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United States Department of the Interior



BUREAU OF LAND MANAGEMENT
WINNEMUCCA DISTRICT OFFICE
705 East 4th Street
Winnemucca, Nevada 89445

July 14, 1987

IN REPLY REFER TO:
6780
(NV-026.5)

Dear Interested Party:

The Bureau of Land Management, Winnemucca District, is developing the **Little Owyhee-Snowstorms** Habitat Management Plan (HMP). This area is shown on the enclosed map. The general objectives of this plan are as follows:

1. Improve and maintain a sufficient quantity, quality and diversity of habitat for all species of wildlife in the WHA.
2. Improve and maintain the condition of 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 a healthy fish community.

Specific objectives are described for streams, special habitat features such as riparian zones, aspen, and curleaf mountain mahogany, and upland vegetative types within wildlife use areas. Specific objectives for allowable utilization levels, providing forage for big game species, bighorn sheep reintroduction, and habitat improvement projects are also addressed.

Major proposed actions of this HMP are as follows:

1. Establish a viable population of bighorn sheep in two potential use areas (S. Fork Little Humboldt River and Calicos-Capitol Peak).
2. Fence the N. Fork Little Humboldt River while leaving watergaps for livestock and wild horses.
3. Fence a one acre study enclosure on Button Lake
4. Develop artificial watering sources for wildlife in areas where water is the limiting factor for wildlife use.
5. Develop waterfowl habitat on new reservoirs based on live water.
6. Monitor wildlife habitat conditions and develop additional planned actions as necessary based on the evaluation of the monitoring data.

This HMP is being developed to be in conformance with the Paradise-Denio Management Framework Plan decisions and coordinated with the Bullhead allotment and Little Owyhee allotment Coordinated Resource Management

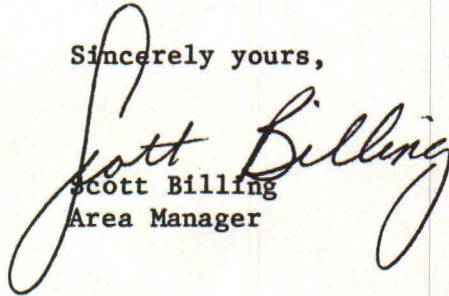
Plans. Monitoring of these allotments is described in the Little Owyhee and Bullhead Monitoring Plans.

In association with this HMP, an Environmental Assessment will be prepared to assess the environmental impacts of the major proposed actions.

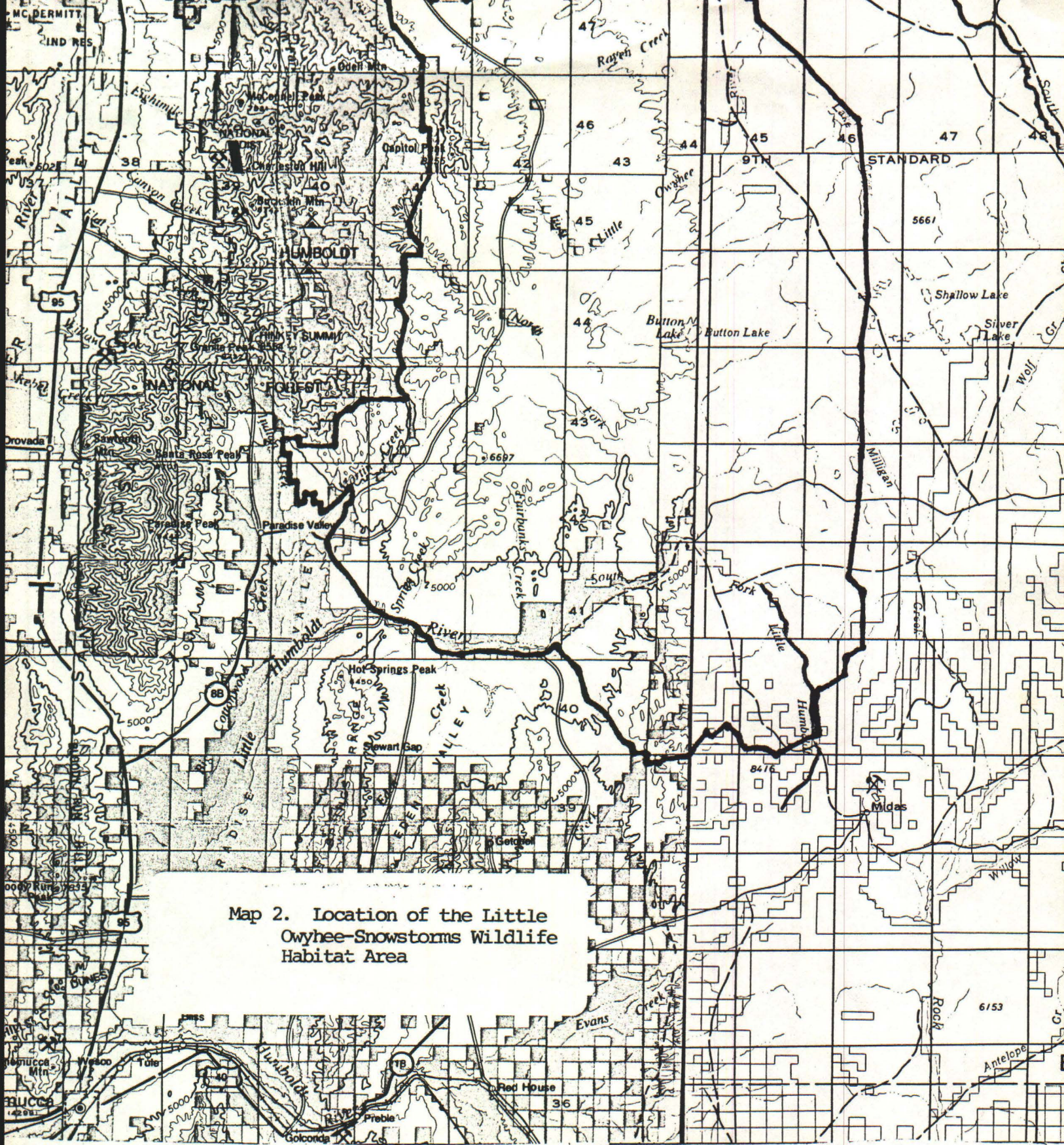
At this time, the Bureau of Land Management is seeking input from various agencies, interest groups, grazing permittees, and individuals on the impacts of the proposed actions and effects this plan may have on other public uses of this area.

A draft copy of this plan is enclosed for your review and comments. All comments should be directed to the Paradise-Denio Area Manager or Area Biologist by August 15, 1987.

Sincerely yours,


Scott Billing
Area Manager

Enclosures



Map 2. Location of the Little Owyhee-Snowstorms Wildlife Habitat Area

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LITTLE OWYHEE-SNOWSTORM
HABITAT MANAGEMENT PLAN

Prepared by:

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1987

Paradise-Denio Resource Area

Winnemucca District

with assistance from:

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DRAFT

Abstract

This Wildlife Habitat Area (WHA) N2-WHA-4 contains habitat for the threatened Lahontan cutthroat trout and potential habitat for the sensitive California bighorn sheep. Other priority species include mule deer, pronghorn antelope, and sage grouse. A large portion of the WHA has been through the Coordinated Resource Management Planning (CRMP) process which developed objectives and actions necessary to accomplish the objectives. These are included in this wildlife activity plan. The overall objective of this plan is to improve and maintain a sufficient quantity, quality, and diversity of habitat for all species of wildlife in the planning area. Planned actions include guzzler construction, fencing of important habitat areas, reestablishment of bighorn sheep, further special habitat feature inventory, and monitoring of habitat. Implementation of this plan is an ongoing process which started several years ago, and will continue until the objectives are met.

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Appendix 1	Common and Scientific Names of Plants and Animals
Appendix 2	Priority Species Use Areas Maps of Wildlife Use Areas, Land Status, and Wildlife Habitat Improvement Projects
Appendix 3	Pronghorn, Mule Deer, and Sage Grouse Habitat Evaluation Information
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I. INTRODUCTION

A. Reasons for Preparation

A large portion of the N2-WHA-4 was evaluated through the Coordinated Resource Management Planning (CRMP) process which necessitated extensive revision of the original habitat management plan (HMP). Current land use plan decisions need to be incorporated into the HMP. The Little Owyhee/Snowstorms Wildlife Habitat Area (WHA) contains habitat for the threatened Lahontan cutthroat trout. The WHA also contains habitat for several priority species such as mule deer, antelope, and sage grouse. It also has potential habitat for California bighorn sheep which is considered a sensitive species in Nevada by the Nevada Department of Wildlife (NDOW), and the Bureau of Land Management (BLM). This HMP is designed to develop objectives and actions for habitat management for these specific species with the assumption that the majority of other wildlife species will benefit as well.

The original HMP for this WHA was prepared in 1971 by G. Duncan MacDonald IV and Jerry Wickstrom of the BLM with assistance from William Foree of NDOW. This plan was never approved before the first revision took place. The first revision of the HMP was completed and approved in 1975. This revision was prepared by Raymond R. Hoem with assistance from several personnel of the BLM and NDOW.

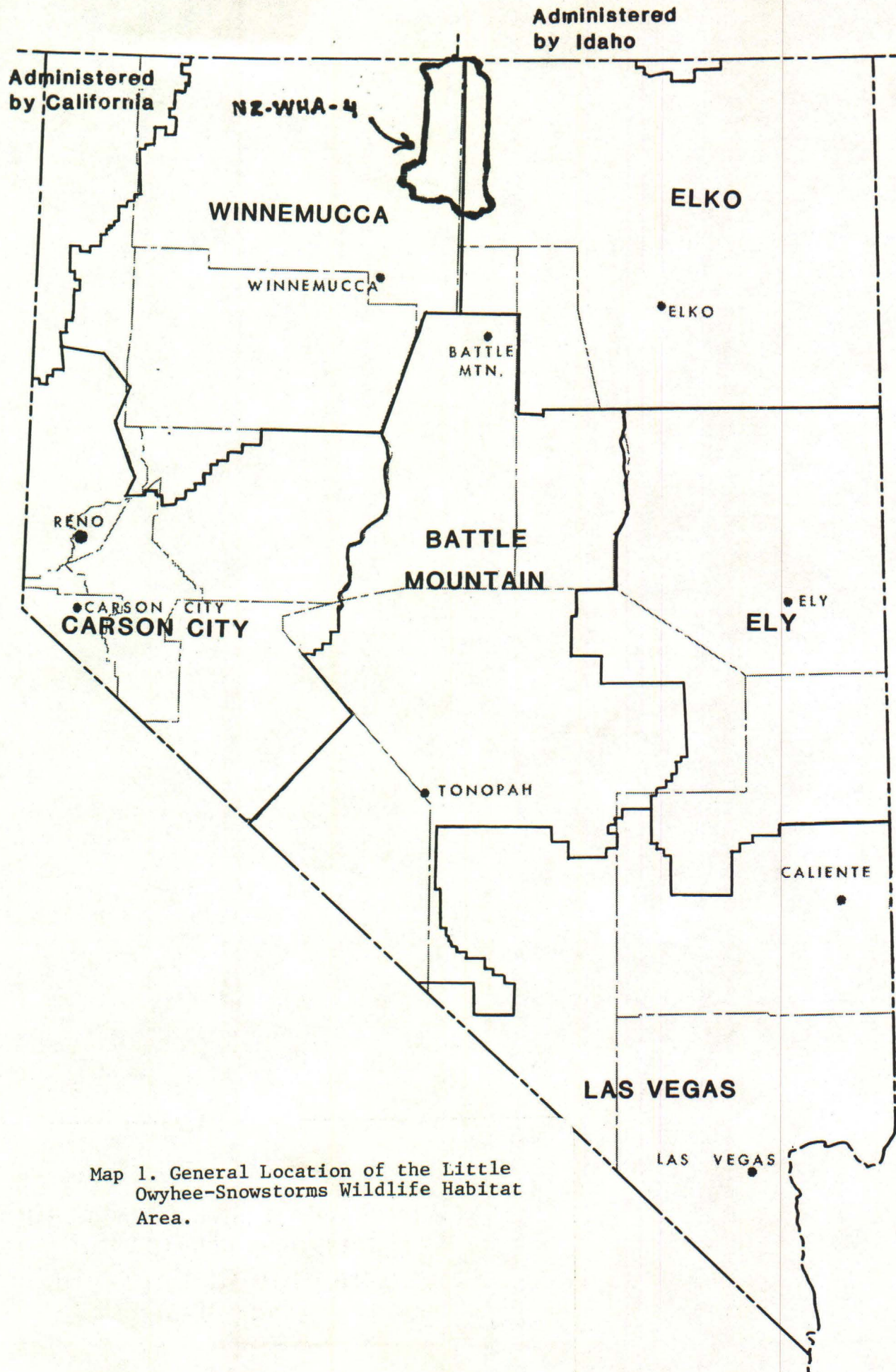
B. Ecosystem Description

1. Physical Characteristics

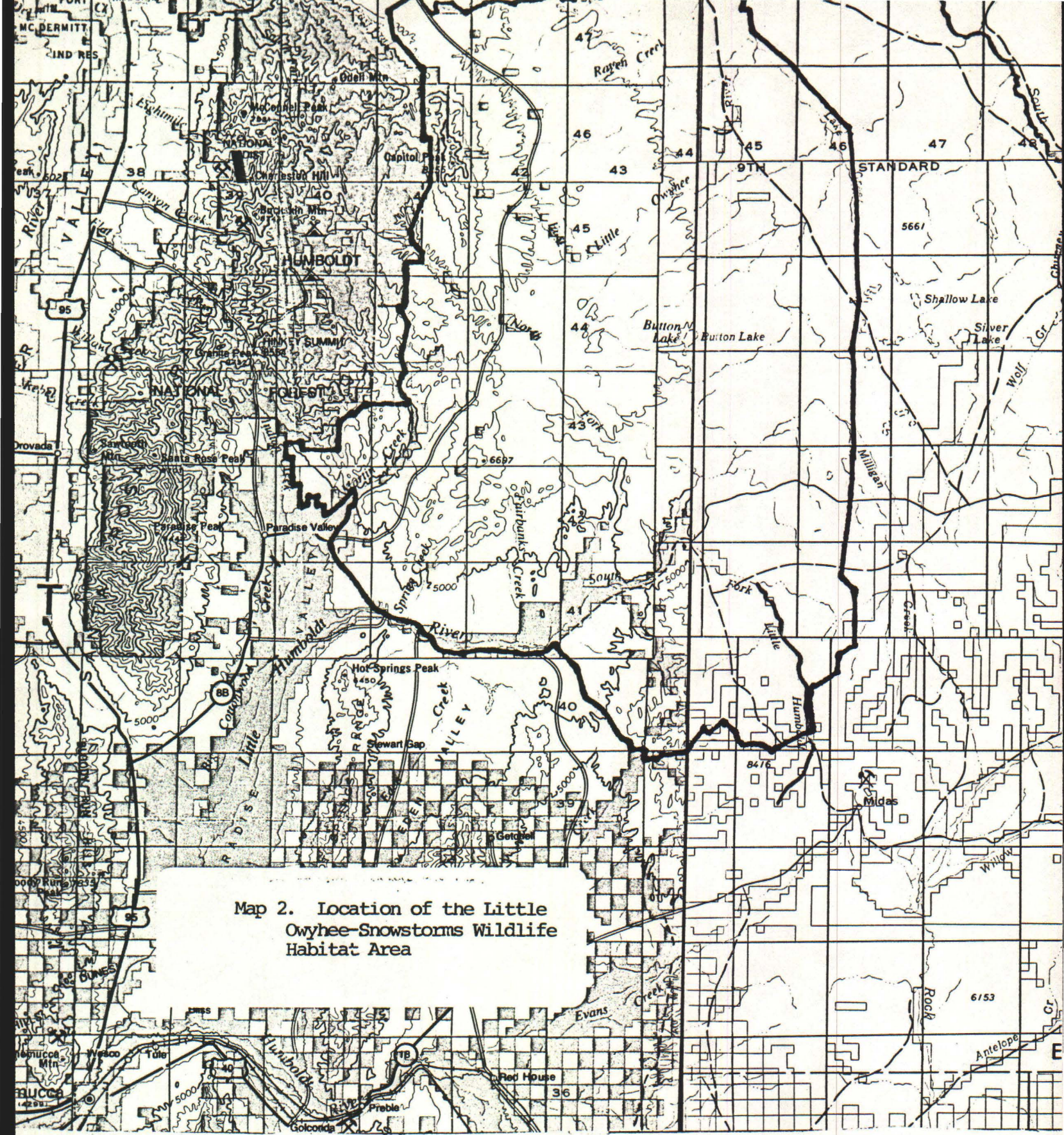
The Owyhee Desert-Snowstorm Wildlife Habitat Area is located in north-central Nevada and encompasses parts of both Humboldt and Elko Counties (see Maps 1 and 2). The topography is characterized by a large undulating plateau with portions of two mountain ranges located on the periphery of this plateau. The area is dissected by a few deep, rocky gorges. Elevations range from a low of 4463 feet in Paradise Valley to a high of 8364 feet on Capitol Peak. The next highest area is located in the Snowstorm Mountains where elevations reach approximately 7700 feet.

