

m 9-27-91



IN REPLY REFER TO:

(NV-054)
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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
LAS VEGAS DISTRICT OFFICE
4765 VEGAS DRIVE
P.O. BOX 26569
LAS VEGAS, NEVADA 89126



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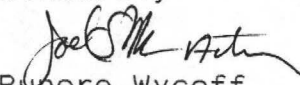
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Dear Concerned Citizen:

Enclosed is a copy of the South Spring Mountain Habitat Management Plan for your review. Comments should be addressed to Runore Wycoff, Stateline Area Manager at the above address. Please comment by September 27, 1991.

Sincerely

 Runore Wycoff
 Area Manager

- 1 Enclosure
 1. South Spring Mountain Habitat Management Plan

SOUTH SPRING MOUNTAIN DESERT BIGHORN
HABITAT MANAGEMENT PLAN

Prepared by

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ABSTRACT

The South Spring Mountain Bighorn Sheep Habitat Management Plan (HMP) includes the southern portion of the Spring Mountains: from Mount Potosi down to the Devil Peak area and the Nevada-California state line. The South Spring Mountain Habitat Management Area (HMA) is located entirely in the Stateline Resource Area of the Las Vegas District. The HMA includes the South Spring Mountains (Mount Potosi, Devil Mountain) and the Bird Spring Range.

The Nevada Department of Wildlife (NDOW) and the Bureau of Land Management (BLM) evaluated the HMA as potential bighorn sheep habitat in 1990 using a numerical rating system developed by Golden and Tsukamoto (1980). The HMA has all the habitat features necessary to support a viable population of bighorn sheep. The population could be increased through water development. Habitat south of State Route 160 is used by bighorn sheep throughout the year. The southern end of the HMA, has no known water. Bighorn sheep in California's Clark Mountain Range and the red rock area migrate into the South Spring Mountains during the fall and winter. The Bird Spring Range is used primarily during the fall and winter due to the lack of water in the area. With the development of additional catchments and the improvement of existing springs the South Spring Mountains and Bird Spring Range will be capable of supporting bighorn sheep yearlong.

This HMP presents an organized plan for the enhancement of desert bighorn sheep populations in present range, for the maintenance and improvement of bighorn habitat and for the future monitoring of bighorn populations. HMP objectives are designed to enhance the quality and quantity of important habitat elements such as forage, water, cover and space. Planned actions have been developed to accomplish the stated objectives by application of wildlife management techniques.

- (A) Is the use of HMA, relating to BH, standard; we ~~the~~ ^{assumed} HMA applied only to Herd Mgt area. Please explain.
- ① What portion of the wild Horse HMA is within the HMP?
- ② The Wild Horse Act states that wild horses will be mged at an ecological balance with the resource, how does the increase² from 50 to over 200 affect this optimum numbers.
- ③ At what point in time will the increase in BH

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then be used as a factor to reduce WH further?

④ We have no objection to the increase in BH, and in fact would like that they are doing well; however the area is a HMA as well as BH habitat & must be shared.

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I. INTRODUCTION

This habitat management plan (HMP) was cooperatively developed under the Master Memorandum of Understanding (December 30, 1970) and the Sikes Act Supplement (October 7, 1975) between NDOW and BLM. This plan calls for the Nevada Department of Wildlife (NDOW) and the Bureau of Land Management (BLM) to work in harmony to maintain, improve, and manage the wildlife resources and their habitat for the best interest of the people of Nevada and the United States. It in no way diminishes the authority of the State of Nevada to own, control and manage the State's wildlife or the BLM's mandate to manage wildlife habitat on public lands.

The purpose of the HMP is to document habitat suitability, set habitat management objectives and describe the actions necessary to achieve those objectives. The HMP allows for the improvement of bighorn sheep habitat, allows expansion of existing populations, and maintains viable populations of bighorn sheep.

The desert bighorn sheep (Ovis canadensis nelsoni) was well distributed throughout Nevada prior to the arrival of European man in the early nineteenth century. At that time, bighorn sheep were probably found in almost every mountain range in Nevada (Monson, 1980 and McQuivey, 1978). Archeological findings and petroglyph sites suggest that most of the ranges in the state supported at least some bighorn sheep (McQuivey, 1978). Bighorn sheep numbers began to decline in the 1800s with the settlement of the Western United States. Factors which may have contributed to the decline of bighorn include: climatic changes, unregulated hunting, commercial hunting to supply meat to mining camps, disease introduced with domestic livestock and in more recent years, loss of habitat due to development and recreational use of public lands.

Until recently, bighorn sheep numbers in Southern Nevada were on the decline. In some mountain ranges, remnants of historical populations still exist, while in others, populations have been completely eliminated. Recently, bighorn sheep have been reintroduced into several mountain ranges in southern Nevada with great success, and bighorn sheep populations are showing stable to upward trends. Within the Las Vegas District, about nineteen mountain ranges now support bighorn sheep. Another ten ranges historically supported bighorn sheep or have the potential to support bighorn. NDOW and BLM have recommended the reintroduction of bighorn sheep into historic ranges and augmentation releases in existing habitat areas, in an attempt to increase the distribution and abundance of the species.

In 1985, the Bureau of Land Management (BLM) began a "Challenge grant" program to encourage a cooperative effort between federal and state agencies for the enhancement of bighorn sheep populations and their habitat on BLM administered lands. NDOW

*The fact that BN are increasing as the
hills the recent shootings of WH, despite the fact their
numbers are low, would warrant a PR program*

and BLM have proposed to establish viable bighorn sheep populations (100+20 bighorn sheep, as defined in the Bureau's Rangewide Plan for Managing Desert Bighorn Sheep on Public Lands, 1988) in the South Spring Mountain HMA.

This HMP provides management objectives and planned actions for management of a viable population of bighorn sheep. Sheep can easily move between Red Rocks National Conservation Area and the HMA. Sheep also move between the Clark Mountains and the South Spring Mountains. According to the population estimates provided by NDOW, the current bighorn sheep population of the South Spring Mountain habitat management area (HMA) is approximately 50 bighorn sheep. Animals which use the Bird Spring Range are included in the population estimate for the HMA.

This HMP is part of a systematic approach to monitor and improve the quality and quantity of bighorn sheep habitat on public lands administered by the Las Vegas District, BLM, and National Forest Service lands administered by the Toiyabe National Forest. The specific factors to be considered are forage, water, cover and space. This plan will integrate the habitat needs of the bighorn sheep with other multiple use needs.

This HMP will be reviewed annually to determine overall progress meeting HMP objectives. Any needed revisions will be made following the annual review. Amendments or revisions of the plan will be subject to public review under provisions of the National Environmental Policy Act (NEPA) regulations. Plan maintenance will not require public notification. Prior to any project development involving surface disturbance, a Class III Cultural Resource Inventory and a T&E clearance will be conducted in compliance with BLM policy.

The implementation schedule is based upon a five year period. However, depending upon funding, manpower, and overall district priorities, implementation may take longer than projected.

II. EXISTING ENVIRONMENT

A. Location and Land Status

The HMA (Habitat Management Area) is located in southern Clark county. It includes portions of two mountain ranges. These are the South Spring Mountains and the Bird Spring Range. The HMA is managed by the BLM, Stateline Resource Area. A small portion of the HMA is managed by the U.S. Forest Service.

The South Spring Mountain range is bounded on the east by Goodsprings Valley, on the south by Interstate 15 and the Nevada-California State line, on the west by the Pahrump and Mesquite Valleys, and on the north by State Route 160. Approximately

that show both species can complement the area in managed numbers.

270,966 acres (unsuitable land included in total) of the HMA are administered by the BLM, Las Vegas District, Stateline Resource Area (RA). The U.S. Forest Service administers 25,293 acres of land within the HMA. The rest of the HMA consists of private/patented inholdings. The approximate legal description of the South Spring Mountains is Townships 22-27 south by Range 56-58 east.

The Bird Spring Range is a small range which runs roughly north-south. It is bounded on the west by Goodsprings Valley, on the south by Ivanpah Valley, on the north by State Route 160, and on the east by Interstate 15. Approximately 4,500 acres of private / patented land is located in this range. The rest of the range is under the jurisdiction of the BLM, Stateline RA. The approximate legal description of the range is Townships 22-24 south by Ranges 58-60 east.

B. Acreage

The HMA contains 270,966 acres of land. Approximately 111,122 acres (private/patented included in total) have been identified within the HMA as having potential for desert bighorn sheep (Table 1). Private/ patented acreage not administered by the BLM is identified only as it relates to potential sheep use and is not part of the HMA. Management objectives and actions will not apply to non-Bureau lands. Private/patented land totals approximately 4,500 acres and though not part of the HMA, will probably be used by bighorn sheep in conjunction with habitat on BLM lands. Movement of bighorn sheep will occur between BLM lands and the land located on the Toiyabe National Forest. The BLM will cooperate with the U.S. Forest Service to manage bighorn sheep habitat within the HMA. Less than 10 % (25,293 acres) of the HMA and less than 16 % (19,537 acres) of the bighorn sheep habitat exists on U.S. Forest Service land. (Map 1, 2).

Approximately 28,415 acres are currently crucial bighorn sheep habitat. Crucial habitat is defined as that which is located within 2 miles of water. An additional 24,415 acres of crucial habitat would be added with the development of four water catchments in the HMA. After water developments are constructed, approximately 34% of the bighorn sheep habitat within the HMA would be crucial summer habitat.

Table 1: Existing Bighorn Acreage in South Spring Mountain HMA.

HMA	Total habitat (acres)	Current crucial habitat (acres)	Additional Proposed crucial habitat (acres)	Percent of BHS habitat that will be crucial
SOUTH SPRING MOUNTAIN HMA				
Bird Sp. Rng.	40,005	0	8,329	8%
Mt. Potosi	25,102	4,000	16,086	18%
Devil Mtn.	46,015	20,146	0	18%
Total	111,122	24,146	44,561	26%

C. Topography and Elevation

The topography of the HMA is typical of the Basin and Range Physiographic province with north-south mountain ranges separated by broad valleys.

1. South Spring Mountains

Elevations range from 3,500 feet in the valleys to 8,510 feet at Mt. Potosi. There are three other major peaks. Big Devil, Little Devil, and Shenandoah Peak rise to 5,882, 5,597, and 5,863 feet, respectively. Pinyon and juniper is common at the higher elevations. Most of the range is steep and rocky with many small cliffs and ledges. Steep-sided canyons and drainages of various sizes are found throughout the range and provide excellent thermal and escape cover for bighorn sheep. Bonanza hill and other isolated hills are found on the southwest side of the range. The Bird Spring range connects to the South Spring Mountains in the northern portion of the HMA, providing a migration corridor between the two ranges.

2. Bird Spring Range

The Bird Spring range contains no major mountain peaks. Its

several small mountains are surrounded by rolling hills and gently undulating terrain. Elevations range from 3,000 feet on the eastern side to 5,672 feet at Bird Peak. Good bighorn sheep habitat (thermal, escape cover) is limited due to the small size of the range and unreliable water sources.

D. Geology and Minerals

Geologically, the South Spring Mountains and Bird Spring Range are composed predominately of carbonate Paleozoic rocks flanked by alluvium in the valleys.

