AN ARCHEOLOGICAL OVERVIEW OF GREAT BASIN NATIONAL PARK

By
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U.S. Department of the Interior

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Western Archeological and Conservation Center
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ABSTRACT

This overview provides a discussion and summary of the archeology and cultural resources of the newly formed Great Basin National Park in east-central Nevada. The Overview has been prepared following the guidelines outlined in NPS-28 and in concordance with previously prepared archaeological overviews for other Western Region parks.

Although a great deal is known of the culture history of the Great Basin, very little research has been conducted in the southern Snake Range. Most of what has been done was completed in the 1930s and 1950s, and the data generated by these studies are not up to modern scientific standards.

The cultural resources of Great Basin National Park include sites, features, structures, and objects ranging from the recent past to as much as 10,000 or more years ago, and the scientific research potential of the Park is considered to be extremely high. These resources are fragile and nonrenewable and they deserve our best efforts at interpreting, managing and protecting them from deterioration or destruction.

The Overview covers the past and present environmental setting; ethnographic, archaeologic and historic backgrounds; previous archaeological research and cultural resources known to be located in the Park; and makes recommendations both for management and for future research.
ACKNOWLEDGEMENTS

The completion of this Overview was greatly facilitated by the invaluable support of a number of individuals. Keith Anderson and George Teague, Western Archeological and Conservation Center (WACC), entrusted me with this project. George Teague served as the Project Director and provided both personal and professional support during the course of the project. His editorial skills and comments greatly enhanced the quality of this report.

I am also indebted to the other individuals at WACC who provided assistance throughout the duration of the write-up. Trinkle Jones offered guidance in pulling together site records, reports and maps from a number of institutions and gave direction for the initial efforts at data banking materials for the Park. Sue Wells’ assistance on the computer, particularly during the final weeks of report preparation, were considerable. Sue’s extensive computer experience, professional advice and humor kept my energy and spirits up during the final haul, and special thanks are due her. Yvette Semler entered the majority of the text into the word processor, often from hastily written, difficult-to-read copies of the draft (which she professes to have seen at least 8 million times). Sandy Elliot and Loyal Enz provided administrative, personnel, time-keeping and budgetary help and, once again, kept the project flowing smoothly. Finally, Lynne D’Ascenzo crafted the computer-generated graphics included in the report using AUTOCAD. Her attention to detail, drafting skills, and ability to decipher very rough copies of some of the figures resulted in the excellent maps and figures included in the text. It was, as always, a pleasure working with her.

I am also privileged to have had the opportunity to work again with my friend John Zancanella, archeologist for the Bureau of Land Management in Ely. John took several days out of his schedule to show
me a number of area archeological sites and share with me his thoughts on the local prehistory. John also gave me access to site files, maps and reports and was frequently available for phone consultation. Fred Frampton, Humboldt National Forest archeologist, accompanied John and me for a day, during which we also visited a Forest Service rock art site in the Snake Range. Fred also forwarded forms and data on several sites previously managed by the Forest. Thanks also are due Evy Seelinger at the Nevada State Museum for providing site data, clarification and locational information on sites in the southern Snake Range. I also relied heavily on the Nevada Historic Preservation Plan (1982) while completing this report, and am grateful to those numerous individuals who worked on the Plan.

Several people at Great Basin National Park helped in securing background information and in making my visit to the Park more enjoyable, including Mac Brock and Gale Arundell, Resources Division, and Albert Hendricks, Park Superintendent. Goody (G. Goodman), proprietor of the Jack Rabbit Motel, also deserves recognition for helping me feel "at home" during my stay in Baker. Finally, I wish to thank Paula Denham for the "Great Sacrifice".

Once again, I would like to express my appreciation to these individuals for their contributions and help in completing this report.
CHAPTER 1

INTRODUCTION

PURPOSE AND SCOPE OF THE OVERVIEW

Great Basin National Park was established on October 17, 1986, by the consolidation of lands previously managed by the U.S. Forest Service, the Bureau of Land Management and to a lesser degree by the National Park Service. Although less than two percent of the Park has been systematically surveyed for cultural resources, at least 35 sites have been recorded or test excavated since archeological research was first initiated in 1932 in what is now the Park. As the culture history of the immediate Park vicinity includes evidence of human use of the region from the present through at least the past 10,000 or more years, the scientific research potential of the Park's cultural resources is considered to be extremely high, particularly for those resources found in caves sheltered from the elements.

However, virtually all of the known sites located in the Park need some level of additional on-site field check and documentation to bring recording up to modern standards, and numerous other as-yet unrecorded cultural resources can be expected to be found within the Park. This Archeological Overview provides Park managers with a baseline document describing, summarizing and assessing the known and the potential archeological resources in the Park. It thus serves as the first step in determining the need for, and the designing of, future studies (NPS 28:2-14), and will function as an initial reference for Park interpreters. It is anticipated that, as additional work is conducted in the Park and vicinity, and in the larger Great Basin region as a whole, portions of this document will of necessity need to be revised.

This Overview includes sections on the natural setting, the cultural history of the region, previous archeological research, an
inventory of cultural resources known to be located in the Park, suggestions for appropriate management actions, a summary of alterations to the natural environment and threats to cultural resources, and a section on the relationship of current ethnographic users to the Park. It further provides bibliographic references, a list of the known locations of collections, suggestions for future research, and ties the proposed research directions into the Nevada Historic Preservation Plan.

The remaining sections of this chapter briefly summarize the legislation and policies affecting cultural resources on federal lands, the cultural history of the Park region and the management recommendations detailed later in the document. Further details on the environmental setting is given later in Chapter 2, on the prehistoric and ethnohistoric culture history in Chapter 3, and on the historic background in Chapter 4. Chapter 5 provides an inventory of archeological research and cultural resources in the Park. Recent alterations to the environment, threats and impacts to cultural resources and suggested management actions completes Chapter 5, while Chapter 6 outlines the research potential for cultural resource studies and suggests avenues for future research.

BRIEF OUTLINE OF LAWS, REGULATIONS AND POLICIES AFFECTING CULTURAL RESOURCES ON FEDERAL LANDS

Although a number of Federal laws address cultural resources, beginning with the Antiquities Act of 1906, two major laws govern how archeology is conducted by Federal agencies: the National Environmental Policy Act (NEPA) of 1969 and the National Historic Preservation Act (NHPA) of 1966. In short, NEPA requires agencies to examine the effect of proposed land actions on the cultural resources under their protection and to preserve important historic and cultural aspects of our national heritage. The National Historic Preservation Act, and more specifically, Section 106 of the NHPA, requires that agency undertakings take into account the potential effect on any properties included on, or eligible for, the National Register of Historic Places. Consultation by Federal agencies with the State Historic Preservation Office (SHPO)
represents the first step in this process. Implied in this directive is the necessity to identify, inventory and assess the significance of all cultural resources located on Federal lands. Section 110 of the NHPA clarifies Federal responsibilities first outlined by Executive Order 11593, which directs Federal agencies to create programs which will lead to the eventual identification of all cultural resources under their jurisdiction, and the nomination of all eligible properties to the National Register. Included in Section 106 and E. O. 11593 is the requirement that no properties which might qualify for inclusion to the National Register of Historic Places be inadvertently impacted. Further legal protection to archeological resources is provided by the Archeological Resources Protection Act (ARPA) of 1979.

Several additional Federal laws affect cultural resources. These include the Historic Sites Act of 1935, the Reservoir Salvage Act of 1960, and the Archeological and Historic Preservation Act of 1974. The protection of individual cultural objects is addressed by several of the above and in the Management of Museum Properties Act of 1955. With regard to Native American concerns, the American Indian Religious Freedom Act of 1978 affects Native American access and land use on Federal lands, while the Native American Relationships Management Policy clarifies earlier National Park Service policies concerning Native Americans.


In Nevada, the Archeological Element of the Historic Preservation Plan outlines research directions concerning cultural resources located on state lands and provides an assessment of their values. The plan was prepared in response to the mandate of the Historic Preservation Act of 1966, and much of the research goals outlined in the Plan has been reproduced in the final chapter.
CULTURE HISTORY SYNTHESIS

Nature of the Resource Base

Most of what is known of the prehistoric culture history of this region has resulted from excavations, particularly in caves and rockshelters, from large-scale land surveys conducted by other Federal agencies such as the Forest Service or Bureau of Land Management, or from smaller state or private surveys conducted in response to ground-disturbing projects or development. Excavations have provided the greatest amount of detail on past subsistence patterns (food gathering strategies) and cultural chronologies (cultural change demonstrated over time), while surveys have helped to identify past land use and settlement patterns. Excavated cave or rockshelter sites in the Park vicinity include those located in Smith Creek Canyon in the northern Snake Range, and in Baker Creek Caves and Lehman Caves within the Park.

Most regional historic information is derived from the journals and diaries of trappers, explorers and emigrants; from early military and scientific documents; from business records of ranches, mines and mining companies, and transportation and communication companies; or from early newspaper accounts.

Prehistory and Ethnohistory

**Paleoindian** (12000 BC - 9000 BC)

The earliest well-dated sites in the Great Basin fall within the Paleoindian Period. The Paleoindians are generally thought of as big game hunters and, in fact, one primary subsistence focus was on the taking of large, now extinct Pleistocene fauna, including mammoth, bison, ground-sloth, camel and horse. These Paleoindian hunting groups were probably quite small and highly mobile so they could move with the herds they were harvesting.

Paleoindian sites are found in the open as "kill" sites, in rockshelters or caves, or along the wave-cut terraces of now-dry lakes.
Relatively few Paleoindian sites have been found. In the Park region, Paleoindian occupation is indicated for the east side of the northern Snake Range. Diagnostic stone tool assemblages of the Paleoindians include large fluted and unfluted projectile points such as Clovis, Folsom and Plano points.

**Great Basin Desert Archaic (9000 BC - AD 500)**

In response to climatic changes resulting in the dessication of lakes scattered throughout the Great Basin, and along with the gradual disappearance of the larger Pleistocene game animals, a broader food-gathering pattern emerged than was evident in the previous Paleoindian Period. This pattern is reflected in the utilization of a wider range of plant and animal products, and has been termed the Great Basin Desert Archaic. The Desert Archaic Period is represented in the archeological record with the appearance of seed-grinding implements (i.e. manos and millingstones) believed to have been used primarily to process hard-shelled grass seeds. Other diagnostic traits of the Archaic include basketry, netting, fiber and hide moccasins, spear-throwers, digging sticks, and Olivella shell beads traded from coastal California areas. Common projectile point styles of the Archaic include those in the Humboldt, Pinto, Elko, Gypsum and Northern Side-notched series.

Archaic sites are often found in caves or rockshelters, or in open-air settings near springs. Danger Cave, Newark Cave, Swallow Shelter, Amy's Shelter and Kachina Cave are a few of the excavated sites with Archaic components in the general Park vicinity. Archaic manifestations are also found within the Park.

**Parowan Fremont (AD 500 - 1300)**

The Fremont Period is represented by peoples who were fairly sedentary horticulturalists inhabiting the Great Basin from at least AD 500 to AD 1300. The Fremont lived in small villages or farmsteads and were primarily small scale farmers, rather than gatherers and hunters, although hunting and gathering greatly supplemented the diet.
The Fremont manufactured their own pottery and had a distinctive art style represented by their clay figurines and their rock art. Residential structures were fairly substantial, and storage structures were built to house excess plant foods. In the Park region, the Garrison site has been excavated and reported on, and Fremont-style rock art and cultural materials have been noted in the Park proper. As the Park lies on the Western Fremont frontier, it is possible the local appearance of the Fremont dates as late as AD 700 to 1100, although this needs further verification.

Shoshone/Gosiute (AD 1300 - Ethnographic Present)

The Park lies within the ethnographic territory of the Numic-speaking Western Shoshone. Although Spring Valley peoples have occasionally been referred to as "Gosiutes," there are no cultural or linguistic differences between the two.

The Shoshone were dispersed into small kin groups living in seasonally occupied camps near water sources such as springs. At various times of the year, several villages would come together to conduct ceremonies and communal hunts, or "drives."

Subsistence strategies were based on an annual round of gathering vegetal and animal foods. In the fall, communal rabbit and antelope drives were held and pinyon nuts harvested and stored. In the winter, families came together and lived in villages usually located in the lower pinyon-juniper zones. In the spring and summer, individual families dispersed to lower valley areas to harvest grass seeds, roots, tubers, and small mammals.

Domestic structures were usually conically-shaped brush houses supported by wood pole frames. Floors were circular and were covered with grass or mats. Brush lean-tos, brush circles, four-post sunshades, caves and rockshelters provided additional shelter. Both earth-covered and willow-wickiup sweathouses were also constructed.
Historical Background

The first EuroAmerican known to have entered Nevada was Peter Skene Ogden who came as far south as northern Elko County to trap beaver in 1825 and 1826. Although subsequent trapping parties might have entered the Park area, there is no evidence of this. The majority of emigrant parties crossing the State in the 1840s passed through Nevada along the Humboldt River, or farther south of the Park region on the Old Spanish Trail and therefore did not come into the Park region. In 1855, however, an exploratory group from the Mormon community of White Mountain Mission in Utah camped at Lehman Creek and climbed Wheeler Peak, with Howard Egan being the first documented EuroAmerican to cross Sacramento Pass.

Mining operations first began in White Pine County in 1859, with six districts organizing in the Snake Range as early as 1869. The better known of these relatively early areas is Osceola, where a bustling mining community was located south of Sacramento Pass. Activities in the various districts brought prospectors, miners and development into the Park area.

In 1869, Lieutenant Wheeler lead a Government mapping survey into the Snake Range. Early in the same year, Absalom Lehman, the first EuroAmerican settler in the Park, established a ranch on Lehman Creek. Lehman is also credited with initiating the tourist industry of the area. After his discovery of Lehman Caves in 1885, he established a second "upper" ranch near the cave entrance from which he conducted guided tours of the caverns. Absalom Lehman's brother, Ben, moved into the area in 1873, when he became the first resident of Baker. Over the following years, several other ranches were established in the area and cattle and sheep were grazed throughout the southern Snake Ranges.

In addition to mining and ranching, other industries of historic importance to the area have included logging, beginning as early as the 1870s, and brick-making in the 1880s. In 1882, a heliograph station was established atop Wheeler Peak as part of a large-scale mapping project covering Utah, Nevada and parts of California. As part of this project, several men were stationed from August through December atop Wheeler
Peak in two five-foot high stone structures covered with canvas. Evidence of this station is still visible on the Peak.

On January 24, 1922, Lehman Caves National Monument was established by presidential proclamation and was originally managed by the U.S. Forest Service. The National Park Service took over the Monument on June 10, 1933. A few years prior to this - in 1924 - the first proposals to establish the area as a National Park were made. This movement was finally realized on October 17, 1986 with the creation of the 76,800 acre Great Basin National Park.

**COLLECTIONS**

The majority of the primary historic source materials (i.e. documents, historic newspapers, photos, maps, oral histories, business records, published works) for the state of Nevada are held by the Nevada Historical Society in Reno, the Nevada State Library in Carson City, the University of Nevada in Reno and the University of California Bancroft Library at Berkeley. The most extensive collection is housed with the Nevada Historical Society. A breakdown of the general types of information available at each is given in Table 1. Other historic materials for the state can be found at a number of other institutions both inside and outside Nevada (cf. Becker 1986).

Historic information for White Pine County is housed with the White Pine County Historical Society, White Pine County Museum, White Pine County Library, the Bureau of Land Management and the U.S. Forest Service. Some information is also housed at repositories in Utah, as portions of the eastern part of the county were originally part of the Territory of Utah.

Artifact collections from Nevada are housed in a number of curatorial facilities, although the majority are at the Nevada State Museum. Additional institutions having large collections from Nevada sites include the Museum of Anthropology and the Research Institute at the University of Nevada - Reno, the Museum of Natural History at the University of Nevada - Las Vegas, the Department of Anthropology at the University of Utah - Salt Lake City, Weber State University - Ogden, the University of California at Los Angeles, Davis and Berkeley, the Adan
<table>
<thead>
<tr>
<th>Location</th>
<th>Type of Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada Historical Society</td>
<td>newspapers, business records, photographs, oral histories, maps, railroad surveys, government surveys</td>
</tr>
<tr>
<td>Nevada State Library</td>
<td>published state documents, maps</td>
</tr>
<tr>
<td>University of Nevada (Reno) Library</td>
<td>mining documents, ranching documents, farming documents, maps, photographs</td>
</tr>
<tr>
<td>Bancroft Library, Berkeley</td>
<td>mining companies' business reports, information on mining techniques, photographs, maps</td>
</tr>
</tbody>
</table>
Collections of ethnographic materials are found at the Nevada State Museum - Carson City, the Nevada Historical Society - Reno, the Lost City Museum - Overton, and at several institutions outside of Nevada: Peabody Museum - Cambridge, University of Utah - Salt Lake City, American Museum of Natural History - New York, Smithsonian Institution - Washington, D.C., Museum of the American Indian - New York, Robert H. Lowie Museum of Anthropology - Berkley, Southwest Museum - Los Angeles, as well as others (cf. Becker 1986:15). Collections of a few materials from Great Basin National Park are held in the Park and at the Western Archeological and Conservation Center (WACC) in Tucson.

A master bibliography of works relating to the prehistory, history and environment of the Great Basin and more specifically to Great Basin National Park is maintained at the Western Archeological and Conservation Center. Site record sheets, site locations, survey and excavation reports and other pertinent cultural resource information for the Park is also kept at WACC. The location of site files pertinent to the Park and the immediate vicinity is indicated in Table 2.

**MANAGEMENT SUMMARY**

Several recommendations are offered for the management of cultural resources in the Park. These recommendations are summarized briefly below in order of priority:

1) avoid impacts to cultural resources;
2) assure compliance with cultural resource legislation before undertaking ground-disturbing maintenance or development projects;
3) improve documentation on sites requiring additional information for significance evaluations; prepare to nominate eligible sites to the National Register of Historic Places, the List of Classified Structures and the Cultural Sites Inventory;
<table>
<thead>
<tr>
<th>Institution</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada State Museum</td>
<td>central repository for site forms;</td>
</tr>
<tr>
<td>Carson City, NV</td>
<td>state trimonial numbers assigned;</td>
</tr>
<tr>
<td></td>
<td>sites plotted on topographic maps.</td>
</tr>
<tr>
<td>State Historic Preservation Office</td>
<td>documentation for sites listed on the National Register; site sheets</td>
</tr>
<tr>
<td>Carson City, NV</td>
<td>on historic structures; reviews cultural resource reports.</td>
</tr>
<tr>
<td>Bureau of Land Management</td>
<td>site sheets; site plots; survey locations; survey and other project reports</td>
</tr>
<tr>
<td>Ely District</td>
<td>for lands under BLM administration.</td>
</tr>
<tr>
<td>Ely, NV</td>
<td>site sheets; site and prior survey locations; survey reports; project</td>
</tr>
<tr>
<td></td>
<td>reports for lands in Humboldt National Forest.</td>
</tr>
<tr>
<td>U.S. Forest Service</td>
<td>site sheets; site sheets; survey plots, survey and other project reports for</td>
</tr>
<tr>
<td>Humboldt National Forest</td>
<td>sites in Great Basin National Park.</td>
</tr>
<tr>
<td>Elko, NV</td>
<td>site sheets; site and survey plots, survey and other project reports for</td>
</tr>
<tr>
<td></td>
<td>sites in Great Basin National Park.</td>
</tr>
<tr>
<td>Western Archeological and Conservation Center</td>
<td></td>
</tr>
<tr>
<td>National Park Service</td>
<td></td>
</tr>
<tr>
<td>Tucson, AZ</td>
<td></td>
</tr>
</tbody>
</table>
4) conduct intensive archeological surveys of heavy use areas in the Park which have not been previously inspected;

5) work towards completing the inventory of all cultural resources located in the Park;

6) increase interpretation of the Park's culture history to the public;

7) support studies directed toward research goals of local and regional significance.

Further details on the recommendations for the management of the cultural resources of Great Basin National Park are included in Chapter 5. Directions for future research are outlined in detail in Chapter 6.
CHAPTER 2

ENVIRONMENTAL BACKGROUND

PRESENT-DAY ENVIRONMENT

Geology and Hydrology

Great Basin National Park is located in White Pine County in east-central Nevada and lies in the Great Basin portion of the Basin and Range Physiographic Province (Figure 1). The Great Basin, a large area with no external drainage covering roughly 200,000 square miles, extends from the Sierra Nevada and Cascade Mountains on the west across Nevada to the Wasatch Mountain-Plateau country of Utah on the east. This large area is characterized by a series of parallel north-south trending mountain ranges and valleys created by block faulting. Elevations vary widely, ranging from 13,140 feet at Boundary Peak in western Nevada to 282 feet below sea level in Death Valley. Within Great Basin National Park, elevations extend from roughly 6180 feet in the extreme eastern portion of the Park below Clay Springs to 13,063 feet atop Wheeler Peak.

The Park encompasses an area covering 76,800 acres which includes much of the southern portion of the Snake Range (Figure 2). The Snake Range contains exposures representative of the Precambrian, at roughly 1300 million years ago (mya), through the Paleozoic (570 - 230 mya), Mesozoic (230 - 70 mya) and the Cenozoic (beginning about 70 mya), and thus reflects much of the geological history of the entire Great Basin (NPS 1981:15; Feray et al. 1968).

Roughly 600 million years ago, the Park area was covered by a shallow inland sea geologically represented today by limestones, sandstone and shales. The Prospect Mountain quartzite found on Wheeler Peak was originally beach sand, the overlying Pioche shale was
Figure 1. Location of Great Basin National Park in the Region.
Figure 2. Detail of Great Basin National Park, Nevada.
originally mud and silt, while the Pole Canyon limestone (which holds Lehman Caves) was a calcium carbonate mud (NPS 1980:14-15).

Approximately 70 million years ago, the first mountain building sequence began uplifting Wheeler Peak. Twenty-five to 35 million years ago, the mountain range evident at present was formed by parallel faulting on the east and west sides of a block of crust which was subsequently uplifted. The resultant southern Snake Range measures 25 miles long and as much as 12 miles wide, and has 14 peaks over 10,000 feet high. The block-faulting has further created a steep western escarpment and a gently-sloping eastern face, and consequently, an extensive foothill zone on the east and virtually none to the west (Conyers 1968:8-9). The valleys on either side of the Snake Range are likewise blocks that have been downthrust, creating a vertical relief today of roughly 7500 feet between the top of the range and the valley floors (NPS 1981:19). This type of block-faulted mountain building sequence, often associated with vulcanism, is typical of the Basin and Range Province, and faulting and the consequent earthquakes continue in the region to this day (Bostick et al. 1975:4; Conyers 1968; Waite 1976:58-59).

During this most recent mountain building period, the Snakes were also subject to intrusive plutons as evidenced in the presence of quartz monzonites and granites. Heat and pressure metamorphosed many of the local sedimentary rocks, transforming limestone to marble, sandstone to quartzite and shales to slate, while magma created granodiorite. Volcanic ash and air-fall tuffs, probably originating from areas to the south, are found in some portions of the Park Area (Hose and Blake 1976:19-25; NPS 1981:19; NPS 1980:15). Figure 3 gives a geological cross section of the Snake Range at Wheeler Peak.

Beginning 2 to 3 million years ago, mountain ranges throughout the Great Basin were subject to the effects of alpine glaciation. During this time, the valleys adjacent to the mountains, including Spring and Snake Valleys, were filled with rainwater and glacial meltwater, thereby creating a series of long narrow lakes separating the ranges (NPS 1981:15; Hubbs and Miller 1948:56-57). The highlands of the southern Snake Range have been sculpted by alpine glaciation and now display classic topographic features reflecting the work of moving ice: cirques,
Figure 3. Geological Cross Section of the Snake Range at Wheeler Peak.
cols, tarns, moraines, arêtes, and U-shaped valleys (Bostock et al. 1975; Conyers 1968; Blackwelder 1931; Drewes 1958; Ives 1946; Whitebread 1969). Even today, the northeast face of Wheeler Peak carries what is believed by some to be the last remnant ice age glacier in the Great Basin (cf. Heald 1958). Also unusual for the Great Basin (NPS 1981:26) is the presence of six alpine lakes, or tarns, in the Park, including Baker, Johnson, Dead, Stella, Brown and Teresa Lakes. In addition, the mountains were subject to a periglacial environment with areas of permafrost, and now bear classic periglacial features such as stone polygons, stone circles, cryptoplanation terraces, and rock glaciers (Shafer 1985:2-4).

The height of the range provides for fairly extensive snowfall, which assures an adequate water flow to the numerous streams and springs common to the Park. The 16 permanent streams have cut deep valleys into the Snake Range and are deeply entrenched in old alluvial surfaces on the east and possess short, steep gradients on the west (Conyers 1968:94) Spring Valley has no outlet and is thus considered a closed evaporative basin and, although Snake Valley does have a drainage outlet, both contain salt marshes and intermittent shallow lake beds, or playas (NPS 1981:25). Springs in the area are found along faults, at the lower edges of alluvial fans, in the dunes found near dry lake beds, or emerging from above impermeable zones in the bedrock (Conyers 1968:105). The presence of a permanent water supply in the form of springs and streams, particularly in the generally arid Great Basin, has implications for both the prehistoric and historic use of the area.

Streams in the area have aided in the formation of several limestone arches in the Park. One of these, the seventy-five foot high Lexington Arch, has been recommended for National Natural Landmark status (Bostick et al. 1975). In addition to the formation of arches, erosion in the highly soluble limestone has also resulted in the formation of numerous caves and rockshelters. The best known of these, Lehman Caves, is now popular for its beautiful shield formations, cave coral, flowstones, stalactites, stalagmites, rimstone dykes, aragonite and curling helicites (NPS 1980:16; Conyers 1968). The caves and rockshelters of the park have also been popular among prehistoric
peoples; many have been inhabited, used as burial areas, or elaborately decorated with petroglyphs and pictographs.

In the last 10,000 years, the climate has shifted toward being slightly more arid, with the resultant gradual shrinkage, or altogether disappearance, of many of the lakes previously found dotting the floor of the Great Basin. As a consequence, shifts in the biotic communities, including widespread extinctions, have occurred in the fairly recent past (cf. Blackwelder 1948:13-15; Elston 1976; and others), with the consequent subsistence focus of prehistoric peoples necessarily shifting with the changing environment. The postulated paleoenvironment, particularly as it relates to the human occupation of the Great Basin, will be discussed in more detail in the final section of this chapter.

Present-Day Climate

The climate of the Park region is characterized by the hot summers and cold winters of mid-latitude deserts or mid-latitude steppes, as defined by Houghton and others (1975). In this region of alternating valleys and mountain ranges, temperature generally decreases while precipitation increases as altitude is gained, resulting in several "climatic zones" (Table 3). Still, the region as a whole is considerably arid, and precipitation is highly variable from one year to the next. At the Park headquarters, the mean annual rainfall is a scant 13.2 inches. Pacific storm fronts bring in moisture from the fall through the spring while intense localized thunderstorms provide rain during the summer months. However, the southern Snake Range immediately west of the Park headquarters exceeds 10,000 feet along much of its length, thereby creating a "mini" rainshadow. The mountains remain snowed-in much of the winter and catch enough precipitation to support lakes, springs, permanent streams and dense stands of vegetation, including dry coniferous and boreal woodlands. In the upper areas of the mountains, summers are cool to cold and winters long, snowy and severe.

Temperatures at the headquarters seldom exceed 90 degrees Fahrenheit, whereas the mean annual low in January is 23 degrees Fahrenheit, resulting in an average growing season of roughly 120 days.
**TABLE 3: CLIMATIC ZONES WITHIN GREAT BASIN NATIONAL PARK**

**AS BASED ON THE KOPPEN CLASSIFICATION SYSTEM**

<table>
<thead>
<tr>
<th>ELEVATION</th>
<th>CLIMATIC ZONE</th>
<th>GENERAL LOCATION</th>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5000 - 6500 ft.</td>
<td>Middle Latitude Desert</td>
<td>Valleys; Mid-to lower alluvial fans</td>
<td>Hot summers, cold winters</td>
</tr>
<tr>
<td>6500 - 7500 ft.</td>
<td>Middle Latitude Steppe</td>
<td>Upper Alluvial Fans; Lower slopes of mountains</td>
<td>Hot summers, cold winters</td>
</tr>
<tr>
<td>7500 - 8500 ft.</td>
<td>Humid Continental Long Summer</td>
<td>Slopes of Mountains; Lower reaches of canyons</td>
<td>Warm to mild summers, cold snowy winters</td>
</tr>
<tr>
<td>8500 - 9500 ft.</td>
<td>Humid Continental Short Summer</td>
<td>Slopes of Mountains; Mid-reaches of canyons</td>
<td>Warm to mild summers, cold snowy winters</td>
</tr>
<tr>
<td>9500 - 11000 ft.</td>
<td>Subarctic</td>
<td>Slopes of Mountains; Upper reaches of canyons</td>
<td>Warm to mild summers, cold snowy winters</td>
</tr>
<tr>
<td>11300-11600 ft.</td>
<td>Ice Cap</td>
<td>Wheeler Icefield/Glacier</td>
<td>Chilly summers, long cold snowy winters</td>
</tr>
<tr>
<td>12000-13000 ft.</td>
<td>Tundra</td>
<td>Mountain Peaks and Ridges</td>
<td>Cool to cold summers, long cold snowy, severe winters</td>
</tr>
</tbody>
</table>
(NPS 1974:9; James 1981:11). At Garrison, the length of the growing season can extend to as much as 159 days with annual precipitation as low as 6.71 inches (Waite 1974:194;198). On the west side of the Snake Range, annual precipitation is over 7 inches at Shoshone (Waite 1974:198). A temperature inversion often develops in the area, with cold air sinking to the valley floors overlain by a layer of warm air along the lower portions of the mountains (Waite 1974:195). The rainfall pattern, coupled with the temperature inversion and presence of springs and creeks, has strong implications for the local settlement pattern, and in particular on the settlement strategies of the horticultural Fremont. The nature of the diverse topography, combined with the unpredictable and scanty rainfall, accounts for the distribution of plants and animals in the region and sets the tone for the predominant foraging patterns of the native occupants of the Basin.

Biotic Communities

Flora

Great Basin National Park is located within the Intermontane Sagebrush Province (Bailey 1978) which is composed of four terrestrial ecosystems, each containing a number of distinct vegetation communities in the Park region (NPS 1981:17; 21-24). The four ecosystems, generally confined to varying elevations (see Figure 4), include the Desert Ecosystem, Dry Coniferous Woodland, Boreal Forest and Alpine Tundra.