Two major drainages are located within the WHA. These are the East Little Owyhee River which drains the mid to northeastern portion and the Little Humboldt River drains the south and southwestern portions of the WHA.

The climate of the area is typical of the Great Basin. Average precipitation increases with elevation while temperature decreases. Most precipitation occurs in the winter months as snow but summer thundershowers are occasional. Precipitation ranges from 6 inches to over 14 inches at the higher elevations. The average annual temperatures range from 42°F



Map 1. General Location of the Little Owyhee-Snowstorms Wildlife Habitat Area.



Map 2. Location of the Little Owyhee-Snowstorms Wildlife Habitat Area

to 47°F. The area has an average frost free period of 70 to 120 days.

The basic geologic structure of the WHA is a continuation of the Snake River volcanic plateau to the north and east. Major lithologies are tertiary in age and range in composition from rhyolite to basalt. Triassic and Jurassic sedimentary rock outcrops occur on the southeast end of the area. These sedimentary rocks have been intruded by granodiorite of Cretaceous or Tertiary age.

Soils are derived from the rhyolite and basalts. Soil depth ranges from shallow to very deep. Soil surface textures are medium and subsoil textures range from medium to fine.

For more in-depth information on physical characteristics of the area, refer to the Paradise Planning Unit Resource Analysis.

2. General Vegetative Characteristics

The WHA is almost entirely located within the western portion of Major Land Resource Area 25 - Owyhee High Plateau. This area is dominated by a shrub-grass aspect characterized by big sagebrush or low sagebrush and by bluebunch wheatgrass, Idaho fescue, and Thurber's needlegrass. Other important plant species are bitterbrush, snowberry, curlleaf mountain mahogany, quaking aspen, willow, and serviceberry. Shadscale and winterfat are important species associated with the lower elevations.

Ecological site descriptions were developed by the Soil Conservation Service for Major Land Resource Area 25. These descriptions offer more detailed information on vegetative characteristics for the area. A list of the plant and animal species use in this document, including both common name and scientific name, is included as Appendix 1.

3. Biological Use Areas

a. Terrestrial Species

The biological use areas for priority species in this WHA are generally quite large (Maps 1 to 4, Appendix 2). Mule deer and pronghorn habitat condition is shown in Table 1 and was rated using BLM Manual Supplement 6630 Nevada State Office. Sage grouse habitat is also identified but not condition classified. Sage grouse habitat is rated fair to good due to the majority of ecological sites being in mid to late seral ecological condition.

The habitat evaluation of mule deer habitat revealed no limiting factors to the populations that proper grazing management would not handle. Further monitoring of habitat

TABLE 1.

Mule Deer, Pronghorn, and Sage Grouse Habitat Distribution by Allotment in WHA-4

Allotment Number	Allotment Name	Mule Deer Use Areas				Pronghorn Use Area				Sage Grouse Wintering Grounds	
		Name	No.	Acres	Condition a/	Name	No.	Acres	Condition a/	Acres	Condition b/
0031	Buttermilk	Santa Rosa	DSP-1	7,078	Fair	Santa Rosa	AY-1	2,714	Fair		
		Santa Rosa	DW-2	16,531	Good	Santa Rosa	AY-2	2,922	Fair		
				23,609				5,636	Fair		
0033	Bullhead	Snowstorms	DS-6	10,810	Good	Snowstorms	AY-1	49,661	Fair		
		Snowstorms	DY-3	30,816	Good						
				41,626	Good						
0034	Spring Creek	Santa Rosa	DSP-1	6,996	Fair	Santa Rosa	AY-2	1,023	Fair		
		Santa Rosa	DW-2	3,552	Good						
				10,548							
0035	Wm. Stock	Santa Rosa	DSP-1	1,585	Fair	Owyhee Desert	AY-1	411	Fair	583	
		Santa Rosa	DW-2	31,233	Good	Santa Rosa	AS-1	5,321	Fair		
				32,818		Santa Rosa	AY-1	11,662	Fair		
						Santa Rosa	AY-2	6,297	Fair		
								23,691			
0036	Little Owyhee	Santa Rosa	DS-1	8,252	Fair	Button Lake	AY-2	12,152	Fair	108,947	
		Santa Rosa	DSP-1	20,148	Fair	Owyhee Desert	AY-1	281,418	Fair		
		Santa Rosa	DW-2	15,793	Good	Santa Rosa	AS-1	2,776	Fair		
		Santa Rosa	DY-2	1,996	N/A	Santa Rosa	AY-1	209,553	Fair		
		Snowstorms	DY-3	12,711	Good	Santa Rosa	AY-2	13,212	Fair		
				58,900				519,111	Fair		
0045	Sugarloaf	Santa Rosa	DW-2	1,182	Good	Santa Rosa	AY-2	4,337	Fair		
			TOTAL	168,683				603,459		109,530	

a/ Mule deer and pronghorn habitat condition was rated by using a weighted average of all sites listed under the appropriate plant community. Site potential is approximately the same for all sites within each plant community. Ratings were calculated using BLM Manual Supplement 6630.

b/ Sage grouse habitat was not condition classified because of the lack of an adequate condition rating system. Overall condition is considered fair.

TABLE 2.

Bighorn Sheep Habitat by Plant Communities/Cover Types
and Associated Ecological Sites (S.F. Little Humoldt)

<u>Plant Communities/Cover Types (Ecological Sites)</u>	<u>Acres</u>
Meadow, Seasonally Wet (25-6 Dry Meadow 10-16" p.z.)	34
Wyoming Big Sagebrush/Bunchgrass (25-25 South Slope 8-12" p.z.) (25-19 Loamy 8-10" p.z.)	200 8,704
Mountain Big Sagebrush/Bunchgrass (25-12 Loamy Slope 10-16" p.z.)	52
Meadow, Permanently Wet (25-5 Wet Meadow 8-16" p.z.)	20
Basin Big Sagebrush/Bunchgrass (25-3 Loamy Bottom 8-14" p.z.) (25-14 Loamy 10-12" p.z.)	4,307 8,010
Low Sagebrush/Bunchgrass (25-18 Claypan 10-12" p.z.)	4,027
Riparian (25-1 Moist Floodplain 6-10" p.z.)	223
Quaking Aspen/Grass	23
Escarpments and Rock Outcrops	855
Talus Slopes & Boulder Fields	595

should be continued, with emphasis on the winter range in the southwestern portion of the WHA.

Pronghorn habitat evaluation showed water to be a potential limiting factor in some concentration areas. The pronghorn use these areas consistently, even though water is in some years over four miles away. This may be partially responsible for lower kid production and lower population numbers in these areas. The pronghorns affinity for specific wintering areas may also have a negative affect on the population during the heavy snowpack years of 1983 and 1984. Some prescribed burns in Wyoming sagebrush ecological sites would improve pronghorn habitat condition as well, but site potentials of the use areas will not allow the attainment of excellent pronghorn habitat condition under any circumstances.

Improvement of sage grouse habitat condition is directly related to the ecological status of the ecological sites in their use area. Utilization levels of these sites by livestock is also a factor. In general, the higher the ecological status is on upland sites, the better the sage grouse habitat. Meadows are somewhat an exception, as plant species preferred by sage grouse are more diverse and abundant at a lower seral stage. These plant species are also more palatable to sage grouse with moderate utilization by livestock. The most important factor concerning meadows is that utilization is not continuously heavy which leads to headcuts and the eventual loss of the meadow due to the lowering of the water table.

More detailed breakdown of mule deer, pronghorn, and sage grouse winter habitat is presented in Appendix 3.

1) South Fork Little Humboldt River Potential Bighorn Sheep Use Area

Bighorn sheep habitat (Table 2) for the South Fork Little Humboldt River potential use area was rated using the habitat suitability rating system described in the South Fork of the Little Humboldt River Bighorn Sheep Reestablishment Release Plan (Appendix 4).

The South Fork of the Little Humboldt potential bighorn sheep use area is rated high (0.89) or would support 89% of the bighorn sheep that the same acreage of optimum habitat would support.

2. Calico-Capitol Peak Potential Bighorn Sheep Use Area

The Calico-Capitol Peak potential bighorn sheep use area is located in the northwest portion of the WHA. Approximately 19,000 acres (Table 3) was evaluated as

TABLE 3.

Acres of the Calico-Capitol Peak Bighorn Sheep
Potential Use Area and Ownership/Administration

<u>Acres</u>	<u>Ownership/Administration</u>
10,169	BLM/BLM
4,169	USFS/BLM
<u>4,521</u>	Nevada First Corporation
18,850	TOTAL

to suitability for bighorn sheep habitat. This area is expected to be the initial reintroduction area, but once a successful reintroduction has been made and the population grows, movement to two adjacent areas is possible. One of these two areas, the Odell Mountain-Klondike Canyon area (administered by the USFS) could eventually allow interaction between a population on Calico-Capitol Peak and the present population of bighorn sheep in the Eight Mile Creek drainage to the west. The other area of potential movement is south to the North Fork Little Humboldt River. This may occur due to winter movements by the bighorn sheep to lower elevations. Both areas contain suitable bighorn sheep habitat.

The Calico-Capitol Peak area ranges from approximately 6,000 feet elevation to 8,364 feet on Capitol Peak. The area is a small north-south oriented mountain range separated from the main Santa Rosa Range by a high elevation basin. Vegetation is dominantly low sagebrush-perennial bunchgrass (Table 4). Ecological condition of the majority of these upland ecological sites ranges from mid-seral to late seral, with perennial bunchgrasses a relatively large component of the sites. This is based on preliminary data collected during the currently ongoing ecological status inventory in this area.

Water availability in the potential use area is good, with water being available on an average of approximately 1/2 mile. One exception to this is the southern portion south of Mahogany Pass, which contains an area of about 1,500 acres which contains no water.

Cover for bighorn sheep is plentiful throughout the area. The southern half of the use area is consistently broken up by medium size rimrocks and isolated rock outcrops. These vary greatly in size, but range from 7 to over 30 feet in height and from 20 to over 1,000 feet in length. The northern half of the use area contains large amounts of very rugged rock outcrops and rims. Many of these are over 100 feet tall and stretch for up to half a mile. These rocky areas are seldom completely vertical and are broken up enough for optimal use by bighorn sheep. Lambing cover, the most critical cover type needed by bighorn sheep, is most abundant near Capitol Peak itself. Other areas of suitable lambing cover is scattered throughout the rest of the area, but is of limited extent for a large population. Escape cover is plentiful throughout the potential use area and cannot be considered a limiting factor.

Forage is plentiful for a reasonable number of bighorn sheep. As stated previously, the ecological sites in the potential use area provide an adequate amount of forage for bighorn sheep due partially to a high composition of perennial bunchgrasses, the preferred forage species throughout most of the year. Past wildfire has reduced the shrub component and increased the grass and forb components on the west side of Capitol Peak. The grazing management system for the Little Owyhee Allotment, which includes all of the described potential use area, was developed to meet the phenological needs of the perennial grass species. Cattle use is restricted to fenced summer use areas and two (Antelope and Capitol) of four pastures are located in the bighorn sheep potential use area. Periodic rest and deferment of these summer pastures allows for potential improvement of the upland sites. Monitoring data collected to date indicates that the present level of livestock grazing in these use areas may not allow for attainment of all allotment management objectives developed in the CRMP plan. This especially pertains to meadows and riparian areas. However, there is more than adequate forage for bighorn sheep, considering areas that cattle can or have not utilized.

Bighorn sheep require more space than most other wildlife species. The Calico-Capitol Peak potential use area receives little use by humans other than during hunting seasons, when use is considered light due to more prime hunting areas elsewhere in the unit. Access is limited in most of the area and discourages much occasional use, especially in the more rugged, high elevation areas. Use by pronghorn and mule deer is light to moderate in preferred habitat and should not create competition for bighorn sheep. Cattle use is restricted to a period of less than four months each year and is rotated so that parts of the area receives rest or only light use. Cattle use is also light in the potential preferred use areas by bighorn sheep.

No conflicts can be expected from domestic sheep in this use area. The grazing allotment which contains the potential use area has no record of domestic sheep use and was adjudicated for cattle and horses in 1964. No domestic sheep use has occurred on USFS lands adjacent to the potential use area for approximately 20 years.

Approximately 24% of the potential use area is owned by Nevada First Corporation (NFC), which is primarily a strip of land going north from Capitol Peak. This strip of land contains some of the better expected summer range for bighorn sheep. Coordination for

reintroduction of bighorn sheep was completed with NFC during the CRMP process. However, management of an established population will require continued coordination between NFC and NDOW in the future.

b. Aquatic Species

The priority species of this HMP is the Lahontan Cutthroat Trout. Several streams exist that contain this species or have the potential to provide habitat for this or other trout species.

The WHA has parts of two major drainage systems, the Humboldt system and the Owyhee system (Map 3).

1. Little Humboldt System

- North Fork of the Little Humboldt River
- South Fork of the Little Humboldt River
 - Pole Creek
 - Snowstorm Creek
 - Winters Creek
 - First Creek
- Martin Creek
- Kelly Creek
- Kenny Creek

2. Owyhee System

- East Little Owyhee River

- Raven Creek

The streams in the Little Humboldt drainage system converge into the Little Humboldt River which flows into the Humboldt River. This entire drainage, which includes much of Elko County, terminates in a closed basin called the Humboldt Sink. Water from those streams in the Owyhee drainage system eventually enter the Snake River.

The Bureau's standard stream habitat survey documented broad scale habitat deterioration throughout the streams in this WHA (BLM 1976). Subsequent monitoring has documented the condition trends to be static or downward (Table 3). The primary cause is livestock grazing. More detailed maps of the streams are located in Appendix 4.

1) North Fork of the Little Humboldt River

The North Fork of the Little Humboldt River originates on the south face of Buckskin Mountain within the Humboldt National Forest. It flows southeasterly down the Santa Rosa Mountains and onto the Owyhee Desert where it eventually empties into Chimney Reservoir.

TABLE 4.

Vegetation and Habitat Types of the Calico-Capitol Peak
 BHS Potential Use Area Including Acres and Rating of
 Forage and Cover Values for Bighorn Sheep

	<u>Acres</u>	<u>Forage Value*</u>	<u>Cover Value</u>
Mountain big sagebrush - perennial bunchgrass	4,129	9	6
Wyoming big sagebrush - perennial bunchgrass	2,000	8	2
Low sagebrush - perennial bunchgrass	10,976	7	1
Meadow (Public only)	45	8-10	0
Curlleaf Mtn. Mahogany (Public only)	58	5	8
Aspen - Riparian (Public only)	51	2-5	2
Rock outcrops	1,600	-	10

*Based on Van Dyke, et. al. Wildlife Habitats in Managed Rangelands - The
 Great Basin of Southeastern Oregon - Bighorn Sheep. 1-Lowest to 10-Highest



Map 3. General location of major streams in the Little Owyhee-Snowstorms WHA.

TABLE 5. Specific habitat condition for aquatic species on major streams in the Little Owyhee-Snowstorm WHA.

	Stream Flow	Average Stream Width	Average Stream Depth	Spawning Gravels	Desirable Materials	% Sediment	% Pools	Pool/Riffle Ratio	Pool Quality	Bank Cover	Bank Stability	Habitat Optimum
<u>NORTH FORK OF THE LITTLE HUMBOLDT RIVER</u>												
8-23-76	4.1 cfs	15.2'	0.5'	11%	21%	57%	64%	72%	40%	46%	52%	46%
8-9-78	0.49	12.5'	0.5'	19%	44%	47%	34%	68%	7%	33%	46%	50%
8-26-80	1.2	15.4'	0.6'	41%	60%	19%	65%	71%	0	43%	74%	50%
8-31-82	0.47	12.6'	0.4'	20%	80%	44%	34%	68%	20%	35%	44%	49%
8-16-84	8.13	18.0'	0.7'	8%	72%	50%	57%	86%	14%	28%	36%	47%
<u>SOUTH FORK OF THE LITTLE HUMBOLDT RIVER</u>												
9-28-76	2.3 cfs	8.9'	0.3'	27%	46%	41%	59%	82%	45%	48%	54%	55%
8-10-82	0.94	11.0'	0.5'	32%	91%	36%	33%	66%	20%	34%	25%	47%
8-15-83	5.15	16.4'	0.55'	33%	78%	16%	14%	28%	14%	42%	44%	41.2%
9-24-85		13.3'	0.46'	66%	84%	23%	34%	68%	55%	25%	39%	54%
<u>FIRST CREEK</u>												
9-29-76		3.8'	0.07'	41%	52%	24%	43%	86%	0	77%	73%	57%
3-10-82	Dry									42%	41%	
8-16-83		4.6'	0.19'	40%	87%	7%	24%	48%	0	40%	65%	48%
8-12-85		3'	0.1'	35%	93%	44%	42%	84%	0	21%	30%	46%
<u>POLE CREEK</u>												
8-27-76	0.6 cfs	4.6'	0.1'	50%	55%	17%	7%	14%	0	58%	73%	40%
8-10-82		3.3'	0.2'	77%	92%	4%	0	0	0	42%	39%	27%
8-17-83		5.6'	0.3'	56%	100%	0	7%	14%	0	34%	31%	36%
8-24-85		5.5'	0.2'	57%	80%	0	0	0	0	28%	38%	29%

The elevation varies from 7000' in the upper watershed to 4500' at the reservoir. It is the 25 mile stretch of river that extends from the Humboldt National Forest downstream to just above the reservoir that is within the scope of this HMP.

