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THE NAVAJO HISTORY AND ARCHAEOLOGY
OF EAST CENTRAL BLACK MESA, ARIZONA
(CRMP-83-046)

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with contributions by
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4 March 1983

Federal Permit No. 79-NM-105
(22 May 1984)

Tribal Permit No. 56
(22 May 1984)

NAVAJO NATION PAPERS IN ANTHROPOLOGY NUMBER 21

ABSTRACT

Navajo historical and archaeological investigations along the Navajo Route 41 roadway are summarized in this report. This roadway traverses east-central Black Mesa, Arizona north from the community of Pinon past the community of Forest Lake to a small wash, Many Sheep Wash, just past the main Dinnebito Wash. Included within this report are the early and later Navajo history of the area, the historic Navajo site types on Black Mesa, and the Navajo settlement patterns along the 23-mile right-of-way. Summary descriptions, maps, and artifact inventories are provided for each of the 47 Navajo sites or site components that were investigated within the right-of-way. A comparative investigation of historic Navajo site artifact assemblages is also presented. The ethnohistoric information and the data from the sites investigated together confirm the extreme isolation of this area of the Navajo Reservation.

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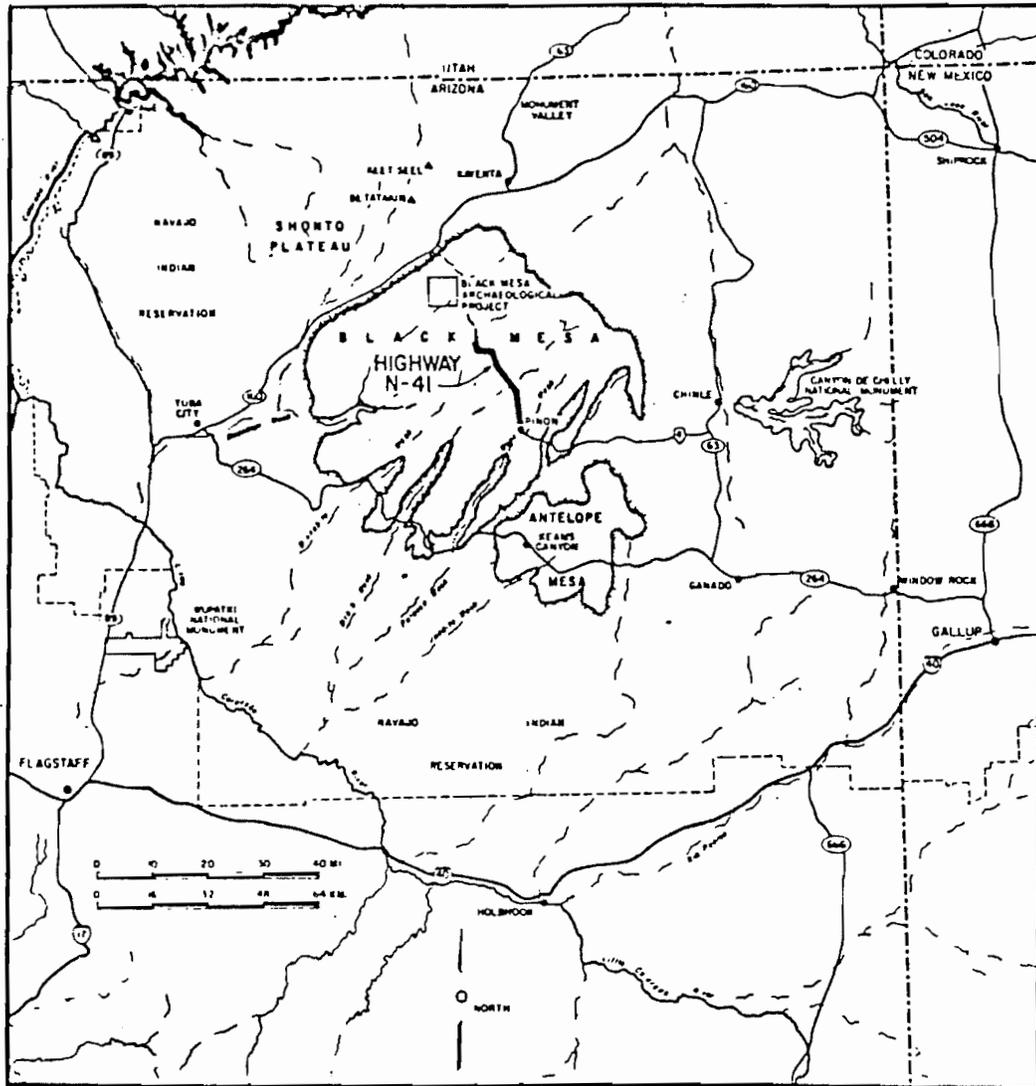
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The location of the project area

CHAPTER 1

INTRODUCTION

Included within this volume is a summary of the investigations of 47 historic Navajo sites, or components of sites, located within the right-of-way and maintenance yard of the proposed Navajo Route 41 (N-41) roadway. Also included is a summary of the Navajo early history, oral history, and ethnohistory of the area under investigation. Navajo Route 41 is a proposed paved road that will traverse east-central Black Mesa, Arizona, north from the community of Pinon past the community of Forest Lake to a small wash, Many Sheep Wash, just past the main branch of the Dinnebito Wash. The N-41 right-of-way is approximately 23 miles long and lies entirely in the former Navajo-Hopi Joint Use Area.

Investigations of the Navajo history and historic archaeology of the right-of-way were undertaken in the spring of 1979. Work on the historic sites to be impacted by road construction was completed in the summer of 1980. Intensive investigations of the prehistoric (non-Navajo) remains in the N-41 right-of-way were undertaken concurrently with those reported here.

The oral and ethnohistory research along the right-of-way was conducted in order to eliminate a relatively common problem in cultural resource management studies: the interpretation of archaeological site data along a linear corridor (road, pipeline, or transmission line). Additional archaeological survey, together with hypothesis testing is usually necessary to assist in the interpretation of prehistoric sites along such a corridor. With recent historic sites, however, the strategy employed in this project (local oral history and ethnohistory research) can and does provide a means of placing sites in their settlement, economic, ecological, and historical context.

The data collected, and form of analysis reported here, follows that outlined in the "Request for Proposal" (Bureau of Indian Affairs, Request No. NA600-8010) for this project. The "Request for Proposal" was quite specific as to the research to be performed. Research on the cultural remains in the right-of-way were to be conducted in two phases. In Phase I investigations, each of the prehistoric and historic sites within the right-of-way were to be examined in light of these guidelines:

- A. A thorough and accurate description of the 53 prehistoric and historic sites located along the proposed N-41 right-of-way. This description should include:

- 1) The accurate plotting of all site locations on appropriate maps.
- 2) Complete and detailed descriptions of the morphological and/or architectural characteristics of the resources, as evidenced by intensive surface observations and selected subsurface testing. The morphological descriptions should include reliable information on the varying depths of cultural deposits at each site.
- 3) The probable cultural-temporal affiliations represented at each site (should include a careful estimation of the nature, number, and extent of archaeological components present at the site).
- 4) A thorough description of the variety and spatial distribution of artifactual material associated with each site (specifically surface material and artifacts found in the course of test excavations). These artifacts should be classified in accordance with meaningful typological schemes.
- 5) Complete photographic documentation of all characteristics, cultural features, and structures encountered during surface examinations or tests conducted at the sites.
- 6) Accurate maps clearly illustrating the plan, extent, and topographic setting of each cultural resource. These maps should also illustrate the exact relationship of the right-of-way to the sites and show the locations of artifact collection areas and any subsurface test.
(Bureau of Indian Affairs 1979:2-3).

In addition to the previously described research on sites within the right-of-way, a Navajo ethnohistory of the project area was included in Phase I investigations. The "Request for Proposal" described this research in this manner:

- D. A professional ethnohistory of the project area designed to aid in the identification, description, and understanding of the Navajo cultural resources located along the right-of-way. The ethnohistory should emphasize the following types of data:
 - 1) The age and use history of the Navajo sites.
 - 2) The function of the Navajo sites and their placement.
 - 3) The Navajo social units that utilized or occupied the sites.
 - 4) The locations of any Navajo burials located within the site area or in the general right-of-way.
 - 5) The location and nature of any sacred sites located along the right-of-way with an evaluation of their significance on the local Navajo people and recommendations for their protection.
 - 6) Identification of any Navajo sites along the right-of-way which have an important heritage value to the local Navajo.

- 7) The ethnohistory should also include an overview of the Navajo occupation of the project area which places the Navajo sites in a meaningful ethnographic and historical context. This overview should include an evaluation by the ethnohistorian of the research potential of the sites and recommendations for additional archaeological investigations (Bureau of Indian Affairs 1979:3-4).

Ethnohistorical research was to be limited in scope for this project. The "Request for Proposal" states that it should follow this form:

Ethnohistorical research should stress the collection of informant data over archival research. Archival research should be largely limited to the major and more accessible primary sources. A complete and intensive search of the records would be inappropriate considering the scope and linear form of the road project (Bureau of Indian Affairs 1979:7).

Additional guidelines for the Navajo portion of this research project were also provided in the "Request for Proposal". These guidelines covered Phase II investigations as well as other aspects of this project. The "Request for Proposal" suggested, for instance, that in-depth research be conducted with regard to local Navajo settlement patterns and that material culture items recovered from the different historic Navajo site types be subjected to additional analysis. (Bureau of Indian Affairs 1979:6).

This volume on the Navajo history and archaeology along the N-41 roadway seeks to fulfill, to as great an extent as possible, the research requested under the guidelines stipulated for this project. In order to meet these goals, this volume is organized as follows. In later sections of this introduction a basic environmental description of the right-of-way is presented along with a brief description of previous research in the area and a summary of the research methodology employed. The next section, Chapter 2, summarizes the early Navajo history of Black Mesa, until the late nineteenth century. In Chapter 3, the later oral and ethnohistory of the area is discussed.

Chapters 4 through 7 contain information concerning the 47 historic Navajo sites or components of sites investigated. In Chapter 4, the Navajo site types found on Black Mesa are described and criteria utilized in identifying them are presented. A summary of the Navajo settlement patterns along the right-of-way is in Chapter 5. Information on the historic Navajo sites investigated, including site maps and tables of artifacts collected from each site, is contained in Chapter 6. The last chapter in this section, Chapter 7, presents a comparative analysis

of artifact assemblages obtained from a large sample of the sites investigated.

Conclusions drawn from this research effort are found in the last chapter of this volume, Chapter 8. Following this chapter, three appendices are provided to augment earlier information presented. Appendix 1 lists the dates of tree-ring samples collected from sites investigated. An analysis of domestic and wild animal bones recovered is contained in Appendix 2. Appendix 3 lists, by site, the dimensions of each of the structures investigated on the 47 sites or site components.

Description of the Right-Of-Way Route

The N-41 right-of-way runs between Pinon, Arizona and Many Sheep Wash just beyond the center (chapter house) of the Navajo Community of Forest Lake, Arizona. The right-of-way begins just east of Pinon and proceeds at the crest of a ridge until it descends into Carries Water Wash. After crossing Carries Water Wash the right-of-way crosses another ridge. A small valley, a tributary of the Oraibi Wash, is then entered. The right-of-way proceeds along the western edge of this valley until it crosses a small ridge and enters the Oraibi Valley. After crossing this broad valley it enters a small side valley of the Oraibi and then climbs another ridge, the highest one of the route.

The right-of-way quickly descends into Ute Valley, soon after the crest of this ridge is reached. The N-41 route, as it has done in previous valleys except for the main washes it has crossed, stays close to the western edge of Ute Valley. It then enters and proceeds down the southern edge of the East Fork of the Dinnebito Wash. After passing the Forest Lake Chapter House the route crosses the East Fork to the north side. The right-of-way then traverses the triangularly shaped ridge just before the confluence of the East Fork and the main Dinnebito Wash. The N-41 right-of-way then crosses the Dinnebito and enters a series of small foothills. After crossing these hills the right-of-way ends just at the edge of Many Sheep Valley, a tributary of the Dinnebito.

Vegetation communities do not change dramatically along the right-of-way. Instead, communities change with regard to which intermediate plant species (generally snakeweed or sagebrush) is the dominant species in lowland and wash areas. These changes primarily reflect elevational differences, with snakeweed dominant in the lower elevations and sagebrush in the higher elevations. The pinyon-juniper forest occurs on all ridges along the right-of-way and at valley edges away from wash areas of deep soils.

The Wepo Wash area, near Pinon, is dominated by snakeweed. The ridge over which the roadway runs after leaving the Wepo Wash Valley on

its way towards Carries Water Wash is covered by a pinyon-juniper-snake-weed-sagebrush community. Carries Water Wash, like Wepo Wash, is dominated by snakeweed, with various species of grasses and Russian thistle also present.

The first side drainage of the Oraibi that the right-of-way passes through contains a sagebrush-snakeweed-grass community with a scattering of pinyon and juniper trees on the edge. The main Oraibi Wash area has a high concentration of four-wing saltbush together with snakeweed and grass. The ridge between the Oraibi Wash and Ute Valley is covered by a pinyon-juniper community. Ute Valley again has pinyon-juniper on its edges, but its floor is dominated by sagebrush. The East Fork of the Dinnebito is dominated by a snakeweed-sagebrush-grass community, with its boundary edges again pinyon-juniper covered.

The next major wash that the right-of-way crosses, the Dinnebito, is covered by a snakeweed-sagebrush-grass community. The upland area between the Dinnebito and Many Sheep Valley is dominated by the pinyon-juniper-snakeweed-sagebrush community. Many Sheep Wash itself is primarily covered by a sagebrush-grass community.

Elevation along the N-41 right-of-way varies from a low of 6300 feet to a high of 6800 feet. The lowest points along the roadway are at its southern end, just below Pinon, and in the Oraibi Wash Valley. The highest point lies on the ridge between the Oraibi Wash and Ute Valley. All washes that the roadway crosses are heavily cut by arroyos. The present period of arroyo cutting began around 1870-1880 and still continues today in the area. Primary water sources along the roadway are springs, and also tanks, and windmills that have been constructed since the 1930s.

Research Methods

Research methods utilized need explanation for three areas: (1) what archaeological investigative techniques were employed at the 47 sites or components of sites investigated; (2) what and how ethnohistoric information was gathered along the right-of-way; and (3) what and how informant data was gathered about the sites to be impacted. Archaeological investigations at the historic Navajo sites within the right-of-way, and the one site in the maintenance yard, were straightforward. The basic research strategy followed is that utilized in recent years on Black Mesa by the Black Mesa Archaeological Project of Southern Illinois University at Carbondale (Russell 1979a; Holley, Blomberg, and Russell 1980). Sites were first mapped, with emphasis on locating and identifying surface features and structures. After the basic site map was completed, artifacts were collected from the site surface. Two methods

were used for collecting artifacts. In the first method, utilized for smaller or older sites with few artifacts, all artifacts and bones on the site surface were point-provenienced. In the second method, utilized for only the more dense (artifact-wise) sites, the site was divided into 4 by 4 meter squares. Artifacts were then collected by square. All but a few of the 47 sites were completely collected (all surface artifacts and bones). In addition to mapping and collecting sites, wood samples, when available, were taken for dating purposes. Written descriptions of sites and structures were also performed as part of the on-site research. Photographs on the site area and structures were taken to augment written descriptions.