Within the Desert Ecosystem, several cold desert plant communities are found, the most significant of which is Sagebrush-Rabbitbrush associations occurring around the valley floors and generally below 7000 feet. However, when conditions are favorable, this plant community can extend to 10,000 feet (NPS 1981:22). Big sagebrush, black sagebrush, rabbitbrush, ephedra, bitterbrush, horsebrush, vetch, balsom root, and several grasses, including wheat grass, Indian ricegrass, three-awn and galleta grass are common to this plant community (for scientific names see Table 4). Below this community - generally in lower portions of
Figure 4. Terrestrial Ecosystems of Great Basin National Park.
<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinyon</td>
<td>Pinus monophylla</td>
</tr>
<tr>
<td>Jeffrey Pine</td>
<td>Pinus jeffreyi</td>
</tr>
<tr>
<td>Ponderosa Pine</td>
<td>Pinus ponderosa</td>
</tr>
<tr>
<td>Limber Pine</td>
<td>Pinus flexilis</td>
</tr>
<tr>
<td>Bristlecone Pine</td>
<td>Pinus aristata</td>
</tr>
<tr>
<td>Juniper</td>
<td>Juniperous osteosperma</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Pseudotsuga menziesii</td>
</tr>
<tr>
<td>Alpine Fir</td>
<td>Abies lasiocarpa</td>
</tr>
<tr>
<td>White Fir</td>
<td>Abies concolor</td>
</tr>
<tr>
<td>Englemann Spruce</td>
<td>Picea englemanii</td>
</tr>
<tr>
<td>Colorado Blue Spruce</td>
<td>Picea pungens</td>
</tr>
<tr>
<td>Mountain Mahogany</td>
<td>Cercocarpus ledifolius</td>
</tr>
<tr>
<td>Aspen</td>
<td>Populus tremuloides</td>
</tr>
<tr>
<td>Cottonwood</td>
<td>Populus angustifolia</td>
</tr>
<tr>
<td>Willow</td>
<td>Salix spp.</td>
</tr>
<tr>
<td>Rocky Mountain Maple</td>
<td>Acer glabrum</td>
</tr>
<tr>
<td>Dogwood</td>
<td>Cornus spp.</td>
</tr>
<tr>
<td>Water birch</td>
<td>Betula occidentalis</td>
</tr>
<tr>
<td>Greasewood</td>
<td>Sarcobatus vermiculus</td>
</tr>
<tr>
<td>Big Sagebrush</td>
<td>Artemisia tridentata</td>
</tr>
<tr>
<td>Black Sagebrush</td>
<td>Artemisia arbuscula</td>
</tr>
<tr>
<td>Bud Sage</td>
<td>Artemisia spinescens</td>
</tr>
<tr>
<td>Rabbitbrush</td>
<td>Chrysothamus spp.</td>
</tr>
<tr>
<td>Mormon Tea</td>
<td>Ephedra nevadensis</td>
</tr>
<tr>
<td>Bitterbrush</td>
<td>Purshia tridentata</td>
</tr>
<tr>
<td>Horsebrush</td>
<td>Tetradyemia canescens</td>
</tr>
<tr>
<td>Shadscale</td>
<td>Atriplex spp.</td>
</tr>
<tr>
<td>Manzanita</td>
<td>Arctostaphylos spp.</td>
</tr>
<tr>
<td>Chokecherry</td>
<td>Prunus virginiana</td>
</tr>
<tr>
<td>Cliffrose</td>
<td>Cowania mexicana</td>
</tr>
<tr>
<td>Wildrose</td>
<td>Rosa spp.</td>
</tr>
<tr>
<td>Curran</td>
<td>Ribes spp.</td>
</tr>
<tr>
<td>Gooseberry</td>
<td>Ribes spp.</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>Amelanchier alnifolia</td>
</tr>
<tr>
<td>Thimbleberry</td>
<td>Rubus parviflorus</td>
</tr>
<tr>
<td>Elderberry</td>
<td>Sambucus glabra</td>
</tr>
<tr>
<td>Oregon Grape</td>
<td>Berberis repens</td>
</tr>
<tr>
<td>Winterfat</td>
<td>Eurotia lanata</td>
</tr>
<tr>
<td>Spiny Hopsage</td>
<td>Grayia spinosa</td>
</tr>
<tr>
<td>Squawwapple</td>
<td>Peraphyllum ramosissimum</td>
</tr>
<tr>
<td>Yucca</td>
<td>Yucca harrimaniae</td>
</tr>
</tbody>
</table>
Table 4 (continued)

### Grasses and Herbs

<table>
<thead>
<tr>
<th>Species</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vetch</td>
<td>Astragalus spp.</td>
</tr>
<tr>
<td>Balsam Root</td>
<td>Balsamorhiza hirsuta</td>
</tr>
<tr>
<td>Wheat Grass</td>
<td>Agropyron spp.</td>
</tr>
<tr>
<td>Indian Rice Grass</td>
<td>Oryzopsis hymenoides</td>
</tr>
<tr>
<td>Three Awn</td>
<td>Aristida longiseta</td>
</tr>
<tr>
<td>Galleta</td>
<td>Hilaria jamesii</td>
</tr>
<tr>
<td>Fescue</td>
<td>Festuca spp.</td>
</tr>
<tr>
<td>Rye</td>
<td>Elymus spp.</td>
</tr>
<tr>
<td>Timothy</td>
<td>Phleum spp.</td>
</tr>
<tr>
<td>Brome</td>
<td>Bromus spp.</td>
</tr>
<tr>
<td>Chenopods</td>
<td>Chenopodiaceae spp.</td>
</tr>
<tr>
<td>Needle and Thread Grass</td>
<td>Stipa comata</td>
</tr>
<tr>
<td>Sedges</td>
<td>Cyperaceae spp.</td>
</tr>
<tr>
<td>Rushes</td>
<td>Scirpus spp., Juncus spp.</td>
</tr>
<tr>
<td>Dry Sedge</td>
<td>Carex spp.</td>
</tr>
<tr>
<td>Rockcress</td>
<td>Draba spp.</td>
</tr>
<tr>
<td>Wild Buckwheat</td>
<td>Eriogonum spp.</td>
</tr>
</tbody>
</table>

### Alpine and Tundra Wildflowers

<table>
<thead>
<tr>
<th>Species</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monkshood</td>
<td>Aconitum colombianum</td>
</tr>
<tr>
<td>Meadow rue</td>
<td>Thalictrum fendleri</td>
</tr>
<tr>
<td>Columbine</td>
<td>Aguilegia spp.</td>
</tr>
<tr>
<td>Orchid</td>
<td>Habenaria spp.</td>
</tr>
<tr>
<td>Primrose</td>
<td>Primula parryi</td>
</tr>
<tr>
<td>Shooting Stars</td>
<td>Dodecatheon spp.</td>
</tr>
<tr>
<td>Iris</td>
<td>Iris missouriensis</td>
</tr>
<tr>
<td>Buttercup</td>
<td>Ranunculus spp.</td>
</tr>
<tr>
<td>Monkey Flower</td>
<td>Mimulus spp.</td>
</tr>
<tr>
<td>Violet</td>
<td>Viola spp.</td>
</tr>
<tr>
<td>Bluebells</td>
<td>Mertensia spp.</td>
</tr>
<tr>
<td>Marigold</td>
<td>Caltha spp.</td>
</tr>
<tr>
<td>Fleabane</td>
<td>Erigeron spp.</td>
</tr>
<tr>
<td>Phacelia</td>
<td>Phacelia spp.</td>
</tr>
<tr>
<td>Phlox</td>
<td>Phlox spp.</td>
</tr>
<tr>
<td>Ivesia</td>
<td>Ivesia spp.</td>
</tr>
<tr>
<td>Forget-Me-Not</td>
<td>Myosotis spp.</td>
</tr>
<tr>
<td>Polemonium</td>
<td>Polemonium spp.</td>
</tr>
</tbody>
</table>
Snake and Spring Valleys just outside the Park - are found Shadscale-Sagebrush communities. Included in this community are shadscale, spiny hopsage, greasewood, rabbitbrush, Mormon tea, horsebrush, yucca and bud sage.

Beginning around 6 to 7000 feet are Dry Coniferous Forests containing Utah juniper and single-leaf pinyon pine, the major components of pinyon-juniper woodlands which form the most extensive forest type throughout the Great Basin. Pockets of Douglas fir, white fir, Jeffrey pine and ponderosa pine are frequently located on north-facing slopes. Stands of mountain mahogany, usually occurring on drier south-facing slopes, are also found in this zone. On the eastern slopes of Wheeler Peak, the mahogany reaches record size (NPS 1981:22). The understory here has many species common to the sagebrush community and consists of manzanita, sagebrush and a host of other shrubs. Often, an upper zone of Sagebrush-Grass associations is found above the pinyon-juniper zone.

Subalpine Boreal Forests occur at still higher elevations. These patches of conifers include Englemann spruce, limber pine and scattered stands of bristlecone pine—vegetation resembling boreal forests of both the Rocky Mountains and the Great Basin. One bristlecone on Wheeler Peak, which has unfortunately been removed, was determined to be the oldest known living thing at 4900 years of age, although others in the same grove are estimated at over 5000 years of age (NPS 1981:23; Waite 1976:311). Delightful groves of aspens are found in well-watered areas within the Boreal Forest zone and occasionally into the lower elevations. It is possible some of the aspen may mark old fire scars (Bostick et al. 1975:19).

In areas above timberline (generally above 10,500 feet), Alpine Tundra prevails. Here grow lichens, grasses (fescue, wheat grass, rye and timothy), sedges and dwarf wildflowers in a low-growing, sparse ground cover.

Dense riparian vegetation is found along the numerous streams issuing out of the mountains. Englemann spruce, aspen, narrow-leaf cottonwoods, willow, water birch, dogwood, Rocky Mountain maple, chokecherry, cliffrose, wild rose, thimbleberry, elderberry, gooseberry, Oregon grape, rushes, sedges, mosses and ferns abound in these moist
areas. Cooler, stream-bearing canyons encourage particular plant species to occur farther down the mountains than they would be found otherwise. Thus a number of coniferous species can be found extending into the sagebrush-rabbitbrush community.

A discussion of the paleoenvironment and its effect on plant communities of the Basin is included later in the chapter as is a discussion of changes in the vegetation of the Great Basin in the last century. An ethnobotany, indicating which plant species were utilized by the Native American inhabitants of the region, is presented in the following chapter.

More detailed information on the biotic communities of the Great Basin can be gleaned from Hall (1946); Lindsdale (1936;1940); Stebbins (1966); LaRivers (1962); Hubbs et al. (1948); Hubbs et al. (1974); Rogers (1982); Waite (1974); Cronquist et al. (1972); Young et al. (1976); Ryser (1985) and Harper (1986).

**Fauna**

The diverse floristic communities of the Park harbor a variety of fauna representative of species found throughout the Great Basin (NPS 1959:31-32; NPS 23-24; Harper 1986:55-58). Large mammals commonly found in the mountains and grasslands include mule deer, re-introduced bighorn sheep, pronghorn antelope, elk, mountain lion, bobcat, coyote, fox, badger and formerly gray wolf and bison. Rodents and small mammals include ground squirrels, chipmunks, gophers, marmots, shrew, mice, rats, skunk, porcupines, beaver, muskrat, pika, rabbits and bats. Additionally, thirteen main herds of mustangs are located in the general vicinity (BLM 1986). In the Snake Range, a total of 53 species of mammals has been recorded (NPS 1981:24).

Birds are also numerous, with 89 species of songbirds, nine species of terrestrial game birds and 20 of raptors found in the Park, either permanently or seasonally (NPS 1959:31-32). These include golden eagle, redtail hawks, sparrowhawk, marsh hawk, rough-legged hawk, pygmy hawk, great-horned owl, turkey vulture, belted kingfisher, raven, Clark's crow, Clark's nutcracker, chickadees, sparrow, swallow, thrush, robins, stellar and scrub jays, red-shifted flickers, Brower's blackbird, Oregon
junco, woodpecker, broad-tailed hummingbird, sage grouse, blue grouse, gambel quail, horned larks and resident and migratory waterfowl. Additionally, nine species of lizards, eight of snakes (including the Great Basin rattlesnake), and nine of toads and frogs are also found here, as are several species of native fish, including native Utah cutthroat trout (NPS 1959:32; Waite 1976:426; 438-440).

A description of the fauna utilized aboriginally is included in Chapter 3. A brief description of the Pleistocene megafauna used aboriginally is presented in the next section.

**PALEOENVIRONMENT**

There is a great deal of evidence that the character and spatial distribution of the above biotic communities have shifted somewhat during the Post-Pleistocene (or Holocene) climatic changes of the last 10,000 years. One of the earliest and most general paleoclimatic models for the western United States was proposed by Ernst Antevs (1948, 1952, 1955). Based on a wide variety of data, Antevs postulated a three-part climatic chronology for the Holocene beginning with the Anathermal, a period existing from 9000 BP to 7500 BP with moister and cooler temperatures than those of today, followed by the Altithermal (7500 to 4000 BP) which exhibited a warmer, more arid climate than at present, capped by the Medithermal, during which time climatic conditions gradually assumed the same precipitation and temperatures common today.

Although the general scheme as outlined initially by Antevs corresponds to broad climatic patterns evidenced over the western United States, the specific effects of the pattern on a particular region have not always been found to be so well defined. However, numerous studies conducted throughout the Great Basin (cf. Mehringer 1986) have yielded data indicative of a mid-Holocene warming trend, followed by cooler and moister conditions like those of today-- a pattern similar to Antevs' with the exception that several of the studies place the peak for warm and arid conditions as late as 2000 to 3000 BP (although this is regionally quite variable) as opposed to Antevs' Altithermal dates of 7500 to 4500 BP, while others indicate that increased summer rainfall

Studies of plant macrofossils, pollen, and constituents of ancient packrat middens indicate that most plant species minimally experienced a downward displacement and broadening of their range during cool-moist periods. For instance, forests dominated by bristlecone pine, complemented with juniper and Englemann spruce, once extended downwards towards the shore of ancient pluvial lake Bonneville (Wells 1983:359), and thus could have been dominant within the area now bounded by the Park. On the alluvial fans bordering the Snake Range, an open juniper-limber pine woodland flourished (cf. Zancanella 1987:99-100). As temperatures warmed coincident with a decrease in effective available moisture, vegetation associations gradually changed. Areas once dominated by spruce, fir and pine were slowly converted to sagebrush steppe, while coniferous forests withdrew to higher elevations, were thinned, or were otherwise reduced in scope. Likewise, areas covered with juniper-sagebrush became dominated by sagebrush-shadscale associations. Grasslands also expanded in response to the more arid conditions.

Several common Great Basin plant species--most significantly pinyon and mesquite--are relatively recent in the Great Basin (Madsen 1986; Mehringer 1986:31; Thompson 1985:114). Between 7000 to 4000 years ago, most of the plant associations characteristic of the area today were in place, although the effect of EuroAmericans on the environment in the last century has resulted in some interesting and wide-spread alterations in floristic communities. Rogers (1982) has documented that entire valleys of grasslands have been converted to shrubland, sagebrush is being replaced by short-lived annuals, and juniper and oak have expanded in some areas during the last 100 years.

The climatic shifts of the Holocene as outlined above would probably never have been severe enough to make the entire region uninhabitable, although it might be expected that alterations in the types and ratios of locally available resources may have favored habitation of some areas over others during different climatic regimes. It might be inferred, for instance, that a heavier reliance on grass seeds and hunting would be more economically feasible during warm/dry periods, all other things
being equal, while pinyon exploitation, hunting and a focus on lacustrian (lakeshore) resources would be relatively more popular during cooler/moister periods. However, in this region of extreme environmental diversity, highly mobile groups might be affected relatively little.

The cooler-moister climate at the end of the Pleistocene (~10,000 years ago), and the consequent presence of numerous "pluvial" lakes and associated marshes throughout the Great Basin, was undoubtedly the most important factor of the past environment in relation to the human occupation of the region. The two largest of these pluvial lakes-- Lake Lahontan-- of which Pyramid Lake and the Carson Sink are remnants, and Lake Bonneville (now represented by the Great Salt Lake) attest to the dramatic nature of some of these lakes. Pluvial lakes once filled the bottom of Spring and Snake Valleys on either side of the Park. The lake in Spring Valley covered more than 230 square miles and was roughly 200 feet deep (Mifflin and Wheat 1979:53-57). Lake Bonneville, once covering 19,940 square miles, extended to within six miles of the northeast Park boundary.

The focus of early inhabitants of the Great Basin on aquatic resources associated with these pluvial lakes and the salt flats and marshes created by their shrinking is well documented. Fishing tools, waterfowl hunting equipment and the remains of shellfish, fish, waterfowl and marsh plants further attest to the importance of these lake resources in the prehistoric economic/subsistence systems. Further information in this regard can be derived from excavation reports and research conducted throughout the Great Basin, particularly at Lovelock Cave, Danger Cave, Sandwich Shelter, Winnemucca Caves, Hidden Cave, Hogup Cave, Lake Mohave, Lahontan basin and the Lake Bonneville basin, as well as others.

Also coincident with terminal Pleistocene times was the presence of a number of large, now extinct fauna in the Great Basin, many of which were hunted aboriginally by the Paleo-Indian occupants of the region. An outline of specific human adaptation to the terminal Pleistocene is included in the Paleoindian discussion in the following chapter.
CHAPTER 3

PREHISTORIC AND ETHNOGRAPHIC CULTURE HISTORY

Most of what is known of the culture history of this region has resulted from excavations, especially in caves and rockshelters, from large-scale land surveys conducted by other Federal agencies (USFS or BLM), or from smaller surveys conducted in response to ground-disturbing projects or development. Excavations have provided the greatest amount of detail on past subsistence patterns and cultural chronologies, while surveys have helped to identify past land use and settlement patterns.

Some of the better known caves excavated in this portion of the Great Basin include Danger Cave, Hogup Cave, and Etna Cave. Important cave or rockshelter sites excavated in the Park vicinity include those located in Smith Creek Canyon in the Northern Snake Range and at Baker Creek Caves and Lehman Caves within the Park. Figure 5 shows the locations of archeological sites and localities referred to in the text.

REGIONAL RESEARCH SUMMARY

Previous ethnographic and archeological research in the Great Basin has been outlined extensively in other sources (see for example Fowler 1986; Fowler 1980; Fowler and Jennings 1982; Rohn 1973; Wallace 1978; C.S. Fowler 1970, 1982; O.C. Stewart 1982; as well as others) and will not be recounted in detail here. Several regional and local studies pertinent to the understanding of the ethnohistory and to the development of a regional cultural chronology will, however, be briefly mentioned.

Between 1776 and 1850, reports on the Great Basin were generally found in the journals and personal diaries of exploring parties, of individuals involved in the fur trade, or of early emigrant parties.
Figure 5. Archeological Sites and Localities Referred to in the Text.
Systematic ethnological research began in the Basin about 1850 (Fowler 1986:15) as the result of increased scientific attention to this region of the West. The first local ethnographic description comes from Captain James Simpson, who described a Gosiute camp in Spring Valley (1876:56).

Julian Steward began his extensive work in the Basin in the 1930s, doing first archeological then ethnographic fieldwork. Steward’s *Basin-Plateau Aboriginal Sociopolitical Groups* (1938) still serves as the primary ethnographic resource for this region and provides the most comprehensive model for cultural ecology in the Basin. In 1939, Alfred Kroeber defined the Great Basin Cultural Area; his definition of the area is still in use. Other ethnographic and ethnohistoric research (focusing particularly on the Western Shoshone) includes that of Stewart (1966, 1978, 1980), Clemmer (1973), Kroeber (1925), Malouf (1940), Steward (numerous) and others (see C.S. Fowler 1970 and Thomas, Pendleton and Cappanari 1986). For the Southern Paiute, studies have been conducted or summarized by Kelly (1934, 1964), Euler (1966, 1972), Heizer (1954), Fowler and Fowler (1971), Stewart (1942), Drucker (1937, 1941) among others (see C.S. Fowler 1970, and Kelly and Fowler 1986). For a recent, detailed summary of the ethnographic and linguistic research conducted in the Great Basin, see Fowler (1986:22-30).

The first scientific archeological excavations in the Basin began near Provo, Utah, in 1872 at what were later identified as Sevier Fremont sites. This work was furthered from 1915 - 1920 by Neil Judd (1925) who tested and recorded sites in Utah, northern Arizona and eastern Nevada, where he visited the Garrison site and Smith Creek Canyon (Judd 1925:60-61). Noel Morss, working in the Fremont River area in the late 1920s, was the first to define the Fremont as a distinct cultural entity (Morss 1931). Investigation of the Fremont culture has continued to the present with Fremont origins, subsistence, settlement patterns and their demise representing major research questions.

Beginning as early as 1930, the University of Utah has been actively involved in archeological research in the Basin, with a number of important studies conducted by Steward, Malouf, Smith, Rudy, Jennings, Gunnerson, Aikens, Marwitt, Taylor and others. (cf. Fowler 1986). In Nevada, archeological fieldwork was initiated at Lovelock
Cave in 1912 by Loud and continued by Harrington in 1924 (Loud and Harrington 1929). Subsequently, Harrington and Wheeler conducted local research in Snake Valley, Smith Creek Canyon and at the Baker Creek Caves (Harrington 1934, 1936). Beginning with Harrington's focus on discovering Pleistocene-age faunal remains in association with cultural materials, a number of other significant dry-cave sites have been excavated throughout the Basin. Some of these include Gypsum, Etna, Hogup, Danger, Lovelock, Promontory, Newark, Black Rock, Deer Creek and other caves in Smith Creek Canyon (see Aikens and Madsen 1986; Elston 1986). As most of these dry-cave sites have well-preserved cultural materials, much is now known of the Archaic period of the Great Basin, and to a lesser extent, Pre-Archaic cultures. Several of these caves contain stratified deposits bearing cultural materials spanning as much as 10,000 years, and thus yield information ranging from at least the Archaic through the Fremont and finally Shoshone use of the area (see for example Aikens' 1970 report on Hogup Cave and Jennings' 1957 report on Danger Cave).

Recent research by federal land holding agencies such as the U.S. Forest Service and the Bureau of Land Management, and by the State (i.e. the Department of Transportation, the Nevada State Museum and the Desert Research Institute of the University of Nevada, Reno) and private companies involved in cultural resource management (CRM) projects, has greatly expanded our knowledge of the Great Basin, particularly with regard to ethnic boundaries, subsistence strategies, and settlement patterns (cf. Aikens 1986). Excellent historical summaries of the work conducted in the Great Basin is included in the Smithsonian Handbook of North American Indians: Great Basin (1986), and more specifically for CRM work in Aikens (1986) and eastern Nevada by James and Zeier (1982).

Archeological research at several localities in the immediate Park vicinity bear mentioning. In Smith Creek Canyon in the northern Snake Range, Mark R. Harrington oversaw research at a number of caves and rockshelters in the late 1920s and early 1930s. At Smith Creek Cave, Harrington uncovered extinct horse and other extinct animal remains which he felt had been culturally fractured (Harrington 1934). In the late 1960s and early 1970s, Don Tuohy, Alan Bryan and Ruth Gruhn continued excavations in Smith Creek Canyon. Alan Bryan's work in Smith
Creek Cave yielded what he believed to "probably be the best dated Paleoindian campsite in America" (1977:170). The validity of Bryan's claim for a late Pleistocene occupation of the cave (called by him the "Mount Moriah Occupation") has subsequently been challenged. Based on reinterpretation of the radiocarbon dates, on floral reconstructions from packrat middens, faunal records from the Snake Range and other paleoenvironmental data, Thompson (1985) has concluded that the Mount Moriah represents an early Holocene occupation beginning after 10,700 BP. According to Bryan, the significance of Smith Creek Cave is the indication that there were two different point traditions here between 11,500 and 11,000BP - a stemmed tradition and the Clovis tradition (Bryan 1977:170). Further support of this idea comes from the work of Pendleton (1979:242-251) who reanalyzed point collections from the Tonopah area and concluded that significant technological differences in the manufacturing sequence of Great Basin Stemmed and Clovis (or "Great Basin Concave") points existed. At any rate, the Smith Creek Cave site was evidently not used extensively again until the "Baker Phase" (ca. AD 1 - 1000), as the next cultural levels contain small Rose Spring Corner-notched points. Finally, Parowan Fremont materials were recovered from the upper levels of the site.

Amy's Shelter, also located in Smith Creek Canyon, yielded a Great Basin stemmed point from its lower levels (although this was considered intrusive). From the excavations in Amy's Shelter, Gruhn (1975) proposed a six phase division of the cultural sequence represented in the shelter (Table 5). The earliest clearly defined phase - the Amy phase - is characterized by Humboldt Concave Base projectile points associated with a number of obsidian microtools, the following Smith Creek phase by Gypsum and Pinto series points, the Wheeler phase by Elko points, the Baker phase by small side-notched points and a preponderance of bone artifacts, and the final prehistoric phase - the Snake Valley by artifacts attributable to the Parowan Fremont (Gruhn 1975). The upper level of the deposit contained historic Shoshone materials (Gruhn 1975).

Kachina Cave, also in Smith Creek Canyon, was originally tested by Harrington (1932). The site, named for the numerous Fremont-style pictographs adorning the walls, contained eleven occupational zones
### TABLE 5 - CULTURAL SEQUENCE FOR AMY'S SHELTER IN SMITH CREEK CANYON

(from Gruhn 1975)

<table>
<thead>
<tr>
<th>PHASE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historic Phase</td>
<td>post - 1850</td>
</tr>
<tr>
<td>Snake Valley Phase</td>
<td>ca. AD 1000 - 1200</td>
</tr>
<tr>
<td>Baker Phase</td>
<td>ca. AD 1 - 1000</td>
</tr>
<tr>
<td>Wheeler Phase</td>
<td>ca. 1000 BC - AD 1</td>
</tr>
<tr>
<td>Smith Creek Phase</td>
<td>ca. 2000 BC - 1000 BC</td>
</tr>
<tr>
<td>Amy Phase</td>
<td>ca. 2500 BC - 2000 BC</td>
</tr>
</tbody>
</table>
spanning from 2 to 3,000 years ago, through the Fremont, to Shoshone times (Tuohy 1979). It should be noted that Tuohy utilized Gruhn's chronology with the addition of a "Kachina Phase" extending from AD 400 to 1200. This phase is characterized by the presence of both Snake Valley Gray and Great Salt Lake Gray pottery, the latter occasionally manufactured with local garnet temper (1979:74), and the use of maize and pinenuts.

In the late 1920s, test excavations by Schellback (1927) at Sawmill Shelter (26WP26) revealed three cached snare bundles. This large rockshelter, one of 15 in the Baker Creek Cave system, is apparently just outside the Park. In this same general area, Alvin McLane later summarized the caves and rockshelters located in the northern portion of the Snake Range for the U.S. Forest Service. His report (1973) detailed area rock art and other work on the Fremont. McLane is currently pursuing continued research on the rock art of the Snake Range.

On the west side of the Snake Range, Tadlock (1966) reported a chipped stone crescent from a private collection. Unfortunately, the crescent had been recovered from an unknown location in Spring Valley. However, 29 crescents recovered from nearby Long Valley Lake were found with surface associations of Folsom, Clovis, Scottsbluff and other lanceolate projectile points dated to at least 7000 to 5000 BC (Tadlock 1966:664). These Long Valley crescents are believed to be contemporaneous with the Spring Valley find (Tadlock 1966:665).

While surveying portions of Western Utah and Eastern Nevada, Rudy (1953) recorded the Garrison site, later excavated by Taylor (1954). Excavations at this village helped to define the local Fremont expression as seen on the Western Fremont frontier. At the site, a series of low mounds and shallow depressions on the Snake Creek alluvial fan were found to be the remains of crumbling adobe structures. A total of nine buildings containing 18 rooms was excavated, with two types of structures represented: jacal (or wattle and daub) and adobe-walled "Kanosh" style houses. The jacal house was a single-roomed structure which may have been used for storage. The wet-laid adobe-walled houses were either single roomed or were multiple room structures which lacked the ventilators and deflectors present in other Parowan Fremont sites. Taylor mentions the possibility that masonry-walled structures were
present at the Fremont village at Baker (Taylor 1954:36). The Baker site has essentially been leveled and has not been excavated.

The residents of the Garrison Site were utilizing the mineral resources of the Snake Range for construction materials and were acquiring a distinctive brown-flecked obsidian from the Confusion Range, 40 miles northeast of the site (Taylor 1954:6). Six types of pottery were recovered from the Garrison Site, including Great Salt Lake Gray, Sevier Gray, Snake Valley Gray, Snake Valley Corrugated and Snake Valley Black-on-Gray. Descriptions of these types are included in Table 6.

Faunal remains at Garrison were dominated in frequency by antelope, followed by mountain sheep, with few deer remains recovered. Numerous bird bones (one would assume of migratory waterfowl) were also recovered. Dog, coyote, bison (probably mountain bison), small mammals and a gill plate of an unidentified fish (Taylor 1954:60) completed the faunal inventory.

Two other items of interest concerning the Garrison Site are the presence of two semi-subterranean structures believed to be ceremonial (Taylor 1954:30,36) - possibly functioning as kivas - and the lack of any clay figurines. Figurines have been found in the Park vicinity however; a portion of one was recovered from a site on the west side of the Snake Range. This site was tested by the Bureau of Land Management (Zancanella 1988). Also of interest was the complete absence of human bone from the site (Taylor 1954:13), and the proposition that the deceased were interred in nearby caves such as the Snake Creek Burial Cave.

A further discussion of Fremont lifeways, material culture and regional variability is included later in this chapter. As the Fremont attract a great deal of research interests, a large body of additional material is available on this cultural pattern (cf. Marwitt 1986; Hester 1973; and others).

Forthcoming reports of large-scale land surveys in Spring and Snake Valleys, conducted by the Bureau of Land Management (BLM), will provide a much clearer picture of the prehistoric use and occupation of the immediate Park vicinity. For example, until recently it was believed that the Garrison Site represented the western extent of Fremont occupation in this portion of eastern Nevada (see James 1981:36).
TABLE 6: FREMONT CERAMIC TYPES PRESENT AT THE GARRISON SITE

(From Taylor 1954:37-38; more complete descriptions of these types are included in Rudy 1953:79-93)

I. GREAT SALT LAKE GRAY

<table>
<thead>
<tr>
<th>Construction:</th>
<th>coiled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>dark gray</td>
</tr>
<tr>
<td>Temper:</td>
<td>medium to coarse obsidian and quartz (see remarks)</td>
</tr>
<tr>
<td>Paste:</td>
<td>coarsely micaceous</td>
</tr>
<tr>
<td>Shapes:</td>
<td>jars</td>
</tr>
<tr>
<td>Rims:</td>
<td>out-curved</td>
</tr>
<tr>
<td>Remarks:</td>
<td>Its occurrence at Garrison may indicate trade; however at Kachina Shelter in the northern Snake Range, it is occasionally manufactured with a local garnet temper (Tuohy 1979:74).</td>
</tr>
</tbody>
</table>

II. SEVIER GRAY

<table>
<thead>
<tr>
<th>Construction:</th>
<th>coiled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>dark gray to darker shades</td>
</tr>
<tr>
<td>Temper:</td>
<td>medium to coarse volcanic glass and basalt</td>
</tr>
<tr>
<td>Paste:</td>
<td>medium, friable, lighter gray than Great Salt Lake, contrasts with the temper in color and texture</td>
</tr>
<tr>
<td>Shapes:</td>
<td>jars, pitchers, water bottles</td>
</tr>
<tr>
<td>Remarks:</td>
<td>centered in Sevier Desert area</td>
</tr>
</tbody>
</table>

III. SNAKE VALLEY GRAY

<table>
<thead>
<tr>
<th>Construction:</th>
<th>coiled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>light gray to reddish buff</td>
</tr>
<tr>
<td>Temper:</td>
<td>fine to medium quartz sand</td>
</tr>
<tr>
<td>Paste:</td>
<td>firm, withstanding weathering</td>
</tr>
<tr>
<td>Shapes:</td>
<td>jars</td>
</tr>
<tr>
<td>Remarks:</td>
<td>centered and probably originating in Snake Valley</td>
</tr>
</tbody>
</table>
Table 6 (continued)

SNAKE VALLEY GRAY VARIANTS

A. Snake Valley Corrugated

The paste and temper are the same as Snake Valley Gray. This ware is finely corrugated by pinching the coils and smoothing the raised portions of the corrugations. Corrugations cover the entire vessel or, less frequently, only the rim and neck. Variations include partial corrugation of the vessel in combination with vertical fluting, and some which appear noded.

B. Snake Valley Black on Gray

Temper and paste are essentially the same as Snake Valley Gray.

Rims: straight walls with round rims
Shapes: bowls and jars
Painted designs: carbon paint on interior only of bowls, exterior of jars. Designs are similar to Pueblo I and II designs from northern Arizona (ie. Anasazi). The patterns are repeated in panels. Narrow line patterns, scrolls, solid elements, and dots isolated and pendant on triangles are the elements in the designs. Many sherds have a reddish tint on the exterior as if fugitive red paint had been applied after firing.
Investigations by the BLM have now extended this occupation boundary, at least for semi-permanently occupied sites, to the west side of the southern Snake Range along the eastern perimeter of Spring Valley (Zancanella 1988).

Other important regional chronological data were also derived from excavations at Newark Cave (Fowler 1968) and Civa I and II (Busby and Seck 1977), in White Pine County; Deer Creek Cave (Shutler and Shutler 1963), Swallow Shelter and Thomas Shelter (Dalley 1977), Raven Cave (Jennings 1957), Bronco Charlie Cave (Casjens 1974), and South Fork Shelter and Upper Shelter (Heizer et al 1968) in Elko County; at Etna Cave (Wheeler 1942, Roberts 1944), Stuart Rockshelter (Shutler et al. 1960), Conaway Shelter (Fowler 1973), and O'Malley Shelter (Fowler 1970; Madsen 1971) in Lincoln County; and at Gypsum Cave (Harrington 1933) in Clark County; and in Danger Cave (Smith 1942; Jennings 1953, 1957), Hogup Cave (Aikens 1970) and the Bonneville Lake terrace sites (numerous references) surrounding the Great Salt Lake in Utah. An excellent summary of the materials found during the above excavations and their regional and chronological significance is given in James (1981).

Also worth mentioning here are the excavations conducted by Don Fowler (1982) at the Alta Toquima Site, a high elevation (over 10,000 feet) residential base camp on Mount Jefferson in the Toquima Range in Nye County. At the site, fairly substantial circular rock-walled houses and storage structures were built. Numerous seed-grinding implements and projectile points in the Desert Side-notched series indicate that both gathering and hunting were important activities. The presence of this high elevation village has significant implications for settlement pattern and land use of other high altitude areas such as those occurring over much of Great Basin National Park. In fact, all the studies mentioned above indicate the type and the diversity of cultural resources one might expect in the Park and immediate vicinity, including sites, features and artifacts ranging from the Paleoindian through the Shoshone Period.

Further information on previous archeological research within the Park, including excavations in the Baker Creek Caves and in Lehman Caves, is outlined in greater detail in Chapter 5. The Historic Period
and EuroAmerican occupation and development of the area are detailed in
the chapter following.

ETHNOGRAPHIC RECORD OF THE WESTERN SHOSHONE

Linguistics

The park area, and nearly all the Great Basin, lies within the
ethnographic territory of Numic-speaking groups belonging to the Uto-
Aztecan language family. The Numic speakers fall into three large
groups - Southern, Central and Western (Lamb 1958). The configuration
of these three groups on the landscape has been likened to a fan, with
the narrower apex near the Coso-Death Valley region in Southeast
California, and the groups spread widely across the Great Basin proper
(see Figure 6). This configuration, and the increased number of
dialects in Southeastern California, suggests an original homeland in
the Coso-Death Valley area, with subsequent expansion to the Northeast
and into the Great Basin (see C.S. Fowler 1972:105-115; Lamb 1958; and
Sutton 1987). Central Numic, which was spoken by the Western Shoshone,
is further divided into three languages: Panamint, Shoshone and
Comanche. The local residents all spoke Shoshone (Thomas et al.
1986:262).

Territory

At the time of EuroAmerican Contact, Western Shoshone peoples
inhabited all of Snake and Spring Valleys with a few Southern Paiute
found in the southernmost reaches of both (Figure 7). However, it can
be considered that the Western Shoshone occupied the entire area
immediately encompassing the Park, although the Shoshone and Paiute
occasionally attended each other's festivals. Although Spring Valley
peoples (and the Shoshone of Deep Creek farther north) have occasionally
been referred to as "Gosiutes", there were no apparent cultural or
linguistic differences between them and the Western Shoshone proper.
Figure 6. Distribution of Numic Speakers in the Great Basin.
Figure 7. Territories of Ethnohistoric Groups in the Great Basin.

Additionally, several tribally published histories for the Southern Paiute and Western Shoshone are available, including those by the Inter-Tribal Council of Nevada (Alley et al. 1976; Crum et al. 1976), and the Duck Valley Shoshone - Paiute Tribe (McKinney 1983). A description of these and other tribal histories is given by Alley 1986:601-607.

