

# Pacific Northwest National Laboratory

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April 12, 2001

Mr. Scott C. Flanders  
U.S. Nuclear Regulatory Commission  
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11545 Rockville Pike  
Rockville, MD 20852-2738

Dear Mr. Flanders:

This letter transmits a copy of the report entitled, "The Skull Valley Cultural Landscape," to your office. This report has been prepared at the NRC's request and is provided to support the cultural resources evaluation of the environmental impact analyses effort for the Private Fuels Storage, L.L.C., Independent Spent Fuel Storage Installation on the Reservation of the Skull Valley Band of Goshute Indians and related transportation facility in Tooele County, Utah. The report describes the ethnohistorical context for historic period occupation and use of Skull Valley by Native peoples over the past two centuries, and is based solely on a review of existing relevant literature. No fieldwork or direct contacts with tribal governments or Native American persons was completed during the course of this analysis.

If you have any questions on the report's contents, please contact me at the above address or at (520) 577-6024.

Sincerely,



Paul R. Nickens, Ph.D.  
Senior Research Scientist

Cc: w/encl  
Van Ramsdell - PNNL, Richland, WA

# The Skull Valley Goshute Cultural Landscape

Prepared by

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For the

U.S. Nuclear Regulatory Commission

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*The Gosiute habitat is one of the least favorable in the entire Shoshoni area. Lying between the fertile piedmont of the Wasatch to the east and the relatively high terrain of central Nevada to the west, it is an area of true desert and semidesert. It is within the drainage basin of the Great Salt Lake (4,200 feet) and occupies a great part of the area once covered by Lake Bonneville... The only fertile areas are Deep Creek Valley and Trout Creek, which lie on the western and eastern sides of the lofty Deep Creek Range, and a few localities with small springs and streams in the Oquirrh and Cedar Mountains which bound Tooele and Skull Valleys. The remainder of the area had only a few widely separated sources of water. [Steward 1938:134]*

*Much of what was distinctive of the original Gosiute is fast passing away and in a few years will be forever beyond the reach of the investigator. The fact that becomes well impressed on the mind of the person who has occasion in his inquiries to contrast the knowledge and point of view of the old men and women with that of the members of the younger generation whose memories do not run back to the time before white dominance in the region and the new mode of life consequent upon it. [Chamberlin 1913:2]*

## Introduction

This essay draws together some of the extant literature for the Skull Valley, Utah, Goshute (also referred to as "Gosiute" in some sources) Indians to serve as a baseline statement for the historic period Indian occupation and use of the Skull Valley landscape. This area is currently proposed as a location for construction and operation of an independent spent fuel storage installation by Private Fuel Storage L.L.C. (PFS). The facility itself would be located in the northwest corner of the existing Reservation of the Skull Valley Band of Goshute Indians. Spent nuclear fuel from operating power reactor sites in the Eastern U.S. would be transported by existing rail to the northwestern part of Skull Valley, then transported along a newly-constructed rail line extending south along the west side of Skull Valley to the reservation. All of the proposed PFS project facilities, both storage and transportation, would be located

within the confines of Skull Valley. This paper provides information in support of the project's environmental impact analysis, currently in preparation under the lead of the U.S. Nuclear Regulatory Commission, Office of Nuclear material Safety and Safeguards, and three cooperating federal agencies: U.S. Bureau of Indian Affairs, U.S. Bureau of Land Management, and the U.S. Surface Transportation Board.

Although the Goshute peoples living in Skull Valley have been confined to a reservation area of a little over 17,000 acres since 1912, prior to that their ancestors utilized a much larger area extending even outside of Skull Valley proper to neighboring uplands and valleys. Since the proposed PFS project features are sited within the valley, the following discussion of historic Indian recognition and use of the landscape is similarly constrained.

## Sources for Skull Valley Goshute Ethnography and History

While no single comprehensive study of Skull Valley Goshute ethnography has been undertaken, several sources are available from which a description can be assembled for Goshute occupation and use of the valley and its natural resources. Anthropological information, including ethnography, linguistics and folklore, was collected from Indian people living in Skull Valley at least three times. The first instance was by John Wesley Powell who visited the area and collected census, vocabulary, and mythology in 1872-73. Powell relied upon one informant by the name of *Seguit*, a Goshute man living in Skull Valley with his two wives and four children. Powell's Goshute data were presented in six manuscripts, which have been summarized in Fowler and Fowler (1971).

Near the end of the first decade of the twentieth century, and just before the establishment of the Skull Valley Reservation, Ralph V. Chamberlin of Salt Lake City collected a large body of linguistic and ethnographical information for the Goshute of Utah. Although the precise circumstances of data collection and methods of analysis are difficult to discern from his written works, Chamberlin's efforts clearly represent a fairly comprehensive compilation of Goshute data. He published three papers on this work: 1) *Animal Names and Anatomical Terms of the Goshute Indians* (1908); 2) *The Ethno-Botany of the Gosiute Indians of Utah* (1911); and 3) *Place and Personal Names of the Gosiute Indians of Utah* (1913).

