



United States Department of the Interior

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m
Black Rock Range East HMA
12/7/01

In Reply Refer To:
4100
(NV-22.13)

December 7, 2001

Dear Interested Public:

Please find enclosed for your review the draft Pine Forest Allotment Evaluation Summary, which includes technical recommendations. If you have additional information or other input related to this document, would you please provide it to me in by January 15, 2002.

If you have any questions, please feel free to contact Lynnda Jackson of my staff at (775) 623-1500.

Sincerely,

Colin P. Christensen
Assistant Field Manager
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DRAFT Pine Forest Allotment Evaluation

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I. Introduction

- A. Pine Forest Allotment (00054)
- B. Permittee - Pine Forest Land and Stock Company
- C. Evaluation Period - 10/14/83 to present
- D. Selected Management Category M

II. Initial Stocking Level

A. Grazing Use

1. Grazing (AUMs)

- a. Active AUMs: 9,700 AUMs
(includes 156 AUMs fenced federal land)
- b. Suspended AUMs: 1,194 AUMs
- c. Permitted Use (Total): 10,894 AUMs

2. Season of Use - 04/01 to 02/28

3. Kind and Class of Livestock - Cattle (cow/calf)
Horses

4. Percent Federal Range

Pine Forest Land and Stock Company is currently licensed at 100% federal land. Prior to 12/01/95 grazing was authorized at 97% federal land or 327 AUMs exchange of use.

5. Grazing System

There is no allotment management plan for Pine Forest Allotment. Cattle are turned out throughout the month of April and are scattered throughout the lower elevations of the allotment. Through the spring cattle drift and are pushed to higher elevations. A drift fence was constructed in 1983 following a fire. This fence prevents most movement of cattle from the Leonard Creek

drainage into Chicken Creek and the remainder of Leonard Creek. Cattle are not moved above the drift fence until after May. Winter grazing occurs from alluvial fans to greasewood flats on the south and east portions of the allotment. Ranch horses are grazed with the cattle from late spring into early fall. The horses do not graze in the vicinity of Bartlett Peak, Pearl Canyon or Center Creek to prevent intermingling with wild horses on the adjacent Paiute Meadows Allotment.

B. Wild Horse Use

The Black Rock East Herd Management Area (HMA) intersects the Pine Forest Allotment at the northern tip of the HMA (see Map 1). In February of 1982 the boundary between Paiute Meadows Allotment and Pine Forest Allotment was changed and a portion of the Paiute Meadows Allotment became part of the Pine Forest Allotment. Prior to the allotment boundary change, the HMA was located outside of the Pine Forest Allotment. The portion of Paiute Meadows Allotment that became part of Pine Forest Allotment contains the northern tip of the HMA. The Paradise-Denio Land Use Plan, which was issued in July of 1982, does not identify horse use within the Pine Forest Allotment.

C. Wildlife Use

Mule deer and pronghorn antelope summer, winter and yearlong habitats along with elk and bighorn yearlong habitats have been identified in the Pine Forest Allotment.

1. Reasonable numbers developed in conjunction with Nevada Division of Wildlife (NDOW) personnel for the Pine Forest Allotment are:

Mule Deer	2,338 AUMs
Pronghorn	108 AUMs
Bighorn	72 AUMs
Elk	96 AUMs

2. The following Key or Crucial Management Areas have been identified within the allotment.

a. Mule Deer:

summer-	12,276 acres	(DS-5,6 & 7)
winter-	31,133 acres	(DW-7)
yearlong-	23,676 acres	(DY-12,13 & 21)

b. Pronghorn Antelope:

summer-	26,304 acres	(PS-2,3 & 15)
winter-	17,562 acres	(PW-4 & 17)
yearlong-	32,403 acres	(PY-3 & 14)

c. Bighorn Sheep:

yearlong-	52,985 acres	(BY-8)
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d. Elk:

yearlong-	51,435 acres	(EY-1)
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e. Sage Grouse:

General distribution is identified throughout the Pine Forest Allotment.

f. Other Game Species:

Chukar and Hungarian partridge, valley quail, and mountain lion.

g. Other Non-game Species:

Various species of nongame birds, mammals and reptiles occur in the Pine Forest Allotment.

D. Riparian/Fisheries

There are six perennial streams located within the Pine Forest Allotment; Leonard Creek, Snow Creek, Center Creek, Corral Creek, Chicken Creek and Sage Hen Creek. A cutthroat trout that may have been a Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*), a

federally listed threatened species, was found during NDOW fish population sampling in Leonard Creek. Leonard Creek and Chicken Creek have been identified in the U.S. Fish and Wildlife Service Recovery Plan for the Lahontan Cutthroat Trout as potential recovery sites.

E. Threatened and Endangered Species

Lahontan cutthroat trout (LCT), a Federally listed Threatened species, historically occurred in upper Leonard Creek and possibly in Chicken Creek. Both streams have been identified as potential recovery sites for LCT in the United States Fish and Wildlife Service (FWS) **Recovery Plan for the Lahontan Cutthroat Trout**, dated January 30, 1995.

According to the Nevada Division of Wildlife (NDOW) 1992 stream survey report, fish (brook trout) were first stocked in Leonard Creek in 1915. Cutthroat trout were first stocked in 1924, and again in 1975. Rainbow and brown trout were also stocked until the last recorded plant in 1978.

During the 1992 NDOW stream survey of Leonard Creek, all eight habitat stations were electroshocked to determine species composition and abundance. Brook, rainbow, brown, and cutthroat (genetic purity unknown) trout were found in the stream, with brook trout being the dominant species.

At the time of the original dam construction for Leonard Lake, brook trout were stocked. The lake failed to fill in late 1974 and the fish were winter-killed during the severe 1974-75 winter. The lake was replanted in 1975 and 1976 with LCT fingerlings.

Chicken Creek was also surveyed by NDOW in 1992. All nine of the habitat stations were electroshocked, but no game or nongame fish were found. NDOW does not possess any records indicating Chicken Creek was ever stocked with game fish.

LISTED, CANDIDATE, AND SPECIES OF CONCERN THAT MAY OCCUR IN THE AREA
OF THE PINE FOREST ALLOTMENT, HUMBOLDT COUNTY, NEVADA
File No. 1-5-01-SP-248

Listed Threatened Species

Fish

Lahontan cutthroat trout

Oncorhynchus clarki henshawi

Candidate Species

Amphibian

Columbia spotted frog

Rana pretiosa

Species of Concern

Mammals

Pygmy rabbit

Brachylagus idahoensis

Spotted bat

Euderma maculatum

Small-footed myotis

Myotis ciliolabrum

Long-eared myotis

Myotis evotis

Fringed myotis

Myotis thysanodes

Long-legged myotis

Myotis volans

Pale Townsend's big-eared bat

Plecotus townsendii pallescens

Pacific Townsend's big-eared bat

Plecotus townsendii townsendii

Birds

Western burrowing owl

Athene cunicularia hypugea

Western Sage Grouse

Centrocercus urophasianus

Northern goshawk

Accipiter gentilis

Invertebrate

Hydrobiid snail

Pyruloopsis gibba

Plant

Grimy ivesia

Ivesia rhypara var. *rhypara*

Of these species, the pygmy rabbit, northern goshawk, and western burrowing owl are most likely to occur in the allotment. The pygmy rabbit, northern goshawk, western burrowing owl and ferruginous hawk are susceptible to impacts associated with ungulate grazing.

III. Allotment Profile

A. Narrative Description

The Pine Forest Allotment is located in the northwest portion of Humboldt County. The allotment is about 50

air miles west of Winnemucca. It includes the southern portion of the Pine Forest Mountain Range and extends south into the Black Rock Desert. Elevations range from 3985 feet on the Black Rock Desert to 9397 feet on Duffer Peak. The lower elevations are dominated by greasewood and shadscale. As elevations increase, sagebrush is dominant. Streambank riparian, meadow, aspen and mountain browse vegetative types are also included within the allotment.

B. Acreage

1. Public land - 124,910 acres
2. Unfenced Private land - 3,686 acres
3. Allotment total - 128,596 acres

C. Allotment Specific Objectives

1. Land Use Plan Objectives

a. Objective RM-1

Provide forage on a sustained yield basis through natural regeneration. Reverse downward deterioration of public grazing lands by improving 1,000,000 acres in poor condition to fair condition, and 400,000 acres in fair condition to good condition within 30 years.

b. Objective WLA-1

Improve and maintain the condition of all the aquatic habitat of each stream, lake, or reservoir having the potential to support a sport fishery at a level conducive to the establishment and maintenance of healthy fish community.

c. Objective WL-1

Improvement and maintenance of a sufficient quantity, quality, and diversity of habitat

for all species of wildlife in the planning area.

d. Objective W-1

Preservation and improvement of quality water necessary to support current and future uses.

e. Objective W-2

Provision of adequate water to support public land uses.

f. Objective W-3

Reduction of soil loss and associated flood and sediment damage from public lands caused by accelerated erosion (man-induced) from wind and water.

2. Rangeland Program Summary Objectives

a. Increase available forage for livestock to sustain an active preference of 9,700 AUMs.

b. Improve range condition from poor to fair on 114,917 acres and fair to good on 9,993 acres by implementing a deferred grazing system, deferring use on the summer range until after seedripeness.

c. Manage rangeland habitat and forage condition to support reasonable numbers of wildlife demand as follows:

Deer	2,338 AUMs
Antelope	108 AUMs
Bighorn Sheep	72 AUMs
(when introduced)	
Elk	96 AUMs
(when introduced)	

d. Protect sage grouse breeding complexes.

e. Protect Caulanthus barnebyi from all man-caused impacts. Note- This species is no longer identified as a sensitive plant in the State of Nevada.

- f. Improve water quality and watershed problems along Leonard, Snow and Chicken Creeks.
- g. Improve the general condition of specific habitat types (meadow, aspen, and mountain browse).

3. Habitat Management Plan Objectives

The Pine Forest Habitat Management Plan was signed by both the Nevada Department of Wildlife and the BLM in January 1981. The overall objective of this HMP is to reestablish vegetative diversity and vigor, watershed cover, and improve the condition of specialized wildlife habitats such as meadows, aspen, and riparian zones. Specific objectives within the Pine Forest HMP for the allotment are as follows for each habitat type:

a. Big Sagebrush

- 1) Change the current vegetative composition to as close to 20% grass, 20% forbs and 60% shrubs as possible. Reduce cheatgrass to less 10% or less of the grass component.
- 2) Insure that key browse and forb species important to wildlife, such as bitterbrush, become or remain a significant portion of the vegetation.
- 3) If necessary, open up dense brush stands to produce "edge", and reduce the shrub component to allow forbs and grasses to increase.

b. Low Sagebrush

- 1) Increase the forb component of the vegetation to at least 15%, and attain a significant quantity of palatable forb species.
- 2) Insure that big sagebrush "islands" in low sagebrush types are maintained.

c. Shadscale

Change the present average composition to 10% grass, 10% forbs and 80% shrubs, by increasing perennial grasses and palatable forb species.

d. Greasewood

Increase the average composition of grasses and forbs to 10% each, with perennial grasses and palatable forbs making up a significant portion of the composition.

e. Conifer

Insure that the approximately 2,000 acres of conifer habitat does not diminish in quality or quantity.

f. Mountain Brush

Provide for increased reproduction and quality of palatable browse and forbs species, including species important for cover.

g. Aspen

Prevent further degradation of aspen habitat and promote rejuvenation of sucker and sapling growth.

h. Meadows

Provide for the restoration of meadow habitat.

i. Riparian

Provide for the restoration of riparian habitat.

j. Aquatic Habitat

Improve watershed conditions along all streams.

k. Other Objectives

- 1) Provide forage for reasonable numbers of big game animals as agreed to by NDOW and the Winnemucca BLM District.
- 2) Mitigate any present or potential adverse impacts placed upon wildlife habitat within the habitat area.
- 3) Encourage range and other resource developments that will provide benefits to wildlife and wildlife habitat.
- 4) Support the potential reintroduction of California bighorn sheep within the Pine Forest Range.
- 5) Cooperate with NDOW if a feasibility study of the potential to transplant elk into a portion of the Pine Forest Range is initiated.
- 6) Insure that future introductions of exotic wildlife species conform to BLM policy and requirements as outlined in BLM Manual 6820.
- 7) Provide input and coordination to resource activities affecting wildlife habitat in the habitat area, such as Recreation Management Plans, Allotment Management Plans, forage allocation, woodland resources water rights activities, and Fire Management Plans.
- 8) Investigate the possibilities for the introduction of more blue grouse into the Pine Forest Range.

4. Standards for Rangeland Health
 - a. Soil processes will be appropriate to soil types, climate and land form.
 - b. Riparian/wetland systems are in proper functioning condition.
 - c. Water quality criteria in Nevada or California State Law shall be achieved or maintained.
 - d. Populations and communities of native plant species and habitats for native animal species are healthy, productive and diverse.
 - e. Habitat conditions meet the life cycle requirements of special status species.

5. Allotment Objectives

The allotment specific objectives tie the Land Use Plan, Rangeland Program Summary and Habitat Management Plan objectives together into quantified objectives for this allotment.

- a. Short Term Objectives
 - 1) Utilization of key streambank riparian plant species in riparian habitats shall not exceed 30% on Center, Corral, Leonard, Chicken and Snow Creeks except where adjusted by an approved activity plan.
 - 2) Utilization of key plant species in wetland riparian habitats shall not exceed 50% except where adjusted by an approved activity plan.
 - 3) Utilization of key plant species in upland habitats shall not exceed 50% except where adjusted by an approved activity plan.

b. Long Term Objectives

- 1) Manage, maintain and improve public rangeland conditions to provide forage on a sustained yield basis for big game, with an initial forage demand of 2,338 AUMs for mule deer, 108 AUMs for pronghorn, 72 AUMs for bighorn sheep and 96 AUMs for elk.
 - a) Improve to and maintain 70,342 acres in good to excellent mule deer habitat condition.
 - b) Improve to and maintain 70,396 acres in fair or good pronghorn habitat condition.
 - c) Improve to and maintain 50,985 acres in Pine Forest BY-8 in good to excellent bighorn sheep habitat condition.
 - d) Improve to and maintain 51,435 acres in Pine Forest EY-1 in good to excellent elk habitat condition.
- 2) Manage, maintain and improve public rangeland conditions to provide forage on a sustained yield basis for livestock, with an initial stocking level of 9,700 AUMs.
- 3) Improve range condition from poor to fair on 114,917 acres and from fair to good on 9,993 acres.
- 4) Improve to and maintain 80 acres of ceanothus habitat types in good condition.
- 5) Improve to and maintain 477 acres of mahogany habitat types in good condition.

- 6) Improve to and maintain 688 acres of aspen habitat types in good condition.
- 7) Improve to and maintain 949 acres of riparian and meadow habitat types in good condition.
- 8) Improve to or maintain the following stream habitat conditions from 50% on Center, unknown on Corral, 37% on Leonard, 59% on Chicken and 40% on Snow Creeks to an overall optimum of 60% or above.
 - a) Streambank cover 60% or above.
 - b) Streambank stability 60% or above.
 - c) Maximum summer water temperatures below 70°F.
 - d) Sedimentation below 10%.
- 9) Protect sage grouse strutting grounds and brooding areas. Maintain a minimum of 30% cover of sagebrush for nesting and winter use.
- 10) Improve to and maintain the seeded pasture in good condition (5-10 acres per AUMs).
- 11) Improve to and maintain the water quality of Sagehen, Chicken, Snow, Corral and Center Creeks to the state criteria set for the following beneficial uses: livestock drinking water, cold water aquatic life, wading and wildlife propagation. Improve or maintain the water quality of Leonard Creek to the Nevada Class A standards.

D. Key Species Monitored

1. Upland Species

<u>Symbol</u>	<u>Scientific Name</u>	<u>Common Name</u>
SIHY	<u>Sitanion hystrix</u>	bottlebrush squirreltail
POSE	<u>Poa secunda</u>	Sandberg bluegrass
ELCI2	<u>Elymus cinereus</u>	Great Basin wildrye
STTH2	<u>Stipa thurberiana</u>	Thurber needlegrass
AGSP	<u>Agropyron spicatum</u>	bluebunch wheatgrass
ORHY	<u>Oryzopsis hymenoides</u>	Indian ricegrass
FEID	<u>Festuca idahoensis</u>	Idaho fescue
BRMA5	<u>Bromus marginatus</u>	mountain brome
CEANO	<u>Ceanothus</u> sp.	ceanothus
CERCO	<u>Cercocarpus</u> sp.	mountain mahogany
RIBES	<u>Ribes</u> spp.	currant
SYMPH	<u>Symphoricarpos</u> sp.	snowberry
ATCO	<u>Atriplex confertifolia</u>	shadscale
PUTR2	<u>Purshia tridentata</u>	bitterbrush
AMAL2	<u>Amelanchia alnifolia</u>	serviceberry
EULA5	<u>Eurotia lanata</u>	winterfat
ARTRW	<u>Artemisia tridentata</u> <u>wyomingensis</u>	Wyoming big sagebrush

2. Riparian Species

<u>Symbols</u>	<u>Scientific Names</u>	<u>Common Names</u>
POPR	<u>Poa pratensis</u>	Kentucky bluegrass
JUNCU	<u>Juncus spp.</u>	rush
CAREX	<u>Carex spp.</u>	sedge
POMO4	<u>Polypogon sp.</u>	rabbitfoot grass
AGAL3	<u>Agrostis alba</u>	redtop
SALIX	<u>Salix spp.</u>	willow
ROWO	<u>Rosa woodsii</u>	Wood's rose
POTRT	<u>Populus tremula</u> <u>tremuloides</u>	quaking aspen
SALIX	<u>Salix spp.</u>	willow

E. Wilderness, Wilderness Study Areas (WSA) and Instant Study Area

A portion of the Black Rock Desert Wilderness is located within the Pine Forest Allotment. Portions of the Blue Lakes Wilderness Study Area (NV-020-600) and portions of the Lahontan Instant Study Area are also located within the allotment (see Map 2). Acreage within Pine Forest Allotment follow:

Name	Acres
Black Rock Desert Wilderness	28,504
Blue Lakes WSA	8,948
Lahontan Instant Study Area	872

IV. Management Evaluation

A. Purpose

The purpose of the monitoring evaluation is to determine if current management practices are meeting the Standards for Rangeland Health, allotment specific and Land Use Plan objectives and to identify management changes needed to meet the Standards and objectives.

B. Summary of Studies Data

1. Actual Use

a. Livestock

Actual Use by Livestock	
Grazing Year 03/01-02/28	AUMs
1983	9250*
1984	9330
1985	9261*
1986	9261*
1987	8523*
1988	6522*
1989	8926
1990	9014
1991	7397
1992	6671
1993	7887
1994	7513
1995	9700
1996	9700
1997	9700
1998	9700

1999	9700
2000	9700
*Licensed use. Actual use not available. Note- Actual use includes 156 AUMs from fenced federal land.	

b. Wildlife

Wildlife population trend data for Pine Forest Allotment follow:

Estimated Mule Deer Fawn Recruitment and Percent Fawn Loss Per Year. 032 Hunt Unit, Western Humboldt County. Data compiled by Jim Jeffress, Wildlife Biologist, Nevada Division of Wildlife.

YEAR	SPRING FAWNS/100DOES ¹	OVER-WINTER PERCENT FAWN LOSS
1992	31	42%
1993	9	77%
1994	25	29%
1995	36	24%
1996	32	38%
1997	36	23%
1998	52	0%
1999	47	19%
2000	49	25%
2001	<u>32</u>	<u>26%</u>
AVERAGE	35	30%

These data indicate that the mule deer population during this time period had the fawn recruitment and the over-winter fawn loss which would support a stable mule deer population. The last several years shows a trend in the increase in the spring fawns per 100 does and a decrease in the over-winter fawn loss which indicates a healthy, thriving mule deer population.

¹ When the fawns per 100 does in the spring is 30 to 35 the population remains stable and with less than 30 fawns the population will have a downward trend while over 35 fawns the population recruitment will have an upward trend.

Estimated Mule Deer Fawn Recruitment and Percent Fawn Loss Per Year. 034 Hunt Unit, Western Humboldt County. Data compiled by Jim Jeffress, Wildlife Biologist, Nevada Division of Wildlife.

YEAR	SPRING FAWNS/100DOES ²	OVER-WINTER PERCENT FAWN LOSS
1992	37	29%
1993	3	87%
1994	7	57%
1995	38	20%
1996	31	32%
1997	38	25%
1998	48	31%
1999	75	39%
2000	60	31%
2001	<u>43</u>	<u>22%</u>
AVERAGE	38	38%

These data show an overall increasing mule deer herd which indicate a healthy and thriving population.

² When the fawns per 100 does in the spring is 30 to 35 the population remains stable and with less than 30 fawns the population will have a downward trend while over 35 fawns the population recruitment will have an upward trend.

Estimated Pronghorn Recruitment and Percent Fawn Change Per Year From The Past Year. 032 Hunt Unit, Western Humboldt County. Data compiled by Jim Jeffress, Wildlife Biologist, Nevada Division of Wildlife.

YEAR	FALL FAWNS/100DOES ³	PERCENT CHANGE OVER PREVIOUS YEAR
1990	50	- 7%
1991	45	-10%
1992	39	-13%
1993	33	-15%
1994	34	+ 3%
1995	22	-35%
1996	50	+127%
1997	41	-18%
1998	43	+ 5%
1999	40	- 7%
2000	<u>24</u>	<u>-40%</u>
AVERAGE	38	- 1%

These data indicate through the fall pronghorn fawns per 100 does and the percent change of fawns from the past year that the pronghorn population is healthy and thriving. The exception is 2000 with 24 fawns per 100 does, probably due to drought conditions.

³ When the fawns per 100 does in the spring is 30 to 35 the population remains stable and with less than 30 fawns the population will have a downward trend while over 35 fawns the population recruitment will have an upward trend

Estimated Pronghorn Recruitment and Percent Fawn Change Per Year From The Past Year. 034 Hunt Unit, Western Humboldt County. Data compiled by Jim Jeffress, Wildlife Biologist, Nevada Division of Wildlife.

YEAR	FALL FAWNS/100DOES ⁴	PERCENT CHANGE OVER PAST YEAR
1990	50	- 7%
1991	45	-10%
1992	39	-13%
1993	24	-39%
1994	13	-46%
1995	24	+85%
1996	40	+67%
1997	29	-28%
1998	43	+48%
1999	40	- 7%
2000	<u>24</u>	<u>-40%</u>
AVERAGE	34	+ 3%

These data show that the pronghorn population in general is stable.