**Villages**

The east side of the Snake Range was favorable for aboriginal settlement as a number of springs and permanent water courses were in constant supply of run-off from the higher mountains. In particular, the well-watered areas around present-day Baker, Nevada, and Garrison, Utah, evidenced a number of Shoshone villages (Steward 1938:124). Kin groups inhabited these villages, some of which were large enough to support a village chief or headman who had, however, no formal position or authority. Steward indicates that there were as many as 378 Shoshone residing in Spring and Snake Valleys ethnohistorically (1928:124). Estimated population densities for Snake and Spring Valleys averaged one person for every 6.3 to 7.3 square miles, although this may be a conservative figure (Steward 1938:124).

Once again, several villages were located near the present Baker area on the alluvial fan of Lehman-Baker Creeks (Steward 1938:124-130; see also Table 7 and Figure 8). Villages located on the east side of the mountains in the Baker vicinity included:
<table>
<thead>
<tr>
<th>Village Name</th>
<th>Village Chief</th>
<th>No. of Families</th>
<th>General Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tunkahniva</td>
<td>Tunkanijugo</td>
<td>3</td>
<td>Mouth of Lehman or Baker Creek Canyon</td>
</tr>
<tr>
<td>Bauwunoida</td>
<td>Tsuguputsi</td>
<td>6</td>
<td>Present-day Baker</td>
</tr>
<tr>
<td>Tosakowaip</td>
<td>-</td>
<td>2</td>
<td>Mouth of Silver Creek</td>
</tr>
<tr>
<td>Biaba</td>
<td>Budazugo</td>
<td>? - 7 camps</td>
<td>Big Springs</td>
</tr>
<tr>
<td>Basiamba</td>
<td>Yagatcu'</td>
<td>4</td>
<td>Near Osceola</td>
</tr>
<tr>
<td>Bauumba</td>
<td>Ziwitci</td>
<td>2</td>
<td>Near Shoshone</td>
</tr>
<tr>
<td>Tozitnp</td>
<td>-</td>
<td>2</td>
<td>West slope Mt. Moriah</td>
</tr>
</tbody>
</table>
Figure 8. Local Village Interaction Sphere.
(Taken from Steward 1938:125).
Bauwunoida (meaning "water zigzagging") - Six families lived in this village which was located at present-day Baker. The village chief was Tsuguputsi.

Tunhahniva (meaning "cave") - The families of three brothers lived here, the oldest of whom (Tunkahnijugo) was chief. This village was evidently at a cave close to Lehman Cave near the mouth of Lehman or Baker Creek Canyon.

To the immediate north of Baker, at the mouth of Silver Creek in the southern portion of the northern Snake Range was:

Tosakowaip (meaning "white ground") - The families of two brothers - Tuhuzu' and Tuwuk - lived here.

Further south of Baker at Big Springs were seven camps at:

Biaba (meaning "big water") - The primary chief here was Budazugo, also an antelope shaman, with the secondary chief - A:wihi - performing pine-nut and other festivals. Intermarriage with the Southern Paiute was probably common at this village, as some residents were bilingual.

On the west side of the southern Snakes were two villages, one near Shoshone and the other at the base of Sacramento Pass.

Bauumba (meaning "clear water") - Two families are believed to have resided here with Ziwitci as chief. This village was situated near the present hamlet of Shoshone, probably near the springs just south of there. Basiamba (named after a mountain near Osceola) - Four families with a village chief named Yagatcu' lived in this village located near the historic mining town of Osceola.
Farther north and also on the west side of the Snakes was:

**Toziüp** (meaning unknown) - The families of two half-brothers - Muvigund and Konogund - lived in this village at the base of Mount Moriah.

Five additional Western Shoshone villages across Spring Valley at the base of the Schell Creek Range cooperated in subsistence and festival activities with many of the villages listed above. These five villages west of Toziüp included Wongovitwunogwap, Haiva, Tuhuva, Biabauwundu, and Basonip. The largest and most important village in Spring Valley, Biabauwundu, had six chiefs and served as a major focal area for festivals and communal subsistence activities (Steward 1938:125-127).

**Village Cooperation and Social Organization**

The biological family, or household - usually a married couple and their children, perhaps an unmarried adult and often grandparents - provided the basic socioeconomic unit in Western Shoshone groups (Stewart 1938). A generalized division of labor, with women gathering and cooking, and men hunting and performing maintenance tasks, was common, with men, women, and occasionally children participating in communal subsistence activities such as antelope and rabbit drives or pine-nut gathering. These activities usually took place within a "home district" within which the family group foraged (Fowler 1980).

Although somewhat fluid in composition, several families related through kinship might come together, particularly in winter, to live in a shared spot or village. Villagers traditionally cooperated in a number of economic and ceremonial tasks (Steward 1938:127-131). Villages from both Spring and Snake Valleys often went north to Deep Creek Valley to participate in festivals, and those from the southern portion of Spring Valley (mostly people from Big Springs) went south to festivals held in Southern Paiute villages. Members of villages from Spring and Snake Valleys also attended each other's festivals.
Communal antelope hunts, or drives, were conducted under the direction of an antelope shaman. As many as 40 to 50 people would participate in the drives and the associated festivals. Locally, ethnohistoric antelope drives were conducted in the spring under the direction of an antelope shaman named Wiyunjugo. These were held at a corral along the base of the mountains between the villages near Baker and Garrison. Antelope drives and associated dances were also conducted below Big Springs or at Indian Spring, and in Spring Valley at a corral just west of Basonip under Tunampa:š direction (an account of an antelope charming and drive is included in Hopkins 1883:55-57). As an aside, antelope overkills may have increased the availability of local grass seeds which were important in the subsistence base from spring to early summer when very little else was available (Thomas 1972).

Communal rabbit drives were held near Garrison under Tuggwip. In Spring Valley, rabbit drives occurred near Biabauwundu under Kajugo, and in the vicinity of Basonip under Kinumbe. Mud hen drives were held near Bauwanoida in Snake Valley and near Biabauwundu in Spring Valley. Fish drives were held near the villages at Big Springs. Deer were occasionally hunted collectively, and although there is no ethnographic reference, bison might also have been taken communally. Communal pine-nut gathering trips were often organized by a director at local groves which were particularly productive (see again Figure 8, and Steward 1938:127-131).

A fairly elaborate communication system was apparently utilized over large portions of the Great Basin by the ethnohistoric period. This consisted mainly of fires set atop prominences and mountains (Bancroft and Victor 1890:48, 58), each signalling or signifying a variety of information - including a death (Hopkins 1883:66); the presence of a specific individual (Hopkins 1883:100), or group of individuals (Fletcher 1929:61; 121-122); distress (Hockman 1924; Hopkins 1883:186); or requesting help (Hopkins 1883:186).

Subsistence

Demands on subsistence strategies were high in this arid portion of
the Great Basin, and as Thomas, Pendleton and Capprianni (1986:265) have pointed out:

"Western Shoshone adaptation was marvelously complex, and students of ecological and social evolution are only now beginning to comprehend the diverse adaptive processes that articulate the Shoshone pattern to the Great Basin ecosystem."

This "marvelously complex" subsistence pattern depended on a seasonal round with families or small kin groups moving about to harvest food resources available in different areas of the landscape at varying times of the year (Figure 9). Families were most mobile in the spring through fall. In winter, several families might come together in villages established near food caches - particularly near caches of pinyon nuts (Thomas et al 1986:266-276).

In the spring and summer, greens, seeds, berries, and roots were collected. Greens might be eaten raw, or added to soups. Roots and tubers were baked or roasted. Seeds were harvested with the use of basketry seed beaters and collected in large burden baskets. Seeds were eaten raw, roasted in basketry parching trays, boiled, or ground with the mano and milllingstone into flour. Seeds were sometimes cached in baskets placed in pits (Janetski 1981:177).

By late fall, pinyon nuts were gathered. Nut gathering camps were established at or near pinyon groves, where hundreds of pounds of nuts were gathered (Steward 1938:27). The majority of the nuts - or the cones themselves - were cached for use over the winter. Some broadcasting of wild seeds such as chenopods and blazing star also occurred (Thomas et al 1986:267), as well as irrigation of these plants (Janetski 1981:181) and some pruning of native plants to increase yields (C.S. Fowler 1986:94-95). Grasslands might also have been maintained through deliberate burning (Winter and Hogan 1986) and burning was used to encourage the growth of tobacco (Winter and Hogan 1986:129). In Spring and Snake Valleys, maize horticulture was practiced ethnohistorically, with some evidence that maize was grown prior to EuroAmerican arrival in the region (see Winter and Hogan 1986:125-130).
# Figure 9. Principal Harvesting Times of Major Plant and Animal Resources

<table>
<thead>
<tr>
<th>PLANT and ANIMAL RESOURCES</th>
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<th>SUMMER</th>
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</tr>
<tr>
<td>BIson</td>
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<td></td>
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</tr>
<tr>
<td>BERRIES</td>
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<td></td>
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</tr>
<tr>
<td>DEER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EARLY GREENS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELK</td>
<td></td>
<td></td>
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<tr>
<td>FISH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRASSHOPPERS and CRICKETS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JACKRABBIT</td>
<td></td>
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<tr>
<td>PINYON NUTS</td>
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</tr>
<tr>
<td>ROOTS, TUBERS</td>
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</tr>
<tr>
<td>SEEDS</td>
<td></td>
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<tr>
<td>STORED PLANTS</td>
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<tr>
<td>WATERFOWL</td>
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</tr>
</tbody>
</table>

Figure 9. Principal Harvesting Times of Major Plant and Animal Resources.
Wheat, barley and vegetables were also grown ethnohistorically (Winter and Hogan 1986:127; Thompson and West 1981:657).

Other plant food products of economic import included the fruit from honeysuckle, elderberry, chokecherry, serviceberry, gooseberry, currants, barberry, and buffaloberry; seeds from amaranth, goosefoot, shad scale, sedges, mormon tea, hyssop, blazing star, buckwheat, juniper and a number of grasses; leaves from yellow cress, Prince’s plume, bee plant, curly dock and several species of lily; and the roots, tubers or bulbs from bulrush, onion, Mariposa lily, sago lily, and cattail (see Table 8).

Hunting was of secondary importance in the local subsistence base, with small mammals providing the bulk of animal protein, and the taking of jackrabbits being of highest import (James 1981:166-168). These were hunted communally by both men and women. An area was surrounded where people beat the bush and drove the rabbits into long woven nets or constructed "corrals" (Raymond 1982) where they could then be readily disposed of. Cottontails were taken with deadfall and snares, and gophers and ground squirrels were flooded, smoked, or removed from the burrows with skewers (for an intriguing account of the drowning techniques see Egan 1917:245-246 reprinted in Janetski 1981:173; see also Downs 1966:51). Porcupine, beaver, and mink were also consumed by some groups (C.S. Fowler 1986; Thomas et al 1986; 267-268).

Larger game animals were taken primarily by sinew-backed bow, with arrows tipped with wooden, horn or bone points or small side-notched points fashioned of stone. Antelope, which generally graze in the open in large herds, are susceptible to communal hunts, or drives. Large "V"-shaped funnels were constructed of brush and stone and the antelope driven into the the corral where they could be easily disposed of over the course of several days. These drives were usually conducted under the direction of an antelope shaman, who "charmed" the antelope into the corrals for as much as five days prior to the drive. Since the drives frequently attracted large numbers of people from the surrounding countryside, they often served as focal points for festivals and dances. An excellent account of a drive observed by Egan (1917) and one by Hopkins (1883) provide additional information on this social and subsistence practice, while Raymond’s study (1982) provide insights into
<table>
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<th>FAMILY</th>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
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<td>Stickseed</td>
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<td>Taney Mustard</td>
<td>Descurainia pinnata var. filipes</td>
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<td>Yellow Cress</td>
<td>Rorippa curvisilguia</td>
<td>Seeds, Leaves</td>
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<td>Desert Prince’s Plume</td>
<td>Stanleya pinnata</td>
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<td>Mammillaria spp.</td>
<td>Inner Stem</td>
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<td>Prickly Pear</td>
<td>Opuntia spp.</td>
<td>Stem, Buds, Fruit</td>
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<td>Bee Plant</td>
<td>Cleome lutea</td>
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</tr>
<tr>
<td>Saxifrage</td>
<td>Golden Currant</td>
<td>Ribes aureum</td>
<td>Fruit</td>
</tr>
<tr>
<td></td>
<td>Prickly Currant</td>
<td>Ribes lacustre</td>
<td>Fruit</td>
</tr>
<tr>
<td></td>
<td>Whitestem Gooseberry</td>
<td>Ribes inermes</td>
<td>Fruit</td>
</tr>
<tr>
<td></td>
<td>Trumpet Gooseberry</td>
<td>Ribes leptanthum</td>
<td>Fruit</td>
</tr>
<tr>
<td>Nightshade</td>
<td>Anderson Wolfberry</td>
<td>Lycium andersonii</td>
<td>Fruit</td>
</tr>
<tr>
<td>Cattail</td>
<td>Common Cattail</td>
<td>Typha latifolia</td>
<td>Roots, Pollen, Flowers, Stalk</td>
</tr>
<tr>
<td>Valerian</td>
<td>Edible valerian</td>
<td>Valeriana edulis</td>
<td>Roots</td>
</tr>
<tr>
<td>Grape</td>
<td>Canyon Grape</td>
<td>Vitis arizonica</td>
<td>Fruit</td>
</tr>
</tbody>
</table>
possible archaeological manifestations of both rabbit and antelope drives.

Bighorn sheep were taken by ambush from behind blinds constructed of rock walls, brush walls or lines of stone cairns. In steeper canyons sheep were taken by ambush, sometimes with the use of dogs. Deer were hunted primarily by individual hunters, although there are reports of communal drives (Janetski 1981:170-171; Steward 1938:36; Thompson and West 1881:649). It is not known how bison were hunted, as they were locally extinct by the ethnohistoric period. Drowning, fire, dogs, slings, nets, snares, spears, clubs, bow and arrow and deadfall traps were all employed in hunting.

Other animals consumed by Western Shoshone groups included resident and migratory waterfowl, eagle, hawks, doves, blackbird, crow, raven, mockingbird, owl and grouse which were taken by bow or with net and brush traps (see C.S. Fowler 1986:85-87; Janetski 1981: 174-175). Fish, frequently left stranded on stream banks after severe cloudbursts or flashfloods (Waite 1974:201), were easily collected. Grasshopper and crickets were also hunted communally by being driven into an area subsequently set afire. Crickets were driven into a shallow grid work of trenches filled with wheat grass which was then set on fire. This ingenious construction could capture thousands of crickets in a short amount of time. Both the crickets and grasshoppers were dried and ground into a flour (Egan 1917:230-231; James 1981:174-175). Reptiles, amphibians, bee eggs, larvae, and Mormon crickets completed the diet.

Additional details on the subsistence strategies of the Western Shoshone, including means of procurement, processing, preparing and caching, and the variety of plant and animal foodstuffs consumed can be gleaned from Bettinger (1978a), Chamberlain (1911), Dutcher (1983), Egan (1917) C.S. Fowler (1982; 1986), Fowler and Fowler (1971), Hoffman (1878), Downs (1966), Janetski (1981), Kroeber (1925), Lowie (1924), Malouf (1940), Thomas et al. (1986). See also Tables 9, 10, and 11 for a list of commonly consumed mammals, birds, fish, reptiles and amphibians of the Great Basin.
# TABLE 9: SELECTED EDIBLE MAMMALS OF THE GREAT BASIN

(Extracted from Fowler 1986:80-81)

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pronghorn</td>
<td>Pronghorn Antelope</td>
<td>Antilocarpa americana</td>
</tr>
<tr>
<td>Bovids</td>
<td>Bison</td>
<td>Bison bison</td>
</tr>
<tr>
<td></td>
<td>Bighorn Sheep</td>
<td>Ovis canadensis</td>
</tr>
<tr>
<td>Beaver</td>
<td>Beaver</td>
<td>Castor canadensis</td>
</tr>
<tr>
<td>Dog</td>
<td>Dog</td>
<td>Canis familiaris</td>
</tr>
<tr>
<td></td>
<td>Coyote</td>
<td>Canis latrans</td>
</tr>
<tr>
<td></td>
<td>Gray Wolf</td>
<td>Canis lupus</td>
</tr>
<tr>
<td></td>
<td>Red Fox</td>
<td>Vulpes vulpes</td>
</tr>
<tr>
<td></td>
<td>Kit Fox</td>
<td>Vulpes macrotis</td>
</tr>
<tr>
<td></td>
<td>Gray Fox</td>
<td>Urocyon cinereoargenteus</td>
</tr>
<tr>
<td>Deer</td>
<td>Elk (Wapiti)</td>
<td>Cervus elaphus</td>
</tr>
<tr>
<td></td>
<td>Mule Deer</td>
<td>Odocoileus hemionus</td>
</tr>
<tr>
<td>Mouse/Rat</td>
<td>Bush-tailed Wood Rat</td>
<td>Neotoma cinerca</td>
</tr>
<tr>
<td></td>
<td>Desert Wood Rat</td>
<td>Neotoma lepida</td>
</tr>
<tr>
<td></td>
<td>Muskrat</td>
<td>Ondatra zibethicus</td>
</tr>
<tr>
<td></td>
<td>Meadow Vole</td>
<td>Microtus spp.</td>
</tr>
<tr>
<td></td>
<td>Grasshopper Mouse</td>
<td>Onychomys spp.</td>
</tr>
<tr>
<td></td>
<td>Canyon Mouse</td>
<td>Peromyscus crinitus</td>
</tr>
<tr>
<td></td>
<td>Western Harvest Mouse</td>
<td>Reithrodontomys megalotis</td>
</tr>
<tr>
<td>Porcupine</td>
<td>Porcupine</td>
<td>Erethizon dorsatum</td>
</tr>
<tr>
<td>Cat</td>
<td>Mountain Lion</td>
<td>Felis concolor</td>
</tr>
<tr>
<td></td>
<td>Bobcat</td>
<td>Lynx rufus</td>
</tr>
<tr>
<td>Pocket Gopher</td>
<td>Smooth-toothed Pocket Gopher</td>
<td>Thomomys spp.</td>
</tr>
<tr>
<td>Pocket Mouse</td>
<td>Kangaroo Rat</td>
<td>Dipodomys spp.</td>
</tr>
<tr>
<td></td>
<td>Pocket Mouse</td>
<td>Perognathus spp.</td>
</tr>
<tr>
<td>Rabbit</td>
<td>Black-tailed Jackrabbit</td>
<td>Lepus californicus</td>
</tr>
<tr>
<td></td>
<td>White-tailed Jackrabbit</td>
<td>Lepus townsendii</td>
</tr>
<tr>
<td></td>
<td>Desert Cottontail</td>
<td>Sylvilagus audubonii</td>
</tr>
<tr>
<td></td>
<td>Pygmy Rabbit</td>
<td>Sylvilagus idahoensis</td>
</tr>
<tr>
<td></td>
<td>Nuttall's Cottontail</td>
<td>Sylvilagus nuttallii</td>
</tr>
<tr>
<td>Animal</td>
<td>Species Name</td>
<td>Scientific Name</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Weasel</td>
<td>Striped Skunk</td>
<td>Mephitis mephitis</td>
</tr>
<tr>
<td></td>
<td>Mink</td>
<td>Mustela vison</td>
</tr>
<tr>
<td></td>
<td>Badger</td>
<td>Taxidea taxus</td>
</tr>
<tr>
<td>Squirrel</td>
<td>Antelope Squirrel</td>
<td>Ammospermophilus leucurus</td>
</tr>
<tr>
<td></td>
<td>Chipmunk</td>
<td>Eutamias spp.</td>
</tr>
<tr>
<td></td>
<td>Yellow-bellied Marmot</td>
<td>Marmota flaviventris</td>
</tr>
<tr>
<td></td>
<td>Beldings' Ground Squirrel</td>
<td>Spermophilus beldingi</td>
</tr>
<tr>
<td></td>
<td>Golden-mantled Ground Squirrel</td>
<td>Spermophilus lateralis</td>
</tr>
<tr>
<td></td>
<td>Richardson's Ground Squirrel</td>
<td>Spermophilus richarsonii</td>
</tr>
<tr>
<td></td>
<td>Townsend's Ground Squirrel</td>
<td>Spermophilus townsendii</td>
</tr>
<tr>
<td></td>
<td>Rock Squirrel</td>
<td>Spermophilus variegatus</td>
</tr>
<tr>
<td>Bear</td>
<td>Black Bear</td>
<td>Ursus americanus</td>
</tr>
</tbody>
</table>
**TABLE 10: BIRDS CONSUMED BY THE WESTERN SHOSHONE**

(Extracted from Fowler 1986:85-87)

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagles and Hawks</td>
<td>Northern Goshawk</td>
<td>Accipiter gentilis</td>
</tr>
<tr>
<td></td>
<td>Golden Eagle</td>
<td>Aquila chrysaetos</td>
</tr>
<tr>
<td></td>
<td>Red-tailed Hawk</td>
<td>Buteo jamaicensis</td>
</tr>
<tr>
<td></td>
<td>Swainson's Hawk</td>
<td>Buteo swainsoni</td>
</tr>
<tr>
<td></td>
<td>Ferruginous Hawk</td>
<td>Buteo regalis</td>
</tr>
<tr>
<td></td>
<td>Northern Harrier</td>
<td>Circus cyaneus</td>
</tr>
<tr>
<td>Swan, Goose, Duck Family</td>
<td>Cinnamon Teal</td>
<td>Anas cyanoptera</td>
</tr>
<tr>
<td></td>
<td>Mallard</td>
<td>Anas platyrhynchos</td>
</tr>
<tr>
<td></td>
<td>Redhead</td>
<td>Aythya americana</td>
</tr>
<tr>
<td></td>
<td>Canadian Goose</td>
<td>Branta canadensis</td>
</tr>
<tr>
<td>Heron and Bittern</td>
<td>Great Blue Heron</td>
<td>Ardea herodias</td>
</tr>
<tr>
<td>Dove</td>
<td>Mourning Dove</td>
<td>Zenaida macroura</td>
</tr>
<tr>
<td>Jay, Magpie, Crow</td>
<td>American Crow</td>
<td>Corvus brachyrhynchos</td>
</tr>
<tr>
<td></td>
<td>Common Raven</td>
<td>Corvus corax</td>
</tr>
<tr>
<td>Warbler, Meadowlark, Blackbird,</td>
<td>Red-winged Blackbird</td>
<td>Agelaius phoeniceus</td>
</tr>
<tr>
<td>Oriole</td>
<td>Yellow-headed blackbird</td>
<td>Xanthocephalus xanthocephalus</td>
</tr>
<tr>
<td>Mockingbird and Thrasher</td>
<td>Northern Mockingbird</td>
<td>Mimus polyglottos</td>
</tr>
<tr>
<td>Quail, Pheasant and Grouse</td>
<td>Sage Grouse</td>
<td>Centrocercus urophasianus</td>
</tr>
<tr>
<td></td>
<td>Blue Grouse</td>
<td>Dendragapus obscursus</td>
</tr>
<tr>
<td>Rails, Gallinules and Coots</td>
<td>American Coot</td>
<td>Fulica americana</td>
</tr>
<tr>
<td>Owl</td>
<td>Burrowing Owl</td>
<td>Athene cunicularia</td>
</tr>
<tr>
<td></td>
<td>Great Horned Owl</td>
<td>Bubo virginianus</td>
</tr>
<tr>
<td></td>
<td>Western Screech Owl</td>
<td>Otus kennicottii</td>
</tr>
</tbody>
</table>
# Table 11: Fish Consumed by the Western Shoshone

(Extracted from Fowler 1986:90-91; and Sigler and Sigler 1987)

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sucker</td>
<td>Utah Sucker</td>
<td>Catostomus ardens</td>
</tr>
<tr>
<td></td>
<td>Desert Sucker</td>
<td>Catostomus clarki</td>
</tr>
<tr>
<td></td>
<td>Bridgelip Sucker</td>
<td>Catostomus columbianus*</td>
</tr>
<tr>
<td></td>
<td>Largescale Sucker</td>
<td>Catostomus marcoheilus*</td>
</tr>
<tr>
<td></td>
<td>Mountain Sucker</td>
<td>Catostomus platyrhyncus</td>
</tr>
<tr>
<td>Minnow and Carp</td>
<td>Chiselmouth</td>
<td>Acrocheilus alutaceus*</td>
</tr>
<tr>
<td></td>
<td>Utah Chub</td>
<td>Gila atravia</td>
</tr>
<tr>
<td></td>
<td>Leatherside Chub</td>
<td>Gila copei</td>
</tr>
<tr>
<td></td>
<td>Roundtail Chub</td>
<td>Gila robusta*</td>
</tr>
<tr>
<td></td>
<td>Speckled Dace</td>
<td>Rhinichthys osculus</td>
</tr>
<tr>
<td>Killifish</td>
<td>Springfish</td>
<td>Crenichthys spp.</td>
</tr>
<tr>
<td>Salmon and Trout</td>
<td>Lake Trout</td>
<td>Salvelinus namaycush*</td>
</tr>
<tr>
<td></td>
<td>Bonneville Cutthroat</td>
<td>Salmo clarki</td>
</tr>
</tbody>
</table>

* probably not consumed locally
It should also be kept in mind that plant and animal products not only provided food, but also medicines, spiritual or shamanistic paraphernalia, and raw materials for tools, clothing, nets and basketry. The extensive use of nearly all the biotic resources of the Great Basin is reflected in the fact that over 300 species of plants were used medicinally in the Basin (C.S. Fowler 1986:94-95).

Technology, Material Culture and Ideology

Since the Shoshone moved around quite a bit in their annual seasonal round, residential structures were usually not substantial, and several types of domestic structures were in use. One was an unroofed, circular brush structure, or windbreak, with 4 foot high walls constructed of sage brush or juniper branches. Conically-shaped, roofed houses were also made of brush or grass "thatched" into log or branch upright supports of juniper or cottonwood. The circular floors of these were then covered with grass or mats. Dome-shaped willow wickiups were also used. Many of the doors to these structures faced the northeast, away from the direction of prevailing winds and storms (Janetski 1981:186). Four-post sunshades, brush lean-tos, caves and rockshelters provided additional shelter (Steward 1941:334; Stewart 1942:261; Kroeber 1925). Dome-shaped sweat houses and menstrual huts were also constructed (Thomas et al 1986:268-269).

The Shoshone wore clothing made of sewn or woven rabbitskins, antelope, bighorn or deer skin, and bark or grass. Basketry hats were made from willow or sagebark, or alternately were made of fur. Fur or sagebark mocassins were worn when extra protection was needed for the foot. Shell, stone, bone and fur earrings and necklaces were worn, with hair and body painting and tattooing adding to one's personal adornment (Steward 1941:245, Janetski 1981:193; Thomas et al. 1986:269). Other items of personal and occasional ceremonial use included tubular L-shaped or platform pipes for smoking wild tobacco, and elderberry flutes, skin drums, and antelope or deer hoof tinklers (Steward 1941:251, James 1981:193;195).

Basketry and pottery were utilized as cooking, collecting, transport and storage vessels, with basketry used much more frequently.
Baskets were beautifully made by both twining and coiling techniques, with twining being more common. Canteens, winnowing trays, burden or carrying baskets, parching trays, seed beaters, bowls, fishing baskets and cradles were all fairly common forms of basketry (Fowler and Dawson 1986; Steward 1941:238-241). Pottery forms included flat bottomed and conically-shaped vessels made most commonly by the paddle and anvil technique. Decoration of pots was infrequent and usually restricted to nail indentation (Madsen 1986; Euler 1964; Thomas et al. 1986). Table 12 (at the end of the chapter) provides a description of common ceramic wares utilized by local ethnographic groups.

Besides hunting and cooking equipment, food processing required the use of several multi-purpose chipped stone tools and seed grinding implements. Scrapers, knives, choppers, hammerstones and burins were used to gather or process animal and vegetal products. Seeds were ground into meal or flour on stone metates, or millingstones, with the use of a handstone or mano. These usually were made of sandstone or basalt. Cooking and heating fires were started with a fire drill and hearth (Janetski 1981:193).

Visions and dreams provided access to spiritual, shamanistic and curing power. Individuals used this power to cure specific illnesses, in general curing practices, or alternatively they used the knowledge strictly in their own self-interest (Steward 1941:257-260; Thomas et al. 1986:271). Curing was conducted by laying-on-of-hands or by sucking. As mentioned previously, botanicals were also used in curing.

The Round Dance, or Circle Dance, served as the primary festival activity, often occurring in the fall prior to the pinyon harvest (James 1981:204; Thomas et al. 1986:272). Other opportunities for festivals and dances occurred around antelope drives in the spring. The Ghost Dance, a "world renewal" ceremonial-dance movement, originated in the visionary experiences of a Nevada Paiute man named Wovoka (Mooney 1896). It was practiced among the Western Shoshone in the 1890s although this dance did not reach the level of devotion it did in other areas of the West. An earlier, 1869 version of the dance was conducted by some Shoshone groups, although not extensively nor over a long period of time. At the regular festivals and other social events, gambling was a frequent pastime, along with handgames, shinny, ball and foot races,
target shooting, the hoop and pole game, guessing games and juggling (Steward 1941:302-207; Thomas et al. 1986:273).

Some ritual attention was given to several events during the life cycle. Willow birthing houses were constructed prior to delivery, and following birth certain taboos applied to both parents for as long as three months. Puberty ceremonies for girls included food taboos and isolation, with confinement in a menstrual hut for five days occurring each month thereafter through adulthood. No formal puberty rites were held for boys although some ritual was evidently practiced by some groups upon the boys' first successful taking of large game. Upon death, the deceased were interred, placed in caves, or were cremated inside their houses, which were also burnt (Thomas et al. 1986:270-271; Steward 1941).

EuroAmerican Contact with the Shoshone

Malouf and Findlay (1986) have distinguished three phases of contact between EuroAmericans and Indian groups in the Great Basin. The first of these, the Spanish Period, extended from the late 1600s through 1820. Although actual contact with the Spring and Snake Valley peoples is unlikely, some local groups may have been affected by the growing slave trade. In the Mexican Period (1821-1846), trade and slave trafficking continued, and some contact may have occurred in response to the fur industry or to organized exploration. However, the main impact on local native cultures happened during the following American Period, as a result of overland migration of large numbers of people to the California gold fields. Competition for the scarce food resources and water supplies, and settlement of the area by whites, brought about conflict, destruction of the fragile environment and subsistence base and the eventual undermining of native lifeways. Armed conflict, treaties and the establishment of reservations followed (Clemmer and Stewart 1986; Rusco 1976; Hockman 1924; Malouf and Findlay 1986). Although no reservations are located in the immediate park vicinity, the Ely Colony of Gosiutes is located in Ely, Nevada, and the Goshute Reservation is located north of the park in Nevada and Utah.
In terms of the local Indian residents, contact with whites and encroaching EuroAmerican culture was relatively recent and, in fact, these groups were some of the last to come into continuous White Contact (Vlasich 1981:211; Malouf 1966:1). Spanish traders initiated the slave traffic, most likely in the late 1700s; this insidious practice reached its peak during the 1830s and 1840s (Vlasich 1981:211). The Southern Paiute were affected more by this practice than the Shoshone, as they were located nearer the Old Spanish Trail, although there are some reports that local Indians were abducted - probably by Utes - and sold into captivity (cf. Waite 1974:495). Despite policy to the contrary, Mormon settlers also bought and took in "domestics" - mostly children - and thus furthered the slave traffic, although on a much less intensive scale (Malouf 1966:16-19). The Mormon presence in the Great Basin did, however, slow the slave traffic and trading in general between Great Basin Indian groups, trappers and Mexico. Eventually (in the 1850s), Mormon militia stopped the trafficking along the Old Spanish Trail.

There is some contradictory evidence that Jedediah Smith spent as much as two days traversing the Park area in 1827 while crossing the Snakes over Sacramento Pass; however, most researchers feel that Smith passed through eastern Nevada at a point north of the Snake Range (see Brooks 1977:180-185; Cline 1963:158, Bancroft and Victor 1890). If Smith did cross Sacramento Pass in 1827, he would have been the first EuroAmerican to come in contact with the local Shoshone (cf. Vlasich 1981:220), albeit briefly. During the mass transit of Emigrant parties across Nevada in the 1840's, little or no contact with the local Shoshone was likely, as most parties passed through Nevada along the Humboldt River or farther south of the Park region on the Old Spanish Trail. However, in 1855, an exploratory group from the Mormon community of White Mountain Mission camped at Lehman Creek and climbed Wheeler Peak, with Howard Egan making the first undisputed crossing of Sacramento Pass by a EuroAmerican (Waite 1974:517). This would have brought the local Shoshone, especially those Snake valley peoples living around Baker and Lehman Creeks, into white contact.

Following the Mormon entry into the Park area, contact with EuroAmericans increased dramatically: mining operations began as early as 1869 in the Snake Range, and settlement in Spring and Snake Valleys
by 1868, if not a few years earlier (Trexler 1966:5-10; Waite 1974:552; NPS 1981:32). The adverse effect on local native populations was quick, and severe. As the traditional subsistence base was destroyed, economic dependence on white culture was inevitable, with many Shoshone switching to a wage economy as employees at mines, ranches and area farms (Thompson and West 1881:649; Forbes 1969:60-61; Inter-Tribal Council of Nevada 1976a; Hopkins 1883). During this time, some growing conflict between the Shoshone and the Paiutes is indicated (Thompson and West 1881:649). An intensely personal account of the hardships of this period on the Indian population of Nevada, as told from the Native perspective, was published by Sarah Winnemucca Hopkins in 1883, and is highly recommended.

By 1881, the Indian population of White Pine County was estimated at no less than 1200 persons, although the census only accounted for 810 individuals (Thompson and West 1881:649). By the early 1900s, local Shoshone were employed in area ranches and had moved into a camp a half mile southwest of Garrison which contained ten wickiups and a couple of log cabins. Following a fire, the residents moved to Baker where they lived until the mid-1930s in an area west of the Baker Indian Cemetery (Waite 1974: 488-489). No descendents of these people are known to live in the immediate area today - most moved to the Ely Colony, to the Duckwater Reservation or to the Goshute Reservation in Deep Creek Valley (Waite 1974: 489-490). Members of the Ely Colony of Gosiutes (established in 1931) have expressed an interest in continuing to gather pinyon nuts in the Park and vicinity (Kelly 1987).

