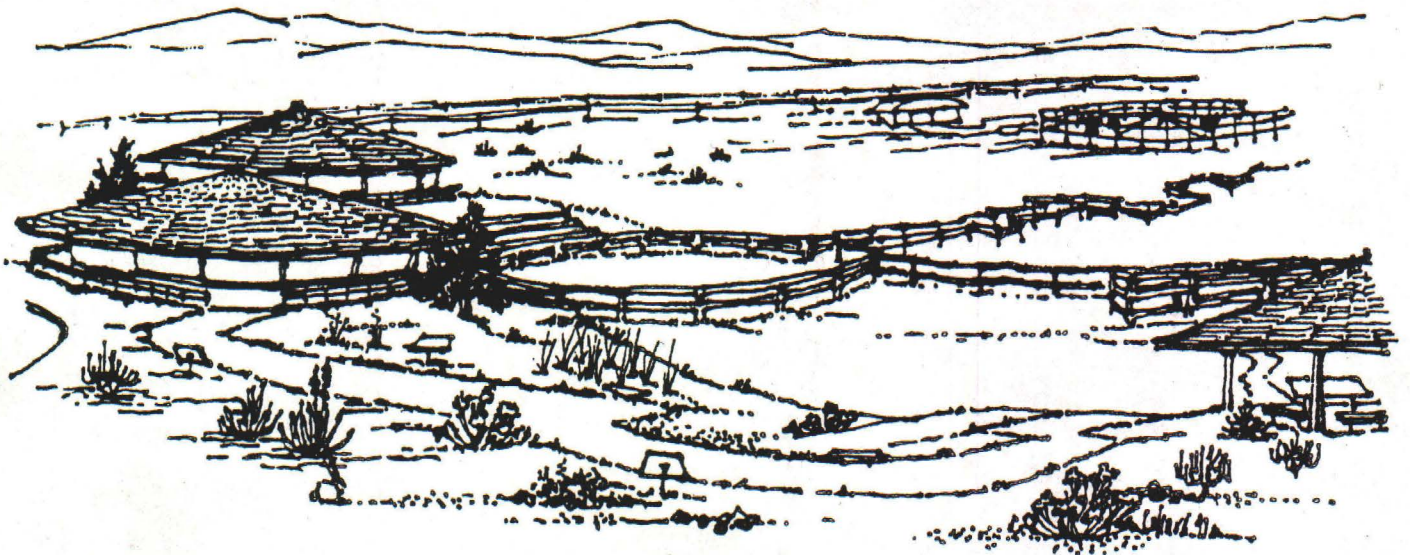


10/1991



BUREAU OF LAND MANAGEMENT
NEVADA

NATIONAL WILD HORSE AND BURRO CENTER



DRAFT

OCTOBER 1991

GOALS

Our goal is to increase and maintain the professional capability and leadership of the Bureau of Land Management (BLM) in order to provide for the management and protection of wild horses and burros on public lands. The components of our program must include:

Research and Development

Science and Technology Transfer

An Interpretive Center

Wild Horse and Burro Processing Center

National Adoption Program

Senior Technical Staff

ENHANCE THE BLM'S IMAGE

The National Wild Horse and Burro Center will:

- Enhance the image of the Bureau of Land Management (BLM). Public outreach is a major initiative of this Administration. A quality Center will benefit the BLM, as well as the program.
- Rise to the challenge of the National Wild Horse and Burro Advisory Board, which on May 13-15, 1991 discussed this issue and made this recommendation:

ISSUE: The Board discussion on this issue began with consideration of the need for a Great Basin Wild Horse and Burro Center, where the public could view a wild horse herd, preparation of wild horses and burros for adoption, and an educational exhibit. The discussion expanded to the broader issue of marketing and public education about the overall wild horse and burro program. The Board seemed to believe that the agencies have not marketed the wild horse and burro program effectively. For example, they see a need to "sell" the value of wild horses and burros in conjunction with recreational and environmental programs.

RECOMMENDATION: The Wild Horse and Burro Advisory Board recommends to the Secretary of the Interior and the Secretary of Agriculture that public education and marketing be implemented as a part of the wild horse and burro program and that wild horse and burro protection and management become an integral part of any environmental education program.

We propose to formally dedicate the National Wild Horse and Burro Center in 1996 -- the 25th anniversary of the Wild Horse and Burro Act. The dedication will emphasize the BLM's commitment to manage this animal in an exemplary manner.

OBJECTIVES

BECOME THE FOCAL POINT FOR NATIONAL WILD HORSE AND BURRO RESEARCH

- When the Center is fully functioning, it will become a focal point for research associated with wild horses and burros and their management.

1. There will be adequate space for scientific and research activities, some of which may require specialized equipment.
2. Adequate library or record space must be provided at the Center so it can serve as a repository for material (history, research, adoption records, etc.) on the subject of wild horses and burros. This effort must take into consideration the Bureau's responsibilities for records management.

FACILITATE APPLICATION OF SCIENCE AND TECHNOLOGY

- We seek to serve and educate our internal publics about numerous facets of the wild horse and burro, including its habitat and its needs. Employees of other government agencies (Forest Service, National Park Service) involved in wild horse management would also benefit from the scientific and educational opportunities and knowledge offered at such a center.

-- Rangeland monitoring techniques, gather techniques, horse health treatment, population management, and other efforts to arrive at a "thriving natural ecological balance and multiple-use relationship" would be directed from this Center.

1. Provide conference space which will allow groups to meet, especially those concerned with management of wild horses and burros. The BLM would control the use of space, but would primarily wish to accommodate conferences and events involving Federal and State involvement first.
2. Become the Bureau's center for training on wild horse and burro management; this means employee training, contractor training, and other training associated with similar management of equines.

EDUCATE, INFORM VISITORS ABOUT HORSES AND BURROS AND THE PROGRAM

- Enactment of this proposal will result in the education and enlightenment of thousands of Americans and foreign visitors each year. Education will be about the history and management of the wild horse and burro program and the multiple uses of the public lands.

- The sights and activities at the Center will serve as a quality recreational and educational experience for those visiting the Reno-Sparks-Carson City-Gardnerville-Minden and Lake Tahoe areas. It would also serve to enhance the State of Nevada's active tourism industry. The Center can add another full day to the time a visitor will spend in the Silver State.

1. Plan for and construct a National Wild Horse and Burro Center which can accommodate school groups, tour groups and members of the traveling public. This includes the provision of adequate parking space for private cars and tour busses, and consideration for the handicapped.
2. Allow space in the Center for permanent quality interpretive displays, as well as an auditorium where an overview film, video or other state-of-the art production can be shown.
3. Plan the Center and design exhibits and space to accommodate a well-coordinated public affairs and interpretive effort.
4. Provide an adjacent or nearby opportunity to view wild horses in a natural range setting. Apply the best range management practices (rest-rotation pastures, etc.), as appropriate, and make range improvements which may be of particular interest to the public visible (solar fences, windmills, etc.)
5. Bi-lingual signing and brochures should be considered since the visitors will be from all over the world, and since the Spanish-speaking population is growing in Nevada.

BE A SHOWCASE FOR PROCESSING WILD HORSES/BURROS

- The majority of the Nation's wild horses and burros gathered for adoption will be processed through the Working Facility of this Center. Facilities should be built and staff trained to become an exemplary showcase for horse processing.

1. The government's showcase for horses should be designed for efficiency. Specifically, the Working Center should be tailored to effectively handle wild horses and burros.
2. Create facilities where wild horses and burros can be maintained and viewed by the public, keeping safety factors in mind at all times. Reduce risks to animals and humans which may arise in handling or viewing.
3. Processing facilities should be built where water and drainage is adequate so BLM can comply with all Federal and State safety and health standards for animals. Location should also take into consideration air pollution and proximity of residential and commercial developments.

4. Build processing facilities to be used after wild horse and burro gathers and during research projects. These facilities should be accessible to authorized individuals, such as BLM employees in the horse program and to researchers, but not to the general public except by prior arrangement. Such facilities should be to ensure safety of the animals and employees in the program, with the public visiting only with a BLM tour guide or other authorized individual.

BECOME THE CENTRALIZED LOCATION FOR WEST COAST ADOPTION

- This effort would efficiently centralize adoption records and the dispatch of animals for adoption in the United States. Animals gathered in Nevada would be readily available at the Center.

1. Track all gathers and the availability of horses and burros gathered in all Western BLM states. Coordinate the dispatch of those animals to adoptions. This would result in efficiencies in arranging transportation, in availability of satellite adoption crews, etc.

SENIOR TECHNICAL STAFF

- Establish a senior technical staff at the National Wild Horse and Burro Center.

1. The staff would develop procedures and facilitate national coordination for the wild horse and burro program.

TARGET AUDIENCES

1. The interpretive portion of the Center will be aimed at school children and the tourists who visit the Reno-Sparks-Carson City area, and local citizens who are interested in the wild horse and burro.
2. The research portion of the Center will be built to accommodate BLM employees involved in the horse and burro program, veterinarians and scientists who may be conducting research at the facility, graduate students who may be conducting or observing research, etc.
3. The drive-through area will be of primary interest to tourists who want to see how horses or burros live in a natural setting.
4. The research portion, the working facility and the conference portion of the Center will be used by numerous federal employees, especially BLM personnel, from Nevada and other states.
5. Wild horse and burro interest groups, humane organizations, and national horse groups may be the most concerned about the quality of the endeavor. However, we must remember that Nevada's Congressional delegation, the State of Nevada elected officials, the Nevada Commission on Tourism and other tourism-visitor groups, the Nevada Department of Wildlife, the Nevada Cattlemen's Association, the Nevada Farm Bureau, the University of Nevada, Reno, and others will have a keen interest in this proposal and its development.

DEMAND

A Center located within an easy drive from Reno-Sparks would have the advantage of a strong existing tourism base, as well as being next to the second largest population base in the State of Nevada.

The Eastern Sierra Recreation Council states that there are 400,000 permanent residents in the Reno-Sparks, Lake Tahoe, Gardnerville-Minden area. Already 12 to 15 million tourists visit this area annually. Tourism is the area's leading industry. In fact this area has the *highest per capita rate of tourism in the Nation*. Twenty separate tourism and visitors' authorities serve the area. Thus, there are a number of existing convention and visitors groups which would be interested in the BLM's efforts to build a Center.

An inquiry to the Nevada Commission on Tourism (Rick Moreno, Director of Advertising and Public Relations), brought enthusiastic response to this BLM proposal. The Commission's goals to work with Federal and State agencies and to offer alternatives to tourists fits well with this Center proposal. (See Appendix A.) Also, the Commission sees need for family-oriented recreational opportunities throughout the state.

Several of Moreno's personal observations are worth noting. The Reno-Sparks tourism market is 70 percent drive-in and 30 percent fly-in. A number of recreational vehicles travel Interstate 80, and thus, an area off Interstate 80 would be desirable. (He feels Fernley would welcome such a Center, and that there are several spin-offs which would be desirable if an area near that town were chosen. First, visitors could be sent from the Center to the north where the Pyramid Lake Indians are trying to develop some interest in their reservation. Second, to the south there is historic Fort Churchill and Lahontan Reservoir. Also, if the Black Rock Desert National Conservation Area proposal comes to fruition, Moreno said there was some discussion of considering Fernley for a visitor's center.)

Moreno says he finds much interest in the wild horses and burros of Nevada, and just recently searched for some in a herd area to show travel writers. He also suggested when the BLM receives backing for this proposal, some major motor coach companies would be most interested. This appears to be so, as a call to one tour company (the Reno Tahoe Company) was met with interest. The spokeswoman there said the tour operators are constantly looking for new things in the area for convention attendees, military reunions, etc. They prefer attractions which are unique to Nevada. The Company finds its demand is for tours to Virginia City, Carson City, Lake Tahoe and the Truckee-Donner area. A National Wild Horse and Burro Center would fit well with a trip to Virginia City.

Another person contacted (Sierra Nevada Stage Lines and Grayline of Northern Nevada) said one of the individuals she worked with had already put together several tours to the existing Palomino Valley Center, coupled with a drive to Pyramid Lake. This company, which does several million dollars worth of business each year, is always interested in a new attraction.

As one looks at the Area of Consideration map (see illustrated portion of this proposal), it is worthwhile to note that within a two hour drive there are two BLM districts, four national forests, six Nevada state parks, and the Pyramid Lake Indian Reservation.

EXISTING FACILITY DEMAND

The existing facility (Palomino Valley Wild Horse and Burro Placement Center) was not purchased with public tours in mind. It has a small conference room which holds about 15 individuals comfortably. The corrals are not arranged to facilitate viewing, and there are no public affairs or interpretive personnel on staff. However, the schools and the travelling public have sought out the facility anyway. And, members of the Palomino Valley Center have conducted numerous individual and group tours.

A small sampling of letters received from individuals visiting Palomino Valley are found in Appendix B. That appendix also contains a copy of the visitor register maintained at the Palomino Valley Center over the past two years. It should be noted that this register does not reflect every group or individual who visits Palomino Valley. The register is maintained in the office and is placed out for signature on a voluntary basis. Any groups are met outside when their bus arrives (such as school groups), so a representative seldom signs the register. Also, individual visitors often do not come to the office, but arrive and immediately begin walking toward the horse corrals. Office personnel suspect that less than half the visitors sign the register.

For those who did sign, it is interesting to note the diversity of groups and persons who visit. Some of the groups represented on the roster are: Washoe County Outdoor Education, Truckee Meadows Hospital, Reno Indian Colony, Western Discovery Tours, National Farm Bureau convention goers, Chapman College students, and the American Farm Bureau Women's Committee. University students (such as those interested in animal science) and public and private school groups are seldom shown on the register, but have been constant users of the facility.

Individuals who now visit the Palomino Valley facility are a fascinating mix. Locals do visit the facility with regularity, and several comment they are interested in seeing the facility or in obtaining more information about adoption. California residents are frequent visitors, but there are a surprising number of visitors from other states -- New Jersey, Alaska, Texas, Oregon, Virginia, New York, Indiana, Idaho, Illinois, Minnesota, Maine, Florida, Pennsylvania, Maryland, Missouri, New Hampshire, Missouri, Washington, North Dakota, Arizona, Arkansas, Montana, Massachusetts, Utah, Ohio, Montana, Colorado, Iowa, Michigan, Wisconsin, Connecticut, Tennessee, Hawaii, Rhode Island, Georgia, etc. International visitors are from Canada, England, Yugoslavia, China, West Germany, Spain, Australia and the Netherlands plus other countries.

LOCATION OF PROPOSED CENTER

LOCATION CHARACTERISTICS -- Ideally, the Center should be located within about a 30-minute drive of Reno-Sparks. This would allow maximum access to the Center. However, if no suitable piece of property can be found within a 30-minute drive, a facility within an hour's drive would still be acceptable given the growth of Reno-Sparks-Carson City. (See Area of Consideration map in the illustrated portion of this proposal.)

The Center's interpretive building, meeting facilities and processing area should be on about a section of land (640 acres). This would allow adequate space for an interpretive and educational-research center, for parking, for viewing facilities and for the processing-research portion (the working portion) of the complex. This would also allow a buffer zone between the Interpretive Center and the processing center and between the corrals and any adjoining future residential or commercial developments. Dust, aroma, flies and traffic are concerns of neighbors to such facilities. Ideally we could find an area not far from an existing herd management area. If not at least another 1,280 acres (at a minimum) would be required for a natural setting drive-through area, not unlike some zoological parks.

Good quality water and "climate" of the area selected is a concern. (A horse drinks about 20 gallons of water per day.) Today's facility (Palomino Valley Wild Horse and Burro Placement Center) has warm water since it is near a geothermal area. It is located in a windy alley which means during the winter the horses and burro suffer and it is difficult to keep the water thawed and the corrals clean. Additionally, about 40 percent of the existing facility is in a flood plain. There are also residences beginning to encroach on the facility, with residents expressing dismay over the smell of the manure, the dust from the transport vehicles, etc. (See Appendix C which discusses the existing location.)

Appendix D has additional information on traffic counts. Information is primarily for the northern part of Nevada.

Another consideration in locating a Center for recreational use is how it fits into the State Comprehensive Outdoor Recreation Plan (SCORP). Detailed information from that plan is contained in Appendix E.

IS THERE SUITABLE PUBLIC LAND AVAILABLE -- If this proposal is acceptable, a search should begin to determine if there is suitable public land available for such a project.

Both Carson City and Winnemucca have provided some preliminary glimpses as to public lands that might be available for such a Center. (Appendix F.) These are a quick general overlook, and considerable attention should be given to a location search. A site-specific area would have to be identified by a field examination.

Topography would be a prime consideration in the Truckee River Canyon, as there is some very steep country in the region. Other considerations are the location to utilities, access and whether or not the lands are encumbered by mining claims or other types of valid existing rights such as mineral materials sites. A protective withdrawal would perhaps be appropriate, but other methods would need to be explored with the NSO program lead for realty matters.

Also, the search should not be limited to public lands. It may be that property should be purchased for part or all of this project.

POSSIBLE CONFIGURATIONS -- It would be ideal if the visitor could wind down a two-lane paved or graveled road, attractively landscaped, and be able to view horses and burros on either side. Once near the Interpretive Center, there would be corrals, with interpretive signing, with animals that are permanent residents. This could include a few horses representing the Bashkir Curly, the palomino, the draft horse and a variety of different colored burros. We might also consider a petting area with friendly burros and occasionally well-mannered mares/colts. Since this would be a national focal point for horses and burros, other states should be represented. For example, a few of the Kiger mustangs might be appropriate. Each BLM state with wild horses should be consulted as to unique or unusual animals from a herd area which ought to be represented.

It would be desirable to have some natural vegetation so the visitor could wander through an area and see what Great Basin animals eat in the wild. Dietary overlaps would be mentioned, so the tourist becomes aware of multiple use management. Interpretive signing and a self-guided brochure would be essential to this section.

Photo points must be considered. Where would a tourist want a child/spouse/friend to stand to get a good photograph: near a wild horse or burro, by the Center sign, by an old piece of farm equipment, in a native vegetation stance?

The Working Facility should have a separate entrance from the Interpretive Center. This would be for visitor safety and for safety of the horses. Large trucks must frequently be used to bring horses to and from a processing facility. In addition to the safety factor, a good all weather road would eliminate some of the dust problems associated with large vehicles, and it would allow the processing section to be secure and separate from the interpretive portion. Tourists and guests of the BLM would only be allowed into the working area on scheduled tours or under the guidance of authorized BLM personnel.

For the visitor who wishes to spend more time at the Center and to see the animals in a more natural setting, there would be the opportunity to drive through an adjoining or nearby area. It would be ideal to locate the Center near an existing horse management area. However, that appears to be unlikely. Thus, the BLM would need to create a section where horses could roam freely.

INTERPRETIVE CENTER

Specific design of the Center will, of course, be determined by the site and by architectural concerns. This committee cannot underestimate, however, the importance of designing with future demand in mind.

INTERPRETIVE FILM

There should be an auditorium to accommodate at least 100 individuals where a film, video or other state-of-the-art presentation is shown or presented periodically. The film or presentation should briefly cover the entire wild horse and burro story, in a professional manner. That is: discuss the Wild Horse and Burro Act, discuss the animals' lives on the range, show what they eat and what else is out there eating with them and competing for water, talk about management on the range like building water developments and putting in seedings, discuss gathers and adoptions, and show some success stories. (The Technology Transfer Staff of the Service Center in Denver is authorized to work on a videotape with a similar theme. It may well be suitable or adaptable.)

DISPLAY COVERAGE

Displays and exhibits will be needed in the Center. Some of the ideas which we might wish to capture are:

1. Archaeological history of the horse/burro. Became extinct.
2. Explorers, missionaries bring animals to America.
3. Indians relationship to the horse: first not allowed to use, then gained power by the usage of the animals (sign of wealth, gave mobility, etc.) Also "pottage to portage".
4. Burros part in exploring the West with miners.
5. Miners, farmer-ranchers use of the animals. Turning loose, gathering again when needed. Introduced various strains -- drafts in some areas, finer species in other areas.
6. What brought about the Act. Mustangs. Wild Horse Annie. School kids, etc.
7. What does BLM do to manage on the range? Water developments, fencing, planning, monitoring, etc. Tie in with multiple use mission.
8. Where are our herds and what are their characteristics? (Need to develop information sheets on each herd area because our adopters ask for this type of information constantly. What kind of vegetation, what kind of mountains in the area, etc.)
9. How do we gather? Helicopter, parada horse, water trapping, etc.
10. Adoption and success stories. (The Service Center in Denver is developing a videotape on how to select a horse that will meet one's particular needs so that the horse and the adopter are better matched.) Show some of our successes such as the Marine Corps Mounted Color Guard, Mustang Lady, Sierra Flame the fire prevention

horse.

11. Training. Prefer resistance free training. (May be able to show a short videotape being developed by Denver on how to train a horse. Longer version of a training videotape could be made available to adopters or sold.)

12. Tack, equipment. Could show both what we recommend be used with wild horses and burros and "old-time" tack.

13. Nevada does have the Nation's first wild burro range at Marietta. This ought to be given special attention. (Because of the special circumstances involving access to Nellis, we will want to evaluate what approach should be taken with the Nellis Wild Horse Range publicity.)

14. The Nevada BLM in its wild horse and burro program has for some time wanted to develop interpretive sites where visitors could see a herd in the wild. These viewing sights must be developed and signed, and brochures should be developed for each one. Other states' viewing areas can also be promoted. (See Appendix G which is on the California Buckhorn Byway. This "Wild Horse Adventure" piece was printed in the Summer 1991 "Friendly Exchange." Also note the "Wyoming Horizons" summer edition which has an article about a bighorn center being developed.)

The displays and exhibits should be professionally prepared, and have a variety of state-of-the art techniques. For example, if one wanted to know about a herd area, one might push a button to light up the area and get a printout with a description of the area. Computer screens which respond to touch might be utilized; this technique has already been applied to obtaining wilderness data in other states, including Utah and Oregon. Selection and training videotapes should be short (time conscious) in the exhibit area, so that an individual who wants to know about it could stop and watch and if he/she wants more, obtain more at the reception area. If not outside, inside we need vegetation examples. Is there a place to put a salt lick and let children taste it?

RECEPTION AREA/SUPPORT GROUP AREA

Even though the overview movie, video or presentation and the displays may be self-guiding and require the attention of only one or two employees, there must be a reception area where trained interpreters and volunteers can greet the public and answer questions.

The wild horse and burro program attracts people. When a Center is built, there will be a perfect opportunity to build a strong volunteer group. It is not difficult to imagine a support group similar to the Friends of Red Rock Canyon in Las Vegas's National Conservation Area.

Visitors will want to purchase items. We suggest planning room for a cooperative association to sell keepsakes. The number of items with horses, the number of books on horses is incredible. Cups, pens, medallions, pins, scarfs, postcards, window shades, toy horses, stick horses, fuzzy burro pins, etc. The BLM ought to encourage a cooperative association from the onset and have a memorandum of understanding awaiting a group.

An item which impresses children, and their parents, is having a hand stamp. Nevada already has one hand stamp developed, and we could do additional ones.

