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AGENCY FOR NUCLEAR PROJECTS/ NUCLEAR WASTE PROJECT OFFICE

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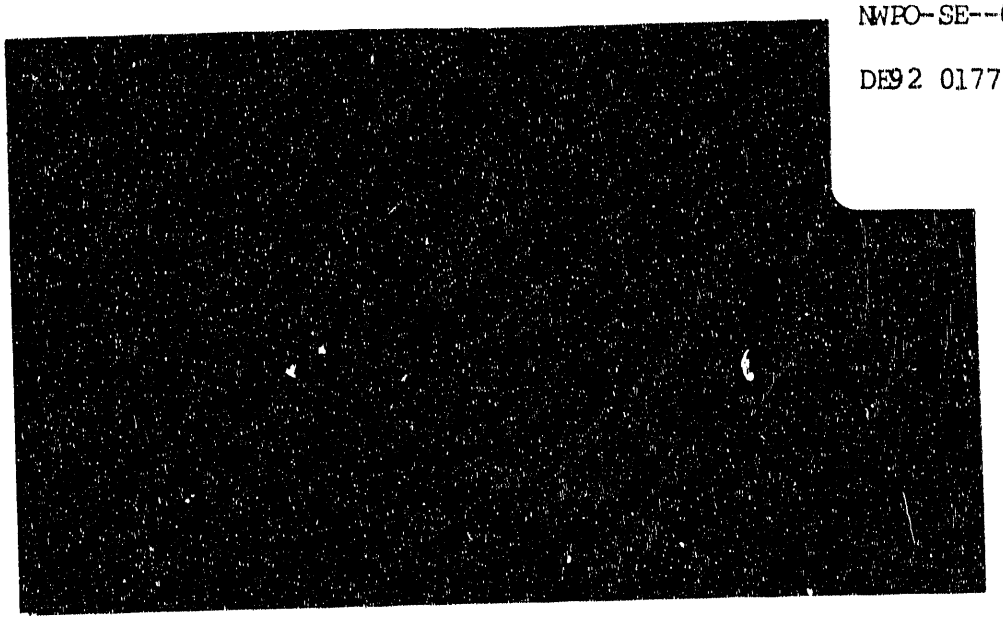

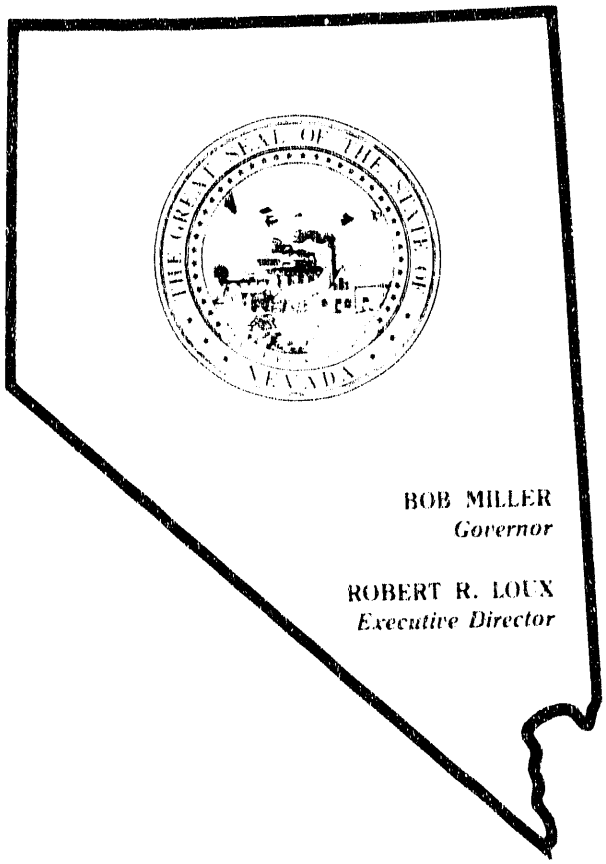

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STATE OF NEVADA
AGENCY FOR NUCLEAR PROJECTS/
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NWPO-SE-039-91

Native Americans and Yucca Mountain: A Revised and Updated Summary Report on Research Undertaken Between 1987 and 1991

VOLUME I

by

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The Nevada Agency for Nuclear Projects/Nuclear Waste Project Office (NWPO) was created by the Nevada Legislature to oversee federal high-level nuclear waste activities in the State. Since 1985, it has dealt largely with the U.S. Department of Energy's (DOE) siting of a high-level nuclear waste repository at Yucca Mountain in southern Nevada. As part of its oversight role, NWPO has contracted for studies designed to assess the transportation impacts of a repository.

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Table of Contents:

EXECUTIVE SUMMARY

This report summarizes data collected between September 1986 and September 1988 (with some updates to September, 1991) relative to Native American concerns involving the potential siting of a high-level nuclear waste repository at Yucca Mountain, Nevada. It is a slightly revised version of the same report presented in 1990. The data were collected from Western Shoshone and Southern Paiute people upon whose aboriginal lands the repository potentially is to be located. Western Shoshone people involved in the study were those resident or affiliated with reservation communities at Yomba and Duckwater, Nevada, and Death Valley, California. Southern Paiute people were at reservation communities at Moapa and Las Vegas. Additional persons of Western Shoshone and Southern Paiute descent were interviewed at Beatty, Tonopah, Caliente, Pahrump, and Las Vegas, Nevada. The work was part of a larger project of socioeconomic studies for the State of Nevada's Nuclear Waste Projects Office, conducted by Mountain West of Phoenix, Arizona.

Cultural and Social Background

A review of the extant ethnographic literature on the Western Shoshone and Southern Paiute people, much of which was gathered in the 1930s, suggests that with few exceptions, the groups lived by hunting and gathering in precontact and early historic times. They moved about what is today southern Nevada and parts of adjacent southern California, southern Utah and northern Arizona in extended

family groups from base camps established in proximity to good water, fuel, and food resources. Seasonal movements took them from lowland valley locations where they spent the winter to camps in the uplands in spring, summer and/or fall where additional food resources were to be found. Given that they knew the environment and its resources exceedingly well, they developed a deep attachment to the land as reflected in cultural values and religion. Important from the perspective of religion is the concept of power (puha), an impersonal force which potentially can reside in any natural or living thing (water, geographic sites, plants, animals, persons, etc.). This in turn translates into a view of the whole Earth as sacred, and the duty of Indian people to protect it. This affects attitudes toward and land-altering projects, including the proposed repository, as potentially harmful to the Earth and all who inhabit it. It also affects views of archaeological and other cultural resources that are within the project area.

Cultural and Legal Issues

Further review of the ethnographic literature on the Yucca Mountain region suggests that this specific area was occupied in precontact and early historic times by Western Shoshone and Southern Paiute family and camp groups who used it seasonally for hunting large and small game and gathering several plant foods. The groups went to Yucca Mountain from winter base camps in and near Oasis Valley, Death Valley, Kawich Valley, Ash Meadows, Pahrump and Lower Amargosa valleys, Indian Springs, Las Vegas and

Moapa. In order to assess the accuracy of these data, as well as determine if there were concerns by Indian people for other cultural resources in the proposed project area, such as for example, burials, ceremonial areas, and other sacred sites that might qualify for protection under various federal laws (NEPA, ARPA, AIRFA, etc.), descendants of persons present at these places in the 1860s were located and interviewed. Several also were taken to visit selected archaeological sites within the proposed repository study area to better elicit data and responses.

Previous archaeological surveys in the project area had revealed the presence of some 400+ sites, covering a time span of from roughly 10,000 years before present to the recent past. Most seemed to match the subsistence uses suggested by the ethnographic literature. Consultation with involved Native Americans confirmed the general accuracy of both ethnographic and archaeological interpretations, but also indicated that other features with less obvious physical manifestations were present: sites with mythological reference, water sources considered sacred, plants and animals used for medicines as well as foods, potential burial areas, etc. These, too, are potentially eligible for protection and mitigation by the federal laws should this large-scale undertaking go forward. Unfortunately, although various of the sites visited were felt to be significant by the Indian people, and will require additional consideration should the project be approved, it is doubtful given the mood of the federal courts on views of the sacred by Native American religions that they alone

will impede the project. Recent cases involving the protection of sacred sites, especially under the American Indian Religious Freedom Act (AIRFA), have been lost more often than won. Nonetheless, Indian people expressed concern that they remain involved if there is to be additional site characterization activity in the project area that potential will impact sites or resources. They want to be part of any decisions as to what to do with archaeological sites as well as these other cultural properties in the region.

In addition to specific concerns for the cultural properties that might be jeopardized should the project go forward, there are other issues of importance involved. One is the question of federal ownership of the proposed project area. For many years, the Western Shoshone National Council as well as its parent organizations, have been asserting claims to these and other lands under the Treaty of Ruby Valley of 1863. This treaty, one of peace and friendship rather than land cession, has been the basis for a number of federal law suits, the results of some of which are still pending in the courts. Although in 1979 the Indian Claims Commission made a money award to the Western Shoshone for the lands held under the treaty, the people have steadfastly refused to accept the money and have chosen instead to pursue their claims for land. At present the DOE, and apparently Congress, appears to want to go forward with site characterization without attention to this issue. It still seems relevant and, of course, is of major concern to the Western Shoshone people. They are continuing to campaign

actively against the repository on these grounds, as well as for cultural reasons involving their views of the incompatibility of nuclear waste storage and the continued viability of a sacred Earth.

An additional issue of significance to both Western Shoshone and Southern Paiute people in this project is its potential for violating their teachings concerning the proper care of the Earth. Indian people in the study area see a great risk to the environment, particularly water resources, but also plants, animals, and all life and its integrity in the proposed underground storage of nuclear waste at Yucca Mountain. According to tradition, the whole earth is sacred, and there is no way to impair a part of it without affecting the whole. Indian people interviewed through formal survey instruments as well as informally expressed deep concern over this issue. They ranked environmental concerns as nearly equal to those of personal and family health. Economic concerns were a distant third. They see themselves as the custodians of the land, with few others being willing to take that responsibility. Cultural values in this case are definitely at risk should the project go forward, and Indian people will hardly remain silent on this point.

Socioeconomic Aspects

In addition to the deep conflict in values that this project represents to Indian people, they also face many additional socioeconomic uncertainties should it continue. Reservation populations throughout the area are in the lower order of economic

self sufficiency, educational levels, and health. Their unique position vis a vis the state and federal governments has meant in the past that they have received poor services in all of these areas. Although this picture has been changing for the better in recent years with the development of some tribal businesses, the addition of new housing and related services, some increases in job training and the upgrading of eductional levels, should the economies of urban or rural southern Nevada suffer a downturn because of the Yucca Mountain project, these groups stand to loose most of what they have gained. Their well being is tied to a complex set of local and national factors, all of which could be adversely impacted by the repository program. Although it is difficult to model specific effects because of the present lack of data on the proposed project's impacts, it can be said that special attention should be paid to factors that might affect these groups in the areas of economics and social well-being. They are likely to be ignored by both state and federal bureaucracies should there be difficult times. A good monitoring plan should be developed and put into place in order to help prevent these occurrences before they happen.

Conclusion

In all, the Native American people in the proposed project area have some unique concerns and stand in a unique position with reference to their neighbors. Some very specific laws govern the protection of their cultural properties within the area, but these will have to be strongly enforced if the project continues and

protection is to be afforded them. Indian people will undoubtedly make several demands with reference to these. But also because of their unique status as separate governments within the area, yet a long history of these governments being ignored and their constituecies being given poor levels of various kinds of services, Indian people are less well off economically, and vulnerable to various local and national exigencies. They see much at risk from this project, including cultural values, personal and family health and well-being, and economic maintenance. Although the decision as to whether to go ahead with the project will undoubtedly be made more on political grounds than on any other, it is hoped that careful monitoring of their situation will occur so that they do not bear far more than their share of the burden.

NATIVE AMERICANS AND YUCCA MOUNTAIN: A SUMMARY REPORT

1. INTRODUCTION

This report summarizes data collected between September 1986 and September 1988 (with some updates to September, 1991) relative to Native American concerns involving the potential siting of a high-level nuclear waste repository at Yucca Mountain, Nevada. The work was conducted as part of a larger study of the potential socio-economic effects of this project on communities in southern Nevada, through Mountain West, Phoenix, Az. Mountain West was prime contractor to the State of Nevada through the state's Nuclear Waste Projects Office. In the sections that follow, data collected during the project period are summarized, and a number of issues of general as well as specific concern to Indian people and tribes in the area are addressed. More specific data are contained in a series of interim reports submitted as part of this assessment (Cultural Resources Consultants, 1988a, 1988b; Fowler, Hamby and Rusco, 1987; Fowler, Rusco and Hamby, 1988. Hamby, 1988, 1989, 1991; Hamby and Rusco, 1988; E. Rusco, 1989; 1991; M. Rusco, 1988, 1989, 1991; and Rusco and Hamby, 1988), as well as in sections appended to this report (Appendices I-IV).

1.1 The Yucca Mountain Project

The Nuclear Waste Policy Act of 1982 (P.L. 97-425, 96 Stat. 2201) outlines certain procedures required in order to determine a site/sites and a method/methods for the "safe" disposal of high level nuclear waste accumulating at U.S. military and non-military

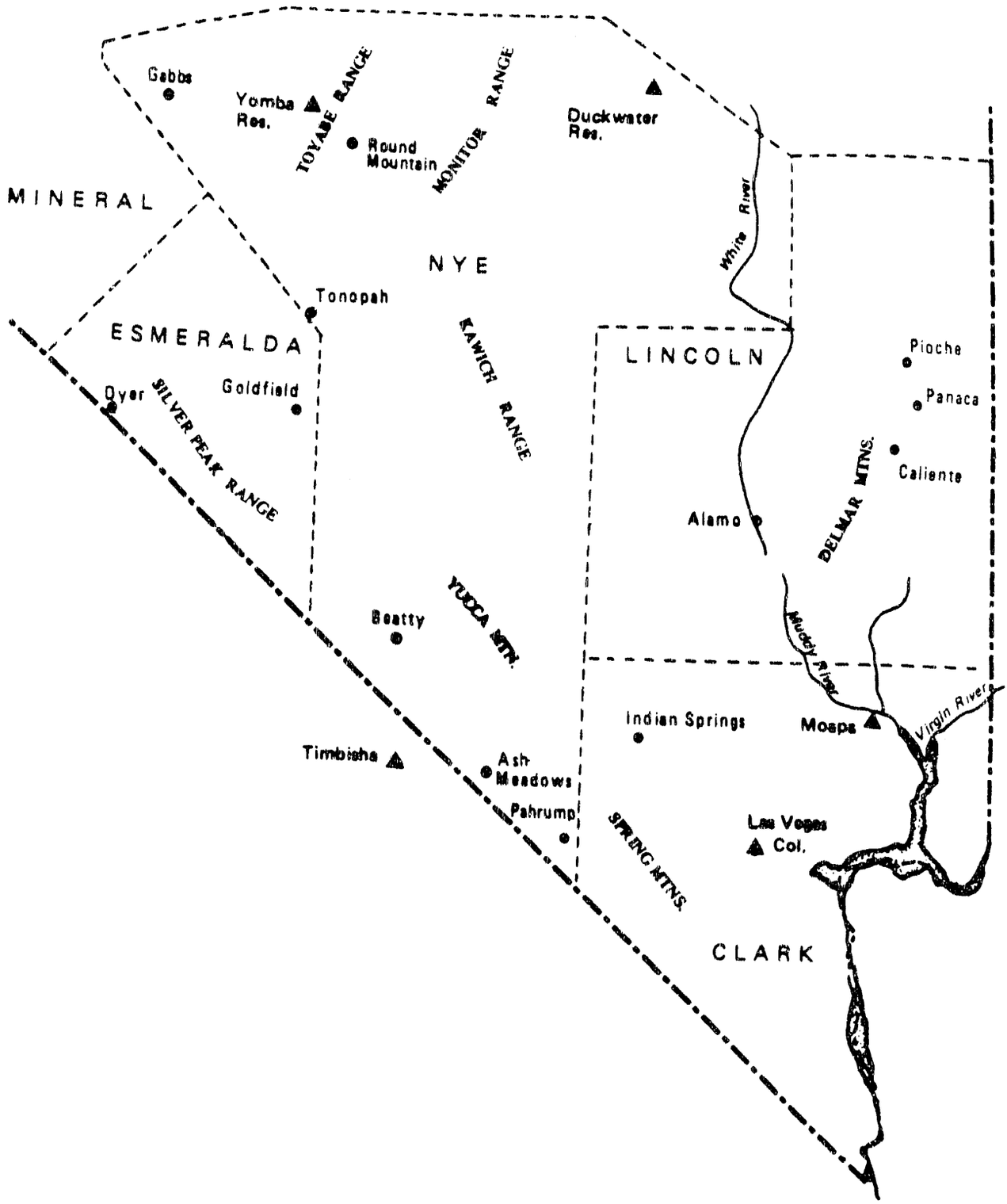
sites across the country. It gives the major role in site characterization and recommendation to the Department of Energy (DOE), but also notes that studies should be conducted in consultation with state, local, and tribal governments in any suggested area. It leaves in place and to be followed existing environmental legislation affecting all federal undertakings (Endangered Species Act, National Environmental Policy Act, National Historic Preservation Act, American Indian Religious Freedom Act, etc.). Initially the DOE was to characterize three candidate sites for the potential repository: Hanford, Washington, Deaf Smith, Texas, and Yucca Mountain, Nevada. Amendments to the act in 1987 (42 U.S.C. 10101) narrowed the initial site characterization process to one candidate location, Yucca Mountain, Nevada.

Given that the NWPA did not supersede existing environmental legislation, site characterization and site selection required the filing by the DOE of various preliminary and final reports involving environmental and socioeconomic impact assessment (see, for example, DOE 1986a, 1986b; 1988a, 1988b, 1988c, 1988d). In order to properly evaluate the DOE's efforts in these directions, the State on Nevada undertook its own independent studies of which this work is a part (see Mountain West, 1989). With reference to the Native American component of the studies, specific attention was given to applications of the American Indian Religious Freedom Act, and the National Historic Preservation Act (although the archaeological component of that act was left to the assessment of

others). Queries as to potential socioeconomic impacts on Native American individuals and communities in Nevada have preceded ahead of parallel DOE studies, which have yet to be undertaken.

1.2 Identification of Native American Groups

Existing environmental and cultural protection legislation (as well as the NWPA of 1982) gives the greatest voice in commenting on federal projects, especially those anticipating land altering activities, to federally recognized tribes. When work was initiated on the Native American component of the Yucca Mountain study in 1986, several federally recognized tribal groups were identified as potential participants, largely because of their proximity to the site and known traditional ties to the area. In addition, since the larger Mountain West study was to focus on three southern Nevada counties (Nye, Clark, Lincoln), groups in these counties were given top priority. The tribes identified include: the Yomba and Duckwater Shoshone tribes of Nye County, Nevada; the Las Vegas and Moapa Paiute tribes of Clark County, Nevada; and because of proximity and cultural connections, the Timbi-Sha Shoshone Tribe of Inyo County, California. In addition to these federally recognized tribes, there are small numbers of Indian people resident in non-Indian communities throughout the three southern Nevada counties, including in Pahrump, Beatty, Tonopah, and Caliente. There is as well a large but poorly identified population in urban Las Vegas (Map 1). Some of these individuals are affiliated with the above tribes, but many are not. Although federal legislation (and especially the NWPA) is less



Map 1: Location of Principal Native American Populations in Southern Nevada.

clear on the role that non-recognized groups and individuals play in the assessment process, most feel that they should be properly informed and consulted in such matters, if only as citizens with special interests (Advisory Council on Historic Preservation, 1985). Thus, for the purpose of this study, an attempt was made to include all of these groups. The diffuse urban Las Vegas Indian population, except for those individuals affiliated with the Las Vegas Paiute Tribe, and some members of the Las Vegas Indian Center, was not included due to the lack of funds (but see 3.4). For comparative purposes, some contacts were made with tribes and individuals outside the immediate study area.[1]

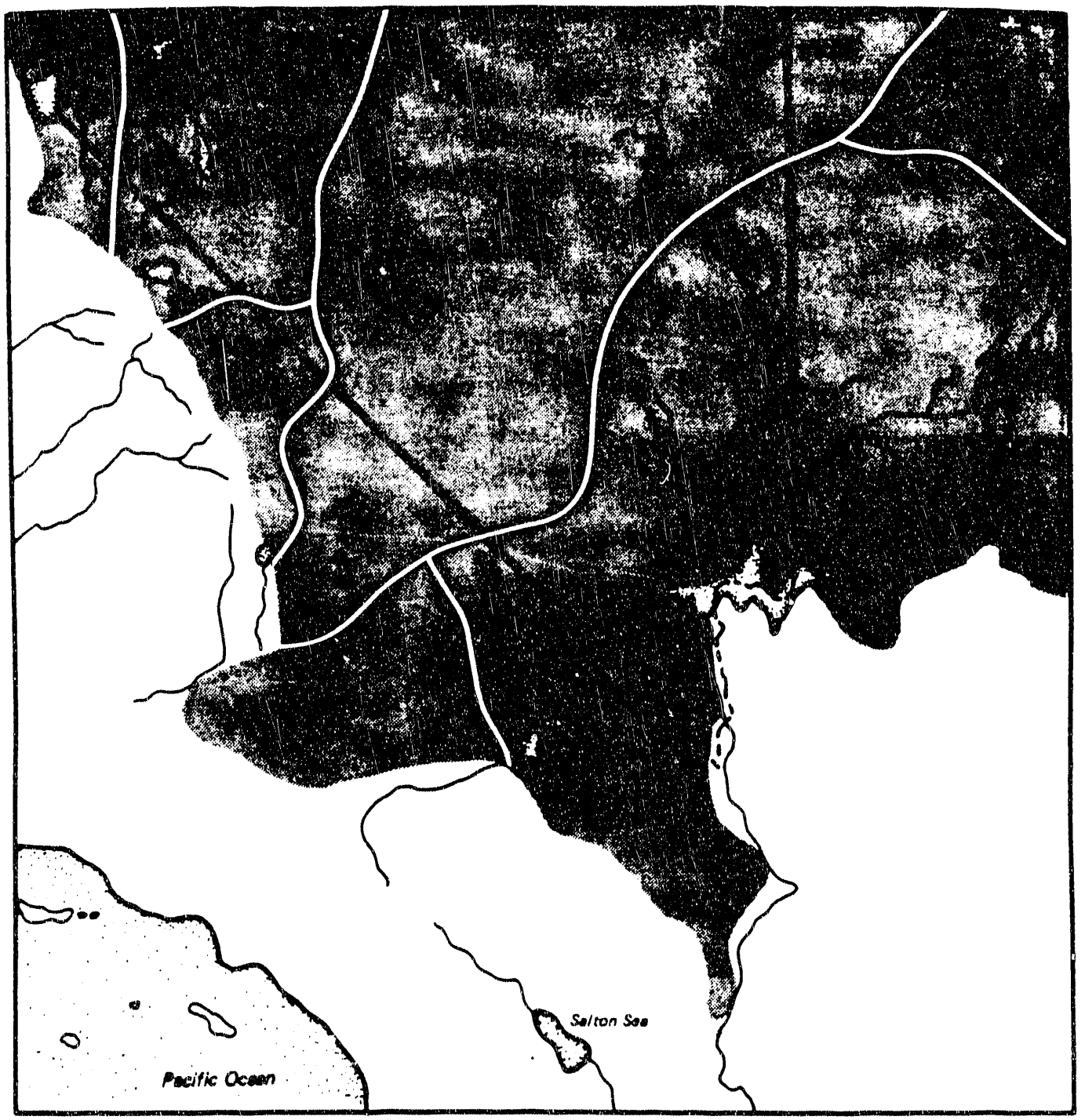
Although this particular study was driven by the concerns noted above, especially in terms of selection of participants, it should be clarified from the outset that it is not anticipated that impacts from this proposed project will be limited only to these groups and individuals. According to the 1990 U.S. Census, there are roughly 13,000 Native Americans in the State of Nevada, more than two-thirds of whom live on reserved lands or in cities and towns next to potential transportation corridors or in areas where socio-economic impacts might be felt. If this project proceeds, due consideration should be given to these groups, and every effort made to assess their concerns.

1.3 Cultural and Social Background

The federally recognized tribes listed above, as well as the Native American individuals resident in southern Nevada communities (with the exception of many in-migrants to urban Las Vegas), belong

to two large and widespread ethnic groups: the Western Shoshone and the Southern Paiute. Prior to Euro-American contact and settlement of southern Nevada in the 1820s to 1850s (Euler, 1966; Malouf and Findlay, 1986), members of these two ethnic groups shared a border near Yucca Mountain (Map 2). Both groups speak related languages within the Numic branch of the Uto-Aztecan language family (Miller, 1986). Culturally they had much in common, although differences in language and descent kept then distinct. The Western Shoshone were distributed from Panamint and Death valleys in present-day California to and through most of central and eastern Nevada, where they joined related Shoshone groups to the north and east. The Southern Paiute, including the related Chemehuevi, held an equally large area beginning on the lower Colorado River in present-day California and extending through southern Nevada, northern Arizona and southern Utah.

Although detailed ethnographic work was not conducted among the Western Shoshone and Southern Paiute in this region until the 1930s (Kelly, 1932-33; Steward, 1938; 1941), earlier historical accounts and scattered and miscellaneous observations can be combined with these to give a general picture of the precontact lifeways of pertinent subunits of these two groups. Such a picture is important toward assessing the potential impact of the Yucca Mountain project on the cultural resources and values of descendant groups today. They also have implications for potential socioeconomic impacts of the project in the future. Particularly important are precontact and persistent views of the land and



Map 2: Tribal Distribution, Southern Great Basin.

human/land relationships, as expressed in language, religion, and general world view. But perhaps equally pertinent is the strong sense of family, and ethnic community that likewise serves as a guide to present-day activities, including socioeconomic activities.

1.3.1 Social Groups and Locations

In the period prior to Euro-American contact and the disruption of aboriginal patterns, both the Western Shoshones and the Southern Paiutes were divided into numerous smaller subgroups, sometimes as small as several families, sometimes including 100 or more persons. Each of these held a territory focussed on permanent water and food sources, usually consisting of a valley and its adjacent mountains. Within these territories, they hunted, gathered, and where possible, fished and farmed,[2] to obtain a living. Given that those portions of Western Shoshone and Southern Paiute territory that fell within southern Nevada (including Yucca Mountain) and adjacent California were largely within the Mojave Desert and the adjacent Great Basin Desert (Beatley, 1976; Jaeger, 1957), subsistence was not easy. Thus, the people developed a very close and intimate relationship with the land and its resources -- several hundred species of plants, mammals, birds, fish, reptiles and insects (Fowler, 1986). As hunters and gatherers, they came to know the land exceedingly well and to view it and its resources as their primary sources of spiritual as well as physical strength.

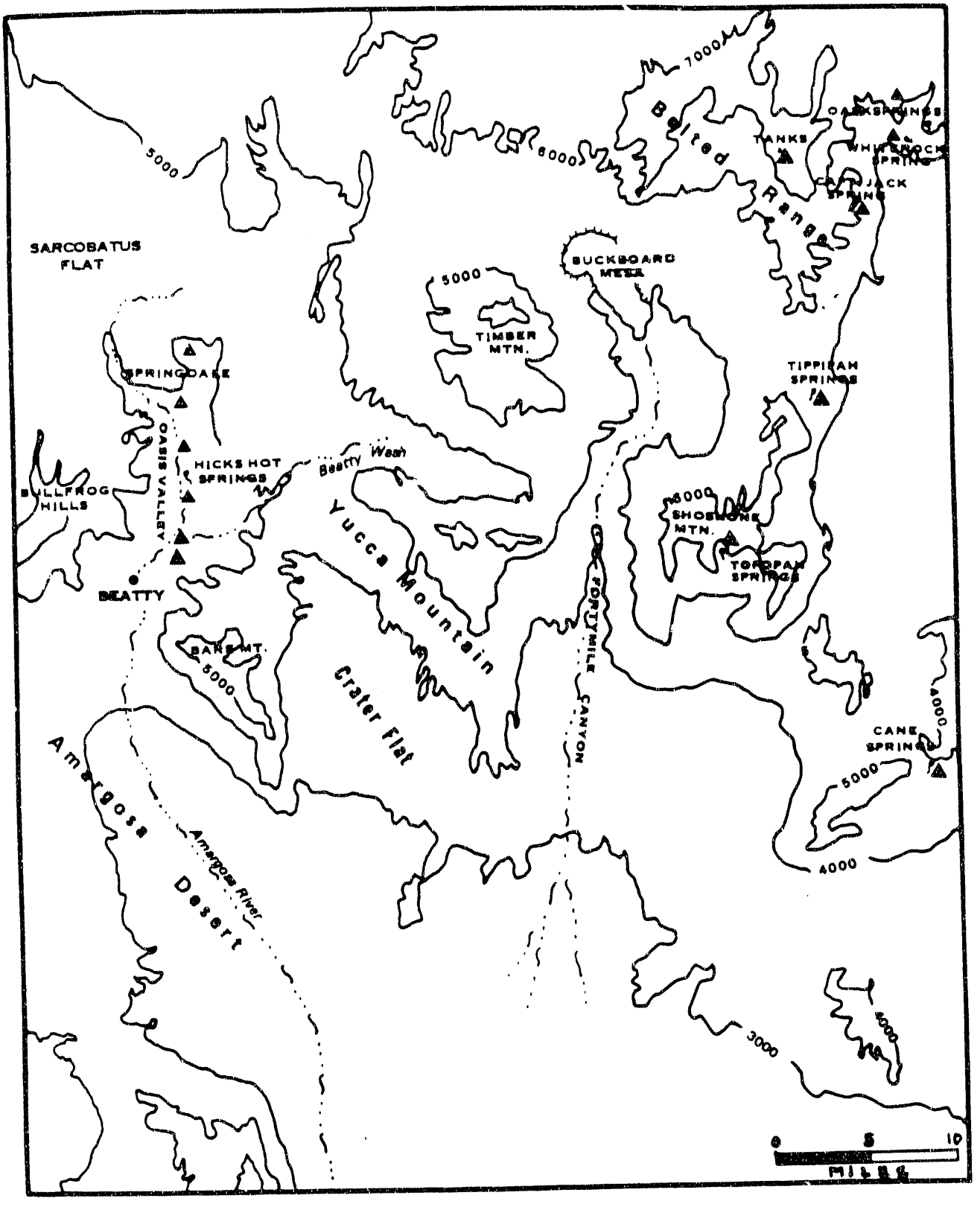
Ethnographic and historical data suggest that several recognized Western Shoshone and Southern Paiute subgroups lived in

the immediate vicinity of Yucca Mountain in the precontact and postcontact periods. Included were: 1) several camps in Oasis Valley, immediately west of Yucca Mountain, and the present site of Beatty, Nevada; 2) several camps in the Belted Range, to the northeast of Yucca Mountain; 3) several groups in Ash Meadows, immediately to the south; 4) quite a number of camps in Pahrump and Lower Amargosa valleys also to the south; and 5) several camp groups in the Indian Springs/Cane Springs area, immediately to the southeast (Kelly, 1932-33; Steward, 1938). People in the Oasis Valley and Belted Range districts were primarily Western Shoshone; people in the Indian Springs/Cane Springs district and at Pahrump/Lower Amargosa were primarily Southern Paiute; and the people at Ash Meadows were of both groups. At a greater distance, but still interactive with the above populations, were Shoshone people in Death Valley and Kawich and Great Smoky valleys, and Southern Paiute people in Las Vegas and Moapa valleys. A number of residents of present-day reservation communities in southern Nevada and adjacent California, as well as in non-Indian towns in the region, trace direct descent to known persons from these primary areas as well as the secondary locations (see, for example, Fowler, Hamby and Rusco, 1987:146b, 153a, 156a for sample genealogies of project consultants with such ties).

Reconstructions of the camp locations and memberships for the period of roughly the 1870s by individuals interviewed by Julian Steward (1938) in the 1930s, suggest that there were six primarily winter camp sites in Oasis Valley (designated in Shoshone the

Ogwe'pi district) at that time (Map 3). These were located at permanent springs in the valley, and each had known populations ranging from a single nuclear family of three persons to as many as ten persons, also usually members of one to two extended families. The total remembered population was under 50 persons, although by this period, there had been considerable displacement of people due to non-Indian settlement and population reductions due to introduced diseases. During this period, these winter village sites were still homes to which people returned throughout the hunting/gathering year. They were also sites of permanent residence from roughly November to May. From them people went each day, or for a few days, on plant gathering trips or to hunt large or small game animals. While away, they established temporary camps, usually near permanent or ephemeral water sources. The total area utilized by the Oasis Valley population for subsistence purposes extended form the east slopes of the Grapevine Mountains in the west to the middle of Sarcobatus Flat in the north, and from the southern Belted Range in the east to the middle of the Amargosa Desert in the south. Yucca Mountain was included in that area, being frequented for its seed resources (primarily chia [Salvia columbariae] and stick-leaf [Mentzelea albicaulis]), but also at times for desert bighorn sheep (Fowler, Hamby and Rusco, 1987:31).