In the mid-1930s, the Skull Valley Goshute were included in wide-scale anthropological efforts to collect information on Western Shoshone groups directly from elders by scholars from the University of California. This work included compilation of extensive culture element lists for individual Great Basin Indian groups. In part, these data were summarized in the book *Basin-Plateau Aboriginal Sociopolitical Groups* by Julian Steward (1938), and presented Steward's *Culture Element Distributions: Northern and Gosiute Shoshone* (1943). Steward's information for the Skull Valley Goshute were acquired in 1936 during a three day interviewing effort with an individual named "Moody" or *Mudiwak*, a man of 76 years of age (thus born about 1860), who was born south of Wendover, but was reared in Skull Valley (Steward 1943:265). The interviewee's information came from his maternal grandfather who had also lived in Skull Valley.

In the late 1930s, Anne Smith conducted fieldwork throughout the Western Shoshone homelands collecting tales and stories. Her posthumously edited book *Shoshone Tales* includes several from the Goshute, although most come from the Deep Creek area (Smith 1993). It is possible that she visited Skull Valley during her fieldwork in 1939, but she did not record tales from that reservation. Nonetheless, her

work is important in that significant common threads occur in tales and myths across the Great Basin and, hence, general Goshute and Western Shoshone tales have relevance for the Skull Valley peoples as well.

More recent summaries include a chapter on the Western Shoshone published in the Smithsonian Institution's *Handbook of North American Indians: Great Basin* (Thomas et al. 1986) and published documentation prepared in support of the Indian Claims Commission efforts (Malouf 1974). In the early 1990s, additional field anthropological data were collected in the area from tribal informants, including the Skull Valley Band, for environmental analyses associated with the Utah Test and Training Range (UTTR). Ethnobotanical results from the UTTR work are reported in *Paitu Nanasuagaindu Pahonupi (Three Sacred Valleys): Cultural Significance of Gosiute, Paiute and Ute Plants* (Halmo et al. 1993).

The history of the Skull Valley Goshute focusing on developments since about 1850 and the subsequent encroachment of whites on their traditional homelands is covered in the following sources: 1) *The Goshiute Indians in Pioneer Utah* (Allen and Warner 1971); 2) *The Skull Valley Band of the Goshute Tribe: Deeply Attached to Their Native Homeland* (Crum 1987); and 3) *Confrontation with an Arid Land: The Incursion of Gosiutes and Whites into Utah's Central West Desert* (Bluth 1978).

## History of Native American Occupation in Skull Valley

Before 1850

Scant evidence has been documented about the prehistoric use of the Skull Valley environs by aboriginal peoples. Some of this may be due to a general lack of large-scale archaeological surveys in the valley, but an equally plausible reason lies in the general character of the landscape and resources available to support human populations. At certain times during the last several thousand years climatic conditions may have changed enough to permit more intensive seasonal use of some sectors of the valley floor. One such example comes from a small archaeological site located about four miles north of the present-day Skull Valley Indian Reservation. This site, designated 42TO504 in the Utah statewide archaeological site numbering system, dates to the early to middle Fremont time period in the cultural history of the region, being utilized between about A.D. 595 and 875 (Smith 1994). Being the only archaeological site that received any detailed examination, it serves to illustrate prehistoric utilization of Skull Valley.

Archaeological Site 42TO504 is situated on a north-south linear bar feature in the center of the valley, interpreted as being a geomorphic feature primarily developed by offshore currents of the late Pleistocene age Lake Bonneville, topped by some aeolian deposition after the Bonneville shoreline receded. In addition to 42TO504, five other archaeological sites were located nearby, all associated with similar linear bar features.

Excavation of this site and subsequent analyses revealed that it was a locale that was intermittently revisited over a long period of time for the purpose of collecting and processing several locally available plant species during the late summer and/or early fall period. All of the plant species identified in the archaeological materials have reported ethnographic uses, primarily as foodstuffs, and grow in the modern Skull Valley environment. Some species found in the remains, such as reeds, do not grow close to the site, and probably indicate the presence of a nearby playa setting during the times the site was used.

Initial historic period encounters with Native Americans in Skull Valley occurred with early exploring expeditions in the 1800s. In 1827, Jeddiah Smith and a small party passed through the valley on a return trip from California at a time that the exploring party was experiencing difficulty in obtaining food and

water (Kelly 1996). It was later reported that the Indians of Skull Valley repeated the tradition that the first white men they ever saw were three who staggered, almost naked, in from the western desert, and were half-crazy from breathing Alkali dust (quoted in Kelley 1996:11). Another early account comes from Captain Howard Stansbury who, when traveling through Skull Valley in October of 1849, noted some Indian lodges constructed of cedar poles and logs, thatched with bark and branches (Stansbury 1851:11).