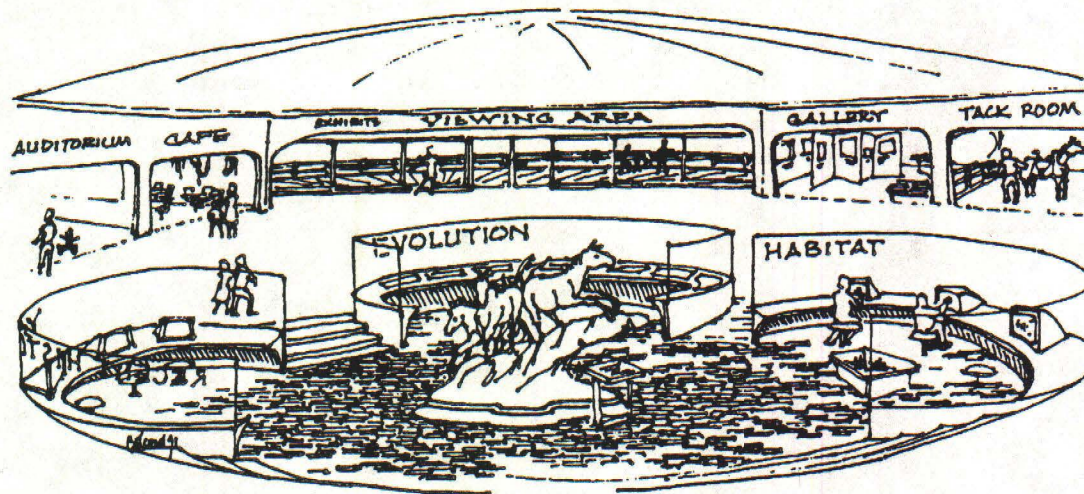
BROCHURES

As in all Centers where we invite the public in, we ought to have one free brochure in several languages to explain the Center, to give an overview of the wild horse and burro program, to give some safety tips about using the Center and viewing animals. The "So You'd Like to Adopt" brochure should also be free.

Other publications the BLM might consider selling (or giving away) are: viewing guides to herd areas in the state, Marietta Wild Burro Range brochures, Wild Horse Annie and how Nevada came to be the capital of wild horse country, etc.

Nationally, BLM should consider producing a lengthy videotape on how to train a wild horse. The Service Center has considerable footage on training. Some have discussed the BLM selling a video OR making the film available to adopters when they pay the \$125 or \$75 adoption fee. Some discussion is also needed on whether a videotape should be made on how to care for and feed one's newly adopted animal.

EXHIBIT IDEAS



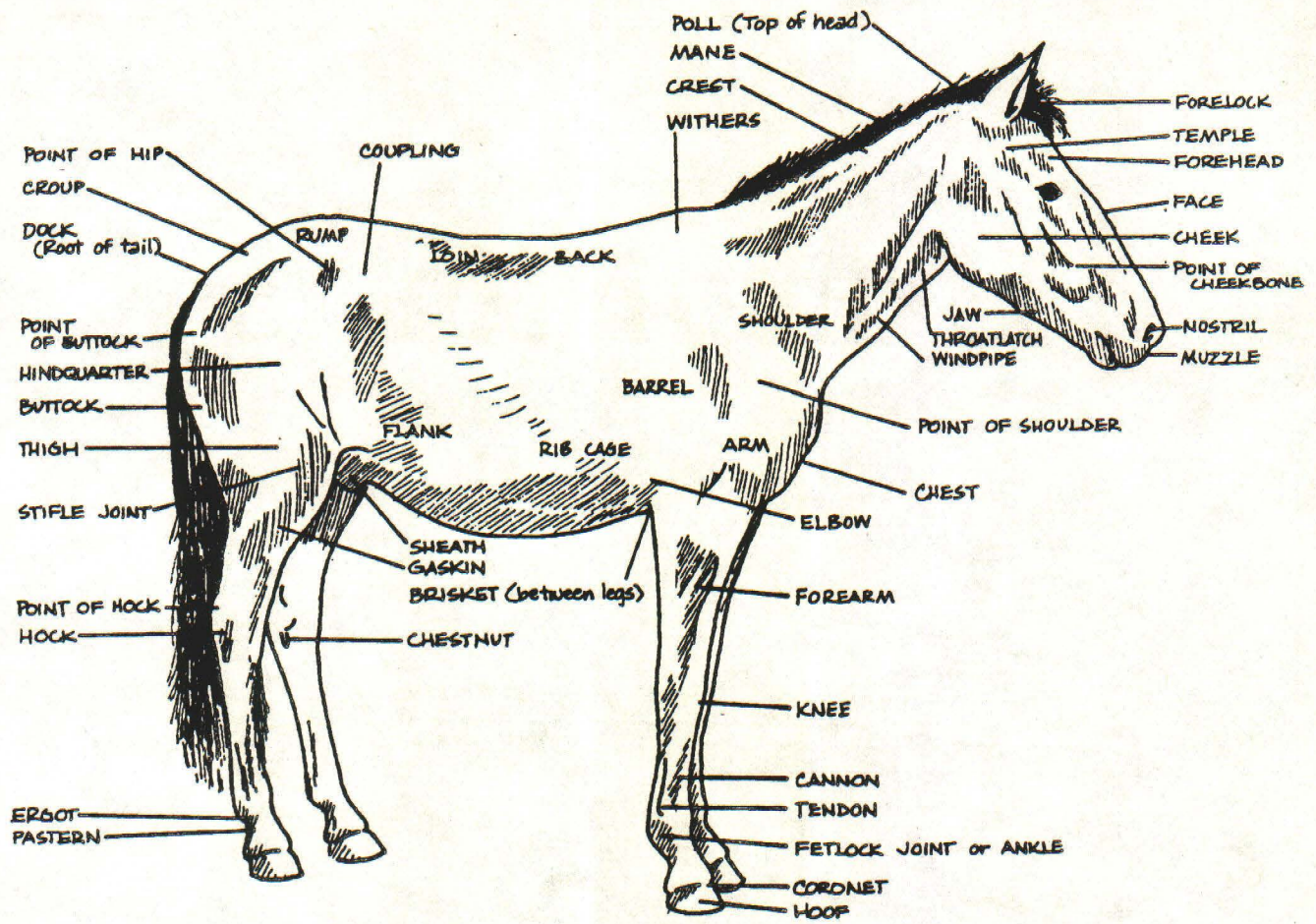
Entrance to Interpretive Center

Sculpture of wild horses is tribute to Wild Horse Annie,
(a replica of sculpture on her gravestone)

Computer work stations with programs relating to habitat, recent history, forage, etc
in semi-circular areas/ interpretive panels depicting evolution

Auditorium, cafe, gallery, tack room where visitors may experience
saddling, bridling, etc. a model of a horse

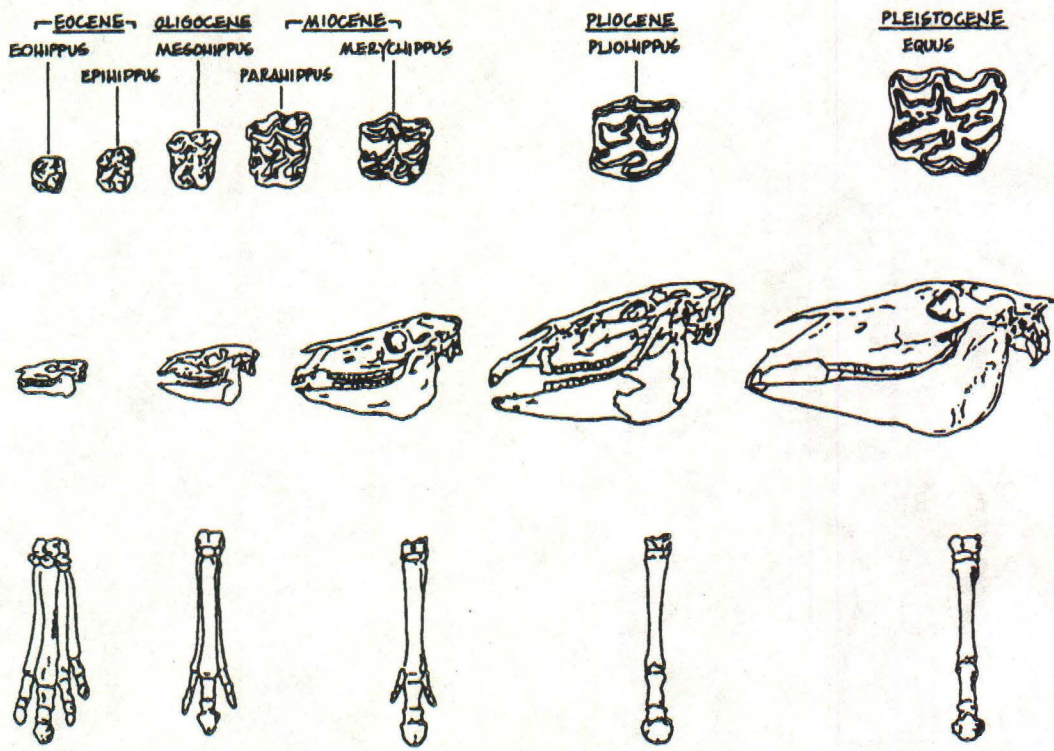
Viewing area, outdoors and indoors straight back



LABELED POINTS OR PARTS OF A HORSE

Poster

Computer program where visitors try to place a word list of parts on a horse



EVOLUTION OF THE HORSE: TEETH, SKULLS & FEET

Poster

Diarama, with replicas of actual horse skulls, feet and teeth to point out varying sizes of horses as they evolved

Design a "horse skeleton" packet, made of semi-heavy card stock, and put together by visitors.

(Such a product currently exists for the human skeleton.)

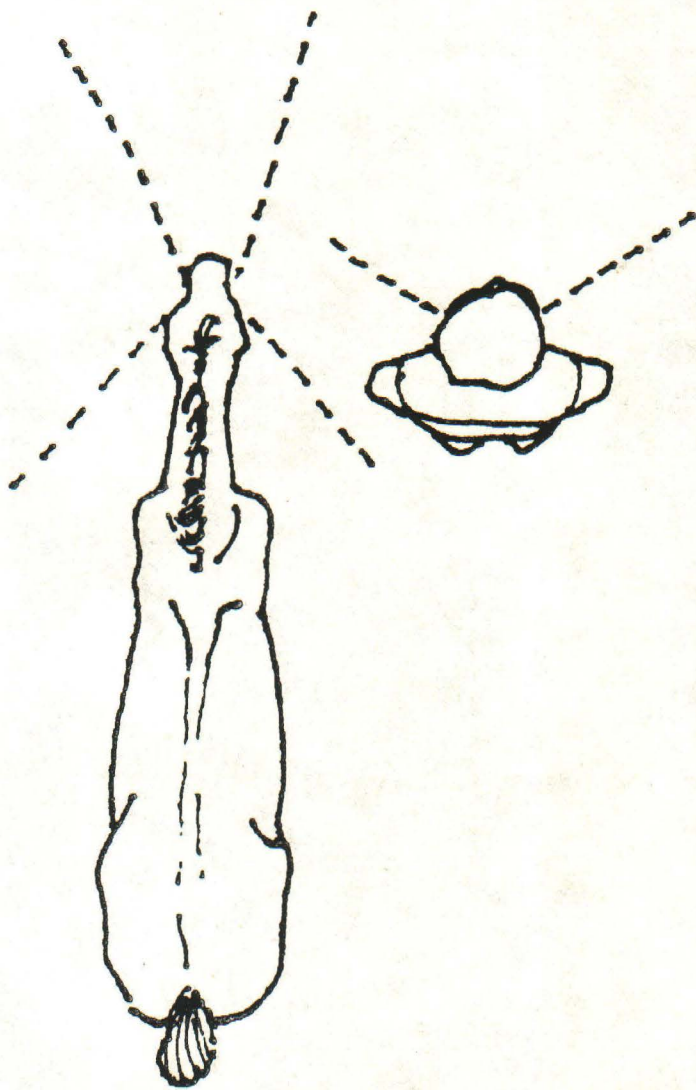
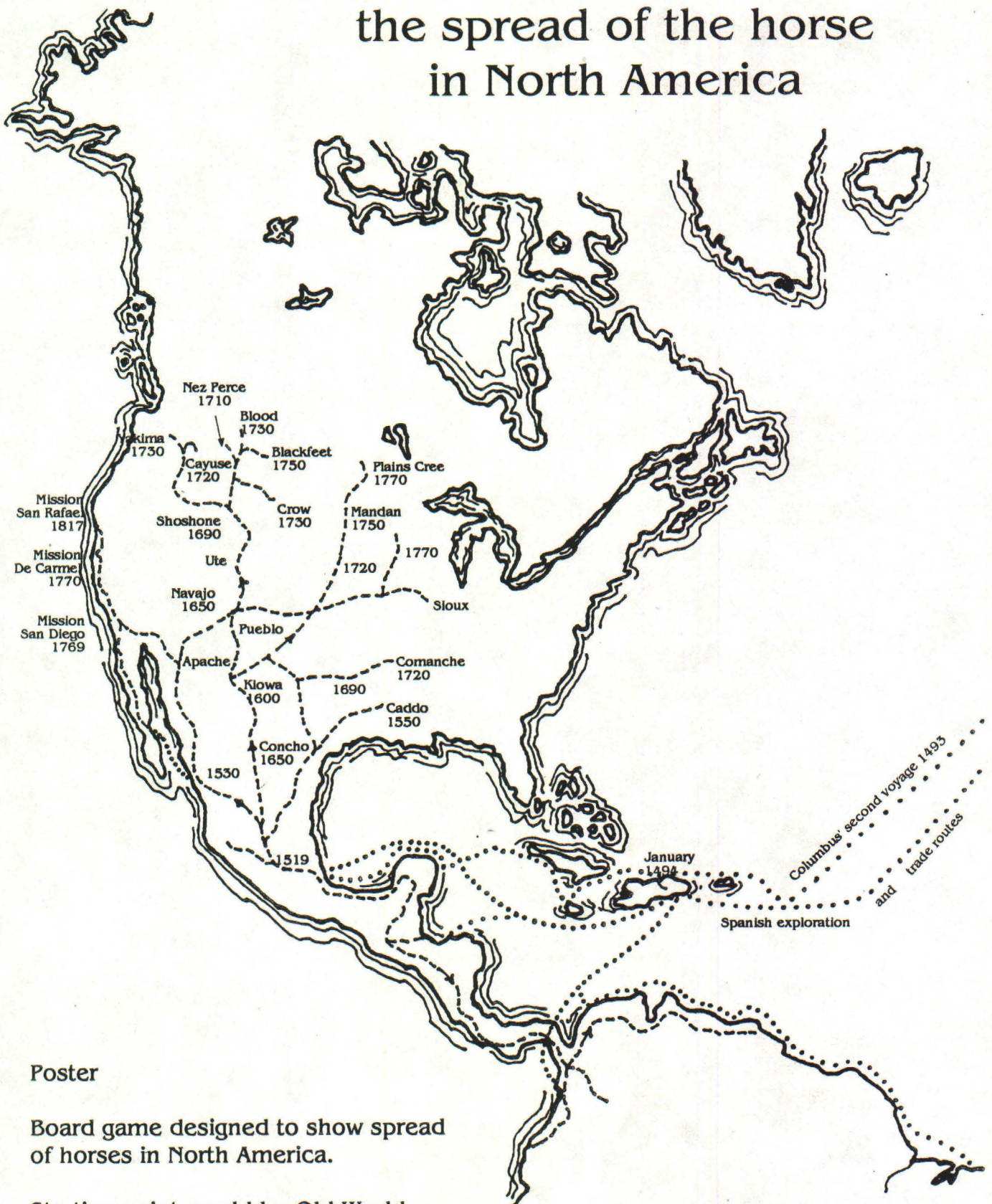


Exhibit where people can experience how a horse sees its world.

Possibly a mold of a horse head where humans can place their faces in the "head", peer out the eye socket areas and gain understanding of a horse's view of the world.

Poster of something similar to above drawing

the spread of the horse in North America



Poster

Board game designed to show spread of horses in North America.

Starting point would be Old World, object would be to arrive at the National Wild Horse and Burro Center after crossing oceans, finding northward paths, avoiding predators, wars, droughts, cranky settlers and Native Americans, etc.

OUTREACH ACTIVITIES AT CENTER

Such a Center is a natural setting for monthly activities and for hosting special forums and training sessions. While at this stage, we cannot possibly anticipate all such demands, it is easy to foresee some of the activities which might be held.

AUDITORIUM

The Center should have an auditorium or large conference room and an indoor area which could be used for displays. (This would be an auditorium in addition to the one used periodically to show the overview film.) Some possibilities are:

- Use the facility to offer training for personnel and contractors in the wild horse and burro program. This would assist in implementing a recommendation by the National Wild Horse and Burro Advisory Board for more training of BLM and FS personnel and appropriate training and credentials for contractors. All new wild horse and burro specialists for the BLM could spend a training period (an internship) at the Center.

- Co-Host an annual wild horse forum like the one recently sponsored by the Commission for the Preservation of Wild Horses.

- Hold BLM workshops, annual work plan sessions for BLM at the Center.

- Hold orientation sessions for school groups in the auditorium, prior to tours.

- Offer the auditorium free of charge to sister agencies and to such organizations as the Farm Bureau; University of Nevada, Reno; Wild Horse Organized Assistance; etc. (BLM Administration need to be involved in setting parameters on who can/can't use the auditorium. The agency/GSA already has guidelines.)

EXHIBIT HALL

Groups holding meetings, forums, seminars could be encouraged to bring their displays/exhibits to near the entrance to the auditorium. We may also want to consider special construction materials on the walls which lend themselves to exhibits -

- such as material to which velcro easily attaches.

The BLM Center's interpretive staff, with the volunteer organization, could sponsor a number of events throughout the year. Some ideas: wild horse and burro photo contest -- in the wild, headshots, your favorite success story; student poster or artwork contest with themes like "Good Range Management Means ---- Room for All Species, Room for the Wild Ones to Roam," etc.; wild horse and burro art contest.

SCHOOL CHILDREN'S SPECIAL EVENTS

As previously mentioned, school children will want to tour the exhibits and see the overview movie or video. Ideally, we will want to show them films or gather them in the conference center auditorium so they will receive special attention and not interfere with the regular flow of visitors.

Nevada presently has a Legend activity book and an accompanying Teacher's Guide. However, we ought to develop some special learning activities for the day student

groups or youth groups visit the Center. Those who successfully complete the educational activity could receive a Junior Wrangler stick-on patch.

Volunteers could be trained to address the students, and we might consider a BLM-Managed Resources Speaker's Bureau which could utilize the facility. Teachers could arrange for their students to go to the Center and hear a speaker on wild horses, on grazing management, on riparian areas, on wildlife, etc. Outside groups and volunteers, such as from WHOA, might be willing to be on the Speaker's Bureau.

SUMMARY OF INTERPRETIVE FACILITY, CONFERENCE AREA SPACE NEEDS

Reception area

Cooperating association area.

Auditorium for overview film.

Exhibits and displays.

Coffee shop or vending machine area. Preferably run by a concessionaire.

Rest rooms -- provide for handicapped, for changing babies, etc.

Auditorium for conferences, large groups, with adjoining exhibit area.

ARENA, GRANDSTANDS

If we are to have training sessions or exhibitions, we will want to consider either permanent or portable arenas and/or grandstands. This facility could be within the working complex. A dual use would be possible.

ADOPTION ARRANGEMENTS

There are two major aspects to the adoption program which can be accomplished at this Center. We want to promote the adoption program and provide for a centralized dispatch of wild horses and burros to adoption sites throughout the Nation. And, we want to facilitate adoption on-site to visitors.

A centralized dispatch program would give priority to safe, humane and efficient distribution of wild horses and burros to BLM facilities throughout the United States. The staff would facilitate transportation and assure that animals move through the processing, training and holding facilities in a timely manner. For the first time the BLM would have an accurate Bureauwide inventory of animals in all facilities.

This would allow the BLM to maintain a current schedule of all proposed removals and adoptions events with such relevant information as number, species, sex, training status. Contractors and equipment acceptable for the transportation of horses would assure quality care and save money.

Once the Center is operational, the BLM should retain a certain number of animals in Nevada which are available for adoption. All staff members should be given a training session on requirements for adoption as a member of the public may ask anyone questions. At least one member of the interpretive staff who can assist with filling our forms and who can answer questions in detail should be on duty at all times. That interpreter should be able to contact a member of the working center staff if there are detailed questions on nutrition, problems, etc. The interpreter who assists with applications should be authorized to interview the potential adopter with regards to his/her facilities. That interpreter should also be the one to call wild horse and burro specialists in the field or cooperators, such as members of International Society for the Protection of Mustangs and Burros, when compliance checks are needed.

WORKING FACILITY

The Working Facility of the new National Wild Horse and Burro Center must be designed especially for the care of the animals. All too often in the past, the BLM has tried to adapt a former livestock facility for the animals. This Center must set the standard for wild horse care. It will be built with suitable materials; that is, shelters and fences must be free from any protrusions (bolts, hinges, nails, etc.) or other objects hazardous to the animals. Rounded pipes, poles, hardwood and other materials that do not pose a hazard will be used. Fences should be six to seven feet high with vision blocks installed as appropriate. For security, the entire working facility should be fenced with a material that is not visually intrusive, perhaps chain link fencing.

The working center should be capable of holding about 2,000 wild horses and burros on a permanent basis. Portable panels should be available for another 1,000 to 2,000 animals should the need arise. Perhaps the existing Palomino Valley Wild Horse and Burro Placement Center should be retained as an overflow facility. (It is anticipated in Nevada that the number of the range to be maintained may be about 20,000. Thus, the BLM could expect to gather as many as 6,000 animals each year.)

By planning this facility carefully prior to construction, there would be an opportunity to make the horse handling operation more efficient. Dual uses could be planned for such items as loading chutes. And, tour routes for the public could be envisioned and built into the working facility.

At least two 100' x 100' covered buildings are needed. One would be to process animals, and one to perform such operations as hoof trimming and gelding. During regularly scheduled tours, an interpretive specialist could take groups through or over the processing area, for example. In the processing section, all the necessary wiring should be done to allow computers to feed descriptive information, the freeze brand number and other data directly into the records. A secure storage room is needed for drugs, syringes, etc.

Feed bunkers should allow for efficient feeding utilizing modern equipment. Concrete aprons may need to be covered by dirt. Water tanks should be designed so cleanliness is promoted and freezing problems are minimized. Shelter for the animals during inclement weather or on hot, sunny days is envisioned.

Hay storage for such a facility is a major concern. Hay should be covered, and scales may be required for weighing trucks making deliveries. A testing laboratory is required to check for protein content of the hay, for the mix fed the animals. Such a laboratory would also make an excellent focus of an interpretive tour.

Equipment such as tractors, loaders and automatic feeders need to be stored, so there is a need for an equipment storage area and a maintenance shop.

Those who are employed in the working facility need a separate structure. It should

have room for tack and for personal belongings. Rest room and shower facilities should be housed in this employee center.

With animals on the premises around the clock, there must be consideration given to a veterinary medical officer. The office, laboratory needs of that position should be considered in construction. Farrier services might also be under the direction of this individual, thus, those needs must be contemplated.

A separate entrance to the working facility is a necessity. Large trucks must be able to enter and have adequate space to maneuver while loading or unloading. Employees at the working facility would also need access and parking separately from the general public going to the Interpretive Center.

Although it not a pleasant subject, there will be animal deaths at the Center. Discrete handling of such dead animals is absolutely necessary and facilities must be constructed to allow this to be done out of view of the general public.

When this particular portion (the Working Facility) of the proposal is detailed, it would be wise to utilize the knowledge of employees who currently are involved in wild horse and burro operations, like Palomino Valley. Consult the previous contracts the BLM has made. These contracts include those for holding facilities such as at Lovelock, NV, Bloomfield, NB, and Mule Shoe, TX; and for adoption centers such as the one in Pennsylvania. This would assure we are meeting or exceeding what we expect of our contractors.