PREHISTORIC CULTURE CHRONOLOGY

In addition to the ethnohistoric Shoshone, three distinct cultural manifestations are represented in the archeological record of the general Park vicinity. These include the Paleoindian, the Archaic, and the Fremont. Each of these is described separately below. Dates are taken from a variety of sources, and are based on scant data, particularly so for the earlier periods.
Paleoindian, or Pre-Archaic Cultures (12000 BC - 9000 BC)

The earliest dated artifactual materials in the Great Basin fall within the Paleoindian Period. The Paleoindians are generally thought of as big game hunters, and in fact one primary subsistence focus was on the taking of large, now extinct Pleistocene fauna, including mammoth, bison, ground-sloth, camel and horse. Also taken were elk, deer and mountain sheep (Butler 1986:127). These Paleoindian hunting groups were probably quite small and highly mobile so they could move with the herds they were harvesting. Opportunistic taking of small game, and the harvesting of plant products requiring little or no processing, is inferred, although there is no strong evidence of this.

Paleoindian sites are found in the open as "kill" sites, in rockshelters or caves, beside ancient stream beds, or along the wave-cut terraces of now dry lakes. Relatively few Paleoindian sites have been found and most of these are in the Plains. In the Park region, Paleoindian occupation may be indicated for the east side of the northern Snake Range in sites located in Smith Creek Canyon (Bryan 1979; Harrington 1934, and others) where organic materials radiocarbon dated to between 12,000 and 10,000 years ago were found in association with cultural materials (projectile point fragments, a variety of scraper types, microtools) and hearths.

Diagnostic point styles of the Paleoindians include large fluted and unfluted projectile points such as Clovis, Folsom, Haskett 1 and 2, Scottsbluff and Plano points. These points were probably affixed initially to thrusting spears and later to darts used with the atlatl (spear-thrower). There is also some evidence that domesticated dogs were used in hunting (see Butler 1986:128). Also included in the stone tool assemblage are large bifacial knives, chipped stone crescents, gravers, and choppers (Elston 1986:137).

Although the term "Paleoindian" has been applied primarily to the Big Game Hunting Tradition as manifested in the Plains, and has further been divided into three subperiods - Clovis (or "Llano"), Folsom, and Plano, based on slight changes in projectile point styles, hunting techniques and specific big game exploited (Jennings 1974:81-125; Butler 1986:128-129), the period as a whole is not well-represented in the
Great Basin (Jennings 1986:115-116) where the majority of Paleoindian materials are Clovis points from surface sites (Tuohy 1974). However, the term is used here to represent a pre-Archaic cultural stage characterized by a heavy focus on the hunting of large game, such as bison, camel, horse, and elk, the presence of distinctive projectile points such as Clovis, and the lack of focus on either the processing or storage of plant food products. This chronological classification ties the area in with an early continent-wide cultural tradition (Mason 1962; Jennings 1974).

**Great Basin Desert Archaic (9000 BC - AD 500)**

In response to climatic changes heralding the drying up of lakes scattered throughout the Great Basin, and along with the gradual disappearance of the larger Pleistocene game animals, a broader food-gathering pattern emerged than was evident in the previous Paleoindian Period. This pattern was reflected in the utilization of a wider range of plant and animal products, and has been termed the Great Basin Desert Archaic. The Desert Archaic Period is represented in the archeological record with the appearance of seed-grinding implements (i.e. manos and millingstones) used primarily to process hard-shelled grass seeds. Other diagnostic traits of the Archaic include coiled basketry, netting, fiber and hide moccasins, spear-throwers, digging sticks and Olivella shell beads traded from coastal California areas. Common projectile point styles of the Archaic include those in the Humboldt, Pinto, Elko, Gypsum and Northern Side-notched series.

The Archaic stage represents a generalized hunting and gathering adaptive strategy so well suited to the Great Basin that, in some areas, it was continued until EuroAmerican contact. The Archaic, beginning in the Basin roughly 11,000 years ago, can be divided in the general park vicinity into three periods (Bonneville, Wendover, and Black Rock) based on slight, but recognizable, changes in artifact assemblages. These are thought to be the product of changes in the environment, population pressure and/or migration (cf. Elston 1986:137). Most excavated Archaic sites in the eastern Great Basin are in caves or rockshelters, providing incredibly good preservation. Consequently, a great deal is known about
the material culture, and much can be inferred about the lifeways of the Archaic Period in the Great Basin.

Once again, Archaic peoples exploited a wider food resource base than did the previous Paleoindian peoples, most notably adding seeds to the diet which were not only processed with the use of newly adopted seed-grinding implements, but also stored or cached for later use. There is some evidence also for limited plant husbandry and maize horticulture (Winter and Hogan 1986:133-137). Hunting techniques became more elaborate, with drives, corrals and ambushes evident in the archaeological record. Rock art appears for the first time, and the settlement pattern shifts to more permanent winter camps, with seasonal temporary campsites reflecting task-specific activities or specific resource exploitation (cf. Elston 1986:137-138).

As there has been relatively little archaeological excavation in the Park and immediate vicinity, it is not known how well the following chronology fits the archaeological record of the Park. Further investigations are needed to assess the degree of consonance, and to refine the local chronology. It is suspected, however, that a fair amount of agreement with the following scheme exists in the archaeological record of the Park and immediate vicinity. As mentioned previously, Gruhn's chronology (1975), defined from excavations in the northern Snake Range, divides the Late Archaic Black Rock Period as outlined here into several phases. Tuohy (1979), also excavating in the northern Snake Range, added another earlier phase (the Kachina Phase) to Gruhn's Snake Valley phase, which she had used to define the local Fremont expression. The Gruhn-Tuohy chronology covers the Late Archaic, or Black Rock, Period in the following chronology through the Parowan Fremont, dividing each period further into phases. Artifactual materials associated with each phase have been defined earlier in this chapter. The Gruhn-Tuohy chronological scheme has the advantage of being defined from local archaeological sequences and of having phase-names taken from local geographic or topographic sources. The chronology utilized here is advantageous in describing cultural patterns common to a larger region. For a comparison of the various local and regional sequences see Figure 10. Figure 11 shows the projectile point chronology established for the Great Basin.
Figure 10. Selected Prehistoric Chronologies for the Great Basin.
(Taken from Jennings 1986 and Gruhn 1978, with additions).
Figure 11. Temporal Distribution of Projectile Point Types in the Great Basin.
Bonneville Period (9000 BC - 7500 BC)

The earliest Archaic occupation in the eastern Great Basin appears at about 9000 BC and continues until 7500 BC during a time when the warming trend of the Holocene saw the continued shrinking and disappearance of lakes throughout the region (Aikens and Madsen 1986:153; Elston 1986:138). In fact, the marshes created by the shrinking of the lakes (beginning at the terminal Pleistocene) probably represent the environment which facilitated human exploitation of the area. Tules, cattails, rushes, sedges, waterfowl, eggs and fish may have been primary subsistence foci (Zancanella 1988). The processing of these foods may be reflected in the presence of pulping planes in the archeological record (Zancanella 1988).

Relatively little is known about this early period of the Archaic, as only a few sites with this component have been excavated: Smith Creek Caves, which are found a scant 20 miles north of the Park, Deer Creek Caves, and Danger Cave (Bryan 1979; Shutler and Shutler 1963; Jennings 1957). The materials associated with this time period at Smith Creek Caves include waste flakes remaining from the manufacture of stone tools, end scrapers and projectile point bases from large, stemmed points (Bryan 1979).

Large, stemmed projectile points throughout the Great Basin have also been found in numerous open sites along the shores of now relict lakes and locally in stratified contexts in Smith Creek Canyon (Bryan 1979). Some controversy exists concerning the origin of these "Western Pluvial Lakes Tradition" (WPLT) points (cf. Aikens 1978; Bryan 1980; Hester 1973; Swanson 1962; Tuohy 1969; and Pippin and Zerga 1981), with some suggesting that they originated from the earlier Clovis tradition (cf. Aikens 1978), and others (cf. Bryan 1979) believing that Clovis and WPLT were coeval, independent traditions arising from different origins. If the latter is found to be correct, the WPLT tradition would fall more comfortably into the Paleoindian, rather than the Archaic, Period.

In any event, most sites of the Bonneville Period are found along the shores of pluvial lakes, marshes and riparian areas, and focus on lacustrine, marshland, and other aquatic resources is therefore implied. It is thought that these sites represent a transitional adaptation
between earlier Paleoindian big game hunters and later Desert Archaic gatherers and hunters (Aikens and Madsen 1986:154).

Manos and metates - used for grinding seeds - and the use of caves and rockshelters as storage facilities are hallmarks of this early transitional Archaic period (Jennings 1957; Elston 1986:138; Aikens and Madsen 1986:156), although these groundstone items are sparse in the local area (Zancanella 1988). Sites are generally located in the open around now-dry lakes or marsh margins, or in valleys near permanent streams, with temporary upland camps used for specific resource procurement. Dietary information for this period is somewhat sparse, but grass seeds, berries, cattail, waterfowl, mountain sheep, small mammals, fish and camel were possibly consumed (Aikens and Madsen 1986:154).

Wendover Period (7500 - 4000 BC)

A number of sites representative of Wendover times have been excavated and much more is known about this period than the preceding one. Some of the regional sites with archeological components falling into the Wendover Period include Danger Cave, Hogup Cave, Black Rock Cave, Sandwich Shelter, Deadman Cave, Sudden Shelter, Cowboy Cave, and O'Malley Shelter (Jennings 1957; Aikens 1970; Marwitt et al. 1971; Smith 1941; Steward 1937; Jennings et al. 1980; Fowler et al. 1973).

The taking of 'large game (bighorn, antelope, deer, bison and elk) remains important in this period, with some indication that upland sites were utilized as hunting camps and lowland sites for plant food processing (Aikens and Madsen 1986:155). Pinto, Northern Side-notched, Humboldt and Elko projectile points were affixed to atlatl darts used to hunt large game. Additionally, small game was utilized more extensively than before, with over 30 species of small animals and 30 of birds consumed (Aikens and Madsen 1986:155). These were evidently taken with nets and snares.

An incredible diversity of plant food resources was also used, including pickleweed, saltgrass, greasewood, shadscale, sagebrush, bulrush, and cattail (Aikens 1970; Fry 1978). Seeds from these plants were milled with handstones or manos on millingstone slabs. Coiled and
twined basketry vessels were probably used to collect, carry, store and parch seeds and other items.

The rainfall pattern also shifted during this time so that most fell in the area in the summer. This encouraged the spread of the pinyon-juniper woodland, which was established in the Park vicinity by about 4000 BC (Thompson 1985:114). The subsequent exploitation of pinyon nuts may have led to the development of a seasonal subsistence round (Madsen 1986).

Animal hides, primarily of woven rabbit skin, were used to make clothing or pouches. Bone was used for tools such as awls and needles, or fashioned into ornaments. Perforated mammal teeth and Olivella shell (probably imported from coastal California) were also worn for personal adornment. Incised stone and portable rock art also occur during this period (Elston 1986:142).

A slight change in settlement pattern may be indicated for this period. As mentioned previously, upland sites appear to have been used primarily as hunting camps, and lowland sites as food processing locales. Site locations were often re-used, storage facilities were made, and material was cached in occupation areas, caves or rockshelters; this suggests that a more limited amount of territory was exploited than before (cf. Elston 1986:142, Dalley 1976:159-161).

Black Rock Period  (4000 BC - AD 500)

Aikens and Madsen 1986:157). Sites with components of the Black Rock Period include Black Rock Cave, Deadman Cave, Danger Cave, Hogup Cave and Sudden Shelter. Many new sites were located in upland settings, often along lake-edges in the pinyon-juniper zone, and most still appear to have been used primarily as hunting camps. A wide variety of plants and animals were still harvested (Aikens and Madsen 1986:159) and basketry continued to be used. Leather moccasins with the dewclaws left on the sole were made, as were figurines made of plant products. Elko and Gypsum points became increasingly popular, and as before, these were used with the atlatl. Towards the end of the Black
Rock period, a number of notably smaller projectile points falling in the Rose Springs and Eastgate series appear, and are believed to mark the beginning of the use of the bow and arrow (see Blitz 1988).

Parowan Fremont Period (AD 500 - 1300)

During the Fremont Period, fairly settled horticulturalists inhabited the eastern Great Basin from at least AD 500 to AD 1300 (although they may not have lived in the Park vicinity until as late as AD 700 to 1100). The Fremont people lived in small villages or farmsteads. Although the Fremont were primarily horticulturalists, rather than gatherers and hunters (as was expressed previously throughout the Great Basin), hunting and gathering greatly supplemented the diet, particularly in the western portion of the Fremont territory (Marwitt 1986:161; Tuohy 1979:76) including the Park area. There may also have been a continued focus on harvesting marshland products such as tule, cattail, sedges, rushes and waterfowl (Madsen and Lindsay 1987).

The Fremont manufactured their own pottery and had a distinctive art style represented by clay figurines and rock art. In the Park vicinity, which falls into the Parowan Fremont area, the Garrison site has been excavated and reported on, and Fremont-style rock art and cultural materials have been noted in the Park. From an archeological and culture historical perspective, the presence of Fremont occupations in the local archeological record is probably one of the more significant aspects of the prehistory of the immediate Park vicinity with the Fremont representing the densest local prehistoric population. The Baker and Baker springs area may have been the local center for this portion of the Western frontier of the Fremont (Zancanella 1988).

Fremont Origins

The origins of the Fremont have been debated since their initial identification by Morss (1931). Some think they developed from residential Archaic peoples who were influenced by cultural developments
occurring in the Southwest (see for example Aikens 1966; Holmer 1980; Jennings and Norbeck 1955; Jennings 1956; Marwitt 1970; Rudy 1953; Taylor 1957 and Wormington 1955). Others believe the Fremont developed as the direct result of Anasazi expansion or diffusion of southwestern culture traits (cf. Ambler 1966; Morss 1931; Steward 1933; Gunnerson 1969 and Berry 1974). Still others envision a blend of traits from Plains bison hunters and Southwest groups like the Anasazi or Mogollon (see for example Marwitt 1986; Aikens 1966; and Sharrock 1966).

At least some researchers have suggested that to some degree all three proposed hypotheses are true (Madsen 1979; Madsen and Lindsay 1977). In fact, Madsen and Lindsay (1977) have suggested that because of this, three distinct cultures are represented in the Great Basin within the "Fremont" time frame: a Fremont Culture, a Sevier Culture and an as yet unidentified Plains-derived culture. In any event, the cultural expression in the Great Basin from about AD 500 to 1300 shared traits with cultures centered in the Plains and the Southwest, and continued some practices common among Archaic peoples.

Although Fremont origins have not yet been established to everyone's satisfaction, the archeological record at Hogup Cave shows the addition of Fremont materials to the Archaic assemblages after AD 400 without any "replacement or marked cultural discontinuity" (Marwitt 1986). Other researchers in eastern Nevada and Utah see similar patterns in the archeological record of sites and regions under their study. The local archeological record seems to indicate that local Archaic peoples adopted some traits from the Southwest which were then manifested culturally as the Fremont (Rudy 1953; Taylor 1957; Zancanella 1988). A connection with the Moapa area (ie. Virgin Anasazi), possibly through the trading of salt for local goods (Zancanella 1988), may have brought some Anasazi traits like Virgin area ceramic wares into the region. Connections to the Kayenta Anazasi area might have resulted in trade based on the local occurrence of Citadel polychromes and Kayenta style petroglyphs (cf. Schaafsma 1980: Fig. 114; Aikens 1978). Current research on the Fremont, and summaries of the theories concerning the origin and demise of this culture are included in Marwitt (1986) and numerous other reports included in the bibliography.
Regional Variants

At least five regional variants of the Fremont pattern have been noted in the archaeological record of Utah and East Nevada (Marwitt 1970; 1986). These include the Uinta, San Rafael, Great Salt Lake, Sevier and Parowan (see Marwitt 1986). Local Fremont expressions fall into the Parowan Fremont variant (Marwitt 1986:164-166), although the local Fremont "frontier" sites apparently show a greater degree of variation than those sites located nearer the Parowan core area (Marwitt 1986:165).

Only one local Fremont village (the Garrison site) has been excavated and reported on (Taylor 1954), although many more Fremont sites, including villages, exist in the local area (Zancanella 1988; James 1986). Both survey and test excavation results from some of the newly identified Fremont sites in Spring Valley will be reported by the Bureau of Land Management (BLM) in the next few years (Zancanella 1988); this will dramatically increase our knowledge of the local Fremont peoples. For example, it was believed until recently that the east side of the Snake Range represented the western extent of the Fremont occupation (cf. James 1981:36). This occupational boundary has now been extended to the west side of the Snakes along the eastern perimeter of Spring Valley, at least for semi-permanent sites (Zancanella 1988). And, this boundary is seemingly well-defined; in a massive BLM survey of Spring Valley, it was found that sites on the east side of the valley contained primarily Fremont wares, that those on the west side contained primarily well-made Numic wares, and that these two ceramic traditions overlapped in the southwest portion of the valley (Zancanella 1988). Further, Zancanella (1988) believes there was roughly a 200 year overlap in Shoshone and Fremont occupations in this area. Continued analysis of additional BLM survey and test excavation data from Spring and Snake Valleys will lend further support to this hypothesis.

Excavated Parowan Fremont sites elsewhere in the region include those at Paragonah, Beaver, Kanosh, Marysvale, Evans Mound and Median Village -- all in Southwestern Utah-- (Judd 1917, 1919, 1926; Meighan et al 1956; Steward 1931, 1933; Gillin 1941; McKusick 1960; Ruby and Alexander 1962; Berry 1972, 1974; Dodd 1982; Marwitt 1970). In general,
the Parowan were heavily influenced by the Virgin Branch of the Anasazi (Marwitt 1986:165).

Parowan villages were generally fairly large (although local villages were smaller overall than those in the core area) and were usually located along streams in lower valleys. Circular and "quadrilateral" semi-subterranean pithouses, as well as coursed adobe and jacal structures, were built. In the Parowan core area in southwest Utah, houses contain ventilators with adobe or jacal deflectors (these were not found at the Garrison site). Artifacts common to this area include the Parowan Basal-notched projectile points, flaked scrapers, bone finger rings, Snake Valley Grayware ceramics and, at Garrison, Sevier Gray ceramics (Marwitt 1986:165). These are in addition to the "standard" Fremont artifact inventory, which also includes the "Utah" metate with a shelf on one end, the Fremont moccasin, incised stone, one-rod-and-bundle baskets, anthropomorphic clay figurines, and Fremont Dent corn (Marwitt 1986:163).

Summit and Paragonah Phases

In the Parowan Valley, two phases of the Parowan Fremont - the Summit and the Paragonah - have been defined. The earlier Summit cultural phase extends to AD 1100. This phase is defined by the presence of circular pithouses, crudely-formed unfired clay anthropomorphic figurines, and a lack of corrugated pottery (Marwitt 1986:165). The following Paragonah phase (AD 1100-1250) evidences the addition of quadrilateral residences, corrugated pottery and larger, fancier figurines.

It is not yet known how well the Fremont manifestation in the Park vicinity will fit into this cultural sequence. The nearby Garrison site apparently falls into the later Paragonah phase. It is therefore possible that the local Fremont presence did not occur until as late as AD 1100, although it is more likely elements of this cultural expression were in place by around AD 700, as some earlier Fremont materials have been found on the Snake Creek alluvial fan (Zancanella 1988). Further work in the area will help to disprove or verify this notion.
Fremont Decline

After AD 1300, the Fremont is not recognizable as a cultural pattern in the Great Basin. What happened to the Fremont is as much debated as their origins. Some researchers believe the Fremont abandoned their horticultural subsistence base and continued living in the area as hunting and gathering ancestors to Numic speakers such as the Shoshone and Southern Paiute (Rudy 1953; Taylor 1954; Gunnerson 1969). It should be noted however, that linguistic evidence puts the Numic speakers in the area within the last 1,000 years - much later than the initial Fremont presence in the Basin. Others believe that the expanding Numic-speaking populations forced the abandonment of the Fremont lifeway, with Fremont peoples then moving into the Plains (cf. Aikens 1966).

Excavations at Hogup Cave appear to shed some light on this situation. At Hogup, there were few Fremont traits noted in purely Shoshonean levels, but Shoshone sherds were found in the upper levels of the Fremont occupation of the cave (cf. Marwitt 1986:172). This would seem to indicate the movement of Shoshone into the area in Late Fremont times, and the subsequent replacement of Fremont culture by around AD 1300. Other investigators in both Utah and Nevada have come to the same conclusion (cf. Marwitt 1986:172).

Other possibilities are suggested by postulated environmental changes. There is some indication that a switch from summer-dominant to winter-dominant rainfall (Dalley 1972; Weide 19701 Berry 1974) may have made horticulture unreliable. There is also some argument that Numic peoples may have possessed more efficient food processing techniques (Bettinger and Baumhoff 1982).

Shoshone/Numic Period (AD 1100 - Present)

The final native cultural period is represented by those peoples encountered ethnohistorically in the region. As mentioned previously, the Shoshone are Numic-speakers believed to have an original homeland in the Coso-Death Valley region in Southeastern California (Lamb 1958;
From here, it is hypothesized, the Numa expanded northward and eastward, beginning at about AD 1000 (Lamb 1958), or at an even earlier date (Taylor 1961; Goss 1977). Glottochronological data, coupled with archeological data, suggests they reached the Snake Valley vicinity sometime prior to AD 1300, perhaps as early as AD 1100 or 1200 (see Madsen 1986:213 and others), and might therefore have contributed to the eventual demise of the Fremont as a cultural entity in the Great Basin. The Shoshonean cultural pattern has been defined in the beginning of this chapter, as have their encounters with EuroAmerican culture.

EuroAmerican incursions into, and the subsequent historic occupation and development of, the Park Area is outlined in the following chapter.

Notes on the Ceramics of the Great Basin

Three groups manufactured pottery used in the Great Basin: the Fremont, Western Anasazi and Paiute-Shoshone. Local Fremont types include those previously defined for the Garrison site (Table 6). Along the Western periphery of the Fremont, Snake Valley Gray represents 57% of the recovered Fremont sherds, Snake Valley Black-on-Gray constitutes 14%, Great Salt Lake Gray 13%, Snake Valley Corrugated 8% and Sevier Gray 7% (James 1986:109). Additionally, the greatest majority of Fremont sherds from the Western frontier are from Snake Valley (James 1986:109). Further discussions of Fremont wares and their distributions can be found in Madsen (1986) and James (1986).

The most frequent Anasazi types in the Basin are North Creek Gray, Shinarump Brown, Moapa Gray and Logandale Gray. The latter two are found primarily in the southeastern Nevada portion of the Great Basin (Madsen 1986:206). Table 12 provides brief descriptions of these four Anasazi ceramic types. It should also be noted that Citadel polychromes have been found in Spring Valley along the west flank of the Snake Range (Zanacella 1988) where they are believed to occur as trade wares.

Paiute-Shoshone wares (or Great Basin Brownwares) are the least well-defined of those within the three ceramic traditions (Madsen 1986:209). Although vessel forms of these wares are fairly limited,
construction and decoration are highly variable (see Table 12). Three varieties of Paiute-Shoshone wares are generally recognized: Shoshone, Southern Paiute and Owens Valley Brownware. Of these, Shoshone and Southern Paiute wares occur within the Park region (Madsen 1986:213). Further discussions of Paiute-Shoshone ceramic types can be found in Madsen (1986), Pippin (1986), and other areal reports contained in Griset (1986).
TABLE 12: WESTERN ANASAZI AND PAIUTE-SHOSHONE CERAMIC WARES OF THE GREAT BASIN

ANASAZI WARES

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>North Creek Gray</strong></td>
<td></td>
</tr>
<tr>
<td>Construction:</td>
<td>coiled, scraped, smoothed</td>
</tr>
<tr>
<td>Color:</td>
<td>light to dark gray</td>
</tr>
<tr>
<td>Temper:</td>
<td>fine quartz sand</td>
</tr>
<tr>
<td>Surface:</td>
<td>well-smoothed to slightly polished</td>
</tr>
<tr>
<td>Decoration:</td>
<td>exterior red stain</td>
</tr>
<tr>
<td></td>
<td>exterior corrugated (generally indented)</td>
</tr>
<tr>
<td></td>
<td>Sosi-Dogoszhi designs</td>
</tr>
<tr>
<td><strong>Shinarump Brown</strong></td>
<td></td>
</tr>
<tr>
<td>Construction:</td>
<td>coiled, scraped, smoothed</td>
</tr>
<tr>
<td>Color:</td>
<td>dark gray to brown</td>
</tr>
<tr>
<td>Temper:</td>
<td>opaque, angular; some quartz sand</td>
</tr>
<tr>
<td>Surface:</td>
<td>smooth, not polished</td>
</tr>
<tr>
<td>Decoration:</td>
<td>plain</td>
</tr>
<tr>
<td></td>
<td>exterior corrugation indented</td>
</tr>
<tr>
<td><strong>Moapa Gray</strong></td>
<td></td>
</tr>
<tr>
<td>Construction:</td>
<td>coiled, scraped, smoothed</td>
</tr>
<tr>
<td>Color:</td>
<td>light gray to brown</td>
</tr>
<tr>
<td>Temper:</td>
<td>quartz sand, olivine</td>
</tr>
<tr>
<td>Surface:</td>
<td>rough to smooth</td>
</tr>
<tr>
<td>Decoration:</td>
<td>exterior red stain</td>
</tr>
<tr>
<td></td>
<td>exterior corrugation - plain and indented</td>
</tr>
<tr>
<td></td>
<td>Sosi-Dogoszhi designs</td>
</tr>
</tbody>
</table>
### Logandale Gray

<table>
<thead>
<tr>
<th>Property</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>coiled, scraped, smoothed</td>
</tr>
<tr>
<td>Color</td>
<td>gray to reddish-brown</td>
</tr>
<tr>
<td>Temper</td>
<td>crushed limestone</td>
</tr>
<tr>
<td>Surface</td>
<td>rough to smooth</td>
</tr>
<tr>
<td>Decoration</td>
<td>plain only</td>
</tr>
</tbody>
</table>

### PAIUTE - SHOSHONE WARES

*(Great Basin Brownware)*

<table>
<thead>
<tr>
<th>Property</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>molded in baskets or holes in ground with coils added to upper portion of vessel; smoothed (scraping or paddle and anvil); thick-walled</td>
</tr>
<tr>
<td>Color</td>
<td>reddish-brown to brown to black</td>
</tr>
<tr>
<td>Temper</td>
<td>coarse, variable</td>
</tr>
<tr>
<td>Surface</td>
<td>rough to well-smoothed</td>
</tr>
<tr>
<td>Decoration</td>
<td>exterior textured (fingernail impressions; straitions; some incised; limited corrugation).</td>
</tr>
</tbody>
</table>
CHAPTER 4

HISTORIC BACKGROUND

Nevada was originally part of the lands claimed in the New World by Spain until the Mexican revolt of 1822. The lands came into the possession of the United States in 1848 following the war with Mexico. Throughout this time, EuroAmerican presence in this portion of the Basin was slight and mostly revolved around the fur industry. In fact, F.N. Fletcher has stated that from the discovery of America in 1492, to the discovery of gold in California in 1848, the only commerce between the Mississippi and the Sacramento Valley was the fur trade (1929:18). The rush to the gold fields of California, beginning in 1849, finally brought large numbers of people, permanent settlements and other industries, such as mining and ranching, to the region.

The first permanent settler in the Park area, Absalom Lehman, established a ranch first on Weaver Creek, sometime between 1866 and 1868, and then on Lehman Creek within the current Park boundaries in 1869. Lehman is credited with discovering the caverns bearing his name and for beginning the local tourist industry. As recognition of the natural beauty of the caverns, Lehman Caves National Monument was established in 1922. In October of 1986, 76,800 acres surrounding and including the National Monument were designated as a National Park.

This chapter outlines the historical development of the region surrounding Great Basin National Park, and summarizes those events important to the specific history of the Park. In as much as an in-depth Historical Resources Study is being compiled for the Park (to be completed in Fiscal Year 1989), no attempt will be made here to provide more than a brief historical outline.
The first EuroAmericans entered the Great Basin in 1776 as the result of Spanish exploration. The Escalante-Dominguez party probably crossed into extreme southern Nevada, but was never in the vicinity of the Park (Bancroft and Victor 1890:36). There followed further exploration and an attempt, first by the Spanish then by Mexico, to connect the original Spanish settlements in northern New Mexico with those along the southern California coast. This resulted by 1830 in the establishment of the Old Spanish Trail which passed through extreme southern Nevada. Although this trail was far to the south of the project area, there was probably some local impact felt throughout the region in the form of trade, pressure on natural resources and the growing slave traffic.

The activities of the Hudson's Bay Company, the Rocky Mountain Fur Company and independent trappers in the 1820s and 30's brought pressure to the area from the north. One member of the Hudson's Bay Company, Peter Skene Ogden, was the first EuroAmerican known to have entered Nevada; he came into northern Elko County in 1825 or 1826 to trap beaver (Vlasich 1981:212; Bancroft and Victor 1890:36). Subsequent trapping parties may have entered the Park area, particularly as the streams west of the Great Salt Lake were explored, although there is no evidence of this.

There is some contradictory evidence that another trapper, Jedediah Smith, crossed Spring Valley, Sacramento Pass and Snake Valley in 1827. If so, he might have spent as much as two days in the Park vicinity (see Brooks 1977: 180-185; Cline 1963:158). However, the majority of information points to his passing 50 to 75 miles north of the Park Area in the vicinity of the Deep Creek Mountains (cf. Bancroft and Victor 1890) or farther south near Pioche (Fletcher 1929:30-31). Numerous books and articles have been written on this highly romanticized period of exploration, particularly with reference to the activities of the trappers, or "mountain men". Some of the earliest accounts of the native inhabitants of the Basin can be attributed to journals and diaries of these explorers and businessmen. The clash of cultures and
lifeways begun during this period later ended eventually in the dissolution of traditional native societies.

SLAVE TRADE

Some digression into the nature and impact of the slave trade is in order. Spanish traders initiated the slave traffic as early as the late 1700s (Vlasich 1981:211; Fletcher 1929:169). Most of the trafficking occurred along the Old Spanish Trail, where Spanish and Mexican traders, an occasional individual fur trapper and groups of Ute Indians exchanged Indian slaves from Nevada and Utah (presumably mostly Paiutes and Shoshone) for blankets brought across the trail from New Mexico, or for grain, animals and hides from California. Locally, the Southern Paiute were affected more by this practice than the Shoshone, as they were located nearer the trade route, although there are some reports that Indians in the Park vicinity were abducted by the Utes and sold into captivity (cf. Waite 1974:495). The Shoshone and Paiute occasionally traded children for EuroAmerican goods (see for example Fowler and Fowler 1971:105, and others). Mormon settlers bought and took in "domestics" who were mostly Indian children (Malouf 1966:16-19). Mormon militia eventually put a stop to this dark practice all along the Old Spanish Trail in the late 1850s (Vlasich 1981:212).

SCIENTIFIC AND MILITARY EXPLORATION OF THE REGION

In contrast to exploration conducted purely in response to the needs of the fur industry, scientific exploration parties were sent into the Great Basin as early as 1843 by the United States government. The first scientific survey of the area was conducted under the direction of Captain John C. Fremont of the U.S. Army Corps of Topographical Engineers. Fremont's government surveys of 1843-44, 1845 and 1853 provided invaluable contributions to the topographical mapping of the Great Basin, and all Fremont's surveys passed through Nevada. His survey of 1853 brought him closest to the Park Area. On this trip, he
passed roughly 100 miles south of the Snake Range near Pioche (Vlasich 1981:216). Fremont's summaries of his expeditions were widely distributed, and influenced both the routes of travel and the settlement patterns of those to arrive in the region later. Emigrant parties used his reports as they traveled across the Basin, and Mormon settlers used his maps as well as his reports (Waite 1974:573).

In 1859, Captain James Simpson was on assignment to survey shorter mail routes to California. One of his routes was later used by the Pony Express and became part of the Overland Stage Route (Vlasich 1981:216). His more southern route over the Sacramento Pass, first crossed by Howard Egan in 1855, later became the route of Highway 6-50 from Utah to Nevada (Waite 1974:531; Trexler 1975:4); see also Figure 13 [later in this chapter] for a summary of early transportation, communication and exploration routes in the Park region).

In 1869, Lieutenant George Wheeler lead a topographical mapping and scientific survey party into the Snake Range where they encountered Absalom Lehman on his first ranch alongside Weaver Creek. Wheeler's survey, "one of the most important government surveys in the West" (Waite 1974:536), produced the first topographic maps of the Snake Range.

These military expeditions also had the assignment of surveying for possible military posts and routes of military travel in the event of conflict with the Native Americans of the region. Military operations eventually involved armed conflict, the signing of treaties, and the establishment of reservations (Hopkins 1883; Clemmer and Stewart 1986; Inter-Tribal Council of Nevada 1976; Vlasich 1981:220-227).

**Wheeler Heliograph Station**

In 1882, a heliograph station was established by the U.S. Coast and Geodetic Survey atop Wheeler Peak as part of a large-scale mapping project covering Utah, Nevada and parts of California (Read 1959). As part of this project, several men (Joseph Davis, and George and 0. A. Rice) were stationed atop Wheeler peak from August through December. Davis resided in a tent on the peak in 1881, and in 1882 a trail was built to the summit. Two five-foot high stone structures covered with
canvas were erected to provide shelter for the Rice brothers and the heliographic instruments. Evidence of this station - rubble at the site of the structure and a cairn bearing the names of the Rice brothers - is still visible on the Peak (Waite 1974:578).

The U.S. Coast and Geodetic Survey also constructed a station near Lehman Ranch in 1882 for astronomers to view the transit of Venus across the sun (Waite 1974:578-579).

