12/1974

Ron

RANGE CONDITION ON NATIONAL RESOURCE LANDS IN NEVADA DECEMBER 1974

BUREAU OF LAND MANAGEMENT
U.S. DEPARTMENT OF THE INTERIOR
RENO, NEVADA

I. Summary

In August 1974, the Senate Appropriations Committee, in approving the Fiscal year 1975 Appropriations Bill for the Department of the Interior's Bureau of Land Management stated:

> "Although the Committee has increased the amount for range management, it is aware the total of little more than $10 million provided in the bill is grossly inadequate. Range conditions are deteriorating at an alarming rate, and budget estimates repeatedly do not meet the Federal responsibility in this area. The Committee directs the Department to review its programs and range conditions and submit to the Committee by January 1, 1975, a full report on its findings together with recommendations for correcting major deficiencies. Further, the Committee will expect the Department to present more realistic estimates in future budget requests for range management."

The following report is designed to serve as the Nevada portion of the total Bureau response to the Senate's directive.

The extent to which deficiencies can be corrected, as directed by the Senate, requires attention to all programs contributing to or affected by deteriorating range conditions. For example, minimal benefits would result from increased funding in the Allotment Management Plan (AMP) program if the wild horses and burros program is not afforded equal consideration. Also, attention to necessary legislation and regulations must be assigned high priority if deficiencies are to be corrected.

The proposals contained in this report were prepared by specialists in the range and watershed programs with assistance regarding related activities as requested. It identifies problems of vegetative management and proposes remedial actions which emphasize outputs of livestock forage and watershed stabilization.

The data in this report is simplified to the extent possible in terms of: 1) the present situation, 2) projected resource conditions and production at current management levels, and 3) projected resource conditions at "optimum" and "intermediate" levels of funding.

Within the confines of the report requested by the Senate, there are only brief discussions on the interrelationships among programs contributing to or affected by range conditions. Additional information and analysis is required in several areas before sound multiple use decisions can be made. These include:

1) Planning - BLM's land use plans are approximately 50 per cent complete in Nevada. The purpose of the planning process is to recognize all resource opportunities and to resolve conflicts among uses. Until these plans are complete (target date for completion is Fiscal Year 1977), any program proposal should be viewed as tentative.

Table of Contents

2) Wild Horses and Burros - Estimates of livestock forage availability and proper vegetative management procedures depend upon desired population of wild horses and burros. Until this question is resolved, either by Congress or through the planning system, management outcomes cannot be anticipated.

3) Wildlife - Vegetation requirements for wildlife have been considered only in terms of big game mammals for this report. It is recognized that hundreds of other wildlife species (wild birds, mammals, fish, amphibians, and reptiles) exist on Nevada's national resource lands and place demands on the vegetation for both food and cover. However, as there is limited historical or current information on the status of most wildlife populations at this time, there have been no estimates of total requirements for food and cover made in this report.

4) Recreation - As the focus of this report is upon vegetative management recreational demands upon national resource lands in Nevada, as they affect vegetation, have not been considered. Primary examples of such demands having an effect on range management would be existing and potential natural areas, primitive values, and aesthetics. Other examples include off-road vehicle use and the impact of vegetation manipulation techniques upon aesthetic and cultural (heritage) values. All of these public uses will affect or be affected by intensive vegetative management programs.

Summary of the Range Condition on National Resource Lands in Nevada

Specific technical details on the condition of range forage in Nevada are explored later in this report. However, for purposes of this brief summary, 84 per cent of the range acreage in Nevada is presently classified in a fair, poor, or bad condition while only 16 per cent is classified in a good or excellent condition. Range conditions, under the current management level, are deteriorating.

Summary of the Optimum Program

The major objective of the optimum program described is to stop the declining trend and improve the range condition. This program will increase forage production for livestock and wildlife while creating a stabilized or improved watershed condition.

This objective would be accomplished by: 1) installing range improvements (fences and water distribution facilities), 2) rehabilitating appropriate areas of the range by brush control and reseeding, 3) developing and implementing grazing management plans and monitoring their operation, and 4) adjusting grazing use to levels that will allow increased and sustainable forage yields.

Total cost of the proposed optimum program is $143.7 million over the next 15 years (to 1990). Of this total, $100 million would be spent on range improvements ($60 million on facilities and $40 million for manpower) and approximately $43 million on maintenance.

Benefits of implementing the optimum program are:

1) Forage Production - This program would provide, by 1990, an additional 750,000 Animal Unit Months (AUM's--the amount of forage required to sustain the equivalent of one cow or five sheep for one month) of grazing for livestock and wild horses and burros in addition to the number of AUM's currently existing.

   As a result of this effort (with no additional investment in range improvements) a total of 1.5 million additional AUM's will be available by the year 2000.

2) Range Condition - The percentage of the total acreage on national resource lands in a good condition will more than double.

3) Erosion Condition - The loss of 2,200,000 acres of national resource land to a declining erosion trend (the result if current management levels are maintained) will be prevented, and, in addition, approximately 3,871,000 acres would be put into an improving erosion trend within the next 15 years. This would mean a total stabilization on 6,071,000 acres.

4) Wild Horses and Burros - Benefits for wild horses and burros would be to provide forage and supervision to maintain a stable population as determined in the BLM planning system.

5) Wildlife - Development and implementation of Habitat Management Plans (detailed plans that document the needs and practices to maintain or improve quality of wildlife habitats) covering the entire State could provide the opportunity, in some areas, to double present wildlife numbers. All species of wild animals would be considered, with priority to threatened or endangered native North American species.

Summary of the Intermediate Program

The objective of the intermediate program is to at least stabilize the present range condition. Any improvements derived as a result of management at this level would be less than that possible at the optimum level.

Total cost of the intermediate program will be $92.2 million over the next 15 years (to 1990). Of this total, approximately $64 million would be spent on range improvements ($38 million on facilities and $26 million for manpower) and $27 million on maintenance.

Benefits of implementing the intermediate program are outlined below:

1) Forage Production - This program would provide, by 1990, an additional 250,000 AUM's of grazing for livestock and wild horses and burros in addition to the number of AUM's currently existing.

   As a result of this effort (with no additional investment in range improvements), a total of 700,000 additional AUM's will be available by the year 2000.

2) Range Condition - The percentage of total acreage on national resource lands in a good condition will increase from 13 per cent to 18 per cent, a net gain of 5 per cent.

3) Erosion Condition - The loss of 2,200,000 acres of national resource lands to a declining trend (the result if current management levels are maintained) will be prevented, and in addition, approximately 2,220,000 acres would be put into an improving erosion trend within the next 15 years. This would mean a total stabilization on 4,420,000 acres.

4) Wild Horses and Burros - Benefits for wild horses and burros would be to provide forage and supervision to maintain a stable population as determined in the BLM planning system. (Same as optimum.)

5) Wildlife - Development and implementation of Habitat Management Plans over approximately half the State on crucial wildlife areas would provide, if proper vegetation for food and cover is provided, opportunities to maintain current levels of certain populations, prevent further decline or increase populations, depending on the area and the species involved. Priority work would be accomplished on species with threatened or endangered habitat due to man's deterioration of the habitat.

Recommendation

The optimum program is recommended. It must be emphasized that increase in funding alone, without commensurate manpower to effectively implement program decisions, would not be in the public interest.

Summary Chart

Budget Costs 1/ and Selected Benefits 2/ Present Situation and Proposed Program for Improving Range Conditions, Nevada

Type of Benefit	Present Situation	1990 Intermediate	1990 Optimum
Livestock Forage (AUM) 3/	1,948,000	2.4 Million	2.9 Million
Unauthorized Use	73,000	-0-	-0-
Wild Horse and Burro Management	276,000	150,000	150,000
Total	2.30 Million	2.55 Million	3.05 Million
Range Condition - % Good	13%	18%	30%
Watershed - Change in Stable Acres to 1990	-2.2 Million	2.2 Million	3.9 Million
Wildlife Habitat Aquatic	30% 4/ in a satisfactory condition	50% 5/ under HMPs	100% 5/ under HMPs
Terrestrial	58% 4/ in a satisfactory condition	50% 5/ under HMPs	100% 5/ under HMPs
Cost	PY 74 $1.8 Million	(15 year) $92.2 Million	(15 year) $143.7 Million

1/ All costs 1974 dollar basis.
2/ Assuming full sustainable yield level of benefits is reached.
3/ Animal Unit Months (AUM's) are based upon cattle.
4/ Present situation precentages are habitat classified in a satisfactory condition.
5/ Intermediate and Optimum percentages are habitat acreages that would be covered by implemented Habitat Management Plans (HMPs) and does not relate to percentage in satisfactory condition.

II. Background

Note: Background relative to grazing in the western States in general is included in the Environmental Impact Statement on Livestock Grazing (available at BLM offices). Data provided in this section includes only information unique to Nevada.

BLM administration in Nevada is handled through a State Office located in Reno and six district offices located in Elko, Winnemucca, Carson City, Ely, Las Vegas, and Battle Mountain. Total acreage managed by the BLM in Nevada is 48,358,114 or approximately 68.4 per cent of the entire land area of the State. This acreage varies from 10 per cent in some counties to 92 per cent in Esmeralda County in south-central Nevada.

Geographic areas of Nevada administered by each district office are shown on Figure I, page 12. Acreage administered by each district is as follows: Elko, 7,382,344; Winnemucca, 8,253,608; Carson City, 5,614,806 (including 272,686 acres in California); Ely 8,009,729; Las Vegas, 9,468,630; Battle Mountain, 8,415,533; 1,433,968 acres of northwestern Nevada is administered from the Susanville District Office in California; and 52,182 acres in Elko County is administered by the Boise District Office in Idaho. A breakdown of these figures is shown on Table 1, page 14. For the purposes of this report, only the acreages shown on the bottom of the table, totaling 46,145,785, will be considered in reporting the grazing condition in Nevada.

A. Economics and Population

The 1974 population of Nevada is estimated at 582,000. Almost 81 per cent of the total population live in two Standard Metropolitan Statistical Areas: the Reno-Sparks area in northern Nevada and the Las Vegas area in southern Nevada. The Statewide population distribution in 1970 is shown on Figure II, page 13.

Nevada's residents were classified in 1970 as 2.1 per cent rural-farm and 17 per cent rural non-farm. Dependence on personal income originating from use of the national resource lands' renewable resources is more than 4 per cent in the non-metropolitan counties, which includes all but Washoe (Reno-Sparks) and Clark (Las Vegas).

Of total earnings by residents in Nevada during 1971, 2 per cent originated from agriculture and 1.7 per cent from mining activities. Per capita personal income of Nevada residents exceeded the U. S. average that year by 15 per cent (see reference 25 in Appendix).

On the average, national resource lands provide about 23 per cent of the feed requirements for livestock in Nevada. Personal income generated from livestock grazing on national resource lands was less than one per cent of all State income during 1969. There is $1.42 worth of personal income generated for each Animal Unit Month (a measure of forage needs per month, hereafter referred to as AUM) provided by national resource lands in Nevada (see reference 28).

B. Livestock

A historical view of livestock grazing on the national resource lands over the past 20 years in Nevada is shown on Table 2, page 15. The table shows increases in livestock and total AUM's until 1959 which began an adjustment period in which grazing use authorizations were based on grazing capacity. Consequently, licensed use continued at a reduced rate until 1969 when adjudications were essentially completed. The trend in change of class of livestock from sheep to cattle operations continues, due mainly to labor, predator, and market problems. The trend to fewer livestock operators continues as some existing operations are consolidated.

C. Wild Horses and Burros

The history, population, and distribution of wild horses and burros in the U. S. is poorly documented and generally subject to individual interpretation and opinion. It is known that large numbers of wild horses occupied Nevada prior to settlement of the area by miners and ranchers during the 1850's. Nevada still has the largest number of wild horses of any State.

Protection, control, and management of wild horses and burros on national resource lands in accordance with Public Law 86-234, Public Law 92-195, and the regulations (43 CFR 4700) is a mandatory function of the BLM. Public Law 86-234, approved by Congress on September 8, 1959, prohibits the use of aircraft or motor vehicles to hunt or capture wild horses and burros and Public Law 92-195, approved by Congress on December 15, 1971, requires the protection, management, and control of wild free-roaming horses and burros on public lands.

In Nevada, these animals occupy at least 25 million acres of the 70 million acres of the State. Surveillance and protection over this vast area is a large and expensive task.

D. Wildlife

Historically, Nevada has had a relatively low density of wildlife numbers. When the pioneers first settled in the State in 1851, there were many more antelope, bighorn sheep, sage grouse and sharp-tailed grouse than there are today. These populations have all decreased due to over-exploitation of wildlife populations and continued loss or deterioration of habitat conditions caused primarily by inadequate livestock management.

On the other hand, there are more mule deer today than there were 100 years ago due to livestock grazing which caused major conversions from grass-dominated vegetation to shrub dominated vegetation. Mule deer prefer shrubs to grass for the bulk of their feed.

While sage grouse habitat quality and quantity declined, conditions were improved for chukar partridge (a non-native species tremendously popular with upland game hunters).

Fish were, at one time, abundant in major lakes and some streams in Nevada, especially the Lahontan cutthroat trout, now considered threatened. Steelhead trout and salmon once migrated into Nevada each year via the Snake River System before it was dammed at several points outside of Nevada. There was a wider variety of native fish in the 1800's than there is today. The record indicates 50 per cent of the fish native to the U. S. that have become extinct within the past 100 years were residents of Nevada.

Currently there are 20 fish species occurring in Nevada listed either by the Department of the Interior or the State of Nevada as being rare, endangered, or threatened with extinction. The BLM has been successful in protecting habitat used by the threatened Warm Springs pupfish in the Las Vegas District and several subspecies of cutthroat trout in the Elko District. The BLM has also been able to provide additional habitat for three threatened species in the Ely District.