While artifactual material from most sites was point provenienced or collected by grid square, analysis of these data is not contained in this report. It was felt, however, that this information was important to obtain so that it could be utilized by future researchers. Listings of artifacts and their proveniences for each site investigated are on file at the Navajo Nation Cultural Resource Management Program in Window Rock, Arizona.

No excavations were performed at any of the historic Navajo sites investigated. The author's experience with the excavation of recent historic Navajo sites (post 1880) is that very little additional information is gained by time-consuming and expensive excavations. Excavations may reveal hearths and small artifacts not visible on the site surface, but these add very little to overall site interpretation. Careful mapping of a site, complete surface collections, and informant information provide a relatively complete picture of the activities that occurred at a specific site (for an alternative opinion, however, see Kelley and Lent 1982).

Ethnohistoric research along the N-41 right-of-way was concerned with a number of specific topics. Primarily, however, research focused on data collection that would allow for a general ethnohistory of the research area. To this end, Navajo informants who lived along the right-of-way were interviewed on the following topics.

- 1) An historic genealogy of the camp of the informant(s) was recorded.
- 2) Settlement and seasonal movement patterns and reasons for these movements of the informant's camp were collected.
- 3) The location of agricultural fields of a camp were identified. Field type was recorded.
- 4) A brief history of the camp was discussed.
- 5) The economic history of the camp was discussed.
- 6) Information on the plants that were gathered for food and where they were gathered was collected.
- 7) Information on the animals that were hunted for food and where this occurred was collected.

- 8) Information on present camp composition was collected.
- 9) Information on site types on Black Mesa was collected.

Altogether, one or several members of eight Navajo camps along the right-of-way were interviewed for all topics listed above. These eight camps represented members of families that had occupied all but a few of the 47 sites investigated. In addition to these primary interviews, members of several other camps near the right-of-way were also interviewed to provide supplemental information.

After one or more members of these eight camps had been interviewed at the camp's present habitation site, they were driven to the sites along the right-of-way where their families had lived or that they knew about in order for the author to collect informant site data. Previous to the interviews at each segment of the right-of-way, each site had been visited. At each site the following information was collected:

- 1) The number of and variety of structures and features present.
- 2) Site age, estimated from artifacts present, variety of structures, and wood deterioration.
- 3) Season of the year the site was occupied.
- 4) Site type.
- 5) The presence of any burials on the site.

Informants, when taken to the sites, were asked a series of questions similar to the observations made earlier. In particular, they were asked questions on the following topics:

- 1) Who had lived at the site.
- 2) When (dates) was the site occupied.
- 3) What was the function of the site.
- 4) What season or seasons of the year the site was utilized.
- 5) What variety of structures were present on the site when it was occupied and where were they located.
- 6) Why was the site abandoned.
- 7) If burials were present on the site (or in the right-of-way near the site).
- 8) If the site was sacred or if others in the area (including prehistoric sites) were sacred.
- 9) If, for any reason, the site was historically important to the local Navajo history.

If discrepancies occurred between the information records about a site and informant data, an attempt was made to resolve them through additional interviewing. If the discrepancy could not be resolved, which occurred in only a few cases, the informant's statements were accepted over observational data unless strong evidence (such as tree-ring cutting dates) later showed that the informant statements were inaccurate.

For the majority of the historic sites along the right-of-way, information was obtained from persons who had lived at the site when it had been occupied, or from close family members (usually children). A few sites in the right-of-way were occupied previous to A.D. 1910. Informant data on these is weak simply because they were occupied before the birth of the local informants utilized to provide information. A number of other sites in the right-of-way had been inhabited by families that had since moved from the region. Information on these sites was obtained from local informants who had known and visited the Navajo families that had lived at the sites in question.

The majority of interview data was obtained during a ten-day period during March and April of 1979. At this same time, during Phase I of this project, sites within the right-of-way were viewed and basic informant data on them was collected. A few additional interviews were conducted in August 1979 to collect information on several recently located sites in the right-of-way and to bolster some areas from which data were deficient. Historic Navajo sites within the right-of-way were mapped, collected, recorded, and photographed in March and April, as well as during the summer of 1979. A few of the larger sites were investigated in the summer of 1980.

History of Previous Research in the Area

In discussing previous research conducted in the area under investigation, two bodies of information need to be addressed. One of these deals with historic Navajo archaeology in the Black Mesa region and the other with ethnohistoric and ethnographic research conducted there. This brief discussion attempts to discuss the most important published sources on these two topics; it does not intend to be an exhaustive summary of all research previously conducted.

Historic Navajo archaeology grew in importance considerably in the 1970s. Most research has been, however, to the east of Black Mesa. Early historic Navajo archaeological research on Black Mesa was conducted by the Navajo Tribe for their various land claim cases (Littell 1967). Navajo land claims researchers investigated many early Navajo sites in the area. A secondary study from this data source (Kemrer 1974) investigated the extent of Navajo settlement at various points in the past.

In recent years many historic Navajo sites on northeast Black Mesa have been investigated as part of the Black Mesa Archaeological Project. These studies have used ethnohistoric and archaeological data together to more fully comprehend the Navajo occupation of northeastern Black Mesa (Russell and McAllister 1978; Russell 1979a; Holley, Blomberg, and Russell 1980). An additional article (Russell 1978) discusses Navajo agricultural field houses and other site types located just northwest of

Black Mesa in the Klethla Valley. A recent study by Andrews (1981), not associated with those previously discussed, provides data on a partially excavated Navajo site adjacent to the N-41 route near the Forest Lake Chapter House.

The most important ethnohistoric summary dealing with Black Mesa was researched as part of the Navajo land claim studies. Correll (1972) compiled a chronological listing of historic documents that mentioned any Navajo use of the 1882 Executive Order Reservation. Ethnographic research on and around Black Mesa has not been as limited as historic archaeological research. Downs (1964, 1965) conducted research on Navajo animal husbandry around Pinon, Arizona in the early 1960s. The community of Shonto, just northwest of the project area, has been the site of three studies that have dealt primarily with Navajo economics (Adams 1963; Ruffing 1973; and Russell 1979b). A study of the effect of livestock reduction on the populations in the Navajo-Hopi Joint Use Area has also recently been conducted (Wood, Vannette, and Andrews 1979). Research into the effect of the coal mines on northeastern Black Mesa was also published in the 1970s (Callaway, Levy, and Henderson 1976; Kozlowski 1972).

In addition to the previous sources, several Navajo autobiographies provide pertinent data on the early history and settlement patterns on and around Black Mesa. These autobiographies (Dyk 1938; Dyk and Dyk 1980; Dyk 1947; Frisbie and McAllester 1978) provide an interesting summary of Navajo social and economic behavior in the area in the late nineteenth and early twentieth centuries.

CHAPTER 2

EARLY NAVAJO HISTORY OF BLACK MESA

The Navajo are fairly recent inhabitants of the Black Mesa region. Before their arrival, this area was occupied by the Hopi and their predecessors, the Anasazi. The exact date of arrival of the Navajo into this area is currently unknown. However, there is strong evidence for their presence on Black Mesa by the eighteenth and nineteenth centuries, and limited evidence for earlier occupation in the seventeenth century.

This chapter provides an outline of the Navajo occupancy of Black Mesa from the seventeenth century to the late nineteenth century. The late nineteenth century was selected as the end date for this chapter for two reasons. First, none of the historic Navajo sites investigated along the N-41 right-of-way dated any earlier than 1880 to 1980. Second, the late nineteenth century is the earliest period for which informant data is available for the project area.

Much of the information available concerning the Navajo occupancy of east-central Black Mesa before the end of the nineteenth century is fragmentary and vague. The best source for the early Navajo occupancy of this area is Correll (1972). Correll in his report summarizes the documentary, archaeological, tree-ring and birth record data for the 1882 Executive Order Reservation. This summary is especially important for information concerning the interactions of the Navajos, Hopis, Utes, Spaniards, and Anglos. However, there is little information concerning the Navajo adaptations to Black Mesa or their political and social systems during this early period.

The second important source for the early Navajo history of the area is Kemrer (1974). Kemrer summarizes the boundaries of Navajo settlements at various historical time periods (1750-1799, 1800-1867, and 1868-1880). Both Kemrer and Correll base their investigations, in part, on Navajo land claim archaeological survey data. This survey provided important tree-ring dates from early Navajo sites on and around Black Mesa. From these dates Kemrer was able to produce three maps depicting limits of Navajo settlement during the three periods mentioned previously. According to Kemrer (1974:127) there is limited evidence for the Navajo occupancy of the Black Mesa region during the seventeenth century. This consists of two tree-ring dates showing some limited Navajo intrusions into the area during this century. Several tree-ring cutting dates show an increased use of portions of this region during the early eighteenth century. In the late eighteenth and early nine-

teenth centuries many more tree-ring dates are available to substantiate the Navajo occupation of the area.

Kemrer's (1974:129) map depicting the limits of Navajo settlement in 1750-1799 shows that southeastern Black Mesa (up to approximately the Oraibi Wash), was occupied. For the period between 1800-1867 the occupied area increased further to include almost the entire Black Mesa except for the extreme western portion and the area immediately adjacent to the Hopi villages. By 1868-1880 the Navajo occupied almost all of Black Mesa, except for the area around the Hopi villages (Kemrer 1974: 131). In addition, by 1880 the Navajo had also extended their settlement range into the areas north and west of Black Mesa.

Kemrer (1974:132) also graphs construction activity from 1750-1900. This graph is based on the number of cutting dates that appear in any one year. From 1750 to 1806 the number of cutting dates is few. From 1807 to 1819 the number of cutting dates from historic Navajo sites increases followed by a decrease from 1820 to 1852. After 1852 and before 1900 the number of cutting dates again shows high levels.

There is little doubt that Navajos were present on Black Mesa by the eighteenth century. From the number of cutting dates available from the land claims data it appears, however, that this occupancy was sporadic and did not involve large Navajo populations. After A.D. 1700 Navajo families slowly moved into the area, or just traversed it on their way to other areas west.

The documentary evidence presented by Correll (1972) gives us a glimpse of some Navajo economic patterns during this early historic period. An analysis of the material indicates that the early Navajo continually interacted with the Hopi. Most of this interaction, as summarized by Correll (1972:ii-vi) was hostile, with the Navajo being normally the aggressor. Correll presents information on raids by the Navajo on certain Hopi villages, on war between the two groups, on depredations by the Navajo against the Hopi, and of Hopi stock being driven off by the Navajo.

The documentary material provides some information on peaceful interactions between the two tribes. For instance, in 1780 a smallpox epidemic caused many Hopi to desert their villages and join the Navajo (Correll 1972:8). In 1851, it was reported that the Navajos were planting with the Hopi in Canyon de Chelly and were coming to Hopi daily to trade (Correll 1972:iii).

In a few specific years both friendship and war were reported between the Hopi and Navajo. For instance, in 1776 the Hopi of Oraibi were said to be on friendly terms with the Navajo. In this same year, there was also a war between the two groups (Correll 1972:6-7). In the

Correll chronicle of references to the Navajo in the 1882 Executive Order Reservation, bad or poor relations between the Hopi and Navajo outnumber good ones. This may be simply the result of observer bias in that travelers, missionaries, political and military expeditions in the area heard about and reported the disagreements between the two groups more than the agreements.

Another possible reason for why both war and peace could occur between the Hopi and Navajo in the same year relates to the structure of Navajo and Hopi society. The Hopi were, and continue to be, divided into a number of villages. These villages are relatively autonomous units, each having a separate governing body. One village, or group of villages, might be on peaceful terms with the Navajo at a point in time, while others might not be. In other words, the villages did not act as a single political unit and it was possible for some to form alliances with the Navajo independently of other villages. Likewise, the Navajo were also divided into a number of autonomous bands, independent of each other. One Navajo band might be on friendly terms with the Hopi, while another might be raiding them. It would thus be possible for different groups of each to be at war and peace at the same time. This pattern suggests that relations were fluid and capable of changing rapidly.

Trade was probably the main link in the early historic period between the Hopi and the Navajo. In fact, the reason southern Black Mesa was settled first by the Navajo, rather than areas north of it, probably was due to its closeness to the various Hopi villages that were present at the time. The flow of Navajo into the Hopi villages was probably fairly constant, especially after the fall harvest.

Several Navajo autobiographies have addressed the topic of Hopi trade. Frank Mitchell (1882-1967), in his autobiography, stresses the role of the Hopi in influencing his family's settlement patterns. He states:

Our winter house was there in the Black Mountain area. One of the reasons we went there was to trade with the Hopi Indians.

My mother's mother usually moved her camp across the valley to the Black Mountain area; there was better grazing over there in the winter for the sheep, and she could trade with the Hopi Indians (Frisbie and McAllester 1978:40).

Trade with the Hopi was very important to Frank Mitchell's family in the last decades of the nineteenth century. The major economic concern of Mitchell's family was livestock, and they moved wherever they needed to find good grazing. Agricultural products were obtained by trading meat to the Hopi.

An excellent example of a trading trip in the 1870s to Hopi is contained in the first autobiography of Left Handed (Son of Old Man Hat). Left Handed and his family lived on the northeastern corner of Black Mesa during the winter. In the summer his family lived at the base of Black Mesa towards the present-day community of Kayenta. Left Handed describes a trading trip to Oraibi from their Black Mesa home in these terms:

One fall my father said to me, "You'll have to go with me to the Oraibi, because we haven't anything to eat." He and my mother killed some sheep and goats, and we packed our horses. After we'd put on all the mutton he said, "You ride this horse. Get on now, and be careful; watch yourself and your horse; watch everything." We started out, but we didn't get there that day. On our way we stopped and camped at a place all night. The next morning we started again and arrived at the village about noon (Dyk 1938:49).

After their arrival at the village, Left Handed continues his story:

Two women came down from a ladder and took all our stuff, mutton, saddles, saddle-blankets and everything and climbed way up the ladder. They said to us, "Tie your horses right there." I was afraid to go up, I thought I might fall, but I tried. When my father went up I went right close behind him, and we got up all right and went in the village where the women had taken our stuff. They already had the mutton laid out over the poles that they used for meat. Our stuff was way back in the house, and there was a place for us. They said, "Come in and make yourselves at home. Sit down." We sat down, and they started going around and making some kind of food for us I'd never seen before. They gave us a great many different things to eat. Some I knew, some not. We started eating, and everything tasted different to me, but I liked it all (Dyk 1938:50-51).

At the conclusion of Left Handed's introduction to Hopi, his father obtained items in exchange for the mutton they had brought. Left Handed also describes this:

They began to talk to us, but my father didn't understand them either, and they couldn't understand us. They started talking to him, just going by motions, and asked when we were going back. My father said, "We want to go now, today." They talked for quite a while with him, asking what we wanted for our mutton. He told them we wanted corn, dried peaches, and other foods already cooked. They said, "All right, sure enough, we'll give you some corn and all the other things you ask for."

They spread a blanket on the ground, one that the Navajo women weave, and on it they put the mutton, cut up in pieces. Each Oraibi got a piece. We had a large buckskin sack, and they each gave my father a measure full of corn, pouring it in his

sack. Soon the sack was full. There was other food, already prepared, made out of corn. He got almost a half sack of that, and dried peaches, about a half a sack also (Dyk 1938:51).