The South Spring Mountains and Bird Spring range have good potential for the occurrence of precious metallic minerals. There is good potential for salable minerals such as sand and gravel in the valleys and lower bajadas adjacent to the Bird Spring Range. The potential for silica and refractory grade sand is fair in the southern portion of the Spring Mountains. There is good potential for other non-metallic minerals in the two ranges. Some development is occurring, and future development is anticipated.

There are currently 12 mining notices and 1 plan of operation on file with the Las Vegas District for the South Spring Mountains and Bird Spring range.

There is low to moderate potential for oil and gas development in the HMA. Potential for oil and gas is based upon the sedimentary basin concept and location within the overthrust belt. To date one test well has been drilled in the HMA. No oil or gas was detected (pers. comm. Gary Beckman, BLM Geologist).

E. Soils

Soils in the HMA are made up of six types derived from limestone, all slightly saline and moderately alkaline with a low water holding capacity and medium runoff. The texture is coarse containing many small rocks. The Isom, St. Thomas, Weiser and Mormon Mesa families occupy an estimated 70% of the HMA and are located between 3000 and 5500 feet. The vegetation found on these soils is creosote bush (*Larrea tridentata*), fourwing saltbrush (*Atriplex canescens*), white bursage (*Ambrosia dumosa*), yucca, galleta (*Hilaria spp.*), blue grama (*Bouteloua gracilis*), and indian ricegrass (*Oryzopsis hymenoides*). The Deama and Stormitt families occupy about 10% of the HMA and are found near Mt. Potosi between 5000 and 8500 feet. The vegetation found on these soils is pinyon pine (*Pinus monophylla*), utah juniper (*Juniperus osteosperma*), gambel oak (*Quercus gambelii*), mountain mahogany (*Cercocarpus ledifolius*), Cliffrose (*Cowania mexicana*), blue grama (*Bouteloua gracilis*), and thurber needlegrass (*Stipa thurberiana*). Limestone rock outcrop makes up an estimated 20% of the HMA. The Isom, Weiser, and Stormitt families are deep

soils (60+ inches), while the St. Thomas, Mormon Mesa, and Deama families are shallow soils (12 inches or less). This information is based on the order 4 soil survey. The order 3 soil survey is being conducted now and is scheduled to be completed in 1996.

F. Climate

Climate in the Mojave desert is usually characterized by high temperatures and low precipitation throughout the year. Temperatures vary significantly along elevational gradients with a decrease of about 5.3°F for every 1,000 ft. increase in elevation. Daily and seasonal temperatures vary greatly. Daytime to nighttime temperatures may vary by 20°-30°F in the winter and 30°-40°F in the summer. Maximum temperatures in the summer exceed 100°F at the lower elevations. Minimum winter temperatures drop below freezing at the higher elevations. There is about a 5,600 foot elevational range within the HMA, leading to significant differences in temperature.

During the winter, widespread frontal systems produce rain at the lower elevations and snow at the higher elevations. During the late summer, precipitation occurs primarily in the form of brief, localized thunderstorms. The amount and timing of precipitation varies greatly from year to year.

McCarren Airport weather station recorded 3.75 inches precipitation in 1990. The average annual precipitation is normally 4.19 inches. The lowest temperature recorded since 1935 is 8°F in January 1963 and the high was 116°F in July 1985. The high and low of 1990 was 112 on July 1, and 11°F on December 23 respectively.

G. Vegetation

The vegetation within the HMA is typical of the Mojave Desert Biome. At lower elevations, the vegetation is typical of the Mojave Desert creosote/bursage plant community. As one travels up the elevation gradient, the vegetation gradually changes to pinyon-juniper. The vegetation can be divided into two major communities: Southern Desert Shrub and Pinyon-Juniper (USDI 1979). These communities can then be further subdivided into more specific vegetative types.

Southern Desert Shrub is found on the valley floors and bajadas below 4,200 feet in areas of low precipitation and high temperatures. Vegetative types within this community include; creosote (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), shadscale (*Atriplex confertifolia*) and Joshua tree (*Yucca brevifolia*). Other shrubs which may be common are; spiny hopsage (*Greyia spinosa*), Anderson thornbush (*Lycium Andersoni*), and Fremont dalea (*Psoralea fremontii*).

The creosote bush type is found on the valley floors and lower bajadas below about 3,800 feet. Although it may be found at slightly higher elevations, especially on southern exposures. Precipitation ranges from 4-6 inches annually. White bursage, range ratany (*Krameria parviflora*), Mormon tea (*Ephedra spp.*), Fremont Dalea, saltbush (*Atriplex spp.*) brittlebrush (*Encelia spp.*) and other common shrubs are associated with creosote. Common perennial grass species are Indian ricegrass (*Oryzopsis hymenoides*), big galleta (*Hilaria rigida*), desert needle grass (*Stipa speciosa*) and bush muhly (*Muhlenbergia porteri*). Common forbs found in this type may include *Plantago sp.*, filaree (*Erodium cicutarium*), globemallow (*Sphaeralcea spp.*) and desert trumpet (*Eriogonum inflatum*).

The blackbrush types are found throughout the HMA at 3,800 to 5,200 feet in elevation. Blackbrush is generally found on shallow soils with an underlying hardpan (Pers. Comm. Doug Merkler, Soil Conservation Service). A wide variety of species may be associated with blackbrush depending upon soil type, elevation, precipitation and degree of disturbance. At the lower elevations, the associated species are representative of the creosote type (e.g. creosote, bursage, big galleta). In undisturbed areas with shallow soils, blackbrush may be monotypic. At the higher elevations, associated species are representative of the lower elevations of the pinyon-juniper type (e.g. juniper, blue grama and bitterbrush).

The pinyon-juniper type is found in the South Spring Mountains but not in the Bird Spring range. This community is generally found between 4,500 and 8,000 feet in elevation. Precipitation ranges from 10-18 inches annually. At the lower elevations, juniper (*Juniperus osteosperma*) is the dominant tree species. As elevation increases, so does the occurrence of single leaf pinyon (*Pinus monophylla*). Shrub live oak (*Quercus turbinella*), manzanita (*Arctostaphylos pungens*) and mountain mahogany (*Cercocarpus ledifolius*) are some associated shrub species. The understory consists of blackbrush and other mountain shrubs such as joint fir (*Ephedra spp.*), rabbitbrush and cliffrose (*Cowania mexicana*). Common grasses include blue grama (*Bouteloua gracilllis*), galleta grass (*Hilaria spp.*), squirrel tail (*Sitanion hystrix*) and bush muhly.

An ecological site survey has not yet been completed for the Stateline RA.

H. Fauna

Mammals which inhabit the HMA include: mule deer, mountain lion, bobcat, grey fox, kit fox, coyote, spotted and striped skunk, badger, ring-tailed cat, black-tailed jackrabbit, desert

Table 2: A summary of the vegetation types found in the HMA via ocular reconnaissance survey 1976-1977 (USDI 1979).

Plant Community

<u>Type</u>	<u>Common name</u>	<u>Scientific name</u>
SOUTHERN DESERT SHRUB		
creosote bush shrub	white bursage	<i>Ambrosia dumosa</i>
	creosote bush	<i>Larrea tridentata</i>
	blackbrush	<i>Coleogyne ramosissima</i>
	Nevada jointfir	<i>Ephedra nevadensis</i>
joshua tree	white burrobrush	<i>Hymenoclea salsola</i>
	spiny hopsage	<i>Grayia spinosa</i>
	blackbrush	<i>Coleogyne ramosissima</i>
	Nevada jointfir	<i>Ephedra nevadensis</i>
other desert shrub	shadscale	<i>Atriplex confertifolia</i>
	Joshua tree	<i>Yucca brevifolia</i>
	spiny hopsage	<i>Grayia spinosa</i>
	Nevada jointfir	<i>Ephedra nevadensis</i>
	spineless horsebrush	<i>Tetradymia canescens</i>
	rabbitbrush	<i>Chrysothamnus viscidiflorus</i>
	winterfat	<i>Eurotia lanata</i>
PINYON-JUNIPER		
Juniper	big sagebrush	<i>Artemisia tridentata</i>
	Utah juniper	<i>Juniperus osteosperma</i>
	blackbrush	<i>Coleogyne ramosissima</i>
	mormon tea	<i>Ephedra nevadensis</i>

cottontail and numerous rodents (Hall 1946).

Approximately 25 mule deer are present in the HMA but there appears to be little overlap between deer and sheep habitat. Most of the deer sign is found at higher elevations in the northern end of the HMA, among the pinyon-juniper and in less precipitous terrain than that used by bighorn sheep.

Some common birds within the HMA include: mourning dove, Gambel's quail, Chukar partridge, scrub jay, red-tailed hawk, American kestrel, great-horned owl, burrowing owl, gila woodpecker, northern flicker, mockingbird, canyon wren, rock wren, cactus wren and turkey vulture (Peterson 1961).

A variety of reptiles may be found within the HMA. Some of the more common lizards are: side-blotched lizard, collared lizard, desert horned lizard, sagebrush lizard and the western whiptail.

A few common snakes are: coachwhip, gopher snake, common kingsnake and the Great Basin rattlesnake (Stebbins 1966). Due to the lack of water, amphibians are probably not common. The Great Basin spadefoot toad and the red spotted toad, which can survive in very arid areas may occur within the HMA.

Bighorn sheep (*Ovis canadensis nelsoni*) currently use the HMA on a yearlong basis in limited numbers. The following paragraphs discuss bighorn sheep distribution for each mountain range within the South Spring Mountain HMA.

Table III Table 3: Potential bighorn sheep numbers in the HMA.

<u>Mountain Range</u>	<u>Potential Minimum</u> <u>Popln. Estimate</u>
Mt. Potosi	50
Devils	75
Bird Spring Range	26
<hr/>	
Total	151*

*Reasonable numbers for the South Spring Mountains and Bird Spring Range were set at 604 animals in the Stateline MFP. Based on updated information gained during the habitat inventory. NDOW estimated that the range could support approximately 150 to 200 animals with habitat improvements (water catchments).

1. South Spring Mountains

In this HMP, the South Spring Mountain range is composed of the southern portion of the Spring Mountains (Map 1). The bighorn sheep currently using the HMA are considered to be part of the Spring Mountain population. The estimated population for the entire Spring Mountains (California / Nevada State line to State Route 95) in 1990 was 161 sheep (NDOW survey data, 1990). The population estimate for the South Spring Mountain HMA in 1990 was 50 bighorn sheep (NDOW survey data, 1990). However, the majority of the HMA is still winter habitat due to lack of water.

Out of approximately 111,122 acres of bighorn sheep habitat in the HMA, only 4,000 acres are within two miles of perennial water and may be considered yearlong habitat. During the habitat inventory completed in 1990, bighorn sheep sign (beds, trails, pellets groups, and tracks) were seen throughout the HMA.

2. Bird Spring Range

During the habitat inventory, a moderate amount of bighorn sign was seen in the vicinity of Bird & Wilson Tank springs. According to NDOW survey records and personal observations during the habitat inventory, most bighorn sheep use occurs on a seasonal basis, primarily during the winter and is concentrated in particular areas which contain relatively steep topographic features and good forage.

I. Threatened, Endangered and Sensitive Species

There are no known federally listed plant species in the HMA. However, several category 2 and 3C candidate plant species are found in or near the HMA. (see table IV)

Table 4: Special status species which may occur within the habitat management area (From BLM data; Mozingo and Williams, 1980).

