A CULTURAL RESOURCE INVENTORY OF THE LOWER LITTLE COLORADO RIVER, COCONINO COUNTY, ARIZONA

HCPO 91-009(a)

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Abstract

As an aspect of the Glen Canyon Environmental Studies, the Hopi Tribe, under contract to the Bureau of Reclamation, undertook a cultural resources inventory of the Lower portion of the Little Colorado River. Beginning at Blue Springs and extending to the confluence of the Little Colorado River with the Colorado River in the Grand Canyon, a Class III inventory of both margins of the Little Colorado River was made. In addition, information concerning resources of concern to the Hopi people was solicited through direct examination of portions of the project area by members of the Hopi Tribe as well as discussions held at the Hopi Mesas.

In the roughly twelve mile stretch of the Little Colorado River that was examined, eleven cultural resource sites were identified; six of these manifest archaeological remains and five are recognized foremost as Traditional Cultural Properties. In addition, five isolated occurrences and two potential resource procurement locations were identified. Of the resources located, ten are eligible or potentially eligible for nomination to the National Register of Historic Places.

This version of the report has been prepared for public dissemination; site location information and the appendices containing the site forms have been removed. The complete document is maintained at the Cultural Preservation Office, the Hopi Tribe.

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Introduction

The Grand Canyon Region is an area of unique beauty and diversity. The value placed on the natural features makes it a national and an international treasure. Value placed on the Grand Canyon region is particularly strong for many Native American groups who, through both spiritual and physical ties to the Grand Canyon, view it as an important and sacred place. Stories that continue to be passed from generation to generation detail the intimate role the Grand Canyon has played in shaping tribal histories. Concrete evidence of Native American interaction with the Grand Canyon is seen in the form of the many prehistoric and historic cultural resource sites located throughout the Canyon. Fully half of the archaeological sites that have been located along the Colorado River are associated with the *Hisatsinom*, puebloan ancestors of many of the Hopi people. For the Hopi, the Grand Canyon region, including the Little Colorado River, is an inseparable portion of their culture. It is a cultural origin place, a previous home, and a future home.

Until nearly the mid-20th century, the human imprint on the Grand Canyon ecosystem was relatively minor. In 1963, however, the natural hydrologic cycles that had been operating within the Grand Canyon were brought to an abrupt halt with the completion of Glen Canyon Dam. Instead of flows through the Grand Canyon being determined by seasonal weather patterns, they became human regulated, governed by legal requirements for water delivery and maximization of hydroelectric power. The predam high, extremely sediment laden spring flows, warm summer-fall flows, and low, cold winter flows were replaced by a much more uniform year-round steady flow of cold, clear water. While the yearly range from extreme high to low flows characterizing the predam period were stabilized by the dam, the use of the dam for producing peaking power increased frequency of the fluctuation of the river level over the course of a 24 hour period. The combined effects of a greatly reduced sediment load in the Colorado River, the year-round release of cold water from the dam, river fluctuations occurring on a regular daily basis, as well as other man-made changes have had a dramatic effect on the entire ecosystem below the dam. The first government sponsored research into the effects that dam operations were having on the downstream resources was instigated in 1982 as an aspect of an environmental assessment conducted on the rewinding and uprating of the generators at Glen Canyon Dam. The results of these studies led to the realization that additional work needed to be undertaken to fully evaluate the effect of dam operations on the downstream resources. In 1989, the Secretary of the Interior directed that an Environmental Impact Statement (EIS) be completed for the operations of Glen Canyon Dam.

While the focus of the EIS is on only those portions of the Grand Canyon that are impacted by flows from Glen Canyon Dam, some species in the effected environment are also integrally tied to portions of the greater region outside of the direct impact zone of the dam regulated flows. One Grand Canyon species, the endangered Humpback Chub (*Gila cypha*), fits into this category. While the adult fish can survive in the modified Colorado River through the Grand Canyon, the Little Colorado River, a tributary to the Colorado River, is currently the only known area that the Humpback Chub is able to reliably reproduce within the Grand Canyon region. Because of the importance of the Little Colorado River as a

refugia for the Humpback Chub, it is also a focus of researchers studying the endangered fish. This has led to a great increase in the number of people in the lower portion of the Little Colorado River.

Long before the Little Colorado River was a focus for endangered fish researchers, it was a focus of spiritual and cultural identity to the Hopi people, a role that it still continues to play. Among the many important places located in the Little Colorado River is the *Sipapuni*, a central feature in Hopi emergence into this, the Fourth World. The Little Colorado River is also the focus of an arduous pilgrimage for salt, culminating the Hopi initiation ceremonies, and it is the location to which Hopis return in the afterlife. Because of the sacred value of this region, the Hopi people were concerned that researchers in the Little Colorado River gorge might inadvertently impact extremely important cultural resources. Concern for the sanctity of these cultural resources provided the impetus for undertaking a cultural resources inventory in the lower portion of the gorge from Blue Springs to the confluence with the Colorado River, the section where researchers would be concentrated while studying the Humpback Chub, as an aspect of the Glen Canyon Environmental Studies (GCES).

Environment

Physiography

The physiography of the lower portion of the Little Colorado River mimics that of the Grand Canyon on a smaller, though equally impressive scale. Beginning at Cameron and continuing downstream to its junction with the Colorado River, the Little Colorado River has carved a narrow defile. At its confluence in the Grand Canyon, the depth of the Little Colorado River gorge is nearly 350 meters while its width is only a little over 2000 meters. It creates an abrupt slash through an otherwise flat plateau region.

In the walls of the Little Colorado River gorge are exposed most of the rock formations in the Grand Canyon stratigraphic sequence. The layers are arranged in a series of large steps separated by vertical cliffs. In many places, these cliffs are virtually continuous from the canyon rim to its base. Therefore, travel into and out of the lower portion of the Little Colorado River can be achieved in relatively few places, mostly confined to the infrequent side drainages. Because these routes were used in the past to access resources and areas in the Little Colorado River and in the Grand Canyon, there are commonly archaeological materials and other cultural features associated with them.

At the heart of the Little Colorado River gorge is the river itself. The generally small volume of water flowing through the canyon stands in stark contrast to the shear magnitude of the canyon. Yet more astonishing is the fact that only the lower twelve miles of river flows year round; the remainder of the stream currently flows only during periods of runoff. In the lower portion of the canyon, stream flow is maintained by a number of springs, with

the main one being known as Blue Springs. The combined output of these springs total about 200 cubic feet per second (cfs). Because of the highly mineralized nature of the water flowing from these springs, the Little Colorado River exhibits a striking blue color when flowing at base level and numerous travertine dams have formed along the watercourse.

Geology

The uppermost stratum exposed in the Little Colorado River is the Kaibab Limestone. Below this is Toroweap Limestone, then the Coconino Sandstone, Hermit shale, Supai Sandstones and Limestones, Redwall Limestone, Muav Limestone, Bright Angle Shale, and Tapeats Sandstone (for a more detailed discussion of the Grand Canyon geology, Breed and Roat 1974, or Collier 1980 are good places to start). Beginning at Blue Springs and traveling downstream, only the lower strata, beginning in the Redwall Limestone, are encountered at river level. Blue Springs and many of the other large springs emanate from the Redwall Limestone. Salt is found in varying amounts in all of the formations below the Redwall.

Several mineral resources were identified during the survey that may have been of interest to prehistoric and historic users of the region (though no direct evidence of their use was found). Calcite crystals, both rhombohedrons and scalenohedrons, were seen within the Redwall limestone. Barite was noted in several places and potentially could have been the focus of prospecting by early miners. Pebble-to-boulder size pieces of hematite rich sandstone occur in the stream bed of "Powell" canyon. Additionally, a suitable, though slightly silty, pottery clay was located filling in a shallow cave slightly upstream from the mouth of "Powell" canyon.

Flora

The flora in the lower portion of the Little Colorado River is characteristic of the transition zone between three desert biomes: the Sonoran to the south, the Mohave to the west and the Great Basin to the north and east (Carothers and Brown 1991:114). The Grand Canyon, because of its low elevation, acts as a corridor for increasing the range for plants of the former two deserts into the Little Colorado River region.

The presence of perennial water in the lower portion of the Little Colorado River has allowed a greater density of plants to survive along the river than in the surrounding uplands. Many of the plants that were noted have uses by the Hopi and their usage likely extends back in time to their ancestors, the *Hisatsinom*. Table 1 provides a listing of the major plants noted during the inventory as well their Hopi name and usage, if known. This is not intended to be a comprehensive listing of all plants in the lower part of the Little Colorado River. The volume by Phillips et al. (1987) on vascular flora of the Grand Canyon identifies the majority of plants that also populate the lower portion of the Little Colorado River.

Table 1: Flora noted along the lower Little Colorado River.

Scientific Name	Common Name	Hopi Name	Use
Acacia greggii	Catclaw acacia	----	----
Agave utahensis	Utah agave	Kwaani	Ceremonial use, Food
Alhagi camelorum	Camelthorne	----	----
Allenrolfea occidentalis	Pickleweed	Laqapa(?)	----
Atriplex canensus	4-wing saltbush	Suuvi, Siwaptsoki, Hoyavako	Food, Ceremonial use
Baccharis spp.	Seep willow	Qahavi	Ceremonial
Cercis occidentalis	Redbud	----	----
Chrysothamnus spp.	Rabbitbrush	Sivapi	Utilitarian
Datura meteloides	Sacred datura	Tsimona	Medicine
Dyssodia penta chaeta	Dogweed	----	----
Echinocactus polycephalus	Manyheaded barrel cactus	----	----
Echinocereus engelmannii	Hedgehog cactus	[Hoo'ko]	Food
Ephedra spp.	Mormon tea	Ösvi	Beverage
Fallugia paradoxa	Apache plume	Mongöw'vi	----
Ferocactus acanthodes	Barrel cactus	----	----
Gutierrezia spp.	Snakeweed	Maaövi	Ceremonial use
Lycium sp.	Wolfberry	Kyeepsi	Ceremonial use
Mammillaria sp.	Fishhook cactus	----	----
Opuntia spp.	Pricklypear cactus Cholla cactus	Yöngö, Naavu Ursa, Esay	Food Ceremonial use
Phragmites sp.	Reed	Paaqavi	Ceremonial, utilitarian
Prosopis glandulosa	Mesquite	Ötövi	Ceremonial bows
Rhus trilobata	Skunkbush, 3-leaf sumac	Suvipsi	Beverage
Salix spp.	Willow	Qahavi	Ceremonial use, utilitarian
Scirpus spp.	Rush	[Mumuri]	Ceremonial
Tamarix chinensis	Tamarisk	----	----
Typha sp.	Cattail	Wi'pho	Ceremonial

Scientific Name	Common Name	Hopi Name	Use
Yucca spp.	Yucca	Moho	Food, utilitarian

note: Hopi names given in brackets [] are from Whiting (1939). The remainder of the Hopi names and uses are from field research on the Hopi Mesas and in the Grand Canyon/Little Colorado River. Many of these plants are also listed in Whiting.

Fauna

Very little animal life was noted during the inventory; most were birds, mice, lizards, fish, amphibians and insects. Some specific sightings included a golden eagle, several peregrine falcons, fish from above Blue Springs to the confluence area, collared and side-blotched lizards, rocky mountain and red-spotted toads, and the ever present cicadas. Large mammals, such as desert bighorn sheep, deer are present in the canyon, but were not seen during the course of the inventory. Similarly, large predators such as coyotes and cats are present. Smaller animals such as various squirrels, ring-tail cats also occur in the area. A good summary of the types of animals found in the Grand Canyon, and in the lower portion of the Little Colorado River, is presented in Carothers and Brown (1991).

Cultural Environment

Culture History of Region

The following synopsis of the general temporal and cultural sequence of occupation in the Grand Canyon is provided in order to place results of the inventory in a regional perspective. Comprehensive overviews of Grand Canyon prehistory and history can be found in Fairley, et al. 1994, Jones 1986, and Schwartz 1989.

The first evidence for human utilization of the Grand Canyon region is in the form of a broken Folsom point found in the Little Colorado River gorge (Ahlstrom et al. 1993:69). While minimal at best, this evidence of Paleoindian presence in the Canyon is similar to that found throughout much of the southwest; Paleoindian remains are just not commonly encountered. The primarily hunting and gathering lifestyle has resulted in a pattern of use in the Canyon that continues into the following Archaic period, though the Paleoindian use appears less intensive.

Manifestations of the Archaic presence in the Grand Canyon are much more common than those of the preceding Paleoindian period, with perhaps the most publicized evidence being the split twig figurines found in dry caves both within the Canyon and in the surrounding region (Euler 1984, Schroedl 1977, Schwartz 1989:17-19). These figurines, the first of which were found in 1933 (Schroedl 1977:255-256), are ingeniously constructed out of single willow or other pliable shoot to form small representations of ungulate animals.

Radiocarbon dating of the figurines places them from as early as 2668 BC (Jones 1986:7) to as late as 1150 BC (Effland et al. 1981:12). This time frame implies that they were left by a Desert Archaic period culture. The existence of projectile points, also dating to the same time period, possibly indicates an Amargosa II-Pinto Basin affiliation. While no definitive living sites, either in association with the figurine caches, or elsewhere in the Canyon, have been clearly identified, a number of aceramic sites postulated to be of Archaic age were identified in the Grand Canyon corridor survey (Fairly et al. 1994:7, 98). Additionally, a component of site AZ A:16:1(GRCA) was identified by Jones (1986) as dating to the Archaic period. Petroglyphs and pictographs attributed to Archaic peoples have also been found in several areas of the Canyon (for example, see Fairley et al. 1994:91,98 and Schaafsma 1990). It has been hypothesized that much of the Archaic remains found in the Canyon were left by hunting parties making forays into the Canyon and leaving amulets for successful hunts (Euler and Olsen 1965, Olsen 1966:59,63, Reilly 1969, Schwartz 1989:20-23, Schwartz et al. 1958:272-273, Smith 1963). Increasingly, however, this limited view of Archaic utilization of the Grand Canyon is less tenable as more diverse site types are recorded.

Following the Archaic utilization of the Canyon, there appears to be a hiatus of almost 1,800 years, with the next widespread signs of use of the Grand Canyon area beginning around AD 700 (Effland et al. 1981:13; Euler 1969:8; Jones 1986:8; Rice et al. 1979; Schwartz 1966:481, 1969, 1989:14; Schwartz et al. 1980:174, 1981:39-44). Whether there was a true dearth of people in the area during the interim, or just a lack of identified sites is uncertain. Effland et al. (1981:16) infer that there may have been continual use of part of the area by people continuously from Archaic times. If sites of this age are be deeply buried, as is likely based on the research of Hereford et al. 1993:6-7, then the already minimal manifestations associated with Archaic sites (and Paleoindian) may be extremely difficult to identify accurately from surface indications alone. As an ironic twist, the increased erosion through the Grand Canyon precipitated by the construction of Glen Canyon Dam may uncover new information on this poorly understood chapter of history in the Canyon.

By the fifth century, an increasing number of people began settling in and around the Grand Canyon; this trend continues until approximately AD 1200. Archaeologically, these people are classified into either the Basketmaker-to-Puebloan cultural continuum or into the Cohonina culture. Unlike the generally ephemeral Archaic remains, more permanent habitations and storage sites become increasingly common. A greater reliance on horticultural or agricultural practices is often identified as contributing to this increase in sedentism. Similarly, technological innovations such as the bow and arrow and pottery first appear in the archaeological record during this period. Socio-economic complexity increases throughout this period and the population of the Grand Canyon likely reached the highest levels to date.

As implied above, archaeologists separate the Puebloan (inclusive of the Basketmaker) and Cohonina into two distinct cultures based of their respective settlement systems and material culture. While this is not the view of the Hopi people, they will be discussed in this section as separate groups for the sake of convention. A brief discussion of the Hopi interpretation of the Cohonina "culture" will be presented in the next section. In addition, the

term "Anasazi" is not being used in this discussion as it is a Navajo term that is objectionable to the Hopi people, who are descendants of these prehistoric groups. "Ancestral puebloan" is used to refer broadly to both the Virgin and the Kayenta branches of the Anasazi; the Hopi term *"Hisatsinom"* is used as a synonym, particularly when referring to people as ancestral to the Hopi people. To remain consistent with the conventions used in the Grand Canyon corridor inventory, all of the dates provided for the Pueblo periods that follow are from Fairley et al. (1994).

While there is considerable variation in the literature as to the antiquity of Puebloan and Cohonina remains in the Grand Canyon, most sources are in agreement that by AD 700, these groups were utilizing and to some extent occupying the Grand Canyon. The earliest use of the Canyon itself was likely seasonal exploitation from permanent settlements to the south and east of the Grand Canyon. As populations grew, more permanent presence is seen in the Grand Canyon by both the Pueblo and Cohonina groups. During the Pueblo I time period (AD 800-1000), there appears to be an expansion in the range occupied by the Cohonina from the south and west into the Grand Canyon; it is common to find a mixed assemblage of Puebloan and Cohonina ceramics at sites of this age, with the Cohonina wares sometimes dominating the assemblage (Fairley et al. 1994:31, Jones 1986, Schwartz et al. 1980:120-121). In general however, the heartland of the Cohonina remains in the uplands to the south and west of the Grand Canyon while the Puebloan stronghold was to the east and north.

By the Pueblo II period (AD 1000-1150), occupation in the Grand Canyon is firmly established. As Puebloan groups continued to expand from the east, the Cohonina presence begins ebbing until by AD 1050, there are no longer Cohonina sites in the Grand Canyon; all are to the south and the west (Schwartz 1989:38). The period from AD 1050-1100 was the heyday of Puebloan utilization of the Grand Canyon and surrounding region with sites located on both rims of the Canyon and in the Canyon itself (Effland et al. 1981:13, Fairley et al. 1994:105, Jones 1986:8, Schwartz 1989:14). After AD 1100, there begins a steady decline in the population in the Grand Canyon until by AD 1150, there are almost no sites occupied on the North Rim or in the Canyon (Effland et al. 1981:13, Jones 1986:9). In a similar manner, it appears that the Cohonina had left the regions to the south and west of the Grand Canyon not long after AD 1100 (Schwartz 1989:38).

Evidence for occupation in the Grand Canyon by Puebloan people during the Pueblo III period (AD 1150-1200/1225) is tentative though some sites may have been occupied as late as 1225 (Fairley et al. 1994:108-109, Jones 1986:9). The last vestige of Puebloan occupation in the Grand Canyon region is on the South Rim, as typified by Tusayan Ruin (Jones 1986:9, Schwartz 1989:62). Even this occupation had ended by the early thirteenth century leaving the area empty of permanent puebloan habitations; intermittent use of the region, however, likely continued.

A couple of theories have been forwarded by archaeologists as to why the area was vacated. The two most popular are that climatic change made the region unsuitable for the agricultural practices that had allowed the more sedentary lifestyle seen throughout the

Puebloan/Cohonina continuum (Euler et al. 1979:1098, Schwartz 1989:76) or, that there was an increase in pressure from the Numic groups that eventually moved into the region (eg. Madsen 1975). This latter hypothesis is currently not widely accepted.

Beginning in the 14th century, two new groups begin appearing in the area formerly occupied by the Puebloan and Cohonina cultures. To the north of the Colorado River, bands of Paiutes emigrated from the Great Basin region. From the southwest, in the area of the lower Colorado River came the Cerbat, an archaeologically defined culture that later becomes the local Pai groups, including the Hualapai and Havasupai. Both of these groups led a much more nomadic lifestyle than the previous Puebloan/Cohonina inhabitants (Schwartz 1989:14,27, Ahlstrom et al. 1993:79). Employment of a subsistence strategy less reliant on agriculture may have allowed successful exploitation of a region that had become unsuitable for the agriculturally facilitated sedentism. Both of these groups sustained their traditional economic lifeways in the Grand Canyon until relatively recently. The introduction of wage labor and access to processed goods has largely shifted subsistence economy away from Grand Canyon resources.