⁴ When the fawns per 100 does in the spring is 30 to 35 the population remains stable and with less than 30 fawns the population will have a downward trend while over 35 fawns the population recruitment will have an upward trend

Estimated California Bighorn Sheep Recruitment and Percent Lamb Change Per Year From The Past Year. 032 Hunt Unit, Western Humboldt County. Data compiled by Jim Jeffress, Wildlife Biologist, Nevada Division of Wildlife.

YEAR	LAMBS/100 EWES ⁵	PERCENT CHANGE OVER PAST YEAR
⁶		
1992	50	--- ⁷
1993	67	+34%
1994	61	- 9%
1995	56	- 8%
1996	58	+ 4%
1997	43	-26%
1998	77	+79%
1999	63	-18%
2000	45	-29%
2001	<u>28</u>	<u>-62%</u>
AVERAGE	55	- 4%

These data show a high lamb per 100 doe ratio which indicates a thriving and a healthy California bighorn sheep population. The exception is 2001 with 28 lambs per 100 ewes, probably due to drought conditions.

c. Wild Horses

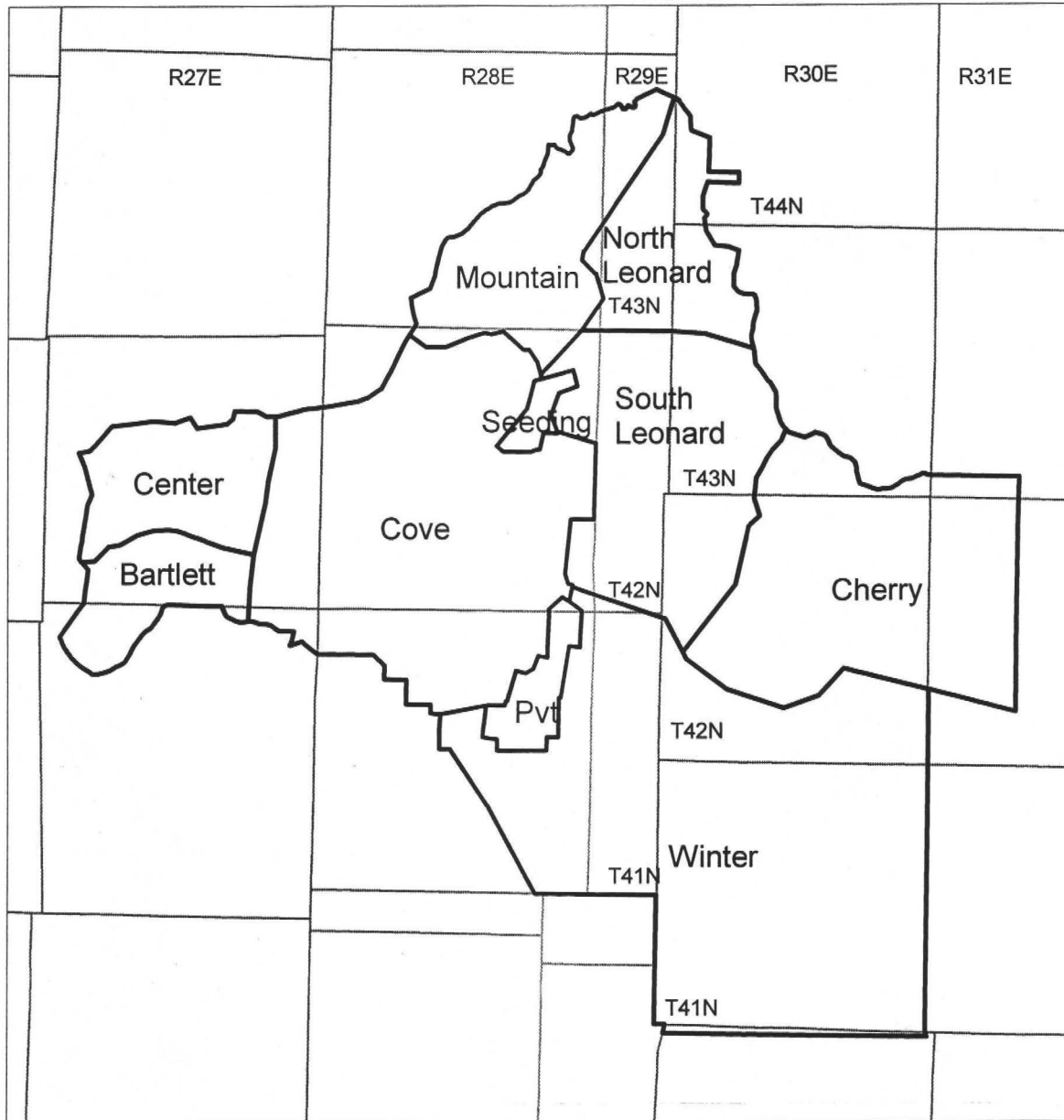
The Black Rock Herd Management Area (HMA) intersects the Pine Forest Allotment at the northeast tip of the HMA. In February of 1982 the boundary between Paiute Meadows Allotment and Pine Forest Allotment was changed. Prior to that time the HMA was

⁵ When the lambs per 100 ewes in the spring is 30 to 35 the population remains stable and with less than 30 lambs the population will have a downward trend while over 35 ewes the population recruitment will have an upward trend.

⁶ A total of 43 California bighorn sheep were released between 1985 and 1988 into three separate locations within this hunt unit.

⁷ No data

Map 4
Pastures and Use Areas From Alternatives 1, 2 & 5



1:250000

located outside of the Pine Forest Allotment. Upon changing the boundary, approximately 2880 acres of the HMA became part of the Pine Forest Allotment. In June of 1982 a fence was completed along the new allotment boundary. Except as discussed below, census and distribution flights, as well as on the ground observations do not indicate that wild horses have occupied this portion of the HMA even prior to fence construction.

Two horses were observed in Pine Forest Allotment approximately one mile southwest of Woodcamp Spring in the fall of 1995. The permittee reports that from 1991 through 1993, he observed four horses in the western arm of the Pine Forest Allotment.

A lone stud has been observed from about 1991 to 1995 in the easternmost portion of the allotment. This is not in the vicinity of the HMA.

During the 2000 wild horse gather for the Black Rock Range, approximately nine wild horses were removed from the Pine Forest Allotment. These horses were captured outside of the herd management area.

2. Climatological Data

Precipitation at the Leonard Creek Ranch Station administered by the National Oceanic and Atmospheric Administration (NOAA) follows:

Leonard Creek Station Precipitation in Inches				
Year	Precipitation		Deviation from Normal	
	March-August	Annual Jan-Dec	March-August	Annual Jan-Dec
1983	4.99M	15.1M	M	M
1984	3	8.5	-0.69	-0.01
1985	2.48	6.82M	-1.21	M
1986	4.85	9.6	1.16	1.09
1987	5.42	9.3	1.73	0.79
1988	2.94	8.11	-0.75	-0.4
1989	3.98	7.48	0.29	-1.03
1990	4.67	7.19	0.98	-1.32
1991	5.06	9.04	1.37	0.53
1992	2.38	7.82	-1.31	-0.69
1993	4.38	10.02	0.69	1.51
1994	2.15	8.31M	-1.54	M
1995	6.7	11.49	3.01	2.98
1996	5.84M	13.71M	M	M
1997	4.41	8.96	0.49	0.45
1998	6.18	15.13	2.49	6.62
1999	2.97	6.65M	-0.79	M
2000	2.59	M	-1.10	M
M: Insufficient data (incomplete or				

More detailed precipitation data is displayed in Appendices 1, 2, 3 and 4.

3. Utilization Data

Utilization studies were conducted with the following use ratings of the current years' growth:

<u>Use Rating</u>	<u>Percent Utilization</u>
No use	<1%
Slight	1-20%
Light	21-40%
Moderate	41-60%
Heavy	61-80%
Severe	81-100%

1984

Date data collected: 09/06/84
Actual Use at the time data was collected: 6557 AUMs

The Snow Creek Burn had heavy to severe use on slopes <15%. Species documented included bluebunch wheatgrass, bluegrass, Idaho fescue and Great Basin wildrye. The burn occurred 08/25/82.

1988

Date data collected: 10/17/88-10/20/88 and 10/25/88-10/27/88
Actual Use at the time data was collected: 5898 AUMs

Utilization was documented as moderate or higher on approximately 10% of the allotment. Use was light to slight on the remainder of the areas observed. Little heavy use occurred on upland areas. Use on riparian areas ranged from slight to severe. Use that was over 60% generally occurred on riparian areas or upland areas immediately adjacent to water sources.

Heavy use occurred on meadows associated with Lone Meadow Spring and several other springs in the area. Other springs in the vicinity received moderate or light use. Meadows at Rodeo Flat also received heavy use. The basin at Wheeler Spring received moderate to heavy use on Idaho fescue and bluebunch wheatgrass. Use was moderate on snowberry and bitterbrush. Use was moderate at Woodcamp Spring and on saddles. Use on the uplands was light to slight. Heavy use was observed at Rock Spring and at associated seeps. Use was heavy at the bottom of the canyon below Horseshoe Bend with moderate and light use on the side slopes. Moderate use was observed in the Cove Camp basin area, with light use extending up the slopes to Willow Spring. Heavy use occurred at the spring with moderate use on the saddles and along the road. Patches of heavy use were found on the Lone Meadow side of the ridge.

The basin above Center Creek received slight use. This area is extensive and productive. The canyon where McCully Spring is located had mostly light use except immediately surrounding the trough where heavy use occurred. Josie Pearl Spring and the low plateau to the east received heavy use extending down the gully almost to the road. Water gaps along Bartlett Creek had heavy use.

Heavy use was found in the streambed of Snow Creek and in the small basins where tributaries enter the creek. Overall upland use in this area was slight to none. North Fork had moderate use in the channel with slight to light use on the side slopes.

The meadows and streambank grasses and grasslike species on Chicken Creek had uniform heavy use extending from Corral Meadows down to the road at the east end. The fenced area around Chicken Creek cabin and surrounding uplands received heavy use on grass and browse species.

Heavy use was mapped along upper Leonard Creek and at Cold Springs. Nearly all the saddles and draws at the north end of Bare Pass had heavy use of perennial grasses and mountain browse.

The area west of the private land in Pass Creek received moderate to heavy use. North of Leonard Creek Meadows, lower Leonard Creek had heavy use of grasses and grasslike species and light use on the uplands. The lower slopes south of the meadow had light use except along the road and just NE of Cappallo Camp.

The spring at the headwaters of Sage Hen Creek received heavy use on willow, grasses and grasslike species. The canyon had moderate use on riparian species and light use of upland species.

Upland use around Tepee Creek was light on Thurber needlegrass and bluebunch wheatgrass. Heavy use was found on riparian species above the cabin and in the meadow at the cabin. Slight use was found in the burned area. Use along Sentinel Creek was light except at the mouth where use was moderate. Two springs in the area received heavy use.

Cherry Creek received slight to light use. Lone Tree Reservoir had light use with heavy use in the immediately surrounding area.

Slight to no use overall was observed on the majority of the plays.

1991

Date data collected: 11/16/91-11/17/91

Actual Use at the time data was collected: 6361 AUMs

The area from Leonard Creek Ranch, to Sentinel Creek, to the Mesa, to the head of Tepee Creek and to Chicken Creek cabin was use pattern mapped. Utilization of upland vegetation was slight on Indian ricegrass, Thurber needlegrass and bluebunch wheatgrass, except in the burned area where utilization was moderate on Thurber

needlegrass. In addition to receiving cattle use, the burned area is favored by antelope. Heavy utilization of Kentucky bluegrass was observed on Sentinel Creek and at the head of Tepee Creek.

Upper Chicken Creek, including Corral Meadow, and upper Leonard Creek and Snow Creek were also examined. Utilization of upland species ranged from slight to moderate. Species included Great Basin wildrye, bluebunch wheatgrass, Thurber needlegrass, Idaho fescue and bitterbrush. Use of riparian species ranged from slight to heavy with heavy use in Corral Meadow, the meadow at Chicken Creek cabin and portions of upper Leonard Creek and where the two forks of Snow Creek come together.

1992

Date data collected: 09/16/92 and 09/22/92-09/23/92
Actual Use at the time data was collected: 5506 AUMs

Upper Chicken Creek near Corral Meadow showed heavy use on herbaceous species and severe use woody species. Upper Leonard Creek showed heavy to severe use woody species by livestock. Species documented included rush, sedge, willow, aspen and Kentucky bluegrass

On mid to lower Chicken Creek and on lower Leonard Creek overall utilization was heavy. Species documented included rush, sedges, willow, aspen, alder and Kentucky bluegrass. Alder, willow and aspen received severe use on some areas of the creek. All seeps and springs observed adjacent to Leonard and Chicken Creeks had heavy to severe use.

1993

Date data collected: 09/23/93
Actual Use at the time data was collected: 5581 AUMs

At DW-PF02 key area the average utilization on bitterbrush was 69%. Due to the high use of the current year's leader growth, heavy use on grass

species, the poor form class and high utilization of bitterbrush plants is attributed to livestock use and not wildlife winter use.

At DW-PF-05 key area, none of the branches of monitored bitterbrush showed any utilization.

Date data collected: 10/13/93-10/15/93 and 10/21/93-10/22/93

Actual use at the time data was collected: 6232 AUMs

On the western portion of the allotment use was slight to light on upland species, except on serviceberry and Thurber needlegrass, which had moderate use in a limited area. Use on riparian vegetation ranged from slight to heavy with heavy use at the mouth of Pearl Canyon, at Josie Pearl Spring, at Rock Spring and along Center Creek. Species documented with heavy use included willow, rose, Kentucky bluegrass and rabbit's foot grass.

Throughout the upper elevations use was slight to light on upland species including bluebunch wheatgrass, Idaho fescue, Thurber needlegrass, Great Basin wildrye, ceanothus, snowberry, mountain mahogany, and currant. Moderate use was found on snowberry in limited areas. Use was light along upper Leonard Creek. Heavy use was found immediately adjacent to Leonard Lake. Use along Chicken Creek was heavy just above the fenced area around the cabin and was slight to light above. Use on Corral Meadow adjacent to Chicken Creek was moderate. Use along Snow Creek was slight to heavy. While most of the creek had less than moderate use, heavy use occurred on pockets of herbaceous species on some portions of the creek above where the north and main fork come together. Key riparian species included bluegrass, rush, sedge and willow.

Use along Sentinel Creek was moderate to heavy along the lowest portion with slight to light use above. Use on upland species in the vicinity was slight (shadscale, squirreltail, Sandberg bluegrass, bluebunch wheatgrass, Idaho fescue, Thurber needlegrass, Great Basin wildrye). In

the Snow Creek Burn area use was slight on the steeper slopes with use up to moderate on Thurber needlegrass in some portions of the burn. Use was slight to light along Cherry Creek. The meadow adjacent to the cabin on Tepee Creek received heavy use. Steep cut banks limit access to Tepee Creek in the area.

North of the burn fence use on upland species, including bitterbrush in addition to other upland species, was slight. Heavy use was found on springs.

1994

Date data collected: 06/24/94

Actual Use at the time data was collected: 2907 AUMs

Utilization was slight to no use in the upper country in the vicinity of Chicken Creek Basin and Leonard Creek Basin. Utilization of bitterbrush was slight to light south of Chicken Creek in the Leonard Creek drainage.

Date data collected: 11/18/94

Actual Use at the time data was collected: 7243 AUMs

Portions of the Leonard Creek drainage were examined. Use along Chicken Creek above the cabin was moderate on rush and bluegrass, and was heavy on sedge and willow. Along lower Chicken Creek overall use was moderate with heavy use on aspen and alder. Use along lower Leonard Creek was moderate. Use of upland species was light to moderate except where heavy use on Thurber needlegrass and squirreltail north of lower Chicken Creek. Use was moderate on bitterbrush south of Chicken Creek. Use within the seeding was light on crested wheatgrass and intermediate wheatgrass, and moderate on wildrye.

1995

Date data collected: 07/20/95-07/21/95

Actual Use at the time data was collected: 4223 AUMs

Utilization on Leonard Creek east of Cappallo Cabin was moderate with a stubble height of 3-4 inches. Use was light to moderate at springs between Leonard and Chicken Creeks and between Chicken and Snow Creeks. Use on lower Sage Hen Creek ranged from light to heavy. Use was moderate to low heavy on Leonard Creek below the drift fence. Utilization on public land on Snow Creek was light to low moderate, and slight to none on side drainages. Utilization was light to slight at the confluence between the north and south forks. The large meadow complex just below the confluence had slight use. Upper Chicken and upper Leonard Creeks had no use.

Date data collected: 10/10/95-10/11/95, 10/18/95-10/19/95, 10/24/95, 10/26/95, 10/31/95

Actual use at the time data was collected: 7717 AUMs

Utilization of upland species ranged from moderate to slight except in on the Mesa where utilization was heavy on Thurber needlegrass, bluebunch wheatgrass and squirreltail. Other perennial upland grass species documented included Sandberg bluegrass, Great Basin wildrye, Idaho fescue, bluebunch wheatgrass and crested wheatgrass.

Species documented in riparian habitat included rush, sedges, redtop, saltgrass, rabbitfoot grass and Kentucky bluegrass. Overall utilization was heavy on Center Creek, tributaries to Bartlett Creek, upper Corral Creek, lower Sagehen Creek and lower Leonard Creek. Use was slight to light on upper Leonard Creek, upper Chicken Creek, Sentinel Creek and Cherry Creek. Use of springs varied. Use was moderate at Josie Pearl Spring. Use was heavy at the head of Tepee Creek, Rock Spring and Corral Spring. Use was moderate at Dyke Spring (warm spring south of Cherry Creek). Use was heavy at Rodeo Flat. Use was slight at Trough Spring.

Date data collected: 03/21/96

Actual Use at the time data was collected: 1158 AUMs
(includes winter use only)

The winter use area includes the flats on the southernmost portion of the allotment. Use was slight to moderate on all but <1% on the area where heavy use was observed on winter fat. A small patch of winter fat received severe use. Other species documented include Indian ricegrass, Great Basin wildrye, squirreltail, shadscale and budsage.

1996

Date data collected: 03/18/97
Actual Use at the time data was collected: 888 AUMs
(includes winter use only)

Utilization was slight to light in the winter use area except in limited areas immediately adjacent to Leonard Creek Ranch fields, where use was heavy. Key species included winter fat, Indian ricegrass, squirreltail, Great Basin wildrye, shadscale, budsage and Sandberg bluegrass. Heavy use occurred on less than 1% of the observed area.

1999

Date data collected: 10/20/99, 10/21/99,
11/18/99, 11/19/99
Actual Use at the time data was collected: 7170-
8255 AUMs

Utilization data was collected on the northern, central and eastern portion of the allotment. Upland utilization was slight to light throughout the those areas on bluebunch wheatgrass, Idaho fescue, Thurber needlegrass, squirreltail and Sandberg bluegrass. Utilization on the seeding was moderate on crested wheatgrass and intermediate wheatgrass. Utilization was light on bitterbrush. A lot of deer pellets were present as was some cattle sign. Bitterbrush was less utilized than in past.

Utilization of key streambank riparian species was light to moderate on Cherry Creek and Sentinel Creek. Utilization was moderate to

heavy on Tepee, Leonard, Chicken and Sage Hen Creek. Utilization was light on saltgrass at Dyke Spring. Utilization was heavy on meadows and springs in the vicinity of Leonard and Chicken Creek with punching and sloughing associated with livestock use.

2001

Date data collected: 10/24/01 and 11/09/01
Licensed use at the time data was collected:
7266-7844 AUMs

Utilization data was collected showing slight use on the Mesa on Thurber needlegrass, Salmon wildrye bluegrass and squirreltail. Stockwater in this area is provided by reservoirs. Utilization was light on upland species adjacent to Cherry Creek and light to moderate adjacent to Leonard Creek including bluebunch wheatgrass, Thurber needlegrass, bluegrass and squirreltail. Utilization of the Seeding was light on crested wheatgrass and intermediate wheatgrass.

Key herbaceous riparian species on upper Cherry Creek, Tepee Creek, lower Leonard Creek and Sage Hen Creek are Poa spp., sedge and rush. Heavy use of these species was observed along these creeks.

4. Trend

Frequency trend data is not available for the Pine Forest Allotment. The Paradise-Denio Grazing Environmental Impact Statement (1982) indicated an apparent downward trend.

5. Range Survey Data and Range Condition Data

- a. The range condition described below is not the range condition or ecological condition relative to ecological potential, which is determined using Ecological Site Inventory method. Therefore, utility of the data is extremely limited.

A Phase I Watershed Inventory was conducted between 1971 and 1974. Livestock forage condition was determined based upon data extrapolation and computations from this inventory. This data extrapolation resulted in the following condition classification for the Pine Forest Allotment:

<u>Good</u> <u>Condition</u>	<u>Fair</u> <u>Condition</u>	<u>Poor</u> <u>Condition</u>
0 acres	9,993 acres	114,917 acres

Appendix G, pg 28, of the Paradise-Denio Grazing EIS provides more discussion on livestock forage condition.

- b. In 1978 a range survey was conducted using the Ocular Reconnaissance Method to provide baseline data for analysis in the Paradise-Denio Grazing EIS. This survey, along with suitability criteria, indicated that 2,363 AUMs were available in 1978 for livestock on Pine Forest Allotment.

6. Ecological Status

The soil survey (order 3) has been completed on the Pine Forest Allotment. Ecological Status

Inventory has not been completed on his allotment.

7. Wildlife Habitat Inventory

- a. Priority Species: Mule deer, sage grouse, trout, pronghorn, bighorn sheep, elk.
- b. Other Game Species: Chukar and Hungarian partridge, valley quail, and mountain lion.
- c. Special Habitat Features

A special habitat features inventory was conducted in August and October, 1977. This inventory identified the location and acres of special habitats, listed observed plant and wildlife species, and documented ocular observations of the condition and utilization of these habitats.