SOUTH SPRING MOUNTAIN HMA

<u>Species</u>	<u>Common Name</u>	<u>Location</u>	<u>Status</u>
PLANTS			
<i>Agave utahensis</i>	Utah agave	Goodsprings	3C
<i>Angelica scabrida</i>	Charleston angelica	Spr. Mtns.	2
<i>Astragalus remotus</i>	Milk vetch	Spr. Mtns.	2
<i>A. nyensis</i>	Milk vetch	Goodsprings	3C
<i>Cryptantha tumulosa</i>	None	Spr. Mtns.	3C
<i>Coryphantha vivipara</i>	None	Spr. Mtns.	3C
<i>Forsellesia pungens</i>	None	Mtn. Springs	3C
<i>Penstemon bicolor</i> var. <i>roseus</i>	beardtongue	Spring Mtn.	2
<i>P. bicolor</i> var. <i>bicolor</i>	Penstemon	Spr. Mtns.	2
<i>P. thompsoniae</i> var. <i>jaegeri</i>	Penstemon	Spr. Mtns.	3C
<i>Salvia dorii</i> var. <i>clokeyi</i>	Clokey milkvetch	Spr. Mtns.	2
ANIMALS			
<i>Plejebus shasta</i>	Spr. Mtn. blue butterfly	Spr. Mtns.	2
<i>Xerobates (Gopherus) agassizi</i>	desert tortoise	below 5,000 feet	T
<i>Falco peregrinus</i>	Peregrine falcon	unknown	E
<i>Euderma maculata</i>	Spotted bat	unknown	2
<i>Heloderma suspectum</i>	Gila Monster	unknown	3C
<i>Buteo regalis</i>	Ferruginous Hawk	unknown	2
<i>Buteo swainsoni</i>	Swainsons Hawk	unknown	3

Table V Table 4: Special Status Species Con't.

SOUTH SPRING MOUNTAIN HMA

<u>Species</u>	<u>Common Name</u>	<u>Location</u>	<u>Status</u>
<i>Strix occidentalis</i>	Spotted owl	unknown	T
<i>Vulpes necator</i>	Sierra Nevada Red fox	unknown	2

Category 2 candidate species are those which information now in possession of the U.S. Fish and Wildlife Service indicate that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threats are not currently known or on file to support the immediate preparation of rules. Category 3C candidate species are those proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat.

The only federally listed animal species known to occur in the HMA is the desert tortoise (*Xerobates (Gopherus) agassizi*). The desert tortoise is listed as a threatened species throughout the Mojave Desert, north and west of the Colorado River. Desert tortoises occur on the valleys and bajadas below 5,000 feet in elevation and are usually associated with the creosote bush vegetation type. Eleven tortoise transects have been conducted in the foothills of the South Spring Mountains. Low to moderate tortoise sign was found in the foothills and upper bajadas. Tortoise densities within bighorn sheep habitat are suspected to be low because of shallow soils and steep slopes. Sixteen tortoise transects were conducted by BLM in the Bird Spring Range. Low to moderate tortoise numbers exist in the Bird Spring Range. A moderate to high number of tortoises have been found in the southern end of Goodsprings valley, located between the South Spring Mountains and the Bird Spring Range. The habitat surrounding the HMA is category 2 tortoise habitat, which supports medium to high densities of tortoise.

The Peregrine falcon (*Falco peregrinus*) may occur in the HMA but has not been documented. Peregrine falcons have been observed in the past in the Red Rock Canyon National Conservation Area. Suitable cliff habitat is found within the HMA, but open water and good quality riparian habitat is lacking. Most likely, peregrines using the HMA would be migrants or winter residents and not nesting birds. The Peregrine falcon is a federally listed endangered species. The Nevada Department of wildlife has released falcons at hack sites in urban Las Vegas. These falcons

may utilize the HMA for foraging or nesting.

Mexican Spotted owls *Strix occidentalis* may be present on portions of the Spring Mountains. A survey is proposed for FY 92-93.

Two candidate animals may occur in the HMA. (see table IV) These are the Spotted bat (*Euderma maculata*), a category 2 candidate species and the Gila Monster (*Heloderma suspectum*), a category 3C candidate species. Gila monsters are known to occur in the Red Rocks NRA, just north of the HMA. Spotted bats have been collected in the Las Vegas Valley and at Lake Mead.

J. Wilderness

There is no designated wilderness or wilderness study areas in the HMA.

K. ~~Horses and Burros~~ or *via versa*

The Spring Mountains Herd Management Area, (horses and burros) overlaps with about two-thirds of the South Spring Mountain Habitat Management Area. Horse and burro use presently occurs on and around the Bird Spring Range and in the Potosi Mountain area. The primary factors affecting current distribution are availability of water, shade, and forage. The latest population figures for the Herd Management Area are 15 horses and 10 burros. The majority of the burros live on the northern portion of the South Spring Mountain HMA. In 1987, 50 horses used the north end of the South Spring Mountain HMA. Monitoring studies indicate that slight (0-20%) to light (21-40%) forage utilization has occurred in the area. Horses have recently declined to about 15 animals due to drought, failure of water projects, shooting, and collisions with automobiles on State Route 160.

Water sources for horses and burros include Bird Spring, Potosi Spring, Cave Spring, and Wilson Tank Spring. Horse forage utilization is mostly concentrated on the lowlands, valleys and open areas. Monitoring studies indicate that forage utilization has occurred near Bird and Wilson Tank springs. Horses rarely use the steep terrain in mountain areas. (Approximately 100,000 acres of land in the South Spring Mountains and Bird Spring Range is used by horses and burros on a yearlong basis.) *Questionable where's data*

Weaver and Hall (1972) noted evident competition between bighorn and burros in the eastern portion of the Clark Mountain Range, an area adjacent to this bighorn Habitat Management Area. More recent surveys show that this same burro population is expanding its range into the Stateline Pass area of Nevada (NDOW 1990). Burros in the Devil Peak area are outside of the herd area.

The BLM has water rights at Wilson Tank Spring and Bird Spring

and are currently developing these springs, along with Mud Springs and Grapevine Spring located north of the HMA, to ensure a reliable water supply to wild horses and burros. Bird Springs and Wilson Tank produce a limited quantity of water. In 1990, the two springs failed to provide horses and burros with a sufficient quantity of water. Bighorn sheep will be able to use the spring sites in the future. However, the spring flow may not be sufficient to provide yearlong water to bighorn, wild horses, and burros. If yearlong water is not available, bighorn may not use the nearby habitat areas during the summer and fall.

L. Water Availability and Riparian Habitat

The relative lack of free water is the single-most important factor affecting the distribution and ultimately the population size of desert sheep on the South Spring Range (McQuivey, 1978). Approximately 32,150 acres of yearlong bighorn habitat exists in the South Spring Range. 24,150 acres of this habitat is administered by the BLM. The remaining acreage is managed by the U.S. Forest Service. Another 86,976 acres of the HMA are classified as bighorn sheep winter range.

NDOW and BLM have recommended construction of four additional wildlife water catchments in the HMA in order to upgrade the habitat to yearlong use. These catchments would support a viable population of between 75-100 bighorn sheep and would result in approximately 28,475 acres of yearlong habitat.

Three of the eight known water sources in the HMA lie within USFS lands. Mexican, Ninety-nine, and Aztec Springs are identified in this document due to their importance to bighorn sheep utilizing the HMA. No improvements to springs on Forest Service land are being proposed through this document. Springs on BLM lands will be examined for the feasibility of improving spring flows and protecting riparian habitat. All eight known water sources lie north of the Goodsprings Road (NV State Route 161) and the Wilson Pass Road.

Potosi Mountain

Mountain Springs at the northern limits of the HMA was once an important wildlife water for animals using the Potosi area. The development of the area and a significant flow of traffic over Mountain Springs Pass limits the value of these sources to bighorn sheep in the HMA.

Potosi Spring is located at the base of the west slope of Potosi Mountain. Potosi Spring, the most reliable water source in the HMA, has been the center of mining and livestock activities for over one hundred years. Tracks and droppings indicate some use by bighorn and mule deer. However, this use is limited by the continued disturbances to the area. This spring is also a water

*Maybe you
don't increase BH
run what the
resources can
support*

*See
A*

source for burros in the HMA. This spring is privately owned and is for sale for development.

Mexican Spring is located three miles south of Potosi Spring. The source was developed at one time and has since fallen into disrepair. Less than a gallon of water is available in a pocket at the source. It is doubtful that Mexican Spring has been a significant source of water for bighorns in recent years. Deer and/or sheep beds and tracks were found close to the spring.

Ninety-nine Spring, on the east flank of Potosi Mountain, was once an important source of water for bighorn sheep. The spring was developed and piped 1.5 miles to the Ninety-nine Mine area. The pipeline was abandoned in the 1930's. Although Hewett (1931) reported a pool of water at the source six feet by 12 feet and flowing at a rate of one gallon per minute in 1931, the spring has been dry for at least 15 years.

Aztec Tank is three miles southeast of Potosi Mountain. This water is a seep which has been developed with two dams to retain the low flow of water. Both dams are filled with debris from occasional flashfloods. Numerous petroglyphs in the area suggest that it may have once been a reliable source of water. The intermittent flow and nearby decorative rock mining make this source questionable for bighorn and mule deer use.

Cave Spring is located one half mile north of Wilson Pass on BLM lands. Water is available in a pool that is one foot deep, two feet wide and three feet long. Bighorn sheep use the water throughout the year. The spring was an important water for past livestock operations. It was dynamited in 1967 in an attempt to increase water flow. Instead, new fissures were opened in adjacent rock structures, resulting in a decreased flow. In January 1978, BLM personnel determined that existing storage and a flow of six gallons per hour could support no more than 16 head of cattle (McQuivey, 1978). Domestic livestock use of the spring has been light to nonexistent since the mid 1970s. Burros were first observed in the area between August and November 1990.

McQuivey reports another water source (Unnamed Spring) in an abandoned mine near Cave Spring. The Bureau water Resources Inventory shows it to be located at T. 24 S., R. 58 E., sec. 6. It is listed as having a flow of 0.25 gallons per minute which extends out from the mine drift. This source was not located during the fieldwork for this HMP and appears to be dry. If feasible spring/riparian enhancement efforts will be initiated at Cave and Unnamed Spring in FY 1993 and FY 1995.

Two slickrock development projects are proposed in the Potosi Mountain area.

Bird Spring Range

Doesn't the permittee have to keep up the waters to retain permit?

How many?

Wilson Tank (Tunnel Spring), four miles east of Potosi Mountain in the Bird Spring Range, receives light to moderate use by bighorn sheep and mule deer. The spring has been developed and water is available in a fenced wildlife trough and a horse and burro trough. The spring source has been fenced to protect the vegetation and storage tanks. The watering system has been set up so the wildlife trough will be the last to go dry in the event of an extended drought.

Bird Spring, three miles southeast of Wilson Tank will be developed in early August 1991 and will be set up with a fenced wildlife drinker and a horse and burro trough similar to that at Wilson Tank. Bighorn sheep tracks have been seen in the area.

Two slickrock developments may be constructed in the Bird Spring Range in 1995.

Devil Mountain

Water sources in the Goodsprings area were once available to bighorn and other wildlife. These waters have since been completely developed for human domestic use and are no longer available to wildlife. Three slickrock developments were constructed in the Devil Mountain area in 1991.