EMIGRANT PARTIES

The first emigrants, crossing Nevada from 1839 to 1846, were headed to Oregon and California to establish farms (Bancroft and Victor 1890:46) and probably missed the White Pine County area altogether. The majority of emigrant parties crossing the State in the late 1840’s passed through Nevada along the Humboldt River, or farther south of the Park region on the Old Spanish Trail, and therefore also did not come into the Park region. However, from a native standpoint, pressure on the resources of the region probably was felt to some degree (see for example Vlasich 1981:220; Rusco 1976), and goods of EuroAmerican manufacture became somewhat more accessible in the region. In any event, the fact that the majority of those traversing the state in the late 1840s and early ’50s were enroute to the gold fields of California set the stage for the eventual settlement and exploration of portions of Nevada in response to mining.

MORMON EXPLORATION AND SETTLEMENT: THE WHITE MOUNTAIN MISSION

The first permanent EuroAmerican presence in the Great Basin occurred in 1847 in the Great Salt Lake area where Brigham Young lead a group of 148 Mormon colonists. Within 20 years, the number of settlers in the region had increased to 144,000 persons (Waite 1974:574). During the Gold Rush, Salt Lake City became a major stopover and supply center for wagon trains, with Mormon settlements and trading posts also established along the major routes of travel to the gold fields.
(Bancroft and Victor 1890:65). The areal extent of the Mormon influence in the Great Basin was tremendous, with colonies and settlements established in Utah, Nevada, Arizona, California, Colorado, New Mexico, Wyoming, Idaho, Canada and northern Mexico (Waite 1974:515-518). Mormon colonization was elaborate and well-planned; an exploratory party would first find a suitable area for farming, then a "mission" would be organized to begin massive irrigation projects and to establish farmsites. The missions were self-sufficient, each having a blacksmith, physician and teacher, as well as a number of other crucial artisans (Waite 1974:517). By 1876, 376 new Mormon settlements were established, most centering on Utah. Many of these still thrive as cities or small communities. These settlements were so well-planned that Utah is "considered to be the only systematically colonized state in the Nation" (Waite 1974:517).

In 1855, the White Mountain Mission was founded at Fillmore, Utah, some 150 miles east of the Park. During that year, Mission members visited Snake Valley, camped at Lehman Creek and climbed Wheeler Peak, thus becoming the first documented EuroAmericans to have visited the Park area. In the same year, Howard Egan set out to find a shorter route between some of the Mormon settlements in Nevada and Utah; Egan crossed Sacramento Pass and was the first EuroAmerican known to have done so.

In 1858, the White Mountain Mission visited Snake Valley a second time, with 45 people staying on to begin farming and ranching. They also built a small fort surrounded by a moat near Clay Springs in the Burbank vicinity. However, the settlement was abandoned in the 1860's, sometime before Absalom Lehman arrived (Waite 1984:518-520).

RANCHING AND SETTLERS

The late 1860s brought the first independent ranchers to Spring and Snake Valleys, and witnessed the establishment of the first permanent EuroAmerican communities in the area. The ranchers supported themselves by providing supplies to mining camps throughout the county (Waite 1974:566). These early settlers relied on the resources of the Snake
Range and Park area, including the use of timber for fuelwood and construction, springs and creeks for domestic and agricultural use, and the alpine meadowlands for livestock grazing, while local Indians were often employed as ranchhands. As an historical aside, many early ranches developed to meet the demands of the Pony Express and the Overland Stage route for fresh mounts, feed for the horses and food for travelers (Welch 1981:27). Later, the market created by area mining helped secure the presence of agriculture and ranching in the region. Ranching and agriculture remain the primary local industries and grazing allotments are still active within the Park (Brock 1988).

**Absalom Lehman**

Absalom Lehman is believed to have been the first permanent EuroAmerican settler in Snake Valley (Waite 1974:552; Trexler 1975:5-10). He arrived in the area between 1866 and 1868, first settling on a ranch on Weaver Creek. It was here that Lt. Wheeler’s party encountered him in 1869. Sometime later that year, Lehman sold his original ranch, and set up another on Lehman Creek where he maintained a successful dairy business. Lehman is credited with having discovered the now-famous Lehman Caves in 1885. Impressed with their beauty, he established a second or upper ranch near the entrance where he began giving guided tours of the caverns. Lehman is thus responsible for initiating the tourist industry of the area. Further information on the role Lehman, his ranch, and the caverns played in the eventual establishment of the National Monument are included in the administrative history later in this chapter.

**Early Ranches**

The first ranch in Snake Valley proper was developed in 1869 at Burbank by the Hockman family. Other ranchers and their families moved into the area over the next few years. In Spring Valley, the first ranch was set up at Shoshone by Benjamín Kimball, with a number of others following. Early families in the valleys included the Yellands, Kirkeby, Swallows, Willards, and Robinsons, as well as others (NPS
1981:32). Further details on these ranch families and photographs of the various homesteads are included in Robert Waite's doctoral dissertation (1974:555-572). As an interesting aside, many of these early ranchers visited Lehman Caves on one of Lehman's tours, and several joined him on his first "official" tour (cf Trexler 1966:18-19).

**Garrison, Baker and Basque Sheepherders**

The two communities in Snake Valley closest to the Park - Garrison and Baker - were founded in 1870 and 1873, respectively. At Garrison, two brothers (Nick and Robert Dowling) first moved into the lower Snake Creek area, and by 1873 as many as 20 families resided there. The town was named in 1898 for its first postmistress, Emma Garrison. This small ranching community still boasts a number of families (Waite 1974:563-566).

Absalom Lehman's brother, Ben, moved into the lower Baker Creek area where he established a ranch in 1873. Several other families soon arrived in the area, including George Baker for whom the town was named. Baker developed a highly successful cattle ranch, but sold his operation in 1914 to a Basque sheepherder named Guy Saval. The large cattle ranch was subsequently turned into a sheep ranch and numerous Basques moved into the community (in fact, Waite indicates that for a number of years the community was referred to as "Basque Town" [1974:567]). Saval sold out in 1921, sheepherding was mostly phased out, and cattle ranching returned to Snake Valley. Baker now serves as the jump-off point to Great Basin National Park. Further details on Baker's history are also included in Waite (1974:566-571) and Trexler (1966:5-11).

The Basques, originally from the Pyrenees of Spain and France, first came to the West in 1850. They began sheep operations and wool production in the Sierra Nevada Mountains of California and in the grazing lands in Western Nevada. Large-scale drives crossed Nevada in the 1850s, with sheep being moved southwest to Sacramento (Welch 1981:28). The presence of free-roaming sheep on public land created a series of range wars between sheep herders and cattlemen until the passing of the Taylor Grazing Act of 1934.
Basques still herd sheep today in much the same way as they have historically (Holliday 1964). Shepherders typically work alone and usually are employed by large Basque-owned livestock companies. Trailer camps at lower elevations serve as the main office for herding operations, with individual temporary camps set up at higher elevations near the herd. The temporary Basque spike camps are small, usually consisting of a single herder, a tent, an oven, a horse, and a group of dogs. Seasonal Basque camps are established each year on the west side of the Snake Range where two grazing allotments are set aside for sheep (Brock 1988). The Hub Mine Basin and Highland Ridge are two areas in the Park which have traditionally been used for grazing (Waite 1974:605-612). A number of Basques reside in Ely where an annual Basque festival is often held. One of the more colorful aspects of Basque presence in an area is their predilection for carving images - often graphic - on aspen trees near their camps (see for example Halliday 1964; Claytor 1979; Lane 1971; Douglas and Bilbao 1975). Several areas in the Park retain historic Basque carvings (Brock 1988). These areas need to be recorded prior to the loss of this resource when the trees die.

MINING

The significance of mining in the development of the region can not be easily overstated. In fact, Bancroft and Victor (1890:92) have written that:

"The State of Nevada came into being through the discovery of and development of the Comstock lode. Hence it is that the history of the Comstock lode is to a great extent the history of Nevada."

The productivity of mines in the gold fields of California and the rich silver deposits in the Comstock Lode in Western Nevada brought prospectors into White Pine County as early as 1859, with mining districts first organized in the Snake Range in 1869. Activities in these districts brought prospectors, miners and development into the
Park area. Thus it was that the mining industry brought growth, wealth and influence to the Snake Range (NPS 1981:32).

**Osceola District**

Of the six mining districts organized in the Southern Snake Range (Figure 12 and Table 13), the Osceola District thrived the longest and produced more than $5 million in mineral wealth (NPS 1981:32). The best known of all the Snake Range districts, and the only predominately placer gold district in the region (Hose and Blake 1976:60-62), the Osceola was located on the northwest end of the southern Snakes on both sides of the range from Willard Creek on the south to Osceola Summit on the north. Lode gold was discovered in 1872 above Dry Gulch on the northeast slope of Pilot Knob Ridge where the Exchange Claim was situated; the district was organized the same year. By 1878, over 100 lode claims were in place, with the ore being milled in arrastras. A 5-stamp mill was erected in 1878 in Dry Gulch (Paher 1970:261) and in 1880 another was built on Mill Creek. In the early 1900s, a cyanide plant was built and another stamp mill was built near Sacramento Pass (Waite 1974:644).

Placer gold was discovered in the Osceola District in Dry and Grub (Wet) Gulches in 1877 with the richest deposits being found near the confluence of the two drainages (Hose and Blake 1976:61) and by 1878, over 300 placer claims had been located. Initially, gold was washed in rockers with water from springs located in Wet Canyon. As this proved inadequate to the demand, two ditches were constructed beginning in 1885 by the Osceola Placer Mining Company to bring water into the district. One ditch, located on the west side of the Snakes and now located on Bureau of Land Management and National Forest land, extended more than 16 miles from Shingle Creek north to Hogum. The other (with over seven miles now located in the Park) extended over 18 miles and brought water from Lehman Creek on the east side of the mountains to Osceola. This east-side ditch had a number of flumes and a 600 foot tunnel along its length. In 1890 a headgate was constructed at Stella Lake to store and divert additional water into the Osceola Ditch (Waite 1974:157). The use of the headgate and diversion capabilities ceased when hydraulic
Figure 12. Historic Mining Districts Located in Great Basin National Park.
TABLE 13: MINING DISTRICTS IN THE PARK
(From Collier 1980; Smith 1970; Hose and Blake 1976)

<table>
<thead>
<tr>
<th>DISTRICT</th>
<th>GENERAL LOCATION</th>
<th>MINERAL RESOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexington</td>
<td>East Side; Portions of 11N 70E, 11N 69E 12N 70E, 12N 69E</td>
<td>Tungsten</td>
</tr>
<tr>
<td>Snake</td>
<td>East Side; Portions of 12N 69E, 13N 69E 12N 70E, 13N 70E</td>
<td>Tungsten, Lead, Silver, Copper</td>
</tr>
<tr>
<td>Osceola</td>
<td>Northwest; 14N 67E, W1/2 14N 68E</td>
<td>Placer Gold, Tungsten, Silver, Lead, Gypsum, Phosphate, Copper, Zinc</td>
</tr>
<tr>
<td>Tungsten</td>
<td>West Side; 11N 68E</td>
<td>Tungsten</td>
</tr>
<tr>
<td>Mount Washington</td>
<td>West Side; 12N 68E</td>
<td>Tungsten, Beryllium, Lead, Silver, Copper</td>
</tr>
<tr>
<td>Shoshone</td>
<td>West Side; Portion of 11N 67E</td>
<td>Tungsten, Silver, Lead</td>
</tr>
</tbody>
</table>
mining in the area stopped (Waite 1974:157), although the dam is still in evidence in the lake.

With water readily available, highly destructive hydraulic mining techniques could be utilized to remove the placer gold. Small-scale hand methods were mostly used to work the placers (Hose and Blake 1976:61), and a dragline and sluice were used on Weaver Creek in 1932. This year also saw a small gold rush to the Summit area, but this was short-lived. Large-scale hydraulicking ceased around 1900 (Hose and Blake 1976:61), although there were several later attempts to reopen the area. Gold continues to be produced in the district to a limited extent to this day (Brock 1988; Vlasich 1981:255). This district has the added distinction of having produced the largest gold nugget in Nevada (Hose and Blake 1976:62).

In 1916, tungsten was discovered in the district and at the Pea Ridge Mine, a 2-stamp mill was build. Bat guano (rich in phosphate) was also mined from Bat Caves, adding to the overall mineral wealth of the district.

The town of Osceola was founded in 1877 and included as many as 1500 residents (Waite 1974:630). In 1878 a post office was established. By 1881 the town had a 5-stamp mill, hotel, restaurant, livery stable, blacksmith shop, butcher shop, schoolhouse, a jail, an assay office and several saloons and stores, and served as the main supply point for area ranches (NPS 1981:33; Waite 1974:638-639; Thompson and West 1881:622; Paher 1970:261). One noteworthy saloon was a "ride-in" establishment where one could take a horse to the bar and order without dismounting (Waite 1974:837). The town published one of the earliest newspapers of the area - The Osceola Nugget - beginning in 1903 (Waite 1974: 632; 639). In the hills above Osceola, a number of Chinese lived in a separate community. The Chinese residents worked on the Osceola ditch, hauled ore or wood to the mills, or worked as cooks and laundrymen (Waite 1974:646). A Shoshone camp was located near main street, although in 1899 the camp was removed by petition (Waite 1974:647). The Shoshone worked in the mines or as domestic laborers. A store, saloons and a post office operated at Osceola until 1920, making this the longest-running placer camp in Nevada (Paher 1970:261-263). A fire in 1943 took out most of the structures which were still standing.
The gradual increase in the number of prospectors in the Osceola district necessitated the presence of another residential area, and Hogum thus came into being in 1889 at a point roughly four miles south of Osceola. Gold had been located in the vicinity earlier in the year by Boone Tilford, and a minor rush brought people into the area. The town was relatively small, with less than 100 residents; it contained a blacksmith shop, some semi-permanent domestic structures and a fine 2-story log cabin which is no longer standing (Waite 1974:655-657; Zancanella 1988). Although some activity took place at Hogum as late as 1906, the area was essentially abandoned by that time. However, there is some light mining activity going on in the vicinity today (Zancanella 1988).

Tungsten District

The Tungsten District lies just south of the Osceola on the west slope of the Snake Range and covers Wheeler Peak, Baker Peak, and the Hub Mine Basin. Hubnerite was found here in 1889, and the district was organized in 1900. In 1910 a gravity concentration mill was erected in Hub Basin with water brought in a ditch from Williams Creek. The mill was closed in 1911 but reopened in 1915. Operations in the district between 1917 and 1951 were pretty much limited to the dismantling of the mill. As of 1976, total production of the district was $704,000 (Hose and Blake 1976:79).

Mount Washington District

South of the Tungsten district lies the Mount Washington District, also known as the St. Lawrence or Mt. Wheeler District. This district lies on the west slope of the Snake Range, extending from Shoshone to Williams Canyon and covering Mount Washington and Lincoln Peak. The first mineral discoveries here occurred in 1869, with the district organized the same year. Mining began in 1890 and continued until 1910 at the head of Lincoln Canyon, with the first production from the St. Lawrence lead-silver mine starting in 1911. Cabins at the mine were built of nearby bristlecone pine. After the war the mine was shut down,
but was reopened in 1939 and then again in 1948-49 when a road was built to the claims (Waite 1974:674). The Mount Wheeler Mine (tungsten) opened in 1952 and operated at least through 1962 (Hose and Blake 1976:57-58). Prospects and shafts occur throughout the district (Waite 1974:672).

**Shoshone District**

The Shoshone District lies in the southwest portion of the Snake Range, extending from Shoshone to Silver Chief Canyon where minerals were found in 1869. Several shafts were sunk, but by 1881 the district was evidently neglected (Thompson and West 1881:656). Production picked up in 1911, when a concentration mill was constructed. The mill was dismantled in 1923 but a second plant was erected in 1938 (Hose and Blake 1976: 76-77). Important mines in the district were located around Highland Ridge and in the Hub Mine Basin (Waite 1974:561).

In 1911, a camp was started to support the operations of the mill build by the U.S. Tungsten Corporation in the Hub Basin. Fifty people lived in the camp (called Tungsten Mines), which boasted a store and post office. Minerva, in Spring Valley, was started as a tent city in World War I to support a mill located below the Chief Mine near the mouth of Minerva Canyon. This mill at one time employed as many as 200 men (Waite 1974:664). In 1937, Minerva contained 60 people and several log cabins and frame houses. A school and a post office were set up at Shoshone, a mile and a half away (Paher 1970:263). Ruins of the development are still visible at Minerva. Although the townsite, like Shoshone, Hogum and Osceola, is located outside the current Park boundaries, residents of these mining camps worked at mines, claims and prospects in the districts which extend into the current Park area. In addition to mineral resources, the mines and camps also utilized water, wood and other resources of the present Park area.

**Lexington District**

The Lexington District lies on the east side of the Snake Range opposite the Shoshone district and covers Big Wash, Lexington Creek and
the Black Canyon area. The Bonanza (or Lexington) tungsten mine at the head of Lexington Creek was the primary district producer, although the first production records begin only in 1918. Ore was milled at a 4-stamp mill on the South Fork of Big Wash (Waite 1974:670). In 1941, a concentration plant was built at the mine. The mine had produced at least $100,000 in mineral wealth by 1976 (Hose and Blake 1976:56-57). In 1974 a lead-zinc mine in upper Lexington Creek was still operating.

Snake District

Just north of Lexington is the Snake District. This district covers the Snake and Baker Creek drainages on the east side of the mountains and extends to the Utah border. Initial discoveries were as early as 1869 but the district was not finally organized until 1873. The Snake is sometimes referred to as "Bonita" for Camp Bonita located in Snake Creek Canyon. In 1890, silver discovered in Can Young Canyon attracted a lot of attention (Waite 1974:635). One early miner in the district, Peter Dieshman, prospected in upper Baker Creek Canyon where he built a cabin which is still standing. The Johnson Tungsten Mine above Johnson Lake operated prior to 1945. An aerial tramway carried ore from the mine to the shore of the lake; the ore was then milled at a plant in the canyon one mile below the lake. Mining equipment, a cabin and shaft mark the spot of this mining activity. The outlet to the lake was also fixed with a gate to control the outward flow. In addition, as many as 44 shafts or pits were excavated in the floor of Snake Creek Canyon below the Bonita Mine, which was operated by Tilford and Bonita.

Some mining continues in the Snake Range even today, particularly in the Osceola - Hogum vicinity. Gold and tungsten, followed by lead and silver, have been the most important minerals mined in the Snakes, with tungsten being mined primarily for wartime demand. Of lesser importance has been the extraction of copper, gypsum, phosphate, zinc and beryllium (Collier 1980; Smith 1970; Hose and Blake 1976). During the late 1970s and early 1980s, a revival in tungsten mining occurred (NPS 1981:33). There is, however, no active mining in the Park today (Brock 1988).
LOGGING AND BRICK-MAKING

In addition to ranching and mining, other industries of historic importance to the area have included logging, which began as early as the 1870s, and brick-making which took place in Snake Creek Canyon in the 1880s. Logging became important as the demand for construction materials increased with the advent of new ranches and mines in the area. According to Waite (1974:612), the first local logging activities took place in Snake Valley, where cottonwood, juniper and pine were harvested. Horse-drawn drag lines pulled the logs down to staging areas where they were loaded onto wagons. The last horse-drawn drag operation took place in 1898 in Snake Creek Canyon (Waite 1974:613).

On the west side of the range, high-altitude mining lead to the cutting of spruce and fir. The construction of the Osceola ditch in the 1880’s was "the largest timber consumer in the area" (Waite 1974:618). Bristlecone pine was logged briefly in the 1890s in order to construct log cabins for the St. Lawrence Mine (Waite 1974:334), located at the head of the Lincoln Canyon. Logging virtually ceased in the southern Snakes in 1959 when the Wheeler Peak Scenic Area was established, and no woodcutting is permitted in the Park today.

Sawmills were located in nearly all the major canyons of the Snakes, including Lehman, Baker, Strawberry, Snake Creek and the South Fork of Big Wash (NPS 1981:33; Waite 1974:618). The mill on Big Wash was named the Stoddart Sawmill, while Tilford and Merchan operated the one on Baker Creek, and Calvin Warlick ran one on Snake Creek (NPS 1981:33). The remains of several of the mills are still visible.

A brick kiln was built alongside the south side of Snake Creek in the 1880s. The foundation of the kiln is visible up the canyon from the fish hatchery. Bricks were used in several local buildings and in the dam at Pruess Lake (Waite 1974: 617). The kiln foundations are located just outside the Park boundaries.

TRANSPORTATION SYSTEM

Howard Egan, who had in 1855 crossed the Sacramento Pass, established the first local wagon road which extended across Snake
Valley, Sacramento Pass and into Spring Valley. Captain Simpson encouraged the later use of this route when he surveyed the area in 1859 (Vlasich 1981:228-229). Although never heavily used, this road served as a main freight route to the ranches in Spring Valley and to the mining communities at Osceola, Ward and Taylor (Waite 1974:622). Further discussions of the historic development in the region of wagon roads and transportation routes by the War Department and the Department of Interior can be found in Jackson (1964).

The first car was brought into Snake Valley in 1910 but the isolation of the area made its use impractical (Waite 1974:624). The first good wagon road to Lehman caves was completed in 1920 primarily by locals hoping to attract more tourists (Trexler 1966:23). A second road approached the caves through Home Farm. The current access road was black-topped in 1948, and in 1967 the road to Wheeler Peak Campground was paved (Waite 1974:624-625). Kenneth Trexler attributes the dramatic rise in tourism from the 1930s to the late 1950s to the paving of local, State and county roads: in 1933 visitation at the caves was a scant 612 persons while in 1959 that number had jumped to 20,651 individuals (1966:42-44). By the early 1970s, there were 152 miles of road in the Snake, much of it constructed by the Forest Service (Waite 1974:627). The majority of these roads remain unpaved. Figure 13 indicates some of the early transportation routes in this area.

Pony Express

The Pony Express was established in 1860 as an overland mail route, carrying letters from St. Joseph, Missouri to Sacramento, California. The Pony Express Route crossed Spring Valley at a point roughly 80 miles north of the Park in the vicinity of Shellbourne. Stations and supply stops were located roughly every 25 miles (Smith 1960; Fike and Headley 1979). The establishment of the Overland Telegraph finally made the Pony Express unprofitable. Although the Express Route passed a good deal north of the Park area and thus did not directly affect the Park’s history, the economic effect on local early ranches was probably significant as the demand for feed, livestock and fresh mounts was felt throughout the region (Hardesty 1979; Smith 1960).
Figure 13. Early Trails and Transportation Routes in Nevada and Western Utah.
true where the Overland Stage shared stops with Pony Express stations.

Overland Stage

The passage of early emigrants across the West, the surveying of the Basin by mapping parties, and the need for adequate freight and public transportation brought the Overland Stage into existence from 1849 until 1869 when it was replaced by the transcontinental railroad (G.R. Stewart 1968). The Overland Route also passed to the north of the Park area where it utilized many of the same stations as the Pony Express and, like the Pony Express, local ranches probably provided the Overland with supplies. The Overland also had a negative effect, particularly on the economy of local Shoshone. Demands on the natural resources of the corridor around the route were high and many areas were overhunted (Inter-Tribal Council of Nevada 1976a:47). Raiding the Overlanders, and scavenging abandoned equipment and personal items along the route, became an alternative means of offsetting the local native losses. However, increased interaction of this sort led to hostilities, and locally to the establishment of the Deep Creek Reservation in 1877.

Political History

Nevada was originally part of the lands claimed in the New World by Spain, until the Mexican revolt in 1822. The lands passed out of Mexican possession into U.S. hands in 1848 following the war between Mexico and the United States. Eastern Nevada, including that portion encompassing the Park, originally fell into the Territory of Utah. In March of 1861, the Territory of Nevada was established with an extension the following year to just short of the 114th meridian; this political move was accomplished in an effort to minimize Mormon control over new mining claims (Vlasich 1981:223). In 1864, President Lincoln proclaimed Nevada the Nation's 36th state. On April 1, 1869, White Pine County was created, with Hamilton established as the county seat. A portion of Nye County was added to White Pine on February 26, 1875 (Thompson and West 1881:650). Excellent summaries of the history of the state and the
creation and history of White Pine County can be found in a number of the references included in the bibliography.

ETHNIC AND CULTURAL DIVERSITY REPRESENTED IN THE PARK HISTORY

As with the Gold Rush mining of the Sierras, the mining enterprises in and around the Snake Range attracted miners of varied origins, including, but certainly not limited to, Italian, French, German, Swiss, Irish, Scotch, Cornish, British, Canadian, Portuguese, Mexican, African and Chinese (cf. Welch 1981:30; Bowers and Meussig 1982). At one time, foreign-born outnumbered native-born 10 to 1. Of these, Italians - at least in other parts of Nevada - composed the largest percentage (Welch 1981:30).

Some of these groups tended to particular occupations (cf. Welch 1981:31; Bowers and Meussig 1982). As mentioned previously, Basque sheepherders established camps and ranches in the local mountains and foothills. The Cornish and Welsh tended toward underground mining, Germans toward ranching, brewing and business, Scandinavians toward the timber industry, while the Swiss and Italians became involved in the production of charcoal (cf. Welch 1981:31; Bowers and Muessig 1982: 62, 65).

Several groups were openly discriminated against: the Swiss-Italian, Shoshone and Chinese in particular. The Chinese first came to Nevada in 1858 to construct a ditch along the Carson River (Bancroft and Victor 1890:292). Later, they were employed to work on the transcontinental railroad (Waite 1974:576; Welch 1981:31). When the rail line was completed, they took other work - mostly around mining towns - where they mined, logged, cooked, or were employed in domestic tasks and as farmhands. After 1871, the charters of railroads in the State of Nevada prohibited their employment (Bancroft and Victor 1890: 292). Locally, Chinese were employed in the construction of the Osceola ditch and the dam at Stella Lake. Chinese lived on the outskirts of the mining town of Osceola, where they worked as wood cutters, cooks and laundrymen. The Chinese Exclusion Act of 1872 prevented further Chinese immigration and precluded citizenship.

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Once again, the Shoshone were employed locally in area mines and on ranches, where they conducted a wide variety of tasks. The Shoshone helped construct the Osceola ditch and helped to establish the Wheeler Peak heliograph station.

Except for the Basques, Swiss-Italians and Chinese, the participation of immigrants to the area was mostly on an individual level, rather than as self-identified groups. In addition to these ethnic groups, at least three other groups - not distinct ethnically, but culturally - can be identified in more recent historical activities around the Park. All of these can be distinguished by religious convictions.

Mormons, Order of Aaron and the School of Natural Order

The first of these - the Mormons - settled in the area in the late 1800s; their role in local historical development has been discussed earlier in the chapter. The second, a religious organization known as the Order of Aaron was founded in the 1940s by Maurice Glendenning. Two towns were established in Snake Valley by the Order: Partoun in 1948, and Eskdale in 1954. Eskdale, the closer of the two to the Park, lies 15 miles north of Baker. Both communities have contributed to the economic and agricultural development of Snake Valley and have been likened to a "modern-day pioneering" settlement (Waite 1974:718). Eskdale has grown until it is now the largest community in Snake Valley (Waite 1974:729). A summary of the early settlement and lifeways within these communities is given in Robert Starr Waite's doctoral dissertation (1974:717-729).

Finally, another religious group, founded in 1949 by Ralph Debit (or "Vitvan") and known as the School of Natural Order, established a community called Home Farm in 1957 in the more immediate Park area. The settlement, located roughly three miles northeast of the Park headquarters, includes housing and work areas, orchards, vegetable gardens and fields. Residences were also established along lower Lehman Creek. Prior to the selection of these spots, the School maintained a campsite "high in Humboldt National Forest" (Nevada Life 1982). Whether
this site was in an area currently managed by the Park Service is not known.

**Administrative History and Establishment of Great Basin National Park**

In 1885, Absalom Lehman reportedly discovered the magnificent caverns now bearing his name. In the same year Lehman began leading guided tours into the caves. As recognition of the scenic beauty of the caves, Lehman Caves National Monument was established by Presidential proclamation on January 24, 1922, with the area originally managed by the U.S. Forest Service. The National Park Service took over the Monument on June 10, 1933. A few years prior to this - in 1924 - the first proposals to establish the area as a National Park were made. This was finally realized on October 17, 1986 with the creation of the 76,800 acre Great Basin National Park. The remainder of this section briefly outlines the administrative history of the Park.

**Absalom Lehman and Early Guided Tours of the Caverns**

Although there is some conflict over the exact time and nature of the discovery of the Caves (see Trexler 1966:11-16), the most widely accepted account is that Lehman's horse broke through to the natural cave entrance in 1885 while Lehman was out looking for cattle. As the cave had been used as an Indian burial area, it is possible the entrance had been deliberately obscured, although it is not likely it was "crusted" over with rock (Trexler 1966:17-18). In any event, the first newspaper account dates to 1885, and no inscriptions in the cave predate this year (Trexler 1966). Lehman soon began leading guided tours, and as many as 800 people may have visited the caves in the first six months it was open (Trexler 1966:21).

Lehman "improved" the caves to facilitate greater visitor use. Passages were cleared of cave formations and wooden stairways were built to ease entry into some lower levels of the cave (these replaced ropes and ladders used previously) (Trexler 1966:20). In 1885, a second or "upper" ranch (also known as "Cave Ranche") was established nearer the entrance. A shelter built here was evidently the first local tourist
facility (Trexler 1966:20-21; Waite 1974: 687-688). Lehman also planted an orchard, some trees of which still remain, built a water wheel to churn butter, and constructed a ditch to bring water from Lehman Creek to a reservoir at the ranch around the turn of the century (Trexler 1966:8;21). Lehman's orchard and aqueduct were added to the National Register of Historic Places as of February 1975. At some point, Lehman had an assistant - George Coburn - to help at the caves (Trexler 1966:21). By 1890 Lehman's ranch included cultivated fields, orchards, stables, a smithy, butcher and carpentry shops, corrals, a dairy ranch, a stone milk house and the water-run churn (Trexler 1966:8).

Lehman died in 1891 and the ranch passed into the hands of C.W. Rowland in 1891 and 1892, then Phillip Baker in 1911, and finally Clarence Adams in 1919 (Trexler 1966:22). All three continued to provide guided tours of the area, although less enthusiastically. After Lehman's death it was discovered that the homestead did not include the cave entrance and in 1912 the cave fell under the jurisdiction of the U.S. Forest Service. However, Baker’s property was positioned such that federal access to the caves was minimal (Trexler 1966:22).

In 1920, Clarence T. Rhodes and his family took possession of the ranch where they added a lodge, dining room, cabins, swimming pool and dance hall and continued guiding visitors to the caves (NPS 1980; Waite 1974:688). A wagon road was built from Baker to the caves in the same year (Waite 1974:690).

Establishment of Lehman Caves National Monument

On January 24, 1922, Lehman Caves National Monument was created by Presidential Proclamation and placed under the administration of the U.S. Forest Service. The Rhodes family stayed on until 1933 as caretakers. Overnight accommodations were made available (some in the form of tents set up near the orchards) and new trails were opened up in the Caves (Trexler 1966:25). A large chamber in the cave was set up as a meeting hall which was used by several organizations. A pack service took visitors to local sites, including Wheeler Peak. Ten log cabins and a log lodge were erected in 1928; the lodge was utilized as the monument headquarters until 1961 when it was moved to the Border Place.
Inn on the state line (Waite 1974:571;690). All the other structures of the day are gone except for Rhodes cabin - which is now on the National Register. This cabin served as a home for the monument custodian and his family from 1933 to 1936. Today the cabin contains displays of the early development of the Lehman Caves area.

On June 10, 1933, administration of the Monument passed from the Forest Service to the National Park Service, with Otto Neilson functioning as the first custodian (Waite 1974:690). Regional jurisdiction was given to Zion National Park, but later transferred to Lake Mead National Recreation Area (at the time known as Boulder Dam National Recreation Area) (Waite 1974:691). Rhodes Ranch was added to the Monument in 1934.

A number of visitor-oriented developments have taken place at Lehman Caves since coming under Park Service administration, including the completion of a new entrance tunnel in 1939, the installation of electric lighting in the cave in 1941, the paving of underground trails from 1950 to 1956 and of the main access road in 1952, and the construction of a Mission 66 visitor center in 1962 (Waite 1974: 692-693). Development of above-ground nature trails, construction of a public picnic area and the mapping of a mile and a half of passages complete the inventory of developments which occurred at the Monument through the 1960s.

Beginning in 1969, construction was initiated on a new exit tunnel to the Caves, and new lighting and a telephone line were added to some sections of the Caves. The water system was also upgraded, with new pipe laid and chlorination added to the water. In the mid-1970s, trails were resurfaced, a dump station and sewage lagoon were installed, additional fruit trees were planted in Lehman orchard, utility buildings were constructed, and a new audio-visual room was added to the visitor center. Significant projects in the mid-1980s have included replacing the existing electrical line with underground utility cables, as well as routine maintenance jobs.

Private concessions have included the taking of upwards of 20 tons of ice yearly from Lehman’s Reservoir from 1937 through 1940, with later concessionaires offering overnight services, food and gifts (Trexler 1966:44-46).
Attempts to Create a National Park

Two years after the National Monument was created, C.C. Boak began a movement to enlarge the monument area upwards to include Wheeler Peak and to change the designation of the Monument to that of a national park (Trexler 1966:23; Waite 1974:732-733). The proposal was evidently defeated by grazing interests (Waite 1974:735). In 1923, the Caves and some of the surrounding country was proclaimed a state recreation area and wildlife refuge; this was followed by a similar county proclamation (Trexler 1966:25).

More organized efforts to establish the area as a national park occurred in 1955. Of significant import to this movement was the scientific "rediscovery" of the Wheeler glacier by Weldon F. Heald, who thereafter began writing a series of magazine and newspaper articles describing the glacier, Lehman Caves and the surrounding mountains (Waite 1974: 736-737; Heald 1958). Heald suggested that Wheeler Peak, Upper Lehman, Baker Creek, Snake Creek, the Monument area and the northern two-thirds of the southern Snake Range be included in a new national park (Waite 1974:738).

