m 2/10/95

United States Department of the Interior

NATIONAL PARK SERVICE

LAKE MEAD NATIONAL RECREATION AREA
601 NEVADA HIGHWAY
BOULDER CITY, NEVADA 89005

IN REPLY REFER TO:

L76 (LAME-RM)
x N1615

February 10, 1995

Dear Interested Parties:

Enclosed is a copy of the Final Environmental Impact Statement (FEIS) for Burro Management at Lake Mead National Recreation Area (NRA). The draft document was available for public review between June 28 and August 31, 1994. During that time, written comments were received.

The goal of the proposal, designated in the FEIS as Alternative B: Resource Based Management, is the cessation of environmental change caused by burros, and the protection of the natural, cultural, and recreational resources of Lake Mead NRA. Burros would be removed, using live-removal techniques, fencing, sterilization and/or birth control, from portions of the park that have been so severely overutilized by burros in the past that habitat recovery is not possible with any level of burro use. Burros would also be removed within areas that have threatened, endangered, sensitive, or unique resources, and where burros cause a threat to public safety. Burros would not be allowed to expand into areas that are currently burro free.

Burro use would be tolerated in certain areas of the park where reducing the burro populations to zero is not prudent or feasible at this time, due to the presence of burro populations on adjacent Bureau of Land Management administered lands, few or non-existent barriers, and the lack of practical and cost effective control methods for these areas of the park. Lands within the park near the Muddy Mountains and Gold Butte, Nevada and Arizona, portions of the Grand Wash not designated as critical tortoise habitat; and lands within the park south of the Eldorado Jeep Trail, Arizona, would be areas where burros would remain, managed to NPS standards and prescriptions, in cooperation with the Bureau of Land Management.

Following a 30-day, no-action period, the proposed action will be adopted for the future management of burros within Lake Mead NRA. The 30-day period ends March 31, 1995.

For further information on the document, please contact Kent Turner, Chief of Resource Management, at (702) 293-8941.

Sincerely,

Alan O'Neill

Alan O'Neill
Superintendent

Enclosure

Final Environmental Impact Statement
Burro Management

Lake Mead National Recreation Area
Clark County, Nevada
Mohave County, Arizona

A no-action and four action alternatives for the management of burros within Lake Mead National Recreation Area (NRA) were considered in detail in this document. Alternative A, the no-action alternative, is the continuance of the level of management that currently exists within Lake Mead NRA. Management of burros would be carried out through cooperative agreements with the Bureau of Land Management (BLM). Although this effort has obtained a degree of success in reducing burro populations in certain areas of the recreation area, existing management has not met National Park Service (NPS) preservation goals. Under this alternative, burro use within the recreation area would continue to negatively impact natural resources. The depletion of forbs, grasses, and shrubs in areas that burros utilize could result in environmental degradation, including a decline in desert tortoise populations. Burros utilizing the shorelines would produce negative impacts to public recreation through trailing and fecal contamination. Burros that congregate along the roadways would continue to create a public safety hazard in these areas. Noise from capture operations could cause minimal short-term impacts to visitors. Cultural resources would be subject to potential burro impacts. On-going removal operations could result in a negative impact to burros. Visitors would be able to view burros within the recreation area.

Alternative B, the proposed action, would establish resource based management within the recreation area. While NPS policies dictate a goal of zero burro use in the recreation area, this goal is not feasible at this time. This alternative establishes criteria for zero-burro-use areas, and NPS prescriptions for burro use in areas where total removal is not feasible nor practical at this time. Burros would be removed from areas containing sensitive resources, including critical habitat of the desert tortoise. This alternative establishes a framework to implement fencing, or other burro control measures, should they prove feasible. Impacts to natural resources would be eliminated in areas where burro populations would be reduced to zero. Impacts would be greatly reduced in areas where burros would remain, and these areas would be closely monitored to assure minimal impacts from burro use. Removal operations could result in a negative impact to burros. People would have less opportunities to view burros within the recreation area and there would be minor, short-term impacts from removal operations. The population of free-roaming burros in the Southwest would decline under this alternative.

Alternative C would halt the current burro management within the recreation area. This impact will not be considered in the final environmental impact statement (FEIS) because it is incompatible with NPS policies and guidelines, and Lake Mead NRA resource management objectives.

Alternative D is similar to Alternative B, only the ultimate goal would be to manage burros within the recreation area for perpetuity, even if new technology is developed that would permit the reduction of the burro population to zero. Impacts under this alternative are similar to those under alternative B. This alternative would require a change in NPS policy towards the management of exotic species

within the recreation area. This alternative would require a long-term commitment of resources and funds to manage and monitor burro populations within the recreation area. The population of free-roaming burros in the Southwest would decline under this alternative.

Alternative E is the total removal of burros from the recreation area by any means necessary, including live removal, fencing, and direct reduction, or shooting. Even with these programs, it is unlikely that the population of burros could be reduced or maintained at zero, until more effective control methods are developed and implemented. Under this alternative, the impacts from burros to natural, socioeconomic, and cultural resources would be eliminated, resulting in long-term positive impacts to the habitat. Fences would be constructed in areas of the park adjacent to BLM managed lands, which would create impacts to vegetation and wildlife, and to burros on adjacent BLM lands. Maintenance on fences would be a necessary and an unending project. People would have no opportunity to view burros within the recreation area under this alternative. Direct reduction activities, or shooting burros, would disturb those who are opposed to killing burros. The free-roaming burro population would be reduced in the Southwest.

Upon completion of the review of the FEIS and the completion of the Record of Decision, the proposed action would be initiated.

The NPS has completed formal section 7 consultation with the U.S. Fish and Wildlife Service (USFWS). The NPS has completed section 106 compliance and the National Historic Preservation Act consultation with the Arizona and Nevada State Historic Preservation Offices. Mitigating measures would be implemented to minimize adverse effects on the overall environment, natural and cultural resources, visitors and burros.

A Notice of Intent to prepare an environmental impact statement was published in the *Federal Register* of July 2, 1992. A news release announcing the intent to prepare the environmental impact statement was distributed July 22, 1992. Scoping was initiated at this time to help identify and summarize significant issues relating to burro management. Both public workshops and scoping mailers were used to allow the public to address their concerns. The Kingman Resource Area, Las Vegas District, and Arizona Strip District BLM were designated as cooperating agencies for the development of burro management at Lake Mead NRA in January 1993. Formal meetings were held with the cooperating agencies in April 1993 and March 1994 to develop alternatives and discuss the preliminary draft EIS. Review of the preliminary draft EIS by the cooperating agencies took place from January to April, 1994. The BLM provided comments in May and June. The NPS acted on these comments by altering components of the DEIS. An additional meeting was held with the BLM in August 1994 to discuss the draft EIS and other management concerns.

Availability of the draft environmental impact statement for public review was announced in the *Federal Register* of June 28, 1994, and the public review period ended August 31, 1994. All comments received have been reviewed and considered. The no-action period for the FEIS will end 30 days after the Environmental Protection Agency accepts the document and publishes a Notice of Availability in the *Federal Register*.

For further information contact:

Superintendent
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, Nevada 89005
(702) 293-8946

CONTENTS

INTRODUCTION

This document is an abbreviated final environmental impact statement (FEIS) and the material included is to be integrated with the *Draft Environmental Impact Statement, Burro Management, Lake Mead National Recreation Area*, (DES-94-32) of May 1994. The abbreviated format has been used because changes to the draft are minor, do not result in modification of the proposal or alternatives, and do not result in new information that many have a significant effect on the environment. Use of this format is in compliance with the 1969 National Environmental Policy Act (NEPA). Readers should utilize the draft environmental impact statement in reviewing this document since the draft and FEIS jointly describe the final proposed action, its alternatives, all significant environmental impacts, and the public comments that have been evaluated.

ERRATA

Corrections and revisions to the *Draft Environmental Impact Statement* (DEIS) are listed below. These revisions were made in response to public comments and agency reviews of the DEIS. These revisions have not resulted in the modification of the proposed action or alternatives, therefore the revisions do not require additional analysis.

Changes to existing sentences are underlined.

page 2 — Second paragraph, add after first sentence: In a February 28, 1939 newspaper article, Guy D. Edwards, National Park Service supervisor, estimated that about 400 burros utilized the Boulder Dam Recreational Area. He stated that, "the burros rove in bands, have voracious appetites and will eat almost anything within reach. They pull leaves and twigs from trees. Areas they range have become so denuded that only sparse 'pickings' are left for the bighorn."

page 8 — Paragraph 6, last sentence, change to read: Results indicated that a niche shift had occurred, a requirement in demonstrating interspecific competition (Dunn 1990).

page 13 — Third paragraph, last sentence, change to read: For those burros that utilize lands administered by both agencies, the BLM would continue to be the lead agency in capture operations.

page 16 — Second paragraph, last sentence: reference to Figure 4 changed to Figure 7.

page 16 — Item 6 change to: Black Mountains, Arizona, from Willow Beach south to Eldorado Jeep Trail.

page 16 — Last paragraph, first sentence, change to read: Lands within the park near the Muddy Mountains and Gold Butte, Nevada and Arizona; portions of the Grand Wash not designated as critical tortoise habitat; and lands within the park south of Eldorado Jeep Trail, Arizona, would be areas where burros remain managed to NPS standards and prescriptions.

page 16 — Last paragraph, add after fourth sentence: In areas north of Cottonwood East, Arizona, the NPS would hold utilization to 20 percent and would accept no burro use of palo verde. Burro numbers in this area would be kept at current levels of 30 or fewer burros unless utilization is exceeded.

page 17 — Figure 3 change the map to show zero to slight use north of Cottonwood East to Eldorado Jeep Trail (see Appendix C).

page 19 — Fifth paragraph, second sentence, change to read: Sterilization would require a long-term commitment.

page 22 First paragraph, third sentence, change to read: The park has a long history of cooperative management operations with the Las Vegas District BLM, the Phoenix District BLM, and the Arizona Strip District BLM.

page 31 Modify Figure 7 to show no proposed fence at Cottonwood East.

page 37 Table 1, under Coordination, Alternative A, change to read: The BLM, through an interagency agreement with the NPS, would continue to cooperatively manage burros within Lake Mead NRA.

page 55 Third paragraph, third sentence, change to read: Critical Habitat has been designated in approximately 142,160 acres of the recreation area, including 98,000 acres of critical habitat in the Piute-Eldorado Desert Wildlife Management Area (DWMA) and 44,160 acres in the Gold Butte-Pakoon DWMA.

page 59 Fourth paragraph, last sentence, change to read: If state, Indian reservation, and Department of Defense lands were included, more burros could be added to this total.

page 60 First paragraph, add after last sentence: He stated that trapping was being considered to remove burros because they "eat almost anything in reach and denude the range."

page 60 Fourth paragraph, last sentence, change to read: The burros successful adaptation to the Southwest deserts, the lack of predators, the low rate of accidental death, and the high reproductive rate prevent the burro population from stabilizing without human intervention.

page 61 Photo 4, caption, second sentence, change to read: The population of burros in the United States exceeds 7,700 animals.

page 62 First paragraph, second sentence, change to read: Approximately 1,300 burros currently inhabit 809 sq. miles or 517,760 acres, nearly one-third of Lake Mead NRA's total terrestrial acreage of 1,300,000 acres. This estimate is derived from several helicopter-based inventories between 1980 and 1994 (Appendix D) conducted by NPS, BLM and AGF personnel, and estimates in the Muddy Mountains. This estimate takes into account the probability that burros on adjacent BLM administered lands range onto NPS administered lands.

page 62 Third paragraph, second sentence, change to read: The BLM (1981) has found that excessive trailing occurs in areas where there are high densities of burros.

page 62 Fourth paragraph, second sentence, change to read: Since 1982, the BLM has reported that some vegetation types are being severely impacted by overgrazing in areas utilized by burros and in some areas utilized by livestock. This can result in a loss of perennial vegetation and white bursage from the community.

page 62 Sixth paragraph, add after first sentence: Norment and Douglas found that during the summer months of their two year study in Death Valley NM, the majority of burros remained within 2 km of water (1977). Moehlman found that individual burros drank approximately once every 24 hours during the summer, and females with young foals drank several times a day (1974). However, a high density of burros remained within 2 miles of the study spring during the spring-summer months (Moehlman 1974). Seegmiller and Ohmart found that burros remained within 3 to 4 miles of the Bill Williams River during the summer, and in the winter they ranged as far as 8 miles from the river (1981).

page 73 Photo 12, change to read: White bursage is the co-dominant plant in the recreation area.

page 74 Fourth paragraph, first and second citation change Hansen 1973, 1974 to Hansen 1972, 1973.

page 74 Sixth paragraph, third sentence, change to read: Burros tend to stay within 1.25 miles of a water source or riparian areas during the summer months (BLM 1981). Concentrations of burros in or near riparian areas can impact the vegetation and soils, thus decreasing the success rates of restoration programs.

page 75 Third paragraph, fourth sentence, change to read: The USFWS has identified several threats to tortoises including the elimination of native perennial grasses and the establishment of non-native annual weeds, which in part can be attributed to burros in areas they utilize.

page 82 Eighth paragraph, first citation change Hansen 1973, 1974 to Hansen 1972, 1973.

page 87 Fifth paragraph, second sentence, change to read: It is likely that through NPS prescriptions, those impacts to vegetation would be minimal.

page 93 Third paragraph, first sentences, change to read: Burros that are adopted out would receive better food and care than free-roaming burros, and water stress problems would be eliminated.

page 93 Fifth paragraph, fifth sentence, change to read: As these studies are completed, knowledge would be gained on how this alternative would effect burro populations on adjacent lands and what mitigating measures would be necessary to minimize these effects.

page 129 Replace Death Valley National Monument and BLM Operational Agreement with Lake Mead NRA and BLM Interagency Agreement (see Appendix D).

page 149 Second paragraph, first sentence, change to read: The Black Mountains are located 12 miles west of Kingman and extend from south of Yucca, 100 miles north to Hoover Dam.

page 174 Biological opinion for USFWS added (see Appendix A.)

page 180 Desert Tortoise Critical Habitat Map added (see Appendix B).

page 181 1994 burro census results added (see Appendix E).

COMMENTS AND RESPONSES

LIST OF AGENCIES, ORGANIZATIONS, AND INDIVIDUALS COMMENTING

Federal Agencies

Bureau of Land Management (Cooperating Agency)
- Nevada State Office, Reno, Nevada
- Phoenix District Office, Phoenix, Arizona
- Arizona Strip District Office, St. George, Utah
- Las Vegas District Office, Las Vegas, Nevada

Environmental Protection Agency, Region IX, San Francisco, California
U.S. Fish and Wildlife Service, Reno Field Office, Reno, Nevada
U.S. Department of Agriculture Soil Conservation Service

State and Local Agencies

State of Nevada
- Department of Conservation and Natural Resources
  - Division of Historic Preservation and Archeology, Carson City, Nevada
  - Division of Wildlife, Reno, Nevada
  - Division of Water Resources, Carson City, Nevada
  - Division of Environmental Protection, Carson City, Nevada
- Commission for the Preservation of Wild Horses, Reno, Nevada
- Department of Administration, Carson City, Nevada
- Department of Transportation, Carson City, Nevada

State of Arizona
- Arizona State Parks, State Historic Preservation Office, Phoenix, Arizona
- Arizona Game and Fish Department, Phoenix, Arizona

Mohave County Board of Supervisors Public Land Use Committee, Kingman, Arizona

Organizations

Maricopa Audubon Society, Phoenix, Arizona
Arizona Desert Bighorn Sheep Society, Phoenix, Arizona
International Society for the Protection of Mustangs & Burros, Phoenix, Arizona
The Black Mountain Ecosystem Management Team, Kingman, Arizona
Wild Horse Organized Assistance, Reno, Nevada
Desert Bighorn Council, Reno, Nevada
Wild Burro Rescue, Onalaska, Washington

Individuals

Leland Smith, Bullhead City, Arizona
James Marquardt, Phoenix, Arizona
Harold Shiley, Chloride, Arizona
Anthony Martinez, Prescott, Arizona
William Snider, Yuma, Arizona
Raymond Bond, Butte, Montana

RESPONSES TO COMMENTS

COMMENTS

BOB MILLER
Governor

STATE OF NEVADA

PETER G. MORROS
Director

RONALD M. JAMES
State Historic Preservation Officer

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF HISTORIC PRESERVATION AND ARCHEOLOGY

January 19, 1994

Mr. Alan O'Neill, Superintendent
National Park Service
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, NV 89005

SUBJECT: Burro Management, Preliminary Draft Environmental Impact Statement, Lake Mead National Recreation Area, Clark Co.

11

Dear Mr. O'Neill:

The Nevada State Historic Preservation Office (SHPO) reviewed the subject document. The SHPO supports the preliminary draft environmental impact statement (PDEIS) as written. We appreciate the opportunity to comment on the PDEIS.

Please contact me at (702) 687-6362 if you have any questions concerning this correspondence.

Sincerely,

Eugene M. Hattori

Eugene M. Hattori
Archaeologist

RESPONSES

COMMENTS

ARIZONA STATE PARKS

February 4, 1994

Mr. Alan O'Neill
Superintendent
National Park Service
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, Nevada 89005

Re: Lake Mead National Recreational Area, Burro Management Draft Environmental Impact Statement, NPS

Dear Mr. O'Neill:

Thank you for notifying us about the above project. I have reviewed the documentation you submitted on this proposed project and have the following comments pursuant to 36 CFR Part 800:

1. The EIS states that surveys of cultural resources would be conducted by qualified NPS personnel prior to construction of temporary corrals or traps, and fences and that traps, corrals, and fences would not be placed in areas that are known to contain such resources.

2. It also states that if any evidence of cultural resources is found during the burro operation, a cultural resource specialist would immediately be called in for evaluation of the situation.

3. Therefore, my main concern is in the use of horses, vehicles, and helicopters during actual burro operations. It is realized that it is not always possible to anticipate the direction animals will move when being captured. However, it is recommended that helicopters not be used in the vicinity, when possible, of archaeological sites. The disturbance caused by rotor movement can cause displacement of archaeological evidence. Horses and vehicles can also directly impact prehistoric sites; however, as is stated in the draft EIS, care will be taken to avoid impacting sites as much as possible.

Overall, the EIS is a good working document that meets the expectations of the National Historic Preservation Act and the Section 106 compliance and consultation process.

2-1

12

RESPONSES

2-1 As discussed in the document, care will be taken to avoid impacting archeological resources during burro removal operations. If any evidence of cultural resources is found during an operation, a cultural resource specialist would immediately be called in for evaluation. Fences, traps, and corrals would be surveyed so to have no effect on historic properties. The evaluation of cultural resources would be done in compliance with section 106 of the National Historic Preservation Act.

COMMENTS

We look forward to further consultation on the burro management EIS. Your continued cooperation with this office in meeting the historic preservation requirements for federal projects is appreciated. If you have any questions, please contact me (602) 542-7142 or 542-4009.

Sincerely yours,

Catherine B. Johnson
Anthropologist
State Historic Preservation Office

cc: Mr. Raymond I. Murray Jr., Acting Associate Regional Director, Resource Management and Planning, National Park Service, 600 Harrison Street, Suite 600, San Francisco, California 94107-1372

RESPONSES

COMMENTS

National Park Service
re: Barro Mgmt Draft EIS

As A Frequent recreational user if the Newberry mtns. I have noticed several things over the past 7 years.
1) the springs + canyons Appear to be in A very Natural State (other than Grapevine which has signs of high human use).
2) the signs of past cattle grazing are going Away And the revegetation project in Sacatch Wash is going well.
3) I have seen sheep sign but have never seen sheep or deer in the Newberrys. This surprises me. As an Amateur naturalist I see the springs, canyons, lake, grass + vegetation And expect to see more large mammals, I suspect the cause of the shortage of Large mammals is the legacy of past cattle grazing And past or current poaching.
IF Burros were to get into the Newberry Range they would damage the springs + the revegetation project And compete with the already too-few Large mammals in the area. They would also damage the esthetic qualities that

3-1

RESPONSES

3-1 **Under the proposed action, burros would not be allowed to expand their range into areas that are historically burro free, including the Newberry Mountains.**

COMMENTS

RESPONSES

attract visitors. It would not be difficult for burros to get into the Newberrys. all they would have to do is walk from Empire wash over the saddle that leads to Pipe Springs CANYON. 3-1

Please understand that I have no particular dislike for burros. IN FACT, I enjoy seeing them + walking on their trails in Arizona's Black MTNS. However managing burros takes money, time, Food + water that would be better used on NPS LAND to benefit rare native species such as sheep + tortoises. I support NPS's proposal to remove burros from LMNRA. IN particular, do whatever is necessary to keep them out of the Newberry MTNS.!

15

Yours truly

Leland Smith

Maricopa Audubon Society

June 15, 1994

Supt., Lake Mead Natl. Rec. Area
601 Nevada Hwy
Boulder City NV 89005

Dear Superintendent:

The Maricopa Audubon Society wishes to recommend Alternative E in the May 1994 Burro Mgmt. DEIS. Since you state this may not yet be feasible, we recommend the preferred alternative and strongly endorse all efforts to remove as many of these exotic animals as possible.

We hope the adjacent BLM lands will look toward having their Burros removed from them as well as their cattle. This will protect and buffer the park lands and also improve the vegetation and soil and riparian areas of those lands. These adjacent areas are frequently watersheds which cause increased erosion of the parklands and their riparian areas.

Sincerely,

Robert A. Witzeman

Robert A. Witzeman, M.D., Conservation Chair.

COMMENTS

James E. Marquardt

June 21, 1994

Superintendent, Lake Mead National
Recreation Area
601 Nevada Highway
Boulder City, NV 89005

RE: Burro Management

Dear Sir:

I have taken the opportunity to read your draft Environmental Impact Statement on Burro Management for the Recreation Area dated May 1994.

17

After a study of all of the Alternatives, I believe that Alternative E makes the most management sense. Since the ultimate goal is the same as that of Alternative B which is the proposed action, it only makes sense to do the job immediately rather than expending scarce resource dollars for supporting a breeding population.

As I see it, the only disadvantages cited for Alternative E over Alternative B are: 1) the cost of fencing, and 2) the cost of direct reduction.

5-1

The cost of fencing would be the same as Alternative B and, in fact, would be cheaper since only external sources need to be excluded rather than to encapsulate or enclose populations on the Recreation Area.

Once the potential for adoption or other removal of burros by other interested agencies has been completed, direct reduction can be accomplished on a volunteer basis under appropriate supervision by Recreation Area personnel. Thus, the valuable resources of the Recreation Area could be used in a more efficient manner and the ultimate goal of cessation of damage and habitat improvement could be accomplished relatively quickly and at low cost. I do believe that the alternative of using volunteer assistance in this matter is one that, while politically sensitive, ought to be explored in depth.

I thank you for the opportunity to comment on the Environmental Impact Statement which is obviously the product of hard work and attention to concerns of the environment and interested groups.

Very truly yours,

James E. Marquardt

RESPONSES

5-1 Alternative E was explored in depth in the document. As stated in the document, alternative E is the total removal of burros by any means necessary. Initial removal efforts would focus on live captures. Once every option was exhausted, direct reduction, or shooting burros, would take place. The NPS boundaries would be fenced in order to halt burro movements between NPS and BLM administered lands. Fencing the recreation area boundary would be an insurmountable task in terms of construction, maintenance, and cost. Even with these efforts, burros would continue to occupy inaccessible portions of the backcountry within Lake Mead NRA.

Superintendent,
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, Nevada 89005

Dear Superintendent,

In regards to burros in the National Park. The park boundries were drawn around the burros, in their natural habitat.

As for being a threat to public safety, the grizzly bears in our national parks have a right to be there and they are not removed as a threat to the public.

I feel the biggest threat is a bunch of pot bellied ranchers who don't want the burros eating forage which is not theirs, so they can make more money off of cattle on "public" property.

At great expense big horn sheep are brought in, protected and provided for, so the choice few can come to our state and shoot one.

It seems like the destruction of game fish, for the working man, in the Colorado river, by planting stripers, would be lesson enough for the department of Game & Fish, or don't they care about anyone but the Elite.

Sincerely,

Harold L. Shiley

Harold L Shiley

COMMENTS

WHOA

WILD HORSE ORGANIZED ASSISTANCE

a note from

Dawn Y. Lappin

July 6, 1994

Superintendent
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, Nevada 89005

Subject: Draft Environmental Impact Statement - Burro Management
Lake Mead National Recreation Area

Attention: Superintendent, Lake Mead National Recreation Area

Thank you for the opportunity to review and comment on the EIS for Burro Management in the Lake Mead National Recreation Area (NRA).

We would like to commend you on your EIS. We feel that you've more than adequately addressed all concerns and proposed alternatives that will satisfy the habitat requirements as well humanely control your burro population. We support alternatives "B" and "D", which actually support each other.

However, there is one area of concern where we must strongly object unless absolutely necessary and that we would like you to re-consider in its recommendation. On page 19, you are considering using dart guns utilizing tranquilizers as part of a capture method. From experience, which I'm sure can be confirmed by any veterinarian, it's extremely dangerous to any animal to be tranquilized. From inadequate delivery to improper dosages, from injury during a fall to easily being overdosed with resulting death, there are many other alternatives to capturing burros without the additional stress, expense, and potential death of suggesting tranquilizing as an alternative. You have proposed many non-direct methods that are highly acceptable to the BLM, the humane community, as well as the general public should they inquire or be notified. We urge you to only consider those alternatives that will provide the maximum amount of safety to the burros while still reaching your habitat protection and restoration objectives.

19

7-1

RESPONSES

7-1 As stated in the plan, dart guns utilizing tranquilizers may be used in the future. We will use this option only if it becomes absolutely necessary.

We look forward to working with you during the extension of the planning process for Burro Management on the Lake Mead NRA.