M. Livestock

Bird Spring Range

Portions of two ephemeral grazing allotments exist in the Bird Spring portion of the HMA. The Spring Mountain and the Table Mountain allotments have not been activated for the past 15 years. As a result, no livestock use has occurred in bighorn sheep habitat. Both of these allotments have limited water availability which limits livestock distribution within the allotments. Portions of these allotments are possibly inaccessible or unsuited for livestock use due to slope and percent rock.

South Spring Mountains

Portions of four livestock grazing allotments exist in the South Spring Mountains portion of the HMA. These are the Spring Mountain, Table Mountain, Black Butte, and Roach Lake allotments. Each allotment is classified as ephemeral range. Livestock use in the Roach Lake Allotment is slight (0% to 20%) within the HMA boundary. Cattle grazing was permitted in the Roach Lake allotment for two of the last six years.

Table 5: Livestock grazing allotments partially or entirely within the HMA (From BLM data).

South Spring Mountain HMA

Allotment Name	Total Acreage	Classification*		Five year Average use (AUMs)	Acres in HMA
Spring Mountain	285,381a 24,983b	C	E	0	123,893
Table Mountain	88,537	C	E	0	83,855
Black Butte	36,312	C	E	0	24,263
Roach Lake	27,639	C	E	0	20,845
<hr/>					
Total	462,852			215	252,856

*C=cattle,E=ephemeral
a=BLM land
b=USFS land

N. Cultural Resources

A Class I Literature Review was conducted by the Area Archaeologist for Stateline Resource Area in 1990 (*A Review of Fifteen Years of CRM on BLM Land in Southern Nevada*, by Keith Myhrer, CR5-1990). The resource area was divided into 19 zones for comparison, based on geographic parameters such as mountain ranges, rivers and valleys. The parameters of Goodsprings Valley includes most of the area described within this HMP and the evaluations below can be used for the HMP area in its entirety. Goodsprings Valley zone is bordered on the north by Red Rock Canyon Recreation Lands, and east by the McCullough Range, southwest by the California border. This zones includes the Bird Spring Range and Mount Potosi. The zones were rated in Myhrer 1990 for sensitivity based on percent of the zone surveyed for cultural resources, numbers and kinds of recorded sites, and intuitive information supplied by professional and avocationalist archaeologists.

Although Goodsprings Valley zone has an adequate amount of inventory, not all zones of sensitivity nor significant sites have been recorded or evaluated. Goodsprings zone was rated as "High Sensitivity" based on the kinds of sites recorded and the presence of positive environmental attributes such as edible resources and water sources. Goodsprings Valley zone has 285,000 acres, which is 6.8 percent of the land in the entire resource

area. A total of 3,184 acres have been surveyed for cultural resources, equaling 1.1 percent of the zone and 1.1 percent of inventoried land in the resource area. Inventory acreage is divided among powerline projects, off-road race courses, and material source pits. This zone ranks 18th in amount of inventoried land and 11th in numbers of recorded archaeological sites.

Of the 30 recorded sites, 40 percent are historic, most related to mining activities, 23 percent rock shelters, and 20 percent camp sites. There is a high potential for the presence of significant historic mining sites in the Goodsprings Mining District. Also, the Yellow Plug Prehistoric/Historic District, located near Rainbow Quarries, is a significant district that has not been sufficiently recorded or evaluated.

Recommendations for future cultural resource evaluation were offered in the Class I inventory. All projects in this zone should be surveyed at Class III levels. There is high potential that several sites, especially historic, can be managed for conservation, information potential and public values.

O. Recreation

The Clark County MFP designated all public lands in Clark County Planning Unit as closed, limited, or open to OHV use, depending upon values found in the specific areas. About 85% of the HMA is located in a limited OHV designation area. Large washes and existing roads in the foothills of the South Spring Mountains have been used for events in the past. Motorized events such as the Barstow to Vegas motorcycle race, the Gold Strike Hare and Hound (BITD), Whiskey Petes Championship Hare and Hound (BITD) have been held in the HMA. Buggy races such as the Frontier 500, Frontier 250, Gold Coast 300, Mint 400, and Snore 250 have been held in the HMA.

encompasses extent

The Barstow to Vegas motorcycle course used the foothills of the entire Devil Mountain area in 1989. A Best in the Desert course used the area leading to Devil Canyon and the Gary Allen quarry in 1989. The Gold Coast 300 course was routed around the Devil Canyon, Goodsprings, Rainbow quarry, and Nevada Royale quarry area in 1988. The Gold Coast course may use the Nevada Royale quarry area in 1991. The 1988 Snore 250 course was routed through the Ivanpah valley on the western side of Interstate 15. The Snore 200 course was routed through the Goodsprings/Pilgrim mine area in 1989.

Almost every year

Proposed OHV events in the HMA would be handled on a case-by-case basis and protective stipulations would be required to mitigate impacts to bighorn sheep crucial habitat and lambing grounds.

Two horse endurance rides are held each year in the northern

portion of the HMA. Riders travel from the Blue Diamond area to the Goodsprings/Jean Lake area. Approximately 25 to 50 riders participate in these events.

As habitat conditions improve and bighorn sheep numbers increase, consumptive and non-consumptive recreational opportunities in the South Spring Mountains and Bird Spring Range will increase. If population objectives are met, two to three bighorn sheep tags could be added to the Spring Mountain hunt (NDOW unit 262). An increase in an estimated 60 to 90 recreation days would be associated with the increase in hunting tags. Increased wildlife viewing opportunities will be available to the public because sheep are expected to remain in the South Spring Mountains during the spring, summer, and fall seasons.

III. HABITAT EVALUATION

A. Methods

The HMA was surveyed using a modification, of Hansen's original classification of desert bighorn habitat potential, developed by H. Golden and G. Tsukamoto in 1980 (Appendix A). This system was designed to assist land managers in delineating crucial bighorn sheep habitat. It not only rates the importance of the area for bighorn sheep, but it also helps to determine where habitat management techniques can be applied most effectively.

This system of surveying bighorn sheep habitat defines a number of important habitat components and ascribes number values to each. This allows for the identification of the limiting factors which may then be improved by wildlife management techniques. If a parcel of land is valued low for bighorn, the reason for the low value can be quickly determined by analyzing the individual points for each component. For example, if a parcel of land rates high in forage and topography but water is absent, the land manager can plan a water development to make the area more suitable for bighorn sheep.

A total of 10 sites were surveyed by NDOW in 1990. Three of these sites were located in the Bird Spring Range, three sites were located in Mt. Potosi Unit, and four sites were located in the Shenandoah - Devil Peak area. The five habitat components listed below were examined at each of the 10 sites. For a more detailed breakdown of point values, see Appendix A.

1. Topography - slope and roughness of terrain (5 points).
2. Water Availability - distribution, amount and permanence, proximity to rough terrain and use by other animals (20 points).
3. Vegetation - community type, overall density and percent preferred forage (15 points).

4. Animal Use - domestic, feral and other big game (8 points).
5. Human Use - presence of roads, fences, mineral and agricultural development (10 points).

Each site was evaluated on the basis of these habitat components. The scores for each site were totaled and then multiplied by four to obtain a coded or "weighted" total. A weighted average was also obtained for each site and each mountain range. These weighted totals could then be used to compare the quality of bighorn habitat from site to site or from mountain range to mountain range. The specific values for each site are shown in appendix B. A breakdown of habitat quality by weighted total is shown below:

Excellent	180+ points
Good	160 - 179 points
Fair to Good	130 - 159 points
Fair	111 - 129 points
Poor to Fair	81 - 110 points
Poor	80 points

The minimum forage production needed to support projected bighorn sheep populations was calculated for each mountain range. This calculation was generated by allowing 4 lbs. (dry weight) of forage/bighorn sheep/day. The following equation was used to generate pounds of forage/acre/year. Assumptions inherent in the equation include even distribution of bighorn sheep throughout available habitat and a summer season of 125 days.

pounds forage/acre/year = $\frac{(\# \text{ bighorn})(4 \text{ lbs. Forage/day})(\# \text{ days/year})}{\# \text{ acres available for bighorn use}}$

acres available for bighorn use

Projected hunting associated recreation days were estimated using the statewide average ram:ewe:lamb ratios. Actual data was used to project number of hunter days in the HMA. The average party size was assumed to be three people.

B. Results and Discussion

1. Bird Spring Range:

This portion of the HMA is bounded on the north by NV Highway 160, on the south by NV Highway 53, on the east by Interstate 15, and on the west by the Cottonwood Pass Road. In 1990, NDOW surveyed the Bird Spring Range and the associated hills to the east and determined that the BLM manages 40,005 acres (62.5 square miles) of bighorn sheep habitat within this area.

Three representative sites were surveyed. The average score was 140.0 points, which is categorized as fair to good bighorn sheep

habitat. None of the area rated as good (160+point) habitat, primarily due to water availability and competition from horses.

Bighorn sheep beds, trails, tracks, and pellet groups were seen throughout the survey area. Summer use of the unit is light and sporadic due to the unreliability of Bird Springs and Wilson Tank. The Bird Spring area currently serves as winter range for bighorns. Sheep utilizing the area come from Potosi Mountain, the Red Rock area, and the Clark Mountains of California. Some movement of bighorn sheep between the Spring Range and the McCullough Mountains probably occurred in the past. Although sporadic reports of migration in the area of Sloan have occurred in recent years, the construction of Interstate Highway 15 and relatively low populations have effectively curtailed use of this migration corridor.

There is currently no yearlong population of desert bighorn sheep in this portion of the HMA. With a sufficient summer water supply from Bird spring and Wilson Tank, a population of 26 bighorn sheep (2 bighorn/square mile) would be feasible. This figure relates specifically to proposed crucial habitat that is added near the catchments. The construction of two water developments would have a similar effect. This population would require approximately 1.56 pounds of forage/acre/year in the summer and 0.62 pounds of forage/acre/year for the remainder of the year.

Escape cover and thermal cover (topography) can be found. The east face of the ridge between NV Highway 160 and Wilson Tank, and the east face of the ridge between Arden Quarry and I-15 provide adequate escape terrain. The best topography lies south of Bird Peak, where a continuum of canyons, cliffs, and ledges provide thermal cover and the microclimates which favor better forage production.

Both of the historic water sources in the Bird Spring Range were recently developed and may prove to be reliable sources of water to bighorns in the Bird Spring Range. Construction of two bighorn sheep water developments in the Bird Peak segment of the range would raise the habitat rating of South Spring No. 2 by eight to ten points, resulting in a habitat rating of good and approximately 8,300 acres of crucial habitat.

The vegetative communities of the Bird Spring area range from creosote-burrobush to blackbrush-joshua tree types. Several species of common perennial grasses are: big galleta (*Hilaria rigida*), desert needlegrass (*Stipa speciosa*), indian ricegrass (*Oryzopsis hymenoides*), and bluegrasses (*Poa sp.*). Common shrubs are: blackbrush (*Coleogyne ramosissima*), range ratany (*Krameria parvifolia*), and creosote (*Larrea tridentata*). Forbs most often seen were: California buckwheat (*Eriogonum fasciculatum*), desert trumpet (*Eriogonum inflatum*), desert marigold (*Baileya*

multiradiata), desert golbemallow (*Sphaeralcea ambigua*) and skeleton weed (*Eriogonum deflexum*).