Trading between the Navajo and Hopi continued well into the twentieth century. Navajo trading trips to Hopi, like the one Left Handed experienced, usually took place in the fall after harvest. The primary items traded by the Navajo to the Hopi included mutton, goat meat, sheep and goat skins, and pinyon nuts. Firewood was also sometimes traded (Frisbie and McAllester 1978:38). For those items the Navajo received from the Hopi corn, cornmeal, piki bread, watermelons, muskmelons, apples, peaches, dry peaches, beans, and Hopi pottery. Historically, much of the interaction between the Hopi and Navajo was probably on peaceful terms, with trade the important linkage between the two groups. The Hopi had access to items the Navajo did not, and the Navajo access to items the Hopi did not.

The Hopi were not the only group the Navajo encountered in and around Black Mesa. Utes and Paiutes were also present in the area. In the late nineteenth century, Left Handed (Dyk 1938:10) and his family lived with Paiutes off of Black Mesa at a place called Another Canyon. Another Canyon is probably a side canyon in the Tsegi Canyon drainage. Left Handed describes the Paiutes and his family's interactions with them in these terms:

Mostly Paiutes lived along the foot of Black Mountain and in the summer at Another Canyon we lived with them. These Paiutes were poor. They had only an old rag round their hips and camped under the trees in brush hogans. But they used to help us a great deal; they were always willing to do something in order to get clothing or food. We were not much better off, but we had enough to eat and enough clothing (Dyk 1938:10).

The Navajo and Paiutes (and other Ute groups) were on good and bad terms at different times, just like the Hopi were with the Navajo. The previous quotation from Left Handed's autobiography shows an example of good relations between the two groups. An example of a conflict between a Band of Navajo and a Ute groups is presented by Correll (1972:37). This conflict occurred on Black Mesa in 1865 and was reported (in a letter) by a Captain Butler. As quoted by Correll, this letter stated:

. . . a Navajo Indian with his family (wife and child) arrived at this post and surrendered himself for the purpose of being sent to Fort Sumner. He calls himself (Cabellado Chino) says he came from the other side of the Moqui Villages and formerly belonged to Manuelito's band. This body, he says, has been dispersed by the Utes. . . The party was attacked by the Utes, he states, about 2 months since November, 1865 near Mesa de

la Baca (Black Mesa) : several Navajos were killed -- no Utes. He was absent hunting when the fight took place, and the Utes took all his stock 27 horses and mules and a large number of sheep. The greater portion of the men, who could not effect their escape by flight, were killed by the Utes. Cabello Blanco the Ute Chief took the survivors and a large number of women and children with him to his own country. . . (Correll 1972:37; information in brackets added by Correll).

Relations between the Navajo and Utes were thus not always on friendly terms.

The above quote concerning a battle or skirmish between the Navajo and Utes may be doubly pertinent to the archaeological record. During excavations of two adjacent prehistoric sites along the N-41 right-of-way, two metal projectile points were unearthed. Informants among the Navajo workers indicated they had heard that a battle had occurred on this spot (just as the N-41 right-of-way leaves a side wash of the Oraibi going to the north) between the Navajo and Ute just prior to the Navajo captivity at Fort Sumner. While it is difficult to substantiate that an actual battle did occur at this location between the Navajo and Utes from the limited data available, it is possible. Also, the battle described by the informants might not have been the one described by the Navajo Cabellado Chino. Metal projectile points replaced stone types sometimes between the middle of the seventeenth century and the middle of the nineteenth century (Kluckhohn, Hill, and Kluckhohn 1972:40), so the projectile points provide very little precise information as to when they were made and used in the region.

Representatives of Spain, Mexico, and the United States had interacted often with the Navajo on and near Black Mesa in the early historic period. Correll (1972) lists these interactions, which consist mainly of military and slaving expeditions against the Navajo. The Navajo in this early period were raiders of livestock, food, stores, etc. Oftentimes, the raiding of one band or several resulted in retaliatory raids against them by first the Spanish, then Mexicans, and finally representatives of the United States government.

Some of these retaliatory raids occurred on or traversed Black Mesa. Governor Vizcarra's (Mexican) journal of an expedition into what became the 1882 Executive Order Reservation area in 1823 provides some insight into these relationships. Vizcarra went from Canyon de Chelly to First Mesa (Hopi), where the village war captain said he would help Vizcarra locate Navajos (Correll 1972:13). Four days later Vizcarra attacked a Navajo homestead at which he killed (. . . five women and capturing nine slaves of both sexes, and taking twelve horses and mules and seventy head of sheep and goats (Vizcarra cited in Correll 1972:13).).

Vizcarra continued his march north across Black Mesa looking for Navajo. He and his men pushed on to the Big Mountain area and then into the Dinnebito drainage, probably fairly close to the current route of the N-41 right-of-way. On the East Fork of the Dinnebito, Vizcarra again encountered some Navajo:

At about noon, very tired of traveling, I halted on the bank of the arroyo, on some cliffs where there is a large red rock. After being there an hour, two Navajos with three mules appeared ahead. I detached ten infantry soldiers, but as soon as the Indians saw them, they left the mules and fled. At the end of another hour three Navajos mounted on horses were sighted in the same direction as those with the mules. I detached another ten men to a point where they could shoot at them, to see if they could wound or kill them. I did not realize that the troop was poorly located, and that the Indians saw them (Vizcarra quoted in Correll 1972:15).

Correll believed that the large red rock on some cliffs described by Vizcarra was located on the East Fork of the Dinnebito Wash (Correll 1972:15):

Little is known about Navajo settlement patterns in the Black Mesa area in this early historic period, especially prior to Fort Sumner. The early historic accounts provide very limited information on settlement patterns and economics. Correll (1972:17) believes that by the early nineteenth century there was some permanence and stability of occupation by Navajos in this area, that is, they did more than simply cross it for an occasional raiding expedition. This is inferred for the early nineteenth century from the Navajos Vizcarra encountered as he crossed Black Mesa.

In the early eighteenth century, Navajos may have only intermittently occupied portions of Black Mesa. Groups could have sought both trade with the Hopi and grazing areas for their livestock. Primary Navajo habitation areas, like Canyon de Chelly, were normally well watered agricultural areas. There are no areas equivalent to Canyon de Chelly, except perhaps Keams Canyon and around the Hopi Pueblos, on Black Mesa. Without this agricultural area occupation of Black Mesa may well have been intermittent in the eighteenth century. Growing Navajo populations elsewhere probably caused some families to settle permanently on and around Black Mesa in the late eighteenth and early nineteenth centuries. In portions of Black Mesa this occupancy may have been seasonal, probably during the winter.

Three Navajo autobiographies from the late nineteenth century, Left Handed, Frank Mitchell, and Old Mexican, all document a seasonal use of Black Mesa during the winter months. Old Mexican (born 1865-1866)

states in his autobiography that before he was born and when he was a child his family wintered on Black Mountain (Black Mesa) and spent the summer at Navajo Mountain (Dyk 1947:17). Frank Mitchell (1882-1967) and his family also utilized Black Mesa primarily as winter habitation area (Frisbie and McAllester 1978:38). His family's movements were not as ordered as those of Old Mexican;

When I was a small boy, just starting to notice things, the family used to moved around. My people used to roam around with us from Black Mountain, back and forth across the Chinle Valley here, from Tsaile clear across to the west of Black Mountain, and then over to Hopi country. There was no permanent home for us then. We just went from one place to another, all the way from there and across and back (Frisbie and McAllester 1978:38).

Later in his life, Frank Mitchell settled permanently in the Chinle area.

Left Handed's family also utilized a seasonal movement pattern that took them to the top of Black Mesa in the wintertime. He states;

In winter we lived on Black Mountain, but in the summer we moved down to the foot of the mountain at a place called Another Canyon. In this canyon, where there were many lakes, my father, Old Man Hat, and my uncle Bitahni, planted corn (Dyk 1938:5).

The moves of the families of Old Mexican and Left Handed were relatively uniform in comparison to Frank Mitchell's. Each family had an area of Black Mesa where they lived in the winter, then in the summer they went to a specific place where they had an agricultural field. Thus, by the late nineteenth century, some Black Mesa Navajo families did not move around opportunistically, but rather between a particular winter area and a particular summer area, where they had an agricultural field. Frank Mitchell's family seemed to have lacked agricultural fields, at least early on, and this might have made their seasonal moves less patterned.

Left Handed's family seasonal moves were not always as patterned as mentioned above. In the late 1870, drought caused his family to move farther in search of adequate grazing for their livestock. These poor environment conditions were described by Left Handed in these terms:

There was no cloud anywhere and no rain. Everything was dried up, no grass, no weeds, no feed for the stock, nothing green all over the flat and the valley. The sheep had enough because they can eat anything, but the horses were poor. They were starving (Dyk 1938:106).

The poor range conditions forced Left Handed's family out of their normal seasonal round to search for better grazing. They moved to areas far from their normal range in pursuit of better grazing. They moved to Tall Mountain, in northern Shonto, to Navajo Mountain, and to the San Juan River area. This pattern of more extensive seasonal moves exhibited by Left Handed's family may have been the typical transhumance pattern in the late eighteenth and early nineteenth centuries. In the later nineteenth century, the increasing Navajo population may have influenced a more limited seasonal movement pattern.

Information on economic patterns of Black Mesa Navajo before the late nineteenth century is also limited. It is presumed that their sources of subsistence did not differ substantially from those of Navajos in other areas. In the early historic period the primary contributors to subsistence were livestock and agriculture. Secondary sources included hunting, gathering of wild plant foods, and raiding. In terms of livestock, sheep and goats, followed by cattle and horses, were the most important animals. Since Black Mesa outside the area of the Hopi Villages, has never been one of the best agricultural areas available to the Navajo, livestock has traditionally been the most important economic source in the area. This was especially the case prior to the Navajo confinement at Fort Sumner.

In conclusion, Black Mesa is one of the more recent areas of Navajo occupation. It was not until the eighteenth century that Navajos moved into this area in any significant numbers. It was not until the middle of the nineteenth that the Navajo population began to become stabilized in the area. After their return from Fort Sumner the Navajo population increased rapidly. Probably one reason for early Navajo movement to Black Mesa was the presence of the Hopi and the opportunity to participate in exchange and trade relations. Important trading relations between the Navajo, a primarily though not completely pastoral people, and the Hopi, a primarily though not completely agricultural people, began early. At times, friction also occurred between the two groups and reflected the fluidity and flexibility of the social and political alliances. Little is known about early Navajo settlement patterns and seasonal movements in the area. During the early period, the Navajo probably moved about opportunistically. Following Fort Sumner, and perhaps before, increased population density may have resulted in less movement by Navajo families except in times of emergency. Overall, very little is known about the Navajo occupancy of Black Mesa prior to the late nineteenth century.

CHAPTER 3

NAVAJO HISTORY OF EAST-CENTRAL BLACK MESA

The key to comprehending the Navajo history of Black Mesa, and in particular east-central Black Mesa, is understanding the ruralness of the area. Black Mesa was historically, and continues to be today, one of the most rural and isolated areas of the Navajo occupied lands. Black Mesa, which is an imposing geological feature, has kept this area isolated by limiting until (and even after) the introduction of automobiles within the last 30 years. The location of Black Mesa in the middle of the reservation far from the towns that border the reservation has also contributed to its isolation. East-central Black Mesa, especially the area around Forest Lake, is one of the most isolated areas of Black Mesa.

Events that have heavily influenced general Navajo history have only had an indirect influence on Black Mesa because of the isolation of the area. For instance, World War II saw very few men from Black Mesa in the armed forces or working in industries or agriculture off-reservation during the war years. Navajos from the less remote eastern part of the reservation were the ones who entered the armed forces or who took jobs off-reservation during this conflict. Black Mesa Navajo only saw the secondary effect of the war on them, a reduction in available items at trading posts and perhaps a reduction in money flowing through the local economy.

Events that have only been of secondary importance to the Navajo as a whole have had profound influences on the local Black Mesa Navajo population. As an example, the flu epidemic of 1918 more heavily affected western Navajo populations, including Black Mesa, than other sections of the reservation. The Navajo-Hopi Joint Use Area dispute, a very important issue on Black Mesa in the 1960s and 1970s, is also an example of something that is of vital interest to the Black Mesa Navajo who are directly affected by it, but of only secondary importance elsewhere on the reservation except where Black Mesa families are relocating.

Other events in general Navajo history have affected both Black Mesa Navajo populations and general Navajo populations as a whole. For instance, the Navajo captivity at Bosque Redondo (Fort Sumner) affected Navajos from all areas. While some Black Mesa Navajo avoided this period of captivity by fleeing north to the Navajo Mountain area or hiding in some of its more remote parts of Black Mesa, most went to Fort Sumner.

Livestock reduction in the 1930s and 1940s, is another example of a circumstance that affected both general Navajo populations and the Black Mesa Navajo.

This brief history of east-central Black Mesa is divided into four primary sections. The first discusses traditional Navajo economic pursuits: hunting, gathering, agriculture, and animal husbandry. The second section contains information on the other aspects of the local Navajo economic system: trade with the Hopi, wage labor, welfare, local trading posts, and a summary of several economic studies that have included Black Mesa within their study boundaries. Population growth and migration patterns are summarized in the third section. The concluding section of this chapter investigates some aspects of the social history of the area.

The preceding chapter discussed the early history of Black Mesa to the late nineteenth century. This chapter begins after that time period and concentrates on the period 1920 to 1965. This is the period for which the majority of the sites investigated in this study were built and utilized by local Navajo. This history of east-central Black Mesa Navajo is intended as an overview of the important development along the N-41 right-of-way. It contains background information necessary to understand the way in which the historic sites along the N-41 route were occupied and utilized. Many good histories of the Navajo are available and these should be consulted for information concerning important events that were influencing general Navajo history.

Traditional Economic Pursuits

The four traditional economic pursuits of the Navajo to be discussed here are hunting, gathering, agriculture, and animal husbandry. Of these four, hunting was historically the least important. Hunting was generally only a supplement to the local Navajo diet. Animal species hunted by members of the primary eight camps interviewed are listed in Table 3.1. The camps in this table are listed, 1 through 8, from Pinon to Many Sheep Wash along the right-of-way. Probably the most important species hunted in east-central Black Mesa were rabbits and prairie dogs. Some families also reported that they hunted deer and elk. Deer have been re-introduced into Black Mesa since the 1950s. Elk, and often deer, were hunted by Navajo men at locales, like southern Utah, away from Black Mesa. All in all, hunting was a very minor source of food for the Black Mesa Navajo.

Table 3.1 Animal species hunted by members of primary camps interviewed

<u>Camp</u>	<u>Rabbits</u>	<u>Prairie Dogs</u>	<u>Deer</u>	<u>Elk</u>
1	+	+	0	0
2	+	+	0	0
3	+	+	0	0
4	0	0	0	0
5	0	0	0	0
6	+	+	+	0
7	+	+	+	0
8	+	+	+	+

+ = animal species is currently hunted or was hunted by camp members.
 0 = animal is not currently hunted and was not hunted by camp members.

Gathering of wild plants was somewhat more important to the Navajo of the area, but still of only minor importance. Gathered plants were important in supplementing the diet of the local Navajo rather than as a major food source. Plants gathered for food by the eight primary camps interviewed are listed in Table 3.2. Gathering of plants, like hunting, was much more important in the period (pre-1920) before local trading posts were established. Plants gathered ranged from greens, such as beeweed, to items that were added to other food for flavoring, such as wild onions. Most gathered plants were available in the summer months, but a few are harvestable in the fall.

One of the fall foods available was pinyon nuts. Black Mesa, especially at altitudes over 7000 feet, is one the more important areas on the Navajo reservation for gathering pinyon nuts. Navajos come from all over the reservation to gather these nuts. Nuts are both saved for home consumption and sold. Many of the pinyon-nut gathering sites found on the mesa were thus left by families that are actually not residents of Black Mesa.