One point should be emphasized: the BLM does not manage wildlife. It is responsible for managing wildlife habitat--where animals, birds, fish, and reptiles live. Species management is the responsibility of the Nevada Department of Fish and Game (resident species) and the U. S. Fish and Wildlife Service (migratory game--primarily waterfowl).

E. Recreation

Recreation management as a separate resource consideration is one of the BLM's newest programs. Legislation in 1962 and 1964 established outdoor recreation as one of the BLM's management programs.

As such, the recreation program is now an integral part of the BLM's total resource management responsibility and cannot be separated from other resource activity functions. Consequently, the BLM is responsible for the recreation resources, the management of people who pursue them and all the associated activities that take place on the lands.

Outdoor recreation also has an economic impact on Nevada. Total outdoor recreation in the State in 1970 was 21 million recreation days. National resource lands provide opportunities for 2.1 million or 10.22 per cent. The personal income generated from recreation on national resource lands was $2.28 million or 0.1367 per cent of the total State income (see reference 28).

In broad terms, the recreation resources considered by the BLM are: (1) recreation opportunities (i.e. hunting, fishing, rockhounding, off-road vehicles, sightseeing, etc.); (2) cultural values (i.e. archaeological, historical and paleontologic values); (3) visual values (i.e. aesthetics, open space); and (4) natural environmental values (i.e. wilderness, primitive, Natural Areas and environmental education.)

The location and population density of BLM administered lands in Nevada indicates the land is, for the most part, noted for its open space values.

A recreation resource that has been largely overlooked that is receiving a new emphasis is cultural values.

The current state of knowledge in regard to man's prehistoric and historic past is inadequate. Much of the reason for this situation is that archaeology, as a legitimate scientific method of inquiry into the past, is a relatively new discipline. Along with the growth of archaeology as a science has been our growing awareness of how archaeology has, and will continue to make positive contributions toward the general study of man and his interrelationship with his environment. It has been successfully argued that our very survival may hinge on our understanding of past events.

Archaeological/historical values (cultural resources) are by their nature finite and non-renewable. This non-renewable resource base has been virtually unmanaged by the BLM in the past--a policy which has resulted in the loss of invaluable irreplaceable data; and loss of numerous educational and recreational opportunities.

Nevada's cultural values, have, perhaps, been more neglected than values in other areas of the country because the archaeological remains are much more subtle than in some areas. However, these archaeological/historical values in Nevada have a tremendous potential because so little research has been done and so little known about them. It has been conservatively estimated there is reliable data on Nevada's cultural resources base for only one to five per cent of Nevada's land mass.

F. Planning

The land use planning system of the BLM includes Management Framework Plans (MFP's) and Activity Plans. The MFP process assures responsiveness of decisions to long term human needs through multiple use decisions that adequately sustain and protect resource values. Activity plans include: (Livestock) Allotment Management Plans, Wildlife Habitat Management Plans, and Wild Horse and Burro Herd Management Plans, which specify details of the actions directed by the MFP.

The contents of this report are, in part, based upon completed MFP's covering 44 per cent of the national resource lands in Nevada. Additional plans covering 14 per cent of the land will be completed during FY 1975.

Therefore, land use allocation decisions have been made on only 44 to 58 per cent of the national resource lands in Nevada at the time this report was prepared. Details of this proposal will be modified by the forthcoming multiple use MFP's scheduled for completion Statewide (100 per cent coverage) by the end of FY 1977.

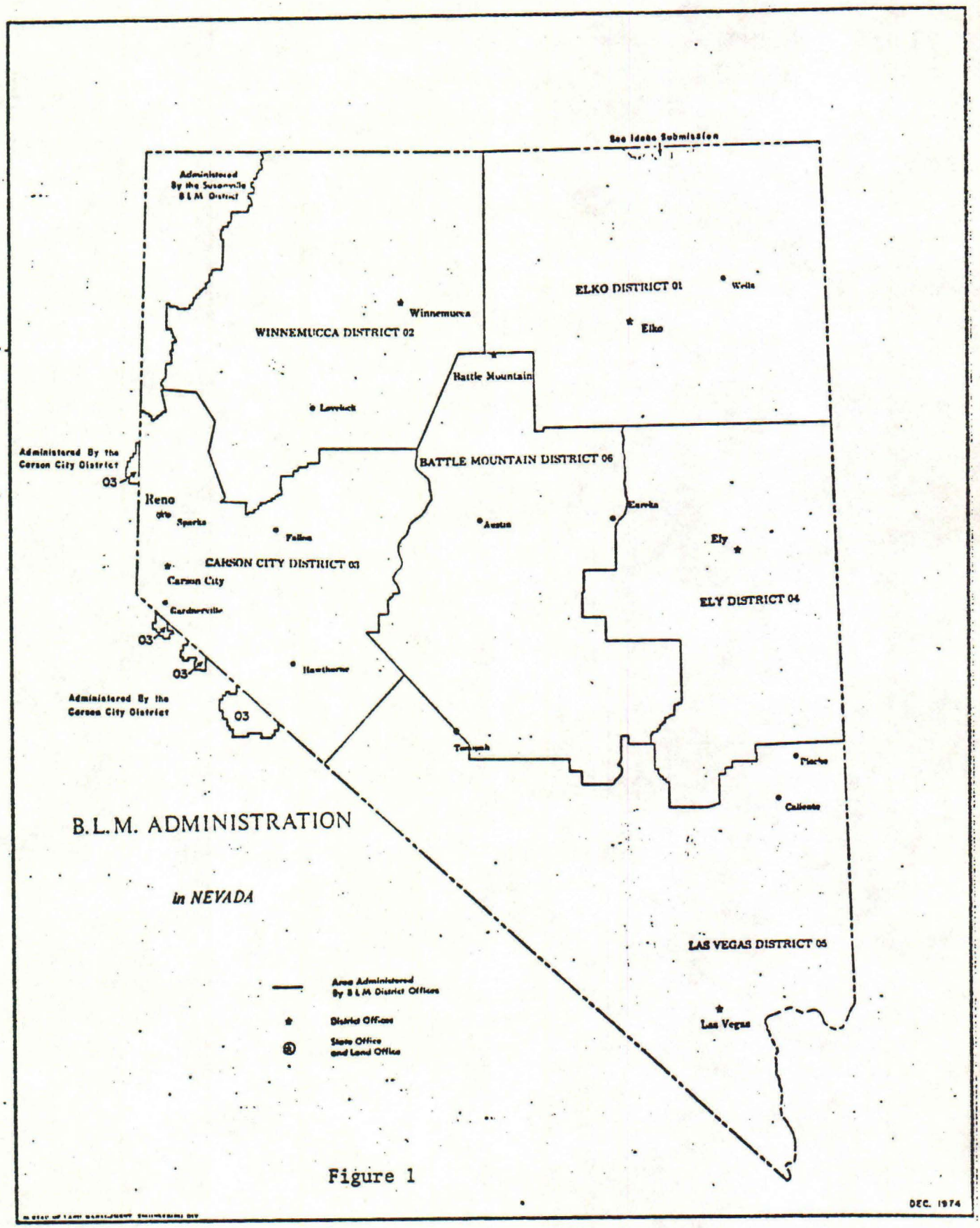

See Idaho Submission
Administered By the Susanville B.L.M. District
ELKO DISTRICT 01
Wells
Winnemucca
Elko
WINNEMUCCA DISTRICT 02
Battle Mountain
Lovelock
Administered By the Carson City District
03
BATTLE MOUNTAIN DISTRICT 06
Reno
Sparks
Fallon
Austin
Eureka
Ely
CARSON CITY DISTRICT 03
Carson City
ELY DISTRICT 04
Gardnerville
03
03
Hawthorne
Administered By the Carson City District
03
Tonopah
Pioche
Caliente
B.L.M. ADMINISTRATION
in NEVADA
LAS VEGAS DISTRICT 05
Area Administered By B.L.M. District Offices
District Offices
State Office and Land Office
Las Vegas
DEC. 1974

Figure 1

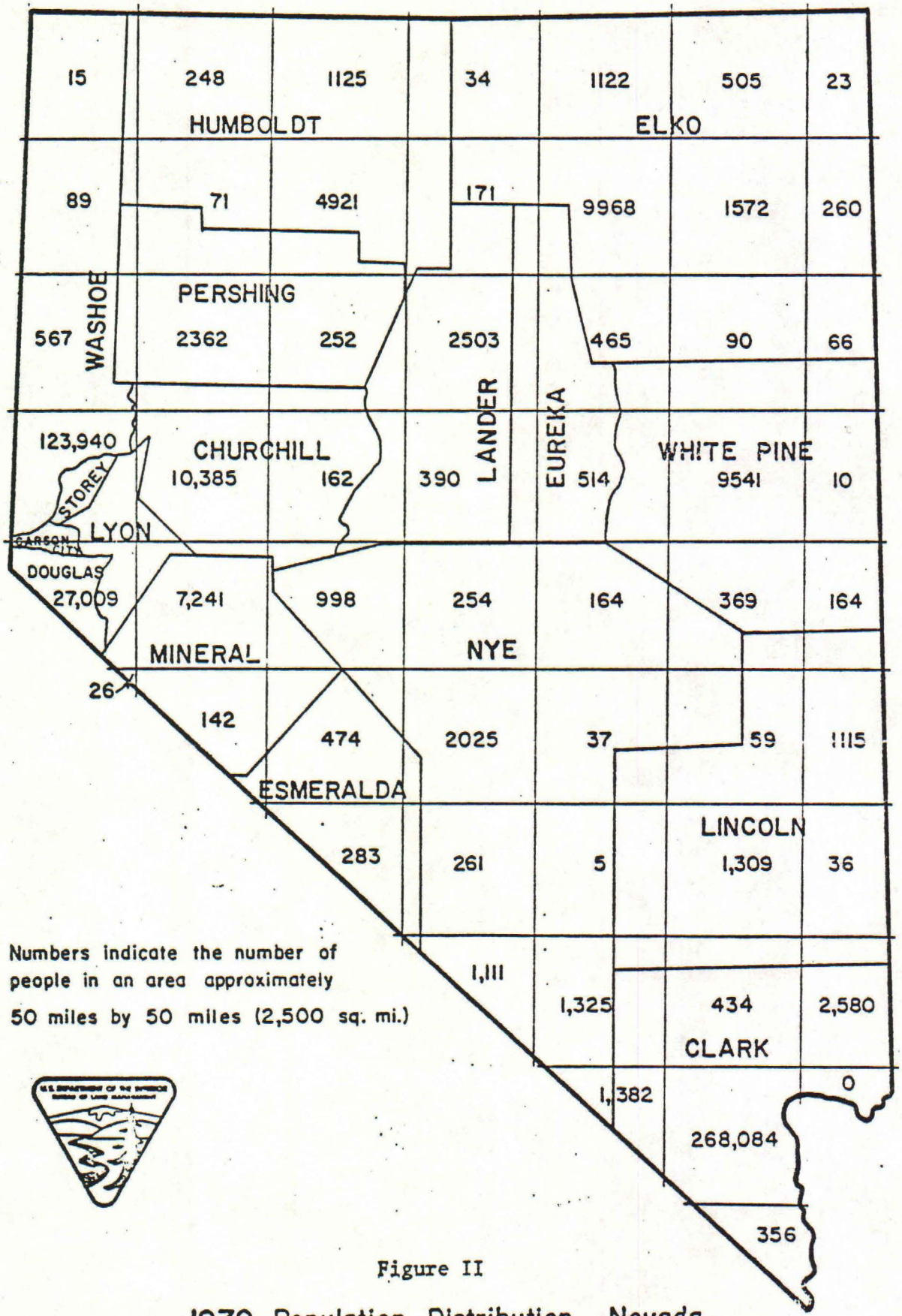


Figure II

1970 Population Distribution, Nevada

Table 1

NATIONAL RESOURCE LANDS UNDER JURISDICTION OF BUREAU OF LAND MANAGEMENT '74

	ELKO	WINNEMUCCA	CARSON CITY	ELY	LAS VEGAS	BATTLE MTN.	SUSANVILLE	BOISE	TOTAL IN NEVADA
Within Grazing Districts	7,020,560	7,801,634	5,301,529	8,002,248	5,864,993	7,980,796	1,431,976	52,182	43,455,918
Outside Grazing Districts	0	439,172	0	0	3,459,000	0	0	0	3,898,172
TOTAL	7,020,560	8,240,806	5,301,529	8,002,248	9,323,993	7,980,796	1,431,976	52,182	47,354,090
Reserved Lands L.U.	0	0	0	0	3/ 3,167	0	0	0	3,167
Reserved Lands - Other	361,784	12,802	35,897	7,161	141,390	432,817	1,033	0	992,884
Unperfected Entries	0	0	1/ 480 2/ 4,214	1/ 320	2/ 80	1/ 1,920	1/ 959	0	7,973
Total in Nevada	7,382,344	8,253,608	5,342,120	8,009,729	9,468,630	8,415,533	1,433,968	52,182	48,358,114
California Acreage	0	0	272,686	0	0	0	0	0	272,686
Total	7,382,344	8,253,608	5,614,806	8,009,729	9,468,630	8,415,533	1,433,968	52,182	48,630,800

1/ Agricultural 3,679
2/ MPA's 4,294
3/ Bankhead Jones

*Acres considered in the Nevada portion of the Range Condition Report.	7,020,560	8,240,806	5,574,215	8,002,248	9,327,160	7,980,796			46,145,785

**These acres will be considered in the California and Idaho portion of this report.

Table 2

Summary of Grazing Use on National Resource Lands in Nevada

Year	Livestock Operators	No. Cattle and Horses	No. Sheep and Goats	Cattle & Horse AUM's	Sheep & Goat AUM's	Total AUM's
1952	1,208	428,186	739,509	2,439,677	742,511	3,182,188
1953	1,186	526,951	987,558	2,981,669	800,298	3,781,967
1954	1,186	426,993	650,936	2,476,647	740,883	3,217,530
1955	1,196	425,383	681,865	2,522,624	744,856	3,267,480
1956	1,139	433,793	660,644	2,476,736	743,578	3,220,314
1957	1,089	427,979	672,957	2,486,500	776,518	3,263,018
1958	1,048	423,395	600,183	2,459,169	746,292	3,205,461
1959	1,016	420,007	565,837	2,440,747	751,892	3,192,639
1960	976	339,687	446,848	1,779,527	467,652	2,247,179
1961	1,034	345,355	434,552	1,649,823	442,285	2,092,108
1962	1,005	320,408	427,700	1,661,136	417,715	2,078,851
1963	1,091	332,985	478,366	1,745,454	407,204	2,152,658
1964	1,014	368,972	450,778	1,824,792	376,185	2,200,977
1965	1,006	364,734	432,405	1,824,541	339,251	2,163,792
1966	957	352,550	444,555	1,838,693	335,116	2,173,809
1967	966	350,781	454,896	1,899,640	325,935	2,225,575
1968	919	360,695	454,139	1,896,665	302,818	2,199,483
1969	927	361,555	454,928	1,849,258	296,513	2,145,771
1970	953	356,040	406,416	1,776,126	357,925	2,134,051
1971	887	353,237	318,316	1,763,144	277,111	2,040,255
1972	891	362,186	331,064	1,792,213	268,321	2,060,534
1973	857	369,057	341,434	1,782,015	231,968	2,013,983

III. Present Situation

A. Statistics

1. Livestock

The following is the total authorized grazing use on the Nevada administered national resource lands for the 1973 grazing season.