Human use of the area is light to moderate in bighorn habitat. The north and northeast portions of the Bird Spring unit are undergoing residential development in a low density pattern. The center of this development is in the vicinity of Arden. The continuing urban sprawl will have a negative effect on bighorn sheep use of this historic habitat.

The Union Pacific Railroad track exits in the Bird Spring Range area near Sloan, Nevada. The tracks are located within 2 miles of interstate 15 and pass through several private / patented parcels of land in the southwest corner of the Las Vegas Valley subunit. The railroad tracks should not have a significant impact on the sheep that use the HMA. Railroad activity primarily affects sheep when access roads are created, and the public uses the roads for access.

The South Spring Mountain area is part of the Spring Range Hunting Unit, area 262. In 1989, five bighorn sheep tags were issued for area 262. Four of the hunters reported expending 28 days hunting in the HMA, and none of the hunters harvested a ram. Harvest and hunter days vary in the HMA depending on annual bighorn distribution.

Some use of the area by mule deer occurs between Wilson Tank and Bird Spring. This use is very light due to the scarcity of water and lack of cover.

In summary, the Bird Spring portion of the HMA is good winter habitat for desert bighorn sheep. In the future the Bird Peak Area may prove suitable for yearlong use. Two water developments may be constructed to provide yearlong habitat for at least 26 bighorn sheep.

2. Potosi Mountain:

The Potosi Mountain area is bounded on the north by NV Highway 160, on the south by the Wilson pass-Sandy Valley Road, on the east by the Cottonwood Pass Road, and on the west by the Sandy Valley Road. Of the 84,356 acres of the potosi portion of the HMA, 59,351 are administered by the BLM. Approximately 25,102 acres (39.2 square miles) of the Bureau lands are bighorn sheep habitat. U.S. Forest Service lands lie in the center of this unit. Though not subject to management under this document, it must be noted that 77% of USFS lands in the Potosi Mountain area are bighorn sheep habitat and serve as the center for yearlong distribution within the South Spring Range.

Three sites of representative habitats were surveyed by NDOW in 1990. The average score was 145.3 points, categorized as fair to

good bighorn sheep habitat. About 4,456 acres of bighorn habitat around Cave Spring was rated as good habitat (164 points).

The northern two thirds of the Potosi area is dominated by pinyon-juniper vegetation in rugged topography. The southern one third of the Potosi area and rugged terrain toward Green Monster Peak are more typical of Mojave desert, predominated by blackbrush-joshua tree-creosote vegetation. Several species of common perennial grasses are: big galleta (*Hilaria rigida*), desert needlegrass (*Stipa speciosa*), and Indian ricegrass (*Oryzopsis hymenoides*). Common shrubs are: Single-leaf pinyon (*Pinus monophylla*); Utah juniper (*Juniperus osteosperma*), blackbrush (*Coleogyne ramosissima*), Mormon team (*Ephedra sp*), cliffrose (*Cowania mexicana*), and desert ceanothus (*Ceanothus gregii*). Forbs most often seen are: desert paintbrush (*Castilleja chromosa*), desert globemallow (*Sphaeralcea ambigua*), desert trumpet (*Eriogonum inflatum*), and California buckwheat (*Eriogonum fasciculatum*).

Escape cover and thermal cover in this unit are very good. Steep cliffs and canyons may be found throughout the area. Potosi Mountain rises over 4,000 feet from its base to an 8,512 foot summit, resulting in a thermal variance of at least 15°F between lower and upper elevations. The best combination of topography and vegetation lies in the southwest portion of the Potosi area, between Cave Spring and Green Monster Mine.

The Nevada Department of Wildlife estimates a current population of 50 desert bighorn sheep, or .78 bighorns/square mile of habitat in the Potosi area (NDOW survey data, Delaney, 1991). The proposed population of 75-100 sheep in the HMA would need 9.3-12.5 pounds of forage/acre/year during the summer and 2.9-3.8 pounds/acre/year during the remainder of the year. Forage production is expected to be more than adequate to support the expected increase in this population.

There is unrestricted movement throughout the year between the Potosi and Red Rock bighorn populations. Some of the Red Rock animals winter in the Potosi and Bird Spring areas. The primary corridor of movement on the north end of the HMA is at the east end of Mountain Springs Pass. Movement to the Bird Spring Range is primarily across Cottonwood Pass. Bighorns also travel from the Devils area to the Potosi area by crossing Wilson Pass to the south.

The mule deer population of the area is estimated to be 25 animals. Competition between deer and bighorn is minimal due to the low densities of both species and the marginal habitat for mule deer.

Human use of the BLM lands of the Potosi area is light. Within the USFS lands, there is residential development in the Mountain Springs (north-central) area. South of Mountain Springs is an

The WH# are artificially low, as their #'s increase. Shows adequate forage. Is a viable population that will compute. Is correct?

area developed for summer camps and residences. While existing outside the HMA, this activity has unquestionably affected bighorn use patterns, particularly use of the springs in the area. Several communication stations are present in the Potosi area. Cave Spring and Unnamed Spring on the south end of Potosi are the only water sources on Bureau lands. Both supply highly limited amounts of water for wildlife.

The BLM lands of the Potosi area primarily serve as winter range for bighorn sheep. USFS lands are preferred because of the available water supply and serve as the base for yearlong bighorn HMA use. At least two water developments may be necessary in the future should existing water sources become unreliable. Vegetation is good in quantity and quality. Anticipated disturbances are light, and the area should at least maintain the current sheep population and levels of use.

Mexican Spring, Ninety-nine Spring, and Aztec Tank lie within USFS-managed lands. Potosi Spring is located on private land at the base of the west slope of Potosi Mountain. Potosi spring, the most reliable water source in the HMA, has been the center of mining and livestock activities for over one hundred years. Tracks and droppings indicate that some bighorn and mule deer use is occurring. However, use is limited by the continued disturbances to the area. Potosi spring is also the primary water source for horses and burros in the HMA. These waters need to be maintained so that the construction of additional water developments in the Mount Potosi area is not an absolute requirement.

3. Devil Mountains:

The Devils area of the HMA extends from the Shenandoah Peak area to Stateline Pass. The area is bounded on the northeast by State Route 161, on the north by Goodsprings-Wilson Pass-Sandy Valley Road, on the west by Sandy Valley, on the South by the Nevada/California state line, and on the east by Interstate 15. All of the 92,728 acres of public land in this area is managed by the BLM. About 46,015 acres (71.9 square miles) of the Devils is bighorn habitat.

Four sites in representative habitat were surveyed by NDOW in 1990. The average score was 163.0 points, categorized as good bighorn sheep habitat. Even without a water source within the unit, 74% of the bighorn habitat rated at or above 160 points. Escape cover and thermal cover in this unit are rated as excellent. Most of the Devils is steep and rocky with numerous small canyons and drainages to provide thermal cover. Numerous abandoned mine shafts also provide thermal cover in this portion of the HMA.

Three water catchments were constructed during 1991 in the Devils, on Big Devil, Little Devil, and Deadman Peak. These catchments raised the habitat rating of the area to 184 points, an increase of 21 points. Temporary water is available throughout the area following rains, in natural pockets in the rocks, called tinajas. These waters are limited in capacity and do not last long during the intense summer heat. Presently the bighorn sheep utilizing the Devils return to the Clark Mountains of California and the Potosi Mountain area during the summer. Since construction of the slickrock catchments, it is anticipated that bighorn sheep will remain in the Devil Peak area year long.

The vegetation of the Devils is typical of the lower mojave desert. Ground cover is generally low. However the quality and quantity of cover is excellent for desert bighorn sheep. Several species of perennial grasses were commonly found. These include big galleta (*Hilaria rigida*), bush muhly (*Muhlenbergia porteri*), desert needlegrass (*Stipa speciosa*), Indian ricegrass (*Oryzopsis hymenoides*), and Three awn (*Aristida adscensionis*). Common shrubs are blackbrush (*Coleogyne ramosissima*), mormon tea (*Ephedra nevadensis*), range ratany (*Krameria parvifolia*), Apache plume (*Fallugia paradoxa*), winterfat (*Eurotia lanata*), and burrobush (*Hymenoclea salsola*). Forbs such as desert marigold (*Baileya multiradiata*), desert trumpet (*Eriogonum inflatum*), California buckwheat (*Eriogonum fasciculatum*), desert globemallow (*Sphaeralcea ambigua*), and desert paintbrush (*Castilleja chromosa*) were frequently seen. Joshua trees (*Yucca brevifolia*) are seen throughout the devil mountain area.

Although sheep are seen sporadically during the summer in the southern Devils, NDOW believes this use and the extent of winter use is dependent upon the amount and timing of precipitation received in the area. With the addition of the three water developments (20,700 gallon total storage capacity), a yearlong population of at least 75 bighorn (1 bighorn / square mile) could be expected. This population would require summer forage of 1.86 pounds / acre / year and 1.56 pounds / acre / year of winter forage.

Bighorns move freely between the Devils, the Clark Mountains, the Potosi Mountain area, and the Bird Spring Range. Human use of the Devil portion of the HMA is generally light. This area has the fewest conflicts within the HMA. It has the highest rated bighorn habitat in the HMA. With the construction of three wildlife water catchments, the area will provide high quality yearlong habitat for desert bighorn sheep.

IV. CLARK COUNTY MANAGEMENT FRAMEWORK PLAN; OBJECTIVES AND DECISIONS

The following objectives and decisions are from the Clark County

Management Framework Plan (U.S.D.I., 1984). Only those objectives and decisions which are pertinent to the South Spring Mountain HMP have been included.

A. Wildlife

1. Objectives

WL-1: Provide and maintain sufficient quality and quantity of food, water, cover, and space to satisfy the demands of all wildlife species using habitats on public land in Clark County. Give special emphasis to Federal and State classified species and to BLM identified sensitive species.

WL-2: Return native fauna to historic ranges and/or improve population numbers in current use areas through effective habitat management in cooperation with state or other federal wildlife agencies. Increase species diversity and distribution of desired animals throughout the variety of habitat types in Clark County with special emphasis on Federal - and State - classified or BLM - identified sensitive species. Assure resource use conflicts are resolved prior to reintroduction to historic ranges or population increases.

2. Decisions

WL-1.1: During development of all activity plans, give special attention to protecting riparian zones as wildlife habitat and to protect the associated native flora. Develop limitations for surface disturbance activities on a case-by-case basis depending upon the nature of the impacts.

WL-1.2: ...Do not develop new dual-use allotments in current or historic bighorn sheep habitat (or introduce bighorn sheep into current or historic domestic sheep allotments) until potential conflicts are identified and resolved through an HMP or AMP, or in a release site description.

WL-1.28: All new water facilities, or extension of existing facilities, constructed to benefit livestock, wildlife, or horses and burros, will be subjected to an appropriate level of environmental review to assure new, unresolved, conflicts are not created.