- 1) Riparian and Meadow habitat-949 acres located predominantly on the Pine Forest Range and the Black Rock Range.
- 2) Aspen-688 acres located in the Pine Forest Range and the Black Rock Range.
- 3) Curlleaf Mountain Mahogany- 477 acres located in the Pine Forest Range and the Black Rock Range.
- 4) Ceanothus- 80 acres located in the Pine Forest Range and the Black Rock Range.
- 5) Pine- 255 acres located in the Pine Forest Range.
- 6) Mountain Browse- Antelope bitterbrush *Purshia tridentata*, Wyoming sagebrush *Artemisia tridentata wyomingensis*, Serviceberry *Amelanchier sp.*, snowberry *Symphoricapos sp.*, and currant *Ribes sp.* are identified as components in most of the various ecological sites in the allotment above an elevation of

5500 feet. This results in general distribution over most of the allotment.

This inventory recorded the following in 1977:

The vast majority of the spring and associated riparian habitat in the allotment was receiving heavy to severe use by livestock and was in poor to fair condition. Meadows fall into this category as well. Springs and wet meadows were trampled, deteriorating, and headcutting was common. Aspen associated with these areas had little reproduction and were being browsed heavily by livestock. Deer also browsed the aspen heavily in a couple of instances. Riparian conditions were somewhat better in the Black Rock Range portion of the allotment, but areas of heavy use still persisted. Part of the reason for this may be the recent addition of a part of the Paiute Meadows allotment to the Pine Forest Allotment which was grazed in common at the time of the inventory.

Aspen on the Pine Forest Range varied in condition. Accessible stands had moderate to heavy utilization by livestock. Overall reproduction of aspen was poor to fair with the exception of scrub stands, which were good. In general, understory diversity was fair, with some stands being very poor. Curlleaf mountain mahogany had fair reproduction but was being browsed heavily. Mountain browse, especially bitterbrush on mule deer winter range, was being heavily utilized by livestock. Current years leader growth was generally unavailable to deer during the winter due to this use.

d. Wildlife Use Areas: (By Nevada Division of Wildlife Management "Hunt" Unit)

Hunt Unit 032

Mule deer			Pronghorn			Bighorn Sheep		
Pine Forest	DS-5	6440	Pine Forest	PW-4	10,574	Pine Forest	BY-8	52,985
Pine Forest	DS-5C	6407	Pine Forest	PW-17	3108			
Pine Forest	DW-7	31,133	Pine Forest	PS-2	2763	Elk		
Pine Forest	DW-7C	7,161	Pine Forest	PS-3	17,427	Pine Forest	EY-1	51,435
Pine Forest	DY-12	13,266	Pine Forest	PY-3	24,494			

Hunt Unit 034

Mule deer			Pronghorn		
Black Rock	DS-6	4590	Black Rock	PS-15	6114
Black Rock	DY-13C	1865	Black Rock	PY-14	7496
Black Rock	DY-13	9164	Pine Forest	PY-3	413
Black Rock	DY-13C	1865	Leonard Cr.	PW-17	3880
Pine Forest	DS-7	1246			
Leonard Cr.	DY-21	2359			

e. Sage Grouse

General distribution is identified throughout the allotment. A total of seven strutting, three brooding and two wintering areas have been identified within the Pine Forest Allotment. General distribution covers the entire allotment, with concentrated use around the upper Leonard Creek basin.

Sage grouse have been observed on the Pine Forest Allotment and their presence are directly correlated to the presence of a healthy sagebrush community. With a proper grazing system with grazing objectives being met and the lack of wildfires sage grouse should not be negatively impacted.

Known Sage Grouse Leks Located by NDOW

YEAR	TYPE OF SURVEY	NUMBER OF BIRDS	LOCATION
1972	Aerial	Unknown	T43N, R27E, Section 21, SW¼
1972	Aerial	Unknown	T42N, R28E, S15, SW¼
1999	Helo	70+	T43N, R30E, S33, NW¼NW¼
1999	Helo	6	T42N, R30E, S16, SW¼NW¼
1999	Helo	4	T42N, R28E, S28, NW¼NW¼

8. Habitat Evaluation

Mule Deer

Mule Deer habitat in the Pine Forest Allotment is extensive and varied. Both the Pine Forest, and Black Rock Mountains contain large populations of mule deer. Both of these ranges contain high elevation summer range, mid elevation spring/fall/winter range, and low elevation yearlong range. Habitat in the allotment varies from large dense mahogany woodlands, to more open mahogany pockets, and extensive open sagebrush/grass communities. Mountain browse species are common with bitterbrush, snowberry, and serviceberry available as a component in the vegetation communities throughout many habitat types.

September 1993 Browse Condition For Mule Deer:

<u>SPECIES</u>	<u>KEY AREA</u>	<u>SEASON OF USE</u>	<u>BROWSE</u>	<u>AGE CLASS</u>	<u>FORM CLASS</u>	<u>UTILIZATION</u>
T43N, R29E, S31, NW1/4, NE1/4 Mule Deer	DW-PF-02	Winter	Bitterbrush	Sat.	No Data	70% Unsat.
T42N, R28E, S15, SW1/4, NE1/4 Mule Deer	DW-PF-05	Winter	Bitterbrush	Sat.	Sat.	Satisfactory

1993 Habitat Condition Rating Summaries For Mule Deer For Pine Forest Allotment:

<u>SPECIES</u>	<u>KEY AREA</u>	<u>SEASON OF USE</u>	<u>RATING</u>	<u>MOST LIMITING FACTOR</u>
T42N, R28E, S14, NW1/4, SW1/4 Mule Deer	DW-PF-04	Winter	89 Excellent	Decadent Browse

Pronghorn

Pronghorn habitat in the Pine Forest Allotment is fairly extensive over the lower elevation valley bottom areas in the allotment. Three antelope key area condition and trend study sites were monitored in the Pine Forest Allotment.

1993 Pronghorn Habitat Condition Rating Summaries For Pine Forest Allotment:

<u>SPECIES</u>	<u>KEY AREA</u>	<u>SEASON OF USE</u>	<u>RATING</u>	<u>MOST LIMITING FACTOR</u>
T42N, R28E, S22, SW1/4, NW1/4 Pronghorn	AW-PF-01	Winter	51 Fair	Vegetation Diversity
T42N, R29E, S19 Pronghorn	AS-PF-03	Summer	63 Fair	Vegetation Diversity
T41N, R29E, S6, NE1/4, SE1/4 Pronghorn	AW-PF-06	Winter	37 Poor	Vegetation Quality Vegetation Diversity

California Bighorn Sheep

Bighorn sheep have been established in the Pine Forest Allotment. The first transplant occurred in 1988 in Buckaroo Canyon. This release was in conformance with the Pine Forest Habitat Management Plan. From the initial transplant

population of 18 the population has increased to over 60 animals. Most of this herd is found in the adjoining Dyke Hot Allotment for most of the year. Individuals move back and forth between the Pine Forest Allotment and the Dyke Hot Allotment. Sightings of sheep have been reported in head of Leonard Creek and up to 25 head of bighorns use the area around Bartlett Peak during parts of the year. Some fall use by ewes has also been observed in the New York Peak area.

Specific bighorn sheep habitat condition studies have not been established, however, population growth rates are an excellent indicator of habitat conditions. Since populations were established in the Buckaroo Canyon area, they have expanded over three-fold.

Elk

Elk are infrequent visitors to the Pine Forest Allotment, primarily in the northern end. In recent years, reports of Elk have been more frequent as populations in Oregon reach carrying capacity and overflow populations begin pioneering into new suitable habitats. Habitat conditions in the Pine Forest Allotment are good to excellent.

Sage Grouse

Sage grouse habitat in the Pine Forest Allotment is extensive. The Pine Forest habitat areas have not been drastically effected by fire. Livestock impacts to crucial late summer forage and habitat quality at riparian areas, due to heavy grazing, have reduced overall habitat condition and overall habitat condition is estimated to be fair to good.

9. Migratory Birds

No migratory bird inventory has been completed for the Pine Forest Allotment. Common migratory birds that may use the area as habitat include various song birds, owls, blackbirds, crows,

ravens, hawks, various species of ducks, finches, doves, juncos, killdeer, robins, and meadowlarks.

10. Riparian and Fisheries

The following perennial streams in the Pine Forest Allotment have been surveyed for quality of instream habitat quality for trout and riparian condition.

<u>Stream</u> <u>Surveyed By</u>	<u>Length (total)</u>		<u>Length {public}</u>
Center Cr.	7.0 miles	5.5 miles	1987,1994, 2000 (BLM)
Chicken Cr.	2.5 miles	2.4 miles	1987 (BLM, 1992 (NDOW)
Corral Cr.	3.4 miles	3.4 miles	1988,1995, 2000 (BLM)
Leonard Cr.	28.6 miles	18.7 miles	1976, 1987 (BLM), 1992 (NDOW)
Snow Cr.	5.5 miles	3.8 miles	1987 (BLM), 1990, 1994 (NDOW)

Please see Appendix 5 for display of stream sections discussed in the following.

Center Creek

The following observations of Center Creek were made in 1994 and 1995.

Center Creek is a perennial tributary to Craine Creek flowing approximately 6.5 miles through the allotment. Of this total, 6.1 miles occur on public lands. Based on habitat conditions, the creek can be divided into two major sections.

Section 1 encompasses the lower 1/3 to 1/2 of the drainage in the allotment. The defining feature of this section is a deeply incised moderately confined channel. The channel is incised in 12-15 foot vertical banks. The channel has widened, however, heavy livestock impacts have hindered the development of a suitable streambank. Heavy

utilization of herbaceous riparian vegetation has also limited the stability of the channel both vertically and horizontally. Upland vegetation such as sagebrush and rabbitbrush often extends directly to the waters edge. In comparison to the same conditions on the same creek in a neighboring allotment, the potential of this site seems to be much more with respect to channel formation, streambank conditions, and floodplain development. The only variable between the two sites is the livestock season of use, and in recent years, the class of livestock.

Section 2 encompasses the upper 1/2 to 2/3 of the drainage in the allotment. This section is incised approximately 1 foot. The incised condition is a result of sloughing of the streambank due to heavy livestock grazing pressure. Active headcutting was observed in one location.

The heavy use of the riparian vegetation along the creek weakens the streams ability to dissipate energy, maintain a vigorous vegetative community, and trap sediment. Woody riparian vegetation is not a major component in this system.

Instream habitat surveys for Center Creek were conducted in 1987, 1994, and 2000. All were conducted using BLM methods. The results of those surveys are as follows:

<u>Factor</u>	<u>1987</u>	<u>1994</u>	<u>2000</u>
Pool/Riffle Ratio ⁸	88	12	67
Pool Quality	0	0	0
Desirable Bottom Material	98	49	18
Bank Cover	31	25	39
Bank Stability	35	34	56
%Habitat Optimum	50	24	36
Riparian Condition Class	33	30	48

Center Creek has shown a decrease in all habitat quality factors between 1987 and 1994. The vegetation along the stream has been heavily utilized by livestock and livestock mechanical damage is also heavy leading to increased sediment loading in the stream. There is a lack of shading along the creek and riparian species of vegetation are almost nonexistent. These conditions can lead to an increase in water temperatures, decrease in aquatic invertebrate and the availability of terrestrial invertebrates as a food source, a lack of instream hiding and over wintering cover for juvenile and adult fish and a lack of suitable spawning habitat.

Chicken Creek

The following observations of Chicken Creek were made in 1993 and 1994.

Chicken Creek is a tributary to Leonard Creek and flows a total of 3.6 miles, all of which occurs on public lands. For discussion purposes, Chicken creek was divided into 6 sections based on habitat type and/or habitat condition.

⁸Optimum is 50% pool to riffle ratio.

Section 1 is approximately 0.5 miles in length. It begins at the upper end of the private property and extends upstream to the road crossing. This section of stream contains a significant aspen component with lesser amounts of other woody riparian species including alder and willow. The aspen community throughout this reach is declining due to the lack of successful regeneration. There is abundant vegetative reproduction, however livestock conflicts are prohibiting successful recruitment. Herbaceous vegetation is present along the many open sections of stream, but provides little protection to the streambank during runoff due to high livestock use. The stream maintains a functional flood plain which does seem to be allowing for limited bank storage.

Section 2 is approximately 0.8 miles in length. It begins at the road crossing and extends upstream to the fenced field at the Chicken Creek cabin site. This reach of stream contains a significant woody riparian community including aspen, willow, alder, and rose. Woody riparian species are represented by a diverse age class suggesting recruitment is not a concern in this section. Herbaceous riparian species are somewhat limited due to the narrow canyon and thick woody riparian cover. Streambanks do not bear evidence of recent impacts associated with livestock grazing.

Section 3 is approximately 0.7 miles in length. It encompasses the portion of stream contained within the fenced area surrounding the cabin. This section of stream is defined by a low gradient sinuous reach containing significant amounts of both herbaceous and woody riparian species. Woody species are dominated by large willow and a diverse age class of aspen. Herbaceous communities are also diverse offering excellent stability to the stream channel, and supporting a functioning flood plain. Livestock utilization of this portion of creek has been

Dear Pete;

Thank you for the opportunity to comment on the draft Pine Forest Allotment Evaluation Summary. I cannot find sufficient words that reflect the shock when I read the document. Briefly, WHOA represented by myself, was actively involved in every aspect of the land use planning for Paradise Basin EIS. I was also a member of the CRMP's. I worked on several committees with Frenchy Montero when we established the State of Nevada Commission for Wild Horses & Burros. I've visited the Pine Forest Allotment several times, Blue Lake, and Black Rock, Paiute Meadows HMA's, so I speak with some knowledge.

Specific concerns for the resources prompted generous public response to the planning process. The primary interests were who ate what, when and where; the establishment of monitoring; ^{and} maintaining herd integrity. I even featured Congress for Monies specifically for Winnemucca to implement the planning, so you can imagine the SHOCK when I discovered through this document that your District removed a portion of the Black Rock HMA (I distributed the Final ~~Report~~ Decision in SEPT 1981, made a boundary adjustment (FEB 1982), ^{which} ~~and~~ removed the NE portion of the Black Rock HMA and fenced ~~the NE~~ ^{that} portion of the Black Rock HMA; then added that portion to the SW portion of the Pine Forest Allotment!

2

To add insult to injury when you overlay Map 4 over Map 1, it becomes clear the portion taken from the horses made another pasture for the permittee whom didn't have wild horses within his allotment. ~~Any fact work here.~~ But please explain to me how a District can change the authority of Congress, or at the very least do so without notification in a land use plan amendment? Please show me in the URA, MFPI-III and the decision document where it authorizes you to arbitrarily change a herd boundary? In fact WH/B 1.2 (D-1) states, "Construct boundary fences in critical locations, to be identified, to maintain the integrity of the HMA." #11 states "No further fencing would be allowed within the HMA." Furthermore, the PD Plan & Implementation (8-6-82) #4 require you to "manage wild horses & burro herds to be maintained in the Genstock Reduction/Maximizing Wild Horse & Burro Alternative. The instruction to fence boundary was to keep horses in and cattle out of the HMA, not to change the boundary.

But since the District failed to follow the LUP there is no surprise that you also ignored the licensing of domestic horses contiguous to an HMA. Clearly this flies in the face of the PD (WHB 2.2) which states "License of domestic horses and burros only in those areas where such domestic animals would not be expected

to mix with ~~wild~~ populations of wild horses and burros. Even the MFP/URA (WH/B 1.6) adds, "Restrict the licensing of any domestic horses or burros within the planning unit."

The authors rationale was fences rarely contain horses if they want through. If over a few censuses a dozen or so wild horses were spotted & then removed where do you suspect they came from? Where in PL 92-195, regulations, manuals, or minutes does it say "USE IT OR LOSE IT?"

You don't know whether critical minerals exist for intermittent use do not exist; you don't know on a day to day basis every animal that comes and goes. Nor does the law require the horses must use every square inch of their habitat. In fact the MFP WH/B 1.2 (L.) states "HMA's are complementary with the idea of having wild and free roaming horses on public lands. These horses would be harassed less than now and they would be in better shape and show greater vigor. These areas are large enough where the lack of space would not be a problem." What a laugh when you will probably claim in some future document that Black Rock AMZ must be lowered because they have less space. What an insult to all who participated, but most of all ^{to} the horses, whose range is the only place they are allowed by law!

~~But not to divert the attention to~~
 Where or what pasture of the Pine Forest
 are the domestic horses licensed? Is there
 sufficient waters within the reduced HMA
 to support the current population? Though
 you claim it is less than 3000 acres, it
 depends on the productivity of that sight
 as to whether you have damaged wild
 horse habitat even more than we suspect.

Last, but not least though it is
 nearly 21 years after the EIS, little
 appears to have changed in the manage-
 ment of livestock. Utilization data on page
 26 showed heavy to severe use on approx
 10-15% of the allotment, with a comment
 "utilization was documented as moderate or
 higher." Does higher mean heavy or severe?
~~BEM blames the reduction of wild horse populations
 on the condition of riparian habitat destruction,
 yet 21 years have not improve.~~

Despite monitoring and use pattern mapping
 there is a failure to determine carrying
 capacity and allocate forage, as required
 by the Rangeland Improvement Act.

Objectives in the LUP are not met and
 even some standards and Guidelines are
 not met. One thing for sure, ~~BEM can't~~
 neither wildlife or BEM can blame wild
 horses for the conditions in Pine Forest
 Allotment.

1-15-92
Pine Joint
Allot Sum.
Comments

limited to short duration use in the fall as a holding facility, therefore livestock impacts are not readily apparent. A recurring open scar area at the downstream end of the section resulting from livestock trailing along the fence edge offers a degree of risk to the stream through this section. This effect could be mitigated or eliminated with better livestock distribution which does not result in season long livestock grazing in the lower areas of the allotment.

Section 4 is approximately 0.3 miles in length. It begins at the upstream end of the cabin field, and extends to the foot of the mountain where stream gradient becomes decidedly steeper. This portion of stream is defined by its incised channel, poorly developed floodplain, and low gradient.

Vegetation is somewhat sparse in terms of both diversity and distribution. Riparian vegetation is limited to the narrow strip along the creek and is dominated by herbaceous species, with a few scattered woody species. The majority of the sides lopes of the gully through this section are composed of highly erodible granitic sand and decomposed granite rubble and boulders. The stream bottom is dominated by the same materials. Livestock access to this section has historically been high as a quasi-watergap between the fenced field and steep mountain slope, as well as a movement corridor across the creek. Poor riparian conditions demonstrated by poor floodplain development, poor woody species distribution, and lack of a discernable streambank are related to the high degree of accessibility of this area throughout the growing season. These conditions are compounded by the position of this section as an outwash area at the end of a high gradient cascade off of the mountain.

Section 5 is approximately 0.5 miles in length. It consists of the exceedingly steep cascade area between the upper bench of the creek and the upstream end of section 5. The steepness of the

terrain in this section has limited the accessibility of the stream to livestock. As a result, this section of stream supports a closed canopy of woody riparian species.

Section 6 is approximately 0.9 miles in length. It begins at the upstream end of section 5 where the gradient levels out. This section of stream flows through several small habitat areas dominated by aspen covered galleries. The majority of the reach has been effected by past downcutting to a level of approximately 3-4 feet below the original stream elevation. The cuts have healed to varying degrees with some herbaceous vegetation reestablishing along the stream. Floodplain development has responded in a limited fashion as well. The majority of the aspen woodlands associated with the creek are single age class/mature to overmature trees, though there are areas of healthy aspen regeneration and recruitment. Close inspection of impacted areas does reveal some regeneration efforts, but only limited recruitment was observed. Of the observed recruitment, most of it is closely associated with thick cover (deadfall, tall thick sagebrush, etc.) indicating a conflict with recruitment, and utilization. Several aspen clones in this area are in a downward trend with steady loss of overmature and decadent trees and little to no recruitment. Habitat conditions do not appear to have changed, and vegetative regeneration is not limiting.

Spring/seep areas are all punched to some degree. Several of these areas are disturbed to the point of being open mud bogs or Helbore (Veratrum sp.) dominated sites. This condition is typical of only a small percentage of the spring/seep habitats, with the majority of the sites impacted to a lesser extent by punching.

Instream habitat surveys for Chicken Creek were conducted in 1976, 1987, and 1992. The 1976 and 1987 surveys were conducted using BLM methods and the 1992 survey was conducted by NDOW using GAWS.

Fish population sampling was also conducted in the 1992 survey. The results of those surveys are as follows:

<u>Factor</u>	<u>1976</u>	<u>1987</u>	<u>1992</u>
Pool/Riffle Ratio	49	82	54
Pool Quality	18	19	12
Desirable Bottom Material	80	64	40
Bank Cover	74	58	70
Bank Stability/Bank Soil Stability*	76	60	67
Bank Vegetation Stability*	NA	NA	68
%Habitat Optimum/HCI*	59	59	51
Riparian Condition Class	75	59	68

* These parameters of stream habitat are collected and calculated in NDOW's GAWS surveys, but not in BLM surveys.

The principal limiting factors for this stream are pool/riffle ratio, pool quality and desirable bottom material. Most pools in the system were also heavily silted. Both pool/riffle ratio and pool quality had been affected by prolonged drought. Overall this stream has shown an improvement in riparian conditions that could lead to a decrease in water temperatures, an increase in food provided by terrestrial insects and a decrease in sediment introduced to the stream.

No fish, game or non-game, were observed when NDOW surveyed this stream in 1992.

Corral Creek

The following observation of Corral Creek were made in 1995.

Corral Creek is a perennial stream which flows a total of 2.8 miles in the Pine Forest Allotment. The entire length of Corral Creek in the allotment occurs on public land. Starting from the allotment boundary fence, the creek can be

divided into three sections based on habitat condition.

Section 1 is approximately 0.7 miles in length. It ends where the stream becomes deeply incised. The major defining features of this section are the declining aspen community and the fairly sinuous stream.

The stream is set in a 1-2 foot eroded gully the sides of which have broken down and been revegetated. There are several large willow spaced throughout the section at fairly close intervals with limited occurrences of young willow which bear evidence of past heavy use. The aspen community in this section is limited to a few remaining overmature and decadent trees which are vigorously producing replacement sucker trees. Due to heavy impacts of livestock grazing, there was no observed successful recruitment.

Streambanks are limited to areas adjacent to the large willows and the stream channel is wide and shallow. The majority of the streambanks in the section are punched and eroded such as to offer little in terms of bank storage, energy dissipation, or fish cover. Sinuosity is maintained by the willow.

Section 2 is approximately 0.9 miles in length. It begins where the creek exits the large incised channel at the upstream end of section 2 and proceeds upstream. The dominant features of this section is the deeply incised channel, poor streambank development, and poor vegetation diversity. The channel is incised approximately 8-10 feet with the creek having widened the cut to a point where a semi functional floodplain is present. The channel is still actively eroding both vertically and horizontally as a result of insufficient vegetation to stabilize the banks due to livestock use. Sediment loads in the stream as a result of this instability are extremely high. There are a few isolated small

willow in the section, however, they are prevented from serving as either stream anchors, or energy dissipators due to heavy livestock use which occurs. Large boulders provide the only real structure to the creek to dissipate energy, and provide sinuosity.