RESEARCH COMPONENT

Research at the National Wild Horse and Burro Center will not be the collection of data for its intrinsic value. Much of the research will have application. There should be opportunities for those who come to the Center to pass that information on to BLM wild horse and burro specialists in understandable terms. To attract quality researchers, and perhaps even grants, it is desirable to have this Center provide superior facilities and professional management. Those willing to fund research or to participate in such projects will come to recognize a well-focused sphere for research.

The BLM and its National Advisory Board recognize the need for some type of manipulation of populations in order to slow the rate of growth of the herds. While the Board in its meetings has not endorsed any one approach, the group has indicated support for studies using a variety of methods and combinations of methods. To do some of this research requires a central facility where a control group can be maintained, where ideas can be tested before applied in the field. Among the types of work which could be centered here would be the implementation of a May 1991 recommendation by the National Board:

Further investigate and implement the safest, cost-effective and least stressful horse handling and removal methods that will meet the goals and objectives for the individual herd management.

Gene pools, feed content, behavioral studies, dietary overlap -- we can only speculate on what types of research the future will bring. Laboratories would be needed for analyzing nutritional levels in feed. Refrigeration is a concern for blood samples which may be taken. Of course, some facilities for veterinary use would be required.

At this time, we recommend the construction of basic laboratories, rather than laboratories for high tech equipment or disease work. We assume the BLM will not wish to provide the specially secured laboratories necessary for disease control studies, and that BLM will not attempt to match the high tech laboratories only major universities can afford.

Research offices need computer capabilities which are state of the art, but buildings should also accommodate future needs for special wiring, etc. as the computer field refines and expands. Researchers, graduate assistants, and others could perform basic work at the Center, send samples requiring high tech analysis out, receive the results via electronic means, and do the writing at the desk in Nevada. A small conference room would be desirable.

A number of individuals presently in the program see a need for behavioral studies on horses and burros. Thus, not only inside facilities, but outside areas should be considered. For example, a 20-acre paddock and corral space might be needed to observe a study group.

Research on monitoring techniques could be done from this Center. Monitoring includes studying wild horse and burro habitat requirements; census methods; vegetation use including pattern mapping, trend and ecological structures; migration; herd structures, etc.

The Center seems the ideal location for a library. The library should contain as much material as possible about wild horses and burros, and we may wish to consider working with Wild Horse Organized Assistance, the International Society for the Protection of Mustangs and Burros and other groups to obtain and house some of the original papers of the organizations and individuals like Velma "Wild Horse Annie" Johnston.

Appendix H contains the 1982 final report from the Committee on Wild and Free-Roaming Horses and Burros, Board on Agriculture and Renewable Resources, National Research Council. The National Research Council operates in accordance with the general policies determined by the National Academy of Sciences. We suggest this report be read and considered when planning work which will take place at or be managed from the Center.

In building the Center, we should consult researchers who have advised us in the past. We should discuss the proposal with professors/researchers associated with the National Academy of Sciences and with some of the wild horse and burro interest groups. This will prevent us from underestimating the importance of providing appropriate space for the activity of research. We recommend the BLM include on its planning staff for the building of this Center, a professional researcher, preferably from this state (the University of Nevada, Reno).

COST

This section contains a first effort at estimating a cost for construction of an Interpretive Center, the Working Center, research facilities, corrals, an arena, chutes, necessary outbuildings, etc. The figures in the following table may change significantly, however, based on the location selected for the National Wild Horse and Burro Center.

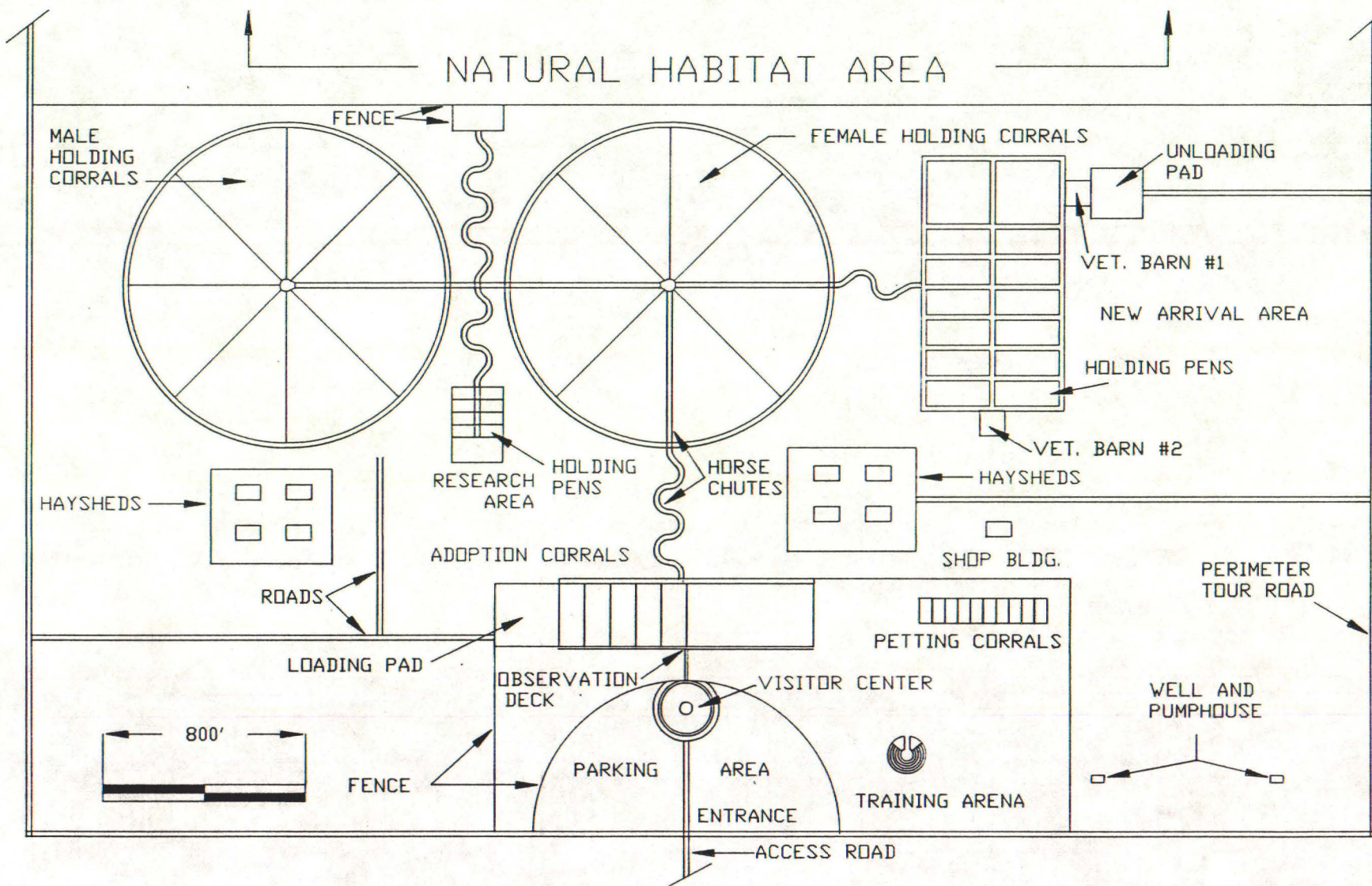
Also in this section is a preliminary site plan. Obviously such a plan could also change considerably, depending upon the terrain.

NATIONAL WILD HORSE AND BURRO CENTER

Preliminary Project Cost Estimate

Based on a preliminary engineering review, projected costs for the National Wild Horse and Burro Center are as follows:

| Facility | Cost (\$) |
|---|--------------|
| Visitor Center and Admin Offices (20,000 sf @ \$100/sf) | 2,000,000 |
| Research Facility (15,000 sf @ \$100/sf) | 1,500,000 |
| Veterinary Facilities (20,000 sf @ \$75/sf) | 1,500,000 |
| Maintenance Shop (6,000 sf @ \$50/sf) | 300,000 |
| Training Arena (5,000 sf @ \$25/sf) | 75,000 |
| Hay Sheds (8 ea)(60'x 100' @ \$12.50/sf) | 600,000 |
| Sanitation System | 360,000 |
| Water System | 600,000 |
| Electrical System | 1,000,000 |
| Chutes | 220,000 |
| Feeders and Pads | 112,000 |
| Fences (60,000' @ \$20/ft) | 1,200,000 |
| Parking Areas (36,000 syd @ \$10/syd) | 360,000 |
| Roads (90,000 syd @ \$10/syd) | 900,000 |
| Site Preparation | 500,000 |
| Subtotal for Construction | 11,227,000 |
| Construction Contract Contingency (20%) | 2,245,000 |
| Total for Construction | 13,472,000 |
| A&E Contract (15%) | 2,021,000 |
| Inspection Contract (5%) | 674,000 |
| PROJECT TOTAL | \$16,167,000 |



NATIONAL WILD HORSE AND BURRO CENTER PRELIMINARY SITE PLAN

NATURAL SETTING DRIVE-THROUGH

Wild horses and burros are Nevada's great natural untapped resource. There is increased interest from travelers in the United States for "natural encounters".

At or near the Center we should provide a drive-through area where travelers can see bands of horses in a natural setting. This drive-through might be similar to what one encounters in drive-through zoos. We might even consider providing transportation through the area.

Ideally we would be able to locate the Center near an existing wild horse herd management area which is thriving. If we can't, a minimum of two sections (1,280 acres) would be required to make this a manageable natural setting for a band of animals. A band is about seven horses. However, it is apparent more than one band would be desirable so the public could see some of the interaction and natural behavior among horses.

A natural setting would allow the BLM to apply its best management practices, such as rest-rotation grazing. The public would find windmills, solar fences, etc. to be of great interest, and this would be one of the BLM's best ways to make some of those unfamiliar terms (multiple-use, sustained yield, etc.) understandable.

Signing would be crucial to such an area, as would a good brochure or perhaps even an audiotape.

Of course, such a natural setting would only whet the appetite for going to a "real" herd management area. Guide books to wild horses and burros of the United States would be a natural spinoff of such a venture. One of the National Advisory Board members (Mary Ann C. Simonds) already is asking for assistance in one such project.

PROMOTION OF THE CENTER

1. Place permanent signs at the entrance to the Center. For those days/hours when the Center is closed, have a paved or graveled pull-out with an informational sign on the wild horse and burro program. That way passers-by will be able to glean some information and may come back. Post other signs on the property to let people know about the turnoff to the Center. Consider bi-lingual signing.
2. We ought to rent signs at the Reno Cannon International Airport to make the public aware of the facility.
3. Consider permanent highway signs advising people of the facility. This would need to be a cooperative effort with the Nevada Department of Transportation.
4. Work with the area newspapers to list the facility in the Guides to Reno, Guides to Northern Nevada.
5. Contact nationally oriented travel publications to list the Center, such as AAA Guide, Good Sam Club guide, senior citizens' groups etc.
6. For the dedication, plan a well-orchestrated opening with dignitaries and the press in attendance. Special events. Of course, the Center may have several "grand openings" prior to the 1996 dedication event. This would give the public and the media a chance for previews of what will come when all phases are functioning.
7. Join such horse organizations as the American Mustang and Burro Association, and have the Center listed in their directory.
8. Seek partnership with someone willing to help pay for and sponsor a horse-shaped hot air balloon. (Supporters of the Forest Service are purchasing a Smokey the Bear balloon.) Also consider a smaller balloon version to fly above the Center on the occasion of special events.
9. Work with the existing tourism and visitors authorities, such as Nevada Commission on Tourism and the Reno-Tahoe Tourism Authority to place ourselves permanently in their brochures, literature. Likewise, visit with the Chambers of Commerce nearby.
10. Produce a general brochure which could be used throughout the West. Send to other BLM offices. Provide to museums, hotels, interest groups, etc.

STAFFING

Such an undertaking would require a major staff. The flow chart on the following page is only one possible configuration of the personnel envisioned to operate the Center itself.

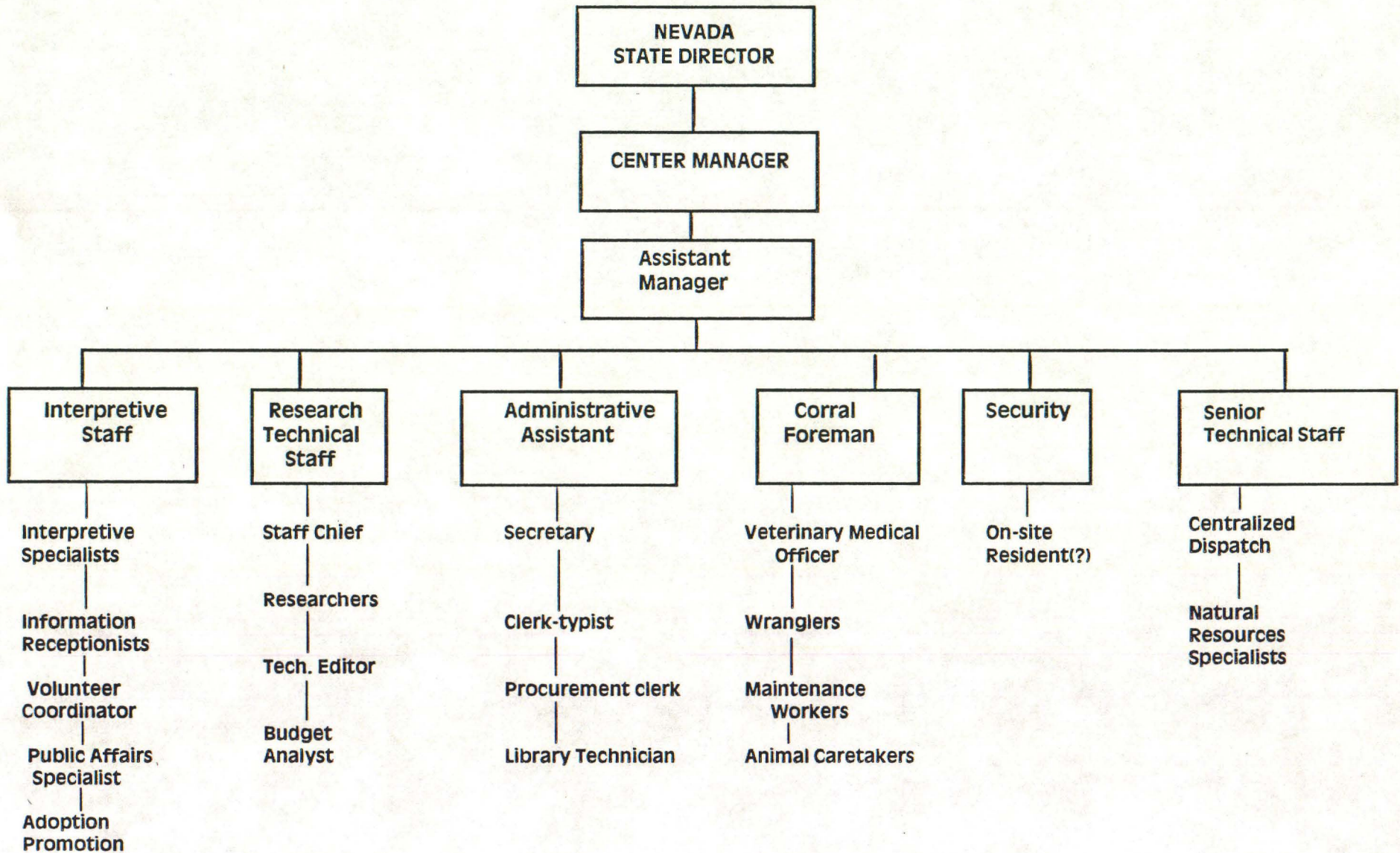
The National Wild Horse and Burro Center will be placed under the Nevada State Office. It will be a significantly different operation than the existing Palomino Valley Wild Horse and Burro Placement Center which functioned primarily under the Carson City District Office. (As of August 25, 1991, the Palomino Valley facility came under the jurisdiction of the Nevada State Office.)

With such a major investment in a Center and with the responsibility for security to the animals and the Center, the BLM must consider either a resident on the premises and/or 24-hour security. While there is always the danger of vandalism at such facilities, a potentially more damaging act would be the possibility of harassment or physical harm to the animals in our care. (We should take every precaution to prevent the type of incident which occurred in the Susanville adoption facility where the mascot was lured from the facility at night and beheaded.)

When the staff for the Center is formalized, all the 1200 Manual requirements must be met: functional statement, TO, positions needed, etc. This would be done with the cooperation of Personnel and the NSO management analyst.

Finally, if this Center project is to succeed, a project manager should be hired from the onset. That individual is needed to oversee contracts, to initiate interpretative efforts, to structure the organization and to see that goals and objectives are met. It is suggested a steering committee be organized to counsel and advise that individual. The project manager should be someone who has broad experience in organization and management. He/she should be positive towards the wild horse and burro program and cognizant of public sentiment in Nevada and in the Nation. While he/she may not possess a working knowledge of both wild horses and burros and interpretive skills, he/she should be of sufficient grade and respect to muster the forces necessary to pull together such a project. If this position is similar to project coordinators in other states, after the Center is accomplished, he/she may become a manager for the Center.

NATIONAL WILD HORSE AND BURRO CENTER



FOR FURTHER INFORMATION

To refine the National Wild Horse and Burro Center, we on the committee recommend visits to existing interpretive centers and to horse parks. We must glean ideas from others successes and learn from failures. Among the public centers we suggest be viewed before this project springs forth are:

1. The Kentucky Horse Park, Lexington, KY. Chairman is Cornelia Bonnie. Executive Director is Lee Cholak. 606 233-4303.
2. The new Wild Horse and Burro Center being developed in Carmel Valley, California. Robin Keller is the contact (408 625-0166). Mary Ann C. Simonds can assist with contacts.
3. There are 19 libraries and museums listed in the Horse Industry Directory. It would be wise to call and learn more about them. Once screened, some should be considered for a personal visit.
4. We should further inquire into what Oregon is proposing (the Josh Warburton efforts).
5. Several existing BLM visitors centers should be visited. These should include those where Nevadans have some personal contacts. (Dave Hunsacker in Oregon. Sheila McFarlin in Colorado. Gene Nodine in Utah.) And, of course, we want to learn from our own Red Rock Canyon NCA (Joel Mur and Chris Miller).
6. In a recent issue of "Wild Horse and Burro Diary," Karen Sussman called for contributions to a heritage foundation. Her group, the International Society for the Protection of Mustangs and Burros, is seeking \$50,000 as seed money to begin a home for unadoptable and abused wild horses and burros and an ecological center. More detail on this proposal would be desirable.
7. One of the most recent BLM efforts has been to build the Birds of Prey facility in Idaho. That facility has two goals: research and public education. These are two goals in common with the National Wild Horse and Burro Center. A personal visit to this facility to talk with those instrumental in its construction and management is highly recommended.

Thanks to:

Committee members Tom Abbott, Carson City; Rodger Bryan, Winnemucca; Dave Griggs, NSO; Maxine Shane, NSO; Fred Wyatt, PVC.

Wild horse and burro specialist Tom Pogacnik, NSO.

Realty specialists Chuck Pope and JoAnn Hufnagle of Carson City.

Visual information specialist Diane Colcord.

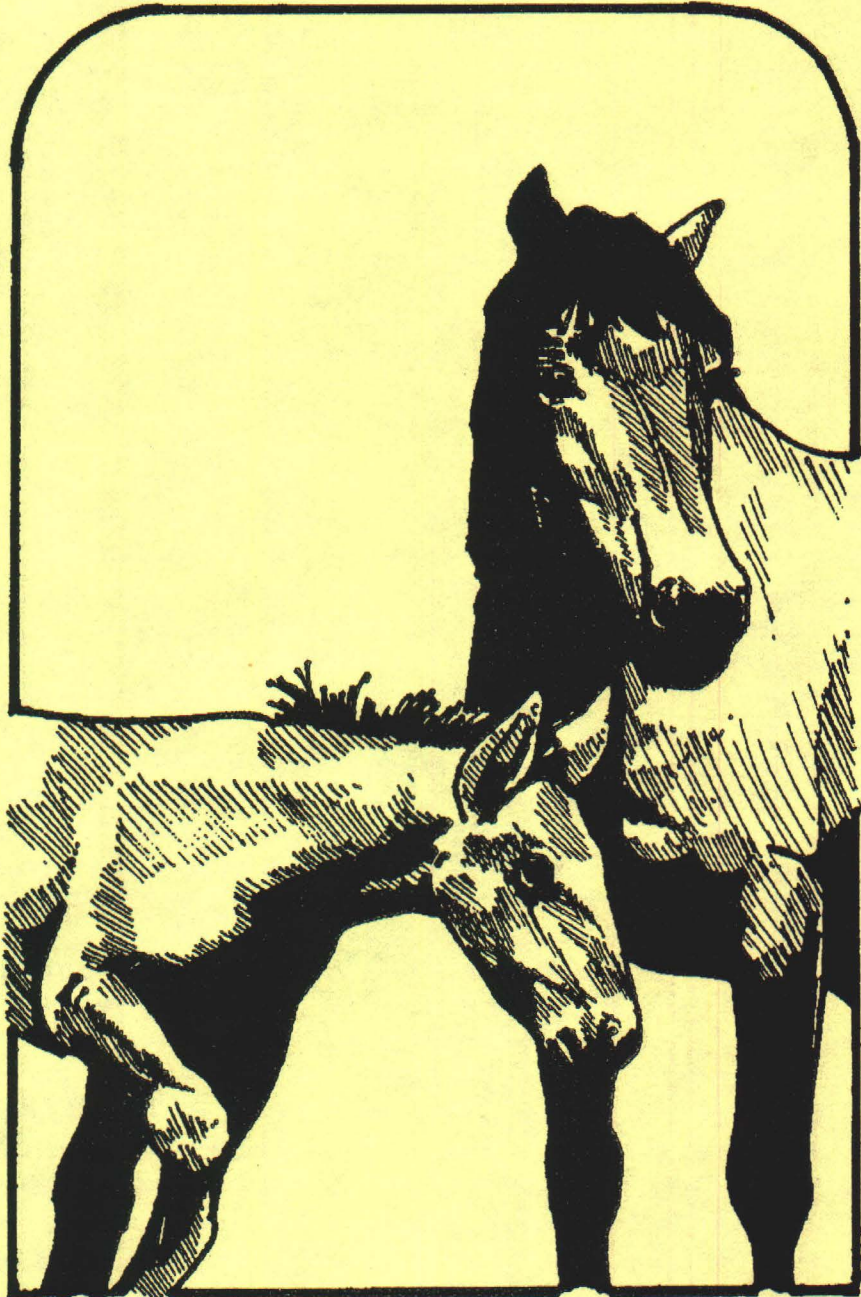
Engineers Kim Schuett and George Clarke, NSO.

Position classification specialist Barbara LaDage

Cartographic aid Barron Lauderbaugh.

NSO printshop, Cal Robinson, Mark Anderson and Oliver Horsley.