The Oasis Valley population was closely related to and often went for food with one or more of the Belted Range camp groups, which were centered around several spring sites at the southern end of the Belted Range (see also Map 3). Prominent among these were



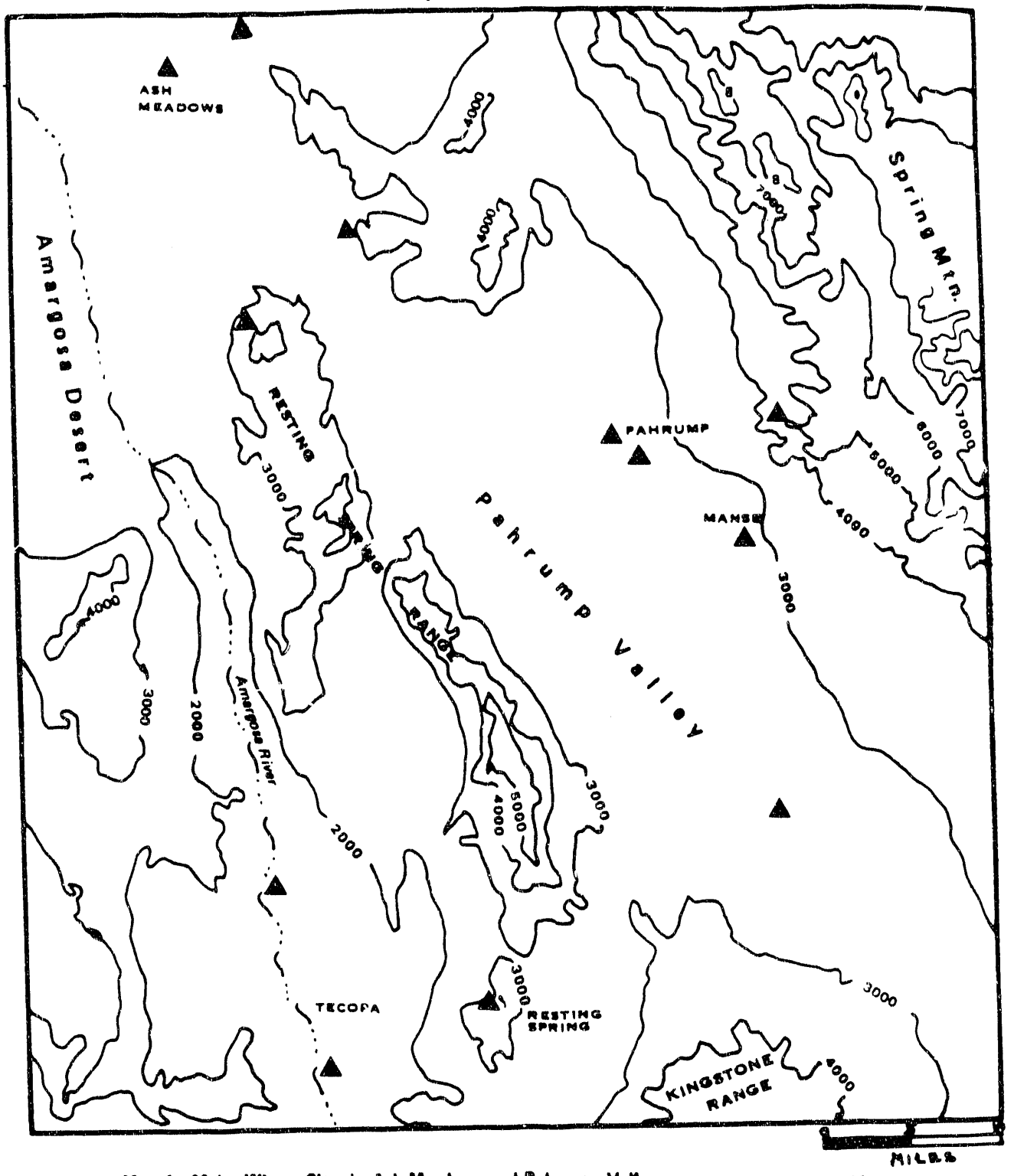
Map 3: Major Winter Sites near Beatty and Belted Range. *Contour Intervals 1000 ft.*

camps at White Rock Spring, Captain Jack Spring, Oak Springs, Ammonia Tanks and Tippippah Springs, now all contained within the Nevada Test Site. These springs, as well as a few other sites, were the primary winter camp locations in this district, called in Shoshone Eso, for a small hill in the area (Steward, 1938:94-5). Several of these sites were also single to multiple family winter camps, with a total remembered population of less than 50 persons. The area utilized for subsistence by the southern Belted Range groups was much the same as that used by the Oasis Valley people, and included Yucca Mountain. These groups also went north into Kawich Valley and east to the Pintwater Range, as well as south to use some areas jointly with Southern Paiute people around Shoshone Mountain and Cane Springs (Steward, 1938:93).

The Ash Meadows and Pahrump/Lower Amargosa Valley districts were to the south of Yucca Mountain. Forty Mile Wash, a major drainage system that occurs on the east side of Yucca Mountain, empties into the Ash Meadows area. Crater Flat, on the west side of Yucca Mountain, likewise opens into Ash Meadows. In former times, these two provided for the Ash Meadows and Pahrump people major entry ways into the Yucca Mountain, Shoshone Mountain, and Bare Mountain areas, as well as onto Timber Mountain and Buckboard Mesa. Ash Meadows and Pahrump people, even as late as the 1930s, used these avenues for access to pine nuts (Shoshone Mountain), deer and bighorn sheep (Timber, Yucca, and Bare mountains), and seed resources (Yucca Wash, Cane Springs).

Twelve major winter village locations were remembered for the

1870s in Ash Meadows and Pahrump/Lower Amargosa Valley, according to persons interviewed by Isabel Kelly in the 1930s (Kelly, 1932-33; see Map 4). [illegible] these, three were in Ash Meadows, at Point of Rocks, Longstreet Spring, and Big Hole, where the population was collectively referred to in Shoshone as koyohuts (Steward, 1938:7) and ko?oic in Southern Paiute (Kelly 1932-33). The remaining nine camps were in Pahrump and Lower Amargosa Valley, primarily at major spring sites at the base of the Spring Mountains and the Resting Springs Range, or along the Amargosa River. Populations at most of these sites appear to have been larger than in the Oasis Valley and Belted Range districts, with three to seven families at each, and a total population of roughly 130 persons (Kelly, 1932-33). In addition to treks by way of Forty Mile Wash to Yucca Mountain and vicinity on the north, these groups ranged for subsistence across the Spring Mountains to the east, south to the Avawats Range, and west to the Black Mountains and Funeral Range on the east side of Death valley. The Ash Meadows people went north as far as Big Dune south of Oasis Valley and occasionally west into Death Valley. Given that these areas are quite diverse as to elevation, the groups were well supplied with a variety of foods characteristic of low areas in the Mojave Desert (mesquite, screwbean, yuccas, agave, small seeds, rabbits, chuckwallas, tortoises) as well as of the high country (pinyon, berries, acorns, deer, bighorn sheep, etc. [Fowler, Rusco and Hamby, 1988]). In addition, groups at several sites in these districts planted moist areas with corn, beans, squash, amaranth, and Spanish-introduced



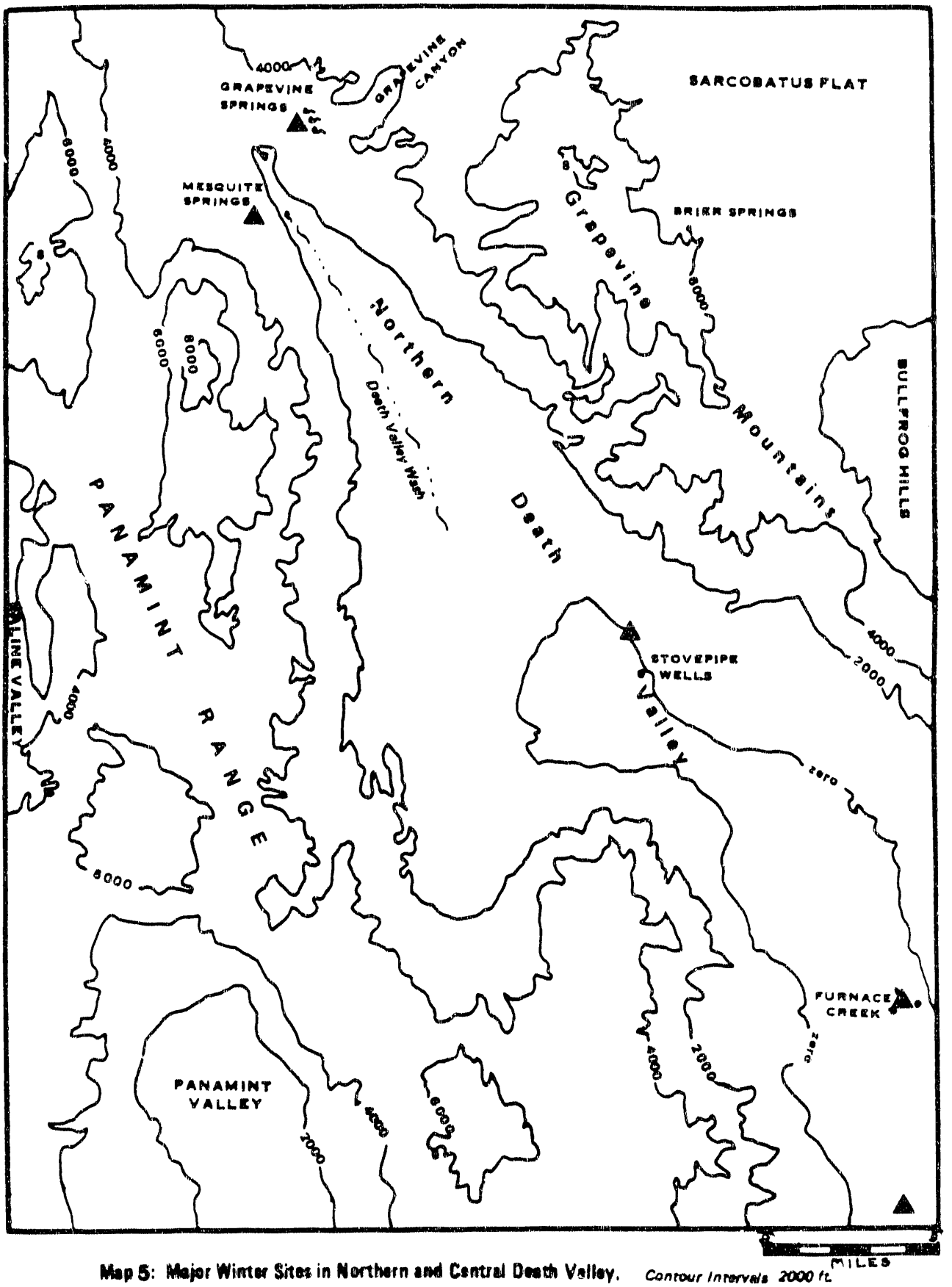
Map 4: Major Winter Sites in Ash Meadows and Pahrump Valley. *Contour Intervals 1000 ft.*

wheat, watermelons, and chick peas (Fowler and Fowler, 1981). Gardening with indigenous crops probably predates contact by only a few generations.

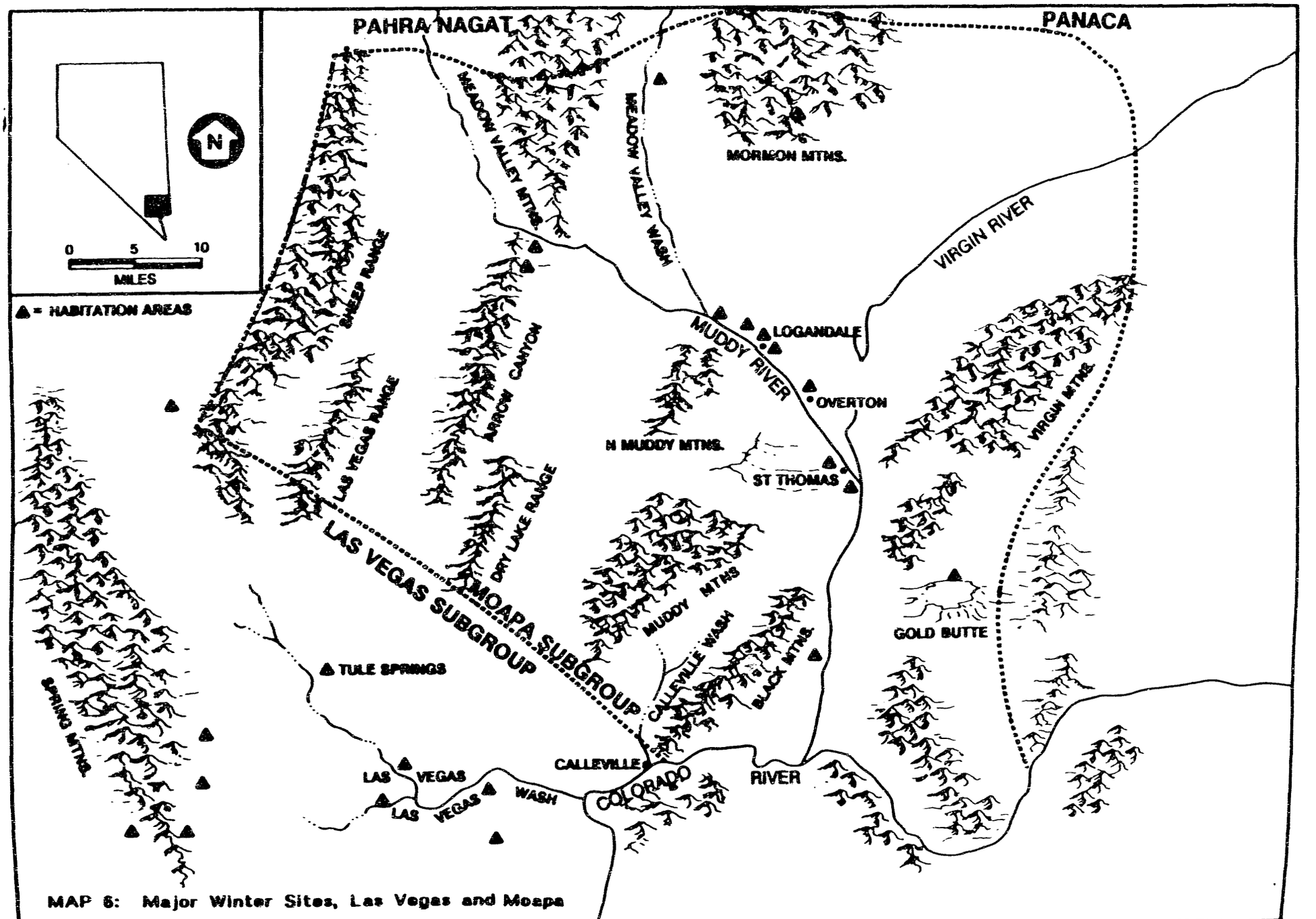
Several winter camps were likewise recorded for the 1870s in the Indian Springs/Cane Springs areas, south and west of Yucca Mountain. Several families had camps at Indian Springs, representing a population of roughly 30 people (Kelly, 1932-33). Additional families camped at Cane Springs, south and west of present-day Mercury, NV, and at Topopah Springs at the base of Shoshone Mountain (see Map 3). Crops were planted at Cane Springs and Indian Springs, and these supplemented naturally occurring food resources such as mesquite, screwbean, Joshua tree buds, yuccas, and small and large game. Given that Indian Springs was at the north end of the Spring Mountains, and a large natural pass led from this locality to and through this high range to Pahrump Valley, these groups were also closely aligned with those from that district. They all shared the resources of the range, including principally pinyon, berries and deer. The Indian Springs camps were likewise connected by kinship to several camps in the greater Las Vegas valley, including most immediately those at Corn Creek and Tule Springs, north of present-day urban Las Vegas (Kelly, 1932-33).

For many, the web of kinship further connected families at greater distances than camp groups in the immediate vicinity of Yucca Mountain. Particularly strong were ties between people in Oasis Valley and those in Death Valley, especially at winter

villages at Furnace Creek, Stovepipe Wells, Mesquite Springs, and Grapevine Springs (Map 5). Not only did the Oasis Valley people speak nearly the same dialect as the people of Death Valley (a language often referred to as Panamint, or more recently, Timbisha Shoshone [Daley, 1989a; 1989b]), but they also often attended each other's fall festival gatherings and Annual Mourning ceremonies (Steward, 1938:94). People from Ash Meadows participated as well. They in turn held ceremonies jointly with the people at Pahrump and Lower Amargosa, who in turn participated in gatherings in Las Vegas valley where there was once a large and dispersed Southern Paiute population (Kelly, 1932-33). The western edge of Moapa Southern Paiute territory also adjoined that of the upper Las Vegas valley and Indian Springs districts at an interface in the Sheep Range, thus bringing Moapa people to within 50 miles of Yucca Mountain (Map 6). Kinship ties are still traced between former Indian Springs residents and people at Moapa, as well as Pahrump and Las Vegas. And the Shoshone of the Belted Range in turn often held ceremonies or collected food with Shoshone neighbors in Kawich Valley, Great Smoky Valley, people in the Groom Range, and even Southern Paiutes in the Pahranagat/Panaca districts [now within Lincoln County, NV]. For hunters and gatherers, such ties not only proved important in times of need for subsistence (individuals could move to other areas if conditions warranted), but they also kept avenues of marriage open as well. For groups with small populations, this was an equally important factor (for detail on proto-historic camp locations in all of these districts, see



Map 5: Major Winter Sites in Northern and Central Death Valley. *Contour Intervals 2000 ft.*



MAP 6: Major Winter Sites, Las Vegas and Moapa

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Fowler, Rusco and Hamby, 1988).

Although ethnographers (Kelly 1932-33; Steward 1938) and present-day consultants report that individuals in all of the core areas discussed above shifted their residences periodically, it was within the defined boundaries of kinship and friendship --not randomly. Persons new to an area, even if they had kinsmen or friends there, had to ask permission to use a local group's resources, or to remain for lengthy periods. To not do so would be to potentially endanger the local persons. Permissions were seldom refused, but asking was required nonetheless as part of etiquette. Such patterns probably brought even more persons than reflected in the ethnographic record into any one home district over a long time span, and doubtless brought more people to the vicinity of Yucca Mountain than just habitual residents. Nonetheless, area of birth and area of habitual residence remained primary defining characteristics for local group membership and for the concepts of resource ownership that defined hunting and gathering rights. Those local groups in the immediate vicinity of Yucca Mountain, as well as their adjacent neighbors, knew it best through rights to be there.

1.3.2 Social and Political Organization

In the 1870s and 1880s, both Steward (1938; 1941) and Kelly (1932-33) identified the family -- nuclear and extended -- as the strongest and most cohesive unit in Western Shoshone and Southern Paiute societies. Families were the basic economic units, with all decisions regarding day-to-day subsistence activities made within

them. Food was obtained by family units and generally used by them as well. This included the products obtained by men through hunting as well as those taken by women and children through gathering. Farming, where practiced, was the work of both sexes.

Families could be as small as a couple -- a husband and wife -- or as large as a unit three or more generations deep. In the latter case, one or more grandparents were part of a household containing a son or daughter plus spouse, their children and possibly a grandchild or two. Widowed or divorced persons might be part of the family as well, sometimes as temporary members, but also permanently. Given that a pair of siblings from one family often married a pair from another family, this type of union resulted in another type of extended family. In this case, the sibling pair was the core of a single camp, with persons attached to them through kinship or friendship connections. Again, the members acted in common as an economic unit.

Nuclear and extended families were the basis of the winter camp groups enumerated for the various Western Shoshone and Southern Paiute districts near Yucca Mountain. Those with six to ten person might have one to three families. Those with 15 or more might have three or four or more. Usually, but not always, winter camp groups were somehow related (Steward, 1938:93-5; Kelly, 1932-33). In the summer, the camps broke up into smaller units, with a single or perhaps a pair of families moving together. Although families often returned to the same wintering site, this was not required, and thus considerable fission as well as fusion took

place. Disagreements could be handled easily by people moving to other camps. Nonetheless, as noted above, there was an overall attachment to area of birth and habitual residence that usually brought people back periodically, even if through marriage they had more or less moved away.

Given that the kinship system for both Western Shoshone and Southern Paiute was bilateral -- one that counted relatives on both sides of the family equally -- reckoning of kinship ties to other families and groups was easily accomplished. Marriages were only between non-relatives,[3] and thus people often were forced to marry outside the immediate area. This created a web of kinship further binding local groups with their immediate neighbors as well as those at a greater distance. Although the data gathered representing the period of the 1870s are not complete, enough can be discerned about them to suggest that persons in each local camp group could probably press ties in three to four directions over a few generations.[4] One of the several functions of fall harvest festivals and Annual Mourning ceremonies was to attract visitors from other areas and give young people a chance to meet. Marriages took place or were arranged at these times (especially the former). Young men usually went to live in the households of their wives for a year or two, as service to their wives' families. After that time, the couple might move to a camp of its own, or continue to stay attached to that of one of their parents. Given the important role played by grandparents in child rearing, these attachments were viewed as significant.

Leadership of winter camp groups was vested in senior men, usually one or two per district, but sometimes one for each major family in the district. These senior men were well respected for the advice they gave, sometimes related to subsistence matters, but also often to social interaction with other families and other winter camps. Although rarely authoritarian in personality, these men could get people to cooperate and compromise by their powers of persuasion. They were also often in charge of communal activities, such as the fall festivals and Annual Mourning ceremonies, or by their own special powers, they might be hunt leaders (deer, bighorn sheep, antelope, rabbits). They were rarely shamans or doctors, these important roles being reserved for others. At the period of the 1870s to 1880s, there were separate headmen or chiefs for Oasis Valley, the Belted Range, Ash Meadows, Indian Springs, Pahrump, and Lower Amargosa Valley, and additional men in charge in the outlying areas (Steward, 1938; Kelly 1932-33).

1.3.3 Religion and World View[5]

Although there were some specific differences in the religious traditions of Western Shoshone and Southern Paiute people, both shared a basic world view that was deeply rooted in their relationships with the land and its resources. A primary tenet of this world view was that the Earth was a living being, just as were the Sun and Moon, the stars, and natural forces such as water, wind, and fire. The life force within all of these, as well as particular geographic features and classes of anthropomorphic

spirits, was power (puha in both Shoshone and Southern Paiute). According to Miller (1983:73):

> "...power is not the best term for characterizing [this] life force -- energy. It is not static or concrete, but rather kinetic, always moving and flowing throughout the cosmos, underpinning all facets of the universe in a way that a physicist could appreciate. Yet convention and English usage place innate constraints on finding a more suitable term, aside from the classic treatment of mana in Polynesia.

In addition to animating the universe, power could be focussed everywhere -- in beings, such as humans, plants and animals, and in springs, rocks, mountains, caves, and other features of the natural landscape. Animal progenitors, in the myth-time "when animals were people," were, along with the Earth and others, among the most powerful beings. They were considered to be "bosses," "owners," "masters," "beautiful progenitors" of present-day species. Each set the course for its species, and at the same time, set human customs through a series of adventures and misadventures. Particularly active in this period were Coyote and Wolf, often portrayed as dueling brothers, but also Mountain Lion, Badger, water beings such as Frog, raptorial birds, and a host of others. Their activities, myth-specific, were mapped onto the landscape in a myriad of place names, often associated with individual features of the geography such as rock formations, specific caves or springs, petroglyph and pictograph panels,

trails, washes or arroyos, and much more. People, even today if they have been properly instructed, cannot move about the landscape without thinking of and feeling these links to the past. They also feel the power emanating from these specific features as well as more generally.

Power from these Immortals, passing through places as well as modern representatives of species, came to humans in various forms. In the past, those who obtained considerable amounts of it, and particularly from multiple sources, were the ones who became doctors or shamans. Others who obtained limited amounts of power, often from a single source, were enabled to do specific tasks, such as hunt deer, bighorn sheep, rabbits, etc. (Park, 1938). Although the very powerful doctors of former times are largely gone at present, certain individuals in contemporary society still control smaller quantities of power, and many people have felt power in association with song, prayer, hunting, gathering, or specific geographic features.

Although power potentially resided anywhere, its association with mountains, caves, springs or other water sources, and the results of past activities by Immortals or humans, was particularly apparent. Mountains were everywhere in the Great Basin important centers. Although the winter habitation units defined above were done so with reference to lowland settings with springs or other sources of permanent water, each was also defined with reference to one or more adjacent mountain peaks which served as its center and point of orientation (see Goss, 1972; Miller, 1983). Mountain

peaks are the sources of much of the water in the region, either captured in the form of precipitation which then flows in streams emanating from them, or from springs or seeps welling up near their bases. Peaks were also the sites of human creation, the points from which people emerged or were dispersed. For the Southern Paiute, Mt. Charleston in the Spring Mountains and very close to Yucca Mountain, was the source of emergence and thus a very sacred place (Kelly, 1932-33; Laird, 1976; Lowie, 1924). For the Shoshone people of the southern deserts, it was the Koso Range in California, equally held in highest regard (Kroeber 1925). But other peaks in the region are likewise sites of important mythic activities. Telescope Peak in Death Valley, and Bare and Timber mountains near Beatty were also important, as were many other peaks in the vicinity (Kelly, 1932-33; Steward, 1938).

Power flowed and continues to flow through the Earth in its waters, all of which were seen as linked in vast underground networks. Some native people suggest as an appropriate analogy for Earth and its water the human body with its blood flowing through arteries and veins (Miller, 1983:79). Given that the Earth is viewed as living, this analogy is particularly appropriate. Doctors in the past were able to travel through these water networks by entering springs, or caves containing springs, ultimately to emerge at some distant point. Ordinary people made offerings (formerly beads, stones; today, beads, money) to springs in recognition of this power and also to make sure that the power did not act in an unfriendly manner toward them (by trying to drown

them, etc.). Water Babies, small anthropomorphic and very powerful beings, inhabited major springs and other watercourses. They become sources of power for doctors, but could do harm to ordinary people. Although springs were often thought of as forever flowing, they would dry up or shift in location if Water Babies left these particular localities.

The tangible results of activity by the animal progenitors or by humans likewise reflected power. Power, in fact, became attached to them. As noted above, geographic features that were associated with the time "when animals were people" were consciously remembered and honored because of the power inherent in them. Old dance grounds and birthing places, where songs were sung and prayers made to evoke power were likewise important. Graves or burial places, usually placed away from human habitation, were of particular significance because of the potential power they contained. Given that the spirits of the deceased continued to reside in the vicinity for an unknown period of time, such localities were remembered and avoided. Their spirits (in the form of ghosts) likewise served doctors as sources of power, but few would knowingly court them. Given that graves from the past can occur anywhere on the land, people today are particularly mindful of where they know or have heard of individuals being buried, but also more generally, of any signs that might indicate a grave. All such localities are to be left undisturbed and basically avoided if at all possible.

The concept of power as the life force or energy also

reinforced Western Shoshone and Southern Paiute relationships with plants and animals. Given that all animal species had progenitors, and that these were potentially still present, all animals were to be treated with respect. Although many animals allowed themselves to be taken as food, it was not without first establishing a relationship with the hunter. The hunter in turn showed respect for each animal taken, often by placing a part of it (each species required a different part) in a specified location and offering a prayer. Although plants were seen less in the role of progenitors or Immortals, when they were taken for food or medicine, they were likewise treated with respect. Offerings such as those placed at springs were made to them during harvesting, and/or specific prayers were said. To treat plants or animals with disrespect or disregard for their welfare formerly meant that they would withhold themselves or their benefits (in the case of medicines) from humans. Now other consequences might occur (see below).

1.4 Field Work for the Yucca Mountain Project

In order to assess the persistence and application of these cultural values involving the land and its proper use, as well as to suggest potential socioeconomic impacts of the proposed Yucca Mountain project, several types of studies were undertaken among Native Americans form September 1986 to September 1988. First, a thorough review of the extant ethnographic literature was made, including some unpublished sources.[6] Particularly important were the voluminous unpublished field notes of anthropologist Isabel Kelly, who worked among the Southern Paiute during 1932 and 1933.

Her notes established the location and named occupants of the 1870s to 1880s winter camps, as did the published notes of Julian Steward (1938; 1941) for the Western Shoshone. Additional historic documents, including the U.S. and Indian census records and unpublished Bureau of Indian Affairs correspondence, were examined in an attempt to gather additional names of Indian persons resident in these areas in the historic and recent past.

Field studies during 1986 concentrated on locating and counting Indian people in Nye, Clark, and Lincoln counties (and in adjacent Death Valley, CA). Interviews and extensive genealogies were made in order to further connect the identified population with that of the historic winter camps around Yucca Mountain (see Fowler, Hamby and Rusco, 1987). From this group, persons with specific knowledge of the project area or the immediately surrounding vicinity were chosen for more intensive interviews. This group (15 in number) also formed the basis for the initial site visit to Yucca Mountain in October, 1987. In cases where persons with specific knowledge could not be found, or were unable because of age or health reasons to go on field trips, tribes were asked to send knowledgeable individuals as tribal representatives. Two additional field trips to Yucca Mountain were made in the spring of 1988 for tribal representatives and leaders who either needed more information about the site or had additional information to contribute. Site visits to Yucca Mountain were the primary vehicles for eliciting data applicable to the American Indian Religious Act and the National Historic Preservation Act

(see 2, below). Additional interviews were conducted during the course of socioeconomic field studies about less site-specific cultural concerns, views, and attitudes.

Socioeconomic baseline studies were conducted from the spring of 1987 through September, 1988 (Cultural Resources Consultants 1988a; Fowler, Hamby and Rusco, 1987; Hamby, 1988; Rusco, 1988). The 1980 U.S. census was specifically analyzed for Indian participants in the three county area, and all of the socioeconomic categories and indicators for reporting Indian households further scrutinized. These were matched to specific tribal records where available (especially work force, health statistics, etc.), and preliminary profiles of reservation communities were drawn up (see Hamby and Rusco, 1987). The large urban Las Vegas Indian population (estimated to be over 6,000) seemed particularly interesting based on this profile (Hamby and Rusco, 1987:87-95), but additional field efforts at the time to locate neighborhoods or other identifiable units for concentrated work proved fruitless (but see 3.4 below). Small non-reservation populations present in towns in the three counties were contacted and additional interviews made for appropriate categories (Fowler, Hamby and Rusco, 1987).

From July, 1987, to September, 1988, two field workers separately resided in or near reservation communities and in the small rural southern Nevada towns. From one to three months were spent by a field worker in Duckwater, Yomba, Death Valley, Moapa, Las Vegas, and Pahrump, and two weeks each in Beatty, Tonopah, and

Caliente. Additional visits were made after the initial stay in order to check data and interpretations. Tribal representatives to the project (if appointed by tribes) and tribal leaders were also contacted periodically in person or by phone to review data obtained. Only by these longer periods of residence, coupled with follow-up and checking, could good socioeconomic community profiles be developed and in depth interviews on issues be conducted.

In the summer of 1988, a modified (shortened) version of the questionnaire, developed by the Mountain West team and designed to assess risk perception relative to the Yucca Mountain project, was administered to 56 Indian people. The results of this effort are summarized in Section 3, and appended (Appendix III).

Since September, 1988, contacts with people who contributed considerable data to this project have been brief and intermittent. Some specific interviews were conducted with the Western Shoshone National Council attorney in 1989 on legal issues that still persist (see Section 2). In 1990 and 1991, additional attempts were made to update some of the data categories (e.g., with figures from the 1990 U.S. Census, etc.), and to check with tribes as to any new developments of relevance. Elmer Rusco also undertook a separate study of the projected effectiveness of state, local and tribal government intercommunication (E. Rusco, 1991).