WL-1.35: Provide water for wildlife, wild horses and burros, and livestock use on public land throughout Clark County. Existing waters should be maintained at

the source and actions taken (such as fencing) to exclude livestock and horses and burros from degrading the source or associated riparian areas (see Tables WL 1.33 and LG 2.2). Where livestock or horses and burros now use the waters, use must be provided away from the protected areas. Existing forage use by an animal should not be denied by denying water access until habitat/allotment use levels are determined after consultation and coordination and monitoring. New waters can be developed (by BLM, NDOW, or ranchers), but such developments must not create new competition for forage or habitat among wildlife, livestock, or horses and burros. Wildlife drinkers should be routinely provided on all projects, unless new conflicts are created thereby. Do not develop new waters which have the sole purpose of expanding the herd area which constituted horse and burro habitat in 1971.

decision
↗

On new water developments permitted by BLM, and on waters in which BLM has an interest, water should be made available to wildlife and horse and burros on a year-round basis as applicable.

WL-1.4:

1. Encourage all users of public lands to travel existing roads or trails in crucial wildlife habitats described in wildlife recommendations 1.4, 1.5 and 3.3.
2. Where possible, new road or trail construction should be avoided in the described crucial wildlife habitat.
3. Coordination with mineral or geophysical companies that plan road construction within the crucial habitat should be accomplished to mitigate the adverse impacts that would occur as a result of such construction.
4. Appropriate mitigation for construction of Communication facilities and associated roads will be required to maintain crucial habitat.

B. Range Management

1. Objectives

RM-1: Maintain and improve the condition of the public rangelands, through management of grazing animals, so that the rangelands become as productive as feasible for all range resources.

RM-2: Monitor use of the range resources by all foraging animals to provide data needed to balance range use to range capacity.

2. Decisions

RM-1.1: Determine proper, long term, stocking rates of domestic livestock on allotments, desirable numbers (see below) of wild horses and burros in herd management areas, and populations of mule deer, bighorn sheep, and elk in their existing and potential habitats, based on data gathered through a rangeland monitoring program covering all grazing animals and after employing a coordination and consultation (C&C) process in which all affected interests may take part and which addresses the multiple land use objectives detailed in Decision 9. It will be the Bureau's goal to provide habitat of sufficient quality and quantity so that the reasonable numbers provided by the Nevada Department of Wildlife (see Tables RM 1.6, RM 1.7, and RM 1.8) can be attained. It will be the Bureau's goal to insure a viable population of healthy free-roaming wild horses and burros in each herd area. This is what is meant by desirable numbers. The initial stocking rate of wild horses and burros purposes will be current numbers of estimated actual population for FY83, as determined by a combination of the following:

- a. Latest Pre-FY83 aerial census data
- b. Latest ground census data
- c. BLM horse and burro specialists' professional judgment .

This current number will be reviewed in C&C, and if an alternative number is recommended which is acceptable to the Bureau, it may be used as an initial stocking rate for monitoring purposes.

The initial stocking rate for wildlife will be current numbers of estimated actual population as determined through NDOW census.

Initially, livestock grazing will continue based upon

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grazing applications received and preliminary field determination that supports adequate forage availability prior to issuance of grazing authorizations.

Table 6: Table RM-1.7 and RM-1.11 from the Clark MFP: (only the allotments which are pertinent to the HMA are listed. For other allotment information refer to Clark MFP).

Table RM-1.7 (Clark MFP)

<u>Big Game Area</u>	<u>Projected AUM Demand</u>	<u>Allotment</u>
BY-6	360*	Spring Mtn. Table Mtn.
BY-7	1,090*	Spring Mtn. Table Mtn. Black Butte Roach Lake 2222
BY-8	1,224*	Spring Mtn. Kyle Canyon. 7777
<hr/>		
Total	2,674*	

Table RM-1.11 (Clark MFP)

<u>Big Game Area</u>	<u>Projected AUM Demand</u>	<u>Allotment</u>
BPY-7	362*	Spring Mtn. Black Butte Table Mtn.
<hr/>		
Total	362*	

2222 and 7777 are unallotted areas, from Table .44-8, Clark County URA Step 3 & 4, 1981. *These are livestock AUM's. One AUM will support five bighorn sheep. 2674 AUM = 1114 sheep.

RM-1.2: Continue to make the public rangelands in Clark County available for livestock grazing, ... Such grazing as is authorized will be consistent with the other multiple land use objectives identified below and associated with individual allotments on Table RM 1.2B....

3. Provide sufficient habitat to attain and maintain reasonable numbers of bighorn sheep.
4. Where possible, provide water for livestock and horses and burros away from riparian habitats which are currently being degraded by excessive use by these animals....

Through cooperation and consultation (C&C), allotment-specific management actions (e.g., range improvements, writing allotment management plans/implementing grazing systems, wildlife projects, etc.) will be developed as needed to meet those multiple land use objectives. A specific monitoring plan, developed according to guidance contained in the Nevada Task Force's Monitoring Program, will be used to determine if those objectives are being met. The above C&C will be conducted in the herd areas / herd management areas and allotments which exist in the South Spring Mountain HMA.

If it is demonstrated through monitoring that livestock or horse and burro grazing use in a given allotment is having an adverse effect on the resources identified in the multiple land use objectives (a-h) above, particularly on crucial bighorn or crucial desert tortoise habitat, then livestock and horse and burro grazing use will be modified to the extent necessary to meet those above objectives.

Use a "selective management" approach to rangeland administration. Manage allotments in Clark County at the level of intensity shown in Table RM 1.2B. These categories should be viewed as initial categories and are subject to amendment during C&C should new data indicate the original categorization to be in error.

RM-1.9: Through coordination and consultation, and using monitoring tools, identify habitat needs of wildlife species, particularly desert tortoise and bighorn sheep in their crucial/critical habitats, such as adequate forage, water, cover, etc., and provide for those needs so as to, in time, attain the population goals for those species as mutually agreed to between

is there an AMP?

U.S. Forest Service BLM and NDOW (see Decision 8). Consider these needs and the multiple land use objectives as identified by allotment in Decision 9 prior to authorizing livestock use on ephemeral range.

RM-1.10: Accomplish bighorn sheep introductions (and permit natural expansion) into historic habitats shown in Table RM-1.11 only after Habitat Management Plans (HMP) or release site descriptions (RSD) have been developed identifying and mitigating potential conflicts. Insure adequate coordination and consultation is conducted in developing the HMP/RSD. Provide sufficient quantity and quality of habitat for reasonable numbers of bighorn sheep identified in the HMP/RSD.

C. Minerals

1. Objective

M-1: Manage public lands in Clark County so as to facilitate exploration and development of leasable, locatable and salable minerals.

2. Decisions

M-1.1: Continue to manage the presently open, federally owned mineral estate in Clark County as open to mineral location, sales, and leases. Locatable mineral activities will be authorized pursuant to 43 CFR Group 3800; saleable mineral activities will be authorized pursuant to 43 CFR Group 3600; and leasable mineral activities will be authorized pursuant to 43 CFR Groups 3100, 3200, and 3500 under, but not limited to, the following guidelines:

- a. Identify in issued mineral leases that impacts to crucial bighorn sheep and desert tortoise habitat will be subject to mitigative measures during the plan of operations stage.
- b. Whenever possible, avoid surface disturbing activities under proposed mining plans of operations in bighorn sheep crucial summer habitat....

D. Recreation

1. Objectives

R-4: Provide visitor safety & resource protection on all public lands in the county. Cooperate with local agencies for those services which BLM is not able to provide.

R-6: Manage and monitor recreational off-road vehicle (OHV) use on public lands in Clark County by providing a spectrum of opportunities ranging from individual, casual travel to highly organized competitive events.

2. Decisions

R-2.8: Manage the public lands and support the Nevada Department of Wildlife in an effort to upgrade hunting opportunities in Clark County. Ensure public access is maintained to the hunting areas identified in Table R-2.8 and to any new areas developed for hunting. Competitive OHV events will be managed on a case-by-case basis taking into account the hunting opportunity available in the area during the specific hunting season. Designations for U.S. Forest Service lands will be accomplished through the Forest Service travel plan. Note: See planned actions under part V: Management Objectives and Planned Actions, for dates on important hunting periods.

R-6.4: Designate public lands in Clark County as open, limited, or closed to OHV use as shown on MFP III Overlay Recreation 6.4.

OHV designations were completed in 1984 and updated in 1988 to clarify boundaries and restrictions. The following designations apply to the South Spring Mountain Habitat Management Area.

Limited Designation: Use is limited to existing roads, trails, and sand washes - no cross country travel. This applies to all vehicle users.

L2: Limited season of use. This applies to competitive events only.

L2C: Southern Spring Mountains and Bird Spring Range.

1. February, March, April, September, October - open to all kinds of racing. 2. November, December, January - no pre running. 3. May, June, July, August - only 3 pre-run events per season.

These limitations are for the purpose of minimizing conflicts with bighorn sheep hunting and migrations and critical quail and bighorn sheep summer habitat.

L4: Limited type of use. These limitations do not apply to individuals.

L4C: Goodsprings area. High speed competitive events are limited to existing roads, trails, courses and sand washes to protect desert tortoise habitat.

L8: Limitations to protect crucial desert tortoise habitat. The limitations apply to group or competitive use only.

L8A: Areas west of I-15 and south of the Pahrump Highway. No more that 3 laps; designated pitting areas; use limited to October 1 through March 31; confined to existing roads, courses, trails, and sand washes; maximum of 3 events per calendar year.

V. MANAGEMENT OBJECTIVES AND PLANNED ACTIONS

These objectives were formulated from various planning documents, policy and guidance, and environmental legislation. The Clark County MFP, the Rangewide Plan for Managing Habitat of Desert Bighorn on Public Lands, the Desert Bighorn Sheep Habitat Status and Cooperative Action Plan in the Las Vegas District (Janke, BLM), The Status and Trend of Desert Bighorn Sheep in Nevada: South Spring Range (McQuivey, NDOW), and the Nevada State Game Commissioners Big Game Reestablishment and Transplant Plan were the documents most often used. Objectives and planned actions were based upon bighorn habitat management policy established in the Rangewide Plan for Managing Habitat of Desert Bighorn on Public Lands (1988).

Objectives

1. Improve or maintain approximately 111,122 acres of habitat to support a viable population of approximately 150-200 animals in the South Spring Mountain/Bird Spring ranges by the year 2010. Population estimates will be revised as necessary through monitoring.
2. Improve approximately 24,475 acres of habitat in the HMA from a weighted average of 145 points to a weighted average of 160+ points by the construction of four slickrock catchments.

Maintain approximately 38,474 acres of habitat at a weighted average of 160+ points. Maintain at least 5,000 acres of winter habitat at a weighted average of 170 points.

Planned Actions

SM1-1 NDOW will conduct appropriate population monitoring studies to determine population size, structure and distribution.

SM2-1 BLM and NDOW will cooperatively develop four slickrock water catchments in the South Spring Mountain HMA. Three catchments have been constructed in the Devil Mountains. These catchments will be evaluated over several years to determine their effectiveness. Two slickrock water catchments will be developed in the Potosi Mountain area. If needed, two catchments will be constructed in the Bird Spring Range (Table 8). If necessary, BLM and NDOW will locate gap fences to keep livestock from using wildlife waters, however, whenever possible catchments will be located in areas inaccessible to livestock and wild horses and burros. A natural slickrock will be utilized for the water collection surface. A small rock dam would be built at the base of the slickrock to temporarily hold runoff water. The dam would be constructed from concrete and rocks found on site and anchored to the bedrock with steel reinforcement. Water which accumulates behind the dam would be collected by two stainless steel Johnson screens and flow into a galvanized pipe. From the galvanized pipe, the water would flow through polyethylene pipe to the storage tanks. Water would be stored in three polyethylene storage tanks, which have a maximum storage capacity of 2,300 gallons each. A level pad would be constructed of soil and rocks for the tanks to set on. A prefabricated drinker-float box would be connected to the tank manifold. Tanks and exposed pipe would be painted to blend into the

natural environment. Materials and equipment would be sling loaded into the project sites by helicopter.