Table 3

Authorized Grazing Use on
National Resource Lands in Nevada
in 1973

	Cattle	Sheep & Goats	Horses	Total
No. Authorized	352,288	359,834	2,784	714,906
AUM's* Authorized	1,695,038	233,379	19,955	1,948,372
No. Licenses, Permits and Leases - Sec. 3 (Areas within grazing districts)	--	--	--	807
- Sec. 15 (Areas outside of grazing districts)	--	--	--	19
AUM's* Authorized				
- Sec. 3	1,658,319	233,315	19,955	1,911,589
- Sec. 15	36,719	64	--	36,783

*Animal Unit Month - The amount of forage required to sustain the equivalent of one cow or five sheep for one month.

2. Wild Horses and Burros (see reference 9)

Wild horses and/or burros are distributed to some extent over most of Nevada and accurate inventories of this vast area have not been completed. The following data has been compiled using areas with reliable inventories, areas with unreliable inventories, and estimates of numbers on the remaining areas. The data includes approximately 7,000 horses and burros for which private claims have been filed. To date, 834 of these animals have been removed.

Table 4

Wild Horse and Burro Inventory, 1974

District	No. 1/ Horses	AUM's* Required	No. Burros	AUM's Required	AUM's - Reserved
Carson City	2,492	37,380	67	804	1,819
Winnemucca	5,928	88,920	123	1,476	0
Elko	2,588	38,820	0	0	0
Ely	3,543	53,145	0	0	0
Las Vegas	902	13,530	539	6,468	0
Battle Mountain (Includes Bombing Range)	3,858	57,870	15	180	0
Total	19,311	289,665	744	8,928	1,819

*Computed at 1¼ AUM's/month for horses.

1/ Does not include animals in Nevada area administered by California's Susanville District Office.

In accordance with the provisions of Section 5 of Public Law 92-195 (the 1971 Wild, Free-Roaming Horse and Burro Act), claims for 7,323 privately owned horses and burros have been filed in Nevada. Authorizations to gather these animals have been in effect for approximately nine months. Only 834 animals have been gathered and removed as of Dec. 1974. Specific data on claims by district is listed on the following page.

Table 5

Claiming Data by District, 1974

District	Number of Claims Filed	Number of Animals Claimed	Number of Animals Gathered	Number of Animals Remaining	AUM's Required
Elko	29	3,890	769	3,121	46,815
Winnemucca	7	223	0	223	3,345
Carson City	1	75	0	75	1,125
Ely	15	942	17	925	13,875
Las Vegas	4	169-H	28-H	141-H	2,115
		50-B	0-B	50-B	600
Battle Mountain	13	1,693	20	1,673	25,095
State Total	69	7,273-H	834-H	6,439-H	96,585
		50-B		50-B	600
				Grand Total	97,185

3. Wildlife

Each BLM district in Nevada has identified the different animal species occurring in that district. Roughly, they have identified an average of the following numbers of species: mammals, 50; birds, 350; fish, 50; and amphibians and reptiles, 50, for a total of 500 species.

Of these, there are 28 species classified as rare, endangered, or threatened by the Department of the Interior or the State of Nevada. Twenty are fish species, ranging from the large Lahontan cutthroat trout to the small Devil's Hole pupfish. Three species are birds of prey, including the southern bald eagle, prairie falcon, and the American peregrine falcon. One amphibian, the Vegas Valley leopard frog and two reptiles, the gila monster and the desert tortoise, are included, as well as two mammal species, the spotted bat and the California bighorn sheep.

About 35 species of birds and mammals are legally hunted in Nevada. Total hunting use on all lands within the State was estimated to be about 479,000 hunter-days and the estimated hunting on national resource lands was approximately 248,000. Therefore, approximately 52 per cent of the hunting in Nevada is dependent upon use of the national resource lands. This dependence varies from 42 per cent in the Carson City District to 64 per cent in the Winnemucca District. Income generated from hunting on national resource lands accounts for approximately $350 million of personal income in the State.

The following table lists the estimated big game herbivores (plant-eating animals) using national resource lands in 1973:

Table 6

Estimates of Big Game on National Resource Lands, 1973

Kind	Number	AUM's Required	AUM's Reserved by Range Surveys
1. Antelope	6,428	7,253	
2. Mule deer	220,900	317,760	97,376
3. Elk	380	420	
4. Bighorn	3,274	9,622	
Total	230,982**	335,055	97,376

**These big game numbers are only estimates, as it is impossible to definitely quantify wildlife populations. In addition, there are no available numerical estimates for upland game species, fish or non-game wildlife species.

The disparity between AUM's required by big game and AUM's set aside results from inadequate AUM reservations for wildlife at the time these areas were adjudicated. Lack of data on wildlife habitat needs has also been a contributing factor to inadequate apportionment of wildlife AUM's.

B. Management Situation

1. Land Patterns (see reference 7)

There are large contiguous areas of national resource lands within each of the six districts within Nevada. There are also interspersed blocks of other Federal lands administered by agencies such as the U. S. Forest Service, National Park Service, U. S. Fish and Wildlife Service, Bureau of Reclamation, Bureau of Indian Affairs, Atomic Energy Commission, and the Department of Defense.

Private lands are concentrated along water courses, near centers of population, and in a checkerboard pattern originally granted to the transcontinental railroad, but now much is in private ownership. Railroad ownership entails approximately 20 per cent of the original grant areas.

Near population centers and in checkerboard lands, national resource lands are fragmented, and management is by custodial care. In some areas there is a problem with private land owners blocking access to substantial areas of national resource lands.

Cooperative agreements and exchanges of land to consolidate management responsibility is necessary.

2. Wild Horses and Burros

Initial and followup wild horse and burro inventories over 25 million acres pose serious fund and manpower problems. Reliable initial inventories are complete on approximately 25 per cent of the area required. Followup inventories every three years will be required.

Populations of wild horses and burros are increasing at an estimated rate of 20 per cent per year. Population control and herd reductions in some areas will be necessary in order to protect other resource values. Techniques to capture and control these animals are so severely constrained by Public Law 86-234 and Public Law 92-195 that realistic and practical procedures are not available. Amendments to these Acts are required.

Major population control actions will require Environmental Analyses and in some cases Environmental Impact Statements, requiring manpower beyond current capabilities and further delay the action resulting in additional problems.

Upon completion of Management Framework Plans, specific Herd Management Area Plans must be developed and implemented. These plans usually require construction of many expensive facilitating projects which must be programmed, funded and placed on the ground. In short, actual required intensive management of wild horses and burros is many years away.

3. Unauthorized Use by Livestock

Unauthorized use (called trespass) is occurring Statewide on national resource lands in Nevada and is in addition to the allocations made of the forage. District reports indicate the unauthorized use exceeds 70,000 AUM's of forage each year. This situation further contributes to the deteriorating range conditions. Supervision on all areas of BLM administered lands has been inadequate for several years to enforce compliance with the regulations.

Unauthorized use by horses and burros in Nevada is divided into two general categories: (1) unauthorized grazing use by domestic animals, and (2) unauthorized use by animals claimed under provisions of Public Law 92-195 (1971 Wild, Free-Roaming Horse and Burro Act) that have not been removed.

Unauthorized grazing use by domestic horses usually occurs when horses are grazed in excess of the numbers authorized by license or permit or at periods of time when they are not authorized. This is not considered a major resource problem in Nevada although the percentage of unauthorized use in relation to the authorized AUM's may be relatively high. Some animals are also released onto national resource lands by non-permittees. This is common, especially adjacent to urban areas, and is likely to increase in direct proportion to the expected increase in hay and private pasture costs.

The second category of horse and burro trespass involves Section 5 of Public Law 92-195 and its provisions for recovery of privately owned horses and burros. Claims exist for 6,439 horses and 50 burros which have not been captured and removed to date. It is estimated these animals will consume more than 97,000 AUM's annually if not removed.

Some of the claims may be abandoned and if the animals are unbranded they would revert to a wild free-roaming classification subject to BLM administration. Procedures must be developed and enforced to terminate all claims either by capture and removal or formal abandonment.

4. Present Forage Demands

Range surveys were conducted from 1938 to 1967 in Nevada to determine the grazing capacity available for the various grazing animals. Allocations were made based on information available at that time.

Increases in forage in some areas have been made over the past 20 years by land treatment practices (spraying, plowing, chaining, and seeding) on low forage producing areas of sagebrush, pinyon-juniper, and those areas burned by wildfire.

There have also been decreases in forage production in other areas due to invasion of pinyon-juniper and other lower value forage producing grasses, forbs, and shrubs; increased densities of sagebrush; and poor livestock distribution due to lack of management facilities. In addition, knowledge of the demands for the forage has been increased through: updated inventories of wildlife numbers for a substantial increase in demand over that allocated; passage of the 1971 Wild, Free-Roaming Horse and Burro Act placed a legitimate demand on the forage in addition to that previously allocated; and unauthorized use by livestock has increased due to lack of adequate BLM supervision.

All present demands of the forage exceed that originally allocated and any subsequent increases in allocations. This situation is reflected in the over-utilization of the forage, present poor range condition, a declining range trend, and a downward trend in livestock use.

5. Water

Water erosion is directly affected by range conditions. Poor range conditions usually are accompanied by an unsatisfactory vegetative cover and soil instability which contributes to higher concentrations of soluble salts and silt loads in water sources, while good or excellent range conditions will reduce the problem.

Some direct pollution and a decrease in water quality occurs from all forms of grazing use including wildlife, livestock, and wild horses and burros when the grazing occurs around water sources and stream channels. The Goshute and Duckwater watersheds (Ely District), and the Mahogany Creek drainage (Winnemucca District) have been identified as major problem areas.

Water sources for the range resource uses on national resource lands are relatively limited in Nevada and water management and utilization is complicated by conflicting Federal and State laws. Most water sources in Nevada have been adjudicated as private waters under State law.

The controversy between Federal, State, and local interests regarding water rights and law complicates water development efforts. Water development is a key to (1) better livestock distribution, (2) wildlife habitat improvement, (3) increasing watershed cover, and (4) other multiple uses.

6. Important Vegetative Changes (see reference 7)

Upland meadows in the Cold High Desert Biome (an ecological classification that includes part of Nevada) are in small isolated areas of succulent grass and forb vegetation. Many upland meadow areas are being invaded by sagebrush and their values as upland meadows are being diminished as a result. Small upland meadow areas are the remaining link to the survival of sage grouse and other birds in the state.

Aspen areas are also critical to many wildlife species. Many small groves of aspen are dying in Nevada. No reproduction is occurring in some areas. In other areas the reproduction is being consumed annually and not allowed to grow to maturity. High concentrations of livestock occur along the water courses that are often associated with aspen vegetative types.

The big sagebrush and pinyon-juniper groupings are the most important vegetation grouping in a major portion of the State. Lack of adequate management of these areas has resulted in reduction of forage production potential.

Understory 1/ species of desirable grasses and forbs have decreased in density. Other less desirable species--cheatgrass and halogeton--occupy most of the understory, resulting in reduction of desirable wildlife habitat.

Approximately 2.5 million acres (or approximately 1/2 of the total) of the pinyon-juniper area os the State provide little forage production. Rugged terrain and a sparse cover of desirable forage limit production in these areas. Pinyon-juniper invasion has reduced desirable vegetative species on other ranges due to competition for available moisture, nutrients, and sunlight.

On areas where intensive livestock grazing techniques have been implemented, trends of conversion of vegetation to one type and natural draining of subsurface water table in meadow areas has been reduced. Seed sources have been expanded for greater flexibility in seeding to accomplish multiple use goals.

7. Range Improvements

Livestock water collection units have been criticized as causing small bird and animal drownings. Providing wildlife escape structures has reduced death loss from this cause.

Many fences have been constructed without adequate consideration for impact on wildlife movement patterns. Through adequate planning, this problem is minimized on new fence construction. Older fences without these considerations will be modified under the maintenance program.

Developments for range improvements may be detrimental to aesthetic values since natural landscapes have been altered. The recreationist often uses areas near water developments. The opportunity to enjoy the scenery or camp near a stream is sometimes marred by a development or water pollution from heavy livestock use.

1/ Understory consists of plants, usually grasses and shrubs, growing under a tree cover.

Some segments of the public have a negative impression of range vegetation conversion projects. The positive results of such projects as increasing forage production, wildlife habitat, and ground cover by reducing monotype vegetative communities has gained little environmental support.

8. Livestock Industry Stability

Transfers of grazing allotments annually exceed 10 per cent of the total district area in some districts. In addition, ranch managers are often changed on the larger ranching operations. These two factors, combined with district office staff changes, often make it difficult to establish grazing systems, which require understanding between the BLM and the operator.