The Park movement gained momentum as the diversity and beauty of the Range led to an awareness of the recreational and economic potential a new national park would hold. Accordingly, the White Pine Chamber of Commerce and Mines undertook to spearhead the movement in 1956. Heald and the editor of the Ely Daily Times - Darwin Lambert - wrote articles which focused national attention on the area (Waite 1974: 736-738).

In 1956, and again in 1958, the National Park Service conducted field investigations of the Snake Range to assess the feasibility of developing the area as a national park. The first report concluded that more studies should be undertaken (Kell 1956). In 1957, the Great Basin National Park Association was created with the express purpose of working for the creation of a national park in the southern Snake Range (Great Basin National Park Association Newsletters, 1958-1961). The Association published monthly newsletters, provided articles to national magazines and newspapers, distributed nationally a film on Great Basin
and the surrounding area, printed informational brochures and provided a series of speakers and slide show programs seen throughout Nevada (Waite 1974:746-748). Congressional representatives from Nevada called for additional studies (Congressional Record 1958: 5878, 6028) which were undertaken in 1958 by Adolph Murie. Murie's recommendations called for the inclusion of this area of the Snake Range within the national parks (Murie 1959), a conclusion concurred with by the Advisory Board on National Parks, Historical Sites, Buildings and Monuments (Waite 1974:743).

In 1959, the Regional Office of the U.S. Forest Service in Ogden declared the 28,000 acre Wheeler Peak Scenic Area to include much of the upper portions of Baker, Lehman, Snake, Lexington and Big Wash Canyons (see Figure 14 later in this chapter). This recreational plan included the development of campgrounds, picnic area, trails and roads, and served to bring further attention to the area (USFS 1967).

Following this, a number of statewide organizations, joined by a number of special interest groups, were formed in the effort to create a national park (Waite 1974:457). These activities and the continued endorsement of the proposed park by the State of Nevada resulted in several bills being introduced in Washington requesting the establishment of the park (see for instance Congressional Record 1959: 18679). However, heavy opposition to the proposed park soon emerged from mining, ranching, hunting and timber interests - including the U.S. Forest Service (Waite 1974:759-767). Later amendments to the bill included concessions to miners and ranchers, and one amended bill (SB 1760) passed the Senate but failed in the House (Waite 1974:770-773). Activities in support of the park thereafter faltered for a time.

Then, in 1964, a Bristlecone pine of 4900 years of age, discovered at the base of Wheeler Peak, was found to be the oldest known living thing and, once again, national attention was brought to the area. Several other bills were introduced in Congress including one in 1965 to create a national recreation area (Congressional Record 1965:18167). Finally, on October 27, 1986 Great Basin National Park was established.

A complete summary of the administrative history of the park needs to be completed. Excellent starting points in this regard are Kenneth Trexler's (1966) historical summary of Lehman Caves (with updates by NPS
Staff to 1975) and Robert Waites (1975) doctoral dissertation on the proposed Great Basin National Park.

**Mission 66 Program**

The Mission 66 program was initiated throughout the Park System in 1955 as a means to upgrade obsolescent facilities in the parks (Trexler 1966:64). The program was so named because the planned upgrades were to be completed by 1966. At Lehman Caves, this program called for construction of new residences, a modern visitor center, a power plant, a picnic area and an access road. Several buildings (the Superintendent's house and 2 ex-concession cabins) were moved to the newly established residential area. Staffing was increased, additional sections of the cave were opened for touring, and the interpretive program was expanded. The new visitor center was dedicated on June 8, 1963 (Trexler 1966:64).

**Humboldt National Forest**

As mentioned previously, Lehman Caves National Monument originally fell under the administration of the U.S. Forest Service. In 1986, when Great Basin National Park was established, most of the acreage transferred to the Park had been administered by the Humboldt National Forest. This forest, originally known as the Nevada National Forest until 1957 when the designation was changed, was created in 1909 to help protect timber and other natural resources of the Snake Range (Waite 1974:696-697). Lehman Caves fell under Forest jurisdiction in 1912 (Trexler 1966:22). While under Forest Service charge, timber had been harvested, watersheds improved, and roads, trails, campgrounds and picnic areas were constructed in the mountains.

In 1959, the Wheeler Peak Scenic Area was established by the Forest Service in the hope of increasing the recreational potential of the area. This designation left all but a small area near the Wheeler Peak glacier under the multiple-use program with mining, logging, grazing, hunting and the like continuing in the area until recently (Waite 1974:703). It also seems that the development of the Scenic Area by the
Forest Service helped to block the movement to establish the area as a national park, an idea to which the Forest Service was opposed (Waite 1974:705). The area continued under Forest Service management until 1986 when the National Park was established.

Figure 14 shows the relationship between the present boundaries of Great Basin National Park and the former boundaries of the Wheeler Peak Scenic Area, the Humboldt National Forest, and Lehman Caves National Monument.

**Bureau of Land Management**

A third federal agency, the Bureau of Land Management (BLM) has also managed lands now included in Great Basin National Park. These include some of the lower slopes of the mountains, particularly in the Snake Creek area. The BLM manages the public lands in Snake and Spring Valleys from their district office in Ely.

**WORK RELIEF PROGRAMS**

**Civilian Conservation Corps (CCC)**

The Civilian Conservation Corps (CCC) and several other organizations were established as an unemployment relief program in the 1930s (Paige 1985). The CCC conducted several projects in the Snake Range including erosion control on mountain slopes, trail and road improvements in the mountains and on the approach road, and agricultural ditch construction for ranches on the valley floor. The local CCC camp was located at the Desert Range Experiment Station southeast of Garrison (Waite 1974:581), and a spike camp was operated from the Monument in 1934. The spike camp worked in the caves, put in a waterline and made improvements to the comfort stations (Trexler 1966:37,47).
Figure 14. Relationship Between the Present Boundaries of Great Basin National Park and the Former Boundaries of the Wheeler Peak Scenic Area, the Humboldt National Forest and Lehman Caves National Monument.
Civil Works Administration (CWA)

From 1933 to 1934, 56 CWA workers conducted projects within the National Monument including repairing and removing early buildings, repairing waterlines and trails and walls inside the caves, removing trees from the orchard and constructing stone walls around the parking lot (Trexler 1966:37,47).

Works Progress Administration (WPA)

From 1937 to at least 1940, WPA projects occurred in the monument, including the construction of cabins, a new lodge, service and storage dug-outs, a waterline and a reservoir, and work on one of the approach roads to the monument (Trexler 1966:38, 43).

RECREATION AND TOURISM

Coincident with the development of the area since the discovery of Lehman Caves has been the growth of recreation and tourism. Much of this growth has been discussed in the previous sections and will therefore only be summarized briefly here.

As early as 1885, the recreational potential of the Caves was recognized by Lehman, who began guided tours to the caverns and thus initiated the local tourist industry. Lehman improved the caves and built the first local tourist facility. Further improvements to the caves occurred in the 1920s when Clarence Rhodes oversaw the construction of a lodge, dining and dance hall, overnight sleeping cabins, overnight sleeping tents, an outdoor tea-room, and a swimming pool (Trexler 966:25-27). In 1922, the caves were given National Monument status, with continued developments over the years further enhancing the visitor experience. In 1987, as many as 46,000 people enjoyed the beauty of the caves (Brock 1988) and it is expected the number of annual visitors will continue to increase.

The recreational possibilities in the stunning countryside of the surrounding mountains was realized as early as 1924 when the first
proposal to create a national park in the Snake Range was made. Most of
the high country was under Forest Service administration and, in 1959, a
28,000 acre Scenic Area was declared. A recreational plan developed for
the Wheeler Peak Scenic Area included plans for, and subsequent
construction of, campgrounds, picnic areas, trails and access roads.
Recreational activities common to the area have included hiking,
backpacking, mountain climbing, spelunking, skiing, snowshoeing,
sightseeing, picnicking, camping, swimming, fishing, hunting, horseback
riding and photography. Most of these activities (with the exception of
hunting) continue in the Park today, with backcountry use of the trail
system, visiting Lehman Caves, and spelunking being most popular. Of
particular cultural interest is the presence of an interpretive
petroglyph nature trail in Baker Creek Canyon. This trail was developed
in the late 1970s, with glyph-covered slabs brought in from a site on
Forest Service land just off the Park boundaries to the west of Baker
Peak (cf. Aikens 1978; Orvis 1979). However, the petroglyph panels were
removed and returned to the Forest Service in late 1988 (Frampton 1988).
Several other interpretive trails lead to natural features in the Park.

Another early local establishment designed to attract tourists was
Meeks Dude Ranch located within a mile of Lehman Caves. This guest
ranch, considered to be one of the finest in Nevada (Waite 1974:701),
was founded by the Meek brothers and consisted of a clubhouse and
cabins. The dude ranch ran pack trips to local rock art sites and to
local caves (Meek n.d.).

Since being designated as a National Park in 1986, visitor use of
the area has increased dramatically and is expected to continue to rise
as more public awareness of the recreational opportunities afforded by
the area are realized.

OTHER EARLY SCIENTIFIC EXPLORATION

In addition to the early government-sponsored mapping parties and
the group which observed the transit of Venus across the sun, other
early parties have explored various aspects of the scientific potential
of the Southern Snake Region. These have included geologists interested
in determining the exact nature of the icefield in the Wheeler Peak Cirque and of the structure of Lehman Caves, botanists interested in the local flora, and more specific to this study, paleontologists and archaeologists interested in discovering any evidence of prehistoric use of the area and, in particular, the potential association of Pleistocene age fauna with cultural materials. Much of this early paleontological and archaeological work was conducted in the 1930s (Harrington numerous; Wheeler numerous) and has been summarized in Chapter 5.

OTHER ITEMS OF HISTORICAL INTEREST

Several other items of historical interest include the naming of Can Young Canyon - which received its appellation after the "outlaw" Canfield Young hid out there in the 1870s (Waite 1974:636). Another notable event was the 1922 Hollywood filming of "Covered Wagon" in Snake Valley. The filming, which included a number of local residents, was quite a production; a tent city holding hundreds of actors was set up at Pruess Lake, and hundreds of oxen and buffalo were brought in (Waite 1974:579). In 1959, a Viceroy cigarette ad was filmed at the Monument, and in 1965 a portion of a movie entitled "The Wizard of Mars" was also filmed here (Trexler 1966:58).

An outline and historical summaries of many whose early inscriptions are found on the walls of the caverns can be found in Trexler (1966). Included are those of local and regional settlers, miners, physicians, newspaper editors, pharmacists, sheriffs, saloon keepers, and women employed in local dancehalls. Mapping of the caves' interior began in 1958 and was conducted primarily by the Salt Lake Grotto of the National Speleological Society (Trexler 1966:55).

Various aspects of the development of local communications have been outlined previously in the section dealing with the Pony Express and the Overland Mail and Stage Company. On a humorous note in this regard is the following description of the development of the local telephone system given by Trexler:

Communications between the monument and the outside world were always difficult. The old farmer-owned
telephone line became inoperable during every rain or snow storm, and when it did work every ring brought each of the 30 subscribers to their phones. After one had counted the thirty clicks of lifted receivers there was no power left on the line to get the message through. Shouting did help, at least on occasion, and the author can remember the obvious problem of getting used to not shouting when the new Bell System phones were installed in 1965" (Trexler 1966:40).

HISTORICAL SUMMARY

Although the advent of the Historical Period in this portion of the Great Basin was relatively late, Euroamerican presence in the area was still somewhat complex. The first Euroamerican known to have traversed the immediate Park was Howard Egan, a Mormon militiaman who established a route across Sacramento Pass in 1855. The late 1860s brought the first settlers to the area, with Abasalom Lehman starting a ranch on Lehman Creek in 1869. Several mining districts were organized in the Snake Range in the same year, and Lt. Wheeler lead the first government mapping survey into the Snake Range. Further large-scale mapping of the West was enhanced by the construction of a heliograph station atop Wheeler Peak in 1882. In addition to ranching and mining, other industries of local importance have included logging, beginning as early as the 1870s, and brick-making in the 1880s.

In 1885, Lehman began leading guided tours into Lehman Caves from his upper ranch near the cave entrance. In 1920 the tourist facilities at the Cave were expanded by Clarence Rhodes, and in 1922 Lehman Caves National Monument was established by Presidential proclamation. The area was originally managed by the U.S. Forest Service; the National Park Service took over the Monument in 1933. The movement initiated in 1924 to enlarge the area and change it to National Park Status was finally realized on October 17, 1986, with the creation of the 76,800 acre Great Basin National Park.
CHAPTER 5

INVENTORY OF ARCHEOLOGICAL INVESTIGATIONS AND CULTURAL RESOURCES IN THE PARK WITH SUGGESTIONS FOR THEIR MANAGEMENT

CULTURAL RESOURCE THEMES

During the study of Alternatives for Great Basin National Park (NPS 1981), three cultural resource themes (Original Inhabitants, Westward Expansion, and America at Work) and six subthemes (Earliest Americans, Great Explorers, Western Trails and Travelers, Mining Frontiers, Cattlemen's Empire, Science and Invention) were identified as being relevant to the park study area as per the National Park Service System Plan - History (1972). As the post-Archaic Fremont and the ethnohistoric Shoshone are present in the local archeological record, the subthemes of Post-Archaic and Pre-Contact Developments, and of Ethnohistory of Indigenous American Populations have also been added to the original list. These are summarized briefly below and in Table 14.

Original Inhabitants

The earliest radiocarbon-dated occupation in the immediate Park region began by at least 11,000 years ago and may have occurred as early as 12,270 years before the present (cf. Bryan 1979; Thompson 1985) in the Paleoindian cultural period. Data collected within the Park itself suggests a human presence during at least three distinct time periods: Desert Archaic (9000 BC - AD 500), Parowan Fremont (AD 500 - AD 1300), and Western Shoshone (AD 1200 - ethnographic present). There is reason to suspect a Paleoindian (12,000 BC - 9000 BC) presence within the Park, as materials from this period were recovered in nearby Smith Creek Canyon in the northern Snake Range.
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A wide variety of site types has been recorded in the Park, including caves, rockshelters, campsites, stone tool manufacturing areas (i.e. lithic scatters), artifact scatters, burial areas, petroglyphs, and pictographs. In addition, in the immediate Park vicinity there are Fremont and Shoshone villages, antelope drives sites, hunting blinds, cemeteries, and plant food processing stations. The Park area was used ethnographically by the Western Shoshone, with some local groups referred to as "Gosiutes." The Southern Paiute inhabited the extreme southern portions of Snake and Spring Valleys and no doubt also utilized some of the resources of the southern Snake Range. At contact, seven Shoshone villages were reported in the southern Snake vicinity (Steward 1938:124-130). Descendants of the Gosiute continue to harvest pinyon nuts in the Snake Range. From the archeologic diversity represented in the Park vicinity it can be seen that at least 11,000 years of prehistory and history are represented, from early hunting and gathering and agricultural adaptations to the occupation and use of the area by ethnographic Shoshone.

Both prehistoric and ethnographic uses of the Park have been discussed in greater detail in Chapter 3. Specific information concerning the archaeological resources of the Park are included later in the chapter. Recommendations for the management of these resources and suggestions for future research are given in the final chapter.

Westward Expansion and America at Work

The earliest recorded EuroAmerican transit of the region was by Jedediah Smith in 1827, although he is believed to have crossed the area roughly 60 miles north of the Park. In 1855, Howard Egan first used Sacramento Pass, just 10 miles north of the Park, as an easy east-west route across the Snake Range, with other settlers and travelers soon following suit. Also in 1855, Mormon survey parties camped in the Park area, with one group climbing Wheeler Peak. A government survey party headed by Lt. Wheeler topographically mapped the southern Snake Range in 1869. Earlier the same year, Absalom Lehman established a ranch on Lehman Creek. A heliograph station, used primarily for mapping, was established atop Wheeler Peak in 1882.
The late 1860s saw the advent of the mining industry in the southern Snake Range, with the town of Osceola being established in 1877 on the northwest side of the range just outside the present park boundaries. Mining activities connected with Osceola, and several other local mining endeavors, impacted several areas in the Park and left behind such historic resources as the Osceola Ditch, the Stella Lake Dam, and scattered mines, prospects, mills and cabins. Mining continues locally to this day and is especially evident in the Osceola area.

In the late 1860s, ranching and agriculture developed on isolated ranches in Spring and Snake Valleys. Isolated ranches sprung up in the valleys, and towns such as Baker and Garrison were developed. From 1914 to 1921, a large number of Basque sheepherders operated out of the Baker area.

A supporting timber industry began in the Snake Range in the late 1870s, with sawmills operating in various areas of the Park, including the canyons associated with Snake Creek, Lehman Creek, Strawberry Creek and Baker Creek. Absalom Lehman, the first settler in the area, discovered Lehman Caves around 1885. Lehman initiated the local tourist industry by offering guided tours of the Caves from 1885 until his death in 1891.

Additional information on the historical utilization of the Park, particularly with respect to mining, the timber industry, ranching and tourism, has been outlined previously in Chapter 4. Specific details on the historic resources known to be located in the Park and recommendations for their management are included later in this chapter. Future research directions are suggested for historic resources in Chapter 6.

**RESEARCH WITHIN THE PARK AND LOCAL RESEARCH SUMMARIES**

Archaeological work first began in the present-day Park area in 1932 when M. R. Harrington conducted test excavation in upper Baker Creek Cave. Over subsequent years, Harrington continued excavations in the caves and rockshelters of the Snake Range, or helped provide support for further investigations through the auspices of the Southwest Museum
in Los Angeles. In 1938, S. M. Wheeler conducted test excavations along a proposed tunnel-entry way to Lehman Caves, and in the following year surveyed some local caves, including additional portions of Lehman Caves and the Baker Creek Caves. G. L. Grosscup continued excavation in Lehman Caves in 1953, while Dick Shutler recorded several sites in lower Snake Creek, the Baker Creek area and the Pole Canyon area in 1955. In the following year, Glen Osborne recorded a site on the South Fork of Big Wash. Rial O. Brinkerhoff recorded the shallow rockshelter (26WP68) between Upper and Lower Baker Creek Pictograph Caves (26WP67) in 1958. This shelter was noted as having been used as an expedition camp of the Southwest Museum as early as 1932; it was also reported to contain traces of (purportedly aboriginal) occupancy.

In 1963, Charles Rozaire excavated roughly 30% of the original entry room of Lehman Caves for research purposes, and much of what is known about the archeology of Lehman Caves is the result of his work. Rozaire excavated 19 units (Figure 15) and uncovered 18 fire hearths, and both historic and prehistoric artifacts. Included with the prehistoric materials were an obsidian projectile point fragment, edgedamaged obsidian flakes, obsidian and basalt waste flakes, granitic and quartzite hammerstones, the end of a wooden bow, and seven cane (?) arrowshaft segments. The remains of perhaps 21 individuals were found scattered throughout the deposit; none appear to be primary interments. The majority of the individuals were adults of 30 or more years. Two children and one infant were also recovered. Thirty species of animals were represented in the non-human faunal remains (Rozaire 1964; Brooks and Brooks 1964; Ziegler 1964). There is no record of any additional work occurring in the Park in the remainder of the 1960s.

National Register nominations for Lehman Orchard and Aqueduct and for Rhodes Cabin were completed by F. Ross Holland, Jr. in 1971; both of these were added to the Register as of May 13, 1975. In 1976, Don Fowler surveyed the entire original Monument area (640 acres) and recorded two large surface lithic scatters. In 1978, Jay Orvis recorded a small site alongside the Baker Creek Road, and in the following year, John Whittaker and Kathryn Kamp conducted surface collections and test excavations at one of the sites (26WP740) originally recorded by Fowler. In 1984, Robson Bonnichsen and Robert Birnie headed an interdisciplinary
Figure 15. Location of Excavation Units in Rooms 1 and 2, Lehman Caves. Taken from Rozaire (1964).
project focused towards the discovery of early Holocene and late Pleistocene cultural remains in the Snake Range. Bonnichsen and Birnie recorded one new site and several isolates within the Park. In 1987, Joe Moore surveyed the Right-of-Way corridor along State Route 488 to its junction with State Route 487, and recorded one site within the Park. Beginning in 1972 and continuing to 1984, several clearance surveys were conducted during which no cultural resources were recorded. These were performed by Evan DeBloois, Jay Orvis, Frank Johnson and Don Morris. Descriptions of the pictographs in Baker Creek Caves, and of other rock art in the Park and immediate vicinity, are included in Harrington (various), Heizer and Baumhoff (1962); Aikens (1978); Rusco (1970) and Schaafsma (1980).

The result of this Park-based research is that, minimally, 640 acres of the Park have been systematically surveyed for cultural resources, or a scant 0.8%. This figure may be low, as some data from early projects are missing. However, it is highly unlikely that more than 1-2% of the Park has been inspected systematically for cultural resources. Table 15 includes summary information of archeological projects within the Park. Figure 16 shows the general location of sites known to be located in the Park, and Table 16 provides a summary of site type and cultural materials recorded for each site.

RECENT ALTERATIONS AND THREATS TO CULTURAL RESOURCES

Human Impacts

The most obvious alterations of the environment within Great Basin National Park have resulted from mining activities, logging and ranching operations, and the tourist industry. Alterations associated with mining have included the construction of buildings, mining structures, access roads, dumps, tunnels, shafts, prospects and water transportation systems. In adjacent Spring and Snake Valley, oil and gas exploration and drilling have occurred.

Alterations to the environment associated with the timber industry have included ground disturbance resulting from draglines and mechanical
<table>
<thead>
<tr>
<th>PROJECT NO. AND YEAR OF FIELDWORK</th>
<th>PRINCIPLE INVESTIGATOR</th>
<th>SPONSORING INSTITUTION</th>
<th>LOCATION IN PARK</th>
<th>PURPOSE AND SUMMARY OF RESULTS</th>
<th>AUTHOR AND DATE OF REPORT*</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRBA 0000 A</td>
<td>Pence, F. Carl</td>
<td>Humboldt National Forest (?)</td>
<td>Atop Wheeler Peak; Upper Shingle Creek; and Stella Lake</td>
<td>Unknown, but four sites recorded (26UP1646, 1648, 1649, 1650)</td>
<td>Unknown</td>
</tr>
<tr>
<td>GRBA 0000 B</td>
<td>Orr, Phil</td>
<td>Nevada State Museum (?)</td>
<td>South side mouth of Pole Canyon, approximately 1 mile SSE of Park Headquarters</td>
<td>Unknown, but one site recorded (26UP20)</td>
<td>Unknown</td>
</tr>
<tr>
<td>GRBA 1932 A</td>
<td>Harrington, M.R.</td>
<td>Southwest Museum (?)</td>
<td>Upper Baker Creek Cave central Park Area, about 1 mile S of Park Headquarters</td>
<td>Unknown, but probably research; test excavation apparently conducted at 26UP67</td>
<td>Harrington, Mark R. (1934)</td>
</tr>
<tr>
<td>GRBA 1932 B</td>
<td>Harrington, Edna P.</td>
<td>Southwest Museum (?)</td>
<td>Baker Creek Caves (Upper and Lower) about 1 mile S of Park Headquarters</td>
<td>Record Pictographs at 26UP67</td>
<td>Harrington, Edna P. (1933)</td>
</tr>
<tr>
<td>GRBA 1934 A</td>
<td>Harrington, M.E.</td>
<td>Southwest Museum (?)</td>
<td>Upper Baker Creek Cave, roughly 1 mile S of Park Headquarters</td>
<td>Test excavations; search for Pleistocene faunal remains in association with cultural materials</td>
<td>Harrington, Mark R. (1934)</td>
</tr>
<tr>
<td>GRBA 1937 A</td>
<td>Unknown; probably Monument staff</td>
<td>National Park Service</td>
<td>Interior of Lehman Caves</td>
<td>Analyze skeletal materials unearthed during new tunnel opening for cave</td>
<td>Stewart, T.D. (1935)</td>
</tr>
<tr>
<td>GRBA 1938 A</td>
<td>Wheeler, S.M.</td>
<td>National Park Service with Southwest Museum</td>
<td>Interior of Lehman Caves</td>
<td>Excavation: continue to remove midden/fill for a new tunnel entry to cave</td>
<td>Wheeler, S.M. (1938)</td>
</tr>
<tr>
<td>GRBA 1939 A</td>
<td>Wheeler, S.M.</td>
<td>National Park Service with Southwest Museum</td>
<td>Lehman Caves, Baker Creek Caves: Central Park area and near Park Headquarters</td>
<td>Gather additional information for the Southwest Museum records; work conducted at 26UP19, 67 and 68</td>
<td>Wheeler, S.M. (1939)</td>
</tr>
<tr>
<td>GRBA 1953 A</td>
<td>Grosscup, G.L.</td>
<td>National Park Service</td>
<td>Lehman Caves, Adjacent to Park Headquarters</td>
<td>Unknown; Limited excavation and possibly site record update for 26UP19 (Lehman Caves)</td>
<td>Unknown</td>
</tr>
<tr>
<td>GRBA 1954 A</td>
<td>Grosscup, G.L. (?)</td>
<td>Nevada State Museum (?)</td>
<td>Baker Creek Area 1 mile S of Park headquarters</td>
<td>Site recordation only (?) for 26UP67 (Upper and Lower Baker Creek Caves)</td>
<td>Unknown</td>
</tr>
<tr>
<td>GRBA 1955 A</td>
<td>Shutter, Richard</td>
<td>Nevada State Museum (?)</td>
<td>Lower Snake Creek, Baker Creek area S of Park Headquarters, and Pole Canyon area</td>
<td>Site recordation only (?) for 26UP2 and 28</td>
<td>Unknown</td>
</tr>
<tr>
<td>GRBA 1956 A</td>
<td>Osborne, Glen C.</td>
<td>Nevada State Museum (?)</td>
<td>On S slope intermittent drainage to S fork Big Wash, SE Park area</td>
<td>Unknown, but one site recorded (26UP55)</td>
<td>Unknown</td>
</tr>
<tr>
<td>GRBA 1958 A</td>
<td>Brinkerhoff, Rial O.</td>
<td>Nevada State Museum (?)</td>
<td>On S side Baker Creek roughly 1 mile S of Park Headquarters</td>
<td>Unknown, but one site recorded (26UP68)</td>
<td>Unknown</td>
</tr>
<tr>
<td>Year</td>
<td>Reference</td>
<td>Date</td>
<td>Author(s)</td>
<td>Institution(s)</td>
<td>Location</td>
</tr>
<tr>
<td>-------</td>
<td>-----------</td>
<td>-------</td>
<td>-----------</td>
<td>----------------</td>
<td>----------</td>
</tr>
<tr>
<td>GRBA 1963 A</td>
<td>Rozaire, Charles</td>
<td>1964</td>
<td>Rozaire, Charles</td>
<td>National Park Service with Nevada State Museum</td>
<td>Interior Lehman Caves, Rooms 1 and 2 (E and W half of original entry room)</td>
</tr>
<tr>
<td>GRBA 1963 B</td>
<td>Rozaire, Charles E.</td>
<td>1964</td>
<td>Rozaire, Charles E.</td>
<td>National Park Service with Nevada State Museum</td>
<td>100N E of picnic area near Park Headquarters</td>
</tr>
<tr>
<td>GRBA 1972 A</td>
<td>Debloois, Evan</td>
<td>1972</td>
<td>Debloois, Evan</td>
<td>National Park Service with Humboldt National Forest</td>
<td>Near Park Headquarters at residential area and sewage lagoon</td>
</tr>
<tr>
<td>GRBA 1976 A</td>
<td>Fowler, Don D.</td>
<td>1977</td>
<td>Fowler, Don D.</td>
<td>National Park Service with Desert Research Institute</td>
<td>Entire original Lehman Caves National Monument area</td>
</tr>
<tr>
<td>GRBA 1978 A</td>
<td>Orvis, Joseph C.</td>
<td>1979</td>
<td>Orvis, Joseph C.</td>
<td>Humboldt National Forest</td>
<td>Baker Creek Road, 1.4 miles down from intersection with Lehman Caves Road</td>
</tr>
<tr>
<td>GRBA 1979 A</td>
<td>Whittaker, J.C.</td>
<td>1979</td>
<td>Whittaker, J.C. and K.A. Kemp</td>
<td>National Park Service</td>
<td>In Headquarters area</td>
</tr>
<tr>
<td>GRBA 1987 A</td>
<td>Moore, Joe</td>
<td>1987</td>
<td>Moore, Joe</td>
<td>Nevada Department of Transportation</td>
<td>From Park headquarters along State Route 488 right-of-way to Junction S.R. 487</td>
</tr>
</tbody>
</table>

*Complete references in Bibliography*
Figure 16. General Location of Sites Recorded in the Park.
<table>
<thead>
<tr>
<th>SITE TYPE</th>
<th>NEVADA STATE MUSEUM NO.</th>
<th>OTHER NON-NSM DESIGNATION</th>
<th>NOTABLE FEATURES AND PREHISTORIC ARTIFACTS</th>
<th>HISTORIC ARTIFACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranch, water control</td>
<td>26WP668</td>
<td>Lehman Orchard and Aqueduct</td>
<td>orchard, ditch</td>
<td>no data</td>
</tr>
<tr>
<td>Cabin</td>
<td>26WP669</td>
<td>Rhodes Cabin</td>
<td>cabin</td>
<td>no data</td>
</tr>
<tr>
<td>Water Control</td>
<td>26WP1646</td>
<td></td>
<td>mining ditch</td>
<td>square nails, lumber</td>
</tr>
<tr>
<td>Water Control</td>
<td>26WP1648</td>
<td></td>
<td>dam</td>
<td>none noted</td>
</tr>
<tr>
<td>Military</td>
<td>26WP1649</td>
<td></td>
<td>remnants of rock structure</td>
<td>no data</td>
</tr>
<tr>
<td>Petroglyph</td>
<td>26WP1650</td>
<td></td>
<td>none noted</td>
<td>none noted</td>
</tr>
<tr>
<td>Petroglyph</td>
<td>26WP135</td>
<td></td>
<td>150-200 elements</td>
<td>none noted</td>
</tr>
<tr>
<td>Rockshelter</td>
<td>26WP68</td>
<td></td>
<td>none noted</td>
<td>none noted</td>
</tr>
<tr>
<td>Rockshelter</td>
<td>26WP35</td>
<td></td>
<td>pictographs, ceramics noted; obsidian and chert projectile points present</td>
<td>none noted</td>
</tr>
<tr>
<td>Rockshelter</td>
<td>26WP42</td>
<td></td>
<td>ceramics noted; obsidian flakes and projectile point present</td>
<td>none noted</td>
</tr>
<tr>
<td>Rockshelters</td>
<td>None</td>
<td>84-29 (Univ. of Maine)</td>
<td>cordage</td>
<td>none noted</td>
</tr>
<tr>
<td>Rockshelter</td>
<td>26WP22</td>
<td></td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>Cave</td>
<td>26WP67</td>
<td></td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>Cave</td>
<td>26WP20</td>
<td></td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>Cave</td>
<td>26WP19</td>
<td>Lehman Caves</td>
<td>4 obsidian flakes, 1 obsidian projectile point fragment, human remains</td>
<td>nails, glass, free, cartridges, matches, bottle caps, boot heel, battery, tobacco tag, buttons, etc.</td>
</tr>
<tr>
<td>Cave</td>
<td>26WP28</td>
<td></td>
<td>none noted</td>
<td>none noted</td>
</tr>
<tr>
<td>Artifact Scatter</td>
<td>26WP1838</td>
<td></td>
<td>2 sherds present; 4 cryptocrystalline waste flakes</td>
<td>none</td>
</tr>
<tr>
<td>Artifact Scatter</td>
<td>26WP739</td>
<td></td>
<td>1 sherd noted; bifaces; none noted possible Desert Side-notched obsidian projectile point fragment; chert, obsidian, basalt, chalcedony, jasper flakes</td>
<td>nails, glass, free, cartridges, matches, bottle caps, boot heel, battery, tobacco tag, buttons, etc.</td>
</tr>
<tr>
<td>Lithic Scatter</td>
<td>26WP84</td>
<td></td>
<td>6 obsidian flakes, 2 chert flakes, possible associated obsidian projectile point</td>
<td>none noted</td>
</tr>
<tr>
<td>Lithic Scatter</td>
<td>26WP740</td>
<td></td>
<td>bifaces, obsidian projectile point tip, chert blade, flakes of chert, quartzite, basalt</td>
<td>none noted</td>
</tr>
<tr>
<td>Lithic Scatter</td>
<td>None</td>
<td>Trail 1 (HM-0071)</td>
<td>projectile point base, waste flakes</td>
<td>none noted</td>
</tr>
</tbody>
</table>
removal of vegetation, the construction of sawmills and haul roads, the cutting of Christmas trees, cutting of juniper for fenceposts and other species for firewood, the collection of dead and down trees for firewood, and pinyon nut harvesting. Although these activities have occurred throughout the southern Snake Range, the majority of disturbance has occurred in the Sacramento Pass area (NPS 1981:39).

Ranching and homesteading activities have resulted in the construction of buildings, corrals, fencelines, reservoirs, ditches and roads. Additionally, the clearing and planting of orchards, fields of grain or domestic gardens has resulted in ground disturbance. Cattle drives, and grazing of sheep and cattle in meadowlands within the Park, have resulted in trampling and occasionally in overgrazed pasture. Forest Service range improvements to grazing allotments have included chaining, burning, or otherwise removing as much as 1900 acres of vegetation on the southern Snake Range (NPS 1981:38). Additional range improvements have included spring development, artificial water collection and the laying of water pipeline (NPS 1981:38).

Paved roads, hiking trails, campgrounds, picnic areas and service facilities have been constructed to enhance tourism. Watertanks, waterlines, sewage ponds, powerlines, residences, interpretive trails and markers, and parking lots have been added to further provide support to the administration and interpretation of Park lands. The growth of the recreation and tourist industry should be anticipated as a continued - and perhaps major - threat to the cultural resources of Great Basin National Park.

Although not completely or systematically documented, other serious types of human impact include vandalism, illegal collection of artifacts and the intentional defacement or destruction of sites or structures. Unauthorized camping and day use may compromise the integrity of some sites or resources. It should be noted, however, that without adequate and current documentation of the Park's cultural resources, a complete assessment of the extent of this type of damage is not yet available. Some previously recorded sites do indicate that vandalism has been a problem in the Park for at least the last 35 years.