Gathering of wild plants for food has slowed considerably in the area since the 1950s. Before this time, most families gathered wild plant foods as part of their summertime activities. Now, only households with elderly members occasionally gather wild plant foods. Households with young members, less than age 45, may never have gathered any wild plant foods. Informants from camps listed in Table 3.2 that have not gathered wild plants foods, or only a few varieties, are generally younger than those that had gathered many varieties.

Agriculture is second to animal husbandry as the most important

Table 3.2 Plant species gathered for food by members of primary camps interviewed

Camp	Wild Onions (Allium sp.)	Beeweed (Cleome serrulata)	Wolfberry (Lycium pallidum)	Squaw Bush (Rhus trilobata)	Yucca (Yucca baccata)	Chenopodium (Chenopodium sp.)	Pinyon Nuts (Pinus edulis)	Wild Potatoes	Morman Tea (Ephedra viridis)	Juniper (Juniperus sp.)	Prickly Pear (Opuntia sp.)
1	+	0	+	0	+	0	0	+	+	+	0
2	+	0	0	0	0	0	0	0	0	0	0
3	+	+	+	+	+	+	0	0	0	0	0
4	0	+	0	+	0	0	+	0	0	0	0
5	+	0	0	+	0	0	+	0	0	0	0
6	+	+	0	+	+	0	+	0	0	0	0
7	0	0	+	0	0	0	+	0	0	0	0
8	0	+	0	0	0	0	+	+	0	0	0

+ = plant species is currently or was gathered by members of camp.

0 = plant species was not and is not currently gathered by members of camp.

traditional economic pursuit on east-central Black Mesa. Most camps along the right-of-way controlled one or several agricultural fields. Agricultural fields along the right-of-way are of one basic type: dry fields. Fields are generally placed along washes, in deep soil areas. Since the water courses along the right-of-way are deep arroyos, no flood waters reach the fields. Fields occur in the valleys of almost all of the main washes along the N-41 route (Wepo, Oraibi, Carries Water Wash, East Fork Dinnebito, the Dinnebito, and Many Sheep Wash). Ute Valley, nearly 7000 feet, contains no fields. Most fields occur at altitudes of 6300 to 6600 feet.

Crops grown by the Navajo in this area are corn, with some squash, melons, and potatoes. Potatoes occur as the principal crop in fields at higher elevations since this crop has a higher tolerance for frost. Fields in east-central Black Mesa range in size from one to ten acres. Dry fields should not be considered as any less productive than other field types, such as floodwater or floodplain fields.

Yet, environmental conditions do restrict field types in the area, and, unlike the nearby Hopi, who are able to spread risk between different field types affected differently by environmental conditions, the east-central Black Mesa Navajo must place all their hopes on one field type. All field types, including floodwater fields, are at the mercy of both winter/spring and summer precipitation. If rain or snow does not fall in the winter and spring, fields cannot be planted due to lack of soil moisture necessary for seed germination.

Crops grown along the right-of-way are used for home consumption. Only very rarely would crops be sold, and then not commercially but to other Navajo either for seed grain or for home consumption. Agriculture, especially before trading posts made other foods available (flour in particular), was an important economic activity to the Navajo. It still remains important to the local Navajo, but not as much as it did 50 to 75 years ago. Agricultural products, along with mutton and goat meat, historically formed the basis of the Navajo diet. Agriculture now probably represents less than 10 percent of the income of the area. Its importance can still be recognized, however, since nearly all camps in the area under investigation control fields and plant them when environmental conditions (precipitation) permit it.

By far the most important traditional economic activity on Black Mesa, for the Navajo, is animal husbandry. All camps own sheep and goats, and most possess horses and cattle as well. Navajo settlement patterns, as we will see later, are affected more by the needs of the herd (sheep and goats), than by any other factor.

Herding on Black Mesa follows traditional Navajo patterns. Adult females are the primary herders for most camps. They also own the majority of the animals in the herd, especially in matrilocal camps and also in camps that reside on grazing areas that have been inherited through females for several generations. In the summertime, teenage children (who are at boarding or day schools in the winter) assume the herding duties.

Sheep and goats supply the Navajo camps on Black Mesa with many products. Probably the most important, historically as well as today, is the meat from slaughtered animals. Mutton and goat meats are staples of the Navajo diet. Camps with large herds, several hundred animals, normally slaughter an animal for home consumption three to four times a month or even more frequently. Camps with smaller herds, 50 to 100 animals, may only slaughter an animal once or twice a month. Before stock reduction in the 1930s, when herd sizes were larger than they are today, mutton and goat meat were probably the two most important food sources. Today, purchased foods have become the most important.

Besides meat, sheep and goats also provide other important products. Wool and mohair are both sold by the Navajo, and wool is also saved to be woven into rugs. Wool was a very important source to the Navajo previous to sheep reduction, and provided local Navajo with cash to buy tools, clothes, and food. Lambs have also traditionally been sold by the Navajo, though in recent years sales have been less because Navajos prefer to save their limited livestock resources rather than sell them for only a small return.

Horses are also kept by the Navajo of east-central Black Mesa. Formerly, large horse herds were a sign of prestige. Since stock reduction, which included horse reduction, horse herd sizes have declined considerably. Today, horses are used for two purposes. First, camps with large sheep and goat herds use them to assist in herding. Second, in the rugged Black Mesa terrain, horses are useful for locating lost cattle (Russell 1979b) and bringing them back to a camp's grazing area. Horses are also used for recreation, especially by younger Navajo.

The type of livestock rated second to sheep and goats in economic importance is cattle. Most camps indicated they have a few cattle, but few had herds of significant size. Cattle are normally owned by the adult males in a camp, though not exclusively. Males generally care for cattle, by checking on their location several times a month to make sure they have not strayed from a camp's grazing area (Russell 1979b). Sale of cattle produced some income for most camps, but this income was intermittent (not every year), and, in comparison to sheep and goats, cattle were a minor income source.

Each of the families along the right-of-way controlled a grazing area or traditional use area. Members of a single camp had the exclusive rights to graze their livestock and have their agricultural fields on the grazing area. Grazing areas along the right-of-way consisted of an area that included both a lowland area (for summer grazing and agriculture) and a highland area (for winter grazing).

Of the four traditional economic enterprises just discussed, animal husbandry and agriculture are the two most important. Hunting and gathering of wild plants have historically never been more than a supplemental food source to the Navajo of east-central Black Mesa. The Navajo of Black Mesa were primarily involved in animal husbandry as their most important economic enterprise prior to 1935. Since 1935, increases in wage labor opportunities and governmental assistance programs have reduced the income derived from animal husbandry activities. While income from these sources have been reduced percentage-wise, Navajo camps along the right-of-way continue to expend as many work-hours toward animal husbandry (and agriculture) as they did prior to stock reduction.

Since 1975, however, livestock activities have been reduced in importance even further by the Bureau of Indian Affairs livestock reduction program in the former Navajo-Hopi Joint Use Area. The Bureau of Indian Affairs has called for a 90-percent reduction of livestock in the former Navajo-Hopi Joint Use Area (Wood, Vannette and Andrews 1979). This reduction, which was underway while investigations of the N-41 right-of-way were in progress, undoubtedly will change the livestock management strategies of the families in the area. Some camps may decide to combine their sheep and goat herds with other camps, while others may decide to let the sheep forage by themselves without being watched. This management practice of unsupervised herds does occur sometimes when herd size is less than 50 animals (Russell 1979b).

Other Economic Activities and Economic Studies

In addition to the traditional economic pursuits just discussed, the Navajo of east-central Black Mesa gain part of their income from trade, wage labor, governmental assistance programs, and arts and crafts production. These income sources, most of which were secondary prior to 1930, now provide the majority of income to the Navajo population of east central Black Mesa.

One economic activity in which most families on Black Mesa engaged in the past was trade with the Hopi. Trading relations with the Hopi seems to have started very early in the Navajo occupation of Black Mesa and may even have been a primary reason influencing Navajo settlement of this area (see Chapter 2). The Navajo families from along the right-of-way reported that they normally traded with the Hopi to the south once or twice a year.

They traded meat, hides, wood, and pinyon nuts to the Hopi for corn, cornmeal, peaches, dry peaches, melons, beans, piki bread, and Hopi pottery. Trade with the Hopi, like hunting and gathering, was only to supplement Navajo diet and income. Trade probably occurred more frequently in bad agricultural years for the Navajo than in good years when their fields did well.

Wage work has grown into the most important economic activity on the Navajo Reservation in the course of the last 50 years. Prior to 1930, wage labor opportunities were rare for the Navajo of east-central Black Mesa. Work histories were collected for the adult males of the interviewed camps. These showed a common pattern with wage labor increasing in importance from the 1930s until the present. The major characteristic of east-central Black Mesa, in regard to wage labor, was again its ruralness. Wage labor, with a few exceptions, was not available along the right-of-way, but is more available in Pinon, where the trading post, churches, chapter offices, tribal offices, school, and cooperative store have provided some wage labor opportunities.

The common pattern for elderly men living along the right-of-way was to sometimes find temporary jobs, such as Tribal ten-day work projects, in the local area. These jobs might be improving roads, fixing the chapter house, or as a chapter officer. World War II provided some Black Mesa men with jobs, but away from the area. Some men went to work in factories or as agricultural laborers to fill in gaps left by workers who had joined the military or were involved in defense work elsewhere. Very few individuals from east-central Black Mesa actually participated in military service during the war.

After the war and after stock reduction of the late 1930s and early 1940s, men from east-central Black Mesa continued to search for wage labor opportunities. In the late 1940s, and even before the war, up to the 1950s and even still today, many Navajo men worked on railroad track and maintenance crews across the United States during the summer months. All middle-aged or elderly men interviewed had participated in this type of work, especially during the 1950s. Some men had worked for railroads during the summer for up to 30 years. Some had even worked throughout the year away from the reservation for the railroads. Two or three months of this temporary wage labor often provided the main source of cash income for a Navajo family for an entire year, because of the unemployment benefits that accompany railroad work. While some men continue to work for railroads each summer, most stopped in the 1960s. It was in the 1960s that welfare programs became more readily available to the Navajo.

For those families that lived closer to Pinon, more wage labor opportunities were and are currently available. Work was available at

the trading post as well as the Tribal offices and the school located there. One man who lived up the right-of-way from Pinon has worked as a schoolbus driver since 1970. Another individual, who lived just above the community along the right-of-way worked at the main trading post for over 30 years. The recent increase in services available at Pinon, both tribal and Bureau of Indian Affairs, has increased the number of wage labor opportunities available there in the 1960s and 1970s.

For those persons who lived closer to Forest Lake, the local wage labor opportunities are very limited. A few individuals from Forest Lake have found jobs recently at the Peabody Coal Company mines further to the north, but this number is small. When the N-41 roadway is completed, more individuals from Forest Lake and Pinon will undoubtedly seek wage labor at the mines. Both areas, Forest Lake and Pinon, however, still have very few wage labor positions for those desiring them.

Government assistance is a relatively recent income source for the Black Mesa Navajo. Very few forms of governmental assistance were available to residents of the area prior to the 1930s. Social Security first became available to the Navajo elderly. In the 1960s and 1970s, General Assistance, a Bureau of Indian Affairs assistance program, became very important. General Assistance was designed for families with no wage labor income who were not eligible for either social security or state welfare. General Assistance was the main governmental assistance income source in the area through the 1960s and 1970s. Since wage labor opportunities were few in the area, government assistance has been and continues to be an important income source to the residents of the study area.

A secondary income source for this area has been arts and crafts production. For the most part, arts and crafts activities have been limited to weaving. Weaving has never constituted an important income source for the area, though some households rely on it to some extent. Since unemployment for females is especially high, this income source has been especially important to them.

Trading posts are a secondary aspect of the economic system that needs to be explored here. Trading posts have drawn local Navajo populations into the Anglo economic sphere. The first trading post available to the residents of Black Mesa was started at Keams Canyon in the early 1870s (Kelley 1977:251). Early on, trips to trading posts were infrequent, perhaps only three or four times a year. Items purchased in the late nineteenth century were minimal, with flour, sugar, coffee, cloth, dishes, blankets, axes, knives, and cooking pots being the most important (Dyk 1966:37). As time progressed, the Navajo began to rely more and more on purchased goods.

In the twentieth century the trading post established at Pinon became the most important in the area. Downs (1964:7) discussed the impact of this trading post on the trading patterns in the area in these terms:

In the last part of the second decade of this century the Hubbell family, famous traders to the Navajo, established a trading store south and west of Black Mesa on a low sandy hill on Wepo Wash, thus forming the nucleus of the community of Pinon. Prior to that time, Black Mesa people made periodic trips with pack horses to the trading posts at Ganado, more than a hundred miles to the south and east, and Keams Canyon, 30 miles south and east.

The present day community of Pinon is centered around the trading post. Around it churches were established, a school was established in the early 1940s, and a second trading post began operation (Downs 1964:7). The presence of the trading post also lured a chapter house, post office, a dipping vat, a police station, a small clinic, and a rodeo ground to the same locale by the early 1960s (Downs 1964:7). Trading patterns at the Pinon trading post probably were similar to those at the Shonto Trading Post (Adams 1963). At Shonto, the trading post heavily influenced local economic behavior and patterns by controlling credit.

Informants indicated that a small trading post at which a Navajo who lived in several of the sites along the right-of-way (AZ-J-44-3 and AZ-J-44-6) was employed had been located near to the northern end of the N-41 route. Many small trading posts run by Anglos, Hopis, and Navajos began business on the reservation in the early and middle twentieth century. These trading posts often went out of business after only a few years of operation. The one near the end of the right-of-way may well have been the Big Mountain Trading Post that was operated in the late 1930s and early 1940s. No other trading post, between Pinon and Forest Lake on the right-of-way were noted by informants.

In the 1920s and 1930s, Navajo families only visited a trading post four or five times a year. By the 1940s, visits may have been up to once a month. If a family lived relatively close to a trading post, visits would be more frequent. With the widespread use of automobiles in the late 1950s and 1960s, visits increased along with dependence. In the late 1970s, local Navajo families around Pinon often visited trading post several times a week to buy goods and to visit with friends. The main trading post at Pinon is the heart and center of the community. Forest Lake still has no real gathering place beyond the chapter house, where monthly meetings occur.

Several economic studies have been conducted on Black Mesa that assist in summing up and supporting several of the conclusions that have been presented concerning east-central Black Mesa. The earliest study was conducted in the late 1930s by the United States Government during livestock reduction. While this study has been criticized several times (Henderson and Levy 1975:7) it does provide basic data that can be used to compare one area to another across the reservation.

The Human Dependency Survey (1939), as this early study was called, used for its unit of analysis "land management units". The Navajo country, including the Navajo-Hopi Joint Use Area, was divided into 18 of these land management units. Table 3.3 summarizes Navajo income from each of the 18 land management units, omitting the Hopi Reservation (Unit 6). The table shows how Black Mesa (Unit 4) differs economically from other areas of the reservation. First, only 8 percent of the income in 1936 for Unit 4 resulted from wage labor. This was the lowest of any of the land management units by a wide margin. (The mean for all land management units was 29.6 percent).