2. CULTURAL AND LEGAL ISSUES

Several pieces of federal legislation in addition to NWPA are pertinent to Native American involvement in a proposed project such

as the Yucca Mountain nuclear waste repository. Primary is the National Environmental Policy Act (43 U.S.C. 4371 et seq.) and its implementing regulations that mandate consideration by agencies of environmental (including physical and social) impacts and alternatives for projects on federal lands. Under this act, attention must be given to maintaining environmental quality and diversity for future generations; and to assuring "for all Americans, safe, healthful, productive, and aesthetically and culturally pleasing surroundings" (Sec 101 (B)2). Cultural properties are considered part of the environment requiring protection under the act. The National Historic Preservation Act (16 U.S.C. 470 et seq.) sets up mechanisms for assuring that historic and cultural properties are given proper assessment and that consultation with all pertinent parties takes place. This is usually accomplished through a Programmatic Memorandum of Agreement (PMOA, or MOA) between the Advisory Council on Historic Preservation (ACOHP), the State Historic Preservation Officer (SHPO) and the agency involved.[7] Pertinent as well is the American Indian Religious Freedom Act (P.L. 95-341) which affirms that it is the "policy of the United States to protect and preserve for American Indians the inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship though ceremonials and traditional rites." If important religious sites are also archaeological properties, than

the Archaeological Resources Protection Act (16 U.S.C. 470aa-mm) applies, in that procedures for avoidance of same or agreed-upon mitigation of potential impacts is required. In 1985, the ACOHP in issuing its "Guidelines for Consideration of Traditional Cultural Values in Historic Preservation Review," reaffirmed the importance of AIRFA in environmental assessments, pointing out as well that sites need not have been in continuous use by Indian people to qualify for consideration as important traditional sites (ACOHP, 1985:7). In so doing, the ACOHP recognized the impact of roughly 400 years of non-Indian contact and induced cultural change on Native Americans in the United States. These include direct assaults on native cultures and religions, and vast reduction in land bases once occupied and utilized. This affirmation is particularly pertinent in the case of Yucca Mountain, as it was once utilized but is no longer due to closure of the area in the 1940s for the Nevada Test Site and other military purposes. But the proposed site is part of Western Shoshone and Southern Paiute traditional territories, although it is not on an existing Indian reservation. It is well known that Western Shoshone and Southern Paiute people utilize many more lands than those technically within reservations for economic and religious purposes.

2.1 Cultural Resources on Yucca Mountain

Archaeologists working under contract to the DOE over the past several years have located through survey roughly 400 archaeological sites in the Yucca Mountain project area and immediate vicinity (Pippin, Clerico, and Reno, 1982; Henton and

Pippin, 1988). Thus far, surveys are incomplete in portions of the area not contained within the boundaries of the Nevada Test Site (Greg Henton, personal communication). Limited test excavations have been conducted on roughly 30 of the surveyed sites, sampled to try to maximize diversity of type as well as return of information (Pippin, 1984). Based on the findings, the time span for occupation of the area by Native Americans appears to run from roughly 12,000 years ago to the immediate past. The earliest pattern is represented by scatters of projectile points, tools, and manufacturing debris along major ephemeral drainages at the base of Yucca Mountain, including in Forty Mile Wash. These sites lack much in the way of depth, but are important representatives of this early pattern.

Around 6,000 years ago, attention seems to have shifted to the higher areas of Yucca Mountain, with temporary camp sites being found on saddles and low passes on the mountain itself. Hunting seems to have been the principal subsistence pursuit. At this time, people also appear to have first used as water sources the natural bedrock potholes that occur in the area. And they continued to use some of the same tool stone sources located earlier. Around 2,000 years ago, the settlement pattern appears to shift again toward occupation of small rockshelters at the top of steep slopes on Yucca Mountain and outlying ridges. Intermountain brownware, a type of pottery associated with the Western Shoshone and Southern Paiute, appears after this time. The people using these sites appear to be dependent on the water supply

in the tanks or potholes. Rather than hunting, these sites reflect more the pattern of seed gathering characterized in the ethnographic literature (Steward, 1938) for the Western Shoshone and Southern Paiute of Beatty, the Belted Range, Ash Meadows, Indian Springs, etc. (Pippin, 1984). Archaeological surveys or test excavations did not identify burials or any sites suggesting major religious activities.[8]

Through DOE's archaeological contractor (Desert Research Institute, Quaternary Research Center), a two-day archaeological site tour was arranged and conducted in October, 1987. Two additional one-day tours were conducted in April, 1988. On the first tour, ten Native Americans with specific knowledge of the Yucca Mountain area visited ten archaeological sites, representing each of the patterns and time periods outlined above. They were accompanied by DRI archaeologists and Cultural Resources Consultants ethnologists. The DRI archaeologists made brief presentations at the sites, and the Native American consultants then gave their views as to the character of the site, its possible function, interpretations of the subsistence and other resources to be found in the immediate area, and, where applicable, their personal experiences or family reminiscences concerning the locality. They also gave names in their native languages for plants, animals, places, and features seen. A summary of their comments on each of the sites visited appears in Appendix I.

Individuals most knowledgeable were well aware of the function of Yucca Mountain in the food gathering cycles of the past, and

they knew as well that the principal water sources on the mountain were the potholes or tanks (po?o in Western Shoshone, pikapo in Southern Paiute). (Nineteen of these features have been identified thus far by archaeologists on Yucca Mountain [Pippin, 1984:13].) They also were aware of the trails and general routes of access to the area from Oasis Valley, the Belted Range, Ash Meadows, Pahrump, and Indian Springs. They spoke of trails through Forty Mile Wash, Crater Flat, and the canyons around Timber Mountain to the southern Belted Range. As they stood at vista points on top of Yucca Mountain, they reaffirmed the importance of Mt. Charleston (Nɨ-baganti, "snow-having") as the sacred place of emergence and dispersal of the Southern Paiute people and of the importance as well to the Western Shoshone people of Telescope Peak, Bare Mountain, and Timber Mountain. All participants in the site visit felt particularly angry that a repository ("dump") of such dangerous material should even be considered so close to these sacred mountains.

People were very interested in the specific contents of the archaeological sites, and how the proposed project might impact them. They were equally concerned about the fate of plants and animals in the project area. Some noted that there had already been significant impacts on them due to nuclear testing, as plants at least appeared "burned", "sick", and "destroyed". But nonetheless, several saw the area as beautiful, and all of its resources as worthy of protection. The concept of further "sacrificing" this area because it was already contaminated seemed

TABLE 1. Some Native Place Names Near Yucca Mountain

Amargosa River	ogwedᵻ (WS)
Ash Meadows	koyoboca (WS), koyoicᵻ (SP)
Black Mountain	pisapi toyabi (WS)
Beatty	ogwetᵻ (WS)
Big Spring, Ash Meadows	panubaci (SP)
Bubbling Spring, Ash Meadows	punipᵻci (SP)
Cane Spring	pagambᵻadᵻ (SP)
Charleston Peak	nᵻbagadᵻdᵻ (WS), nᵻbagantᵻ (SP)
Death Valley	tᵻmbisakadᵻ (WS)
Devil's Hole, Ash Meadows	popobᵻci (SP)
Funeral Mountains	piki (WS)
Furnace Creek Wash	padumbea nunupi (WS)
Grapevine Canyon	maahunu (WS)
Grapevine Mountains	wahago?i, ogwagai, obagai (WS)
Grapevine Ranch	sᵻᵻba (WS)
Groom Range	tᵻbongadᵻ (SP)
Indian Springs	kwiyangguma (SP)
Pahrump Valley	padumbe (WS), padapunici (SP)
Panamint Mountains	kaigoti (WS)
Point of Rocks Spring, Ash M.	tiyagaci (SP)
Rock Canyon (e. of Beatty)	tᵻmbi hunupi (WS)
Stovepipe Wells, Death Valley	ohyu, tugumata (WS)
Telescope Peak	siᵻmbᵻtsi, mugudoya (WS)
Timber Mountain	nabungai (WS)
White Rock	eso (WS), angkapa (SP)
Yucca Mountain	eso (WS), soadamᵻ (SP)

particularly foreign to them. Conditions should be made right, not worsened.

Persistence of world view was also well expressed by the participants in their general attitude toward the land. They repeated several times that when entering an area such as this after such a long absence, specific prayers needed to be offered to any spirits (animal, human, other) present, and several persons did so. Places that could contain power, such as mountains, but also the Earth generally, needed to be fed: small bits of food are and were given to the four directions in order to discharge this responsibility. They regretted that in their absence no one had cleaned the tanks and potholes for proper use by the animals -- part of routine maintenance by Indian people properly discharging their responsibilities to the animals. They noted that had we been interested in collecting plants or animals for food or medicines, specific rules would have to be followed, including the making of offerings. (Given that we were primarily interested in identifying important food and medicinal plants, this was not required, but we were reminded of the obligation.) Several also reaffirmed the importance and sacredness of the water in springs we visited up Forty Mile Canyon, and noted again that all of the waters in this part of the region are connected underground. If any contamination were to occur at any point in this system, the whole of the waters would be affected.

Although none of the consultants knew of specific burials at or near any of the sites, persons did identify potential burial

locations along some of the ridge lines at Yucca Mountain and related features. They suggested that these were the right kinds of locations for burials to occur, and that the areas should be avoided for that reason. (Some are within areas likely to be impacted.) Other archaeological sites, as manifestations of human activity, should also be left as is in the view of the consultants. To disturb these resources is not to show them and the people who used them proper respect. If land altering activities do take place during site characterization, all archaeological sites should be avoided, in their view. The same view holds, again out of religious tradition, with reference to important animals and plants.[9]

Although the archaeological site tour did not include pictograph or petroglyph sites (except one small glyph on a low stone), or specific ceremonial areas, people knew of some in the vicinity. White Rock Spring, one of the old winter camp sites in the southern Belted Range, was seen as particularly significant as the site of remembered Annual Mourning ceremonies, thus making it potentially a very powerful place (see below). The extensive rock art site in Forty Mile Canyon, immediately to the north, was also known and viewed as very significant, and another potential source of puha. Areas known to be sacred from the activity of the Immortals in the time "when animals were people" include Forty Mile Wash, immediately east of Yucca Mountain (site of a traditional tale involving a giant snake that crawled through that way and ultimately wrapped himself around Bare Mountain, near Beatty).

Native place names were recalled by this group (or others interviewed) for many other environmental features (see Table 1), as were the native names of most of the winter village sites recorded by Steward (1938) and Kelly (1932-33). The district names for Oasis Valley and the Belted Range were also given, and these, with the others, are clear attestations of cultural memory over more than 50 years. Although Native American people have been denied access to this area since the 1940's and 1950's, it is clearly still within their cultural traditions. They have been cognizant of the loss of access to the Nevada Test Site and the bombing and gunnery range for some time,[10] and the Yucca Mountain site visits reminded them of this loss.

Given that the DOE also contracted for AIRFA and NHPA compliance work relative to Yucca Mountain, the documents generated by this work have been examined and compared to the above findings (see Stoffle, Evans and Harshbarger, 1988; Stoffle, Olmstead and Evans, 1988; Stoffle, et al. 1988, Stoffle, Evans and Halmo, 1988; Stoffle, Halmo, Olmstead and Evans, 1990). In tenor and principle, the results of their site visits appear to agree. The DOE study team used several of the same consultants, and visited several of the same sites. They also visited others that were not available to us, including the ceremonial area at White Rock Spring and a suggested burial area at Prow Pass (Stoffle, Halmo, Olmstead and Evans, 1990). Consultants were equally vocal regarding the protection of these archaeological resources and plants, although in specific discussions of possible mitigation measures, some

alternatives were proposed (see Appendix C, in Stoffle, Halmo, Olmstead and Evans, 1990).

Of special interest in terms of persistence of world view and the pervasiveness of Western Shoshone and Southern Paiute views of power and its localization, was an event related to us at a later date by the person directly involved. This person, a religious leader who visited White Rock Spring with the DOE team, was rather immediately struck by the power at this place, and received from it a song (a common gift of power). Immediately upon his return from the site visit, he sang this song to his elderly mother, who was very pleased by it. When his mother died the following summer, he sang the song again at her funeral. Although White Rock Spring is nearby, rather than on Yucca Mountain, such an event could just as easily have happened at Yucca Mountain. The fact that it did not happen there on any of the site visits does not lessen the potential of such an occurrence. As noted above, power is everywhere and in everything. It controls the exact time and place of human contact. No part of the landscape can be ruled out from containing it, and no person who still follows Native religious precepts is necessarily exempt from acquiring it.

2.2 Applications of NHPA and AIRFA to Yucca Mountain

Assessments of the archaeological properties on Yucca Mountain and decisions as to whether they are "significant" to preserve or mitigate will be made according to criteria set forth in regulations and policies that flow from NHPA. These regulations give primacy to the "scientific" significance of sites, something

assessed based on the importance of any or all of them to answering research questions set forth in various plans for explaining regional prehistory and history (Fowler, 1982:25-26). If site characterization of Yucca Mountain goes forward, these plans and agreements will have to be put into place. To date, only preliminary statements regarding the area have been made (Pippin, 1988). Thus, in order to comply with the legislation, much more will have to be done. Although AIRFA must be given consideration in these deliberations, it seems doubtful that in its present form it will have major impact on decision-making regarding avoidance or mitigation of Yucca Mountain sites or the area in general.

Since its passage in 1978, AIRFA has not accumulated an impressive record in the courts in protecting Native American religious freedom or sacred sites. Much of the difficulty appears to lie in court interpretations of what constitutes freedom of religion, or in reverse, what types of impediments truly interfere with the free exercise of religious beliefs. As Barsh (1986:366-8) has pointed out, much of the interpretation revolves around profound differences in world view. According to Native Americans, the whole earth is sacred because it is the source of life, and there are <u>many</u> places on the landscape where communication with the spirits and processes of renewal can take place. Of specific importance is the belief that landmarks cannot be moved or altered. Consequently, land-altering activities threaten not only sacred places but violate concepts of the entire natural order. This more generalized view is well expressed in Western Shoshone and Southern

Paiute concepts of a living, breathing Earth with waters flowing uninterrupted and interconnected through it (or her, in Western Shoshone, Sogobia, 'Mother Earth'), as well as their concepts of 'power' free in nature and unpredictably localized (as in the case of White Rock Spring, cited above). Their view that the integrity of the entire Earth is at stake if a part is vandalized is also pertinent. Native American tribal religions also have rituals and ceremonies that are involved with continuing, or constantly renewing the creation process, and keeping proper forces (such as again, Western Shoshone and Southern Paiute 'power') in balance (Federal Agencies Task Force, 1979). The sacred is conceptually totally enmeshed with the natural, with the Earth and other natural phenomena seen as one with humans, plants and animals. The sacred is a force in itself, and it calls for the harmonious integration of land and people (Deloria, Jr., 1973; Curtis, 1988:3).

This view is opposed to that held by many members of industrialized cultures and their governing bodies which tend to see life on earth divided between humans and their resources, with little regard for the interdependence of all (Suagee, 1982:15). Resources are to be utilized for the present good, and not necessarily preserved or managed for the future. Judeo-Christian religious traditions also tend to associate rituals and ceremonies with "commemorative" events, more obviously sacred happenings in the past than at present or in the future (Curtis, 1988:3). Continuity is less important the commemoration. Judeo-Christians also have specific localized places of worship, and these can be

moved if necessary (commissioned, decommissioned). The importance of ritual outweighs the importance of place and the oneness of all.

These differences have been well expressed in court decisions that have involved AIRFA. In most, two primary principles derived from the case Wisconsin-v-Yoder have usually been applied. The Wisconsin-v-Yoder case was a dispute over whether Amish children should be exempt from mandatory public education because it violated a religious tenet that requires home education. In it, the plaintiffs were required to show: 1) a significant burden on the free exercise of religion; and 2) that this burden was balanced against the importance of the state's interests and the degree to which it would be impaired by a religious exemption (Gould, 1986:872). The Amish succeeded in demonstrating that home education was imperative to the free exercise of their religion, and also that the state's interests would not be unduly jeopardized. But, when applied to Native American religions, the two principles involved in what has come to be called the "Yoder test" have been difficult to prove and the requirements difficult to meet.

In order to establish a free exercise of religion violation, as required in the first part of the Yoder test, "the individual must show that the practice in question was rooted in religion, and the belief was sincerely held, and that the government action placed a burden upon that belief's practice. Also, an explicit requirement is that beliefs and practices be 'central' to a bona fide religion" (Gronhovd, et al., 1986:131). Of specific interest

and importance is the centrality principle, "the necessary importance of the religious practice to the individual;...the more central a practice is to a religion, the less likely a governmental interest will override a claimant's free exercise right" (Gronhovd, et al., 1986:134). The second aspect of the Yoder test is also important: the religious exemption must not place an undue burden on the governmental agency.

In case after case in recent years, the centrality issue and the undue burden issue have proved most troublesome. Native Americans have had less trouble proving the sincerity of their beliefs than showing the other two. In Hopi Indian Tribe, et al.-v-Block, et al. (Nos. 81-1912, 81-1905, 81-1956 D.C. Cir., May 10, 1983), the Hopi attempted to block the development of a ski area on the San Francisco Peaks in Arizona by U.S. Forest Service lease holders, claiming that these mountains were home to the sacred Katchinas, important spirit figures in their religion. The court found in favor of the Forest Service and the ski resort, stating that the tribe did not show that the proposed area was central and indispensable to their religion: this home of the Katchinas is only part of a much larger religious sphere. Therefore, there was no infringement on their First Amendment rights as their religion could still be practiced and beliefs in the Katchinas still held. A similar reason was given in the case Sequoyah-v-T.V.A. in which the Cherokee tried to prevent the completion of the Tellico Dam on the Little Tennessee River as it would flood ancient burial sites and other sacred lands. The court held that the Cherokee's lack

of property interests in the area prevented them from having any religious claim. It also found that the site was of only historical interest to the tribe and not central to their religion (Sewell, 1983:450). In Northwest Indian Cemetery Protective Association-v-Peterson, several northwestern California tribes tried to block Forest Service development of a road (G-O road) through mountainous timber areas as it would impair religious practices involving contacts with power sources and other activities. After the lower courts found in favor of the Native Americans, largely because the government failed to prove that there was a "paramount" or "compelling" reason to justify infringements on the First Amendment rights of the Indian people, the U.S. Supreme Court reversed the decision in retrial, indicating that there was a compelling reason (timber development), and that the religious views of a minority should not impede federal progress (Ling, et al.-v-Northwest Cemetery Protective Assn., et al., No. 86-1013. Supreme Court, April 19, 1988). In Badoni-v-Higginson, Navajos sued for protection of Rainbow Bridge and the ceremonies performed there from further flooding by Glen Canyon Dam and development of tourist traffic. In this case, the court found that the interests in power development connected with the dam outweighed the religious concerns, and that since the Indians were not denied access, their rights were not violated (Sewell, 1983:451-2). And in Fools Crow-v-Gullet, a dispute over Bear Butte State Park in South Dakota involving the Sioux, Cheyenne, and others in a case for special use of a sacred site, the court held

that there was no government obligation to protect the environment for these specific religious purposes. It further warned the state that making such accommodations was "burdening the rights of the general public" (Sewell, 1983:457).

Thus, in case after case, at least to the present, Native Americans have trouble demonstrating the centrality of a specific place to the exercise of their religion, as well as that their unimpeded practices will not burden someone else. Undoubtedly, differences in world view are conflicting here, especially in the former issue. With the view that all the earth is sacred, and that important interrelationships with spirits can potentially take place everywhere, how can Native Americans show that one place is most sacred above all? And, with the mood of the courts to disallow exemptions if it appears to infringe upon anyone, including, it would appear, federal progress or even the "general public," there appears to be little to be done under AIRFA as it presently stands. As Sewell (1983:436) has succinctly stated:

> The American Indian Religious Freedom Act, though passed with good intentions, has done little to protect the religious interests of Native Americans. Because their interpretation of the world is so different from ours and we don't understand it, because to them culture and religion are one in the same and we change the world to suit ourselves, the government's economic interests will continue to prevail. That is the bottom line. Whether or not this is the last word on the fate of AIRFA

depends on how the courts continue to interpret Congress's intention in its passage, and how effectively attorneys continue to argue their cases. In 1990, there was before the Senate Select Committee on Indian Affairs S.B. 1124, which offered some significant additions to AIRFA that might have made it more than a vague intention to protect Indian religious freedom. However, the bill still contained provisions for exceptions because of "compelling government interest" and other concerns. The bill died in committee in 1991, but there is still interest in resubmitting it with significant amendments. These new amendments are presently before the Senate Select Committee on Indian Affairs, and are being transmitted to various federal agencies for their response (Native American Rights Fund, personal communication, September, 1991). Others involved in lobbying for more effective historic preservation legislation are also interested in strengthening AIRFA, and perhaps in taking new cases before the court that challenge the centrality issue as well as others. They intend to work toward these ends in 1991 and 1992 (Tom King, personal communication, April, 1991).

In the meantime, protection of cultural resources in the area of the proposed Yucca Mountain waste repository seemingly cannot be left to AIRFA. Protection under NHPA remains the most viable option, although as noted above, NHPA eligibility criteria place more weight on the scientific values of sites than on humanistic ones. Tribes have been able to derive some satisfaction from NHPA when sites (religious or otherwise) are important or potentially

important for their contributions to prehistory or history. However, to qualify on strictly religious grounds, NHPA places primary weight on architectural and aesthetic criteria, which almost automatically exclude most Native American religious sites (Suagee, 1982:43; but see also Klesert and Downer, 1990, for some other interesting possibilities). Plans for the disposition of sites on Yucca Mountain will likely involve additional consultation with tribes, but the overriding concerns probably will remain scientific. In that the State of Nevada has not agreed to sign the MOA for Yucca Mountain with ACOHP and DOE, the State will not have an oversight role in the conduct of this work should site characterization go forward. Individual Indian tribes have to go forward on their own with oversight -- if they can get the appropriate data. This may prove particularly unfortunate, as there will be little chance for the State to pressure DOE to consider more than the exact letter of the law, or to back tribes should they want to present an alternative view.

2.3 Who Owns Yucca Mountain? Western Shoshone Claims

An additional issue that enters into plans to develop a high level nuclear waste repository at Yucca Mountain is that of title to the lands being considered. Although DOE is proceeding as if the proposed site is on federal lands managed by federal agencies (DOE, BLM, U.S. Air Force), there is another position as to who owns these lands--that of the Western Shoshone, represented by the Western Shoshone National Council.

Yucca Mountain clearly lies within territories owned

aboriginally by the Western Shoshone people and the adjacent Southern Paiute people. Archaeological sites thus far discovered in the project area support that Indian people, including those tribes presently in the area, have used the locality for at least 12,000 years (Pippin, 1984). Although a number of Indian people of both major entities now reside on reservation lands, most set aside between roughly 1876 and 1940,[11] they have continued to maintain ties to the full extent of their aboriginal lands in various ways. The Indian Claims Commission, in a series of decisions rendered in the 1960s and 1970s, sought to extinguish aboriginal claims by Native American tribes, and provide "just compensation" for the lands taken. On January 18, 1965, the ICC awarded a judgement of roughly $7,000,000 to the Southern Paiute people as a result of Dockets 88, 330, and 330A. The award was paid to tribes and individuals, with some of the funds reserved for the future. On December 6, 1979, the ICC awarded roughly $26,000,000 to the Western Shoshone people as a result of Docket 326-A. The tribes and people in question refused to accept payment, and the funds are still on deposit in the U.S. Treasury (Clemmer and Stewart, 1986:552-3).

The Western Shoshone land claims case has a long and complicated history (E. Rusco, 1989; 1990). When dockets were first filed in this case (as well as in a number of others), Indian people were given the impression that settlement and "just compensation" were their only alternatives. Although many voiced opinions as far back as the 1930s that the land was theirs and not

for sale (Crum, 1987:16), few non-Indians seem to have taken these claims seriously until the 1960s when a group of Western Shoshone traditionalists under the leadership of Frank Temoke refused to continue with the ICC process, electing instead to assert aboriginal claims under the Treaty of Ruby Valley of 1863. This treaty, ratified in 1866, was a treaty of "peace and friendship," in which the U.S. government was granted certain rights to traverse Western Shoshone lands and build improvements, but not ceded lands (Kappler, 1904). The treaty assured communication routes, such as roads and the telegraph, allowed mineral prospecting and exploitation and the supporting ranches for that industry, and allowed the establishment of military posts. It was stated in the treaty that the Western Shoshone people might elect to go to reservations at some time in the future, when their aboriginal way of life was no longer possible; but even in this case it did not state that the lands would be forfeited. Although the Timoke group's assertion and refusal to participate came too late to halt the ICC process, and a judgement was ultimately awarded, the group's position has continued to gain strength since the 1960s. Refusal to accept the ICC award has been a significant factor.

In 1974, traditionalist Western Shoshones incorporated in the State of Nevada the Western Shoshone Legal Defense and Education Association. Later renamed the Sacred Lands Association, and in 1984 the Western Shoshone National Council, this group had as its goals: 1) resistance of the unfair and unlawful sale of their traditional lands; 2) education of their people as to their legal

rights; 3) raising funds for education and enforcement of legal rights; and 4) authorization of members to retain legal assistance to further their common interests (Rusco, 1989:7-8). The association immediately attempted to intervene in the ICC case, but again, without success. It also supported, and has continued to support with some notable successes, the various cases brought by the United States against Mary and Carrie Dann, members of the Dann Band of Western Shoshones, for alleged livestock trespass on federal lands. Through the years, the National Council has evolved into an entity that represents most Western Shoshones, with 17 constituent groups in 1991.[12] Its membership incorporates, or has incorporated, every Western Shoshone organization, including those representing tribal governments, but also groups comprised of Western Shoshone people living in cities or towns.[13] While it does not supersede recognized reservation governments, the National Council has attempted to establish a level of authority above existing governments and to allow representation for all Western Shoshones, wherever they live. During the time of fieldwork for this report all he Western Shoshone reservations in the study area were members of the Council. In April, 1991, the Duckwater Tribal Council gave up its membership, although in activities, it still remains closely tied to it.[14]

In the various Dann cases, most of which have come before the Federal District Court in Reno and the Ninth Circuit Court, federal attorneys have attempted to show that the Western Shoshones (including the Danns) lost title to their lands either: 1)

through the Treaty of Ruby Valley (arguing unsuccessfully that it was a treaty of cession); 2) through the Treaty of Guadalupe Hidalgo, by which the U.S. acquired from Mexico one type of title to lands in the Southwest and West; 3) through homestead laws and their administration in Western Shoshone country; 4) through the establishment of the Duck Valley Reservation in 1879 (which fulfilled a provision of the Ruby Valley Treaty that stated that the Western Shoshones would move to reservations within their territory when established); and 5) through enactment of the Taylor Grazing Act of 1934 which, they claimed, extinguished aboriginal title which existed until that time. In a confusing set of decisions as well as reversals of these decisions, each of these points appears to have been struck down or otherwise shown to be invalid (see Rusco, 1989; Millett, 1989; Tom Luebben, personal communication, 1990). The date of supposed extinguishment of Western Shoshone title to the lands in these various decisions and reversals has vacillated from the arbitrary July 1, 1872, set by the ICC, to December 6, 1979, the date of the ICC award, to 1934, the date of the Taylor Grazing Act, to not at all. Throughout, the Treaty of Ruby Valley appears to have remained valid.

In 1985, because of the steadfast refusal of the Western Shoshone people to accept the ICC payment, the Supreme Court took up the very narrow question as to "whether the appropriation of funds into a Treasury account...constitutes 'payment' under Section 22(a) of the Indian Claims Commission Act ...", deciding in the affirmative (United States-v-Dann, 470 U.S. 39, 40-41, 44 [1985]).

The court did not go beyond this to decide the legal effect of this action on Western Shoshone land title, although the decision is interpreted by some, including the DOE, as extinguishing title. The decision apparently does preclude the Western Shoshone Nation (as a body) from further litigation. The following year, as if to further muddy the waters, the District Court ruled that "[t]he government has admitted that the 1863 Treaty of Ruby Valley is in full force and effect" (13 Ind. L. Reptr. 3158, Finding 4). Moreover, the Supreme Court in 1985 found that the Dann sisters held individual aboriginal title. Since other Western Shoshones are undoubtedly in the same position, the possibility exists for further litigation to establish the individual title of various persons and perhaps bands.[15] Most recently, the Ninth Circuit Court of Appeals has reopened the issue of title extinguishment, holding that the original ICC decision of a date of taking in 1872 should be considered valid, but also remanding the case again to the District Court for a final determination (United States-v-Dann, F.2d, [9th Cir. 1989]). To date, no final judgment has been rendered, and the Danns filed a petition for a writ of certiorari with the Ninth Circuit on July 5, 1989. Even if the petition is denied, the case must still go to trial in the district court, thus leaving the question open (Millett, 1989:20).

In September, 1991, in line with an earlier decision that the Dann sisters' right to run livestock on "public" land be limited to the numbers the family owned at the time of the passage of the Taylor Grazing Act (1934), the Nevada Bureau of Land Management

moved to round up the surplus animals and remove them from the lands. In October, 1991, in order to avoid a major confrontation with the Dann sisters and their supporters (including Citizen Alert, a powerful local environmental watchdog group), the BLM negotiated a settlement whereby the WSNC was given the power to police livestock numbers for the Danns. This decision by a federal agency further strengthened the position of the WSNC as a governmental body, seemingly again affirming the right of Western Shoshone people to regulate activities on their lands.

The Western Shoshone National Council succeeded in another case based on rights stemming from the Treaty of Ruby Valley, and because of it is further exercising some of the authority of a government. In December, 1986, the Council filed suit against the State of Nevada and its Director of Wildlife seeking recognition of treaty-based hunting and fishing rights for its members. On January 4, 1988, a preliminary injunction by the Federal District Court for Nevada went into effect. This injunction suspended the application of State fish and game laws to Western Shoshones hunting and fishing within the Ruby Valley Treaty territory (U.S. Dis. Court for Nevada, Western Shoshone National Council, et al.-v-Molini, CV-N-86-587-BRT). The Western Shoshone National Council has established a Hunting and Fishing Code that governs these activities (with a few exceptions where State law still applies), and has set up the Western Shoshone Wildlife and Plant Resource Commission to issue identification cards to individuals and to enforce the Code. This preliminary injunction remains in effect

in 1991 pending final determination of the Treaty issues raised in the case by the Ninth Circuit Court of Appeals (Millett, 1989:21; Rusco, 1989:18-20; 1990:12-14; 1991).

In 1990, in an action related to these regulatory rights, the WSNC authorized the roundup of wild horses on treaty lands near the Duckwater Reservation. The Council reasoned that given the seeming lack of control of these herds by the BLM, it had the right to remove surplus animals damaging the range and initiate a management plan for the herds. Surplus animals were caught and shipped to Texas for sale. The BLM confiscated the animals in Texas, but has chosen not to litigate the case given the complexities of the land issue. Nor has the agency pressed hard to collect grazing fees from Yomba, Duckwater and South Fork cattlemen who for several years have refused to pay them because of treaty rights (Rusco, 1991).

Thus, from various legal perspectives, it is not all clear that the DOE or federal government in general has the right to proceed with the Yucca Mountain project without clearing once and for all the title to the land or otherwise negotiating with the Western Shoshones. Under U.S. Indian law, extinguishment of land title can take place only through agreement with the Indians involved, by conquest, by a clear act of extinguishment by Congress, or as a result of purchase by the U.S. (Cohen, 1982:279-91). Since it is quite clear that none of the first three situations applies, that leaves only the last. Although the Supreme Court decision on the ICC monies may suggest that payment

(and hence, purchase) has occurred, in actuality no monies have changed hands. The effect of the Supreme Court opinion in the Dann case appears to be that Western Shoshone governments may no longer litigate to establish their title to ancestral lands, although individuals may do so. However, the decision was on technical legal grounds; no court has ever stated that the traditionalist arguments for continued ownership of most of the territory covered by the Ruby Valley Treaty are historically invalid. This gives the Western Shoshone National Council ample opportunity to press its claims before Congress and the general public, and in 1991, it was considering various actions.[16]

On September 28, 1989, Nevada Rep. B. Vucanovich introduced H.R. 3384 to establish a roll for the distribution of the ICC award to Western Shoshone individuals at the urging of a Salt Lake City attorney, as well as a number of disheartened Western Shoshones. The Western Shoshone National Council took a firm stand against this proposal, recognizing the dangers to its claims. In the Spring of 1990, hearings were held on the bill, during which the Western Shoshone National Council and others played a major role. The bill was not reported out of committee. A second drive is presently (September, 1991) underway to introduce a new bill for payment, although this has not actually occurred. However, the proposed bill (as did the previous one), carefully states that payment does not invalidate other land claims (E. Rusco, 1991). It is unlikely, however, that should such a bill pass, it would not have a negative effect on any further petitions for land.