Table 7: Proposed slickrock water catchments in the South Spring Mountain HMA (Stateline RA).

<u>Catchment Name</u>	<u>Location</u>
Devil #1 (Big Devil)	T.26S, R.58E, sec. 3, NE,SE
Devil #2 (Little Devil)	T.25S, R.58E, sec. 29, SE,SE
Devil #3 (Deadman)	T.25S, R.58E, sec. 10, NE,NE
Potosi Mt. #1	Locations to be selected
Potosi Mt. #2	
Bird Spring Range # 1	Locations to be selected
Bird Spring Range # 2	

SM2-2 The BLM will examine the feasibility of improving Cave Spring by 1993. The unnamed water source near Cave Spring will be examined at a later date and developed if feasible.

SM2-3 BLM will conduct appropriate habitat monitoring studies to ensure that use levels are consistent with maintaining existing habitat conditions. The extent and frequency of habitat monitoring studies will be based upon bighorn sheep concentration areas and use patterns as determined by NDOW population monitoring studies.

SM2-4 BLM will not allow competitive OHV events in bighorn sheep habitat unless the event can be mitigated to have no affect on bighorn sheep. Other appropriate commercial permitted activities will be allowed on a case-by-case basis, if consistent with the goals and objectives of the HMP and the Rangewide Plan for Managing Bighorn Sheep Habitat on Public Lands. The BLM will ensure that competitive OHV events do not occur in unit group 262 from November 16 to December 15 and

during lambing season for the Desert Bighorn (*Ovis canadensis nelsoni*) which occurs from February 15 to May 31 in the Mojave Desert. OHV activity in sheep lambing areas causes excessive disturbance to ewes.

SM2-5 Through the environmental process, BLM will include appropriate stipulations to ensure that oil and gas, and mineral leases are compatible with the objectives of this plan. Prevent undue and unnecessary degradation of bighorn sheep habitat due to mineral related exploration and development by implementation of the following stipulations.

- a. Where feasible allow no new road construction or siting of ancillary facilities in lambing habitat.
- b. Require mitigation of impacts to bighorn and their habitat.

SM2-6 BLM will ensure that mineral material sales are issued with appropriate stipulations to mitigate impacts to bighorn and their crucial habitat. If appropriate mitigation can not be developed, the BLM authorized officer will not approve the sale.

SM2-7 Through mining plans of operations and the environmental process, BLM will work with mining companies to reduce impacts to bighorn sheep and their crucial habitat.

SM2-8 BLM will not increase livestock distribution from current use areas within bighorn sheep habitat. BLM will remove any unclaimed cattle found within the HMA as expediently as possible.

SM2-9 BLM will not dispose of bighorn sheep habitat, within the constraints of the current land use plan. It is recommended that the BLM not dispose of sections 1-12, T 23S, R 60E, within the Las Vegas Valley Subunit.

- SM2-10 Fences will be constructed only when necessary and then to Bureau's standards as specified in the BLM fencing handbook, "Fences" USDI BLM & USDA USFS; July 1988, and "Wildlife Water Development", Proceedings from the November 29, 1988 Wildlife Water Development Symposium, Las Vegas, Nevada.
- SM2-11 BLM will maintain or improve forage condition by ensuring that utilization of key forage species does not exceed an average of 50 percent use of the current years growth on key forage species throughout the HMA. The U.S. Forest Service will maintain their lands under their guidelines.
- SM2-12 NDOW will take the appropriate actions necessary to manage bighorn sheep populations to ensure that habitat use is consistent with habitat objectives and appropriate utilization levels.
- SM2-13 BLM will not allow the conversion of the following allotments from cattle use to domestic sheep use. 1) Table Mountain, 2) Spring Mountain, 3) Roach Lake, 4) Black Butte.
- SM2-14 BLM will remove any horses and burros that have settled permanently outside of herd areas/herd management areas as expediently as possible.

Monitoring Studies

- SM1-M1 NDOW will conduct census surveys to determine population size, recruitment, structure and distribution every 2-4 years. Crucial lambing grounds will be identified to facilitate the implementation of planned actions. Reports will be sent to the BLM and USFS.
- SM2-M1 Within one year of construction of additional water catchments, the BLM and USFS will determine key forage species and conduct utilization studies (as

defined in the Nevada Rangeland Monitoring Handbook, 1984). Key areas will be located in bighorn sheep concentration areas, such as near water catchments. Install and read a utilization study in the Spring Mountains within one year of construction of the slickrock water catchments at Devil #1, #2, and #3. Begin/Continue to read utilization studies in the Spring Mountains. If any habitat overlap occurs, at least one key area will be located in areas that receive use by both bighorn sheep, livestock, and/or horses and burros. Utilization will be read on a one to three year cycle depending upon use levels. If average utilization of key forage species exceeds 40 percent or light use, utilization will be read annually and frequency trend studies will be established and read on a five year cycle. Utilization will be read in the fall.

VI. COORDINATION

A. South Spring Mountain HMA

1. Energy and Minerals

Precious metal mineral potential in the Spring Mountains and Bird Spring range is good. Currently, there are many old mines in the southern end of the Spring Mountains. However, only 12 mining notices and one plan of operation existed as of January 15, 1991. Oil, gas, and geothermal exploration potential is low in the Spring Mountains and the Bird Spring Range. Due to good potential for mineral resources, more mineral development is anticipated in the Spring Mountains. Planned actions SM2-5, SM2-6, SM2-7 refer to energy and minerals. These actions will be managed to meet the Code of Federal Regulations.

2. Horses and Burros

There is one horse and burro Herd Management Area within the HMA. The management of these animals will

be based on the goals and objectives in a HMAP. Stray animals outside of a Herd Area or Herd Management Area will be removed as expediently as possible. Planned action SM2-14 refers to horses and burros. The HMAP will be coordinated with this HMP to ensure that a proper balance of bighorn sheep and horses and burros is maintained.

3. Forest and Woodland Products

There are no significant forest or woodland products within the BLM managed portion of the HMA. Pinyon pine and juniper trees do exist at higher elevations in the Spring Mountains, mainly on U.S. Forest Service lands.

The obj of LUP must be followed unless an amendment is put out for public comment.

4. Lands

According to the Clark County MFP, there are approximately 6 square miles of Las Vegas Valley Subunit land within the HMA. All public lands within the subunit are available for disposal and much of it is privately owned. Sheep management will occur only on the south side of the Spring Mountain allotment boundary due to the presence of humans and surface activity. Land sales in the Las Vegas Valley Subunit would not be affected even though the disposal area overlaps with the HMA. Bighorn sheep utilize the habitat near the southwest corner of the Las Vegas Valley Subunit. It is recommended that the Bureau of Land Management retain ownership of the relatively undisturbed public land in Township 23 South, Range 60 East, Section 1 to 12. Planned action SM2-9 refers to retaining bighorn sheep habitat in public ownership.

5. Soil, Water and Air Resources

Most projects initiated under watershed guidance will complement the wildlife objectives of this HMP. Likewise, most of the planned actions of this HMP will enhance long term watershed qualities of the area. To ensure adequate protection of watershed values, a soil scientist or hydrologist will be consulted in the design of wildlife projects whenever necessary. The BLM will improve and fence Cave Spring by 1993 to protect the watershed from trampling. The unnamed water source near Cave Spring will be examined at a later date and developed if feasible.

6. Recreation

As habitat conditions improve and bighorn sheep numbers increase, consumptive and non-consumptive recreational

opportunities in the Spring Mountains and Bird Spring Range will increase. If population objectives are met, the number of bighorn sheep tags for the entire Spring Mountain hunt (NDOW unit 262) could be expected to increase by two to three tags. An increase in at least 5 recreation days would be associated with the increase in hunting tags. More wildlife viewing opportunities will be available to the public once sheep remain in the South Spring Mountains during the spring, summer, and fall seasons.

The Clark County MFP designated all public land in Clark County Planning unit as closed, limited or open to OHV use, depending upon values found in the specific areas. All of the Spring Mountains is designated as limited. Large washes and existing roads in the Spring Mountains have been used for events in the past. Proposed OHV events in the HMA will be handled on a case-by-case basis and protective stipulations will be required to mitigate impacts to bighorn sheep habitat. Planned action SM2-4 refers to OHV use in the HMA.

7. Cultural Resources

Prior to any project development involving surface disturbance, a class III Cultural Resources Inventory will be conducted in compliance with BLM Manual 8100.

8. Livestock

Four grazing allotments exist in the HMA, but only the Roach Lake allotment is currently grazed. All of these allotments have very limited water availability. Livestock use in the roach lake allotment is generally confined to the lower benches and valleys. A few wells are currently located within the HMA. Overlapping use of habitat by bighorn and cattle is limited to the south side of the South Spring Mountains. Overlapping use may also occur if livestock use the foothills located below Bonanza Hill. The other three allotments have not been grazed recently but are still open to grazing. Wildlife water catchments will be located in areas inaccessible to cattle. Therefore, no new areas of habitat overlap will be created and gap fences should not be necessary. Planned actions SM2-8 and SM2-M1 refer to livestock grazing, water development and forage utilization.

9. Support Actions

The success of the HMP depends upon the completion of up to seven water catchments. BLM Operations will be responsible for survey and design of projects constructed by the BLM.

B. Other Agencies and Organizations

1. State Agencies

The Nevada Department of Wildlife will play a key

part in the successful implementation of this plan. Their primary responsibilities will be to monitor the resulting sheep populations and to construct and maintain water developments. Because the Nevada Department of Wildlife is a key cooperator of this plan and has ultimate responsibility for the wildlife resource, any multiple-use activities proposed within the HMA which may potentially affect the success of this plan will be closely coordinated with the Department. Mining plans of operation, AMP's, HMAP's, and RAMP's which are proposed, or needed in the HMA, will be made available for review by NDOW.

2. Federal Agencies

Movement of bighorn sheep will occur between BLM lands and the land located on the Toiyabe National Forest. Less than 10 % of the South Spring Mountain Bighorn Sheep HMA and less than 16 % of the Bighorn Sheep Habitat exists on U.S. Forest Service land. However, 77% of the USFS lands in the Mt. Potosi area is bighorn habitat and serve as the center for yearlong distribution within the South Spring Mountains. If necessary, a cooperative agreement between BLM and Forest Service would be developed to address movement of bighorn between lands managed by the two agencies.

3. Private Organizations

The Fraternity of the Desert Bighorn (FDB), Foundation for North American Wild Sheep (FNAWS), and Nevada Bighorns Unlimited (NBU) are organizations that are dedicated to protecting and enhancing desert bighorn sheep and their habitat in Nevada. Their support in the improvement of desert bighorn habitat is expected to continue. One or more of these organizations are expected to be involved in the construction of the water developments identified in this HMP. These organizations have been involved in project construction, material donations, and have provided helicopter time to deliver project materials.

VII. IMPLEMENTATION SCHEDULE

The following implementation schedule has been developed through fiscal year 1996. The project activities have been identified as

well as who will be responsible to insure their completion. The units of completion are identified by reporting year. The implementation schedule is dependant upon the availability of funding and manpower and is subject to change.