After 1850

By the mid 1800s, Goshute Indians, who had formerly occupied a homeland that included much of the southern Salt Lake Desert region were being impacted by the intrusion of Mormon settlers. The effect of colonization of the Great Salt Lake Valley and the neighboring more fertile valleys by the Mormons served to push Goshute peoples to the west, primarily into Skull Valley and Deep Creek Valley along the Utah-Nevada border. Allen and Warner (1971) and, more recently, Crum (1987) provide reviews of the historical developments related to the continuing struggle by the Goshute people to retain a land base within their once extensive homelands.

Although numerous attempts were made between about 1860 and 1950 to remove the Goshutes from Skull Valley, they actively resisted all such efforts. In 1863, a treaty was signed between all Goshute bands and the U.S. Government. Though Goshute occupation was by then confined to Skull and Deep Creek Valley, the treaty did not set aside lands for reservations, as many other contemporary Indian treaties did in other parts of the country. In the last half of the 1800s, several attempts were made to move the Skull Valley Goshute Band, including proposals to move them to Deep Creek with the other remaining Goshute, the Uintah and Ouray Ute Reservation in northeastern Utah, the Fort Hall Northern Shoshone Reservation in southern Idaho, and even to Indian Territory in Oklahoma. The Skull Valley Goshutes resisted each of these moves, although they remained in essentially a landless condition. Aided by intervention on the part of a few whites, two 160-acre homesteads were claimed under the authority of the Homestead Act of 1862 by two Goshute families in 1883. These homesteads were located on Hickman Creek, within the area that would later become the reservation. The Hickman Creek locale appears to have become the primary occupation area in the valley in the late 1800s, although, as discussed later, other Goshute village locales were used historically in Skull Valley. An 1871 Government Land Office survey map of Skull Valley indicates the presence of an "Indian Settlement" on Hickman Creek in the same location that would be formally homesteaded some 12 years later; it is the only Skull Valley Indian habitation shown on the map (Figure 1).

Forty-nine years after the 1863 treaty, the Skull Valley Goshute were finally given an 80-acre reservation at Hickman Creek by Executive Order in 1912. Five years later, another Executive Order expanded the Skull Valley Reservation to 17,120 acres. Interestingly, the achievement of a reservation did not end attempts to remove the Skull Valley Goshute from their homeland. Because of the relatively small size of the reservation and the small number of Goshutes living there, federal aid was essentially terminated in the early 1920s, and subsequent attempts were made to consolidate the Skull Valley Band with the Deep Creek Goshute, for which a larger reservation had been established in 1914, first through the Indian Reorganization Act of 1934 and then via the federal tribal termination policy in 1954. At one point, a counter proposal to actually increase the size of the Skull Valley Reservation was offered in 1935, but ironically it fell through for exactly the same reason that others were attempting to remove the Indians – the fact that only a few Goshute were actively living on the reservation. As part of these ongoing considerations, an attempt was made in 1940 to "constitutionally consolidate" the two Goshute groups, thereby hoping to effect movement of the Skull Valley people to the Deep Creek locality. Sanctioned by the Indian Reorganization Act and approved by the Deep Creek Goshute, the "Constitution and Bylaws of the Confederated Goshute Reservation" became official in 1940. Although the new constitution included