Sincerely,

Dawn Y. Lappin

DAWN Y. LAPPIN
Director

COMMENTS

BOB MILLER
Governor

STATE OF NEVADA

CATHERINE BARC
Executive Direct

COMMISSION FOR THE
PRESERVATION OF WILD HORSES

July 6, 1994

Superintendent
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, Nevada 89005

Subject: Draft Environmental Impact Statement - Burro Management
Lake Mead National Recreation Area

Attention: Superintendent, Lake Mead National Recreation Area

Thank you for the opportunity to review and comment on the EIS for Burro Management in the Lake Mead National Recreation Area (NRA).

We would like to commend you on your EIS. We feel that you've more than adequately addressed all concerns and proposed alternatives that will satisfy the habitat requirements as well humanely control your burro population. We support alternatives "B" and "D", which actually support each other.

However, there is one area of concern where we must strongly object unless absolutely necessary and that we would like you to re-consider in its recommendation. On page 19, you are considering using dart guns utilizing tranquilizers as part of a capture method. From experience, which I'm sure can be confirmed by any veterinarian, it's extremely dangerous to any animal to be tranquilized. From inadequate delivery to improper dosages, from injury during a fall to easily being overdosed with resulting death, there are many other alternatives to capturing burros without the additional stress, expense, and potential death of suggesting tranquilizing as an alternative. You have proposed many non-direct methods that are highly acceptable to the BLM, the humane community, as well as the general public should they inquire or be notified. We urge you to only consider those alternatives that will provide the maximum amount of safety to the burros while still reaching your habitat protection and restoration objectives.

8-1

21

RESPONSES

8-1 As stated in the plan, dart guns utilizing tranquilizers may be used in the future. We will use this option only if it becomes absolutely necessary.

COMMENTS

RESPONSES

We look forward to working with you during the extension of the planning process for Burro Management on the Lake Mead NRA.

Sincerely,

CATHERINE BARCOMB
Executive Director

COMMENTS

REAL ESTATE APPRAISAL OFFICES

ANTHONY J. MARTINEZ & ASSOCIATES

July 18, 1994

Superintendent
Lake Mead National Rec Area
601 Nevada Highway
Boulder City, Nevada
89005

Dear Sir:

I have reviewed the Draft Environmental Impact Statement for Burro management. After having read it I have concluded that the only reasonable course of management for Burros and the native animals & plants is to totally remove all Burros, consequently, Alternative E is the program that I as a Tax payer would like to see implemented for the Lake Mead Area.

Please keep me informed. Keep up the good work that you a doing under difficult circumstances.

Respectfully

A. Martinez

RESPONSES

9-1 Alternative E was considered in the document. As discussed in the document, alternative E is not considered feasible at this time due to the presence of burro populations on adjacent BLM administered lands and constraints of adjacent land management policies, few or nonexistent barriers, and the lack of practical and cost effective control methods for those areas of the park. In addition, if direction reduction, or shooting, was initiated, some burros would remain in the inaccessible portions of the backcountry within Lake Mead NRA. Without the development of new technologies, it is likely that burro populations within the recreation area could not be eliminated in the foreseeable future.

COMMENTS

William L. Snider

12 August 1994

United States Dept. of Interior
National Park Service
Lake Mead National Recreational Area
601 Nevada Highway
Boulder City, Nevada 89005

Dear Sirs :

Let me first thank you for the opportunity to comment on your Burro Management Environmental Impact Statement.

I prefer Alternative E, Total Removal of All Burros. Both Alternatives B and E have the same desireable goal but only E proposes a plan which might reasonaoly achieve the goal. Alternative B proposes to revisit the situation after five years and readdress the issues with a new EIS. Five years during which the resources will continue to be affected as
10-1 the presence of burros is conceded and there is no assurance that numbers would be reduced to the NPS "prescription".

You have reviewed in your EIS many of the previous burro management actions taken in similar situations. Nothing in this documentation or in any other source I am aware of suggests that "zero burros" can be achieved without resort to direct reduction.

In Table 1, Summary of Initial Alternatives, the costs of Alternatives B and E are stated to be the same. I find this difficult to rationalize as, after five years there would
10-2 still be a burro population to be eliminated and the expense of a new EIS would be incurred. Further some fencing is proposed within the LMNRA which would not be needed once the burros were eliminated.

As a taxpayer I am concerned about the cost of these actions and believe that the cost is often not given enough consideration in the decisions of methods to be used such as capture versus direct reduction. The ability to achieve the goals within the time frame proposed or to ever achieve them is dependent upon the funds which may be made available. In
10-3 our present economy and with the political pressures which exist I see no assurance that the funds sought for burro management will be forthcomming in the amounts needed. I believe that it is imperative that the most economical solutions be adopted. It is my perception that Alternative E is the most economical solution and it meets the goal '

I am concerned also about what I perceive to be a long term problem in the migration of burros into the LMNRA from BLM

RESPONSES

10-1 Alternative E was considered in the document. We believe that alternative B will reach the goals of halting or minimizing burro impacts within the recreation area. Under the proposed action, modification of burro populations based on NPS data and refinement of monitoring and utilization would be an ongoing process. The effectiveness of control methods would also be evaluated. If deemed necessary, five years after the finalization of the plan, control methods, including direct reduction, or shooting, would be evaluated in a supplemental environmental analysis.

10-2 The main costs associated with alternative B include removal operations, some fencing and associated maintenance, monitoring, and research. The costs associated with alternative E include removal operations, boundary fencing and associated maintenance, and monitoring. Even if burros were eliminated from within the recreation area, boundary fencing would be necessary to prevent burros from entering the recreation area from adjacent BLM administered lands.

10-3 The costs associated with the proposed action were considered in the document. Though economic issues are very important, they were not the only issues identified during the scoping process. Other issues were identified and analyzed in the draft EIS, including natural resources, socioeconomic resources such as recreation, cultural resources, and burros.

COMMENTS

lands since the BLM is committed to a plan to retain some numbers of burros on their lands. It would appear that a considerable amount of fencing will be necessary to prevent this. I do not believe that any funds should be spent on fencing that does not contribute to this need.

10-4

I note what appear to be a couple of inconsistencies. In the Public Safety topic of Table 2, Summary of Impacts, Alternative E is stated to be the same as Alternative B. How can this be so if Alternative B has population of burros while they have been eliminated under Alternative E ? The introduction to Alternative A on page 81 states that " burro populations would continue to increase", however the conclusion on page 81 says that "Continued removal operations within the recreation area would result in a decreasd free-roaming burro population in the Southwest.". This does not appear logical.

10-5

10-6

A further comment on Impacts to threatened and endangered species (page 109) of Total Removal of All Burros - a positive long term benefit would be derived for the desert tortoise by direct reduction of burros as the weathered bones would be utilized by the tortoises who gnaw on them, presumably to obtain calcium for bone and shell growth.

respectfully yours

William L. Snider

RESPONSES

10-4 As discussed in the document under the proposed action, the NPS and BLM would cooperate to determine acceptable burro population levels based upon monitoring and utilization studies and would work mutually to develop initial herd levels in joint burro use areas, recognizing each agencies policies and prescriptions.

10-5 In alternative B, the proposed action, burros would be removed in areas where they pose a threat to public safety.

10-6 As stated in the document under alternative A, current burro management levels would continue in the recreation area. Burros would be management through a cooperative agreement with the BLM. Recently, the BLM has achieved a degree of success in reducing burro populations in certain portions of the recreation area, thus reducing overall populations of free-roaming burros in the southwest. However, in several circumstances in the past, management impediments have forestalled effective burro management in the recreation area, allowing burro populations to increase and move into previously uninhabited areas.

ARIZONA DESERT BIGHORN SHEEP SOCIETY, INC.

August 15, 1994

Mr. Alan O'Neill
Superintendent
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, NV 89005

Re: Draft Environmental Impact Statement for Burro Management at Lake Mead National Recreation Area

26

Dear Mr. O'Neill:

The Arizona Desert Bighorn Sheep Society, Inc. (ADBSS) has reviewed the above-referenced draft EIS.

We prefer Alternative E, the total removal of all burros from the Lake Mead NRA, because that alternative would completely eliminate the destructive effects of burros on the area's habitat and wildlife.

At the same time, however, we realize the difficulty of keeping burros from neighboring BLM herd management areas from entering portions of the Lake Mead NRA and, for that reason, we are willing to support Alternative B, the proposed action. We are encouraged by the plan's stated objectives of no range expansion or new use of NRA lands by burros, elimination of burros from areas where they pose a threat to natural resources or public safety, and fencing sections of the park to prevent entry by burros. We are also encouraged by the National Park Service's stated goal of eventually reducing the burro population to zero.

Thank you for the opportunity to comment on the draft burro management plan for the Lake Mead National Recreation Area. Please keep us informed of all developments as the plan takes shape.

Sincerely,

Richard Robles

Richard Robles
President

COMMENTS

BOB MILLER
Governor

STATE OF NEVADA

JOHN P. COMEAUX
Director

DEPARTMENT OF ADMINISTRATION
Capitol Complex

August 26, 1994

Alan O'Neill, Superintendent
Lake Mead NRA
601 Nevada Highway
Boulder City, NV 89005

Re: SAI NV # 943000118 Project: DEIS--Burro Management. Lake Mead NRA

27

Dear Mr. O'Neill:

Attached are the comments from the Nevada Divisions of Wildlife. Transportation, Water Resources, and Environmental Protection's Bureau of Water Quality Planning concerning the above referenced project. These comments constitute the State Clearinghouse review of this proposal as per Executive Order 12372. Please address these comments or concerns in your final decision.

Sincerely,

Julie Butler

Julie Butler, Coordinator
Nevada State Clearinghouse/SPOC

JB/jb
Enclosures

RESPONSES

COMMENTS

STATE OF NEVADA

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF WILDLIFE

PETER G. MORROS
Director
Department of Conservation and Natural Resources

WILLIAM A. MOLINI
Administrator

ROB MILLER
Governor

Region III III-95-019

August 23, 1994

Mr. Ron Sparks, Coordinator
Nevada State Clearinghouse
Department of Administration
Division of State Planning
Blasdel Building, Room 204
Carson City, NV 89710

RE: SAI NV#943000118

Dear Ron:

The Draft Environmental Impact Statement for Burro Management at the Lake Mead National Recreation Area has been reviewed by Nevada Division of Wildlife personnel. This document is supported and the National Park Service is encouraged to pursue the elimination of feral equids in the Lake Mead/Lake Mohave area.

Thank you for the opportunity to comment upon this proposed project in Nevada. If you have questions or require additional input, please feel free to contact the Region III office of the Division at (702) 486-5127.

Sincerely,

Cornelio O. Padilla
Supervising Biologist-Habitat

COP:jln

cc: Habitat Bureau Chief
Game - Las Vegas
Law Enforcement - Las Vegas, Boulder City, Searchlight, Laughlin
Fisheries - Las Vegas

28

RESPONSES

COMMENTS

DEPARTMENT OF TRANSPORTATION JUN 2 2 1994

June 20, 1994

John Walker, Coordinator
Nevada State Clearinghouse
Department of Administration
Budget Division

PSD 7.02

Dear Mr. Walker:

The Nevada Department of Transportation, has reviewed the project titled DEIS, Burro Management, Lake Mead National Recreation Area, SAI =943000118.

Based on the information submitted we have the following comments on the proposed project.

14-1 Nevada Department of Transportation and Arizona Department of Transportation are studying a new connecting road, with a new crossing of the Colorado River, including a by-pass of Boulder City. This (these) alternative(s) should be discussed or evaluated, and not be prohibited by this DEIS.

Thank you for the opportunity to review this project.

Sincerely,

D. Keith Maki
Assistant Director
Planning

DKM:JWC:dg

cc: Daryl James

29

RESPONSES

14-1 This information is irrevalent to this document. Neither the absence nor presence of burros would impact road construction in the referenced area. Evaluation of proposed road construction in the recreation area is a separate issue. Proposed road construction activities are evaluated through an environmental impact statement including section 4(f) compliance.

COMMENTS

BOB MILLER
Governor

STATE OF NEVADA

PETER G. MORROS
Director

R. MICHAEL TURNIPSEED, P.E.
State Engineer

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

AUG 11 1994

August 10, 1994

Nevada State Clearinghouse
Planning Division
Blasdel Bldg., Rm. 200

Re: Nevada SAI #943000118; DEIS - Burro Management, Lake Mead National Recreation Area

To Whom It May Concern:

In regards to the above mentioned project, the following is NDWR's only concern:

15-1 • Water rights must be obtained for any springs that are developed for watering of the burros.

Should you have any questions, please feel free to call.

Sincerely,

Jason King, P.E.
Engineering Branch Manager

30

RESPONSES

15-1 Water modification and spring development are not proposed in the document. We may assist the BLM in developing springs on public lands, water rights would be addressed in individual project plans..

COMMENTS

STATE OF NEVADA
ROBI MILLER
Governor

PETER G. MORROS
Director

Administration
(702) 687-4670
Fax 687-5856

Air Quality
Mining Regulation and Reclamation
Water Quality Planning
Water Pollution Control

Fax (702) 885-0868
TDD 687-4678

Waste Management
Corrective Actions
Federal Facilities

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION

June 17, 1994

MEMORANDUM

TO: State Clearing House

FROM: Pete Anderson, EMS BWQP

SUBJECT:

BUREAU OF WATER QUALITY PLANNING
COMMENTS TO:

NATIONAL PARK SERVICE - DRAFT EIS FOR
LAKE MEAD NRA
BURRO MANAGEMENT PLAN
DEP # 94-115

1. The Bureau of Water Quality Planning (BWQP) supports the National Park Service's Proposed Action regarding burro management in Lake Mead National Recreation Area. Burros are known to negatively impact water quality, riparian habitat and the distribution, abundance, and composition of native plant species. Impacts can be significant, both cumulatively and over the long term. Correspondingly, increased levels of nonpoint source pollution and degraded water quality can be anticipated in burro use areas.

16-1 2. Proposed mitigation measures should consider the implementation of Best Management Practices (BMPs) to minimize water quality impacts from nonpoint source pollution sources in those areas of burro use, particularly in spring/riparian areas and the lake shore.

31

RESPONSES

16-1 As discussed in the document, mitigating measures, including monitoring park resources, would occur to assure that burro impacts to park resources, including springs, are minimal. If impacts are occurring beyond NPS prescriptions, burro populations in those areas would be reduced or eliminated.

COMMENTS

3. The BWQP recently funded a livestock ear tag project entitled "Electronic (Fenceless) Control of Livestock in Riparian Areas" which was conducted in Great Basin National Park. The study indicated a 90 percent effective rate of controlling
16-2 livestock with electrical stimulation. Lead investigators on the project were Ms. Wendy Lauritzen, Great Basin NP and Mr. Art Tiedemann, USFS-Forestry and Range Sciences in La Grande, Oregon. This research may provide an alternative management opportunity for burros within Lake Mead NRA.

4. Grants are available for implementation projects which address nonpoint source pollution and water quality concerns through 319(h) Clean Water Act funds administered by the BWQP. Please do not hesitate to contact us should you desire additional information.

c:\npslmead.eis

RESPONSES

16-2 Research is a component of the proposed action. If more effective techniques for controlling burro populations are developed, the NPS would evaluate these techniques through an amendment to the document and public review.

COMMENTS

DESERT BIGHORN COUNCIL

Established to promote the advancement of knowledge regarding the Desert Bighorn Sheep and the ecosystem on which these animals

25 August 1994

Mr. Alan O'Neill, Superintendent
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, NV 89005

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR BURRO MANAGEMENT

Dear Mr. O'Neill:

The Technical Staff of the Desert Bighorn Council (Council) has reviewed the draft Burro EIS. The Council would prefer Alternative E, total removal of all burros, but recognizes, as does the Park Service, the political realities involved; therefore, we fully support your Alternative B, Implementation of Resource Based Management.

33

17-1 This is a well written document compared with many we have reviewed. The only comment we have is that citations listed in the text on pages 74 and 82, of reports prepared by the late Dr. Charles Hansen, refer to Hansen 1973 and 1974, while the Bibliography lists Hansen 1972 and 1973...

The Council appreciates the opportunity to comment on this document and would be happy to comment on future documents prepared by the Park Service which potentially impact desert bighorn sheep.

Sincerely,

William R. Brigham

William R. Brigham, Chairman
Technical Staff
Desert Bighorn Council

RESPONSES

17-1 The citation has been revised accordingly; see corrections page 74 and 82.

COMMENTS

The Black Mountain Ecosystem Management Team
Kingman, Arizona

August 29, 1994

Mr. Alan O'Neill
Superintendent
Lake Mead National Recreation Area

Dear Mr. O'Neill,

Thank you for your support of the Black Mountain Ecosystem Management Team and it's efforts to develop a management plan that will meet the goals and objectives of both agencies (BLM and NPS) by improving and sustaining healthy ecosystems.

The Black Mountain Ecosystem Management Team supports your decision to enlarge the boundary of the joint burro management area to include the area that lies between Cottonwood Road and the Eldorado Jeep Trail as proposed in your Draft Burro Management Plan. We accept your conditions that the Ecosystem Team formulate management prescriptions that protect sensitive vegetation, specifically palo verde, in the Lake Mead National Recreation Area.

Your cooperation and commitment in this effort is greatly appreciated.

Sincerely,

Scott Elefritz
Team Coordinator

RESPONSES

COMMENTS

THE STATE OF ARIZONA

GAME & FISH DEPARTMENT

August 26, 1994

Mr. Alan O'Neil
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, Nevada 89005

Re: Draft Environmental Impact Statement - Burro management

Dear Mr. O'Neil:

The Arizona Game and Fish Department (Department) has reviewed the above-referenced Draft document (DEIS), and the following comments are provided.

35

19-1 **Page 15.** 2nd paragraph - If the proposed control methods fail to be effective, the Department believes that significant habitat degradation could occur over the five year monitoring period. We suggest that the monitoring period be shortened to two years and that direct reduction then be made an option.

Page 55. 3rd paragraph - The number of acres designated as Critical Habitat for the desert tortoise has been omitted.

Page 73. Photo 12. "Co-dominate" should be co-dominant.

19-2 **Page 87.** 5th paragraph - "It is likely that through NPS prescriptions, that impacts..." should be "those" impacts.

Page 93. 3rd paragraph - The Department suggests changing better food and care "than burros" to "than free-roaming burros." 5th paragraph - As these studies "area" completed should be "are."

Page 149. The Inventory Area. The Black Mountains are 12 miles west of Kingman.

RESPONSES

19-1 Under the proposed action, modification of burro populations based on NPS data and refinement of monitoring and utilization would be an ongoing process. The effectiveness of control methods would also be evaluated. Five years is a reasonable time period to evaluate proposed control methods, and to determine if additional methods should be implemented, including direct reduction, or shooting, in a supplemental environmental analysis.

19-2 The document has been changed accordingly; see corrections page 55, 73, 87, 93, and 149.

Mr. Alan O'Neil
August 16, 1994

Thank you for the opportunity to review and comment on this DEIS. If you have any questions, please contact Bob Posey, Kingman Regional Habitat Program Manager, at (602) 692-7700.

Sincerely,

Ron Christofferson

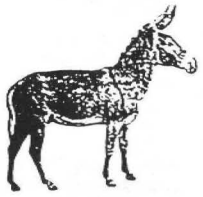
Ron Christofferson
Project Evaluation Coordinator
Habitat Branch

RAC:GSS:GBC:ss

cc: Steve Ferrell, Regional Supervisor, Region III, Kingman

AGFD# 6-16-94(02)

COMMENTS



Wild Burro Rescue

A non-profit corporation dedicated to: The rescue, rehabilitation and preservation of otherwise doomed wild burros.

August 28, 1994

Alan O'Neill, Superintendent
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, Nevada 89005

RE: WILD BURRO MANAGEMENT
WILD BURRO RESCUE/NPS PARTNERSHIP

Dear Mr. O'Neill;

37 We would like to express our most sincere appreciation in response to your cautious and patient avoidance of utilizing "direct reduction" as a method of managing wild burros on NRA's lands. Our major emphasis and course of action as an animal protection organization is to provide a rescue alternative to "direct reduction". We are very realistic in our mission on behalf of wild burros and understand the many complexities of the politics, economics and management surrounding the burro issue. We also know that burros are very much in demand by people who appreciate their unique characteristics. We are committed to the live capture and humane removal of wild burros from public lands where they can no longer remain, while doing whatever possible to insure that these burros receive good homes and or permanent sanctuary.

We have been an IRS 501(C)3 Animal Rescue Organization, since July, 1991, but we have been living with and rescuing burros since 1985. We have assisted in rescuing wild burros from U.S. Fish and Wildlife Service, Sheldon-Hart Wildlife Refuge. We have a small high quality sanctuary providing permanent residence to 20 burros at this time.

When we realized the enormity and cost involved necessary to provide a rescue response to the many wild burros at risk, plus the fact that almost no other animal groups were actively involved in burro rescue, we decided to go public on a nation wide basis. Knowing that publicity and networking does not always result in action, we took it upon ourselves to initiate direct action that would provide the motivation and momentum for others.

RESPONSES

We have been receiving support from individual burro advocates, animal protection groups and grant foundations. Participation and support is steadily growing with the primary concern being to prevent "direct reduction". We expect to intensify the national publicity and increase our rescue capacity as Gene travels throughout the southwest on a two month journey. He will visit the wild herds in California, Arizona and Nevada and request participation in the governments wild burro management plans. Wild Burro Rescue is acting independently on behalf of wild burros, but the following animal protection organizations support our rescue action and have requested frequent updates on the wild burro issue: Fund for Animals, Friends of Animals, World Society for the Protection of Animals and the Humane Society of the United States.

Nancy Yoder has invited Wild Burro Rescue to observe/participate in upcoming wild burro live captures and Gene hopes to get the opportunity to meet with you at that time. He will be meeting with Edwin Rothfuss, Death Valley National Monument around the same time. We are looking forward to establishing a good working relationship with the National Park Service that will be both beneficial to the land and wild burros.

We studied the Draft Environmental Impact Statement, Burro Management, with great interest. Please consider this letter to be our request to join with you in a partnership designated to assist you in avoiding direct reduction or the sale of wild burros to slaughter ore any other management plan or action that would cause death. We prefer Alternative D., but will do whatever possible to assist your efforts in a plan of action that includes the live capture and removal of wild burros in a humane and safe manner. We hope to meet with you in October to discuss the possibility and expectations of such a partnership.

38

Sincerely,

Gene and Diana Chontos
Co-Founders
WILD BURRO RESCUE

cc: Edwin L. Rothfuss, Superintendent, Death Valley
Stanley T. Albright, Director, Western Region NPS

GLC/DRC

COMMENTS

MOHAVE COUNTY BOARD OF SUPERVISORS
PUBLIC LAND USE COMMITTEE

Rob Grumbles, Chairman
Ben McReynolds, Vice Chairman
Keith Helmer, Public Relations

MEMBERS
SUBCOMMITTEES

Rob Grumbles
Timber

Ben McReynolds
Grazing

Keith Helmer
Business & Industry

Paul Pokrasky
Air Quality

Gary Brummett
Mining

Bryan Corbin
Recreation

Joe Birbich
Transportation

Bob Broz
Water

Don Martin
Wilderness
Wildlife &
Endangered
Species

August 31, 1994

Mr. Alan O'Neil, Superintendent
Lake Mead National Recreational Area
601 Nevada Highway
Boulder City, NV 89005

RE: Burro Management

Dear Mr. O'Neil:

In regards to your agency's proposed management of burros within the Lake Mead National Recreational Area, the Mohave County Public Land Use Committee, after reviewing the draft EIS dated May, 1994, would make the following recommendation.

1. That the Lake Mead National Recreation Area adopt the recently approved plan formulated by the Black Mountain Ecosystem Management Team, which consists of a broad range of special interest groups and government agencies, including the National Park Service, Bureau of Land Management, and the Arizona Game & Fish Department, of managing burros on Park Service controlled lands within Mohave County.

2. That in other areas of the Lake Mead National Recreational Area, Alternative Action "B" be selected as the preferred action taken. This recommendation is in line with the previous statement of the Mohave County Public Land Use Committee that resource based management be used when dealing with burros on all public lands.

Thank you.

Rob Grumbles, Chairman
Mohave County Public Land Use Committee

RESPONSES

COMMENTS

USDA SOIL CONSERVATION SERVICE — FLAGSTAFF AREA OFFICE

SUBJECT: Burro Plan/EIS — DATE: August 18, 1994

TO: Alan O'Neill, Superintendent
Lake Mead Nat'l Recreation Area
601 Nevada Highway
Boulder City, Nevada 89005

I have reviewed the Draft Environmental Impact Statement on Burro Management in the Lake Mead National Recreation Area on behalf of the Big Sandy Natural Resource Conservation District. I would like to offer the following comments concerning this draft.

First, alternative E, Total Removal of All Burros is clearly the alternative that will best protect the soil, water, plant and wildlife resources of the Lake Mead Area. The option is also the most in concert with the mission of the National Park Service.

22-1 Second, the draft impact statement does not adequately explain why alternative E was not selected. Alternative E is simply characterized as not feasible at this time or in the foreseeable future. Why not?

Finally, under alternative B, the proposed alternative, it is stated that "the goal of the proposed action is the cessation of environmental change caused by burros..." Under the environmental consequences section it is stated
22-2 that impacts to soils and vegetation will be minimal after burro reductions. It is my contention that the goal is unattainable with this alternative and that the environmental consequences are understated.

Over grazing occurs one plant at a time. The simple reduction of the number of animals utilizing the plant
22-3 resource will not prevent over grazing it will only slow the rate of environmental change. The west is replete with lightly stocked year round livestock grazing operations that are overgrazed. Along with continued degradation of plant resources in areas where burro numbers have only been reduced, accelerated erosion can be expected. Trailing will
22-4 also continue. The number and size of trails will continue to expand, all be it at a lower rate than before reductions. Increased soil erosion will accompany the increased trailing. It is also stated that "reduction of burro populations would end the foraging, trampling and fecal contamination impacts around the lakeshore and springs within areas of burro use..." This simply is not true.
22-5 These impacts are not dependent on numbers, the severity of

RESPONSES

22-1 As discussed in the document, alternative E is not considered feasible at this time due to the presence of burro populations on adjacent BLM administered lands and constraints of adjacent land management policies, few or nonexistent barriers, and the lack of practical and cost effective control methods for those areas of the park. In addition, if direction reduction, or shooting, was initiated, some burros would remain in the inaccessible portions of the backcountry within Lake Mead NRA. Without the development of new technologies, it is likely that burro populations within the recreation area could not be eliminated in the foreseeable future.