Table 8: Implementation schedule and units of accomplishment.

Project Activity	Proponent	FY91	92	93	94	95	96
WATER DEVELOPMENT							
S. Spring Mtn. HMA							
Devil # 1	NDOW	1					
Devil # 2	NDOW	1					
Devil # 3	NDOW	1					
Potosi Mtn. #1	NDOW						1
Potosi Mtn. #2	NDOW						1
Bird Spr. Range # 1	NDOW					1	
Bird Spr. Range # 2	NDOW					1	
SPRING DEVELOPMENT							
S. Spring Mtn. HMA							
Bird Spring	BLM	1					
Wilson Tank	BLM	1					
Cave Spring	BLM			1			
Unnamed Seep	BLM					1	
HABITAT MONITORING STUDIES							
S. Spring Mtn. HMA	BLM		1		1		1

VIII. COST SCHEDULE AND BENEFIT/COST ANALYSIS

Costs for implementing and maintaining the HMP have been estimated through fiscal year 1996. The costs are not broken down for each unit of accomplishment but are calculated for the total of all units for that fiscal year. Costs include the Bureau's costs for project development, project maintenance and monitoring studies. NDOW costs are included. Project survey and design and NEPA compliance costs are included for both BLM and NDOW projects.

Table 9: Cost Schedule (dollar figures in thousands of dollars combined for BLM, NDOW, FDB).

PROJECT ACTIVITY	FY91 \$ WM	FY92 \$ WM	FY93 \$ WM	FY94 \$ WM	FY95 \$ WM	FY96 \$ WM	Total \$ WM
<u>WATER DEVELOPMENT</u>							
Survey and Design	.5				.5		1.0
Construction	25				18	19	43
Maintenance		.2	.2	.2	.2	.3	1.1
<u>SPRING DEVELOPMENT</u>							
Construction			16	8	9		33
Maintenance				.4	.4	.4	1.2
<u>MONITORING STUDIES</u> (#)		(1)		(1)		(1)	(3)

Benefit/cost analysis

A projected 165 annual hunting days will be added and a minimum of 100 more wildlife associated recreation days is expected to result from the development of these projects.

Over the long term, benefits are estimated to exceed costs of the program. The benefit/cost ratio is 2.1/1.

IX. CONCURRENCE AND APPROVAL

This HMP as written meets with our concurrence and approval. The implementation of the HMP will depend upon the availability of funding and manpower, and other land management priorities.

Area Manager, Stateline Resource Area
Bureau of Land Management

Date

Regional Supervisor, Region III
Nevada Department of Wildlife

Date

District Manager, Las Vegas District
Bureau of Land Management

Date

District Ranger, Las Vegas Ranger District
Toiyabe National Forest

Date

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XI. APPENDICES

APPENDIX A

Evaluation Guide of Habitat Components for Sites Surveyed in the South Spring Mountain HMA.

<u>TOPOGRAPHY</u>	<u>VALUE</u>
Steep and rocky terrain broken frequently by canyons or draws of varying widths with at least one main canyon or draw 500 feet wide more or less and side canyons or draws at various angles for protection from the weather and for escape.	5
Steep and rocky terrain broken frequently by canyons and/or draws (50-90%) and rolling hills.	4
a) Steep and rocky (100%) with no canyons.	
b) Rolling hills broken frequently by broad canyons or draws and within one mile of steep and rocky terrain.	
c) Mesa-type terrain.	3
Rolling hills (such as alluvial fans) without canyons or draws and/or more than one mile from steep and rocky terrain.	2
Level or slightly undulating (100%) within one mile of steep and rocky terrain.	1
Level or slightly undulating (100%) (example: dry lake beds and their margins) that is more than one mile from steep and rocky terrain.	0

WATER

A. DISTRIBUTION

1 mile (or less) increments	5
2 mile increments	4
3 mile increments	3
4 mile increments	2
Over 4 mile increments	1

B. AMOUNT AND PERMANENCE

Sufficient and always present 5

Seldom dry during the summer 4

Dry half of the time during dry summers 3

Often dry in summer during dry years 2

Water present irregularly, mainly in winter 1

C. TYPE OF TERRAIN AND OBSTRUCTIONS

Open, steep and rocky terrain with a clear view for at least 50 yards 5

Steep and rocky but with some trees or natural or minor obstruction to vision 4

Rolling hills with trees or other natural or minor obstruction to vision 3

Open, rolling hills; surrounded by a corral, etc., that is passable; or about 1/2 mile from steep and rocky terrain 2

Flat land; water surrounded by fences, etc.; steep-sided pothole 1

D. COMPETITION

No sign of native big game use 5

Some native big game use 4

More native big game use than other 3

Some domestic livestock use and some native or feral animal use 2

Frequent livestock use 1

ANIMAL USE

A. DOMESTIC/FERAL UTILIZATION

Light to None 4

Light 3

Light to Moderate 2

Moderate to Heavy	1
B. BIG GAME UTILIZATION	
Light to None	4
Light	3
Light to Moderate	2
Moderate to Heavy	1

HUMAN USE

A. ROADS AND FENCES

Less than 5% of the area	5
Less than 10% but more than 5% of the area	4
Less than 15% but more than 10% of the area	3
Less than 20% but more than 15% of the area	2
More than 20% of the area	1

B. MINERAL AND AGRICULTURAL DEVELOPMENT

Less than 10% of the area	5
Less than 20% but more than 10% of the area	4
Less than 30% but more than 20% of the area	3
Less than 40% but more than 30% of the area	2
More than 40% of the area	1

VEGETATION

A. GENERAL COMMUNITY TYPES

Grass/forbs	5
Grass/forbs/shrub	4
Grass/forbs/shrub/trees	3
Grass/trees	2
Shrub/trees	1

B. PERCENT PREFERRED FORAGE

High (+80%)	5
Moderately - High (60-80%)	4
Moderate (40-60%)	3
Moderately - Low (20-40%)	2
Low (-20%)	

1

C. OVERALL DENSITY

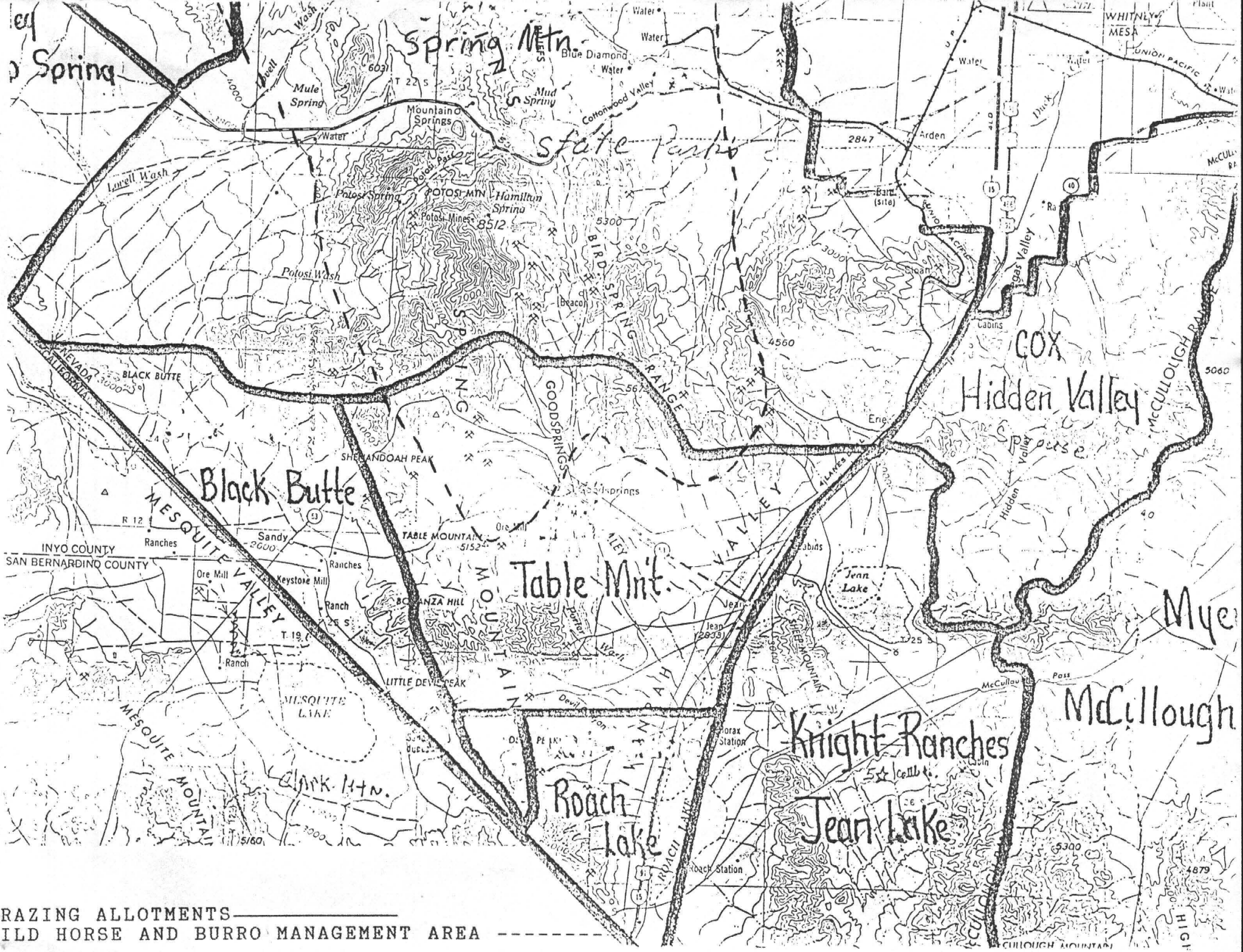
High (+65% ground cover)	5
Moderately - High (50-65% ground cover)	4
Moderate (35-50% ground cover)	3
Moderately - Low (15-35% ground cover)	2
Low (-15% ground cover)	1

APPENDIX B

Point values for bighorn sheep habitat evaluation in the South Spring Mountains.

Site Total	Topo- graphy	Water Availability				Vegetation			Animal Use		Human Use		x4	
		A	B	C	D	A	B	C	A	B	A	B		
SSM1	4	2	3	5	1	4	2	3	1	3	4	4	144	
SSM2	5	2	2	4	1	4	3	3	2	2	4	4	144	
SSM3	3	1	2	4	1	4	2	2	3	3	4	4	132	
SSM4	5	2	1	3	4	3	2	4	2	3	4	5	152	
SSM5	4	3	5	3	1	1	2	2	1	2	3	3	120	
SSM6	4	4	2	4	4	3	3	3	2	3	4	5	164	
SSM7	5	3	3	4	2	4	2	2	4	4	3	3	156	
SSM8	4	1	3	4	2	4	3	4	4	4	3	4	160	
SSM9	5	1	3	4	2	4	3	3	4	4	5	4	168	
SSM10	5	1	3	4	2	4	3	3	4	4	5	4	168	
<hr/>														
Total Average		4.4	2.0	2.7	3.9	2.0	3.5	2.5	2.9	2.5	3.2	3.9	4.0	150.8

END



GRAZING ALLOTMENTS _____
 WILD HORSE AND BURRO MANAGEMENT AREA - - - - -