APPENDIX A

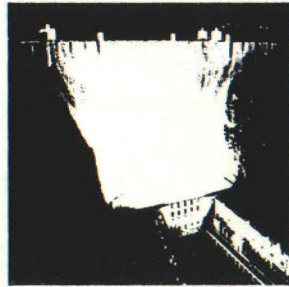




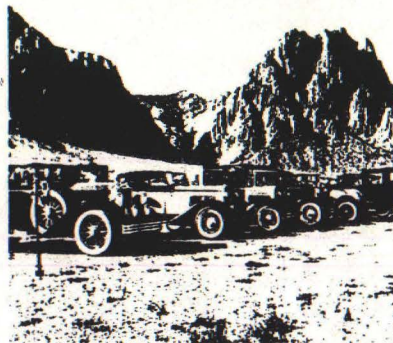
STRATEGY

*Nevada Travel and Tourism
in the 90s*

711



A-3



From its beginnings in 1983 through 1990, the Tourism Commission has awarded an impressive 575 individual grants for a total of more than \$1.75 million.

The funds have been expended on a variety of programs that have included historic heritage, mining history, cowboy lifestyles, the state's proud ethnic cultures, such as its Native American and Basque people, and unique highway promotions.

During the past five years, the grants have also helped promote and advertise annual special events, including: Gridley Days in Austin, Jim Butler Days in Tonopah and the Cowboy Poetry Gathering in Elko.

The matching grants funds are increasingly being used for regional and destination marketing advertising to attract tourists to stay in rural Nevada in more places and for longer periods.

SIERRA SKI MARKETING

Skiing is one of the major non-gaming activities in Nevada. To better promote this growing market, the Tourism Commission is a member of the Sierra Ski Marketing Council, a marketing coalition that also includes ski area operators and the Reno and Lake Tahoe visitors authorities.

The group's objective is to provide a regional identity through the promotion of skiing in Nevada. The Tourism Commission helps provide direction to the council and distributes information about the region as a winter vacation destination.

JOINT PROJECTS

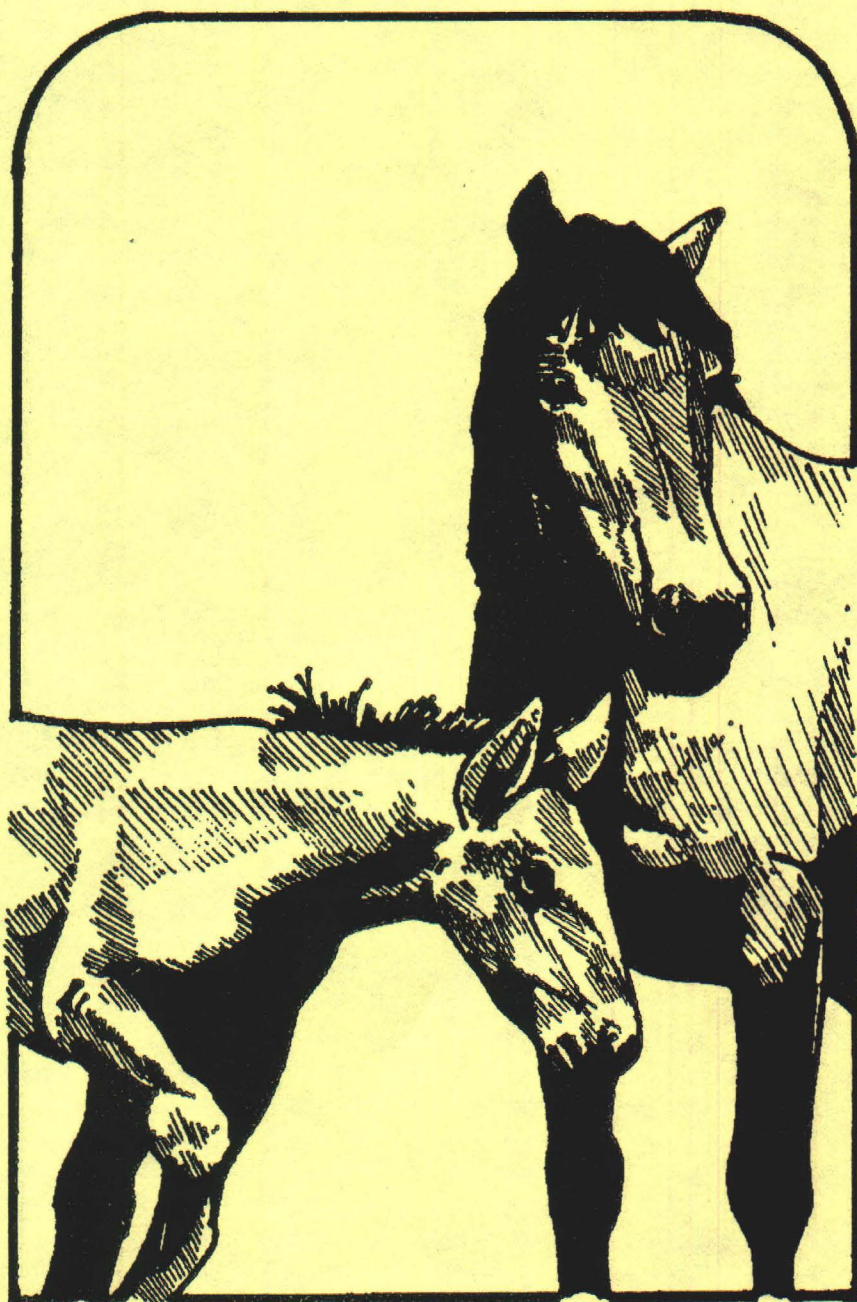
Many state and federal agencies oversee aspects of the other side of Nevada, such as the Nevada Division of State Parks, the Nevada Department of Wildlife, the Nevada Department of Transportation, the National Park Service, the Bureau of Land Management, The Nevada Commission on Economic Development and the Nevada Department of Museums.

The Tourism Commission frequently works with these and other agencies to develop joint promotions, such as brochures and media opportunities. In recent years, the Tourism Commission has jointly participated in major press events, including the dedication of the Great Basin National Park with the National Park Services and the national debut of the Bureau of Land Management's Back Country Byways program.

Under the auspices of the Nevada Commission on Economic Development, the Tourism Commission also participates in the Silver Star Program, an effort designed to help a community review its economic development and tourism resources, then develop a plan for attracting new industries.

Additionally, the Tourism Commission has cooperatively developed several brochures with other agencies, including the official state map, a comprehensive state parks brochure, a boating safety booklet and a statewide museums and attractions pamphlet.

APPENDIX C

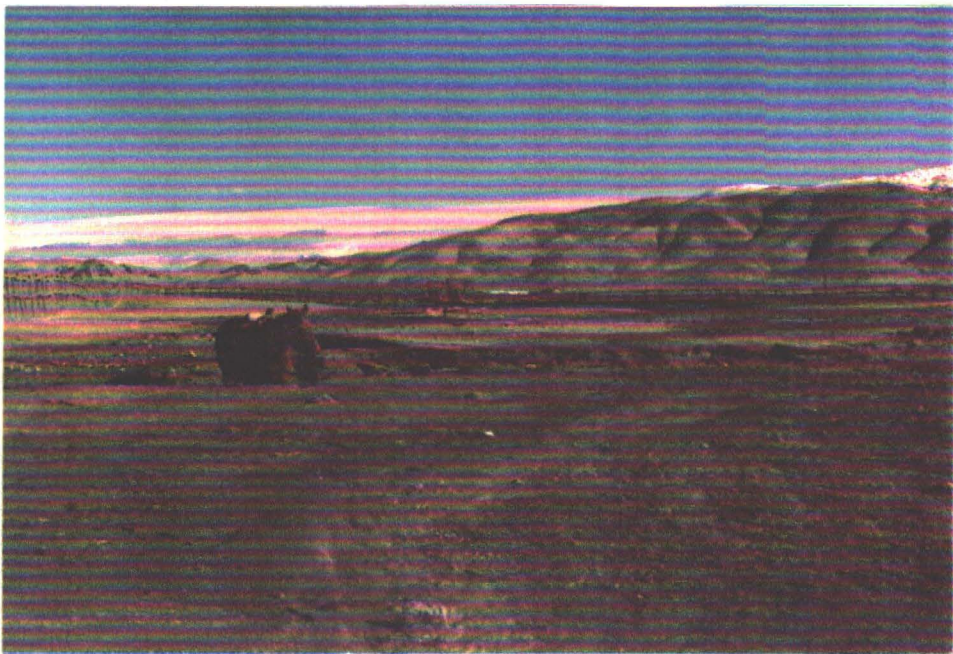


APPENDIX C

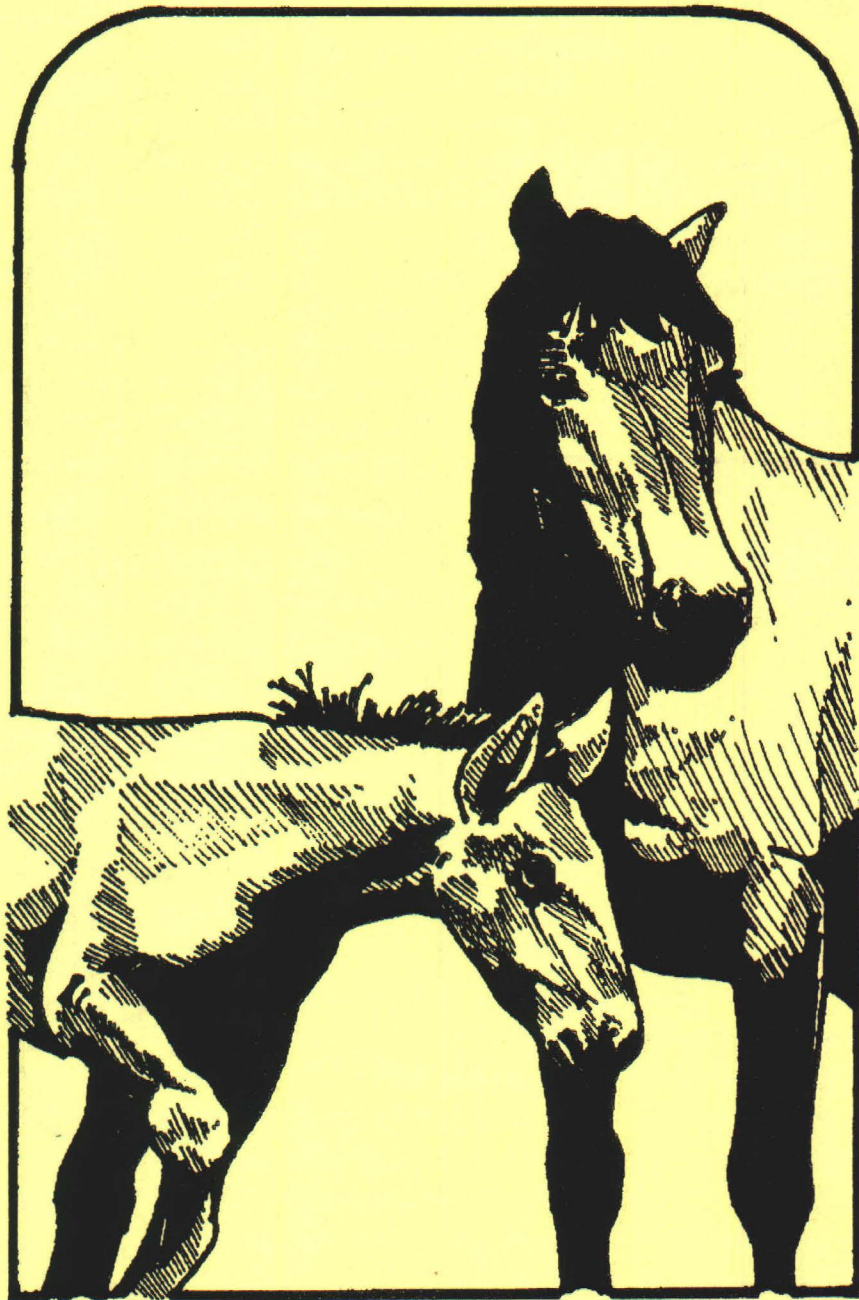
Palomino Valley Wild Horse and Burro Placement Center began operation in June of 1977. The facility was operated by the Division of Wild Horses and Burros which was attached to the BLM's Carson City District. (It is now under the Nevada State Office.) The facility is located on a former ranching operation headquarters; the corrals and chutes which existed when purchased by the BLM have been modified for horses over the years. Thus, the landing mat corrals and the layout of the facility has grown gradually around what existed in the beginning -- unfortunately not always in an attractive or most efficient way.

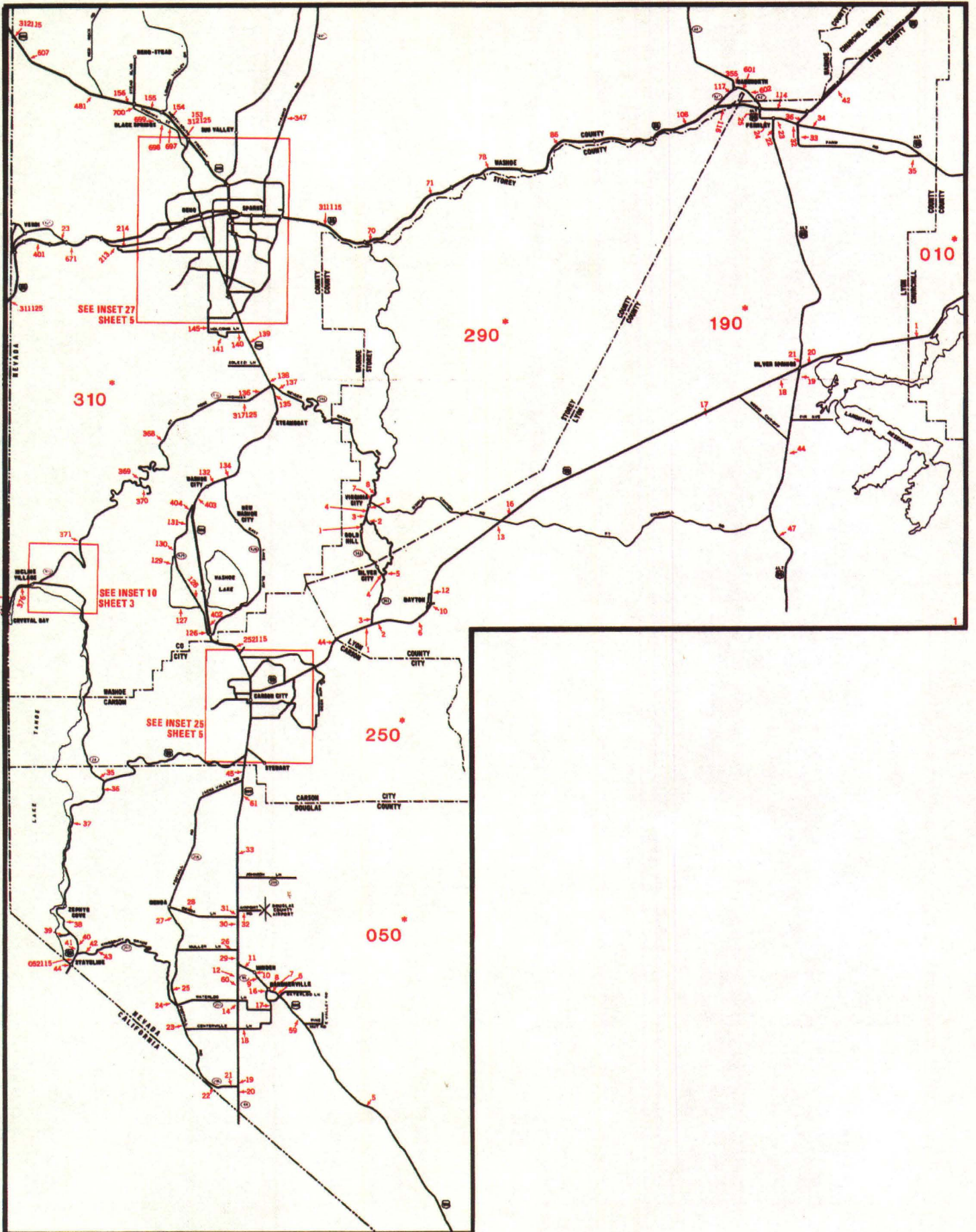
Limitations on the existing facility include that is only 140 acres, and about 40 percent of that is on a flood plain. (See the photos which follow.) Water is not potable to humans, and comes out of the ground at about 114 degrees Fahrenheit. There is some arsenic in the water, also. The existing corrals are located in a valley where the wind and snow can be quite severe during the winter months.

While the facility was isolated was purchased by the BLM, there are several residences around the corrals now. Neighbors are beginning to complain of the aroma and flies associated with this type of operation. Also, some residences share the unpaved road with the facility, so dust and use from large trucks could also be a source of conflict with neighbors.



APPENDIX D





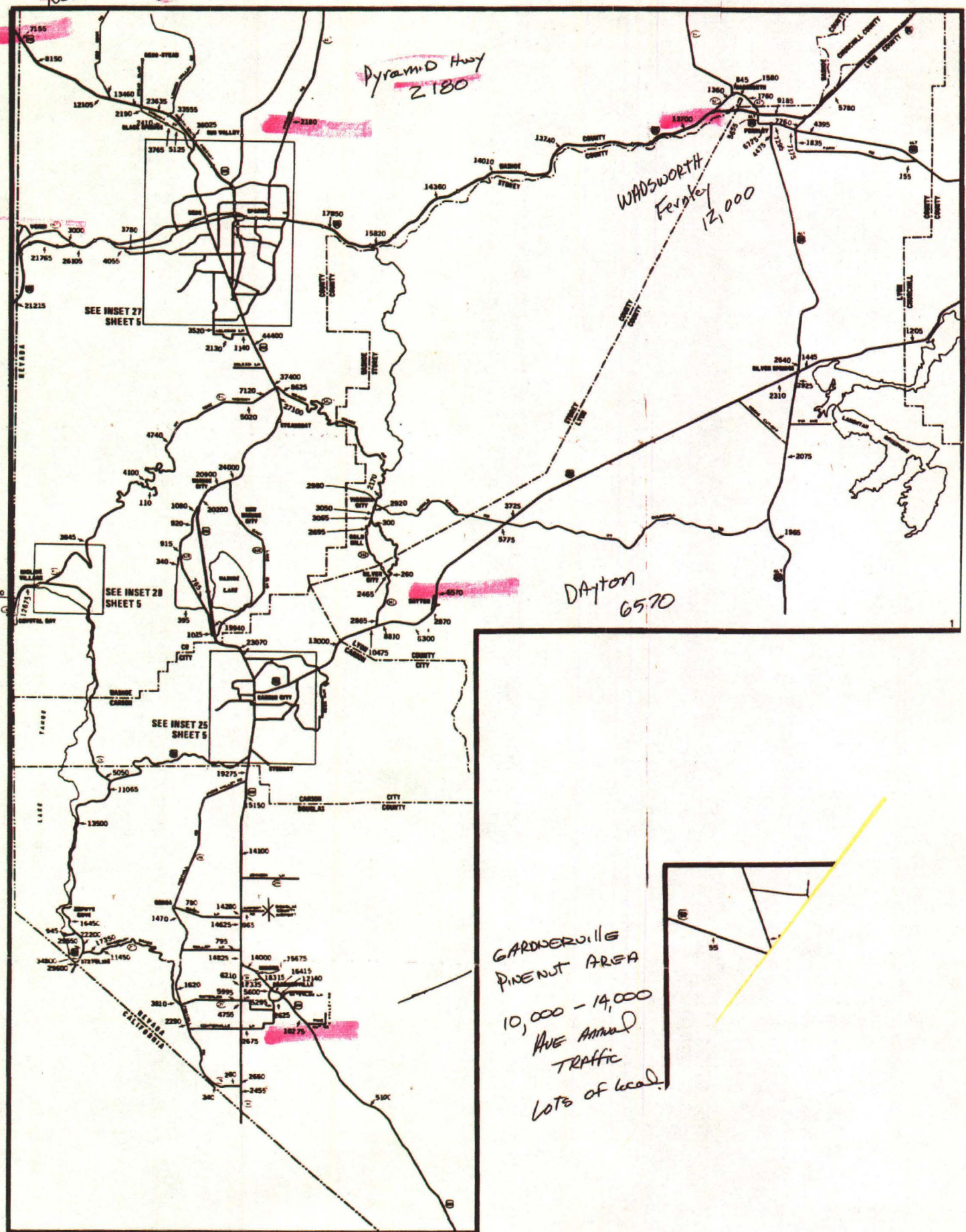
WEST CENTRAL NEVADA

NORTH OF Reno 7155

Pyramid Hwy 2180

WADSWORTH Ferry 12,000

Dayton 6570



STATION NO. 311115
 LOCATION - Interstate 80, 0.2 mile east of Vista Interchange east of Sparks
 1989 ANNUAL AVERAGE DAILY TRAFFIC 17,850

PERCENT CHANGE FROM 1988 104.6

PERCENT 30TH HIGH HOUR
 IS OF ANNUAL A.D.T. 9.2

MONTHLY DATA

| MONTH | ADT | PERCENT OF ANNUAL ADT |
|-----------|--------|-----------------------|
| January | 14,232 | 79.5 |
| February | 13,233 | 74.2 |
| March | 16,687 | 94.0 |
| April | 17,939 | 99.7 |
| May | 18,606 | 104.6 |
| June | 20,700 | 116.2 |
| July | 20,665 | 115.4 |
| August | 21,281 | 119.5 |
| September | 19,720 | 110.4 |
| October | 18,265 | 101.7 |
| November | 16,724 | 93.9 |
| December | 16,167 | 90.9 |

HISTORICAL RECORD

| YEAR | ADT | PERCENT CHANGE FROM PREVIOUS YEAR |
|------|--------|-----------------------------------|
| 1988 | 17,070 | 104.5 |
| 1987 | 16,330 | 107.0 |
| 1986 | 15,255 | 105.2 |
| 1985 | 14,500 | 104.2 |
| 1984 | 13,920 | 106.9 |
| 1983 | 13,025 | 102.3 |
| 1982 | 12,725 | 94.5 |
| 1981 | 13,465 | 102.9 |
| 1980 | 13,080 | 101.1 |
| 1979 | 12,935 | 100.9 |

STATION NO. 311125
 LOCATION - Interstate 80, 2.0 miles east of Nevada-California State Line west of Verdi
 1989 ANNUAL AVERAGE DAILY TRAFFIC 21,215

PERCENT CHANGE FROM 1988 100.4

PERCENT 30TH HIGH HOUR
 IS OF ANNUAL A.D.T. 12.0

MONTHLY DATA

| MONTH | ADT | PERCENT OF ANNUAL ADT |
|-----------|--------|-----------------------|
| January | 16,829 | 79.3 |
| February | 15,725 | 74.1 |
| March | 18,431 | 86.4 |
| April | 19,938 | 95.5 |
| May | 21,714 | 101.2 |
| June | 24,057 | 112.7 |
| July | 26,233 | 125.0 |
| August | 27,049 | 126.2 |
| September | 24,345 | 115.2 |
| October | 22,010 | 104.8 |
| November | 19,634 | 91.9 |
| December | 18,590 | 87.7 |

HISTORICAL RECORD

| YEAR | ADT | PERCENT CHANGE FROM PREVIOUS YEAR |
|------|--------|-----------------------------------|
| 1988 | 21,125 | 105.0 |
| 1987 | 20,120 | 109.1 |
| 1986 | 18,445 | 101.1 |
| 1985 | 18,250 | 103.4 |
| 1984 | 17,655 | 106.0 |
| 1983 | 16,650 | 104.0 |
| 1982 | 15,995 | 96.0 |
| 1981 | 16,660 | 105.5 |
| 1980 | 15,790 | 100.2 |
| 1979 | 15,755 | 97.9 |

STATION NO. 311215
 LOCATION - Interstate 80, 0.5 mile west of U.S. 395 Interchange in Reno
 1989 ANNUAL AVERAGE DAILY TRAFFIC 82,725