Even though the Puebloan groups were no longer occupying the Canyon, their descendants, particularly the Hopi, continued to enter and utilize the Canyon and its resources. Hopi ceramics dating from the 1300-1600s are found widely dispersed throughout the Canyon (Fairley et al. 1994:110, 198, and Appendix I). Trade from the Hopi Mesas as well as direct deposition by Hopis during entry and use of the region are likely responsible for the distribution seen in the ceramics; a well developed trading relationship existed between the Hopi and the Havasupai (Ahlstrom et al. 1993:82, Colton 1964:91).

The most recent Native American group to make their home in the vicinity of the Grand Canyon are the Navajo. While the earliest dates are still in dispute (cf. Begay and Roberts, 1993, and Euler 1974:309-320), it can be safely assumed that by the 1800s, the Navajos, who had expanded into the region from the east, were utilizing the Marble Canyon portion of the Grand Canyon. In the 1860s, some portions of the Grand Canyon were used as a refugia by some of the Navajos fleeing removal to Fort Sumner in a United States military campaign led by Kit Carson.

The subjugation by Anglo culture and loss of land base essentially brought to an end the majority of traditional Native American lifeways in the Grand Canyon. European interaction with the Grand Canyon started an essentially different chapter in the human relationship with the region. No longer was the area integrally tied to the daily subsistence and lives of the people occupying it. Instead, the Grand Canyon and its resources were exploited for their economic potential. Pursuits attempted included mining, trapping, ranching, railroad development, water development, and tourism (Ahlstrom et al. 1993:84-89, Fairley et al. 1994:113-145).

Hopi History in the Region

For the Hopi, their association with the Grand Canyon region begins with the coming of their clans into the Fourth World. On arrival into the Forth World, the ancestors of today's Hopi (*Motisinom* and *Hisatsinom*) began a series of migrations that eventually led to the establishment of what is now Hopi. During these migrations, the people traveled throughout the land leaving their "footprints" as evidence of their fulfillment of the spiritual pact made with *Ma'saw*, the caretaker of the fourth world. This pact identified that the Hopi would ultimately act as stewards of this world and that during the migrations, they would imbue all the land with their spiritual stewardship through cultivating and caring for the land (Ferguson et al. 1993:27). Culmination of the migrations and fulfillment of the spiritual pact resulted in the *Motisinom* and *Hisatsinom* settling at the center of the earth, the Hopi Mesas. The "footprints" that the *Motisinom* and *Hisatsinom* left are the sites that the archaeologist study.

Because different clans embarked on migrations through different regions, and had different experiences, each group possessed their own ceremonial expertise and cultural histories. On arrival at the present Hopi Mesas, these groups, or clans, had to demonstrate how their certain ceremonial knowledge could benefit the greater Hopi purpose prior to being allowed to settle at Hopi. If they were accepted, they were allowed to become part of the greater Hopi cultural lifeway (Leigh Jenkins, personal communication 1995). From the Hopi perspective, many of the temporally, and spatially identified archaeological "cultures" are nothing more than artificial constructs segregating what in total forms the foundation of present day Hopi culture.

The *Motisinom* were the original Hopi ancestors to occupy the Americas including the Grand Canyon region. Hopi traditional knowledge relates that these people had been in the region from time immemorial and that they led a sparse existence based on a nomadic subsistence strategy. The Hopi equate these people to the Paleoindian and Archaic cultures described in archaeological terminology. It was into this region that additional Hopi ancestoral clans entered, bringing with them the trappings associated with Puebloan culture, such as agriculture and a more elaborate ceremonial system. The melding of the *Motisinom* and the newer clans lead to increasing cultural complexity, culminating with the completion of the migrations at the center of the world (Leigh Jenkins, personal communication 1994). Collectively, these ancestors to the Hopi are referred to as the *Hisatsinom*.

Different clans in various phases of their migrations account for the temporal depth of the occupation in the Grand Canyon. Similarly, some of the "cultural" differences identified by archaeologists in the prehistoric record are attributed to the individual unique histories of the various clans involved in these migrations. At least 20 clans have been identified as passing through the Grand Canyon during their migrations (Jenkins and Ferguson 1994:2). With fulfillment of their spiritual covenant with *Ma'saw*, the *Motisinom* and *Hisatsinom* necessarily concentrated at the Hopi Mesas thereby bringing the occupation of the Grand Canyon came to a close. Archaeologically, this happens around AD 1200, at the time that villages in the Hopi Mesas were increasing in size. It should be noted that the Hopi view this

exodus out of the Canyon area not as an inherent response to environmental forces, but as a conscious decision based on cultural and religious dictates established in their covenant with *Ma'saw*. In this view, active human decision-making rather than environmental determinism was the primary driving force for human behavior.

Similarly, the Hopi do not view this movement out and away from the Grand Canyon as "abandonment", as commonly interpreted in a Western viewpoint. Even though Hopi ancestors were no longer physically living at the Canyon after about AD 1220, ties to the Canyon area were not broken. Hopi ceramics dating from the 1300s and later are found in limited quantity throughout the Canyon. This demonstrates the continued Hopi interaction with the Canyon environs and the people who were then occupying it, despite the fact the Hopi were now living at the Hopi Mesas. Trade interaction with the Pai groups, particularly the Havasupai, is well documented.

More important to the Hopi people than physical presence in the Grand Canyon, however, is their continued spiritual stewardship role which is brought even more to the forefront precisely because of the lack of physical presence in the Canyon. The stewardship role encompasses not only the land and the physical and biological resources on it, but also the homes and features left by the ancestors of the Hopi people. *Hisatsinom* burials in the Canyon are of particular importance as they are tangible expressions of this ongoing stewardship role and the Hopi covenant with *Ma'saw*. In addition, this ongoing spiritual presence in the Canyon is manifest through the shrines located within and adjacent to the Canyon which are physically and ritually visited. Springs and other natural features within the Canyon retain their traditional names and the histories associated with them are still recounted.

Perhaps one of the most powerful demonstrations of the continued importance of the Grand Canyon region following movement of the *Hisatsinom* to the Hopi Mesas, is its role in the culmination of the initiation ceremony into adulthood (*Wuwtsim*). As the climax of Hopi initiation rites, participants travel from the Hopi Mesas, into the Little Colorado gorge and down to the Hopi Salt Mines along the Colorado River (Titiev 1937). Along this arduous route are many important shrines and locations that must be appropriately cared for.

Finally, not only is the Grand Canyon a location where the ancestors of the present Hopi lived, as witnessed by the archaeological sites, it is also the final destination for the spirits of all generations of Hopis, past, present and future. This attribute of the Grand Canyon, in part, is what makes entrance into the Grand Canyon such a serious, spiritual undertaking for the Hopi people. Because of its integral role in the history and evolution of Hopi culture, the Grand Canyon, in its totality, is considered to be one of the most important cultural and religious sites for the Hopi people.

Previous Research

Research in the Grand Canyon

While the prehistory of the Grand Canyon and the region immediately surrounding it has been a topic of interest for a considerable length of time, research has been relatively limited throughout most of the time that Western society has known about the Grand Canyon. The archaeological research in the Canyon can be broadly classified into three approaches based on the primary orientation of the work: exploratory, research (academic) oriented, and legislatively mandated. While there is necessarily considerable overlap in these categories, both temporally and theoretically, the focus of work carried out in a given project can usually be associated with one of these approaches. Rather than provide an exhaustive, and redundant, listing of all archaeological research that has occurred in the Canyon, the reader is directed to the comprehensive summaries provided elsewhere (eg. Ahlstrom et al. 1993, Fairley et al. 1994:91-143, and Jones 1986:3-7). The characteristics of each of the approaches as well as some examples of typical research follows.

The exploratory approach can best be described as work driven primarily by curiosity rather than preconceived research goals and explicitly developed hypotheses. Essentially, data is collected, but no specific goals for that data are espoused before the data collection; that is, the collection of the data is the end in itself. Obviously, research of this orientation must necessarily be the first type conducted in a region about which very little is known. It is difficult to formulate grand research goals and hypotheses if you do not know anything about your data, or even if it exists. In the Grand Canyon, archaeological research of this type has generally resulted as a by-product of research oriented for pursuing other goals. Observations by John Wesley Powell during his two traverses of the Colorado River (Powell 1875), the Stanton expedition (see Smith and Crampton 1987), Neil Judd's work on the North Rim (Judd 1926), as well as other early explorers exemplifies this type of work. The survey conducted by Walter Taylor along the Colorado River (Taylor 1958) essentially follow an exploratory approach, but it also could be considered one of the first "legislatively" driven in that he was attempting to examine site density in the area that would be flooded by the proposed Bridge Canyon Dam.

The research oriented approach can be considered work carried out to collect data for addressing specific research questions and associated hypotheses. Areas and sites to be examined are chosen solely on the basis of their suitability for addressing specific research priorities. This type of work has commonly been termed "academic archaeology." One of the earliest projects utilizing a research oriented approach was the excavation of Tusayan Ruin in 1930 (Haury 1931). Another early example of work of this type was the survey carried out by Hall (1942) on the Walhalla Glades. Not only did he select and inventory an area, he then used this data to examine cultural dynamics on the North Rim. Perhaps the most prolific archaeologist in the Grand Canyon region following a pure research orientation was Dr. Douglas Schwartz. Beginning in 1954, he, with various other researchers began a stream of studies looking at archaeological sites on both rims of the Canyon, sites within the Canyon, and the relationship of the Havasupai Indians to the prehistoric inhabitants of the Grand Canyon (see for example Schwartz 1955, 1960, 1963, 1965; Schwartz et al. 1958,

1979, 1980, 1981). Other researchers conducting this type of research include Aikens (1966), Euler (1984), and Thompson (1970).

The final research orientation considered is that driven by legal and development concerns; that is, cultural resources work that is mandated by Federal or State legislation. While this approach shares many of the same theoretical and methodological approaches as does research oriented work, particularly in the formulation of a priori research questions to be addressed, it differs in that the areas examined are not selected on the basis of research goals but because of proposed land modifying activities. Similarly, this type of work also overlaps with the exploratory approach, but rather than providing archaeological information as an adjunct product, it is specifically the collection and analysis of archaeological data that is undertaken. As mentioned above, Taylor's 1953 inventory (Taylor 1958) could be considered in part an early project of this type. During the 1960s, Robert Euler with Larry Powers conducted a number of inventories to assess impacts to archaeological sites that would be inundated by proposed dams in the Grand Canyon (see Ahlstrom et al. 1993:155). Since the early 1970s, the vast majority of archaeological work in and around the Grand Canyon has been conducted for the purposes of compliance with cultural resource legislation (Ahlstrom et al. 1993:35-57).

Research in the Little Colorado River

Very little cultural resource work has been undertaken in the lower portion of the Little Colorado River. The majority has focused on the area surrounding the mouth of the Little Colorado River, primarily by parties traveling down the Colorado River. As with archaeological research throughout the Grand Canyon, the earliest observation of prehistoric remains in the Little Colorado River was made by Powell. He and his men noted the presence of "...ruins and many fragments of pottery..." (Schwartz 1965:279). Similarly, the Stanton expedition in 1890, and the 1927 Clyde Eddy expedition reported pottery and arrowheads at the mouth of the Little Colorado River (Schwartz 1965:279). The site that all these groups identified is likely AZ:C:13:4 (GRCA), commonly referred to as "Beamer's Cabin." For a number of years, a mystery surrounded the identity and location of the prehistoric site described in these early reports, as no site fitting the description was found at the mouth of the Little Colorado River by Taylor (1958:23) during his survey of then Colorado River. In 1961, Schwartz conducted an archaeological survey along the Colorado River, and up a number of the side drainages between Nankoweap Creek and Unkar Creek, including the lower 5 miles of the Little Colorado River. At the mouth of the Little Colorado River, he recorded a "tentative site", GC638, that he felt may have been the site that Powell and others had referred to (Schwartz 1965:287). On it was constructed a historic masonry cabin, although he also identified Hopi and prehistoric ceramics. Euler (1969:11-12) had visited the site the year before Schwartz and also noted prehistoric ceramics in addition to the historic artifacts and cabin; additional prehistoric sherds were found eroding from beneath the cabin site during his subsequent visits in 1962, 1965 and 1968. Apparently, a prospector named Ben Beamer, had constructed his cabin out of the remains of the prehistoric site, effectively modifying the features such that the site described by the early river runners was

no longer obvious. Beamer occupied the cabin from some time around 1890 until 1892 (Euler 1969:12).

In 1968, Dr. George Gumerman and Dr. Robert C. Euler conducted the first archaeological testing project within the lower Little Colorado River. In a rock shelter located a little more than 1.5 miles above the confluence, they mapped and placed a couple of test trenches in site AZ:C:14:66 (GRCA). Results of the testing included the bifurcation of a firepit and the recovery of ceramics including Hopi yellow-wares near the surface and PII Kayenta wares at the base of the trenches (Dr. Robert C. Euler, personnel communication 1991).

The only other excavation to be carried out in the Little Colorado River was at Beamer's Cabin by the National Park Service in 1984 (Jones 1986). This excavation was part of a Canyon wide project that tested five stratified sites. In addition to a detailed surface map of the site, a 1x2 meter (considered as two 1x1's in the report) test unit was excavated in the midden deposit in front of Beamer's Cabin. The project identified fourteen features; ten being subsurface thermal features and four new surface manifestations (the cabin was not considered a "new" feature) (Jones 1986:65-67).

One of the most interesting results of the testing at Beamer's Cabin is the large temporal span encompassed by the deposits at the site. From the test unit, materials ranging from Ben Beamer's 1890s occupation to a hearth dating to ca. AD 618 were present. The upper 20 centimeters contained domestic sheep and goat bones mixed with Hopi, Paiute, and Cerbat ceramics. The bones are attributed to Beamer's occupation of the site. The next 80 centimeters contained PII Tusayan Ware ceramics; from a hearth within this stratum was obtained a C-14 date of AD 1295. The base of this level was a stratum containing Basketmaker III ceramics. Ceramics were not identified below 100 centimeters below the present ground surface. At about 135-140 centimeters was a hearth that dated to around AD 618. Also in this level were charred seeds (*Kochia sp.* and *Chenopodia sp.*) and artiodactyl bone fragments (Jones 1986:70,72).

By far, the vast majority of anthropological work pertaining to the Little Colorado River has focused on the route of the Hopi pilgrimage to the Hopi Salt Mine. This work has sought to document both the pilgrimage itself, and the locations and descriptions of the shrines and features along the route. Until the current project, however, only those locations described in the 1912 pilgrimage, discussed below, have been sought out; systematic coverage of the entire canyon bottom had not attempted.

While reference to Hopis collecting salt in the Grand Canyon region begins with the first Spanish entrance into the Southwest (Hammond and Rey 1940:216), the only published descriptions concerning actual locations of features and shrines visited during the course of the Salt Pilgrimage are all based on a single trip undertaken by three men from Third Mesa in 1912. This trip is detailed in Titiev (1937) as told by Don Talayesva, the youngest member on the trip, and again in Simmons (1942:232-246), an autobiography of Don Talayesva.

Since publication of the description of this trip to the Hopi Salt Mine, a number of researchers have attempted to locate the features described in the narrative. In 1959, Fred Eisman published an account of the route based on a trip taken in 1958 by him and three other people. He ascribes the purpose of the effort to detail the route "in the spirit of scientific inquiry (Eisman 1959:25)." He also notes (Eisman 1959:25) that his original intent was to use a Hopi guide, however, no Hopis "could be found who were physically able or willing to go." It is likely, based on the spiritual sanctions necessary to make the trip, the significance of the region, and the distrust of researchers studying their religion, that the reluctance of the Hopis to participate was more culturally than physically derived.

In 1968 Peter Pilles, working for the Museum of Northern Arizona completed site cards for the salt trail and some of the features along it. Site numbers include NA 10531 (segments A-F) for the trail from Oraibi to the head of Salt Trail Canyon; NA 10532 (AZ:C:14:2 (MNA)) the trail down Salt Trail Canyon; NA 10533 (AZ:C:13:1 (MNA)) the trail from the confluence of Salt Trail Canyon with the Little Colorado River, and along the Little Colorado River to its confluence with the Colorado River; NA 10534 (AZ:C:13:2 (MNA)), the remainder of the trail to the Hopi Salt Mines; NA 10535 (AZ:C:14:4 (MNA)) the *Kooyemsi* Cave; NA 10536 (AZ:C:14:5 (MNA)) the *Sipapuni*; and NA 10537 (AZ:C:13:3 (MNA)) the Hopi Salt Mine.

Survey Methodology

As stated in the introduction, the Hopi Tribe felt that the increased number of people who would be conducting research in the lower portion of the Little Colorado River in support of the Glen Canyon Environmental Studies posed a potential threat to the cultural resources in this part of the canyon. As no comprehensive inventory of the canyon had been conducted, and most of the known resources were directly associated with the Hopi Salt Trail and salt pilgrimage, the Hopi Tribe felt that in order to safeguard the resources, a complete inventory should be undertaken. The objective of the inventory was to examine the entire bottom of the Little Colorado River Gorge for cultural resources, from Blue Springs to its confluence with the Colorado River, a distance of approximately 12 miles (Figures 1-4). This was carried out during three field sessions, the first lasting two days, the second lasting eight days and the final lasting a single day. Although different crews were used for each of these sessions, the same survey methodology and crew supervisor was employed.

The first session began on June 16, 1991 and ended June 18, 1991. During this period, the entire left bank (travelling downstream) from Blue Springs to Salt Trail Canyon, and the right bank to within approximately 2.5 miles of the Salt Trail Canyon were examined by Michael Yeatts and Stacy Griffith. A single site was identified and recorded.