Other WSNC activities pertinent to land claims and eventual legislation are a series of studies presently being conducted through a grant from the Washington, D.C. based Administration for Native Americans. Under this grant six planning units including various Western Shoshone reservations and communities have been established and attempts are being made to determine the future goals of each of these units (economic development plans, land acquisition plans, etc.) The ultimate aim of these studies is to produce one or more legislative packages to be presented to the U.S. Congress for passage. The Duckwater Shoshone Tribe has completed its study and has a package ready to be presented. Senator Harry Reid of Nevada was reviewing the materials as of September, 1991, and asking for comment from other interested parties. Treaty obligations and claims payments will doubtless play an important role in any final wording. The other five Western Shoshone groups are not yet ready to come forward with their packages.

In addition to the continued importance and effect of the Treaty of Ruby Valley for various Western Shoshone claims, it has other ramifications for the proposed Yucca Mountain project. The Nuclear Waste Policy Act of 1982, in recognizing the importance of consultation with tribal governments in the site characterization and determination process, set up a specific category of "affected Indian tribe(s)." By definition in the Act (Sec. 2), an affected Indian tribe is:

> any Indian tribe (A) within whose reservation boundaries

a monitored retrievable storage facility, test and evaluation facility, or a repository for high-level radioactive waste or spent fuel is proposed to be located; (B) whose federally defined possessory or usage rights to other lands outside of the reservation's boundaries arising out of congressionally ratified treaties may be substantially and adversely affected by the locating of such a facility.

The status of "affected Indian tribe" is to be granted by the Secretary of Interior upon review of these two criteria. To date, no tribes in Nevada have been so designated. Although under strict reading criterion (A) could be shown not to apply as the proposed repository is not actually on reservation lands, criterion (B) should be valid, given the status of the Western Shoshone National Council's legal claims. In an attempt to argue adverse economic and religious impacts on lands still covered by the Treaty of Ruby Valley, the Duckwater Tribe filed a petition for consideration of affected tribe status with the Secretary of the Interior on July 20, 1989 (Millett, 1989). As of June, 1991, the tribe had been told over the telephone that their petition was denied, but had not received any official letter to this effect (Jerry Millett, personal communication). Letters requesting consideration of affected tribe status were also sent in 1988 by the Las Vegas Paiute Tribe and the Moapa Band of Paiutes. Both were denied, again apparently based on a strict interpretation of both criteria. Although the Southern Paiute groups cannot argue from the basis of

treaty rights, the proximity of the proposed site and the ultimate transportation of the waste will affect reservation lands. DOE has suggested that issues related to transportation over tribal lands will be addressed "later" (DOE 1986c:7-42), but as of September, 1991, only some preliminary inquiries about a transportation corridor in eastern Nevada (along U.S. Highway 6) had been made. This route, if chosen, would have major impacts on the Duckwater Tribe within this study area, but also other Western Shoshone and Southern Paiute people in eastern Nevada. It is particularly unfortunate that none of the Nevada tribes have been granted affected tribe status under this project, as given the few laws and agencies in the state that are involved with Indian issues, each tribe will have to fight these battles on its own and without much help from state or local governments (see Rusco, 1991).

2.4 Cultural Themes: Mother Earth At Risk

As Douglas and Wildavsky (1982), have attempted to show, different peoples worry about different things. For some, it is war, pollution, unemployment, inflation. For others, it is land, family, crime, good vs. evil. Some take global perspectives; others more parochial ones. For yet others, there are still different possibilities. What is important to keep in mind, however, is that worries, or better, what might be considered risks, are culturally defined. What people tend to perceive as at risk at various times in history or in life comes from persistent cultural themes or more general world view. But explaining the world view of one group to another is not an easy task; getting

them to give it credibility is even more difficult.

As has been noted, many of the controversies both inside the courts as well as outside of them involving AIRFA, land title, hunting and fishing rights, treaties, and much more, are in the end clashes in cultural themes and world views. For the Western Shoshones and also the Southern Paiutes, what is at stake and what is specifically at risk should the Yucca Mountain waste repository be built is the Earth itself. Even site characterization, with its deep drilling and testing of many rock strata, is damaging to the integrity of Earth as a system. Traditionalist Western Shoshones have demonstrated through steadfast refusal to take claims monies (now amounting to over $56,000,000) that their responsibilities to their Earth come first. This is in the face of some very severe economic problems (see Section 3). Southern Paiute people, although their claims case was settled (probably in large measure because they did not know there was an alternative), also feel these responsibilities deeply.

When concerns are ranked by Indian people, environmental risks from the repository are perceived as significant, slightly below those involving family and personal health, and well above economic considerations (see 3.4). When people discuss the topic outside the formal structure of a questionnaire, it is also the risks to the land, the water, plants, and animals that are raised first. These feelings are deep-seated, and as noted, go back to old cultural themes: proper relationships to the land and resources. Not surprisingly, to desert people, water is exceedingly important.

The morpheme paa (pa-, 'water') is one of the most common in both the Western Shoshone language and the Southern Paiute language (Daley, 1989b; Sapir, 1931). It is found in countless placenames (springs, areas with/without water, lakes, seeps, etc.); it also occurs in the related term for human and animal blood (SP: paɨpi; WS: paopi). Focus in naming for plants and animals is on a highly specific level, with more than 250 forms occurring in each language (Fowler, 1972). Myths and tales from the time "when animals were people" also occur in the hundreds, with all proper instruction in human behavior and inter-relationships coming from them (Liljebald, 1986). As Hultkrantz (1966:131) once remarked regarding Great Basin Indian people, their religions show "conspicuous environmental conditioning." This is what is at risk, along with the deeply felt role that Indian people are responsible caretakers of the Earth.

In recent years, a number of Western Shoshones, including several members of the Western Shoshone National Council, have become increasingly vocal in their opposition to land-altering activities, including massive mining projects, the take-over of more and more land in Nevada by the military, and to all things nuclear. Although a major focus of their attentions has been on the Nevada Test Site, which is on their specific piece of Earth, some have felt the responsibility to protest nuclear activities nationally and internationally.[17] Western Shoshone people, including several leaders in the WSNC, have consistently picketed the Nevada Test Site, side by side with other environmentalist and

anti-nuclear groups such as the American Peace Test, the Nevada Desert Experience, and Nevada-based Citizens Alert [a member of the WSNC serves on the board of the latter organization]. They have been arrested on several occasions for trespass, although the WSNC issues permits to protesters to use Western Shoshone traditional lands (the NTS) for such purposes (Fowler, Hamby and Rusco, 1987; Rusco, 1989). For many, the proposed nuclear waste repository is an aspect of the larger nuclear issue, opposition to which is a part of their caretaker role. Although not all Western Shoshone people are moved to take this type of direct action, many sympathize with this position. The Western Shoshone National Council, representing by consensus its constituent members, also passed a formal resolution opposing the siting of the repository at Yucca Mountain (87-WSNC-02) as did the Duckwater Shoshone Tribe (88-D-22).

More recently, Southern Paiute people have begun to get involved as well. The Chemehuevi Tribe of California passed a formal resolution opposing the siting of the repository at Yucca Mountain (CHEM. R. 88-16) and the Moapa Band of Paiutes passed a resolution (88-M-4-19) regarding what the tribe considers to be appropriate mitigation considerations regarding cultural resources on these lands. In May, 1990, two Southern Paiutes, including the Chair of the Paiute Tribe of Utah, attended with three Western Shoshones, international meetings in Moscow, in the Soviet Union, seeking to stop nuclear proliferation. Although again, not all tribal members would feel quite this strongly or take such direct

action, it is an opinion that is gaining strength. It is not a position left only to the older generation; many younger people are actively involved. They all hope that someday, somehow, governments will listen and finally take them seriously; and for the right reasons.

Non-Indian anti-nuclear protesters are very pleased to have the company of Indian people in these as well as other environmental campaigns. For a long time, the perception of Indian people as proper caretakers of the land has been incorporated into the environmental movement in the United States (Callicott, 1990). The activities of Western Shoshone and Southern Paiute people, and especially the WSNC, is certainly in keeping with these perceptions and sentiments. At the same time, formal protest has been a source of annoyance to the DOE, and particularly the Yucca Mountain Project. The DOE has yet to recognize the WSNC as a legitimate type of governmental body, preferring instead to deal only with federally recognized tribal governments. At least one reason for this is likely the WSNC's open protest of the agency's presence on Western Shoshone lands as well as its position on nuclear testing. In 1991, the DOE attempted to diffuse some of the negative sentiment of Indian people in general toward the Yucca Mountain Project by hiring through one of its Yucca Mountain contractors a local Indian person to better express Indian views. As of September, 1991, relationships with tribes had not improved noticeably, nor had they with the WSNC. Whether or not perceptions of the agency by the general public are at all affected by these

activities is unknown, but should be further investigated.

3. SOCIOECONOMIC AND CULTURAL PROFILES AND SUGGESTED IMPACTS

The Western Shoshone and Southern Paiute reservations and communities within the study area can be expected to experience varying socioeconomic and cultural impacts should the decision be made to build the high-level nuclear waste repository at Yucca Mountain. In order to more fully assess and project these impacts, baseline data were gathered in each area, and field workers discussed with tribal administrators and concerned community members their hopes and plans for future economic development, housing growth, educational enhancement, cultural maintenance, etc. These data were then compared to available historical data on changes in these aspects for the groups over the past three to four decades (Fowler, Hamby and Rusco, 1987; Hamby 1988; 1989; Rusco 1988; 1989). Although the historical information is far from complete, and contemporary socioeconomic data are subject to rapid change, in combination they suggest certain trends for the future that could be affected should the waste repository be built. Given that socioeconomic and cultural conditions differ based on the ethnic and regional ties of the communities, they will be discussed separately for the Western Shoshone and the Southern Paiute.

3.1 Western Shoshone.

The majority of the Western Shoshone population in the study area is concentrated in three places. Two are reservations in Nye County: the Yomba Shoshone Reservation and the Duckwater Shoshone Reservation. The third is the Timbi-Sha Shoshone Indian Village

at Furnace Creek, inside Death Valley National Monument, California. Yomba is about 150 miles northwest of Yucca Mountain and 290 road miles. Duckwater is roughly 340 road miles north-northeast and 290 air miles. Timbi-Sha is closer, at roughly 100 road miles southwest of Yucca Mountain or 30 air miles. In 1991 their total resident population was about 291 persons (enrolled membership 675), which is more than their present economies and land bases can fully support (see Appendix II for statistics).

3.1.1 General Economy

The Western Shoshone groups profiled here are rural populations, and their fortunes are tied most closely to those of the rest of rural southern Nevada and eastern California. The economies of the Shoshone people at the two Nevada reservations are dependent primarily upon ranching, and the reservations, each slightly under 4,000 acres, are both too small to allow profitable operations for those presently involved let alone for those who wish to earn a living in this way. Off-reservation grazing on other federal lands is required and practiced, but the acreage is still too small to allow all tribal members who wish to ranch to do so. The Timbi-Sha people do not have federal trust land even though they are a federally recognized tribe. They occupy a 60 acre tract within the Monument, and activities on it are strictly controlled by the National Park Service.

One economic development option for the future considered by all three Western Shoshone groups is to get involved in tourist-related businesses. For the Timbi-Sha of Death Valley, this form

of economic development is at present their top priority. The tourist market already exists, and they are presently frustrated by their lack of direct involvement in it. They would like to expand their village to Highway 190, the main road through Death Valley, putting in a motel, restaurant, store, and/or gasoline station. However, without trust lands, they are required to get Park Service permission for expansion. Thus far, negotiations in that direction have not been successful, but efforts are continuing. The Nevada reservations would need to develop both the market and the facilities. Duckwater has considered developing its large hot spring into a camping area and spa. Yomba would like to develop camping facilities for hunters, fishermen, campers, and hikers. A few residents already derive a small income as outfitters and guides for these individuals.

Public perception of risk from nuclear radiation or transportation accidents in southern Nevada and California could adversely affect the success of any and all of these economic ventures. Should significant numbers of people decide not to vacation in or visit Death Valley National Monument, any attempt by the Timbi-Sha tribe to develop or maintain tourist businesses would undoubtedly feel the impact. Although Death Valley is often a destination facility, a number of people do combine visits to Las Vegas with a stop there. Adverse impacts on the Las Vegas tourist industry thus would be felt in Death Valley as well. Even without their own tourist businesses, residents of the village who work for others in the industry might lose their jobs in a decline,

given that most of these jobs do not require a high degree of skill or training.

Although perhaps less drastic or predictable, a decline in people willing to visit Nevada Shoshone areas for outdoor recreation because of the presence of a nuclear repository would also be significant, if current plans reach fruition. Perceptions of radioactive contamination of the land or its plants or animals through leakage into the water or air could cause people to think twice about making these areas destinations. Any developed or developing businesses would then feel the effects.

Tourist industries are not the only business options being considered by the Duckwater and Yomba tribes. Both would like to expand ranching through the acquisition of more tribal lands. Duckwater hired a consultant who also suggested such enterprises as mining or oil refineries, and cottage industries involving piecework in clothing. The first two would involve capitalization, and the tribe presently lacks the funds. Although these industries might not be adversely impacted by the proximity of a repository, expansion of the ranching enterprises of both reservations could be. Again, should land or water contamination occur, cattle would be affected. Even perceptions by outside markets that there might be contamination could impact cattle sales and thus the present economy as well as any future expansion. Contamination would not have to occur on tribal lands directly; it could equally affect grazing allotments on BLM and Forest Service lands, which for both tribes are closer to the proposed repository and highly significant

(see Millett, 1989). Given that a number of people still hunt game animals and birds and gather plant foods (such as pine nuts) and medicinal plants on these lands, contamination could also affect this aspect of their economy as well.

3.1.2 Demography

The present resident population of the three Western Shoshone areas is slightly above 260 tribal members, not including some non-Indian and non-Shoshone spouses of members. In round figures, about 120 live at Duckwater, 90 at Yomba and 50 at Death Valley. At Duckwater and Death Valley, there are slightly more women than men (see Appendix II, Table 1a). The population is predominantly young at both places as well, with roughly 40 percent of the residents aged 16 or younger. At Yomba, men outnumber women, but again, 40 percent of the population is 16 or younger.

Population growth in residents in the next few decades will undoubtedly be tied to economic factors on the reservations. At all three locations, some inevitable population growth will come when those now under 20 start their families, unless the majority choose to leave the reservation or village at maturity. That they will leave is unlikely, unless they choose to go for educational reasons, to seek jobs outside the area should local job opportunities not improve, or there is a perceived risk to health should they remain. A large number likely will choose to remain or to return, as these areas are their homes and they strongly prefer them.

Another source of population increase may come from outside

the areas in the form of presently enrolled tribal members choosing to return to their family homes after an absence (at present, a little less than one-half of the enrolled members live on these three reservations).[18] In the past, such increases have occurred at Duckwater and Yomba with the advent of new housing. In the event of tribal economic prosperity, many who wished all along to live there would come home. Even without the prospect of jobs, some who were unsuccessful in finding suitable employment off the reservation will return because of the security of family. Yomba is currently home to a number of young, single men who are victims of this process. Alcohol abuse is high among this group. Adverse impacts on the population trend as well as on natural increase could come about again if the lands are viewed as contaminated by a nuclear presence. Many people already feel that they have absorbed considerable radiation from above-ground nuclear testing, and the waste repository is viewed as having the same potential.

3.1.3 Housing, Household Size, and Composition

At Duckwater and at Yomba, the current housing is adequate in both number and quality for the 1991 population (see Appendix II, Table 2). The mean household size of 3 persons in 1988[19] is significantly lower than in the past (1980: 5.2 [Hamby and Rusco 1987:74, 82]), and the reduction is due to the increased housing. Since the arrival of electrical service in both places in the 1970s, a combination of renovated original reservation houses, individually-owned HUD housing, low-cost rental HUD housing, and privately purchased mobile homes has accumulated for residents.

Timbi-Sha has only renovated adobes and mobile homes; HUD will not build new houses unless the tribe has its own land.

Whether the available housing will remain adequate for the near future depends on the stability of the population. If the population grows, household size will increase first, as there is a strong feeling that extended families are appropriate, especially if the need is there. Although this sometimes puts a strain on the household, the importance of maintaining proper and close relations with kinsmen far outweighs any inconvenience.

If a population increase should come about as the result of an increase in reservation land base and tribal economic prosperity, a housing shortage could probably be relieved either by tribally-funded or privately-purchased new housing. For Timbi-Sha, no new housing is presently possible without the acquisition of trust land or a change in Park Service policy which now restricts the number of houses to those presently there. It is unlikely that the Yucca Mountain project will cause significant in-migration to any of these communities as it is too far from them for any to be used as a commuter base. But it might cause an out-migration if health and economic risks become too high. Given that young people would be the first to leave, reservations could become places for only the old and infirm. Such a result would also cause changes in the family structure, at present the most cohesive aspect of society.

3.1.4. Labor Force Characteristics

For all of the Western Shoshone groups in the project area

unemployment is customarily much higher than that of the general population; income level is always lower (see Appendix II, Table 3a). The 1991 employment situation for all the Western Shoshone people was poor; while Duckwater was experiencing a small and probably temporary mining boom in the area that was employing several men as laborers, unemployment was particularly high at Yomba and at Death Valley.

Most jobs held by Shoshone workers in 1991 required no specialized training or skills (see Appendix II, Table 4). Exceptions were some of the administrative, professional, and clerical positions with tribal governments. At Duckwater, for example, the health center is headed by a member of the tribe who is a Registered Nurse; the tribal chair is also tribal administrator; and the clerical positions also require specific training. In some cases in all three areas, on-the-job training has permitted tribal members to fill positions for which they lacked some of the necessary skills. But some professional positions are still held by individuals who are not tribal members. The tribes, with the help of federal and other funds, are the big employers on the reservations and at the village.

The next few decades could see a decline in the already precarious employment situation for the Shoshones. Due to the high degree of dependence upon federal funding in tribal administrations, any cuts in federal spending in these or social programs would have a severe impact. Such cuts are at least conceivable, should there be significant cost overruns in the

repository program or other federal undertakings. Indian people have found in the past that when federal spending priorities shift, they and other minorities suffer most.

The employment situation at the two Nevada reservations will probably not improve due to the Yucca Mountain project. The distance to the locality is too great for a daily commute. Also, reservation residents do not have the educational background or training that would qualify them for specialized jobs with the repository project. Although such training might be acquired, the reservations would have to be targeted specifically for it and for resulting jobs before there would be any benefit. Given the distances involved, trained individuals would have to relocate for work, something that can and sometimes does happen. However, this in turn has impacts on any families left behind. While the Death Valley people might choose to make a very long commute to the project site (especially if there is access through Lathrop Wells), their educational situation is the same as that of reservation residents. They, too, would have to be specifically targeted for training and jobs before they would realize any benefit. With or without the Yucca Mountain project, if there is not a significant improvement in tribal business ventures and job training, the employment picture for any of these groups is not likely to improve.

3.1.5. Education

Educational levels for the Western Shoshone groups are low: 30 percent of the present population at Death Valley and 45 percent

at Yomba did not finish high school. No current figures are available for Duckwater, but in 1980, 40 percent of people over 25 had not completed high school (see Appendix II, Table 4). The present level of education among the Shoshone leaves many ill-prepared for jobs in higher-paid categories. As noted, without specific training they would have difficulty taking advantage of employment opportunities even if such were to materialize as a result of the Yucca Mountain project.

The quality of the education received by Western Shoshone students varies, but is generally substandard. Due to their geographic isolation, Yomba's elementary students and the high school students of all the groups must commute daily at least one hour each way. Death Valley and Duckwater elementary students both go to school close to home, the Duckwater children in a tribally operated school. For the high school children, the commute lowers both their participation in extra curricular activities and their enthusiasm for finishing school. The schools they attend are all in very small towns, and lack many facilities and curriculum variety.

At Duckwater and Yomba, the trend seems to be to greater emphasis on education. At Duckwater, one success of the tribally operated grade school seems to be more enthusiasm for education, and the tribe points with pride to most children completing high school and many wanting to on to college (in 1988, 10 tribal members were away at colleges and 8 were taking college courses through correspondence or TV). For both Nevada groups, the

emphasis on education should improve the younger people's chances in the job market. In both cases, however, unless they take their education off reservation to find jobs, or unless the tribes are able to begin new economic enterprises that will make use of the work force at home, there may be no great impact upon the employment situation at either reservation. At Death Valley, although no greater emphasis on education is evident, jobs for trained individuals might be more readily available at least seasonally with the Park Service or tourist industries.

3.2.6. Social Organization and Values

The primary organizing structure for the Shoshone people is kinship. Economic and political interaction is first along family lines. Kinship creates ties of varying strengths between nearly all residents of each reservation or village, because nearly all families are related in some degree to all others. This relatedness extends between reservations and tribal groups as well: people can easily name people they are related to in many parts of the Great Basin, by ties from the past as well as the present. For younger people (under 25 years of age) who do not speak their native language or fully comprehend its kinship terminology, these relationships may be known more generally than specifically. Nonetheless, when strangers meet, it is quite common for them to first establish common relatives, as this defines appropriate interaction.

Living in small reservation populations among relatives often means that young people have to seek marriage partners outside

their local community. The result can be marriage to non-Shoshones and to non-Indians, producing children who are nearer the lower limit of blood required for inclusion in tribal membership (usually 1/4 Shoshone required; 1/2 at Yomba) or for federal programs (usually 1/4 Indian). Increases in reservation size and population would increase the pool or eligible marriage partners for the generation marrying in the 1990s and 2000s. This would result in continuation of Shoshone cultural cohesiveness that otherwise might be diluted or lost.

As noted above, increased housing on reservations has resulted in the reduction of numbers of persons per household in the last 10 years. Without doubt, more couples are choosing to live in a new residence rather than that of one of their parents, as might have been more typical 50 or even 20 years ago. Nonetheless, a parent or sibling household may be quite nearby, and weekends often find family members in residence for a visit. In 1987, two thirds of reservation households were headed by married couples -- one third by single persons (Hamby and Rusco, 1987:77). An additional one-quarter of households contained a person other than the married couple and children -- usually a grandparent. Roughly one-third of single person households also consisted of a grandparent plus a grandchild. In many Shoshone families, grandparents still take an active role in childrearing. This allows parents to participate more fully in work outside the home. It also benefits cultural cohesiveness.

Cultural cohesiveness is important to most present-day

Shoshone parents and is even more important to the elders. Although efforts have varied, each Shoshone community sees cultural and particularly language maintenance in the future as an important goal. At present, native language fluency is decreasing rapidly, with few people under the age of 50 having any speaking ability, although they might understand some sentences and/or vocabulary. The last monolingual (by preference) speaker in these particular communities died in 1989. Duckwater, through its tribal school, actively supports the principal of bilingual and bicultural education, although funding and staffing are not always sufficient to meet their goals. Yomba and Timbi-Sha are likewise interested in learning from their tribal elders and would like to begin oral history programs, but lack funding.

All three groups, as well as Western Shoshone people from elsewhere, participate in the Shoshone Traditional Gathering, a yearly retreat held at Duckwater since the mid 1980s as a time of renewal of traditional beliefs and values and as an opportunity to instruct young people in these in formal and informal ways. These gatherings, closed to the non-Indians, are ample evidence of the people's concern for tradition, and of their desire to perpetuate traditions in the future. Activities include traditional prayers, dances, singing, and games. The gathering usually attracts 300 people or more, depending on other activities at the same time. Although begun in the mid 1980s, it is seen by many as a continuation of spring and summer festivals commonly held in pre- and post-contact times (Steward, 1938). Each year the gathering

has attracted Shoshone people from greater distances (Idaho, Utah, Wyoming), although attendance has fluctuated.

Land and its proper use and care dominated discussions with people about the Yucca Mountain project (see verbal responses to risk perception questionnaire, Hamby, 1991). There is consensus that putting nuclear waste into the earth violates the traditional Shoshone teachings and will disturb the natural balance and bring harmful consequences. It is viewed as particularly harmful to water, plants, and animals, but also people. Should the repository be built against Shoshone wishes, years of violation will result in cultural tension for the people. With the added stress of projected accidents, this tension will be increased, and could seriously harm the people's general feelings of well-being.

The overall strength of Western Shoshone adherence to these cultural values can only be measured by feelings such as these, and by statements made on various occasions.[20] These feelings of respect for and practice of traditional beliefs have little to do with other religious affiliations, as some of the most traditional values are also espoused by persons affiliated with various Christian churches. Persons also come to hold traditional values and beliefs at different points in their lives -- perhaps moving away for a time, and then returning. But overall, the sense of persistence of a basic world view that involves deep spiritual commitments to the Earth and its resources dominates attitudes and actions.

3.1.7. Political Structure and Relationships

Each tribe has a five-member council that is responsible for making all the decisions affecting the tribe and its lands. All of these tribal council members, including the chair, serve their terms without pay. As time has gone by, the complexity of the issues facing councils has increased, as has the time required to do the job. Duckwater has made the position of chairman coterminous with the paid position of Tribal Administrator, so that the elected chair can afford to devote full time to the job. The chairs at Yomba and Death Valley are still not paid.

As tribal populations increase over the next few decades, and as tribal government becomes increasingly complex, it will be necessary for all groups to have some full time paid government and management positions. In order for tribes to deal effectively with the political and economic issues, these positions will require more education and business training. These changes could alter the location of the seat of authority from the tribal elders to a new, youthful and educated group, thus bringing about another significant cultural change. Tribal councils presently are strained by commenting on various proposals, including the EIS and EA statements regarding Yucca Mountain. They attempt to involve elders in these and other processes as much as possible, but again the complexities of the issues involved and the limits on comment periods stress the system.

All three of Western Shoshone groups (as well as many others) have some relationship with the Western Shoshone National Council. The Council acts on behalf of a significant number of Western

Shoshone groups and people in matters involving pan-tribal concerns. The Council presently has a closer relationship with Duckwater (but see note 14), as it is headquartered there, but a number of individuals from the other Shoshone tribes also take active roles. The effectiveness of the Council in dealing with national issues and with non-Shoshone people and governments has increased in recent years (see 2.3) and that trend is expected to continue. The Council has taken an active stand against the Yucca Mountain repository, including the passage of a formal resolution, and the active involvement of its members in anti-nuclear campaigns. The Council has a funded position through the Nevada Nuclear Waste Projects Office to work on tribal concerns involving Yucca Mountain. The staff person meets with the State and Local Government Steering Committee and the Technical Review Committee, attends various DOE briefings, and speaks with tribal leaders in the larger region on these issues.

Tribal interactions with non-Indian local groups and state and local governments in their areas vary, but are generally not of high quality. Part of this is the result of the unique legal position of Indian tribes vis a vis state and local governments. It is not anticipated that local governments will take a more active interest in tribal concerns should the nuclear waste repository be built (see Rusco, 1991, for details). Many conflicts presently arise over the amount and quality of services provided reservation and village residents by local governments. In some cases, confusion resulting from jurisdictional question about law

enforcement on Indian lands, health care, and other issues, has resulted in a deterioration of services to persons as well as in inter-governmental relationships generally. Isolation from services has also been another factor. Duckwater has responded to its isolation by becoming the provider of many of the most essential services under contract with the IHS and BIA. In the case of some of these services, such as emergency medical care and law enforcement, the tribe makes services available to the surrounding, off-reservation population as well. Duckwater's emergency medical team is a first responder for northeastern Nye County, and its deputies are cross-deputized in the County. Should nuclear waste transportation be across U.S. Highway 6, the Duckwater personnel would be the primary accident response unit, and would need special training.

Residents of Yomba must go to Fallon, Walker River, or Reno for some IHS and BIA services, or depend on Nye County, which seems to provide little except basic educational services. Timbi-Sha is often in conflict with the Park Service over law enforcement issues. Emergency health care is provided by the Park Service, but routine and long-term medical care through the IHS must be obtained in Bishop or some other distant locality. Specific data on health are difficult to obtain, but Western Shoshone self-identify problems of diabetes, high blood pressure, and substance abuse (alcohol, drugs) as primary. Communities are attempting to combat these problems locally, but consistency of funding is often a problem.

In at least one case, the Nevada Shoshone joined forces with local communities over a large issue similar to the Yucca Mountain project. This took place when the possibility of the MX missile system threatened Shoshone and private lands. This will probably not happen in the present case unless accidents in the future create among the non-Indian communities a much more negative view of the repository than they hold at present. If present attitudes continue, the Yucca Mountain project will be one more divisive issue between the Shoshone and their non-Indian neighbors. On the other hand, the Timbi-Sha community may find itself in agreement with the Park Service on this issue: at present the Park Service is questioning the impact of the project on its water as well as tourism.

Tribal interactions with non-Indian national and international organizations is largely limited to the anti-nuclear groups (see 2.3). Interactions with state and national Indian organizations (beyond the WSNC) are also limited. Some individuals affiliate with the Seventh Generation Fund, a national and international organization of Native peoples who promote self-determination, basic human rights, and sound environmental management policies. People have attended workshops and meetings sponsored by the National Congress of American Indians on nuclear and other issues. Leaders are generally aware of the workings of the Nevada Indian Commission, and the Inter-tribal Council of Nevada, and they have been involved with their programs through the years.

3.2 Southern Paiute

Three Southern Paiute groups are most directly affected by the Yucca Mountain repository Program. They are the Moapa Band of Paiute Indians, who occupy the Moapa Reservation; the Las Vegas Tribe of Paiute Indians, on the Las Vegas Indian Colony in the heart of downtown Las Vegas; and the small, informally organized Pahrump Band made up of residents in Pahrump and Lower Amargosa valleys. The first two are in Clark County; the latter in Nye County. Moapa tribal headquarters is approximately 106 air miles (165 highway miles) east-northeast of the proposed Yucca Mountain repository site. The Las Vegas Colony is approximately 109 highway miles southeast of the site (91 from its new parcel); and the Pahrump group is approximately 80 highway miles (59 air miles) southwest. The number of resident individuals in member households in these three groups is 272 in 1991. There are 378 enrolled members.[21] They are part of a larger Native American population in urban Clark and southern Nye counties estimated at slightly under 7,000 individuals (see Appendix II for statistics).

3.2.1 General Economy

Unlike the majority of the Western Shoshone population which is rural and dependent largely on ranching (except Timbi-Sha), the Southern Paiute groups are more dependent on the urban economy of Las Vegas. Although the Moapa Reservation, some 72,000 acres, is roughly 55 miles northeast of Las Vegas, many residents see Las Vegas as their primary source of goods and services, and at least some commute there to jobs. The Las Vegas Colony is entirely urban, given that its downtown lands (12 acres) are completely

surrounded by urban businesses. Even Pahrump, although more rural in setting, is highly dependent on the general Las Vegas economy. Some members commute to jobs in Las Vegas, along with many of their non-Indian neighbors. They, too, look to Las Vegas for many goods and services not available locally. Although more Indian people in these three areas are employed than are rural Western Shoshones, employment and income levels are still much below those of non-Indians (see Appendix II, Table 3b).

While most of the income for Moapa and the Las Vegas Colony comes from off-reservation wage employment, both groups have small tribal enterprises that provide employment opportunities for tribal members and some tribal income. Moapa operates a convenience store near its main settlement, and a larger smoke shop and fireworks outlet on Interstate 15 on tribal lands. Las Vegas has a smoke shop with attached convenience store and a small graphite company (Nuwuvi Industries) that operate in the colony and a second smoke shop on its 3,840 acre parcel 18 miles north on U.S. Highway 95. In addition, there are on-reservation tribal administrative and maintenance positions, partially funded by federal grants and contracts. But tribal positions, which depend on annual fund applications, are subject to cancellation or change with little notice. Relatively large holdings of trust land by both tribal groups will permit the expansion of tribal business and residential facilities. The situation of the small band in Pahrump, is somewhat different and will be discussed separately.

The success of tribal enterprises is dependent upon a healthy

local economy. Tourist purchases, which were not a major factor in the Las Vegas Colony retail sales, but which have accounted for as much as 20 percent of Moapa tobacco and fireworks sales, are expected to increase in importance over the next two decades. This is attributable to improvement and additions to the tribal enterprises capitalized by revenues from these tribal businesses. Because of the importance of smoke shop revenues in the tribes' attempts to become economically independent, tribal councils are apprehensive about any action taken by state government that would tax or otherwise restrict their tobacco sales.

Both tribal groups can be expected to begin implementing planned expansion of their highway businesses to attract motorists and truck drivers. Among proposed additions to the existing smoke shops and the fireworks outlet are service stations, restaurants and/or fast-food services, and possibly craft shops offering locally produced items. Which of these facilities will be added in the near future depends upon the amount of additional capital accrued by the tribes or the availability of outside developers. These developments will increase both groups' dependence on the tourist trade, further linking their economies with that of Las Vegas. Should either the reservation or the colony choose to develop a gaming facility, tribal involvement in tourism would be even stronger. Any downturn in that economy because of the nuclear waste repository will impact the tribal enterprises as well. Given that major business expansion opportunities also will be along proposed transportation routes for nuclear waste (Interstate 15;

U.S. 95), any transportation accidents or other problems will also affect tribal businesses. One possible benefit of the project for the Las Vegas tribe might be increased use of its U.S. 95 smoke shop and facilities by worker traffic commuting from Las Vegas.