22-2 Removal of burro populations from severely overutilized portions of the recreation would prevent further degradation of these areas from burro impacts, and allow restoration of these lands. In areas where burro populations remain, NPS prescriptions would ensure that overutilization does not occur. Monitoring will occur to ensure that use does not exceed prescriptions. If burro impacts continue, burro populations will be adjusted until the time that prescriptions are met.

22-3 We disagree with this comment. Many species of plants are not negatively affected by light grazing. Some respond by producing more new growth. We have set utilization limits at 30 percent and will monitor plant health in response to the grazing. If negative impacts to the plants is detected, utilization levels will be lowered.

COMMENTS

the impact may be less but the impact will still be there. In the case of springs used by bighorn sheep the only way to eliminate these adverse impacts is to eliminate all burros from the area. It does not take a large number of burros to contaminate a water source or to cause sheep not to use a given water source.

22-5

Thank you for the opportunity to provide comment on this document.

Marcus Miller
Area Biologist

RESPONSES

22-4 Under the proposed action, burros would be eliminated from areas in the recreation area that are severely utilized. Areas where burros remain would be monitored to ensure that impacts are minimal.

22-5 The riparian environment is extremely important in Lake Mead NRA. As discussed in the document, mitigating measures, including monitoring park resources, would occur to assure that burro impacts to park resources, including springs, are minimal. If impacts are occurring beyond NPS prescriptions, burro populations in those areas would be reduced or eliminated.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX

August 31, 1994

Superintendent
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, NV 89005

Dear Superintendent:

The Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the project entitled **Burro Management, Lake Mead National Recreation Area, Arizona.** Our review is pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

The National Park Service (NPS) proposes the management of burros within the Lake Mead National Recreation Area (Lake Mead NRA), Clark County, Nevada, and Mohave County, Arizona in such a manner as to comply with preservation goals and management policies of the NPS and Lake Mead NRA. In accordance with NPS policy, burros are an exotic species and are not an integral component of the desert ecosystem. Five alternatives are evaluated in detail including no action/status quo; implementation of resource based management; no management of burros; managing a population of burros for perpetuity; and total removal of all burros.

The preferred alternative is to implement resource based management. This alternative recognizes that NPS policies require a goal of reducing exotic species populations within the recreation area to zero. However, the alternative recognizes that this goal is not feasible at this time, nor in the foreseeable future. The plan proposes to establish burro free areas within the park and to accept a certain amount of burro use in areas according to National Park Service prescriptions (33% average vegetation utilization). The plan also proposes no range expansion or new use by burros, removal of burros from areas where they pose a resource threat or public safety hazard, and fencing sections of the park as opportunities arise.

We commend the National Park Service for their efforts to manage burros to allow recovery of park resources and to minimize or prevent burros from interfering with natural processes and the perpetuation of natural features and native species. It is obvious that the deteriorated condition of burro use areas requires change. Although we have not identified any potential environmental impacts requiring substantive changes to the proposal, we believe the DEIS lacks sufficient information on

grazing allotment impacts, funding feasibility, and mitigation measures. These items should be discussed in detail in the FEIS. Detailed comments are enclosed. Based upon our review of the DEIS, we have classified this document as category EC-2, Environmental Concerns - Insufficient Information (see attached "Summary of the EPA Rating System").

We appreciate the opportunity to review this DEIS. Please send one copy of the FEIS to this office at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please call me at (415) 744-1574, or Laura Fujii, of my staff, at (415) 744-1579.

Sincerely,

David J. Farrel, Chief
Environmental Review Section
Office of Federal Activities

Enclosure: Detailed Comments, 1 page
EPA Rating System, 1 page

94-223
MI001670
Filename: burro.dei

cc: USFWS, Reno Field Office
BLM, Kingman Resource Area
BLM, Las Vegas District
BLM, Arizona Strip District

COMMENTS

EPA DEIS COMMENTS, NPS, BURRO MANAGEMENT, LAKE MEAD NRA, ET., AUGUST '994

COMMENTS

23-1 1. The FEIS should include information on existing and projected grazing allotments and potential impacts. Include sufficient information regarding allotment management, present and historical grazing impacts, and future rangeland management plans to support a comparative evaluation in the FEIS of burro and cattle grazing impacts. If cattle grazing impacts are similar to those described for burros, we urge consideration of rangeland management modifications and grazing restrictions.

23-2 The Bureau of Land Management (BLM) and US Forest Service (USFS) have proposed significant changes in rangeland management and administration in their Rangeland Reform '94 DEIS and proposed rules. Describe whether the NPS will collaborate with and join BLM and USFS in implementation of these proposed changes.

23-3 2. The FEIS should provide specific information on the proposed fencing activity. Describe the miles of fencing proposed, how the fence will be constructed to minimize impacts to bighorn sheep, and the maintenance schedule. A diagram of fence features to minimize potential wildlife impacts would be helpful.

23-4 3. The DEIS states that the NPS will utilize BLM removal crews, the BLM adopt-a-burro program, and burro interest groups to accomplish the proposed plan. Additional base funding of $150,000 per year plus special funding of $200,000 for three years is necessary to ensure adequate plan implementation. The FEIS should evaluate the feasibility of receiving this funding, potential funding sources, and fall back options in case direct appropriations are not provided.

23-5 4. Appendix A provides the operational agreement for burro management on BLM and NPS administered lands in the vicinity of Death Valley National Monument. If available, the FEIS should include the operational agreement between BLM and NPS for burro management for the Lake Mead NRA.

23-6 5. If available, provide information regarding the burro viewing preference of Lake Mead NRA visitors. Indicate if a visitor survey has ever been conducted to determine the level of this interest.

RESPONSES

23-1 The relationship between grazing and burro impacts has been discussed in the document. Most areas where burro populations exist are not active allotments or open to cattle grazing. The Tassi Grazing Allotment is the only area where burro and cattle use currently overlap. As discussed in the document, much of this area was recently designated as critical habitat for the desert tortoise. No burro use will take place in designated critical habitat. The NPS is working with the BLM and USFWS to resolve the issues in this allotment. There are potential ephemeral allotments in the Black Mountains, Arizona. These allotments have not been active for more than 10 years. As discussed in the document, the NPS is working with the Black Mountain Ecosystem Management Team to set burro and cattle numbers and develop a monitoring plan for potential use in this area.

23-2 This is not within the scope of the plan.

23-3 Figure 7 in the document shows projected fence locations (see correction on page 31). The plan authorizes fencing of additional segments of the park boundary when there is adequate funding for construction and maintenance, when it would be effective in preventing burro entry into the park and when it would not prevent the normal movements by native wildlife, principally desert bighorn sheep. Fencing would occur when staffing and funding is available. Maintenance would be occur yearly. Fences have been constructed in other portions of the recreation area, such as at Corral Springs, and effectively prevent burros from entering the spring, but allow bighorn sheep to enter. The fence would be a three to four strand fence with barbed wire on the top two or three strands only. This allows for the desert

bighorn sheep to crawl under the fence. Similar fences would be constructed to eliminate burro use elsewhere.

23-4 These impacts have been evaluated in the document. Alternative sources of funding, such as utilizing interest groups, are considered a viable option.

23-5 The Interagency Agreement for Burro Management between Lake Mead NRA and the BLM has been incorporated into the document (see Appendix D).

23-6 Impacts to persons wishing to view burros has been discussed in the document. Viewing opportunities will remain under the proposed action, plus in BLM administered lands adjacent to the recreation area.

COMMENTS

August 25, 1994

Superintendent,
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, Nevada 89006

Dear Sir:

After reading the Draft Environment Impact Statement for the management of exotic burros within Lake Mead NRA, your description of action to be taken is contrary to NPS exotic species policy. You are mandated to eliminate exotic species found on NP areas by any means such as the recent direct reduction of Mouflon Sheep by helicopter sharpshooters in Hawaii.

Alternative E is the best policy and follows NPS guide lines.
There would be no increase in cost to administer.
24-1 After five years there would be no cost for an evaluation of this plan as would Alternative B nor need or cost for a supplemental environmental analysis.
Would recommend live trapping and removal, placing removed burros in the BLM Adopt-A-Burro Program, direct reduction when burro densities decrease, and fencing. By using Alternative E the bighorn sheep population wouldn't be in competion with burros for spring use and grazing giving them a better chance to increase above their present level. In fact the whole area would improve to go to this plan.

46

By using Alternative B there is alot of grey area in this plan. What will be the burro population ~~xxx~~ in areas where burros remain within the park? What are NPS prescriptions on impacts within the park? NPS working with BLM to set burro pOpulations within Lake Mead NRA & adjacent BLM areas using their forage allocation ratios and animal unit ratios isn't acceptable. BLM wants a "thriving ecological
24-2 balance" with 800 burros in the Kingman Resource Area to detriment of the bighorn sheep population. This is 400% more burros than the 1981 Black Mtn. HMP was written and 200% more burros than a 1982 BLM Herd Management Plan. No priority is given to bighorn sheep and no burro herd management level is established. NPS should go it alone on establishing burro population levels.

Let's get down to dollars and sense. What is the value of one burro? Nothing only for predator food. What is the value of one big horn sheep? The 1994 Arizona Desert Bighorn Sheep Governers permit brought $245,000 for the state. In areas where sheep can be hunted, tourists, fishermen, who come to Lake Mead NRA all help the economy. Everyone wants to see more wildlife than burros. Can we sacrifice valuable wildlife for the sake of several thousand burros?

My vote is for Alternative E as it's the best ~~one~~ plan ~~going~~ around.

Thanks for letting me comment.

Sincerely,
Raymond D. Bond
Raymond D. Bond

RESPONSES

24-1 Alternative E was considered in the document. We believe that alternative B will reach the goals of halting or minimizing burro impacts within the recreation area. Under the proposed action, modification of burro populations based on NPS data and refinement of monitoring and utilization would be an ongoing process. The effectiveness of control methods would also be evaluated. If deemed necessary, five years after the finalization of the plan, control methods, including direct reduction, or shooting, would be evaluated in a supplemental environmental analysis.

24-2 As described in the document, the NPS would work with the BLM to set initial population levels in burro joint use areas within the park contiguous to the Black Mountains, Muddy Mountains, Gold Butte, and Grand Wash Herd Management Areas, with the exception of USFWS designated critical habitat, designated as zero burro use. The NPS and BLM would cooperate in these areas to determine acceptable burro population levels based upon monitoring and utilization studies, and would work mutually to develop initial herd numbers in these joint use areas, recognizing each agencies policies and prescriptions. Monitoring would ensure that burro use does not exceed prescriptions.

COMMENTS

August 31, 1994

Mr. Alan O'Neill, Superintendent
Lake Mead National Recreation Area
601 Nevada Highway
Boulder City, NV 89005

Dear Mr. O'Neill:

On behalf of our members, both nationally and internationally, I am pleased to have the opportunity to respond to the National Park Service's *Draft Environmental Impact Statement for Burro Management* on Lake Mead National Recreational Area (LMNRA).

47

25-1 We propose that Alternative D be the preferred alternative in the final EIS with the following modifications including the management of burros between Cottonwood Road and Eldorado Jeep Trail:

Page 2 - first paragraph emendation. (burros were **reintroduced**)

"The mainstream of equid evolution occurred in North America;" "Native equids were present from the lower Eocene, 55 million years ago (Colbert 1969), and remained abundant until 11,000 years ago. Late Pleistocene mammal sites in Arizona (Londsay and Tessman 1974) reveal that Equus was second in abundance only to Mammuthus and was twice as abundant as Bison." "The disappearance of equids 11,000 years ago coincided with the extinction of three genera of large mammals, and the immigration of a new predator, Paleolithic man. "

25-2 "Dating of fossil remains of type Equus (large), as well as other Equus species including E. asinus. has established their ages at between 11,000 +- 100 and 13,310 +- 210. These remains came from sites in Nevada, Arizona and California (Haynes 1967, Mawby 1967, Hemmings 1970, Hary 1975, Cole and others 1979) "

"Skinner (1972) maintains that certain species groups of Equus have existed for 3 to 5 million years. He present evidence that there is a high degree of similarity between extinct Pleistocene and living

RESPONSES

25-1 Alternative B has been modified to reflect management of the current levels of 30 or fewer burros between Cottonwood East Road and Eldorado Jeep Trail.

25-2 As stated in the document, respected authorities differ on opinions and beliefs on whether the burro has replaced a "burro-sized" animal that existed during the Pleistocene Epoch. According to NPS policies, burros are exotic and are not an integral component of the desert ecosystem within the recreation area because they were introduced to the area as a result of deliberate or accidental actions by humans.

COMMENTS

equids. Skinner describes the type species of the subgenus Equus (Heminous) as being Equus hemionus Pallas, 1775, with the following distribution: 'Pleistocene, North America, and living, Asia.' Pleistocene deposits show specimens ranging from Texas to Alaska, and Kansas to Arizona. Specimens referred to as Equus (Asinus) cumminsii Cope were found in fossil remains are rarely identified to the species level. However there were ass, horse and zebra types present in Pleistocene North America, and the skeletal morphologies of the fossil and the reintroduced equids are anatomically indistinguishable (Cole and others 1979). **[National Academy of Sciences Committee on Wild Free-Roaming Horses and Burros - December 1980]**

25-2 April 9, 1495 in a letter to Juan de Fonseca from Ferdinand II of Spain (Isabella's husband). "Conveying the order that one Diego Carillo was to take some livestock to Columbus, who was then on his second voyage to the New World. " The shipment included four jacks and two jennies. **[Frank Brookshier "The Burro"]**

April, 1598, Spanish colonizer Juan de Onate and his band of settlers reached El Paso. Comprehensive recorded inventories showed livestock numerous and to include burros. One inventory showed 40 dozen pairs of shoes for burros. **[Frank Brookshier "The Burro"]**

Page 2 - second paragraph : Page 60 paragraph 1 emendation (clarify what impacts in 1936)

"Burros in two locations (Granite Wash and Temple Bay) in LMNRA apparently did not cause major impacts on vegetation (O'Farrell 1978)". "Although it is widely alleged that horses and burros have severe grazing impacts on western rangelands, there are few published studies about the nature and
25-3 extent of these impacts. Most of the existing studies are on grazing effects of burros." "A study in the Lake Mead National Recreation Area, however, revealed no major impacts." **[Effects of Equids on other Ecosystem Components - National Academy of Sciences Committee on Wild Free-Roaming Horses and Burros - December 1980]**

48

Page 4 - second paragraph (burros classified as exotics, alien, non-native, introduced)

"Thus although feral horses and burros are considered alien or 'exotic' today, they represent lineages that have a long paleohistory in North America. This is particularly important to the interpretation of their role in modern ecosystems. The concern on the part of some people that feral horses and asses are detrimental to their habitat is partially based on the assumption that since they are exotic they are particularly disruptive to vegetational communities with which they have not coevolved. However, modern-day equids in North America are not typical exotics. A long period of coevolution between their evolutionary predecessors and the vegetation was broken for 11,000 years, which is
25-4 a brief interval in geologic time."

"Whether or not the vegetation today retains the same antiherbivore adaptations it had developed by the time equids became extinct at the end of the Pleistocene is a moot question. Paleobotanical evidence show distributional changes in the vegetational zones, which were depressed from 600 to 1,000 m (Martin and Mehringer 1965, an Devender and Spaulding 1979). But to our knowledge, no one has produced any evidence that native plant species have lost adaptations to grazing and/or browsing pressures (e.g., oily foliage, spiny or thorny branches, siliceous stems, or toxic alkaloids)

RESPONSES

25-3 This information was clarified. See corrections page 2 and 60.

25-4 See ISPMB response 1.

COMMENTS

that are the result of selective pressure exerted during millions of years of coevolution with equids." [NAS 1980]

"Of course, there is no way to determine differences and/or similarities in behavioral ecology between the equids present in North America 11,000 years ago and the recently introduced species. However, it is an oversimplification simply to dismiss feral asses and horses as 'exotics.' The possibility of their filling an "open niche" remains".Martin 1970) [NAS 1980]

25-4

Martin, from the studies of fossil pollen, concludes (1970a) that "1.) the plant environments occupied by the late Pleistocene animals of North America were directly comparable to those known at present, 2) no unique biotic change, nothing serious enough to exterminate the plants, or marine organism, was underway when mastodons and the other extinct large animals disappeared." [**Patricia Moehlman 1974**]

Page 4 - paragraph three, five, six. (management of exotics)

Cultural Zones - In addition, nonnative species that are a desirable part of the historic scene being represented in a cultural zone may be introduced, but only if they are controlled by such means as cultivating for plants or tethering, herding, or pasturing for animals. In such cases the exotics used must be those which are known either to have existed in the park during its period of historical significance or to have been commonly used in the local area at that time, except in cases where agricultural permits allow other crops. [**Management Policies US DOI NPS**]

49

Historical significance:

"The Grand Canyon has known burros since the days of the conquistadors." [**Frank Brookshier - The Burro**]

25-5

"In the Southwest the burro is more closely associated with the prospectors and the miners." [**Frank Brookshier - The Burro**

"That Congress finds and declares that wild free-roaming horses and burros are living symbols of the historic and pioneer spirit of the West. [**PL 92-195 Wild Horse and Burro Act of 1971**] Passed without one dissenting vote.

"From wild asses, people developed donkeys, which serve as beasts of burden all over the world, and have done since the Mesopotamian civilization, 2,500 B.C." "Their importance, cultural as well as military, in the history of the peoples of central Asia, Europe and North America has been capital." [**Zebras, Asses and Horses - An Action Plan for the Conservation of Wild Equids - IUCN/SSC**]

America's wild burros are descendants of the African Ass (africanus and somaliensis) both of which are nearing extinction. Maintaining populations of feral wild burros and exploring genetic testing would be both a historical and scientific advantage. Although, burros are not now covered under the Endangered Species Act, certainly the future could provide for such changes to protect these animals.

RESPONSES

25-5 As stated in the document, under the NPS *Natural Resource Management Guidelines*, burros cannot be managed as a historical resource at Lake Mead NRA because burros were not introduced to the area by indigenous people prior to European settlement; burros impact native species; and burros are disruptive to native ecosystems. As detailed in NPS *Management Policies*, the reference made under the introduction of new exotic species is irrevalent to this document because burros are already present within the recreation area, therefore it would not be an introduction of "new" exotic species.

COMMENTS

Page 22 - Monitoring burro trailing last paragraph

25-6 Although burro trailing is well noted in the Gold Butte area, several of the trails used in Lake Mead actually have been inpacted by four wheeling and motorcycles. We would like to have this document show areas where joint use is happening.

Alternatives A and C

25-7 We disagree with the consequences of these alternatives because actual numbers of burros have decreased in the past four years and with these decreases, impacts will decrease.

Page 62 - paragraph one

25-8 We question the number 1600 for current burro census on the Park. Is this number including lands managed by the BLM. If so, we would appreciate clarification of such. We would like to know if this population number was estimated based on projected fertility rates.

Page 62 - paragraph five. Palo Verde

25-9 What percentage of Palo Verde trees are damaged? Are the impacted trees located only in the washes where burros trail to water? If the majority of trees outside this area are not damaged, then we contend that the Palo Verde stands are not threatened by burros.

Page 62 - paragraph six. Distribution and water use during summer months.

50

"During the hot summer months asses tend to drink once every 24 hours and water is a critical factor in their distribution. In most study areas, asses were concentrated within 3 km of water sources. during the summer months" [NAS 1980]

25-10 "Only a few researchers have studied water economy in asses. Schmidt-Nielson (1964) compared the water economy of the donkey with that of a camel in the Sahara Desert. The donkey would be able to survive twelve days without water and the camel thirty days without water." "The burro looks upon water as a necessity for life --- drinking only. A burro will never over-indulge no matter how thirsty he is (Brookshier 1974). Schmidt-Nielson (1964) states that donkeys always seem to drink an amount closely equal to the amount lost in dehydration, and can recoup losses as great as 20% of body weight in less than 2 minutes. If more water is available the donkey will be completely disinterested in drinking any more than it needs, even several hours later". [**Status of Present Knowledge of Wild, Free-Roaming Burros U.S. Dept of Int, BLM and U.S. D. A. and USFS**]

We would like to see distribution data and utilization records to ascertain the burros impact on riparian areas in the summer months. Since burros are native to desert ecosystems, they would have less impacts over all if populations are kept under control.

RESPONSES

25-6 Illegal off highway vehicle (OHV) use does take place in portions of the recreation area. This illegal use is concentrated in the Northshore area (Lake Mead NRA), where no burros are present. However, occasional use does occur in other parts of the recreation area. Any overlap of burro and OHV use is minor and is not considered a significant issue in the document.

25-7 Although in the past three years burro numbers have been reduced in certain portions of the recreation area, numbers in other areas, including the Muddy Mountains, Eldorado Mountains, and Gold Butte have increased. Existing management has not been able to remove enough burros from within the recreation area to meet NPS preservation goals. Also, past management impediments have restricted BLM management of burros within the recreation area, allowing burro populations to increase and move into previously uninhabited areas. This could occur in the future if the management of burros within Lake Mead NRA occurs solely under BLM policies.

25-8 The burro population is based on several helicopter-based inventories between 1980 and 1994. See clarification on page 62 and Appendix E for most recent census results.

25-9 Any loss of palo verde trees is unacceptable to the NPS preservation goals for unique resources.

25-10 This issue has been clarified; see corrections page 62.

COMMENTS

We encourage LMNRA to manage for burros in a natural ecological balance. Burros serve as a draw for recreational visitors to the Lake.

Populations of wild burros have actually been declining since 1971 when the Wild Free-Roaming Wild Horse and Burro Act was passed. The Act specifically states " and that these horses and burros are fast disappearing from the American scene." It is interesting to note that while wild horse populations have increased since 1971, burro populations have decreased over 40% on public lands alone.

We encourage the Park Service to manage on an ecosystem basis in continued cooperation with federal agencies whose lands are contiguous to the Park and that special consideration be given to the wild burro which evolved on this continent for **millions** of years.

For ISPMB

Karen A. Sussman

Karen A. Sussman
President

51

RESPONSES

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
NEVADA STATE OFFICE

In Reply Refer To
4700T (NPO-960)

Memorandum

To: Superintendent, Lake Mead National Recreation Area

From: Chief, Wild Horse and Burro National Program Office

Subject: Comments on Draft Burro Management Environmental Impact Statement

The attached comments are provided for your use in formulation of the Final Environmental Impact Statement (EIS) for Burro Management on the Lake Mead National Recreation Area (NRA). This document reflects a great deal of work by your staff. The Bureau of Land Management's (BLM) Wild Horse and Burro National Program Office (NPO) appreciates the opportunity to provide comments on the draft EIS.

The draft EIS has been reviewed by a number of BLM resource specialists and the staff from the NPO. Comments by my staff are attached which relate to the general structure or content of the EIS. Additional comments expressing concerns of individual BLM field offices are also attached. We hope the comments will aid your staff in completing the final EIS.

We feel the proposed action, if selected, will largely resolve the wild burro related resource issues in and around the Lake Mead NRA. The proposed action reflects the benefit of close coordination and cooperation in management of the wild burros found in the Lake Mead NRA and the surrounding public lands.

Questions or comments concerning this memorandum, should be directed to Vern Schulze, (702) 785-6583.

Acting

4 - Attachments
1. NPO Comments (7pp)
2. Phoenix District Comments (2pp)
3. Arizona Strip District Comments (6pp)
4. Las Vegas District Comments (3pp)

COMMENTS

Burro Management Environmental Impact Statement
Lake Mead National Recreation Area

A. General Comments and Organization

1. While there is much good data presented in the Draft EIS relating to impacts of the various alternatives presented, the document would be aided greatly by quantification of the actions inherent in each alternative. For example, it would aid the reader if the number of wild burros to be maintained and removed were specified for each alternative, the number of miles of fencing to be constructed, the degree of vegetation utilization that would be allowed by species and use area under each alternative were displayed. Without this data, neither the author nor the reader is able to make a quantitative assessment of the impacts of each alternative or a useful comparison of the alternatives.

2. We believe a comparison of each alternative would be easier if each was described in the same level of detail as the Proposed Action alternative.

26-1

3. Some of the information shown on Page 20, Proposed Alternative, is also common to the other alternatives. It may reduce redundancy and improve clarity to incorporate this information into a new section where all actions common to alternatives were described.

53

4. Some of the data shown on page 15, describing environmental impacts, may be more appropriate in the Chapter outlining Environmental Consequences.

5. Figures 5 and 6 which display existing conditions, now in the Chapter describing the alternatives, would be more appropriate in the Chapter describing the Affected Environment.

26-2

6. The reference to Figure 4 on page 16 appears to mislabeled and probably should have been Figure 7.

7. The statement in paragraph 6, Page 8, is subject to question. This paragraph concludes that a niche shift had occurred and demonstrates that there was a interspecific competition between burros and bighorns for spring use. While a niche shift may have occurred it does not necessarily demonstrate competition between burros and Desert Bighorn sheep since these changes may have occurred coincidentally and be related to other causes.

26-3

RESPONSES

26-1 This document has been reviewed and accepted under the compliance guidelines established by the National Environmental Policy Act (P.L. 91-190 as amended) (NEPA); Council on Environmental Quality Regulations (40 CFR 1500-1508); Department of Interior Manual, Part 516; and NPS NEPA Compliance Guideline (NPS-12).

26-2 The reference to Figure 4 has been revised accordingly; see corrections page 16.

26-3 The statement has been revised accordingly; see corrections page 8.

COMMENTS

B. Description of the Alternatives

26-4 1. The underlining assumptions concerning the BLM's existing management as described in Alternatives A and C needs to be corrected. Under present management burros populations have decreased and burros would not continue to expand their range. As presently constructed, this statement describes impacts in the Environmental Consequences chapter that are not likely to occur under the existing management practices.