At old sheep corrals, old, fallen trees outside of the current channel indicate a large aspen gallery in past years. This component is completely gone from the section at this time.

Section 3 is approximately 0.8 miles in length. It contains the uppermost section of perennial stream beginning at the downstream end of the large meadow and proceeding upstream to the headwaters spring at the top of the meadow. A defined channel flows throughout the entire meadow area. This channel is incised approximately two feet but the banks have been broken down and are somewhat revegetated. The streambottom is extremely impacted by livestock hoof action with water quality being extremely poor with high sedimentation. The sinuosity of the stream is a remnant of the original meadow habitat and remained in place due to the low gradient of the stream section.

The headwaters spring is severely impacted by livestock. The drier portions of the spring around the perimeter are primarily bare soil due to hoof action. The spring is perched in the center around the inaccessible section. Water quality and flows are poor due to the heavy livestock influence.

Instream habitat surveys for Corral Cr. were conducted in 1988 and 1995. Both surveys were conducted using FLM methods. Stations 2 and 3 of

the survey are within the Pine Forest Allotment and the results of the combination of those station in 1987, 1995 and 2000 surveys are as follows:

<u>Factor</u>	<u>1987</u>	<u>1995</u>	<u>2000</u>
Pool/Riffle Ratio	80	46	85
Pool Quality	0	0	0
Desirable Bottom Material	18	53	98
Bank Cover	37	46	95
Bank Stability	63	64	70
%Habitat Optimum	39	42	70
Riparian Condition Class	42	55	77

In 2000, station one was dry. However, both stations two and three had flowing water. Limiting factors for this stream are pool/riffle ratio, pool quality, desirable bottom material and bank cover. These factors can lead to increases in water temperature, reduction suitable spawning gravel, lack of instream cover, increases in sediment delivery to the creek, decrease in aquatic invertebrates and a decrease in food provided by terrestrial invertebrates. This stream has shown an upward trend since the last stream survey in 1988.

No fish, game or non-game, were observed during either the 1988 or 1995 surveys and there are no records of this creek ever being planted.

Leonard Creek

The following observations of Leonard Creek were made in 1995.

Leonard Creek is approximately 20 miles in length, with just over 5.0 miles under public ownership. Publicly owned portions of the creek are divided up into several detached sections divided by unfenced private lands. From a habitat standpoint, and for discussion purposes,

Leonard creek was divided into five discreet sections.

Section 1 is approximately 3.3 miles in length. It is the largest reach along the creek. Section 1 consists of the unfenced private and intermingled public reaches of creek at the lower elevations from the downstream end of the fenced holding field to the diversion point above the ranch. This section is grazed season long by livestock and is at the bottom of the Leonard Creek watershed.

A large flood event significantly downcut this section of creek to depths of 10-12 feet at some point in the past. Since this event, the creek has widened the cut significantly, thereby reestablishing a floodplain. Streambank stability, streambanks in general, willow distribution and abundance, and vegetation diversity have not improved however.

Streambanks are low and outsloping. Tremendous amounts of sediment move through this section annually, however the lack of residual vegetation due to season long livestock use prohibits beneficial use of this resource for streambank building.

The stream is unconfined in terms of lateral movement, however, stream sinuosity is basically nonexistent. Streambank and floodplain vegetation is conspicuously lacking willows, though suitable habitat in the form of barren gravel areas is abundant. The stream profile is wide and shallow, a further indication of the poor habitat condition.

Section 2 is approximately 0.2 miles in length. It begins at the upstream end of the private field and continues upstream to the base of the steep cascade portion of the creek approximately above the uppermost diversion point. This section of creek is in a constant state of change due to the presence of at least two diversion structures along its course.

The diversion structures effectively remove the majority of the stream water from the channel directing flows to various points in the fenced holding field. The diverted water crosses several highly erodible soil types, and deep active headcuts were observed at three locations. The original channel does not appear to contain sustained flows as evidenced by the vegetation. Immediately below the uppermost diversion, seepage through the coarse unconsolidated base material results in a short stretch of perennial stream flow. This portion of stream contains a few scattered willow but is dominated by herbaceous riparian species. Punching of the streambanks is common along this stretch.

Section 3 is approximately 0.6 miles in length. It includes the steep gradient cascade off the mountain to the top of section 2. This section is inaccessible to livestock due to the steep slopes lack of established trails, and thick vegetation. The dominant vegetation along this section of creek is willows with some aspen. Herbaceous riparian vegetation is lacking due to a lack of suitable habitat as a result of the steep gradient.

Section 4 is approximately 0.5 miles in length. It begins at the top of section 3 and proceeds upstream to the foot of the hill leading to Leonard lake. This meadow has been impacted by livestock in the form of punching in past years, but not to the detriment of the vegetation. Aspen surround three sides of the meadow and are characterized by a healthy community of varying age classes on the uphill sides away from the creek/meadow, and poor age class diversity near the meadow. Reproduction is not limiting, however recruitment is being hindered by livestock use.

The creek is incised approximately 2 feet into a sloping gully the slopes of which are mostly revegetated. Herbaceous vegetation dominates the stream channel throughout the remainder of the section with large boulders serving as the

principle structure in the stream to dissipate runoff energy. During 1994, this section of creek dried to a trickle sustained mostly by subsurface flows.

One large spring/meadow complex off the left bank of the creek approximately 2/3 the way up the section has been heavily impacted by livestock activity in the past. The downhill edge of the complex is cut two to three feet with open exposed banks along the majority of its course. The watertable appears to have lowered somewhat as a result of these cuts. Aspen communities surrounding this basin vary with respect to condition, with those nearest water sources bearing significant evidence of livestock impacts in the form of soil compaction, reduced recruitment, and poor understory community condition. The majority of other aspen communities away from water sources are in good condition with vigorous regeneration and successful recruitment.

Section 5 is approximately 0.5 miles in length. It includes the last steep climb upstream of section 4 to and including Leonard Lake. This section is a steep gradient segment of the creek dominated by large granitic substrates. Streambanks are fairly consistent throughout the section possibly due to the armoring by the coarse substrate. Woody riparian species are not present, and based on site conditions, suitable habitat is not present. Herbaceous riparian vegetation is the dominant vegetation and seems to be anchoring the fine sediment well.

At the foot of the boulder dam forming the lake, a fairly large meadow complex is present due to the seepage by the dam. Livestock utilization has been heavy here in past years, and the effects of punching are apparent. In addition, a small eroded channel at the foot of the meadow similar to that in association with the spring/meadow in section 4 is present.

Leonard Lake is a shallow natural lake that was deepened by construction of a weir by the BLM in the past. The lake does not always sustain water year around, but it does in most years. The lake is surrounded on all sides by encroaching sagebrush with the exception of the upstream end which is a small meadow.

From the lake through the remainder of the headwaters, no data has been collected.

Instream habitat surveys for Leonard Creek were conducted in 1976, 1987, and 1992. The 1976 and 1987 surveys were conducted using BLM methods and the 1992 survey was conducted by NDOW using GAWS. Fish population sampling was also conducted in the 1992 survey. The results of those surveys are as follows:

<u>Factor</u>	<u>1976</u>	<u>1987</u>	<u>1992</u>
Pool/Riffle Ratio	81	50	45
Pool Quality	27	5	10
Desirable Bottom Material	54	68	20
Bank Cover	45	25	57
Bank Stability/Bank Soil Stability*	66	38	46
Bank Vegetation Stability*	NA	NA	52
%Habitat Optimum/HCI*	55	37	37
Riparian Condition Class	56	32	52

* These parameters of stream habitat are collected and calculated in NDOW's GAWS surveys, but not in BLM surveys.

All factors surveyed are limiting for Leonard Creek in relation to trout habitat potential. Generally, since 1976 to 1992 most of the Leonard Creek stream survey parameters became progressively worse or less suitable. Pool/riffle ratio and pool quality had been affected by prolonged drought conditions. Most pools had been heavily silted and lacked shading. Embedding of larger substrates was found throughout most of the creek. Bank trampling in addition to low flows appear to be the major contributors too the high sediment loads in the

creek. Bank stability is also decreased by trampling of livestock. Very little shrub type vegetation is found along banks. This could be attributed to low potential for this type of vegetation on these sites or over utilization by livestock.

This stream has shown improvement in pool quality, bank cover and bank stability between the 1987 BLM survey and the 1992 NDOW survey. However pool/riffle ratio and desirable bottom materials have declined and overall stream habitat condition has been static during the same time frame.

Fish sampling in 1992 showed this stream to be inhabited by no native non-game species. Brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), and Lahontan cutthroat trout (*Oncorhynchus clarki henshawii*), were found in Leonard Creek with brook trout being the most abundant. Fish plant records show that the stream was planted with all four species and the last planting was with rainbow trout in 1978.

Snow Creek

The following observations of Snow Creek were made in 1994 and 1996.

Snow Creek is a major tributary flowing into Leonard Creek. Snow Creek consists of a main stem and a North Fork. Surveys were done for the stream as a whole, but habitat values were also determined for the North Fork individually. Snow Creek flows through 3.6 miles of public lands and 1.8 miles of private land. All 3.0 miles of the North Fork flows through public lands.

Instream habitat surveys for Snow Creek were conducted in 1976, 1990 and 1994. The 1976 survey was conducted using BLM methods. The 1990 and 1994 surveys were conducted by NDOW using GAWS. Fish population sampling was also conducted in the 1990 and 1994 surveys. The results of the

surveys are as follows (Values for the North Fork are in parenthesis):

<u>Factor</u>	<u>1976</u>	<u>1990</u>	<u>1994</u>
Pool/Riffle Ratio	45	53 (53)	73 (83)
Pool Quality	16	9 (0)	58 (41)
Desirable Bottom Material	87	75 (68)	55 (52)
Bank Cover	37	78 (72)	68 (61)
Bank Stability/Bank Soil Stability*	55	79 (83)	59 (79)
Bank Vegetation Stability*	NA	79 (85)	63 (81)
%Habitat Optimum/HCI*	48	60 (64)	61 (65)
Riparian Condition Class	46	79 (80)	63 (74)

* These parameters of stream habitat are collected and calculated in NDOW's GAWS surveys, but not in BLM surveys.

Overall both the main stem and the North Fork of Snow Creek provide good habitat for trout according to both the 1990 and 1994 stream surveys. The major limiting factor for all parts of the stream at the time of both surveys was a lack of quality pools. Overall the trend for the stream condition has been static. Pool/riffle ratio, pool quality rating, bank cover and bank stability have been upward, but desirable bottom material and bank vegetation stability have declined.

In 1990 brook trout were found in both the main stem and North Fork of Snow Creek. In the 1994 survey both rainbow trout and brook trout were found in the main stem and no trout were found in the North Fork.

Sage Hen Creek

The following observations of Sage Hen Creek were made in 1994 and 1996.

Sage Hen Creek is a perennial tributary to Leonard Creek. Sage hen creek flows approximately 3.1 miles, 2.5 miles of which occurs on public lands. For the purposes of this

discussion, the creek was divided into five specific sections based on stream conditions beginning at the confluence with Leonard creek.

Section 1 is approximately 0.3 miles in length. It includes the lower public stretch of creek. The channel is deeply incised to a depth of five to six feet. Riparian vegetation is limited to scattered coyote willow (*Salix exigua*) and Wood's rose (*Rosa woodsii*). Flood plain development is marginal due to the incised nature of the channel. The poor condition of this section of stream is reflective of the continuing effects of the downcutting event, and conditions are not expected to improve until the gully widens.

Section 2 is approximately 0.1 miles in length. It is located immediately above section 1 and is characterized by a short ephemeral stretch protected at the downstream end by a bedrock outcropping which has prevented the headcut in section 1 from moving through. This section is dominated by sagebrush with some herbaceous riparian vegetation immediately adjacent to the channel. Some rose and willow are also present but bear evidence of past heavy use.

Section 3 is approximately 0.4 miles in length. It is located upstream of section 2 and above the private stretch. This section is characterized by a large spring/meadow complex which contributes significant flow to the stream. This complex also contains a small willow/aspens component which is declining due to lack of successful regeneration due to heavy use of young plants. The portion of the complex near the channel is actively eroding resulting in sections of exposed soil which could be effecting the height of the water table.

Section 4 is approximately 0.6 miles in length. It is located upstream of section 3 and includes the stretch between the road crossing and the canyon mouth. This stretch of creek is characterized by a narrow stringer of riparian

vegetation dominated by herbaceous species with few woody species.

Section 5 is approximately 1.1 miles in length. It includes portions of the creek from the mouth of the canyon to the headwaters spring. This stretch contains a declining aspen community at the lower end and a healthy aspen community at the upper end. The middle stretch of this section is dominated by herbaceous riparian vegetation with some willow and rose dogwood and alder. This stretch of stream occurs over highly erodible granitic soils and is maintained by a high rock content in the stream channel.

11. Riparian Assessment: Functionality

Functionality is a term used to describe the process for assessing the functional condition of a riparian area. As defined in TR 1737-9, a stream is in proper functioning condition when:

"Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to:

- 1) dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality.
- 2) filter sediment, capture bedload, and aid floodplain development.
- 3) improve flood-water retention and ground-water recharge.
- 4) develop root masses that stabilize streambanks against cutting action.
- 5) develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration and temperature necessary for fish production, water fowl breeding, and other uses.
- 6) and support greater biodiversity.

Riparian areas are functioning properly when there is adequate structure present to

provide the listed benefits **applicable** to a particular area."

The process for determining stream functionality includes the use of an interdisciplinary team completing a worksheet through **on-the-ground** observation, with a final determination being made through consensus of the team. Proper functioning condition does not necessarily mean that the stream is providing optimum terrestrial and aquatic habitat for wildlife, nor does it mean that the stream is meeting all management objectives. It does mean that all attributes necessary for these uses to occur are present. Functionality was conducted for Sage Hen Creek and Snow Creek, during the month of August 1995.

Sage Hen Creek

For the purposes of determining functionality Sage Hen Creek was divided into three reaches, based on stream gradient. Reach one, which is over one mile in length, begins at the headwater spring, which provides the majority of the late season base flow. The reach extends downstream to the mouth of the canyon. The reach can be characterized as very steep, with granitic soils that contain a large cobble/boulder component. Large woody species observed include willow, dogwood, alder, and aspen. Stream energy was attenuated, to a large degree, through the rock component. This reach was determined to be in properly functioning condition.

Reach two, approximately 1/2 mile in length, begins at the mouth of the canyon and continues downstream to where the stream crosses the road. This reach is much lower in gradient and contains a stable channel. This stability is due to a large boulder component and a thick herbaceous component. Woody species were very scarce, but there was adequate land form to provide for desirable conditions. This reach was determined to be in properly functioning condition.

Reach three, approximately one mile in length, runs from the road crossing to the private land boundary in section 13, but does not include the short corner crossing of private land in section 12. This reach includes three different landforms: 5-6 foot deep erosional gully, bedrock outcrop, and spring/wet meadow complex. The gully is present in the lower end of the reach and is truncated by bed rock. Upstream from the bedrock exists a spring complex that is experiencing some effects from erosion. Throughout this reach, the previously observed stability is lacking. This reach was determined to be functioning at risk with a static trend.

Snow Creek

The main stem of Snow Creek was broken into three reaches based on changes in gradient. The first reach, approximately 1/2 mile in length, begins at the headwaters and extends downstream to the upper end of the thick aspen stand (see map). This reach is characterized as being of moderate gradient with an incised channel. The site is located on granitic soils which adds to the lateral instability that is occurring. Herbaceous vegetation, known to bind streambanks together (i.e. Carex and Juncus spp.), was not present in sufficient density to stabilize the streambanks. Woody riparian species were noted to be lacking throughout this reach. A few isolated willows were encountered. This reach was determined to be functioning at risk with a static trend. The lack of woody riparian vegetation and lateral instability were the primary reasons for this determination.

Reach two, approximately 1 3/4 mile in length, begins with the thick aspen stand and ends at the point where the canyon opens up, approximately .5 miles above the confluence with the North Fork of Snow Creek. This reach could be subdivided into three smaller components: 1) the thick aspen stand above the McCully cabin site 2) the lower gradient area at McCully cabin and the area immediately downstream of the cabin site, and 3)

that portion of the stream which is confined to the narrow, steep canyon at the lower end of the reach. Overall, the first and third sub reaches are in good condition and are functioning properly. The middle portion is negatively affected by two separate issues:

1. The area has received a large deposition of geologic material from an event in the past. It is not known if this was a glacial type event or a landside. The net result is that the gradient of the canyon bottom was lessened. Over time the stream has downcut, through the deposit, and re-established it's original slope. This downcut has restricted the stream to the gully and continual sloughing occurs. This area remains in a state of flux and is subject to further erosional events.
2. The area downstream of the deposit is accessible to livestock and as such it receives heavy use. Stream banks and riparian vegetation in this area bear the signs of this accessibility.

Given these circumstances, the entire reach was determined to be functioning at risk with a static trend. The reach is at risk for sedimentation downstream and to headcutting upstream.

The final reach evaluated, number 3, is over one mile in length. It starts at the end of number two and proceeds downstream to the private land boundary. This reach is typified by a lesser gradient and a canyon bottom which has widened. This area was determined to be functioning at risk with a downward trend. Lack of regeneration and age structure of woody species were contributing factors to the downward trend.

Functionality was determined in accordance with BLM Technical Report 1737-9 (1993) Process for Assessing Functioning Condition (lotic) and Technical Report 1737-11 (1994) Process for Assessing Proper Functioning Condition for Lentic Riparian-

Wetland Areas. Five assessment classes are used: 1 - Proper Functioning Condition (PFC), 2-4 Functioning at risk (up, static, and down), and non functioning.

	Lotic (Miles)				
	PFC	FAR+	FAR=	FAR-	NF
Center Creek	0.08	0.00	0.64	4.11	0.90
Cherry Creek	1.20	1.40	0.00	2.50	0.30
Chicken Creek	1.50	0.00	1.32	0.73	0.00
Corral Creek	0.52	0.69	1.65	0.00	0.83
Leonard Creek	2.33	0.00	4.35	0.00	0.00
Sagehen Creek	2.05	0.00	0.95	0.00	0.00
Snow Creek	0.00	0.00	3.49	0.00	0.00
Tepee Creek	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>7.84</u>	<u>0.78</u>
Totals = 40.32	7.68	2.09	12.56	15.18	2.81

	Lentic (Acres)				
Tepee	0	0	0	0	10
Corral/Rodeo	<u>0</u>	<u>0</u>	<u>126</u>	<u>0</u>	<u>0</u>
Totals = 136	0	0	126	0	10

12. Water Quality

Thermograph Information

Continuous recording data loggers were installed to monitor stream temperatures on Chicken Creek and Leonard Creek. The loggers were installed on June 23, 1995. The data loggers were StowAway temperature model #Steb02 -05+37 C, and were manufactured by Onset Instruments. Each of the instrument's calibration was checked, in the District office, prior to deployment. The stowAways were deployed with a sampling interval of 2 hours with a maximum deployment of 150 days.

One unit was deployed on Chicken Creek. It was located at T43N R29E Sec. 30 SW SE. The site was approximately 100 feet upstream of the lower road crossing. The results are depicted in the attached graph.

Two units were deployed on Leonard Creek, the upper unit was located at T43N R29E Sec. 19 SE

NW. The site was located at the canyon mouth, above the first point of diversion.

The lower unit on Leonard Creek was located at T42N R29E sec. 6 SE NW. The site was located about 180 feet downstream of the road crossing.

Stream temperature monitoring serves the purpose of evaluating habitat conditions. Stream temperature is a critical element of the water quality requirements of nearly all salmonid species. Regulatory authority for water quality is under the management of the Nevada Division of Environmental Protection. This authority was delegated to the states through the Clean Water Act. Specific requirements for temperature are not established for all waters.

The State of Nevada has adopted a system of classifying waters and then assigning quality standards to each classification. Under the Nevada system there are four classes, A, B, C, and D. As described in NAC 445A.124 "Class A waters include waters or portions of waters located in areas of little human habitation, no industrial development or intensive agriculture and where the watershed is relatively undisturbed by man's activity." The standard for temperature in class A waters is "Must not exceed 20 C. Allowable temperature increase above natural receiving water temperature: none." The only water in the Pine Forest Allotment which has been classified is Leonard Creek. It is a class A water from its origin to the first point of diversion.

Thermograph data are displayed in Appendix 6.

Additional water quality data has been collected, however lab results have not been returned.

13. Noxious Weeds

A complete noxious weed inventory has not been completed for this allotment.

14. Cultural Resources

Unevaluated cultural resources are known to be in the area. Presently, the concentrated use by cattle is known to be associated with riparian areas, and particularly on lower portions of creeks within the allotment. There is high potential for cultural resources on riparian areas, including creeks and springs.

The allotment specific objectives stated beginning on pages 13 were developed to improve and maintain conditions of vegetation, habitat, and water quality. These objectives do not provide specific protection for cultural resources. Overall, management that allows attainment of the objectives will result in less concentrated use on areas where cultural resources are expected to be found.

In accordance with the project planning process, appropriate inventory, consultation, NEPA and Section 106 compliance will occur prior to construction of new range improvement projects. Each project will be evaluated on an individual basis.

15. Standards for Rangeland Health

- a. Soil processes will be appropriate to soil types, climate and land form.
- b. Riparian/wetland systems are in proper functioning condition.
- c. Water quality criteria in Nevada or California State Law shall be achieved or maintained.
- d. Populations and communities of native plant species and habitats for native animal species are healthy, productive and diverse.
- e. Habitat conditions meet the life cycle requirements of special status species.

V. Conclusions

A. Short Term Objectives

1. OBJECTIVE

Utilization of key streambank riparian plant species in riparian habitats shall not exceed 30% on Center, Corral, Leonard, Chicken and Snow Creeks except where adjusted by an approved activity plan.

CONCLUSION

The objective was not met on Center Creek and on the headwaters of Corral Creek. The objective has generally been met on upper Chicken Creek except at Corral Meadows. The objective has not been met on the portions of lower Chicken Creek. Except in localized areas, the objective has generally been met on upper Leonard Creek and not met on portions of lower Leonard Creek. The objective has been met on Snow Creek except on herbaceous vegetation in the vicinity of, and above, where the north fork comes together with the main fork.