The second session composed the bulk of the work done in the canyon. Between August 3, 1991 and August 11, 1991, a crew consisting of Michael Yeatts, Joel Clark, Merwin Kooyahoema, and Darryl Nehoytewa inventoried the remainder of the canyon, with

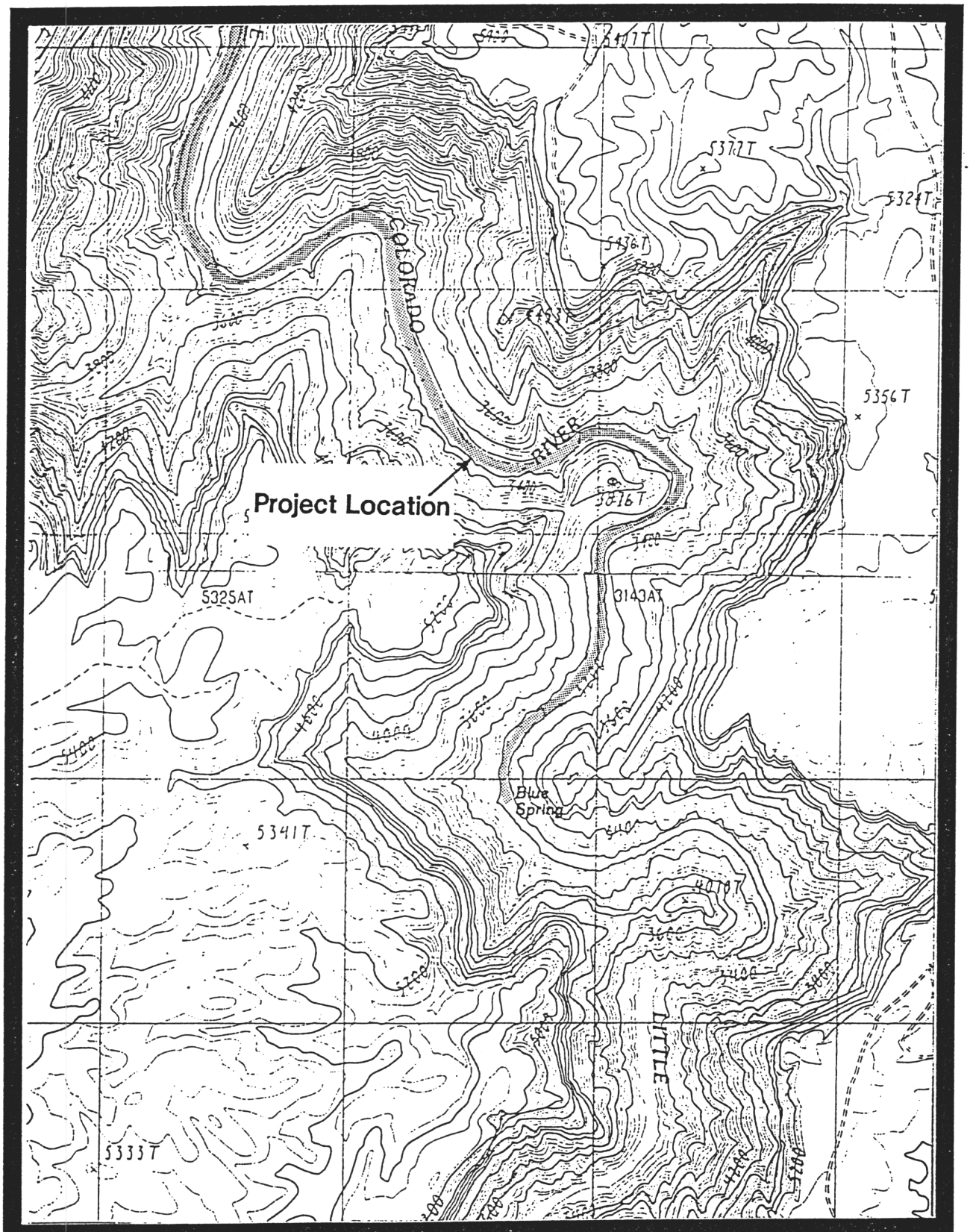


Figure 1: Project Location. USGS Blue Springs, Arizona, 1988 provisional edition, 7.5' series and Salt Trail Canyon, Arizona, 1988 provisional edition, 7.5' series maps (HCPO 91-009).

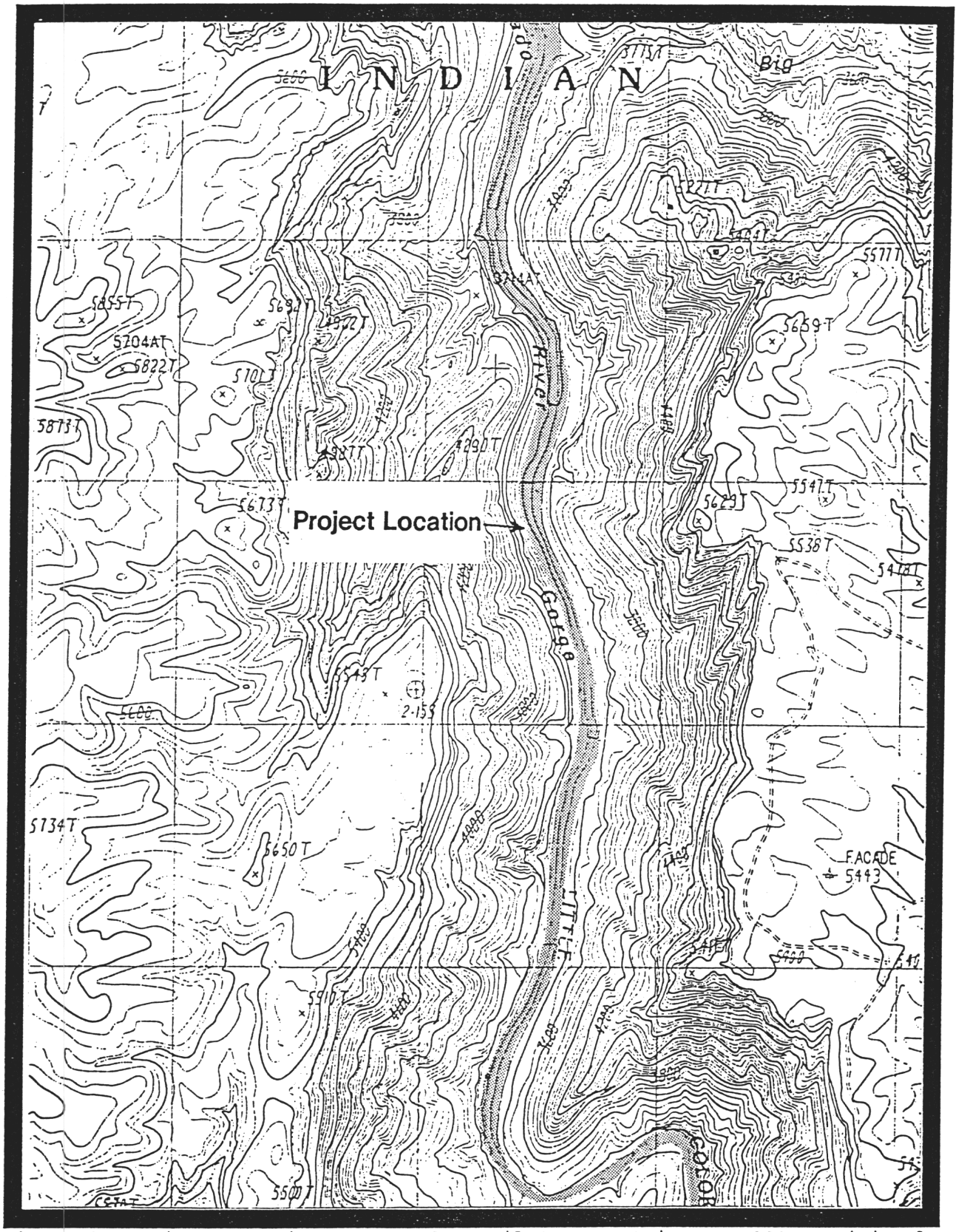


Figure 2: Project Location. USGS Salt Trail Canyon, Arizona, 1988 provisional edition, 7.5' series map (HCPO 91-009).

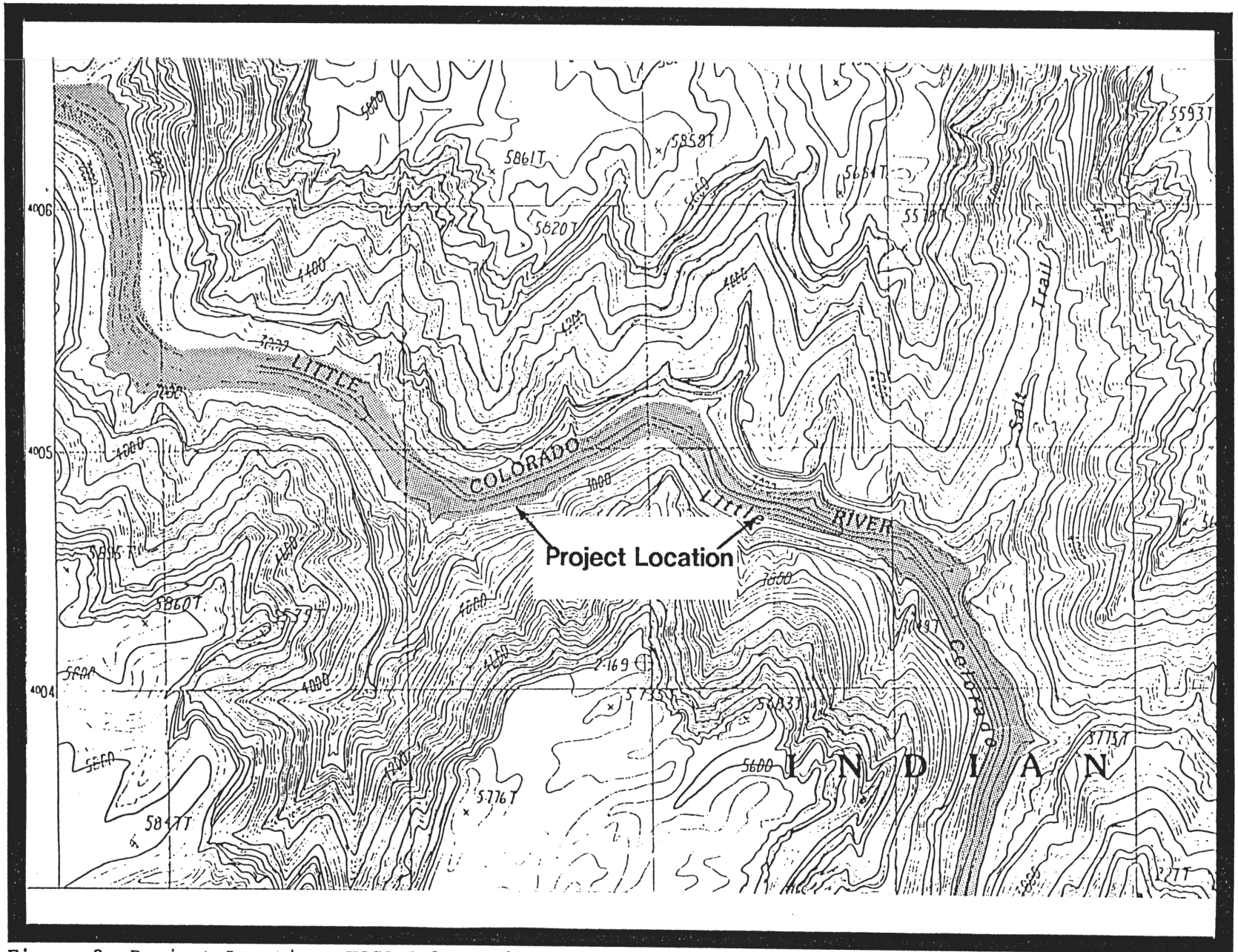


Figure 3: Project Location. USGS Salt Trail Canyon, Arizona, 1988 provisional edition, 7.5' series map (HCPO 91-009).

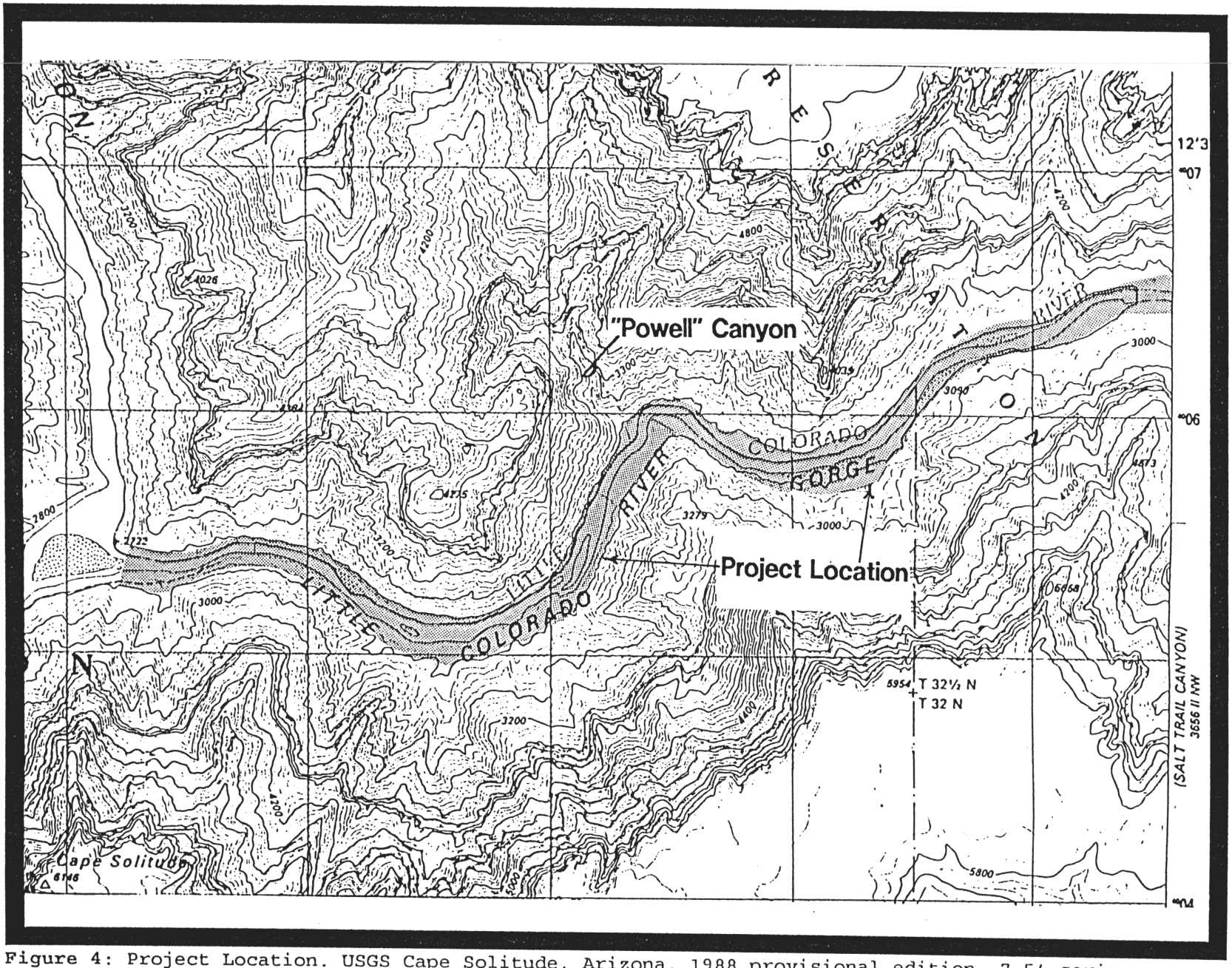


Figure 4: Project Location. USGS Cape Solitude, Arizona, 1988 provisional edition, 7.5' series map (HCPO 91-009).

the exception of the 2.5 mile stretch upstream of the Salt Trail Canyon on river right. Ten cultural resource sites were identified and recorded.

During the final session, on September 5, 1991, the remaining portion of the canyon, running from Salt Trail Canyon 2.5 miles upstream on river right, was inventoried. Michael Yeatts accomplished this alone and a single cultural resource site was identified.

Throughout all of the field sessions, the survey methodology was kept constant. Coverage of the river bottom was made at a Class III level with transect spacing at approximately 15 meters. Because of the variability and ruggedness of the terrain covered, as well as the often impenetrable density of the vegetation encountered, a precisely uniform transect spacing could not be constantly maintained. Throughout most of the canyon, however, an average of 15 meters or less was maintained between transects.

Coverage of the canyon bottom was up to the level of either the first cliff band above river level, or, in areas where large, steep debris slopes bounded the river, to the top of the first relatively flat terrace bounding the river. In areas where it was felt that there was a high potential for cultural remains above the terrace level (such as rock shelters in a cliff base, or flat areas on higher ridges), these areas were also examined. Because of the mostly vertical topography, very few of these areas were located.

In the upper three miles of the project area, the portion examined during the first field session, the stream covers most of the canyon bottom from cliff wall to cliff wall. The only potentially habitable terrain through most of this stretch are alternately spaced, alluvial benches formed on river bends and around side drainage out washes. Some of these areas are associated with springs, the dense vegetation growth serving to stabilize the sediments. Many of these areas are relatively low lying and are probably routinely flooded during periods of high water. Coverage of this section was accomplished by a single pass of two people, crossing back and forth across the canyon.

From approximately three miles downstream to the confluences with the Colorado River, the benches became continuous on both sides of the river and also increased in width, particularly at major bends and around the mouths of side canyons. This is due to the river cutting into a less resistant, slope forming geologic strata (lower member of the Redwall, Muav, Bright Angel, and Tapeats). Spring frequency and flow quantities also greatly reduced once the river was below the level of the Redwall. Coverage of the lower portions of the river was accomplished by surveying, with four people abreast, along one side of the river in a single pass, and then returning along the opposite bank.

Following the intensive coverage of the entire canyon bottom, repeat visits were made with other members of the Hopi Tribe in order to corroborate information obtained during the initial inventory and solicit additional traditional knowledge. Four trips into the lower portion of the canyon were made in conjunction with Colorado River trips. Participants on the first trip (September 14, 1991) included Walter Hamana (Third Mesa, Greasewood clan) and

Leslie David (First Mesa, Flute clan). They saw the area between the confluence with the Colorado River and "Powell Canyon." The second visit included Leigh Jenkins (Third Mesa, Greasewood clan), Walter Hamana (Third Mesa, Greasewood clan), Harlan Williams (Second Mesa, Eagle clan), Orville Hongeva (Moencopi, Rattlesnake clan), Bradly Balenquah (Third Mesa, Rattlesnake clan), Wilmer Joshvema (Third Mesa, Young Corn clan), and Fred Koruh (Third Mesa, Sand clan) on October 5, 1993. They examined the area between the confluence and the *Sipapuni*. Members of the third trip on April 29, 1994 were Ronald Humeyestewa (Second Mesa, Bear clan), Byron Tyma (Second Mesa, Bearstrap clan), Owen Numkena, Jr. (Second Mesa, Water clan), Rex Talayumptewa (Second Mesa, Sun-forehead clan), and Gilbert Naseyowma (Moencopi, Sun clan). This group likewise examined the area between the confluence and *Sipapuni*. The final group primarily examined the area between the confluence and the *Sipapuni* although one member (V. Masayesva) traveled as far as the mouth of the Salt Trail Canyon. This group consisted of Leigh Jenkins (Third Mesa, Greasewood clan), Wilton Kooyahoema (Third Mesa, Fire clan), Victor Masayesva (Third Mesa, Coyote clan), and Patrick Joshevama (Third Mesa, Sun clan). This trip was conducted on October 9, 1994.

In addition, the knowledge of the Hopi Cultural Resources Advisory Task Team (CRATT) was utilized for assessing traditional historical information. The CRATT consists of approximately 18 men representing most of the Hopi villages and many of the religious societies. They function in an advisory capacity to the Cultural Preservation Office on cultural matters (see Ferguson et al. 1993:28 for additional discussion of the CRATT).

The cultural resources that were located during the project were recorded in several ways. Those sites that had artifacts or other evidence of human utilization were located on USGS 7.5′ maps, and then mapped utilizing a Brunton Compass and meter tape. All artifacts on the site surfaces were pin flagged for analysis and to defined artifact concentrations. For sites that did not have artifactual manifestations, their locations were plotted on USGS 7.5′ series maps and a description of them, including traditional historical information was recorded. Real world coordinates were obtained for most of the sites from the GCES-GIS network survey.

Project Findings

During the course of the inventory, eleven cultural resources sites, five isolated occurrences, and two potential resource locations were encountered. Of the sites, six are manifest because of archaeological remains and five were identified through traditional knowledge. For the discussion, these two classes of cultural sites are segregated as follows: if a property was derived primarily through human activities, it was classified as an archaeological site; if the property was a natural aspect of the landscape, but still culturally, it was classified as a Traditional Cultural Property (TCP). Sites displaying aspects of both of these definitions were classified by their primary aspect, recognizing the non-mutually exclusive nature of these categories.

The isolated occurrences consisted entirely of isolated prehistoric artifacts and modern, recreational camp sites. No "modern" isolated artifacts were encountered in the survey corridor apart from those within the high water zone of the Little Colorado River. These were not recorded because of their lack of culturally relevant integrity of location. These flood derived artifacts occurred throughout the river corridor and were most plentiful in areas that would form eddies during high water. Cans, plastic bottles (particularly oil cans), glass bottles, lumber, and miscellaneous trash made up this assemblage.