26-5 2. We believe that both Alternatives A and B are "resource based" although the goals and management constraints placed on wild burros by the two alternatives are different.

26-6 3. We suggest a revision of the BLM's role in burro management in Alternative A, No Action, from "The BLM would continue to arrange captures on NPS lands based on BLM prescriptions and would be the lead agency in capture operations." This statement is not entirely true as written. It should read "The BLM would continue to remove excess wild burros through a cooperative agreement with NPS based on Herd Management Area Plan prescriptions. For those wild burros that utilize lands administered by both agencies, BLM would continue to be the lead agency in capture operations."

26-7 4. The discussion in the 1st paragraph, page 15, and the 4th paragraph, page 34, may a good place to introduce the concept of ecosystem management and could state "Cooperating as partners, the NPS and the BLM would work together on determining wild burro populations and ecosystem goals including where wild burros would be allowed to continue to exist within the ecosystem including those areas in the LMNRA."

26-8 5. It appears the management strategy listed in the last full paragraph on page 15, section a) should also apply to alternative A, D, and E.

26-9 6. It appears that the on-going research and monitoring is strictly related to the Proposed Action. It may be more appropriate to indicate that both of these activities would also continue under Alternatives A and D.

RESPONSES

26-4 Although in the past three years burro numbers have been reduced in certain portions of the recreation area, numbers in other areas, including the Muddy Mountains, Eldorado Mountains, and Gold Butte have increased. Existing management has not been able to remove enough burros from within the recreation area to meet NPS preservation goals. Also, past management impediments have restricted BLM management of burros within the recreation area, allowing burro populations to increase and move into previously uninhabited areas.

26-5 The goal of alternative B is the cessation of environmental change caused by burros and the protection of natural, cultural, and recreational resources. NPS prescriptions would be implemented in order to stop or minimize impacts. The resources, such as soils, vegetation, and riparian areas, would be used as a base to determine impacts. Under alternative A, the BLM would continue to manage burros on Lake Mead NRA lands adjacent to BLM administered lands through a cooperative agreement. Although the BLM removes burros based on vegetation utilization levels, the goal of this alternative is to maintain a thriving ecological balance and a viable population of burros.

26-6 This statement has been revised accordingly; see corrections page 13.

26-7 The discussion of coordination with the BLM is adequately addressed in the document under "Bureau of Land Management Coordination", pages 20 to 21.

26-8 These management strategies apply to the proposed action.

26-9 Current research includes burro censusing and vegetation monitoring. As detailed in the document, under the proposed action, the BLM and NPS would pursue additional research relating to burro movement patterns and use areas, sterilization and birth control techniques, efficient and humane trapping techniques, diet studies, burro/wildlife interactive studies, vegetation monitoring techniques, and aerial census techniques.

COMMENTS

26-10 The results of the Univ. of Arizona density plots and trailing data would be useful to the reader and could be displayed in the Affected Environment chapter. However, more specific information is needed to show its relevance. For example, neither the text nor the map defines the levels of trailing (no trailing, light trailing, moderate trailing and heavy trailing). On the map (Figure 6), light trailing is identified in areas such as Temple Bar which the burro distribution map (Figure 9) show as having no burros. Distinctions should be made between livestock, wildlife, and wild burro trails. The methodology is not well defined and may lead the reader to believe that all trailing is caused by burros.

26-11 8. The BLM is committed by statute, policy, and interagency agreement to aiding the NPS in removal of burros where the animals are known to cross from BLM administered lands on to Lake Mead NRA. Therefore, the phrase "if possible" could be removed from the 7th paragraph on page 25. Also, consider changing the term "processing" to "preparing" in the 2nd paragraph on page 26.

26-12 9. We suggest a full ecosystem based alternative be added to the list of alternatives or substituted for one of the existing alternatives. Under this alternative the BLM and NPS would jointly determine in which areas burros would be allowed. This alternative would be in support of the Secretary of Interior's ecosystem management initiative.

26-13 10. The description of alternatives A, C, D, and E should be expanded to included all of the actions needed to implement the alternative. Also references to impacts such as "Impacts to park resources would increase" on page 34, should be moved to the Environmental Consequences chapter.

26-14 11. The description of BLM's role in management of burros on LMNRA as outlined in Table 1 on page 37, appears to be overly broad and not consistent with the terms of the existing interagency agreement. It probably would be more accurate to state: "The BLM, through an interagency agreement with the NPS, would continue to cooperatively control wild burros within the LMNRA."

26-15 12. Table 2, Summary of Impacts, will require some revision to be consistent with the BLM's management as mentioned in our earlier comments about Alternative A. For example, the statement about changes in soil conditions: "Current levels of burro management would result in enlargement of existing trails, extension of trail systems, soil compaction, soil loss, and erosion." Under current management, the wild burro population within the park have decreased by about 40% during the past 3 years. As burro populations decrease, we would expect that negative impacts to soils from burros would decrease from the present situation. The negative impacts to vegetation and livestock grazing (forage) occurring under Alternative A, B, and C will also need revision to be consistent with existing BLM management policies and actions during the past 3 years.

RESPONSES

26-10 The primary purpose of the trailing study would be to determine the establishment and recovery rate of trails within Lake Mead NRA. The trailing map was developed through the use of low-level aerial surveys and photographic points to show relative trailing impacts. The map shows historic trails, wildlife trails, and cattle trails, in addition to burro trails. The trailing map in addition to the burro distribution map (Figure 9) help determine where burros are creating the majority of trailing impacts. Under the proposed action, several small exclosures would be constructed to provide complete removal of additional trailing impacts and to provide photographic points of trail recovery over time.

26-11 We understand that the BLM is committed to aiding the NPS is the removal of burros, however, in the past, the BLM has been delayed or hampered in removing burros from the recreation area due to management impediments such as scheduling difficulties, budgetary restraints, and administrative reviews. Therefore, the document states that we will use BLM capture crews, if possible, in portions of the park where burros are known to cross from BLM lands onto NPS lands. Other options would be available if BLM crews are not obtainable.

26-12 Ecosystem management is a component of the proposed action.

26-13 See BLM response 1.

26-14 The document has been modified accordingly; see corrections page 37.

26-15 See BLM responses 4 and 11.

COMMENTS

C. The Affected Environment

26-16 1. It would be useful to have a map depicting vegetative communities and burro use areas, with emphasis on those communities most sensitive to burro impacts.

26-17 2. The statement in the 2nd paragraph, page 50 may mislead the reader into concluding that over half of the springs in the NRA are negatively impacted by burro use. It appears that less than 1/3 of the springs are found in areas where burros graze. It is possible that much of negative impact to vegetation around springs results from livestock grazing since it seems to occur on a much larger portion of the NRA. In all discussions about the impacts of burros it is important to distinguish the impacts of burros from the effects of livestock, humans, and other inhabitants of the NRA.

26-18 3. A map/table showing critical desert tortoise habitat would be helpful to the reader in assessing the extent of the potential interactions between wild burros and the desert tortoise. Also it might be useful to indicate that much of the impetus for listing of the desert tortoise was due to the viral infection which severely reduced the population rather than any recent loss or change in its habitat.

57

26-19 4. The discussion of burros on page 59 implies the protection provided by the Wild Free-Roaming Horse and Burro Act of 1971 and a high rate of reproduction assures the continued existence of burros. While we agree that burros are not in danger of extinction, burros have had a significant loss of habitat in the past 20 years and their numbers on public lands have been reduced by over 50 percent during this time. This trend appears to be continuing and as the agency responsible for the largest number of free-roaming burros, we are concerned about any further loss of the available habitat.

26-20 5. At the end of FY 1993 there were 7,500 wild burros on the public lands. Because of the uncertainty of the number of burros on other agency lands, we recommend that no figure be included in the text on page 59.

26-21 6. To emphasize the importance of human control of burro populations, we recommend that the phrase "becoming stable" be changed to "stabilizing without human intervention" in the 4th paragraph on page 60.

26-22 7. To maintain consistency with the text on page 59, the caption for Photo 4 should be changed to "There are approximately 7,500 wild burros on public lands administered by the BLM and Forest Service."

RESPONSES

26-16 Burro use is almost always found in the creosote-white bursage plant community. As stated in the document, gypsum soils, springs, and the palo verde forest area are particularly sensitive to burro use. Each of these communities is sensitive if over-grazed by burros.

26-17 The statement contained in the "Affected Environment" section of the document refers to the general condition of springs within Lake Mead NRA. There is no mention of burro impacts to springs in this section of the document.

26-18 A map showing critical habitat for desert tortoises is added to the document (see Appendix B).

26-19 We understand your concern about free-roaming burros. Our long-standing cooperation for burro management recognizes the condition on adjacent public lands.

26-20 The document has been modified accordingly; see corrections page 59.

26-21 The document has been modified accordingly; see corrections page 60.

26-22 The document has been modified accordingly; see corrections page 61.

COMMENTS

26-23 On page 62, the text states there are approximately 1,600 burros on the NRA. We believe this is considerably above the current population since many of the animals are found on the adjacent public lands. In addition, the Final EIS should reflect the population after the removals planned in FY 94.

26-24 The 3rd paragraph on page 63 states: "The BLM (1981) has found that excessive trailing occurs in burro use areas." The reference used for this quotation was the Black Mountain Herd Management Plan and was written as the initial document for burro management in the Black Mountains. In 1981, there was an estimated 2,000 wild burros inhabiting this area. Since 1981, the Bureau has been actively managing wild burros in the Black Mountains and has reduced the population by nearly 50%. The statement, as written, no longer indicates current conditions in the Black Mountains. Impacts of trailing and the visible trails have decreased. Old trails have healed considerably as populations in specific areas have been reduced. The sentence would be more accurate if it read "The BLM has found that excessive trailing occurs in burro use areas where burro populations are not managed."

26-25 10. The Ruffner et. al. 1978 study was completed in the Grand Canyon National Park. It would help the reader to understand the impact of the burros if this study could be related to the existing soil and burro conditions in the NRA.

26-26 11. In the 4th paragraph, page 62, it is stated that "Since 1982, the BLM has reported". Unfortunately, this sentence may lead the reader to conclude only burros are involved in the impacts described. In this situation, livestock grazing is also a major factor. We strongly recommend the document clearly state this fact whenever more than one species has influenced the existing resource conditions.

26-27 12. The 3rd paragraph on page 65 states that "These studies can be directly correlated . ." While we recognize some similarities in environmental conditions, significant differences in terrain, availability of water, and population control techniques probably make such an all-encompassing statement of questionable accuracy.

26-28 13. Our analysis of weather records indicate the O'Farrell, 1978 study cited on page 72 may not be accurate. The sentence "At the time of the study, burros were not having a significant impact on Lake Mead NRA due to above-average precipitation and greater-than-average plant production." is not correct. At the time of O'Farrell's study, the area was coming out of a prolonged drought. In the period from 1968 through 1977, eight years were below average precipitation (1968, 1969, 1970 1971,1972, 1973, 1975, and 1977), one year was average (1974), and one year (1976) was above average (data recorded at Searchlight, Nevada). In 1976, most of the rain occurred in one event which led to severe flooding, with the remainder of the year being below average. In 1978 above average precipitation was received and was the beginning of a wet cycle. If examined further, the weather records show that in 1977-1978 the area was just coming out of a severe drought with low plant production and maximum burro numbers. The document would be more accurate if this sentence was left out or reworded to reflect these conditions.

RESPONSES

26-23 The population estimate in the document takes into account the probability that burros on adjacent BLM administered lands range across onto NPS administered lands. The document does not take into account removal operations that have not yet occurred.

26-24 The document has been modified accordingly; see corrections page 62.

26-25 The Ruffner et.al. 1978 is part of the baseline data that can be used to show general burro impacts. It can also be related to desert pavement, microfloral crusts, gypsum soils, and steeper sloped areas of Lake Mead NRA.

26-26 The document has been modified accordingly; see corrections page 62.

26-27 The studies and their relationships to Lake Mead NRA are further explained in subsequent sections of the document.

26-28 According to the weather records provided by O'Farrell in his 1978 study, the annual precipitation for Katherine Landing from 1974 through 1978 was, in inches, 5.15, 2.85, 5.83, 4.93, and 8.85 respectively. Precipitation for all the years except one was above the mean annual precipitation at Katherine Landing of 4.4 inches. Weather records from Katherine Landing indicate that primary productivity may have greater than normal for at least six years prior to the study (O'Farrell).

COMMENTS

14. The statement on page 74, 6th paragraph, "Burros spend the majority of the summer within or near riparian areas..." is not accurate. Years of BLM observation indicate that burros, unlike domestic cattle, do not spend the majority of their time within or near riparian areas. Typically, burros come to water sources to drink and when finished then move away again. 26-29

15. The general statement in the 2nd paragraph on page 75 about burro use of palo verde trees is not complete without some discussion about the number of burros relative to the number of palo verde trees. At low burro population densities, this statement would not be accurate. To analyze the impacts on burro grazing on palo verde trees, the analysis must discuss the population level of burros or density of the animals as it relates to utilization of the trees. 26-30

16. The discussion of desert tortoises fails to distinguish between the Sonoran and Mojave populations which are not equally threatened. In addition, a map show the populations and Desert Wildlife Management Areas should be included in place or in addition to Figure 12. 26-31

17. We believe the statement "...the elimination of native perennial grasses and the establishment of non-native annual weeds, which can be attributed to burros in areas they utilize." on page 75, 3rd paragraph is incomplete. There are several additional causes such as fire, livestock grazing, etc. for the introduction and spread of non-native annual plants. 26-32

59

D. **Environmental Consequences**

1. The assessment of the environmental consequences of Alternative A, No Action/Maintain the Status Quo, assumes that burros would continue to expand their range and burro populations would continue to increase. This assumption is not consistent with present conditions and management actions. In the past several years, burro populations have decreased within the NRA as well as on adjacent BLM lands. Under current management practices, burro populations are expected to continue to decrease until an acceptable ecological balance is achieved. Under current management, the BLM through a cooperative agreement, is assisting the NRA to reduce burro numbers within the NRA as well. To the extent that the Environmental Consequences are based on the assumption that burro populations will increase, the impacts discussed are incorrect. 26-33 26-34

2. It appears the discussion of impacts under Alternative C is also based upon an incorrect assumption. This alternative is built on the premise that the NPS will do nothing to manage burros. It also implies that BLM will also do nothing and will let burro populations go unchecked. BLM is mandated to manage burros on the herd areas adjacent to the NRA. Large portions of the wild burro herds will continue to be subject to management including the removal of excess animals. These management actions will effect the burro populations within the park boundaries. Thus, the assumption that burro populations will continue to increase unchecked is inaccurate and the assessment of impacts based upon this assumption is inaccurate. 26-35

RESPONSES

26-29 This statement was clarified; see corrections page 74.

26-30 As stated in the document, Lake Mead NRA protects the northern most stand of palo verde trees in the United States. Any impact or damage to these trees is unacceptable.

26-31 A map showing critical habitat for desert tortoises is added to the document (see Appendix B). Desert tortoises remain a candidate species for listing in the Sonoran populations. NPS policies require that management of candidate species be as preservation oriented as those for listed species.

26-32 This statement was clarified; see corrections page 75.

26-33 See BLM response 1.

26-34 The current interagency agreement was developed upon the initiation of the draft Burro Management Environmental Impact Statement (DEIS) and the designation of the BLM as a cooperating agency in the development of the DEIS.

26-35 Alternative C was ruled out after further review of the DEIS as it would not be permitted under NPS policy, nor likely under BLM policy.

COMMENTS

26-36 | 8. Much of the impact assessment is hampered by the lack of quantification in the descriptions of the various alternatives. As a result, it is difficult to determine the magnitude of the impacts and to make a comparison of impacts among the alternatives. The document does not always recognize that the extent of impact is dependant upon the number of animals involved and the quantity of the resources available to the animals.

RESPONSES

26-36 See BLM response 1.

COMMENTS

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
PHOENIX DISTRICT OFFICE

4700(020)

September 1, 1994

Memorandum

To: State Director, Nevada (NV-960)

From: District Manager, Phoenix (020)

Subject: Lake Mead National Recreation Area Draft EIS on Burro Management

The Phoenix District has had an opportunity to review the subject Draft EIS and have the following comments specific to the District:

27-1 Page 16, Item Number 6: This item should be eliminated from the list based on the Black Mountain Ecosystem Team's established goals and objectives for continuation of management of burros, which includes the area of "Black Mountains, Arizona, from Willow Beach south to Cottonwood East".

27-2 Page 19, last paragraph: No credible population modeling has been done for burros, therefore, the possible population effects of immuno-contraception efforts are, for the time being, speculative. The "average life span of a burro in the wild" is nowhere near 15-20 years. In the Kingman Resource Area, less than 10% of burros captured are older than 6 years. This shorter longevity (higher mortality) could make immuno-contraception more effective with burros than with horses (personal communication with Steven Jenkins, University of Nevada, Reno).

27-3 Page 22, first paragraph: "The park has a long history of cooperative management operations with the Las Vegas District BLM and the Arizona Strip BLM." You need to include Phoenix District BLM.

27-4 Page 72, fourth paragraph: The statement "...BLM transect from 1990 through 1992 showed an average of 46% to 79% utilization..." is true, but misleading. If the data from those same transect was examined for 1993, it would be shown that the utilization levels had been reduced considerably and the data from 1994 shows that utilization limits are within the prescription limits identified in this plan.

General and overall comments have been developed jointly with the National Program Office for the Wild Horse and Burro Program, and with the Phoenix, Las Vegas and Arizona Strip Districts, with the understanding that they will be sent by your office.

RESPONSES

27-1 The document has been modified accordingly; see corrections page 16, 17, and 31.

27-2 The document has been modified accordingly; see corrections page 19.

27-3 The document has been modified accordingly; see corrections page 22.

27-4 Utilization data from 1994 has been added (see Appendix F).

COMMENTS

We appreciate the efforts by the National Program Office. If you have any questions regarding our specific comments please contact Bill Childress at 602-780-8090.

/s/ David J. Miller
for G. L. Chemae

CC: AZ-931
KRA

RESPONSES

COMMENTS

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
LAS VEGAS DISTRICT OFFICE

TAKE PRIDE IN AMERICA

(4700)
NV-053

Superintendent, Lake Mead Recreation Area
601 Nevada Highway
Boulder City, NV.89005

Dear Alan,

The following comments are provided by the Las Vegas District for your use in formulation of the Final Environmental Impact Statement for Burro Management on the Lake Mead National Recreation Area (LMNRA). We appreciate the opportunity to provide comments on the Draft Environmental Impact Statement.

63

28-1 The EIS's proposed action will eliminate wild burro populations on adjacent public lands. It will do this by significantly reducing burro habitat and the historical seasonal dependence on the lake for water. The original HMA boundaries were developed in 1979 with LMNRA concurrence and included wild burro access to the lake. The EIS does not analyze the impacts of any of the alternatives to the wild burro herds on adjacent public lands managed by the BLM or to the responsibilities of a sister agency. Mitigation of these actions is needed for each alternative.

28-2 Your references to the Desert Wildlife Management Areas are not consistent with the Desert Tortoise Recovery Plan dated June 1994. You may want to refer to this document and reconsider your analysis.

28-3 The trailing data portrayal and narrative conclusions in Figure 6 and photo 11 cannot be supported by the BLM. The data as published in the EIS is not consistent with BLM data collected in 1990 and 1992. We shared this data with your agency. Also, the trailing concentration areas portrayed do not distinguish between burro and domestic livestock use. This may lead to misinterpretation of the data.

RESPONSES

28-1 As discussed during a burro coordination meeting with your agency on August 10, 1994, the only Herd Management Area (HMA) that may be negatively impacted by the proposed action is the Eldorado HMA. It appears that criteria for burro use within this critical habitat as stipulated by the *Desert Tortoise Recovery Plan* may make our management compatible within this HMA. The 1994 census of this HMA and adjacent NPS lands in the Eldorado Mountains area showed that 100 percent of the burros were utilizing NPS lands at that time. Additionally, past field surveys by NPS staff showed that there was little to no burro use on the BLM administered HMA. The BLM initially designated more than 80 percent of the HMA on NPS lands. In recent years, the NPS has requested that all herd management area designations be removed from NPS land, since the BLM had no authority for this designation.

28-2 At the time of the draft EIS, the final *Desert Tortoise Recovery Plan* was not available. This plan has been reviewed since that time and found to be consistent with *Desert Tortoise Recovery Plan* recommendations.

28-3 The primary purpose of the trailing study would be to determine the establishment and recovery rate of trails within Lake Mead NRA. The trailing map was developed through the use of low-level aerial surveys and photographic points to show relative trailing impacts. The map shows historic trails, wildlife trails, and cattle trails, in addition to burro trails.

The trailing map along with the burro distribution map (Figure 9) help determine where burros are creating the majority of trailing impacts. Under the proposed action, several small exclosures would be constructed to provide complete removal of additional trailing impacts and to provide photographic points of trail recovery over time.

COMMENTS

28-4 Alternative C does not acknowledge the current level of burro management by the BLM. The" No Management " alternative only effects the LMNRA actions. The BLM will continue to set AML's, implement the management actions developed during that process, and manage for sound resource objectives in HMA's on Public Lands that would effect the LMNRA. The assumption that the habitat will deteriorate under this alternative is inconsistent with the facts and assumes incorrectly that the wild burros will not be managed by BLM. This alternative analysis and conclusions need to be reconsidered with this in mind.

28-5 The discussion in Alternative B on page 38 titled " Relationship to Policies and Guidelines " wild burros are identified as an exotic species. Considering the National Historical perspective, wild burros have actually been "indigenous" since the Spanish Trail was established and were essential to our countries western expansion. By labeling them as exotic and using this to justify total removal of wild burros from the LMNRA, you appear to be inconsistent with your current policy of stocking exotic fish in Lake Mead for sport fishing. This is an inconsistent adverse action on the burros which needs to be addressed and resolved.

In the discussion on page 44 under "Livestock Grazing" your portrayal of this alternative as being a benefit to grazing permittee's is incorrect. By letter dated July 18, 1994 LMNRA gave The Nature Conservancy (TNC) two years notice that grazing, of LMNRA lands will be cancelled, on the Gold Butte, Ireteba Peaks and Christmas Tree Pass allotments. In July of 1996, grazing will be officially cancelled on LMNRA lands on those allotments noted above. Also, TNC will and is applying for non-use on each of the noted allotments. This clearly eliminates any competition for forage between livestock and wild burros.

28-6 In addition, the Muddy Mountain allotment has not been grazed for 15+ years.

Finally, grazing on the White Basin allotment has been very limited over the past 5 years. A maximum of 15 cows grazed the allotment during 1989, with 7 hd. or less being present since that time.

Based on BLM and LMNRA actions, the Gold Butte and Eldorado HMA's do not have any conflicts with livestock. The Muddy Mountains allotment does not currently have any conflicts with livestock and burro use because no livestock grazing has occurred for more than 15 years. As for the White Basin allotment, minimal cow use has been documented in this area, no conflicts exist between livestock and burros.

RESPONSES

28-4 Alternative C was ruled out after further review of the DEIS as it would not be permitted under NPS policy.

28-5 As discussed in the document, according to NPS policies, burros are considered an exotic species. The stocking of exotic fish species is stipulated in NPS *Management Policies*, 1988, "In national recreation areas and preserves where the enhancement of fish and game species for hunting and fishing is authorized, preference will be given to native species. However, where stocking of exotic fish and game species has historically occurred, stocking for the same species may be continued unless it is known to be damaging native resources."

28-6 This statement is a general overview of impacts. Impacts to grazing and the relationship between grazing and burro impacts are explained in further detail under the "Environmental Consequences" section of the DEIS. Most areas where burro populations exist are not active allotments or open to cattle grazing. The Tassi Grazing Allotment is the only area where burro and cattle use currently overlap. As discussed in the document, much of this area was recently designated as critical habitat for the desert tortoise. No burro use will take place in designated critical habitat. The NPS is working with the BLM and USFWS to resolve the issues in this allotment. There are potential ephemeral allotments in the Black Mountains, Arizona. These allotments have not been active for more than 10 years. The NPS is working with the Black Mountain Ecosystem Management Team to set burro and cattle numbers and develop a monitoring plan for potential use in this area.

COMMENTS

It is clear the statement in Alternative B about removing burros to benefit grazing permittees is incorrect. In fact there is no issue here because, livestock have either been removed, minimal
28-6 cattle use occurs within the other HMA's, and the BLM is actively managing the burro herds throughout the district. Removing burro's will not benefit the grazing industry because they will not be allowed to occupy the burro's habitat.

The discussion on page 72 in the first paragraph is an inconsistent portrayal of the O'Farrell data, and is even
28-7 inconsistent as stated in the paragraph. The O'Farrell study did not find any problems associated with the burro use, and when AML is achieved in the winter of 1995 no adverse impacts from burro grazing are anticipated.

Data from BLM lands will be analyzed for establishment of AML in HMA'S on Public Lands. Burro populations will be adjusted to that level and will be maintained as a Federally protected species for the American people as mandated by law.

We recommend that a Regional Ecosystem Management Team be organized. The purpose of this team would be to develop and implement all management actions concerning wild burro management. This will ensure proper management for the nations entire burro population as mandated by law.

Thank you for the opportunity to comment on your planning effort. If you have any questions , please contact Gary Mc Fadden of my staff (702)647-5000.

Sincerely;

Gary Ryan
District Manager

NV053-GMC
cc;Tom Pogacnik
Donn Siebert

TOTAL P.04

99

RESPONSES

28-7 As stated in the document, O'Farrell found that burros were not having a significant impact on Lake Mead NRA due to the above-average precipitation and greater-than-average plant production. O'Farrell found that within ¼-mile of a spring within the study area, 20 percent of the vegetation showed severe browse impacts, and burro trails were leading to compaction and baring of the soil within that area. Additionally, the O'Farrell study took place when high concentrations of burros were known only at two locations, Granite Wash and Temple Bay. Also, the study took place on NPS administered lands in the Arizona portion of the park. It did not assess impacts on any lands within the Nevada portion of the park nor on adjacent BLM administered lands. To employ the results of the O'Farrell study to determine that no adverse impacts would occur when AML [Appropriate Management Level] is reached on BLM lands in Nevada is beyond the scope of the study.