The small number of service jobs available in the Moapa Valley in 1988 may increase over the next few years, but are unlikely to bring about any major economic improvement on the reservation. The principal local off-reservation employer is the nearby Nevada Power plant which operates under a lease agreement with the tribe. The 12 jobs open for reservation people is unlikely to decrease in the near future, and if the plant is expanded, may increase slightly.

Programs of job training in conjunction with guaranteed job placement and various kinds of support (child care, etc.) were perceived needs on the part of the Moapa Reservation and Las Vegas Colony residents in 1988. Such programs depend on better federal funding via the BIA or another agency, as well as continued growth in the local economy. Should this take place in connection with the construction or operating phase at Yucca Mountain, it could have a positive economic impact, but Las Vegas Colony efforts in 1988 to obtain information from DOE that would facilitate the planning of appropriate vocational training were unsuccessful. Commuter distances for Las Vegas and Pahrump residents would be quite reasonable. Moapa is a little farther, but some might choose residence in Las Vegas during the week and home visits on weekends if the guarantees were sufficient.

The economic status of the small rural Pahrump Valley Indian

population is related to their ability to find employment in the valley or within commuting distance. Population growth in Pahrump Valley should the Yucca Mountain project go forward is most likely, and thus there may be an attendant increase in the number of local jobs should additional services be required. This might result in some additional employment of Indians, but available jobs may not be secure or provide enough inducements for relatives of current Indian residents to return to Pahrump from various reservations where they now have better, lower-cost housing and other benefits. Increased growth will have other effects on the local economy: a larger market may reduce prices for food, clothing, gasoline and other necessities, but will undoubtedly cause housing costs to rise. As with Moapa and Las Vegas, special job training that would enable members of the Pahrump Indian work force to obtain employment at Yucca Mountain would benefit some households, but again the populations would have to be specifically targeted.

3.2.2 Demography

The population of the Moapa Reservation, Las Vegas Colony and Pahrump Band is expected to increase gradually over the next few years, based on current trends (Appendix II, Table 1b). For the Moapa Reservation, the growth rate has slowed in recent years, due to some out-migration for employment. Las Vegas Colony underwent a sharp decline in the 1980s due to lack of lands for new residences. With the new lands (the U.S. 95 tract), and increased numbers of houses, that trend has already reversed. The population of the Pahrump Band should remain more-or-less stable unless there

is an influx for new jobs due to Yucca Mountain. The ratio of males to females in all three areas is roughly the same and is expected to remain such. A currently low percentage of retired individuals on the Las Vegas Colony should increase as the present population ages. Unless employment opportunities and housing conditions at Pahrump improve, retired individuals over 60 are likely to continue to be over represented in that population.

3.2.3 Housing, Household Size and Composition

Moapa has had successful HUD housing projects over the last several years and thus greatly improved the housing conditions for its members. Recently, a low-income rental development has also brought some non-Indian residents to the reservation. Las Vegas has had an acute housing shortage on colony lands for several years, causing some out-migration. The recent completion of 10 HUD homes on the new lands north of the city has improved the situation for members, but increased the commute. Land on the Colony proper will remain in short supply, with most present residents firm in their commitments to retain their present property rights. The shortage of housing, particularly at lower rents or with an option to purchase, is the greatest obstacle to population growth and improving economic conditions for any Indian people who choose urban Las Vegas. Worker influx for construction, should the Yucca Mountain project go forward, may make the situation worse; although present population growth in Las Vegas is so rapid that it is hard to see the situation getting much worse. The Pahrump Band, lacking federal recognition, trust land and an accordingly strong claim on

federal trust obligation, is unlikely to improve its housing situation in the near future. Approximately 25 percent of the people there live in sub-standard housing units, although some do own their own land.

Mean household size is approximately 3.5 on the reservation and colony. It has lowered over the past two decades because of major housing improvements. The somewhat smaller household size in Pahrump Valley is due to the high proportion of retired persons living alone or with one or two grandchildren. Household size would be expected to increase in Pahrump and Las Vegas should relatives find employment at Yucca Mountain during the construction phase of the project. Such increases are viewed as acceptable, even though they put certain strains on the households.

3.2.4 Labor Force Characteristics

Over the past two decades the educational level of the labor force has been increasing for both the reservation and colony populations (Hamby and Rusco, 1987:91-95). Clearly related to this trend is an increase in the number of people employed (male and female) and the fact that both individual and household incomes have also increased (see Appendix II, Table 3b). Incomes are still lower than for most non-Indian segments of the population, however. Rates are likely to remain higher for Las Vegas residents than the two rural communities: Pahrump and Moapa. Moapa's residents, however, have a slightly higher educational level than those of the Las Vegas Colony. In the recent past Indians in Nevada have been underemployed in categories that are the most prestigious and best

paid, and over represented in labor and service categories (Knack 1986:587; see also Appendix II, Table 5).

If negotiations with Nevada Power continue to be successful and jobs in new industries open, the mean income of Moapa households is likely to increase until it approaches the mean for other residents of rural Clark County. Increased incomes on the Las Vegas Colony are likely to be correlated with the increased availability of better employment training there; Pahrump incomes are likely to remain more-or-less stable.

3.2.5 Education

In all three Native American communities, decreasing secondary school drop-out rates and an apparent increase in the numbers of young people entering college or other post-secondary education or vocational training suggest some upward mobility (see Appendix II, Table 4). If these individuals are to remain in their home communities at Moapa and Pahrump, it will be necessary for new jobs to be created. Otherwise, more Moapa and Pahrump residents will choose to commute to Las Vegas, or to move there and become part of the growing urban Indian population. Should tribes be successful in expanding businesses, more employment opportunities in managerial and/or technical categories may become available; but underemployment could continue if expansion is not in the right direction.

3.2.6 Social Organization and Values

As among Western Shoshone people, the family remains the strongest and most cohesive unit in Southern Paiute society.

Families, including extended families, often with a grandparent, are primary economic units, expanding household membership as the need arises. This expression of traditional values remains strong and is likely to continue. Attachment to land, especially reservation land in the case of Moapa, is also very strong. Approximately 50 percent of the Moapa Band members live on the reservation, and many return for short or long-term visits. Fewer Southern Paiute individuals are involved in traditional hunting and plant gathering than is the case among the Western Shoshone. Nonetheless, many people still maintain a deep respect for the Earth and its resources, and feel equally strongly that the Yucca Mountain project is likely to violate them. There is a small, but committed group at Moapa that is much involved in fostering the learning of aspects of the traditional culture, including the use of plants, the manufacture of basketry, continuation of dances and music, etc. Most people still attend traditional Mourning Ceremonies wherever they are held in Southern Paiute country, and request them in spite of expense ($2,000 to $4,000) when a family member dies. Moapa, at least, would like to begin an oral history project with its elders and a native language program. (At present, only about 15% of the tribe has any native language fluency.)

The Moapa tribe received a grant in 1990 from the National Park Service to further some of these aims. In connection with this grant, a five-member tribal Historic Preservation Commission was established on February 9, 1991. The commission has already

received training in some preservation aspects, and intends to study and protect historic and archaeological sites on its reservation and traditional lands. It will also be participating in the future in reviews of environmental impacts of projects proposed for those lands, including the Yucca Mountain project.

Las Vegas is less committed to these types of programs, largely because the population has already lost most of its elders (there is no one in the Colony over age 65). A few individuals participate in a traditional basketry group with people from Moapa, and the colony sponsors a yearly pow-wow and other cultural events. The pow-wow attracts more than 1,000 people each day, including many Las Vegas urban Indians.

Family members tend to share the same values, and most individuals find their closest friends within their immediate kin group. In some cases, young adults differ from their elders somewhat in their attitudes, including toward the proposed waste facility. In these cases, some young adults either see potential economic benefits or they believe that the building of the facility at Yucca Mountain is inevitable and they are resigned to it (see 3.3). Additional family dissension, such as might occur if there were an actual condition of risk brought about by transportation accidents on or near tribal lands, could affect the strongest force for social cohesiveness in the tribal populations.

Persistence of cultural values for persons, however, as with the Western Shoshone people, is difficult to measure precisely. Some of the younger members of the tribes most in favor of change

in 1986 are now (1991) the persons most vocal about their caretaker role vis a vis the Earth. Again, as with Western Shoshone people, persons often return to traditional values at different points in their lives. Although many of the Southern Paiute people in southern Nevada are Mormons, adherence to this faith does not interfere with most traditional cultural values.

3.2.7 Political Structure and Relationships

On both the reservation and colony, tribal business is conducted by an elected tribal council, numbering five individuals. Paid administrative assistants to the councils have become increasingly important in recent years as the tribes have undertaken economic development programs. The tribal chair at the Las Vegas Colony is a full-time salaried position, but this is not the case in Moapa. However, salaries for tribal administrators, administrative assistants, and other support personnel are low when compared to other local governments or the private sector. Payment of council members commensurate with their responsibilities in planning and overall administration of tribal enterprises and other programs might be required in the near future. More paid positions on councils would probably result in the attraction of more candidates. But tribal incomes will have to increase before this can occur.

At present, most tribal members attend council meetings or communicate with council members only when there is a crisis or when a council decision is highly controversial. Councils are vulnerable to acrimonious criticism and even to recall, when they

make unpopular decisions. The reported consideration in 1989 by the Moapa Council of the reservation as the site for a manufacturing plant for a rocket fuel component is an example of such a controversy. Harsh criticism of council members for considering this potential economic development proposal included threats to start recall petitions.

The Las Vegas Colony has responded to the Yucca Mountain repository program by appointing council liaisons with both the DOE and NNWPO study teams and requesting their consulting attorney to reapply for affected tribe status. They made preliminary inquiries of the NNWPO for a tribal study, but have not entered into a formal agreement. The Moapa Reservation has contracted with NNWPO for a tribal study and has employed a tribal member to work on this since 1988. As with the Western Shoshone National Council employee, the Moapa coordinator attends State and Local Steering Committee meetings, Technical Review Committee meetings, DOE briefings, and other activities. Overall, however, the Southern Paiute people have been less involved in vocal opposition to the Yucca Mountain Project than have the Western Shoshone, as represented by the WSNC.

The rural, informally organized Pahrump Band, currently not federally recognized, has no legal status as a tribal government. If this group is successful in applying for federal recognition during the next few years as has been suggested, their council would be able to obtain some programs provided by the federal government as part of its trust responsibilities. Lacking an independent land-base that would permit economic development,

however, their council's role would continue to be somewhat restricted, as is that of the Timbi-Sha Shoshone of Death Valley.

Various public services and facilities are provided by the tribes alone or in cooperation with federal or local governmental entities. Tribally administered programs on the reservation and colony are partially or completely funded by federal agencies or by private foundations. Such programs are the providers of most health, welfare and other social services, as well as the maintenance of housing, streets and roads and, in the case of the reservation, irrigation.

Reservation health and welfare programs are perceived as vulnerable to additional cuts as the increasing costs of hazardous nuclear waste disposal threaten federal deficit reduction. Current problems with IHS physician and hospital services (for much of 1988 to present available only on an emergency basis) have caused tribal employees to ask for health insurance, presently not offered as a benefit. If this situation continues, it will put an additional strain on tribal enterprises. Although no specific data are available on health conditions on either the reservation or colony at present,[22] alcohol and drug abuse are said to be problems of some concern, as is diabetes and high blood pressure. There is also considerable concern about "down-winder" consequences, as affecting cancer rates.

Some public safety programs (particularly fire and police protection) are provided wholly or in part by the city of Las Vegas, Clark County, or other non-reservation political entities.

Assuming funding is stable, programs should be maintained at current levels. The increased city, county and state revenues expected to be generated by construction of the nuclear waste facility at Yucca Mountain are not seen by reservation and colony residents as offering significant benefits to them in the form of direct services.

The Pahrump Valley Indian population is largely dependent upon local public services and facilities. Some IHS and BIA services are offered to those who are on tribal rolls of Las Vegas Colony and Moapa Reservation; IHS services are available only in Las Vegas. Some locally or county-provided services may improve if the population of the valley increases as expected, but other services and facilities may be strained if a substantial portion of the Yucca Mountain facility construction work force chooses to live in Pahrump.

All Southern Paiute are just beginning to organize in a fashion and for similar purposes as the Western Shoshone National Council. The organization of Southern Paiute tribal chairs[23] is a recent attempt to facilitate intra-tribal dialogue on matters of mutual interest, such as the Yucca Mountain waste facility, the Nevada Test Site, major construction, mining or other projects potentially affecting tribal lands. Meetings are thus far on an irregular, as-needed basis, but it is reasonable to expect that over the next few years, this intra-tribal structure will become more formally organized and move to regular meetings.

Inter-Tribal Council of Nevada provides the avenue for inter-

tribal relations within the state. At various points in time since its organization in 1964, this group has facilitated the acquisition of various types of grants for Nevada tribes, including the Moapa tribe and the Las Vegas Colony. Members of both groups have served as officers in the organization through time, and both remain as members. The southern Nevada Southern Paiute groups also maintain some contact with the Western Shoshone National Council and with various Western Shoshone reservations. Finally, most reservation or colony households subscribe to the Native Nevadan, a state-wide Native American monthly newspaper, formerly published by the Inter-Tribal Council, and now by the Reno-Sparks Indian Colony. This keeps them up-to-date with news and events in the state, as well as some adjacent states. Many households also receive the Indian Affairs Commission newsletter or other publications. Few, however, are involved with any national Native American organizations.

The Las Vegas Indian Center serves to link Indian residents of Las Vegas, who live off the colony or are from other Nevada reservations, as well members of tribal groups from elsewhere in North America, with the inter-tribal network (see 3.4).

3.3 Native American Responses to Risk Perception Questionnaire

In addition to the general studies of socioeconomic status and some of the perceived impacts on tribal economic and cultural conditions elicited through standard interviews, the project ethnographers also administered to a sample of this Native American population a version of the risk questionnaire developed by the

larger Mountain West study team. The sample size was 59 persons; it is representative, but not statistically valid. Questions chosen were largely those having to do with technological issues involving the construction and operation of the Yucca Mountain facility, health and safety concerns, trust in government, and socioeconomic parameters (see Appendix III).

Several questions were asked on the survey questionnaire about perceived risks should the repository be constructed at Yucca Mountain. In general, responses supported opinions given through other lines of questioning, including native language interviews with elders from the tribes. As noted in Section 2 above, through all avenues of questioning, opinions seemed to run high about the perceived risks, and attitudes strong against construction. Native American opinions are far more uniform in opposition and the risks are perceived to be greater in degree than either their urban or rural non-Indian neighbors.

For example, with reference to the survey question as to whether the nuclear waste repository could be built and operated safely, 71 percent responded "no" or "definitely no," 17 percent "yes" or "possibly," and 11 percent "didn't know." This is in marked contrast to the general assessment of the majority of rural non-Indians that the repository can be built and operated safely and also a higher percentage than elicited from urban Las Vegans who seem to be more divided on the issue. Nearly identical opinions were voiced on the issue of safe transportation of waste materials with 75 percent responding that it could definitely not

be transported safely, 20 percent "yes" or "possibly," and 3 percent "don't know." Again, rural non-Indian opinion on this matter, although varying somewhat by community, indicates that well over 50 percent of residents feel that it can be transported safely. Urban opinions, although less positive, again are higher than Native Americans. Native Americans were also more negative about whether they would be dealt with truthfully by the federal government on the risks having to do with this project. Their long history of dealing with various federal agencies, most of which have had inconsistent, if not conflicting policies regarding them, has probably led them to this position.

Responses to questions as to perceived affects on personal and community health and safety also showed elevated levels of concern. To a question asking for perceived effects on the respondent personally, 71 percent responded in the ranges of extremely harmful, 20 percent in the range of balanced effects, 2 percent beneficial and 9 percent unsure or no response. A question asking for a suggested level of perceived personal health and safety effects elicited mean responses of 7.5 on a scale of 0 to 10. Perceived hazards to family elicited a 7.8 mean response. Threats to the community (Reservation) at large were likewise perceived as high: 71 percent high, 23 percent balanced, 1 percent beneficial, 5 percent unsure or no response. Both populations also responded in more open-ended questions that the results of radiation from previous NTS activities have already been felt. People have died from cancer and other unknown causes that most feel are the direct

result of nuclear testing. They feel that their populations have sacrificed enough; let others take on the added risks of exposure. These responses hold whether the topic is repository construction or transportation of materials. Given that both Moapa and Las Vegas are on major suggested transportation routes, (I 15, U.S. 95, railroads), transportation issues are of major concern to them.

Several questions posed as to potential effects on the environment also elicited responses suggesting perceived negative impacts. Mean responses on a scale of 0 to 10 as to threats of air pollution were 6.9 for the Western Shoshone (already "down-winders"), and 5.9 for the Southern Paiute. Both cultural groups responded with a high degree of concern for potential water pollution: 7.6. As noted in Section 2, water purity is a sacred as well as a practical concern. Water is a primary religious cleansing agent as well as a necessity for life. Potential concerns that radiation would not be contained within the storage facility elicited 5.6 among the Western Shoshone and 6.0 among the Southern Paiute. As to a final decision on whether the repository should be built, with the respondent making the decision, 6 percent favored it, 8 percent were uncertain, 71 percent were opposed, and 14 percent did not respond.

We also asked two questions with reference to specific cultural perceptions as to whether construction of the repository violated traditional teachings or would damage traditional lands. Mean responses were 5.9 on the first question (scale of 0 to 10), and 6.2 on the second (same scale). Overall responses to these

questions on traditional values seemed to run slightly lower than anticipated, and may reflect some shifts in attitudes away from traditional teachings of causality. Certainly among all the elders interviewed during the survey as well as separately, consensus about repository construction violating traditional teaching was high.

Lastly, Native American see nothing to be gained for themselves and future generations economically. Responses to a question as to whether economic well-being will be improved had mean values of 1.6 (Western Shoshone) and 2.6 (Southern Paiute). A question as to whether economic conditions would be appreciably worsened showed mean values of 4.1 for both groups. They see themselves as deriving little economic or other gain from the project, but rather as loosing much.

3.4. Urban Las Vegas

Although as noted earlier, specific funding was not made available to include the Native American population of urban Las Vegas in these studies, through census data and some interviews, we have learned something about it (Hamby and Rusco, 1987:87-95; Richard Arnold, Las Vegas Indian Center, personal communication, 1991).

According to the 1970 U.S. Census, there were 1,131 self-identified Native Americans in Clark County, of which 847 resided in the urban area. By the time of the 1980 Census, these figures had nearly tripled, to 2,949 Native American persons in the county, of which 2,519 lived in the urban area. Although this population

does not appear to occupy identifiable neighborhoods, there are some concentrations of persons according to census tracts (see Appendix II, Table 6 for residential district figures). In 1980, the Native American population made up .62% of the county total, making it the smallest identified ethnic population (as compared to Black, Asian, Hispanic, other).

By 1990, the Native American population figures had risen to 6,416 in the county, 5,907 of which were in the urban area -- more than doubling the 1980 figures. In 1990, however, self-identified Native Americans still remained the smallest identified ethnic population, being less than one-tenth of the Black, one-quarter of the Asian, and one-fifth of the Hispanic populations. They still remained less than 1% of the overall county population.

Although tribal identifications are difficult to impossible to obtain from the U.S. Census data, the Las Vegas Indian Center, which serves on a drop-in basis, an estimated 10-15% of this population, does keep track of tribal affiliation. According to their data for the 1989 - 1990 fiscal year, roughly 25% of their clients and visitors were Navajo people, 10% were Sioux, 8% were Paiute, 5% were Cherokee, and 3% each were Shoshone and Chippewa. The remainder was made up of from 1 to 10 persons representing 62 different tribes, a true cross-section of Native American tribal affiliations. Of the Paiute and Shoshone people, many were probably from Nevada, possibly enrolled members living away from their communities, but that cannot be ascertained from the data at hand. Other Indian people living in Las Vegas have suggested that

at least impressionistically, the high figures for Navajo would probably hold for the population as a whole. Their impressions are based on attendance at pow-wows and other Indian functions. Tribes from Arizona and California are thought to be particularly well represented.

The population served by the Indian Center, while varied, is predominantly poor, transient, and in need of basic, and often emergency assistance with housing and food. According to the Center's annual report for fiscal 1989-90, the average annual household income of its clients was roughly $4,400 below the poverty income guidelines of $12,100. The overwhelming majority of these households received no form of public assistance, even though they would likely have qualified. Roughly 30% of the clients did not finish high school, and the overall average educational level attained was the 8th grade. Sixty-eight percent of those in this group eligible to be employed were unemployed, and roughly 5% under-employed. Only 38% of the households served had a permanent residence, with 56% being reported as homeless (31% of these residing temporarily with friends or relatives -- perhaps in keeping with traditional values). Two-parent families made up only 23% of the clients, followed closely by single parents at 22%. Children made up one-half of the clients served.

Based on these characteristics, the Las Vegas Indian Center continues its emphasis on job training and education, day care and counseling, and providing funds for housing and food. The bulk of its budget is spent in these categories, although additional

services in job placement, finding shelter, and referring clients to other, more appropriate agencies takes additional staff time. Although the population served by the Center is undoubtedly a select one, it is important to know that at least 10-15% (if not more) of the urban Las Vegas Native American population requires its services. Should economic conditions in Las Vegas worsen due to the Yucca Mountain project, and yet the rate of what clearly appears to be an in-migration remains the same or increases, Clark County, the State of Nevada, and perhaps the federal government, will have to consider this group. At present, Clark County has made little effort or had little success in involving local Native Americans in its Yucca Mountain study plans. It is further unlikely that it will be successful in incorporating an urban component without a major effort to locate and characterize this population.

Profiles of the Las Vegas urban Indian population based on U.S. Census data from 1980 (1990 break-downs not yet available) give a different picture -- although persons likely to respond to the census are probably also a select group. This group was much better off by all socioeconomic indicators. Forty-one percent of the Native American population (as opposed to 51% generally) was living in owner-occupied housing, paying mortgage payments ranging from $100 to over $600, with a median of $383 (Hamby and Rusco, 1987:90). Another 53% were in rented homes or apartments, at a cost of $80 to over $400 monthly, with the median rent at $279. Median mortgage and rent figures for the Clark County population

as a whole were roughly $70 and $40 per month higher, respectively, but overall, the Native American population did not appear to be that far behind.

Clark County Native Americans on the whole were reported to be better educated than either the 1990 Indian Center figures or the 1980 Las Vegas Colony and Moapa Reservation figures would suggest: 19% had gone to high school from 1 to 3 years, 36% had graduated from high school, 23% had attended college for 1 to 3 years, and 9.5% had graduated from college. The remaining 12.5% had 8 years of school or fewer (Hamby and Rusco, 1987:91). Income levels were also higher, with a median per family of $17,060 and a mean of $19,367, as opposed to $21,029 and $24,493 for county residents as a whole. Persons above the poverty level for Native Americans were 85% (as opposed to 91% for the county as a whole. While these figures represent increases over the Colony and reservation figures, it is still important to note that the urban Native American population is below county averages in many parameters (see additional figures in Hamby and Rusco, 1987:87-94).

An additional source of information on Native Americans in urban Las Vegas is the Clark County Indian Education Program. In 1990, there were roughly 700 children registered in the program, and another 1,200 self-declared but not enrolled. The Program maintains a mailing list of families numbering 800, and for these households there are an average of 2.4 children (K - 12) per household. Children registered or otherwise known to this program

represent roughly 30% of the reported urban Native American population, probably a reasonable figure. This group, as well as the Las Vegas Indian Center, would be excellent contacts for any future studies of the urban Native American population.

Based on the available data, which are primarily socio-economic, and sketchy at best, potential issues involving the urban Las Vegas Native American population should the proposed nuclear waste repository be built are open to speculation. Although those people of "Paiute" and "Shoshone" heritage could have cultural and environmental concerns for sites and areas on Yucca Mountain, and should be contacted if at all possible, it is doubtful that the members of the other tribes represented would be able to comment under AIRFA or NEPA on the repository site. They might well have opinions about the project as a whole, and these opinions deserve to be heard, but under present legislation they will probably be given less weight than those of the traditionally local groups. The socioeconomic situation for all of Clark County's urban minorities should be taken into account, however, as the project may well have significant impacts on them if the economy is jeopardized.

4. CONCLUSIONS

The foregoing summary of the data derived from Native American people in southern Nevada (and southern California) regarding the potential impacts of the construction of a high-level nuclear waste

repository at Yucca Mountain upon them has been necessarily speculative, given the lack of firm plans by DOE for nearly anything having to do with the project. In the various sections, we have outlined something of the culture, history and use of Yucca Mountain in the past, and the present-day concerns of Western Shoshone and Southern Paiute people for the culture resources that remain there today. In so doing, we have attempted to stress the differences in world view between Native Americans, management agencies, and unfortunately, also the courts regarding these resources. We have also looked at the present socioeconomic conditions prevailing on Native American reserved lands, and the plans of these groups for the future. We have attempted to show that although all groups have made major steps forward in recent years, they are far from economically self-sufficient. Any downturn in the urban or rural economies due to repository impacts will certainly be felt by them. They are vulnerable populations.

Native American people have been in this region of the Great Basin for a long time. They intend to remain for an equally long time. In fact, they are probably the only population in the region really able to take the long-term view: 10,000 years of radioactivity. In addition to perceived effects on themselves, they are also looking at long-term effects, on many generations to come, both Indian and non-Indian. They see the repository as posing major threats to the environment: the Earth, her waters, her plants and animals. They feel that it is morally wrong to contaminate the earth with nuclear waste, and should this occur,

they feel that there may be drastic consequences. They see themselves, along with a few anti-nuclear and environmentalist allies, as the only ones willing to take a stand to protect the Earth for the future. In terms of priorities, they see risks to the Earth, and family and personal health as primary, and economic concerns as much lower. As people who have rarely had much of a stake in major economic gains, they would more freely sacrifice any perceived benefits there to gain security for the others.

Conflicts over resources and how best to manage them are not new in this country or the world. They can, and most frequently do, revolve around differences in cultural themes or world view--even within the same society. In the first decade of the 20th century, John Muir, founder of the Sierra Club and what has been called the American Conservation Movement, fought bitterly the public utilities policies of Gifford Pinchot, head of the U.S. Forest Service. Pinchot was for development, utilization, economic gain; Muir saw a natural aesthetic as a higher good. Their conflicts over Hetch Hetchy in Yosemite were bitter, and in the end, Pinchot won, as he often did (Fox, 1981). In his 1971 book, Encounters with the Archdruid, John McPhee simulates conversations involving different views of natural resources between David Brower of the Sierra Club and later other conservation groups, and Floyd Dominy, then head of the Bureau of Reclamation. Dominy saw as the mission of his agency to plug rivers and utilize them for power and other developments. Brower, like Muir, saw another prevailing good. A trip down the Colorado River, dammed many say unneces-

sarily in several places for development purposes, was the occasion.

The battle over the Colorado River, like Hetch Hetchy, was ultimately decided by politics and politicians, as are so many other issues, including Yucca Mountain. It will be relatively easy for DOE, or even the U.S. Congress, to dismiss Native American concerns by following the letter of the law as it now exists. It will be equally easy, unless the national debt finally begins to give enough people pause, to provide funds to Native American impacted businesses, or to settle long-standing disputes by providing the populations with additional lands or even capital for improvements. (Someone will have to monitor all of this, however, and make sure it is done properly.) But it will not be easy to reconcile the world views in which one group sees the project as morally wrong and potentially very dangerous to the whole of mankind, and the other as its mission and mandate from Congress. As a Western Shoshone consultant remarked about the proposed project:

> My great-grandmother told me those guys who are messing around with the earth, scarring it, the earth is not going to like it. It's going to create a bad situation for human beings. We're supposed to take care of it. Indians talk to it, sing to it, praise it, thank it for something you get from it. All things have life. She talked to her plants in her garden when she was old. I asked her why she talked to her beans--they're just old

beans. She said we're part of nature. She said the one that made the earth told us to do it. We're supposed to do it because it works, she said.

Used to be when you went out in my country, the birds used to sing to you. Now it's silent. It makes you sad. The birds have died or gone. They say that if you mess around with nature something's got to give. Things may dry up, maybe earthquakes--some unnatural thing. To an Indian, earth has life and you're supposed to treat it with respect.

The water worries me. There's an underground ocean under the Test Site, like the Amargosa River at Beatty, and there are artesian wells at Kimball and Springdale (in Oasis Valley). All through that area water comes out of the ground. All of them had Indian names. None of that water is pumped. It just comes out of the ground. If they keep messing around in there, they'll murder the land they're living on by ruining the water. Water is life. When they ruin that, they might as well just drain the juice out of their own system.

The big thing is that if they blast some more, they're going to ruin the water down there--not just there but all over. Don't the scientists know that? It seems like just common sense to me. How can the white man make anything right when they don't follow the Indian teaching. Yucca mountain is related to all the other

places on the earth, all are connected. If they put that 'no good stuff' in the earth, it could kill off all the people. There is no way to make it right.

NOTES

1. Contacts were also made with the Paiute Tribe of Utah, and several interviews conducted. Other tribes involved in the DOE studies include several groups in Owens Valley, California, the Chemehuevi on the Colorado River Reservation, the Kaibab Paiute Tribe of Arizona, and the Paiute Tribe of Utah.
2. Only the Southern Paiute engaged in much agriculture before non-Indian contact. Western Shoshone people in Death Valley were involved after about 1860.
3. Some Western Shoshone groups practiced pseudo-cross-cousin marriage: marriage to mother's brother's step children, or father's sister's step children.
4. Western Shoshone, and other Shoshone people presently reside on a number of reservations and in a number of communities in Nevada, Idaho, Utah, California, and Wyoming (Thomas, Pendleton, and Cappanari, 1986). Kinship often connects persons at these distant places with people in the study area. This is partly true because of prohibitions against marrying relatives have forced people to marry at farther distances. In historic times, people have also travelled farther and met more people from other areas. Relationships also increasingly cross tribal lines, so that now Western Shoshone

people are married to members of several other tribes. The same generalization holds for Southern Paiute people.

5. Ethnographic data on Great Basin religion and world views are minimal at best. A major reason for this is that few ethnographers ever spent any length of time in a single community or with persons to get in-depth information. Most of the traditional ethnography in the region was of the survey type, and oriented toward subsistence, social organization, and material culture. The specific evolutionary theoretical orientation of Julian Steward (1938) also heavily influenced inquiry away from the subtleties of Great Basin religions.

6. There is an enormous historical literature, including that contained in newspapers. There is also a very large body of unpublished literature in the National Archives and Federal Records Centers. Although we made some attempt to gather this literature, there is much more to do.

7. The SHPO of Nevada had not signed the PMOA as of September, 1991, although the agreement had been negotiated. DOE and the ACOHP had both signed.

8. Most religious sites as well as most burials would not be found by survey alone. The signs are subtle, and Native American people are required to interpret them in the field.

9. We did not bring up the topic of mitigation of sites or resources during our conversations. But, on a recent (April, 1990) visit to Yucca Mountain with the Technical Review Panel, a Western Shoshone consultant spoke openly against any plans

by DOE to move desert tortoises. This is not appropriate mitigation.

10. A Western Shoshone consultant remarked on our Yucca Mountain site visit that he and several others had been on the Test Site and Bombing Range a number of times since the closure. They felt that they had the right to be there.

11. Moapa Reservation was founded in 1873; Las Vegas Colony in 1911; Yomba Reservation in 1937; and Duckwater in 1940-44 (Clemmer and Stewart, 1986).

12. Member councils of the Western Shoshone National Council as of May, 1991 are: Battle Mountain, Elko, Wells, Southfork, Odger's Ranch (Ruby Valley), Ely, Yomba, Western Shoshone Organization at Duck Valley, Great Basin Descendants, Southfork Traditional Cattlemen's Association, Western Band of Western Shoshone (Winnemucca), Timbi-Sha, Fallon Western Shoshone, Big Pine Western Shoshone, Dann Band, and the Sacred Lands Association. The Timoak Bands Council and the Duckwater Shoshone Tribe, formerlly members, withdrew in April, 1991.

13. Estimates of total Western Shoshone population vary considerably, with the Bureau of Indian Affairs suggesting roughly 3,000, and the WSNC suggesting as high at 10,000. The U.S. Census figures for 1990 for reservations traditionally occupied by Western Shoshone people would give about 2,400. But then probably only about one-half to two-thirds of enrolled populations live on reservations.