Once the river leaves the BLM/USFS boundary line, it is characterized by steep, narrow canyons. It is believed that the early drainages followed discontinuities in the volcanic substrate and the resultant erosion formed narrow canyons with steep, vertical walls extending several hundred feet above the present river level. This geological phenomenon formed a gorge seven miles long, extending from just below the Humboldt National Forest boundary to Greely Crossing. A second gorge was formed 2.5 miles below Greely Crossing which extends 15 miles downstream to just above the reservoir.

The stream habitat condition in the North Fork is rated poor and the trend is static. One of the identified causes is livestock grazing (Paradise URA). That part of the stream within the Humboldt National Forest is also in less than desirable condition for trout. Summer water temperatures over 80° F were recorded at the boundary.

NDOW presently intends to manage the stream for sport fishing rather than Lahontan cutthroat trout management. Fish species in the North Fork include brown trout, brook trout, rainbow trout, Lahontan cutthroat trout, and channel catfish. The North Fork flows into the Chimney Creek Reservoir which also has walleye, largemouth bass, and white crappie. There are no barriers to fish movement on the North Fork.

2) South Fork of the Little Humboldt River

The South Fork of the Little Humboldt River begins on the north slope of the Snowstorm Mountains at about 7,000 feet. Several streams are tributary to the South Fork. Those within the WHA are First Creek, Snowstorm Creek, Winters Creek and Pole Creek. There are many smaller ephemeral drainages that flow into the South Fork which have potential to support much riparian habitat.

The South Fork flows northerly then westerly for about 21 miles within the WHA before entering Chimney Reservoir. Ten miles of this stream flow through public land and have been fenced for protection against livestock grazing. The fence was completed in 1985.

The stream is slightly to moderately alkaline in nature with an average PH of 8.3 (measured in 1979 and 7.4 in 1983 (BLM water quality inventory 1979 and 1983)). Flows were documented to range from .94 CFS (BLM Stream Survey 1982) to 473 CFS (USGS Water Data Report for Nevada 1980).

The South Fork supports a population of Lahontan cutthroat trout (Humboldt strain). Other fish species reported to exist in the South Fork are the Lahontan red shiner, speckled dace and the Lahontan mountain sucker. There is an artificial barrier designed to keep fish from Chimney Reservoir from traveling upstream.

Stream habitat condition on the South Fork fluctuates between fair and poor. A major identified problem has been livestock grazing (Paradise URA).

3) Tributaries to the South Fork

- a) First Creek begins its flow in the Snowstorm Mountains at about 6800 feet and flows northeasterly for about six miles. The headwaters and the upper three miles flow through privately owned lands. The lower three miles are public and flow through a steep gorge. Naturally protected from grazing they are in good to excellent shape (BLM Stream Survey). First Creek is ephemeral and is dry during moderately dry years. There are undocumented reports that Lahontan cutthroat trout use the lower parts of the stream for spawning during the spring.
- b) Snowstorm Creek is approximately eight miles in length and begins its flow at the 7200 foot level and is similar in nature to First Creek. The headwaters and the upper one half of the stream flow through private land with only the gorge area transversing public land. There is no habitat condition survey on Snowstorm Creek but personal observations by the district biologist indicate little difference in habitat condition from First Creek.
- c) Winters Creek, an ephemeral stream, originates at the 7000 foot level on the Snowstorm Mountains and flows easterly to the South Fork of the Little Humboldt River. Approximately 2.5 miles of this four mile long stream flow through private land. The public portion of the stream flows through a steep and spectacular gorge. There is no habitat survey on Winters Creek.

d) Pole Creek supports a population of Lahontan cutthroat trout. It is a small perennial stream with midsummer flows less than one CFS (BLM stream survey). It begins its flow at 7800 feet on the mountain and flows approximately 5 miles to the South Fork. The stream almost entirely flows through private land and the habitat rating is poor. Livestock grazing is an identified cause (Paradise URA).

4) East Fork Little Owyhee and Tributaries

The East Fork Little Owyhee and tributaries originates on the eastern slope of the Santa Rosa Mountains near Capitol Peak. The headwaters and approximately 18 miles of this system lie within the WHA. They eventually flow into the South Fork of the Owyhee River. Habitat information for these streams is scarce. They are ephemeral except for a few small stretches downstream from springs. Rainbow trout are present in the East Little Owyhee River, but the status of this population, or other populations in tributaries is unknown.

The streams are important water sources for both cattle and wild horses. Riparian habitat is declining.

5) Kelly Creek

The condition of riparian habitat in Kelly Creek varies from section to section. The lower sections on private land beginning at T. 39 N., R. 44 Section 6 NWNW are in good condition. Grassy meadows and willow thickets are increasing, aiding in the stabilization of stream banks and creation of pools. High and severe cut banks are characteristic of the whole lower watershed. The stream channel was as wide as 20-30 feet. The management of grazing has allowed the reduction of the channel width to less than 10 feet. In addition, the reestablishment of riparian vegetation has created large pools.

There is a light scattering of mature aspen with a few large stands, above T. 39 R. 44 Sec. 5 NWNE. However, this area is in poor condition with unstable cut banks and punched-out grassy meadows quite common. This is an area of intermingled private and public land.

The riparian habitat condition upstream of the WHA boundary is better with scattered dense thickets of willow and aspen.

6) Kenny Creek

Only the lower sections of Kenny Creek were analyzed. The condition of this area is poor since it is vegetated only by grasses and sagebrush. In addition, there is excessive bank cutting.

7) Martin Creek

Martin Creek originates in the Santa Rosa Mountains and is approximately 37 miles long. Six miles are on public land. A 1986 stream survey indicates that the public stream miles are in good habitat condition. This is primarily due to good quality pools, however, bank stability and cover are fair to poor. Martin Creek has the greatest flow of any stream in the District and the public stream miles have much potential to support a recreational fishery, but management is needed.

4. Special Habitat Features

Table 4 shows the acreages of special habitat features in the WHA, according to current inventories. Each is broken down by an allotment and pasture basis.

a. Riparian:

There are approximately 705 acres of riparian habitat* in the WHA. This acreage can be broken down as follows:

S. Fork Little Humboldt River	151 acres
N. Fork Little Humboldt River	194 acres
Martin Creek	84 acres
Remainder of WHA	276 acres ¹

Common trees and shrubs associated with the riparian zones are quaking aspen, willow, chokecherry, rose and buffaloberry.

Most of the riparian habitat is located along the larger streams but the small isolated zones also provide important habitat diversity.

Since no ecological sites have yet been described for different riparian zones in terms of site potential, overall condition is somewhat subjective. The riparian habitat in the WHA ranges from poor to good condition. The majority could be classified as in fair condition.

*Riparian habitat, in this case, is considered vegetation associated with live water.

TABLE 6. Acreages of Special Habitat Features in the Little Owyhee-Snowstorms WHA on an allotment and pasture basis.

Allotment	Meadow	Riparian	N.F. L. Humboldt Riparian	N.F. L. Humboldt Meadow	Martin Cr. Riparian	Ceanothus	S.F. L. Humboldt Riparian	S.F. L. Humboldt Meadow	Mountain Mahogany	Aspen
Spring Creek										
West		10								
Spring Cr.	15									
East	5									
Total	20	10								
William Stock										
Winter	1	2								
Mud Spring	20	5	64	8						
Charlie Young	32	17								
Total	53	24	64	8						
Little Owyhee										
Antelope	126	10	46	52					25	
Fairbanks		1	84							
Capitol	117	25				18			34	
Twin Valley Spr.	688									
(Button Lake)										
Rock Spr.	85	3							1	
Lake Creek	2							3		
Total										
Buttermilk	1			84						
Bullhead										
Kinney	46	26								35
Kelly Burn	34	4								196
First Crk.	1						17	45		
Snowstorm Flat	36	172					134	19		14
Castle Ridge	1									
Total	558	276	194	60	84	18	151	67	60	266
1246										

b. Meadows

There are approximately 685 acres of wet and dry meadow in the WHA. Meadows are concentrated in two major portions of the WHA: the northwestern portion of the WHA along the east slope of the Santa Rosa Range and Capitol Peak; and in the Snowstorm Mountains. Other meadows are scattered throughout the WHA and are associated with isolated spring and seep areas, and along perennial streams. Overall condition of these meadows is fair or mid-seral. Button Lake, which is a unique ecological site, has been described as a meadow. This 688 acre site is dominated by creeping wildrye and mat muhly.

c. Aspen

There are approximately 266 acres of aspen which are located outside of the stream drainages. The majority of this aspen is located in the Snowstorm Mountains (245 acres). Overall condition can be considered good. Light livestock grazing and a burn closure has allowed the aspen to produce moderate sucker growth and expand in recent years. The wildfire in the area also acted to rejuvenate many stands.

d. Curlleaf Mountain Mahogany

Mahogany is rare in the WHA. Approximately 60 acres of mahogany are restricted to the Calico Mountains in the northwest portion of the WHA. Small isolated stands are prone to over-utilization by livestock and wildlife. However, with some exceptions, reproduction has been adequate and the overall condition is fair to good.

e. Ceanothus

Ceanothus is restricted to 18 acres at the highest elevations of the Calico Mountains. Overall condition for the ceanothus in the WHA can be considered fair at best.

f. Bitterbrush

General field observations indicate that bitterbrush is limited to the southwestern portion of the WHA west of the N. Fork Little Humboldt River. In the areas where bitterbrush exists, it is potentially one of the dominant shrub species of some ecological sites. Overall condition of the species is fair and observed utilization levels are moderate.

g. Serviceberry

This species is common in the WHA at the higher elevations. It is classified as a portion of the shrub component in Mountain big sagebrush-grass dominated ecological sites. This species generally sustains moderate to heavy utilization by livestock and wildlife. Overall condition of this plant species is poor to fair even though the condition of the ecological site may be at a higher seral stage.

h. Rock Outcrops and Gorges

This special habitat feature is common throughout the WHA and is characteristic of the Snake River volcanic plateau. No acreage or distribution was computed for it.

C. Relevant Constraints

1. Land Use Plan

This plan was developed to be consistent with the Paradise-Denio Management Framework Plan (MFP) decisions and the District Standard Operating Procedures.

2. Coordinated Resource Management Planning (CRMP)

This plan is consistent with the objectives developed for the Little Owyhee and Bullhead allotments and included in their respective CRMP documents.

3. This plan is consistent with the Nevada Department of Wildlife's Lahontan Cutthroat Trout Fishery Management Plan for the Humboldt River Drainage Basin, signed by the BLM which requires improvement of Lahontan Cutthroat Trout habitat.

4. This plan is consistent with the U.S. Fish and Wildlife Service's draft Recovery Plan for the Lahontan Cutthroat Trout.

5. This plan complies with the Endangered Species Act (as amended) which restricts any actions which may be harmful to any population of any species officially designated as threatened or endangered.

D. Sikes Act Authority Statement

This HMP will be implemented under authority of the Sikes Act and the Memorandum of Understanding between BLM and NDOW.

II. LAND STATUS/ADMINISTRATION

This WHA contains over 800,000 acres (Appendix 2, Map 5). The boundaries were established to include as much of biological use areas of the primary species as possible.

<u>Ownership</u>	<u>Administration</u>	<u>Acres*</u>
BLM	BLM	774,966
USFS	BLM	6,468
Private	Private	50,288
	TOTAL	831,722

*These acreages were computed digitally and may not correspond to the Master Title Plats.

III. Management Objectives

A. General Objectives

1. Improve and maintain a sufficient quantity, quality and diversity of habitat for all species of wildlife in the WHA.
2. 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 a healthy fish community.

B. Specific Objectives

1. Lahontan cutthroat trout waters

Improve the condition of the habitat for Lahontan cutthroat trout:

a. South Fork Little Humboldt River

- 1) Increase overall fish habitat quality from 48% of optimum (Poor) to a minimum of 60% (good to excellent)
- 2) Reduce sedimentation from 31% to 10% or less
- 3) Increase bank cover from 41% (poor) to a minimum of 60% (good to excellent)
- 4) Increase bank stability from 41% (poor) to a minimum of 60% (good to excellent)
- 5) Decrease summer water temperatures to below 70° F

b. Tributaries of South Fork Little Humboldt River

Increase the overall habitat condition from an average less than 50% optimum to a minimum of 60% (good to excellent).

2. Other Waters

a. North Fork Little Humboldt River

Improve fish habitat on that portion of the stream in the WHA to support a stable and usable sport fish population. This entails;

- 1) Improve overall habitat condition from 48% (poor) to a minimum of 60% (good to excellent)
- 2) Reduce sedimentation from 43% to 10% or less.

- 3) Increase bank cover from 37% (poor) to a minimum of 60% (good to excellent)
- 4) Decrease summer water temperatures to below 70° F.

b. Martin Creek

Improve overall fish habitat condition on that portion of the stream in the WHA to a minimum of 60% of optimum (good to excellent).

c. Kelly Creek

Improve overall fish habitat condition on that portion of the stream in the WHA to a minimum of 60% of optimum (good to excellent).

d. East Little Owyhee River

Improve overall fish habitat condition to a minimum of 60% of optimum (good to excellent).

3. Terrestrial Habitats

Specific objectives are described as to broad vegetative types (groups of similar ecological sites) within wildlife biological use areas and are tied to specific grazing allotments. Presently, an ecological site and condition class inventory and a soil survey are in progress on some of this WHA. When this information is finalized and available, the vegetative type objectives may be separated into objectives for each ecological site.

a. Bullhead Allotment

1. Mountain big sagebrush-perennial bunchgrass ecological sites.
 - Maintain habitat condition in good condition for mule deer and improve to late seral ecological condition by 1995.
2. Wyoming big sagebrush-perennial bunchgrass ecological sites.
 - Maintain habitat condition in good condition for mule deer and improve to late seral ecological condition by 1995. Maintain a minimum of 30% composition of shrubs in important mule deer winter range.
3. Low sagebrush-perennial bunchgrass ecological sites.
 - Maintain or improve habitat condition to fair-good condition for pronghorn antelope by improving to late seral ecological condition by 1995.

4. Meadow ecological sites

- Improve or maintain condition in mid seral ecological condition by 1995.
- Stabilize all meadow soils to eliminate head-cutting and any decrease in meadow size.

5. Aspen ecological sites

- Maintain all aspen stands in late seral ecological condition and assure that no aspen stands are lost by 1991.
- Improve deteriorated stands to the point that the stand can reproduce itself to maintain the same acreage as originally covered.

6. Riparian zones

- Improve all riparian zones to good condition by 1995.
- Increase occurrence of woody riparian species including, but not limited to, aspen and willow.
- Show an increasing trend of desirable riparian species by 1990.

7. South Fork Stream Exclosure

- Refer to specific objectives for South Fork Little Humboldt River.
- Achieve by 1991.

8. South Fork Potential Bighorn sheep use area.

- Establish a viable population of bighorn sheep in this area.
- Improve or maintain habitat to late seral ecological condition.
- After reestablishment of bighorn sheep, manage habitat to reach Potential Native Community (PNC).

b. Little Owyhee Allotment

1) Mountain big sagebrush-perennial bunchgrass ecological sites.

- Improve habitat condition to reach late seral ecological condition by 1996.

2) Wyoming big sagebrush-perennial bunchgrass ecological sites.

- Improve habitat condition to reach late seral ecological condition by 1996.

DRAFT

- Maintain a minimum shrub composition of 30% in mule deer and pronghorn antelope winter ranges.
- 3) Low sagebrush-perennial bunchgrass ecological sites.
 - Improve habitat condition to late seral ecological condition by 1996.
- 4) Meadow ecological sites
 - Improve or maintain all meadows from fair condition to mid seral ecological condition by 1996.
 - Stabilize all meadow soils to eliminate head-cutting and any decrease in meadow size.
- 5) Aspen
 - Improve aspen stands to late seral ecological condition by 1996.
 - Improve all deteriorated aspen stands to guarantee that none are lost and each is able to reproduce itself to reach its original acreage.
- 6) Riparian Zones
 - Improve all riparian zones to good condition by 1996.
 - Increase occurrence of woody species such as aspen and willow.
 - Show an increasing trend of desirable riparian species by 1990.
- 7) Curleaf mountain mahogany
 - Maintain present stands of mahogany and improve as necessary to ensure adequate reproduction of the species.
- 8) Ceanothus
 - Improve existing stands of ceanothus to achieve complete occupation of the ecological site by the species.
 - Improve all stands to late seral ecological condition by 1996.
- 9) Bitterbrush and Serviceberry
 - Improve the ecological sites containing these species to late seral ecological condition (generally included in Mountain big sagebrush-perennial bunchgrass vegetative types) by 1996.
 - Maintain or increase the composition of these two species within the ecological sites.