Two "potential resource locations" were identified; these both consist of salt occurrences. While these are not considered "sites" as they lack evidence of utilization or cultural significance, as determined by either archaeological and/or ethnographic research, there is a relatively high potential that they could have been exploited in the past, particularly considering the value of salt in the past.

Two cultural resources within the canyon were not explicitly recorded during the current project as they have been recorded and described in detail elsewhere; they are the Hopi Salt Trail (NA 10531-10535) and Beamer's Cabin (AZ:C:13:4 (GRCA)). The Salt Trail enters the survey corridor via Salt Trail Canyon and follows the Little Colorado River downstream to its confluence with the Colorado River. It then, travels downstream along the east side of the Colorado River on top of the Tapeats Sandstone ledges for approximately two miles, where it descends to the Hopi Salt Mine. Along the Little Colorado River portion of its route, the Salt Trail is assumed to have been the predecessor of the currently in-use trail. No other trail was identified throughout most of the canyon, and in many places, it is virtually impossible to pass through the canyon if you are not on the trail. The only place where a trail was identified that was different from the most traveled modern trail is near the confluence. A faint trail was located south of the Little Colorado River on top of the Tapeats ledges starting about 0.8 miles upstream of the confluence. Traveling towards the confluence, it did join with the Salt Trail (the Beamer Trail downstream of Beamer's Cabin). The heavy use of the area just upstream from the confluence by river runners has led to the formation of multiple routes, potentially obfuscating traces of the original trail.

If the original Salt Trail was approximately coincident with the route of the current trail, there were three stream crossings between Salt Trail Canyon and the Hopi Salt Mines. An additional set of crossings would have been necessary to reach the *Sipapuni*. It is possible to reach the Hopi Salt Mines with only a single stream crossing, but vegetation currently makes this a less efficient route.

Beamer's Cabin is located just upstream of the confluence of the Little Colorado River with the Colorado River. This site was not recorded during the current project as the Park Service has fully completely documented it, including subsurface testing. The site and research that has occurred at it have already been discussed in the "Previous Research" section of this report.

Even though the *Sipapuni* had previously been assigned a site number (NA 10537), it

was felt that there was considerably more information that could be added to the site description. Therefore, the *Sipapuni* was re-recorded during this project.

Site Descriptions

Archaeological Sites

Six archaeological sites were encountered during the inventory. Their locations are shown in Figures 5 and 6; they are described below.

Site Number: AZ C:13:24 (ASM) (Figure 7)

UTM Location: Zone 12, N 40,05,340 E 4,28,900

Elevation: 2780 ft./ 848 m.

Site Type: Roasting pits Age: PII or later

Cultural Affiliation: Unknown prehistoric

Site Description: The site consists of an area containing roasting pits and a low density scattering of artifacts along the base of a slightly undercut Tapeats sandstone cliff band. It is located about 30 meters south of the Little Colorado River, about 15 meters above the level of the river. The area is covered by eolian sand dunes and colluvial debris from the slope above.

Altogether, seven roasting pits were identified. They consisted of clusters of burned rock and associated ash and charcoal measuring approximately 1 meter in diameter (erosion has lengthened some of them). Two of the roasting pits, F8 and F9, had artifacts in association. At F8, a one-hand mano was located and at F9, a chert core. No artifacts were identified at any of the remaining roasting pits.

In addition to the good roasting pits, two areas of rock concentration may indicate additional roasting pits. At one of these (F2), a sherd from an indented corrugated vessel was found. The "rock scatters" had a lower density of rock than the roasting pits, covered larger areas and lacked charcoal. Perhaps they are the remains of weathered roasting pits.

In the eastern end of the site is a roughly rectangular area of slightly raised sand and organic materials (grass, fibers) measuring 2.5 meters by 1 meter. It is abutted against the cliff at the back of the overhang. It may have been a small structure (waddle and daub), however, this could not be confirmed from the remains on the surface. No smoke blackening was seen on the roof above this feature, or anywhere else along the overhang.

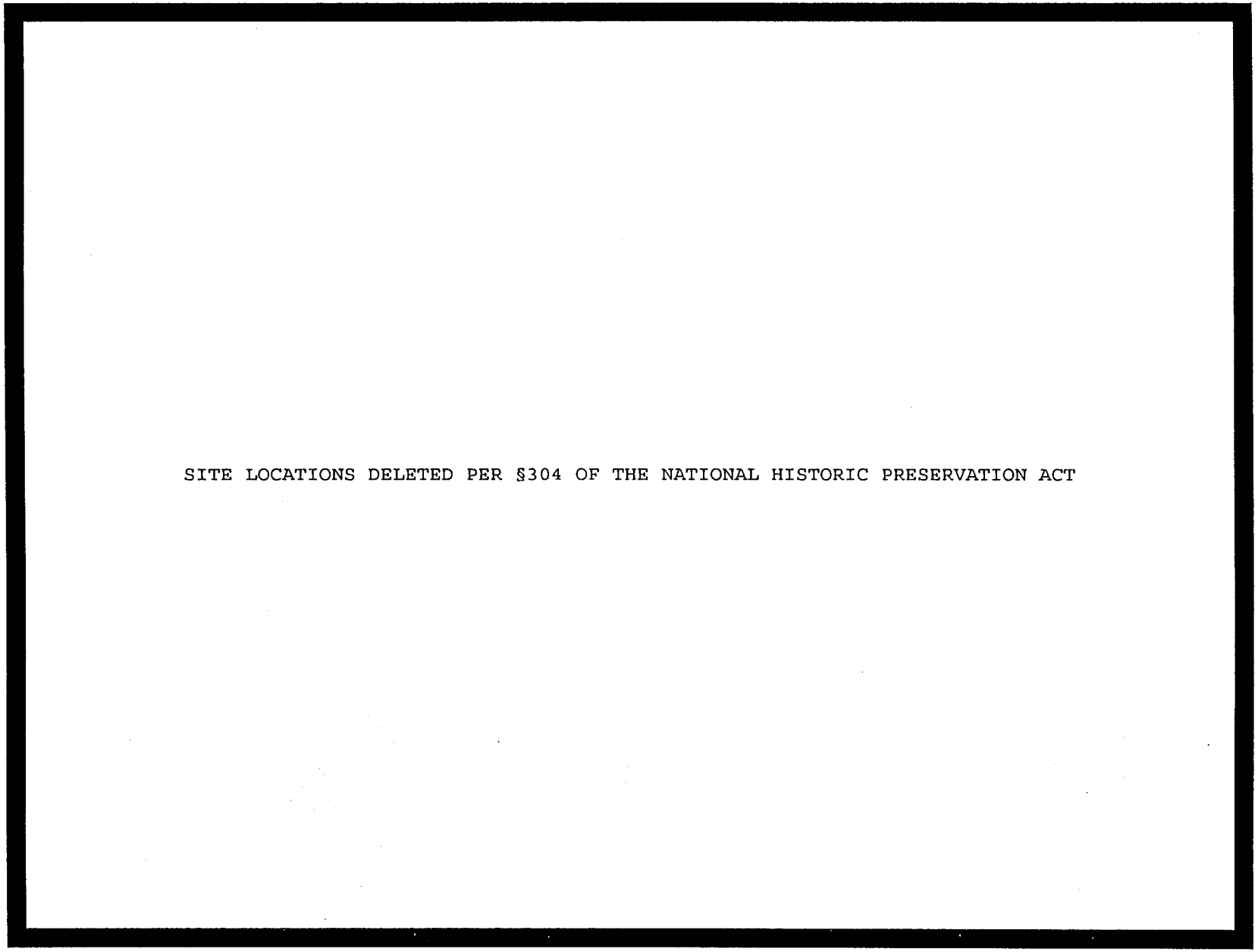


Figure 5: Locations of Archaeological Sites. USGS Cape Solitude, Arizona,1988 provisional edition, 7.5' series map (HCPO 91-009).

SITE LOCATIONS DELETED PER §304 OF THE
NATIONAL HISTORIC PRESERVATION ACT

Figure 6: Location of Archaeological Sites. USGS Salt Trail Canyon, Arizona, 1988 provisional edition, 7.5′ series map (HCPO 91-009).

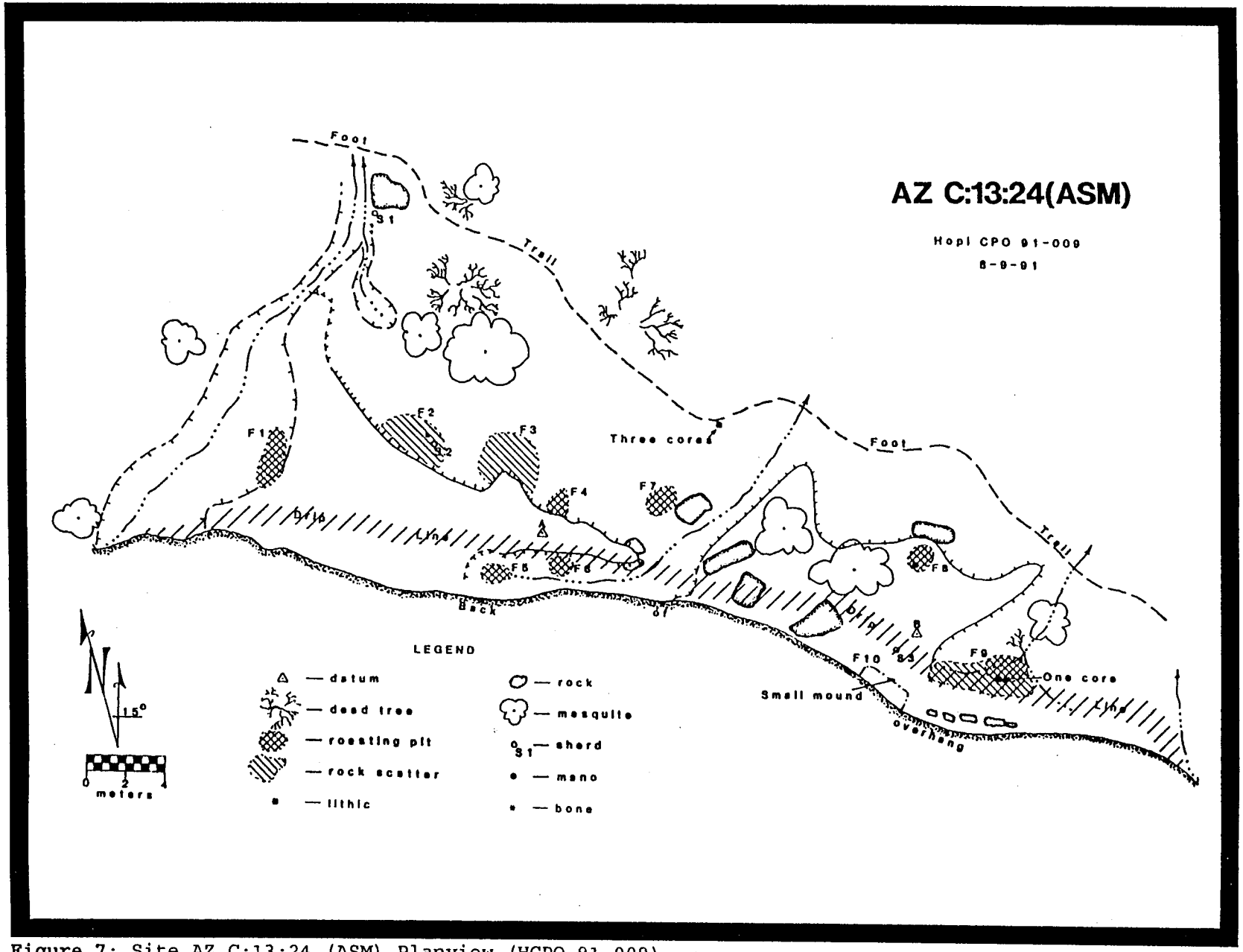


Figure 7: Site AZ C:13:24 (ASM) Planview (HCPO 91-009).

The majority of the site is buried within sand dunes; only where erosion had occurred could cultural remains be discerned. The likelihood of additional buried remains is high.

Artifact Assemblage: The artifact assemblage from the site is quite limited. Lithics were the most common artifact class, forming 71.4% of the total assemblage. Six pieces of debitage were encountered: five were flakes of white chert and one was a flake of grey chert. None of them had evidence of any use and with the exception of one, they all lacked cortex. In size, they ranged from 2 centimeters to 5 centimeters with the 5 centimeter piece being a "chunk" rather than a true flake. Four chert cores were also located; three of these being located together, adjacent to the foot trail across the lower portion of the site. The forth one was associated with roasting pit F9.

Only three sherds were found on the site, derived from two vessels. One, an indented corrugated vessel was represented by two sherds, about 12 meters apart. These sherds were both quartz sand tempered, brownish, with blackened interiors. The other was a non-decorated whiteware sherd of the Tusayan series. The indented corrugated ware indicates a PII or later utilization of the area, but from such a small assemblage, this should be taken as little more than an educated guess. The only other artifact noted was a one-hand mano formed out of a natural limestone cobble. It measured 10 x 9 x 4 centimeters and had been ground only on one surface.

Disturbances to Site: The primary impact to the site is erosion. Small arroyos and sheet washing are degrading the area. There is a trail through the dune at the lower edge of the site. Closing this trail may help to stabilize the face of the dune. All of the roasting pits that were identified were in areas of erosion.

Other: This site is located about 0.5 kilometers upstream from the Beamer's Cabin site (AZ:C:13:4 (GRCA)) in the same cliff band. It is quite likely that there are additional roasting pits between these two sites that were not apparent because of the dune sand.

Site Number: AZ C:13:25 (ASM) (Figure 8)

UTM Location: Zone 12, N 40,05,950 E 4,30,270

Elevation: 2800 ft./ 853 m.

Site Type: Rock shelter Age: BMIII-modern

Cultural Affiliation: Hisatsinom/Unknown prehistoric/Hopi/Unknown historic-modern

Site Description: This site is a rock shelter located at the mouth of Powell Canyon, on a bench overlooking the Little Colorado River. The cave entrance ranges from 2-3 meters high,

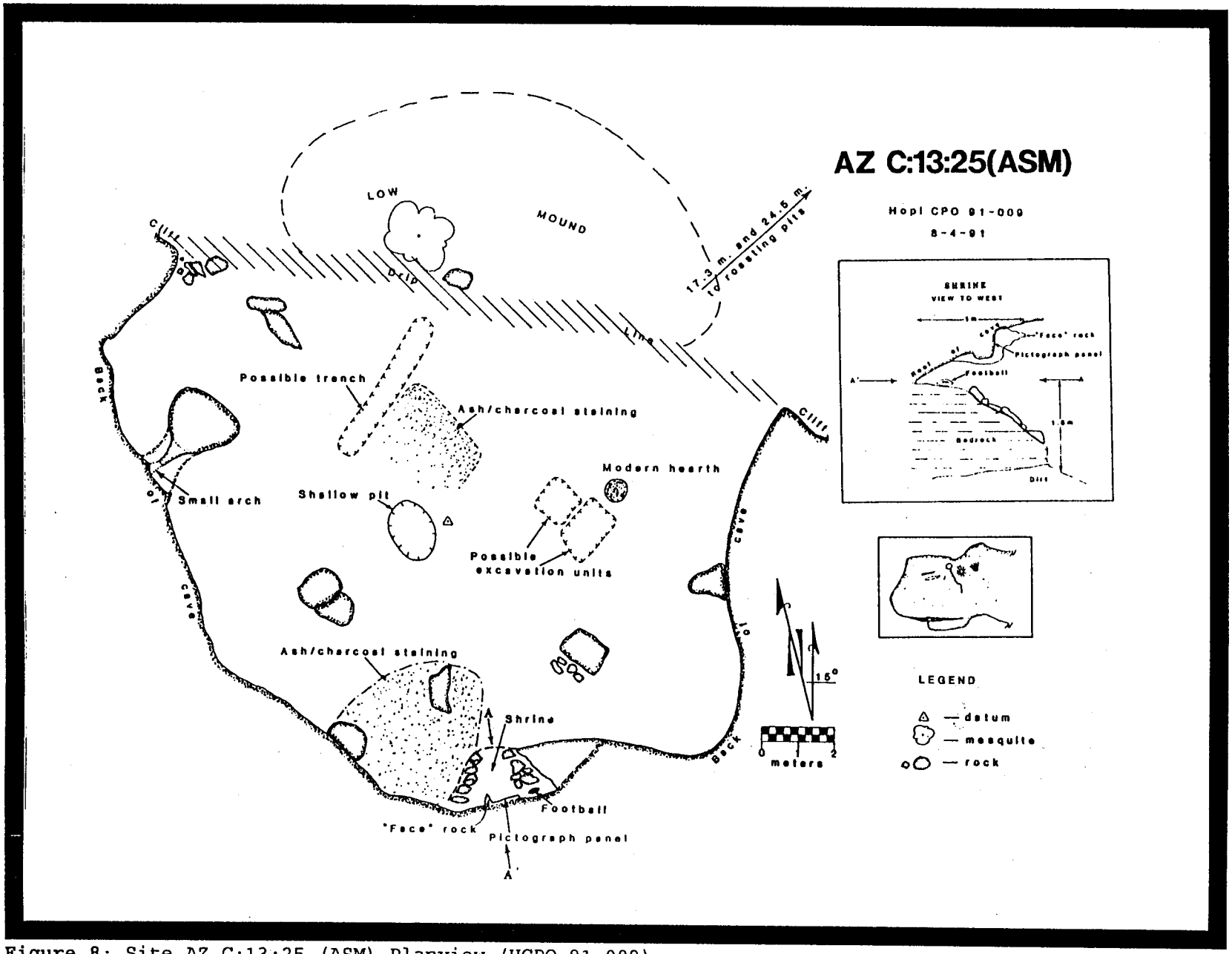


Figure 8: Site AZ C:13:25 (ASM) Planview (HCPO 91-009).

and faces roughly north. Inside the cave, the ceiling raises to as much as 4 meters. The depth of the cave is 14 meters and the width is 18 meters.

Evidence of human utilization of the cave is in the form of ashy, organic containing soil, burned bone, a low density artifact scatter, smoke blackening of the cave roof, and pictographs and a "shrine" in the back of the cave. Two areas of ash staining were present in the cave; one extending from the back wall of the cave and the other centered in the cave. The one at the back contained a lot of organic materials including burned bone (from a large mammal), corn cobs, fiber "quids" and a possible *Paho* stick. Much of the material in this area seems to be from packrats. A Tusayan B/W was found in this stain.

The lower ash stain is the site of the test excavations carried out in 1969 under the direction of Dr. G.J. Gumerman and Dr. R.C. Euler (see "other" section below). Three depressed regions seem to indicate the locations of the test trenches. In the edges of several of these depressions, it is possible to see that the ash extends below the surface indicating intact subsurface deposits.

A "shrine" and pictographs are located to the west of the ash stain extending out from the back wall. The "shrine" consists of a small enclosure formed by two single-course rows of rocks extending out from the back walls of the cave. Within the enclosure, against the back wall is a tabular, stream-worn cobble. The entire feature is built on a ledge of bedrock protruding from the back of the cave. Leigh Jenkins (personal communication) noted that this feature was not a "shrine" in the strict Hopi use of the term, but rather an offering location.