14. The Duckwater Tribe withdrew from the Council in April, 1991.

However, in a number of actions since that time, as well as in general philosophy, the tribe and various of its members remain close to Council aims.

15. Roy Rappaport (personal communication, October, 1991, has suggested that this concept of individual ownership of land is a particularly dangerous one to the integrity of Western Shoshone and Southern Paiute cultures. As hunters and gatherers in former times, both of these groups maintained an approach to land best characterized as a collective estate. To break this up by making lands the property of individuals strikes at the heart of this concept of collective ownership, and probably at the heart of each individual's relationship to the Earth as a sacred and integrated whole. Although this may be more applicable to the Western Shoshone than to most Southern Paiute people, as Nevada lands, at least, have remained more "collective" under federal control than have those in Utah, it is certainly a position worth taking into account and worth investigating. From personal experience over some 30 years with families of Southern Paiutes in Utah, I know that increasing privatization of large tracts of land over which they formerly hunted and gathered, but more recently visited for a sense of personal if not ethnic renewal, is a frequent topic of conversation. They are increasingly "locked out" of these lands even for pleasure. Their children and grandchildren know little of animals and plants through direct experience. They are house-bound at

least partly because they lack alternatives. Although the Yucca Mountain Project certainly has not caused this legal situation to occur, it is one more instance of "lock out" and privatization that exacerbates the situation. As Rappaport suggests, it all contributes to ethnicide.

16. The WSNC in 1991 was considering a suit against the federal government or the railroads across central Nevada for unauthorized expropriation of alternate sections of land before the Treaty of Ruby Valley went into effect. Since the act authorizing railroad land specified that title to Indian lands had to be extinguished before expropriation, and title was certainly not extinguished before the treaty was enacted, the WSNC feels that grounds for suit probably exist. The Council in the past has also protested the establishment of Great Basin National Park and various wilderness areas on what are their treaty lands, as well as the payment of grazing fees to the BLM and Forest Service (Rusco 1991).

17. The Green Party of Germany has actively supported the anti-nuclear stand taken by the WSNC, and members of the council have been to Germany to lecture. Members of the Green Party have also spent several months in Western Shoshone country in recent years.

18. Determining the exact location of individuals on tribal roles but not in residence on reservations is a difficult task. Tribes are not always aware of the latest moves of their members, and unless they are required to contact them for some

reason, do not always make a concerted effort each year to track them because of time and expense. Given that tribal roles are not public documents, our study team did not have access to them, outdated though they may be. We requested on two occasions that an authorized tribal member go through particular roles for us and extract city of residence information, and offered to pay for the service. However, as of September, 1991, neither of these tasks had been accomplished. Based on very general interviews, it appears that Western Shoshone and Southern Paiute people on tribal roles but not in residence are scattered throughout the West, but are particularly likely to be on adjacent reservations or in adjacent cities or towns for marriage, school, and employment reasons. It is doubtful that they make up any appreciable proportion of the Las Vegas urban Indian population, except in the case of Moapa and the Las Vegas Colony.

19. Detailed analyses of the 1990 census data were not available as of May, 1991; only preliminary population figures. When these data are made available, they should be integrated into these studies to better note trends.

20. Time spent in residence in the various Native American communities in the study area was too short to determine with any degree of precision exactly how many Indian people hold traditional religious values and how often these are expressed. Given the subtleties of Great Basin religions,

these types of data can only be obtained through long-term observation and close interaction with persons in many situations. In addition, as noted, people self-identify with traditionalist values at differing times in their lives. After a period of absence, they may return rather quickly to them, even at a young age.

21. Given that the Pahrump Band is not federally recognized, its members are not officially enrolled. A few people are enrolled in Las Vegas Colony, however.

22. In April and May, 1991, Moapa was participating in a health survey that would identify significant problems on the reservation. The results were not available as of this writing.

23. Members of the Southern Paiute Chairs Association include: The Moapa Band of Paiute Indians, Las Vegas Indian Colony, the Paiute Tribe of Utah (representing the Shivwits Reservation, Kanosh Reservation, Indian Peaks Band, Richfield Band, Cedar City Band), the Kaibab Paiute Tribe, and the Chemehuevi Tribe.

REFERENCES CITED

Advisory Council on Historic Preservation
1985 Guidelines for Consideration of Traditional Cultural Values in Historic Preservation Review. ACOHP, Washington, D.C.

Barsh, R. L.
1986 The Illusion of Religious Freedom for Indigenous Americans. Oregon Law Review, 65:363-412.

Beatley, J.
1976 Vascular Plants of the Nevada Test Site and Central-Southern Nevada: Ecologic and Geographic Distributions. Energy Development Administration, National Technical Information Service, Springfield.

Callicott, J. B.
1990 American Indian Land Wisdom. In The Struggle for the Land: indigenous Insight and Industrial Empire in the Semiarid World, P. A. Olson, ed., pp. 255-72. University of Nebraska Press, Lincoln.

Clemmer, R. O. and O. C. Stewart
1986 Treaties, Reservations, and Claims. In Handbook of North American Indians, Vol. 11 (Great Basin), W. L. d'Azevedo, ed. (Wm. Sturtevant, gen. ed.), pp. 525-57. Smithsonian Institution, Washington, D. C.

Cohen, F.
1982 Handbook of Federal Indian Law. Michie Bobbs-Merrill, Charlottesville, W.V.

Crum, S.
1987 The Western Shoshone People and Their Attachment to the Land: A Twentieth Century Perspective. In "Ethnicity and Race in Nevada," E. Rusco and S. F. Chung, eds., pp. 15-18. Nevada Public Affairs Review, No. 2. Reno.

Cultural Resources Consultants
1988a Socioeconomic Profiles of Native American Communities: Las Vegas Colony and Pahrump-Lower Amargosa Valley. Mountain West for the Nevada Nuclear Waste Project Office, Carson City.

1988b Native American Visit to Yucca Mountain: October 16-17, 1987. Mountain West for the Nevada Nuclear Waste Project Office, Carson City.

Curtis, S. A.
1988 Regulatory Compliance and American Indian Risk Perception. Unpublished Paper presented at the American Anthropological Association Annual Meeting, Phoenix, AZ.

Daley, J. P.
1989a Tumpisa (Panamint) Shoshone Grammar. University of California Publications in Linguistics, Vol. 115. Berkeley.

1989b Tumpisa (Panamint) Shoshone Dictionary. University of California Publications in Linguistics, Vol. 116. Berkeley.

Deloria, V.
1983 God Is Red. Grosset and Dunlap, New York.

DOE (U.S. Department of Energy)
1986a Environmental Assessment (EA), Yucca Mountain Site, Nevada Research and Development Area, Nevada. U.S. Department of Energy, Office of Civilian Radioactive Waste Management, Washington, D.C.

1986b Environmental Assessment Overview, Yucca Mountain Site, Nevada Research and Development Area, Nevada. U.S. Department of Energy, Office of Civilian Radioactive Waste Management, Washington, D.C.

1988a Site Characterization Plan: Consultation Draft, Yucca Mountain Site. U.S. Department of Energy, Office of Civilian Radioactive Waste Management, Washington, D.C.

1988b Draft Environmental Field Activity Plan for Cultural Resources: Native American Component. U.S. Department of Energy, Nevada Operations Office, Las Vegas.

1988c Draft Environmental Field Activity Plan for Cultural Resources: Archaeological Component. U. S. Department of Energy, Nevada Operations Office, Las Vegas.

Douglas, M. and A. Wildavsky
1982 Risk and Culture: An Essay on the Selection of Technical and Environmental Dangers. University of California Press, Berkeley.

Euler, R. C.
1966 Southern Paiute Ethnohistory. University of Utah Anthropological Papers, 78. Salt Lake City.

Federal Agencies Task Force
1979 American Indian Religious Freedom Act Report, P.L. 95-341 (42 USC 1996). Washington, D.C.

Fowler, C. S.
1972 Comparative Numic Ethnobiology. Unpublished Doctoral Dissertation in Anthropology, University of Pittsburgh, Pittsburgh.

1986 Ethnographic Subsistence. In Handbook of North American Indians, Vol. 11 (Great Basin), W. L. d'Azevedo, ed. (Wm. Sturtevant, gen. ed.), pp. 64-97. Smithsonian Institution, Washington, D.C.

Fowler, C.S. and D. D. Fowler
1981 The Southern Paiute: A.D. 1400 - 1776. In "The Protohistoric Period in the North American Southwest, A.D. 1450-1700, D. R. Wilcox and B. Masse, eds., pp. 129-62. Arizona State University Anthropological Research Papers 24. Tempe.

Fowler, C.S., M. Hamby and M. Rusco
1987 Native American Studies (First Year Socioeconomic Progress Report, Appendix A.5.4). Mountain West for Nevada Nuclear Waste Projects Office, Carson City.

Fowler, C.S., M. Rusco and M. Hamby
1988 Native Americans and Yucca Mountain: Ethnographic Sketches, Las Vegas, Paranigat and Panaca, and Moapa Southern Paiute and Central Nevada Western Shoshone. Montain West for Nevada Nuclear Waste Projects Office, Carson City.

Fowler, D. D.
1982 Cultural Resources Management. Advances in Archaeological Method and Theory, Vol. 2, pp. 1-50. Academic Press, N.Y.

Fox, S.
1981 John Muir and His Legacy: The American Conservation Movement. Little Brown and Co., Boston.

Goss, J. A.
1972 A Basin-Plateau Shoshonean Ecological Model. In "Great Basin Cultural Ecology: A Symposium," D. D. Fowler, ed., pp. 49-70. Desert Research Insti-

tute Publications in the Social Sciences 8. Reno.

Gould, D. B.
1986 The First Amendment and the Indian Religious Freedom Act. Arizona Law Review, 25:429-72.

Gronhovd, S. L., J. F. Kewlor, S. R. O'Keefe and K. D. Talcott
1986 Northwest Indian Cemetery Protective Association v. Peterson: Indian Religious Sites Prevail over Public Land Development. Notre Dame Law Review, 62:125-44.

Hamby, M.
1988 Native Americans Contemporary Socioeconomic Sketches, Esmeralda and Lincoln Counties and Death Valley. Mountain West for the Nevada Nuclear Waste Projects Office, Carson City.

1989 The Timbisha Shoshone of Death Valley California. Department of Anthropology, University of Nevada, Reno for the Nevada Nuclear Waste Projects Office, Carson City.

1991 Socioeconomic Profiles of Native American Communities: (A) Duckwater Shoshone Reservation. (B) Yomba Shoshone Reservation. Cultural Resources Consultants, Ltd., for the Nevada Nuclear Waste Projects Office, Carson City.

Hamby, M. and M. Rusco
1987 Native Americans and Yucca Mountain: Socioeconomic Perspectives. In "Native American Studies," pp. 57-138. Mountain West for Nevada Nuclear Projects Office, Carson City.

Hamby, M. and M. Rusco
1988 Responses to Risk Perception Questionnaire: Western Shoshone Reservations and Southern Paiute Reservations. Mountain West for Nevada Nuclear Waste Projects Office, Carson City.

Henton, G. and L. C. Pippin
1988 Prehistoric and Historic Archaeology of Forty Mile Canyon, Yucca Wash, and Midway Valley, near Yucca Mountain, Nye County, Southern Nevada. Desert Research Institute Quaternary Sciences Center Technical Report No. 60. Reno.

Hultkrantz, A.
1966 An Ecological Approach to Religion. Ethnos, 31: 131-30. Stockholm

Jaeger, E. C.
1957 The North American Deserts. Stanford University Press, Stanford.

Kappler, C. J., comp.
1904 Indian Affairs: Laws and Treaties. U. S. Government Printing Office, Washington. 4 volumes.

Kelly, I. T.
1932-33 Southern Paiute Field Notes. 12 Volumes, in Author's Possession, Reno.

Kelly, I. T. and C. S. Fowler
1986 Southern Paiute. In Handbook of North American Indians, Vol. 11 (Great Basin), W. L. d'Azevedo, ed. (Wm. Sturtevant, gen. ed.), pp. 368-97. Smithsonian Institution, Washington, D.C.

Klesert, A. and A. Downer, eds.
1990 Preservation on the Reservation. Native Americans, Native American Lands and Archaeology. Navajo Nation Anthropology Papers No. 26. Window Rock.

Knack, M. C.
1986 Indian Economies, 1950-1980. In Handbook of North American Indians, Vol. 11 (Great Basin), W. L. d'Azevedo, ed. (Wm. Sturtevant, gen. ed.), pp. 573-91. Smithsonian Institution, Washington, D.C.

Kroeber, A. L.
1925 Handbook of the Indians of California. Bureau of American Ethnology Bulletin 78. Washington, D.C.

Laird, C.
1976 The Chemehuevis. Malki Museum Press, Banning, Ca.

Liljeblad, S.
1986 Oral Tradition: Content and Style of Verbal Arts. In Handbook of North American Indians, Vol. 11 (Great Basin), W. L. d'Azevedo, ed. (Wm. Sturtevant, gen. ed.), pp. 641-59. Smithsonian Institution, Washington, D. C.

Lowie, R. H.
1924 Shoshonean Tales. Journal of American Folk-lore, 37(143-44):1-242.

Malouf, C. and J. Findlay
1986 Euro-American Impact Before 1870. In Handbook of North American Indians, Vol. 11 (Great Basin), W. L. d'Azevedo, ed. (Wm. Sturtevant, gen. ed.), pp. 499-516. Smithsonian Institution, Washington, D.C.

McPhee, J.
1971 Encounters with the Archdruid. Farrar, Straus, and Giraux, N. Y.

Miller, J.
1983 Basin Religion and Theology: A Comparative Study of Power (Puha). Journal of California and Great Basin Anthropology, 5(1-2):66-86.

Miller, W. R.
1986 Numic Languages. In Handbook of North American Indians, Vol. 11 (Great Basin), W.L. d'Azevedo, ed. (Wm. Sturtevant, gen. ed.), pp. 98-106. Smithsonian Institution, Washington, D.C.

Millett, J. (signator)
1989 A Petition of the Duckwater Shoshone Tribe for Recognition as an "Affected Tribe" Under the Nuclear Waste Policy Act of 1982. Duckwater, NV, July, 1989.

Mountain West
1989 Yucca Mountain Socioeconomic Project: An Interim Report, the State of Nevada Socioeconomic Studies. Mountain West, Phoenix, for the Nevada Nuclear Waste Projects Office, Carson City.

Park, W. Z.
1938 Shamanism in Western North America: A Study in Cultural Relationships. Northwestern University Studies in Social Sciences 2. Evanston.

Pippin, L. C., R. L. Clerico and R. L. Reno
1982 An Archaeological Reconnaissance of the NNWSI Yucca Mountain Project Area, Southern Nye County, Nevada. Desert Research Institute Social Sciences Technical Report No. 7. Reno.

Pippin, L. C., ed.
1984 Limited Test Excavations at Selected Archaeological Sites in the NNWSI Yucca Mountain Project Area, Southern Nye County, Nevada. Desert Research Institute Social Sciences Technical Report No. 40. Reno.

Rusco, E.
1989 Western Shoshone Land Claims and the Western Shoshone National Council. Department of Anthropology, University of Nevada, Reno, for the Nevada Nuclear Waste Projects Office, Carson City.

1990 Traditionalist Western Shoshone Land Claims and the Evolution of the Western Shoshone National Council. Paper prepared for Archeological Research Services, Virginia City, NV.

1991 Native Americans and State and Local Governments: Futures for the Yucca Mountain Project. Cultural Resources Consultants, Ltd. for the Nevada Nuclear Waste Projects Office, Carson City.

Rusco, M.
1988 Southern Paiute Socioeconomic Sketches. Mountain West for the Nevada Nuclear Waste Projects Office, Carson City.

1989 Transportation of High Level Nuclear Waste: Potential Impacts on Native American Populations in Southern Nevada: The Moapa Band of Paiute Indians, a Case Study. Department of Anthropology, University of Nevada, Reno, for the Nevada Nuclear Waste Projects Office, Carson City.

1991 Socioeconomic Profiles of Native American Communities: Las Vegas Colony. Cultural Resources Consultants, Ltd. for the Nevada Nuclear Projects Office, Carson City.

Rusco, M. and M. Hamby
1988 Socioeconomic Profiles of Native American Communities: Moapa, Yomba Shoshone, and Duckwater Shoshone Indian Reservations. Mountain West for the Nevada Nuclear Waste Projects Office, Carson City.

Sapir, E.
1931 Southern Paiute Dictionary. Proceedings of the American Academy of Arts and Sciences, 65(3). Boston.

Sewell, E. M. W.
1983 The American Indian Religious Freedom Act. Arizona Law Review, 25:429-72.

Steward, J. H.
1938 Basin-Plateau Aboriginal Sociopolitical Groups. Bureau of American Ethnology Bulletin 120. Washington, D. C.
1941 Culture Element Distributions, XIII. Nevada Shoshone. University of California Anthropological Records, 4(2):209-360. Berkeley.

Stoffle, R. W., M. J. Evans and D. B. Halmo
1988 Recommended Actions for Reducing Potential Adverse Effects on Native American Cultural Resources

Caused by Site Characterization Activities. Institute for Social Research, Ann Arbor, for Science Applications International Corporation, Las Vegas and DOE, Nevada Operations Office.

Stoffle, R. W., M. J. Evans, D. B. Halmo, W. E. Niles and J. T. O'Farrell
1988 Native American Plant Resources in the Yucca Mountain Area, Nevada. Institute for Social Research, Ann Arbor, for Science Applications International Corporation, Las Vegas and DOE, Nevada Operations Office.

Stoffle, R. W., M. J. Evans, and C. J. Harshbarger
1988 Native American Interpretation of Cultural Resources in the Area of Yucca Mountain, Nevada. (Interim Report). DOE, Nevada Operations Office, Las Vegas.

Stoffle, R. W., J. E. Olmsted and M. J. Evans
1988 Literature Review and Ethnohistory of Native American Occupancy and Use of the Yucca Mountain Region. Institute for Social Research, Ann Arbor, for Science Applications International, Las Vegas and DOE, Nevada Operations Office.

Stoffle, R. W., D. B. Halmo, J. E. Olmsted and M. J. Evans
1990 Native American Cultural Resource Studies at Yucca Mountain. Institute for Social Research, Ann Arbor.

Suagee, D. B.
1982 American Indian Religious Freedom and Cultural Resources Management: Protecting Mother Earth's Caretakers. American Indian Law Review, 10:1-58.

Thomas, D.H. L. Pendleton and S. Cappanari
1986 Western Shoshone. In Handbook of North American Indians, Vol. 11 (Great Basin), W.L. d'Azevedo, ed. (Wm. Sturtevant, gen. ed.), pp. 262-83. Smithsonian Institution, Washington, D.C.

APPENDIX I: NATIVE AMERICAN SITE VISIT TO YUCCA MOUNTAIN, OCTOBER 16 - 17, 1987

NATIVE AMERICAN SITE VISIT TO YUCCA MOUNTAIN, OCTOBER 16 - 17, 1987

Introduction

This report presents the substantive results of a two-day site visit with 10 Native American consultants to Yucca Mountain and the immediate vicnity. The visit took place October 16 - 17, 1987, and was designed as part of an ongoing assessment of Native American concerns regarding the possible siting of a high level nuclear waste repository within their aboriginal territories. The site visit was part of an overall assessment strategy that involves interviews on site-specific issues as well as on larger ones that might fall under the protections afforded by the American Indian Religious Freedom Act (P.L. 95-341), Section 106 of the National Historic Preservation Act of 1966 (80 Stat. 915; ammended 1980), and the Nuclear Waste Policy Act of 1982 (P.L. 97-425, 96 Stat. 2202).

All of the Native American participants were either Southern Paiute or Western Shoshone people, representing the two large ethnic groups in the immediate vicinity of Yucca Mountain. The site is in an area overlapping the aboriginal boundary between these two entities. The purpose of the site visit was not only to assess site specific concerns, but also to acquaint people with the features of the region and possible impacts upon it. Given that the area has been closed to the public since roughly 1940, even those who had been there at some time in the past needed to reacquaint themselves with the region.

The participants for the site visit were chosen using the following criteria: 1) individuals who had direct experience with the area in question, either through residence or visits; 2) individuals who had a relative who had been to the site area and from whom they had heard of localities or activities; and 3) individuals who were acting as representatives of proximate tribal/residence entities previously determined to be most likely to undergo direct ot indirect impacts due to site characterization, construction and operation. Fifteen people were originally selected based on these criteria. They were from the following localities: Pahrump, 2, one being unable to attend; Las Vegas Colony, 1, ultimately unable to attend; Death Valley, 3, all of whom attended; Beatty, 2, one of whom was unable to attend; Moapa, 2, both of whom attended; Duckwater, 2, one of whom was unable to attend; Moapa, 2, both of whom attended; Caliente, 1, ultimately unable to attend. Although these individuals are currently residing where stated, several had lived elsewhere within the project area, and had familiarity with the site over a long period. All of the 10 participants ultimately able to attend also met either criterion 1 or 2. All were at a minimum descendants of Southern Paiute or Western Shoshone people shown through previous

genealogical work to be directly affiliated with the immediate project area.

In addition to the above, Dr. Lonnie Pippin and Cari Lockett of the Desert Research Institute accompanied the party. Pippin is the prime DOE Test Site archaelogical contractor, and together with Lockett and other DRI staff members has been engaged in archaeological reconnaissance in the region for roughly 10 years. The DRI group was responsible for the preliminary archaeological assessments for Yucca Mountain (Pippin, Clerico and Reno, 1982; Pippin, 1984). Catherine Fowler, Mary Rusco and Maribeth Hamby acted as ethnographers for the site visit. All had visited the area in September to view potential sites for this trip.

Methods

Given that the project area is so large and difficult of access, especially for the elderly, a selection of 10 sites was made for viewing. Although this is a very small percentage of the total within the project area, Pippin and Lockett felt that they well represented the various types of archaeological resources resent. Had we had more time, others could have been visited. As it was, both days were quite full, given that we allowed ample time for discussion at each locality. All participants were given an orientation map and a very brief discription of the sites (Appendix A) prepared by the DRI archaeologists.

The procedure at each stopping point was roughly as follows: 1) the DRI archaeologists made a brief presentation about each locality (types of artifacts found, dates if known, etc.; 2) consultants were then asked specific or general questions about what they were seeing; and 3) consultants were encouraged to look at the surrounding area in more detail for anything they felt might be important. Each ethnographer attempted to interact with the same small group of people in order to record the data as accurately as possible (given that tape recorders were not allowed). Some people focussed on the same features at each site; others were more interested in others. Some seemed to be assessing the potential food and medicinal resources, taking the site features more or less as given. The ethnographers did not raise the issue of religious significance unless the consultants brought it up. The ethnographers also attempted to get as many Native place names as possible as these are a good indication of familiarity with a region. They also asked for Native food names (biotaxonomic names given below are tentative), feature names, etc.

People representing the different tribes and groups were interested in learning from each other, and they often compared their Native words for plants, animals, and places. Although we did not recognize it at first, there was great deference paid to age within each group: the oldest individual was considered the primary repository of knowledge. Younger people (even by a few

years) spoke only after the elders had given an opinion or only after direct questioning. On the one hand, all benefitted fron the comments within the large group. On the other, some might have spoken more often had the group been smaller and had the difference in age not obtained. No one seemed compelled to stay only within his/her group. Several people explored the vicinity ofeach site on their own or with someone else, and then reported back anything of interest. All were sincerely interested and willing to share their knowledge. Some had understandable difficulty recalling situations and events 60 to 70 years previous. A few had had a chance to see some of the sites within the past month, and think about them, as they had accompanied the DOE ethnographic team (Richard Stoffle abd Michael Evans). The DOE team visited some of the same sites, but also some different ones given that they had access to four-wheel drive equipment.

Notes Recorded at Specific Sites

Site 1. Fortymile Terrace, with a view looking south down Fortymile Wash toward Amargosa VAlley, and north toward Fortymile Canyon. This site is of considerable antiquity according to Pippin and Lockett. A Clovis point (ca. 11,000 B.P.) was recovered here as well as more recent materials. Chipping debris remains at present.

Consultant's Comments. According to a Western Shoshone consultant, Fortymile Wash is called togʷahunupi, 'snake wash,' in reference to a big snake who came this way long ago. This wash is his trail here. He continued up Fortymile Canyon and came back around Timber Mountain and Bare Mountain (near Beatty) where he stayed (see also Fowler, Rusco, and Hamby, 1987). When asked about the significance of this, the consultant indicated that he was uncertain, but suggested that from these actions the snake "opened up a home," perhaps thus making this country habitable for people. This same person recalled traveling up this way by auto probably in the late 'teens or early '20s, to gain access to the springs east of the head of Fortymile Canyon for deer hunting and camping. He came with John Bolland, son of Bill Boland of Death Valley and Ash Meadows, who hunted this area by car until at least the 1930s. Others stopped coming here in the 1940s with Site Closure. The consultant came on his trip from Amargosa Valley.

Another Western Shoshone consultant remembered being in the Wash 40+ years ago, as a young boy. He thought that he had ridden across the top of Yucca Mountain on horseback, perhaps near here or perhaps farther north. He was enroute from Beatty to Ammonia Tanks. Another added that the way they went from Beatty (old Kimball Ranch) to White Rock Spring was higher (north of here), and crossed Timber Mountain. There was a spring in the canyon they came through. Pippin agreed that that would be a good access route.

Although most of the consultants walked over the site area looking at the lithic scatter, most seemed more interested in the plant cover. Several people commented on the growth of creosote (Larrea tridentata), called in Southern Paiute and Western Shoshone yatambi. All agreed that this is a good medicinal plant. A Southern Paiute consultant stated that the leaves and stems boiled and taken as a tea are good for arthritis. A wash will cure athlete's foot. A Western Shoshone consultant described taking the crushed leaves in capsules to help cure his copper poisoning. This remedy (although not the mechanism) had been suggested by a person knowledgable in traditional medicine. He also noted that his father had used smoke from the burning dried plant to cure distemper in horses. The horse was "smoked" under a canvas tarp.

People noted as well the presence of Mormon tea (Ephedra viridis) or tutupi (Southern Paiute) or tutubi (Western Shoshone). All suggested it would be better at higher elevations. When asked about knoowledge of desert bighorn sheep (Western Shoshone wasi-pi) or pronghorn (Western Shoshone wansi) in this area, the Western Shoshone consultant who had hunted in the region said that he had not seen them here nor heard of their presence. He noted that winter fat (Ceratoides lanata) seen growing at this site was good food for bighorn, however. A mug full of a tea made from the leaves of this plant taken every morning is a good general tonic. No one could remember its Indain name, however.

In addition to the above, several others commented on the springs known to occur east of the head of this canyon; White Rock and Captain Jack. A descendant commented that Bill Kawich, leader of the Western Shoshone in Kawich Valley and the Kawich Range area [see also Steward 1932:113], was present at White Rock Spring (Western Shoshone: tosatimbimba 'white rock spring') in 1906, and that his (the person reporting's) mother (Kawich's daughter) was a small child there. They were also around the mines at Goldfield during some of this period. Another person spoke of Captain Jack, after whom the other spring is named. He was originally from the Lida area [same as Gold Mountain Jack? (Steward 1938:69, 95)]. He lived at this spring most of the time and during the period Kawich was at White Rock. Access was by wagon and/or horse from eother the north or west. There are no descendants of Captain Jack. Descendants of Bill Kawich live at Yomba and elsewhere.

Site 2. The top of Yucca Mountain, which gives an excellent overview of the region: Crater Flat, Bare Mountain, Yucca Mountain in its entirety, Fortymile Canyon, Amargosa Desert, Shoshone Mountain, Calico Hills, the Spring Mountains, and Paiute Mesa in the distance. According to Pippin and Lockett, there is a small rock shelter over the edge of the ridge in this locality. It features a rock alignment and a hearth.

Consultants' Comments. Since we did not visit the

archaeological site because of difficulty of access, we used this area as a vantage point to discuss the region observed. A Western Shoshone consultant agreed that the term elicited earlier from another Beatty consultant, eso ('dry place'), could be used for the region around here and to Beatty, but felt the term applied more particularly to Timber Mountain [see Site 10 for correction], a favored pine nutting area in the district. Togokadidi, 'snake sitting,' was the term for Bare Mountain, the snake's resting place. The Bullfrog Hills, near Beatty, are called a.daibi. The Spring Mountains and Mt. Charleston (Southern Paiute nibaganti), are sacred to the Southern Paiute of the region as their place as emergence. They are also of importance for the pinyon trees, mountain sheep and deer that they contain. No one knew of names for the cinder cones of Crater Flat, nor of their possible significance.

Small rockshelters such as Pippin and Lockett described were suggested by Southern Paiute and Western Shoshone consultants to be the types of places where things were stored for later use. Sometimes they were marked with rocks as a reminder or a notice to others.

The practice of marking areas with piles of rocks was discussed. One Western Shoshone consultant said that it was the practice to travel along the ridge tops when possible, not in the canyon bottoms. A rock pile two to three rocks high marks the trail, but also possibly a point where the trail descends, or where one goes down for water. Another agreed, stating that taller rock piles, if Indian made, would not be trail markers but possible locations of caches. Other persons could then be told of such caches and what they contained. The description of the trail marking system and sizes of the rock piles seemed to confirm Pippin's suspicions about the functions of such features seen on the Nevada Test Site.

A southern Paiute consultant commented on the presence of hu?upi, desert thorn (Lycium andersonii), a good food plant. Several discussed the Ephedra viridis growth at this location. A Southern Paiute consultant said theyt preferred the "grayer" one (E. nevadensis?). Death Valley consultants said that the stems of those we saw were still not the right length. All Agreed that a beverage can be made from the stems. It is a good stomach tonic.

Site 3. Historic rock shelter (26NY3042) with two associated tinajas, potholes or tanks. The archaeologists say that this is a good representative of this site type in the area. Sherds of brownware pottery (Southern Paiute/Western Shoshone) were present here as well as hearths. The site had been tested.

Consultants' Comments. People inspected the site generally, but seemed more intereted in the water sources and other features. Down slope from the site wa an amorphous cluster of rocks that

interested one Southern Paiute consultant. He suggested that this was where people may have slept in cold weather. They would have first heated the rocks in a fire, dug a slight hollow and rolled them in, covered them with sand, sagebrush and bedding, and then slept there. The rocks provide radiant heat during the night. A second Southern Paiute consultant visited the site after the explanation had been given and made the same observation. She stated that this was still the practice at pine nut harvest time--her son having made such a "hot bed" last fall. The Native name for such a feature was not recalled. A Western Shoshone consultant had heard of such a practice, but largely in connection with childbirth. The heated rocks were covered with creosote and bursage (Ambrosia dumosa?) and then bedding. The feature is called in Western Shoshone timbi soadi.ci or timbicidi.ci.

The tinajas or pot holes were of much interest to all. They appear to hold about three to five gallons each and are lidded, seemingly to aid against evaporation. They are called po?o in Western Shoshone and pikabo in Southern Paiute. According to a Western Shoshone consultant, the po?o in Death Valley have specific names, such as certain ones where people ordinarily stop, as opposed to ones used mainly by animals. Echo Canyon in Death Valley is named po?o because it contains these features.

People did not think offerings need to be made to these water features. But a Western Shoshone consultant added, upon entering an area such as this for the first time (any area), one should askk the area for general acceptance of one's p[resence. The place and the animals should be told what it is you intend to do there. All wildlife us superior to humans and one needs to speak to them. If one intends to eat in an area, then offerings of a small portion of food one has brought should be made to the east, west, south and north. Then the person will be welcomed. But one should always speak to the spirits so that only the good will remain--not the bad.

It is unlikely that water babies (Western Shoshone: pibiandi; Southern Paiute: pa?anabi) would inhabit pot holes. They are found more commonly in springs for more permanent water sources. Several consultants knew of places they had been seen or heard.

Some of the consultants were asked as to how many people they thought might have lived at a site this size. They suggested about 8 to 10--maybe as high as 12. People would go one or two days without water if the pot holes dried and would then have to move on. It was noted bya Western Shoshone consultant that when on the move or traveling people moved briskly--at a light jogging pace. People who move about slowly, including today, are accused of "acting like you are in your shelter"--the slower pace of movement appropriate to camp or home.

Plants recognized as useful in this area included Eriogonum

inflatum (Southern Paiute papakudampi; Western Shoshone tusati-mbokipi) noted as a source of salt by a Southern Paiute consultant and as an outer covering for tobacco by a Western Shoshone consultant. Also seen was (Krameria parviflora), the thorns of which are used to oierce ears--thus its name, nankaba tonanimpi- (Southern Paiute). An unidentified Haplopappus-like plant (Southern Paiute tibikadaibi) was noted as useful as an eye wash. Indian ricegrass (Oryzopsis hymenoides), a useful food plant at the site, is called wai in Western Shoshone and wa?ibi in Southern Paiute. Again, stands of desert thorn, which produces edible berries, were observed.