10) Enclosures

There are four wildlife habitat enclosures in the Little Owyhee allotment. Objectives for each are as follows:

- Mahogany Ridge Meadow Enclosure - Improve the meadow ecological sites to late seral ecological condition by 1991.
- Owyhee Reservoir No. 3 Enclosure - Improve the riparian zone within the enclosure to late seral ecological condition and/or maintain utilization by livestock at zero until 1996.
- Antelope Springs Meadow Enclosure - Improve the meadow ecological sites to late seral ecological condition and increase meadow size by 25% by 1996.
- Lone Willow Meadow Enclosure - Improve and maintain the meadow in late seral ecological condition by 1991.

11) Calico-Capitol Peak Potential Bighorn Sheep Use Area

- Establish a viable population of bighorn sheep in this area.
- Improve or maintain potential habitat in late seral ecological condition.
- After reestablishment of bighorn sheep, manage habitat to reach PNC.

c. William Stock, Spring Creek, Buttermilk, Sugarloaf, and Martin Creek Allotments

- 1) Mountain big sagebrush-perennial bunchgrass ecological sites.
 - Improve to late seral ecological condition while maintaining or increasing composition of bitterbrush and serviceberry within the site.
- 2) Wyoming big sagebrush-perennial bunchgrass ecological sites.
 - Improve to late seral ecological condition.
 - Maintain a minimum of 30% shrub composition in mule deer and pronghorn antelope winter range.
- 3) Low sagebrush-perennial bunchgrass ecological sites.
 - Improve to late seral ecological condition.

4) Meadow ecological sites.

- Improve to mid seral ecological condition and/or stabilize meadow soils to eliminate head-cutting and any decrease in meadow size.

5) Riparian Zones

- Show an increasing trend in all riparian zones in relation to desirable riparian species.
- Increase occurrence of woody species such as willow and aspen.

6) Bitterbrush and Serviceberry

- Maintain or increase the composition of these two species within the ecological sites which contain them.

7) Aspen

- Improve all deteriorated aspen stands to guarantee that none are lost and each is able to reproduce and reach its original acreage.

- d. Provide forage for reasonable numbers of big game species. Estimated forage use required to reach this objective by allotment is as follows:

<u>Allotment</u>	<u>Deer AUMs</u>	<u>Antelope AUMs</u>	<u>BHS* AUMs</u>
Bullhead	1,029	101	370
Buttermilk	300	12	
Little Owyhee	300	1,233	72
Spring Creek	150	48	
Sugarloaf	75		
William Stock	170	36	

*Bighorn sheep have not yet been reestablished in the HMP area.

e. Allowable utilization levels

Use the allowable utilization levels as recommended in the Paradise-Denio Grazing Environmental Impact Statement for key management species (Table ____). These figures are the maximum averages allowable use levels for the species under continuous use. These levels may be exceeded in specific cases under intensive management. However, before exceeding allowable utilization levels, all other management objectives for the grazing allotment or area of use should be evaluated to determine if the higher utilization levels will allow for attainment of those objectives.

TABLE ____.

Key Management Species and Allowable Utilization Levels.

Key Management Species	Allowable Utilization Levels
<u>Grasses</u>	
Nevada bluegrass (<u>Poa nevadensis</u>)	50
basin wildrye (<u>Elymus cinereus</u>)	50
crested wheatgrass (<u>Agropyron cristatum</u>)	50
bluebunch wheatgrass (<u>Agropyron spicatum</u>)	50
Thurber needlegrass (<u>Stipa thurburiana</u>)	40
needle-and-thread grass (<u>Stipa comata</u>)	50
bottlebrush squirreltail (<u>Sitanion hystrix</u>)	40
Idaho fescue (<u>Festuca idahoensis</u>)	40
Indian ricegrass (<u>Oryzopsis hymenoides</u>)	50
Webber ricegrass (<u>Oryzopsis webberi</u>)	50
<u>Forbs</u>	
tapertip hawksbeard (<u>Crepis acuminata</u>)	50
globemallow (<u>Sphaeralcea</u> spp.)	15
arrowleaf balsamroot (<u>Balsamorhiza sagittata</u>)	30
Hooker balsamroot (<u>Balsamorhiza hookeri</u>)	5
<u>Shrubs</u>	
winterfat (<u>Eurotia lanata</u>)	50
antelope bitterbrush (<u>Purshia tridentata</u>)	50
Saskatoon serviceberry (<u>Amalanchier alnifolia</u>)	40
quaking aspen (<u>Populus tremuloides</u>)	40
curlleaf mountain mahogany (<u>Cercocarpus ledifolius</u>)	50
Mormon-tea (<u>Ephedra nevadensis</u>)	30
snowberry (<u>Symphoricarpos</u> spp.)	40
bud sagebrush (<u>Artemisia spinescens</u>)	30
spiny hopsage (<u>Grayia spinosa</u>)	20
willow (<u>Salix</u> spp.)	30

Other key species may be identified for specific ecological sites or habitat types as more site specific information is gathered. The allowable utilization levels for these species should reflect the phenology and growth requirements of the species.

IV. Planned Actions

The planned actions will be covered by allotment and are fully correlated with wildlife use areas. Wildlife habitat improvement projects are shown on Map 6 of Appendix 2.

A. Bullhead Allotment - I Allotment

The specific planned actions for this allotment were covered for the most part in the CRMP Plan. Those pertaining directly to wildlife/fisheries are:

1. Fence Castle Ridge Field from First Creek Basin Field and Snowstorm Flat Field in a manner to exclude livestock from the S. Fork Little Humboldt River riparian zone except at specified watering areas. This enclosure was completed in 1985 and will be rested until aquatic habitat condition is good to excellent and upland sites reach late seral ecological conditions to PNC.
2. Develop fenced waterfowl habitat on a portion of all new reservoirs developed on live water streams or springs. (Although a CRMP action, each project should be evaluated on a case by case basis).
3. Establish a viable population of bighorn sheep in the South Fork Little Humboldt River potential use area.

Other planned actions may be required to achieve one or more of the objectives for this allotment. At this time, however, no other specific actions are planned by the wildlife program in this allotment, other than monitoring.

B. Little Owyhee Allotment - I Allotment

This allotment has also been carried through the CRMP process. Wildlife objectives and planned actions were developed as part of the CRMP. The grazing system is of the rest-rotation type and contains three large spring pastures and four small summer pastures.

Planned actions that are contained in the CRMP and that pertain directly to the wildlife program are:

1. Fence the North Fork Little Humboldt River to exclude livestock use except at identified water gaps to improve riparian habitat.
2. Fence 1/2 of Piccolo (Owyhee No. 3) reservoir. This CRMP action has been completed. Objectives are included in this plan.

3. Fence a one acre study exclosure on Button Lake.
4. Develop fenced waterfowl habitat on a portion of all new reservoirs developed on live water streams or springs. (Although a CRMP action each project should be evaluated on a case by case basis).
5. Develop artificial watering sources for wildlife in areas where water is the limiting factor for wildlife use.
6. Establish monitoring system for all wildlife habitat objectives.
7. Establish a viable population of bighorn sheep in the Calico-Capitol Peak potential use area.

The summer pastures and Fairbanks pasture of the Little Owyhee Allotment may require additional actions on special habitat features to obtain the objectives of this HMP, as well as CRMP objectives. These wildlife program actions will be on specific meadows, aspen stands, mountain mahogany, ceanothus patches, or riparian areas. Specific actions will be developed later for these areas as monitoring shows the need.

Other wildlife habitat actions for the Little Owyhee allotment have already been completed. These are three exclosures around important but deteriorated meadow complexes. Objectives for these projects are included in this plan.

C. William Stock Allotment - M Allotment

This allotment has a grazing system consisting of two seasonal use areas (Spring and Summer). Each area has three pastures which are used in a rest-rotation system.

1. Evaluate and monitor special habitat features in the allotment.
2. Fence the North Fork Little Humboldt River above Greely Crossing to improve the aquatic habitat condition. This correlates to the CRMP planned action for the Little Owyhee allotment.

D. Spring Creek Allotment - M Allotment

This allotment has an AMP and has a two pasture rest-rotation system on a total of four pastures. In reality, two pastures are grazed each year and two are rested, resulting in a one year flip-flop. No actions are scheduled for this allotment at this time, other than monitoring special habitat features.

E. Sugarloaf Allotment - M Allotment

This allotment has a grazing system in place which is a one year flip-flop between two pastures. This is a small allotment and the

grazing system appears to be working well. No planned actions are scheduled for this allotment at this time.

F. Buttermilk Allotment - M Allotment

The grazing use is presently divided between three seedings and the native pasture. The seedings are used first and then the native pasture is used each year. The period-of-use is a short period in the spring, usually April through May. The only planned action is to evaluate and monitor Martin Creek for fisheries habitat, due to a recent land exchange which gave the Bureau control of a larger portion of this stream.

G. Martin Creek Allotment - M Allotment

This allotment was recently separated from the Buttermilk Allotment and is also used in the spring. At this time the only planned action on this allotment is the evaluation and monitoring of Martin Creek.

V. Evaluation and Monitoring

WHA monitoring is coordinated with allotment monitoring in accordance with the Winnemucca District Coordinated Monitoring Plan.

The Bullhead Allotment Monitoring Plan was finalized in July of 1986 and a Decision to Monitor was issued. Specific studies and key areas are covered in this plan. The plan also specifies evaluation procedures for the monitoring data that is being collected.

The monitoring plan for the Little Owyhee allotment is scheduled to be completed in 1987. The majority of key areas have been selected at this point and some data has been collected. Some studies remain to be established, primarily those on special habitat features such as meadows, riparian areas, and mountain mahogany stands.

The remaining allotments do not have high priority for monitoring at this time. Monitoring by the wildlife program will continue on special habitat features as described in the planned actions section of this HMP. This evaluation process will indicate if additional actions are needed in these lower priority allotments.

VI. Habitat Management Plan Progress Report

See Appendix 7.

VII. Coordination with Other BLM Programs, Agencies, and Organizations

The objectives and actions used in this HMP were coordinated with other Bureau programs, private and public interests during the CRMP process. The HMP management objectives and planned actions were developed based on objectives and actions of the CRMP plans.

Objectives for monitoring plans have been developed in coordination with the range, wild horse and watershed programs and must continue to be in future monitoring efforts.

Coordination with the range program is needed on grazing systems and changes in grazing use and proposed land treatments to determine potential impacts on wildlife habitat. Coordination with the mining program is required for potential mining operations in the WHA.

The Nevada Department of Wildlife was coordinated with during the development of this HMP and additional coordination with other State agencies was completed during the State Clearinghouse review.

Coordination between NDOW, BLM and Nevada First Corporation (NFC) is essential concerning the Calico-Capitol Peak Bighorn Sheep Potential Use Area due to 24% of the area being owned by NFC. The CRMP plan included coordination on the reintroduction, but future management of the bighorn sheep population requires continued coordination.

The Fish and Wildlife Service completed a Section 7 consultation on actions which might affect the threatened Lahontan cutthroat trout and is included as part of the Bullhead CRMP Plan.

VIII. Wildlife Economics

It was decided to use the SAGERAM program to evaluate the planned actions of this HMP (Appendix 8).

Note: The values used for hunter/angler days, etc., in the SAGERAM program may be lower than those values which have been documented in Nevada. This will lower the value of wildlife habitat improvements as well as the final benefit cost ratio.

The all cost benefit/cost ratio for planned actions of this HMP is 5.5/1, with an IROR of 64.9%.

IX. Concurrence and Approval

This HMP contains the wildlife habitat objectives and planned actions for the Little Owyhee-Snowstorm Wildlife Habitat Area (N2-WHA-4). Revisions and amendments to this plan can be made if coordinated with the Nevada Department of Wildlife and approved by the Winnemucca District Manager. This Habitat Management Plan is approved upon signature of the Regional Supervisor and the Winnemucca District Manager on the following Form NSO 6520-1. Inventory Wildlife Habitat Project and/or Habitat Management Plan.

X. HMP Development Costs and Implementation Schedule

See Appendix 9.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

INVENTORY
WILDLIFE HABITAT PROJECT AND/OR HABITAT MANAGEMENT PLAN

District: Winnemucca

Prepared by: _____

Reviewed by: _____

BLM District Wildlife Specialist Date

NDOW District Representative Date

Name of Project or Plan Little Owyhee-Snowstorm Habitat Management Plan

Location of Project or Plan North central Nevada including portions of Humboldt and Elko counties

Species Benefited Mule deer, pronghorn antelope, California bighorn sheep, Lahontan cutthroat trout, and sage grouse are the priority species of this area

Description of Job or Project Combines Coordinated Resource Management Planning efforts including objectives and actions with the approved land use plan decisions into the wildlife habitat activity plan. The general objective of this plan is to improve and maintain habitat for all wildlife species in the planning area. Important planned actions include fencing of important wildlife areas, artificial wildlife water developments, reintroduction of California bighorn sheep into two potential use areas, reserving forage for big game species, and monitoring of wildlife habitat.

Justification and Priority This Wildlife Habitat Area contains habitat for the Threatened Lahontan cutthroat trout and potential habitat for the sensitive California bighorn sheep.

Cost and Manpower Estimates Monitoring and maintenance of projects will require approximately 1 WM per year. Most structural projects are in place and additional costs will be determined as monitoring shows the need for any additional projects.

Cooperative Funding (if any) No funding needs have been identified at this time as being needed from NDOW. NDOW will monitor populations and be responsible for costs associated with the reintroduction of California bighorn sheep.

Approved:

District Manager, BLM Date

Region I Supervisor, NDOW Date

Region II Supervisor, NDOW Date

NV 6520-1 (February 1985)