Table 3.3 also contains information on other sources of income available to the Navajo in the 1930s. Unit 4 had a higher percentage of income from livestock than the majority of the others. Fully 48 percent of the income of Unit 4 was from animal husbandry. The mean for all units was only 36.4 percent. Agricultural income, as percent of total income, was higher for Unit 4 than for many of the others. Thirty-one percent of income in Unit 4 was from agriculture. For all land management units, the mean figure was only 20.9 percent. Income from weaving (6 percent) and from miscellaneous sources (7 percent) did not differ significantly from other land management units nor from means for all land management units.

Table 3.3 also contains information on per capita income by land management unit. As expected, Unit 4 is one of the lowest of the 17 land management units. In fact, Unit 4 is the lowest with a per capita income of only \$70.28 in 1936. The primary cause of this low per capita income is the levels of income from wage labor. Even for the Navajo, the inhabitants of Black Mesa, and the study area, were poor.

The Human Dependency Survey also provides information on per capita livestock ownership by land management unit. Unit 4 differs very little from others across the reservation as to the number of livestock owned per capita. The number of livestock owned per capita for Unit 4 was 21.4. For all land management units the mean is 21.0. Cultivated acres per capita also differed little from the reservation mean. The mean for all land management unit was 0.9; for Unit 4 this figure is 1.0.

Table 3.3 Navajo Income By Land Management Unit
(Source: Human Dependency Survey 1939: Table III)

Land Management Unit	Percent Wage Income		Per Capita Wage Income		Percent Livestock Income		Per Capita Livestock Income		Percent Agricultural Income		Per Capita Agricultural Income	
1	15		\$12.07	53	16	\$43.59	16	\$13.00				
2	27		28.93	34	26	36.97	26	27.99				
3	40		63.30	29	24	46.03	24	39.07				
4	8		5.35	48	31	34.11	31	21.58				
5	45		59.12	40	10	51.62	10	13.17				
7	24		32.04	50	13	67.32	13	16.87				
8	42		55.11	28	23	37.55	23	30.10				
9	22		21.95	56	12	56.12	12	11.57				
10	23		27.45	22	39	26.58	39	48.26				
11	22		25.21	24	44	27.93	44	50.37				
12	37		56.17	29	25	43.72	25	38.07				
13	35		66.32	37	18	68.04	18	33.90				
14	40		60.12	26	10	38.22	10	15.49				
15	13		9.24	55	8	39.67	8	5.97				
16	--		28.25	--	--	21.13	--	-----				
17	26		34.71	35	22	47.45	22	29.61				
18	55		135.25	16	14	40.63	14	33.75				
Mean *	29.6		\$42.39	36.4	20.9	\$42.75	20.9	\$26.80				

*means exclude Unit 16.

Table 3.3 (continued)

Land Management Unit	Percent Income From Rugs	Per Capita Rug Income	Percent Miscellaneous Income	Per Capita Miscellaneous Income	Per Capita Income Per Land Management Unit
1	13	\$10.54	3	\$ 2.68	\$ 81.88
2	7	7.68	6	6.52	108.99
3	3	5.58	4	6.22	160.20
4	6	4.45	7	4.79	70.28
5	4	5.11	1	1.63	130.65
7	10	13.97	3	4.21	154.41
8	5	6.88	2	3.12	132.76
9	9	9.16	1	.91	99.71
10	7	8.61	9	11.30	122.20
11	6	7.36	4	2.91	113.78
12	7	9.71	2	2.27	149.94
13	7	13.57	3	5.60	187.43
14	7	10.90	17	24.80	149.53
15	12	8.76	12	9.00	72.64
16	---	8.31	---	41.60	---
17	6	8.96	11	14.77	135.50
18	5	11.39	10	25.07	246.90
Mean*	7.1	\$8.88	5.9	\$9.85	\$132.30

*means exclude Unit 16.

No good income data are available for Black Mesa for the 1940s, 1950s, or 1960s. One study, conducted in the community of Shonto just to the north of Black Mesa, does provide income data that are comparable to those on Black Mesa. Shonto income in 1955 is summarized in Table 3.4. Shonto, like Black Mesa, is one of the more rural, traditional, and isolated of Navajo communities. Income in the 1950s was derived from livestock, agriculture, weaving, singing, local wage work railroad wages, non-local wage work, and welfare. Black Mesa, like Shonto, received most of its wage income from off-reservation work. For Shonto in 1955, off-reservation wage work primarily comprised railroad work. In 1955, slightly over 50 percent of all Shonto income was derived from this source.

Table 3.4

Table 3.4 Shonto income in 1955

(Source: Ruffing 1931:162)

<u>Source of Income</u>	<u>Amount of Income (In Dollars)</u>	<u>Percentage of All Income</u>
Livestock	\$31,405	18.3
Agriculture	8,606	5.0
Curing Singing	6,360	3.2
Nonlocal Wage Work	22,624	13.2
Railroad Wages and Compensation	85,779	50.9
Local Wamework	2,800	1.6
Welfare (cash)	13,598	7.9
Totals	\$171,166	99.8

Local wage work only accounted for 13.2 percent of Shonto income in 1955. For Black Mesa, especially the Forest Lake area, this percentage was probably lower at this same time period. Livestock and agriculture accounted for 18.3 and 5.0 percent of Shonto income respectively in 1955. For Black Mesa, this figure was probably slightly higher. Also in 1955, residents of Shonto received 7.9 percent of their income from welfare. This figure was probably similar to that for Black Mesa. Per capita income in Shonto in 1955 was only \$291. Black Mesa per capita income may well have been even lower.

In the 1960s, wage work and welfare probably increased as a proportion of local income on Black Mesa. Income from animal husbandry and agriculture probably both stabilized (percentage-wise). By the 1970s welfare (including Social Security) had increased to over 25 percent of the income of families in Shonto (Ruffing 1973: 162). Per-capita income had risen to \$725 in Shonto in 1971.

A study on the affects of the coal mines on northeastern Black Mesa, just north of the study area discussed here, was completed in the early 1970s. Thirty-six households were interviewed as part of this study (Callaway, Levy, and Henderson 1976). The sample area for this study included northeastern Black Mesa, sections of the Klethla Valley (Shonto), and Long House Valley. Per-capita income in the sample was \$1108 (Callaway, Levy, and Henderson 1976:67). Of this amount, 77 percent was from wage labor, 5 percent from livestock, and 16 percent in unearned income sources (welfare, social security, etc.), and 1 percent was from craft activities (Callaway, Levy, and Henderson 1976:67). Eighty percent of the household heads in this sample, who resided on Black Mesa, were employed at the time of the study in mine-related jobs.

A more recent economic study (Wood, Vannette, and Andrews 1979) was conducted in 1977 to assess the impact of livestock reduction in the Navajo-Hopi Joint Use Area. Members of a total of 146 households were interviewed, and represented a 6.7 percent sample of all Navajo households living in the Navajo-Hopi Joint Use Area. This study reported per-capita income to be \$1267 (Wood, Vannette, and Andrews 1979:112). Household income in the study area was derived from the following sources: 52.8 percent wage, 18.2 percent livestock sales, 6.9 percent livestock consumed, 7 percent livestock received, 0.7 percent wool sales, 14.5 percent unearned, 2.6 percent weaving, 3.5 percent silversmithing, and 11 percent other crafts (Wood, Vannette, and Andrews 1979:115). Livestock income is higher in this study than in Callaway's because of incentive payments offered by the Bureau of Indian Affairs for livestock sold to them by residents of the Navajo-Hopi Joint Use Area.

The previously discussed studies reinforce the picture of Black Mesa economic change presented here. The area is one of low per-capita incomes, even lower than many other reservation areas. Income sources also differed from other areas of the reservation. Black Mesa, and especially along the right-of-way, has never had a wage-work oriented economy. Local wage work was not available in the past, and still continues to be unavailable for most people in the area. The residents of the area have had to rely very heavily on their own resources -- livestock, agriculture, hunting, gathering, and arts and crafts -- as their major source of income until very recently. It has only been since World War II that the Navajo of east-central Black Mesa have be-

come at all integration into the Anglo wagework economy.

Population and Migration Patterns

The prime factor in understanding Navajo population over the last 100 years on Black Mesa is growth. After the return from Fort Sumner in 1868, Navajo population on Black Mesa has grown steadily, except for one brief period. Several informants indicated that their ancestors had occupied areas on Black Mesa prior to the Navajo removal to Fort Sumner in 1864. These informants also indicated that their ancestors, after release, had returned to Black Mesa to take up residence again. Data are available to support the contention (Holley, Blomberg, and Russell 1980) that, during the Fort Sumner period Black Mesa held some Navajos that did not go to Fort Sumner but instead remained hidden out in the more remote regions of Black Mesa.

The population that grew on Black Mesa immediately after Fort Sumner thus included returning families and families that had never left. Immediately after Fort Sumner, new immigrants also entered the area. A number of informants indicated that their ancestors had arrived on Black Mesa in the 20 to 30 years after Fort Sumner looking for new grazing areas.

Population in the 1882 Executive Order Reservation (not including Hopi villages) has been established at 300 Navajo just after 1882 (Wood, Vannette, and Andrews 1979:22). Navajo population had reached 2500 around 1920, and current population of the 1882 Executive Order Reservation is around 8000. Population growth on Black Mesa, with its rapid increases, has followed general Navajo trends.

-winter?
season?

The only time period that a decline, however slight, occurred on Black Mesa was the result of the influenza epidemic of 1918. According to Johnston (1966:88) total Navajo population declined 5.5 percent because of this epidemic. Population decline on Black Mesa may have been somewhat higher than the Navajo population as a whole. Reagan (1922:136-138) provides a long list of Navajo who died within 25 miles of the Marsh Pass boarding school, just north of Black Mesa, from the epidemic.

Navajos have been moving in and out of east-central Black Mesa since before Fort Sumner. In recent years, migration into the area (outside of marriage) has been limited. Today, and for some time in the past, all land along the right-of-way has been claimed by one Navajo family or another. How long no new land for settlement has been the norm in the area is difficult to access. Migration into the area probably became difficult by the 1920s. Most families along the N-41 right-of-way trace their heritage in the area back to the nineteenth

century. A few families indicated that they had moved into the area relatively recently. For instance, one elderly informant indicated that her family (her siblings and her parents) had moved into the area around Pinon in the late 1930s. When feed proved difficult for the livestock to find, the family moved to a location on the Oraibi Wash around 1960. The claim to a grazing area at this location came from her husband, whose parents had once lived in the same locale. While this family moved to a location along the right-of-way in the early 1960s, the reason they were able to do so was because of an existing claim to land.

While many of the children in the area have grown up and married locally, many also have moved away from Black Mesa. This shows up particularly on genealogies for persons born after 1940. With such a small number of wage work positions available in the area many have moved to larger reservation communities (towns) where wage work is more readily available. Those males that have remained in the area and those that have married into it, have been forced to leave Black Mesa to seek wage work, usually seasonal in nature.

Social History

It is difficult to assess and comprehend the social history of the area along the right-of-way because of its linear nature. From genealogies no marriage patterns between families or clans can be identified. In all probability, the Navajo social organization along the right-of-way follows general Navajo patterns (see Aberle 1961 for a summary of these). Matrilocal residence was common along the right-of-way, as was neolocal postmarital residence. Because of the linear nature of the right-of-way and the research design employed, it was impossible to establish the presence of any units larger than the camp. Navajo clans represented along the right-of-way are listed in Table 3.5.

Table 3.5 Navajo clans represented along the N-41 right-of-way

<u>Clan Name</u>	<u>English Translation</u>
Ashiihi	Salt
Hashk'aa	Yucca
Kiyaa'aani	House Standing Up
Ma'ii deeshgiizhnii	Coyote Pass (Jemez Pueblo)
Kinlichii'nii	Red House
Nihoobaanii	Light Colored Soil
Todich'ii'ni	Bitterwater
Naakaii dine'e	Mexican People
TX'izi Yani	Manygoats
Tabaaha	Edgewater
Nat'ohisoh tachii'ni'	Big Tobacco Tachiini

While Navajo social organization has remained traditional on east-central Black Mesa, religion has not. Most Navajos in the area have converted to either common forms of christianity or to the Native American Church, although participation in the latter is compatible with the practice of traditional religion. While this is the case, many of the elderly residents still remain faithful to traditional Navajo religious beliefs. As we will see in the following chapters, the old main road between Pinon and Forest Lake, adjacent to the new N-41 route, has been the location of several traditional Navajo Squaw Dance ceremonies. This indicates that traditional Navajo religion, at least in the form of public ceremonies, are still practiced and attended by persons along the right-of-way.

Conclusion

Researchers who have worked in this area have seen isolation as the key to understanding the history of the area. For instance, Downs (1964:6) discusses this point in these terms:

Until about 1920 the Black Mesa region remained one of the most isolated areas, not only on the reservation, but also perhaps in the entire United States. The inhabitants were little affected by events outside the reservation, or indeed elsewhere on the reservation.

In many respects, Black Mesa continued to be one of the most isolated areas of the reservation into the 1960s and 1970s. The isolation of the area, as we have seen, is reflected in all aspects of its history.

CHAPTER 4

PRIMARY NAVAJO SITE TYPES AND STRUCTURES ON BLACK MESA

The primary Navajo site types found on Black Mesa are described in this chapter. Navajo sites are classified into site types which can be used in a settlement pattern analysis. The sites are classified on the basis of season of occupation, site function and spatial arrangement of structures. These three primary attributes facilitate the use of site types in settlement pattern analysis, particularly when they are coupled with date of site occupation.

Classifying Navajo sites into site types is not a new phenomenon. Several other recent studies have also utilized the concept of site type or one similar to it in order to facilitate historic settlement pattern analysis of an area. These studies include Reher (1977), Noisat (1978), and Powers (1979). Reher (1977:39) grouped Navajo sites into eight basic types, Noisat (1978:98) into six types, and Powers (1979:68) lists nineteen different site types. The distribution of these site types in each of the studies was used to analyze historic Navajo settlement patterns and land use within the specific study areas. All three studies examined data derived from intensive block area surveys rather than the linear roadway material available for analysis here. Hence, the linear nature of the survey precludes the same type of analysis as conducted by the aforementioned studies. This study out of necessity relies much more heavily on informant data concerning historic settlement patterns along and around the N-41 route. Sites located along the route are compared to historic settlement patterns described by informants for specific geographic areas along the route. This comparison, along with a classification of the sites into the various site types to be described here, is contained in the next chapter.

Primary Navajo Structures

Before discussing site types it is necessary to present descriptions of the basic varieties of structures built by the Navajo along the N-41 route. The type of structures present and their spatial arrangement helps determine site function and season of occupation. These factors together determine site type.

A thorough description of Navajo structures has recently been provided by Jett and Spencer (1981). No attempt is made here to duplicate this description. As Jett and Spencer have shown, there is much variation in Navajo architecture both in terms of the varieties of structures present and variation within a single structure. Emphasis here is placed on describing the primary types of Navajo habitation,

storage, and ceremonial structures present in east-central Black Mesa. These structures do not reflect all those constructed by the Black Mesa Navajo, nor are they representative of all the forms of a single structure.

The following structures are discussed: 1) hogans; 2) houses; 3) circular brush shades; 4) tents; 5) ramadas; 6) windbreaks; 7) sweat-lodges; 8) sheep and goat corrals; 9) horse corrals; 10) lamb pens. Each structural type is discussed individually. Emphasis is placed on construction characteristics and season of the year in which the structure was normally built and utilized by Navajos.