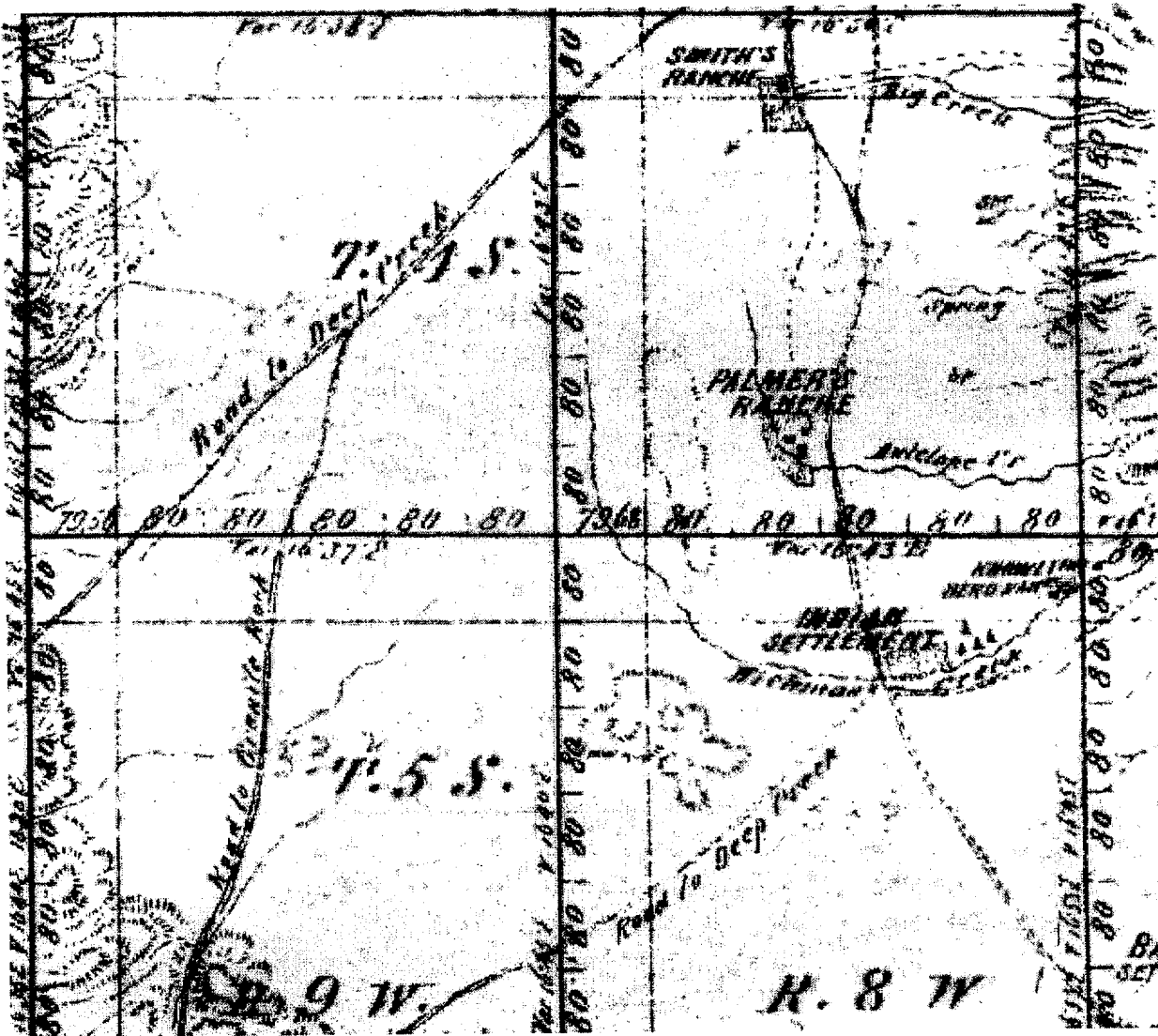


Figure 1. Portion of the 1871 Government Land Office survey map for Skull Valley, Utah, showing the Indian Settlement identified on the north bank of Hickman Creek and nearby historic roads and ranches. The Indian Settlement shown on this map is in the same locale as the present day Skull Valley Goshute Band village.

a membership clause that the Skull Valley Band was to be included and Skull Valley Indians could affiliate thereafter. The Skull Valley Band never approved the 1940 constitution.

The Skull Valley Goshute vigorously opposed all attempts to remove them from Skull Valley throughout each of these efforts. Their position is perhaps best summed up by a statement following a 1936 meeting in which the position Skull Valley Goshute attending the meeting was that "All members present at the meeting very emphatically stated that it was their wish to remain at Skull Valley. Their reasons for wanting to stay at Skull Valley were that they had lived their all their lives and their ancestors had lived there and were buried there, and that they themselves wished to remain..." (quoted in Crum 1987:266).

## Use of the Landscape

### Population Density

Owing to the landscape characteristics and available natural resources in historic Goshute territory, it is not a surprise to find that the population density of this area was among the lowest to be found in the entire Great Basin. Steward (1938:134) employed available historic population estimates to posit that there was not over one person to 30 to 40 square miles in this area. Even so, the pre-white population was undoubtedly greater than the historic period figures indicate. For the Goshute groups, Chamberlin (1908:74) observes that the Indian population in the area underwent a drastic reduction with the intrusion of white pioneers. According to Chamberlin:

*The principal agency in this in this decimation was certain diseases, brought by the whites, to which the natives had never before been exposed, and to which, as a consequence, they had acquired no special resistance. They died off, it is said, by the hundreds. Almost overnight an entire camp would be swept free of every living soul. In 1848, for example, an epidemic of measles broke out among them... They died off in great numbers, as many as forty being heaped in a single grave.*

In 1872, the population given for Skull Valley Goshute was 149 persons, including 56 men, 58 women, and 45 children (Fowler and Fowler 1971:104). In the same census, the total number of Goshutes in all of Utah was estimated at 256 persons. In the 1936 Bureau of Indian Affairs census, there were only 39 Indians living on the Skull Valley Reservation (Crum 1987:264). Today, about 30 people continue to live on the reservation.