PERCENT CHANGE FROM 1988 101.3

PERCENT 30TH HIGH HOUR
 IS OF ANNUAL A.D.T. 9.3

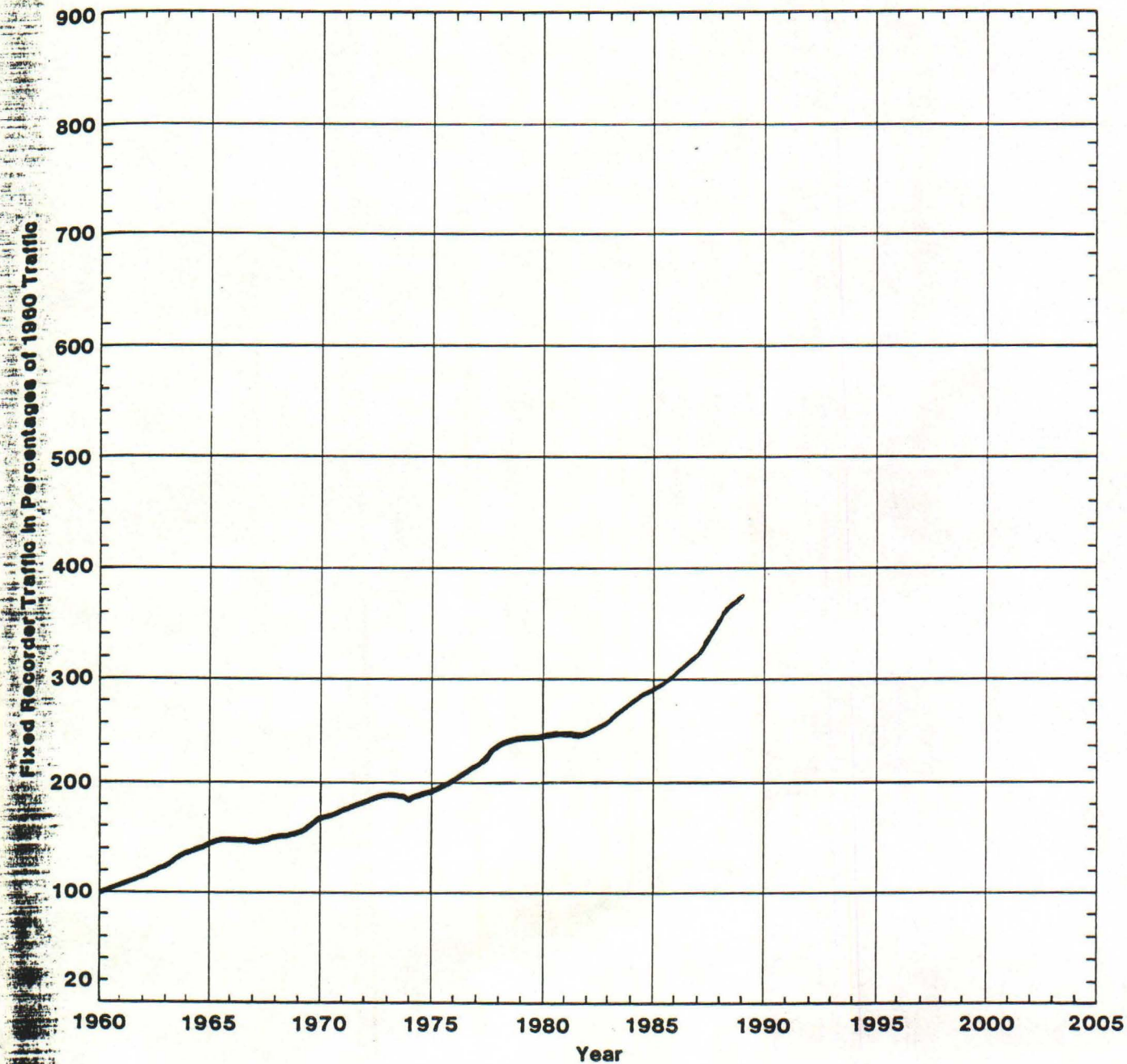
MONTHLY DATA

| MONTH | ADT | PERCENT OF ANNUAL ADT |
|-----------|--------|-----------------------|
| January | 77,985 | 94.0 |
| February | 75,417 | 91.2 |
| March | 82,850 | 100.9 |
| April | 85,819 | 102.5 |
| May | 85,011 | 103.4 |
| June | 86,862 | 105.5 |
| July | 81,260 | 97.6 |
| August | 84,319 | 102.5 |
| September | 84,845 | 102.5 |
| October | 87,387 | 104.6 |
| November | 82,524 | 100.3 |
| December | 78,448 | 95.0 |

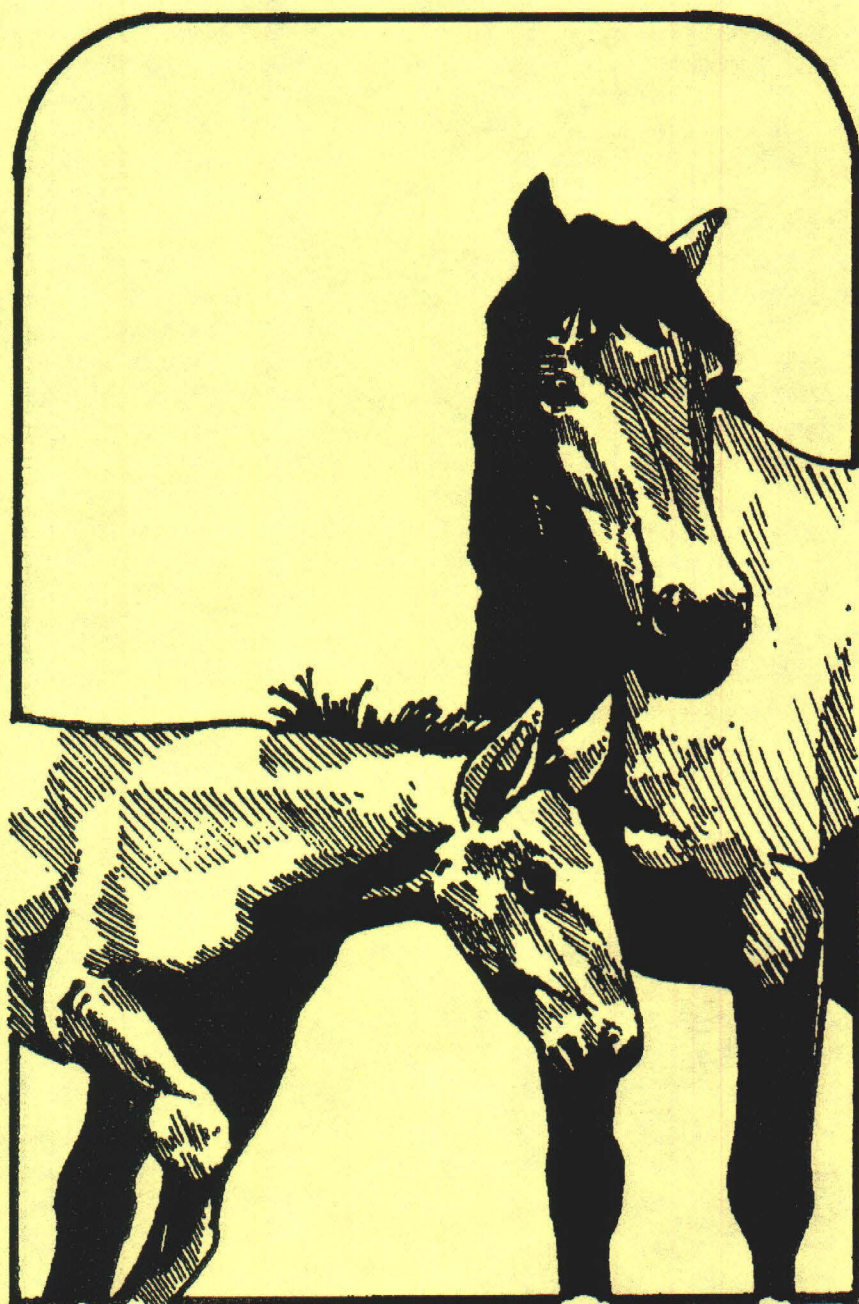
HISTORICAL RECORD

| YEAR | ADT | PERCENT CHANGE FROM PREVIOUS YEAR |
|------|--------|-----------------------------------|
| 1988 | 81,615 | 108.8 |
| 1987 | 75,000 | 106.1 |
| 1986 | 70,680 | 100.7 |
| 1985 | 70,165 | 107.0 |
| 1984 | 65,570 | 104.2 |
| 1983 | 62,890 | 103.2 |
| 1982 | 60,915 | 106.4 |
| 1981 | 57,270 | 108.4 |
| 1980 | 52,850 | 101.5 |
| 1979 | 52,070 | 105.8 |

TRAFFIC GROWTH IN NEVADA
Data Based on all Fixed Recorders
Base Year for Percentages- 1960



APPENDIX E



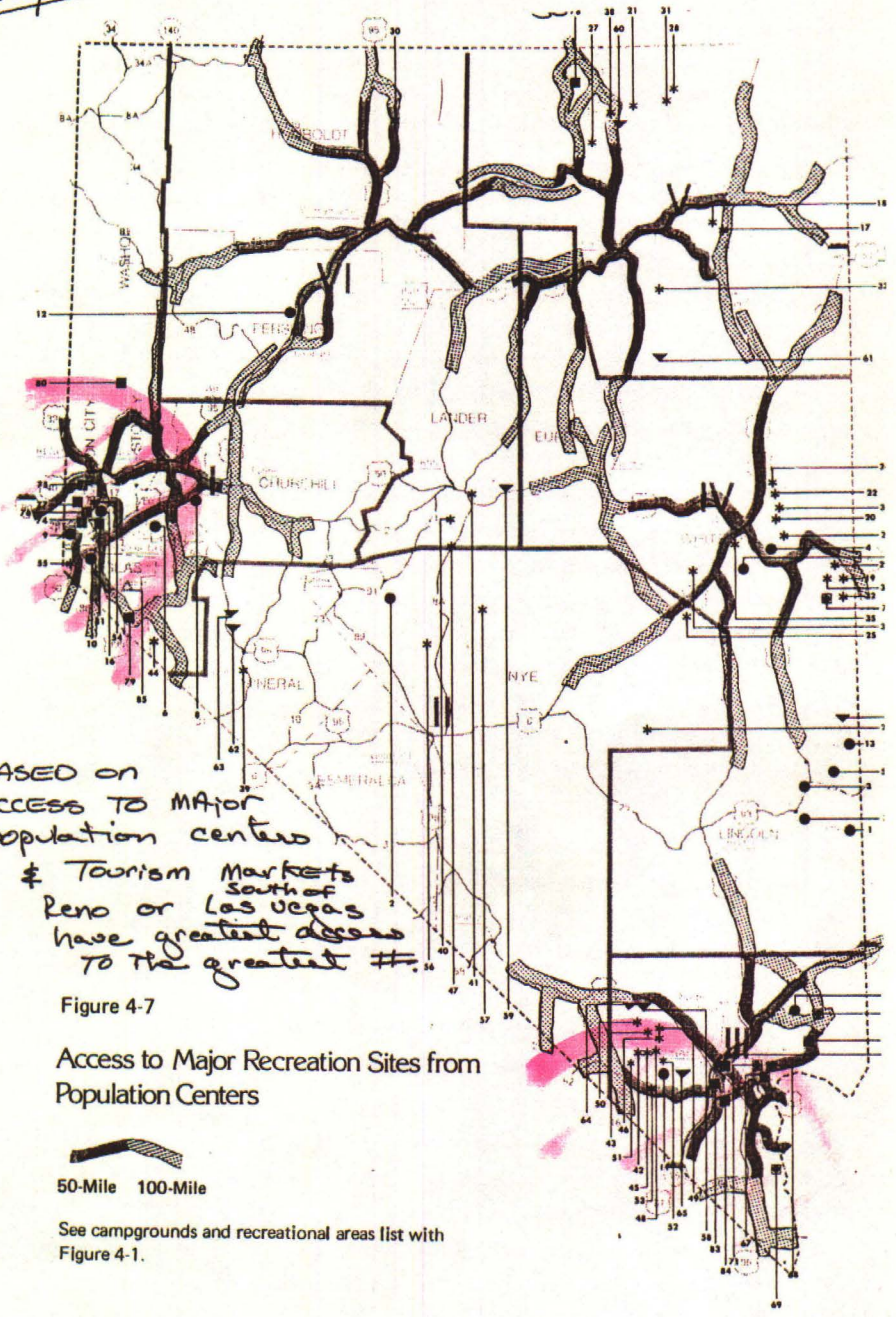
COPY.

EFFECTIVENESS OF SUPPLY

The enumeration of supply figures by region and even by county are only gross indicators of the kinds of recreational opportunities available in various parts of Nevada. To fully understand the distribution of facilities indicated in the supply tables, one would need a detailed knowledge of the condition and quality of the facilities. A campground, picnic area, or tennis court in a good surrounding environment may be five times more attractive and enjoyable to use than the same number of facilities in poor condition or unpleasant surroundings. This refinement of the supply inventory can only be obtained by systematic local field surveys and evaluations according to standard criteria.

Distance between population centers and facilities is another important factor in evaluating the recreation inventory's effectiveness in meeting public needs. Distance or travel time is a major determinant of how frequently given facilities are likely to be used. Other things being equal, a recreation site 50 miles from an urban center is likely to receive much more visitation than one located 100 miles away. The first step in this kind of analysis is illustrated in Figure 4-7, which superimposes highway distance from population centers upon a map of existing recreation sites. The same highway distance overlay is compared in Figure 4-8 to natural resource areas with picnic and camping activity potentials.

Figure 4-7 shows that many of the important developed recreation sites in Nevada are beyond 100 road miles of population centers. This is only a sampling of the many different kinds of recreation opportunities that could be mapped in the same fashion. The point is that when additional acquisitions



BASED ON
ACCESS TO MAJOR
POPULATION CENTERS
& TOURISM MARKETS
South of
Reno or Las Vegas
have greatest access
to the greatest #.

Figure 4-7
Access to Major Recreation Sites from
Population Centers

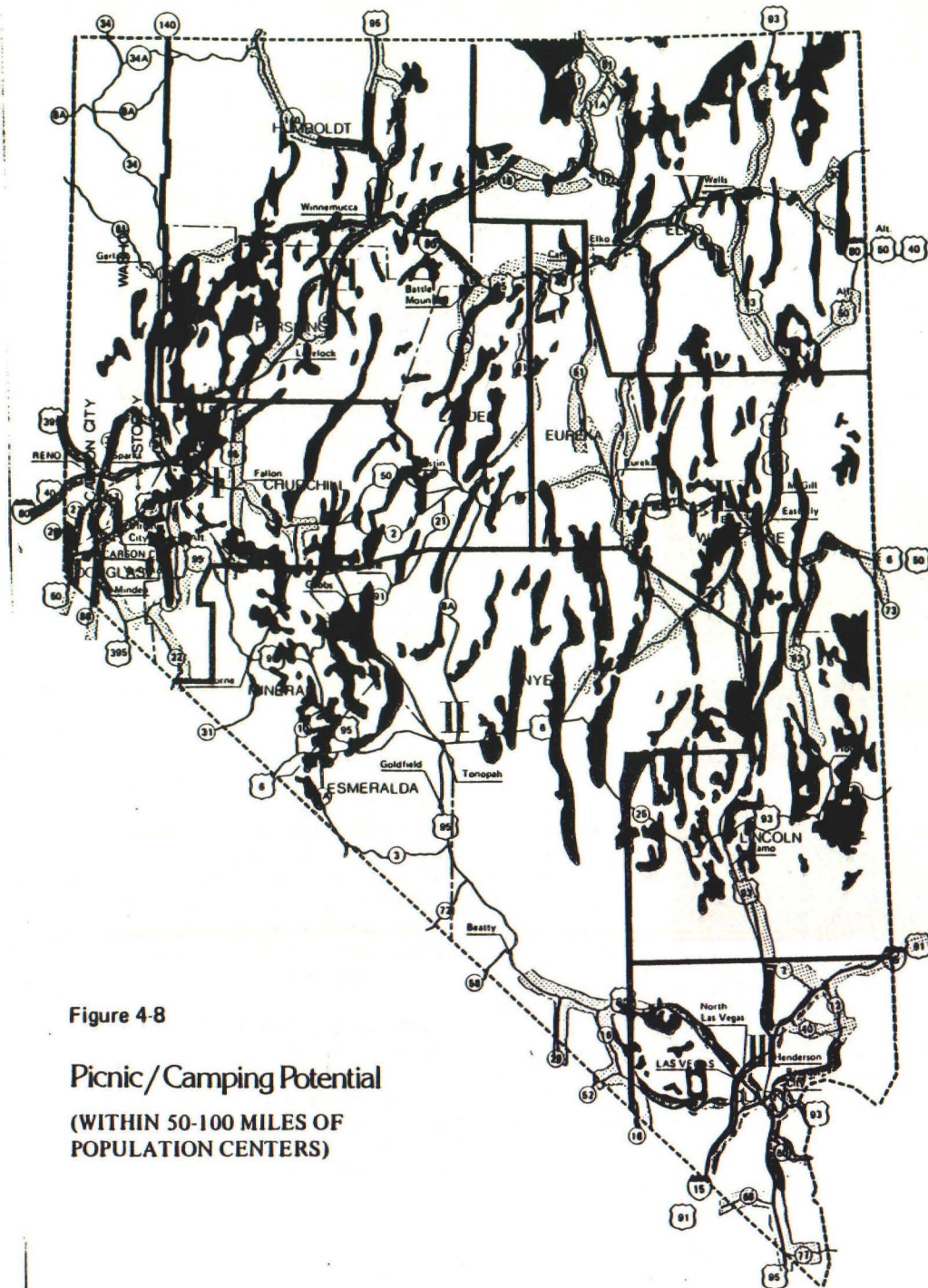


Figure 4-8

Picnic/Camping Potential
 (WITHIN 50-100 MILES OF
 POPULATION CENTERS)

or development expenditures are considered in the future, priority attention might be given to those areas closest to population centers. Other factors such as uniqueness of a resource in a remote location must also be considered in priority evaluation, of course.

The reasons for assigning high priority to areas nearest the population centers, where there is some choice, include:

- . Fuel conservation
- . Reduced user cost, expansion of recreation opportunity to a wider cross-section of the population
- . Reservation of prime areas for public recreation that are subjected to heaviest urban growth pressures and/or value inflation

The 100 road mile measure of proximity to urban populations is only an approximation. Where road conditions or unique attractiveness of a site reduce the importance of a distance barrier, adjustments can be made in priorities also.

The overlays in Figure 4-8 indicate the quantity of picnic and camping sites within 50- and 100-mile driving distances of six population centers. Historic sites, hiking trails, golf courses and other sites can be depicted the same way. The graphic result shows several things of importance to decisions about where and when to invest public or private funds in additional facilities:

1. Some recreation sites are likely to be subjected to pressure from two different directions, as in the places where the Reno/Sparks and Winnemucca 100 mile distances meet

EFFECTIVENESS OF SUPPLY

The enumeration of supply figures by region and even by county are only gross indicators of the kinds of recreational opportunities available in various parts of Nevada. To fully understand the distribution of facilities indicated in the supply tables, one would need a detailed knowledge of the condition and quality of the facilities. A campground, picnic area, or tennis court in a good surrounding environment may be five times more attractive and enjoyable to use than the same number of facilities in poor condition or unpleasant surroundings. This refinement of the supply inventory can only be obtained by systematic local field surveys and evaluations according to standard criteria.

Distance between population centers and facilities is another important factor in evaluating the recreation inventory's effectiveness in meeting public needs. Distance or travel time is a major determinant of how frequently given facilities are likely to be used. Other things being equal, a recreation site 50 miles from an urban center is likely to receive much more visitation than one located 100 miles away. The first step in this kind of analysis is illustrated in Figure 4-7, which superimposes highway distance from population centers upon a map of existing recreation sites. The same highway distance overlay is compared in Figure 4-8 to natural resource areas with picnic and camping activity potentials.

Figure 4-7 shows that many of the important developed recreation sites in Nevada are beyond 100 road miles of population centers. This is only a sampling of the many different kinds of recreation opportunities that could be mapped in the same fashion. The point is that when additional acquisitions

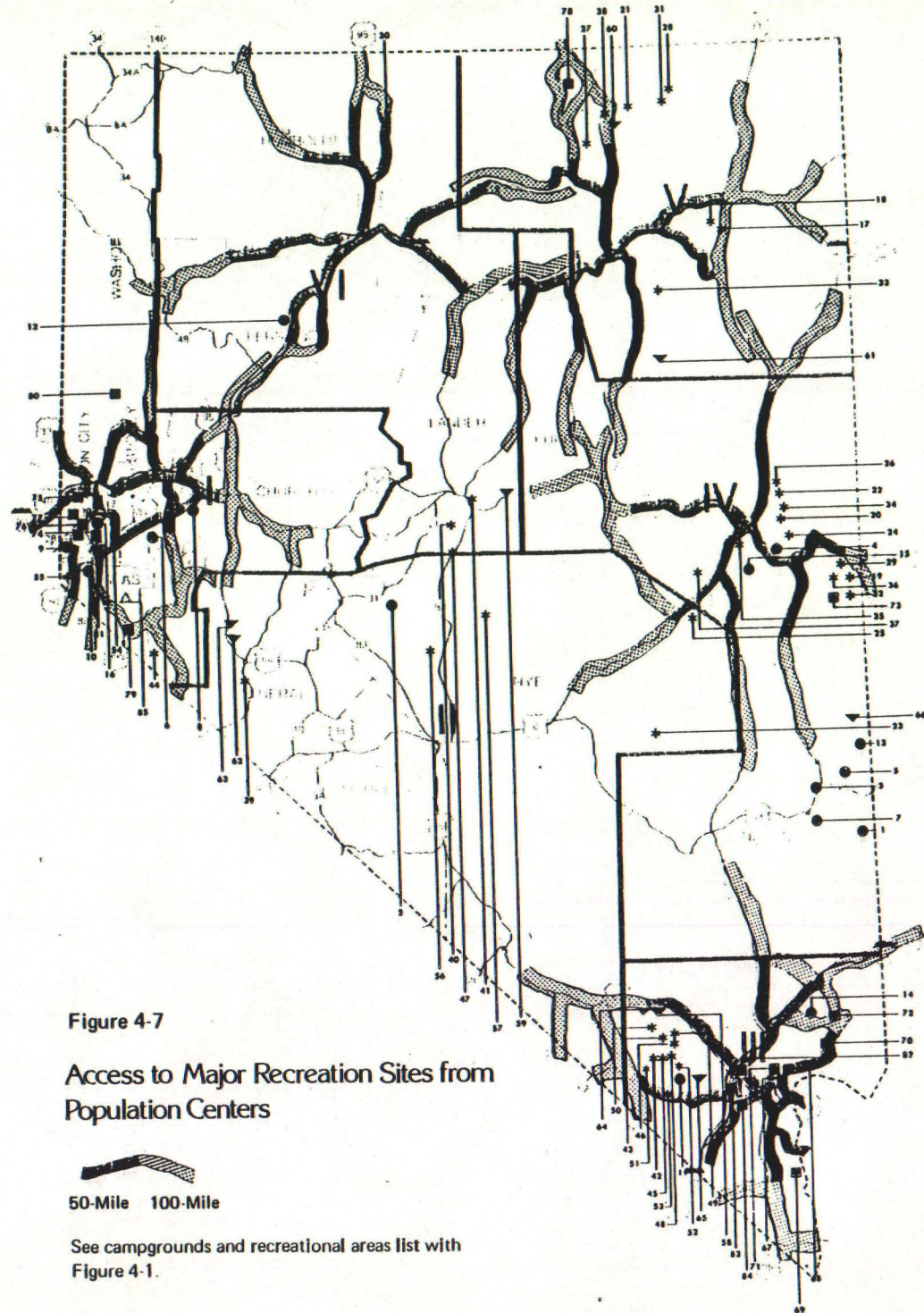


Figure 4-7

Access to Major Recreation Sites from Population Centers

50-Mile 100-Mile

See campgrounds and recreational areas list with Figure 4-1.