2. OBJECTIVE

Utilization of key plant species in wetland riparian habitats shall not exceed 50% except where adjusted by an approved activity plan.

CONCLUSION

While utilization has been slight to moderate at many springs, The objective was not met at Rodeo Flat and Corral Spring; at the cabin on Tepee Creek; Rock Spring; and at other springs in the vicinity of those listed and in the vicinity of Leonard Creek and Tepee Creek.

3. OBJECTIVE

Utilization of key plant species in upland habitats shall not exceed 50% except where adjusted by an approved activity plan.

CONCLUSION

This objective has consistently been met on all but small areas of the allotment. The exception is heavy use that occurred on the Mesa in 1995. Localized areas of bitterbrush which have received heavy use have more recently received light use.

B. Long Term Objectives

1. OBJECTIVE

Manage, maintain and improve public rangeland conditions to provide forage on a sustained yield basis for big game, with an initial forage demand of 2,338 AUMs for mule deer, 108 AUMs for pronghorn, 72 AUMs for bighorn sheep and 96 AUMs for elk.

- a. Improve to and maintain 70,342 acres in good to excellent mule deer habitat condition.
- b. Improve to and maintain 70,396 acres in fair or good pronghorn habitat condition.
- c. Improve to and maintain 50,985 acres in Pine Forest BY-8 in good to excellent bighorn sheep habitat condition.
- d. Improve to and maintain 51,435 acres in Pine Forest EY-1 in good to excellent elk habitat condition.

CONCLUSION

Mule Deer Habitat:

The data gathered by NDOW (pages 19, 20) indicate that the mule deer population is healthy and thriving, therefore this objective has been met.

Pronghorn Habitat:

The data gathered by NDOW (pages 21, 22) show that the pronghorn population is healthy and thriving. Therefore this objective has been met.

Bighorn Sheep Habitat:

Specific monitoring for bighorn sheep habitat was not conducted so this objective can not be evaluated. However the bighorn herd in the allotment has increased in size, therefore this objective has been met.

Elk Habitat:

Specific studies to monitor elk habitat were not conducted and at this time elk only frequent the allotment as an accidental occurrence, so there is no way to evaluate this objective.

2. OBJECTIVE

Manage, maintain and improve public rangeland conditions to provide forage on a sustained yield basis for livestock, with an initial stocking level of 9,700 AUMs.

CONCLUSION

Utilization data shows slight to light utilization throughout most of the allotment indicating forage is present to support 9,700 AUMs. However, under current management that forage cannot be harvested without high levels of utilization on riparian areas. Therefore, under

current management, this objective is not being met.

3. OBJECTIVE

Improve range condition from poor to fair on 114,917 acres and from fair to good on 9,993 acres.

CONCLUSION

Ecological Site Inventory has not been conducted on Pine Forest Allotment. This objective will be redefined/quantified utilizing desired plant communities as information becomes available.

4. OBJECTIVE

Improve to and maintain 80 acres of ceanothus habitat types in good condition.

CONCLUSION

Baseline data has not been gathered to evaluate this objective. Utilization data showed slight use on ceanothus suggesting that the habitat is not being negatively impacted by browsing animals.

5. OBJECTIVE

Improve to and maintain 477 acres of mahogany habitat types in good condition.

CONCLUSION

Baseline data has not been gathered to evaluate this objective. Utilization data showed slight use on mountain mahogany suggesting that the

habitat is not being negatively impacted by browsing animals.

6. OBJECTIVE

Improve to and maintain 688 acres of aspen habitat types in good condition.

CONCLUSION

Chicken Cr.

Section 2 contains a significant aspen component. The aspen community throughout this reach is declining due to the lack of successful regeneration. There is abundant vegetative reproduction, however livestock conflicts are prohibiting successful recruitment.

Section 3 contains a significant woody riparian community including aspen, willow, alder, and rose. Woody riparian species are represented by a diverse age class suggesting recruitment is not a concern in this section.

Section 4 is dominated by large willow and a diverse age class of aspen.

Section 7 flows through several small habitat areas dominated by aspen covered galleries. The majority of the aspen woodlands associated with the creek are single age class/mature to overmature trees, though there are areas of healthy aspen regeneration and recruitment. Close inspection of impacted areas does reveal some regeneration efforts, but only limited recruitment was observed. Of the observed recruitment, most of it is closely associated with thick cover (deadfall, tall thick sagebrush, etc.) indicating a conflict with recruitment, and utilization. Several aspen clones in this area are in a downward trend with steady loss of overmature and decadent trees and little to no recruitment. Habitat conditions do not appear to

have changed, and vegetative regeneration is not limiting.

Corral Cr.

The aspen community in Section 2 is limited to a few remaining overmature and decadent trees which are vigorously producing replacement sucker trees. Due to heavy impacts of livestock grazing, there was no observed successful recruitment.

Abundant evidence is present outside of the current channel of Section 3, to indicate a large aspen gallery in past years. This component is completely gone from the section at this time.

Leonard Cr.

Section 3 is inaccessible to livestock due to the steep slopes lack of established trails, and thick vegetation. The dominant vegetation along this section of creek is willows with some aspen.

Section 4 begins with a spring/meadow. Aspen surround three sides of the meadow and are characterized by a healthy community of varying age classes on the uphill sides away from the creek/meadow, and poor age class diversity near the meadow. Reproduction is not limiting, however recruitment is being hindered by livestock use.

One large spring/meadow complex off the left bank of the creek approximately 2/3 the way up the section has been heavily impacted by livestock activity in the past. Aspen communities surrounding this basin vary with respect to condition, with those nearest water sources bearing significant evidence of livestock impacts in the form of soil compaction, reduced recruitment, and poor understory community condition. The majority of other aspen communities away from water sources are in good

condition with vigorous regeneration and successful recruitment.

Sage Hen Cr.

Section 4 contains a small willow/aspen component which is declining due to lack of successful regeneration due to heavy use of young plants.

Section 5 contains a declining aspen community at the lower end and a healthy aspen community at the upper end.

Based on the above data the aspen stands that are accessible to livestock grazing are being negatively impacted. While there are aspen stands that are healthy and are reproducing and maintaining vigor most stands inventoried are in a state of decline and the aspen objective for this allotment as a whole has not been met.

7. OBJECTIVE

Improve to and maintain 949 acres of riparian and meadow habitat types in good condition.

CONCLUSION

Creek Name	Riparian Condition Class			Objective Met?	Trend
Center Creek	33 (1987)	30 (1994)	48 (2000)	Not met	Upward
Chicken Cr.	75 (1976)	59 (1987)	68 (1992)	Met	Upward
Leonard Cr.	56 (1976)	32 (1987)	52 (1992)	Not met	Upward
Corral Cr.	42 (1988)	55 (1995)	77 (2000)	Met	Upward
Main Fork Snow Cr.	46 (1976)	79 (1990)	63 (1994)	Met	Downward
North Fork Snow Cr.	80 (1990)	74 (1994)		Met	Downward

8. OBJECTIVE

Improve to or maintain the following stream habitat conditions from 50% on Center, unknown on Corral, 37% on Leonard, 59% on Chicken and 40% on Snow Creeks to an overall optimum of 60% or above.

- a. Streambank cover 60% or above.
- b. Streambank stability 60% or above.
- c. Maximum summer water temperatures below 70°F.
- d. Sedimentation below 10%.

CONCLUSION

Center Creek

This objective has not been met for all three years monitored because the Bank Cover and Stability and the Percent Habitat Optimum are too low as a result of livestock grazing.

Chicken Creek

This objective has not been met for all three years monitored because the Bank Cover and Stability and the Percent Habitat Optimum did not meet the 60% minimum.

Corral Creek

This objective has been met for the most recent 2000 stream survey with Bank Cover at 95%, Bank Stability at 70%, and the Percent Habitat Optimum at 70%.

Leonard Creek

This objective has not been met because the 1987 and 1992 stream surveys failed to meet the Bank Cover, Bank Stability, and Percent Habitat Optimum standards due to livestock grazing (page 54).

Snow Creek

This objective has been met since 1990 and 1994 because the Bank Cover Bank Stability, and Percent Habitat Optimum have all averaged above the 60 percent minimums.

9. OBJECTIVE

Protect sage grouse strutting grounds and brooding areas. Maintain a minimum of 30% cover of sagebrush for nesting and winter use.

CONCLUSION

Sage grouse habitat in the Pine Forest Allotment is extensive. The Pine Forest habitat areas have not been drastically effected by fire. Livestock impacts to crucial late summer forage and habitat quality at riparian areas, due to heavy grazing, have reduced overall habitat condition and overall habitat condition is estimated to be fair to good.

Note- The technical recommendation section of this document includes a recommendation to update this objective.

10. OBJECTIVE

Improve to and maintain the seeded pasture in good condition (5-10 acres per AUMs).

CONCLUSION

Data have not been collected to evaluate this objective.

11. OBJECTIVE

Improve to and maintain the water quality of Sagehen, Chicken, Snow, Corral and Center Creeks to the state criteria set for the following beneficial uses: livestock drinking water, cold water aquatic life, wading and wildlife propagation. Improve or maintain the water quality of Leonard Creek to the Nevada Class A standards.

CONCLUSION

Data has been collected to evaluate this objective, however lab results have not been return.

C. Standards for Rangeland Health

1. Soil processes will be appropriate to soil types, climate and land form.

As discussed on page 67, upland utilization objectives have consistently been met on all but small areas of the allotment. These objectives provide for maintenance of soil processes.

This standard is being achieved.

2. Riparian/wetland systems are in proper functioning condition.

The results of functionality data is displayed on page 63.

This data shows that this standard is not being achieved on some areas. Current grazing practices are significant factors in failing to achieve this Standard.

3. Water quality criteria in Nevada or California State Law shall be achieved or maintained.

Water quality data has been collected, however lab results have not been returned. Therefore, it is unknown whether or not this standard is being achieved.

4. Populations and communities of native plant species and habitats for native animal species are healthy, productive and diverse.

Numerous ecological sites exist with varying plant communities within this allotment. Utilization data indicate that this standard is being achieved on the uplands.

This standard is not being achieved on some riparian areas. Current grazing practices are significant factors in failing to achieve this Standard.

5. Habitat conditions meet the life cycle requirements of special status species.

This standard is being achieved for sage grouse. Please refer to page 74 for further information.

Leonard Creek and Chicken Creek have been identified as potential LCT recovery sites. Stream survey data show this standard is not being achieved on those creeks. Current grazing practices are significant factors in failing to achieve this Standard.

Data are not available for other special status species.

VI. Technical Recommendations

A. Livestock

Alternative 1

Under this alternative the Pine Forest Allotment would be separated into pastures and use areas. The pastures would be completely fenced. The use areas would be partially fenced. Implementation of this alternative would require construction of approximately eight miles of new fence.

Spring through early fall, the allotment would be grazed by three herds. The first herd would graze Cherry Use Area and South Leonard Use Area spring through summer and then in the fall would graze the Seeding and North Leonard Use Area. The second herd would graze Cove Use Area spring into summer and would then graze the Mountain Use Area, and then graze North Leonard Use Area in the late fall. The third herd would be worked though Cove Use Area in early spring, would graze Center Pasture and Bartlett Pasture spring through summer and would graze Cove Use Area in the fall.⁹ Winter Use Area would be grazed in the winter.

Following is the pasture schedule for this alternative:

<u>Name</u>	<u>No.</u>		<u>Period of Use</u>	<u>%</u>	<u>AUMs</u>
				<u>Fed</u>	
Cove Use Area	200	c	04/01 to 04/14	100	92
	350	c	04/15 to 04/30	100	184
	385	c	05/01 to 06/30	100	772
	440	c	07/01 to 07/20	100	289
	220	c	09/01 to 10/31	100	<u>441</u>
			Subtotal		1778
Center Pasture	250	c	04/15 to 04/30	100	132
	275	c	05/01 to 06/30	100	<u>552</u>
			Subtotal		684
Bartlett Pasture	220	c	07/01 to 08/31	100	448

⁹ Fifty-five head would be taken from the third herd and added to the second herd in July to balance the amount of forage to be harvested. Instead of going from Center Pasture to Bartlett Pasture with the rest of the third herd, those cattle would go from Center Pasture, through Cove Use Area and on to the Mountain Use Area with the second herd.

Mountain Use Area	440	c	07/21 to 09/30	100	1042
Cherry Use Area	300	c	04/01 to 04/30	100	296
	330	c	05/01 to 07/31	100	<u>998</u>
			Subtotal		1294
South Leonard Use Area	100	c	04/01 to 04/30	100	99
	110	c	05/01 to 07/31	100	333
	440	c	08/01 to 08/31	100	<u>448</u>
			Subtotal		880
North Leonard Use Area	220	c	09/01 to 09/30	100	217
	660	c	10/01 to 10/31	100	673
	165	c	11/01 to 11/30	100	<u>163</u>
			Subtotal		1053
Seeding	220	c	09/01 to 10/31	100	441
Winter Use Area	625	c	12/01 to 02/28	100	1849
horse use	15	h	05/01 to 09/30	100	75
fenced federal	13	c	03/01 to 02/28	100	156
			Allotment Total		9700

The terms and conditions must be in conformance with the Standards and Guidelines for the Sierra Front-Northwestern Great Basin Area Resource Advisory Council, approved by the Secretary of Interior on February 12, 1997.

Terms and Conditions:

The authorized officer reserves the authority to modify annual grazing authorizations where the modification is consistent with meeting management objectives and Standards for Rangeland Health.

One week following the scheduled move date is authorized for completion of movement of livestock to the next scheduled pasture/use area within the Pine Forest Allotment.

In pastures grazed after June, livestock shall be removed when key herbaceous streambank riparian species are grazed to a stubble height of four inches.

The permittee has the flexibility of moving cattle from South Leonard Use Area to the Seeding prior to the scheduled move date.

Salt and/or mineral blocks shall not be placed within one quarter (¼) mile of springs, streams, meadows, riparian habitats or aspen stands.

Horses are authorized to graze the same use area/pastures, during the same time periods, as livestock area authorized to graze; with the exception that no horse use is authorized in Bartlett or Center Pastures or Cove Use Area.

The permittee is required to perform normal maintenance of the range improvements as per the signed cooperative agreements and section 4 permits prior to livestock turnout.

Pursuant to 43 CFR 10.4(g) the holder of this authorization must notify the authorized officer, by telephone, with written confirmation immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined at 43 CFR 10.2). Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the immediate vicinity of the discovery and protect it from your activities for 30 days or until notified to proceed by the authorized officer.

Rationale:

Under current management much of the Pine Forest Allotment receives season-long continuous grazing. Season-long continuous grazing is a very poor grazing strategy for both uplands and riparian areas. It allows livestock to repeatedly graze preferred areas and preferred plants. It allows livestock maximum forage selectivity and preferred plants receive excessive use even under light stocking. Although the permittee herds cattle through the Pine Forest Allotment, lack of fencing allows cattle to return to areas that have already been grazed. Construction of the fences will allow the permittee to effectively limit the period of use in each pasture or use area. This would be a very important improvement. To be successful, it is incumbent upon the permittee to diligently remove all cattle from each pasture/use area as scheduled and ensure that minimal drift occurs between unfenced areas. A few cattle left behind can particularly impact riparian areas.

Under this alternative grazing is deferred until after the growing season on Bartlett Pasture, North Leonard Use Area, Mountain Use Area and the Seeding. There are clear advantages to this period of use, including allowing seed production, seedling establishment and plant vigor. Forage plants will have completed growth and root storage of carbohydrates. Streambanks have a lower moisture content and are less vulnerable to mechanical damage. However, Bartlett Pasture and Mountain Use Area would be used during the hottest time of the year. The primary concern grazing this time of year is that livestock tend to concentrate on riparian areas. Upland grasses dry and livestock seek riparian areas for water, lush forage and shade. It is important to leave adequate residual vegetation to protect, maintain and build streambanks during spring runoff. Adequate regrowth can not be expected following grazing during this time period. To ensure adequate residual vegetation, livestock would be removed when a four inches stubble height is reached. A disadvantage to the permittee to grazing during this time period is that the permittee would be unable to fully harvest available upland forage because he must remove livestock to met riparian objectives. However, livestock need to be somewhere during this time period and it is an economic decision to forego upland forage in these pastures. Through salt placement and diligently herding livestock away from riparian areas the permittee can improve his ability to harvest upland forage. Whether to invest in herding to increase harvest of upland forage is also an economic decision the permittee can make independently. The northern portion of South Leonard Use Area would also be grazed during the hottest time of the year and livestock would be removed when a four inch stubble height is reached.

Under this alternative Cherry Use Area, Cove Use Area, Center Pasture and the southern portion of South Leonard are grazed every year in the spring. The advantages of grazing during this time period are good water availability and livestock distribution. The primary concern is that plants are most vulnerable to livestock grazing during the growing season. To maintain or improve range condition and the forage base, it is important that the permittee rotate grazing within each pasture/use area to allow forage plants rest during part of the growing season. Livestock would be removed from Center Use Area by June 30, so no hot season use of Center Creek would occur.

The southern half of South Leonard Use Area would be used primarily in the spring and early summer and the northern half would be used primarily in August. The northern half includes

part of lower Leonard Creek and tributaries, including Tepee Creek. Under this grazing system use of the northern half would change from continuous season long grazing to essentially one month of grazing. While this is a clear improvement over continuous grazing, livestock will be attracted to the riparian areas at this time as upland grasses will be drying while riparian vegetation will be green. The permittee has the flexibility of moving cattle onto the Seeding early to allow utilization objectives to be met on South Leonard Use Area.

The Seeding and North Leonard Use Area would be used beginning in September. North Leonard Use Area includes part of lower Leonard Creek. Grazing during this time period would maintain or improve both upland and riparian vegetation. The permittee has the flexibility of moving cattle from South Leonard Use Area to the Seeding to allow adequate residual riparian vegetation in South Leonard Use Area.

The Winter Use Area would continue to be grazed from December through February. Grazing during this time period would maintain range condition.

After the pasture fences are completed and the grazing system is implemented, some adjustment in stocking rates and periods of use on a pasture by pasture basis can be expected to ensure multiple use objectives and Standards of Rangeland Health will be met. Such changes are within the scope of the proposed grazing permit and, if they are needed, will be authorized on an annual basis.

Alternative 2

This alternative is similar to Alternative 1 and utilizes the same proposed pastures and use areas. This alternative includes some differences in its pasture schedule including use not beginning in Mountain Use Area until 8/15 (rather than 7/21 under Alternative 1) and full number of cattle would not be out on Mountain Use Area until 9/1.

Spring through summer the allotment would be grazed by three herds. As in Alternative 1, the first herd would grazed Cherry Use Area and South Leonard Use area spring through summer and then in the fall would grazed the Seeding and North Leonard Use Area. The second herd would graze Cove Use Area spring into late summer and would then grazed the Mountain Use Area, and would then graze North Use Area later in the fall. The third herd would be worked through Cove Use Area to, would then graze Center Pasture and Bartlett Pasture spring through summer. About 1/3 of the third herd would then go home and 2/3 would work through Cove Use Area and join the second herd on Mountain Use Area on 9/1 and would work through North Leonard Use Area prior to going home.

Following is the pasture schedule for this alternative:

<u>Name</u>	<u>No.</u>	<u>Period of Use</u>	<u>%</u>	<u>AUMs</u>
Cove Use Area	200	04/01 to 04/14	100	92
	450 c	04/15 to 04/30	100	237
	330 c	05/01 to 08/31	100	1334
		Subtotal		1663
Center Use Area	150 c	04/15 to 04/30	100	79
	330 c	05/01 to 06/30	100	662
				741
Bartlett Use Area	330 c	07/01 to 08/14	100	488
Mountain Use Area	330 c	08/15 to 08/31	100	184
	560 c	09/01 to 10/14	100	810
		Subtotal		994
Cherry Use Area	300 c	04/01 to 04/30	100	296
	330 c	05/01 to 07/31	100	998
		Subtotal		1294

South Leonard	100	c	04/01 to	04/30	100	99
Use Area	110	c	05/01 to	07/31	100	333
	440	c	08/01 to	08/31	100	<u>448</u>
				Subtotal		880
North Leonard	220	c	09/01 to	10/14	100	318
Use Area	780	c	10/15 to	10/31	100	436
	99	c	11/01 to	11/30	100	<u>98</u>
				Subtotal		852
Seeding						
	220	c	09/01 to	10/31	100	441
Winter Use Area	715	c	12/01 to	02/28	100	2116
horses	15	h	05/01 to	09/30	100	75
fenced federal	13	c	03/01 to	02/28	100	156
				Allotment Total		9700

The terms and condition would the same under this alternative as those listed under Alternative 1.

Rationale:

This grazing system is similar to Alternative 1 and the rationale is similar to that Alternative 1 with some exceptions.

Under this alternative Mountain Use Area is grazed later and for a shorter time period. Because the amount of time the cattle would graze the area during the hot season would be reduced, livestock would be less concentrated on the riparian areas. This would improve the permittees ability to harvest upland forage while meeting riparian objectives. Cattle would also be in Mountain Use Area and Bartlett Pasture for shorter time periods than under Alternative 1, reducing repeated use of preferred forage plants in those areas.

The disadvantage of this alternative is that it would require more movement of cattle through the western portion of the allotment. The less cattle are moved, the easier it is on both cattle and riders.

Alternative 3

Under this grazing strategy no livestock grazing would occur within the Pine Forest Allotment from June 20 through September 10. Cattle use would be permitted for the remainder of the year.

<u>No.</u>	<u>Period of Use</u>	<u>% Fed</u>	<u>AUMs</u>
1039	c 03/01/00 to 06/20/00	100	3826
1039	c 09/10/00 to 02/28/01	100	5875

Rationale:

This strategy would eliminate all hot season grazing from Pine Forest Allotment. During the hot season cattle tend to concentrate use on riparian areas where green forage and water are readily available. Upland grasses dry during this period and are less attractive to livestock. Even with relatively low stocking rates utilization of riparian plants can be high with little use of upland species.

Benefits of spring grazing to riparian areas are, 1) high water and very wet conditions reduces livestock use of riparian areas, 2) upland vegetation is green and palatable, 3) if cattle are removed there is a good opportunity for regrowth of herbaceous riparian vegetation. One disadvantage of spring grazing is that wet soil conditions result in streambanks that are more susceptible to damage from trampling by livestock.