Site 4. Rock ring complex (26NY2960) on the edge of confluence of Dune Wash and Fortymile Wash. Six rock rings four to six feet in diameter, some cleared of desert pavement were observed. The site contained milling stones and a possible cache feature (rock pile) according to the archaeologists.

Consultants' Comments. A Southern Paiute consultant suggested that the rings might be related to the processing of the desert thorn (huupi) common in the area. Two Shoshone consultants, speaking with another ethnographer at another part of the site had a similar explanation. The stems and branches of the desert thorn would be broken fron the plant before the berries were fully ripe, and piled in these circles which would have been slightly excavated or at least had the brush cleared. Rocks one course high would be added to the edges to keep the branches from blowing away. Such a circle would be called tindudu in Western Shoshone. Another Southern Paiute consultant agreed with the method of processing, but noted that her mother had nbot used rocks to keep the branches on place. The area underneath was hard packed earth in the ones she had seen in the Pahrump area. A Western Shoshone offered the observatuon that by this method, people "stayed ahead of their food;" i.e., were able to lengthen the harvest season for these berries. They could return to these sites and process the materials later--but at least they had been gathered together. Some might wait until the berries were fully dried; others not, depending on how heavy the harvest had been.

A large barrel cactus (Echinocactus polycephalus), Western Shoshone towipi) in the area was suggested as a source of basketry awls (winupi). The end of the awl was cushioned with a lump pf creosote lac (tincana). Other barrels have edible fruit, including one called nog^{w}ia.

Site 6. Fran Dune Site, with a buried hearth feature. The site has been tested and part of the hearth is exposed. The area is also important as a potential food collecting area, as the archaeologists have noted several resources present today.

Consultants' Comments. A Southern Paiute consultant suggested

that the buried hearth feature might instead have been an area used to fire pottery, and he asked if there were any such evidence. The archaeologists said that there was none that they discovered. The consultants' observations were based on the soil type, a fine sand, which he said was important in tghe firing process. Clay soil will cause the pottery to explode. The rock features hold the heat longer allowing the clay to fire properly. The temperature needn't be high, but it should be consistent--otherwise you will get fire clouding as he has observed on Shivwits and Kaibab pottery. He witnessed an attempted firing by a Mojave woman at Parker using a garbage can instead of rock lined kiln. The pottery all broke. No other consultant offered an explanation of the feature.

Several commented on the presence of indigo-bush (Psorothamnus fremontii) in the area, but there was some confusion as to its Native name. Terpentine broom (Thamnosma montana) is mugundu in Southern Paiute and is often mistaken for this. Both are valuable medicinal plants, teas being made for bladder and kidney troubles. The stems of terpentine broom are also chewed for colds. Several noticed Indian rice grass and other unidentified grasses and several also commented on the heavy concentration of jackrabbits in the area--based on the number of droppings.

Site 7. Drill Hole Wash shelter complex, consisting of a series of southwest-facing rockshelters along the top of a ridge. Some contain milling stones, often without manos. One had a sandal. The only known water source is a tinaja on one of a pair of hills to the west in Cleavage Gulch. This site type is not uncommon on capped ridges or ones with some type of rimrock.

Consultants' Comments. A Western Shoshone consultant suggested that an area like this, with several small shelters facing south, would be a likely winter camp location. People would have harvested seed foods during the summer abnd stored them in the shelters. They would then return in winter and live off the accumulation while doing a laittle hunting. Likely plant foods here would be kuha or stick-leaf (Mentzelia albicaulis); wai, or Indian rice grass; poina or poiya (tansy mustard, Descurania spp.), and pasida or chia (Salvia columbariae). All are storable. There may have been other things long ago. The archaeologists mentioned that doves and quail have been seen in the area.

The Western Shoshone consultant added that in wointer people would be less active. They would eat little and more or less "hole up." Another added that her mother even today follows these ideas and objects when people fill her plate with food. She says that the old people would have eaten maybe one little bowl of pinenuts during a whole day. That is how one should eat in the wintertime.

One person asked why people would have left an area such as this, to which the consultants replied that a death or lack of food might cause them to leave. If a death occurred and someone were

buried here, others might not return for a year or more. If all thos e remaining were healthy, and there were no old people or sickly babies, they might move a considerable distance. This practice is ;not adhered to today because of the impracticality, but some people still feel strongly about it. The cap rock and talus in areas such as this might provide places to bury the dead. No one knew or had heard of someone being buried in this area, but it remained a possibility.

A general repository orientation discussion followed, as this was a good place to see shaft exploration of drilling. Maps showing the suggested limits of the repository and the related facilities were shown and all consultants were asked to carry this information back to their respective communities for discussion.

Site 8. Top of the north end of Yucca Mountain, with a view of Yucca Wash and Pinyon Pass into Beatty Wash. There us a covered tinaja in the area, a milling slab and a cairn. Joshua trees are present as well.

Consultants' Comments. Several consultants gathered to look at the Joshua trees (Yucca brevifolia) in the area. They are called uumpi in Western Shoshone and soadami in Southern Paiute. The growth tip and emerging flower buds are twised out in the spring, pit roasted and eaten. Later the fruit (Western Shoshone: kuda?wi?i) is gathered and eaten. Another Western Shoshone consultant noted that the roots make a good shampoo as well.

A rocky area such as this site would be called timbidigami in Western Shoshone. These flat rocks would be ideal for taking ki-imbi, or ground squirrels (Spermophilus spp.) or kangaroo rats (paiyo, Dipodomys spp.). Rock traps of the figure-4 type are called timbi huapi. A smaller one iof thge same type (?) is called macimbo huapi. These traps "flatten" small mammals, but since they are often pounded when prepared for food, including heads and bones, this really does not matter. This site would be good for ground squirrels. Death Valley people take them still on occasion (along with kangaroo rats) but one consultant noted that their use has declined in her memory compared to the period before 1940.

The site would also be good for chuckwallas, (Western Shoshone cag^{w}ada) and a Western Shoshone consultant found evidence that it had been so used. He walked over a considerable area and found places where cracks in the rock--ideal chuckwalla locations--had been marked by Indian people by placing a small stone across the crack. This would let others know that chuckwalls were here. The chuckwallas would be extracted from these locations with a sharp stick that would penetrate and could be twisted to remove the prey. They are then roasted whole (eviscerated) in a pit in the sand with a flat rock added on top to weight the animal (otherwise its leg muscles will contract and it will rise out of the pit). Most of

the meat is in the tail, although the entire chuckwalla could be ground up as well. Chuckwallas are used as medicine as well. The dried skin is ground and placed on sores as is the fresh blood (the latter stings because it is salty--but it prevents scarring). Fresh chuckwalla fat combined with pinyon pitch (sanapi) to make a salve is excellent for the skin and will remove old age marks. The fat near the organs of large game animals is used this way as well.

The discussion of chuckwalla processing occasioned talk of turtles or tortoises and their uses, especially as food. Two Southern Paiute consultants remembered eating turtle as soup and also roasted (skinned legs, liver and eyes common parts eaten). Turtles are called aya in Southern Paiute, and used to be common in Pahrump Valley, around Indian Springs and elsewhere. Now they are hardly seen. Chuckwallas, too, are scarce. A Western Shoshone consultant noted that her brother and taken only four this year. The eggs are leathery (as are turtle eggs) and are found in nests in the washes in sandy and gravelly areas.

Other resources seen in the area were black brush (Coleogyne ramosissima), called tu.ciabi in Southern Paiute and containing edible seeds, and the dried stems of sego lily (Calochortus sp.) called sigo?o in Southern Paiute and siigo in Western Shoshone. The bulbs of the latter are dug in the spring and eaten raw. We also saw the right variety of Mormon tea, still apparently ephedra viridis, but witha different growth habit--long straight stems instead of multi-branching ones. The grass Stipa speciosa, called in Southern Paiute hug^{w}ibi and in Shoshone hugi, was also noted as producing an edible seed. A small barrel cactus with edible fruit, called wisibuiti in Southern Paiute and nog^{w}iada in Western Shoshone [see notes fir Site 4; possibly claret cup, Echinocerus triglochidiatus], was also seen. And we encountered a tarantula (Southern Paiute nibisopici; Western Shoshone nasuada) and a Jerusalem cricket (Western Shoshone aatogopi 'bald'). Neither has uses, although they figure in stories.

Site 9. An area along the same ridge as Site 8 from which a long-term habitation site (26NY1964) can be seen below. It is associated with a pink tuff knob and has two 80 gallon tinajas close by. It is in Yucca Wash and potentially on a trail to Pinyon Pass, and thence to Beatty Wash.

A Western Shoshone consultant attempted to orient himself from this point in reference to a trip he had taken up Fortymile Wash in a Star automobile in the 1920s. But due to failing eyesight he could not be certain of his path. He and John Bolland had made the trip for hunting deer. They may have gone up Yucca Wash, or perhaps they went up Fortymile Wash a greater distance. They were headed for a spring where there were lots of pine (pinyon?) trees. [The area he was viewing north of this point had been burned over

and there may have been pinyon there at one time.] They did reach the spring and found many deer tracks-- but did not see any deer. All of this occurred before the Nevada Test Site was established. They made the trip in one day.

The pink tuff and white outcropping in the site area was the subject of some interest. It reminded one Western Shoshone consultant of the white outcroppings on the way to White Rock Spring called "Cottontails flute" [apparently Landmark Rock, according to Pippin and Lockett; see also Steward 1938:95 for mention of a "tavondowayo", 'standing rock'; tabun- is 'cottontail']. Another Western Shoshone consultant suggested that the white might be useful as paint (pisa). Other points of discussion are the differences between Southern Paiute and Western Shoshone names for pinyon tree (tibapi in Pahrump; waapi in Death Valley), pine nut (tiv in Pahrump; tiba in Death Valley; juniper tree (waapi in Pahrump, sawabi in Death Valley; sagebrush (san^{w}abi in Pahrump, poobi in Death Valley), etc.

A brief stop at a downed Joshua tree occasioned a discussion of the use if the nice red roots in basketry for decoration. A Southern Paiute consultant demonstrated splitting (in halves). This fiber is further thinned by removing the inner core by pulling it against the thumbnail. It should be soaked in water before use to make it pliable. Some people wet it in their mouths again just before use. It is an important material to all who know of basketry (southern Nevada Southern Paiute, Death Valley Shoshone). The use of the roots for soap in noted again. Four-winged saltbush (Atriplex canescens) was also observed. It is called mudunapi in Western Shoshone.

Site 10. Twin Springs. The location of both prehistoric and historic occupations. Artifact from both, including a small petroglyph rock are visible on the surface. The spring itself is located on the sidehill above and has been cleaned and augmented by the inhabitants of the site in the historic period.

Consultants' Comments. Most of the consultants hiked to the spring where various plants were observed, including sumac (Rhus trilobaba) called sihivimi in Southern Paiute, and chia (Southern Paiute pasida). Sumac stems are used extensively by Southern Paiute basket makers for warp and weft. The small prehistoric site located near there eliciated some comment. One Southern Paiute consultant observed the ground rock surfaces and the chia growing nearby and suggested a connection. Another noted that the site was probably far enough from the spring so that people would not scare the mountain sheep that would come there. (This same consultant seemed sure that the scat and tracks seen here were mountain sheep and not deer.) He said that there might be blinds above the spring for shooting sheep. They would be so located so that hunters could shoot down hill and not up--very difficult for arrow travel.

In the wash below the site was sacred datura (Datura meteloides), called muipi in Western Shoshone and momopi in Southern Paiute; also an unidentified composite that might be the Western Shoshone medicinal tea tubisibungu.

A Western Shoshone consultant again attempted to sort out routes of travel through ths area from his youth. He recalled coming by wagon from Beatty to White Rock Spring to bring supplies for an Annual Mourning Ceremony (nadiabinina) for Willy George's father. He came "straight" up the wash, over a summit to Tippipah Spring, and then on to White Rock Spring. He came from Kinball Ranch in Oasis Valley (Beatty). Another time he came over Timber Mountain through a canyon, hit Forty Mile Wash and came down to a cross point to Tippipah Spring. From there he again went on to Capatin Jack Spring and White Rock Spring. He and the DRI archaeologists discussed the possibility that he came across Timber Mountain via Cat Canyon, hit Fortymile Wash above this area and came down it to a cross point to Tippipah Spring. From there one could go north past Captain Jack Spring to White Rock Spring. Both agreed that that would be a good way to go. Timber Mountain was called in Western Shoshone nabungaici?i; Table Mountain [Buckboard Mesa?] is eso [note correction of earlier discussion, Site 2]; and Pahute Mesa is nimigauki. Another trio was mentioned in which he may have initially gone farther north, possibly down Thirsty Canyon, and then headed southeast, possible to Ammonia Tanks. He recalled extensive petroglyphs in upper Fortymile Wash [north of where we were]. This was confirmed by Pippin. This was all a long time ago and it is difficult to be sure when your eyesight is no longer as good as it once was.

As people dispersed after the hike to the spring, only a couple saw and commented on the historic and possible prehistoric features below Twin Springs. One Southern Paiute consultant suggested that three grooved stones in the historic camp had been so grooved to "test" for their rock grain or fracturing potential prior to additional work. One was broken, an indication that it could not have been further worked in that direction. A Western Shoshone consultant felt that the grooved stones may have been part of a coyote trap--the weights would have been attached to the steel trap so that the coyote could not drag it away. He noted that several Indian people in the historic period hunted in the area and trapped coyotes and bobcats for their furs. Thus, sites with historic components need not always be attributed to non-Indians.

Exit Discussion

After visiting this, our last site, we sat for a few minutes to discuss as a group what the State should know about this area and people's feeling about the proposed repository. Only a few spoke, but others seemed to agree. The first opinion was that the repository should be opposed because of the larger nuclear issue.

Nuclear testing in known to have caused cancer among Indian people as well as non-Indians in the area. It has altered stream flow and polluted water. Plants such as pinyon are less abundant and the nuts are smaller. Some animals have become scarce or disappeared. Another added that if siting the repository here meant that the sites we had seen would be destroyed, that was a good reason for opposition. Another noted and strongly objected to the locking up of so much of Nevada (after all, Indian land) by the military and others. This basically denied Indian people the right to come to places like this and see the sites and utilize the plants and other resources. Opposition should be voiced on these grounds as well. The general feeling that all the destruction violates the earth and its resources as a whole was also stated (see discussion earlier about proper relationships between people, animals and places). Another asked whether the additional sites in the area that might be destroyed were like what we had seen in the past two days and how maby of them there were. The DRI archaeologists tried to answer this based on the indefinite proposal and plans of DOE at present. What would happen and which sites would be inivolved would be determined as more definite plans developed. The construction phase (vs. the site characterization phase) was felt to be the most destructive for sites, but undoubtedly site characterization would impact some. Plants and animals would also be effected during both phases. There are indeed more sites, but what we have seen is typical.

All consultants agreed to think about these matters further, and discuss them in their respective communities. The field workers would contact them later for more comments, and they would see a draft report of their visit for additional thoughts.

Postscript

Although some additional comments have been forthcoming, they have not been systematically gathered at present. We hope that this draft will elicit more responses. We are also planning an additional one-day site visit in April or May for some of those who were unable to attend the first, and also for the purpose pf additional ethnobiological work. Many of the plants observed last fall were no longer in leaf and were therefore difficult to identify.

References Cited

Fowler, Catherine S., Mary K. Rusco and Maribeth Hamby
1987 Native Americans and Yucca Mountain: Ethnographic,

Religious and Socioeconomic Perspectives. Contract Report, submitted to NWPO through Mountain West, Phoenix, AZ.

Pippin, Lonnie C. (ed.)
1984 Limited Test Excavations at Selected Archaeological Sites in the NNWSI Yucca Mountain Project Area, Southern Nye County, Nevada. Social Sciences Center Publication No. 40. Desert Research Institute, University of Nevada, Reno.

Pippin, L. C., R. L. Clerico and R. L. Reno
1982 An Archaeological Reconaissance of the NNWSI Yucca Mountain Project Area, Southern Nye County, Nevada Social Sciences Center Publication No. 28. Desert Research Institute, University of Nevada, Reno.

Steward, Julian H.
1938 Basin-Plateau Aboriginal Sociopolitical Groups. Bureau of American Ethnology Bulletin 120. Washington.

PROPOSED ROUTE FOR VIEWING OF ARCHAEOLOGICAL SITES

IN THE NNWSI YUCCA MOUNTAIN AREA FOR ETHNOGRAPHIC ON-SITE VISITS

All proposed route stops are to be considered optional and up to the discretion and needs of the ethnographers and their consultants. All sites, unless otherwise noted are directly off the road and have easy, short, walking access.

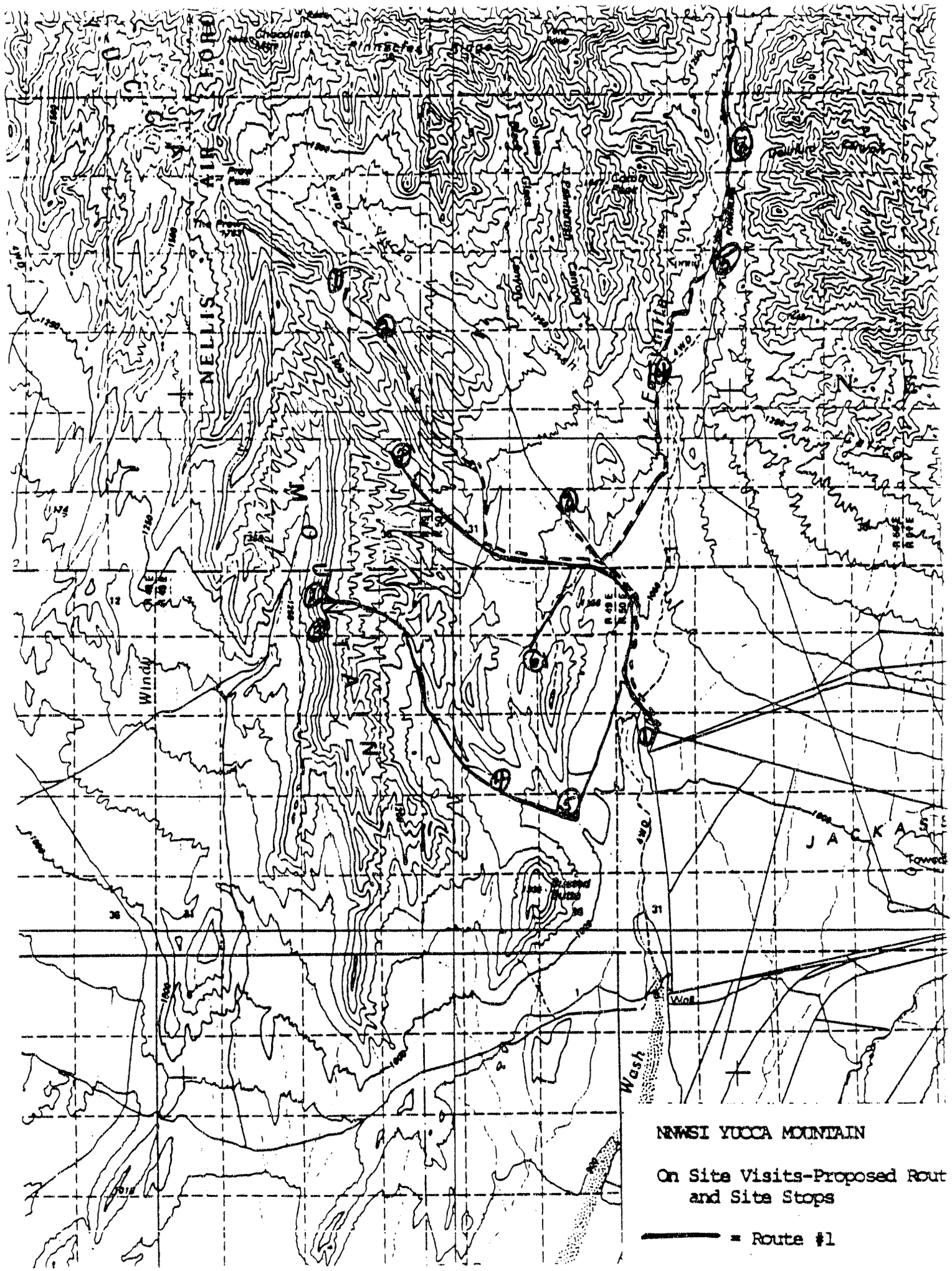
Route stops not accomplished in one day could be carried over to second day.

Route #1:

Stop #:	Description:
1	40 Mile Terrace, view looking north and south into 40 Mile Canyon; general project orientation. (Site of extensive lithic scatter of considerable antiquity.)
2	Top of Yucca Mountain; complete areal overview of Yucca Mountain within regional perspective. View of Crater Flat, Big Dune, Bare Mountain, Yucca Mt. proper, Yucca Wash, 40 Mile Canyon, Amargosa Desert, Shoshone Mt., Calico Hills, Pahute Mesa in distance.)
3	Small rock shelter on west side of Yucca Mt. on steep colluvial slope overlooking Crater Flat. Rock alignment and hearth features present; (dependent upon relocation; in same general area as stop #2).
4	Historic Rock Shelter and 2 covered tinaja/tanks. (26NY3042 and 3056) Representative of site type and patterning in the Yucca Mountain region. Sherds of brownware pottery on site.
5	Rock Ring complex on edge of Dune Wash and 40 Mile Wash confluence. 6 rock rings and 1 cache feature. Several millingstones recorded. (26NY2960)
6	Fran Fan Dune Site and buried hearth feature. Potentially important as resource gathering area.
7	Drill Hole Wash Rock Shelter Complex; series of southwest facing rock shelters along top of ridge. Visible from valley bottom; discussion of features from distance.

Route #2:

Stop #:	Description
1	Road to top of north end of Yucca Mountain; view of Yucca Wash and Pinyon Pass into Beatty Wash. Covered tinaja, milling slab and cairn in vicinity. Vegetation change into Joshua trees.
2	View from along same ridge looking down into long term habitation site (26NY1964) associated with pink tuff knob (landmark) and two 80 gallon tinajas/tanks. Potentially recognizable and significant site. Shows relationship between Yucca Wash and 40 Mile Canyon and potential route of travel.
3	Opalized chert opportunistic quarry. Scattered concentrations of knapping stations.
4	Terrace sites in 40 Mile Canyon. Artifacts visible. Potential discussion from truck without walking.
5	View of Cottonwood Spring from wash bottom within 40 Mile Canyon.
6	View from truck of small rock shelter, milling station locations within 40 Mile Canyon. Representative of occupation pattern and site types within lower 40 Mile Canyon.
7	Twin Springs site; location of prehistoric and historic occupations. Artifacts visible on surface. Single petroglyph boulder. (Subject to access through barricade.)


NELLIS AIR FORCE
Windy
Wash
NNWSI YUCCA MOUNTAIN
On Site Visits-Proposed Rout
and Site Stops
= Route #1

APPENDIX II

YUCCA MOUNTAIN PROJECT: Socioeconomic Data

APPENDIX II

YUCCA MOUNTAIN PROJECT:

SOCIOECONOMIC DATA

Table 1a. Resident Population of Western Shoshone Reservations: Duckwater, Yomba, Timbisha, by Age and Sex.

Table 1b. Resident Population of Southern Paiute Reservations and Communities Studied: Moapa, Las Vegas Colony, Pahrump, by Age and Sex.

Table 1c. Enrolled Tribal Members by Age and Sex: Duckwater, Yomba, Timbisha.

Table 1d. Enrolled Tribal Members by Age and Sex: Moapa and Las Vegas Colony.

Table 1e. Population Change (1980-1990): Data for Duckwater, Yomba, Death Valley, Moapa and Las Vegas Colony.

Table 1f. Indian Population of Clark, Lincoln, and Nye Counties, Showing Population Change between 1980 and 1990.

Table 2. Housing on Western Shoshone and Southern Paiute Reservations or Communities.

Table 3a. Western Shoshone and Nye County Income, Unemployment, 1980 (Hamby and Rusco, 1987; U.S. Census, 1980).

Table 3b. Southern Paiute and Clark County Income, Unemployment, 1980 (Hamby and Rusco, 1987).

Table 4a. Educational Levels, 1980, Western Shoshone Population in Study Area (Hamby and Rusco, 1987; U.S. Census, 1980).

Table 4b. Educational Levels, 1980, Southern Paiute Population in Study Area (Hamby and Rusco 1987; U.S. Census, 1980).

Table 5. Employment Categories Represented in Western Shoshone and Southern Paiute Reservation or Community Workforce.

Table 6. Urban Las Vegas Native American Population by Census District, 1980 (Hamby and Rusco, 1987; U.S. Census, 1980).

Table 1a. Resident Population of Western Shoshone Reservations: Duckwater, Yomba, Timbisha, by Age (U.S. Census, 1990 Advance Estimates).

Age	Duckwater			Yomba			Timbisha*		
	Indian	Other	Total	Indian	Other	Total	Indian	Other	Total
>/= 18	74	13	87	52	6	58			28
</= 17	41	7	48	36	1	37			18
Total	115	20	135	88	7	95			46

* Estimates for the 1990 census were not available for the Timbisha Village; the 1987-1988 figures were from a house-to-house census reported by Hamby (1989: Table III.). The preponderating majority can be assumed to be Indian.

Table 1b. Resident Population of Southern Paiute Reservations and Communities Studied: Moapa, Las Vegas Colony, Pahrump, by Age and Sex.

Age	Moapa			Las Vegas Col.			Pahrump**		
	Indian	Other	Total	Indian	Other	Total	Indian	Other	Total
>/= 18	125	98	223	44	7	51	22	1	23
</= 17	65	87	152	28	1	29	11	-	11
Total	190	185	375	72	8	80	33	1	34

* The Moapa Reservation has a large low-rental housing unit currently occupied by a relatively large number of non-Indians, largely of Hispanic origin.

** Pahrump figures are from a house-to-house census of Indian households in Pahrump in 1988 (Rusco and Hamby 1988).

Table 1c. Enrolled Tribal Members by Age and Sex: Duckwater, Yomba, Timbisha.

Age Class	Duckwater M	Duckwater F	Yomba M	Yomba F
On-Reservation:				
>/= 65	4	6	1	2
16-64	27	28	16	19
<16	16	12	11	6
Total:	47	46	28	27
Off-Reservation:				
>/= 65	3	6	4	8
16-64	55	68	39	56
< 16	23	34	13	9
Total:	81	108	56	75
Total:				
>/= 65	7	12	5	10
16-64	82	96	55	75
< 16	39	46	24	15
Total:	128	154	84	100

Table 1d. Enrolled Tribal Members by Age and Sex: Moapa.

Age Class	Moapa		
	M	F	
On-Reservation:			
>/= 65	1	3	4
16-64	53	59	112
< 16	21	25	46
Total:	75	87	162
Off-Reservation:			
>/= 65	1	2	3
16-64	44	34	78
< 16	11	6	17
Total:	56	42	98
Total:			
>/= 65	2	5	7
16-64	97	93	190
< 16	32	31	63
Total:	131	129	260

Table 1e. Population Change (1980-1990): Data for Duckwater, Yomba, Death Valley, Moapa and Las Vegas Colony.

Tribe:	1980	1990	Pop. Change	% Change
Duckwater	147	115	- 32	- 21.8%
Yomba	*	88	?	?
Timbisha*	26	46	+ 20	+ 76.9%
Moapa	153	190	+ 37	+ 29.2%
Las Vegas Colony	89	72	- 17	- 19.1%

Table 1f. Indian Population of Clark, Lincoln and Nye Counties, Showing Population Change between 1980 and 1990.

County:	1980	1990	Pop. Change	% Change
Clark	3056	6416	+ 3360	+ 109,9%
Lincoln	65	58	- 7	- 10.85
Nye	354	499	= 145	+ 41.0%
Sub-Tot.	3,475	6,973	+ 3,498	+ 100.7%
State-wide	13,322	19,637	+ 6,315	+ 47.4%

Sources: 1980 Population Data: 1988 County and City Data Book, U.S. Census Bureau; 1990 Population Data: PL 94-171 Files, U.S. Census Bureau.

Note: If the Indian, Eskimo and Aleut population for a county was less than 100 in 1980, the percentage of change is shown on the table as a blank in order not to exaggerate the percentages in cases where the 1980 to 1990 increase in the Indian population may have been relatively small.

Table 2. Housing on Western Shoshone and Southern Paiute Reservations or Communities.

	Count by Reservation of Community:						
	Western Shoshone:			Southern Paiute:			
Housing Type	Duck water	Yomba	Death Valley	Moapa	Las Vegas	Pah-rump	Total (%)
Old/Remodeled	0	2	3	0	0	2	7 (3.6)
New, HUD-built	47	22	0	53	10	0	132 (67.3)
Mobile Homes	3	3	12	5	22	12	57 (29.1)
Totals	50	27	15	58	32	14	196
Percents	25.5	23.8	7.7	29.6	16.3	7.1	100.0

Table 3a: WESTERN SHOSHONE AND NYE COUNTY INCOME, UNEMPLOYMENT, 1980 (Hamby and Rusco, 1987; U.S. Census).

	# of persons	% Unemp.	Family Income	% Below Poverty, Family
Duckwater	103	*36.8%	M $12,500	18.5%
Yomba	147	*74%	M $11,295	15.3%
Indians in county	352	6.3%	M $20,324	21.8%
County	9,048	4.8	M $21,148	11.8%

* worked less than 15 weeks during the year (not including traditional [ranching] employment.

M = median income/family.

Table 3b: SOUTHERN PAIUTE AND CLARK COUNTY INCOME, UNEMPLOYMENT, 1980 (Hamby and Rusco, 1987).

	# of persons	% Unemp.	Family Income	% Below Poverty, Family
Moapa	141	*24%	M $7,891	40%
Las Vegas Colony	83	*44%	M $15,308	17%
Indians in County	2,519	9%	M $17,060	14.2%
Clark County	463,087	6.4%	M $21,029	9.1%

*worked less than 15 weeks during the year (not including traditional [ranching] employment.

M = median income/family.

TABLE 4a: EDUCATIONAL LEVELS, 1980, WESTERN SHOSHONE POPULATION IN STUDY AREA (Hamby and Rusco, 1987; U.S. Census)

	Duckwater			Yomba			Death Valley	Native Amer/Co.	Nye Co. gen.
Yrs. school	M	F	<25	M	F	<25	total	total	total
1-4	5	2		1	1		*	*	*
5-8	5	6		5	2		5	70	647
9-11	6	4		8	2		3	37	1,021
12	9	10		2	3		14	134	2,371
13-15	5	3		0	1		3	8	915
16	0	0		0	0		0	0	519

* totals given as 1-8 years

TABLE 4b: EDUCATIONAL LEVELS, 1980, SOUTHERN PAIUTE POPULATION IN STUDY AREA (Hamby and Rusco, 1987; U.S. Census)

	Moapa			Las Vegas Colony			Native Amer/ co.	Clark Co.
years school	M	F	<25	M	F	<25	total	total
1-4	4	3		3	1		43	*
5-8	8	11		5	6		120	26,758
9-11	11	10		1	21		377	43,966
12	12	8		6	3		718	112,427
13-15	4	6		2	0		453	54,964
16	0	5		0	1		190	34,330

* totals given as 1-8 years

** Nye County Native American figures include Native Americans in Pahrump (34 persons total)

Table 5. Employment Categories Represented in Western Shoshone and Southern Paiute Reservation or Community Workforce.

Category:	Count by Reservation or Community: Western Shoshone: Duck water	Yomba	Death Valley	Southern Paiute: Moapa *	Las Vegas	Pah-rump	Total (%)
Manager, Administrator	4	2	1	3	2	1	13
Technical	4	1	0	5	0	0	10
Clerical, sales	5	2	0	8	11	1	27
Services	5	1	12	3	6	2	29
Laborer	12	7	1	3	11	0	34
Mechanic, Operator	13	1	0	10	0	1	25
Farm, mgt. labor	15	**	0	3	0	1	19
Total	49	34	14	35	26	6	164

* Information from interviews at sample households and with Tribal employees.

** There are three Yomba families with herds of 150-250, and some others with smaller herds, but fewer than the original 20 allottees are engaged in farm (herd management) activities.

TABLE 6: URBAN LAS VEGAS NATIVE AMERICAN POPULATION BY CENSUS DISTRICT, 1980 (Hamby and Rusco, 1987; U.S. Census)

	Native Americans	
	Count	% of Total
East Las Vegas	25	0.39
Nellis AFB	45	0.60
Boulder City	36	0.38
Winchester	75	0.38
Henderson	261	1.08
N. Las Vegas	369	0.86
Sunrise Manor	324	0.73
Paradise	353	0.42
Las Vegas	1,031	0.63
Total	2,519	0.62

APPENDIX III.