Dependence upon national resource lands in Nevada for total livestock feed requirements averages 23 per cent for the State; however, some operators (e.g. water based permittees) depend upon national resource lands for 100 per cent of their livestock feed. Reduction in feed originating from the national resource lands would require the operator to reduce herd size or to purchase feed (occasionally from distant sources).

Average dependence of the livestock industry on the national resource lands has been stable for the past decade. Many of the allotments are controlled by large operators who can better absorb adversities of drought, range fires, and severe winters.

9. Recreation

Recreation has been significantly affected by range improvement developments. Likewise the recreationist can have a detrimental effect on range improvements. Off-road vehicle use has led to complaints from range users. ORV's have caused above normal livestock movements resulting in undesirable livestock distribution. Vandalism by recreationists of range improvements is a repeated problem which increases annual maintenance costs by at least 10 per cent. Archaeological values have been damaged by construction of developments.

Another management problem exists in the realm of archaeological values. It has been conservatively estimated that only one to five per cent of Nevada's land mass has been systematically inventoried for archaeological values, which is a totally inadequate sample for BLM planning purposes.

C. Status of Management

1. Livestock

Implemented, 5,363,673 BLM acres
Not Implemented - 3,194,817 BLM acres
Grazing System - 25,195 BLM acres

Table 7

Present Status of Range Management, 1974

	Intensive Management	Interim Management	Custodial Management	Total
No. Existing AMP's*	87		--	87
No. AMP's Potential	644	--	--	644
Acres Presently	5,363,673	30,145,634	6,438,025	41,947,332
Acres Potential	35,509,307	--	6,438,025	41,947,332
AUM's Authorized Present	361,880	1,287,458	299,034	1,948,372
AUM's Authorized Potential	3,377,527	--	299,034	3,676,561

*Allotment Management Plans - A concisely written program of livestock grazing management, including supportive measures if required, designed to attain specific management goals on grazing allotment or specific area of land where livestock are grazed.

District reports compiled during February 1974 show 852 allotments in Nevada. The total number of AMP's developed will be less than the present number of allotments due to anticipated further consolidation of base properties and consolidation of certain individual allotments into a single AMP. The Custodial Management Area (see chart) is comprised of areas outside grazing districts and ephemeral range lands within the Las Vegas District and areas unsuitable for intensive management in other districts due to scattered Federally owned lands.

2. Wildlife

Through the BLM Planning System, needs for 303 wildlife Habitat Management Plans (HMP's) have been identified. These are broken down in the following table:

Table 8

Habitat Management Plans Identified in Nevada

	Number	Acres
Terrestrial HMP's	148	46,675,121
Aquatic HMP's	155	4,579,100
	303	

Aquatic HMP's are for fish only; habitat needs for all other water-oriented species, including waterfowl, are handled under terrestrial HMP's. Note also that aquatic HMP's are based on watersheds, so there is some overlap between terrestrial and aquatic HMP areas.

A total of 30 HMP's (22 terrestrial and 8 aquatic) have been prepared by the districts between 1967 and the present, as shown in the following table:

Table 9

Habitat Management Plans Thru 1974

District	No. Plans		Acres in Terrestrial	Miles of Stream in Aquatic	Estimated Cost to Implement	Estimated MM's* to Implement	Cost of Implemented Jobs to Date
	Terrestrial	Aquatic					
Elko	3	3	389,000	218	315,000	25	140,000
Winnemucca	5	1	2,190,700	8	124,900	49	17,300
Carson City	4	0	736,500	0	259,000	29	51,000
Ely	4	2	581,900	6	409,200	27	38,500
Las Vegas	3	1	696,000	0	170,900	73	24,300
Battle Mtn.	3	1	261,200	13	89,800	6	8,000
Total	22	8	4,855,300	245	1,368,800	209	$278,100

*MM's - Man Months

Two factors must be noted in terms of this chart breakdown. First, of the estimated cost to implement these plans, only 20.3 per cent of the needed monies have been spent, based upon funds to do the job. Second, several of these plans were written as far back as 1967, when only game species were considered. As these HMP's are updated, there may be major increases in estimated funds needed to accomplish wildlife habitat goals for both game and non-game species.

D. Resource Condition

1. Range Condition

The following table reflects the BLM's assessment of range condition in Nevada as it was reported in 1964. That year was the last time range condition readings were made on a Bureau-wide basis.

Table 10

Range Condition in Nevada, 1964

	Acres (1,000's)	Per cent
Excellent	860	1.8
Good	6,726	14.4
Fair	26,993	57.6
Poor	10,995	23.5
Bad	1,259	2.7
Total	46,833	100

2. Erosion Condition

The erosion condition in Nevada by district is outlined in the following table:

Table 11

Erosion Condition in Nevada, by District, 1974

District	Stable	Slight	Moderate	Critical	Severe	Total*
	Acres	Acres	Acres	Acres	Acres	Acres
Elko	1,327	3,613	1,991	369	74	7,374
Winnemucca	330	3,707	3,632	578	8	8,255
Carson City	646	4,292	613	23	0	5,574
Ely	318	3,601	3,681	400	2	8,002
Las Vegas	186	2,985	5,214	932	10	9,327
Battle Mountain	479	5,587	1,596	314	5	7,981
State Total**	3,286	23,785	16,727	2,616	99	46,513
Percentage of Total	7	51	36	6	Trace	100

* District total acres are a summary of erosion condition inventory.
**Acreages listed in 1,000's.

The preceding table projects the acreages in each erosion condition class at completion of studies in FY 1977. Currently, watershed studies are approximately 84 per cent complete for the State.

Most areas in a moderate to severe erosion class are situated on sites of fragile soils, in pinyon-juniper invasion areas, in areas of excessive grazing use, and on sites of low soil fertility.

3. Wildlife

Table 12

Habitat Condition for Wildlife, 1973

Wildlife Group	Habitat Condition		
	Satisfactory	Unsatisfactory	Total
Big Game - Acres	10,555,900	9,529,000	20,084,900
Stream Fish - Miles	187	541	728
Lake Fish - Acres	830	1,875	2,705
Upland Birds - Acres	14,437,000	5,759,700	20,296,700

Therefore, 47 per cent of the big game habitat is in an unsatisfactory condition; 74 per cent of the stream fish miles; 69 per cent of the lake fish acres; and 28 per cent of the acreage for upland birds.

E. Resource Trends

1. Range - Livestock

Table 13

Trend in Range Condition

	Acres (1000's)	Per Cent
Improving	5,697	12
Static	37,822	81
Declining	3,313	7
Total	46,833	100

Trends for rangeland conditions have not been reported since 1964. Some studies have been initiated on the intensive livestock management areas, but sufficient data is not available for reporting any changes to date. However, it is estimated that the areas under intensive management are static or improving. The remaining acres of useable lands are static or declining due to lack of adequate management facilities for proper distribution and utilization of the forage, unauthorized domestic livestock use, and inadequate wildlife and wild horse and burro allowances.

2. Erosion Condition[1/]

The following table shows the trend in total acreages and percentages in each erosion class by 1990 if no changes in management are made.

Table 14

Erosion Condition Trends to 1990

Trend	Acres	Per cent
Improving	7,559,000	16
Static	32,239,000	69
Declining	6,715,000	14

Most of the declining trend is attributed to competition between livestock and wild horses, resulting in over-grazing the forage production of the range. Continuous grazing during the growing season and plant utilization exceeding proper use results in inadequate ground cover.

By comparing acreage in erosion condition classes presently and in 1990 without change in management, the Statewide area in moderate, critical, and severe erosion classes will increase by 6,715,000 acres, representing a 14 per cent change.

3. Wild Horses and Burros

The BLM has responsibility for the protection, health, and welfare of wild horses and burros as well as their habitat requirements. Similar to wildlife, wild horses and burros require three major components for their habitat: food, water, and cover, which are discussed below.

a. Forage - Horses and burros are highly mobile animals which adapt to almost any habitat. They are able to travel and utilize forage many more miles from water sources than domestic cattle and sheep or big game animals, so forage conditions must become extremely severe before it is reflected in the health and condition of the horses and burros. Horses and burros utilize all available forage close to water first and then forage as far away from water as necessary to meet their biological requirements, so forage resource conditions are directly related to the animal populations and the competing uses for available forage. Most areas with a high concentration of horses and/or burros reflect a poor forage and vegetative condition with a downward trend.

b. Water - The water situation in Nevada is especially critical in relation to wild horses and burros. Most present sources of water in Nevada have been adjudicated as private waters under State law. A large percentage of the water sources are located on private lands subject to fencing which could result in the exclusion of wild horses and burros. Water sources in many areas occupied by wild horses and/or burros are widely scattered and weak in supply when all uses are considered. Opportunities for development of new water sources would be relatively expensive since most known cheap sources have already been developed.

c. Cover - Wild horses and burros are not dependent upon "cover" in the sense of many wildlife species. Cover required for these animals is actually an "escape area" which can be a broad open valley or a steep mountainous area. There are no problems associated with escape areas in Nevada.

IV. Projected Resource Condition at Current Management Levels

A. Resource Condition

1. Range Condition

Range conditions are deteriorating at current management levels. This situation will continue until adequate levels of funds and manpower are available to implement and supervise Allotment Management Plans.

Table 15

Past, Present, and Projected Range Conditions

	Excellent	Good	Fair	Poor	Bad	
Percentage of Rangeland 1964	1.8	14.4	57.6	23.5	2.7	= 100%
Percentage of Rangeland 1974	1.5	13.0	54.5	27.0	4.0	= 100%
Percentage will be 1990	1.2	12.0	50.3	31.0	5.5	= 100%
Percentage will be 2000	1.0	11.5	48.5	33.0	6.0	= 100%

2. Erosion Condition

The following table shows the percentage of the total national resource land acreage in each erosion class now and at future dates if the current level of management continues:

Table 16

Percentage Distribution of Erosion Classes

Year	Erosion Class					
	Stable %	Slight %	Moderate %	Critical %	Severe %	
Erosion Percentage 1974	7	51	36	6	Trace	= 100%
Erosion Percentage 1990	3	41	48	8	Trace	= 100%
Erosion Percentage 2000	3	32	50	14	1	= 100%

As shown, watershed conditions will continue to deteriorate. If overgrazing is not curtailed, grazing areas close to water will be supporting 50 to 70 per cent less perennial grasses and weeds. Dissolved solids in springs will continue to exceed Public Health Standards of less than 500 milligrams per liter. Therefore, if management continues at the present level, more than 2.2 million acres of national resource lands in Nevada will fall into a declining trend.

3. Wildlife Habitat

The projected big game habitat condition outlined below is based on the assumption that livestock management will remain at the status quo and funding levels in the wildlife program will remain just as they are, i.e. very little direct habitat improvement work will be accomplished. Direct habitat improvement includes protective fencing, reseeding, pinyon-juniper chaining, etc.

Table 17

Projected Big Game Habitat Condition

Year	Percentage of Wildlife Habitat	
	Satisfactory	Unsatisfactory
1974	50	50
1990	40	60
2000	33	67

B. Resource Production

1. Livestock

Table 18

Livestock Forage Production

Type of Livestock	AUM's 1974	AUM's 1990	AUM's 2000
Cattle	1,695,038	1,486,238	1,434,038
Sheep	233,379	204,579	197,379
Horses	19,955	17,555	16,955
Total	1,948,372	1,708,372	1,648,372

Livestock forage production is decreasing as reflected in the downward trend in licensed livestock use and will continue to decrease as a result of the deteriorating range conditions and projected increase in wild horse and burro demands.

2. Wildlife

The table below shows estimates of big game numbers, assuming no changes in present levels of management. Again, no estimates are available for other species.

Table 19

Projected Population of Big Game

Population	1973	1990	2000
Deer	220,900	210,000	200,000
Antelope	6,428	7,500	8,000
Elk	380	450	500
Bighorn Sheep	3,274	3,500	5,000

Mule deer, by far the most important game wildlife species in the State in terms of populations and harvest, will decline in population between now and 2000.

Antelope and elk are shown to be on a slightly upward trend because these animals are presently increasing very slightly in population. The increase in bighorn sheep is projected with the hope these animals can be reintroduced into portions of the ranges they historically inhabited. Little or no increase in BLM funds would be necessary to complete this task; however, BLM may have to initiate intensive livestock grazing consistent with the habitat requirements of the species. If livestock grazing on these historic ranges was effectively coordinated and benefical to wildlife, the opportunity would be available for the Nevada Department of Fish and Game to reintroduce bighorn sheep in these areas, which would increase the population of these animals.

3. Wild Horses and Burros

Current capabilities are inadequate to cope with the present wild horse and burro situation and carry out the intent of Public Law 92-195 to control populations and manage the animals as an integral part of the natural system of the public lands.

Control and management of the animals requires inventory, analysis, and planning followed by implementation of management plans. Current capabilities are limited to inadequate protection, inventory and planning. As inventories are completed, some population control will begin. Until optimum horse and burro numbers are determined through the processes of the BLM Planning System, such control efforts will be directed toward preventing unrestricted increase of horse numbers in areas where resource damage is occurring or is imminent if horse numbers are allowed to increase.

Table 20

Projected Wild Horse and Burro Populations

	1974	1990	2000
Wild Horses			
Population 1/	11,300 4/	20,000	25,000
AUM Requirement 2/	169,500	300,000	375,000
Wild Burros			
Population 1/	700 4/	1,400	1,800
AUM Requirement 3/	8,400	16,800	21,600

1/ Other than for 1974, these population projections are arbitrary at this time, since optimum numbers will be determined based on many factors (i.e. range/forage production, requirements for wildlife and livestock as well as wild horses, compatibility of wild horses with other resource uses, etc.).

2/ AUM requirement for wild horses based on the number of horses multiplied by 12 month season of use, multiplied by 1.25 (AUM's/horse).