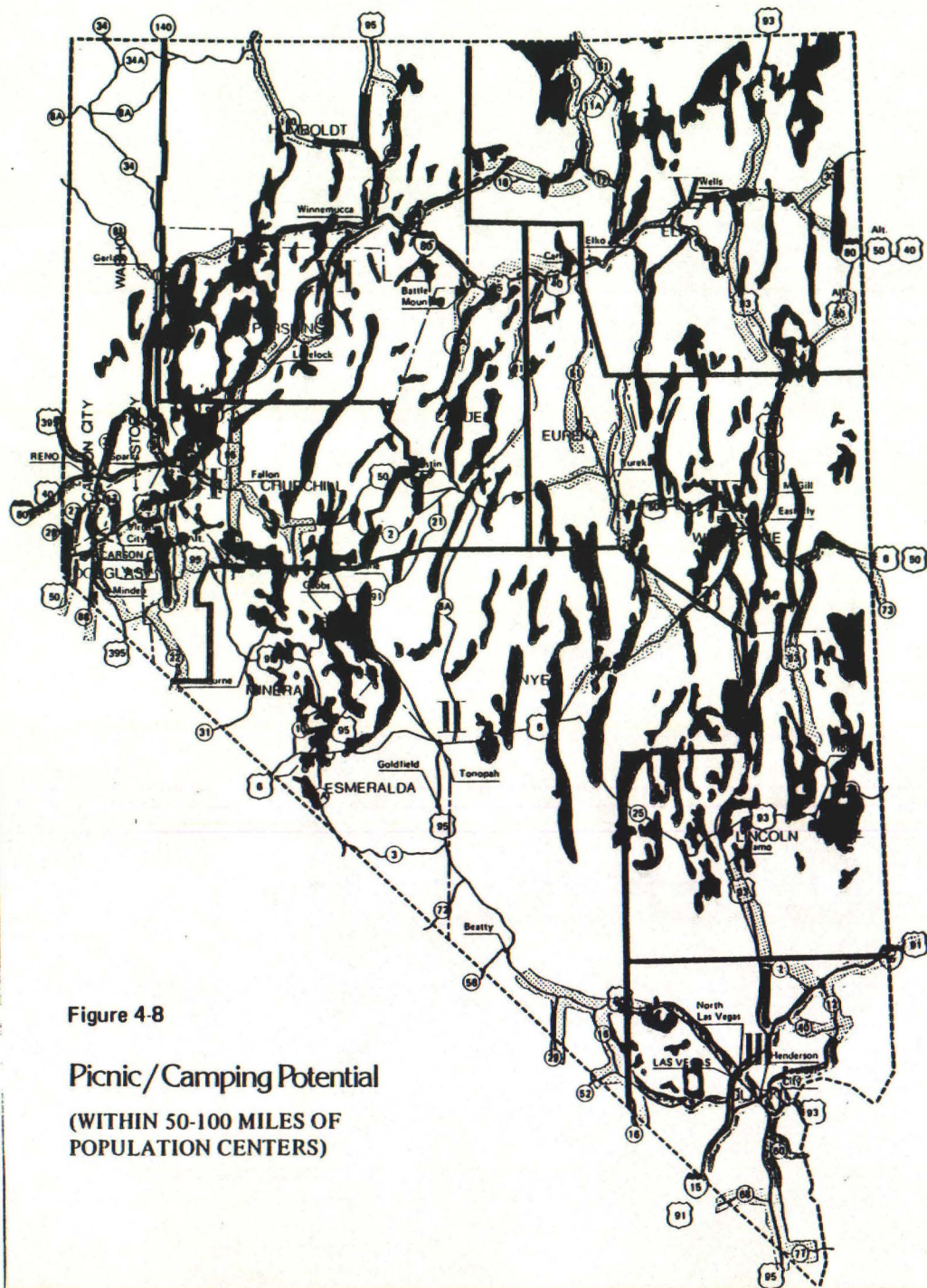


Figure 4-8

Picnic/Camping Potential

(WITHIN 50-100 MILES OF POPULATION CENTERS)

or development expenditures are considered in the future, priority attention might be given to those areas closest to population centers. Other factors such as uniqueness of a resource in a remote location must also be considered in priority evaluation, of course.

The reasons for assigning high priority to areas nearest the population centers, where there is some choice, include:

- . Fuel conservation
- . Reduced user cost, expansion of recreation opportunity to a wider cross-section of the population
- . Reservation of prime areas for public recreation that are subjected to heaviest urban growth pressures and/or value inflation

The 100 road mile measure of proximity to urban populations is only an approximation. Where road conditions or unique attractiveness of a site reduce the importance of a distance barrier, adjustments can be made in priorities also.

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1. Some recreation sites are likely to be subjected to pressure from two different directions, as in the places where the Reno/Sparks and Winnemucca 100 mile distances meet

along Interstate 80. A new recreation facility located in that common area may nominally boost the Region VI supply. However, it may, in fact, be dominated by Region I users from the Reno-Sparks population center.

2. Areas of undeveloped recreation potential within the 50 mile distance may be subjected to heavy visitor pressures which will damage the resource unless it is carefully managed. Resource-managing agencies should use these distance/resource overlays in considering priorities of investment to develop and adequately manage recreation sites. If two recreation sites have approximately the same intrinsic value, for example, the one most accessible to the largest population center should receive first priority for development, while the other one is acquired for development later.
3. The Reno-Sparks and Las Vegas population centers exert pressure on accessible recreation resources to a much larger degree than other centers shown on the map. Not only are their resident populations much larger, but they both draw from the large California population centers as well. The extensive highway systems in those two areas also magnify the intensity of pressure.
4. Areas closest to population centers are likely to be most appropriate for day use, while those over 50 miles away are more likely to attract overnight visitors. The types of site development can be designed to reflect these differences.

Photo by Darrell Craig

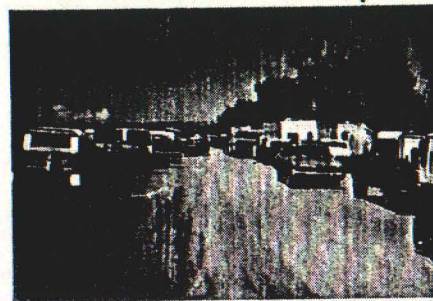
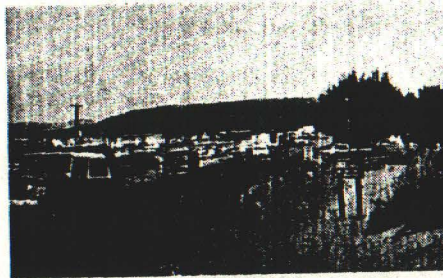


Photo by Darrell Craig

LAND OWNERSHIP

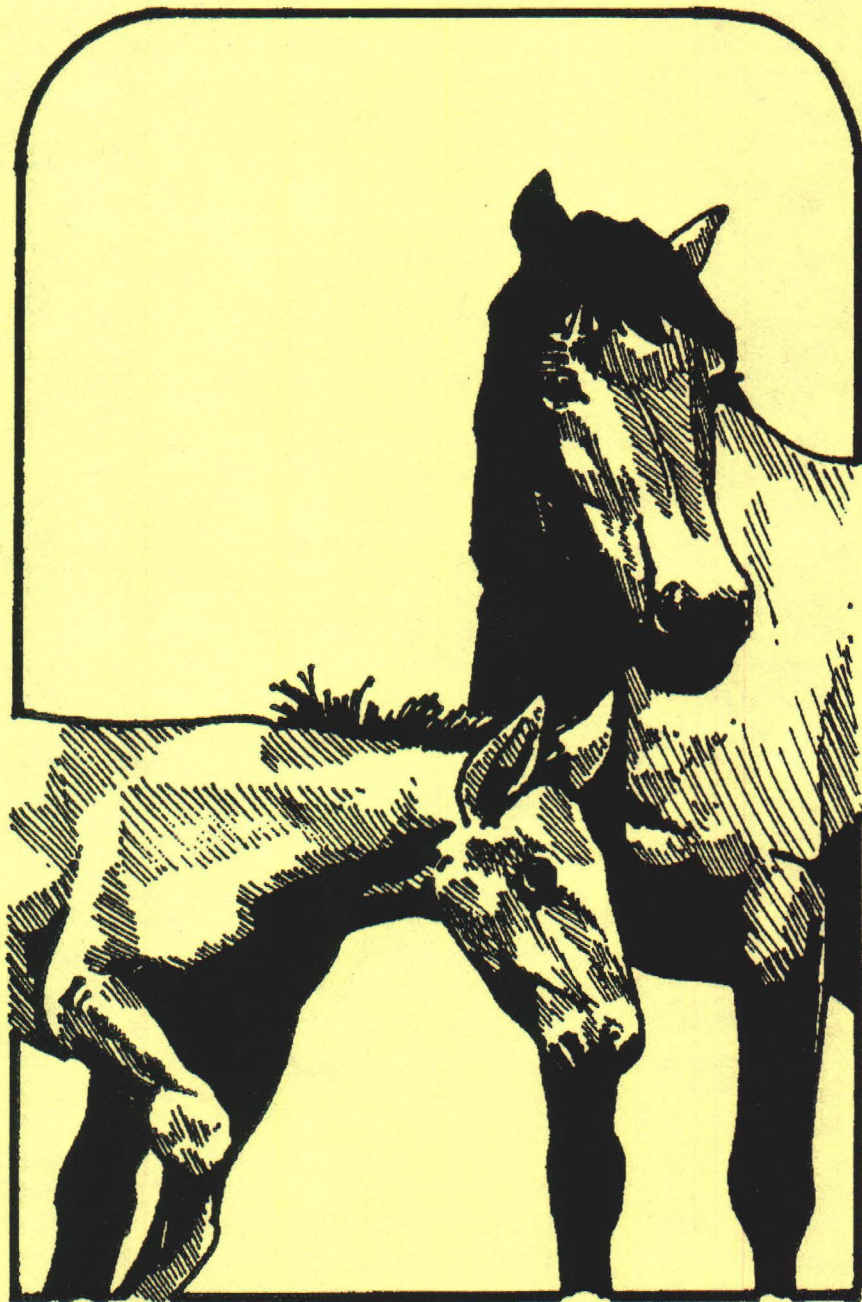
Ownership and land management is a prime influence on the "effectiveness" of public recreation resource supply. The land ownership pattern in Nevada is intimately involved with the state's natural resources, its history, economy, and land use management. Recreation opportunities afforded to Nevada citizens and visitors are directly affected by land ownership pattern.

Figure 4-9 is a generalized land status map of the state showing the major ownerships. Due to the scale, many of the isolated ownerships have been omitted.

Approximately 86.5 percent (94,000 square miles) is in federal ownership. Of this, 7,813 square miles is National Forest and 72,680 square miles is within the Bureau of Land Management's jurisdiction. Approximately 16,500 square miles is privately owned. This includes a 40-mile wide strip across northern Nevada where the old Central Pacific Railroad was given every alternating square mile as an incentive to build. As Figure 4-9 shows, a large percentage of these are valuable river bottom lands and relate closely to many Nevada urban centers that arose because of river, rail, and later highway access. Today these private land holdings are important to recreation because they can potentially obstruct recreation access to river frontage. This is particularly noticeable along certain stretches of the Truckee, Carson, and Humboldt Rivers.

From a public recreation viewpoint, Nevada is fortunate that many exceptional areas are in public ownership, and many of the larger mountain ranges are national forest lands. Some of the Forest Service land is bordered by extensive privately-owned land, particularly in the Ruby Mountain and Jarbidge Wilderness areas. Coordina-

APPENDIX F



APPENDIX F POSSIBLE LOCATIONS

The maps which follow are a look "on paper" of possible sites for further investigation in the Reno-Sparks-Carson City areas. When looking for a site for the Interpretive Center and the Working Center, we should also consider the nearest herd management area as that may be most suitable for our Natural Area, rather than creating a new drive-through viewing area.

NORTH OF RENO-SPARKS

The map with sites 1-5 were ranked by the area manager as being most suitable for development (least impacts to other resources anticipated). Of course, this was a quick ranking and further study is necessary.

Site 1: North Sun Valley. Access would be from U.S. Highway 395 to Sun Valley Drive to paved and dirt roads.

Site 2: Warm Springs Valley South. Access from State Highway 445 (Pyramid Highway) to the Winnemucca Ranch Road (which is a county road).

Site 3: Warm Springs Valley North. Access from State Highway 445 (Pyramid Highway) to the Winnemucca Ranch Road.

Site 4: Mullen Pass. Access from State Highway 445 (Pyramid Highway)

Site 5: Cold Springs Valley. Access from U.S. Highway 395 to Red Rock Road (a country road) to dirt roads.

Nearest herd management areas are: Flanigan, Dogskin Mountains/Granite Peak and the Pah Rah.

EAST OF RENO-SPARKS

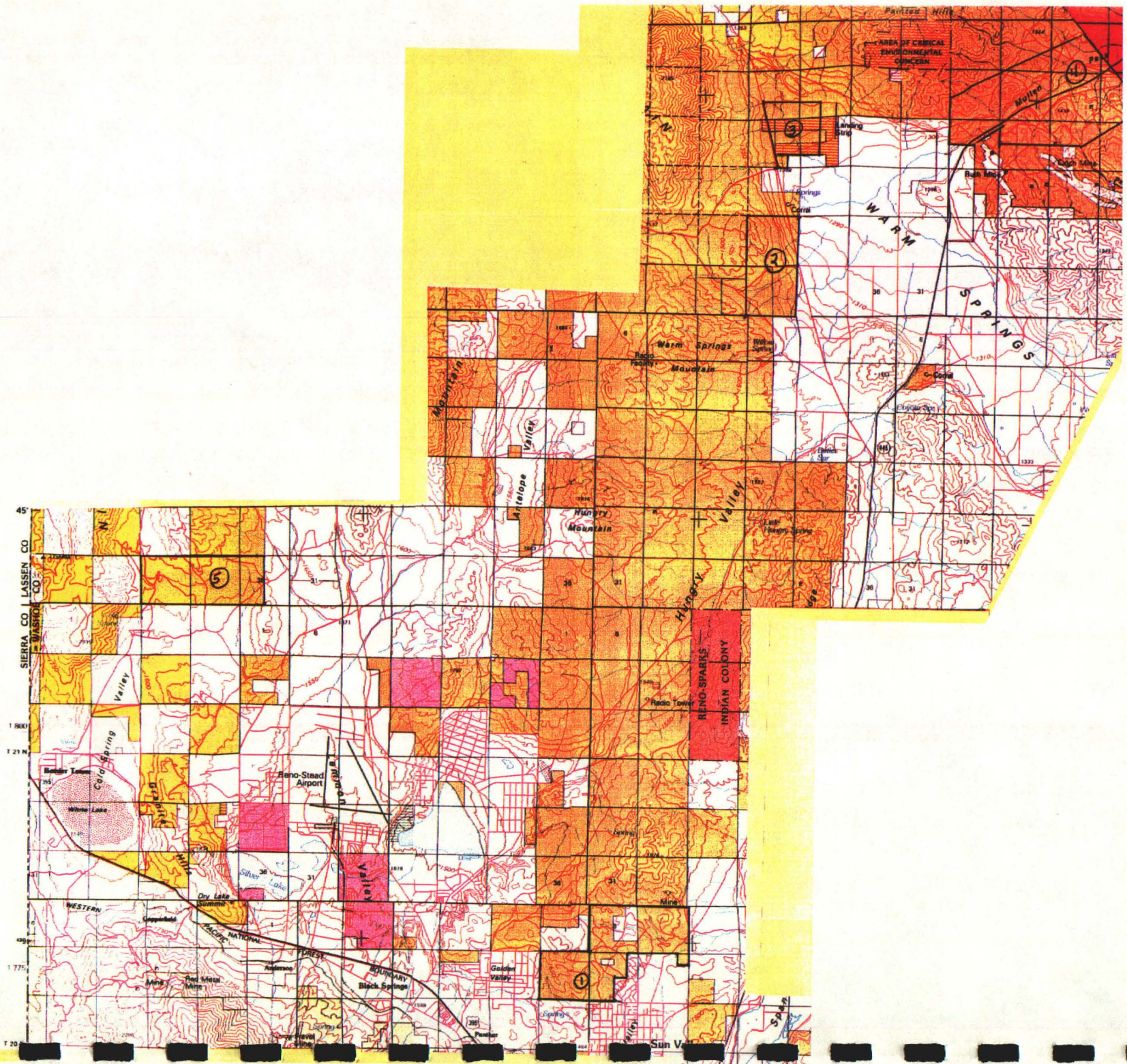
The maps on the Carson City Quadrangle look at sites near Wadsworth, Fernley and Silver Springs.

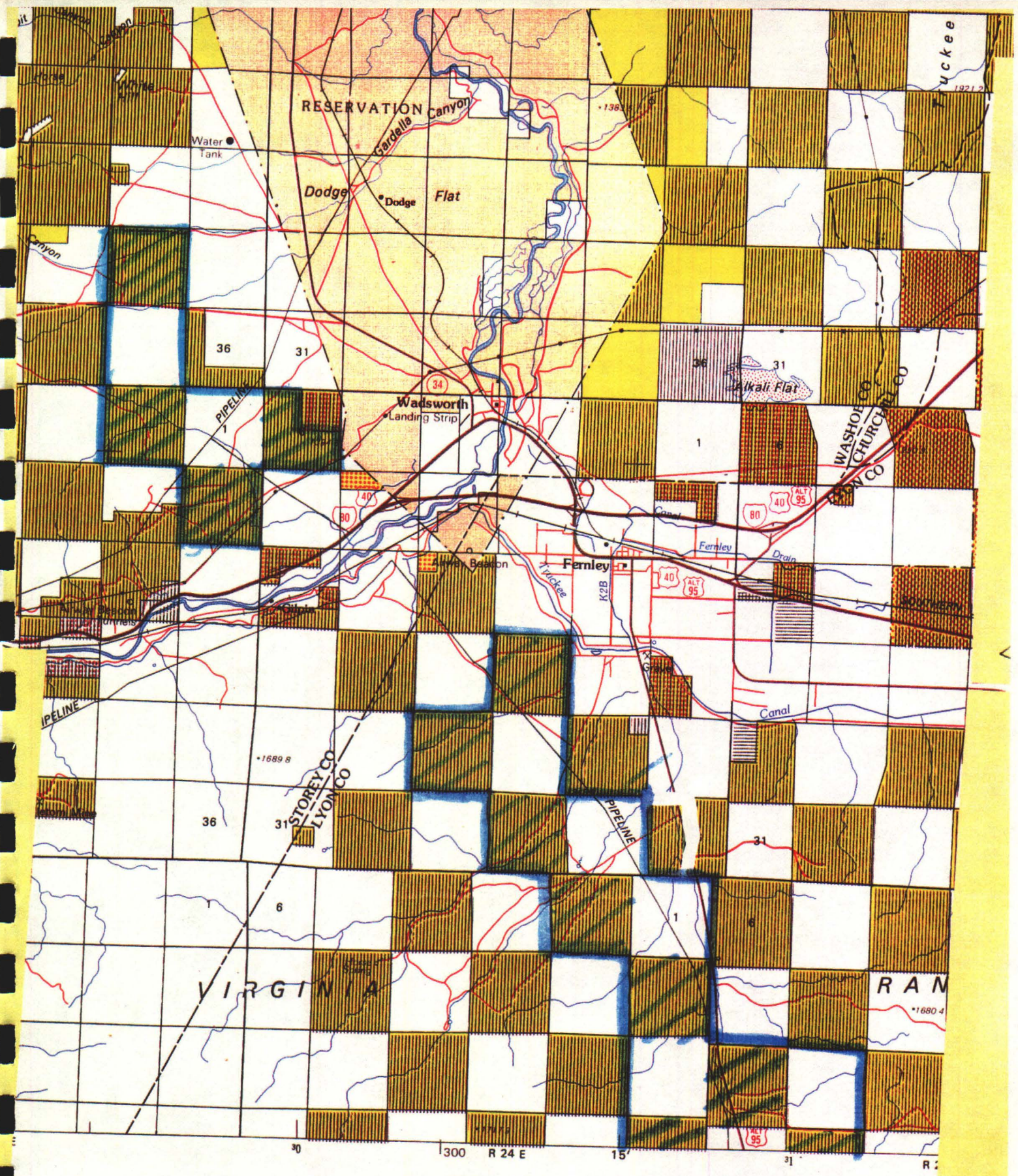
The map showing blocks of land northeast of Fernley shows a few sections of land in Churchill and Lyon Counties.

Nearest herd management area is Horse Springs, a small Herd Management Area with no naturally occurring waters.

EAST OF CARSON CITY

The final map shows three possible locations all to the east of Carson City.
Nearest herd management area is the Pinenuts.