### Former Villages

Information on historic period Goshute village locations in Skull Valley is somewhat limited. Archaeologically, not one has been formally identified and recorded as such. In addition to the aforementioned 1872 Government Land Office map designation of a village at Hickman Creek, there is some information derived from the ethnographic literature. In his classic study, *Basin-Plateau Aboriginal Groups*, cultural anthropologist Julian Steward (1938) provides information on former Skull Valley village locations. This information is based on interviews conducted in 1935-36 with Indian elders throughout Nevada and Utah, including Skull Valley. According to Steward's Skull Valley informant, there were several formerly occupied village sites in the valley, including:

- *Tozava*, at a spring on the western side of the lakeside Range. (This village lies between the Lakeside Range and the northern tip of the Cedar Mountains, northeast of the PFS rail transfer facility at Low.)

- A cave on the northern end of the Stansbury Mountains (on the Skull Valley side, south of the proposed PFS intermodal transfer station at Timpie).
- *Haiyacawiyep*, near the old town of Iosepa (along the Skull Valley road, a proposed alternative transportation route for the PFS project).
- *Iowba*, in the mountains just east of the present Skull Valley Reservation.
- *Tiava*, on the present reservation along Hickman Creek, in the vicinity of the current reservation village.
- *Suhudoasa*, located at the Orr Ranch (situated just south of the present reservation). Steward also states that this was the site of dances and festivals for all the Skull Valley villages.
- *Ongwove*, a few miles south of Orr's Ranch.
- *Wanapo'ogwaipi*, located at Indian Springs, south of the last village.

Steward does not provide information about the time of use for any of these villages, but it can probably be assumed that they date between ca. 1860 and the beginning of the reservation period in 1912. In all likelihood, the villages were occupied early in that timeframe as non-Indian entities (e.g. ranches and the town site of Iosepa) were located at several of these locations by the end of the nineteenth century, except for the locale at Hickman Creek. Steward designates each of these villages as winter villages. The information on number and location of these villages indicates a historical Goshute presence throughout Skull Valley, not just in the area of the present reservation (Figure 2).

Aside from the apparent importance and continuity of the village location at Hickman Creek, the village at Orr's Ranch (*Suhudaosa*) appears to have been an important place because of its identity as the location for dances and festivals. These activities were important ceremonies throughout the Western Shoshone territory (Thomas et al. 1986:2.72-274). For the Goshute, Steward (1938:139) describes these ceremonies as follows:

*Festivals were held independently at Skull Valley, Deep Creek, and perhaps elsewhere under different directors. In Skull Valley the director was Tave (Sun)... Members of several neighboring villages held festivals, principally in the spring. They performed the round dance to make seeds grow. If, however, many people were assembled in some area of abundant seeds during the summer, and especially when gathering pine nuts in the fall, they might also hold dances. The chief of the nearest village served as the director. When such dances were to be held the chief sent out messengers to invite people to attend. The main festivals lasted five days.*

Based on similar situations in Nevada valleys, it was not uncommon for Western Shoshone festivals to be co-located with historic period ranches where Indians camped and worked as laborers. In Skull Valley, Chamberlin (1913:2) observed that during the haying season, the Goshute men hired themselves out as hands on neighboring ranches.



## Named Places in Skull Valley

In addition to the designated village locations, the Goshute associated names with natural and topographic features throughout the valley and neighboring areas. Chamberlin (1913) lists Goshute names for some sixteen natural features in Skull Valley, including springs, creeks, mountains, and canyons.

Although apparently not extensively collected by Chamberlin, it is probable that many of these features on the landscape have stories and myths associated with the names. One of the Skull Valley springs, for example, known in Goshute as either *Pan'tsa-bitc-um-ba* or *Tu'kai-ho-gwa*, was known to be the home of *Pan'tsa-bitc*, a supposed water living creature (Chamberlin 1913:8). The Goshute, along with other Western Shoshone groups, believe certain creatures or "babies" can be seen in the springs at night and can be heard from a distance to cry. In the daytime, they disappear in holes. [See Smith 1993:78, 108, and 165 for comparable Water Baby stories from the Western Shoshone groups in Nevada.]

## Utilization of Natural Resources

### Animals

As might be anticipated, those animals that were found in this semiarid area were an important source of food, although the larger forms, such as antelope and deer, were more of an occasional source of subsistence with more reliance being placed on smaller animals and insects, in addition to plants. Nonetheless, numerous animals were recognized and named in the Goshute lexicon. In 1872, Powell obtained a list of nearly 50 Skull Valley Goshute names for mammals, birds, insects and reptiles (Fowler and Fowler 1971:252-253), while Chamberlin (1908) provides Goshute names for more than 230 combined species.