APPENDICES

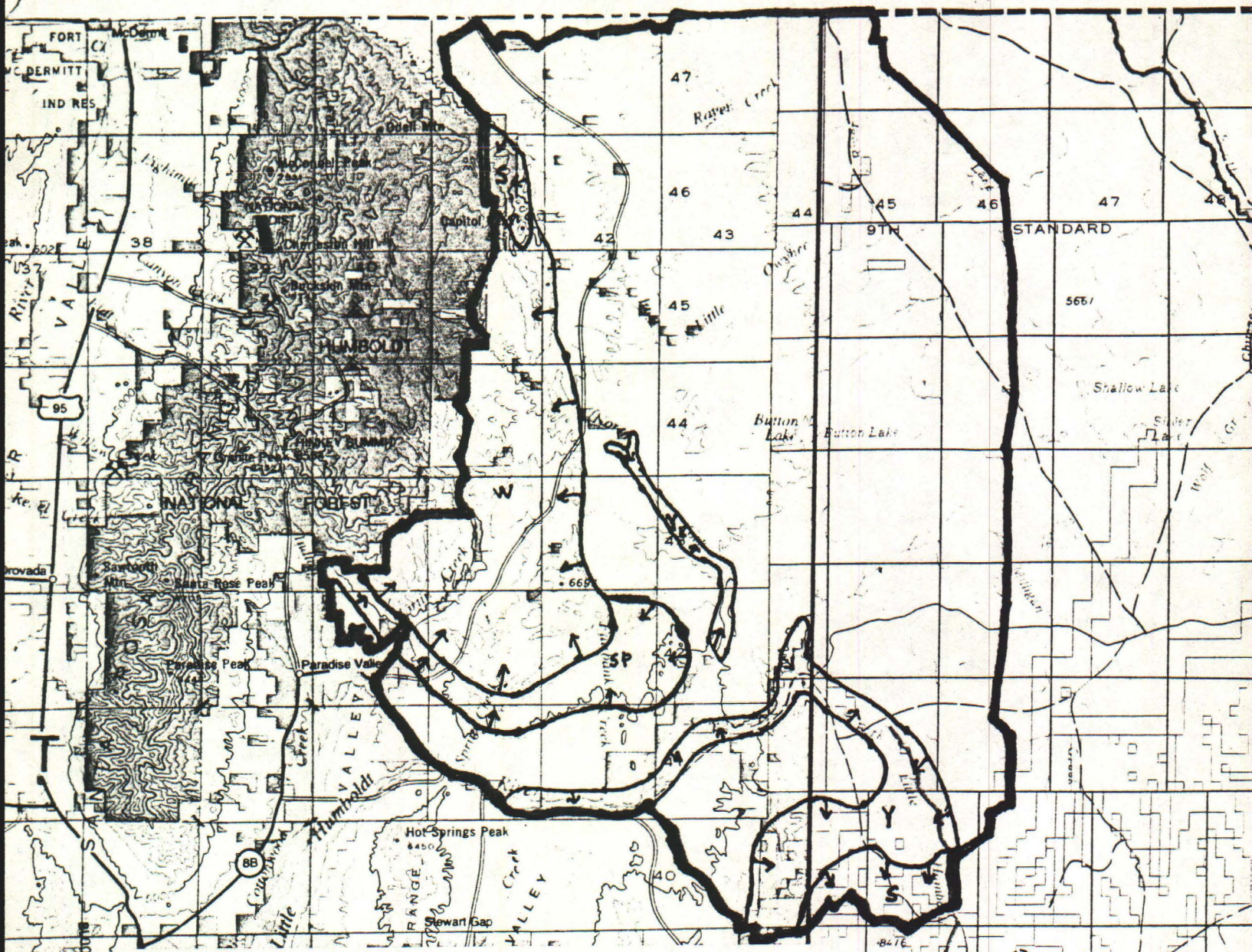
Appendix 1

Common and Scientific names of plants and animals






<u>Common Name</u>	<u>Scientific Name</u>
Plants	
Wyoming big sagebrush	<u>Artemisia tridentata wyomingensis</u>
Mountain big sagebrush	<u>Artemisia tridentata vaseyana</u>
Basin big sagebrush	<u>Artemisia tridentata tridentata</u>
Low sagebrush	<u>Artemisia arbuscula</u>
bluebunch wheatgrass	<u>Agropyron spicatum</u>
Idaho Fescue	<u>Festuca idahoensis</u>
Thurber's needlegrass	<u>Stipa thurberiana</u>
antelope bitterbrush	<u>Purshia tridentata</u>
snowberry	<u>Symphoricarpos oreophilus</u>
Ceanothus	<u>Ceanothus velutinus</u>
curlleaf mountain mahogany	<u>Cercocarpus ledifolius</u>
quaking aspen	<u>Populus tremuloides</u>
willow	<u>Salix spp</u>
serviceberry	<u>Amelanchier spp.</u>
Shadscale	<u>Atriplex confertifolia</u>
Winterfat (white sage)	<u>Eurotia lanata</u>
Animals	
Lahontan cutthroat trout	<u>Salmo clarkii heshawi</u>
California bighorn sheep	<u>Ovis canadensis californianus</u>
Mule deer	<u>Odocoileus hemionus</u>
Pronghorn antelope	<u>Antilocapra americana</u>
Sage Grouse	<u>Centrocercus urophasianus</u>
Rainbow trout	<u>Salmo gairdneri</u>
Brown trout	<u>Salmo trutta</u>
Brook trout	<u>Salvelinus fontinalis</u>
Walleye	<u>Stizostedion vitreum</u>
Largemouth bass	<u>Micropterus salmoides</u>
white crappie	<u>Pomoxis annularis</u>
channel catfish	<u>Ictalurus punctatus</u>
Lahontan red shiner	<u>Richardsonius egregius</u>
speckled dace	<u>Rhinichthys osculus</u>
Lahonatan mountain sucker	<u>Pantosteus lahontan</u>

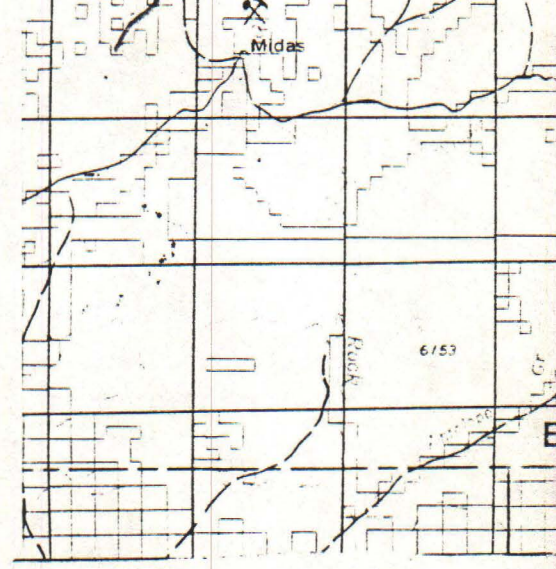
APPENDIX 2

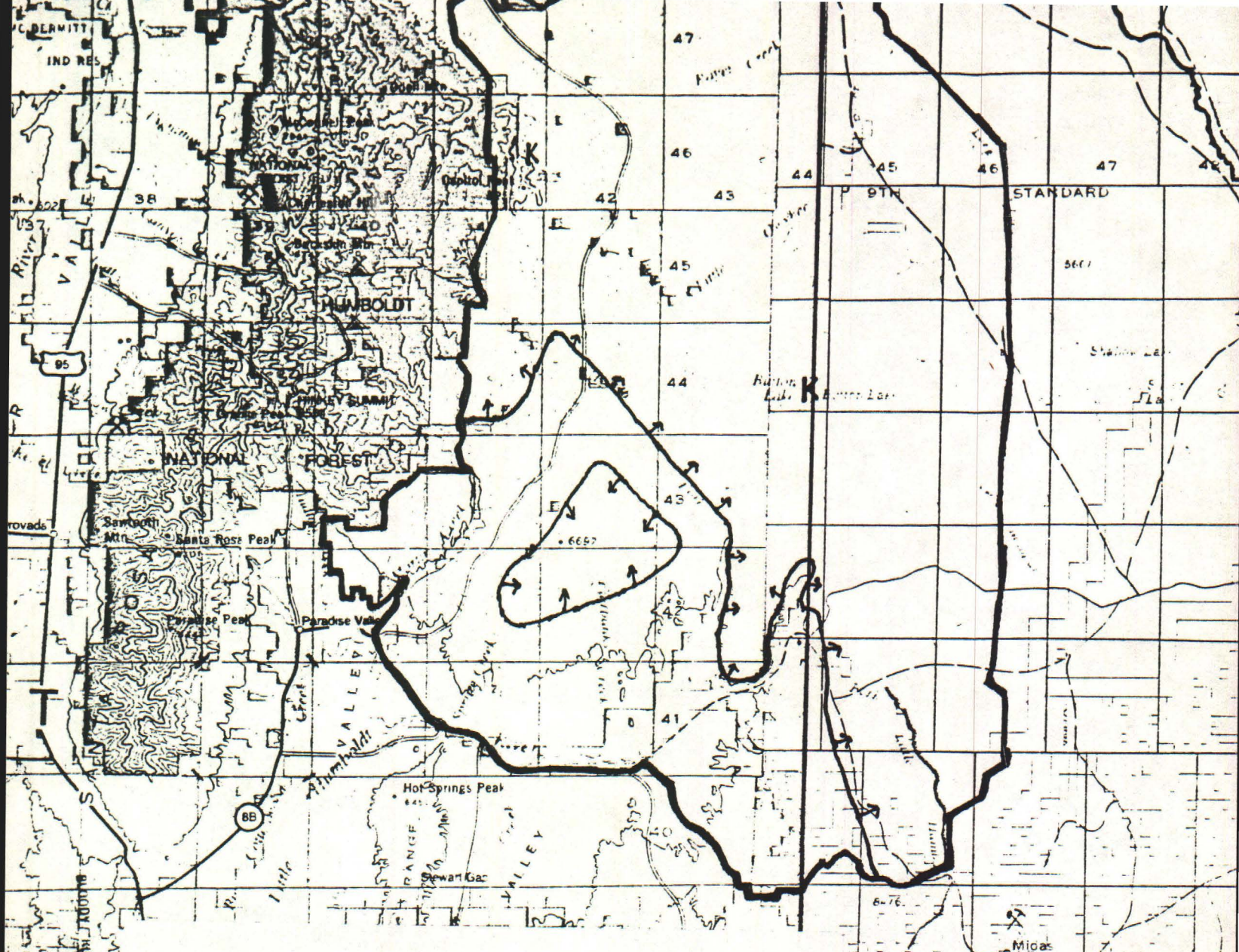
Maps of wildlife use areas, land status, and wildlife habitat improvement projects.






Map 1. Mule Deer Use Areas

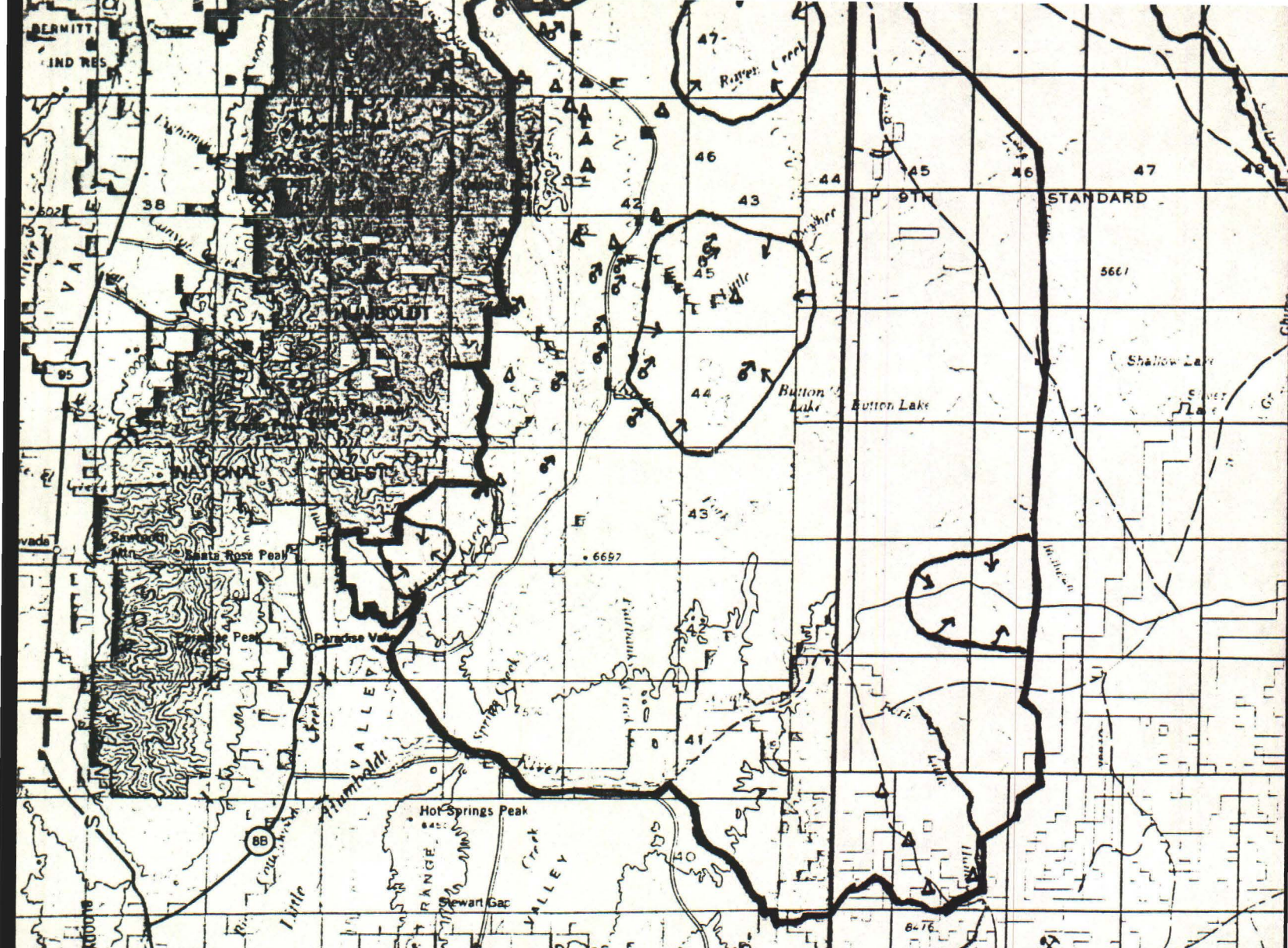
-  WHA Boundary
-  Summer
-  Spring
-  Winter
-  Yearlong










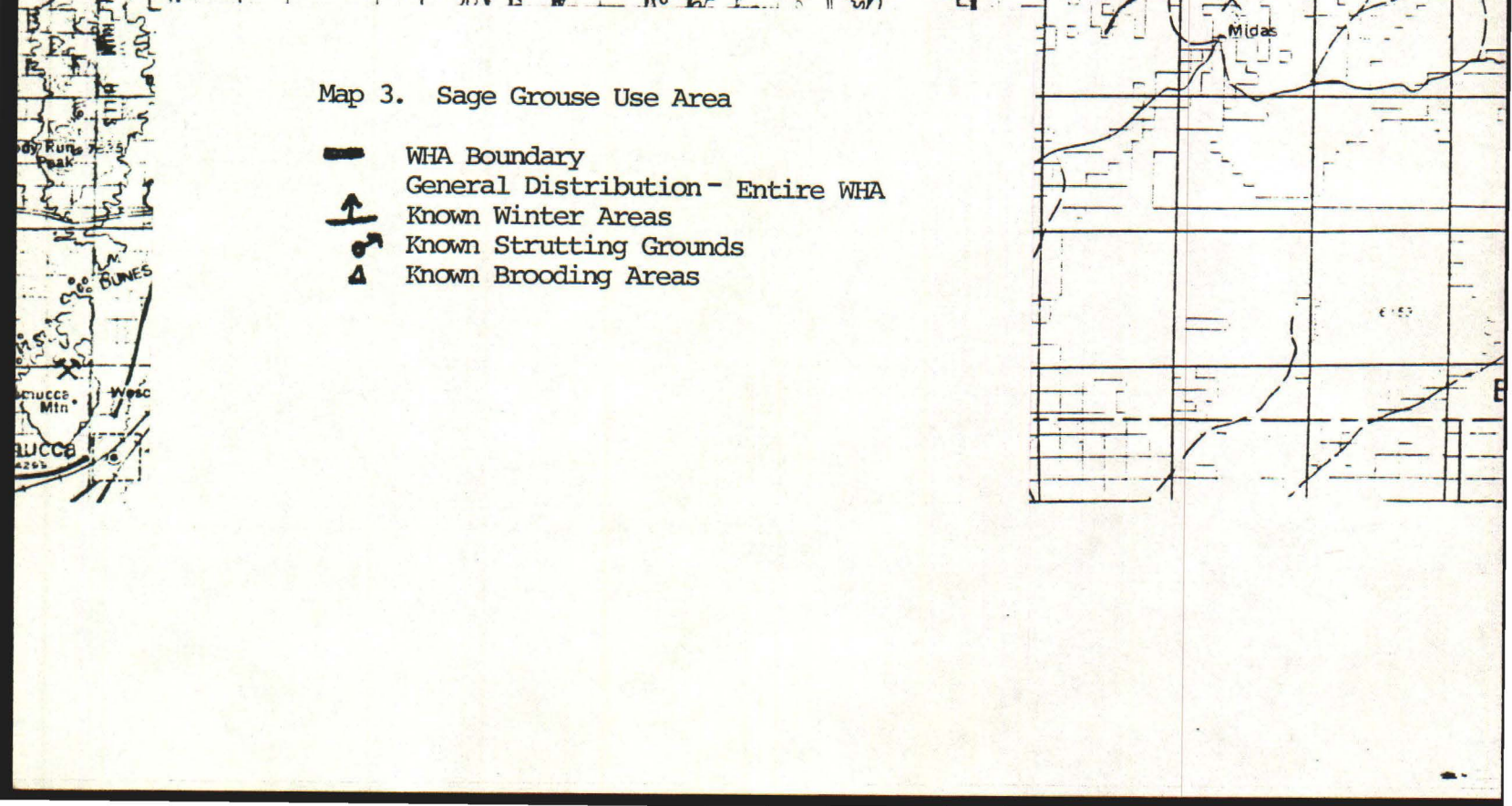
Map 2. Antelope Use Areas

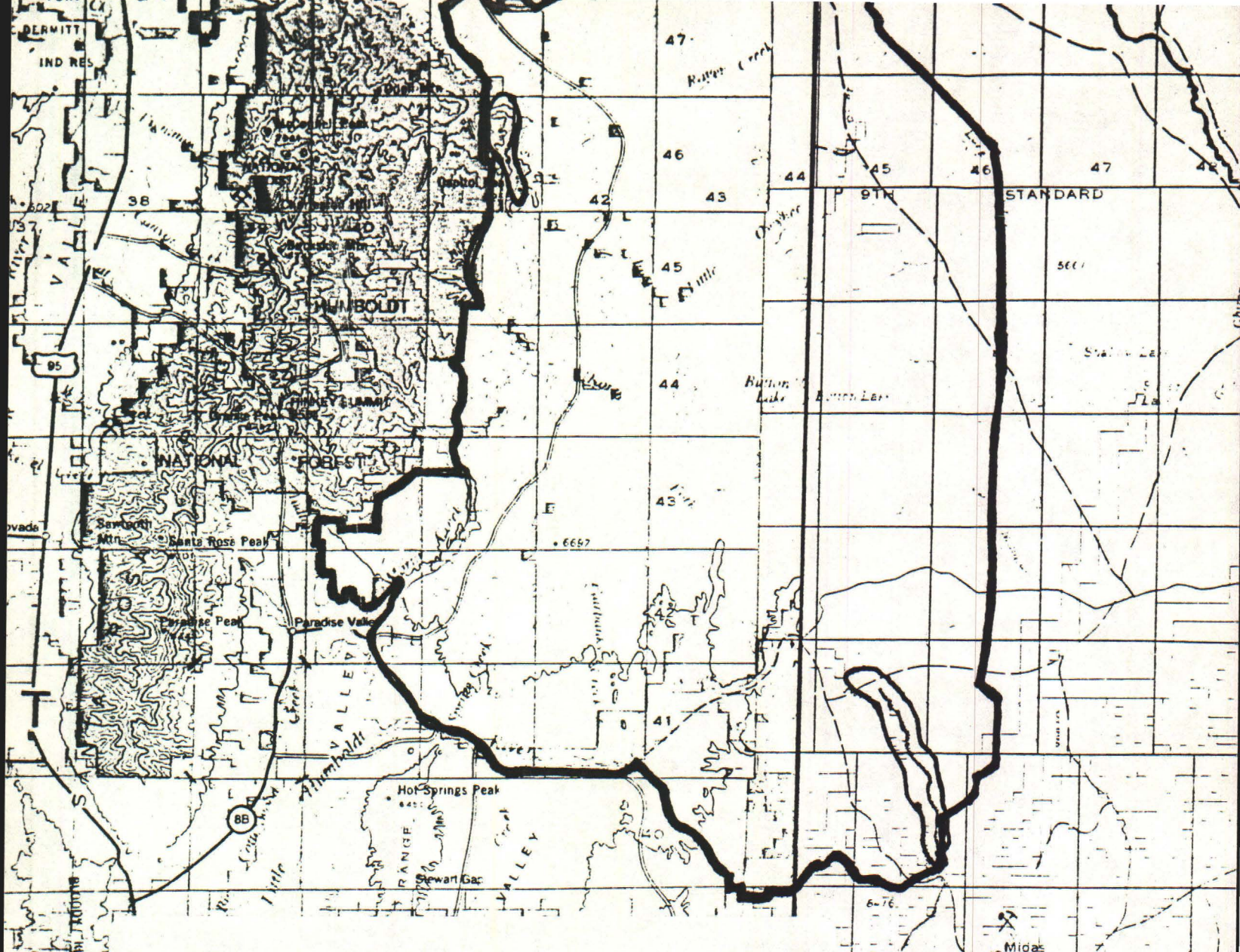
-  WHA Boundary
-  Yearlong
-  Known kidding areas