COMMENTS

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ARIZONA STRIP DISTRICT OFFICE

IN REPLY REFER TO:
1792 (010)

SEP - 9 1994

Memorandum

To: Wild Horse & Burro National Program Office

Form: District Manager, Arizona Strip District

Subject: Comments on the Draft Environmental Impact Statement for Burro Management on Lake Mead National Recreation Area

Attached are our comments on the draft Environmental Impact Statement (EIS) for Burro Management on the Lake Mead National Recreation Area.

Roger G. Taylor

1 Attachment

67

RESPONSES

COMMENTS

29-1 Page 2. The plan states that burro populations are changing the ecological composition of large areas yet you have not completed any Ecological Site Inventory work. We suggest a statement be used like the one found on page 93 - "The impacts have not been fully studied, therefore, they can not be addressed at this time."

29-2 Page 16. The plan calls for fencing. A map is needed of the area that shows locations and type of fence planned. On page 9 it is mentioned that fencing of Grand Canyon National Park did not work because of difficult terrain fencing may not be effective in this instance either.

29-3 Page 16. A map of the areas where burros would remain is needed for Arizona's Grand Wash where critical tortoise habitat has not been designated.

29-4 Page 16. Thirty-three percent utilization of key species is less than what the livestock permittee on the Arizona Strip is allowed, so cattle numbers would have to be reduced to reach this prescription. These impacts should be addressed.

29-5 Page 25. You state fencing has been proven as a feasible option for control of exotics, but fencing at Grand Canyon National Park for burros has not worked because some burros still trespass on to the park from Lake Mead NRA and adjacent BLM lands. See page 9 of your plan, this statement is inconsistent.

29-6 Page 40. Summary of Impacts, Vegetation. The statements relating to reduction of grasses in the burro use areas assumes that perennial grasses were a significant part of the vegetation community and climate and soils of the area would support grass. If the area was incapable of growing perennial grasses to begin with due to low site potential based on climate and soil conditions, then reductions of grasses would not be a potential impact. The key to the vegetation is the site potential based on climate and soils. Not all plants will be found on every site. For example on the Beaver Dam Slope in Arizona, on the sandy upland (non-calcareous) ecological site (6100 acres) perennial bunch grasses are dominant. These grass dominated sites are side by side with the limy sites (calcareous) which are shrub dominated. These sites are equally available to grazing and receive the same amount of precipitation. Soils high in calcium carbonate (greater than 10%) and with precipitation less than eight inches annual are naturally shrub dominated with grass present in very small amounts and limited to run-in areas where additional moisture is available and under the microclimate of a bush. With precipitation averaging 3-5 inches per year and the temperature regime classed as hyperthermic it is improbable that grasses would be a significant component of the vegetation community.

29-7 Page 45. States precipitation for Mojave Desert is 3 to 5 inches, but on the Grand Wash area the average from 1978 to present is 7.57 inches with 3.10 being the low and 12.67 the high. See record Attachment. #1, Historical Precipitation Report, Arizona Strip District, Shivwits Resource Area.

RESPONSES

29-1 It is evident from monitoring and field observations that soils have been degraded and key plant species have been completely eradicated from portions of the recreation area, such as Gold Butte, where high density and uncontrolled burro populations exist. As stated in the document, research shows that burros change the natural conditions of soils (Linnartz 1966, Hansen 1973, Ruffner 1978, Fuller 1958). Removal of plant species from their ecological communities has been shown to change the ecological composition of an area (Ruffner 1978, Norment and Douglas 1977, Koehler 1974, Earth Environmental Consultants, Inc. 1974).

29-2 Figure 7 within the document shows proposed fencing locations; see corrections page 31. As stated in the document, fencing would occur only when there is adequate funding for construction and maintenance, when it would be effective in preventing burro entry into the park and when it would not prevent the normal movements by native wildlife. Fencing can be an effective barrier to control burro movements and it has been proven a feasible option for control of exotic species movements in various NPS areas.

29-3 Lake Mead NRA will continue to work with the Arizona Strip District BLM to coordinate burro numbers and locations in the Grand Wash area.

29-4 The only active grazing allotment within the recreation area that has burros is the Tassi allotment. The park will continue to work with the Arizona Strip District BLM to address grazing and burro management within these areas.

29-5 The fence at Grand Canyon National Park was initially

successful in preventing burro movement across park boundaries. However, the condition of the fence deteriorated due to lack of maintenance, allowing burros to break through sections of the fence. As stated in BLM response 2, fencing has been proven a feasible option for control of exotic species movement in various NPS areas.

29-6 This table reflects the summary of impacts to each alternative. Impacts are further explained in the "Environmental Consequences" section of the document. It is understood that the key to vegetation is the site potential based on climate and soils. Grasses are present in many areas within the park. Where grasses are present along with high concentrations of burros, grasses have been moderately to severely utilized, as detailed in Appendix C of the document. Where burro populations would be removed or reduced from areas that currently or historically supported grasses, it is likely that grasses would recover.

29-7 The average precipitation reflects the average throughout the Mojave Desert.

COMMENTS

29-8 Page 45. The plan talks about the Shivwits Plateau being over 6,000 feet in elevation. This is out of the burro area and is not part of affected environment

29-9 Page 85 On the Tassi grazing permit, which is perennial\ephemeral there is still forage available for both livestock and burros at the present time. Under current management, burro populations would be held at or near 100 head.

29-10 Page 89. What resource data is used to reach the conclusion that the condition of threatened and endangered species habitat would improve if burros were removed. The key to the vegetation is the site potential based on climate and soils.

29-11 Page 92. Since the wild burro population on LMNRA are a significant part of the total wild and free roaming population in the west a discussion of cumulative impacts to burros is needed to see the true cumulative impacts of this action. This discussion should include the impacts to burro populations from other actions such as the protection of endangered species including desert tortoises, and impacts to burros on adjacent lands. How will these cumulatively impact the total wild burro population.

Page 104. If burro and cattle numbers are balanced to forage then grazing closures would not be needed.

29-12 Page 116. Viewing of burros is important to many people and their interests and values have not been considered to the same extent as those who value other resources. The elimination of the recreational opportunity to view burros would not be offset by anything for those who want to see them.

29-13 Page 146. Also include Arizona Strip's utilization data *Attachment #2, Trend Analysis Summary and Allotment Utilization/Actual Use Sumary, Arizona Strip District, Shivwits Resource Area.

RESPONSES

29-8 This information was provided to give the reader an understanding of the overall conditions of the recreation area.

29-9 Lake Mead NRA will continue to coordinate grazing and burro management, and overall numbers, with the Arizona Strip District BLM.

29-10 Research has shown that high concentrations of burros detrimentally affect the habitat. As described in the document, impacts to soils by grazing and burros caused soils compaction, erosion, and reduced seed germination (Linnartz 1966, Hansen 1973, Ruffner 1978, Fuller 1958). Also, studies have shown that uncontrolled or high density burro populations negatively influence vegetation communities (Ruffner 1978, Caruthers 1976, Norment and Douglas 1977, Fisher 1975). By controlling or preventing impacts to these resources, it is expected that the quality of the habitat for would improve.

29-11 As discussed in the document, the proposed action could have direct or indirect effects, both short and long term, to burro populations that the BLM wishes to maintain on adjacent BLM lands. Long-term cumulative impacts are also discussed in the document. As burro populations are removed from the recreation area, there would be reduced populations of free-roaming burros in the Southwest.

29-12 The impact of the proposed action and alternatives to those people wishing to view burros within the recreation area has been considered in the document.

29-13 This information has been included in Appendix F.

AGENCIES/ORGANIZATIONS/INDIVIDUALS TO WHOM COPIES OF THE STATEMENT WERE SENT:

The NPS sent copies of the final EIS and requested comments from the following agencies and interest groups:

Federal Agencies:
Advisory Council on Historic Preservation
Department of Agriculture
- Forest Service
- Soil Conservation Service

Department of Defense
- U.S. Army Corps of Engineers

Department of the Interior
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Mines
- Bureau of Reclamation
- Fish and Wildlife Service
- Geological Survey

Department of Transportation
- Federal Highway Administration

Environmental Protection Agency

Arizona State Agencies:
Governor of Arizona
Department of Agriculture
Department of Transportation
Game and Fish Department
Office of Tourism
Outdoor Recreation Coordinating Commission
State Clearinghouse
State Historic Preservation Office
Governor's Commission on Arizona Environment

Nevada State Agencies:
Governor of Nevada
Department of Agriculture
Department of Natural Resources
Department of Transportation
Division of Environmental Protection
Division of State Parks
Division of Wildlife
Natural Heritage Program
State Clearinghouse
State Planning Coordinator
State Historic Preservation Office
University of Nevada

Local Agencies:
Bunkerville Town Board
City of Boulder City
City of Henderson
City of Kingman
City of Las Vegas
City of Mesquite
City of North Las Vegas
City of Phoenix
Clark County Commissioners
Clark County Manager
Clark County Wildlife Advisory Board
Las Vegas Valley Water District
Mohave County Board of Supervisors
Pahrump Valley Paiute
Searchlight Town Advisory Board

Other Organizations:
Animal Protection Institute
Arizona Desert Bighorn Sheep Society
Arizona Riparian Council
Arizona Wilderness Coalition
Arizona Wildlife Federation
Arizonans for Wildlife and Outdoor Recreation
Colorado River Fish and Wildlife Council
Commission for the Preservation of Wild Horses
Defenders of Wildlife
Desert Bighorn Council
Desert Research Institute
Desert Tortoise Council
Environmental Defense Fund
Fund for Animals
International Society for the Protection of Mustangs and Burros
Maricopa Audubon Society
Mohave County Sportsman Club
Mohave Native Plant Society
National Parks and Conservation Society
National Mustang Association
National Wild Horse Association
Nevada Bighorn Unlimited
Nevada Horsemen's News

Nevada Humane Society
Nevada Wildlife Federation
Northern Arizona Audubon Society
Red Rock Audubon Society
Rocky Mountain Bighorn Society
Sierra Club
Southern Utah Wilderness Alliance
Southern Nevada Off-Road Enthusiasts
Society for Range Management
The Desert Protection Council
The Nature Conservancy
The Tortoise Group
Utah Wilderness Association
Wild Ass Foundation of America, Inc.
Wild Burro Rescue
Wilderness Research Impact Foundation
Wild Horse and Burro Commission
Wild Horse Organized Assistance
Wildlife Society
World Wildlife Fund

Libraries:
Boulder City Library
Clark County Community College
Clark County Library
Las Vegas Public Library
Mohave County Library
Sunrise Public Library
University of Arizona Library
University of Nevada-Las Vegas Library

Concessionaires:
Black Canyon, Inc.
Callville Bay Resort
Cottonwood Cove Resort
Echo Bay Resort
Forever Resorts
Forrest Enterprises, Inc.
Lake Mead Ferry Service
Lake Mead Resort
Lake Mohave Resort
Lakeshore Trailer Village
Las Vegas Boat Harbor
Overton Beach Resort
Temple Bar Resort
Willow Beach Resort

Elected Arizona and Nevada Representatives

Individuals responding to the draft EIS

Additionally, a mailing list was compiled during the planning process. Individuals from this list were notified of the availability of the EIS.

APPENDIX A:
Section 7 Consultation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
NEVADA ECOLOGICAL SERVICES STATE OFFICE
4600 Kietzke Lane, Building C-125
Reno, Nevada 89502-5093

December 8, 1994
File No. 1-5-94-F-322

Memorandum

To: Superintendent, Lake Mead National Recreation Area, National Park Service, Boulder City, Nevada

From: State Supervisor, Ecological Services, Reno, Nevada

Subject: Biological Opinion on Implementation of a Burro Management Program at Lake Mead National Recreation Area

On September 9, 1994, we received your request for initiation of formal consultation under section 7 of the Endangered Species Act of 1973, as amended (Act). At issue are those potential effects upon the threatened desert tortoise (*Gopherus agassizii*) and its critical habitat from the implementation of the preferred alternative of the Draft Environmental Impact Statement (EIS) for burro management on Lake Mead National Recreation Area (LMNRA) by the National Park Service (NPS). On May 23, 1994, NPS submitted a Preliminary Draft EIS for burro management within LMNRA to the Fish and Wildlife Service (Service) for consultation. On June 23, 1994, the Service transmitted a memorandum (File No. 1-5-94-I-223), providing comments on the preferred alternative of the Preliminary Draft EIS, fully supporting implementation of the preferred alternative to manage for zero burros on LMNRA.

This consultation is conducted pursuant to 50 CFR § 402.14 of our interagency regulations governing section 7 of the Act. The Service initiated formal consultation upon receipt of your request on September 9, 1994.

Eleven federally endangered or threatened species are known to occur in LMNRA (Table 1). Critical habitat for the razorback sucker, boneytail chub, Colorado squawfish, and humpback chub was designated on March 21, 1994. Burro capture and removal operations will avoid areas occupied by any listed species other than the desert tortoise. Therefore, NPS has determined that the proposed activity is not likely to adversely affect any endangered or threatened species or adversely modify their critical habitat, except for the desert tortoise. The Service concurs with this finding. Therefore, only effects on the desert tortoise and its critical habitat will be addressed in this Biological Opinion.

Table 1. Endangered and threatened species known to occur on LMNRA.

Common Name	Scientific Name	Status
California brown pelican	*Pelecanue occidentalis californicus*	E
bald eagle	*Haliaeetus leucocephalus*	E
peregrine falcon	*Falco peregrinus anatum*	E
Yuma clapper rail	*Rallus longirostris yumanensis*	E
least Bell's vireo	*Vireo bellii pusillus*	E
boneytail chub	*Gila elegans*	E
humpback chub	*Gila cypha*	E
Colorado squawfish	*Ptychocheilus lucius*	E
razorback sucker	*Xyrauchen texanus*	E
Mexican spotted owl	*Strix occidentallis lucida*	T
desert tortoise	*Gopherus agassizii*	T

This Biological Opinion contains information from the Preliminary Draft EIS for Burro Management dated November 1993; Draft EIS for Burro Management dated May 1994; correspondence from NPS dated January 5, 1994, June 6, 1994, and September 9, 1994; the Biological Opinion for the Bureau of Land Management's Interim Livestock Grazing Program in Mojave Desert Tortoise Critical Habitat approved April 20, 1994; conversations with Service staff in the Phoenix office; a meeting held on November 2, 1994, with the Bureau of Land Management (BLM), NPS, and the Service; conversations with NPS staff; conversations with BLM staff; and information in our files.

Description of the Proposed Action

LMNRA occurs along the Colorado River system from approximately Laughlin, Nevada to the westernmost boundary of the Grand Canyon National Park in Arizona (Figure 1). The recreation area encompasses 1.3 million acres of land and 200 thousand acres of water, including Lakes Mead and Mohave. LMNRA was established by Congress on October 8, 1964, and is administered by NPS. Mojave, Great Basin, and Sonoran Deserts; pinyon-juniper woodland; and riparian/native wash plant and animal communities are represented

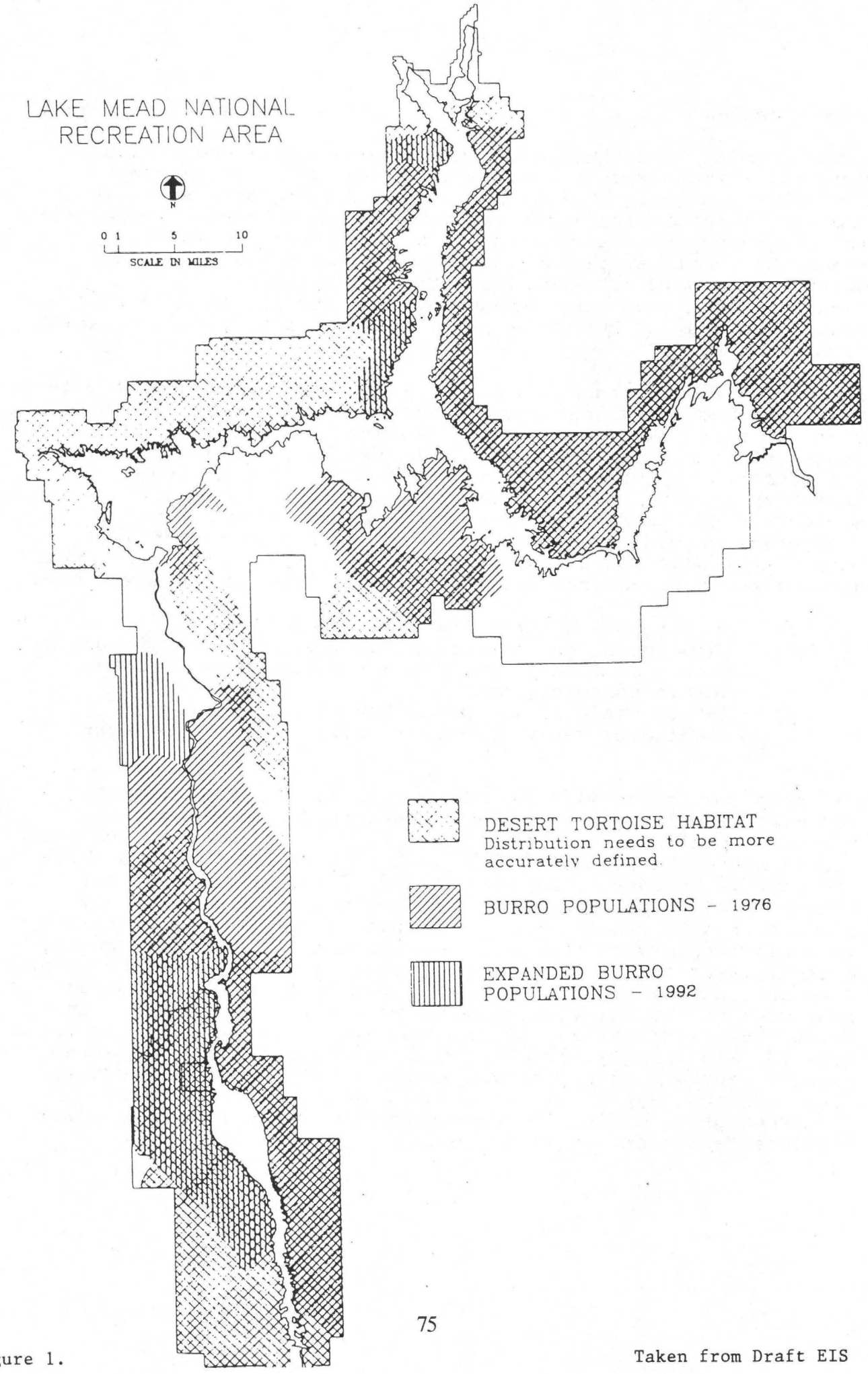


Figure 1.

Taken from Draft EIS

within LMNRA. The NPS Organic Act of 1916, as amended, The Redwood National Park Act of 1978, as amended, NPS Natural Resources Management Guidelines, and NPS Management Policies provide the basis for burro management within LMNRA. These laws mandate resource preservation and authorize management to eradicate exotic species which threaten resources or public safety. The Wild Free-Roaming Horse and Burro Act of 1971 requires the protection, management, and control of wild free-roaming horses and burros on public lands. NPS lands are exempt from this law.

In May 1994, NPS produced a Draft EIS for burro management within LMNRA and requested consultation with the Service on Alternative B of the plan. NPS proposes to implement a burro management program for LMNRA in accordance with NPS mandates and guidelines. The preferred alternative of the Draft EIS (Alternative B) is cessation of environmental change caused by burros and the protection of the natural resources and unaltered native ecosystems within LMNRA. NPS proposes to manage burros in a manner that will not allow their range to expand into areas which are currently burro-free and to eliminate them in areas where:

a) Burros pose a threat to public safety;
b) threatened, endangered, sensitive, or unique resources occur, including designated recovery areas for the desert tortoise; and
c) severe overutilization by burros has occurred, precluding habitat recovery with any level of burro use.

The proposed action will result in fencing sections of LMNRA and removal of burros from areas where they pose a resource threat or public safety hazard. Burro populations on LMNRA occur within BLM's Stateline District in Nevada and the Arizona Strip District in Arizona. The long-term goal of burro management within LMNRA is to manage for zero burros. However, NPS may allow burros to remain in critical habitat in Arizona until BLM, in consultation with NPS, has designated boundaries of recovery areas (Desert Wildlife Management Areas) for the desert tortoise. This action will be accomplished by BLM in Arizona through an amendment to the Shivwits Resource Management Plan (RMP). In Nevada, BLM's Stateline RMP is scheduled to be finalized in March 1995 (S. Sloan, pers. comm.), at which time, BLM will implement recovery actions as prescribed in the Desert Tortoise Recovery Plan (Service 1994). As recommended in the recovery plan, livestock grazing and wild burros should be prohibited in Desert Wildlife Management Areas (DWMA).

Initial NPS burro management actions will include removal of burros in the following areas of LMNRA:

1. Overton Beach, Nevada, to Muddy Mountains, Corral Springs complex, and Black Mountains south to Echo Bay

2. Portions of Gold Butte, Nevada

3. Eldorado and Newberry Mountains, Nevada

4. U.S. Highway 93 in Arizona, from Kingman Wash to Willow Beach

5. Temple Bar, Arizona (Black Mountains to Salt Spring)

6. Black Mountains, Arizona, from Eldorado Jeep Trail south to Cottonwood East

Initially, burros will be removed from proposed recovery areas for the desert tortoise but may remain within LMNRA near the Muddy Mountains and Gold Butte, Nevada and Arizona; portions of Grand Wash, Arizona; and south of Cottonwood East, Arizona. NPS will manage burros in accordance with NPS standards and prescriptions and will accept no more than 33 percent utilization on selected key forage species, including white bursage *(Ambrosia dumosa)*, catclaw (*Acacia greggii*), saltgrass (*Distichlis spicata*), and alkali sacaton (*Sporobulus airoides*). However, the long-term goal of the management program is elimination of burros from LMNRA.

Removal operations may occur at any time of the year and would include: Helicopter/trap; helicopter/rope; helicopter/net-gun; and corral trapping. Dart guns/tranquilizers may be used in the future. This plan proposes to fence areas of specific concern to control the immigration of burros from adjacent areas. Direct reduction (shooting) and birth control methods are not options under the proposed action. Any technology that provides for more efficient or effective burro control will be evaluated in an amendment to this Draft EIS prior to use at LMNRA.

NPS will be the lead agency for burro management within LMNRA, in cooperation with the BLM. NPS will invite BLM to be a cooperator in trapping and removal activities within LMNRA. NPS will cooperate with the respective BLM districts to develop overall monitoring procedures for vegetation and animal numbers for joint use areas. Captured animals will be placed in the BLM burro adoption program.

NPS proposes the following mitigation measures to minimize effects to desert tortoises from the proposed action (National Park Service 1994):

1. Surveys of candidate, threatened, and endangered species will be conducted by qualified NPS personnel prior to construction of temporary corrals, traps, and fences. Traps, corrals, and fences will not be placed in areas that are known to contain such resources.

2. Trap and corral locations will not be located in critical wildlife areas. Corral traps will be closely monitored to ensure that native wildlife is not caught.

3. Traps and corrals shall be located in previously disturbed areas or in sandy or gravelly wash bottoms so damage to soils and vegetation will be minimal.

4. Fencing will be of such construction that it will not interfere with the movement of native wildlife nor will it be allowed to damage rare or threatened plants.

5. In areas where burros remain within LMNRA, monitoring will occur to assure that burro impacts to park resources are minimal, and if impacts are occurring beyond NPS prescriptions, burro populations in those areas will be reduced or eliminated.

6. Fence construction around springs and NPS boundaries will take place during the cooler months.

Status of the Species/Environmental Baseline

The desert tortoise, a large, herbivorous reptile, is generally active when annual plants are most common (spring, early summer, autumn). Desert tortoises usually spend the remainder of the year in shelter sites, escaping the extreme weather conditions of the desert. Sheltering habits of desert tortoises vary greatly in different geographic locations. Shelter sites may be located under bushes, in the banks or beds of washes, in rock outcrops, or in caliche caves. Further information on the range, biology, and ecology of the desert tortoise can be found in Berry (1984); Berry and Burge (1984); Burge (1978); Burge and Bradley (1976); Hovik and Hardenbrook (1989); Karl (1981, 1983a, 1983b); Luckenbach (1982); and Weinstein et al. (1987).

On April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 FR 12178). The Mojave population includes those animals living north and west of the Colorado River in the Mohave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California (a division of the Sonoran Desert). In Nevada, the native range of this species is generally restricted to Clark County and those portions of Nye and Lincoln Counties south of 37 degrees North latitude and below approximately 1,330 meters elevation (4,000 feet). Reasons for the determination included loss of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture. Grazing and off-highway vehicles have degraded additional habitat. Also cited as threatening the desert tortoise's continuing existence were illegal collection, upper respiratory tract disease, and predation on juvenile desert tortoises by common ravens *(Corvus corax)*.

On February 8, 1994, the Service designated approximately 6.4 million acres of critical habitat for the Mojave population of the desert tortoise (59 FR 45748), which became effective on March 10, 1994. Critical habitat units (CHU) are based on recommendations for DWMAs outlined in the *Desert Tortoise (Mojave Population) Recovery Plan* (Service 1994). Because the CHU boundaries were drawn to optimize reserve design, the CHUs may contain both "suitable" and "unsuitable" habitat. Suitable habitat can be generally defined as areas that provide the constituent elements of nesting, sheltering, foraging, dispersal, and/or gene flow. The regulation of activities within critical habitat through section 7 (of the Act) consultation will be based on recommendations in the recovery plan.