Communal game drives, primarily involving antelope and rabbits, were a hallmark of Western Shoshone and Goshute social, religious and subsistence activities, often involving a large amount of planning, construction of traps, and large numbers of people. Following observations by Steward (1938:138), all Goshute probably held antelope drives under the direction of a shaman who had received special supernatural power in a vision to charm antelope. According to Steward's informant, antelope drives by the Skull Valley Goshute were under the direction of a shaman named *Teub* and were conducted either somewhere west of the Cedar Mountains or just south of the present-day town of Delle, in the northwest part of Skull Valley (Steward 1938:138). A detailed account from the early 1900s describing Goshute preparation and drive activities just west of Deep Creek is quoted in Steward 1938:38-39, and is undoubtedly similar to those conducted in Skull Valley. In that case, runners begin some 20 miles from a corral and progressively drive the animals toward the enclosure. Chamberlin (1911:335-336) offers another example of communal antelope hunting for the Skull Valley Goshute in which a trap was constructed in the Cedar Mountains, just west of Skull Valley, formed by a V-shaped runway, the sides of which were formed of logs and brush. Once driven to the apex of the chute or into a corral at the end, the animals were dispatched. Smith (1993:178-179) also provides a Western Shoshone version of antelope hunting shamanism and technique that is virtually identical with that of the Goshute.

It is perhaps worth observing that archaeological site 42TO1187, a stone ring with associated stone cairns and rock accumulations recorded along the proposed PFS rail corridor (Birnle and Newsome 2000), is found in the area specifically identified by Steward (1938) as being the general locale for communal antelope drives in Skull Valley. Although not definitive, it is perhaps also noteworthy that the stone cairns and rock accumulations associated with the stone circle form "wings" extending both east and west from the circle. A corral with wings is characteristic of the antelope hunting enclosures, although the

wings usually extended at an angle from the corral rather than on a perpendicular axis. The discussion herein does not include a comparative analysis of construction methods and materials for antelope hunting corrals throughout the region, but it is potentially useful to observe the statement by Thomas and his co-authors (1986:267 that among the Western Shoshone groups "antelope were driven along a V-shaped runway into a corral constructed of brush, *stone*, and poles," (emphasis added). Steward (1943:293) provides a trait list of Skull Valley Goshute communal antelope hunts that includes the use of brush corrals and wings for directing the animals toward the enclosure.

Throughout the Great Basin, jackrabbits inhabit the open sage-covered valleys in large numbers and offered another activity for social occasions, usually in the fall. Chamberlin (1908:95-96) notes that the jackrabbit was a primary source for Goshute food and clothing. In Skull Valley, however, Steward (1938:1938) observes that in Skull Valley communal rabbit hunts were minor affairs and did little to unite families of different camps. He goes on to state that one net, perhaps 20 feet long, was placed across a trail and three or four men drove rabbits into it. Steward (1938), Chamberlin (1911:28), and Egan (1917:235-237) provide additional and more detailed descriptions of Goshute jackrabbit hunting, although these accounts are focused more on the Deep Creek group where the events involved large groups of people.

The question of why the Skull Valley rabbit drives were considered to be "minor affairs" by the Skull Valley Goshute is interesting, given the generally heavy reliance on jackrabbits by their neighbors throughout the region. However, closer examination of the subsistence cycle and concurrent availability of another food staple, the pinyon pine nut, offers a possible answer. Also available in the fall, and an important food for the coming winter months, pine nuts were gathered in copious quantities by the Goshute and Western Shoshone. Apparently the higher elevations adjacent to Skull Valley did not offer sufficient availability as Steward (1938:137) notes that the Skull Valley Goshute procured pine nuts from either toward the east near Murker in the Oquirrh Mountains, south of Tooele, or from the Deep Creek area to the west. Regarding jackrabbit hunting, the sources listed above indicate that favored hunting areas were both Deep Creek and Cedar Valley, just east of Murker. It seems likely, therefore, that the Skull Valley Goshute typically traveled either to the west or east in the fall in quest of abundant pine nuts and possibly participated in communal rabbit drives in those areas, thereby taking advantage of the dual availability of both fall resources before returning to their winter villages in Skull Valley.

## Plants

Procurement of plants provided the economic basis for Goshute and Western Shoshone groups throughout the region. For the Goshute, Powell (Fowler and Fowler 1971: 252) provides Indian terms for about 15 of the major species, but Chamberlin (1911) offers names and cultural uses, as applicable, for more than 350 species, including food, beverage, chewing gum, smoking, domestic object, shelter, and medicinal plant uses. Chamberlin's examination remains the most comprehensive ethnobotanical undertaking completed of the Goshute, and is especially useful because it was completed at an early date when plant names and uses were still in the memories of the older people. The thoroughness of the study is highlighted in one statement when, speaking specifically about the Skull Valley Goshute, he notes that "the work has been carried on at different seasons, and tests have been made at different times through various better-informed men and women of the tribe, who have been consulted both singly and in groups" (Chamberlin 1911:358). The thoroughness of the earlier study is also acknowledged by Steward (1938:137), who observes that Chamberlin's list of edible plants was more complete than his own collected in 1936. Although Chamberlin offers an extensive listing of plants and associated cultural uses for many of the individual plants, he does not identify any specific collecting locales within the area except to observe that some plants were collected in the valley bottom while others came from the uplands.