Map 3. Sage Grouse Use Area

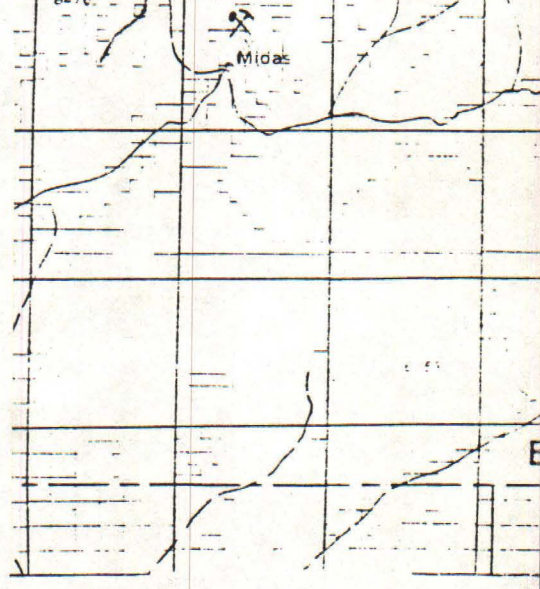
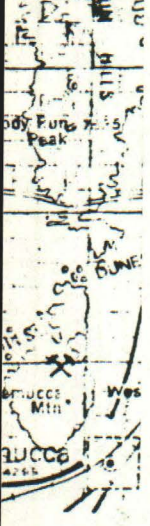
-  WHA Boundary
-  General Distribution - Entire WHA
-  Known Winter Areas
-  Known Strutting Grounds
-  Known Brooding Areas

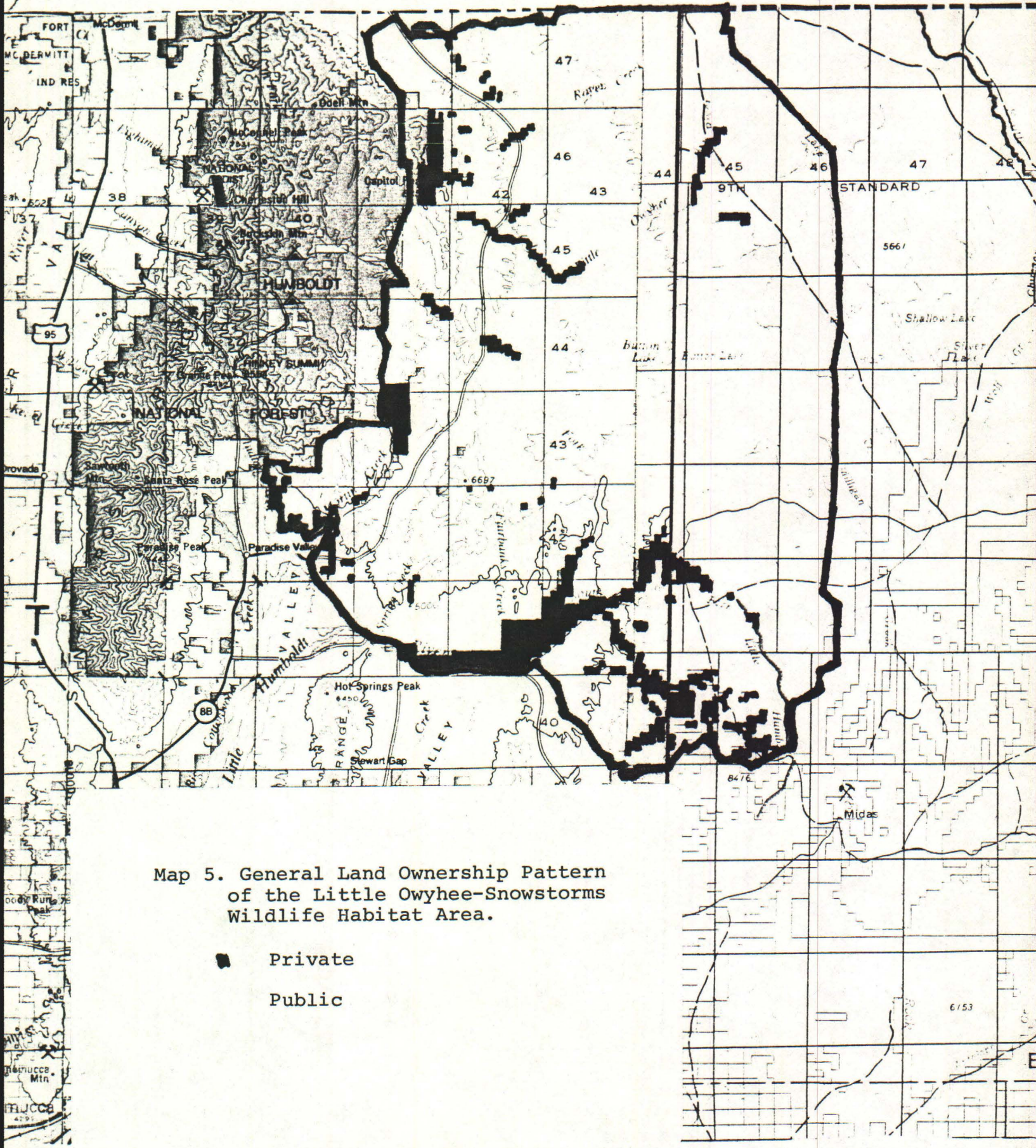




Map 4. Bighorn Sheep Potential Use Areas

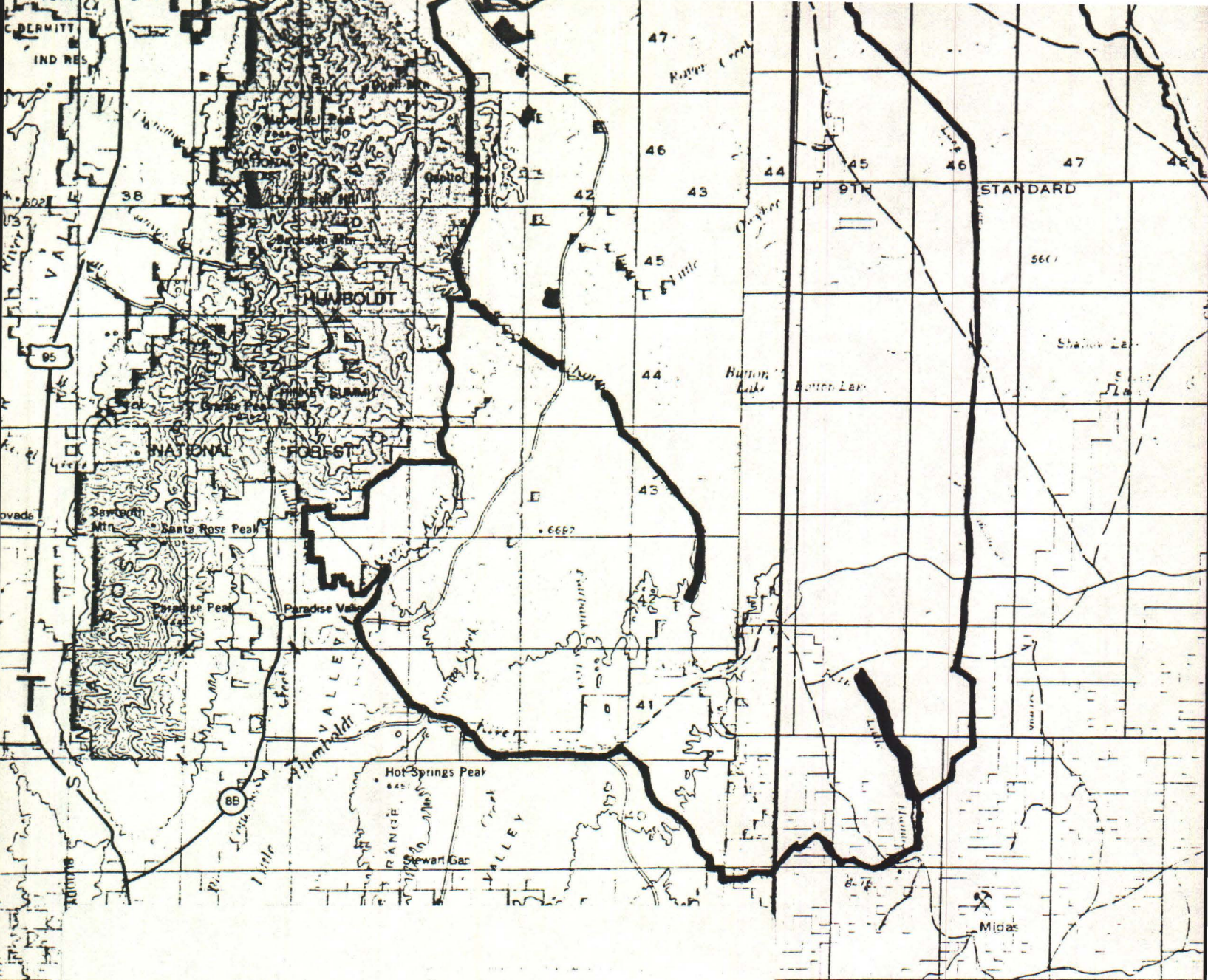
-  WHA Boundary
-  Potential Use Areas







Map 5. General Land Ownership Pattern of the Little Owyhee-Snowstorms Wildlife Habitat Area.

- Private
- Public



Map 6. Wildlife Habitat Improvement Projects in the WHA.

-  Existing
-  Planned

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APPENDIX 3

Pronghorn, mule deer, and sage grouse habitat evaluation information.

Mule Deer Habitat by Standard Habitat Site and Habitat Site

Total Acres	Standard Habitat Site (Habitat Site)	Santa Rosa DS-1 Acres Condition	Snowstorms DS-6 Acres Condition	Santa Rosa DSP-1 Acres Condition	Santa Rosa SW-2 Acres Condition	Santa Rosa DY-2 Acres Condition	Snowstorms DY-3 Acres Condition
	Wyoming Big Sagebrush/Bunchgrass	58-Fair	66-Good	56-Fair	71-Good		65-Good
12,199	(ARTRW-AGSP-EFR)	1,902		1,339	8,955		3
2,103	(ARTRW-STTH-EFR)			83	2,020		
18,584	(ARTRW-POSE-EFR)	140		5,970	2,871		9,603
7,867	(ARTRW-SIHY-EFR)			3,319	4,548		
3,159	(ARTRW-ORWE-EFR)			972	2,187		
2,391	(ARTRW-ELC12-EFR)					1,933	458
29,487	(ARTRW-BRTE-EFR)			8,818	11,556		9,113
2,237	(BRTE-SIHY-EFR)	516		1,668	53		
3,969	(BRTE-STTH-EFR)			2,458	1,511		
1,721	(BRTE-POSE-EFR)			1,721			
8,261	(BRTE-AGSP-EFR)		5,914				2,347
386	(ARTRW-GRSP-FAN)			251	135		
69	(CHVI8-BRTE-EFR)						69
100	(GRSP-SIHY-EFR)						100
8,162	(ARTRW-ARAR8-FAN)				8,162		
	Mountain Big Sagebrush/Bunchgrass		69-Good				77-Good
7,124	(ARTRV-FEID-SIS)		1,377				5,747
3,129	(ARTRV-PUTR2-SIS)	1			3,128		
	Lupine/Needlegrass						
2,523	(BRTE-LUPIN-BKS)		144				2,379
	Low Sagebrush/Bunchgrass		55-Fair				61-Good
29,799	(ARAR8-POSE-EFR)	5,118	1,280		16,582		6,819
2,202	(ARAR8-ORWE-RPR)				2,202		
87	(ARAR8-AGSP-EFR)	87					
33	(ARAR8-STTH-EFR)					33	
1,163	(ARAR8-FEID-SIS)		1,163				
1,035	(ARAR8-BRTE-RPR)						1,035
3,485	(ARAR8-ARTRW-EFR)				3,485		
	Basin Big Sagebrush/Bunchgrass						
3,992	(ARTRT-PONE3-ALF)			3,198	794		
580	(ARTRT-AGSM-ASF)		580				
743	(CHRYS9-DIST-ASF)			743			
	Meadows						
573	(IRMI-CAREX-WMR)	288	81	150	35		19
	Riparian						
62	(SALIX-POSE-ASF)				62		
5,605	(SALIX-IVD)	81	30		5		5,489
69	(SALIX-BRTE-ASF)			10			59
	Riparian Aspen						67-Good
287	(POTR5-BRTE-ASF)					287	
	Shadscale Saltbush/Bunchgrass						
180	(ATCO-ELJU-LAP)			180			
4,044	(ARTRW-ATCO-AFL)			4,044			

Mule Deer Habitat by Standard Habitat Site and Habitat Site

<u>Total Acres</u>	<u>Standard Habitat Site (Habitat Site)</u>	<u>Santa Rosa DS-1 Acres</u> <u>Condition</u>	<u>Snowstorms DS-6 Acres</u> <u>Condition</u>	<u>Santa Rosa DSP-1 Acres</u> <u>Condition</u>	<u>Santa Rosa DW-2 Acres</u> <u>Condition</u>	<u>Santa Rosa DY-2 Acres</u> <u>Condition</u>	<u>Snowstorms DY-3 Acres</u> <u>Condition</u>
803	Seedings AGCR			883			
51	Aspen Thicket (POTR5-BRMA4-BKS)	21	30				
222	Aspen Woodland (POTR5-BRMA4-BKS)	21	201				67-Good
59	Curleaf Mountain Mahogany/Mountain Big Sagebrush (CELE-ARTRV-SIS)	59					
28	Snowbrush Thicket (CEVE-BKS)	18	10				
	TOTAL	8,252	10,810	35,807	68,291	1,966	43,527
	OVERALL CONDITION	58-Fair	65-Good	56-Fair	71-Good		66-Good