Benefits of fall and winter grazing are 1) most plants have completed growth and perennial plants have completed root storage of carbohydrates, so grazing impacts to upland and riparian vegetation is minimized, 2) streambanks are drier and less susceptible to damage from trampling by livestock, and 3) cooler air temperatures generally result in better livestock distribution than in the hot season. It is important to leave residual vegetation to maintain and built streambanks during the following spring runoff.

An advantage of this strategy is that good livestock distribution would maximize the amount of upland vegetation that could be harvested relative to the riparian vegetation while allowing riparian objectives to be met. With the current continuous season long grazing cattle repeatedly graze the preferred vegetation and large areas of upland vegetation receive little grazing.

This grazing strategy would require a major shift in operation for the livestock permittee. It would require adequate pasture on the ranch property to sustain the livestock mid-June through mid-September. A shift to earlier calving or other changes in livestock management would be needed. This is not a practical strategy for implementation in the short term. However, it is worthy of consideration if less severe changes in livestock management fail to allow resource objectives to be met.

In the future it may become practical to bring at a portion of the cattle home mid-June through mid-September. Development and utilization of new wells or pipelines, rather than reliance on natural waters with associated riparian areas, could make it possible to avoid riparian areas with the remaining cattle left on the allotment during the hot season.

Alternative 4

Under this grazing strategy no change in management would be required except in stocking rate. The permittee would have the flexibility of moving the cattle throughout the allotment in accordance with his judgement. If allotment specific objectives and Standards for Rangeland Health are met, the permittee would continue at his present stocking rate. If monitoring showed additional forage can be harvested while meeting the objectives and Standards, increases in stocking could be authorized. If monitoring showed short term utilization objectives are not met, the permit would be reduced by 10% the following grazing year. If short term objectives continue to be unmet, 10% reductions would continue on a yearly basis.

Rationale:

The advantage of this strategy is it allows the permittee maximum flexibility in managing his livestock operation while meeting resource objectives. It allows him the full latitude in balancing the cost and benefit of more intensive (and expensive) livestock management needed to meet resource objectives relative to the value he attributes to the forage provided by his grazing permit.

As with the other alternatives, expenditures of public funds for range improvements could occur under this alternative.

Alternative 5

This alternative utilizes the same pastures and use areas described in Alternative 1. Under this grazing strategy the Winter Use Area would be grazed every year during the winter. The remaining pastures would be completely rested for two consecutive years and then be grazed for two consecutive years as follows:

Year 1 & 2:

<u>Name</u>	<u>Period of Use</u>
Cherry Use Area	04/01 to 07/31
South Leonard Use Area	06/01 to 07/31
North Leonard Use Area	08/01 to 10/31
Winter Use Area	12/01 to 02/28
Cove Use Area	Rest
Center Pasture	Rest
Bartlett Pasture	Rest
Mountain Use Area	Rest

Year 3 & 4:

<u>Name</u>	<u>Period of Use</u>
Cove/Center/Bartlett	04/01 to 07/31
Mountain Use Area	08/01 to 10/31
Winter Use Area	12/01 to 02/28
Cherry Use Area	Rest
South Leonard Use Area	Rest
North Leonard Use Area	Rest

The pasture rotation would continue beginning in year 5.

Rationale:

Under this alternative all areas, except Winter Use Area, would be completely rested for two consecutive years and then be grazed two consecutive years. The advantages to this strategy are the increased opportunity for plants to recover vigor, produce seeds and for seedlings to become established during rest. Woody riparian plants have the opportunity to accomplish adequate leader growth to become less vulnerable to livestock grazing. Rest is the quickest and surest method to allow both plants and streambanks to recover from past damage.

Under current stocking rates this alternative would be expected to result in very high forage utilization and increased mechanical damage. It is unlikely that the rest years would be adequate to compensate for the increased use. This alternative cannot be recommended under the current stocking rate. A 30% to 50% reduction in herd size would be a reasonable initial stocking level for implementation of this alternative.

Alternative 6:

Alternatives 1, 2 of 5 would require new fence construction to effectively control livestock movement. Alternative 6 addresses the question as to how to meet resource objectives in the interim prior to fence construction.

Under this alternative the grazing permit would include the following term and condition:

To allow attainment of objectives during the interim period prior to construction of pasture fences, in pastures/use areas grazed after June, a stubble height of four inches is being established. When a stubble height of four inches is reached on key streambank riparian species all livestock shall be removed from the pasture/use. Livestock will be moved to the next scheduled pasture/use area at that time or removed from the allotment. The permittee shall remove the cattle and horses within five days of notification that the four inch stubble height has been reached.

Rationale:

Prior to fence construction it would be difficult to meet utilization objectives for streambank riparian habitat under Alternatives 1, 2 or 5. Under this alternative those objectives would be met.

Alternatives 1 and 2 include a term and condition requiring movement of livestock when the four inch stubble height is reached. However, prior to fence construction it is likely that the permittee would be unable to harvest his active AUMs for the grazing year and would need to remove his cattle earlier in the fall to allow the four inch stubble height objective to be met.

B. Wild Horses

The appropriate management level of wild horses within the Pine Forest Allotment portion of the Black Rock Range Herd Management Area will be 0 horses.

Rationale:

The Black Rock Herd Management Area (HMA) intersects with Pine Forest Allotment at the northeast tip of the HMA. In February of 1982, the allotment boundary between Paiute Meadows Allotment and Pine Forest Allotment was changed. Prior to that time the HMA was located outside of the Pine Forest Allotment. Upon changing the boundary approximately 2880 acres of the HMA became part of the Pine Forest Allotment. In June of 1982 a fence was completed along the new allotment boundary. Census and distribution flights, as well as on the ground observations, do not indicate that wild horse occupied this portion of the HMA prior to the fence construction.

C. Wildlife/Fisheries

Adjustment in wildlife numbers is not warranted. Reasonable numbers will remain at the level outlined in the Land Use Plan. Reasonable numbers for wildlife are as follows:

Mule deer	2338 AUMs
Pronghorn	108 AUMs
Bighorn sheep	72 AUMs
Elk	96 AUMs

Analysis of monitoring data indicates that the overall short term utilization objectives have been met. However, short term utilization objectives for streambank riparian and wetland riparian habitats have not been met. Wildlife did not contribute to the non-attainment of utilization objectives for these habitats. Therefore, a change in the existing wildlife populations or the existing wildlife management, within the Pine Forest Allotment is not warranted.

D. Objectives

Recommendation on Short Term Objectives, revise to the following:

1. The objective for utilization of key woody streambank riparian plant species (SALIX, POLUL) in riparian habitats is 30% on Center, Corral, Leonard, Chicken, Sage Hen and Snow Creeks.
2. The objective for utilization of key herbaceous streambank riparian plant species (POA, CAREX, JUNCUS) in riparian habitats is a stubble height of four inches on Center, Corral, Leonard, Chicken, Sage Hen and Snow Creeks.
3. The objective for utilization of key plant species in wetland riparian habitat is 50% (POA, CAREX, JUNCUS, SALIX, POLUL).
4. The objective for utilization of key plant species in upland habitats is 50% (POA, STIPA, AGROP2, CEANO, CELE3, SIHY, ELYMU, PURSH, SYMPH).

Recommendation on Long Term Objectives, revise 4, 5, 6, 7, 8, and 9 to the following:

4. Improve to and/or maintain 80 acres of ceanothus habitat types by allowing for successful reproduction and recruitment based on site potential.
5. Improve to and/or maintain 477 acres of mahogany habitat types by allowing for successful reproduction and recruitment based on site potential.
6. Improve to and/or maintain 688 acres of aspen habitat types to ensure good reproduction and maximize recruitment based on site potential.
7. Improve to and/or maintain 949 acres of riparian and meadow habitat types to ensure species diversity and quality and to maximize reproduction and recruitment of woody riparian species.

8. Improve to and/or maintain the following stream habitat conditions from 36% on Center, 70% on Corral, 37% on Leonard, 51% on Chicken and 61% on Snow Creeks to an overall optimum of 60% or above.

- a) Streambank cover 60% or above.
- b) Streambank stability 60% or above.
- c) Maximum summer water temperatures below 68 °F.

9. Improve and maintain suitable sage grouse strutting, nesting, brood rearing, and/or wintering habitat in good condition within the ecological potential of the rangeland habitat.

The following parameters have been found to constitute good conditions for sage grouse use:

- a. Strutting habitats
 - (a) Low sagebrush or brush free areas for strutting and nearby areas of sagebrush having 20-50% canopy cover for loafing.
- b. Nesting habitats
 - (a) Between 7 and 31 inches of sagebrush height (optimum of 16 inches)
 - (b) Sagebrush canopy cover between 15-30% (optimum of 27%)
 - (c) 25-35% basal ground cover
 - (d) Average understory height of 6-7 inches.
- c. Brood Rearing habitats
 - (a) Early season
 - Sagebrush canopy cover of between 10 and 21% (optimum of 14%).
 - (b) Late season
 - i) Meadow areas that are in functioning condition
 - ii) Residual meadow vegetation of no less than 3-6 inches in height.
- d. Wintering habitats
 - Greater than 20% sagebrush canopy cover.

Rationale:

The recommended revised wording of objectives would clarify the objectives and provide wording consistent with other recent allotment evaluations and decision.

E. Range Improvement Projects

The following range improvement projects are recommended for evaluation through the project planning process. Construction of these projects is dependent upon NEPA analysis, funding and project priorities:

Pasture Fencing: Alternatives 1, 2 and 5 would require construction of approximately eight miles of fence.

Exclosures: Exclosures at Center Creek, Leonard Creek in South Leonard Pasture, Meadows along Tepee Creek, lower Chicken Creek, dry meadows near Rodeo Flat, springs and associated meadows.

Seeding: Seeding within the Cove Use Area, particularly in burned areas dominated by exotic annuals.

Roads: Construct, or improve existing, roads to facilitate administrative access within the allotment.

Rationale:

Construction of pasture fences would greatly improve livestock control and would be necessary to implement Alternatives 1, 2 or 5.

Exclosures would serve two purposes. First, they would allow complete protection of a specific area from livestock use, either indefinitely or for a limited time. Second, exclosures would provide control areas which provide information as to the potential of specific sites.

Seedings would rehabilitate areas dominated by exotic annuals to enhance watershed and wildlife habitat and improve the forage base for livestock.

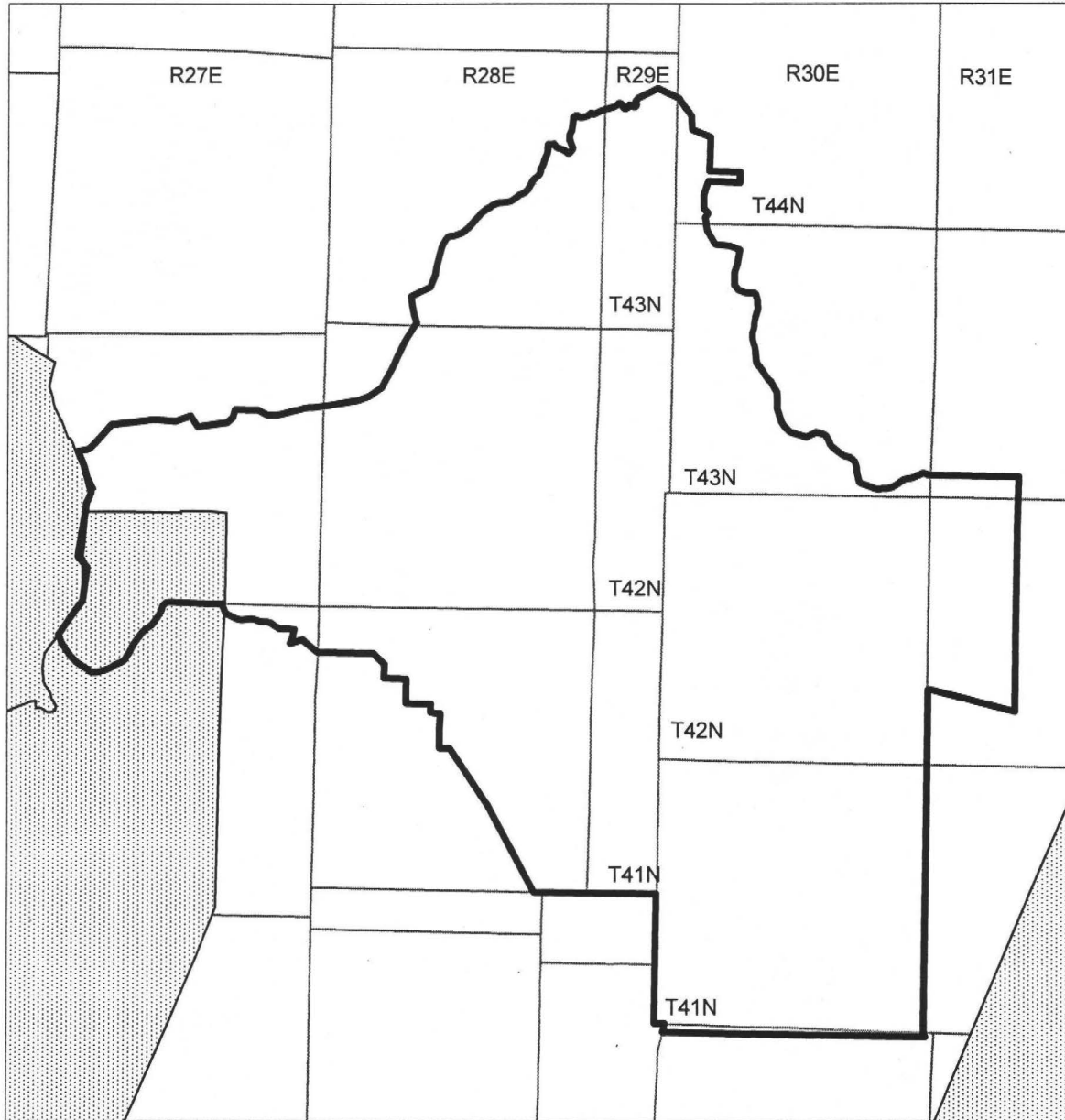
Construction of new roads and improvement of existing roads would facilitate administrative access within the allotment.

F. Monitoring

The following types of monitoring data are needed to make a determination if allotment objectives and standards for rangeland health are being met/achieved:

1. Utilization/Trend-Key Areas
2. Actual Use
3. Climate
4. Wildlife Habitat Evaluation/Condition
5. Ecological Status
6. Wild Horse Census
7. Water Quality
8. Riparian Functionality
9. Stream Survey

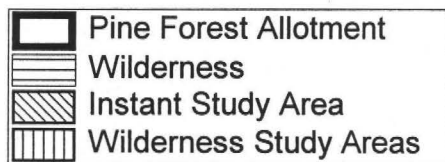
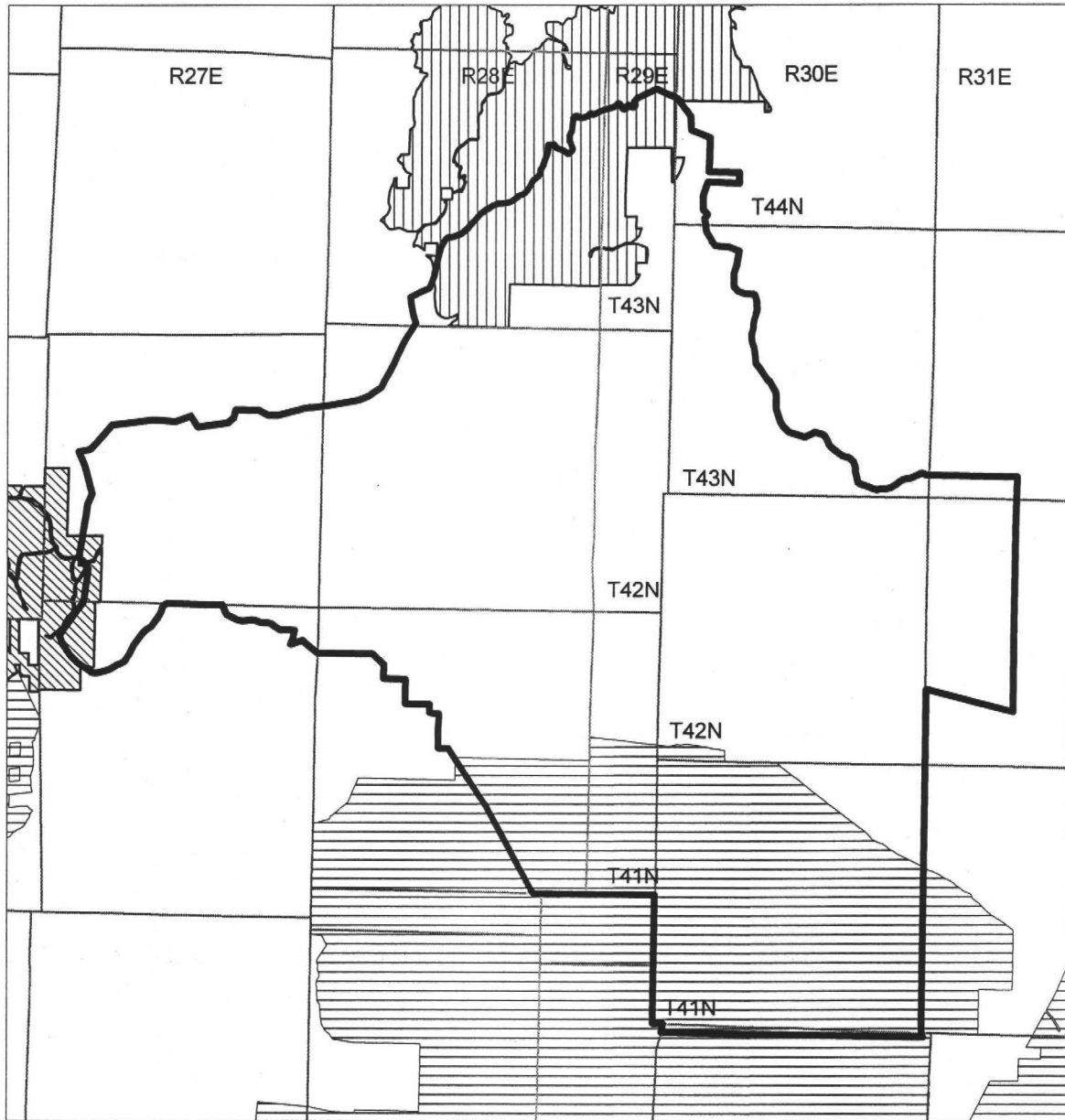
Map 1
Portion of Herd Management Area Within Pine Forest Allotment



□ Pine Forest Allotment
▨ Herd Management Areas

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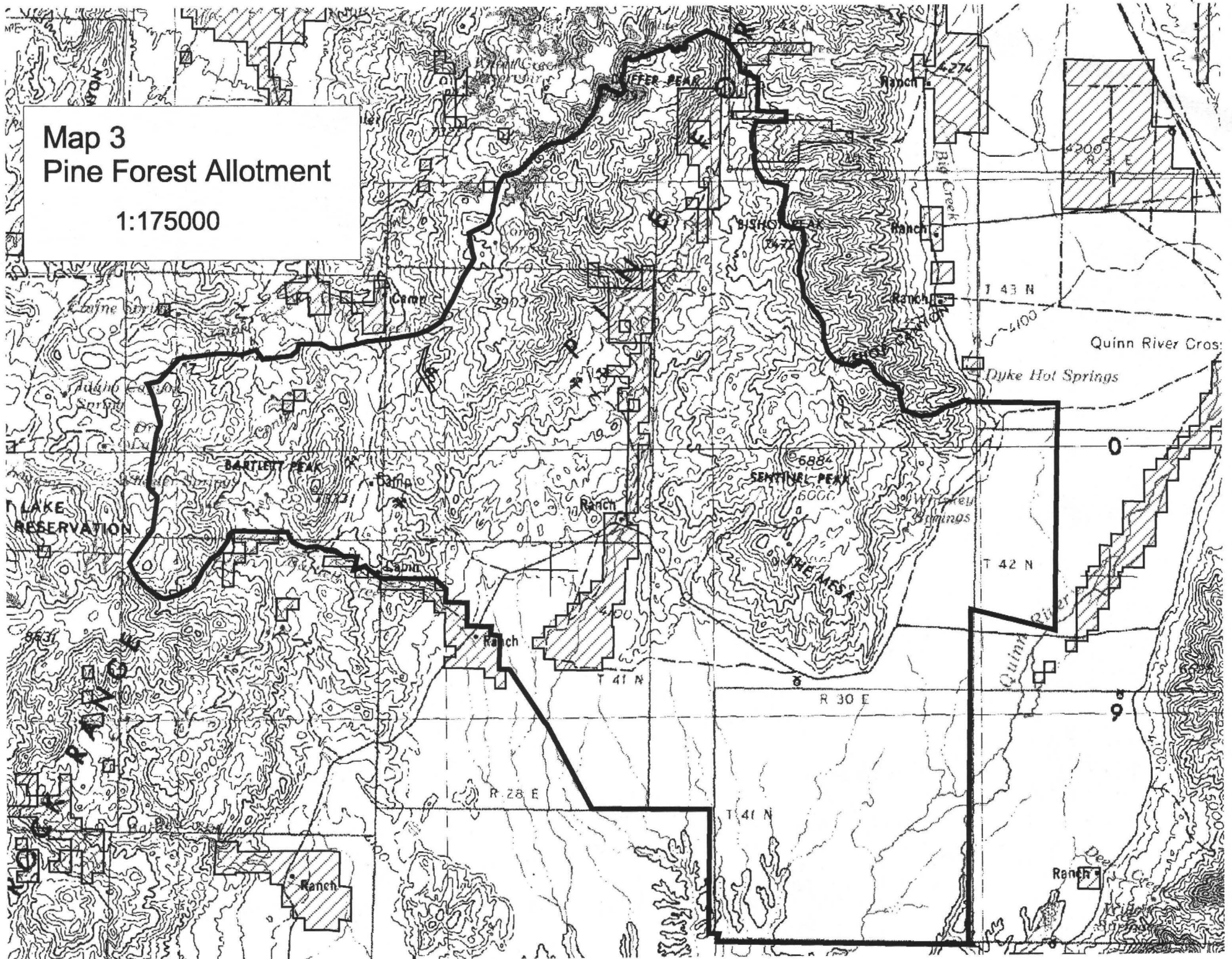
Map 2
Wilderness, WSA and ISA Within the Pine Forest Allotment



1:250000

Map 3 Pine Forest Allotment

1:175000



Appendix 1

Monthly Precipitation (January-December)

Leonard Creek Ranch Station

Monthly Precipitation (January-December) in Inches

YEAR(S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	% of Normal
Normal Precip.	1.02	0.83	0.80	0.69	0.69	0.71	0.30	0.50	0.46	0.46	1.05	1.00	8.51	100%
1982										1.04	2.08	0.94	N/A	N/A
1983	1.30	1.48	2.64	0.71	0.2	1.44	0.01	1.94	1.49	0.49	1.91	4.13	17.74	or greater 208%
1984	0.32	0.79	0.89	0.62	0.25	0.29	0.32	0.63	0.27	1.51	2.11	0.50	8.5	100%
1985	0.39	0.73	1.20	0.04	0.05	0.00	1.09	0.10	1.13	M	1.59	0.50	6.82	or greater 80%
1986	0.49	2.8	1.35	0.83	0.72	0.47	0.48	1.00	0.93	0.00	0.15	0.38	9.6	or greater 113%
1987	0.91	0.81	1.32	1.09	1.59	1.20	0.07	0.15	0.00	0.56	0.83	0.77	9.3	109%
1988	1.52	0.26	0.30	1.67	0.09	0.56	0.14	0.18	0.33	0.00	1.53	1.53	8.11	95%
1989	0.73	0.81	1.09	0.34	1.69	0.65	0.00	0.21	0.85	0.42	0.58	0.11	7.48	88%
1990	0.28	1.15	0.47	1.86	1.55	0.02	0.21	0.56	0.53	0.00	0.12	0.44	7.19	84%
1991	0.61	0.61	1.87	0.80	1.69	0.23	0.20	0.27	1.06	1.04	0.26	0.40	9.04	106%
1992	0.07	0.81	1.00	0.26	0.00	0.70	0.40	0.02	0.03	2.00	0.76	1.77	7.82	92%
1993	3.07	0.89	1.35	0.49	0.56	1.87	0.11	0.00	0.12	0.85	0.28	0.43	10.02	118%
1994	0.12	1.71	0.67	0.52	0.95	0.00	0.01	0.00	0.25	0.18	1.81	2.09	8.31	or greater 98%
1995	2.32	0.07	2.34	1.66	1.33	1.00	0.32	0.05	0.08	0.00	0.14	2.18	11.49	135%
1996	2.75	1.12	0.80	0.96	1.04	2.19	0.85	0.00	0.22	1.01	0.92	1.85	13.71	or greater 161%
1997	2.20	0.31	0.49	1.02	0.38	1.16	0.99	0.14	0.19	0.35	0.89	0.84	8.96	105%
1998	1.49	3.12	1.16	0.72	2.77	1.24	0.24	0.05	1.59	0.27	2.01	0.47	15.13	178%
1999	1.72	1.28	0.37	0.35	0.25	1.63	0.00	0.37	M	0.20	0.41	0.07	6.65	or greater 78%
2000	2.19	3.28	0.89	0.62	0.76	0.16	0.00	0.16	0.05	M	M	M	M	

Maximum allowable missing days of data is 5 days per month.