Hogans

Hogans are the best known of Navajo structures. Several types of hogans have been built by Navajos in and around the study area. The oldest hogan type is the conical forked-pole hogan. Forked-pole hogans consist of three to five forked logs that are interlocked together two to four meters above the ground. Additional logs are leaned over these supports to form the outside walls of this type of structure. The structure is then covered with earth. Historically, early forked-pole hogans are small structures normally no more than two meters in height with a diameter of only three meters. In the late nineteenth and early twentieth centuries, up until around 1920, forked-pole hogans that were two to four times the size of early ones were constructed. These later structures also had much larger and more elaborate vestibules than earlier ones. In addition, the vestibules were often constructed of milled lumber. No standing fork-pole hogans were recorded along the N-41 route, although several of the early hogan rings may represent this type of structure.

One of the most common hogans today on Black Mesa is the corbelled-log hogan (described in Jett and Spencer 1981:74). These are constructed of logs placed horizontally on a circle slowly moving upwards and inwards until a dome is formed. All standing hogans encountered along the N-41 route were of this type. The majority of hogan rings located in the survey of the route also represent corbelled-logs hogans.

The cribbed-log hogan type is very similar to the corbelled-log hogan (Jett and Spencer 1981:80). The wall beams of this type are stacked with the ends of a log placed (often in prepared grooves) between the upper and lower beams of adjacent walls. This produces tight fitting walls with much fewer holes than the corbelled-log hogan. The roof of cribbed-log hogans is usually of corbelled-log design. Both corbelled-log and cribbed-log hogans fit into Jett and Spencer's general category of stacked-log hogans (1981:74). The other hogan type in this category, the abutting-log hogan, is uncommon in the study area.

Other primary types of hogans constructed on Black Mesa include the palisaded hogan and leaning log hogan. Palisaded hogan walls are constructed of posts that are set upright in a circular trench (Jett and Spencer 1981: 71). The leaning-log hogan closely approximates the palisaded hogan in appearance. This type generally has four or six support posts (often crotched posts) that support the roof (Jett and Spencer 1981:69). Other logs are leaned to fill in the wall between the primary roof supports posts. Roofs of both the leaning-log and palisaded hogan are generally of corbelled-log construction.

Several other types of hogans were also constructed on Black Mesa. Most of these varieties are rare. These include plank hogans, frame hogans, stone hogans, and cinder-block hogans (see Jett and Spencer 1981:90-105 for a discussion of these hogan types). Stone hogans are especially rare on Black Mesa because the abundance of wood precludes the need for their construction. Frame and plank hogans occur on post-1950s settlements because of access to milled lumber. Frame hogans were often the intermediate type of structure adopted by many families before they constructed houses.

The predominant type of hogan used on Black Mesa has changed through time. Most families in east-central Black Mesa utilized hogans as primary habitation structures prior to 1950. At this time there was a shift to houses or frame hogans. While conical forked-pole hogans are the oldest type of identifiable Navajo built structure, their construction has only continued sporadically at best to the present. In the Black Mesa area most families shifted to stacked-log and vertical-post hogans around 1920. Forms of these two varieties of hogans dominated the area until houses began to appear.

Hogans have traditionally been associated with permanent or semi-permanent habitation sites. Here, the term permanent means that the site would be occupied for at least one season, and normally would be reoccupied for one season of the year over a five to ten year period. Since the development of year-round habitation sites, hogans were occupied during all seasons of a year. Normally, they are built in the fall for winter use. Less frequently, they are constructed for use during the summer months. Hogans are usually built to be occupied for an extended period of time. Minimally, hogans are occupied for a single winter or summer. At the other end of the spectrum, they are reused, or continuously occupied, for a period of approximately ten years. The length of use is often influenced by natural factors. For example, insect infestations and/or structural weakenings caused by rotting wood can cause hogans to be abandoned or taken down and rebuilt at another location after a period of ten years or less. The presence of a hogan normally indicates that the site was more or less a permanent location for a group of families.

Houses

Houses consisting of rectangular or square habitation structures are not a recent introduction to the area. Informants indicate that houses were built as early as 1910, although they did not start to replace hogans as the primary habitation structure until the 1950's for some families, and as late as the 1960s or 1970s for the majority of households. Early houses were constructed of available local materials (logs) while later ones use milled lumber, cinder blocks, and tar paper in their construction.

During the first portion of the twentieth century houses were used at winter habitation sites. At this time hogans were common, and houses rare. Houses, for most families, replaced hogans as the principal habitation structure by the 1960s. Today, houses can be found at winter, summer, and year-round Navajo habitation sites. For a full description of Navajo house forms see Jett and Spencer (1981:107-141).

Circular Brush Shades

This type of Navajo habitation structure is constructed of juniper branches which are from three or four meters in height. The butts (large end) of these branches are placed in the ground to a depth of thirty to forty centimeters at a slight angle so that their tops form a dome over the interior of the structure. Floor space of these structures is usually two to four meters in diameter. Jett and Spencer (1981:34) have referred to this structure as a palisaded windbreak or shade.

Circular brush shades are built and used during the warm summer months from May until September or early October. While they can co-occur with hogans, they are built generally at Navajo limited activity or special use sites. This type of structure is built to provide a cool shady area for its occupants.

Tents

Fabric wall tents, and several other types of tents, are sometimes used in conjunction with or in place of circular brush shades or ramadas at several site types. Primarily, tents are utilized at sites occupied during the warmer summer months of the year. Sometimes, however, a tent is used in place of a windbreak at a spring or fall occupied site. In his case, the tent would be equipped with a metal stove of one variety or another.

On rare occasions tent/circular brush shade or tent/ramada combinations are built. In both of these the two are combined to form one structure. Most often, a circular brush shade is built with a large

opening to the east. A tent is then erected within this opening and forms the entrance to the structure.

It is very difficult to document that a tent was present at an historic Navajo site. A small cleared area or one or several short (1 to 2 1/2 meters) upright posts, are frequently the only indications that a tent had once been erected. Commonly, nothing is left to reveal that a tent was once present at an abandoned Navajo site.

Ramadas

The basic Navajo ramada is a small structure constructed of four forked posts placed upright in the ground with four logs placed across the top (in the forks) to form a frame. Secondary poles are then rested across these upper support beams. The top is then covered with freshly cut brush. This covering provides shade to the area underneath the structure. Height of ramadas, above the ground, varies from two to three meters. Sometimes ramadas have log or brush sides (or both) or they can be sideless. Ramadas are built for use during the warmer, summer months of the year. This type of structure conforms with Jett and Spencer's (1981:41) flat-roofed shade.

Windbreaks

Windbreaks are constructed of branches, logs or stones stacked in a circle or semi-circle. The height of the walls is usually not much more than one meter. Often living trees are incorporated into the western, northern, or northwestern wall of these types of structures. The primary purpose is to act as a windbreak. Structures of this type are constructed and utilized in the fall or spring. A hearth, for space heating and cooking, is centrally located within the structure. Jett and Spencer have referred to them as stacked bough windbreak (1981:33).

Sweatlodges

This type of structure is not a habitation structure, rather it is a sudatory for taking sweatbaths. They are similar in construction to a conical forked-pole hogan but on a reduced scale. Inside diameters and height are usually no more than 1.5 meters. The common type found on Black Mesa has been referred to as a "conical forked-pole sweathouse" by Jett and Spencer (1981:193).

Sweatlodges are associated with most permanent or semi-permanent Navajo habitation sites. They are not usually located in association with the other structures at a site. Since privacy is preferred while taking a sweatbath, they are located away from the area of habitation. Distance from habitation sites varies from fifty to one hundred meters to as far as two kilometers. This distance is heavily influenced by rock and fire-

wood sources. Since sweatlodges are located away from habitation away from habitation sites, it is often difficult to link them to the site they were associated with.

Sheep and Goat Corrals

Herding (especially sheep and goats), has been an important activity for the Navajo for several hundred years particularly after their release from confinement at Fort Sumner in 1868. Corrals are built by the Navajo to contain their sheep and goats at night since during the day the herds are away from the corral foraging and seeking water. Two types of sheep and goat corrals are built by the Navajo of Black Mesa referred to here as winter and summer corrals. These two differ both in terms of location as well as in form, although location is usually the most notable difference. Winter corrals are located in a protected environment. Normally they are situated east, south, and southeast of a hill, rock face, or escarpment. As such they protect the herds from the winter winds coming from the west, north and northwest, and thus reduce mortality rates. Winter corral walls, usually no higher than 1.5 meters, are built of any available material. This includes logs, rocks, milled lumber, parts of old dismantled structures, and even sections of whole automobiles. There are no openings in the walls so that the animals cannot escape. Freshly cut branches (brush) are often placed on the outside of winter corrals to act as an additional windbreak.

Summer corrals, as opposed to winter corrals, are placed in a more open unsheltered environment. They are often located on flats or at the crest of a hill. Walls of summer corrals are less sturdy and often lack the brush associated with winter corrals. It is important to discriminate winter from summer corrals in order to determine the occupation season for many Navajo sites particularly when no other direct evidence is available. One problem that sometimes occurs, especially on early sites (pre-1920) is that there is no corral. This can cause misinterpretations of the site type. Here informants can indicate whether a herd was present or not.

Horse Corrals

Horse corrals are much less frequently encountered at historic Navajo sites. Navajos would prefer to hobble a horse rather than keep it in an enclosure and have to feed it. These corrals differ in construction in two respects from sheep and goat corrals. First, their walls are often higher. Second, there is less concern with small openings in the walls. Horse corrals can occur at sites occupied at any season of the year.

Lamb Pens

Lamb pens are built by Navajos inside, as part of, or adjacent to sheep and goat corrals and used during the late winter and early spring. When lambs and kids are very young they are unable to travel with the main herd each day. Navajos, usually females, separate the lambs and kids from their mothers in the morning before the herd leaves on its daily round. The young animals are caught while still inside the sheep and goat corral, and placed in the lamb pens for holding until the herd is released. After the herd is released the lambs and kids are sometimes placed back in the larger sheep and goat corral.

Lamb pens can take several forms, the most common of which is a small pen attached to the side of the main sheep and goat corral. After the lamb is caught, it is dropped into a pen of this type over the corral wall. The pens can also be semi-subterranean pits inside corrals or small enclosures adjacent but separated from the main corral. Due to the date of lambing, lamb pens present on a site indicate a late winter or spring occupation.

Site Types

The following is a discussion of site types composed of the various different kinds of structures discussed above. Season of use and type of structures present and their spatial arrangement are important factors defining site type. The above kinds of Navajo structures comprise the majority of those built in and around the study area. Many are built and/or utilized by the Navajo at different seasons of the year, and the presence of particular structures at a site whose season of use is known, is a strong indication of the season that the site was occupied. Only rarely do two structures with different seasons of use co-occur together on the same site. For example, circular brush shades and ramadas are not normally found on sites that also contain the late winter or spring built lamb pens. Winter corrals are also not found in association with circular brush shades and ramadas. Rather, they are often found, as would be expected, with lamb pens.

While the season of construction and/or use of a structure is one component of site type, another major component is the function of structures. A single structure or a combination of structures presents information on the function of a site. Some combinations of structures at a site provide more information than others (or a single structure) concerning site function. For instance, as will be shown, a site with a lone windbreak is often difficult to interpret and classify as to site type. If however, a windbreak and a winter corral co-occur the site would be classified as a fall/spring sheep camp.

Another important variable for determining site type is the spatial relationship between the structures. For instance, two sites, as we will see, can have identical structures located on them-- a ramada, circular summer shade, and a hogan. The spatial arrangement of these structures determines whether the site should be classified as a summer habitation site or as a specialized site built solely for a Ye'ii bicheii ceremony.

The concept of "site type" utilized here therefore has three basic ingredients present. These are: 1) the type of structures present on a site and what inferences can be made from these concerning seasonality; 2) the combination of structures present and what inferences can be made concerning site function; and 3) the spatial arrangement of structures and features on a site and the implications for site function. At some sites these three criteria are not adequate for determining all site types. Additional discriminating variables are then needed to differentiate them from other site types. These other variables consist of: 1) secondary structures and features like wool bag racks or underground storage pit; 2) locale of a site, and sometimes 3) artifacts present on a site's surface. Each or all of these three items can assist in discriminating site type when the other criteria fail to delineate a clear-cut type for a specific site. Sometimes, however, even when all criteria are used, classifying a site into the proper category can be a problem. At this point, local informants should be questioned as to function and season of occupation of a site if they are aware of a site's specific history. For this project, informants were taken to all but a few sites to verify site type based on the criteria previously outlined.

Each of the primary Navajo site types found on Black Mesa will now be described. Criteria separating one site type from another are emphasized. Site types found on Black Mesa include the following thirty-two types (see Table 4.1).

Winter Habitation Site

A hogan (or multiple hogans) or a house (or multiple houses) or a combination of hogans and houses together with a winter sheep and goat corral (or corrals) comprise the basic structures of this site type. The sheep and goat corral, due to winter use, is located in a protected environment.

Winter/Spring Habitation Site

This site type would be occupied by a Navajo family (or families) during the winter and spring months. It consists of the same structures as a "winter habitation site" with the addition of a lamb pen or pens. If the site was occupied into the late spring, a wool bag rack might

Table 4.1 Principle Navajo site types on Black Mesa

1. Winter habitation site
2. Winter/spring habitation site
3. Spring habitation site
4. Summer habitation site
5. Year-round habitation site
6. Summer sheep camp
7. Fall or spring sheep camp
8. Agricultural field house
9. Pinyon-nut gathering camp
10. Four-day mourning site
11. Squaw Dance site
12. Fire Dance site
13. Ye'ii bicheii site
14. Campsite
15. Isolated agricultural field
16. Isolated sweatlodge
17. Isolated sheep/goat corral
18. Isolated horse corral
19. Isolated cattle corral
20. Isolated lamb pen
21. Isolated hogan or house
22. Isolated circular brush shade
23. Isolated ramada
24. Isolated tent
25. Isolated windbreak
26. Isolated burial
27. Isolated water or soil control device
28. Isolated underground storage pit or corn roasting pit
29. Isolated cairn or shrine
30. Isolated antelope trap
31. Pictograph or petroglyph
32. Isolated trash

also be present.

Spring Habitation Site

This type has the same kind of structures as the winter/spring habitation site but is or was occupied only during the spring months, not during the winter. The site type is very difficult to distinguish from the winter/spring habitation site without informant statements.

Summer Habitation Site

These consist of a hogan (or multiple hogans) or a house (or multiple houses) or a combination of hogans and houses together with a summer sheep and goat corral (or corrals). The sheep and goat corral is not built in a protected environment, rather it is built in the open. Secondary structures located at a summer habitation site can include circular summer shades and/or ramadas.

Year-Round Habitation Sites

This site type is not present, for the most part, until the 1950s or 1960s on Black Mesa. It is (or was) occupied year-round by a Navajo family or families. Primary structures present include a hogan or hogans, a house or houses, or a combination of hogans and houses. If only one corral is present it is normally constructed like a winter corral, in a protected environment. Sometimes year-round habitation sites have two corrals present, a winter corral and a summer corral. Beyond this basic set of primary structures, all other Navajo-built structures also could be present on a year-round habitation site including lamb pens, horse corrals, windbreaks, circular summer shades, underground storage pits, and many of the other structural types defined by Jett and Spencer (1981). A typical site of this type could consist of a hogan, a house, a corral in a protected environment, and a ramada, together with a number of features. Trash accumulation at year-round habitation sites is often much heavier than at other site types.