3/ AUM requirement for wild burros based on the number of burros multiplied by 12 month season of use, multiplied by 1.00 (AUM's/burro).

4/ Does not include animals for which private claims of ownership exist.

C. Fiscal Capabilities

1. Range Management

The following table outlines range management funding and accomplishments for fiscal years 1973 and 1974:

Table 21

Range Management Funding and Accomplishments

Work Element	Year 1973	1974
Resource Inventory - acres	5,102,000	1,398,000
Unit Resource Analyses - each	5	7
Management Framework Plans - each	4	4
Allotment Management Plans - each	5	7
AMP Evaluation - each	19	50
Contests and Appeals	2	1
Use Authorizations		
Environmental Analysis - number	29	10
Section 7 Transfers - number	125	113
Dependent Property Surveys - number	58	53
Section 3 License	1,077	1,067
Section 15 Lease	26	24
Trespass Cases - number	65	43
Supervision - Management Plans - number	86	54
Programmed Man Months	257	294
Actual Man Months	272.3	289.5
Percentage of Total Programmed	106.0	98.5
Programmed Costs	358,800	434,900
Actual Costs	398,942	446,043
Percentage of Total Programmed	111.1	102.0

Programmed man months and costs were fully expended or exceeded each year. Priority was given to accomplishing the Bureau Planning System. Use authorizations were accomplished. Supervision time was directed towards existing Allotment Management Plans so no new AMP's were developed. All AMP studies were not accomplished due to limited manpower. In addition, little supervision time was available for non-AMP areas and for control of unauthorized grazing uses.

2. Wild Horses and Burros

Capabilities to accomplish specific work elements at current funding and manpower are shown below:

Table 22

Accomplishments in Wild Horse and Burro Program With Current Capabilities, 1974

Work Element	Percentage of Accomplishment With Current Capabilities
Protection, Investigation and Surveillance	50
Completion of Initial Inventory	100
Environmental Analyses and/or Impact Statements on Population Control	25
Completion of Planning Through Management Framework Plans	100
Development of Herd Management Plans	0
Interim Population Control	10
Implementation of Herd Management Plans	0
Supervision of Herd Management Plans	0
Maintenance of Facilities	0
Studies and Research	.5

3. Watershed

The following table is developed to analyze the 1973 and 1974 Annual Work Plan accomplishments and programmed units of the watershed activity.

Table 23

Watershed Funding and Accomplishments

Work Element	Year 1973	1974
Resource Inventory - acres	7.4M	10.3M
Unit Resource Analyses - each	4	5
Resource Study - each	24	30
Management Framework Plans - each	2	6
Project Plan - each	77	86
Environmental Analysis Records - each	27	28
Site Improvement - acres	2,225	3,873
Water Development - each *	82	54
Water Control - cubic yards	33,304	7,045
Fence - miles	60	134
Cattleguards - each	25	25
Maintenance - Fence - miles	136	105
Maintenance - Cattleguards - each	16	15
Maintenance - Water Diversions - each	36	19
Maintenance - Land Treatments	2,620	1,815
Programmed Man Months	332	371
Utilized Man Months	293	350
Percentage of Total Used	88	94
Programmed Funds	954,700	983,500
Utilized Funds	776,750	843,501
Percentage of Total Used	81	86

* 1 mile pipeline = 1 water development.

As shown by the table, only 88 per cent of man months and 81 per cent of funds were utilized during fiscal year 1974; 94 per cent of programmed man months and 86 per cent of funds were utilized in fiscal year 1973. Funds and man months were not utilized due to: travel ceilings; mileage restrictions; occurrence of unprogrammed work; speed limits (50 mph) imposed due to energy crisis; not being able to use Grade Step 8 employees and below for more than 40 hours per week or 8 hours per day without overtime; and temporary and permanent position - man month ceilings.

Resource inventories will be complete by fiscal year 1977, so this manpower may be used in other elements in later fiscal years. Following table shows workload and outputs at current level of funding.

Table 24

Soil and Watershed Workload and Outputs

Output - Job Element	Unit - Annually - 1974
Resource Inventory	5,710,000 acres*
Unit Resource Analyses & Update	5 each
Resource Study	25 each
Management Framework Plans & Update	3 each
Resource Plans	6,300,000 acres
Project Plan	80 each
Environmental Analysis Records	25 each
Construction - Improvements	
Fence	60 miles
Cattleguards	25 each
Site Improvement	2,000 acres
Water Control	30,000 cubic yards
Maintenance - All	$70,000

4. Effects of Increases in Costs

Work accomplishments, when measured by budget expenditures, change as a result of changing prices for goods and services. The accompanying Table 25, page 42, provides illustration of historical trend of budgetary expenditures of the soil and watershed, and range activities, compared with the amount of services they could be expected to deliver, relative to the base year 1965.

"Adjusted" (for changes in purchasing power) expenditures relative to "actual" (number of dollars actually spent) expenditures were approximately 65 per cent effective for range management, compared to the base year 1965. For soil and watershed, the same comparison indicates that 1974 dollars were 48 per cent as effective as 1965 dollars. Watershed expenditures were primarily for contract construction items which increased in cost more rapidly than salaries, the major component of the range management budget.

Observation of past effectiveness of budget dollars for natural resource management is interesting for two reasons. First, it may help decision-makers and evaluators to comprehend underlying factors relating to changing effectiveness of the BLM in achieving management objectives. Secondly, comparisons are valuable to help understand what can be expected in the future.

In Table 26, projections of the Gross National Product deflator are utilized to project effectiveness of current budgetary levels in the range and the combined range and watershed improvement activity. To maintain current effectiveness of budgeted funds, it may be expected that a doubling of the budget will be required for the combined activities by 1982 or in range management alone by 1985.

D. Economics

The percentage of Nevada residents' personal income directly attributable to utilization of national resource land livestock forage did not exceed 0.3 per cent during 1969. Total personal income derived (direct plus indirect) falls within the range 0.5 per cent to 2 per cent. While Statewide dependence is relatively minor, dependence of the livestock industry on national resource land produced forage from authorized grazing, ranged from 78 per cent in Mineral County to 1 per cent in Douglas County (both in the Carson City District).

The average personal income created per national resource land AUM of grazing was estimated to be $1.42 (including indirect by generated personal income). Therefore, approximately $3 million of Nevada resident personal income during 1970 was attributable to national resource land livestock forage. This does not include the effect of operators with base property outside Nevada, nor unauthorized grazing.

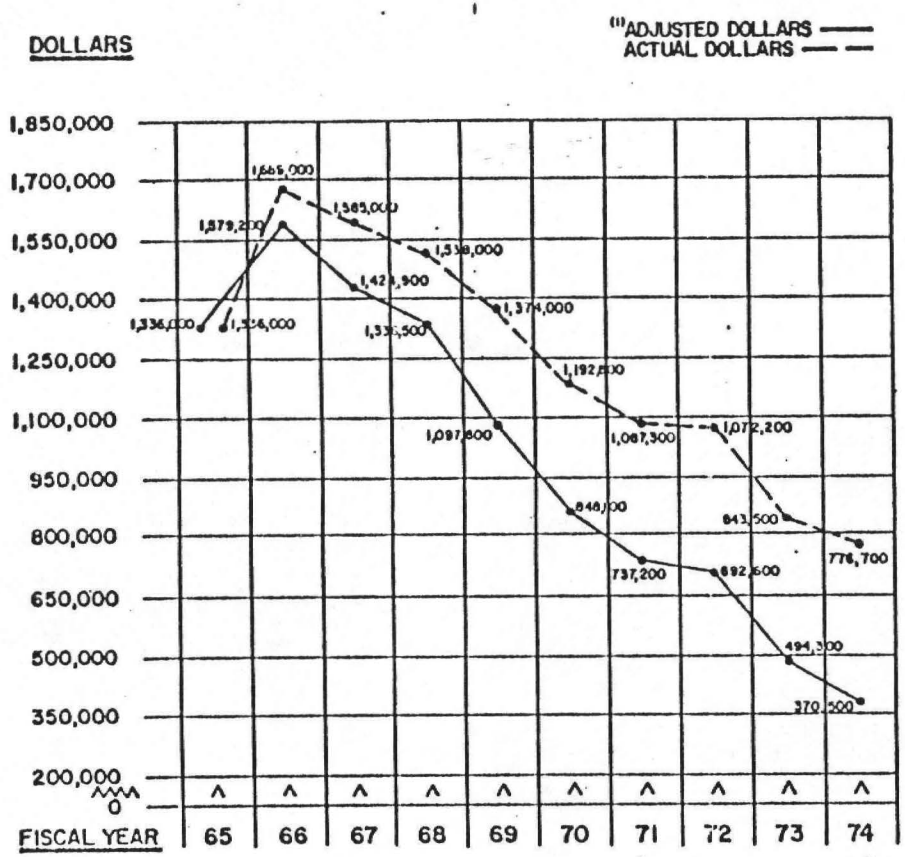
Permittees have for the past decade obtained about 40 per cent of their forage from national resource lands. The number of permittees has declined, suggesting the size of ranches using BLM land has increased (as have farm and ranch sizes nationwide). These dependency figures reflect only the permittee dependency on national resource land for their total forage supply and not their dependency on national resource lands for total income.

The dependency of the livestock, as shown on Table 27, page 44, was estimated from the percentage of livestock feed provided by national resource lands. The industry dependence for the State is estimated to be 23.45 per cent. The portion of forage provided by national resource land varies from a low of 8.63 per cent in the Carson City District to a high of 63 per cent in the Ely District.

Table 25

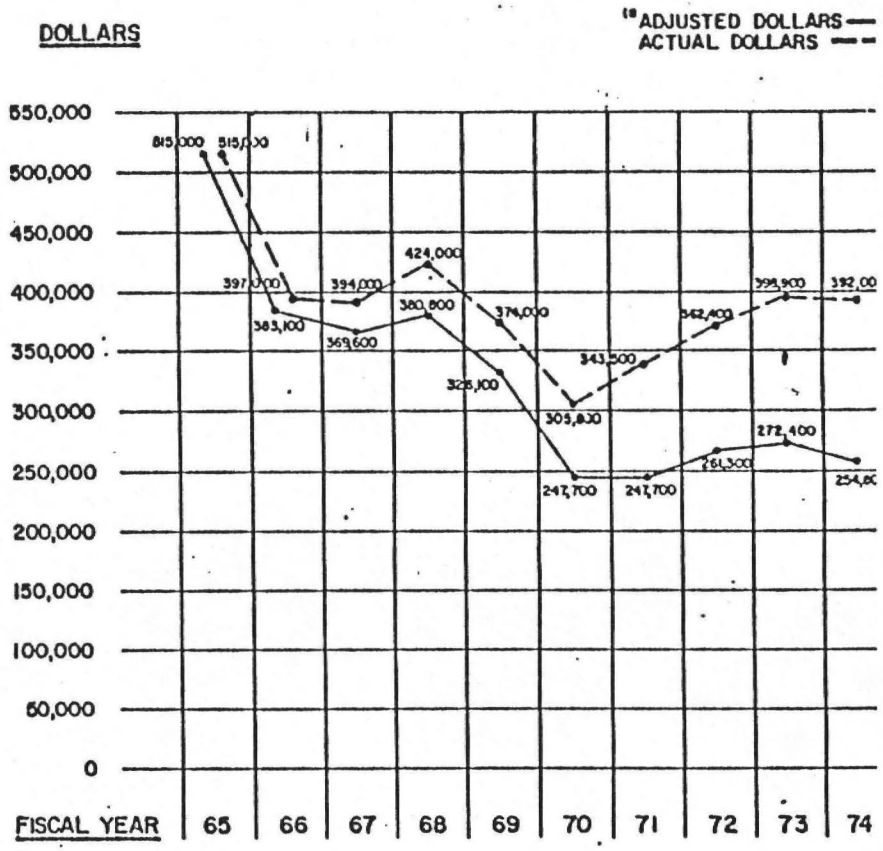
Soil and Watershed and Range Management Expenditures in Nevada

SOIL AND WATERSHED EXPENDITURES IN NEVADA, BASED ON ADJUSTED AND ACTUAL DOLLARS USING F.Y. 65 AS A BASE PERIOD



(1) ADJUSTED DOLLARS ARE BASED ON HIGHWAY CONSTRUCTION COSTS FROM THE "SURVEY of CURRENT BUSINESS"— 1965 TO 1974.

RANGE MANAGEMENT EXPENDITURES IN NEVADA, BASED ON ADJUSTED AND ACTUAL DOLLARS USING F.Y. 65 AS A BASE PERIOD

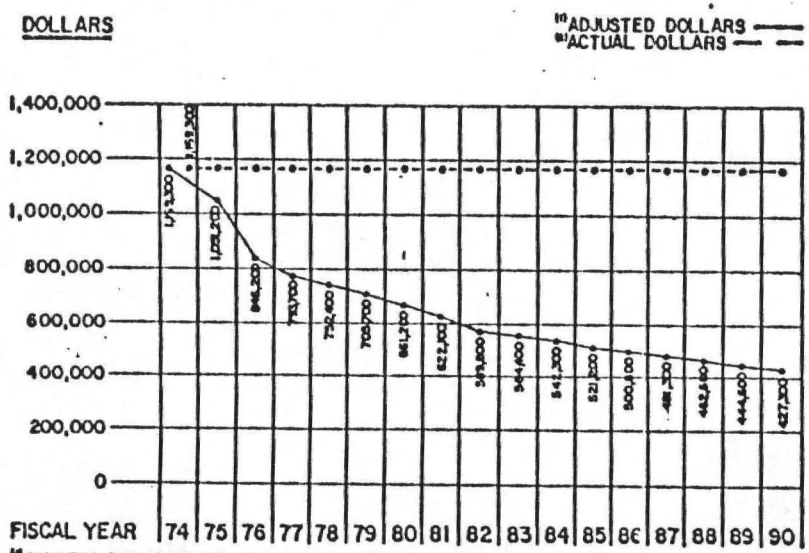


(2) ADJUSTED DOLLARS ARE BASED ON SALARY INCREASES OF A GS-5, STEP 1, FROM 1965 TO 1974.