Currently, burros occur on LMNRA within the Gold-Butte-Pakoon CHU in Arizona and Piute-Eldorado CHU in Nevada. Approximately 147,200 acres of LMNRA occur within designated critical habitat for the desert tortoise in Nevada (Piute-Eldorado and Gold-Butte-Pakoon CHUs) and Arizona (Gold-Butte Pakoon CHU). LMNRA contains approximately 700,000 acres of potential desert tortoise habitat.

On June 28, 1994, the Service approved the *Desert Tortoise (Mojave Population) Recovery Plan* (Service 1994). The recovery plan divides the range of the desert tortoise into six distinct population segments or recovery units (RU) and recommends establishment of 14 DWMAs throughout the RUs. Within each DWMA, the recovery plan recommends implementation of reserve level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. The design of DWMAs should follow accepted concepts of reserve design. Specific actions recommended in the recovery plan are the use of fences to exclude burros from DWMAs and

restoration of disturbed areas to pre-disturbance conditions. Furthermore, the recovery plan recommends prohibition of feral ("wild") burros and horses throughout DWMAs because they are generally incompatible with recovery of the tortoise. A portion of the project area occurs within the Piute-Eldorado (Nevada) and Gold-Butte-Pakoon (Arizona and Nevada) proposed DWMAs. NPS proposes to remove and exclude burros from areas of LMNRA within DWMAs. DWMAs will be designated by land management agencies and the Service through appropriate land-use plans.

LMNRA is located on the southern edge of the Great Basin, northern edge of the Sonoran, and in the northeast portion of the Mojave Deserts. Creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) are dominant plant species between 500 and 3,500 feet elevation. Black brush (*Coleogyne ramosissima*) and Joshua tree (*Yucca brevifolia*) are dominant plant communities at higher elevations. The saltbush community (*Atriplex* sp.) is found in soils containing high salt levels and occurs throughout the creosote and Joshua tree communities. Elevations of LMNRA above 3,000 feet may include pinyon/juniper (*Pinus edulis/Juniperus* sp.) vegetation.

Burros on LMNRA. Burros have occurred in LMNRA since 1936 or prior, with an estimated 1,600 present at any given time within LMNRA. Since their introduction, burros have progressively changed the ecological composition of the approximately 518,000 acres of LMNRA they occupy. Adverse effects to desert tortoise habitat in LMNRA by burro activities include overutilization of perennial shrubs, trailing and compaction of fragile desert soils, disturbance of the cryptogamic crust resulting in decreased soil productivity and increased erosion, trampling of vegetation, decreased abundance of perennial grasses, and displacement of native plants with exotic species. This conversion from native to exotic vegetation has contributed to an increase in fire (Brown and Minnich 1986, Service 1994). The loss of perennial shrubs biomass and canopy cover results in reduction of shade for tortoises and cover for burrows. Most juvenile burrows (80%) are sheltered by shrubs, particularly creosote bush and white bursage (Burge 1977, Berry and Turner 1984, 1986).

The first documented removal of burros from LMNRA in Nevada occurred in 1979. Between 1979 and 1992, more than 1,800 animals were removed. Burro removal activities have been accomplished through cooperative agreements with BLM. Although large numbers of burros have been removed from LMNRA, these removals have been unsuccessful in meeting NPS policy. Burros continue to expand their range and damage resources in the recreation area.

Effects of the Proposed Action on the Listed Species

The proposed action involves the prompt capture and removal and exclusion of all burros within critical habitat for the desert tortoise and eventual removal of all burros from LMNRA. Capture and removal activities may result in the short-term destruction of an undeterminable amount of desert tortoise habitat. Project vehicles, horses, or equipment may kill or injure desert tortoises in the area by crushing them or caving in their burrows (Nicholson 1978). Desert tortoises and their burrows may be trampled by burros during gathering activities. Other desert tortoises may be harassed by movement out of harm's way in association with fence construction and burro removal activities.

Additional indirect effects may occur from noise produced by vehicles, helicopters, and equipment (Bondello 1976, Bondello et al. 1979); attraction of ravens to trash and burro carcasses (Berry 1985, BLM 1990, Knight et. al. 1993); and capture of desert tortoises by personnel for use as pets. NPS proposes to conduct surveys prior to construction activities and place traps and corrals outside areas occupied by desert tortoises to minimize these effects.

Elimination of burros will benefit the tortoise by increasing cover and forage, and reducing trampling of desert tortoises and their burrows. Perennial grasses and white bursage, in particular, have been overutilized by burros. Mistletoe infection of catclaw (*Acacia greggii*) and mesquite (*Prosopis* sp.) is correlated with increases in areas browsed by burros.

The Service has determined that this level of effect described herein will not reduce appreciably the likelihood of survival and recovery of the Mojave population of the desert tortoise in the wild or diminish the value of the critical habitat both for the survival and recovery of the desert tortoise because:

(1) Only a minimal area of desert tortoise habitat will be disturbed on a short-term basis. Following removal of burros from specified portions of LMNRA, areas damaged by burros are expected to recover, resulting in a long-term benefit to the desert tortoise.

(2) The level and extent of effects on desert tortoises within the project site represent a small effect on the Mojave population of the desert tortoise when total desert tortoise population numbers and geographical extent are considered.

(3) Within 2 years from the date of this opinion, burros will be eliminated from within designated DWMAs.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered and threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed action.

The 1,501,216-acre project area consists of NPS administered lands, with the exception of 12,568 acres of non-Federal land. Most of the surrounding lands are administered by the BLM. Any actions on these Federal lands will be subject to consultation under section 7 of the Act. Recreation within LMNRA is expected to increase as the human population grows in Clark County.

Clark County is proceeding with preparation of a long-term HCP for an incidental take permit, pursuant to section 10(a)(1)(B) of the Act. The application will address take of desert tortoises and their habitat from future development projects on all private lands within Clark County and will propose mitigation to minimize such effects.

Biological Opinion

It is our Biological Opinion that development and implementation of Alternative B of the Burro Management Program at Lake Mead National Recreation Area by the NPS is not likely to jeopardize the continued existence of the threatened Mojave population of the desert tortoise. No critical habitat will be adversely modified by the proposed activity.

Incidental Take

Sections 4(d) and 9 of the Act, prohibit take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering (50 CFR § 17.3). "Harass" is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3). Under the terms of sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is

not considered a prohibited taking provided that such taking is in compliance with the reasonable and prudent measures, and the terms and conditions that implement them, as set forth below.

The Service hereby incorporates by reference the NPS's seven mitigation measures from the *Description of the Proposed Action* into this incidental take statement as part of these terms and conditions. The following terms and conditions either specify additional measures considered necessary by the Service or modify measures proposed by the NPS. Where these terms and conditions vary from or contradict mitigation measures proposed under the *Description of the Proposed Action*, specifications in these terms and conditions shall apply. The measures described below are nondiscretionary and must be implemented by the NPS so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) of the Act to apply.

The NPS has a continuing duty to regulate the activity that is covered by this incidental take statement. If the NPS fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permits or grant documents, the protective coverage of section 7(o)(2) of the Act may lapse.

Based on the analysis of effects provided above, mitigation measures proposed by the NPS and anticipated project duration, the Service anticipates that the following take could occur as a result of the proposed actions:

1. One (1) desert tortoise may be accidentally injured or killed during construction or burro removal activities, per year.

2. Five (5) desert tortoises may be harassed per year during construction or burro removal activity within the project area.

3. An unknown number of desert tortoise eggs may be destroyed during project activities.

4. An unknown number of desert tortoises may be taken in the form of indirect mortality through predation by ravens drawn to burro carcasses or trash on the project site.

5. An unknown number of desert tortoises may be taken indirectly in the form of harm and/or harassment through increased noise associated with construction and burro removal activities.

6. An undeterminable number of acres of desert tortoise habitat may be further degraded or disturbed for a short-term period during the project activities which could result in harm and/or harassment of desert tortoises.

Reasonable and Prudent Measures

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize take:

1. Measures shall be taken to minimize mortality or injury of desert tortoises due to construction or burro removal activities.

2. Measures shall be taken to minimize predation on tortoises by ravens drawn to trash during the proposed project.

3. Measures shall be taken to minimize destruction of desert tortoise habitat, such as soil compaction, erosion, or crushed and removed vegetation, due to fence construction or burro removal activities.

4. Measures shall be taken to ensure compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and reinitiation requirements contained in this Biological Opinion.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, NPS must comply with the following terms and conditions, which implement the reasonable and prudent measures described above.

1. To implement Reasonable and Prudent Measure number 1, NPS shall fully implement mitigation measure 1 (requiring surveys), measure 2 (concerning trap and corral locations), and measures 4 and 6 (regarding fence construction). In addition to NPS's mitigation measures above, the following terms and conditions shall be added:

    a. Prior to construction of burro traps, corrals, and fences, a qualified tortoise biologist (Biologist) shall thoroughly search all areas for tortoises, no more than 24 hours before the start of construction activities and be onsite during all construction activities to ensure that any tortoises that may wander onto the construction site are not harmed. Desert tortoises removed from the project sites shall be released into undisturbed habitat within 1,000 feet

from the collection site. Desert tortoises removed from these construction sites shall be placed in the shade of a shrub or in a natural unoccupied burrow, similar to the hibernaculum in which it was found, or in an artificial burrow following the protocol provided in the attachment. In accordance with *Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise* (Service 1992), a Biologist should possess a bachelor's or graduate degree in biology, ecology, wildlife biology, herpetology, or related fields. The Biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises. Field experience may mean a minimum of 60 days field experience searching for desert tortoises and tortoise sign. In addition, the Biologist should have the ability to recognize and accurately identify all types of desert tortoise sign and carefully, legibly, and completely record survey results. The Service does not endorse any individual or company with respect to their abilities to conduct satisfactory surveys.

b. Prior to the onset of burro removal or fence construction activities, all personnel who shall be involved in on-the-ground activities shall be informed, through an education program developed by NPS, of the occurrence of the desert tortoise in the project area and of the threatened status of the species. They would be advised of the definition of "take" and the potential penalties (up to $25,000 in fines and 6 months in prison) for taking threatened species. They would also be informed of the terms and conditions included in the Biological Opinion, when delivered. The contents of the education program shall be coordinated with the Service prior to its implementation. The program shall also be presented to all supervisory personnel associated with the project. All such persons shall sign a statement indicating that they have completed the education program and understand fully its provisions and the terms and conditions included in the Biological Opinion. If a live tortoise is in imminent danger of harm, assuming a Biologist is not readily available, a crew member may move the tortoise out of harm's way using methods provided in the training program.

c. Helicopter landing/departure areas shall be located in previously disturbed areas or areas determined by a Biologist to be unsuitable desert tortoise habitat.

d. The ground beneath any parked vehicle shall be carefully searched for tortoises before a vehicle is moved. If a tortoise is found beneath a vehicle and has not moved out of harm's way of its own volition within 15 minutes, a Biologist shall move it according to the attached protocol (Appendix A).

2. To implement Reasonable and Prudent Measure number 2, NPS shall fully implement the following term and conditions:

a. A litter-control program shall be implemented in construction and burro removal/holding areas. The program shall include covered trash receptacles, prompt removal, and disposal offsite, to avoid attracting ravens.

b. In the event of burro mortality, the carcass shall be removed from desert tortoise critical habitat at a minimum. Wherever possible or feasible, carcasses should be cremated to prevent attraction of predators.

3. To implement Reasonable and Prudent Measure number 3, NPS shall fully implement mitigation measure 3 (concerning trap and corral locations) and measure 5 (regarding monitoring of burros that shall remain within LMNRA). In addition to the NPS's mitigation measures above, the following terms and conditions shall be added:

a. All equipment and materials shall be stored within previously disturbed areas, wherever possible. No blading of vegetation shall occur during fence construction.

b. All vehicle traffic shall be restricted to existing access roads wherever possible.

4. To implement Reasonable and Prudent Measure number 4, the following terms and conditions shall be implemented:

a. NPS shall designate a representative responsible for overseeing compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and reinitiation requirements contained in this Biological Opinion. The designated representative shall provide coordination among NPS, BLM, contract personnel, and the Service.

b. The Biologist(s) must possess a valid state permit to collect desert tortoises from the appropriate state wildlife agency.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the anticipated incidental take that may result from the proposed action. With implementation of these measures, the Service believes that no more than 6 desert tortoises may be incidentally taken (1 killed or injured and 5 harassed) and an undetermined number of acres of desert tortoise habitat may be further degraded or disturbed. If, during the course of the action, the level of incidental take identified is exceeded, reinitiation of consultation shall be required. NPS must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Reporting Requirements

Upon locating a dead, injured, or sick endangered or threatened species, initial notification must be made to the Service's Division of Law Enforcement in Las Vegas, Nevada, at telephone number (702) 388-6380. Care should be taken in handling sick or injured desert tortoises to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured desert tortoises or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by the Law Enforcement Division to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

Sick or injured desert tortoises shall be delivered to any qualified veterinarian for appropriate treatment or disposal. Dead desert tortoises suitable for preparation as museum specimens shall be frozen immediately and provided to an institution holding appropriate Federal and State permits per their instructions. Should no institutions want the desert tortoise specimens, or if it is determined that they are too damaged (crushed, spoiled, etc.) for preparation as a museum specimen, then they may be buried away from the project area or cremated, upon authorization by Law Enforcement Division. NPS shall bear the cost of any required treatment of injured desert tortoises, euthanasia of sick desert tortoises, or cremation of dead desert tortoises. Should sick or injured desert tortoises be treated by a veterinarian and survive, they may be transferred as directed by the Service.

Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" has been defined as Service suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information.

1. NPS should revegetate areas damaged by burro use.

2. The Service encourages NPS to implement education programs that promote the study of desert tortoise ecosystems, emphasizing the special adaptations of its occupants, as well as the effects of human activities on the Mojave desert ecosystem. Also, the education program could incorporate the concepts of threatened and endangered species, biodiversity, and extinction. NPS should seek technical assistance from the Service in the development of these education programs.

In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

Reinitiation Requirement

This concludes formal consultation on the proposed burro management plan on LMNRA. As required by 50 CFR § 402.16, reinitiation of formal consultation is required if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

In instances where the amount or extent of incidental take is exceeded, any operations that are causing such take must be stopped in the interim period between the initiation and completion of the new consultation if any additional taking is likely to occur.

We appreciate the assistance and cooperation of your staff throughout this consultation process. If we can be of any further assistance, please contact Michael Burroughs in the Las Vegas Office at (702) 646-3499.

Carlos H. Mendoza

Attachment

cc:
Assistant Director, Administrative Services, Clark County, Las Vegas, Nevada
Desert Tortoise HCP Coordinator, The Nature Conservancy, Las Vegas, Nevada
Regional Manager, Nevada Division of Wildlife, Las Vegas, Nevada
District Manager, Arizona Strip District, Bureau of Land Management, St. George, Utah
District Manager, Las Vegas District, Bureau of Land Management, Las Vegas, Nevada
State Director, Bureau of Land Management, Reno, Nevada
State Director, Bureau of Land Management, Phoenix, Arizona
State Supervisor, Ecological Services, Fish and Wildlife Service, Phoenix, Arizona (Attn: Jim Rorabaugh)
Assistant Regional Director, Ecological Services, Fish and Wildlife Service, Portland, Oregon
Chief, Division of Endangered Species, Fish and Wildlife Service, Arlington, Virginia
Assistant Regional Director, Ecological Services, Fish and Wildlife Service, Albuquerque, New Mexico
Senior Resident Agent, Division of Law Enforcement, Fish and Wildlife Service, Boise, Idaho
Special Agent, Division of Law Enforcement, Fish and Wildlife Service, Las Vegas, Nevada
Special Agent, Division of Law Enforcement, Fish and Wildlife Service, Mesa, Arizona

Literature Cited

Berry, K. H. (ed.) 1984. The status of the desert tortoise (*Gopherus agassizii*) in the United States. Report from the Desert Tortoise Council to the U.S. Fish and Wildlife Service, Sacramento, California. Order No. 11310-0083-81.

Berry, K. H. and B. L. Burge. 1984. The desert tortoise in Nevada. Chapter 8 *In*: The status of the desert tortoise (*Gopherus agassizii*) in the United States. Report to U.S. Fish and Wildlife Service from the Desert Tortoise Council. Order No. 11310-0083-81.

Berry, K. H. 1985. Avian predation on the desert tortoise (*Gopherus agassizii*) in California. U.S. Bureau of Land Management, Riverside, California. Report to Southern California Edison Company, Rosemead, California.

Berry, K. H. and F. B. Turner. 1984. Notes on the behavior and habitat preferences of juvenile desert tortoises (*Gopherus agassizii*). Proceedings of the 1984 Desert Tortoise Council Symposium. Pages 111-130.

Bondello, M. C. 1976. The effects of high-intensity motorcycle sounds on the acoustical sensitivity of the desert iguana *(Dipsosaurus dorsalis)*. M.A. Thesis, Biology Dept., California State University, Fullerton. 37 pp.

Bondello, M. C., A. C. Huntley, H. B. Cohen, and B. H. Brattstrom. 1979. The effects of dune buggy sounds on the telencephalic auditory evoked response in the Mojave fringe-toed lizards (*Uma scoparia*). Report, Contract No. CA-060-CT7-2737, USDI Bureau of Land Management, Riverside, California. 31 pp.

Brown, D. E. and R. A. Minnich. 1986. Fire and changes in creosote bush scrub in the western Sonoran Desert, California. American Midland Naturalist 116(2):411-422.

Bureau of Land Management. 1990. Draft Raven Management Plan for the California Desert Conservation Area. Prepared by Bureau of Land Management, California Desert District, Riverside, California. April 1990.

Burge, B. L. 1978. Physical characteristics and patterns of utilization of cover sites by *Gopherus agassizii* in southern Nevada. Proceedings of the 1978 Desert Tortoise Council Symposium. Pages 80-111.

Burge, B. L., and W. G. Bradley. 1976. Population density, structure and feeding habits of the desert tortoise (*Gopherus agassizii)*, in a low desert study area in southern Nevada. Proceedings of the 1976 Desert Tortoise Council Symposium. Pages 51-74.

Bury, R. B. 1978. Desert tortoises and off-road vehicles: do they mix? Proceedings of the 1978 Desert Tortoise Council Symposium. Page 126.

Fish and Wildlife Service. 1994. Desert tortoise (Mojave population) recovery plan. Portland, Oregon. 73 pp. plus appendices.

Hovik, D. C. and D. B. Hardenbrook. 1989. Summer and fall activity and movements of desert tortoise in Pahrump Valley, Nevada. Abstract of paper presented at the Fourteenth Annual Meeting of the Desert Tortoise Council.

Karl. A. 1981. The distribution and relative densities of the desert tortoise (*Gopherus agassizii*) in Lincoln and Nye counties, Nevada. Proceedings of the 1981 Desert Tortoise Council Symposium. Pages 76-92.

Karl, A. E. 1983a. The distribution and relative densities of the desert tortoise (*Gopherus agassizi*) in Clark County, Nevada. Unpublished Report to Bureau of Land Management, Denver, Colorado. Contract No. YA-512-CT9-90. 46 pp.

Karl, A. E. 1983b. The distribution, relative densities, and habitat associations of the desert tortoise (*Gopherus agassizii)* in Nevada. MS Thesis, California State University, Northridge. 111 pp.

Knight, R. L., H. A. L. Knight, and R. J. Camp. 1993. Raven populations and land-use patterns in the Mojave desert, California. Wildlife Society Bulletin 21:469-471.

Luckenbach, R. A. 1975. What the ORVs are doing to the desert. Fremontia 2:3-11

Luckenbach, R. A. 1982. Ecology and management of the desert tortoise (*Gopherus agassizii*) in California. *In*: R. B. Bury (ed.). North American Tortoise: Conservation and Ecology. U.S. Fish and Wildlife Service, Wildlife Research Report 12, Washington, D.C.

National Park Service. 1994. Draft environmental impact statement for burro management. May 1994. Prepared by Lake Mead National Recreation Area, Boulder City, Nevada. 126 pp. plus appendices.

Nicholson, Lori. 1978. The effects of roads on desert tortoise populations. Proceedings of the 1978 Desert Tortoise Council Symposium. Pages 127-129.

Weinstein, M., K. H. Berry, and F. B. Turner. 1987. An analysis of habitat relationships of the desert tortoise in California. A report prepared for Southern California Edison Company. 96 pp.

APPENDIX A

DESERT TORTOISE HANDLING AND OVERWINTERING PROCEDURES

(Note: Much of the information contained herein was obtained from Chapter III, Protocols for Handling Live Tortoises, in the Interim Techniques Handbook for Collecting and Analyzing Data on Desert Tortoise Populations and Habitats. This handbook is a cooperative effort among Federal and State agencies. Primary editor is Dr. Cecil Schwalbe of the University of Arizona, Tucson, Arizona. The information on handling tortoise eggs was developed by the Nevada State Office in consultation with Dr. Schwalbe, Betty Burge of Las Vegas, Nevada, and the Fish and Wildlife Service's (Service) Ventura Field Office.)

1. All desert tortoises shall be handled in a careful manner. This includes lifting the animal slowly, fully supporting the animal in an upright position, and completing various measurements in the minimum amount of time. A tortoise can be damaged or die of intestinal torsion. If a tortoise must be turned over on its back, this should be done gently. The fieldworker shall turn the tortoise over by carefully rolling it over on its side to its back, and return the tortoise to the upright position by rolling it back in the same direction. The tortoise shall not be rolled end over end, side over side, or spun.

   Tortoises, especially females, may be fatally damaged by blows, butting, or overturning, which results in egg yolk peritonitis brought on by seepage of egg yolk or breakage of shelled eggs into the peritoneal cavity. Handling of potentially gravid females shall be done very carefully.

   To prevent hyperthermia, on warm days a tortoise must be kept in the shade (of the fieldworker, a pack, other equipment, etc.) except during photography. Tortoises shall not be weighed, measured, etc. when air temperatures exceed 90 °F (32 °C) at 1.5 m (4.9 ft) above ground unless measures are taken to insure the animal does not overheat. Tortoises shall be placed in shaded areas during handling, and if the animal is to be held for a longer period, it shall be individually placed in a sterile cardboard box, placed in a shaded, cool location and returned to the site of capture or relocation at sunrise on the following day. CAUTION! TEMPERATURES ARE MUCH HIGHER NEARER THE GROUND. Take extreme caution to avoid overheating a tortoise whenever surface temperatures exceed 86 °F (30 °C). Shield the bulb of the thermometer from direct solar radiation and wind when measuring temperatures.

2. Because of the threat of upper respiratory tract disease (URTD), all tortoises shall be handled so as to minimize the chances of spreading the disease, even if URTD has not been documented in a given locality. All personnel handling tortoises must be initially trained using protocols developed by Dr. Cecil Schwalbe of the University of Arizona. These protocols will be used to minimize the spread of URTD. All personnel handling tortoises shall wear disposable latex or plastic gloves to prevent transmission of diseases among tortoises. Not more than one tortoise shall be handled with each pair of gloves.

   All equipment that comes in contact with any tortoise shall be sterilized before it is used on another tortoise. For example, triangular files for notching, calipers for measuring shell length, rules, and other equipment should be sterilized by soaking in 95 percent isopropyl or ethyl alcohol for at least 20 minutes before using on another tortoise. A 25 percent solution of chlorine bleach may also be used, but bleach is extremely corrosive and may damage many types of equipment. Wooden rules should not be used; they are difficult to sterilize because of the porosity of the wood. Use metal or plastic rules instead.

   To avoid sterilizing spring scales or weighing straps prior to weighing each tortoise, use individual "T-shirt" bags, the plastic bags with two handles that are used to bag groceries. The handles of the bag can be used to suspend the tortoise during weighing.

   The fieldworker's clothes shall be changed completely, including shoes, before visiting other tortoise sites. Dr. Schwalbe defines a site as follows: "As a general rule, a single valley or desert mountain range would be considered one site, unless there were special circumstances, such as URTD confirmed in one part of a valley, but not thought to occur in other parts of that valley. In such an instance, a change of clothes would be necessary before visiting other parts of that valley." Always visit the site with known occurrence of URTD last to minimize the chance of spreading the disease. Vehicle undercarriages and tires shall be washed when travelling between sites where URTD is known or suspected to occur. The fieldworker is not required to wash vehicles if there are no confirmed reports of URTD on a study site. The fieldworker shall consider that wet soil carrying microbes will adhere to vehicles, and such microbes are less likely to die before a new study area is visited. It is advisable to wash a vehicle after driving in wet soil if feasible.

When transported by vehicle or confined, each tortoise shall be contained in a newly-purchased, clean cardboard box of an appropriate size. Boxes shall be discarded after use. Tortoises shall never be placed in automobile trunks or on floorboards in an unconfined manner. Tortoises shall never be placed in the bed of a truck over the catalytic converter as this area of the metal bed may become extremely hot. Tortoises must not be left unattended in vehicles; this measure is intended to eliminate accidental mortality caused by overheating. Truck beds and floorboards must be padded and travel shall be at speeds which eliminate unnecessary vibrations.

3. Tortoises removed from the project area and released into the wild as a result of mitigation measures for this project shall not be individually marked, except for those hibernating tortoises removed temporarily as specified under Procedure number 6 below. These tortoises shall be marked per Bureau of Land Management standards (Attachment A-1). Tagging is the current preferred method for long-term marking and is supplemented with photographs and drawings. All three methods should be used to insure that over time the tortoise can be properly identified in future years.

Tagging: Tagging was originally used in 1977 and appears to be as effective or better than notching for a long-term marking technique. Place a small dot of white paint or a small piece of heavy white paper (card stock) on the fourth left costal scute; wait for the paint to dry. Write the identifying number for that tortoise on the dry dot or paper using permanent black ink. Wait for the ink to dry and cover the dot or paper and the ink with quick-drying clear epoxy. Note that the epoxy shall not touch the suture lines between the scutes. Numbers shall not be placed in the middle of the scute as this area may be sloughed or rubbed depending on the age of the tortoise and habitat in which it occurs.