Immediately above the ledge on which the "shrine" is located is a pictograph panel. It is done on a large, smooth conglomerate cobble. To the right of the pictographs, the cobble has the natural form of a face, with a large nose, sticking out over the offering location. There are four figures on the panel identified by the Hopi consultants as bow (possibly), spider, bear (or badger), and bear strap clan symbols. The latter three are done in hematite; the former is done in hematite and a black pigment. Leigh Jenkins suggested that the "bow" clan petroglyph might be the result of testing pigments.

On the bench in front of the cave are two roasting pits. The closest (A) is approximately 15 meters from the cave entrance. It measures 1.65 x 1.5 meters across and is about 30 centimeters in height. It is formed of pebble to cobble sized rocks and is stained by ash and charcoal.

The second roasting pit (B) is located at the very edge of the bench, approximately 22 meters from the cave entrance. Similar to the first, it measures 1.3 meters in diameter and 40 centimeters in height. A portion of this pit has eroded down the steep embankment and off of the bench. This erosion is being accelerated by the presence of a trail up to the bench at this point. The fill in the pit extends to a depth of 40 centimeters below the ground surface and contains ash and charcoal. Some of the rocks in the pit show evidence of heat alteration.

To the west of the cave, also on the bench is the remains of a hearth/stove, possibly used by the archaeologists who tested the site in 1969. It is formed of rock slabs set vertically against a large boulder. Ash and charcoal are present within the feature. Leaning against the boulder are pieces of steel rod that were used as a grill above the hearth.

Artifact Assemblage: Currently there is a limited artifact assemblage at the site. Many of the artifacts were removed during the original investigations at the cave during the 1960s, and others have likely been removed during casual visitation by hikers. Identified in the assemblage were seven sherds, six lithics, two hammerstones, seven corn cobs, numerous burned bone fragments, quids, wood, and other organic materials, a possible *paho* stick, and a football.

The ceramics located included a Sosi B/W, four Tusayan indented corrugated, and two possible Paiute graywares. This implies a PII and later utilization of the cave.

Three of the lithics were grey, Redwall chert flakes and one was of a white Redwall chert. These flakes varied between 2 and 4 centimeters across and 0.4 to 1.5 centimeters in thickness. None of them have any remaining cortex and none showed any edge alteration. The other flaked stone artifacts were core fragments, both of grey Redwall chert. They measured 3 by 6 centimeters and 4 by 5 centimeters. The only other stone artifacts were two hammerstones; one complete and the other was in fragmentary condition.

Much of the organic material found was associated with the ash stain in the back of the cave, and a good portion of it could be attributed to packrat activities. Among the detritus were corn cobs, pieces of burned bone and yucca or agave fiber quids. Five of the corn cobs had 12 rows of kernels and the other two had 8 rows. None of them were burned. The bone located was derived from animals ranging in size from rodents to large mammals, possible sheep or deer. The football was located on the ledge to the west of the shrine area. It was a leather football, mostly deflated.

Disturbances to Site: The site is in relatively good condition. There has been disturbance do to human visitation, primarily camping. This is witnessed by a recent hearth in the cave. During 1969, some testing of the site was carried out by Gumerman and Euler. Natural erosion has also had some impact to the site.

Other: While the only written information concerning the 1969 testing of the site was a site form on file at Museum of Northern Arizona, a telephone discussion with Euler (personal communication, 1991) provided some additional information on the site (Euler, along with Gumerman had tested the site). He stated that most of the notes prepared during the excavation had been destroyed when Prescott College, the repository for the notes, went bankrupt. He said that two test trenches had been excavated into the site. Of note from the excavations were Hopi yellow wares near the surface and PII Kayenta Ware ceramics at the bases of the trenches. In the southern trench, a firepit was sectioned. He also said that at the time of the excavation (1969), he did not remember any pictographs at the back of the cave.

In addition, the football was not something that they had encountered at the site.

Jan Balsom noted that a 1969 photo of the site on file at the Grand Canyon showed that the petroglyph consisting of two horizontal lines (identified as possibly bow clan) was present, but that the others were not (personal communication, 1994).

Site Number: AZ C:13:26 (ASM) (Figure 9)

UTM Location: Zone 12, N 40,06,035 E 4,30,320

Elevation: 2880 ft./ 888 m.

Site Type: Rock shelter Age: Unknown, probably prehistoric

Cultural Affiliation: Unknown, likely Native American

Site Description: The site consists of a non-contiguous, linear alignment of rocks crossing the mouth of a small cave and extending along the base of the adjacent, overhanging, cliff face. The rock outcrop containing the cave is situated about 80 feet above the level of the Little Colorado River on a steep slope. In the same outcrop, just to the northeast of the site is a much larger, un-utilized cave. This cave is readily visible from the river.

The linear arrangement of rocks is the only architectural remains at the site. There is no surface evidence of cultural materials within the cave and the cave roof showed no smoke blackening. The cave measures about 5 meters across its mouth, 5 meters deep, and has an opening height of 1.5 meters. The cave floor is level, as is the area in front and to the south of the entrance.

The rock alignment extends from the northern side of the cave, across its mouth, and then five meters farther south along the base of the cliff. The rock that sits in the center of the opening, somewhat apart from the other rocks, is formed of a metate. Nowhere are the rocks piled higher than a single course.

Artifact Assemblage: The only artifact identified was a metate, used as part of the rock alignment. It is a shallow basin metate, measuring 48 x 26 x 8 centimeters. One corner had been broken off. There was very little grinding evident on it.

Disturbances to Site: Natural erosion.

Other: none

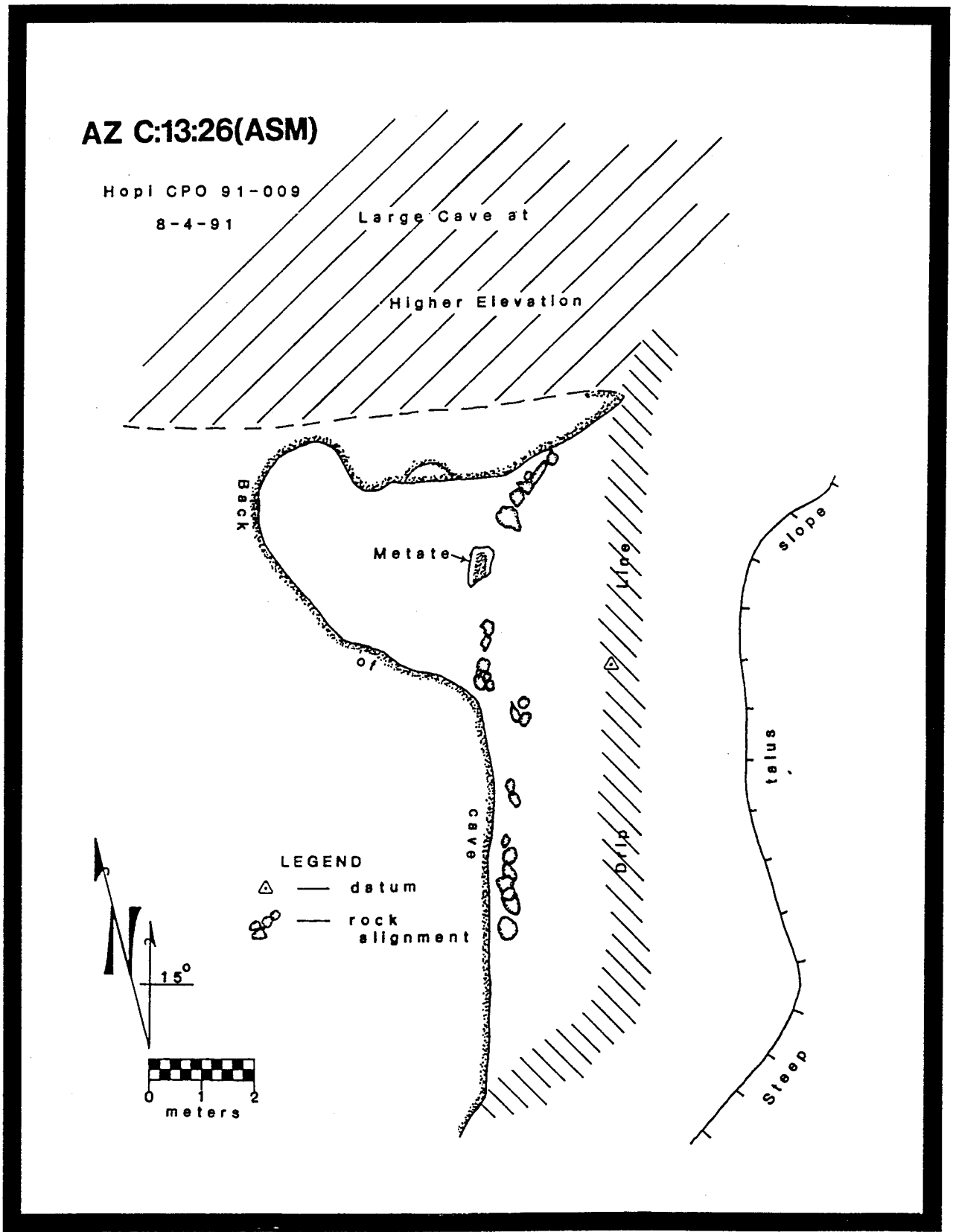


Figure 9: Site AZ C:13:26 (ASM) Planview (HCPO 91-003).

Site Number: AZ C:13:27 (ASM)

UTM Location: Zone 12, N 40,05,910 E 4,31,180

Elevation: 2840 ft./ 866 m.

Site Type: Possible Rock shelter Age: Unknown

Cultural Affiliation: Unknown

Site Description: This cave site is located about 15 meters above the level of the Little Colorado River. The sole evidence for its use by humans is the smoke blackening on the roof; no features or artifacts were located. This lack of any other cultural remains is likely due to the filling of the cave and the area in front of it with a sand dune. A portion of the cave roof has collapsed and it may be that this has caused the wind patterns in the cave to have shifted, allowing sand deposits to settle in the cave.

The entrance to the cave measures six meters across and five meters high. Inside the cave, the width remains about six meters, but the height decreases to as little as one meter due to the sand dune. The depth of the cave is about ten meters. Other than these measurements of the cave dimensions, no further mapping was undertaken due to the lack of observable cultural remains (the cave was photographed).

Artifact Assemblage: None.

Disturbances to Site: Natural erosion: roof collapse.

Other: None.

Site Number: AZ C:13:28 (ASM)

UTM Location: Zone 12, N 40,06,260 E 4,33,110

Elevation: 2840 ft./ 866 m.

Site Type: Historic pictograph Age: unknown

Cultural Affiliation: Anglo

Site Description: The site consists of the number "30" painted onto a vertical rock outcrop. It is executed in yellow paint. The paint may have been spray paint as the edges of the numeral

are slightly blurred. Weathering has caused some of the paint to flake off the rock leaving bare patches.

Much of the rock face is covered with a black lichen. The lichen, however, is not present under the paint. It appears the paint has killed the lichen.

No other signs of human activities were seen in the area of the marking. It is possible that the number indicates the point in the Little Colorado River three miles from the confluence with the Colorado River. No other markings of this kind were seen elsewhere in the canyon.

Artifact Assemblage: None

Disturbances to Site: Natural erosion.

Other: None

Site Number: AZ C:14:1 (ASM) (Figure 10)

UTM Location: Zone 12, N 40,02,960 E 4,36,160

Elevation:3220 ft./ 982 m.

Site Type: Cairn: mining claim marker Age: ca. 1928

Cultural Affiliation: Anglo

Site Description: The site consists of a rock pile measuring 1 meter in diameter and 0.5 meter in height. Rock placement and size appear to be arbitrary; the nearest available rocks had been roughly stacked into a domed pile. No artifacts were found either within the pile or in the area around it. The site is likely a boundary marker for a mining claim (see "other" section below).

The site is located in a short, narrow side canyon entering from the west side of the Little Colorado River. It sits on a sloping bench to the north of a gully. Just up the side canyon from the site is a large dryfall, the base of which contains a dense stand of redbud trees.

Artifact Assemblage: none

Disturbances to Site: Natural erosion.

Other: A search of the mining claim records at the Coconino County Courthouse identified a

claim in the area of this site. In 1928, a placer claim was filed by Walter Dickinson for an area approximately seven miles up the Little Colorado River for the confluence with the Colorado River (Record of Mines, Book 11, page 119 (#764)). This coincides with the general location of this site.

Traditional Cultural Properties

As mentioned above, Traditional Cultural Properties were defined for the report as those areas identified as important to the Hopi people but which lacked or largely lacked artifactual remains. It should not be construed that just because some of the areas are classified as archaeological sites that they are not similarly important for traditional historical and cultural reasons to the Hopi People. It is in the context of this report that the classes of cultural features were separated. Five Traditional Cultural Properties were identified within the corridor; their locations are shown in Figure 11 and they are described below. Additionally, the Little Colorado River itself, and the springs that feed it are considered traditional cultural resources of the Hopi Tribe (Leigh Jenkins, personal communication 1995).

Site Number: 91-009-1

UTM Location: Zone 12, N 40,04,130 E 4,36,420

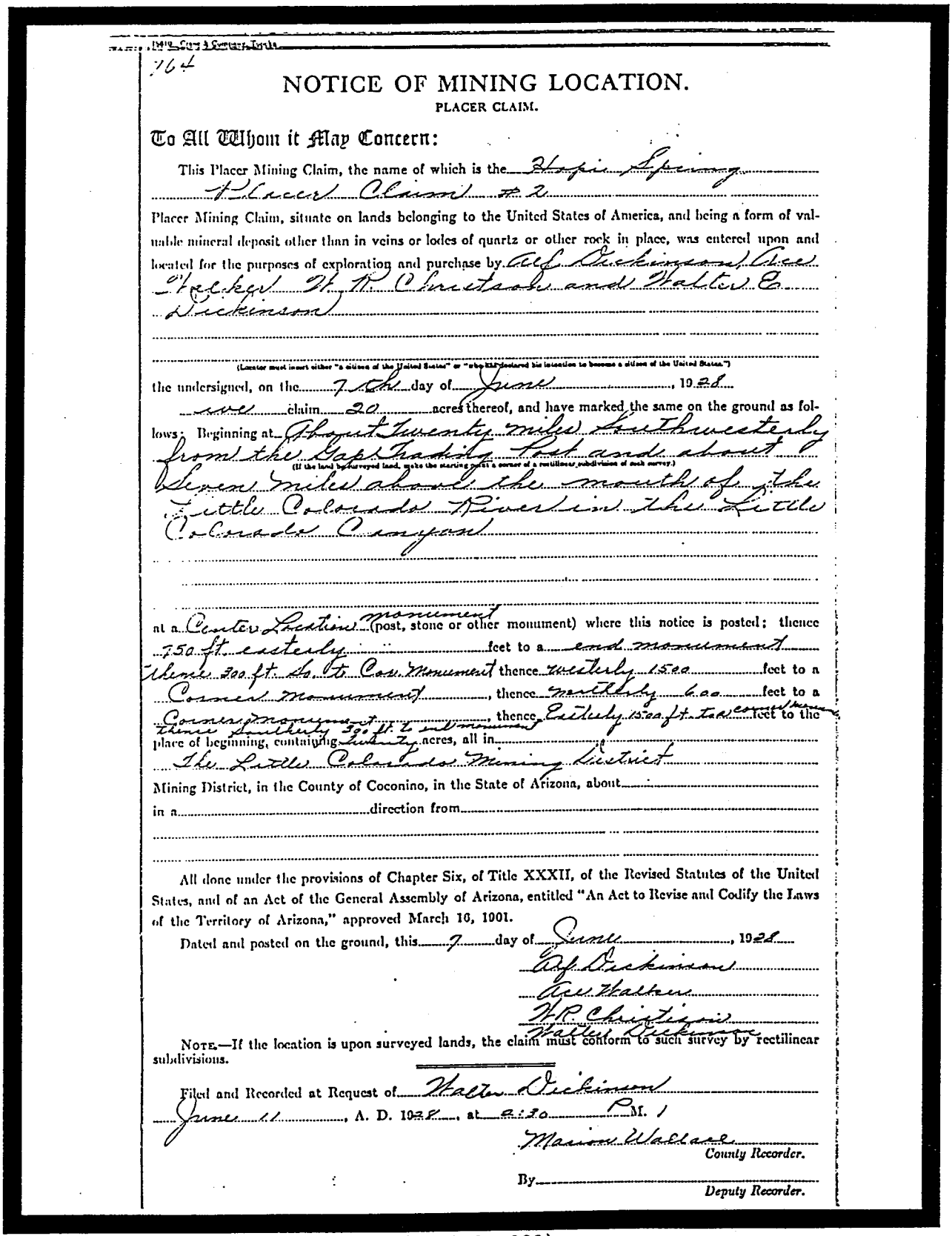
Elevation: 3000 ft./ 914 m.

Site Type: Salt deposit Age: n/a

Cultural Affiliation: Hopi

Site Description: This site consists of a large salt seep located between the confluences of Big Canyon and Salt Trail Canyon with the Little Colorado River. The lower portion of the deposit is a vertical-to-overhanging cliff with salt covering the walls and the slope below the cliff. This cliff appears to be a zone of conglomerate materials within the Redwall formation. On the slope above the cliff, the seep continues, but it is not known whether it contains salt or only alkalies. The seep area is about 300 feet in height and several hundred feet across. The seep is currently active as attested to by the dripping of salty water and the occurrence of recently exfoliated clumps of salt below the cliff.

This area has been tentatively identified as the salt belonging to *Tatatsiqtöm* (Hopi ritual "mudheads"), by Wilton Kooyahoema of Hotevilla during the October 9, 1994 trip into the lower portion of the Little Colorado River. Up until that point, it was postulated that this salt deposit may have been the one referred to as "Old Man's Salt" (*Wuyo'önga*), a location used by men who, for various reasons, could not travel the entire way to the Hopi Salt Mine along the Colorado River.



764

NOTICE OF MINING LOCATION.

PLACER CLAIM.

To All Whom it May Concern:

This Placer Mining Claim, the name of which is the Hopi Spring Placer Claim No. 2

Placer Mining Claim, situate on lands belonging to the United States of America, and being a form of valuable mineral deposit other than in veins or lodes of quartz or other rock in place, was entered upon and located for the purposes of exploration and purchase by A. J. Dickinson and Chas. Hecker W. R. Christianson and Walter C. Dickinson

(Locator must insert either "a citizen of the United States" or "who has declared his intention to become a citizen of the United States.")

the undersigned, on the 7th day of June, 1928

save claim 20 acres thereof, and have marked the same on the ground as follows: Beginning at About Twenty Miles Southwesterly from the Gap Trading Post and about Seven Miles above the mouth of the Little Colorado River in the Little Colorado Canyon

(If the land be surveyed land, make the starting point a corner of a rectilinear subdivision of such survey.)

at a Center Location monument (post, stone or other monument) where this notice is posted; thence 750 ft. easterly feet to a end monument thence 200 ft. So. to Cor. Monument thence westerly 1500 feet to a Corner Monument, thence Northerly 600 ft. feet to a Corner Monument, thence Easterly 1500 ft. to Cor. Mon. feet to the thence Southerly 600 ft. to mon. place of beginning, containing twenty acres, all in the Little Colorado Mining District Mining District, in the County of Coconino, in the State of Arizona, about in a direction from

All done under the provisions of Chapter Six, of Title XXXII, of the Revised Statutes of the United States, and of an Act of the General Assembly of Arizona, entitled "An Act to Revise and Codify the Laws of the Territory of Arizona," approved March 16, 1901.

Dated and posted on the ground, this 7 day of June, 1928

A. J. Dickinson

Chas. Hecker

W. R. Christianson

Walter Dickinson

NOTE.—If the location is upon surveyed lands, the claim must conform to such survey by rectilinear subdivisions.