Summer Sheep Camps

These consist of a circular brush shade (or shades) and/or a ramada (or ramadas) and/or a tent (or tents) together with a summer sheep/goat corral. Many Navajo families have traditionally moved with their herds to new summer locale or locales for grazing. If a family moves to several different locations in a single summer, the habitation site often takes the form of summer sheep camps rather than the more permanent summer habitation site. The summer sheep camp is historically one of the most common site types on Black Mesa.

Fall or Spring Sheep Camp

Navajo families also will sometimes travel to temporary camps for herding either in the fall or spring or both. Structures at sites of this type would normally include a windbreak (or rarely a tent) together with a sheep and goat corral. Normally it is difficult to differentiate fall from spring sheep camps without informant data. Sometimes, however, the presence of a lamb pen indicates a spring sheep camp.

Agricultural Field House

A hogan (or hogans), a house (or houses), a ramada (or ramadas), a circular brush shade (or shades), a tent (or tents), or a combination of these primary structures together with an agricultural field area, which is usually fenced or was once fenced, comprise the basic structures of this site type. A more detailed description of agricultural field house site was previously described by Russell (1978). A sheep and goat corral is sometimes, but not always, found on agricultural field house sites. Frequently, the sheep and goat herd is kept at a summer sheep camp or summer habitation site while part of a Navajo camp maintains the agricultural field. Field house sites are normally located at a rise or other high points that overlook the agricultural field.

Pinyon-Nut Gathering Camp

For many years Navajos have gathered pinyon nuts in the fall (October to November) when they are ready to be harvested. Navajos from all over the reservation go to areas in and outside the reservation during years that the pinyon trees produce a good crop of nuts. People from all over the reservation have traditionally come to Black Mesa because of the dense pinyon tree stands and the resulting abundant pinyon nut harvests. It should be remembered that good pinyon nut harvests are sporadic, occurring on the average every five to ten years. The principal structure at a pinyon nut gathering camp is one or several windbreaks. There are three ways that windbreaks, used as pickers camps, can be discriminated from other site types that contain this structure only. One key factor is location. Pinyon nut gathering camps, as one would expect, are located in areas of high altitudes in and around the Navajo reservation, that presently have a high density of pinyon trees. Often, these trees are large. A second key factor in identifying pinyon nut gathering sites is the presence of other pinyon nut gathering sites. Navajo frequently return to the same area to collect pinyon nuts the years that they are available. Thus, there is a spatial clustering of these camps. Third, there are artifacts which are characteristic of pinyon nut gathering camps. These include cans and sometimes wire screens. Nuts are normally gathered in cans. These cans range from one pound coffee cans to six or eight pound lard cans. If a large can, such as a lard can, has handles, Navajos

will use it as is. If a can does not have a handle, like coffee cans, a wire handle is added to it. Cans with handles are thus frequently found as trash items at this site type. Sometimes, wire screens are used in the pinyon nut gathering process. The wire screen has a stand so that it is held approximately one meter off the ground. Dirt, leaves, and fallen pinyon nuts from under trees are screened so that only the nuts remain in the metal screen. These are then collected. While broken screens are sometimes found near pinyon nut gathering sites, it is much more common to find the cone-shaped dirt piles which are the result of the screening process. The presence of these dirt/leaf piles indicates that pinyon nut gathering occurred in the area. When these piles are found in the same area as windbreaks, it supports the contention that these windbreaks were utilized while Navajos gathered the nuts. Pinyon nut gathering camps are utilized from periods of one day to six weeks, depending on the harvest availability in any one area.

Four-Day Mourning Site

Traditionally, after the death of a Navajo, the site where the death occurred is abandoned. This abandonment normally happens very quickly. After a death has occurred, a Navajo family would move to a newly established site, often within one kilometer of the old site where the death took place. At this new site a four-day mourning ceremony takes place for the deceased. After four days, this temporary site is abandoned and the family moves to a new location to build a new site or re-occupy an old one. The mourning site consists of a windbreak (or windbreaks) or a circular brush shade (or shades), or a tent may also be possible. Due to the short occupancy of the sites only these temporary structures would be constructed. A sheep and goat corral might also be located at the site. In some instances, if an old habitation site is located near to the site where the death occurred, it could be utilized for this four-day mourning ceremony. Informant statements are the only way to identify this site from others that may contain similar structures. At present, I know of no structural or artifactual ways to distinguish it from other Navajo site types.

Squaw Dance Site

The Navajo have three types of sites utilized for specialized public ceremonies. Of these, the most common is currently the Squaw Dance. The Squaw Dance, or Enemy Way, is a three-day Navajo curing ceremony. For two of the three days specialized sites at different locations are used to hold the ceremony. Frequently this site is located away from a habitation site, at a new location. Squaw Dance sites as well as the two other types of specialized ceremonial sites, are located along major roads or at other well known locations. This is because many of the people who attend the ceremony are strangers to the area in which the ceremony is to

be held. Since these persons will have to find the ceremony's location, they are held in places that are easy to find or be directed to. The main Squaw Dance site used on the first morning and second night of the ceremony consists of four principal structures. The most westerly structure is a large ramada. This ramada is oftentimes three to four or more times the size of a normal domestic ramada. It is used for cooking and storage of food. Fifty to one hundred meters east of this large cooking ramada is located a circular brush shade (or shades). Between this brush shade and the cooking ramada a small ramada and a hogan are present. Also between the cooking ramada and the shade a dance ground can occur, though it can also be in other areas near the site. The specialized site used for the first night of the ceremony consists of a cooking ramada and hogan. The west to east arrangement of structures at a Squaw Dance site is typical of all of the three types of Navajo specialized ceremonial sites. This spatial arrangement is a good way to differentiate these ceremonial sites from habitation sites that are often arranged on a north-south axis. Squaw Dances are held during the summer months, usually from May through October. More than one Squaw Dance can be held at a particular site. In this case, multiple circular brush shades would be present east of the cooking ramada. Trash items at recent Squaw Dances since the 1950s consist primarily of beverage indulgences -- pop cans and bottles and alcoholic beverage containers.

Fire Dance Site

The Fire Dance, a mountaintop way is a nine-day Navajo ceremonial. Like the Squaw Dance, a special site is frequently built to hold this ceremony. Fire Dance sites have the same basic west to east spatial pattern as Squaw Dance sites. To the west again lies a large cooking ramada. West of this a hogan is built. It is in this hogan that most of the ceremonial aspects of this nine-day ceremony take place. On the ninth night a large corral, constructed of freshly cut brush, is built by visitors to the ceremony. This is built to the east or northwest of the hogan. It is this Fire Dance Corral that observances during the last night of the ceremony take place. Numerous fires are built along the inside edge of the corral and a large fire is built near its center. When the visitors leave the corral on the morning of the tenth day, they leave by four openings which are made at each of the four cardinal directions in the wall of the Fire Dance Corral. Built around this main Fire Dance site are often many windbreaks (and perhaps small horse corrals). Dancers who perform on the ninth night reside and practice in these temporary structures for their performances. Fire Dances are held during the months of October or November normally. Stone beehive-shaped bread ovens may or may not be associated with the cooking ramada. A holding corral, for the livestock that is to be slaughtered for consumption at the dance, may or may not be present.

Ye'ii Bicheii Site

The Ye'ii bicheii, like the Fire Dance, is also a nine-day curing ceremony. It is also held during the fall months and has the public portions of its ceremony on the ninth night. Ye'ii bicheii sites contain the same west to east orientation of structures as the previous two specialized ceremonial site types. The most western structure is again the large cooking ramada. To the east of this lies a hogan in which most of the actual curing ceremony takes place. Immediately to the east of this hogan is a cleared dance ground. Four (or sometimes three) hearths are located on each side of the dance ground. These hearths are spaced in a line and extend to the east. Further to the east, beyond the end of the dance ground and the hearths, a brush shade is located. This shade is more oval than circular in shape, and perhaps two or three times the size of a normal domestic brush shade.

Campsite

Navajos, when traveling, gathering wild foods or hunting, will sometimes not construct a structure at a place they plan only to spend a night or two. This site type would contain only a hearth with or without trash. Informant data is almost always necessary to determine the exact function of such a site.

Isolated Agricultural Field

Sometimes agricultural fields are located away from Navajo habitation sites. This may happen if a family has two fields, one of which is not located adjacent to the habitation site. The family lives by the one field and visits the isolated field in order to perform the necessary labor and gather the harvests. Informant derived information is needed to link an isolated agricultural field to a habitation site and/or the family that utilized it.

Isolated Sweatlodge

Sweatlodges are built for use at many different Navajo site types. Most habitations, ceremonial, and many types of limited activity or special use sites have an associated sweatlodge or sweatlodges. As we have seen, sweatlodges are normally built away from the associated habitation site. Without informant data it is often very difficult to link a sweatlodge to the appropriate habitation site particularly when there are multiple habitations and sweatlodges in an area. During initial archaeological survey of an area, most sweatlodges should be placed in this category until informant data is available.

Isolated Sheep/Goat Corral

Some families on Black Mesa utilize a herding pattern where their herds are moved to several different corrals at various locations while they reside at yet another locale. This pattern allows a family to exploit the vegetation resources in their grazing area, without having to move their belongings from site to site. This type of movement pattern, while not common among the Navajo, results in a number of isolated corrals in an area. These corrals could either be summer or winter structures, but most are used during the summer and fall. Rarely, though it is possible, would lamb pens be attached. Usually during the lambing season the attention given to and needed by the herd precludes leaving them in isolated corrals overnight.

Isolated Horse Corral

These occur, but generally are rare. Little settlement pattern data is derivable from them. Some Navajos keep their horses in canyons or other areas. When they are periodically rounded up they may be placed in a corral away from a habitation site. Later, the horses could be moved to the habitation for whatever purpose, such as branding and then released.

Isolated Cattle Corral

These are used in a similar manner as isolated horse corrals. As a Navajo family rounds up their cattle, for instance, to select some for sale, they are placed in a holding corral. This corral is often located in the family's grazing area where the cattle are normally kept. A cattle corral at a habitation site could serve the same purpose.

Isolated Lamb Pen

In the spring when the herd is on its daily grazing round a lamb may be born. Since the lamb is too young to continue with the herd for the rest of the day, the herder(s) often builds a small pen of dead wood (or rocks) to contain the lamb and it's mother. The herder(s) returns to pick the lamb up in the afternoon on his/her return trip to the habitation site. Obviously, this kind of activity is most common on the way from camp in the morning. If the lamb is born on the return trip to camp, it is just carried to the habitation site.

Isolated Hogan or House

An isolated hogan or house (or multiples of each) is difficult to interpret without informant data. Secondary structures, which hold the key to accessing seasonality of site occupation and site function are not present. Usually hogans are built at cold weather habitation sites, but this is not always the case. Again, without informant data isolated hogans

or houses are difficult to evaluate. With informant data, often isolated hogans or houses can be classified as summer, winter, or year-round habitation sites.

Isolated Circular Brush Shade

The brush shade indicates a summer site use. The function of the site could have been a sheep camp (without corral), a wild plant gathering camp, or the site could have been utilized by travelers. Informant data is often necessary to define site function.

Isolated Ramada

These structures could have been used as a sheep camp (without corral) or agricultural field house with the field area no longer visible. Summer occupation is indicated by ramadas. Ramadas are not built by travelers.

Isolated Tent

These structures could have been used as a sheep camp (without corral) or agricultural field house. Other functions include those of the isolated circular brush shade-wild plant gathering site or used by travelers.

Isolated Windbreak

The windbreak (or windbreaks) indicates a fall or spring site use. The site could have been used as a pinyon nut picking camp, hunters camp, by a family gathering other wild plant resources than pinyons, or by travelers. Informants data is often necessary to detail site function. The site could also have been a fall/spring sheep camp (without corral).

Isolated Burial

Burials are often located away from the habitation site at which a person died. Burials can be intact tree burials, underground shaft burials, or located in crevices or under rocks. A broken shovel, wash pan, and clothing are often located near the burial. These artifacts were used in the burial or discarded after the burial was completed by the persons who buried the individual.

Isolated Water or Soil Control Device

Small dams or tanks are sometimes built by Navajos away from habitation sites. When water, from rains or snow, fills behind the dam, livestock (horses, cattle, or sheep or goats) are taken to water. These check dams, constructed to control runoff or to prevent arroyo cutting,

are sometimes built in drainages, above or below an agricultural field. All evidence of the field, fence posts, etc. may have disappeared leaving only the water or soil control device, usually check dams. Informant data is advisable to determine if an agricultural field was once present.

Isolated Underground Storage Pit or Corn Roasting Pit

Both of these features are frequently associated with an agricultural field, especially the corn roasting pit. All evidence of the agricultural field, as suggested above, may have disappeared leaving only those secondary features to indicate that it was once present. As above, informant data is advisable to determine if an agricultural field was once present.

Isolated Cairn or Shrine

Sites of these types do occur, but are rare. Cairns can provide land or field boundary markers. Shrines indicate areas or places that have religious significance.

Antelope Trap

While these are rare, they do occur on Black Mesa. Antelopes are driven into a wide mouthed corral that leads into a smaller holding corral. Fence height is usually much higher than normal corrals.

Pictographs or Petroglyphs

These generally occur away from habitation sites or limited activity sites. Often they are located in caves or along cliff faces. A wide range of phenomenon can be depicted.

Isolated Trash

This consists of areas of trash with no other features, such as a hearth, and no habitation or storage structures. Isolated trash areas can range from just a few artifacts, traditional pottery or cans, to large trash dumps. Large trash dumps are relatively recent. Many Navajo families started collecting and removing trash from habitation sites in the 1950's and 1960's. Trash after removal by pick-up truck, is dumped in arroyo cuts, over cliff faces, or in other out-of-the-way places. Informant data is usually necessary to link a trash dump with the habitation site it was derived from.

In summary, this chapter has described Navajo site types located on Black Mesa. Site types were distinguished on three primary criteria: 1) structures present; 2) site function; and 3) spatial arrangement of

structures. While thirty-two site types have been presented, not all were recorded among the sites located along the N-41 right-of-way. In fact, only eighteen of the thirty-two were encountered. In the next chapter a settlement pattern analysis is performed along the N-41 right-of-way with site types utilized as a major component in the analysis..

CHAPTER 5

NAVAJO SETTLEMENT PATTERNS ALONG THE N-41 ROUTE

The majority of Navajo families along the N-41 right-of-way have ceased all seasonal moves within the last 20 years. Most families now reside at a permanent site throughout the year. This is most often the site of their former summer residence near their agricultural field(s). The availability of hay and feed grains for livestock and the increasing importance of cars and trucks as well as wage labor have reduced the need and benefits of seasonal movements.

Previous to 20 years ago, most families move between at least two locations during the year. These two locations included a summer habitation site, near their field(s), and a highland winter habitation site. In order to more fully exploit available grazing in their grazing (traditional use) area, many families moved between more than these two primary site locations. Families could have a winter habitation site, a spring habitation site, a summer habitation site, and perhaps one or several sheep camps which were used either during the summer, fall, spring or all three. In addition, they might utilize one or several special use or limited activity sites during the year. These might include a specialized ceremonial site or a pinyon nut gathering camp.

Navajo seasonal movement on east-central Black Mesa has been influenced by several factors. Primary factors included: 1) potential winter and summer grazing areas; 2) the location of agricultural fields; and 3) the location of livestock and domestic water sources. Secondary factors affecting seasonal movements included the location of firewood, major roads, schools, and employment possibilities.

Basic Navajo seasonal migration patterns have recently been summarized by Jett (1978). The Navajo settlement pattern along the N-41 route falls in Jett's (1978:67) lowland-summer and highland-winter seasonal movement pattern. According to Jett (1978:67) the location of agricultural fields was the primary factor influencing Navajo movement to lowland areas in the summer while winter movement to highland areas was determined by the presence of firewood.