In addition a photograph (35mm slide) of the carapace and fourth left costal scute shall be taken. If possible dust off the tortoise with a small brush to remove mud or dust from the scutes. Remember the brush must be either sterilized or disposed of after each use. Place a small piece of white paper (16 mm x 90 mm) on the edge of the shell with information on the study site name, date, and tortoise number. The tortoise shell area and fourth costal scute shall fill the slide frame. Drawings shall be made showing any anomalies (e.g., extra or missing marginal, costal, or vertebral scutes) or injuries (e.g., punctures holes from canines, tooth scrapes).

The responsible Federal agency shall develop its own cataloging format to enable it and others to track tortoises handled as a result of development projects.

4. A standard data sheet should be developed to record the following information:

   A. Name of person collecting the animal.
   B. Exact location and date of collection.
   C. The individual number assigned to that animal.
   D. The over-wintering location of the tortoise.
   E. The release site and date of release of the animal.
   F. Health condition of the tortoise, including measured weight and length at initial capture and release. In addition to this information complete the URTD checklist (Attachments A-2 & A-3).
   G. Photographs of carapace, plastron, and fourth left costal scute.
   H. The information specified in 4.A. through 4.G. must be supplied to the responsible Federal agency and the Service immediately after cessation of both tortoise clearing and release activities. The information shall be provided in the form of a report accompanied by data sheets.

5. Tortoises found actively moving on the surface, and to be removed from the project site, shall be released between 150 and 1000 feet from the outer boundary of the project area nearest the capture point. Relocated tortoises shall be placed under a shrub in the shade. Tortoises shall be monitored at the release site until they are exhibiting normal behavior. Should the capture occur late in the day so the animal will not have sufficient time to find a suitable burrow for the night, the tortoise shall be placed in a clean cardboard box as described above and held in an appropriate place safe from predators and danger of hyperthermia, until release can occur in the morning.

6. If tortoises found in burrows, and to be removed from the project site and released into the wild, are removed from burrows between November 1 and March 15, they shall be transported in cardboard boxes to the approved over-wintering site. Each tortoise shall be placed in an artificial burrow within a fenced enclosure with one tortoise per enclosure. Each enclosure must be separate from adjacent pens so that one tortoise can not place its head or limbs through the fence and physically contact a tortoise in an adjacent enclosure. Fencing does not need to be buried but shall be stable enough to preclude escape.

The main chamber of the burrow shall be constructed of plywood and the roof placed approximately 2.5 feet below the soil surface. The burrow's tunnel shall be 8 to 10 feet long with a gentle slope (e.g., about 4:1). The tunnel shall be stabilized on the top with PVC pipe cut in half. The pipe shall be no smaller than 15 inch in diameter and soil shall be used to adjust tunnel to tortoise size. After placement of the tortoise in the burrow, the entrance of the tunnel shall be partially blocked with loose topsoil.

If any tortoise excavated is underweight, as determined by comparison to regressions developed by Dr. Michael Weinstein for the tortoises at the Honda project, the tortoise shall be placed in a room at a temperature of 90° to 100 °F and allowed to soak in fresh water for 2 to 3 hours. After rehydration and drying, the tortoise shall be cooled to hibernation temperature slowly and placed in an artificial burrow. This procedure shall be implemented only by persons instructed in this manner of treatment.

Beginning in February, activity of the tortoises within the artificial burrows shall be monitored to determine an appropriate release time. Tortoises shall be released in the morning hours when temperatures are conducive to activity. The appropriate time for release will probably occur in the 3rd week of March.

Each tortoise shall be released between 150 and 1000 feet from the outer boundary of the project area nearest the capture point. Released tortoises shall be placed under a shrub in the shade. Releases shall occur at a temperature that is suitable for activity, with reasonable expectation that the temperature will remain within the tortoise's thermal preference long enough for the tortoise to adjust to its surroundings. Tortoises shall be monitored at the release site until they are exhibiting normal behavior. To facilitate this measure, each tortoise must be accompanied by one of the approved biologists. There shall be no mass releases of animals.

7. Tortoise eggs shall be moved to artificial nests either in the wild or at an approved facility. Biologists must receive special training in the procedures outlined below, but such training can be obtained after a nest is actually found. If this is done, the nest shall be carefully covered with soil so as not to move the eggs and protected until on site training is provided. The responsible Federal agency shall ensure that this training is made available.

Any nest that is found shall be carefully excavated by hand at a time of day when the air temperature 6 inches above the ground is approximately equal to the soil temperature at egg level. Immediately upon finding a nest, large tool use shall be discontinued and the nest excavated by the biologist using his or her hands. Before disturbance of nest contents, each egg shall be gently marked with a small dot on the top using a felt-tipped pen to establish the egg's orientation in the nest. In handling nest contents, eggs must be maintained in this orientation at all times. Because egg shells become extremely fragile in the last few weeks before hatching, special care shall be taken with eggs found from August to mid-October. Because these eggs are very fragile, some may break during handling. This will be lethal to egg contents. Such an accident can be expected to occur until techniques are developed to avoid this type of incident. Broken eggs shall be buried nearby and left in the field, or the contents preserved and provided to qualified researchers.

The biologist shall measure and record the depth of the nest below the soil surface, the location of the nest in relation to any adjacent shrub (i.e., whether on the north, south, east, or west side of the shrub), the species of shrub and its approximate foliage volume, and the soil type. Place approximately one inch of soil from the nest area in a bucket and carefully transfer the eggs to the bucket, maintaining egg orientation. Cover the eggs with soil that is free of cobbles and pebbles, to a depth equivalent to that in the original nest.

If good tortoise habitat is available in the general area, the eggs shall be relocated between 150 to 1,000 feet from outer boundary of the project site. Prepare a nest with the same depth, orientation, location in relation to a specific

shrub species, and in the same soil type as the original nest. Carefully transfer the eggs, maintaining their original orientation, to the new nest. The eggs shall be replaced so that they touch one another. Gently cover with soil from which cobbles and pebbles have been removed so that all the air spaces around the eggs are filled. Relocated nests in the wild shall be monitored by a qualified biologist. The monitoring program shall be developed in consultation with the Service.

If a suitable site for a new nest is not available in the wild, the eggs shall be prepared for incubation in a suitable holding facility. Place a small amount of soil in a bucket and transfer the eggs to the bucket using the

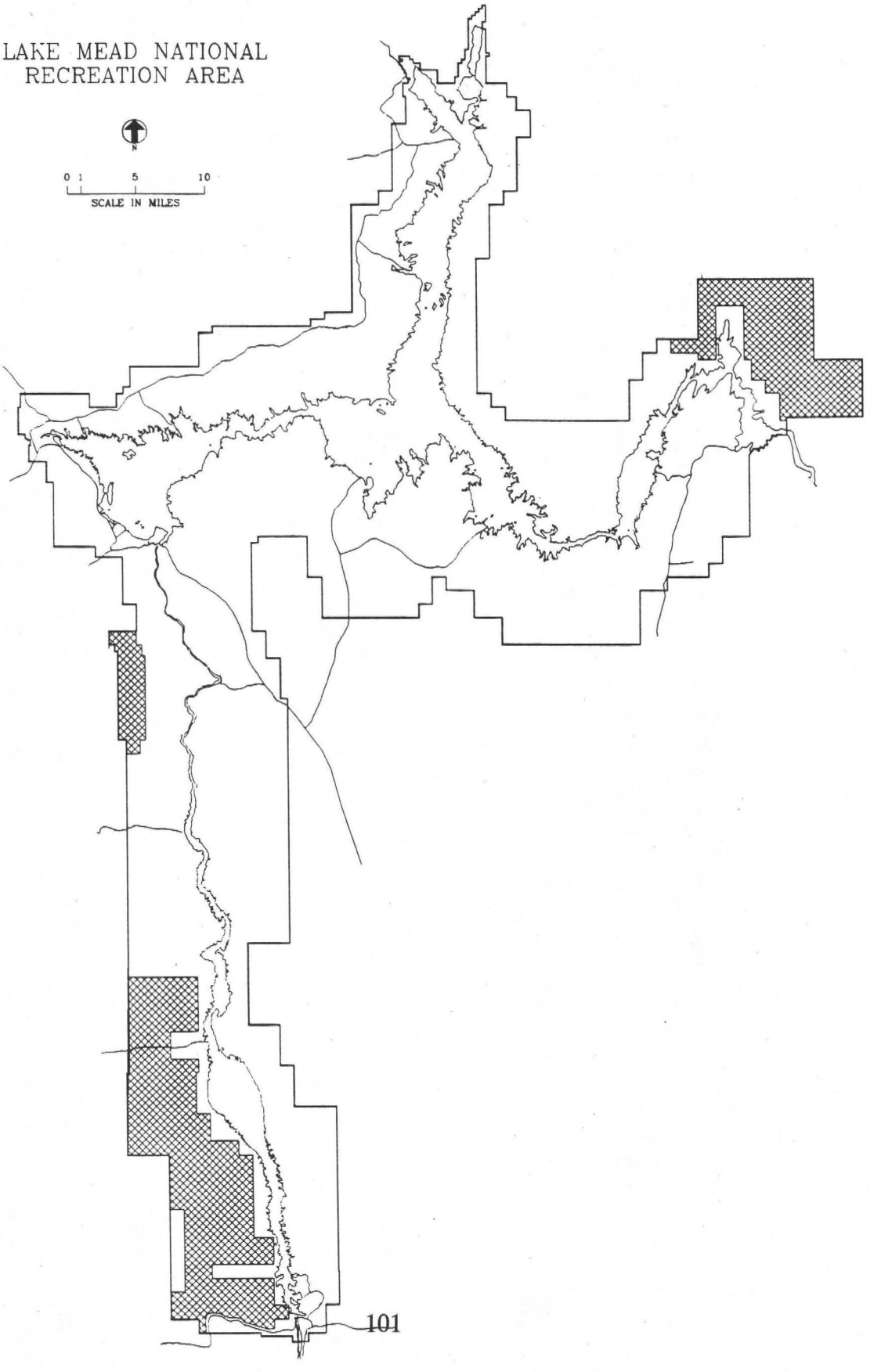
technique specified above, making sure the eggs are touching one another. Carefully fill the bucket to the depth of the original nest, but leave the top of the soil layer 3 inches below the rim of the bucket so that future hatchlings cannot escape. Bury the bucket in soil in a safe location at an approved holding facility.

The biologist shall record in detail all the procedures used in moving eggs. Personnel caring for incubating eggs at a facility shall maintain a record of where the eggs were found, method of incubation, length of time and conditions under which the eggs were incubated, observations of eggs during the incubation period, information about hatchling health and behavior, and disposition of the hatchlings.

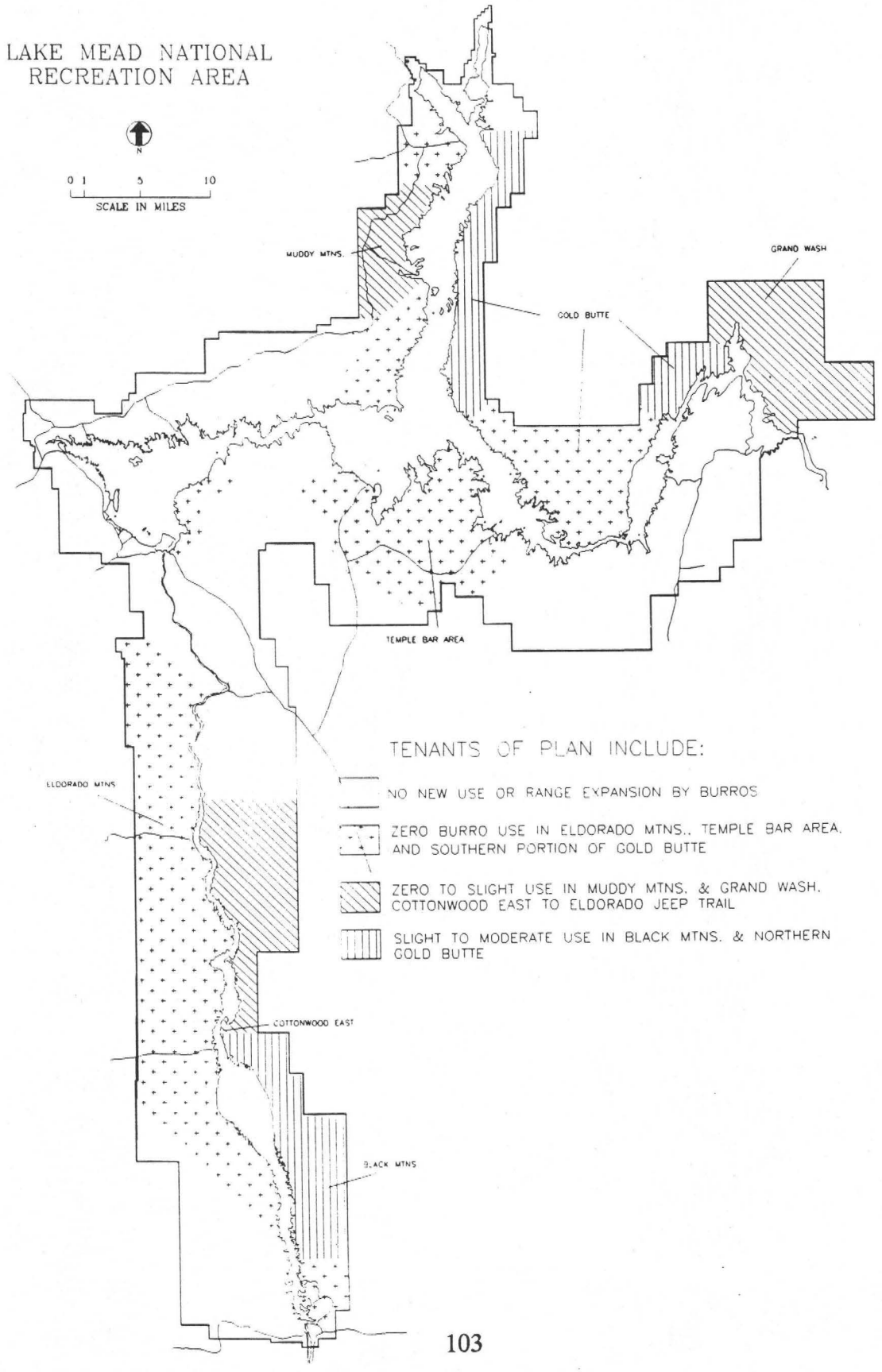
8. Should any deviation from the procedures outlined above be necessary, the approved biologist shall contact the Service as soon as possible.

9. A final report, containing all the information noted above and including release information, must be supplied to the Service and the responsible Federal agency within 1 month of the final releases or disposition of tortoises.

APPENDIX B:
Desert Tortoise Critical Habitat



APPENDIX C:
Burro Management Areas



APPENDIX D:
Interagency Agreement

INTERAGENCY AGREEMENT
BETWEEN
NATIONAL PARK SERVICE
LAKE MEAD NATIONAL RECREATION AREA
AND
BUREAU OF LAND MANAGEMENT
PHOENIX DISTRICT
ARIZONA STRIP DISTRICT
LAS VEGAS DISTRICT
FOR BURRO MANAGEMENT

(IA-8360-94-0003)

Article I.

Background and Objectives

Whereas, it is jointly recognized that burros inhabit adjoining lands that are administered by Lake Mead National Recreation Area (NRA), National Park Service (NPS), and lands administered by the Bureau of Land Management (BLM), Phoenix District, Arizona Strip District, and Las Vegas District, and;

Whereas, there is a mutual desire by the NPS and the BLM to work cooperatively in the management of burros that utilize the lands identified above;

Whereas, the BLM manages the public lands under the Federal Lands Policy and Management Act of 1976 for their various resource values under the principles of multiple use and sustained yield that will best meet the present and future needs of the American people, making the most judicious use of the land without permanently impairing the productivity of the land and the quality of the environment, and;

Whereas, the NPS administers Lake Mead NRA under the National Park Service Organic Act of 1916 et seq., and the Lake Mead NRA Organic Act of 1964 in order to conserve its scenic, natural, cultural, and wildlife resources and to provide for public enjoyment of those resources in such a manner as to leave them unimpaired for the enjoyment of future generations, and;

Whereas, the NPS and BLM both have responsibilities for carrying out policies and programs established by the National Environmental Policy Act of 1969, Clean Air Act, Federal Water Pollution Control Act, Wilderness Act, Endangered Species Act, Historic Preservation Act, Archeological Resources Protection Act of 1979, and other applicable public laws, recognizing that the policies, programs, plans, and activities pertaining to our respective responsibilities may significantly affect the other and recognizing the need for harmonious and effective cooperative relationships between our agencies, and;

Whereas, The Wild Horse and Burro Act of December 15, 1971, 16 U.S.C., 1331-1340, provides the legal basis for the management of wild horses and burros on public lands with the objective of achieving and maintaining a thriving natural ecological balance with their environment and public lands being defined as lands administered by the Secretary of the Interior through the BLM, and;

Whereas, lands within Lake Mead NRA, a unit of the National Park System, are not included under the Wild, Free-Roaming Horse and Burro Act of 1971, and the foundation for burro management within NPS boundaries at Lake Mead NRA is derived from statutes such as the NPS Organic Act of 1916 as amended, and in the Lake Mead Act of October 8, 1964, and various regulations set forth by the NPS in publications entitled *National Park Service Natural Resources Management Guidelines* and *Management Policies*, and;

Whereas, the goals and objectives for burro management at Lake Mead NRA are found in the Lake Mead NRA Burro Management Plan, and the goals and objectives for burro management on BLM administered lands are found in BLM land use plans, and;

Whereas, the BLM and the NPS desire an ecosystem management approach to resolve conflicts and achieve each agency's objectives.

Article II.

Authorities

This agreement is prepared under several authorities, including, but not limited to, for the Bureau of Land Management, the Federal Land Policy and Management Act of 1976 (43 USC 1701-1782, Public Law 98-540) and the Economy Act of 1932 (31 USC 15); and for the National Park Service, the National Park Service Organic Act of 1916 et seq. and the Lake Mead NRA Organic Act of 1964.

Article III.

Statement of Work

Now, therefore it is mutually agreed that:

1. The National Park Service at Lake Mead NRA will determine appropriate burro utilization prescriptions, including areas of zero burro use, within the recreation area.

2. The NPS, Lake Mead NRA and the BLM will develop a joint monitoring plan including monitoring methods and prescriptions for the border areas adjacent to each agency's boundaries where burros utilize both NPS and BLM lands.

3. In areas where burros utilize both BLM and NPS administered lands, the NPS and BLM will cooperate to determine acceptable burro population levels in these areas based upon vegetative monitoring and utilization studies and will work mutually to develop carrying capacities and population numbers in these areas recognizing each agencies policies and prescriptions. Carrying capacity for burros will be based on forage available from BLM administered lands. The agencies will work to set such levels and prescriptions and to manage populations for these levels as soon as possible after the implementation of this Agreement.

4. The NPS, in consultation and coordination with the BLM, will determine when burro removals within the recreation area are necessary, and with the exception of nuisance burro removals, removals in joint use areas will be based on prescriptions established by Lake Mead NRA in consultation with the BLM. Nuisance burros many be removed at any time regardless of utilization levels.

5. Removal of burros from the recreation area will be in accordance with approved removal plans developed by personnel at Lake Mead NRA and/or BLM personnel. Burros may be gathered by BLM capture crews and/or contractor of BLM and/or NPS. All burro removals will be done in a safe and humane manner to prevent injury and minimize stress and heat exhaustion to the burros.

6. The NPS and BLM will coordinate project planning and funding for habitat enhancement.

7. The NPS may humanely destroy sick or injured burros within the recreation area and will notify the appropriate BLM office as soon as possible.

8. NPS and BLM will annually determine funding and personnel needs and availability for removals and disposition of burros. An Interagency Agreement will be established after all necessary planning has been completed and agreed on by all parties concerned. The NPS may seek assistance from private wild horse and burro groups or humane organizations for funding and implementation of captures.

9. Burros captured within the recreation area will be placed, when available, in the BLM adoption program. The NPS may seek assistance from private wild horse and burro groups or humane organizations for placement or adoption of burros removed from the recreation area.

10. The NPS and the BLM will exchange information and promote cooperative research on scientific, biological, population, and other information regarding burro management.

11. The NPS and BLM will work with the Black Mountain Ecological Planning Team for the purposes of implementing coordinated burro management within the Black Mountain Ecosystem. Other BLM and NPS interdisciplinary team efforts will be initiated as necessary.

12. The NPS and BLM will coordinate press releases and media coverage relating to actions pertaining to this agreement.

13. An annual coordination meeting will be held each July to determine budget submissions, capture priorities, and program evaluation. To maintain consistency, representatives from NPS, involved BLM districts, state offices, and National Program Office will attend. Hosting responsibilities will be alternated between agencies.

Article IV.

Term of Agreement

This interagency agreement shall become effective when signed by the parties hereto and shall continue in force for five (5) years unless terminated at an earlier date as stipulated under Article IX. This agreement shall be evaluated yearly at the annual coordination meeting.

Article V.

Key Officials

a. Superintendent, Lake Mead National Recreation Area

b. State Director, Arizona BLM

c. District Manager, Phoenix District BLM

d. District Manager, Arizona Strip District BLM

e. State Director, Nevada BLM

f. District Manager, Las Vegas District BLM

Article VI.

Property Management and Disposition

Not applicable.

Article VII.

Prior Approval

Not applicable.

Article VIII.

Reports

Not applicable.

Article IX.

Termination

This agreement may be terminated only by either BLM state directors or Superintendent, Lake Mead NRA upon thirty days written notice.

Article X.

During the performance of this agreement, the participants agree to abide by the terms of Executive Order 11246 on non-discrimination and will not discriminate against any person because of race, color, religion, sex, or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex, or national origin.

No member or delegate of Congress, or resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

Approved:

ACTING

Alan O'Neill, Superintendent
Lake Mead National Recreation Area

6/3/94
Date

District Manager
Phoenix District BLM

6-17-94
Date

District Manager
Arizona Strip District BLM

6/17/94
Date

District Manager
Las Vegas District BLM

7/11/94
Date

APPENDIX E:
1994 Burro Census Results

1994 BURRO INVENTORY RESULTS
BLACK MOUNTAIN BIOLOGICAL UNIT, ARIZONA

Purpose

A tri-agency inventory of the burro population of the Black Mountain Biological Unit was undertaken from June 6 through July 5, 1994. Representatives from the Bureau of Land Management, National Park Service and Arizona Game and Fish Department participated in the survey. The purpose of the inventory was to collect data for population estimates and population age, color and sex structure.

The Inventory Area

The Black Mountains are located 12 miles east of Kingman and extend from south of Yucca, 100 miles north to Hoover Dam (see map). The major physical features in the area inventoried include the Black Mountains, Wilson Ridge, the Colorado River Valley, and Sacramento/Detrital Valley. The vegetation is typical of the lower Sonoran Desert and Mojave Desert shrub with influence from the Arizona Interior Chaparral on the higher slopes of the Black Mountains.

Permanent water is available for burros along the Colorado River north of Katherine Landing and from numerous springs and seeps throughout the Black Mountains.

Materials and Methods

Seventy-six (76) hours of helicopter time were used for the burro inventory. A Bell helicopter was used, with the doors removed. The marking agent was plastic, marble-sized projectiles fired from a $C0_2$ powered rifle. The plastic paint balls explode on impact, leaving a 2 to 4 inch orange spot on the marked animals. Because of the shooter's position in the helicopter, most animals were marked on the left hip or side.

The inventory was accomplished in two phases. During the first phase, the objective was to locate and mark as many burros as possible. When flying in relatively open country, a grid pattern was flown to locate the animals. In mountainous areas or in steep canyons, a contour pattern was flown. When animals were located, the helicopter would break out of the search pattern and the shooter would attempt to mark the animals. If a mother and foal were observed, only the jenny was marked to keep stress experienced by the foal to a minimum. During the recount, unmarked foals with marked jennies were counted as marked. During the marking phase, data was recorded on total number of animals marked, age class and location.

During the second phase, the entire area was flown again and data was recorded, which included total number of burros observed, number marked and unmarked, age class, sex, color and location. All locations were plotted using a Global Positioning System (GPS) receiver during the flights.

The Black Mountain Biological Unit can be conveniently separated into three flight areas delineated by roads. The boundaries of those three areas are:

Area I = Interstate 40 to Highway 68
Area II = Highway 68 to Highway 93
Area III = Highway 93 to Temple Bar

Once work had begun in a given flight area, both phases (mark and recount) were completed before moving on to the next area. This was done to insure that marks would be preserved between the marking and recounting phase of the study. Using this system, the period between marking and resighting varied from 2 to 15 days.

The Lincoln-Peterson formula was used to estimate the burro population size:

$$N = \frac{Mn}{m}$$

Where:

N = Estimate of Population
M = Total number of burros marked (phase one)
n = Total number of burros counted (phase two)
m = Total number of marked burros resighted (phase two)

Confidence limits were assigned to the population estimates through the formula: 95% confidence limits = N ± 2 Standard Errors. The Standard Error was calculated using the formula:

$$S.E. = \frac{M^2 n\,(n-m)}{m^3}$$

Sighting rate (S.R.) was determined by the formula:

$$S.R. = \frac{m}{M(100)}$$

Results

Data collected during these surveys is summarized in Tables 1 through 7.