In an observation that has significant implications, Chamberlin (1911:337) noted that the knowledge of plant uses was quickly disappearing even at the time of his studies during the first decade of the twentieth century. He states:

*The education of Goshiute children in a knowledge of these and other matters important to them in their original state was formerly given with much care by the grandparents; but since the change in mode of life consequent on the coming of the white race, this education, or drill, is much neglected. As a result the knowledge concerning plants and their properties possessed by the younger generations is very inferior to that of the older men and women now passing away.*

A more recent ethnobotanical plant study including Goshute informants was been completed in conjunction with the Utah Test and Training Range environmental analysis (Halmo et al. 1993). That study involved fieldwork in three valleys (Whirlwind, Tule and Snake) located just south of Dugway, Utah, and included a representative of the Skull Valley Goshute Band, in addition to individuals from other regional Goshute, Southern Paiute and Ute tribes. Focusing on specific areas targeted for project-driven impacts, tribal members identified a total of 19 plant species as being traditionally used. Goshute representatives (Deep Creek and Skull Valley) identified 18 of the 19 plants, which is more than the other tribes, a reflection of their closer historical attachment to the territory. Significantly, six of the species identified were not included in Chamberlin's 1911 listing, possibly indicating either the advent of more recent uses or omissions from the earlier list. The importance of the study by Halmo and his co-authors is the use of a weighted formula to achieve a ranking of relative importance of plants based on a cumulative index of cultural significance scores. This methodology allows not only identification of culturally important plants but also permits assessment of the relative importance that Indian people and/or tribes place on certain plants as well as the places or ecozones that individual plants or combinations of plants are found. Within the context of defining the importance of local plants to Indian people, Halmo and others (1993:149) observe that: "Plants were integral components of American Indian lifeways, and in most instances are still used in religious practices, economic enterprises, and as subjects of cultural transmission for the heritage of future generations."

Although not elaborated upon in the cited study by Halmo and his co-investigators, they do list some general categories of impacts expressed by representatives of the tribes that could come into play during any proposed development in the area (Halmo et al. 1993:146). These include concerns impacts of low-altitude overflights on reservation buildings, tribal elk herds, and burials; further appropriation of former traditional territory and resources, particularly spring water, and construction near culturally and historically important mountain ranges. Other issues also identified involved potential for impacts to artifacts, sites, animals, and plants located throughout the broader area.

## Summary

Review of the available ethnographic literature for the Skull Valley Goshute indicates a documented presence in Skull Valley since the mid-1800s. Although Indians were observed in the valley as early as the 1820s, it is not possible to identify them as other than "Goshute," and the references are too brief to learn about their activities. The intrusion of travelers passing through the area on their way West, followed by Mormon pioneers settling the Salt Lake Valley and adjacent valleys with adequate water for irrigation, served to push the Goshute peoples westward. By the 1860s, it is fairly well documented that the remaining Goshutes were identified as being associated with either Skull Valley or the Deep Creek area further west along the Utah-Nevada stateline. Continuous Goshute occupation of Skull Valley is