Filed and Recorded at Request of Walter Dickinson

June 11, A. D. 1928, at 8:30 P. M.

Marion Wallace
County Recorder.

By
Deputy Recorder.

Figure 10: Mining claim document (HCPO 91-009).

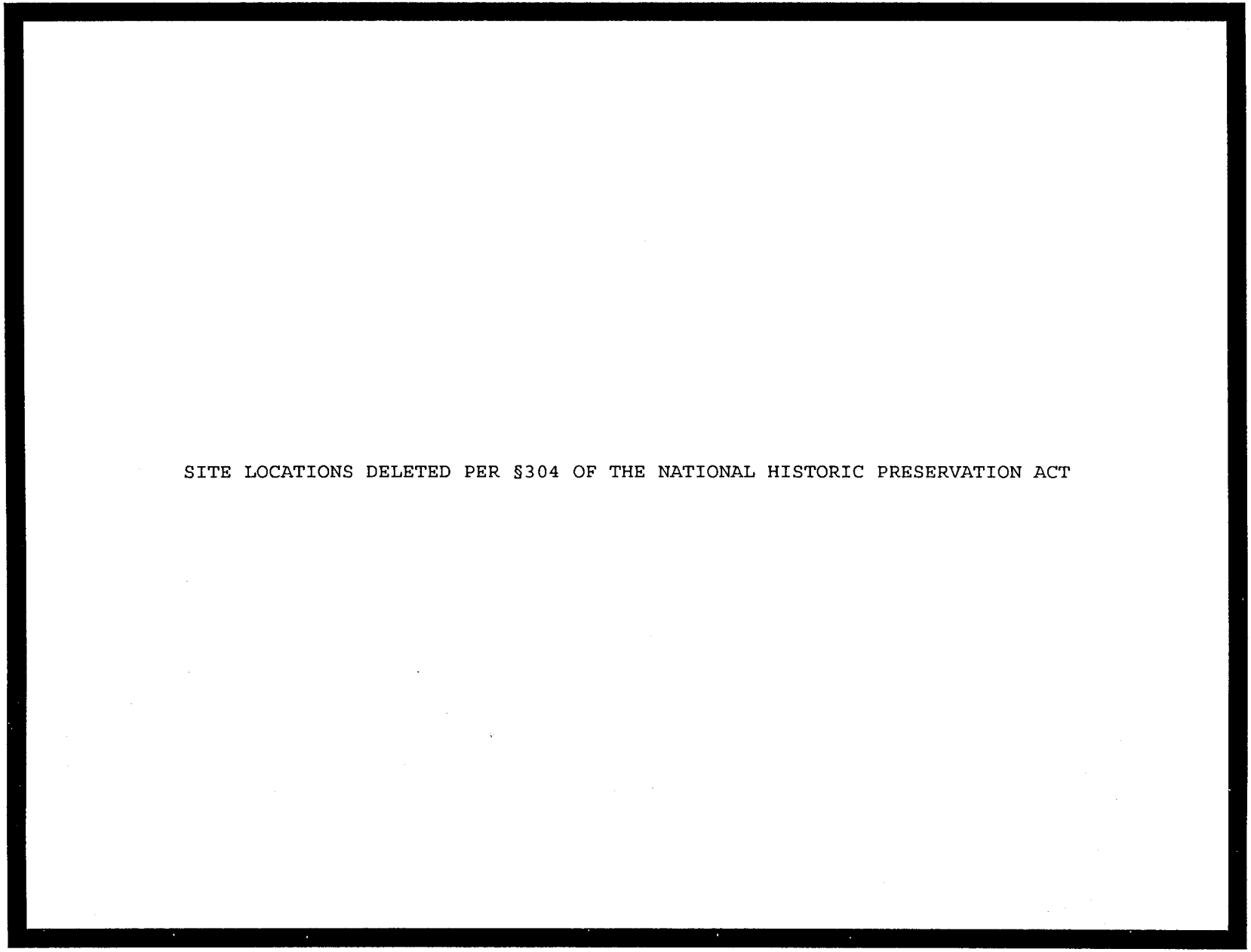


Figure 11: Traditional Cultural Property Locations. USGS Salt Trail Canyon, Arizona, 1988 provisional edition, 7.5' series map (HCPO 91-009).

The general location of this salt deposit is shown in Bartlett, 1940 in the portion of the figure on page 40; it is listed as "Salt Mine." She implies that this is the location that the Hopi visited with Cardenas on the return trip from the Grand Canyon. This, however, is considered unlikely given the fact that the Spanish group did not successfully reach the Colorado River, something that they could have easily done from the location of this salt deposit. Secondly, reaching this salt deposit from any location that it could be seen from the rim of the Little Colorado River is a difficult undertaking and the effort very likely would have been recorded by the Spanish chroniclers.

This location was discussed at Hopi with Leigh Jenkins and Eric Polingyouma who in turn discussed it with members of the Cultural Resources Advisory Task Team (CRATT). Photos of the site were also shown at a CRATT meeting. It was also discussed with Hopi members of the river trips who examined the lower part of the Little Colorado River. Interviews with additional people from Third Mesa may add more information regarding this site.

Artifact Assemblage: none

Disturbances to Site: none

Site Number: 91-009-2 (Figure 12)

UTM Location: Zone 12, N 40,04,920 E 4,34,470

Elevation: 2880 ft./ 875 m.

Site Type: Salt deposit Age: n/a

Cultural Affiliation: Hopi

Site Description: This site seems to be the location known *Hawi-onga* (Going-down Salt), based on the description in Titiev (1937:250-251). Leigh Jenkins (personal communication 1995) alternatively suggested that this might be *Wuyo'önga* (Old Man's Salt").It consists of a salt seep occurring in a section of the Muav formation, about 50 meters from the Little Colorado River. The seep itself is concentrated to a slightly overhanging portion of the wall about 27 meters in length. At each end of the salt outcrop are active seeps forming travertine. The damp portions of the seeps are not especially salty tasting. The spring at the eastern end of the salt deposit has built the wall out far enough to form a pronounced bend in the wall. In addition, a small arch has formed near the top of this deposit where it has bridged a small cave.

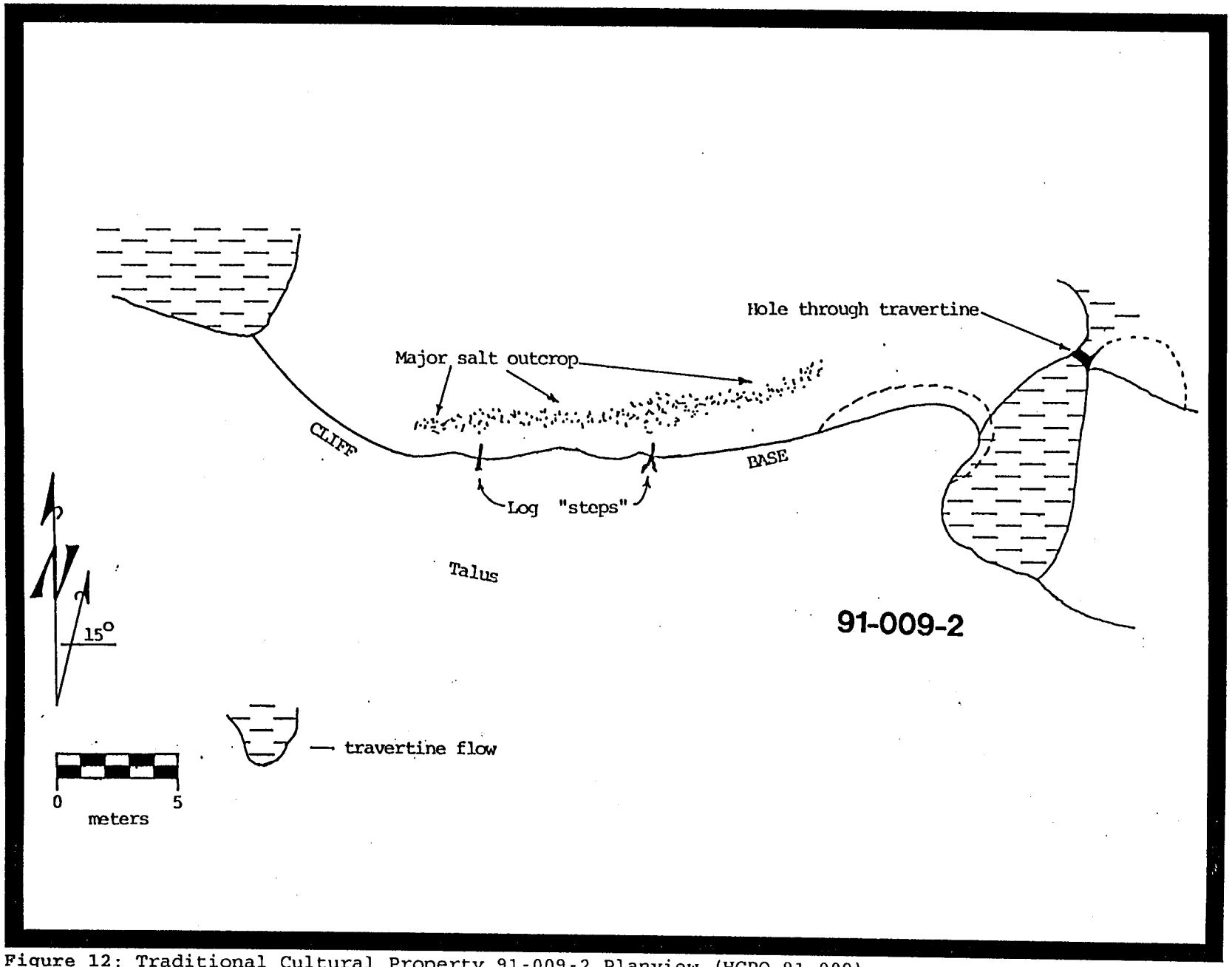


Figure 12: Traditional Cultural Property 91-009-2 Planview (HCPO 91-009).

The salt is present as a variable thickness crust on the rock wall at a height of 2-3 meters above the base of the cliff. The salt is forming around the peripheries of small fissures in the rock. The seep is currently active as witnessed by the presence of relatively new pieces of salt on the ground below the wall that have broken away as additional salt forms.

At two places along the wall, where the salt is thickest, are logs leaning against the wall. These may have been placed to allow access to the salt higher on the wall. There is a buildup of salt and soil at the base of each log, indicating that they had been in place for a relatively long period of time.

The site is about 1/2 mile upstream of the *Sipapuni*. Titiev (1937:250) also mentions *Sakwa-onga* (Blue Salt) as being in the same area as this deposit. No deposit matching the description given (a blue-tinted salt(?)) could be found. Slightly farther southeast (about 15 meters) along the same cliff as the main deposit, an additional, very small outcrop of salt was encountered. It was above a very dense growth of mesquite and other vegetation and did not appear to have been used.

Artifact Assemblage: No artifacts located. There are two short logs, one forked and the other unbranched, that are leaning against the walls. These seem to have been placed so as to provide access to the main portions of the salt deposit.

Disturbances to Site: Natural erosion.

Site Number: 91-009-3 (Figure 13)

UTM Location: Zone 12, N 40,05,265 E 4,33,700

Elevation: 2840 ft./ 866 m.

Site Type: Travertine dome Age: n/a

Cultural Affiliation: Hopi

Site Description: This site is considered by the Hopis to be the *Sipapuni*, a place of emergence into this, the Fourth World, and as such, an extremely important religious shrine and cultural location. It consists of a spring-formed travertine dome rising 10 meters high above the Little Colorado River and 3 meters high on the upslope side. It is nearly circular, measuring 31 meters across at its base on an east-west axis and 35 meters north-south. The top is flat and measures 17 meters (north-south) by 16 meters (east-west) across. Near the center of the top is an opening 2.5 meters wide (north-south) by 2.8 meters long (east-west).

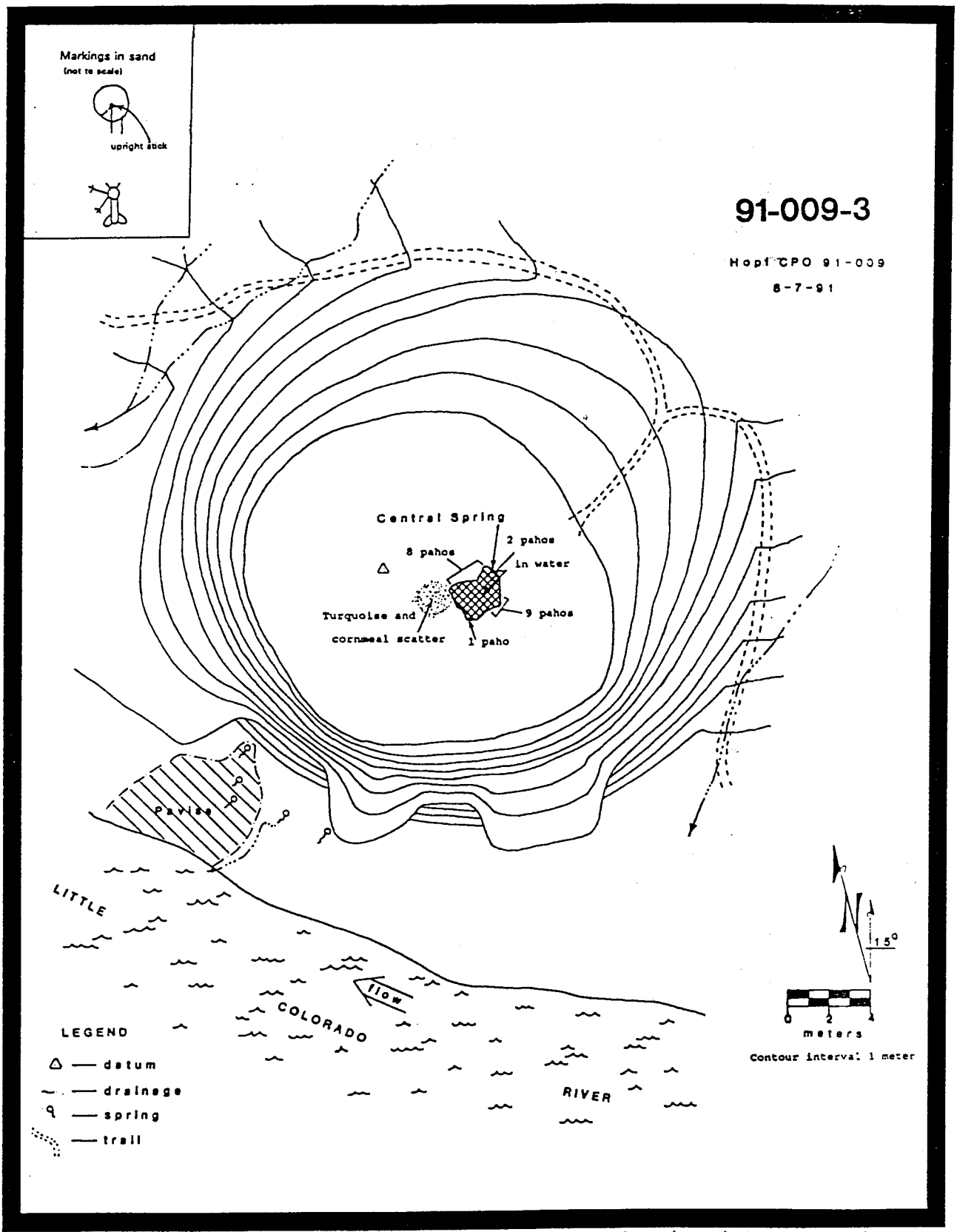


Figure 13: Traditional Cultural Property 91-009-3 Planview (HCPO 91-009).

This is where the water from the spring used to emerge. Currently, the water exits through the base of the *Sipapuni* adjacent to the Little Colorado River. Based on photographs taken of the *Sipapuni* in 1961 (Schwartz 1989:64) and 1968 (Judge 1969:685), sometime during this period the water quit emerging from the top and began coming out the base. The water level in the central hole currently is about 3 meters below the top of the dome.

The *Sipapuni* sits at the base of a southwest facing hillslope immediately adjacent to the north side of the Little Colorado River. There is a slight bend in the river at this point. The top of the *Sipapuni* is accessed from the upslope side (opposite the river) from either direction by trails that join partway up the dome.

Ten meters to the north, from the base of the *Sipapuni*, is a small rock pile. It is composed of 24 loosely stacked rocks. To the southwest of the *Sipapuni*, in the sand bordering the river, are two scratched markings (see Figure 13). They must be relatively recent because any rise in the river level would have removed them.

Artifact Assemblage: Two classes of artifacts were located at the site. Within the hole on top of the *Sipapuni* were the remains of at least 20 pahos. Ten were stuck in the south side of the hole, above water level, eight were on the north side, and two were floating in the water. Seven of them appeared to still have portions of the feathers attached.

In addition to the pahos, a scattering of approximately 20+ small pieces turquoise and cornmeal was noted on top of the dome on the western side of the hole. As corn meal was still present, the offering must have been placed shortly prior to the recording of the site. The offering was placed by Alex Laweka (Beaver Clan), a Zuni member of the U.S. Fish and Wildlife Service team studying the Humpback Chub in the Little Colorado River.

Disturbances to Site: Natural erosion, and general visitation by non-Hopi people. While the lowering of the water level in the *Sipapuni* and leakage out of the base could be considered a disturbance, it is not known whether this is a natural event that occurs cyclically, or if this is the first time that it has happened. There appears to have been very little physical change to the site since 1968. There was little evidence of visitation by "New Age" people in the form of offerings, rock alignments, etc. The only possible remains seen were two drawings in the sand.

Site Number: 91-009-4

UTM Location: Zone 12, N 40,05,945 E 4,32,700

Elevation: 3200 ft./ 975 m.

Site Type: Named rock spire Age: n/a

Cultural Affiliation: Hopi

Site Description: This site consists of a detached rock spire at the base of the Redwall formation. Wilton Kooyahoema of Hotevilla identified it as likely being *Putstuqwi*, a significant named location on the Salt Trail pilgrimage. During the original inventory Merwin Kooyahoema observed this rock formation and noted that it resembled the *Saalako* Kachina.

Artifact Assemblage: n/a

Disturbances to Site: Natural erosion.

Site Number: 91-009-5

UTM Location: Zone 12, N 40,04,530 E 4,35,950

Elevation: 3000 ft./ 914 m.

Site Type: Named rock spire Age: n/a

Cultural Affiliation: Hopi

Site Description: This site consists of a detached rock spire, at the base of the Redwall formation, that Merwin Kooyahoema (Corn Clan) thought might be the War Twin *Palöngawhoya*. He, along with his brother *Pökonghoya*, are responsible for the creation of the Hopi Salt Mine, and the shrines associated with the Salt Trail pilgrimage. There is some uncertainty as to whether this is in fact *Palöngawhoya* as other references (such as Eisman 1959:26 or Titiev 1937:248, 257) identify the location as being at the top of Salt Trail Canyon. Members of the CRATT have indicated that *Palöngawhoya* is located at the top of Salt Trail Canyon.

Artifact Assemblage: n/a

Disturbances to Site: Natural erosion.