Pronghorn Habitat Condition by Habitat Site

Total Acres	Standard Habitat Site (Habitat Site)	Button Lake AY-2 Acres Condition	Owyhee Desert AY-1 Acres Condition	Santa Rosa AS-1 Acres Condition	Santa Rosa AY-1 Acres Condition	Santa Rosa AY-2 Acres Condition	Snowstorms AY-1 Acres Condition
Wyoming Big Sagebrush/Bunchgrass							
25,567	(ARTRW-AGSP-EFR)		6,557		6,985	11,927	98
10,091	(ARTRW-STTH-EFR)			291	3,367	6,433	
53,177	(ARTRW-POSE-EFR)	79	9,672		25,078	2,037	16,311
207,725	(ARTRW-SIHY-EFR)		101,189		102,449	542	3,545
8,389	(ARTRW-ORWE-EFR)	2,387	6,002				
114,871	(ARTRW-ORHY-EFR)	1,191	103,872		9,808		
2,837	(ARTRW-ELC12-EFR)		2,837				
14,336	(ARTRW-BRTE-EFR)		8,254		147	1,532	4,403
8,720	(BRTE-SIHY-EFR)	7,470		1,250			
20,464	(BRTE-STTH-EFR)		20,290			174	
3,157	(BRTE-AGSP-EFR)						3,157
867	(ARTRW-GRSP-EFR)						867
274	(ARTRW-CHV18-EFR)				274		
1,577	(CHV18-BRTE-EFR)		1,577				
14,622	(ARTRW-ARAR8-FAN)		232		4,960		9,430
Mountain Big Sagebrush/Bunchgrass							
682	(ARTRV-FEID-SIS)						682
3,014	(ARTRV-ARAR8-EFR)			3,014			
Low Sagebrush/Bunchgrass							
48,820	(ARAR8-POSE-EFR)		5,613	770	33,501	776	8,160
2,631	(ARAR8-ORWE-RPR)		2,631				
4,316	(ARAR8-AGSP-EFR)					4,316	
7,705	(ARAR8-STTH-EFR)				7,705		
5,736	(ARAR8-SIHY-EFR)		5,736				
1,170	(ARAR8-FEID-SIS)						1,170
5,712	(ARAR8-ARTRW-EFR)			2,240	3,472		
Basin Big Sagebrush/Bunchgrass							
1,113	(ARTRT-PONE3-ALF)			279			561
2,469	(ARTRT-AGSM-ASF)		1,860		273		609
47	(CHRYS9-ELC12-ASF)				47		
Mat Muhly/Nevada Bluegrass							
218	(MURI-LAP)	197	21				
826	(ELTR3-LAP)	826					
Meadows							
199	(IRMI-CAREX-WMR)	2	20	7	128	5	37
371	(CAREX-JUNCU-WMR)		151	147	22	32	19
Riparian							
232	(SALIX-POSE-ASF)		8	25	10	17	172
134	(SALIX-IVD)						134
Riparian Aspen							
1,697	(POTR5-BRTE-ASF)				1,391		306
Winterfat/Bunchgrass							
5,070	(ARTRW-EULAS-AFL)		3,107		1,963		

Pronghorn Habitat Condition by Habitat Site

<u>Total Acres</u>	<u>Standard Habitat Site (Habitat Site)</u>	<u>Button Lake AY-2 Acres Condition</u>	<u>Owyhee Desert AY-1 Acres Condition</u>	<u>Santa Rosa AS-1 Acres Condition</u>	<u>Santa Rosa AY-1 Acres Condition</u>	<u>Santa Rosa AY-2 Acres Condition</u>	<u>Snowstorms AY-1 Acres Condition</u>
22,076	Shadscale Saltbush/Bunchgrass (ARCO-SIHY-AFL)		536		21,540	45-Fair	
36	Nuttall Saltbush/Bunchgrass (ATNU2-SIHY-LPT)				36		
773	(ATNU2-ARTRW-LPT)				773		
1,504	(ARTRW-ATNU2-LPT)		1,504				
21	Aspen Woodland (POTR5-BRMA4-BKS)			21			
59	Currleaf Mountain Mahogany/Mountain Big Sagebrush (CELE-ARTRV-SIS)			34	25		
19	Snowbrush Thicket (CEVE-BKS)			19			
160	Bolander Silber Sagebrush/Bunchgrass (ARCAB2-SIHY-LAP)		160				
	TOTAL	12,152	281,829	8,097	223,929	27,791	49,661
	OVERALL CONDITION	36-Fair	40-Fair	42-Fair	32-Fair	46-Fair	42-Fair

Sage Grouse Wintering Habitat by Habitat Site

Standard Habitat Sites
(Habitat Sites)

Acres

Wyoming Big Sagebrush/Bunchgrass

(ARTRW-STTH-EFR)	316
(ARTRW-POSE-EFR)	1,838
(ARTRW-SIHY-EFR)	49,456
(ARTRW-ORWE-EFR)	1,057
(ARTRW-ORHY-EFR)	21,868
(ARTRW-ELCI2-EFR)	181
(ARTRW-BRTE-EFR)	240
(ARTRW-CHVI8-EFR)	117

Low Sagebrush/Bunchgrass

(ARAR8-POSE-EFR)	6,768
(ARAR8-ORWE-EFR)	1,285
(ARAR8-STTH-EFR)	25,564

Basin Big Sagebrush/Bunchgrass

(CHRYS9-ELCI2-ASF)	47
--------------------	----

Mat Muhly/Nevada Bluegrass

(MURI-LAP)	21
------------	----

Meadows

(IRMI-CAREX-WMR)	141
(CAREX-JUNCU-WMR)	142

Riparian Aspen

(POTR5-BRTE-ASF)	22
------------------	----

Nuttall Saltbush/Bunchgrass

(ATNU2-SIHY-LPT)	36
------------------	----

Bolander Silver Sagebrush/Bunchgrass

(ARCAB2-SIHY-LAP)	103
-------------------	-----

TOTAL 109,530

APPENDIX 4

Bighorn sheep habitat evaluation South Fork Potential Use Area

Amendment one to the South Fork of the Little Humboldt River Bighorn Sheep Reestablishment Release Plan.

The South Fork of the Little Humboldt River Bighorn Sheep Reestablishment Release Plan was approved in October of 1985. Since that time, information which was not included in the plan has surfaced. In addition, clarification of some sections is needed. This information and clarification is enumerated as follows:

1. Actual bighorn sheep use areas will be determined after the reestablishment of bighorn sheep. The boundaries of the reestablishment site as described in the plan should not be construed to be the potential limits of the bighorn sheep use area. The Paradise URA included over 60,000 acres as potential bighorn sheep habitat which encompasses the majority of the Snowstorm Mountains administered by the Winnemucca District. It is improbable that the entire area will receive bighorn sheep use, but this point needs clarification. It is recognized that the plan does address the largest and most suitable area for potential bighorn sheep use and where initial reestablishment efforts should take place.
2. The proposed release site at Button Field should not be considered an option for any release of bighorn sheep. Further research on livestock grazing shows that a domestic sheep operation customarily trails sheep on the northwest edge of the reestablishment site. These sheep are trailed by the Roaring Springs Association down Milligan Creek to Button Field, and then on down the South Fork Little Humboldt River. To reduce the likelihood of interaction between bighorn sheep and domestic sheep, it is strongly recommended that no releases of bighorn sheep be considered below Rodear Flat.

This information and recommendation is generally common knowledge by NDOW at this time, and this amendment just serves to document the situation.

3. Release and Monitoring

This section of the plan is changed to read as follows:

The Nevada Department of Wildlife proposes to reestablish bighorn sheep in this area. Approximately 15-20 sheep may be released initially but the number and composition is largely dependent on availability of sheep.

Monitoring of the bighorn sheep population is the primary responsibility of NDOW and includes use area identification and updates.

Monitoring of bighorn sheep habitat is the primary responsibility of BLM, including vegetative condition and trend.

An annual exchange of information between these two agencies concerning this bighorn sheep population should be considered the minimum required to properly manage this population.

4. Management Objectives

This section is changed to read:

The general objective of this plan is to provide quality habitat for a population of bighorn sheep.

Specific objectives are identified in the Little Owyhee-Snowstorm Habitat Management Plan.

This amendment will be included as part of Appendix 4 of the Little Owyhee-Snowstorm HMP. Concurrence and approval of these changes and clarifications is indicated by the signatures below.

Carl J. Corey
Area Wildlife Biologist
Paradise-Denio Resource Area

Walt Billings
Area Manager
Paradise-Denio Resource Area

4/9/87

Frank E. Miller
District Manager, Winnemucca

Larry Basngrove
Region II Supervisor, NDOW

South Fork of the Little Humboldt River
Bighorn Sheep Reestablishment Release Plan

Prepared by:

Donald J. Armentrout

Wildlife Biologist

Renewable Resources Staff

Winnemucca District

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1.0 Introduction

Nevada Department of Wildlife (NDOW) is planning to reestablish California bighorn sheep into the South Fork of the Little Humboldt River canyon in Elko County. This area is within the boundaries of the Elko District. The interdistrict agreement, however, establishes Winnemucca District as the District responsible for management of renewable resources.

California bighorn sheep are considered a sensitive species by the Bureau of Land Management (BLM) and NDOW.

This Release Plan is prepared to fulfill the release site description required by Instruction Memorandum No. NV-83-390. The Release Plan meets the necessary planning and evaluation requirements for reestablishment of a native species.

The South Fork of the Little Humboldt River was identified as potential bighorn habitat within the Snowstorm Mountains in the Paradise-Denio Unit Resource Analysis. Reasonable numbers were established for this area (USDI 1979). Paradise-Denio Management Framework Plan (USDI 1982b) decision W.L. 1.1 includes the number of AUMs required by allotment to provide forage for reasonable numbers of bighorn sheep once they are reestablished. These reasonable numbers and decision were adopted by the Local #1 Coordinated Resource Management and Planning (CRMP) group (USDI 1982a).

2.0 Description of the Area

2.1 Location

The reestablishment site is located in the Paradise Planning Unit, Winnemucca District, Elko County, Nevada (Figure 1). Figure 2 shows the boundaries of the reestablishment site. All but 700 acres of the area are public lands.

2.2 Elevations

The top of the South Fork of the Little Humboldt River canyon rim averages 5,600 feet. Elevations of the Snowstorm Mountains and Castle ridge boundaries to the west and east average 6,200 and 6,100 feet, respectively.

2.3 Climate

Average annual precipitation ranges from 6 to 14 inches. Snowfall along the slopes of the Snowstorm Mountains and Castle Ridge averages 25 inches with little snowpack occurring in the canyon itself. Temperatures range from 100 degrees F in the summer to -10 degrees F in the winter (USDI 1985a).

Figure 1. General Location Map.

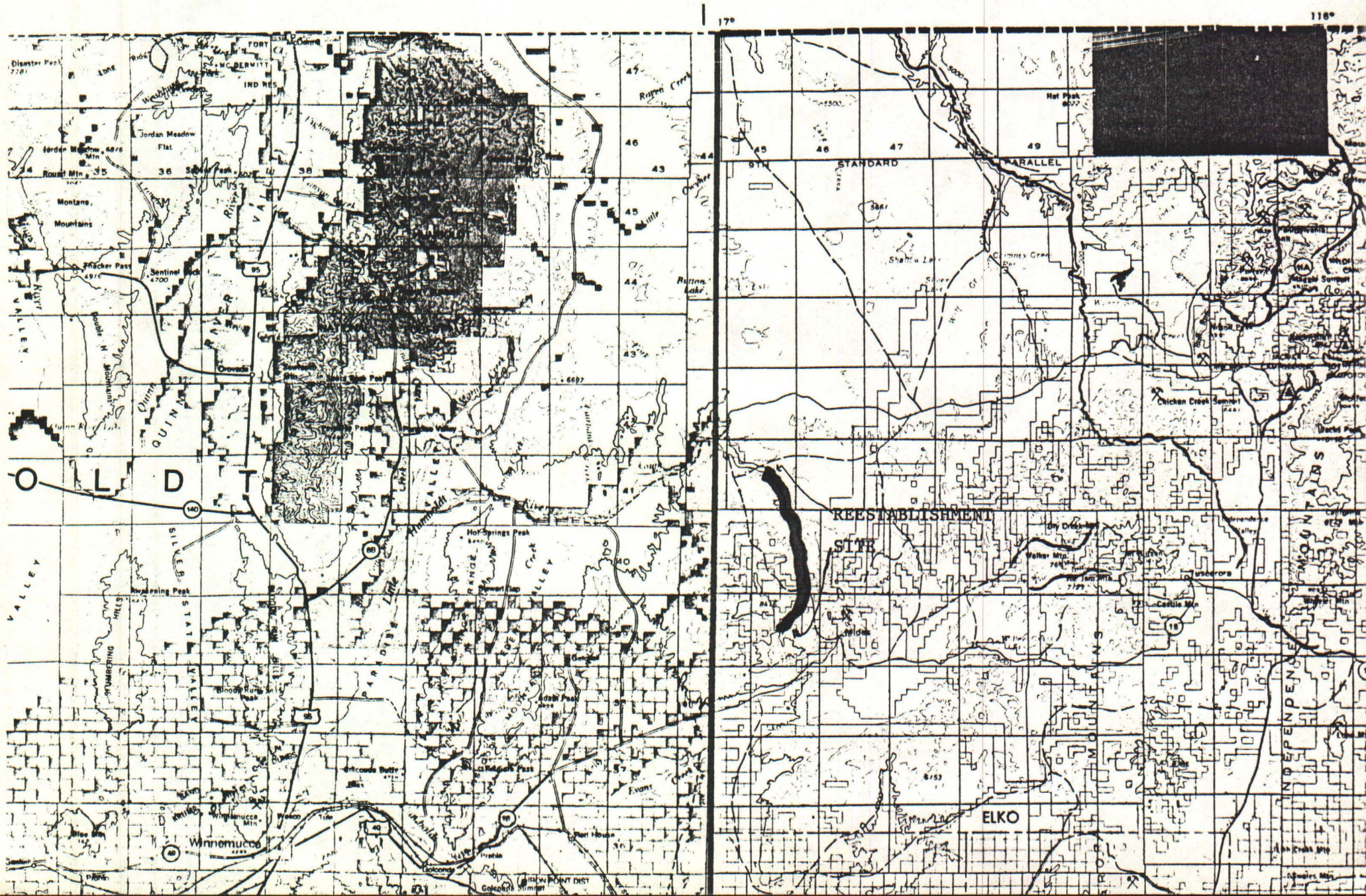
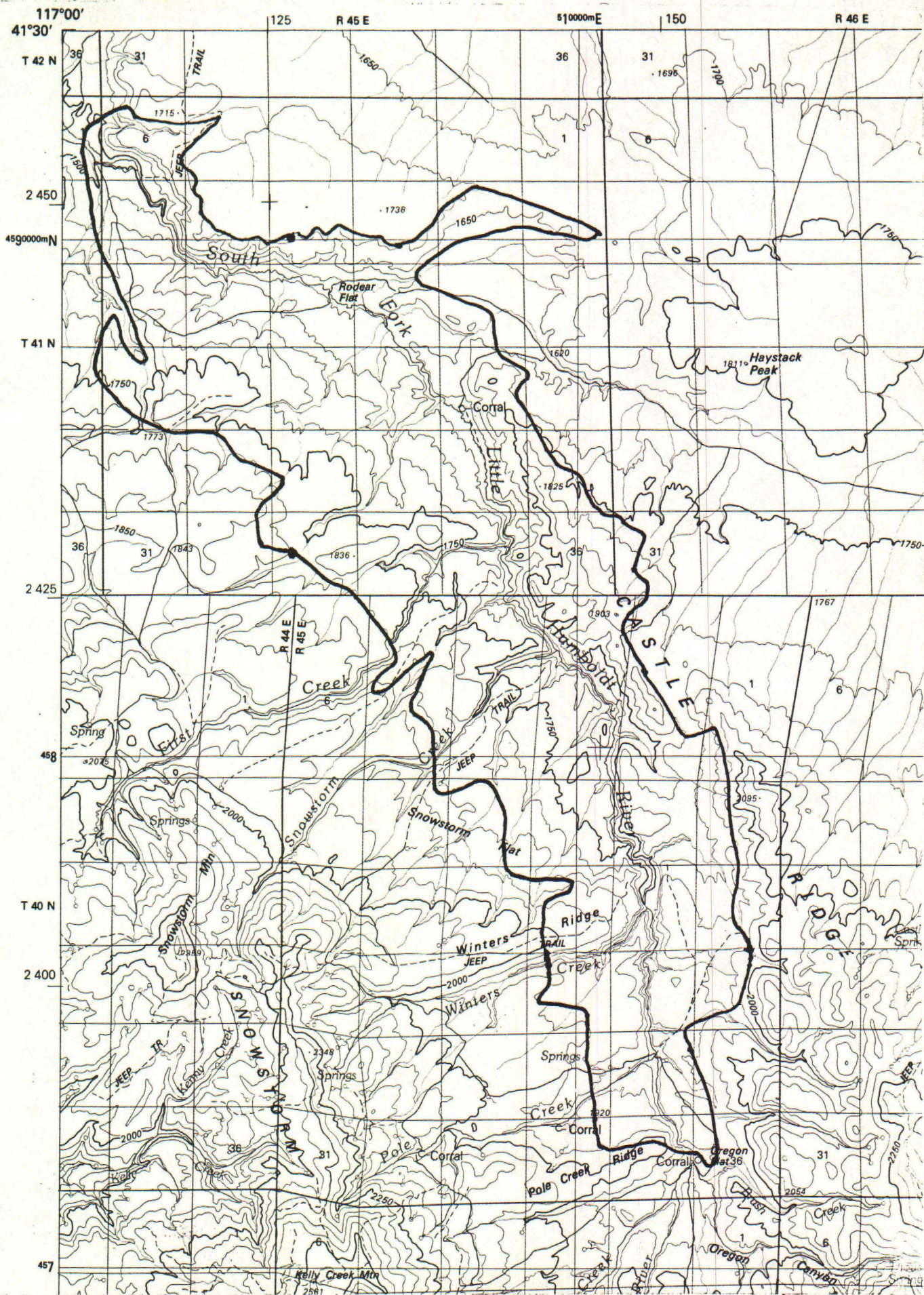


Figure 2. South Fork of the Little Humboldt River
Reestablishment Site.