Other human threats to the cultural resources of the Park could occur as the result of industrial accident such as fuel or chemical
spills, fires, sewer backups or water supply failures. Deliberate actions such as arson or the unauthorized collection of artifacts, pose threats to historic resources in the backcountry. Indirect impacts to resources resulting from increased visitor traffic should also be expected, particularly at above-ground surface sites and near the mouths of caves and rockshelters in easily accessible areas of the Park. All of the above activities have resulted in negative impacts to the cultural resources of Great Basin.

Natural Impacts

Natural impacts to cultural resources have included flashfloods, fires, vegetation growth, high winds, wind erosion and deposition, deposition and erosion from sheet wash, animal burrowing, and trampling by large animals such as pack horses or cattle. Periodic monitoring of sites throughout the Park would provide a means of measuring the type, source and intensity of these natural impacts. Stabilization of some sites might be effective in reducing some effects.

Summary

In sum, archeologic and historic resources are nonrenewable and generally fragile, and the continued destruction of sites can be expected through both human activity and natural processes. It is necessary to identify and inventory resources; to assess the type and degree of impacts which have occurred in the past (or which are likely to happen in the future); and to take protective measures to lessen and/or eliminate ongoing negative effects. It is also important to protect against any environmental and industrial hazards which have the potential of occurring. Although stabilization might prove useful in some instances, the complete recordation of sites prior to impact may be the only means of providing adequate mitigation of impacts to the majority of sites in the Park (cf. NPS 1987).
RECOMMENDATIONS FOR THE MANAGEMENT OF THE PARK'S CULTURAL RESOURCES

In as much as negative impacts are likely to continue at some level, and in that most of the cultural resources known to be located in the Park have not been adequately documented or evaluated for their significance, and a complete inventory of the Park's resources has yet to be made, the following management recommendations are offered. A section discussing how park managers should handle newly discovered cultural resources is provided, along with criteria for assessing site significance, and management actions for prehistoric, ethnohistoric and historic resources. Finally, a discussion of the Park Service's responsibility in protecting and managing resources of import to contemporary ethnographic users of the Park is included.

Suggestions for Handling Newly Discovered Cultural Resources and Getting Cultural Resource Assistance

Consultation with archeologists at the National Park Service's Western Archeological and Conservation Center (WACC) in Tucson is necessary prior to initiating any projects involving ground disturbance in the Park. Many of the Park's cultural resource management needs can probably be handled by phone, and will not require an on-site visit to the Park. Should a visit be necessary, archeological personnel can be provided from Tucson. Early consultation can greatly facilitate smooth and efficient project operations.

When new cultural resources are discovered, all materials at the site should be left in place, as removing artifacts from sites displaces them from their archeological context and severely lessens or negates their scientific value. The area should be accurately plotted on a USGS topo map or air photo, and a brief description of the resource, its location and the surrounding countryside should be provided. An In-Park file could be started, and when archeologists are in the Park the resource should be formally recorded and documented. A phone call to WACC will verify whether or not the site has been previously recorded,
or if in fact it is an as-yet unknown resource. The following flow chart (Figure 17) provides a simplified version of how archeological procedures are conducted within the Park Service.

Site Numbering System

Also of concern in the State of Nevada is the confusion that has resulted from the assignment of site numbers by several state and federal institutions, both in Nevada and in Utah. The Nevada State Museum has been charged with assigning the official Smithsonian State Trinomial numbers. In this system, the first part of the trinomial represents the state (26 for Nevada), the second represents the county (WP for White Pine) and the last a number representing the next consecutive site formally processed by the Museum for the county. In other words, 26WP78 is the 78th site officially recorded in White pine County. To help eliminate future confusion with site numbering systems, all future sites recorded in the Park should receive official state trinomial numbers from the Museum as soon as practical following fieldwork. WACC customarily assigns temporary field numbers, and later obtains official site numbers from the state of Nevada, as a service to Parks. WACC further serves as a permanent repository for all records concerning archeological resources.

Suggested Criteria for Evaluating Site Significance

Archeological sites and historic structures are evaluated for their significance as per National Register criteria. "Significance" has been outlined in federal cultural resource legislation, as follows:

...the quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
Figure 17. Archeological Procedures Flow Chart: Simple Version.
(a) That are associated with events that have made a significant contribution to the broad pattern of our history; or

(b) That are associated with the lives of persons significant in our past; or

(c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) That have yielded, or may be likely to yield, information important in prehistory or history.

(Title 36 CFR60.6 and 36 CFR800.10)

As such, sites in the Park need to be evaluated particularly with respect to their ability to yield information important in prehistory or history. Until sites can be professionally assessed, it is assumed that they do, indeed, have this potential.

With respect to the State of Nevada and the direction of archeological and historic inquiry, numerous research questions were outlined in response to the development of the Archaeological Element of the Nevada Historic Preservation Plan (Lyneis 1982). Additionally, criteria for evaluating the significance of cultural resources in Nevada were suggested. In as much as the Park’s cultural resources have the potential to yield information relevant to state and regional research concerns, the majority of these research questions and the criteria for assessing significance have been reproduced here without alteration. Prehistoric and historic site types present in the State of Nevada Plan (as outlined in the Archaeological Element), and the criteria for assessing their significance are included in the tables at the end of
this chapter (Tables 17-23). The research domains defined in the Archeological Element are included in the chapter following.

It should be borne in mind that significance is a dynamic process as sites are evaluated within current regional research frameworks. The significance of sites may change as the regional research base is broadened or as current research domains change. Several criteria other than those outlined in the Nevada State Plan have been developed to aid in objectively ranking sites as to their significance. An example of one used successfully in the Great Basin is reproduced in Reed (1987).

Management of Prehistoric and Ethnohistoric Resources

As a general guide to Park Managers, the following actions are recommended for prehistoric and ethnohistoric cultural resources in the park.

(1) **Avoid Impacts to Cultural Resources**

All prehistoric and ethnohistoric sites are considered potentially significant until evaluated, and thus all identified cultural resources should be avoided whenever possible. If impact is unavoidable, mitigation procedures will be identified on a case-by-case basis, and subject to appropriate compliance reviews. Any proposed ground disturbing activities, land transfers or other actions having the potential to affect cultural resources will need to be reviewed on a project-by-project basis by professional archeologists in order to assure that the Park is in compliance with federal law and policy regarding the protection of cultural resources. Tables 19 and 21 (at the end of the chapter) gives some recommended guidelines for assessing site significance as outlined in the Nevada State Historic Preservation Plan.
(2) **Update Site Data**

Improve documentation on sites recorded in the Park so that the significance of sites can be adequately evaluated. Many of the sites in the Park were recorded decades ago and need fuller documentation to bring them up to modern standards. The locations of most sites need to be verified. Those cultural resources known to be located in the Park which have yet to be recorded and evaluated for their significance (such as the numerous unrecorded historic sites along the spine of the Snake Range, the petroglyph reported atop Wheeler Peak, and the reported rock hunting blind at the head of Snake Creek Canyon) need to be visited by a professional. Documentation on these informational gaps is maintained in the Data Bank archives at WACC.

(3) **Complete National Register Nominations**

Sites found to be significant under National Register criteria should be nominated to the National Register of Historic Places. The nomination for Lehman Caves should be completed and submitted for review.

(4) **Assess Sites and Structures for Inclusion in the Cultural Sites Inventory and the List of Classified Structures**

Prehistoric and ethnohistoric sites should be assessed for inclusion in the proposed Cultural Sites Inventory (CSI). The CSI describes and documents the location, significance, threats and management requirements for known ethnographic and archeologic sites, and identifies those that require funding for their proper management (NPS-28:2.12). The List of Classified Structures (LCS) serves a similar function in relation to prehistoric and historic structures.

(5) **Intensive Survey of Headquarters and Heavy Use Areas**

Federal laws and regulations require full protection and preservation or adequate mitigation of adverse effects to all cultural resources. Most impacts to cultural resources occur
in headquarters or living areas (usually new construction) and other heavy use areas (popular visitor attractions, campgrounds, picnic areas, popular backcountry areas). With the exception of the old Monument property, none of these areas have been intensively surveyed. In order to facilitate compliance proceedings, as well as reduce the costs of conducting numerous small surveys, intensive systematic surveys of the following areas is suggested:

a) all areas in the immediate headquarters vicinity not previously inspected;
b) high visitor impact areas, including all campgrounds and picnic areas;
c) high use trail and backcountry areas;
d) the "flats" (i.e. lower reaches) associated with Lehman and Baker Creeks; and
e) aspen groves and meadows likely to contain historic Basque tree carvings and spike camps.

(6) Archeological Sample Survey and Completion of Site Inventories

Less than two percent of the Park has been surveyed, and many areas remain archeologically unknown. Intensity of coverage on most prior surveys is also unknown. A survey strategy should be established to include samples large enough to be predictive, and should cover all geographic, topographic and environmental zones in the Park. In order to be archeologically meaningful, large blocks or tracts of land should be systematically inspected, with all cultural resources (both prehistoric and historic) recorded to NPS standards. These block surveys will provide a basis for determining the full range of prehistoric and historic chronology, site type, and settlement pattern as well as strengthening determination of site significance. This will also bring the Park closer to compliance with Executive Order 11593, which requires inventory and evaluation of all prehistoric and historic cultural resources. A serious effort
should be made to address those research questions outlined as archeologically and historically meaningful in the Nevada State Historic Preservation Plan in future research in the Park (Lyneis 1982; see also Chapter 6).

(7) Archeological Monitoring, Testing, Salvage

In conjunction with the survey of high impact areas, a program to regularly monitor sites should be initiated. If sites are being destroyed, protective measures should be tried. If these measures fail, the sites should be tested for their ability to yield useful information. If tests reveal this ability, the sites should be salvaged using the most recent archeological techniques and in full compliance with federal law.

(8) Eliminate or Reduce the Effects of Vandalism on Park Resources

If monitoring shows that vandalism is destroying Park resources, actions should be taken to reduce, or preferably eliminate, its effects. In a comprehensive study conducted by the Bureau of Land Management, the following management recommendations were presented to offset this type of human destruction (Lyneis et al. 1980:iii, 153-154):

(1) patrolling accessible sites,
(2) monitoring "inaccessible" sites,
(3) developing active interpretive programs,
(4) removing signs of vandalism,
(5) erecting barriers to keep vehicles at a substantial distance,
(6) closure of access roads,
(7) not releasing locational information,
(8) posting signs small enough to be observable only in immediate environs of site, and
(9) apprehending and prosecuting vandals.
As appropriate, any or all of these could be implemented in the Park. At present, no statistics are available on vandalism and theft related to archeological sites within the Park. In conjunction with Western Region Division of Ranger Activities, at the end of each calendar year the Park should report observable threats or attacks on cultural resources to the Regional Office using Case Incident Reports, if available. This accounting will give some picture of vandalism and theft of archeological resources (National Park Service 1987:54).

(9) Analysis of Collected Artifacts

Although both surveys and excavations have been conducted in which artifacts were collected, most artifacts have never been analyzed to modern professional standards, as much of the work in the Park occurred prior to 1970s. Since the time that the reports on these projects were issued, significant archeological research outside the Park has produced an excellent comparative framework for analytic studies. Identification and analysis of these artifacts should provide a quantified data base to be used in determining site significance as well as clarifying archeological research problems, such as site chronology, site function, intersite relationships, and the relationship of Park resources to those located outside the Park and to the Great Basin as a whole.

(10) Interpretation of Prehistoric and Ethnohistoric Use of the Monument

Since archeological sites throughout the West are highly subject to destruction from vandals, the prehistoric and ethnohistoric occupation and use of the Monument should be interpreted through offsite programs, exhibits, or life-size displays, or within strictly patrolled areas containing cultural resources. Interpretive programs should focus on the different aspects of archeology, including culture history, settlement patterns, subsistence systems, material culture, site formation processes, excavation, survey, resource management and the loss of valuable scientific data to vandalism. Interpretation should also
stress that archeology and information about the past is in the public interest.

(11) Preliminary Recommendation for Cave and Rockshelter sites

With respect to caves, a number of preliminary recommendations were made to the Park in February of this year from the perspective of public use and exploration of caves in the Park.

At this point we have no clear idea of the integrity of cave and rockshelter sites, but suspect that most still retain intact cultural deposits. Also, there is little doubt that numerous other caves and rockshelters besides those previously recorded were utilized prehistorically. Archeological excavations, particularly in the northern Snake Range (ie. Smith Creek Canyon), indicate the great research potential of caves and rockshelters in the region, both for the last 10,000 or more years of human prehistory, and for the paleontological record of the Pleistocene. The following preliminary management actions are thus recommended:

a) restrict access and exploration of caves and rockshelters which are known to be archeological sites until they can be evaluated further, or unless there is information indicating the unlikelihood of any further damage occurring to a particular cave.

b) limit or restrict access to wild (virtually unexplored) caves until they can be evaluated for cultural deposits or prior human use.

c) It is believed that organized speleological groups would not knowingly or deliberately disturb cultural deposits in caves. However, it should be stressed (and strictly enforced) that no digging, no chalking of petroglyphs, no graffiti, no camping in or near the cave mouths, and no collecting of any material...
(including organic and inorganic) should take place in any of the Park's caves or rockshelters.

d) With the general public and groups such as school children, education again is the key to preservation. Perhaps also, these groups could be directed to explore caves having little possibility of impacts to cultural resources.

e) Most cultural deposits in caves occur near the cave mouth and just outside and downslope of the mouth. There may therefore be some creative way to allow access to the remainder of the cave system without compromising any cultural deposits. It seems possible to find a way to lessen the threat to cultural resources while allowing the continued exploration of one of the more interesting natural resources of the Park.

f) At some point, archeologists should visit all caves known to be located in the Park to determine if they contain cultural resources.

(12) Future Research Goals

All future research should provide both an adequate information base for resource management and address research questions consistent with current regional professional research goals. In this regard, the research directives outlined in the Nevada State Historic Preservation Plan should be used as a guideline for directing future research in the Park (see Chapter 6 for further details; see also Lyneis 1982). Additionally, research and interpretation might be
conducted as a cooperative effort with other federal agencies managing lands surrounding the Park.

Management of Resources Important to the Western Shoshone and Gosiute

Some of the legislation and policies regarding the legal relationships between the Park Service and Native Americans is included in the following:

Amended American Antiquities Act (1906);
National Park Service Organic Act (1916);
Natural Historic Preservation Act (1966);
National Environmental Policy Act (1969);
The American Indian Religious Freedom Act (1978);
The Archeological Resources Protection Act (1979);
National Park Service Management Policies (1978);
NPS-28 Cultural Resource Management Guidelines (1985); and

The last contains new policy guidelines which clarify the earlier National Park Service policies outlined in Special Directive 78-1. These have been subject to extensive review (Crespi 1987) and were recently published in the Federal Register (1987; September 22; Vol. 52 (183):35674-35678).

Great Basin National Park is required to address the concerns of current ethnographic users with respect to the planning and management of the Park and with the continuation of traditional uses of Park lands and resources (NPS-28:3.15; Scovill 1987; Endreson 1987). Members of the Gosiute Colony in Ely have expressed the desire to continue non-commercial pinyon nut harvesting within the Snake Range and within the Park (Kelly 1987). Contemporary ethnographic uses of the Park might be residential, temporary, permanent, place-specific, family-related or individual in nature (Rettie 1987:38). Ethnographic values might include structures, locations and resources having subsistence, ritual,
historic, military, political and/or folklife associations (National Park Service 1987:1; Scovill 1987:20).

Sacred resources are places, objects or traditional sites which are perceived as having religious significance (Federal Register 52 (183)). Locally, the Snake Creek Burial Cave, which is not on Park land, was considered sacred to both the Shoshone and the Southern Paiute (James 1981:206-207). Other sacred sites undoubtedly exist within the Park and immediate vicinity. Places of ceremonial or traditional significance could include former village locations (particularly where dance ceremonies were conducted), cemetery areas, rock art sites, or caves (NPS 1987).

Should local Indian groups express a desire to continue any of their traditional activities within the Park, an updated ethnographic program document should be prepared and added to the General Management Plan (GMP) if possible (NPS-28:3.15). Prior to instituting the ethnographic program, an ethnographic study should be professionally prepared to document traditional and current uses, settlement localities, sacred resources (NPS-28:3.15) and intangible aspects of Shoshone lifeways and culture (NPS-28:7.1). Briefly, a comprehensive ethnographic study would give managers the data necessary to (NPS-28:7.1):

1. develop appropriate Park resource management strategies and effective working relationships with Native Americans and other groups;
2. track relationships with Native American and other groups historically and presently dependent on park resources;
3. provide baseline data for use in developing GMPs responsive to the affected peoples and the cultural and natural resources associated with them;
4. help identify potentially affected groups for NEPA-mandated public involvement;
5. identify and help protect cultural resources having intangible values;
6. develop interpretive programs about the lifeways of peoples and ethnographic resources associated with NPS units; and
(7) document the areas, resources, or activities related to the American Indian Religious Freedom Act and Special Directive 78-1.

An overall ethnographic resources management program should cover relationships between local residents and their cultural as well as the natural environment (NPS-28:3.15). In this regard, the Park should involve the local Indian community in the planning process of the Park, particularly when any actions are undertaken which will affect their interests (Special Directive 78-1).

Special Concerns of the Western Shoshone

As of late 1987 members of the Ely Shoshone Colony were still visiting traditional pine-nut gathering areas in the Snake Range and had notified the Park Superintendent of their desire to continue this practice (Kelly 1987).

It is also unclear whether any of the Park lands are part of the Western Shoshone land claim under the congressionally ratified 1863 Treaty of Ruby Valley. Further legal research may be required to assess any residual rights held by the plaintiffs in the Dann vs. The United State case (Kelly 1987).

Recommended Actions

In particular, the following management actions are recommended for the Park with respect to the Western Shoshone and Gosiute:

(1) Consultation with the appropriate Indian community to help identify areas of traditional, ceremonial or religious use, bearing in mind that both natural and cultural resources are considered significant to living ethnographic peoples (Federal Register 52(14):2457); once identified, protect these areas;
(2) Conduct oral ethnographic histories and, if appropriate, prepare an ethnographic study of the native community, addressing both the tangible and intangible aspects of the culture; check archival records for extant oral histories for local Shoshone who previously lived in the Park area;

(3) Involve the appropriate local community in the planning process through periodic meetings and timely notification and consultation;

(4) Encourage the use of Native American expertise in the interpretive program, as directed in the proposed Policy Guidelines (Federal Register 52(14):2458), particularly as they relate to the preservation of their cultural heritage in the immediate Park area;

(5) Consult the Shoshone on the propriety of ethnological museum exhibits while still in the planning stages (NPS-28:3.18);

(6) Establish research, interpretation and collection programs of interest to the local Indian community (Federal Register 52(14):2452, 2455);

(7) Identify all burial areas which may be located in the Park (both historic and prehistoric) so they may be protected (Federal Register 52(14):2457);

(8) Maintain updated lists of Native American individuals who could be consulted in different kinds of situations (Federal Register 52(14):2452, 2455, 2457); in this regard, it should be noted that Park policy requires that Park-associated Native Americans be dealt with and not just BIA-recognized tribes;

(9) Identify all known localities and sites in the Park which have Native American values or values to other Park-associated ethnic communities; register these on the Cultural Sites Inventory as outlined in NPS-28:7.1-7.3.
Management of Historic Archeological Resources

Some of the general recommendations covered in the prehistoric and ethnohistoric sections quite obviously apply here. The status and conditions of historic properties are not well-known in the Park. Some properties, such as structures, deteriorate fairly rapidly without intervention. Shafts, tunnels, prospects, mine dumps, roads and stone features such as fences are more stable. These historic resources are subject to loss and deterioration through a variety of agents, both natural and human.

Historic sites, depending on their values, can be listed on several federal and state registers, including the National Register of Historic Places, the List of Classified Structures, the Nevada Historical Sites Listing, and the Cultural Sites Inventory.

National Register of Historic Places

The National Register of Historic Places is a nationwide listing of properties considered to be significant in American history, archeology, architecture and culture. These historic properties might be objects, structures, buildings, sites or districts maintaining structural, locational, associational or other types of integrity. Criteria for determining the significance of a property and its integrity are defined within historic contexts as outlined in Title 36 CFR800. The National Register process thus serves to identify, evaluate, preserve and protect our cultural resources (U.S. Department of the Interior 1977).

Two properties in Great Basin National Park are listed on the National Register as of February 25, 1975: Lehman Orchard and Aqueduct (75000181) and Rhodes Cabin (785000180). The one-room log cabin was built by Clarence T. Rhodes in 1928. The cabin initially housed tourists, and in the 1930s provided residence for Monument employees. The log cabin currently provides an interpretive display adjacent to the Park headquarters. Lehman Orchard and Aqueduct consists of a small orchard now bearing seven apricot, two pear and a single peach tree, and a two-mile ditch circling the orchard. The ditch, constructed by
Absalom Lehman, was controlled by board gate (Holland 1971; Babcock 1978). Both were determined to be significant on the local level. Lehman Caves was nominated to the Register in 1978 for its significance on the regional level but needs better photo documentation to complete the processing. Other sites in the Park need to be evaluated for their eligibility for inclusion on the Register.

List of Classified Structures

The List of Classified Structures (LCS) is a computerized inventory of both historic and prehistoric structures which have archeological, historical, architectural or engineering significance as defined by National Register Standards (Stamm 1985). This includes structures located on National Register properties and others which may not be on the Register but which are managed similarly due to planning decisions (NPS-28:5.1). The LCS has been used for planning purposes, for compliance reviews, in National Register documentation and as a means of compiling data on historic and prehistoric sites. A complete listing of structures on the LCS for Great Basin National Park should be included in the upcoming Historic Resources Study.

Nevada Historical Sites

Nevada Historical Sites are features, buildings, sites or topographic areas which have statewide historic significance and which possess potential for use by the State Park System for restoration, preservation or interpretation of Nevada’s history to the public (Page and Associates 1978:2). In White Pine County, the following sites in the Park and immediate vicinity are on the list (1987:18): the Baker site, Baker Creek Caves, Garrison site, Osceola-Shoshone, Snake Creek Cave, Spring Valley, the mining town of Osceola, and Lehman Caves.

Recommended Actions for Historic Archeological Resources

Several management options should be considered for historic resources, including those listed below:
(1) Basque tree carvings in the Park should be recorded before the demise of the aspen groves;

(2) the unrecorded historic sites should be formally recorded (see Figure 18);

(3) further archival or additional field research is minimally recommended for the majority of the Park's historic resources in order to assess their significance and eligibility for inclusion in the National Register, or to enhance their interpretive values. Much of this assessment is expected to come as part of the Historic Resources Study now in progress. All structures of significance should be placed on the List of classified structures. Eligible properties should be nominated to the National Register.

(4) conduct oral histories of individuals having first-hand knowledge of the Park's history;

(5) further archival research into when and who constructed the additions in the "Civil Defense Passage" in Lehman Caves could be conducted;

(6) further interpretive work could be done in the Park, with particular emphasis placed on the history and technology of mining, and the lifeways and hardships of early miners, ranchers and homesteaders in this portion of the Great Basin.

(7) conduct studies of early recreational and tourist use of the area;

(8) the Inscription Room in Lehman Caves bears the names of many early ranchers, miners and tourists. Further recording could be conducted in this portion of the cave, particularly for interpretive purposes;
Figure 18. General Location of Unrecorded Historic Sites in the Park.
(9) determine whether any wild horse corrals exist in the Park. Wild horses were captured individually, or more commonly by driving herds into a two-winged "funneled" circular corral. Traps were constructed of brush, trees and logs, stones or canvas, and were often wired together (Muessig and Bowers 1982:81-83). Whether any of these corrals exist in the Park is not known. It should be noted however, that the central portion of the Park contains a long ridgeline named "Horse Heaven".

**Actions Related To Construction and Other Development Projects**

In addition to the recommendations given above, appropriate actions should be taken on a project-by-project basis, particularly if any ground disturbance is proposed. This applies for areas containing known cultural resources, and for areas which have not yet been inspected by a qualified archeologist. These actions might include reconnaissance, archeological clearance, complete survey, field and archival documentation, systematic collection, and test or full scale excavation. In general, all areas of proposed ground disturbance should be inspected by a professional archaeologist and, when appropriate, by an historian, prior to project operations. Timely consultation with professional archeologists facilitates efficient execution of projects and frequently saves mitigative costs when consultation occurs early in the planning stages.

**SUMMARY**

The variety of archeological resources present in the Park suggests occupation and use of the area spanning at least the last 8-10,000 years, with the probability that older cultural materials are present. The majority of the archeological resources known to be located in the Park today are relatively easy to detect, and are thus easily disturbed, vandalized or destroyed. Cultural resources should be protected from
both human and natural impacts. Much of the Park (98%) has not been systematically surveyed, and additional significant cultural resources are expected to be found within the Park.

An inventory of cultural resources, as directed by E.O. 11593, should be completed for the Park. This will involve survey, site recordation, and the evaluation of site significance as prescribed by National Register criteria. Sites should likewise be evaluated for their inclusion in the Park Service's Cultural Sites Inventory. Future archeological work should be conducted within a local and regional research framework. Management concerns of appropriate ethnic communities need to be addressed. Finally, the prehistoric and ethnohistoric use of the Park needs to be interpreted to the public.

To summarize, the best overall means of mitigating adverse human and natural effects to cultural resources is through an active archeological inventory and data recovery program focused primarily on identifying the cultural resources present, documenting the current status of the resources, and in assessing their significance according to National Register standards, prior to impact (cf. National Park Service 1987:11).
**TABLE 17: TYPES OF PREHISTORIC SITES IN THE EASTERN NEVADA STUDY UNIT**

(Taken from the Nevada Historic Preservation Plan)
(James and Zeier 1982:139-141).

1. **Habitation sites** - These are areas that show evidence of occupation over a long time span, either continually or seasonally through repeated visits. Habitation sites are further divided into three subtypes.

   a. **Rockshelters/Caves** - This category includes caves, rockshelters, alcoves, and any other natural areas which provide shelter from the elements and show surface or subsurface indications of having been utilized for habitation purposes by prehistoric populations.

   b. **Open habitation sites with structures** - These sites include pithouses, surface masonry structures, adobe structures, or other man-made structures that show evidence of having been occupied. The presence of a fire hearth inside a structure is usually the criterion for making this determination, but this may not be established until after the site is excavated. Mounds and/or depressions, associated features and artifacts (pottery, ground stone, fire cracked rock, sandstone hatch covers, etc.) may be the only clues visible on the surface which may indicate that structures are present. This type of site is generally attributed to the Fremont or Anasazi in eastern Nevada.

   c. **Open habitation sites without structures** - These are open sites which were inhabited for an extended period of time, perhaps on a seasonal basis. Evidence of man-made habitation structures should not be visible on the surface of these sites. The presence of chipped and ground stone, possibly ceramics, fire hearths, and midden deposit in what appears to be an intensive site occupation define this site type. The Shoshoni winter base camp identified by Julian H. Steward is an example of this site type.

2. **Nonhabitation sites** - These sites are sometimes referred to as limited activity areas. Since this is a rather nebulous term, it was felt that nonhabitation site would more adequately describe sites of this nature and could more readily be contrasted with habitation sites.
Table 17 (continued)

a. **Temporary campsites** - These are sites that show evidence of short-term occupation for the purposes of procuring food resources and raw materials and require overnight camping away from base camp. Chipped or ground stone, and/or ceramics in association with a fire hearth or burned area usually define temporary campsites. These sites are distinguished from artifact scatters by the presence of a fire hearth.

b. **Artifact scatters** - These sites are more commonly known as lithic scatters, but since other kinds of debris (ceramics, animal bones, etc) may also be present, artifact scatter is a more accurate description. The term artifact scatter is simply a descriptive, objective category and implies no assumptions as to the specific function of the site.

c. **Quarry sites** - These sites contain raw lithic material for chipped or ground stone tools and building materials, along with some indication that the site was used prehistorically for obtaining these materials. In the case of lithics, primary and secondary flakes, exhausted cores, tested cobbles, hammerstones, partially finished tools, and unworked raw material would be found.

d. **Rock art** - This category includes petroglyphs and pictographs that are found on boulders, cliff faces, or semi-portable slabs and boulders (not to be confused with etched stones).

e. **Rock alignments** - These are circular, semi-circular, or linear alignments of rock or brush, more commonly known as hunting blinds, rock walls, and game drives.

f. **Storage sites** - These are small man-made structures or caches that are not directly associated with habitation areas. Storage sites were normally used to hold food items, but other cultural remains, such as baskets and ground stone implements, may be present. Two types of man-made structures can be identified under storage sites: (1) above ground storage structures, such as masonry or adobe granaries and (2) below ground storage facilities, such as cists.
g. **Human burials** - These are human interments that are isolated from habitation sites; they are usually found in rocky outcrops, in crevices, caves, or under ledges.

h. **Isolated finds/small site concentrations** - An isolated find is a single cultural item such as a projectile point, ground stone artifact, core, or flake found in a solitary context. A small site concentration may be composed of from 2 to 25 lithic fragments in a relatively distinct spatial context.
TABLE 18: CLASSIFICATION OF INDUSTRIAL ARCHAEOLOGICAL SITES OF NEVADA

(Taken from the Nevada Historic Preservation Plan)
(Edaburn 1982:242-245)

1. **Geological resource sites** - Potential archaeological sites identified by availability of a known exploitable mineral or metal resource. Developed from mineral resource maps to locate potential sites.

2. **Prehistoric mining and quarrying sites** - Archaeological sites identified by remnants of human activity in prehistoric development of mineral and metal resources, that can be clues to later historic exploitation.

3. **Mineral and metal recovery sites** - Archaeological sites identified by remnants of human activity in extracting minerals and metals.
   a. **Placer mining**
      - Surface mining - hand panning and sluicing sites
      - Surface mining - machinery hydraulicking sites
      - Subaqueous mining - machinery dredging sites
   b. **Lode mining**
      - Surface mining - Open pit mining sites
      - Underground mining - Unsystematic mining sites or "prospects"
      - Subterranean mining sites
      - Modern subsurface and subterranean mining sites
   c. **Secondary mining**
      - Surface removal of secondary sites - Waste rock dump ores and mill tailings removal sites
    (Hardesty and Firby 1980:64-67)
   d. **Mineral recovery**
      - Surface recovery
      - Encrustation or deposit
      - Evaporation
Table 18 (continued)

4. **Mineral or metal milling sites** - Archaeological sites identified by remnants of human activity in the processing of mineral or metals

   a. **Transportation to another site for processing**

   b. **Preliminary preparation**
      Breaking and sizing - can include breaking by hand, crushing and washing

   c. **Recovery**
      Separation and concentration
      Physical - relying on the physical properties of the mineral to facilitate its separation and concentration, i.e. use of tables, vanners, sink flotation, etc.
      Chemical - relying on the addition of a chemical agent to facilitate the separation and concentration, i.e. amalgamation.

   d. **Refining and smelting**
      Send away for smelting
      Smelt at the site

   e. **Disposal of concentrates and waste**
      Send away for smelting
      Smelt at the site

5. **Water supply sites** - Archaeological sites identified by remnants of human activity in developing water supply systems.

   a. **Spring** - undeveloped, indicating limited development of facilities.
   b. **Spring** - developed
   c. **Creek or stream** - seasonal
   d. **Creek or stream** - year around
   e. **River**
   f. **Lake** - natural
   g. **Lake** - manmade
   h. **Mine drainage**
   i. **Well**
   j. **Pipeline**
   k. **Flume**
   l. **Aqueduct**
Table 18 (continued)

6. **Residence sites** - Archaeological sites identified by human activity in establishing and maintaining living space.

7. **Commercial sites** - Archaeological sites identified by human activity in establishing and maintaining commercial or service sites.

8. **Communication sites** - Archaeological sites identified by remnants of human activity in developing communications networks.
   a. Mail service
   b. Telegraph
   c. Newspaper
   d. Telephone
   e. Railway mail/express
   f. Airmail service

9. **Transportation sites** - Archaeological sites identified by remnants of human activity in developing and maintaining transportation systems.
   a. Trails
   b. Roads
      - Freights
      - Toll
      - Highway
   c. Railway lines
      - Mining
      - Commercial
   d. Airfields, landing strips and airports

10. **Ranching and farming sites** - Archaeological sites identified by remnants of human activity in development of ranches and farms, in direct support of mining or industrial sites.

11. **Service systems sites** - Archaeological sites identified by remnants of human activity in developing resources to support mining, mining activities and mining towns.
   a. Lumbering
   b. Freighting
   c. Salt mining
   d. Mining and commercial railroads
   e. Military installations
   f. Others not listed
12. **Industrial sites** - Archaeological sites identified by remnants of human activity in developing and maintaining industrial sites other than mining. Includes, for example:

a. Breweries
b. Rendering works
c. Tanneries
d. Canners
e. Beet sugar factories
**TABLE 19: SUGGESTED CRITERIA FOR EVALUATING THE SIGNIFICANCE OF MINING AND INDUSTRIAL SITES**

(Taken from the Nevada Historic Preservation Plan)
(Edaburn 1982:249)

1. Does the site satisfy criteria for nomination to the National Register of Historic Places as interpreted by the National Architectural and Engineering Record?

2. Are site features archaeologically visible? Do they possess interpretive potential?

3. Does documentary research on the site suggest:
   a. specialized use of the site, i.e. mining, milling, or both? Brickmaking or other industrial adaptations?
   b. associated residence sites for miners and mill men? Is the site a "company town?"
   c. transportation of minerals away for processing?

4. Does the site provide information about a poorly documented event, or a statistical population, such as a mine disaster? or Chinese mining population?