Isolated Occurrences

Five isolated occurrences were encountered during the inventory (Figures 14 and 15). They were considered to be "isolated" as they were the result of a single action and by recording them, all of their potential scientific information could be obtained. They are as follows:

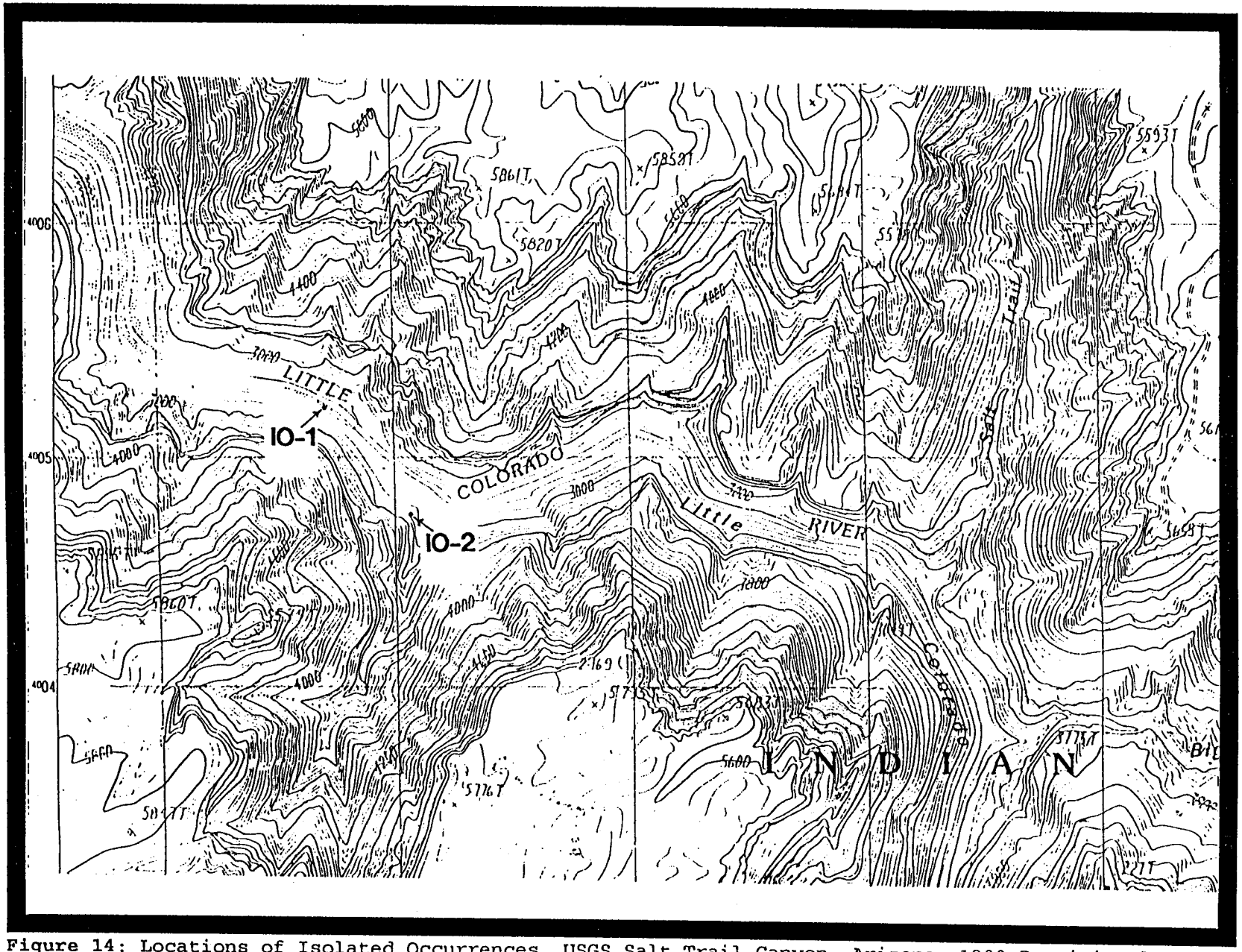


Figure 14: Locations of Isolated Occurrences. USGS Salt Trail Canyon, Arizona, 1988 Provisional edition, 7.5' series map (HCPO 91-009).

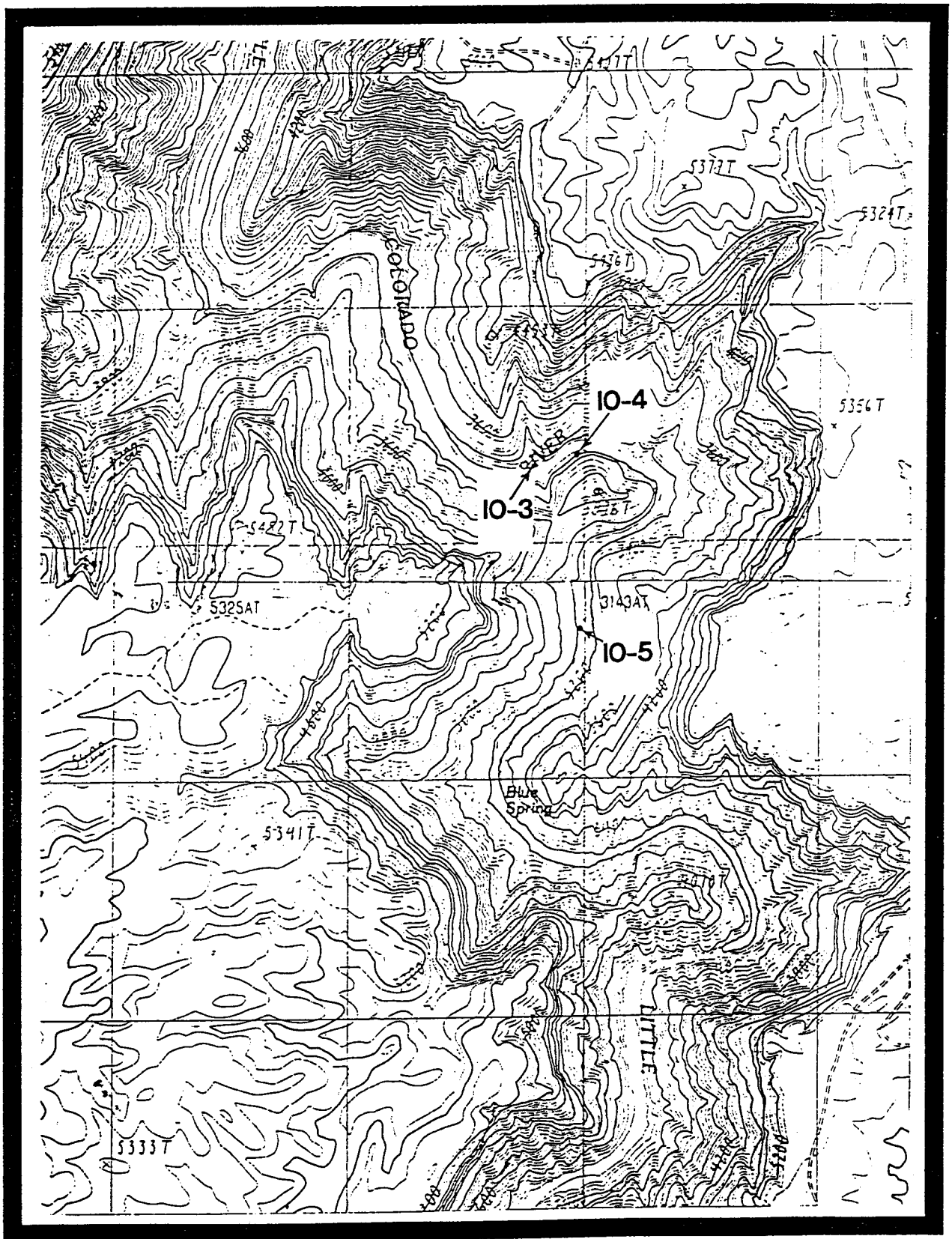


Figure 15: Locations of Isolated Occurrences. USGS Blue Springs, Arizona, 1988 provisional edition, 7.5' series and Salt Trail Canyon, Arizona, 1988 provisional edition, 7.5' series maps (HCPO 91-009).

Isolate 1 - plain Tusayan ware sherd.

Isolate 2 - distal end of a red/gray chert biface (Figure 16).

Isolate 3 - recent campfire ring.

Isolate 4 - recent campfire ring with Heineken beer bottle cap.

Isolate 5 - recent campfire ring and two cans.

Potential Resource Locations

The two "potential resources" identified along the Little Colorado River consist of mineral deposits, specifically salt. Because of a lack of either ethnohistoric and/or archaeological evidence of utilization, these locations could not definitely be considered cultural sites.

The first potential resource location is along the lower reach of the Little Colorado River, on the northern side of the stream (Figure 17), across from site AZ C:13:24. The salt seeps out of an overhanging layer of Tapeats sandstone for approximately 300 meters. The quantity of salt present is not very large, being confined to a thin crust and occasional stalactites on the underside of the ledge.

The second salt deposit (Figure 18) is located on the eastern side of the Little Colorado River, opposite the rock spire identified as *Putstuqwi* (this area is referred to as "white spot" by the GCES fish researchers). There are two areas at slightly different levels within a shallow gully were salt is being exuded. These are about 50 meters above the level of the river. As with the first deposit, there is not a large quantity of salt present; in fact, much of the white color is due to alkali deposits.

Salt occurred throughout the entire canyon in trace quantities. Almost all rocks slightly above river level had small salt "bumps". Likewise, many of the fissures and fault zones that had evidence of seepage or a spring had minor quantities issuing from them. None of these location were deemed to be large enough to be potential resource extraction locations.

Evaluation of Resources

For the purpose of potential federal or tribal management decisions, it is appropriate to evaluate the identified resources with regard to the various legislation addressing cultural resources and Native American issues. Among the principle laws are the National Historic Preservation Act (as amended through 1992), the Archaeological Resources Protection Act,

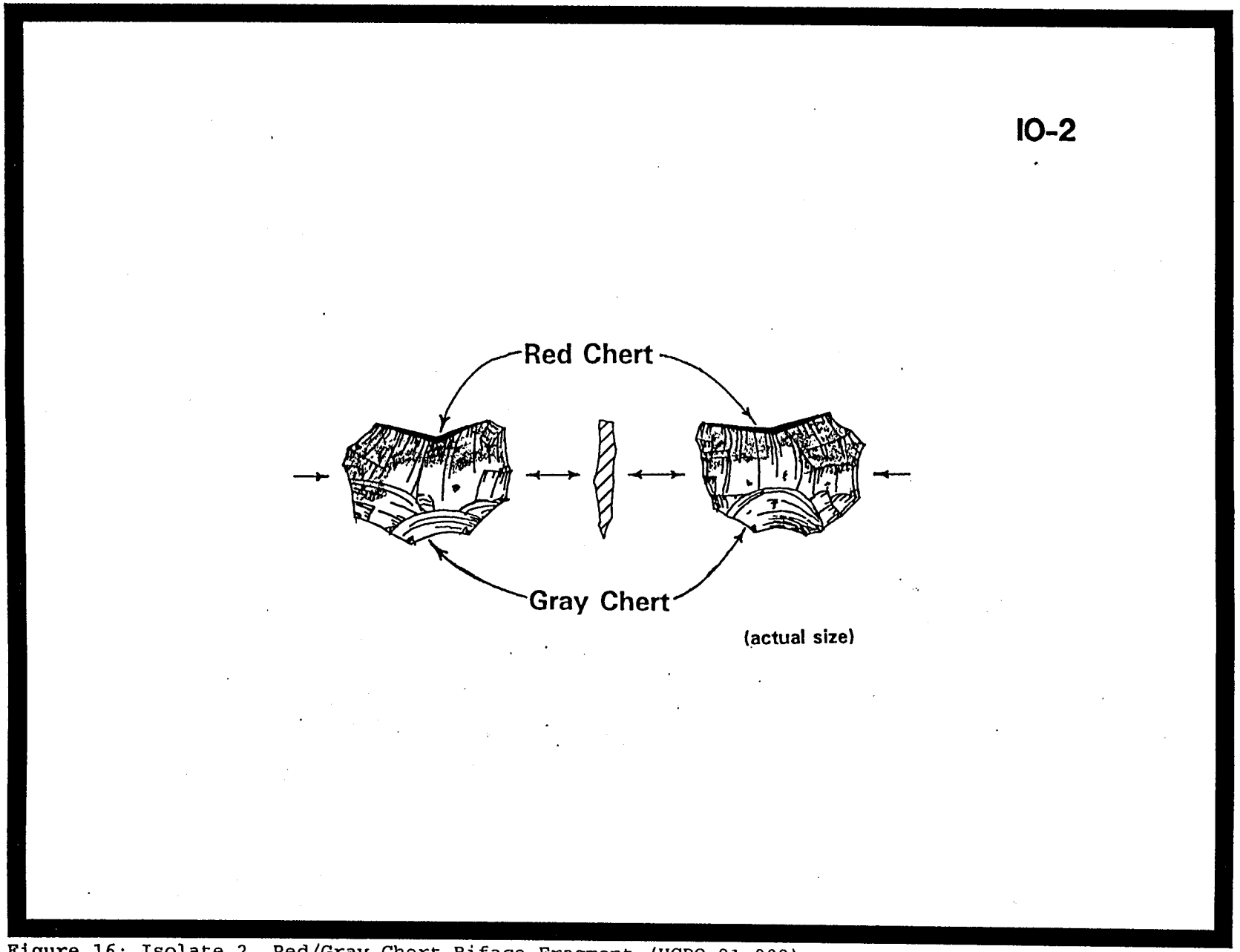


Figure 16: Isolate 2, Red/Gray Chert Biface Fragment (HCPO 91-009).

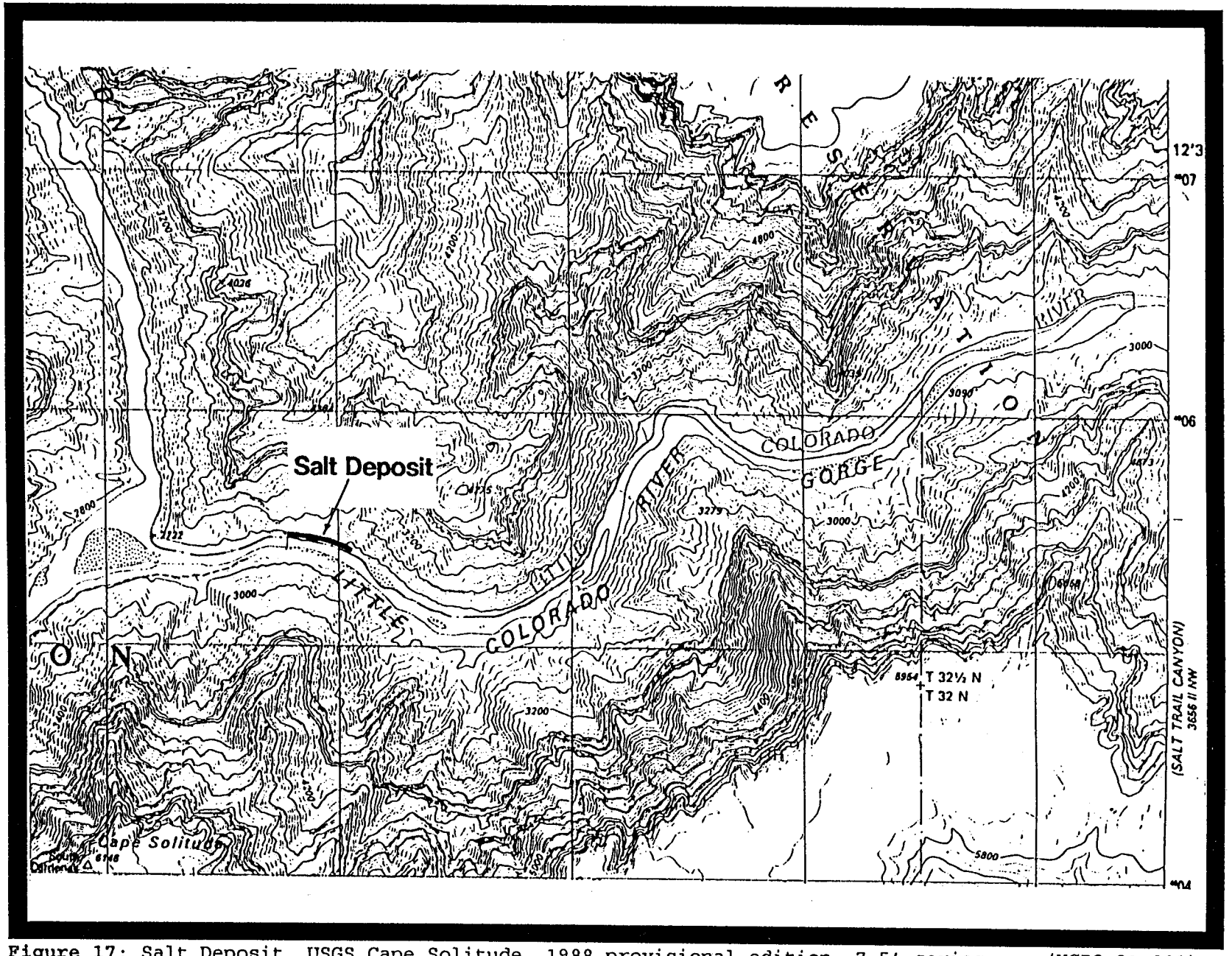


Figure 17: Salt Deposit. USGS Cape Solitude, 1988 provisional edition, 7.5′ series map (HCPO 91-009).

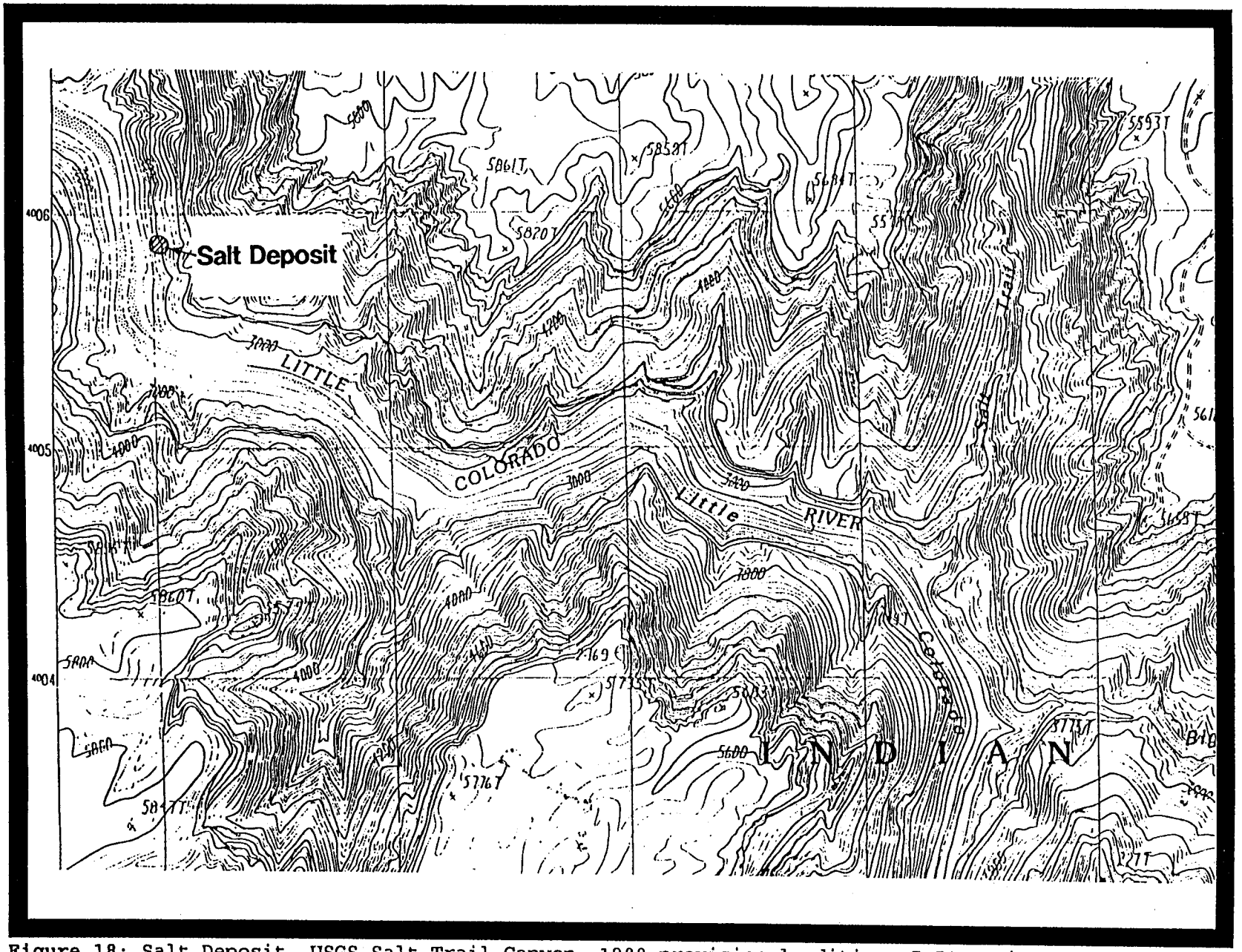


Figure 18: Salt Deposit. USGS Salt Trail Canyon, 1988 provisional edition, 7.5' series map (91-009).

the American Indian Religious Freedom Act, and the Native American Graves Protection and Repatriation Act.