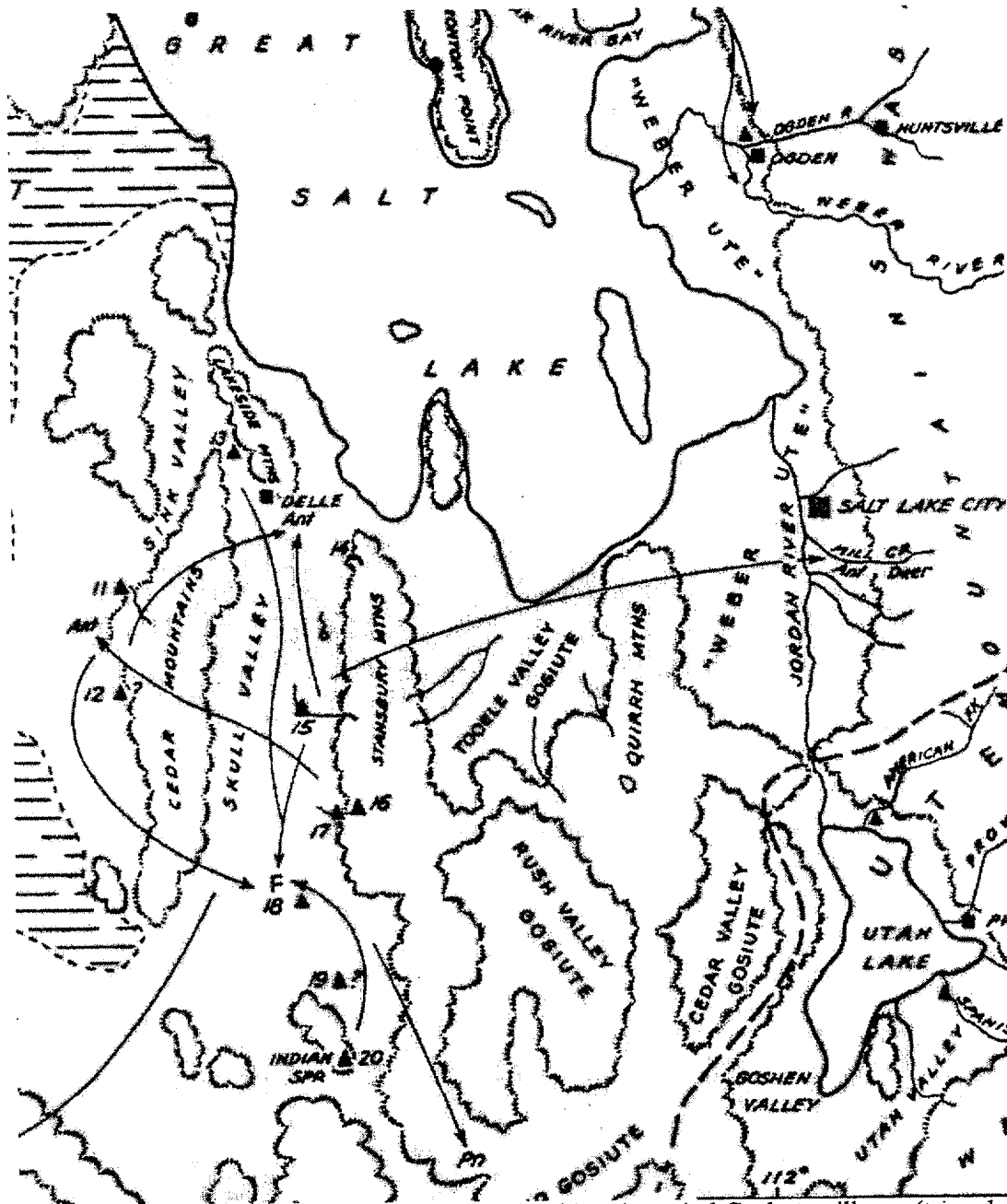


Figure 2. Map of the Skull Valley, Utah, area showing historic period Goshute villages (triangles), modern towns (black squares), and postulated subsistence-related movements for antelope and pine nuts. Congregation of groups for dances and festivals at village No. 18 (Orr's Ranch) is also indicated. For orientation, village No. 17 is Hickman Creek, the location of the Skull Valley Goshute village on the Reservation today. Map adapted from Steward (1938: Figure 12).

documented from the 1860s until the present, in spite of several attempts on the part of the U.S. Government and some locals to have them removed.

Historic period occupation throughout the valley is documented in the Steward (1938) study; however, little information is available for the eight designated winter villages other than their general location. It seems certain that by the time the reservation was set aside in 1912, the entire Goshute population in Skull valley was consolidated at the Hickman Creek locale. Several of the other earlier village locations had been taken over by that time by white-owned ranches and, in one instance, by the Hawaiian colony town of Iosepa.

Goshute Social and subsistence activities also occurred throughout the valley in earlier times, including gathering places for festivals and communal hunts. It is known, however, that both social and food quest activities took place away from the valley at times during the year. Steward (1938) graphically shows the location of Skull Valley villages and activities, as well as seasonal movements to other areas for hunting and plant collecting undertakings (Figure 2). The work of Ralph Chamberlin in the time just prior to the establishment of the reservation in skull Valley further indicates the historic and intimate knowledge of the entire valley, including its physical places and natural resources.

Aside from the one recent limited example of knowledge of and use of plants by current-day Goshute people (Halmo et al. 1993), there is unfortunately no documented information for the continued use of native plants and animals by the Skull Valley Goshute, nor for issues that involve culturally important places on the landscape. Certainly, these concepts continue to be a part of Skull Valley Goshute lifeways, as indicated by the work of Halmo and his associates and the essay by Crum (1987) that details the deep rooted historical attachment that the Goshute have to their native homeland in Skull Valley.

Although there is a considerable amount of historical information to indicate that there are many potentially culturally important places and resources in Skull Valley, the proposed PFS project does not appear to directly affect any of these resources. Archaeological field studies have been completed for all PFS project features and no Native American sites have been identified within those areas. None of the identified historic village sites would be impacted by construction of the rail line and storage facility. Similarly, there are no natural resources of cultural importance that have been identified within the project areas by intensive consultation efforts between federal agencies and Goshute and other regional tribes. However, it must be pointed out that field studies involving Native Americans, which are designed to identify significant plants and animals, or other natural resources, have not been conducted within those areas that will be affected by ground disturbing activities.

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