TABLE 1. SUMMARY OF BURRO SURVEY RESULTS

Flight Area	#Marked (M)	Recount Marked (m)	Recount Unmarked	Total (n)	Population Estimate	Sighting Rate (S.R.)
I	296	202	157	359	526 ± 49	68%
II	190	104	102	206	376 ± 52	55%
III	35	24	28	52	76 ± 23	69%
TOTAL	**521**	**330**	**287**	**617**	**984 ± 73***	**63%**

*Includes 10 burros not marked at the town of Oatman (town burros)

Past census results:

1,342 ± 87 (1991)**
1,183 ? (1986)
1,933 ? (1981)

**Includes 12 burros not marked at the town of Oatman (town burros)
***6 horses were observed in the Temple Bar area in 1991 and 1994

TABLE 2. BLACK MOUNTAIN BURRO POPULATION AGE STRUCTURE (SPRING, 1994)

Flight Area	Adults	%	Yearling	%	Colts	%
I	267	74	28	8	64	18
II	166	81	16	8	24	12
III	37	71	3	6	12	23
TOTAL	**470**	**76**	**47**	**8**	**100**	**16**

TABLE 3. BLACK MOUNTAIN BURRO POPULATION SEX RATIOS (SPRING, 1994)

Flight Area	Male	%	Female	%
I	131	47.1	147	52.9
II	114	62.6	68	37.4
III	20	52.6	18	47.4
Total	**265**	**53.2**	**233**	**46.8**

TABLE 4. BLACK MOUNTAIN BURRO POPULATION COLOR RATIO (SPRING, 1994)

Flight Area	Gray	Brown	Black	Red	Pink	Blue	White	Paint	Other
I	229	84	-	1	8	7	16	2	-
II	121	68	1	-	3	9	1	1	1
III	44	3	2	-	-	-	-	-	-
Total	**394**	**155**	**3**	**1**	**11**	**16**	**17**	**3**	**1**
Percentage	65.6	25.8	0.5	0.2	1.8	2.7	2.8	0.5	0.2

Summary

A total estimate of 984 ± 73 burros was calculated for the entire study area including an estimated 10 burros inside the town of Oatman that were not actually observed. Estimates based on the number of animal sightings recorded with the Global Positioning System differed slightly from the estimate derived from the data sheets recorded by hand with a pencil and paper. (i.e. 982 ± 73 for an overall estimate from the GPS records). This degree of error is probably attributable to human error during the data entry process due to difficulties communicating through a helicopter intercom.

Personnel from all three agencies involved in the study felt that the methodology used provided a reasonably accurate estimate for the area surveyed. Concerns that marks could be lost between the mark and resight phases of the study were alleviated by the ease with which most marks could be identified. Furthermore, it is believed that adequate time was provided for marked and unmarked animals to mix following the marking phase of the study. This belief is based upon the observation of numerous mixed groups of marked and unmarked animals during the resight phase of the study.

Prepared By: Mike Stamm, Bureau of Land Management
Ross Haley, National Park Service

1994 BURRO INVENTORY RESULTS
GOLD BUTTE AND ELDORADO MOUNTAINS, NEVADA
GRAND WASH AND TASSI AREA, ARIZONA

The Gold Butte burro census took place from April 18 through April 28, 1994. The Eldorado census occurred on May 3 and 4, 1994. The Grand Wash and Tassi census took place from October 17 through 20, 1994. The same methods were utilized as detailed in the Black Mountain inventory results.

TABLE 1. SUMMARY OF BURRO SURVEY RESULTS

Flight Area	#Marked (M)	Recount Marked (m)	Recount Unmarked	Total (n)	Population Estimate
Gold Butte	387	218	85	303	538 ± 39
Eldorado Mts.	83	65	33	98	125 ± 18
Grand Wash Tassi Area	93	70	27	97	129 ± 16

APPENDIX F:
Utilization Studies

Tassi Allotment Utilization Summaries
Arizona Strip District Bureau of Land Management

PASINO	YEAR	PERIOD OF USE	AUMSUSED	%NSEA	%CSEA	%BROW	WEIGHTED%UTIL
1	1981	YEAR LONG	0	41	50	27	36
1	1983	YEAR LONG	0	43	35	25	39
1	1984	YEAR LONG	0	50	23	22	41
1	1986	YEAR LONG	0	50	28	3	35
1	1987	YEAR LONG	0	42	40	22	37
1	1989	YEAR LONG	0	31	37	14	27
1	1990	YEAR LONG	0	29	33	10	26
1	1991	YEAR LONG	0	32	20	16	24
1	1992	YEAR LONG	0	12	3	7	8
1	1994	YEAR LONG	0	2	1	2	2
PASTURE AVERAGES			0	33	27	15	28

STOCKING RATE @ 50% = AUMs

PASINO	YEAR	PERIOD OF USE	AUMSUSED	%NSEA	%CSEA	%BROW	WEIGHTED%UTIL
2	1981	YEAR LONG	0	-	-	45	45
2	1987	YEAR LONG	0	-	-	11	11
2	1989	YEAR LONG	0	-	-	21	21
2	1991	YEAR LONG	0	-	3	11	33
2	1992	YEAR LONG	0	-	-	6	5
2	1993	YEAR LONG	0	-	-	-	-
2	1994	YEAR LONG	0	-	-	1	1
PASTURE AVERAGES			0	-	3	16	19

PASINO	YEAR	PERIOD OF USE	AUMSUSED	%NSEA	%CSEA	%BROW	WEIGHTED%UTIL
3	1981	YEAR LONG	0	50	-	44	47
3	1983	YEAR LONG	0	28	-	21	24
3	1984	YEAR LONG	0	18	-	20	20
3	1985	YEAR LONG	0	25	-	14	19
3	1987	YEAR LONG	0	19	-	23	21
3	1988	YEAR LONG	0	25	-	21	23
3	1989	YEAR LONG	0	19	-	11	17
3	1990	YEAR LONG	0	19	3	15	17
3	1991	YEAR LONG	0	29	-	21	25
3	1992	YEAR LONG	0	6	-	11	9
3	1993	YEAR LONG	0		-	-	-
3	1994	YEAR LONG	0	4	-	2	2
PASTURE AVERAGES			0	22	3	18	20

PASINO	YEAR	PERIOD OF USE	AUMSUSED	%NSEA	%CSEA	%BROW	WEIGHTED%UTIL
4	1981	YEAR LONG	0	26	-	17	21
4	1985	YEAR LONG	0	25	25	23	24
4	1987	YEAR LONG	0	16	34	9	13
4	1988	YEAR LONG	0	31	29	22	26
4	1989	YEAR LONG	0	36	50	23	32
4	1990	YEAR LONG	0	30	14	7	18
4	1991	YEAR LONG	0	35	28	23	31
4	1992	YEAR LONG	0	6	3	3	4
4	1993	YEAR LONG	0	1	-	-	5
4	1994	YEAR LONG	0	2	3	-	
PASTURE AVERAGES			0	21	23	16	20

PASINO	YEAR	PERIOD OF USE	AUMSUSED	%NSEA	%CSEA	%BROW	WEIGHTED%UTIL
5	1981	YEAR LONG	0		57	36	40
5	1986	YEAR LONG	0			41	41
5	1989	YEAR LONG	0			32	32
5	1990	YEAR LONG	0	40	6	28	29
5	1991	YEAR LONG	0		20	20	20
5	1994	YEAR LONG	0			4	1
PASTURE AVERAGES			0	40	28	27	27

PASINO	YEAR	PERIOD OF USE	AUMSUSED	%NSEA	%CSEA	%BROW	WEIGHTED%UTIL
6	1981	AVG. 5 PLOTS	1183				30
6	1982	AVG 5 PLOTS	1188				
6	1983	AVG. 5 PLOTS	1236				32
6	1984	AVG. 5 PLOTS	1152				31
6	1985	AVG. 5 PLOTS	1188				22
6	1986	AVG. 5 PLOTS	1200				38
6	1987	AVG. 5 PLOTS	1188				21
6	1988	AVG. 5 PLOTS	1188				25
6	1989	AVG. 5 PLOTS	1188	29	39	24	26
6	1990	AVG. 5 PLOTS		26	30	13	21
6	1991	AVG. 5 PLOTS		32	18	17	24
PASTURE AVERAGES							

*NOTE: AUM averages are not changed by a record showing a blacnk for AUMs USED.

TREND ANALYSIS SUMMARY FOR TASSI ALLOTMENT

PASTURE	PLOT	KEY AREA	YEAR READ	% KEY SPECIES	LIVE VEG COVER	LITTER	TOTAL
1	1	1	1981	23	1	8	32
1	1	1	1986	37	1	32	70
1	1	1	1990	13	8	4	25
1	1	1	1994	39	3	41	83
2	2	2	1981	2	1	4	7
2	2	2	1986	6	0	31	37
2	2	2	1990	4	3	18	25
2	2	2	1994	5	1	62	68
3	3	3	1981	6	1	5	12
3	3	3	1985	22	0	25	47
3	3	3	1990	9	4	17	30
4	4	4	1981	13	2	11	26
4	4	4	1985	27	3	29	59
4	4	4	1990	10	3	1	14
4	4	4	1991	25	1	24	50
4	4	4	1994	55	3	49	107
5	5	5	1981	5	1	13	19
5	5	5	1986	13	1	35	49
5	5	5	1991	10	1	23	34

Black Mountains, Arizona, Lake Mead National Recreation Area
Average Percent Utilization of White Bursage (*Ambrosia dumosa*)

Transect	Method	1990	1991	1992	1993	1994
Kingman Wash #1	LMNRA	--	--	78.0	78.0	--
Palo Verde #1	LMNRA	--	--	42.0	42.0	34.0
Palo Verde #2	LMNRA	--	--	23.0	22.6	--
Palo Verde #3	LMNRA	--	--	17.0	17.1	--
Powerline	BLM	79.0	78.0	79.0	79.0	4.0
Eldorado	BLM	68.0	51.0	72.0	72.0	48.0
Sheeptrail	BLM	79.0	79.0	79.0	79.0	9.0
Owl Point	BLM	73.0	70.0	46.0	46.0	5.0
Black Mts. #1	LMNRA	--	--	61.0	40.0*	--
Black Mts. #2	LMNRA	--	--	28.0	28.0	--
Black Mts. #3	LMNRA	--	--	18.0	18.0	23.0
Black Mts. #4	LMNRA	--	--	51.0	51.0	--
Black Mts. #5	LMNRA	--	--	58.0	58.0	--

*Utilization on chuckwalla's delight (*Bebbia juncea*)

Gold Butte Utilization Summary
Average Percent Utilization

Transect	Plant	Method	1990	1992	1993	1994
Quail Springs	Bursage	BUM	49.0	38.0	38.0	49.0
Twin Springs	Bursage	BUM	63.0	36.0	36.0	39.0
Walker Wash	Catclaw	BUM	44.0	35.0	35.0	--
Jawbone	Cheesebush	BUM	38.0	27.0	27.0	--
Wild Burro Wash	Catclaw	BUM	27.0	55.0	55.0	51.0
Burro Bay	Bursage	BUM	75.0	75.0	75.0	75.0
Burro Bay	Mormon Tea	BUM	40.0	49.0	49.0	54.0
Gregg's Wash	Bursage	BUM	75.0	75.0	75.0	--
Catclaw Wash	Bursage	LMNRA	--	21.0	21.2	27.0
Delmar Butte	Bursage	LMNRA	--	78.0	78.0	80.0
Hell's Kitchen	Bursage	LMNRA	--	76.0	76.0	81.0

Eldorado Mountain Utilization Summary

Transect	Plant	Method	1992	1993	1994
Eldorado #1	Bursage	LMNRA	16.5	16.5	41.0
Eldorado #2	Bursage	LMNRA	16.5	16.5	19.0
Eldorado #3	Bursage	LMNRA	38.0	38.0	38.0
Burro Wash #1	Catclaw	LMNRA	47.0	47.0	29.0
Burro Wash #2	Catclaw	LMNRA	59.0	59.0	20.0
Burro Wash #3	Catclaw	LMNRA	55.0	55.0	29.0

Muddy Mountains Utilization Summary

Transect	Plant	Method	1992	1993	1994
Muddy Mts. #1	Sacaton	LMNRA	83.5	83.5	78.4
Muddy Mts. #2	Sacaton	LMNRA	83.0	83.0	38.5
Muddy Mts. #3	Saltgrass	LMNRA	33.0	33.0	18.5
Muddy Mts. #4	Saltgrass	LMNRA	28.0	28.0	16.5
Muddy Mts. #5	Bursage	LMNRA	63.0	63.3	34.0
Muddy Mts. #6	Bursage	LMNRA	44.0	43.6	36.0

Arizona Gypsum Beds Utilization Summary

Transect	Plant	Method	1992	1993	1994
Gypsum Beds #1	Bursage	LMNRA	40.0	40.3	--
Gypsum Beds #2	Bursage	LMNRA	22.0	21.5	--
Gypsum Beds #3	Bursage	LMNRA	18.0	18.1	--

BIBLIOGRAPHY

Beatly, J.C. 1976. Vascular plants of the Nevada Test Site and central southern Nevada ecologic and geographic distributions. National Technical Information Service, TID-2688 DAS, Springfield Virginia, 316pp.

Belshaw, Mike and Ed Peplow Jr. 1980. Historic Resources Study, Lake Mead NRA Volume I. National Park Service, Denver Service Center, Denver, Colorado.

Belshaw, Mike and Ed Peplow Jr. 1983. Historic Resources Study, Lake Mead NRA Supplement. National Park Service, Denver Service Center, Denver, Colorado.

Brown, Cathi. 1991. The Burro Removal Program at China Lake Naval Weapons Center, California. Unpublished research paper. California State Polytechnic University, Pomona.

Carothers et al. 1976. An ecological survey of the riparian zone of the Colorado River between Lees Ferry and the Grand Wash Cliffs, Arizona. Final research report, Colorado River Research Program. Grand Canyon National Park.

Carothers, et al. 1976. Feral Asses on Public Lands: An Analysis of Biotic Impact, Legal Considerations and Management Alternatives. Wildlife Management Institute, Washington, D.C.

Desert Research Institute. 1988. Nineteenth Annual Report, Atmospheric Survey. Energy and Environmental Engineering, University of Nevada, Reno.

Douglas, C.L. 1984. 021/05. Management significance of a study of burro-small vertebrate interactions in Death Valley National Monument.

Douglas, Charles L. and Christopher Norment. 1977. Ecological Studies of Feral Burros in Death Valley. Cooperative National Park Resources Study Unit, University of Nevada, Las Vegas.

Douglas, Charles L. and Christopher Norment. 1977. Habitat damage by feral burros in Death Valley. Desert Bighorn Council Trans., pp. 23-25.

Douglas, Charles L. and Kathleen M. Longshore. 1991. Vegetational recovery following burro removal in Death Valley National Monument. Cooperative Park Study Unit, University of Nevada, Las Vegas.

Douglas, Charles L. and Thomas L. Hurst. 1993. Review and Annotated Bibliography of Feral Burro Literature. Cooperative National Parks Resources Study Unit, University of Nevada, Las Vegas.

Dunn, William C. 1984. Ecological relationships between desert bighorn and feral burros in Death Valley National Monument, California. University of Nevada, Las Vegas.

Dunn, William C. 1990. Effects of burro removal on spring use by desert bighorn sheep. Cooperative National Parks Resources Study Unit, University of Nevada, Las Vegas.

Earth Environmental Associates. 1974. Survey of range and ecological conditions for southern part of Bandelier National Monument. (In Bandelier Nat. Mon. files).

Ervin, Richard G. 1986. Lake Mead Developed Area Surveys. National Park Service, Western Archeology Center, Tucson, Arizona.

Farrell, Joel E. 1973. Behavioral patterns of feral burros as influenced by seasonal changes in western Arizona. Arizona State University.

Fisher, J.C., Jr. 1975. Impact of feral asses on community structure in the Acamptopappus grayia plant community of the Panamint Mountains of Death Valley National Monument. Cooperative National Park Resources Study Unit, University of Nevada, Las Vegas.

Fletcher, Milford R., and Roland H. Wauer. 1976. Feral burro management at Bandelier National Monument. Desert Bighorn Council 1976 Transactions. Desert Bighorn Council, Death Valley, California.

Foin, T.C. et al. 1977. Quantitative studies of visitor impacts on environments of Yosemite National Park, California, and their implications for park management policy. Jour. Environmental Manage. 5:1-22.

Fuller, W.H. 1958. Soil Compaction. Report 168, Arizona Agr. Exp. Sta., University of Arizona, Tucson.

Ginnett, Tim F. 1982. Comparative feeding ecology of feral burros and desert bighorn sheep in Death Valley National Monument. University of Nevada, Las Vegas.

Guthrie, D. 1977. Impact of feral burros on small mammal populations within Bandelier National Monument. Typed Report. Joint Science Department, Claremont College.

Hansen, C.G. 1972. The evaluation of bighorn habitat in Death Valley National Monument. U.S. Fish and Wildlife Service report.

Hansen, C.G. 1973. Evaluation of burro activity in Death Valley National Monument. U.S. Fish and Wildlife Service report.

Harper, K.T. and L.L. St. Clair. 1985. Cryptogamic soil crusts on arid and semiarid rangelands in Utah; effects on seedling establishment and soil stability. Final report BLM, Utah State Office, Salt Lake City.

Holland, James S., Wesley E. Niles, and Patrick J. Leary. 1979. Vascular Plants of Lake Mead National Recreation Area, Nevada and Arizona. Lake Mead NRA Technical Report No. 3.

Kirkeeng, Kristine E. 1985. Food habits and food resources of bighorn in the River Mountains, Nevada. National Park Service, Cooperative National Park Resources Studies Unit, University of Nevada, Las Vegas.

Knight, Teri. 1992. Status report of four rare plant species located in the Lake Mead National Recreation Area, Nevada and Arizona. The Nature Conservancy, Las Vegas.

Koehler, D.A. 1974. The ecological impact of feral burros on Bandelier National Monument. Unpub. M.S. thesis, Univ. of New Mexico.

Linnartz, N.E., Chung-Yun Hse, and V.L. Duvall. 1966. Grazing impairs physical properties of a forest soil in central Louisiana. Jour. of Forestry 64:239-243.

Marble, J.R. 1985. Techniques of Revegetation and Reclamation of Land Damaged by Off-Road Vehicles in the Lake Mead National Recreation Area. National Park Service/University of Nevada, Las Vegas. Contribution No. CPSU/UNLV 027/03.

Marble, J.R. and Kimbeall T. Harper. 1989. Effect of timing of grazing on soil-surface cyrptogamic communities in a Great Basin low-shrub desert: a preliminary report. Great Basin National Park. 49: 104-107.

Martin, S.C. 1975. Ecology and management of Southwest semi-desert grass-shrub ranges;the status of our knowledge. USDA Forest Service Research Paper. RM-156, Rocky Mountain Forest and Range Experimental Station.

McClellan, Carole et al. 1980. The archeology of Lake Mead National Recreation Area. National Park Service, Western Archeology Center, Tucson, Arizona.

McKnight, T.L. 1958. The feral burro in the United States. In: The Journal of Wildlife Management. 22:2.

Moehlman, P.D. 1974. Behavior and ecology of feral asses (Equus asinus). Ph.D. dissertation, University of Wisconsin.

Neill, William M. 1983. The Tamarisk Invasion of Desert Riparian Areas. The Education Foundation of the Desert Protective Council.

Norment, C. and C.L. Douglas. 1977. Ecological studies of feral burros in Death Valley. Report prepared for National Park Service, Death Valley National Monument, California.

O'Farrell, Michael J. 1978. 013/05. An assessment of impact of feral burros on natural ecosystems of the Lake Mead National Recreation Area, Arizona-Nevada.

Potter, L.D. and S. Berger. 1977. Deer-burro utilization and competition study, Bandelier National Monument. Final Report Department of Biology, University of New Mexico.

Potter, L.D. 1985. Re-evaluation Studies of Grazing Exclosure Plots, Bandelier National Monument. University of New Mexico.

Reddick, Phillips Brandt. 1981. Feral Burro Management Program Naval Weapons Center, Final Environmental Impact Statement. China Lake Naval Weapons Center, California.

Ruffner et al. 1976. Analysis of age structure and diets in burros in Grand Canyon National Park. Research Report. Grand Canyon National Park, Arizona.

Ruffner et al. 1977. Diets of feral burros (Equus asinus) from the Bedrock Canyon Area. Final Research Report for the National Park Service, Grand Canyon National Park, Arizona.

Ruffner et al. 1977. Biology and ecology of feral burros (Equus asinus) at Grand Canyon National Park, Arizona. Final research report. Grand Canyon National Park, Arizona.

Ruffner, George A. and Dennis S. Tomko. 1976. Mammals of the Colorado River. In: An ecological survey of the riparian zone of the Colorado River between Lees Ferry and the Grand Wash Cliffs. Final research report. Grand Canyon National Park, Arizona.

Ruffner, George A. and Steven W. Carothers. 1982. Age Structure, Condition and Reproduction of Two Equus Asinus (Equidae) Populations from Grand Canyon National Park, Arizona. The Southwestern Naturalist 27(4):403-411.

Rushforth, S.R. and J.D. Brotherson. 1982. Cryptogamic Soil Crusts in the Deserts of North America. The American Biology Teacher. 44(8):472-475.

Seegmiller, R.F. and R.D. Ohmart. 1981. Ecological relationships of feral burros and desert bighorn sheep. Wildlife Monographs 78. 55pp.

Schmutz, E.M. and D.A. Smith. 1976. Successional classification of plants on a desert grassland site in Arizona. Jour. of Range Manage. 29:476-479.

Thomas, Heather Smith. 1979. The Wild Horse Controversy. A.S. Barnes and Co., Inc. Cranbury, New Jersey.

USDI (Bureau of Land Management). 1981. Black Mountain Herd Management Area Plan, Draft. Black Mountain/Cerbat Planning Units, Kingman Resource Area, Arizona.

USDI (Bureau of Land Management). 1989. Arizona Strip District Resrouce Management Plan and Final Environmental Impact Statement. Bureau of Land Management, Arizona Strip District.

USDI (Bureau of Land Management). 1989. Lake Mead 1989 Monitoring Report. Bureau of Land Management, Las Vegas District.

USDI (Bureau of Land Management). 1990. Draft Kingman Resource Area Resource Management Plan and Environmental Impact Statement. Bureau of Land Management, Kingman Resource Area, Arizona.

USDI (Bureau of Land Management). 1990. Removal Plan for Gold Butte Wild Burro Gather. Bureau of Land Management, Las Vegas District.

USDI (Bureau of Land Management). 1991. Black Mountain Biological Unit Burro Inventories. Bureau of Land Management, Kingman Resource Area, Arizona.

USDI (Bureau of Land Management). 1992. Herd Area Statistics Report, 1990-1991. Bureau of Land Management.

USDI (Bureau of Land Management). 1992. Draft Stateline Resource Management Plan and Environmental Impact Statement. Bureau of Land Management, Stateline Resource Area, Nevada.

USDI (Fish and Wildlife Service). 1981. Final Environmental Impact Statement, Proposal to Eliminate Cattle Grazing and Wild Burro Populations on Kofa National Wildlife Refuge. U.S. Fish and Wildlife Service, Region 2.

USDI (Fish and Wildlife Service). 1993. Draft Recovery Plan for the Desert Tortoise (Mojave Population). U.S. Fish and Wildlife Service, Portland, Oregon. 170 pages plus appendices.

USDI (National Park Service). 1979. Bandelier National Monument feral burro management plan and environmental assessment. Bandelier National Monument, New Mexico.

USDI (National Park Service). 1979. Feral burro management and ecosystem restoration plan and draft environmental statement. Grand Canyon National Park, Arizona.

USDI (National Park Service). 1982. Proposed natural and cultural resources management plan and draft environmental impact statement. Death Valley National Monument, California.

USDI (National Park Service). 1988. Management Policies. National Park Service publication, National Park Service, Washington, D.C.

USDI (National Park Service). 1990. An administrative history of the removal of feral burros from Death Valley National Monument. Death Valley National Monument, California.

USDI (National Park Service). 1991. Natural Resource Management Guideline, NPS-77. National Park Service publication, National Park Service, Washington, D.C.

USDI (National Park Service). 1993. Notes compiled to the Office of Resource Management from Visitor Protection Services, Lake Mead National Recreation Area.

USDI (National Park Service). 1993. Statement for Management, Lake Mead National Recreation Area.

USDI and Department of Agriculture. 1990. Eigth Report to Congress on the Administration of the Wild Free-Roaming Horse and Burro Act, National Advisory Board for Wild Free-Roaming Horses and Burros.

USDI and Department of Agriculture. 1992. Draft Ninth Report to Congress on the Administration of the Wild Free-Roaming Horse and Burro Act, National Advisory Board fo Wild Free-Roaming Horses and Burros.

U.S. Soil Conservation Service. 1967. Las Vegas and Eldorado Valleys Area, Nevada - Arizona. U.S. Soil Conservation Service Series (1967).

U.S. Soil Conservation Service. 1979. Soil Survey of Virgin River Area, Nevada - Arizona. U.S. Soil Conservation Service Series (1979).

Vasek, F.C., Johnson, H.B. and D.H. Eslinger. 1975. Effects of power transmission lines on vegetation of the Mojave Desert. Madrono. 23:1-13.

Walker, Michael T. 1978. Ecological similarities between feral burros and desert bighorn sheep, Black Mountains, Northwestern Arizona. M.S. Thesis, Arizona State Univ., Tempe. 127 pp.

Walters, J.E. and R.M. Hansen. 1978. Evidence of feral burro competition with desert bighorn sheep in Grand Canyon National Park. Desert Bighorn Council Trans. pp. 10-16.)

Wauer, R.H. 1978. Impacts of feral burros upon the breeding avifauna at Bandelier National Monument, New Mexico. Typewritten report to National Park Service, Southwest Region, Santa Fe, NM.

Webb, R.H. and H.G. Whilshire. 1980. Recovery of soils and vegetation in a Mojave desert ghost town, Nevada U.S.A. Journal of Arid Environments. 3:291-303.

Welles, R.E. and F.B. Welles. 1961. "The Bighorn of Death Valley." U.S. Government Printing Office, Washington, D.C.

White, T.C.R. 1978. The importance of a relative shortage of food in animal ecology. Oecologia 33:71-86.

Wolfe, Michael L., C. Ellis Legrande, and Robert Macmullen. 1989. Reproductive Rates of Feral Horses and Burros. J. Wildl. Manage. 53(4):916-924.

Woodward, Susan Lee. 1976. Feral burros of the Chemehuevi Mountains, California: The biogeography of a feral exotic. University of California, Los Angeles.

Yancey, M.J. 1984. 021/06. A study of burro-small vertebrate interactions in Death Valley National Monument, California.