2.4 Vegetation

Lying at the boundary of the Columbia Plateau and Upper Basin and Range, the area's vegetation is strongly influenced by the sagebrush steppe and Great Basin sagebrush vegetation associations (Kuchler 1964). Dealy and others (1981) have described plant communities which are presently used to evaluate the habitat. These plant communities can, for the most part, be associated with ecological sites described by the Soil Conservation Service for Major Land Resource Area 25 (Table 1). Base ratings provided for each plant community will be discussed in the Habitat Evaluation Section.

Table One. Plant Communities/Cover Types and Associated Ecological Sites.

<u>Base Rating</u>	<u>Plant Communities/ Cover Types</u>	<u>Associated Ecological Sites</u>	<u>Total Acres</u>
1.0	Meadow, Seasonally Wet	25-6 Dry Meadow 10-16" p.z.	34
0.8	Wyoming Big Sagebrush/ Bunchgrass	25-15 South Slope 8-12" p.z. 24-19 Loamy 8-10" p.z.	8,904
0.8	Meadow, Permanently Wet	25-5 Wet Meadow 8-16" p.z.	20
0.7	Basin Big Sagebrush/ Bunchgrass	25-3 Loamy Bottom 8-14" p.z. 25-14 Loamy 10-12" p.z. 25-31 Dry Floodplain 6-10" p.z.	8,565
0.7	Low Sagebrush/Bunchgrass	25-18 Claypan 10-12" p.z.	4,027
0.7	Riparian	25-1 Moist Floodplain 6-10" p.z.	4,027
0.2	Quaking Aspen/Grass	No Associated Ecological Sites	23
			<u>21,890</u>
N/A	Escarpments & Rock Outcrops		855
N/A	Talus Slopes & Boulder Fields		595
			<u>1,450</u>
			<u>23,340</u>

2.5 Water Availability

Water is available throughout the area. A maximum travel distance to water is calculated to be one-half mile under normal conditions.

Having water available at the release point or nearby is essential. For this reason the preferred release points are directly into the canyon at river level.

Emigration into the Castle Ridge area of the release site should be limited by water distribution. Attempts are being made to locate and protect water sources along Castle Ridge.

3.0 History and Land Use

3.1 Livestock Grazing

The Snowstorm Mountains and Castle Ridge areas have been used for livestock grazing since the late 1800's. Nevada First Corporation is the present permittee for the Bullhead Allotment. For five years prior to 1983 the area received no licensed domestic livestock grazing. Since then SECO, Inc., leasee of Nevada First Corporation, has begun grazing cattle under a grazing system. SECO has requested and received approval to graze the Bullhead Allotment with yearlings on a one-to-one conversion basis. Potential conflicts between bighorns and yearlings will be discussed in Section 6.0 Potential Problems and Conflicts. The canyon itself precludes most livestock use due to its steep, rocky topography.

3.2 Mining Activity

Midas, three miles to the south, is the center of the Gold Circle Mining District which borders on the south end of the reestablishment area. The reestablishment area itself, however, lies within an area rated as unfavorable for locatable minerals, except for the northern 600 acres which are rated low. No active excavation has taken place within the area (USDI 1985b).

The South Fork of the Little Humboldt River reestablishment area has no oil and gas leases. No geothermal potential is known to exist in the area (USDI 1985a and 1985b).

3.3 Wild Horses

Historically, wild horse populations were established during the late 1800's and early 1900's by the release and loss of rancher's horses. Some range deterioration has been attributed to wild horse use. Under an agreement reached through CRMP, horse numbers have been lowered to 50 in the Snowstorm Mountains Herd Use Area (HUA) and 250 in the Owyhee Desert HUA. Although these levels will be reached during 1985, horse movements will cause these numbers to fluctuate. There are only two points in the canyon which receive significant use. Fencing of the canyon for fisheries has limited horse access to the canyon.

4.0 Bighorn Sheep Population Information

4.1 Past Distribution

Bighorn sheep (Ovis spp.) have been known to exist in the region as far back as the Pleistocene. Which species or subspecies in particular occurred along the South Fork of the Little Humboldt River is not settled. Wishart (1978), however, indicates the California subspecies distribution extends over this area.

4.2 Cause of Extripation

Habitat degradation from overgrazing by livestock and wild horses as well as competition and diseases associated with domestic livestock are believed to have helped lead to the disappearance of bighorns from the area. Unrestricted hunting by early settlers and miners are also believed to have counted in the extripation of bighorns.

4.3 Present Situation

Rangeland condition is mid to late seral (fair to good) along Snowstorm Flat, Winters Ridge, Castle Ridge, and in First Creek Basin. As the topography begins to steepen and descend into the canyon, the status increases to late seral and almost potential natural community (PNC)(good to excellent).

Bighorn forage requirements indicate late seral and PNC status would provide the best forage habitat. Multiple use objectives for the Bullhead Allotment are directed toward allowing the range to recover to late seral.

4.4 Proposed Release

Approximately 20 California bighorn sheep will be released into the South Fork of the Little Humboldt River canyon. The proposed release sites are as follows:

Button Field: T. 41 N., R. 45 E., Sec. 1, NW1/4 SE1/4

Rodear Flat: T. 41 N., R. 45 E., Sec. 16, SW1/4 NE1/4

First Creek Rim: T. 41 N., R. 45 E., Sec. 35, SW1/4 SE1/4

The Button Field release site is on private land. Although concurrence to the release has been given by the permittee within the CRMP process, specific concurrence will be obtained prior to use of this site.

5.0 Habitat Evaluation

A habitat suitability evaluation was completed on the reestablishment area. The analysis used to evaluate the data was in accordance with a system being developed for determining habitat suitability for California bighorn sheep. This habitat evaluation system utilizes the guidelines of the U.S. Fish and Wildlife Services Standards for the Development of Habitat Suitability Index Models (U.S. Fish and Wildlife Service 1981). The habitat suitability evaluation uses the assumption that habitat suitability determines carrying capacity.

Like all other species, bighorn sheep require the four basic habitat components of cover, forage, water, and space. The presence, lack, or condition of one component can modify the suitability of another component (Golden and Tsukamoto 1980; Hansen 1980, 1982; Sands 1976; Van Dyke et al. 1983; Wilson et al. 1978; Wishart 1978; and U.S. Fish and Wildlife Service 1981). Eight variables are used to develop three indices (Table Two).

Table Two. Habitat Variables Measured To Evaluate California Bighorn Habitat.

<u>Variable Name</u>	<u>No.</u>	<u>Remarks</u>
Escarpments and Rock Outcrops	V1a	Modified by distance to water combined with competition for water. 2.4 acres or greater (kidding habitat) = 1.0. Each escarpment is measured separately (Van Dyke et al. 1983).
Talus Slopes and Boulder Fields	V1b	A combination of size and slope modified by distance to water combined with competition for water. Believed to be only used for escape and bedding cover (Golden and Tsukamoto 1980; Hansen 1982; Sands 1976; Van Dyke et al. 1983; and Wilson et al. 1978).
Distance To Water	V2a	A modifier for V1a and V1b only perennial water sources are used (Golden and Tsukamoto 1980; Hansen 1982; Sands 1976; Van Dyke et al. 1983; and Wilson et al. 1978). 1/4 mile or less = 1.0, 2.25 miles = 0.
Competition For Water	V2a	A modifier of distance to water taken from Sands (1976), Golden and Tsukamoto (1980), Hansen (1982), Van Dyke et al. (1983), and Wilson et al. (1978). Bighorn use only = 1.0. Frequent livestock use at a point source = 0.
Forage Areas	V3	A base rating comes from Van Dyke et al (1983)(Table One). This rating is modified by Distance from Escape Cover (V4), Distance to Water (V2a), and Competition For Water (V2b), Shrub Canopy Cover (V5), and Shrub Height (V6)(Golden and Tsukamoto 1980; Hansen 1982; Sands 1976; Van Dyke et al. 1983; Wilson et al. 1978; and Wishart 1978).
Distance From Escape Cover	V4	A modifier of Forage Areas. 1/4 mile or less = 1.0, 1 mile or greater = 0.1.
Shrub Canopy Cover	V5	A modifier of Forage Areas. 25% or less = 1.0, 100% = 0.
Shrub Height	V6	A modifier of Forage Areas. 2' or less = 1.0, 8' or greater = 0.1.
Domestic Sheep Conflicts	V7	Distance of separation combined with Human Use Conflicts to reach Disturbance Index. 2 miles or less with nose to nose contact = 0, 6 miles or greater separation = 1.0 (Golden and Tsukamoto 1980; Hansen 1980; Jessup 1985; Kistner 1982; Sands 1976; Van Dyke et al. 1983; Wilson 1978; and Wishart 1978).
Human Use Conflicts	V8	Used in combination with Domestic Sheep Conflicts to develop Disturbance Index from Hansen (1980), Class I = 0, Class X = 1.0.

These variables are assigned a linear value from one for optimum to 0 for unacceptable. Using geometric calculations (Figure 3), a final Habitat Suitability Rating is developed. This final rating is the averaging of the Relative Cover Index, Relative Forage Index, and Relative Disturbance Index. A relative index is calculated by multiplying the area of each index by its representative index value, summing these products, and dividing the sum by the total area of all cover types used in developing the index. The disturbance index applies to all cover types.

Using this system, the Habitat Suitability Rating for the reestablishment area equals 0.87. What this means is that the 23,340 acres of habitat found in the reestablishment area will be needed to support the same population numbers 20,306 acres of optimum habitat would support. Using 4.0 bighorn sheep per square mile as the number of individuals optimum habitat will support, we find the South Fork of the Little Humboldt River area should support 127 bighorn sheep instead of 146 supportable with optimum habitat.

Figure 3. Calculations Used in Analyzing Habitat Variable Data To Develop An Overall Habitat Suitability Rating.

<u>Index</u>	<u>Formula</u>
1. Escarpments & Rock Outcrops	$V1a \times (V2a \times V2b)^{1/2}$
2. Talus Slopes & Boulder Fields	$[(V1a \times V1b)^{1/2} \times (V1a \times V2b)^{1/2}]^{1/2}$
Forage	$[V3 \times V4 \times (V1a \times V2b)^{1/2} \times V5 \times V6]^{1/5}$
Disturbance	$[(V7 \times V8)^{1/2} \times (CI \text{ or } FI)^{1/2}]^{1/2}$
Relative Cover Index (RCI)	$\frac{\sum_{i=1}^n E_i CI_i A_i}{\sum_{i=1}^n A_i}$ where: n = number of cover types CI _i = cover index value derived from use of the appropriate formula above for each cover type A _i = area of cover type;
Relative Forage Index (RFI)	$\frac{\sum_{i=1}^n E_i FI_i A_i}{\sum_{i=1}^n A_i}$ where: n = number of forage types FI _i = forage index value derived from use of the forage formula for each forage type A _i = area of forage type;
Relative Disturbance Index (RDI)	$\frac{\sum_{i=1}^n E_i DI_i A_i}{\sum_{i=1}^n A_i}$ where: n = number of cover and forage types. DI _i = disturbance index value derived from use of the disturbance formula for each cover and forage type.
Habitat Suitability Rating	$(RCI \times RFI \times RDI)^{1/3}$

6.0 Potential Conflicts and Problems

Bighorn sheep aversion to livestock has been recorded but a particular comment on yearling steers was documented in Geist (1975). Apparently, bighorns were observed retreating from curious, investigative steers. Whether this is a problem here, will have to be determined through monitoring. Due to the grazing system, the bighorn sheep will not be exposed to yearlings annually. Point sources, if found in the Castle Ridge area, will have to be protected from wild horse competition. Domestic sheep are not a conflict now or after bighorn sheep reestablishment. Winnemucca District policy prohibits the conversion to domestic sheep in areas of bighorn sheep occupation.

7.0 Consultation/Coordination

The establishment of potential habitat, reasonable numbers, and this reestablishment has been coordinated through the Coordinated Resource Management and Planning Local #1 in the Winnemucca District. Those involved in CRMP are the permittees Nevada First Corporation and SECO, Inc., Sierra Club, WHOA, and NDOW Region I, as well as others. Regions I and II of the Nevada Department of Wildlife participated in an on-the-ground tour of the reestablishment area during 1985. Because the area in question is in the Elko District, preparation of this plan has been closely coordinated with the Elko Resource Area Biologist.

8.0 Release and Monitoring

Twenty bighorn sheep are proposed for release. The bighorn sheep will be captured in Oregon or British Columbia by the Nevada Department of Wildlife. Bighorn sheep could be stocked in late 1985 or during 1986.

A minimum of four bighorn sheep will be collared with radio-telemetry collars. Which sheep are collared will be based on number, sex, and age class of animals released. Nevada Department of Wildlife has primary responsibility for the bighorn capture, release and monitoring. The Bureau of Land Management is invited to participate jointly in these operations and will do so whenever possible. Winnemucca District BLM is responsible for habitat monitoring and management. The Nevada Department of Wildlife is invited to participate jointly in this process and will do so whenever possible.

This Release Plan will cover supplemental releases in the proposed release sites. The proposed release on public land is authorized by signature of the Winnemucca District Manager and the NDOW Regions I and II Supervisors on the Inventory Wildlife Habitat Project and/or Habitat Management Plan (Appendix 1).

9.0 Management Objectives

The objective of the proposed bighorn sheep release is to reestablish a viable population of sheep in the South Fork of the Little Humboldt River canyon area.

Reasonable numbers identified for this yearlong use area have been equated to 190 Animal Unit Months (AUMs) of forage. Habitat monitoring will be initiated when the bighorn sheep have established a home range. Data will be gathered by BLM to determine if the objective to support a viable population is being met.

10.0 Recommendations

Weather and conditions permitting the primary release site should be First Creek Rim. This site is on public land directly above the river in an area of steep, rocky cover. In order to utilize this site, the release would need to be made before snowfall using a stakebed truck. A stake bed truck would also be best for use at the Rodear Flat site. Location of the exact site should be coordinated between BLM and NDOW when the exact release date is known.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Appendix 1, Page 1

INVENTORY
WILDLIFE HABITAT PROJECT AND/OR HABITAT MANAGEMENT PLAN

District: Winnemucca
Prepared by: Donald J. Amant
Reviewed by: BLM District Wildlife Specialist Date
NDF&G District Representative Date

Name of Project or Plan South Fork of the Little Humboldt River Bighorn
Sheep Reestablishment

Location of Project or Plan South Fork of the Little Humboldt River, Elko
County, Nevada

Species Benefited California Bighorn Sheep

Description of Job or Project Release California bighorn sheep into the
South Fork of the Little Humboldt River Canyon to effect the
reestablishment of a native sensitive species.

Justification and Priority The release area has been identified for reestab-
lishment in the Paradise-Denio URA, MFP, Grazing EIS & Local #1 CRMP Plan.

Cost and Manpower Estimates All cost incurred in the capture, release, and
follow-up will be paid by NDOW.

Cooperative Funding (if any) BLM will assist in capture, release, and
follow-up dependent upon funding levels.

Approved:

Frank C. Duvall 10/29/85
District Manager, BLM Date

Larry R. Bassett 10/29/85
District Supervisor, NDF&G Date

District Supervisor, NDOW Date

Project Name: South Fork Little Humboldt River Canyon Bighorn Sheep Reestablishment

Categorical Exclusion Report Number: NV-020-6-CE-2

Project Description: California bighorn sheep (*Ovis canadensis Californiana*)

are scheduled to be released for reestablishment into the canyon of the South Fork
of the Little Humboldt River between Button Field and the confluence of Pole Creek
and South Fork Little Humboldt River. Part of this area has been designated as a
Wilderness Study Area (NV-010-132).

Recommended Mitigations: No mitigations are necessary for this project.

The Interim Management Policy and Guidelines for Lands Under Wilderness Review
recognizes the reintroduction of native species as an allowable activity within
wilderness study areas. No vehicular travel will occur off established trails.
Wilderness values will be enhanced by this transplant.

Exceptions:

NAME

COMMENTS

Sensitive Species: Dennis Tol

Dennis Tol No impact

9-30-85

Cultural Resources: Stanley Jaynes

OK, no comment Stanley Jaynes

Health & Safety, Unique Resources, Controversial, Risks, Precedent,
Cumulative, Violate Law: Donald J. Armentrout N/A

Prepared by: Donald J. Armentrout

9/25/85
Date

Reviewed by: Gerald L. Moritz
Environmental Coordinator

17 October 85
Date

Approved by: David Griggs
Area Manager

10-17-85
Date

APPENDIX 5

Detailed maps of major streams.