Table 26

Projected Combined Range and Watershed Improvements and Projected Range Management Expenditures in Nevada

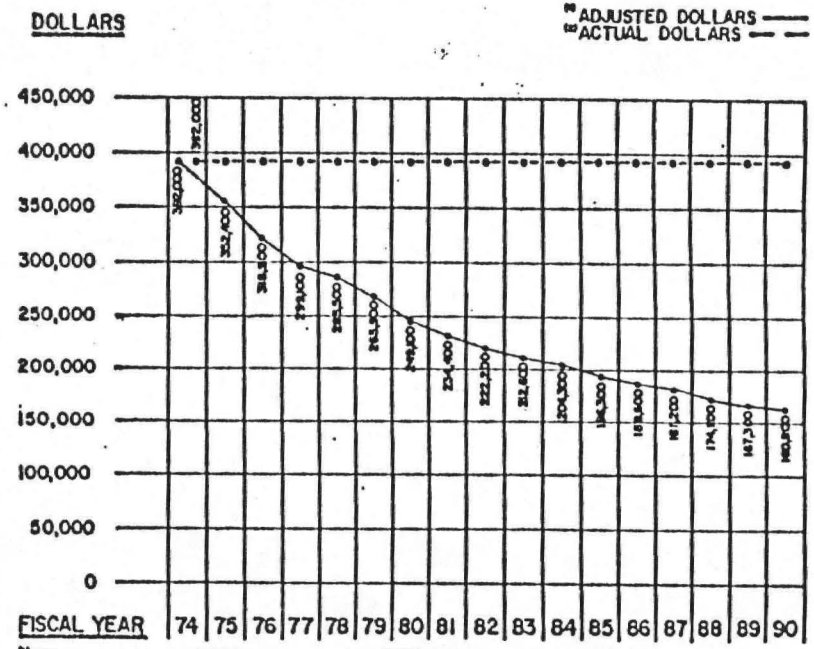
PROJECTED SOIL AND WATERSHED AND RANGE IMPROVEMENT EXPENDITURES IN NEVADA, BASED ON ADJUSTED AND ACTUAL DOLLARS THROUGH F.Y. 1990



[1] PROJECTED RATE OF INFLATION PROVIDED BY WHARTON ECONOMIC FORECASTING ASSOCIATES, PHILADELPHIA, PA.

[2] LEVEL FUNDING IS ASSUMED THROUGH 1990.

PROJECTED RANGE MANAGEMENT EXPENDITURES IN NEVADA, BASED ON ADJUSTED AND ACTUAL DOLLARS THROUGH F.Y. 1990



[1] PROJECTED RATE OF INFLATION PROVIDED BY WHARTON ECONOMIC FORECASTING ASSOCIATES, PHILADELPHIA, PA.

[2] LEVEL FUNDING IS ASSUMED THROUGH 1990.

Table 27

Livestock Industry Dependence on BLM Resource by BLM Regions, 1969

D.S.R.	Value of All Agricultural Products Sold[a]	Estimated Personal Income in Livestock Industry[a]	Total Personal Income in Area[b]	Percent of Total Personal Income Attributable To the Livestock Sector[c]	Industry Dependence[d]	Initial Percentage of Personal Income in Area Attributable to Use Of BLM Forage[e]
Nevada[f]	$78,858,506	$12,779,241	$1,625,602,240	0.80	23.45	0.19
Elko	16,735,270	5,046,048	39,941,906	12.63	25.67	3.24
Winnemucca	21,883,087	3,229,407	24,235,278	13.33	26.83	3.57
Carson City	23,630,500	3,055,482	530,227,240	0.58	8.63	0.05
Ely	2,499,506	777,134	27,090,787	2.87	63.00	1.80
Las Vegas	6,227,215	424,239	912,594,610	0.05	20.73	0.01
Battle Mountain	7,853,926	1,282,908	33,041,497	3.88	27.37	1.06

[a]See Table 18.

[b]See Table 15.

[c]Column 2 divided by column 3.

[d]See Table 72 (percentage of total livestock feed originating from public lands).

[e]Column 4 times column 5. (This is community dependence--see Table 75.)

[f]State totals do not add due to data withheld from Storey County.

V. Alternative Management Opportunities

A. Optimum Program

The optimum program reflects realistic goals and objectives that could be expected to be accomplished if this program, with the funding and manpower described, were implemented over the next 15 years.

1. Resource Condition

a. Range Condition - Under this alternative, the objective is to stop the declining trend and increase conditions to a fair or good condition.

Table 28

Range Condition Under Optimum Program

	Excellent	Good	Fair	Poor	Bad	Total
% 1974	1.5	13.0	54.5	27.0	4.0	100
% 1990	2.0	30.0	52.0	13.0	3.0	100
% 2000	5.0	35.0	50.0	8.0	2.0	100

b. Erosion Condition - Under the optimum plan of intensive management and treatments, the loss of 2,200,000 acres of national resource lands in Nevada to a declining erosion trend (the projected result if current management is maintained) will be prevented and, in addition, approximately 3,871,000 acres would be put into an improving erosion trend within the next 15 years. Treatments would include brush control, water control structures, and/or watershed tillage (see reference 15).

Table 29

Erosion Condition Under Optimum Program

Erosion Class	1974 Acres*	%	1990 Acres*	%	% Change by 1990 Acres*	%
Stable-Slight	26,978	58	36,745	79	9,767	+19
Moderate-Severe	19,535	42	9,768	21	9,767	-19

*In 1,000's.

c. Wildlife Habitat Condition

There is a tremendous opportunity to restore or improve habitat for wildlife in Nevada. Since 50 per cent or more of the habitat is in an unsatisfactory condition and the trend is downward, optimum management could reverse this situation. This statement is appropriate not only for big game ranges, but also habitat management for game birds such as sage grouse, streams for fish, and habitat protection for raptors and threatened or endangered species.

The previous section on the present situation stated that 30 Habitat Management Plans (HMP's) have been developed. These plans identify habitat problems and make recommendations for improvement practices to rectify the situation. These plans call for close to $1.5 million to implement. To date, approximately $278,000 has been expended.

On a Statewide basis, there is a need to implement a total of 303 identified HMP's on national resource lands. All of these HMP's (except the 30 that have already been developed) will deal with the habitat of all wildlife species in the area, or in the stream, not just the game species. The stress for the past several years has been to develop HMP's for threatened or endangered species first, as opportunities for HMP's for them were developed through the BLM's Planning System.

2. Resource Production

a. Livestock

Table 30

Livestock AUM Production Under Optimum Program

	1974		1990		2000	
	Nos.	AUM's	Nos.	AUM's	Nos.	AUM's
Cattle & Horses	352,288	1,714,993	415,000	2,387,546	500,000	3,066,65
Sheep	359,834	233,379	465,000	495,476	490,000	609,90
Total		1,948,372		2,883,022		3,676,56

With full implementation of all Allotment Management Plans and projects by 1990, livestock AUM's will have increased in addition to providing proper allowances for wildlife and wild horses and burros. By the year 2000 additional AUM's will have occurred through proper management and supervision of Allotment Management Plans.

b. Wild Horses and Burros

The optimum number of wild horses and burros has not yet been determined through the Bureau's Planning System; however, if it was determined that 10,000 animals would be permanently maintained on national resource lands, the reservation of 150,000 AUM's annually would be required to take care of their needs.

c. Wildlife

With implementation of HMP's under the optimum program, wildlife numbers could possibly be doubled. There are several examples to date where this has been accomplished for fish populations. In general, however, there is no way of knowing what numbers will be reached until the HMP's are actually written and fully implemented.

Native bighorn sheep could be increased by reintroducing them onto national resource lands in the northern half of the State. This was the historic range until excessive hunting eliminated them from this region. Coordinated efforts to accomplish this goal are underway between the BLM and the Nevada Department of Fish and Game.

d. Watershed

Under the optimum program of intensive management plus treatments, the loss of 2,200,000 acres of national resource lands in Nevada to a declining trend (the result if current management levels are maintained) will be prevented and, in addition, approximately 3,871,000 acres would be put into an improving erosion trend within the next 15 years. This would mean a total stabilization of 6,071,000 acres.

3. Costs

a. Livestock Grazing and Watershed

Table 31

Costs of Optimum Program for Livestock Grazing and Watershed

Project Feature	Units	Cost/Unit	Total Cost
Construction -			
Fence	9,100 Mi.	$ 1,600.00	$ 14,560,000
Well	550 Ea.	8,000.00	4,400,000
Cattleguard	910 Ea.	1,500.00	1,365,000
Spring	780 Ea.	2,000.00	1,560,000
Pipeline	2,200 Mi.	2,500.00	5,500,000
Catchment	120 Ea.	5,500.00	660,000
Reservoir	750 Ea.	3,300.00	2,475,000
Small E.C. Dike	1,080,000 Cu.Yds.	.50	540,000
Spraying-Chaining	700,000 Ac.	10.00	7,000,000
Plowing-Seeding	520,000 Ac.	25.00	13,000,000
Chaining-Seeding	260,000 Ac.	22.00	5,720,000
		Sub Total	$ 56,780,000
Maintenance of Facilities - 10% of Construction			$ 3,106,000
Manpower - Managerial & Clerical		2,800 MM -	$ 5,600,000
" - Inventory, Studies and Planning		10,800 MM -	21,600,000
" - Support & Training		520 MM -	1,040,000
" - EAR's & EIS's		1,080 MM -	2,160,000
" - Force Account & Contract		6,480 MM -	12,960,000
Sub Total		21,600 MM -	$43,200,000
Equipment - $1,000/position/year		-	1,800,000
		Sub Total -	$121,086,000
Miscellaneous - Housing and Space		-	2,250,000
		Total	$123,336,000 *

*15 year program total.

b. Wild Horses and Burros

This table shows the funding to accomplish management of the wild horse and burro population and maintain 150,000 AUM demand (the AUM's required if 10,000 wild horses and burros are to be permanently maintained).

Table 32

Costs of Optimum Program for Wild Horses and Burros

Project Feature	Units	Total Cost
Fence	850 Mi.	$ 1,275,000
Water Development	144 Ea.	720,000
Traps	36 Ea.	360,000
Corrals	36 Ea.	360,000
	Sub Total	$ 2,715,000
Maintenance of Facilities	10% of Construction	272,000
Manpower - Protection, Investigation & Surveillance	30 MM	60,000
" - Initial Inventory	24 MM	48,000
" - EAR's & EIS's	48 MM	96,000
" - Interim Population Control	360 MM	720,000
" - Planning thru MFP	180 MM	360,000
" - Activity Plan Development	144 MM	288,000
" - Force Account & Contract	252 MM	504,000
" - Activity Plan Supervision	150 MM	300,000
Sub Total	1,188 MM	$2,376,000
Aircraft Rental	6,600 Hrs.	$ 695,000
Equipment and Supplies		203,000
Wild Horse Care, Transportation, Inspection		240,000
	Sub Total	1,138,000
	Sub Total	$6,501,000
Miscellaneous - Housing & Office Space		100,000
	Total	$6,601,000*

* 15 year program total.

c. Wildlife

Under the optimum level of management, 303 HMP's would have to be developed and implemented. Using data based on existing HMP's, it would require 2 to 3 man months to develop a HMP, or a total need for around 1,000 man months to develop HMP's for the national resource lands in Nevada.

Working with dollar figures, our existing 30 HMP's identify a need for $1.5 million; therefore, if 303 HMP's were to be implemented, almost $14 million would be needed to restore adequate habitat quality for wildlife on the national resource lands in Nevada.

Table 33

Costs of the Optimum Program for Wildlife Habitat

Project Feature	Units	Cost
HMP - Construction	330 Ea.	$ 8,280,000
Annual Maintenance	10% of Construction	828,000
Manpower - all except construction	1,520 MM	3,040,000
Manpower - Force Account & contract	650 MM	1,300,000
	Sub Total	$13,448,000
Equipment - $1,000 - 1 position		180,000
	Sub Total	$13,628,000
Misc. housing & office space		90,000
	Total	$13,718,000*

* 15 year program total.

4. Summary of Costs and Benefits for Optimum Program

Table 34

Summary of Costs and Benefits for Optimum Level (by 1990)

Benefits	
Increased Output:	
Livestock Forage (AUM's) (including wild horse and burro forage)	750,000
Watershed Improved (Acres)	6.1 Million
Range Condition (Increase in acreage classified good)	7.8 Million
Wildlife Habitat	(possible doubling of some wildlife populations)
Cost (Cumulative to 1990)	$143.7 Million

5. Economics Implications of the Optimum Program

Under the optimum program, approximately 750,000 additional AUM's will be (by 1990) authorized for livestock uses. (See Summary Table, page 5 .) This additional AUM capacity will increase personal income received by Nevada residents by $975,000 annually (see reference 28). Approximately $490,000 of this would be received by ranch owners, managers, and employees, with the balance received by local providers of goods and services related to production and marketing of livestock products (see reference 36). This proposed target will provide a 40 per cent increase in forage availability.

Benefits of watershed stabilization will be derived primarily through increased forage availability, however, water quality, air quality, and soil erosion susceptibility problems will also be reduced. Within proximity of urbanized areas, improvements to "quality of living" may be of greater value than personal income generated by the livestock forage increases.

As distinguished from the livestock grazing benefits (which are primarily monetary), the wildlife, recreation, and cultural management benefits accrue directly to consumers, and are not converted to personal income impacts except as the hunter or recreationist purchases extraordinary goods or services within the regional economy.

Briefly, under the optimum program, personal income of Nevada residents will be increased by a minimum of $1.3 million, in addition to the non-monetary benefits of improved wildlife habitat and environmental quality due to watershed stabilization.

B. Intermediate Program

The intermediate program reflects minimal program needs that are required and accomplishments that can be expected if resource conditions are not to be irretrievably lost.