Months with missing days are displayed in italics.

M - Insufficient data

Leonard Creek Ranch Station

Deviation from Normal Monthly Precipitation (January-December) in Inches

YEAR(S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
Normal Precip.	1.02	0.83	0.80	0.69	0.69	0.71	0.30	0.50	0.46	0.46	1.05	1.00	8.51
1982										0.58	M	M	N/A
1983	0.28	M	1.84	0.02	M	0.73	-0.29	1.44	1.03	0.03	0.86	3.13	M
1984	-0.70	-0.04	0.09	-0.07	-0.44	M	0.02	0.13	-0.19	1.05	1.06	-0.50	-0.01
1985	-0.63	-0.10	0.40	-0.65	-0.64	-0.71	0.79	-0.40	0.67	M	0.54	-0.50	M
1986	-0.53	M	0.55	0.14	0.03	-0.24	0.18	0.50	0.47	-0.46	-0.90	-0.62	M
1987	-0.11	-0.02	0.52	0.40	0.90	0.49	-0.23	-0.35	-0.46	0.10	-0.22	-0.23	0.79
1988	0.50	-0.57	-0.50	0.98	-0.60	-0.15	-0.16	-0.32	-0.13	-0.46	0.48	0.53	-0.40
1989	-0.29	-0.02	0.29	-0.35	1.00	-0.06	-0.30	-0.29	0.39	-0.04	-0.47	-0.89	-1.03
1990	-0.74	0.32	-0.33	1.17	0.86	-0.69	-0.09	0.06	0.07	-0.46	-0.93	-0.56	-1.32
1991	-0.41	-0.22	1.07	0.11	1.00	-0.48	-0.10	-0.23	0.60	0.58	-0.79	-0.60	0.53
1992	-0.95	-0.02	0.20	-0.43	-0.69	-0.01	0.10	-0.48	-0.43	1.54	-0.29	0.77	-0.69
1993	2.05	0.06	0.55	-0.20	-0.13	1.16	-0.19	-0.50	-0.34	0.39	-0.77	-0.57	1.51
1994	-0.90	M	-0.13	-0.17	0.26	-0.71	-0.29	-0.50	-0.21	-0.28	0.76	1.09	M
1995	1.30	-0.76	1.54	0.97	0.64	0.29	0.02	-0.45	-0.38	-0.46	-0.91	1.18	2.98
1996	1.73	0.29	0.00	0.27	0.35	1.48	M	-0.50	-0.24	0.55	-0.13	M	M
1997	1.18	-0.52	-0.31	0.33	-0.31	0.45	0.69	-0.36	-0.27	-0.11	-0.16	-0.16	0.45
1998	0.47	2.29	0.36	0.03	2.08	0.53	-0.06	-0.45	1.13	-0.19	0.96	-0.53	6.62
1999	0.70	0.45	-0.43	-0.34	-0.44	0.92	-0.30	-0.13	M	-0.26	-0.64	-0.93	M
2000	1.17	2.45	0.09	-0.07	0.07	-0.55	-0.30	-0.34	-0.41	M	M	M	M

M - Insufficient data

Appendix 2																	
Water Year (October-September) Precipitaion																	
Leonard Creek Ranch Station																	
Water Year (October-September) Precipitaion in Inches																	
YEAR(S)	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total	% of Norm			
Normal Precip.	0.46	1.05	1.00	1.02	0.83	0.80	0.69	0.69	0.71	0.30	0.50	0.46	8.54	100%			
10/82-9/83	1.04	2.08	0.94	1.30	1.48	2.64	0.71	0.2	1.44	0.01	1.94	1.49	15.27	or greater 179%			
10/83-9/84	0.49	1.91	4.13	0.32	0.79	0.89	0.62	0.25	0.29	0.32	0.63	0.27	10.91	or greater 128%			
10/84-9/85	1.51	2.11	0.50	0.39	0.73	1.20	0.04	0.05	0.00	1.09	0.10	1.13	8.85	104%			
10/85-9/86	M	1.59	0.50	0.49	2.8	1.35	0.83	0.72	0.47	0.48	1.00	0.93	11.16	or greater 131%			
10/86-9/87	0.00	0.15	0.38	0.91	0.81	1.32	1.09	1.59	1.20	0.07	0.15	0.00	7.67	90%			
10/87-9/88	0.56	0.83	0.77	1.52	0.26	0.30	1.67	0.09	0.56	0.14	0.18	0.33	7.21	85%			
10/88-9/89	0.00	1.53	1.53	0.73	0.81	1.09	0.34	1.69	0.65	0.00	0.21	0.85	9.43	111%			
10/89-9/90	0.42	0.58	0.11	0.28	1.15	0.47	1.86	1.55	0.02	0.21	0.56	0.53	7.74	91%			
10/90-9/91	0.00	0.12	0.44	0.61	0.61	1.87	0.80	1.69	0.23	0.20	0.27	1.06	7.9	93%			
10/91-9/92	1.04	0.26	0.40	0.07	0.81	1.00	0.26	0.00	0.70	0.40	0.02	0.03	4.99	59%			
10/92-9/93	2.00	0.76	1.77	3.07	0.89	1.35	0.49	0.56	1.87	0.11	0.00	0.12	12.99	153%			
10/93-9/94	0.85	0.28	0.43	0.12	1.71	0.67	0.52	0.95	0.00	0.01	0.00	0.25	5.79	or greater 68%			
10/94-9/95	0.18	1.81	2.09	2.32	0.07	2.34	1.66	1.33	1.00	0.32	0.05	0.08	13.25	156%			
10/95-9/96	0.00	0.14	2.18	2.75	1.12	0.80	0.96	1.04	2.19	0.85	0.00	0.22	12.25	or greater 144%			
10/96-9/97	1.01	0.92	1.85	2.20	0.31	0.49	1.02	0.38	1.16	0.99	0.14	0.19	10.66	125%			
10/97-9/98	0.35	0.89	0.84	1.49	3.12	1.16	0.72	2.77	1.24	0.24	0.05	1.59	14.46	170%			
10/98-9/99	0.27	2.01	0.47	1.72	1.28	0.37	0.35	0.25	1.63	0.00	0.37	M	8.72	or greater 102%			
10/99-9/00	0.20	0.41	0.07	2.19	3.28	0.89	0.62	0.76	0.16	0.00	0.16	0.05	8.79	103%			
Maximum allowable missing days of data is 5 days per month.																	
<i>Months with missing days are displayed in italics.</i>																	
M - Insufficient data																	
Leonard Creek Ranch Station																	
Deviation from Normal Water Year (October-September) Precipitaion in Inches																	
YEAR(S)	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total				
Normal Precip.	0.46	1.05	1.00	1.02	0.83	0.80	0.69	0.69	0.71	0.30	0.50	0.46	8.51				
10/82-9/83	0.58	M	M	0.28	M	1.84	0.02	M	0.73	-0.29	1.44	1.03	M				
10/83-9/84	0.03	0.86	3.13	-0.70	-0.04	0.09	-0.07	-0.44	M	0.02	0.13	-0.19	M				
10/84-9/85	1.05	1.06	-0.50	-0.63	-0.10	0.40	-0.65	-0.64	-0.71	0.79	-0.40	0.67	0.34				
10/85-9/86	M	0.54	-0.50	-0.53	M	0.55	0.14	0.03	-0.24	0.18	0.50	0.47	M				
10/86-9/87	-0.46	-0.90	-0.62	-0.11	-0.02	0.52	0.40	0.90	0.49	-0.23	-0.35	-0.46	-0.84				
10/87-9/88	0.10	-0.22	-0.23	0.50	-0.57	-0.50	0.98	-0.60	-0.15	-0.16	-0.32	-0.13	-1.3				
10/88-9/89	-0.46	0.48	0.53	-0.29	-0.02	0.29	-0.35	1.00	-0.06	-0.30	-0.29	0.39	0.92				
10/89-9/90	-0.04	-0.47	-0.89	-0.74	0.32	-0.33	1.17	0.86	-0.69	-0.09	0.06	0.07	-0.77				
10/90-9/91	-0.46	-0.93	-0.56	-0.41	-0.22	1.07	0.11	1.00	-0.48	-0.10	-0.23	0.60	-0.61				
10/91-9/92	0.58	-0.79	-0.60	-0.95	-0.02	0.20	-0.43	-0.69	-0.01	0.10	-0.48	-0.43	-3.52				
10/92-9/93	1.54	-0.29	0.77	2.05	0.06	0.55	-0.20	-0.13	1.16	-0.19	-0.50	-0.34	4.48				
10/93-9/94	0.39	-0.77	-0.57	-0.90	M	-0.13	-0.17	0.26	-0.71	-0.29	-0.50	-0.21	M				
10/94-9/95	-0.28	0.76	1.09	1.30	-0.76	1.54	0.97	0.64	0.29	0.02	-0.45	-0.38	4.74				
10/95-9/96	-0.46	-0.91	1.18	1.73	0.29	0.00	0.27	0.35	1.48	M	-0.50	-0.24	M				
10/96-9/97	0.55	-0.13	M	1.18	-0.52	-0.31	0.33	-0.31	0.45	0.69	-0.36	-0.27	2.15				
10/97-9/98	-0.11	-0.16	-0.16	0.47	2.29	0.36	0.03	2.08	0.53	-0.06	-0.45	1.13	5.95				
10/98-9/99	-0.19	0.96	-0.53	0.70	0.45	-0.43	-0.34	-0.44	0.92	-0.30	-0.13	M	M				
10/99-9/00	-0.26	-0.64	-0.93	1.17	2.45	0.09	-0.07	0.07	-0.55	-0.30	-0.34	-0.41	0.28				
M - Insufficient data																	

Appendix 3

March-June Precipitation

Leonard Creek Ranch Station

March-June Precipitation in Inches

YEAR(S)	MAR	APR	MAY	JUN	Total	% of Normal
Normal Precip.	0.80	0.69	0.69	0.71	2.89	100%
1983	2.64	0.71	0.2	1.44	4.99	or greater 173%
1984	0.89	0.62	0.25	0.29	2.05	or greater 71%
1985	1.20	0.04	0.05	0.00	1.29	45%
1986	1.35	0.83	0.72	0.47	3.37	117%
1987	1.32	1.09	1.59	1.20	5.2	180%
1988	0.30	1.67	0.09	0.56	2.62	91%
1989	1.09	0.34	1.69	0.65	3.77	130%
1990	0.47	1.86	1.55	0.02	3.9	135%
1991	1.87	0.80	1.69	0.23	4.59	159%
1992	1.00	0.26	0.00	0.70	1.96	68%
1993	1.35	0.49	0.56	1.87	4.27	148%
1994	0.67	0.52	0.95	0.00	2.14	74%
1995	2.34	1.66	1.33	1.00	6.33	219%
1996	0.80	0.96	1.04	2.19	4.99	173%
1997	0.49	1.02	0.38	1.16	3.05	106%
1998	1.16	0.72	2.77	1.24	5.89	204%
1999	0.37	0.35	0.25	1.63	2.6	90%
2000	0.89	0.62	0.76	0.16	2.43	84%

Maximum allowable missing days of data is 5 days per month.

Months with missing days are displayed in italics.

M - Insufficient data

Leonard Creek Ranch Station

Deviation From Normal Precipitation

March-June in Inches

YEAR(S)	MAR	APR	MAY	JUN	Total
Normal Precip.	0.80	0.69	0.69	0.71	2.89
1983	1.84	0.02	M	0.73	M
1984	0.09	-0.07	-0.44	M	M
1985	0.40	-0.65	-0.64	-0.71	-1.6
1986	0.55	0.14	0.03	-0.24	0.48
1987	0.52	0.40	0.90	0.49	2.31
1988	-0.50	0.98	-0.60	-0.15	-0.27
1989	0.29	-0.35	1.00	-0.06	0.88
1990	-0.33	1.17	0.86	-0.69	1.01
1991	1.07	0.11	1.00	-0.48	1.7
1992	0.20	-0.43	-0.69	-0.01	-0.93
1993	0.55	-0.20	-0.13	1.16	1.38
1994	-0.13	-0.17	0.26	-0.71	-0.75
1995	1.54	0.97	0.64	0.29	3.44
1996	0.00	0.27	0.35	1.48	2.1
1997	-0.31	0.33	-0.31	0.45	0.16
1998	0.36	0.03	2.08	0.53	3
1999	-0.43	-0.34	-0.44	0.92	-0.29
2000	0.09	-0.07	0.07	-0.55	-0.46

M - Insufficient data

Appendix 4

Growing Season (March-August) Precipitation

Leonard Creek Ranch Station

Growing Season (March-August) Precipitation in Inches

YEAR(S)	MAR	APR	MAY	JUN	JUL	AUG	Total	% of Normal
Normal Precip.	0.80	0.69	0.69	0.71	0.30	0.50	3.69	100%
1983	2.64	0.71	0.2	1.44	0.01	1.94	6.94 or greater	188%
1984	0.89	0.62	0.25	0.29	0.32	0.63	3.00 or greater	81%
1985	1.20	0.04	0.05	0.00	1.09	0.10	2.48	67%
1986	1.35	0.83	0.72	0.47	0.48	1.00	4.85	131%
1987	1.32	1.09	1.59	1.20	0.07	0.15	5.42	147%
1988	0.30	1.67	0.09	0.56	0.14	0.18	2.94	80%
1989	1.09	0.34	1.69	0.65	0.00	0.21	3.98	108%
1990	0.47	1.86	1.55	0.02	0.21	0.56	4.67	127%
1991	1.87	0.80	1.69	0.23	0.20	0.27	5.06	137%
1992	1.00	0.26	0.00	0.70	0.40	0.02	2.38	64%
1993	1.35	0.49	0.56	1.87	0.11	0.00	4.38	119%
1994	0.67	0.52	0.95	0.00	0.01	0.00	2.15	58%
1995	2.34	1.66	1.33	1.00	0.32	0.05	6.70	182%
1996	0.80	0.96	1.04	2.19	0.85	0.00	5.84 or greater	158%
1997	0.49	1.02	0.38	1.16	0.99	0.14	4.18	113%
1998	1.16	0.72	2.77	1.24	0.24	0.05	6.18	167%
1999	0.37	0.35	0.25	1.63	0.00	0.37	2.97	80%
2000	0.89	0.62	0.76	0.16	0.00	0.16	2.59	70%

Maximum allowable missing days of data is 5 days per month.

Months with missing days are displayed in italics.

M - Insufficient data

Leonard Creek Ranch Station

Deviation From Normal Precipitation

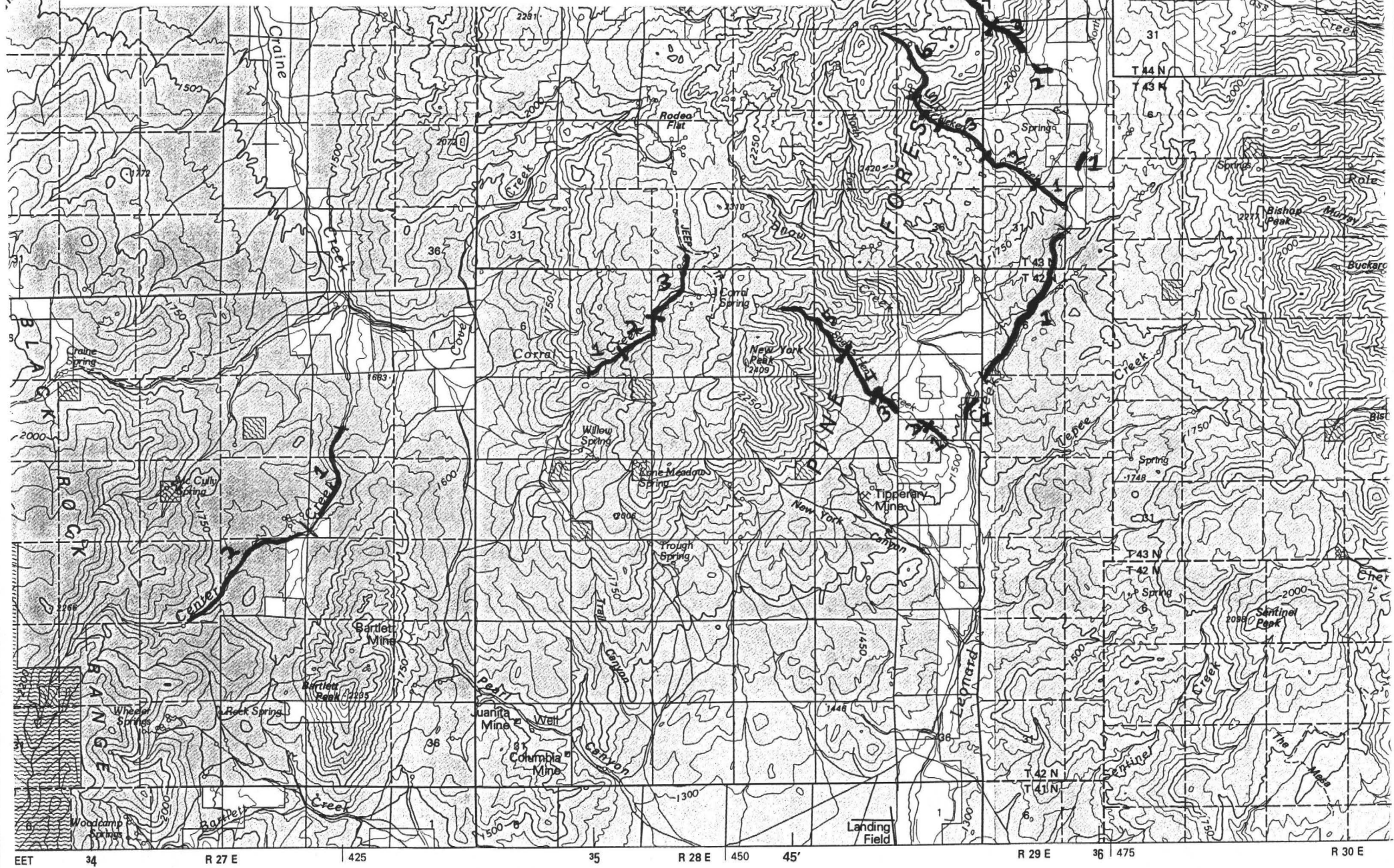
During Growing Season (March-August) in Inches

YEAR(S)	MAR	APR	MAY	JUN	JUL	AUG	Total
Normal Precip.	0.80	0.69	0.69	0.71	0.30	0.50	3.69
1983	1.84	0.02	M	0.73	-0.29	1.44	M
1984	0.09	-0.07	-0.44	M	0.02	0.13	M
1985	0.40	-0.65	-0.64	-0.71	0.79	-0.4	-1.21
1986	0.55	0.14	0.03	-0.24	0.18	0.5	1.16
1987	0.52	0.40	0.90	0.49	-0.23	-0.35	1.73
1988	-0.50	0.98	-0.60	-0.15	-0.16	-0.32	-0.75
1989	0.29	-0.35	1.00	-0.06	-0.3	-0.29	0.29
1990	-0.33	1.17	0.86	-0.69	-0.09	0.06	0.98
1991	1.07	0.11	1.00	-0.48	-0.1	-0.23	1.37
1992	0.20	-0.43	-0.69	-0.01	0.1	-0.48	-1.31
1993	0.55	-0.20	-0.13	1.16	-0.19	-0.5	0.69
1994	-0.13	-0.17	0.26	-0.71	-0.29	-0.5	-1.54
1995	1.54	0.97	0.64	0.29	0.02	-0.45	3.01
1996	0.00	0.27	0.35	1.48	0.55	-0.5	2.15
1997	-0.31	0.33	-0.31	0.45	0.69	-0.36	0.49
1998	0.36	0.03	2.08	0.53	-0.06	-0.45	2.49
1999	-0.43	-0.34	-0.44	0.92	-0.3	-0.13	-0.72
2000	0.09	-0.07	0.07	-0.55	-0.3	-0.34	-1.1