1988 MODIFIED RISK PERCEPTION QUESTIONNAIRE:

TABULATION OF DATA

ATTITUDES TOWARD WASTE REPOSITORY AT YUCCA MOUNTAIN

SOCIOECONOMIC DATA

1. Politics and Government:

1. (Q21) How often do you think you can trust the federal government to do what is right (0 = never, 10 = always)?

	min/max	mean	count
Yomba:	0 / 6	2.6	9
Death Valley:	0 / 6	3.5	4
Duckwater:	0 / 6	2.6	15
W.Shoshone:	0 / 6	2.7	28
Moapa	0 / 10	4.1	17
Las Vegas:	0 / 10	2.7	10
Pahrump:	0 / 4	2.3	3
S. Paiute:	0 / 10	3.4	30
Combined:	0 / 10	3.1	58

2. (Q22) How often do you think you can trust the state government to do what is right (0 = never; 10 = always)?

	min/max	mean	count
Yomba:	0 / 6	3.5	9
Death Valley:	0 / 7	3.3	4
Duckwater:	0 / 8	3.5	15
W.Shoshone:	0 / 8	3.4	28
Moapa:	0 / 10	3.2	17
Las Vegas:	0 / 10	3.5	10
Pahrump:	0 / 8	4.3	4
S. Paiute:	0 / 10	3.4	31
Combined:	0 / 10	3.4	59

3. (Q23) How often do you think you can trust the county government to do what is right (0 = never; 10 = always)?

	min/max	mean	count
Yomba:	0 / 10	3.5	9
Death Valley:	0 / 7	3.7	4
Duckwater:	0 / 7	3.6	15
W.Shoshone:	0 / 10	3.6	28
Moapa:	0 / 10	3.7	16
Las Vegas:	0 / 10	3.5	10
Pahrump:	5 / 10	7.8	4
S. Paiute:	0 / 10	4.2	31
Combined:	0 / 10	4.1	57

4. (Q24) How often do you think you can trust the city government to do what is right (0 = never; 10 = always)?

	min/max	mean	count
Yomba:	N/A		
Death Valley:	N/A		
Duckwater:	N/A		
W.Shoshone:	N/A		
Moapa:	N/A		
Las Vegas:	0 / 7	3.3	10
Pahrump:	N/A		
S. Paiute:	N/A		
Combined:	N/A		

5. (Q25) How often do you think you can trust the tribal council to do what is right (0 = never; 10 = always)?

	min/max	mean	count
Yomba:	0 / 8	2.5	9
Death Valley:	0 / 9	5.7	4
Duckwater:	0 / 9	5.6	15
W.Shoshone:	0 / 9	5.0	28
Moapa:	0 / 10	5.6	16
Las Vegas:	0 / 10	4.8	10
Pahrump:	N/A	-	-
S. Paiute:	0 / 10	5.3	26
Combined:	0 / 10	5.1	54

6. (Q26a) In the last four years or so have you written or talked to your congressman, senator or any federal official to let them know what you would like them to do on a public issue?

	Yes	No	Under Age
Yomba:	2	6	1
Death Valley:	2	2	0
Duckwater:	5	10	0
W.Shoshone:	9	18	1
Moapa:	6	11	0
Las Vegas:	3	7	0
Pahrump:	0	4	0
S. Paiute:	9	22	0
Combined:	18	40	1

7. (Q26b) In the last four years or so have you written or talked to your state senator or assemblyman or any state official to let them know what you would like them to do on a public issue?

	Yes	No	Under Age
Yomba:	2	6	1
Death Valley:	2	2	0
Duckwater:	5	10	0
W.Shoshone:	9	18	1
Moapa:	4	13	0
Las Vegas:	2	8	0
Pahrump:	0	4	0
S. Paiute:	6	25	0
Combined:	15	43	1

8. (Q26c) In the last four years or so have you written or talked to your county or local officials to let them know what you would like them to do on a public issue?

	Yes	No	Under Age
Yomba:	2	6	1
Death Valley:	2	2	0
Duckwater:	5	10	0
W.Shoshone:	9	18	1
Moapa:	4	13	0
Las Vegas:	2	8	0
Pahrump:	1	3	0
S. Paiute:	7	24	0
Combined:	16	42	1

9. (Q26d) In the last four years or so have you written or talked to your tribal cuncil members to let them know what you would like them to do on a public issue?

	Yes	No	Under Age
Yomba:	6	2	1
Death Valley:	4	0	0
Duckwater:	10	5	0
W.Shoshone:	20	7	1
Moapa:	13	4	0
Las Vegas:	10	0	0
Pahrump:	N/A	-	-
S. Paiute:	23	4	0
Combined:	43	11	1

10. (Q26e) In the last four years or so have you worked for the election of any congressman, senator or other political candidate?

	Yes	No	Under Age
Yomba:	0	8	1
Death Valley:	1	3	0
Duckwater:	1	14	0
W.Shoshone:	2	25	1
Moapa:	1	16	0
Las Vegas:	1	9	0
Pahrump:	0	4	0
S. Paiute:	2	29	0
Combined:	4	54	0

11. (Q26f) Did you vote in the 1986 general election?

	Yes	No	Under Age
Yomba:	4	4	1
Death Valley:	3	1	0
Duckwater:	8	7	0
W.Shoshone:	15	12	1
Moapa:	7	10	0
Las Vegas:	6	4	0
Pahrump:	0	4	0
S. Paiute:	13	18	0
Combined:	28	30	1

2. Science and Technology

12. (Q27) How strongly to you agree or disagree that scientists generally work for the well-being of the public (0 = completely disagree; 10 = completely agree)?

	min/max	mean	count
Yomba:	0 / 10	6.8	9
Death Valley:	4 / 8	5.2	4
Duckwater:	0 / 10	6.0	14
W.Shoshone:	0 / 10	6.2	27
Moapa:	0 / 8	5.3	13
Las Vegas:	0 / 10	4.7	9
Pahrump:	4 / 10	8.5	4
S. Paiute:	0 / 10	5.6	26
Combined:	0 / 10	5.9	53

13. (Q28) How strongly to you agree or disagree that scientists often make sensational announcements just to get publicity (0 = completely disagree; 10 = completely agree)?

	min/max	mean	count
Yomba:	3 / 10	6.8	9
Death Valley:	4 / 8	6.0	4
Duckwater:	0 / 10	5.2	14
W.Shoshone:	0 / 10	5.8	27
Moapa:	0 / 10	7.6	12
Las Vegas:	0 / 10	4.9	8
Pahrump:	10	10.0	2
S. Paiute:	0 / 10	6.8	22
Combined:	0 / 10	6.2	49

14. (Q29) How strongly do you agree or disagree that science attempts to increase the knowledge we can apply to our everyday lives (0 = completely disagree; 10 = completely agree)?

	min/max	mean	count
Yomba:	1 / 10	6.6	9
Death Valley:	3 / 8	5.0	4
Duckwater:	5 / 10	7.2	14
W.Shoshone:	1 / 10	6.7	27
Moapa:	5 / 10	7.0	14
Las Vegas:	0 / 10	5.8	9
Pahrump:	0 / 10	7.5	4
S. Paiute:	0 / 10	6.7	27
Combined:	0 / 10	6.7	54

15. (Q30) How strongly to you agree or disagree that science creates more problems than it solves (0 = completely disagree; 10 = completely agree)?

	min/max	mean	count
Yomba:	0 / 10	6.0	9
Death Valley:	5 / 8	5.7	4
Duckwater:	0 / 7	4.2	14
W.Shoshone:	0 / 10	5.1	27
Moapa:	1 / 10	6.9	14
Las Vegas:	0 / 10	6.8	9
Pahrump:	4 / 10	6.0	4
S. Paiute:	0 / 10	6.7	27
Combined:	0 / 10	5.9	54

16. (Q31) How strongly to you agree or disagree that scientists can almost always be trusted when they say something like a product or procedure is safe (0 = completely disagree; 10 = completely agree)?

	min/max	mean	count
Yomba:	0 / 8	3.7	9
Death Valley:	2 / 4	2.7	4
Duckwater:	0 / 9	4.9	14
W.Shoshone:	0 / 9	4.2	27
Moapa:	0 / 10	4.1	15
Las Vegas:	0 / 10	4.0	9
Pahrump:	0 / 3	0.8	4
S. Paiute:	0 / 10	3.6	28
Combined:	0 / 10	3.9	55

3. Risks Perceived

17. (Q38) How likely do you think it is that above ground nuclear weapons testing activities at the Nevada Test Site have in the past caused harmful health problems for people who live in your area (0 = extremely unlikely; 10 = extremely likely)?

	min/max	mean	count
Yomba:	0 / 10	6.8	9
Death Valley:	0 / 10	7.5	4
Duckwater:	8 / 10	9.5	15
W.Shoshone:	0 / 10	8.3	28
Moapa:	0 / 10	7.4	16
Las Vegas:	6 / 10	9.4	10
Pahrump:	0 / 10	2.5	4
S. Paiute:	0 / 10	7.4	30
Combined:	0 / 10	7.8	58

18. (Q39) How likely do you think it is that underground nuclear weapons testing activities at the Nevada Test Site will in the future cause harmful health problems for people who live in your area (0 = extremely unlikely; 10 = extremely likely)?

	min/max	mean	count
Yomba:	0 / 10	7.6	9
Death Valley:	3 / 10	7.5	4
Duckwater:	8 / 10	9.7	15
W.Shoshone:	0 / 10	8.7	28
Moapa:	0 / 10	8.4	17
Las Vegas:	8 / 10	9.8	10
Pahrump:	8 / 10	9.5	4
S. Paiute:	0 / 10	9.0	31
Combined:	0 / 10	8.9	59

19. (Q40) To what extent do you agree that the Nevada Test Site has provided safe procedures for transporting and handling nuclear materials (0 = not safe at all; 10 = completely safe)?

	min/max	mean	count
Yomba:	0 / 10	4.4	9
Death Valley:	0 / 3	2.0	4
Duckwater:	0 / 10	3.6	13
W.Shoshone:	0 / 10	3.5	26
Moapa:	0 / 10	4.0	13
Las Vegas:	0 / 8	2.0	10
Pahrump:	0 / 8	2.7	3
S. Paiute:	0 / 10	3.1	26
Combined:	0 / 10		52

20. (Q41) Generally speaking would you say that the Nevada Test Site has had entirely harmful effects (0-3), entirely beneficial effects (8-10), or that harmful and beneficial effects balance each other (4-7)?

	(0 - 3)	(4 - 7)	(8 - 10)	(Unsure)
Yomba:	3	5	1	0
Death Valley:	1	2	0	1
Duckwater:	9	1	2	3
W.Shoshone:	13	8	3	4
Moapa:	2	5	1	4
Las Vegas:	4	3	0	3
Pahrump:	1	2	1	0
S. Paiute:	7	10	2	7
Combined:	20	18	5	11

21. (Q43) To what extent do you agree that accidents involving the transportation of hazardous materials are inevitable (0 = completely disagree, that is, accidents not inevitable; 10 = completely agree -- accidents are inevitable)?

	min/max	mean	count
Yomba:	4 / 10	7.7	9
Death Valley:	1 / 10	6.0	4
Duckwater:	2 / 10	8.6	14
W.Shoshone:	1 / 10	7.9	27
Moapa:	5 / 10	8.9	17
Las Vegas:	3 / 10	8.8	10
Pahrump:	10	10.0	4
S. Paiute:	3 / 10	9.0	31
Combined:	1 / 10		58

22. (Q44) To what extent do you agree that hazardous materials should not be transported through highly populated areas (0 = completely disagree -- transportation is safe; 10 = completely agree -- transportation is unsafe)?

	min/max	mean	count
Yomba:	0 / 10	8.6	9
Death Valley:	9 / 10	9.5	4
Duckwater:	4 / 10	9.2	15
W.Shoshone:	0 / 10	9.0	28
Moapa:	5 / 10	9.7	17
Las Vegas:	8 / 10	9.8	10
Pahrump:	10	10.0	4
S. Paiute:	5 / 10	9.8	31
Combined:	0 / 10		59

23. (Q45) To what extent do you agree that transportation of hazardous materials is unsafe (0 = completely disagree -- transportation is safe; 10 = completely agree -- transportation is safe)?

	min/max	mean	count
Yomba:	0 / 10	7.2	9
Death Valley:	1 / 10	7.3	4
Duckwater:	3 / 10	9.5	15
W.Shoshone:	0 / 10	8.4	28
Moapa:	3 / 10	9.3	16
Las Vegas:	0 / 10	8.5	8
Pahrump:	10	10.0	4
S. Paiute:	0 / 10	9.1	28
Combined:	0 / 10		56

23a. (Q46) To what extent do you agree that current methods of transportation of hazardous materials through your community are safe (0 = completely disagree -- current methods unsafe; 10 = completely agree -- current methods safe)?

	min/max	mean	count
Yomba:	0 / 3	0.6	9
Death Valley:	0 / 4	1.8	4
Duckwater:	0 / 8	1.4	15
W.Shoshone:	0 / 8	1.2	28
Moapa:	0 / 10	2.0	16
Las Vegas:	0 / 5	0.9	8
Pahrump:	N.A.		
S. Paiute:	0 / 10	1.5	24
Combined:	0 / 10	1.3	52

24. (Q47) Do you think that underground storage is the best means of disposing of nuclear waste ?

	YES	NO	UNSURE
Yomba:	4	4	1
Death Valley:	1	3	0
Duckwater:	1	12	2
W.Shoshone:	6	19	3
Moapa:	5	8	4
Las Vegas:	2	3	5
Pahrump:	1	1	2
S. Paiute:	8	12	11
Combined:	14	31	14

25. (Q48) Do you think that a nuclear waste repository could be built at Yucca Mountain in such a way that would be acceptably safe?

	YES	NO	UNSURE
Yomba:	0	7	2
Death Valley:	1	3	0
Duckwater:	3	11	1
W.Shoshone:	4	21	3
Moapa:	2	11	4
Las Vegas:	1	8	1
Pahrump:	0	2	2
S. Paiute:	3	21	7
Combined:	7	42	10

26. (Q49) Do you think that nuclear waste could be transported to the repository in a way that would be acceptably safe?

	YES	NO	UNSURE
Yomba:	2	4	3
Death Valley:	1	3	0
Duckwater:	1	12	2
W.Shoshone:	4	19	5
Moapa:	3	14	0
Las Vegas:	0	9	1
Pahrump:	1	3	0
S. Paiute:	4	23	1
Combined:	8	42	6

27. (Q50) How confident are you that federal agencies have provided the public with honest and accurate information about the safety of the government's nuclear program (0 = not confident at all; 10 = completely confident)?

	min/max	mean	count
Yomba:	0 / 10	4.1	9
Death Valley:	0 / 4	2.0	4
Duckwater:	0 / 5	1.4	15
W.Shoshone:	0 / 10	1.6	28
Moapa:	0 / 7	1.9	17
Las Vegas:	0 / 5	0.7	7
Pahrump:	0 / 10	4.5	4
S. Paiute:	0 / 10	2.0	28
Combined:	0 / 10		56

28. (Q51) Generally speaking would you say that the nuclear waste repository would have entirely harmful effects (1-3), entirely beneficial effects (8-10) <u>on this reservation/village</u>, or that harmful and beneficial effects would balance each other (4-7)?

	0 - 3	4 - 7	9 - 10	unsure
Yomba:	4	4	0	1
Death Valley:	4	0	0	0
Duckwater:	11	2	1	1
W.Shoshone:	19	6	1	2
Moapa:	12	8	2	0
Las Vegas:	5	1	2	0
Pahrump:	2	2	0	0
S. Paiute:	19	11	4	0
Combined:	38	17	5	2

29. (Q52) Generally speaking would you say that effects <u>on you personally</u> would be entirely harmful (0-3), entirely beneficial (8-10), or that harmful and beneficial effects would balance each other (4-7)?

	0 - 3	4 - 7	8 - 10	unsure
Yomba:	4	4	0	1
Death Valley:	4	0	0	0
Duckwater:	10	2	1	1
W.Shoshone:	18	6	1	2
Moapa:	14	7	2	0
Las Vegas:	2	1	2	0
Pahrump:	2	2	0	0
S. Paiute:	18	10	4	0
Combined:	36	16	5	2

30. (Q54) Thinking about everything that has occurred over the past year or so how fair do you think the process of selecting Yucca Mountain as a possible site for a nuclear waste repository has been (0 = completely unfair; 10 = completely fair)?

	min/max	mean	count
Yomba:	0 / 5	2.8	9
Death Valley:	0 / 3	0.8	4
Duckwater:	0 / 5	1.3	11
W.Shoshone:	0 / 5	1.8	24
Moapa:	0 / 10	2.1	14
Las Vegas:	0 / 10	1.4	9
Pahrump:	4 / 7	5.5	2
S. Paiute:	0 / 10	2.1	25
Combined:	0 / 10		49

31 - 40. (Q53) The following possible concerns about Yucca Mountain were ranked by respondents, many of whom assigned the same value to more than one of the items.

31. Accidents may occur during transportation across tribal land:

	min/max	mean	count
Yomba:	3 / 10	6.5	4
Death Valley:	6 / 10	8.0	4
Duckwater:	2 / 10	6.3	15
W.Shoshone:	2 / 10	6.7	23
Moapa:	1 / 10	7.7	16
Las Vegas:	2 / 10	8.2	9
Pahrump:	-	-	-
S. Paiute:	1 / 10	7.9	25
Combined:	1 / 10		48

32. A repository on Yucca Mountain would violate traditional teachings about treatment of the earth:

	min/max	mean	count
Yomba:	4 / 10	6.5	4
Death Valley:	3 / 10	7.5	4
Duckwater:	2 / 10	5.1	15
W.Shoshone:	2 / 10	5.8	23
Moapa:	0 / 10	5.8	16
Las Vegas:	2 / 10	6.1	9
Pahrump:	-	-	-
S. Paiute:	0 / 10	5.9	25
Combined:	0 / 10	5.9	48

33. A repository on Yucca Mountain would damage traditional lands:

	min/max	mean	count
Yomba:	3 / 10	5.3	4
Death Valley:	3 / 10	7.5	4
Duckwater:	2 / 10	6.2	15
W.Shoshone:	2 / 10	6.3	23
Moapa:	0 / 9	5.9	16
Las Vegas:	3 / 9	6.4	9
Pahrump:	-	-	-
S. Paiute:	0 / 9	6.1	25
Combined:	0 / 10	6.2	48

34. A repository on Yucca Mountain would cause air polution:

	min/max	mean	count
Yomba:	7 / 10	8.5	4
Death Valley:	4 / 10	6.5	4
Duckwater:	2 / 10	6.5	15
W.Shoshone:	2 / 10	6.9	23
Moapa:	2 / 10	6.3	15
Las Vegas:	2 / 7	5.2	9
Pahrump:	-	-	-
S. Paiute:	2 / 10	5.9	24
Combined:	2 / 10	6.4	47

35. Economic well-being would be worsened by a repository on Yucca Mountain:

	min/max	mean	count
Yomba:	1 / 10	4.3	4
Death Valley:	2 / 10	4.3	4
Duckwater:	1 / 10	3.9	15
W.Shoshone:	1 / 10	4.0	23
Moapa:	0 / 9	4.2	16
Las Vegas:	0 / 9	4.3	9
Pahrump:	-	-	-
S. Paiute:	0 / 9	4.2	25
Combined:	0 / 10	4.2	47

36. A repository on Yucca Mountain would cause water pollution:

	min/max	mean	count
Yomba:	8 / 10	9.0	4
Death Valley:	8 / 10	8.8	4
Duckwater:	4 / 10	7.1	14
W.Shoshone:	4 / 10	7.6	22
Moapa:	2 / 10	7.9	16
Las Vegas:	2 / 10	7.1	9
Pahrump:	-	-	-
S. Paiute:	2 / 10	7.6	25
Combined:	2 / 10	7.6	47

37. Economic well-being would be improved by a repository on Yucca Mountain:

	min/max	mean	count
Yomba:	1 / 2	1.5	4
Death Valley:	1 / 10	3.3	4
Duckwater:	1 / 2	1.2	15
W.Shoshone:	1 / 10	1.6	23
Moapa:	0 / 9	2.0	15
Las Vegas:	0 / 10	3.6	9
Pahrump:	-	-	-
S. Paiute:	0 / 10	2.6	24
Combined:	0/ 10	2.1	47

38. Radiation would not be contained within the Yucca Mountain area:

	min/max	mean	count
Yomba:	1 / 10	5.8	4
Death Valley:	5 / 10	6.5	4
Duckwater:	1 / 10	5.3	15
W.Shoshone:	1 / 10	5.6	23
Moapa:	0 / 10	6.3	16
Las Vegas:	1 / 10	5.7	9
Pahrump:	-	-	-
S. Paiute:	0 / 10	6.0	25
Combined:	0 / 10	5.9	47

39. The Yucca Mountain repository would pose a public health/safety threat:

	min/max	mean	count
Yomba:	5 / 10	7.8	4
Death Valley:	4 / 10	8.5	4
Duckwater:	3 / 10	7.2	15
W.Shoshone:	3 / 10	7.5	23
Moapa:	4 / 10	8.0	16
Las Vegas:	3 / 10	7.0	9
Pahrump:	-	-	-
S. Paiute:	3 / 10	7.6	25
Combined:	3 / 10	7.6	48

40. The Yucca Mountain repository would pose a personal or family health/safety threat:

	min/max	mean	count
Yomba:	7 / 10	9.3	4
Death Valley:	2 / 10	5.5	4
Duckwater:	6 / 10	8.0	15
W.Shoshone:	2 / 10	7.8	23
Moapa:	2 / 10	8.4	16
Las Vegas:	1 / 10	6.9	9
Pahrump:	-	-	-
S. Paiute:	1/ 10	7.8	25
Combined:	1 / 10	7.8	48

41. If you could make the final decision, would you build the repository at Yucca Mountain?

	Definitely Yes	Probably Yes	Uncertain	Probably No	No
Yomba:	0	1	2	1	5
Death Valley:	0	0	1	1	2
Duckwater:	0	0	2	1	12
W.Shoshone:	0	1	5	3	19
Moapa:	1	1	5	2	7
Las Vegas:	0	0	1	2	6
Pahrump:	1	0	0	0	3
S. Paiute:	2	1	6	4	16
Combined:	2	2	11	7	35

1988 MODIFIED RISK PERCEPTION QUESTIONNAIRE:

TABULATION OF DATA

SOCIOECONOMIC DATA

1, 2. (Q1) Number of adult relatives or in-laws on Reservation except in own household; reservations/colonies where relatives live.

	min/max	mean	count
Yomba:	3 / 70	22.5	8
Death Valley:	4 / 20	12.0	4
Duckwater:	0 /100	25.0	15
Moapa:	1 / 30	13.9	17
Las Vegas:	0 / 10	4.1	9
Pahrump:	0 / 4	2.3	4
S. Paiute:			

Other Paiute Reservations in Nevada: 35

Other Shoshone Reservations in Nevada: 16

Washoe Reservations: 3

Reservations in California: 11

Reservations in Utah: 8

Reservations in Arizona: 9

Others: 3

3. (Q8) Are you now or have you been a member of the tribal council or a tribal committee?

	Present	Past	Sample
Yomba:	6	1	9
Death Valley:	1	3	4
Duckwater:	6	0	14
W. Shoshone:	13	4	28
Moapa:	5	6	17
Las Vegas:	3	5	10
Pahrump:	1	0	4
S. Paiute:	8	12	31
Combined:	21	16	59

4. (Q9) Are you satisfied with your reservation or village as a place to live (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 10	8.0	9
Death Valley:	0 / 10	5.8	4
Duckwater:	0 / 10	7.2	8
W. Shoshone:	0 / 10	7.3	21
Moapa:	0 / 10	7.3	17
Las Vegas:	5 / 10	7.1	9
Pahrump:	10	10.0	4
S. Paiute:	0 / 10	7.7	30
Combined:	0 / 10	7.5	51

5. (Q10a) Are you satisfied with your reservation or village as a place to raise children (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 10	7.7	9
Death Valley:	4 / 8	6.0	4
Duckwater:	1 / 10	7.4	14
W. Shoshone:	0 / 10	7.3	27
Moapa:	2 / 10	7.5	17
Las Vegas:	0 / 10	5.0	9
Pahrump:	5 / 10	8.8	4
S. Paiute:	0 / 10	6.9	30
Combined:	0 / 10	7.1	57

6. (Q10b) Are you satisfied with the quality of medical and health services available (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 10	4.7	9
Death Valley:	0 / 5	2.3	4
Duckwater:	0 / 9	4.9	14
W. Shoshone:	0 / 10	4.4	27
Moapa:	0 / 10	4.1	17
Las Vegas:	0 / 6	2.7	9
Pahrump:	10	10.0	4
S. Paiute:	0 / 10	4.0	30
Combined:	0 / 10	4.2	5

7. (Q10c) Are you satisfied with the quality of schools available (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 7	3.2	9
Death Valley:	4 / 5	4.8	4
Duckwater:	0 / 10	6.6	14
W. Shoshone:	0 / 10	5.2	27
Moapa:	2 / 10	7.2	17
Las Vegas:	0 / 10	5.0	9
Pahrump:	7 / 9	7.7	3
S. Paiute:	0 / 10	6.6	29
Combined:	0 / 10	5.9	56

8. (Q10d) Are you satisfied with the friendliness of the people here (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 10	5.4	9
Death Valley:	5 / 9	6.5	4
Duckwater:	2 / 10	6.4	14
W. Shoshone:	0 / 10	6.1	27
Moapa:	0 / 10	6.7	15
Las Vegas:	0 / 5	2.1	9
Pahrump:	8 / 9	8.5	4
S. Paiute:	0 / 10	5.8	28
Combined:	0 / 10	5.9	55

9. (Q10e) Are you satisfied with the availability of good jobs here (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 5	2.3	9
Death Valley:	3 / 7	4.5	4
Duckwater:	0 / 8	4.1	14
W. Shoshone:	0 / 8	3.6	27
Moapa:	0 / 6	1.8	17
Las Vegas:	1 / 10	5.8	9
Pahrump:	0 / 2	1.5	4
S. Paiute:	0 / 10	2.9	30
Combined:	0 / 10	3.2	57

10. (Q10f) Are you satisfied with the opportunity to earn an adequate income here (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 5	2.8	9
Death Valley:	0 / 7	3.0	4
Duckwater:	0 / 8	3.7	14
W. Shoshone:	0 / 8	3.3	27
Moapa:	0 / 5	2.3	17
Las Vegas:	0 / 10	5.6	9
Pahrump:	0 / 2	1.5	4
S. Paiute:	0 / 10	3.2	30
Combined:	0 / 10	3.2	57

11. (Q10g) Are you satisfied with the availability of suitable housing here (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	2 / 10	6.5	9
Death Valley:	1 / 4	3.0	4
Duckwater:	4 / 10	7.6	14
W. Shoshone:	1 / 10	6.5	27
Moapa:	5 / 10	7.9	17
Las Vegas:	0 / 10	2.3	9
Pahrump:	2 / 5	4.0	3
S. Paiute:	0 / 10	5.8	29
Combined:	0 / 10	6.1	56

12. (Q10h) Are you satisfied with the adequacy of law enforcement here (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 5	1.2	9
Death Valley:	5 / 7	5.7	4
Duckwater:	0 / 10	6.5	14
W. Shoshone:	0 / 10	4.6	27
Moapa:	2 / 10	6.5	17
Las Vegas:	0 / 8	3.7	9
Pahrump:	8 / 10	9.5	4
S. Paiute:	0 / 10	6.1	30
Combined:	0 / 10	5.4	57

13. (Q10i) Are you satisfied with the physical condition of streets and roads here (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 5	1.2	9
Death Valley:	5 / 10	7.2	4
Duckwater:	1 / 6	4.5	14
W. Shoshone:	0 / 10	3.8	27
Moapa:	0 / 10	5.6	17
Las Vegas:	0 / 10	5.9	9
Pahrump:	5 / 6	5.5	4
S. Paiute:	0 / 10	5.7	30
Combined:	0 / 10	4.8	57

14. (Q10j) Are you satisfied with the overall effectiveness of tribal government here (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 5	3.3	9
Death Valley:	0 / 9	5.6	4
Duckwater:	1 / 9	6.4	13
W. Shoshone:	0 / 9	5.2	26
Moapa:	0 / 10	5.2	17
Las Vegas:	0 / 8	5.2	9
Pahrump:	N/A	-	-
S. Paiute:	0 / 10	5.2	26
Combined:	0 / 10	5.2	52

15. (Q10k) Are you satisfied with the availability of senior programs here (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 5	1.7	9
Death Valley:	3 / 10	6.7	4
Duckwater:	1 / 8	5.9	14
W. Shoshone:	0 / 10	4.6	27
Moapa:	0 / 10	4.2	17
Las Vegas:	0 / 5	3.3	8
Pahrump:	0 / 10	3.3	4
S. Paiute:	0 / 10	3.4	29
Combined:	0 / 10	4.0	56

16. (Q10l) Are you satisfied with the availability of youth programs here (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 8	4.0	9
Death Valley:	0 / 7	3.2	4
Duckwater:	0 / 8	5.0	14
W. Shoshone:	0 / 8	4.4	27
Moapa:	0 / 10	1.8	17
Las Vegas:	0 / 5	2.0	9
Pahrump:	0 / 10	5.0	4
S. Paiute:	0 / 10	2.3	30
Combined:	0 / 10	3.3	57

17. (Q10m) Are you satisfied with the adequacy of the nearest shopping facilities here (0 = completely dissatisfied; 10 = completely satisfied)?

	min/max	mean	count
Yomba:	0 / 10	5.5	9
Death Valley:	2 / 3	2.7	4
Duckwater:	0 / 10	3.5	14
W. Shoshone:	0 / 10	4.0	27
Moapa:	2 / 10	5.7	17
Las Vegas:	0 / 10	6.2	9
Pahrump:	2 / 5	4.0	4
S. Paiute:	0 / 10	5.8	30
Combined:	0 / 10	4.9	57

APPENDIX IV

YUCCA MOUNTAIN PROJECT BIBLIOGRAPHIES

THE SOUTHERN AND CENTRAL GREAT BASIN;

SOUTHERN PAIUTE AND EASTERN SHOSHONE

BIBLIOGRAPHY: 1969 - 1990

Compiled by Mary K. Rusco

for

The Nevada Nuclear Waste Project Office
Carson City, Nevada 89710

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

INTRODUCTION

This bibliography contains all works published since 1969 that have been cited in any of the Yucca Mountain Native American Study project reports. Earlier references cited can be found in a bibliography of Great Basin Anthropology and related studies and documents compiled by Catherine S. Fowler (1972). In addition to works cited, this document contains all relevant papers published by the major series and in major journals on the appended list between 1969 and 1990. Section ID contains key cultural resource management studies for Southern Nevada, emphasizing the vicinity of Yucca Mountain. Many works appear in more than one of the bibliographies. In the Index to the Bibliographies, each entry is listed by author (in alphabetical order) and by publication date, with the code for each bibliography in which it occurs listed, followed by the page numbers on which it appears.

Although large, the bibliography is not complete, and the compiler would appreciate receiving addenda and corrections.

ABBREVIATIONS USED IN THIS BIBLIOGRAPHY

AA . . . . . American Anthropology

AAnt . . . . . American Antiquity

ACOHP. . . . . .Advisory Council for Historic Preservation

AMNH-AP . . . . . American Museum of Natural History Anthropological Papers

AmW . . . . . American West

JCA . . . . . Journal of California Anthropology

JCGBA . . . Journal of California and Great Basin Anthropology

M . . . . . The Masterkey

NAS-R . . . . . Nevada Archaeological Survey Reporter

NAS-RP . . . . . Nevada Archeological Survey Research Papers

NHSQ . . . . . Nevada State Historical Society Quarterly

NSM-AP . . . . . Nevada State Museum Anthropological Papers

SAA . . . . . Society for American Archaeology

TEB . . . . . Tebiwa

UHQ . . . . . Utah Historical Quarterly

UC-AR . . . . . University of California Anthropological Records

UC-ARF . . . . . University of California Archaeological Research Facility

UC-ARFC . . . . University of California Archaeological Research Facility Contributions

UC-ASR . University of California Archaeological Survey Reports

UU-AP . . . . . University of Utah Anthropological Papers

WAR . . . . . Western Anasazi Reports

INDEX

GOVERNMENT DOCUMENTS: FEDERAL, STATE AND LOCAL

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