1. Resource Condition

a. Range Condition

The main objective of management under the intermediate program would be to stop the present declining trend of the range condition. If the program as described in the cost summaries were implemented, the projected range condition would be as follows:

Table 35

Range Condition Under the Intermediate Program

	Excellent	Good	Fair	Poor	Bad	Total
% 1974	1.5	13.0	54.5	27.0	4.0	100
% 1990	1.8	18.2	60.0	17.3	2.7	100
% 2000	2.0	30.0	52.0	13.0	3.0	100

b. Erosion Condition

If the positive management changes of the intermediate level of management are implemented, the loss of 2,200,000 acres of national resource lands in Nevada to a declining erosion trend (if the current management levels are maintained) will be prevented and, in addition, approximately 2,220,000 acres would be put into an improving erosion trend within the next 15 years.

The erosion classification would change with opportunities to develop watershed resources as shown by the following table.

Table 36

Erosion Condition Under the Intermediate Program

Erosion Classes	1974		1990		Change by 1990	
	Acres*	%	Acres*	%	Acres*	%
Slight-Stable	26,978	58	32,373	69.6	5,395	+11.6
Moderate-Severe	19,535	42	14,140	30.4	5,395	-11.6

*Acres in 1,000's.

c. Wildlife Habitat Condition

Stabilization at present wildlife population levels is grossly inadequate since so many areas are so badly deteriorated that they are no longer producing wildlife. This is especially true for the deer winter ranges, sage grouse strutting grounds and meadows, and trout streams.

A classic example of low population levels is the deer situation in the Pine Nut Range in the Carson City District. In the early 1960's the resident deer herd was estimated at approximately 5,000 animals. Today this figure is less than 500--a 90 per cent reduction in the population.

Stabilization at the present level in the Pine Nut Range would be poor at best. Reservation of adequate forage for not only deer but other wildlife will help, but it will be a stop-gap measure until management plans are developed and implemented after the first two phases of the Bureau's Planning System are accomplished.

The best method to bring overall habitat conditions up to an intermediate level on a Statewide basis would be to develop and implement approximately 150 of the most important HMP's, following completion of the first two phases of the Bureau's Planning System (Unit Resource Analysis and Management Framework Plans).

2. Resource Production

a. Livestock

Under the intermediate level of management the main objective would be to stabilize the range condition. If this level were implemented, the livestock AUM production could be expected to reach the following levels:

Table 37

Projected Livestock AUM Production

	1974		1990		2000	
	Nos.	AUM's	Nos.	AUM's	Nos.	AUM's
Cattle & Horses	352,288	1,714,993	368,000	1,988,295		2,387,546
Sheep	359,834	233,379	400,000	363,611	415,000	495,476
Total		1,948,372		2,351,906		2,883,022

The implementation of Allotment Management Plans will provide increased livestock AUM's in addition to adequate wildlife and wild horse and burro allowances. By the year 2000, additional livestock AUM's will have accrued through management.

b. Wild Horses and Burros

The numbers of wild horses and burros that will be permanently maintained on national resource lands in Nevada has not yet been determined through the Bureau's Planning System; however, if it was determined that 10,000 animals would be permanently maintained on national resource lands, the reservation of 150,000 AUM's would be required annually to take care of their needs.

c. Wildlife

It would be highly desirable to at least stabilize declining conditions on crucial wildlife habitats in the intermediate program. As noted previously, the 10 year habitat evaluation by the University of Nevada (under BLM contract) on key deer winter ranges documents that the trend is downward. The same condition is true for trout streams in the Elko and Winnemucca Districts and for sage grouse strutting grounds in the Carson City, Elko and Winnemucca Districts.

However, it must be noted here that stabilization will not do the job. Even if livestock overuse (the major factor in the decrease of wildlife habitat condition) were curtailed today, most important habitats are so far reduced in quality and quantity for wildlife that a decade could pass with no noticeable improvement.

The best method to bring overall habitat conditions up to an intermediate level on a Statewide basis will be to develop and implement about 150 of the most important HMP's. But, even these 150 HMP's should not be developed until the first two stages of the Bureau's Planning System (Unit Resource Analysis and Management Framework Plans) are completed on these areas.

d. Watershed

The intermediate level of funding will prevent the loss of 2,200,000 acres of national resource lands to a declining trend within the next 15 years and move approximately 2,220,000 acres into an improving trend due to positive management changes. This would mean a total improvement on 4,420,000 acres. Any attempt to increase ground cover or improve water quality would be through AMP developments or grazing systems. An increase in mechanical or chemical vegetation manipulation above present funding levels would not be necessary in the intermediate program.

3. Costs

a. Intermediate - Livestock Grazing and Watershed

Table 38

Costs of Intermediate Program for
Livestock Grazing and Watershed

Project Feature	Units	Cost/Unit	Total Cost
Construction -			
Fence	9,100 Mi.	$ 1,600.00	$ 14,560,000
Well	550 Ea.	8,000.00	4,400,000
Cattleguard	910 Ea.	1,500.00	1,365,000
Spring	780 Ea.	2,000.00	1,560,000
Pipeline	2,200 Mi.	2,500.00	5,500,000
Catchment	120 Ea.	5,500.00	660,000
Reservoir	750 Ea.	3,300.00	2,475,000
Brush Control -			
Seeding	520,000 Ac.	20.00	10,400,000
		Sub Total	$40,920,000
Maintenance of Facilities -			
10% of Construction			$ 3,052,000
Manpower - Managerial & Clerical		- 2,040 MM -	$ 4,080,000
" - Inventory - Studies - Planning		- 7,850 MM -	15,700,000
" - Support & Training		- 250 MM -	500,000
" - EAR's & EIS's		- 790 MM -	1,580,000
" - Force Account & Contract		- 4,710 MM -	9,420,000
Manpower Sub Total		15,640 MM -	$31,280,000
Equipment - $1,000/position/year		-	1,303,000
		Sub Total	$76,555,000
Miscellaneous - Housing, Office Space			1,425,000
		Total	$79,405,000 *

*15 year period total.

b. Wild Horse and Burro

This table shows the funding to accomplish control of the wild horse and burro population and maintain 150,000 AUM demand (the AUM's required if 10,000 wild horses and burros are to be permanently maintained). Since this is a hypothetical figure set for estimation of cost purposes, it is the same as the optimum levels of funding.

Table 39

Costs of Intermediate Program for
Wild Horses and Burros

Project Feature	Units	Total Cost
Fence	850 Mi.	$ 1,275,000
Water Development	144 Ea.	720,000
Traps	36 Ea.	360,000
Corrals	36 Ea.	360,000
	Sub Total	$ 2,715,000
Maintenance of Facilities	10% of Construction	272,000
Manpower - Protection, Investigation & Surveillance	30 MM	60,000
" - Initial Inventory	24 MM	48,000
" - EAR's & EIS's	48 MM	96,000
" - Interim Population Control	360 MM	720,000
" - Planning thru MFP	180 MM	360,000
" - Activity Plan Development	144 MM	288,000
" - Force Account & Contract	252 MM	504,000
" - Activity Plan Supervision	150 MM	300,000
Sub Total	1,188 MM	$2,376,000
Aircraft Rental	6,600 Hrs.	695,000
Equipment and Supplies		203,000
Wild Horse Care, Transportation, Inspection		240,000
	Sub Total	1,138,000
	Sub Total	$6,501,000
Miscellaneous - Housing & Office Space		100,000
	Total	$6,601,000 *

* 15 year program total.

c. Wildlife - Intermediate

This table shows the estimated costs and man months needed to develop 150 additional HMP's and fully implement the existing 30 HMP documents.

Table 40

Costs of Intermediate Program for Wildlife Habitat

Project Feature	Unit	Cost
HMP - Construction	180 Ea.	4,516,000
Annual Maintenance	10% of Construction	452,000
Manpower - all except construction	830 MM	1,660,000
Manpower - Force Account and Contract	350 MM	700,000
	Sub Total	$7,328,000
Equipment - $1,000/position		197,000
	Sub Total	$7,525,000
Miscellaneous - Housing and Office Space		50,000
	Total	$7,575,000 *

* 15 year program total.

4. Summary of Costs and Benefits for Intermediate Level - 1990

Table 41

Summary of Costs and Benefits for Intermediate Level (by 1990)

Benefits	
Livestock Forage (AUM's) (including wild horse and burro forage)	250,000
Watershed Improved (Acres)	4.4 Million
Range Condition (Acres) (increase in acreage classified good)	2.3 Million
Wildlife Habitat	(Maintain and improve current habitat capacity)
Cost (cumulative to 1990)	$92.2 Million

5. Economic Implications of the Intermediate Program

By 1990, this proposal will provide for increased personal income received by Nevada residents of $265,000. (This would be sufficient to provide for approximately 26 additional families.)

Wildlife habitat management proposals under this program would provide quality habitat to maintain present numbers (which would decline without the proposal). Wildlife hunting on national resource lands provides approximately $1 of personal income per AUM provided for maintenance of game species.

The watershed proposal will prevent approximately 2.2 million acres of national resource lands in Nevada from changing into a declining trend, while putting another 2.22 million acres into an improving trend, for a total benefit of 4.42 million acres. The monetary benefits of this outcome are received as livestock forage, however, improving air and water quality for dependent communities will be beneficial to local residents.

The increase in available forage from this program, compared with the existing level is 6 per cent.

VI. Recommendations

A. Optimum Level

1. Total Program - watershed, livestock, wildlife and wild horses and burros

Table 42

Year	Acres Activity Plan Completed	Estimated Activity Plan Development Cost per Acre	Total Development Cost		Total Acres under Activity Plans	Cost/Acre Maintenance Supervision		Total Maintenance Cost		Total Cost	Total Manpower Requests
			Facilities	Manpower		Maintenance	Supv	Material	Manpower		
Prior to 1976	8,437				8,437						
1976-80	10,650	2.89	18,486	12,324	19,087	.82	.42	7,922	5,282	44,014	17,60
1981-85	9,800	3.17	18,617	12,411	28,887	.90	.46	7,979	5,319	44,326	17,73
1986-90	13,060	2.96	23,232	15,488	41,947	.84	.43	9,957	6,638	55,315	22,12
Total	41,947	3.00	60,335	40,223	41,947	.85	.44	25,858	17,239	143,655	57,46
Average Annual After 1990	41,947	0	0	0	41,947	.165	.085	6,292	4,194	10,486	10,48

1/ 70% of total cost
2/ 30% of total cost
3/ 60% of total development cost
4/ 40% of total development cost
5/ 60% of total maintenance cost
6/ 40% of total maintenance cost
7/ 85% of manpower maintenance cost
8/ 15% of manpower maintenance cost

All figures are in 1,000's.

2.. Wild Horses and Burros for Optimum and Intermediate levels

Table 43
Wild Horse and Burros Program Breakdown

Year	Acres Activity Plan Completed	Estimated Activity Plan Development Cost per Acre $	Total Development Cost		Total Acres under Activity Plan	Cost/Acre Maintenance Supervision		Total Maintenance Cost		Total Cost $	Total Manpower Requests $
			Facilities	Manpower		Maintenance $	Supv. $	Material	Manpower		
1976				0			2.3¢			580	396
1977				0			2.3¢			579	396
1978				0			2.3¢			579	396
1979				0			2.3¢			580	396
1980	0			0			2.3¢			580	396
1981-85	25,000	12.6¢	3,011 1/	140	25,000	.5¢	.2¢	76	60	3,211	200
1986-90	0	0	0	0	0	.5¢	1.7¢	76	416 2/	492	196
Total	25,000				25,000						

1/ Most equipment and miscellaneous are shown in development cost.
2/ Most equipment and miscellaneous are shown in maintenance cost.

Table 44

3. Implementation Schedule - Optimum Level

Program	Year	Construction	Maintenance	Manpower		Equip.	Misc.	Total Needs
				MM	$			
Range-Watershed	1976-80	1,703	931	5,326	10,652	540	675	37,000
Wildlife	"	2,484	248	651	912	54	90	4,115
Wild Horse-Burro	"	-	-	990	1,980	222	696	2,898
Range-Watershed	1981-85	1,703	931	5,326	10,652	540	675	37,000
Wildlife	"	2,484	248	651	912	54		4,115
Wild Horse-Burro	"	2,715	136	100	200	100	60	3,211
Range-Watershed	1986-90	2,272	1,244	8,640	17,280	720	720	49,336
Wildlife	"	3,312	332	868	1,216	72		5,487
Wild Horse-Burro	"	-	136	98	196	100	60	492

Table developed to show that 30% of total needs are accomplished from 1976-80 and 1981-85 and 40% of total needs are accomplished from 1986-90.

All figures are in 1,000's, except MM's

B. Intermediate Level

1. Total Program - watershed, livestock, wildlife and wild horses and burros

Table 45

Year	Acres Activity Plan Completed	Estimated Activity Plan Development Cost per Acre	Total Development Cost 1/		Total Acres under Activity Plans	Cost/Acre Maintenance Supervision		Total Maintenance Cost 2/		Total Cost	Total Manpower Requests
			Facilities 3/	Manpower 4/		Maintenance 8/	Supv 7/	Material 5/	Manpower 6/		
1974					7,587						
1975					8,451						
1976	1,300	2.08	1,621	1,081	9,737	.59	.30	695	463	3,860	1,544
1977	2,000	2.00	2,402	1,601	11,737	.57	.29	1,030	686	5,719	2,287
1978	2,450	2.14	3,139	2,093	14,187	.60	.31	1,346	897	7,475	2,990
1979	2,450	1.65	2,424	1,616	16,637	.47	.24	1,039	693	5,772	2,309
1980	2,450	1.65	2,424	1,616	19,087	.47	.24	1,039	693	5,772	2,309
1981-85	9,800	2.06	12,122	8,081	28,887	.54	.28	4,849	3,232	28,861	11,313
1986-90	13,060	1.86	14,573	9,716	41,947	.53	.27	6,245	4,164	34,618	13,880
Total	41,947	1.80	38,705	25,804	41,947	.53	.27	16,243	10,828	92,156	36,632
Average Annual After 1990	41,947				41,947	.165	.085	6,292	4,194	10,486	10,486

1/ 70% of total cost
2/ 30% of total cost
3/ 60% of total development cost
4/ 40% of total development cost
5/ 60% of total maintenance cost
6/ 40% of total maintenance cost
7/ 85% of manpower maintenance cost
8/ 15% of manpower maintenance cost and material

All figures are in 1,000's.