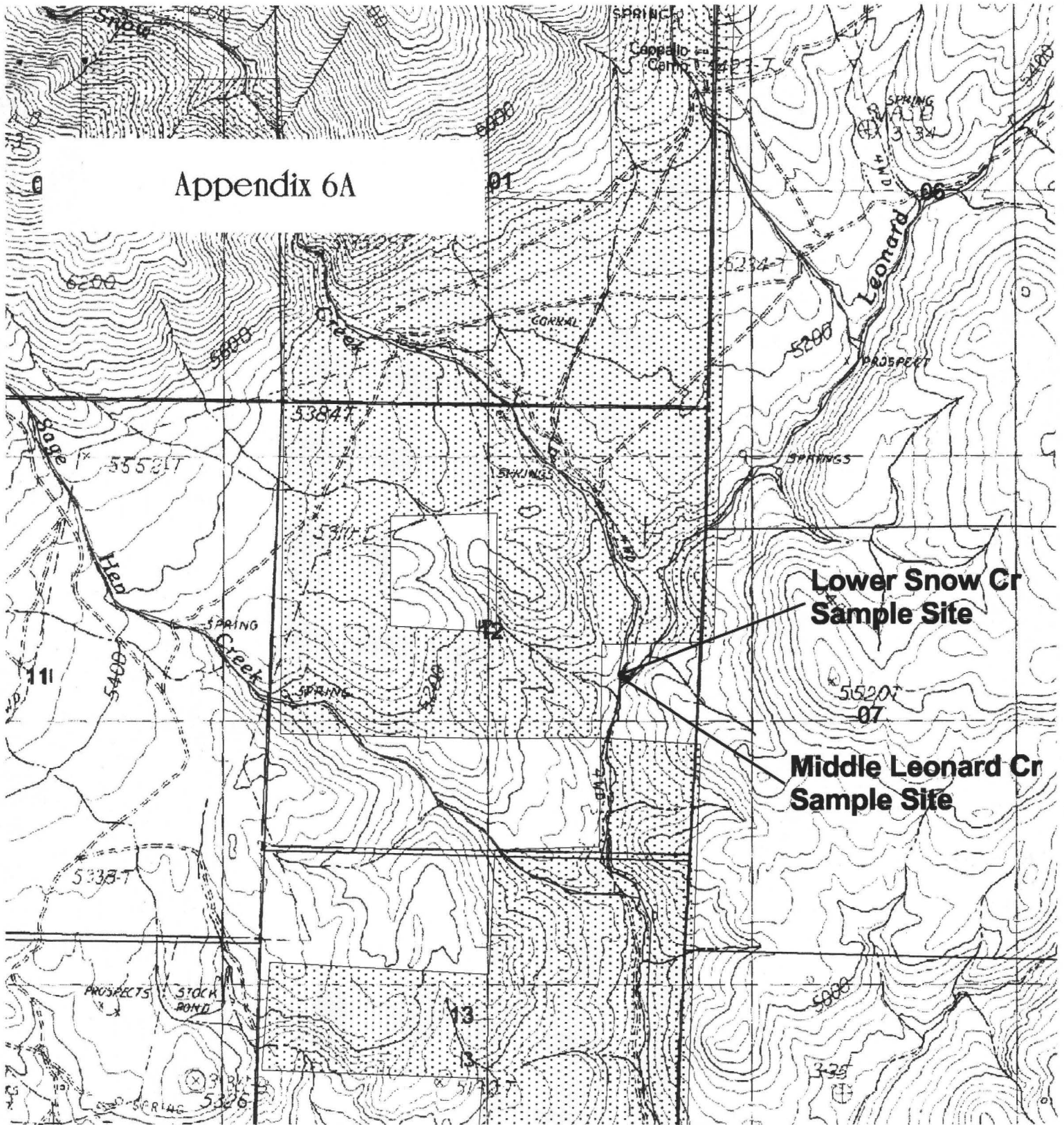
M - Insufficient data

Appendix 5

Location of Stream Sections Discussed in the Summary of Studies Data for Riparian and Fisheries (Section IVB9)



Appendix 6A







T42N R28E SEC.12 NE SE

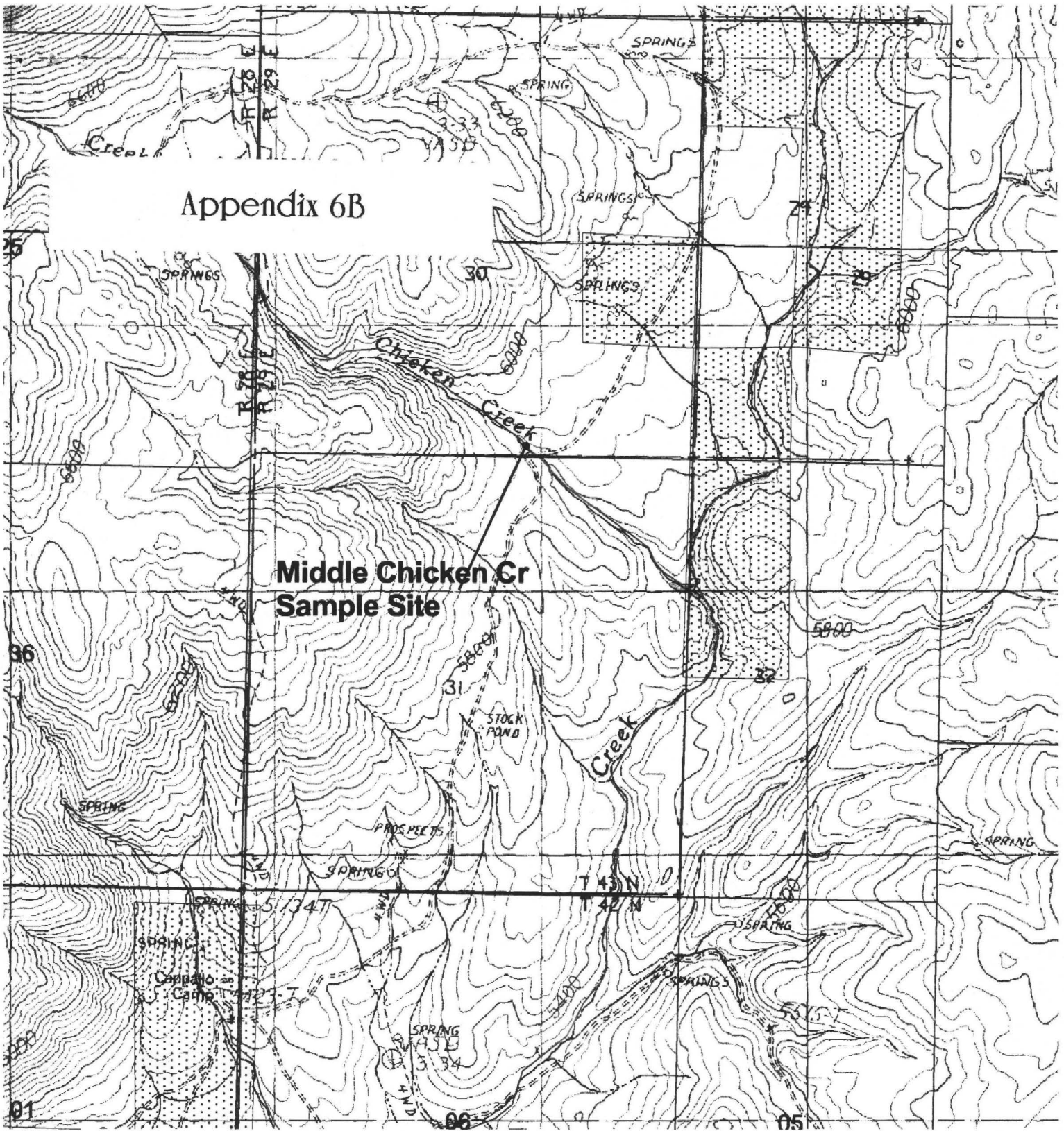
Middle Leonard & Lower Snow Cr

United States Department of the Interior
Bureau of Land Management
Winnemucca Field Office
5100 E. Winnemucca Blvd.
Winnemucca, NV 89445



-  Public (BLM)
-  Private
-  Section lines
-  Streams

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data.



Appendix 6B

Middle Chicken Cr
Sample Site

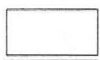



0.2 0 0.2 0.4 Miles

Middle Chicken Cr

T42N R29E SEC.30 SW SE

United States Department of the Interior
Bureau of Land Management
Winnemucca Field Office
5100 E. Winnemucca Blvd.
Winnemucca, NV 89445



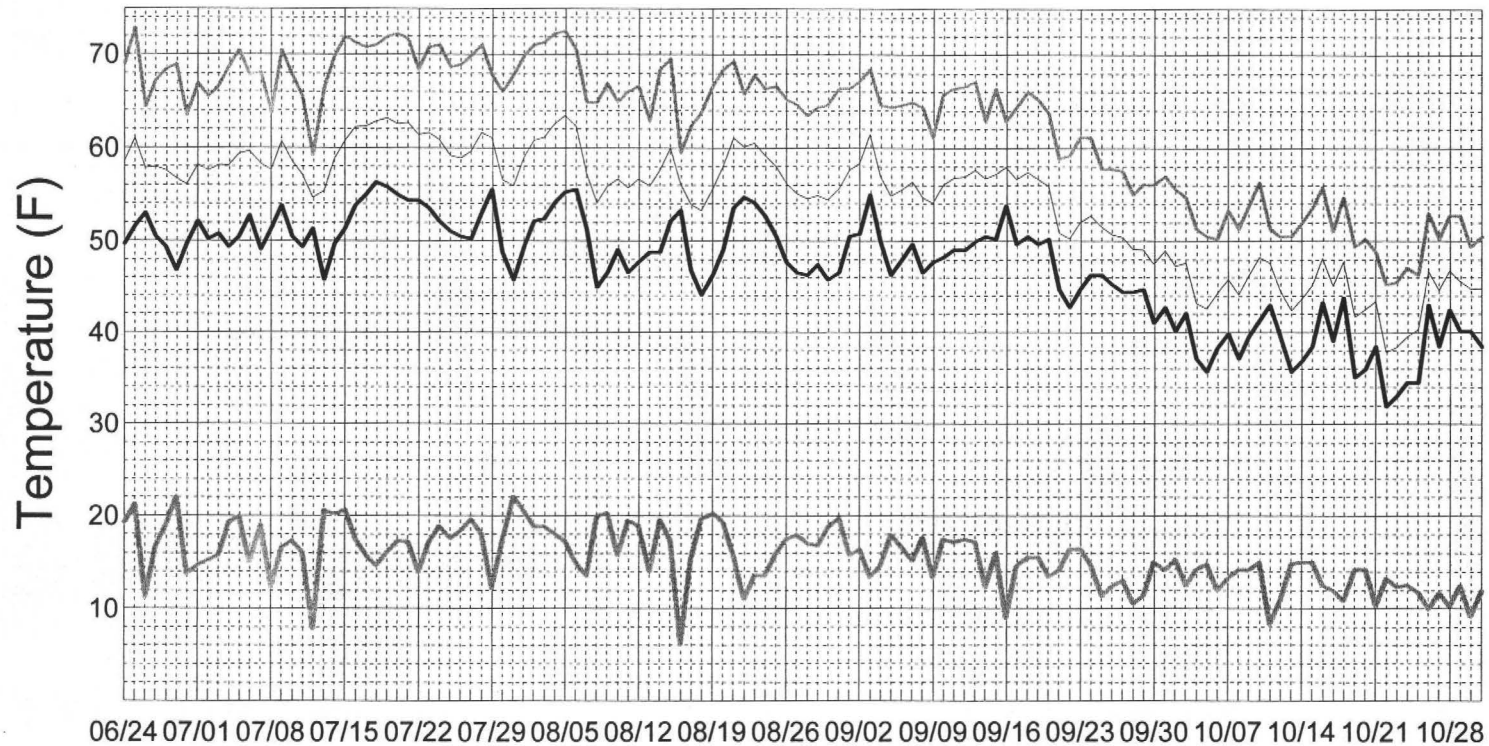
-  Public (BLM)
-  Private
-  Section lines
-  Streams

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data.

Appendix 6C

Lower Leonard Cr

1995 daily stream temperatures

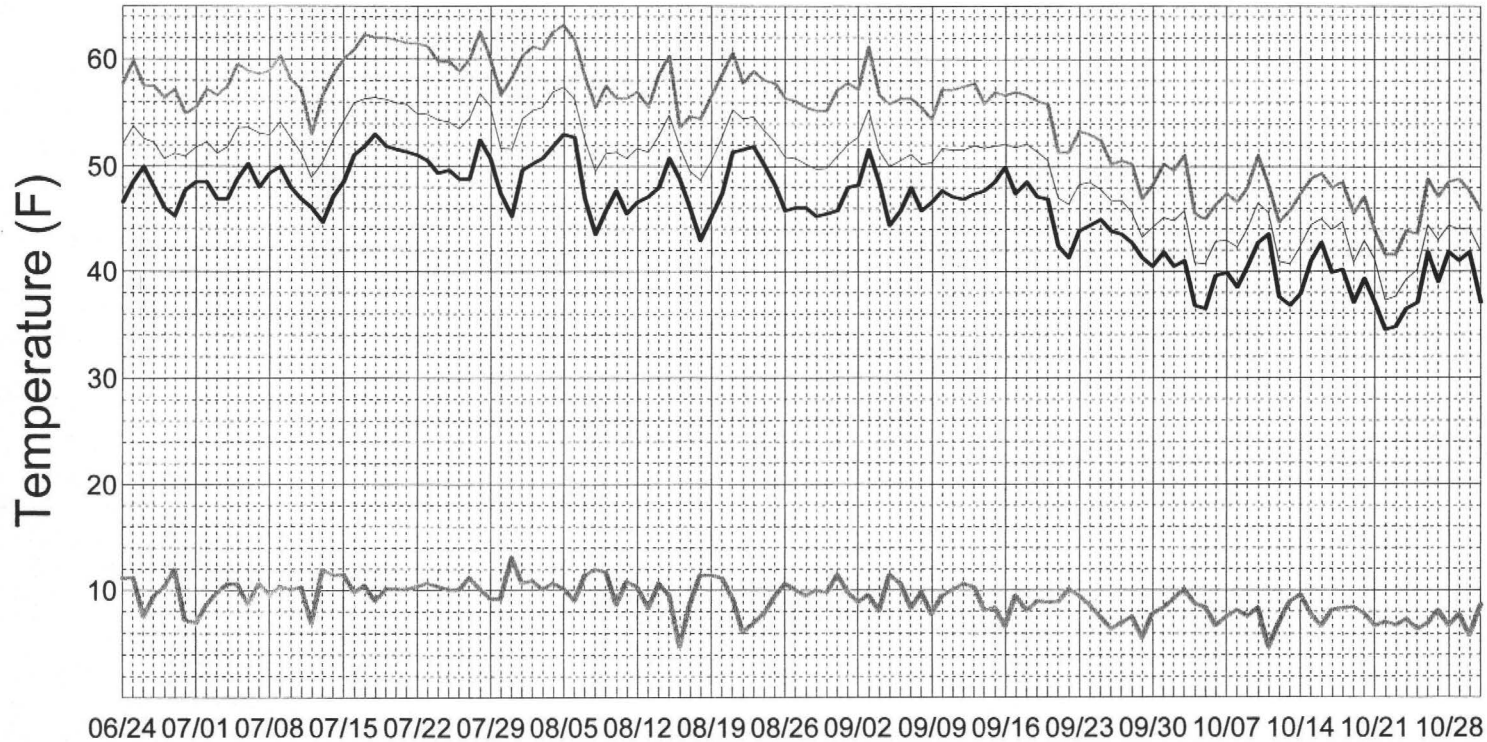


Pine Forest Range, Pine Forest Allotment

— max — min — mean — diurnal change

Upper Leonard Cr

1995 daily stream temperatures



Pine Forest Range, Pine Forest Allotment

— max

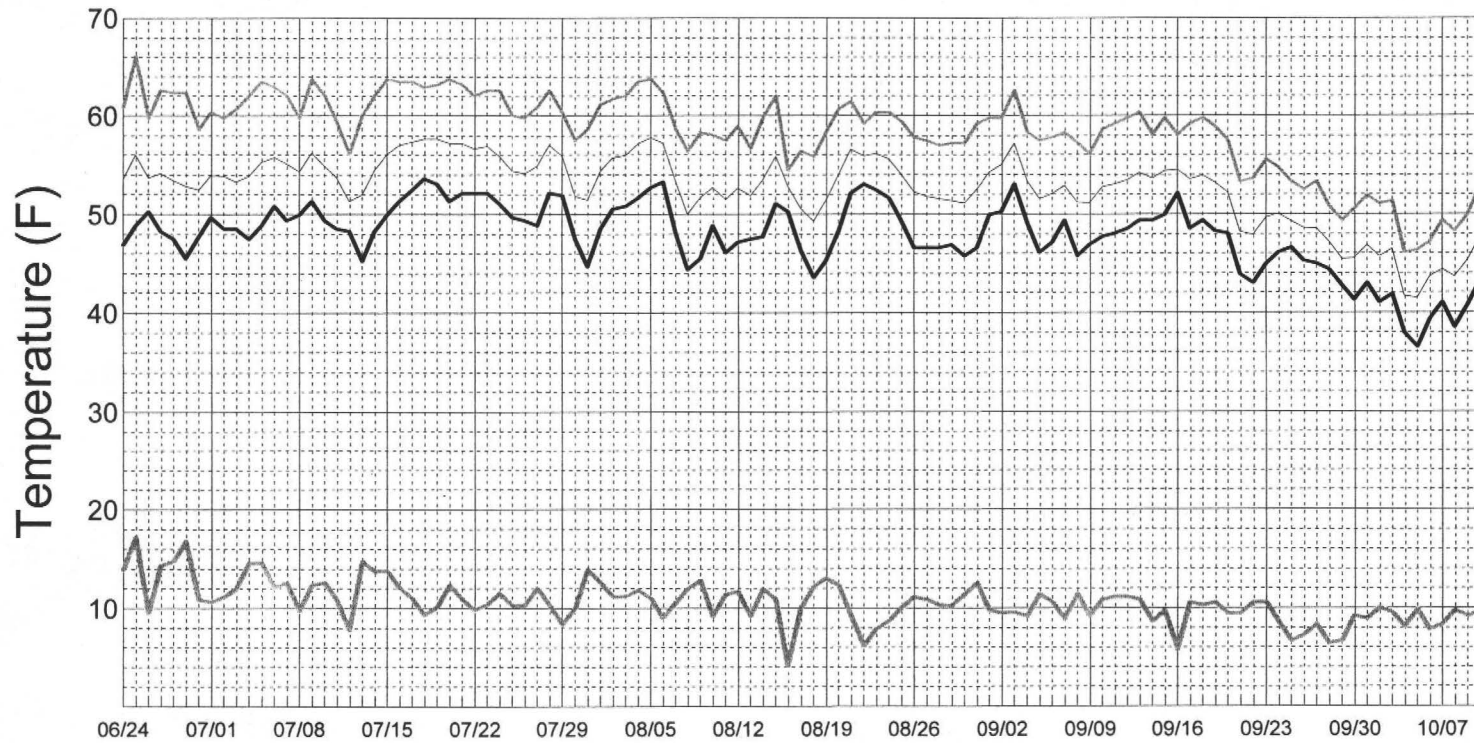
— min

— mean

— diurnal change

Chicken Cr

1995 daily stream temperatures



Pine Forest Range, Pine Forest Allotment

— max

— min

— mean

— diurnal change

Appendix 7

NDOW uses the General Aquatic Wildlife Survey (GAWS) to survey methodology to survey instream habitat and riparian condition. Winnemucca BLM surveys were done using protocols developed by the Elko and Winnemucca BLM Districts. These methods were modified from the 6671 and 6720-1 manuals for stream and riparian habitat analysis.

These methodologies measure instream habitat and riparian condition in relation to optimum trout habitat conditions for a stream in the intermountain region. These are not methods that measure condition of a stream in relation to the habitat potential for that stream, so it is possible and probable that a stream could be at the best possible potential for that stream but be in poor condition in relation to the optimal conditions for trout habitat.

Both of these techniques measure pool to riffle ratio, pool quality, desirable bottom material, bank cover and bank stability. Pool to riffle ratio is the measure of the stream's deviation from a 1:1 pool to riffle ratio which is the standard for optimum trout habitat. Pool quality is a measure of the percentage of quality pool habitat in the stream. Quality pool habitat is determined by the presence of adequate pool size, depth and instream cover. Desirable bottom material is a measure of the percentage of gravel (.25-3") and rubble (3-12") that make up the stream bottom. Bank cover is a measure of the predominant type of vegetation on stream banks. Bank stability (BLM) and bank soil stability (NDOW GAWS) is a measure of the resistance of the bank to erosion based on type and density of bank vegetation and bank substrate material. In addition, the GAWS technique also measures bank vegetation stability which measures stability generated by vegetative cover. The major differences between the NDOW GAWS protocols and the protocols used by the BLM are as follows:

1. BLM uses a 100 ft. interval between survey transects, NDOW uses a 50 ft. interval.
2. The value for shrubs in the NDOW protocol is 100% of bank cover optimum. In the BLM protocol the value is 75%.
3. The value for trees in the NDOW protocol is 75% of bank cover optimum. In the BLM protocol the value is 100%.
4. To determine the cumulative condition of the stream habitat BLM uses Percent of Optimum Habitat and NDOW uses Habitat Condition Index (HCI). These differ in that the average of the values for pool/riffle ratio, pool quality, desirable bottom

materials, bank cover and bank stability determines the Percent of Optimum Habitat and HCI is determined by the average of the same habitat factors plus bank vegetation stability.

5. Riparian Condition Class (RCC) is determined in the BLM technique by averaging the values for bank cover and bank stability and in the NDOW GAWS technique by averaging the values for bank cover, bank soil stability and bank vegetative stability.