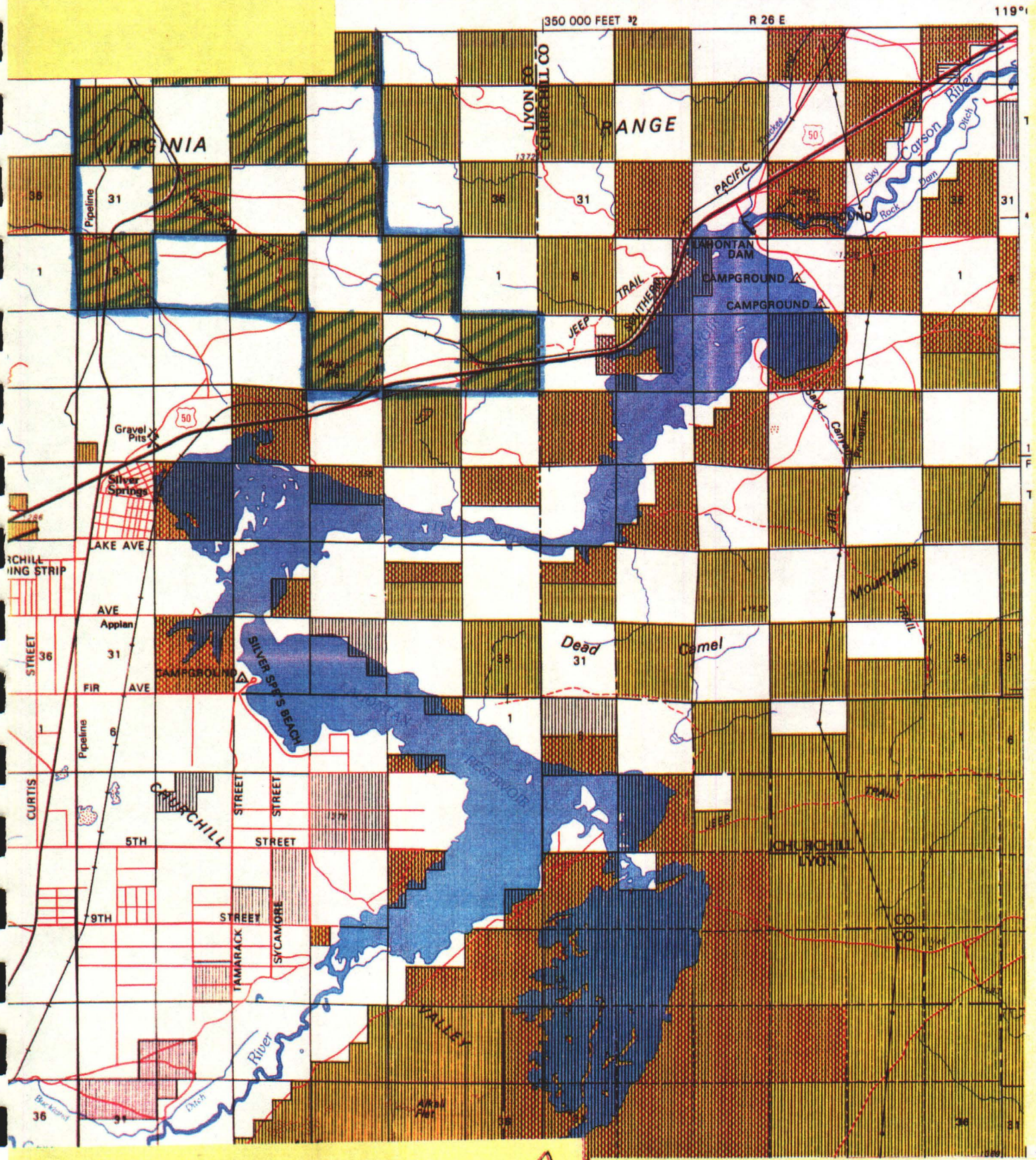


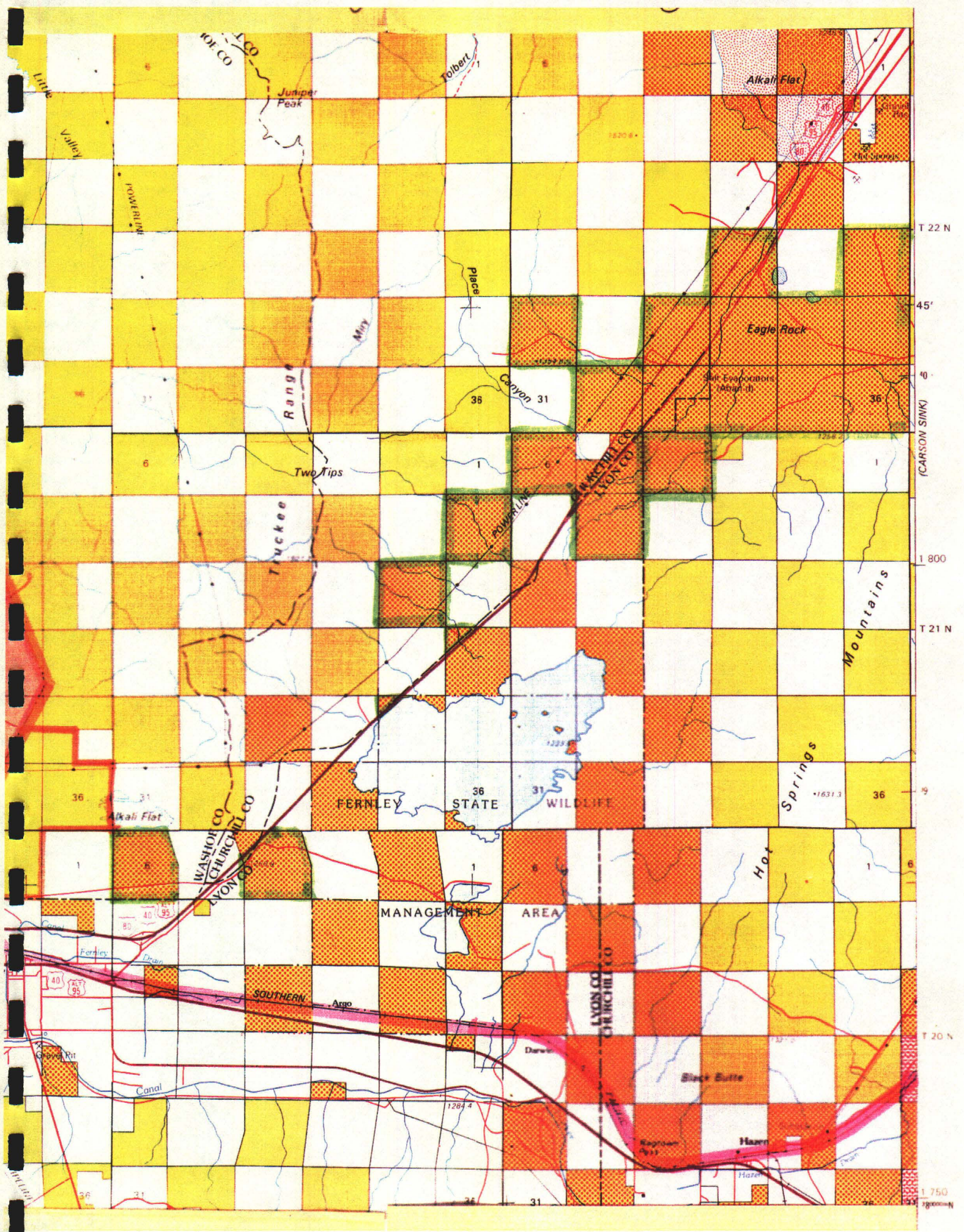


NEVADA

- LEG**
- Village or locality
 - Landmark building
 - Perennial stream, lake
 - Intermittent stream, lake

CARSON CITY QUADRANGLE
NEVADA
1:100 000-SCALE SERIES (PLANIMETRIC)





T 22 N

45'

40'

(CARSON SINK)

1 800

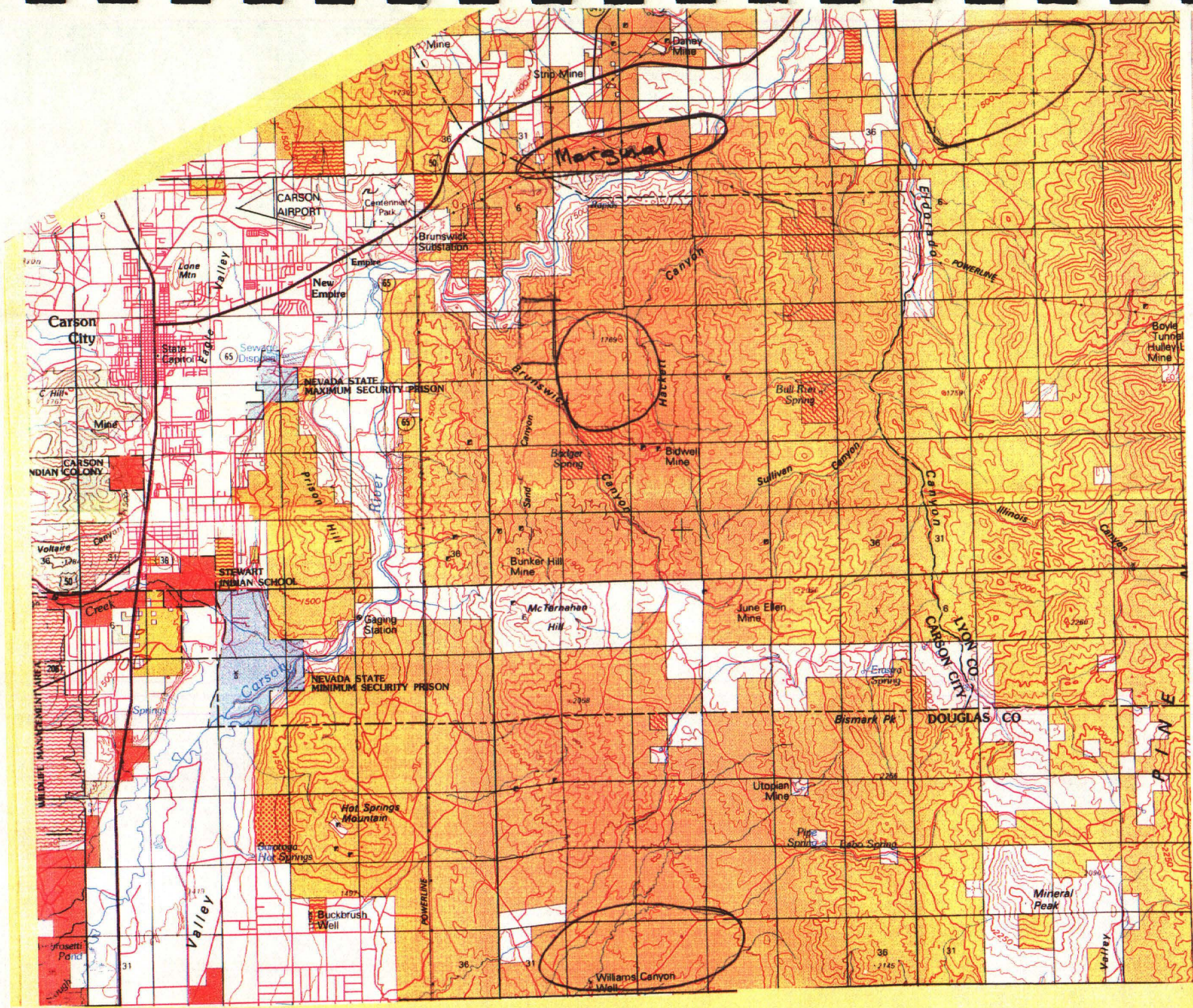
T 21 N

35'

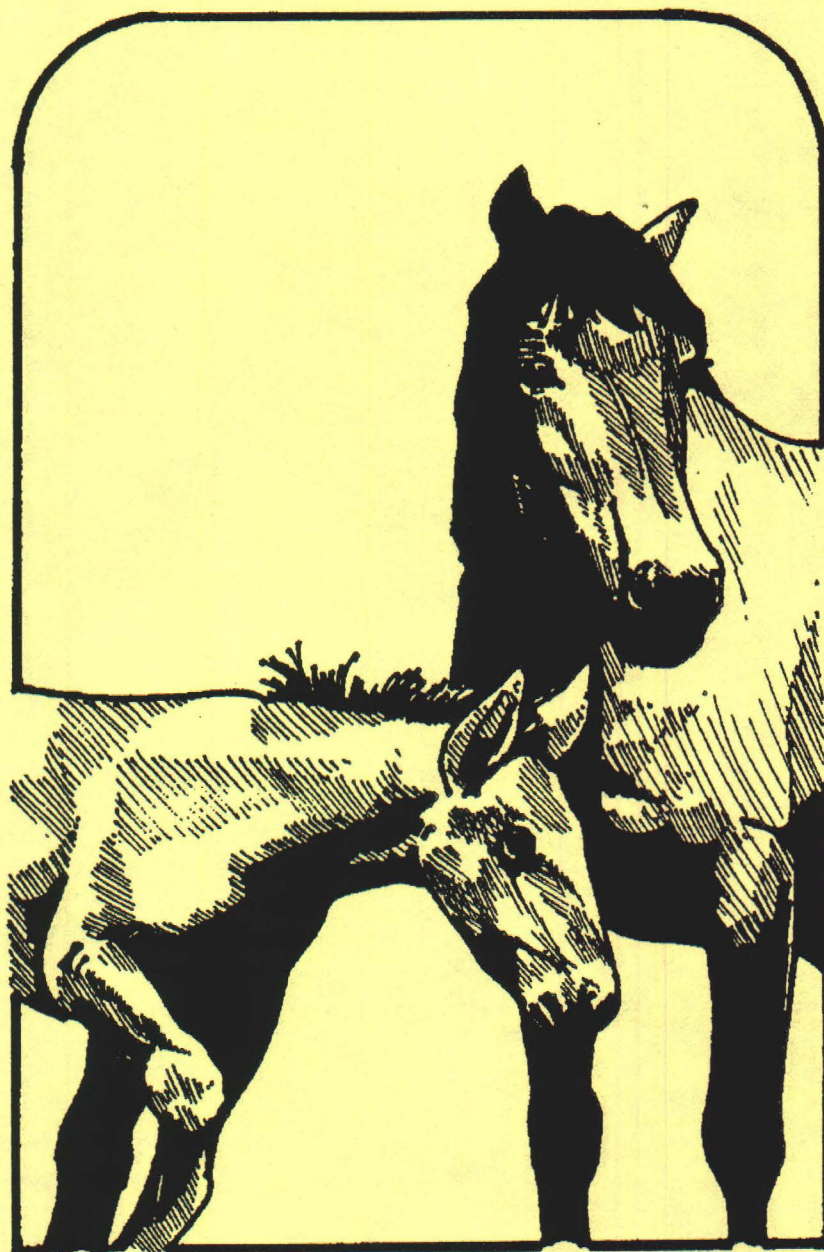
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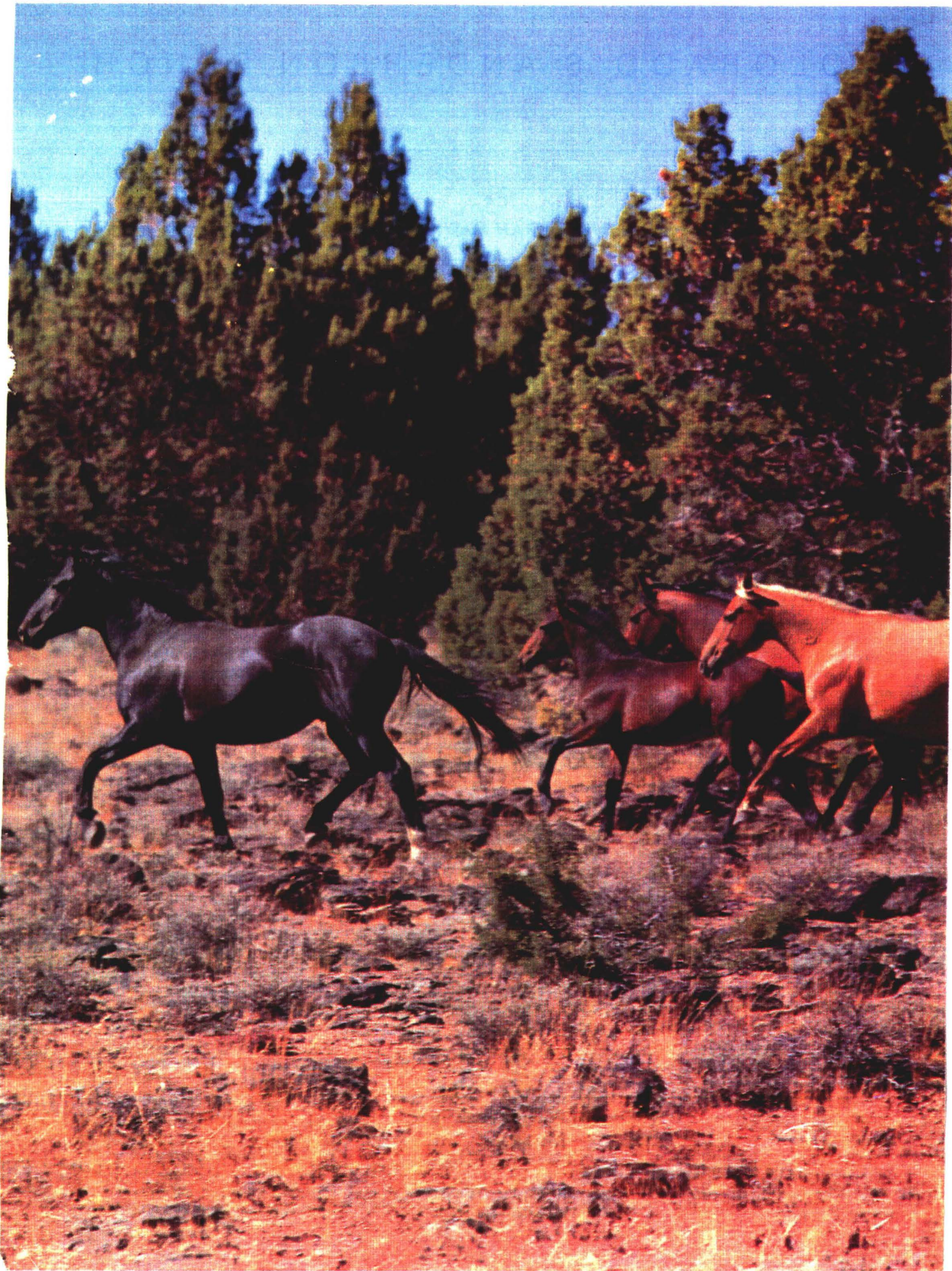
1 750

Nevada



APPENDIX G





Wild Horse Adventure

By GARY F. ST. MARTIN



The Buckhorn Byway meanders 31 miles across the Nevada/Northern California border through scattered juniper, fields of silver-blue sagebrush, and small valleys. A walk to the edge of a narrow canyon reveals mountain mahogany and small stands of quaking aspen. For patient naturalists there are herds of wild horses, wild burros, mule deer, pronghorn antelope, and coyote.

The local horse population is managed by the Bureau of Land Management (BLM). The average range population is from 200 to 283 horses. "If the horse population is considered too high," says Jeff Fontana, Public Affairs Specialist for the BLM, "then certain numbers of the horses are rounded up and entered into the adoption program."

Another option for the Buckhorn adventurer is to bicycle or backpack through the sagebrush to explore the narrow canyons, perhaps stopping to sit upon a knoll to picnic or think how the Paiute, Maidu, and Modoc Indians lived and hunted this area. The terrain is scattered with volcanic rocks the Indians used to make tools and arrowheads. Obsidian and chert are two types of rocks used by American Indians in this area.

Two wet-season lakes along the road provide excellent places to see ducks, geese, and other wild birds that have chosen this area for their springtime habitat.



GARY ST. MARTIN



CHARLES HAINE

A hiker stops to enjoy the rugged beauty of the Buckhorn Byway, top. Deer, above, and wild horses, opposite, populate the area.

The experience visitors gain from traveling the Buckhorn Byway "takes a certain spirit of adventure," according to Larry Teeter, outdoor recreational planner for the BLM. "Now, if they don't see the road line on the map, they are less likely to go off the main road. With the growth of the Back Country Byway program,

brochures and maps will be distributed so more people will know where to pull off the main road," says Teeter.

The Buckhorn Byway is a high-clearance gravel and dirt road where two-wheel-drive vehicles can operate, but small or large pickup trucks or utility vehicles are recommended. The byway is open for travel and recreation May through November. Snow closes it in winter.

In California, the byway, which is managed by the BLM, is 65 miles northeast of Susanville off U.S. Highway 395. From Ravendale travel east on 502/Lassen County Marr Road, north on County Road 526, then follow the BLM

Buckhorn Byway signs. The Buckhorn begins 16 miles from Ravendale. If coming from the Nevada side, take S.R. 447 north from Reno to Gerlach, then go approximately 25 miles north on Highway 81 and turn left onto the byway. Watch for the signs.

This area has no facilities, so bring plenty of food and water. "There are no permits required for overnight camping, and there are few restrictions," says Teeter. "This Back Country Byway is an area where the adventurous traveler can pull off the main highway and see a little bit of the Old West and watch for wildlife. They can take out the binoculars and admire a red-tailed hawk or a golden eagle flying overhead." □

Gary F. St. Martin, a freelance writer and photographer, lives in San Diego.

WYOMING *Horizons*

Summer 1991

Bureau of Land Management

Bureau of Land Management

Vol. 16 No. 3

MOU Signed for Bighorn Sheep Visitor Center in Dubois

With the recent signing of a memorandum of understanding (MOU) among four local, state and federal agencies, work is proceeding on what is expected to become a nationally-known interpretive center on bighorn sheep. The MOU was signed by Wyoming BLM State Director Ray Brubaker, Wyoming Game and Fish Department (WGFD) Director Pete Petera, Dubois Mayor Bob Baker, and U.S. Forest Service's (FS) Shoshone National Forest Supervisor Barry Davis.

Located west of Dubois, the visitor center will be a few miles from the Whiskey Mountain Winter Range for the Whiskey Mountain herd of bighorn sheep and 80 miles from the south entrance of Yellowstone National Park.

WGFD Director Pete Petera stated, "We want this facility to focus on the habitat and ecosystem relationship to the sheep, while encouraging the general public to learn about, photograph and observe sheep in their natural setting. The center also will include a national repository of publications on the Rocky Mountain Bighorn Sheep, which will allow the public and scholars to have one central location for information about this species."

Petera continued, "All of us are very excited about this project because it brings together state, federal and local interests to promote the economic welfare of Wyoming."

According to Ray Brubaker, BLM Wyoming state director, "This center grew out of a very successful program with BLM, the Forest Service and Wyoming Game and Fish that began in 1969 to manage the Whiskey Mountain bighorn sheep herd and its habitat. As a result of that effort, the Whiskey Mountain herd is now the largest in the world. Developing a center to allow visitors to learn more about bighorn

sheep seems to be the next logical step."

A 1985 National Hunting and Fishing survey found that more than half of the American adult population took part in some form of watching, studying or photographing wildlife. This, according to Shoshone National Forest Supervisor Barry Davis, played an important part in the decision to build the center. "Dubois already attracts many pass through visitors because it is a gateway to the Grand Tetons," he explained. "The Dubois Chamber of Commerce estimates that 500,000 tourists travel through during the summer months



alone. By developing the center here, we can encourage more visitors to come to Wyoming and also provide a significant economic boost to Dubois by having tourists spend more time there."

Although the exact number of bighorns using the range is unknown, the habitat area is managed by the BLM Lander Resource Area for one thousand of the animals. According to Resource Area Manager Jack Kelly, the area is home to the "largest concentration of bighorn sheep in the continental United

States. ADA STATE also points out that the size and health of the herd have made it a "valuable resource for replenishing and expanding other bighorn herds. Periodic transplants of selected animals from the Whiskey Mountain area have improved herds in several other western states."