While this lowland-summer/highland-winter seasonal movement pattern dominated in the past on east-central Black Mesa, the reasons for movement differ somewhat from those presented by Jett. The location of agricultural fields does influence summer residence locations. However, since firewood

is generally available throughout the area, it is not a primary variable affecting winter camp location. Instead, areas with certain varieties of grazing plants are more important determinants of winter habitation location. Preferred winter grazing plants, for the sheep and goat herds, are four-wing saltbush and big sagebrush. These two species are large and high enough to remain above the ground snow level during the winter months, thus allowing herds to continue to graze. An additional reason for winter highland movement historically has been that snow stays on the ground longer at these higher elevations and thus provides both a domestic and livestock water source since snow is commonly melted for these purposes. It should be noted that along the N-41 right-of-way altitude differences between summer and winter habitation sites are small in comparison to other areas of the reservation. Altitude differences between a family's summer and winter habitation site may vary only 300 to 800 feet.

Having discussed the traditional settlement pattern and site types in the historic period, it must be recognized that sites within the N-41 right-of-way are not typical of those in the surrounding area for several reasons. The primary difference stems from the presence of a main roadway along the proposed N-41 route from Pinon to the main Dinnebito Wash. With changes in transportation modes this main roadway affected and altered the types of Navajo sites near it. As cars and trucks have become more and more important to the Navajo, many families have located permanent residences near major roads to avoid difficult access on dirt roads to more remote locations. Another trend on the reservation has been to move closer to school-bus pickup locations. Hence, many families have located their permanent habitation sites within one-half kilometer of the present road between Pinon and the Dinnebito Wash.

Let us now review historic Navajo settlement patterns within and adjacent to the N-41 right-of-way. Two primary sources of information are included in this analysis. These include historic Navajo sites within the right-of-way and informant data. Table 5.1 provides a listing of all sites in the N-41 right-of-way (from Pinon north to Many Sheep Wash) together with information on site types and date of occupation for each. Informant data on seasonal movement patterns of families who currently or historically lived along the N-41 route is also presented.

Rather than viewing the entire length of the N-41 right-of-way as a complete analytical unit, it has been subdivided into a number of smaller segments each consisting of site clusters. This facilitates a more detailed and specific analysis of local areas that may differ from others along the roadway. Basically these segments consist of drainage basins, like the Oraibi Wash, or highland areas separating the drainage basins. The analysis proceeds from Pinon to the end of the right-of-way in Many Sheep Valley. At the conclusion of this discussion, several general statements concerning Navajo settlement patterns along the N-41 right-of-way are presented.

Table 5.1 Type and date of all sites investigated

<u>Site Number</u>	<u>Site Type</u>	<u>Site Date</u>
AZ-J-58-1	Winter Habitation Site	1952-1960
AZ-J-58-3	Squaw Dance Site	1944-1956
AZ-J-58-5	Summer Habitation Site	1946-1947
AZ-J-58-7	Summer Sheep Camp	1915-1924
AZ-J-58-8	Year-round Habitation Site	1940-1945
AZ-J-58-9	Isolated Sweat lodge	1950-1960
AZ-J-55-1	Summer Sheep Camp	1927
AZ-J-55-2	Summer Habitation Site	1950-1962
AZ-J-55-3A	Fall or Spring Sheep Camp	1935-1940
AZ-J-55-3B	Isolated Hogan	1900-1920
AZ-J-55-5A	Summer Habitation Site	1930-1938
AZ-J-55-5B	Summer Sheep Camp	1955
AZ-J-55-6	Isolated Sweat lodge	1930-1938
AZ-J-55-8	Isolated Circular Brush Shade	1910-1930
AZ-J-55-1	Spring Sheep Camp	1940-1945
AZ-J-55-13	Squaw Dance Site	1967
AZ-J-55-16	Squaw Dance Site	1967
AZ-J-55-18	Isolated Circular Brush Shade	1934
AZ-J-54-3	Four-day Mourning Ceremony Site	1950
AZ-J-54-12	Agricultural Field House	1935-1945
AZ-J-54-13	Summer Habitation Site	1940-1941
AZ-J-43-1	Winter Habitation Site	1960-1964
AZ-J-43-3	Winter/Spring Habitation Site	1920-1930
AZ-J-43-5	Winter/Spring Habitation Site	1945-1949
AZ-J-43-6	Year-round Habitation Site	1923-1940
AZ-J-43-7	Spring Sheep Camp	1895
AZ-J-43-9	Campsite	1930-1950
AZ-J-43-10	Isolated House	1924-1930
AZ-J-43-11	Summer Habitation Site	1924-1936
AZ-J-43-12	Winter Habitation Site	1918-1920
AZ-J-43-13	Summer Sheep Camp	1936-1940
AZ-J-43-14	Summer Habitation Site	1920-1925
AZ-J-43-16A	Summer Habitation Site	1920-1930
AZ-J-43-16B	Isolated Wind Break	1900
AZ-J-43-20	Squaw Dance Site	1974-1977
AZ-J-43-21	Isolated Sweat lodges	1955-1965
AZ-J-43-22	Isolated Lamb Pen	1950-1960
AZ-J-43-3	Winter Habitation Site	1914-1918
AZ-J-44-4A	Isolated Lamb Pen	1930-1950
AZ-J-44-4B	Isolated Agricultural Field	1930-1950
AZ-J-44-6	Winter Habitation Site	1931-1939
AZ-J-44-7	Isolated Burial	1939
AZ-J-44-8	Isolated Sweat Lodge	1931-1939
AZ-J-44-9	Pinyon Nut Gathering Camps	1890-1910
AZ-J-44-10	Winter/Spring Habitation Site	1950-1960
AZ-J-44-11A	Agricultural Field House Site	1940-1945
AZ-J-44-11B	Squaw Dance Site	1952

NOTE: Sites are listed from Pinon to Many Sheep Wash along the N-41 right-of-way. The first site in the table is located in the proposed maintenance yard, near Pinon, Arizona.

Table 5.2. Frequency of Navajo site types
along the N-41 right-of-way

<u>Site Type</u>	<u>Frequency</u>	<u>Percent</u>
Winter Habitation	5	10.6
Winter/Spring Habitation Site	3	6.4
Summer Habitation Site	7	14.9
Year-round Habitation Site	2	4.3
Summer Sheep Camp	4	8.5
Fall or Spring Sheep Camp	3	6.4
Agricultural Field House	2	4.3
Pinyon Nut Gathering Camp	1	2.1
Four-day Mourning Ceremony Site	1	2.1
Squaw Dance Site	5	10.6
Campsite	1	2.1
Isolated Agricultural Field	1	2.1
Isolated Sweat Lodge (s)	4	8.5
Isolated Lamb Pen	2	4.3
Isolated Hogan or House	2	4.3
Isolated Circular Brush Shade	2	4.3
Isolated Windbreak	1	2.1
Isolated Burial	1	2.1
	<hr/>	<hr/>
Totals	47	100.0

CHAPTER 6

NAVAJO SITES INVESTIGATED

Though the Navajo occupation of Black Mesa has been relatively short, the density of historic Navajo sites located within the N-41 right-of-way is higher than the density of prehistoric (non-Navajo) sites. Altogether, forty-one historic Navajo sites were located within the N-41 right-of-way. One additional site, J-58-1, located in the proposed maintenance yard for the roadway, was also investigated. Of the forty-one sites within the right-of-way, five consisted of two separate (time-wise and functionally) components. A total of forty-two historic Navajo sites, with forty-seven separate components, were investigated as part of this project.

This chapter contains summaries of basic descriptive information about the sites or components investigated. These summaries contain: (1) a description of the types and number of structures present on a site; (2) informant data concerning the site; (3) information on date of site occupation; and (4) an identification of site type. Special characteristics of a site, such as burial or specific artifacts, are also discussed in these summaries.

For the majority of sites investigated, a 100 percent collection of surface artifacts was taken. Only five of the 47 sites do not have complete surface collections. One of these five sites was sampled, for the others no collections were taken. Tables of artifacts recovered from each site are located with each site summary. Tables are of three types: (1) Euro-American artifacts located on the site; (2) native items of material culture; and (3) intrusive (non-diagnostic) items of material culture. Many more intrusive items of material culture were recovered from sites than would normally be expected because of the closeness of the N-41 route to an existing road. Intrusive items normally represented recent trash that had been deposited on the site surface after an historic site was abandoned. On only a few occasions, items that dated earlier than the site under investigation were able to be identified as intrusive to a site.

In addition to the site summary and artifact tables, maps are included with all sites. For the historic Navajo sites with two components, both are located on the same site map. Several of the sites also contain a prehistoric and historic component. Excavation (test pits) and other information on the prehistoric component sometimes appears on the site maps.

The site maps are useful in depicting the spatial arrangement of structures and features at historic Navajo sites. While little research has presently been done on the topic of the spatial arrangement of structures and features at historic Navajo sites, this is one way to discriminate site types. For instance, the ceremonial site types discussed earlier (Squaw Dance, Fire Dance, and Ye'ii bicheii) all possess a basic characteristic spatial arrangement of structures that differentiate them from habitation sites with the same structures present.

In the site descriptions and site maps the following are classified as structures: hogans, houses, circular brush shades, ramadas, windbreaks, sweatlodges, sheep and goat corrals, horse corrals, and lamb pens. All other Navajo modifications of site environments are classified as features. These include: ashpiles or ash areas, wood chopping areas, trash areas, rock piles, stone beehive-shaped bread ovens, hearths, burials, wool bag racks, wood piles, brush piles, etc. Most of the sites described contain a combination of structures and features, though some only have one of these present.

In order to make the site descriptions more readable the dimensions of the structures located on each of the sites investigated are included not in the descriptions but in Appendix Three. For some structure types, the dimensions listed represent only approximations of the original structures measurements. With some structure types, for instance hogan rings represented at the time of site investigations by a dirt ring, as most were, it is very difficult to accurately reconstruct original dimensions.

A date of habitation or site use is assigned to each of the sites and site components investigated. For most, a time-range of site occupation is presented. These range from a minimum of a single year to a maximum of 20-year periods. Site dating is primarily based on tree-ring dates and/or informant data on when a particular site was occupied.

Tree-ring dating is the most accurate method available to date historic Navajo sites. However, in order to use this dating method, usable wood must be present on a site and this wood must provide dates very close to cutting dates or actual cutting dates. Wood for tree-ring dating was collected from all sites investigated where it was present and where it appeared to be in a good enough condition to provide cutting dates. A little less than half the sites investigated provided wood samples with cutting dates or near cutting dates. For these sites these dates provided the primary information by which the dates of site use were determined.

Dates provided by an informant or several informants was the primary manner in which sites without tree-ring cutting dates were assigned a site date. Care was taken to elicit as accurate as possible site dates from informants. For the most part, informant statements concerning site date proved reasonably accurate. This statement is reinforced by a comparison of tree-ring cutting dates and informant dates for the sites for which both are available that is provided later (see Chapter 8).

Several other dating mechanisms were sometimes used to corroborate site dates. These included wood deterioration, artifact density, type and size of structures present, and the historic artifacts present on a site. None of these methods is as accurate as tree-ring dating. Dating by wood deterioration, artifact density, and type and size of structures presents on a site is derived from my extensive experience with historic Navajo sites on Black Mesa.

Dating by the manufacture date of artifacts located on a site is the most well-known and probably commonly used site dating mechanism on post-1900 Navajo sites. Ward, Abbink, and Stein (1977) provide an extensive listing of the manufacture dates of many historic artifacts commonly found on Navajo sites. This source was consulted when necessary to provide the manufacture dates of historic artifacts recovered.

While artifact manufacture dates have been used elsewhere to place historic Navajo sites within their temporal context, as noted they were only used to corroborate site dating here. This occurred for several reasons; first, as already stated, because tree-ring cutting dates were available for many sites; second, because of the availability of informants who had lived at many of the sites in question and could thus provide accurate site dates.

The third reason why artifacts were not used to date sites relates to the nature of many of the sites investigated. A significant proportion of the sites within the N-41 right-of-way had no artifacts present or only a small number present. In order to achieve accurate artifact dating of a site, at least several datable artifacts need to be present on a site. Because of this, using artifacts to date sites often times would not have been a reliable method to use in this study.

Using artifacts to date site occupation often presents another problem. A 20- or 30-year period when a site may have been occupied is often obtained. This is the result of the manufacture dates for many artifacts extending over a long period of time. Both tree-ring and informant site dating almost always give a much narrower limit to the occupation of an historic Navajo site.

Two other reasons, artifact time lag and reuse, can be presented for not relying on artifacts to date sites. Ward, Abbink, and Stein (1977: 230) have suggested a five-year time lag between the manufacture of an historic artifact and its deposition in the archaeological record in Navajo sites. At present, little information is available to assess the accuracy of this statement. However, a recent paper (Russell and Myers n.d.) using a site from Black Mesa has indicated in one instance (a K.C. Baking Powder can lid) that for the late 1930s artifact time lag, from manufacture to deposition, was less than one year. A longer or shorter time lag would severely affect site dating. The area of artifact reuse by Navajos is also one in which little data is available, particularly concerning how long artifacts are reused for. Both artifact time lag and reuse need more

investigation. They have the potential to adversely affect the accurate dating of historic Navajo sites on which the manufacture date of artifacts is relied.

The site summaries that follow are arranged from south to north (Pinyon to Forest Lake) along the N-41 right-of-way. A comparative analysis of artifact assemblages from 37 to the 47 sites or components of sites is included in the next chapter.

AZ-J-58-1

Site Description. This historic Navajo site is located to the south of the Navajo community of Pinyon. AZ-J-58-1, rather than being along the N-41 right-of-way, is located in the proposed maintenance yard for this roadway. Several structures and numerous features comprise this site. A hogan ring (Structure 1) and the remains of a sweatlodge (Structure 2) are currently the only structures indicated. The presence of another sweatlodge is indicated by a pile of rocks (rocks are heated then placed in the sweatlodge with damp juniper bark on them to produce steam) and an ash-rock area where the rocks were heated (Feature 5 and Feature 6). The identified sweatlodge, Structure 2, also has located near it an ashpile (Feature 12) and a rock pile (Feature 8). Both sweatlodge locations also have associated with them a wood chopping area, indicated by woodchips, where wood for the fires that heated the rocks for the sweatbath was cut. The remains of a stone beehive-shaped bread oven is also located at this site location to the east of the hogan ring.

A number of trash piles are also located across the surface of AZ-J-58-1 (Features 1, 4, 7, 9, 11, 14, and 15).

Informant Data. No informant data is available concerning when this site was occupied and who occupied it, as this site was investigated after the period of interviewing had been completed.

Site Date. The condition of the hogan, bread oven, and sweatlodge, together with the artifacts around them, indicate a 1952-1960 site occupation. A tree-ring cutting date of 1952 from Structure 2, the sweatlodge, partially substantiates this site dating.

The contents of the trash piles located across the site indicate a later site activity than that associated with the structures previously discussed. These trash piles contain artifacts from the 1960s and 1970s. After the habitation site at this locale had been abandoned, probably in the later 1950s, a trash dumping by Pinyon residents undoubtedly occurred. (Due to the large amount of material in the trash piles at this site, complete collections of artifacts were not taken. The artifact table of items of material culture collected from this site represents a sample of artifacts collected from the trash piles and over the surface of the site.)