5. Are the site features stratified or otherwise deposited so that cultural or ecological change can be studied?

6. Does the site contain components or features that can be dated accurately?

7. Is the site unique, or is it one of a particular class of sites? Sites should not be assumed to be similar just because they dealt with the same minerals or industry. Technical differences should be examined. If a site is determined to be one of a larger population of sites, what new information about the population will the site contribute? Railroad grades differ according to geographical locations, geological features, time built and construction methods employed, for instance.
Table 19 (continued)

8. Does the site have any identifiable ethnic populations? If so, does it potentially provide new information about mining techniques or ethnic interaction?

9. Does the site have features that can be used to understand the impacts of environmental change brought on by the development of mining and industrial activities?

10. Does the site have the potential to provide information about changes in the technology of mining and industrial activities in the area through time?
TABLE 20: CLASSIFICATION OF FARMING AND RANCHING FEATURES IN NEVADA

(Taken from the Nevada Historic Preservation Plan)  
(Hardesty 1982:209-210)

I. MANAGEMENT FEATURES - from activities used to create and maintain farming and ranching ecosystems.

1. **Water management** - Irrigation canals, reservoirs, dams, and other works related to control and distribution of water to farming and ranching ecosystems.

2. **Animal husbandry** - Barns, corrals, branding stations, fences and other sites directly related to the management of cattle, sheep, horses and other domestic animals.

3. **Managed habitats** - Cultivated fields and other archaeologically visible effects of farming and ranching activities.

II. MANUFACTURING FEATURES - from activities used to supply materials and energy to farming and ranching operations.

1. **Blacksmithing sites**

2. **Kilns** - Brick, lime, and other kiln sites used in the manufacture of construction or fertilizer materials.

3. **Other**

III. ENVIRONMENTAL IMPACT FEATURES - environmental responses to farming and ranching operations.

1. **Erosion** - Gullies and other erosion features directly related to farming and ranching activities.

2. **Salt deposits** - Areas of salt build up in soils caused by irrigation with poor drainage.

3. **Habitats with vegetation shifts** - Areas where native vegetation has been changed due to farming and ranching activities.
Table 20 (continued)

4. **Other**

IV. **DOMESTIC FEATURES** - originating from domestic activities.

1. **Permanent habitation** - Household dwellings, fruit cellars, outhouses, and other archeologically visible evidence of year-round domestic activities.

2. **Temporary habitation** - Camp sites associated with cattle drives, sheep herding, and other temporary farming and ranching activities.

V. **LOGISTIC FEATURES** - from activities used for importing and exporting materials, energy, and information.

1. **Transportation corridors** - Railroads, overland trails, waterways, and other routes used to transport goods and services.

2. **Shipping stations** - Stockyards, grain elevators, and other sites on transportation corridors used to receive and ship ranching and farming products; also includes telegraph stations as points to receive and send information.

3. **Maintenance** - Railroad yards, toll stations, and other sites used to maintain transportation routes.

4. **Other**
TABLE 21: SUGGESTED CRITERIA FOR EVALUATING THE SIGNIFICANCE OF FARMING AND RANCHING SITES

(Taken from the Nevada Historic Preservation Plan)  
(Hardesty 1982:214-215)

1. Does the site satisfy criteria for nomination to the National Register of Historic Places?

2. Are site features archeologically visible and reasonably undisturbed?

3. Does historical research on the site suggest:
   a. specialized use of site features that will give a clear archeological picture?
   b. relatively long, continuous occupation of domestic structures that can provide archeological data about household processes over time? Especially important are historical data about changes in household composition, house rebuilding, subsistence/wage patterns, and the like.
   c. the archaeological record of the site may consist of more than one type - for example, both trash disposal and fire.

4. Does the site provide archaeological information about a poorly documented event or statistical population, such as the Post-WWI "veterans bonus" homesteading population?

5. Are the site features vertically or horizontally stratified so that studies of cultural or ecological change can take place?

6. Does the site contain features that can be dated rather precisely?

7. Is the site unique or a member of a statistical population? If the latter, what new information about the population will the site contribute?

8. Does the site have a multi-ethnic occupation? If so, does it potentially provide new information about ethnic interaction?

9. Does the site have features that can be used for the study of environmental change?
10. Does the site have features that can be used to study multiple ranching and farming activities? For example, does the site include only a residential structure or does it include a residential structure, a variety of specialized outbuildings, line shacks in a variety of ecological zones, and so forth?

11. Does the site have interpretive potential?

12. Does the site potentially provide information about changes in ranching or farming patterns over time?
TABLE 22: FARMING AND RANCHING ZONES WITH DISTINCTIVE ARCHAEOLOGICAL EXPECTATIONS

(Taken from the Nevada Historic Preservation Plan)  
(Hardesty 1982:212)

1. **Reservations** - The establishment of reservations for Native Americans by the U.S. Government at Pyramid Lake, Fallon, Walker River, and elsewhere created unique conditions for the formation of archaeological sites; key research questions are distinctive.

2. **Urban** - Cow towns and farm towns are distinctive not only for nucleation and large populations but also for ethnic diversity and greater diversity of site types.

3. **Transportation corridors** - Railroads and other transportation routes are associated with towns, shipping stations, maintenance stations, and a variety of other distinctive sites.

4. **Mormon farming settlements** - Mormon expansion into parts of southern and western Nevada brought with it farm-villages and other distinctive farming patterns.

5. **Irrigated valleys** - The use of irrigation technology for farming and ranching not only creates unique archaeological sites but also distinctive habitats.

6. **Dryfarming zones** - Some marginal areas were farmed without the use of irrigation technology; these areas are defined by microclimatic variables controlling length of growing season, soil types, slope, rainfall distribution, and the like.

7. **Summer grazing zones** - High altitude meadows are associated with temporary habitation sites, animal husbandry sites, and some Basque ethnic sites.

8. **Winter grazing zones** - Low altitude meadows associated with permanent habitation sites, animal husbandry, etc.

9. **Permanent water source** - Areas in which permanent springs, artesian wells, streams, and rivers occur are most likely to be associated with farming and ranching sites. Long-term occupations or repeated occupations are expected in these places.
TABLE 23: KINDS OF MORMON COLONIZATION SITES

(Taken from the Nevada Historic Preservation Plan)
(Lyneis 1982:262)

**MANAGEMENT SITES**

1. Water management systems, particularly dams and canals.
2. Animal husbandry sites such as sheds, barns, corrals and fences, spatially separated from the house-site.
3. Managed habitats such as cultivated fields and gardens.

**EXTRACTIVE AND MANUFACTURING SITES**

1. Quarries and pits for stone, clay and mud for construction.
2. Mining sites.
3. Other industries?

**ENVIRONMENTAL IMPACT SITES**

**DOMESTIC SITES**

1. Forts: compact, partially closed alignments of residences with common walls, rectangular in overall shape.
2. City of Zion communities, characterized by large lots, widely spaced houses and broad streets.
3. Other village plans.

**TRANSPORTATION SITES**

1. Roads and tracks along the corridors which linked the communities, serving as routes for missionaries and for the redistribution of good between communities under the church's aegis.
2. Stations along these routes?
3. Roads in and between closely situated communities, and to extractive or manufacturing sites.
Chapter 6

SUMMARY OF GENERAL MANAGEMENT ACTIONS
AND SUGGESTIONS FOR FUTURE RESEARCH

CULTURAL RESOURCE MANAGEMENT

The cultural resources of Great Basin National Park include sites, features, structures and objects ranging from the recent past to as much as 10,000 or more years ago. The management of these extremely varied resources involves a complex planning framework (see Figure 19). The preceding chapters have provided environmental and cultural background information and outlined recommendations for treating Park resources. Summarized briefly in the following section are general treatment and management options which cover historic, prehistoric and ethnographic resources. These proposed alternatives are intended to accomplish long-range goals of maintaining the integrity of the cultural environment along with the surrounding environmental context.

The basic goal of cultural resource management is to protect, preserve and interpret the cultural resources of the Park. In order to make effective management decisions regarding cultural resources, resource managers must be familiar with the historic, archeologic and ethnographic resources of Great Basin National Park, know which are significant, and what management recommendation or treatment level has been made for each site or resource. Damage to the integrity of historically and/or archeologically significant sites, structures, buildings and objects must be avoided or, when unavoidable, the adverse effect must be mitigated in consultation with Regional cultural resource staff, the State Historic Preservation Officer and the Advisory Council on Historic Preservation.
Figure 19. Relationship of Cultural Resources Inventories, Studies and Special Plans to Overall NPS Planning (from NPS-28:2.10).
Any ground disturbing activities, land transfers or other actions having the potential to affect cultural resources will need to be reviewed on a case-by-case basis by cultural resource professionals in order to assure that the Park is in compliance with federal legislation and NPS policies regarding the protection of cultural resources. All future research should provide both an adequate information base for resource management, and address research themes consonant with regional professional research goals.

The management options offered here should not be considered the final word in the matter; they are, rather, recommendations for the management of the cultural resources of the Park. As administrative and management goals are subject to change, and as significance, site integrity and local and regional research goals change, the management of cultural resources should be viewed as a dynamic process. As the need arises, individual projects or the treatment of specific sites may need to be re-evaluated on a case-by-case basis with the input of Regional cultural resource staff and other appropriate professionals.

If no actions are taken for the management of the Park's cultural resources, Great Basin National Park will not be in compliance with Executive Order 11593 and the National Historic Preservation Act of 1966. Without a completed inventory, sites could not be nominated to the National Register of Historic Places and structures could not be included on the List of Classified Structures. The archeology of Great Basin National Park would be poorly understood, and Park managers would lack the data needed to make informed decisions regarding the preservation, interpretation and management of the Park's cultural resources.

**Summary of General Management Recommendations**

The following has been treated in greater detail in Chapter 5. In summary, the following is recommended:

(1) Avoid impacts to cultural resources. If impact is unavoidable, apply appropriate mitigation measures in compliance with federal statutes and NPS policies.
(2) Actively work towards the completion of an inventory of cultural resources in the Park as mandated by Executive Order 11593.

(3) Identify, document and evaluate for management purposes all previously unknown cultural resources as they are encountered, based on level of significance, condition, impacts, and potential for interpretation.

(4) When necessary, improve documentation on properties to adequate levels so that significance can be evaluated.

(5) Update existing surveys, studies and site documentation if such are not up to current professional standards.

(6) In accordance with amendments to the National Historic Preservation Act, locate, inventory and nominate to the National Register all properties which appear to be eligible, and ensure their immediate protection.

(7) Eliminate, or at least minimize, adverse impacts on cultural resources by both natural and human agents. Take an aggressive stance on eliminating any vandalism which may be occurring to the Park’s resources.

(8) Conduct intensive surveys of all heavy-use areas in the Park not previously inspected.

(9) Interpret the prehistory, ethnohistory and history of the Park to the public and conduct research where needed on the Park’s past.

(10) Provide training by archeologists to new employees and seasonals, particularly in law enforcement, resource management and interpretation to further enhance protection of cultural resources. Training should also be provided in cross-cultural perspectives (NPS 1987:49).
(11) Conduct oral histories of individuals with first-hand knowledge of the history of the Park area. Determine the status of, and transcribe if available, oral history tapes which may be housed in archival repositories in the state which contain information on the Park's past.

(12) Analyze collected aboriginal artifacts within a regional comparative framework addressing such issues as chronology, settlement patterns, site function, and the relationship of the Park throughout time to the Great Basin culture area. Consolidate the collections from projects previously conducted in the Park and curate them in a single facility, or minimally in one state. For example, the 1938 and 1963 excavations in Lehman Caves resulted in materials being housed at the Park, the Nevada State Museum, and the National Museum in Washington D.C. Additionally, some materials are housed at WACC in Tucson, and some may be located at the Southwest Museum in Los Angeles.

(13) Include in an Administrative History of the Park reference to cultural resources.

(14) Maintain updated lists of Native American individuals who could be consulted when needed on a variety of cultural resource concerns.

(15) Identify all known localities and sites in the Park which have Native American values or values to other Park-associated ethnic communities; register these on the Cultural Sites Inventory as outlined in NPS-28:7.1-7.3.

SUGGESTIONS FOR FUTURE RESEARCH

As the Great Basin National Park area has been utilized for at least the last 10,000 or more years, fundamental questions regarding social organization, cultural ecology and change over time can be addressed by research within the Park, and the research potential of the
park is thus considered to be extremely high. Possible areas of future research will be addressed in the following sections separately for prehistoric and ethnohistoric resources, and for historic resources. Outlined briefly in the remainder of the chapter are topical areas toward which future research in Great Basin National Park could be directed, particularly as addressed in the Nevada State Plan.

**Research Themes and the Nevada Historic Preservation Plan**

Future research in Great Basin National Park should be directed toward research goals which are consistent with current regional research interests within the scientific community. Research themes might address the broad regional concerns as outlined in the previous chapter and *Part One of the National park System Plan - Historic* (1972) and more specifically, to those outlined in the *Archaeological Element of the Nevada Historic Preservation Plan* (Lyneis 1982).

The *Archaeological Element* was completed in 1982 by state, federal and contract archeologists in Nevada. Five prehistoric study units, defined by hydrology, an historic study unit, and a number of research themes were outlined in the document. The following table (24) provides a summary of the study units and research domains identified in the plan. Although the plan has some weaknesses (c.f. Becker 1986), early application of the research questions outlined in the plan could facilitate the evaluation of site significance when plans are submitted by agency archeologists to the Nevada SHPO (Becker 1986:10). Research questions for the Prehistoric Eastern Nevada Study Unit (James and Zeier 1982), for prehistoric trade and exchange (Lyneis 1982), for Mormon colonization sites (Lyneis 1982), for farming and ranching sites (Hardesty 1982), and for industrial sites (Edaburn 1982) are reproduced below essentially as written for the Nevada Historic Preservation Plan (Tables 25-29).

**Research Potential of Archeologic Resources**

Future studies with archeologic resources could address a number of broad research problems. These might include reconstruction of the past
### TABLE 24: OUTLINE OF THE ARCHAEOLOGICAL ELEMENT OF THE NEVADA STATE PRESERVATION HISTORIC PLAN (Lyneis 1982)

#### Prehistoric

<table>
<thead>
<tr>
<th>Regional Study Units</th>
<th>Research Domains</th>
</tr>
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<tbody>
<tr>
<td>EASTERN</td>
<td>PAST ENVIRONMENTS AND GEOCHRONOLOGY</td>
</tr>
<tr>
<td>CENTRAL</td>
<td>ECOLOGICAL STUDIES</td>
</tr>
<tr>
<td>WESTERN</td>
<td>SUBSISTENCE SYSTEMS</td>
</tr>
<tr>
<td>SOUTHERN</td>
<td>SETTLEMENT PATTERNS</td>
</tr>
<tr>
<td>HUMBOLDT RIVER</td>
<td>TRADE AND EXCHANGE</td>
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<tr>
<td>BASIN</td>
<td>IDEOLOGY AND BELIEF SYSTEMS</td>
</tr>
<tr>
<td></td>
<td>LITHIC ANALYSIS</td>
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<tr>
<td></td>
<td>DIRECTIONAL CHANGE DURING THE ARCHAIC ROCK ART</td>
</tr>
<tr>
<td></td>
<td>GEOGLYPHS (EARTH SURFACE FEATURES)</td>
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<tr>
<td></td>
<td>PRE-ARCHAIC OCCUPATIONS</td>
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</tbody>
</table>

#### Historic

<table>
<thead>
<tr>
<th>Study Unit</th>
<th>Research Domains</th>
</tr>
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<tbody>
<tr>
<td>ENTIRE STATE</td>
<td>FARMING AND RANCHING</td>
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<tr>
<td></td>
<td>MORMON COLONIZATION</td>
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<td></td>
<td>MINING AND INDUSTRY</td>
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<td></td>
<td>URBANIZATION</td>
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TABLE 25: KEY PREHISTORIC RESEARCH PROBLEMS IN THE EASTERN NEVADA STUDY UNIT

(Taken from the Nevada Historic Preservation Plan)
(James and Zeier 1982:142-145)

1. **Projectile point chronology** - Projectile point keys have been developed for the area both east and west of the study area. The chronological placement of prehistoric phenomena differs depending on the key used. Eastern Nevada data should be reviewed in detail to determine which key, if either, is the most appropriate. In all likelihood, newly excavated samples of projected points from well-stratified and dated sites within the study unit will be required.

2. **Past vegetation zones** - The extent and chronology of the variation in elevational distribution of vegetational zones must be better understood if we wish to study past subsistence and settlement patterns. A concerted effort should be made to seek out all classes of data relevant to the resolution of this issue.

3. **Past faunal distribution** - Historic data on the abundance and distribution of faunal species (particularly larger animals) are known to be inapplicable to the prehistoric period. Archaeologists often make ill-founded, implicit assumptions as to past relative abundance of various fauna, because so many of the arguments depend on human-animal relationships. Implicit assumptions are made regarding the relative abundance of various faunal forms. Efforts should be made to provide hard data on this matter. Such data are essential if we are to accurately assess past subsistence patterns.

4. **Palynological data** - Pollen and flotation samples should be collected and analyzed during future excavations in eastern Nevada. Very little data of this sort exists for the area and it is vital to our understanding of past plant utilization.

5. **Settlement patterns** - An understanding of general subsistence and settlement patterns is essential if we are to study past lifeways and culture process. No studies have been conducted in eastern Nevada for the purpose of the identification and explication of such patterns. Studies of this sort must be encouraged, and small scale studies should be conducted in such a manner to be applicable as units in larger-scale studies of subsistence and settlement.
6. **Paleoindian remains** - Relatively little evidence of the early Paleoindian period has been found in eastern Nevada. The data found, however, has been very significant (Smith Creek Cave and Long Lake for example). Archaeologists working in the area should make a concerted effort to acquire data on this period. Private collections should be examined and, if possible, the material should be traced back to its source. York (1974) has suggested that sites dating to the pre-projectile period are present along the uppermost shore lines present in Long Valley. The presence of such sites would be of regional and continental significance. Therefore, his claim should be reevaluated. A common reason given for why early sites are not more frequently located is that they are buried by Holocene deposits. An assessment should be made of eastern Nevada identifying those areas most likely to contain early sites and buried early deposits. This would result in a land use model of use to the archaeologist and land manager in making decision regarding possible impacts.

7. **Pleistocene extinctions** - The question of Pleistocene megafauna extinction lingers on. Evidence should be sought that will provide a clear idea of when the extinction process was effectively complete in eastern Nevada.

8. **Pluvial lakes** - Remnant Pleistocene and Holocene pluvial lakes are thought to have been of central importance in the subsistence patterns of Pre-archaic and Archaic populations. The chronology of their appearance and desiccation is not totally clear, however. Studies should be conducted to document these processes and their effects on resource abundance and availability in valley floor environments.

9. **Ethnic continuities** - A common question regarding subsequential archaeological cultures is whether they represent separate peoples or if the latter is simply developed out of the earlier cultures. Fremont and Shoshoni cultural origins appear to be cases of the former. Is this also true of the transition from the early Paleoindian to Western Pluvial Lakes Tradition? What of the Western Pluvial Lakes to Archaic transition? Detailed technological and subsistence settlement studies may provide data pertinent to such questions in eastern Nevada.
10. **Archaic subsistence patterns** - Steward's subsistence pattern for the Shoshoni has often been applied to the Archaic period both as an inferential tool on which to base interpretations and as a model for testing against the archaeological record. Madsen and Berry (1975) have proposed that the structure of Archaic settlement and subsistence is more varied than previously believed. The reality of these assertions in eastern Nevada should be determined. Also, evidence from the eastern-most Great Basin suggests a shift to the emphasis on upland resources during the Altithermal. Does a shift in subsistence occur in eastern Nevada during this period? What is the meaning of the concept 'upland resources' in the context of eastern Nevada versus its meaning in the eastern Great Basin?

11. **Pinyon exploitation** - Many have assumed that the pinyon nut has been a stable food source available to the Indian throughout prehistory. As noted, the validity of this assumption has been questioned. If pinyon is fairly recent in eastern Nevada or only a minor element in the vegetation, then it may not have been available for utilization until late in the Archaic period. Research aimed at defining the earliest effective presence of pinyon (in terms of density and distribution) is needed. Wood rat nests and middens have been of particular value in regard to this topic elsewhere. The location of such data sources is vital information. Sites of this type should be routinely sought out and recorded by archaeological teams.

12. **Fremont frontier** - Fremont sites in eastern Nevada appear to represent the very margin of that culture's westward distribution. Do these sites exhibit a frontier character, and if so, what is its nature?

13. **Thirteenth century interaction** - The thirteenth century A.D. was a period of pronounced cultural interaction in eastern Nevada. Three dominant cultures were present: Archaic, Fremont, and Shoshoni. Students of culture change and process should focus attention on sites of this century in an effort to more fully understand a) the eventual predominance of the Shoshoni; b) the fate of the Fremont and Archaic; and c) the nature of the intercultural relations.

14. **Protohistoric assimilation** - Archaeological sites dating to the mid-1800s contain data relevant to the generation of protohistoric Indian subsistence and settlement patterns and the assimilation process then underway regarding the increasingly dominant European culture. Sites of this period should be sought out and studied in regard to these issues.
15. **Ethnographic studies** - The basis for much of archaeological interpretation is analogy. To the extent possible, ethnographic and literature studies should be conducted in eastern Nevada to identify behavioral correlates to archaeologically perceived items and activities, to expand our knowledge of subsistence and settlement activities, to extend our awareness of socio-cultural patterns that may have direct reflections in the archaeological record (travel routes, ritual and sacred areas, traditional use areas, etc.), and to investigate the concerns of present-day Indian populations in regard to cultural resources.
<table>
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<th>Table 26: Key Research Problems for Prehistoric Trade and Exchange</th>
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<td>(Taken from the Nevada Historic Preservation Plan)</td>
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<td>(1982:25-26)</td>
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1. What were the processes of trade and exchange in prehistoric Nevada? Was it uniformly down-the-line exchange, consistent with the premise that all prehistoric societies in the state were of egalitarian social organization? Or was there spatial or temporal variation in the processes of trade?

2. Are there changes in the size of exchange networks or the kinds and volumes of goods moving on them?

3. Are there systematic differences in the forms or distances of exchange for different kinds of commodities, such as long distance trade in luxury goods, in contrast to intra-regional exchange of low-value or subsistence commodities?

4. What factors serve to distinguish between actual trade and direct acquisition of a resource? The consideration of direct acquisition, or reciprocal use of resource areas, is probably just as important as delineation of trade. We need to consider interchange as well as exchange.

5. What factors, other than simple distance from a source, affect the quantity of a commodity obtained by a society? Is it an energy-efficiency tradeoff between obtaining, say, more desirable obsidian through trade or using a locally available chert instead?

6. What is the role of ethno-linguistic boundaries in structuring trade and exchange? Although Ericson (1977) did not find discontinuities in obsidian distribution which coincided with ethno-linguistic boundaries in California, his data was far too scanty to provide a definitive test. Stephenson and Wilkinson (1969) report that in the Osgood Mountains area the demarcation of areas to the east which use chert, and areas to the west which use obsidian, coincides with the boundary between the Northern Paiute and Shoshone in the area.

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7. What was traded and what was not traded? We need to identify trade goods. Archaeologically visible foods are usually restricted to non-perishables. Source identification of lithic materials is a necessity in recognizing transported lithic goods. For example, obsidian sources important in trans-Sierran trade have been identified (Jackson 1971; Moratto et al. 1978; Erickson 1977; Singer and Ericson 1977), and turquoise sources in the Tonopah region and areas of southern California, Colorado, New Mexico and Arizona have been sampled (Weigand et al. 1977). This information needs to be correlated and used in conjunction with Great Basin research. A turquoise pendant was recovered from the Pine valley excavations--how far north does the system reach? (T.H. Turner, personal communication). By the same token, more sources need to be identified throughout the Great Basin. Additionally, other sources of other materials need to be identified--selenite, magnesite, and cinnebar, to name a few.

8. What materials are found along the major trade and communication routes through the Great Basin, which stem primarily from Utah, Arizona, and California?
TABLE 27: KEY SCIENTIFIC RESEARCH QUESTIONS
FOR INDUSTRIAL SITES IN NEVADA

(Taken from the Nevada Historic Preservation Plan)
(Edaburn 1982:246-247)

MINING DISTRICT STUDY

1. Technological approach
   a. mining and mineral recovery techniques
   b. mineral and metal processing
   c. technological "district" - areas of similar processing and development of techniques
   d. evolution of mining, milling and construction equipment

2. Social/economic approach
   a. political organization
   b. status patterns
   c. settlement/community patterns
   d. ethnicity and ethnic relations
   e. social organization of labor - company towns vs nucleated settlements; family vs corporation, etc.
   f. household adaptation to frontier mining system

3. Ecological approach
   a. effect on "neighborhood", change of accessibility
   b. effect on drainage patterns and water supply
   c. effect on local plant and animal communities
   d. effect on health and well being of worker/inhabitant

4. Real/ideal comparison approach
   a. mining and milling techniques apparent from features
   b. methods of construction apparent in mines, mills, roads, railways: grades, cuts, fills, borrow pits, prospects, tunnels, shafts, adits, culverts, etc.
   c. location of features in relation to water supply, transportation and communication

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INDUSTRIAL DEVELOPMENT STUDY

1. Technological approach

   a. development (engineering), construction (methods and equipment), and maintenance (system) of:

      water supply sites
      residence sites
      commercial sites
      communications sites
      transportation sites
      ranching/farming sites
      salt mining sites
      lumbering sites
      freighting sites
      military installations and sites

2. Social/economic approach

   a. political organization
   b. status patterns
   c. settlement and maintenance station patterns
   d. social organization of labor
   e. household adaptation to specialized sites: engineering, construction and maintenance
   f. ethnicity and ethnic relations

3. Ecological approach

   a. effect on "neighborhood", change of accessibility
   b. effect on general area
   c. effect on drainage patterns and water supply
   d. effect on local plant and animal communities
   e. effect on health and well-being of worker/inhabitant

4. Real/ideal comparison approach

   a. method of construction apparent in features
   b. location of features in relation to water supply, transportation and communications
TABLE 28: KEY SCIENTIFIC RESEARCH QUESTIONS FOR FARMING AND RANCHING SITES

(Taken from the Nevada Historic Preservation Plan)
(Hardesty 1982:216-217)

BUILDING AND TESTING MODELS OF CHANGE IN AGRICULTURAL SOCIETIES

1. Operationalizing and testing competing models of change with documentary and archaeological data from Nevada and the Great Basin are top priority goals; a variety of population pressure, least cost, evolutionary, ecological, social, and technological models have already been proposed and are the center of a key scientific controversy (see Abruzzi 1981; Green 1980; Riviere 1972; Strickon 1965).

2. "Appropriate technology" vs industrialization as explanations for variability and change in agricultural technology.

3. Models of regional development
   a. Farming and ranching as support systems for mining operations - local markets.
   b. The role of large landholding companies in regional development.
   c. The role of water control technology.
   d. General ecological models, such as Abruzzi’s (1981) succession model of Mormon colonies in the Little Colorado River Basin.
   e. "Ideal" vs "Real" geographical and economic patterns of ranching and farming.

FRONTIER STUDIES

1. Can distinctive patterns of variability and change be identified for farming, ranching, and mining frontiers? Archaeological data from the farming and ranching study unit can be used to build and test competing models of the frontier, such as those proposed by Lewis (1977 and various), Ostrogorsky (1980), and Hardesty (1980).
Table 28 (continued)

2. Testing and modifying general ecological models of colonization.

ENVIRONMENTAL STUDIES

1. Environmental responses to "managed" ecosystems in the Great Basin using both documentary and archaeological data, including direct environmental impacts and ecological consequences of those impacts.

2. Farming and ranching "management" solutions to environmental responses.

ETHNICITY AND ETHNIC RELATIONS

1. Native American responses to farming and ranching operations (see Thomas 1971; Clewlow et al. 1978; Clewlow and Rusco 1972).

2. Urban vs rural patterns of ethnicity and ethnic relations: Basque, Chinese, Italian and other ethnic groups.

PREDICTIVE MODELS OF SITE LOCATION VARIABILITY

SITE FORMATION PROCESS ON FARMS AND RANCHES

1. Refuse disposal patterns: continuous vs transitionary deposits (Praetzelis et al. 1980).

2. Artifact or feature recycling.
TABLE 29: KEY RESEARCH QUESTIONS FOR MORMON COLONIZATION

(Taken from the Nevada Historic Preservation Plan)
(Lyneis 1982:258-259)

THE HOWS AND WHYS OF MORMON COLONIZATION

1. What was the role of technological knowledge and experience, particularly regarding water control strategies, in the successes and failures of Mormon settlements in Nevada? Were inadequacies in technological understanding compounded by the self-imposed isolation of the Saints in the Great Basin Kingdom?

2. How was the Mormon community pattern adapted to the differing environments encountered in Nevada? How did the communities change, in terms of size, spatial organization and location during the course of the repeated attempts at settlement?

3. How did the economic interaction of Mormon communities with non-Mormon communities vary? To what extent was it affected by proximity, by complementarity of products, by political change 1855-1900?

CONTRIBUTION OF MORMON COLONIZATION STUDIES TO GENERAL RESEARCH PROBLEMS

1. Hardesty (1980:74-77) proposes that Mormon colonies were sent out as "tramp species", and so were likely to be initially successful in an area undergoing initial colonization but to lose out in the face of increasing competition. Testing of the Hardesty hypothesis will lead to better understanding of the causes of failure and successes of the Nevada Mormon communities, and will have important implications for the utility of biologically derived models for the explanation of human behavior.

2. What are the rates of immigration and extinction of Mormon communities (Hardesty 1980:77)? How are they affected by:
   a. variation in the natural environment?
Table 29 (continued)

b. changes in social environment, both in the relationship of individual communities to the Kingdom, and changes of the Kingdom's economic and political relationship with the larger U.S. socio-political and economic system?

3. What does the experiment of the Mormon colonizations tell us about colonizing behavior and colonization theory generally?

METHODOLOGICAL RESEARCH QUESTIONS

1. How does the rate of discarding vary among contemporaneous but contrasting frontier communities such as the Mormon and mining communities of southern Nevada?

2. How does the spatial patterning of discarded material vary between contemporaneous settlements? What does it tell us about variation in discard behavior? Are the differences the result of ideology or economic?
environment, including climatic patterns and biotic distributions and their effect on human use of the Park area; resource acquisition, particularly as reflected in the seasonal round; refinement of the local chronology, utilizing chronometric studies, obsidian hydration and sourcing, and projectile points, especially with respect to demographic changes through time; technological studies addressing manufacturing trajectories and techniques with respect to lithic analysis, the adoption of the bow and arrow, and locally manufactured goods such as pottery and basketry; determinations of settlement patterns, both intra- and intersite, and over time; the extent of trade and trail systems between the Great Basin, California, the Plateau and the Southwest, and the movement of goods and ideas across these different interaction spheres; the relationship between the Spring and Snake Valleys to other surrounding areas; the presence and nature of Paleoindian sites; and the spread or development of distinct cultural entities within the region, in particular focusing on the Numic spread and the development of the Fremont.

Key research problems for eastern Nevada have been outlined in more detail in the Nevada Historic Preservation Plan (James and Zeier 1982). These have been reproduced earlier in this chapter in Table 25. Key research problems for analyzing prehistoric trade and exchange were reproduced from the Plan in Table 26.

**Research Potential for Ethnographic Resources**

Several research foci present themselves with regard to potential ethnographic resources of the Park. For the Western Shoshone, places of spiritual, ceremonial, social or cultural importance, including shrines, ceremonial sites or areas, prayer sites, power spots, sacred spots, dance areas or places important in myth should be identified (without locational disclosure) with respect to the ethnographic record and contemporary viewpoints. Ethnographic interviews could be conducted with Shoshone individuals to elicit information on life histories, family histories, and the present lifeways of the current ethnographic users of the Park. First-hand information, ethnographic interviews and oral histories on the interaction between Shoshone and miners, ranchers,
and tourists and the local Native American population and how this interaction and the presence of EuroAmericans altered their lifestyle-from their perspective - could be gathered; and more explicit information on the role Shoshone played in the development of the local mines, the timber industry and the industrialization of the Park area in general could be gathered.

Other definable ethnic groups, such as the Chinese and the Basques, have contributed to the historical development of the Park region. Their contributions could be better defined from archival research and oral histories.

Archeological Research Potential of Historic Resources

Several broad areas of research could be addressed with local historic resources, particularly with respect to gathering additional information on the lifeways and living conditions of miners in the Snake Range in terms of individual mining efforts, camp life and townsites. First-hand accounts of these efforts might come to light through an exhaustive archival search for letters and diaries, oral histories or other first-hand accounts. Additional data on mining technology, particularly as it relates to the extraction of different mineral resources, and how this technology has changed could also be gathered. The extent to which Chinese miners' lifestyles differed from their EuroAmerican contemporaries, and their connections with other, larger established Chinese communities throughout the West could be determined. Research on the living conditions and lifeways of ranchers and homesteaders and how intimately the ranchers (including the Basques) were involved with mining enterprises, individual mines, and other ranches or homesteads, could be conducted and the relationship of early farming and ranching communities to each other could be determined. The nature of frontier farming developments should be explored, particularly with respect to Mormon colonization. And finally, the nature of early transportation, communication and resource distribution networks in the Park area and the surrounding region could be determined.
Once again, further specific details for key research questions with regard to historic sites in Nevada have also been outlined in the Nevada Historic Preservation Plan (1982). Key research questions for mining and industrial sites have been reproduced here from the Plan (Edaburn 1982) and were given in Table 27. Research questions for farming and ranching sites (Hardesty 1982) were indicated in Table 28, and for Mormon colonization (Lyneis 1982) in Table 29.

SUMMARY

Without directed analysis and research, assessment of the significance of Great Basin National Parks' cultural resources is difficult and the application of appropriate management techniques equally difficult to achieve. Likewise, the interpretation of these resources to the public is less meaningful than it could be within a well-understood and tightly defined cultural context.

The cultural resources of the Park and immediate vicinity are rich and varied, and possess a time depth not equalled in many other parts of the country. These resources are fragile and nonrenewable, and deserve our best efforts at managing, interpreting and protecting them from future deterioration or destruction.
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