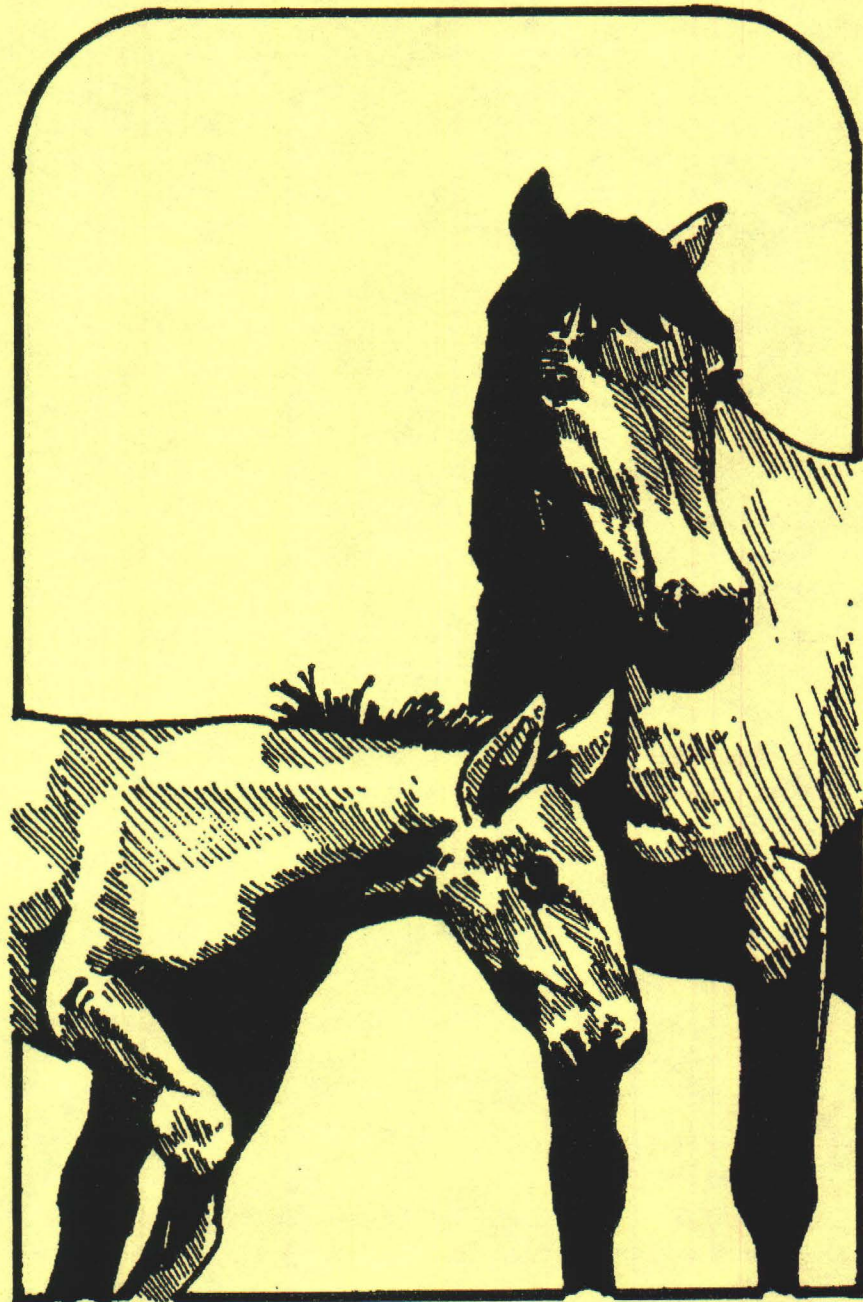
The building of the center showcasing the bighorns is the result of several years of work by the BLM, WGFD, the Town of Dubois and the FS, as well as private citizens and organizations in the area. Much of the planning and exhibits for the facility are being provided by the BLM and FS. The WGFD will be supervising the construction. In addition to the land for the center, the Town of Dubois also is providing utility hook-ups and will participate in the funding and operation of the center. Additionally, Dubois will have the lead in marketing, promoting and fundraising for the center.

Most of the floor space in the proposed center will be for exhibits. Preliminary cost estimates total over \$600,000. A large part of this money will come from WGFD, BLM and FS, however, the town hopes to raise an additional \$150,000 from private sources.

Plans call for construction to begin after sufficient funds have been raised to cover construction of the building and the exhibits. This is tentatively scheduled for the fall of 1992 with the grand opening the following spring.

If you are interested in contributing to the Bighorn Sheep Center, checks may be sent to: National Bighorn Sheep Center, ATTN: Fiscal Officer, Wyoming Game and Fish Department, 5400 Bishop Boulevard, Cheyenne, Wyoming 82006.

APPENDIX H



WILD AND FREE-ROAMING HORSES AND BURROS

Final Report of the
Committee on Wild and Free-Roaming Horses and Burros
Board on Agriculture and Renewable Resources
National Research Council

NATIONAL ACADEMY PRESS
Washington, D.C. 1982

NOTICE

The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the Committee responsible for the report were chosen for their special competences and with regard for appropriate balance.

This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

The National Research Council was established by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and of advising the federal government. The Council operates in accordance with general policies determined by the Academy under the authority of its congressional charter of 1863, which establishes the Academy as a private, nonprofit, self-governing membership corporation. The Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in the conduct of their services to the government, the public, and the scientific and engineering communities. It is administered jointly by both Academies and the Institute of Medicine. The National Academy of Engineering and the Institute of Medicine were established in 1964 and 1970, respectively, under the charter of the National Academy of Sciences.

This study was supported by the Bureau of Land Management, U.S. Department of the Interior and the Forest Service, U.S. Department of Agriculture.

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EXECUTIVE SUMMARY

1. This report completes a "research study" assigned to a National Academy of Sciences (NAS) Committee by the Public Rangelands Improvement Act of 1978 (PRIA) and agreed to in a contract between NAS and the Bureau of Land Management (BLM) of the U.S. Department of the Interior. The contract specified that the Committee proceed in three phases: (I) review existing knowledge on wild horses and burros and design a research program, (II) evaluate horse and burro research contracted by BLM, and (III) submit a final report recommending management programs for wild horses and burros.

2. In December 1980 the Committee completed Phase I by issuing a 382-page report. During Phase II, the Committee evaluated five discrete research projects, a small fraction of the program recommended in Phase I. This report completes Phase III.

3. Ecological niches to which Pleistocene equids related do not exist today, and no other animals in the contemporary North American fauna would have the same niche relationships as the modern-day equids, with or without the latter's presence.

4. From annual agency censuses, reports from individual areas, and from the fractions of young in populations, statements have been made that horse and burro populations typically increase at rates ranging from 16 to 22 percent per year. However, the Phase I Report explored several biases in the census data, cited or calculated rates of increase based on a number of published values for reproductive and survival rates, as well as sex and age ratios, and concluded annual rates of increase of 10 percent or less. A recent study documented high increase rates in two Oregon herds. More data are needed to gain a better sense of the range and typical magnitude of the rates.

5. Although there is some evidence of density-dependent processes in feral (in this report "feral" is used interchangeably with "wild") equid populations, they do not appear effective enough to self-limit populations below levels at which they significantly impact the vegetation. Starvation has been observed in some horse herds and reported for some burro populations.

6. In response to congressional concern for the condition of public rangelands, as expressed in the PRIA and by the general sense in which the Act used the term "excess," the Committee has considered "excess" as that number of large herbivores exceeding the number that

(a) allows a range ecosystem to exist at some condition approaching its potential productivity, or prevents it from becoming as productive as feasible; and (b) permits a plurality of resources and uses.

7. The concept of excess also has a sociopolitical component. Different vegetation types and combinations of herbivorous animals, all meeting the above two criteria, are possible within the potential for a site. Decisions on which of these options to feature in a management plan are sociopolitical rather than biological ones, and deviations from an agreed-upon option can constitute excess.

8. Proper management plans for a given area require a strong information base on (a) biological potential for the area; (b) numbers and combinations of herbivorous animals that can safely be carried on it; (c) kinds and amounts of forage and habitat required by the animals; (d) effects of herbivores on vegetation and on each other; (e) effects on soil and hydrology; and (f) an understanding of economic and social values associated with the area.

9. Assessing site potential in western North America is beset by extreme spatial and temporal variations. Primary production on a given area may vary between years by a factor of 2 or more.

10. Given the extreme variability, range managers advocate a conservative grazing policy, in some cases setting stocking levels appropriate for average forage production, and, in the case of overused range, stocking in the range of 65 to 80 percent of average forage production. In practice, grazing capacities are not often determined, and stocking decisions are more often made on the basis of a range trend.

11. Horses have been found to be primarily grazing animals with considerable dietary overlap with cattle. The Phase II study in the Wyoming Red Desert showed that shrubs provided between 25 (in summer) and 35 (in winter) percent of the diets of horses. Cattle, too, were using appreciable amounts of shrubs.

12. The Phase II Colorado State University study indicated that mares consumed 14 percent more forage dry matter than did cows. The disparity was greater between lactating animals, less between nonlactating ones. This finding supports the BLM policy of assigning a higher animal unit month (AUM) rating to horses than to cattle. However the study found no relationship between horse body size (range 367 to 578 kilograms (kg) and forage consumption.

13. Except for protein, cows digested nutrients more thoroughly than did mares, possibly in part because food material passed through the cows more slowly. By moving the material through more quickly, the horse may be able to compensate for low-quality forage by consuming a greater total aggregate of scarce nutrients.

14. The Phase II habitat preference and use study in the Wyoming Red Desert showed horses occupying all areas used by cattle, but cattle were distributed over only a small fraction of the areas utilized by horses. Cattle remained close to water year round, horses only in spring and summer. During the seasons of coexistence, horses and cattle segregated to some degree among different vegetation types. If competition for forage occurs, it is most likely during spring and summer in the vicinity of watering areas. Pronghorn

antelope distribution closely followed that of horses.

15. Based on the Red Desert forage-impact study, winter stocking rates as high as 8 animal unit days (AUDs) per hectare (ha) are unlikely to produce undesirable changes in plant communities. But summer use of about 3 AUDs per ha is likely to be excessive. Such values are applicable only to other areas with similar vegetation, soils, and climate and need to be established for other areas with site-specific studies.

16. Recent range-management research shows the mutual benefit to grazing animals and vegetation of short, intensive grazing periods. This is obviously difficult to accomplish with feral equids, but should be explored.

17. Almost no formal research has been carried out on the impacts of feral equids on hydrology, and there is no alternative at this stage but to assume that their effects are similar to those of livestock. Abundant research shows that heavy, continuous grazing promotes soil erosion and accelerates runoff. However, measurements of soil and watershed parameters do not differ statistically between ungrazed pastures and those with light or moderate grazing. Riparian areas are especially attractive to grazing animals and are subject to alteration.

18. Soil loss constitutes irreversible change on a time scale measured in human lifetimes and undercuts the regenerative abilities of plant and animal resources. Populations of any herbivores--livestock, feral equids, or wildlife--must be considered in excess if they reach numbers that so alter the vegetation as to promote soil erosion.

19. The effects of feral equids on wild ungulates can be beneficial or harmful, depending on the similarity or complementarity of their food and habitat preferences and on their numbers and intensity of resource use. Since horses are primarily grazers, it is reasonable to expect them to have a beneficial effect on the primarily browsing and/or forb-feeding ungulates--deer, moose, pronghorn antelope, and elk--on ranges in reasonably good condition. However, on severely degraded ranges, diets of different species tend to converge, and competition is possible.

20. Competition between cattle and Rocky Mountain bighorn sheep, both grazers, has been inferred in several cases and between horses and bighorns in two. According to numerous investigators, the more precariously situated desert bighorn subspecies have been affected by cattle, domestic sheep, and goats; several have implicated competition with wild horses.

21. A 40-year publication history chronicles a wide range of research and investigators, some of whom conclude that wild burros compete with desert bighorns for water, vegetation, and/or space and have been one factor in sheep decline. Where such effects risk the survival of bighorn populations and public attitudes deem that the bighorn be saved, burros must be considered in biological excess in such areas.

22. Wild horse and burro census methodology will continue to rely on some form of aerial technique, but the present method misses animals, the percentage depending on the nature of the terrain and vegetation. Fixed-wing aircraft census in gentle topography with low

vegetation in the Phase II research located about 93 percent of horses present, but in a wooded mountainous area it counted only 40 percent. Helicopter census in the same area counted 48 percent. If accurate census is desired in such areas, and for burros, some form of capture-recapture or removal method will be necessary.

23. Census findings imply that there are more horses in the western United States today than estimated and that there were more in 1971 than the 17,000 sometimes claimed. However, those animals and their forage demands, whatever the correct values, still comprise a minor fraction of the domestic livestock and/or wild ungulates. The comparative numbers are more nearly similar in some grazing districts with few livestock and large horse populations.

24. Annual censuses do not appear necessary. It should be possible to manage herds adequately with one census every 2 or 3 years.

25. Herd growth rates would be reduced by removing mares of the more fecund age classes, but the effect would be short-lived and less effective than appears at first glance because of the interaction of herd growth, the periodic nature of round-ups, and the small fraction that these mares constitute of the total herd. The practice could also incur some logistic problems.

26. There is evidence that a small number of horse and burro foals are left behind and orphaned during round-ups.

27. A significant fraction of pregnant mares, perhaps approaching half in some cases, apparently abort their fetuses as a result of round-up, penning, transportation, and adoption.

28. If animals need to be chemically immobilized for administering antifertility drugs, combinations of etorphine and xylazine show promise. Succinylcholine is not recommended.

29. Despite positive results reported by one investigator, reducing horse reproductive rates by chemosterilizing dominant band stallions does not appear promising, because the two preconditions for success--a dominant stallion responsible for all breeding and the lack of movement of mares between bands--have not held true in horse populations in Wyoming, Oregon, Montana, and New Mexico. Two observers object to this practice on the grounds that it blocks gene flow from the genetically superior animals. It also appears logistically unfeasible for herd reductions over a large geographic area.

30. Long-term fertility control in mares by injecting or implanting steroid compounds appears to have potential but has not received appreciable study. Such research should begin with captive or domestic animals.

31. A number of changes in public and government attitudes and policy regarding wild horses and burros have occurred since completion of Phase I. These include changes of opinion among the various interest groups, newly proposed policies in BLM, and pending legislation. The effects of new wild horse and burro management policies cannot yet be predicted.

32. Public opinion, along with biological factors, will continue to be a major force in shaping decisions on wild horse and burro management. A firm understanding of the nature and geographical

distribution of public attitudes, and their consideration in formulating management policies and procedures, are vital to the smooth facilitation of management programs. Also, the agencies involved need to be aware of the attitudes among their own personnel.

33. Land-use planning systems will continue to be controversial, because of data inadequacies and the difficulties of reconciling the mandates of single-purpose and multiple-use legislation.

34. In the present climate of economic austerity, adequate cost data are not available to ensure cost-effective management decisions. The uncertainty created by this lack of data affects the assurance and time frame of private decision making. Local and regional economics are likely to be affected, particularly in regions heavily dependent on the livestock industry.

35. Sound and effective equid management programs require a firm base of scientific information. The Phase I Report prescribed a long-term equid research program, 7 to 10 years at the very minimum. Such a program can best be administered in BLM by an expanded in-house scientific staff advisory to fairly high-level administrative positions.

INTRODUCTION

Basis for This Report

This report, along with the appended research documents, is the final step in the "research study" mandated by Congress in Sec. 14(a) of the Public Rangelands Improvement Act (PRIA) and agreed to in Contract No. AA551-CT9-16 between the National Academy of Sciences (NAS) and the U.S. Department of the Interior, Bureau of Land Management (BLM).

The 1971 Wild and Free-Roaming Horse and Burro Act directed that "The Secretary [of Interior and of Agriculture] . . . shall consider the recommendations of qualified scientists in the field of biology and ecology. . . ." The Act was the predecessor of that provision in PRIA calling for a study of wild horse and burro problems. Actually, an amendment to the Wild and Free-Roaming Horse and Burro Act, Sec. 14(a) of PRIA, directed the President of the National Academy of Sciences to impanel a committee to outline a research study that would further knowledge ". . . of wild horse and burro population dynamics and their interrelationship with wildlife, forage and water resources, and assisting him [the Secretary] in making his determination as to what constitutes excess animals."

The intent of Sec. 14(a) was actualized by a contract between NAS and BLM in May 1979, which specified that NAS would bring together a committee of scientists. Pursuant to the Act and the contract, the Committee's work was to be carried out in three phases:

Phase I, June 1979 (first meeting of Committee) to October 31, 1979:

Review existing knowledge on wild horse and burro populations, forage requirements, impacts on other rangeland resources, and socioeconomic relationships of population control and management.

Phase II, November 1, 1979, to January 31, 1982:

Evaluate horse and burro research under contract by BLM.

Phase III, February 1982 to October 31, 1982:

Prepare and submit to BLM a final report that would contain recommendations and ". . . summarize scientific information upon which the Secretaries of Interior and Agriculture can make their recommendations to the Congress as to management of the wild horses and burros."

A Committee was duly appointed in 1979, and it proceeded with Phases I and II. This report constitutes the completion of Phase III.

Review of Committee Operations

Phase I

The Committee began Phase I in June 1979 with its first meeting in Salt Lake City. At that time members were assigned topics on which they were to review literature and available unpublished data and write sections for the Phase I Report. Members were also asked to specify and design research projects needed to fill in knowledge gaps that they detected in the course of reviews.

Toward completion of Phase I, the group also met in Reno, Nevada, in July 1979 (along with a day-long public hearing); in Laramie, Wyoming, in September 1979 (along with participation in an equid conference organized by the University of Wyoming); in Davis, California, in February 1980; and in Las Vegas, Nevada, in June 1980 (along with a BLM and National Park Service-sponsored field trip to burro problem areas in California, Arizona, and New Mexico).

The Committee completed a 382-page Phase I Final Report in December 1980. It contains an exhaustive review of what was known in 1979-1980 about wild horse and burro biology, management problems, and socioeconomic aspects of horse and burro issues and a proposed research program designed to provide a more complete basis for horse and burro management, as requested in PRIA.

The report was duly conveyed to BLM, and at that point Phase I of the BLM-NAS contract was completed. Because of its size, and the fact that it is self-contained, the Committee has elected not to incorporate the Phase I Report in this document, but its Executive Summary is attached hereto as the Appendix.

The Committee believed that this report could serve both as a useful reference volume for individuals concerned with feral (in this report "feral" is used interchangeably with "wild") equid management and as perspective for the recommended research program. The Committee recommends that the Phase I Report be more widely distributed to Bureau personnel than apparently has been the case and to others interested in feral equid management.

Phase II

Anticipating that the Phase I analysis would take considerable time, the Committee filed an interim report in November 1979 recommending several high-priority research projects that, the members concluded, should get under way as soon as possible. As stated in the BLM-NAS contract, House and Senate conferees on PRIA had concluded that the research program should span at least two horse/burro breeding seasons, and with spring 1980 approaching it was necessary to take the first steps toward getting the research under way.

Phase II was formally begun with a meeting in Logan, Utah, in early December 1979, between BLM officials and three members of the Committee. The purpose of the meeting was to begin drafting requests for proposals for four research projects designated high priority for early activation:

- comparative habitat selection by horses and cattle
- range impacts by horses and cattle
- comparative nutrition of range horses and cattle, and
- horse and burro census

Working on a very tight time frame, BLM announced Requests for Proposals (RFPs) in early 1980 and received proposals in ensuing weeks. Two meetings were held in Denver in the spring of 1980 between BLM officials and selected Committee members to review proposals. At Committee invitation, David R. Anderson, Leader of the Utah Cooperative Wildlife Research Unit, also participated in the Logan RFP meeting and one of the Denver proposal-review meetings. BLM awarded two contracts in May 1980--one to the University of Wyoming for the habitat-selection and range-impact studies, and one to Colorado State University for the nutrition study--and a third in July 1980 to the University of Minnesota for a census project to be carried out in Nevada and Oregon.

Both in a Discussion Paper presented by BLM and the Forest Service to NAS on March 6, 1978 (Anonymous, 1978) and in the BLM and the Forest Service to NAS contract, attention was given to socioeconomic considerations of wild horse and burro management. PRIA itself raises the question of whether excess animals should be removed, destroyed, sterilized, or left to "natural controls." The Committee concluded unanimously that cost and public preferences, as well as the agency's ability to implement the various strategies, must be considered in both defining excess and in selecting among these options. Furthermore, as we will discuss later in this report, the concept of excess, which appears repeatedly in PRIA and the BLM-NAS contract, has social and economic dimensions.

Hence the Committee gave considerable attention to socioeconomic issues in the Phase I study and prescribed several research projects in the areas, two of which were accorded top priority. In late 1980 and early 1981, material was provided for RFPs, and two Committee members traveled to Washington to confer with BLM officials on the matter. However, RFPs were never issued nor was any research initiated in the socioeconomic area.

In early 1981, RFPs were issued for a study of horse and burro pregnancy rates throughout the West in order to provide more insight into the magnitude of reproductive rates. Proposals were reviewed at a June Committee meeting in Rock Springs, Wyoming, and BLM awarded a contract on this study in July to Utah State University. This same meeting culminated a 1-week field trip that included site visits to research locations and problem horse areas in Oregon, Nevada, and Wyoming. And the meeting included a half day of project reviews by investigators involved in the BLM-sponsored equid research projects.

In October 1981, the University of Minnesota contract on census methods was amended to include investigations on horse survival rates in Oregon and Nevada.

The University of Wyoming and Colorado State University projects have been completed at the time this report is submitted. The reproductive study, originally scheduled for two years, is being terminated after one because of reductions in BLM round-ups. Thus, the six projects represent the total amount of research carried out in compliance with the mandate of PRIA and Phase II of the BLM-NAS contract.

Scope of the Phase III Report

As stated above, PRIA calls for research on ". . . wild horse and burro population dynamics and their interrelationship with wildlife, forage and water resources . . ." The contract sets forth these same areas in more detail, as well as other topics.

In an effort to comply with the breadth of research intended in these two documents, the Committee proposed a research program divided into 21 separate titles and subtitles, several of which were to be replicated in three or four areas of the West, and many of which were to be conducted on both horses and burros. These are shown in Table 1. In the Committee's judgment, this array of projects was needed to provide the foundation of knowledge called for in the Act, and upon which its authors intended that a sound horse and burro management program would be based.

This is an extensive research program, considered the ideal by the Committee. A minimum program would perhaps include at least the two top priority levels shown in Table 1. Yet the five completed and one ongoing projects constitute less than a fourth of this minimum need for Phase II; a very limited research program on horses and, with the exception of the pregnancy study, none on burros. Furthermore, none was conducted on the socioeconomic questions.

This shortfall is mentioned here to make it clear at the beginning of this report that the full range of questions posed by the authors of PRIA cannot be answered at this time. The Committee will address those questions as best it can, drawing on the results from the limited research that has been undertaken, the findings of its Phase I study, both published and unpublished data, and its own professional experience. But many of those questions will remain unanswered until a commitment is made to an appropriate research program. Meanwhile, this report will be relatively limited in terms of the full scope of horse- and burro-management problems.

TABLE 1 Research Projects Prescribed in Phase I

| <u>Initiated (x)</u> Project Title | <u>Projects</u> | |
|--|-----------------|--------|
| | Horses | Burros |
| Priority 1 | | |
| 1a. Habitat Preference and Use | | x |
| b.1 | | |
| c. | | |
| 2. Food Consumption Rates and Nutrition | x | |
| 8a. Grazing Impacts on Plant Communities | | x |
| b.1 | | |
| c. | | |
| 17. Census Methods | | x |
| 5a. Demography--Natality | | x |
| x | | |
| 4. Blood Assays | | |
| 9a. Hydrologic Values | | |
| b.1 | | |
| c. | | |
| 11b. Public Preferences for Alternative Management Strategies | | |
| 13 Nonmarket Values | | |
| Priority 2 | | |
| 7. Genetic Polymorphism | | |
| 14. Economic Considerations for Management Alternatives | | |
| Priority 3 | | |
| 5b. Demography--Survival | | x |
| 10a. Riparian Zone Impact | | |
| b.1 | | |
| c. | | |
| 11a. Taxonomy of Values and Benefits | | |
| Priority 4 | | |
| 3. Nutritional Plane, Condition Management and Reproduction | | |
| 6. Social Structure, Feeding Ecology, Population Dynamics | | |
| 11c Public Attitudes, Preferences, and Knowledge | | |
| 12. Analysis and Evaluation of Demand for Excess Equids | | |
| 15. Nonmarket Values | | |
| 16. Conceptual Development of Public Rangeland Management Models | | |
| 18. Contraception Studies | | |
| Unprioritized | | |
| Age Criteria ² | | |

¹The Phase I research design recommended that Projects 1, 8, 9, and 10 be replicated in three or four different areas of the western United States.

²A project on age criteria was not originally advocated in the Phase I Report. But since then, the need for such a study has become apparent and is therefore included here.