National Historic Preservation Act (NHPA):

All of the sites are evaluated for eligibility to the National Register based on two interpretations of the nomination criteria, those of National Register Bulletin 15 and those of National Register Bulletin 38. The reason for evaluating the sites using both of these interpretations of the criteria is to clarify whether the site was eligible foremost as a historic/archaeological resource or as a Traditional Cultural Property. The potential exists for cultural resources to be eligible based on both of the interpretations of the criteria. When considering the eligibility as a TCP, this judgement was made from the standpoint of the Hopi culture; properties that are not a TCP for the Hopi Tribe may be one for another tribe. The following is a listing of the criteria of eligibility. In the case of TCPs (Bulletin 38 interpretation), the evaluation needs to be made from the standpoint of the relevant traditional culture and their view of history, rather than from the standpoint of Western values of history. The Bulletin 38 (TCP) form of the evaluation is shown with [Hopi] inserted at the relevant place.

> *criterion (a)*: properties that are associated with events that have made significant contribution to the broad patterns of our [Hopi] history.
>
> *criterion (b)*: properties that are associated with the lives of persons significant in our [Hopi] past.
>
> criterion (c): properties that [Hopis feel] embody the distinctive characteristics of a type, period, or method of construction, or that represents [in Hopi tradition] the work of a master, or that possess high [traditional Hopi] artistic values, or that represents [to Hopi] a significant and distinguishable entity whose components may lack individual distinction.
>
> *criterion (d)*: properties that have yielded, or may be likely to yield, information important [to Hopis] in prehistory or history.

Archaeological Resources Protection Act (ARPA):

Sites are evaluated as to whether they are of archaeological interest and are greater than 100 years old. If it is not clear whether the site is 100 years old or if there are intact archaeological remains, the sites are classified as potentially meriting protection under ARPA.

American Indian Religious Freedom Act (AIRFA):

For the purposes of evaluating sites under AIRFA, only those sites integrally involved in the continuation of religious practices were deemed eligible for protection. Sites not specifically required as a portion of the ceremonial activities were not considered as meriting protection. As with TCPs, properties of religious importance are culturally specific. These

have only been evaluated from the Hopi perspective.

Native American Graves Protection and Repatriation Act (NAGPRA):

Evaluation of sites based on their potential for consideration under NAGPRA stemmed from two distinct segments of the act. These are the potential for the site to contain human remains and the potential for the site to contain sacred objects or other items of cultural patrimony. Any site that appears to have been a habitation is considered to have the highest potential for containing human remains. Those sites with the potential for containing sacred objects and other items of cultural patrimony include such things as shrines and other locations with offerings. Again, cultural patrimony and sacredness are specific to a given culture, and it is the Hopi culture for which these resources are evaluated. Natural features without some form of human modification are not generally considered to be items of cultural patrimony.

Table 2: Evaluation of Cultural Resources in the Little Colorado River.

SITE #	ELIGIBILITY		ARPA	AIRFA	NAGPRA
	Bulletin 15 a b c d	Bulletin 38 a b c d			
AZ C:13:24	X	?	Yes	No	Pot.
AZ C:13:25	X	X X	Yes	Yes	Pot.
AZ C:13:26	X	?	Yes	No	No
AZ C:13:27	?	?	Pot.	No	Pot.
AZ C:13:28	none	none	No	No	No
AZ C:14:01	?	none	No	No	No
91-009-01	none	X X	No	Yes	No
91-009-02	none	? X X ?	No	Yes	No
91-009-03	none	X X X X	No	Yes	Yes
91-009-04	none	X X X	No	Pot.	No
91-009-05	none	? ? ?	No	Pot.	No
IO-1	none	none	No	No	No
IO-2	none	none	No	No	No
IO-3	none	none	No	No	No

SITE #	ELIGIBILITY Bulletin 15 a b c d	Bulletin 38 a b c d	ARPA	AIRFA	NAGPRA
IO-4	none	none	No	No	No
IO-5	none	none	No	No	No

note: "?" indicates potentially eligible, but there currently is not enough information known to make a definitive assessment.

Discussion

The inventory of the lower portion of the Little Colorado River did not yield any startling results. Eleven cultural resource sites were encountered: six classified as archaeological sites and five as traditional cultural properties. In addition, five isolated occurrences were located, most in portions of the Little Colorado River that did not have other classes of cultural resources. Taken together, the evidence demonstrates that all portions of the lower Little Colorado River have witnessed a human presence, though the upstream portion contains the most ephemeral and recent of the remains.

Even though the lower twelve miles of the Little Colorado River have perennial water, a relatively scarce resource in this desert region, several factors probably limited the utility of this resource. First, the water is extremely mineralized and as such, it does not provide a suitable long term drinking source. Likewise, any agriculture utilizing this water for irrigation would be a short lived enterprise due to the salt buildup in the soil. Secondly, the canyon itself is very narrow with little level land along its banks. This, coupled with the large drainage area that feeds the Little Colorado River, creates a great risk to any settlement along the banks from catastrophic flood events. Finally, the extreme importance of the area as a spiritually and ritually powerful destination for the Hopi people, and by inference to their ancestors, makes "casual" use of the area less likely or even sacrosanct.

In concordance with these assumptions, the only area where sites were identified that likely served habitation functions was near the confluence of the Little Colorado with the Colorado River. Since the Colorado River could have served as a source of less mineralized water, sites reflecting longer stays are logical. Still, no features indicative of agriculture, as have been seen at some of the larger delta areas along the Colorado River (for example, Unkar Delta (Schwartz et al. 1980)), were identified.

The vast majority of the sites represent limited and specialized activity loci. Among these, the majority are related to the Hopi Salt Trail and its use. As most of these comprise natural features, it is only through ethnographic information that they were identified. The other limited activity sites are historic properties, likely associated with Anglo-American use

in the area; one is likely tied to historic prospecting and mining activities.

Temporally, use of the identified cultural resources cover most of the prehistoric and historic spectrum from the Basketmaker period until the present. Similarly, evidence of Puebloan, Hopi, Paiute, and Anglo utilization is seen in the sites that were located.

One of the ancillary results of this project was the ability to evaluate the relative strengths and weaknesses of archaeological information and traditional cultural knowledge. As can be expected, each of these classes of knowledge is better suited for elucidation of distinct types of information. The archaeological research can identify precise areas in which human activities that have left physical manifestations have occurred. Similarly, it can often identify in a rough manner the types of activities that may have occurred and provide a temporal dimension. Traditional cultural knowledge, on the other hand, is much more suitable for identifying locations that may lack any physical cultural remains and can provide details about a location that could not be readily ascertained from the remains that are present. This aspect is manifest in the rich data surrounding the Hopi Salt Trail and the locations and activities that take place along it. None of this information could have been identified from the physical remains present at the sites, assuming even that the site itself could have been identified. In the context of work in the Little Colorado gorge, it became apparent that the traditional cultural knowledge was limited in specifying precise geographic locations. If the person relaying the information has not personally visited the location, then it is unlikely the account of the location will contain enough geographically specific clues for a third party to unambiguously identify the location. Similarly, oral historic data generally lacks the temporal precision - such as the antiquity of a specific site or when a region was occupied - that is obtainable through other classes of data.

Some specific examples of the relative merits of archaeological and oral historical information that were identified in this project follow. Sites associated with the Salt Trail closely conformed to what has been described in ethnographic literature (eg. Titiev 1937). Additionally, features that had not been previously documented were located and correlated with oral history. As mentioned above, it was also apparent that oral historical knowledge is not precise concerning specific locational information when learned abstractly. A feature or story may be well known, but unless the person has been shown locations referred to, there seems to be considerable ambiguity in confidently locating them from the story alone. This may be a factor related to the level of esoteric knowledge possessed by the informant, as higher level knowledge will likely contain greater detail and may better allow location of places from the account alone. It is also likely that the knowledge regarding a feature and how it relates to the culture is the important aspect of oral history, not the geo-spacial specifics that are dominant in the Western perspective of landscapes.

These factors may have led to the different in interpretations of the *Palöngawhoya* and *Putstuqwi* features. While it seemed to be relatively common knowledge that *Palöngawhoya* was in the Little Colorado River, the exact location was not uniformly known. For *Putstuqwi*, it appeared that knowledge of this feature was known only by a limited number of people. In

addition, lack of clarification between what was assumed by the author to be a "formal" place name and what was actually an individually assigned designation reflecting appearance of the feature (in this case to the *Saalako* Kachina) exacerbated the confusion. The distinction between a formal place name and a personally ascribed designation needs to be made obvious when multiple languages are involved.

With careful integration, recognizing the limits inherent in each form of research and data potential, ethnohistoric and archaeological data sets may yield a more complete view of history. Archaeological data is strong on the where and when, ethnohistoric information better address issues of what, why and who. The combination allows a more complete assessment of past human utilization of the environment.

References Cited

Aikens, C. Melvin

1966 *Virgin-Kayenta Cultural Relationships.* University of Utah Anthropological Papers No. 79 and Glen Canyon Series No. 29. University of Utah Press, Salt Lake City.

Ahlstrom, Richard V.N., David E. Purcell, M. Zyniecki, Dennis A. Gilpin, and Virginia L. Newton

1993 *An Archaeological Overview of Grand Canyon National Park.* SWCA Archaeological Report No. 93-92. Flagstaff.

Bartlett, Kathrine

1940 How Don Pedro de Tovar Discovered the Hopi and Don Garcia Lopez de Cardenas Saw the Grand Canyon, with Notes Upon Their Probable Route. *Plateau*, 12(3):37-45. Flagstaff.

Begay, Richard and Alexandra Roberts

1993 Early Navajo Occupation of the Grand Canyon Region. Paper Presented at the 58th Annual Meeting of the Society for American Archaeology, St. Louis.

Breed, William J. and Evelyn C. Roat (editors)

1974 *Geology of the Grand Canyon.* Museum of Northern Arizona, Flagstaff, and Grand Canyon Natural History Association, Grand Canyon, Arizona.

Carothers, Steven W. and Bryan T. Brown

1991 *The Colorado River Through Grand Canyon: Natural History and Human Change.* The University of Arizona Press, Tucson.

Collier, M.

1980 *An Introduction to Grand Canyon Geology.* Grand Canyon Natural History Association, Grand Canyon, Arizona.

Colton, Harold S.

1964 Principle Hopi Trails. *Plateau* 36(3):91-94. Flagstaff.

Effland, Richard W.,Jr., A. Trinkle Jones, and Robert C. Euler

1981 *The Archaeology of the Powell Plateau: Regional Interaction at Grand Canyon.* Grand Canyon Natural History Association Monograph No. 3. Grand Canyon, Arizona.

Eisman, Fred B., Jr.
1959 The Hopi Salt Trail. *Plateau* 32(2):25-32. Flagstaff.

Euler, Robert C.
1969 The Archaeology of the Canyon Country. In *John Wesley Powell and the Anthropology of the Canyon Country*, pp. 8-20. Geological Survey Professional Papers No. 670. Washington D.C.

1974 Havasupai Historical Data. In *Havasupai Indians*, edited by Robert A. Manners. Garland, New York.

1984 The Archaeology and Geology of Stanton's Cave. In *The Archaeology, Geology, and Paleobiology of Stanton's Cave, Grand Canyon, Arizona*, edited by Robert C. Euler, pp. 7-32. Grand Canyon Natural History Association Monograph No. 6. Grand Canyon, Arizona.

Euler, Robert C., George J. Gumerman, Thor N.V. Karlstrom, Jeffery S. Dean, and Richard H. Hevly.
1979 The Colorado Plateaus: Cultural Dynamics and Paleoenvironment. *Science* 205:1089-1101.

Euler, Robert C. and Alan P. Olsen
1965 Split-twig Figurines from Northern Arizona: New Radiocarbon Dates. *Science* 148:368-369.

Fairley, Helen C., Peter W. Bungart, Christopher M. Coder, Jim Huffman, Terry L. Samples, and Janet R. Balsom
1994 *The Grand Canyon River Corridor Survey Project: Archaeological Survey along the Colorado River between Glen Canyon Dam and Separation Canyon.* Grand Canyon National Park, prepared in cooperation with the Glen Canyon Dam Environmental Studies.

Ferguson, T.J., Kurt Dongoske, Leigh Jenkins, Mike Yeatts, and Eric Polingyouma
1993 Working Together: The Roles of Archeology and Ethnohistory in Hopi Cultural Preservation. *CRM*, Vol. 16, Special Issue, pp. 27-37. National Park Service, Cultural Resources.

Hall, Edward T.
1942 *An Archaeological Survey of the Walhalla Glades.* Museum of Northern Arizona Bulletin No. 20. Flagstaff.

Hammond, George P., and Agapito Rey
1940 *Narratives of the Coronado Expedition, 1540-1542.* Coronado Cuarto Centennial Publications, 1540-1940, vol. ii. University of New Mexico Press,

Albuquerque.

Haury, Emil W.
1931 *Kivas of the Tusayan Ruin, Grand Canyon, Arizona.* Medallion Papers No. 9. Gila Pueblo, Globe, Arizona.

Hereford, Richard, Helen C. Fairley, Kathryn S. Thompson, and Janet R. Balsom
1993 *Surficial Geology, Geomorphology and Erosion of Archaeological Sites along the Colorado River, Eastern Grand Canyon, Grand Canyon National Park, Arizona.* US Geological Survey Open-File Report 93-517.

Jenkins, Leigh and T.J. Ferguson
1994 *Öngtupka: Hopi Sacred Geography of the Grand Canyon.* Paper prepared for a Symposium on Sacred Geography of the Grand Canyon, Annual Meeting of the Western History Association, Albuquerque, New Mexico.

Jones, Anne Trinkle
1986 *A Cross Section of Grand Canyon Archaeology: Excavations at Five Sites Along the Colorado River.* Western Archaeological and Conservation Center Publications in Anthropology No. 28. National Park Service, WAC, Tucson.

Judd, Neil M.
1926 *Archaeological Observations North of the Rio Colorado.* Bureau of American Ethnology Bulletin No. 82. U.S. Government Printing Office, Washington, D.C.

Judge, Joseph
1969 Retracing John Wesley Powell's Historic Voyage Down the Grand Canyon. In *National Geographic* 135(5):668-713. National Geographic Society, Washington, D.C.

Madsen, David B.
1975 Dating Paiute-Shoshoni Expansion in the Great Basin. *American Antiquity* 40:82-86.

Olsen, A. P.
1966 Split-twig Figurines from NA5607, Northern Arizona. *Plateau* 38:55-64. Flagstaff.

Phillips, B. G., A. M. Phillips, and M. A. S. Bernzott
1987 *Annotated Checklist of Vascular Plants of Grand Canyon National Park.* Grand Canyon Natural History Association Monograph No. 7. Grand Canyon, Arizona.

Powell, John W.
1875 *Explorations of the Colorado River of the West, 1869-1872.* Government

Printing Office, Washington D.C.

Reilly, P. T.
1969 Was Fire Once Part of the Figurine Ritual? *Masterkey* 43:34-36.

Rice, Glen, Rick Effland, and Laurie Blank-Roper
1979 *A Sample Survey of Tusayan Planning Unit I, Kaibab National Forest, Arizona.* Arizona State University, Department of Anthropology OCRM Report 34, Tempe.

Schaafsma, Polly
1990 Shaman's Gallery, A Grand Canyon Rock Art Site. *Kiva* 55(3):213-234. Tucson.

Schroedl, Alan R.
1977 The Grand Canyon Figuring Complex. *American Antiquity* 42(2):254-265.

Schwartz, Douglas W.
1955 *Havasupai Prehistory: Thirteen Centuries of Cultural Development.* PhD. dissertation, Yale University, New Haven.

1960 Archaeological Investigations in the Shinumo Area of Grand Canyon, Arizona. *Plateau* 32:61-67. Flagstaff.

1963 An Archaeological Survey of Nankoweap Canyon, Grand Canyon National Park. *American Antiquity* 28(3):289-302. Salt Lake City.

1965 Nankoweap to Unkar: An Archaeological Survey of the Upper Grand Canyon. *American Antiquity* 30(3):278-296. Salt Lake City.

1966 A Historical Analysis and Synthesis of Grand Canyon Archaeology. *American Antiquity* 31(4):469-484. Salt Lake City.

1969 Grand Canyon Prehistory. In *Geology and Natural History of the Grand Canyon Region, 5th Field Conference, Powell Centennial River Expedition, 1969,* pp. 35-40. Four Corners Geological Society, Durango.

1989 *On the Edge of Splendor, Exploring Grand Canyon's Human Past.* Annual Bulletin of the School of American Research, Santa Fe.

Schwartz, Douglas W., Richard C. Chapman, and Jane Kepp
1980 *Archaeology of the Grand Canyon: Unkar Delta.* Grand Canyon Archaeological Series, Vol. 2. School of American Research, Santa Fe.

Schwartz, Douglas W., Jane Kepp, and Richard C. Chapman

1981 *Archaeology of the Grand Canyon: The Walhalla Plateau.* Grand Canyon Archaeological Series, Vol. 3. School of American Research, Santa Fe.

Schwartz, Douglas W., Arthur L. Lange, and Raymond deSaussure
1958 Split Twig Figurines in the Grand Canyon. *American Antiquity* 23(3):264-274. Salt Lake City.

Schwartz, Douglas W., Michael P. Marshall, and Jane Kepp
1979 *Archaeology of the Grand Canyon: The Bright Angle Site.* Grand Canyon Archaeological Series, Vol. 1. School of American Research, Santa Fe.

Simmons, Leo W (editor)
1942 *Sun Chief: The Autobiography of a Hopi Indian.* Yale University Press, New Haven.

Smith, G. H.
1963 Split-twig figurines from San Bernardino County, California. *Masterkey*:37:86-90.

Smith, Dwight and Gregory Crampton (editors)
1987 *The Colorado River Survey.* Howe Brothers Publishers, Salt Lake City.

Taylor, Walter W.
1958 *Two Archaeological Studies in Northern Arizona. The Pueblo Ecology Study: Hail and Farewell and a Brief Survey Through the Grand Canyon of the Colorado River.* Museum of Northern Arizona Bulletin No. 30. Flagstaff.

Titiev, Mischa
1937 A Hopi Salt Expedition. *American Anthropologist* 39(2):244-258.

Whiting, Alfred F.
1939 *Ethnobotany of the Hopi.* Museum of Northern Arizona Bulletin No. 15. Flagstaff.