2. Wild Horses and Burros for Optimum and Intermediate levels

Table 46
Wild Horse and Burros Program Breakdown

Year	Acres Activity Plan Completed	Estimated Activity Plan Development Cost per Acre $	Total Development Cost		Total Acres under Activity Plan	Cost/Acre Maintenance Supervision		Total Maintenance Cost		Total Cost $	Total Manpower Requests $
			Facilities	Manpower		Maintenance $	Supv. $	Material	Manpower		
1976				0			2.3¢			580	396
1977				0			2.3¢			579	396
1978				0			2.3¢			579	396
1979				0			2.3¢			580	396
1980	0			0			2.3¢			580	396
1981-85	25,000	12.6¢	3,011 1/	140	25,000	.5¢	.2¢	76	60	3,211	200
1986-90	0	0	0	0	0	.5¢	1.7¢	76	416 2/	492	196
Total	25,000				25,000						

1/ Most equipment and miscellaneous are shown in development cost.
2/ Most equipment and miscellaneous are shown in maintenance cost.
All figures are in 1,000's except for units/acre.

Table 47

3. Recommended Implementation Schedule - Intermediate Level

Program	Time Span	Construction $1,000's	Maintenance $1,000's	Manpower MM	Manpower $1,000's	Equip. $1,000's	Misc. $1,000's	Total Needs $1,000's	Ave. Annual Need MM	Ave. Annual Need $1,000's
Range-Watershed	FY 76-80	12,276	915.6	4,690	9,380	390.9	427.5	23,390	938	4,678
Wildlife	"	1,355	135.6	355	710	59.1	50	2,309.7	71	461.9
Wild Horse-Burro	"	-	-	990	1,980	222	696	2,898	198	579.6
Range-Watershed	FY 81-85	12,276	915.6	4,690	9,380	390.9	427.5	23,290	938	4,678
Wildlife	"	1,355	135.6	355	710	59.1	-	2,259.7	71	451.9
Wild Horse-Burro	"	2,715	136	100	200	100	60	3,211	20	642.2
Range-Watershed	FY 86-90	16,368	1,220.8	6,260	12,520	521.2	570	31,200	1,252	6,240
Wildlife	"	1,806	180.8	470	940	78.8	-	3,005.6	94	601.1
Wild Horse-Burro	"	-	136	98	196	100	60	492	19.6	98.4

Miscellaneous (Wild Horse-Burro Program) includes aircraft rental.
Equipment cost includes horse care, rental and transportation.

VII. Appendix

A. Summary of Public Input

To secure public input into the problems of range condition and solutions in Nevada, the Nevada State Office and six BLM District Offices (Elko, Winnemucca, Carson City, Ely, Battle Mountain, and Las Vegas) sent letters to various interests throughout the State asking for opinions on general areas of concern:

1) What is your assessment of range conditions on BLM managed lands in Nevada for wild horses and burros, watershed, wildlife, aesthetics, etc.?

2) What are the consequences of these present range conditions to your interest (watershed, wildlife, grazing, wild horses and burros, recreation, etc.)?

3) Please identify specific areas on which you feel range conditions should be improved?

4) What are your recommendations for improvement in line with multiple use considerations?

5) In your opinion, what multiple use priorities should we consider in our range management program?

6) If your recommendations could be implemented, what benefits will accrue to your group or interests?

The letter was sent to 404 individuals, groups and governmental agencies statewide (mailing lists available). To date, 110 replies have been received, indicating approximately a 25 per cent return. Considering the complexity of the questions and the short time period allowed for answer, this return would be considered by most statisticians to be good. Some of the respondents cited the short time period allowed as cause for their short, inadequate or lack of response. This could indicate that had more time been allowed, the percentage of those persons responding might have been higher.

This report will attempt to summarize the content of the 110 replies. By necessity, this summary is a subjective interpretation and contains only the highlights of the responses. However, one overall conclusion can be made from reading the letters--people in Nevada are deeply concerned about the future of the range that dominates so much of the State and have a desire to contribute to the knowledge and decision making of the BLM.

A continuing topic in the responses was the opinion expressed by many about the BLM. Several stated the BLM was doing "a good job". However, most of the people mentioning this topic said the agency could do better and suggested more funding, manpower, public support, and materials to do the job.

A. Response Summary to Question 1 - "What is your assessment of range conditio on BLM managed lands in Nevada for wild horses and burros, watershed, wildlife, aesthetics, etc?"

Approximately one-third of the respondents rated the Nevada range in a negativ condition, using such adjectives as poor, critical, deteriorating, severe, bad, etc. to express their views. Approximately 20 per cent rated the range in a positive condition (i.e. good, fair, or improving). Another 20 per cent were generally in the middle ground stating conditions varied widely in the State, were adequate, hadn't changed in 15 years, or could be better.

Adverse factors cited for contributing to the range condition are outlined below:

The overwhelming majority cited the problem of wild horse and burro over-population and the lack of control of these animals. The next largest number cited the drought conditions as being the major problem. Other causes stated were overgrazing of livestock and little or no support for BLM management programs. One writer stated the BLM was a livestock-oriented agency and contributed to the bad range conditions.

Another segment cited the short time period for response as being a problem in completing their answers. Approximately 25 per cent of the respondents did not address themselves directly to the question at all.

B. Response Summary to Question 2 - "What are the consequences of the present range conditions to your interests?"

Since the interests varied widely, so did the answers to this question. However, a trend in topics identified can be outlined. In most of the letters the following general consequences were identified:

1. An adverse effect on wildlife forage and wildlife welfare and numbers.
2. An adverse effect on the range in general.
3. A decline in livestock forage and livestock production.
4. No adverse effects at all.
5. A deteriorating effect on watershed.
6. Damage to water sources.
7. An adverse effect on recreational values.
8. A harmful effect on the economics of the livestock industry and the State in general.
9. Decline in the number of uses the range can support.
10. A negative effect on aesthetic values.
11. A demonstrated need for more cooperation between resource agencies and the public.
12. A harmful effect on wild horses and burros.

Roughly 25 per cent of the letters did not specifically identify consequences of the present range condition.

C. Response Summary to Question 3 - "Please identify specific areas on which you feel range conditions should be improved."

There was a diversity of interpretation of this question. Approximately half interpreted the word "area" to mean specific location. The other half interpreted it to mean a general topic area.

Of those identifying locations, most gave specific geographic locations, su as Stone Cabin Valley, northern Nevada, Pershing county, etc. These specific are are listed in the letters. However, some of those who talked about location gav general types of areas needing attention, such as wild horse and burro grazing areas, pinyon-juniper areas, arid areas, valuable wildlife areas, etc.

Of those identifying topics needing attention, the following were cited:

1. Water projects.
2. Management in general
3. More reseeding projects.
4. More fencing.
5. More brush control.
6. Better implementation of rest roteation grazing systems.
7. Better distribution of livestock and wildlife on the range.
8. Improvement of grazing permit system.
9. More aid to ranchers with allotments.
10. Improvement needed in all areas.

Approximately half of those answering the letter said the time limit was too short for in-depth analysis of trouble areas or any answer at all about specific areas needing improvement.

D. Response Summary to Question 4 - "What are your recommendations for improvement in line with multiple use considerations?"

This question received a wide variety of answers. Many cited multiple recommendations, and, depending on the interest involved, the answers were uniqu and quite often specific. To list all would be too time consuming. However, to give an idea of general topics discussed, the following are some of the recommendations:

1. More management control of wild horses and burros (Several also suggeste establishment of a sanctuary for these animals so the public can view them.)
2. More pinyon-juniper control.
3. Intensify reseeding programs.
4. More inter-agency cooperation needed.
5. Develop better management programs.
6. Set aside specific areas for specific uses; then enforce it.
7. Provide additional incentives for ranchers to improve the range.
8. Provide more funding for BLM.
9. More legislative backing and establishment of goals needed for BLM.
10. More BLM personnal needed to do the job.
11. Make advisory boards more representative of users other than livestock.
12. Develop better public relations programs to educate public on resource management.
13. Improve and expand water developments.
14. Improve quality of the range.
15. Reduce numbers of livestock grazing on national resource lands.
16. Reduce numbers of all animals grazing on national resource lands.
17. Provide maximum development for multiple use.
18. Develop more recreation facilities.
19. Establish a fee for all users of the national resource lands, not just ranchers.

20. Provide for better control of all users.
21. More predator control needed.
22. Accelerate range research.
23. Control off-road vehicle use.
24. Give fair treatment to all users, not just ranchers and miners.
25. Enforce mining regulations.

E. Response Summary to Question 5 - "In your opinion, what multiple use priorities should we consider in our range management program?"

Response to this question also varied widely, but some of the general topics mentioned most were:

1. Food production (including grazing, livestock, ranching, agriculture)
2. Recreation.
3. Wildlife.
4. Watershed.
5. Priorities should vary from area to area.
6. Mining.
7. Aesthetics.
8. Oil and gas and geothermal exploration.
9. Should be no priorities; maintain multiple use concept.
10. Basic resources (air, water, vegetation, soil, etc.)
11. Wild horses and burros (both protection and control were cited.)

F. Response Summary to Question 6 - "If your recommendations could be implemented, what benefits will accrue to your group or interests?"

The response to this question is almost impossible to quantify or generalize since the answer is given in terms of each particular interest. If any summary could be validly reached, it would be that, in one way or another, all interests and values would benefit if the range were improved. Just what "improved" or "benefit" means, depends, of course, on the interest involved. Whether it be the benefit of preservation of open spaces, more forage for livestock production, or more lands for wildlife, all generally felt the objective should be to improve the range in some form.

Since the question asked the respondent to answer what benefits would accrue to his particular group or interest, many said their suggestions might not benefi their interest specifically, but attached the benefit to more broad areas, such as "everyone," "the entire country," and "the whole world" for example.

To summarize, the responses on all the questions ranged from technical and specific to general and vague. However, since most of the major users of the national resource lands in Nevada are in some way represented in these letters (with the possible exception of the "Silent Majority") all of the answers are valuable information from the standpoint of public input.

References

(1) Data Book - FY 1974 - State of Nevada - USDI-BLM annual publication.

(2) Statistical Appendix - Annual Report of the Director Bureau of Land Management, annual reports 1952 through 1961; and Public Land Statistics (name change only of above report) annual reports 1962 through 1972.

(3) Annual Grazing Statistical Report - 1973 BLM report.

(4) Estimated Permitted Use of Taylor Act Grazing Lease Lands - annual report 1973.

(5) Grazing Leases in Force - annual report 1973.

(6) District Reports, February 1974 in response to Interdisciplinary Resource Management questionnaire.

(7) District Reports, September 1974 in response to Range Management Program Report Requested by the Senate Appropriations Committee - Instruction Memorandum No. 74-327.

(8) Final Environmental Statement - Proposed Wild Free-Roaming Horse and Burro Management Regulations, July 3, 1973.

(9) District Reports, August 1974 on present status of wild horses and burros.

(10) Allotment Management Plans State Summary - 1974 Nevada and AMP Program Report, I.M. 74-171.

(11) State Report, June 1974 on Livestock Grazing Use in Nevada - Authorized Nonuse, Suspended Nonuse and Authorized Active Use.

(12) Draft Environmental Impact Statement - Livestock Grazing Management on National Resource Lands.

(13) Annual Report on Range Condition and Trend in Nevada, 1964.

(14) Program and Cost Report by Activity - State of Nevada.

(15) Effects of Livestock Grazing on Other Resources in Nevada, April 1974, Illustration 7.

(16) WO Instruction Memorandum, Subject: Fiscal Year 1976 Package and Construction Directives.

(17) Fiscal Year 1975 Annual Work Plan - Nevada State Office and District Submissions.

(18) WO Memorandum No. 74-435, Subject: Watershed Inventory - Erosion Condition Summary.

(19) Nevada ADP Printout - Watershed Conservation and Development System - Nevada and Districts.
No. 81 - Elko, Winnemucca, Carson City, Ely, Las Vegas and Battle Mountain - 5/9/74.

(20) Nevada ADP Printout - Program Detail Report No. 52 - 6/30/74.

(21) Nevada ADP Printout No. 54 - Program Detail Report (Job Breakdown) - 6/30/74.

(22) WO Instruction Memorandum No. 74-171, Subject: Allotment Management Program.

(23) 1973 Nevada Land Statistics.

(24) Bureau of Business and Economic Research UNR, August 1974.

(25) Survey of Current Business, April 1974.

(26) Public Land Statistics, 1973.

(27) Nevada, Statewide Comprehensive Outdoor Recreation Plan, Part 4, 1974.

(28) Economic Profile for BLM in Nevada, U.S. Department of Interior, BLM - June 1974.

(29) Nevada State Comprehensive Outdoor Recreation Plan, Parts 3 and 4, February 1971.

(30) Calf Marketing in Nevada (1968).

(31) Nevada Fish and Game Commission General Regulation #1 and amendments. 8 p.

(32) U.S. Fish and Wildlife Service. 1973. Threatened wildlife of the United States. Resources Pub. 114. U.S. Gov't. Printing Office, Wash., D.C. 289 p.

(33) Tueller, P. T. and L. A. Monroe. 1974. Management guidelines for selected deer habitats in Nevada. Univ. Nevada, Reno. 212 p.

(34) Bureau of Land Management. 1973 Annual Wildlife Report. Reno, Nevada.

(35) Bureau of Land Management. Habitat Management Plans in all District Offices.

(36) An Inter-industry Analysis of the Elko County, Nevada Economy University of Nevada—Reno, May 1969.