EVER WESTWARD

PAPERS IN HONOR OF ELIZABETH KELLEY

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PREFACE

Past volumes of the Archaeological Society of New Mexico’s annual publication have honored either professional archaeologists or the leaders of various affiliated societies. In recent years, the Board has endeavored to honor key individuals among the affiliated societies who, while not the primary leaders, nevertheless fill important roles in these organizations. Such individuals comprise the ever-necessary cadre upon whom the leaders depend to accomplish the missions.

One such person, honored by the present volume, is Elizabeth Kelley of the Gallup Archaeological Society and the Plateau Sciences Society. Betty, as she is known to all of us, was instrumental in forming the G.A.S. and in carrying out its first project, the excavation of several sites in the path of the then new Gallup city landfill in Heaton Canyon. From there, she helped inaugurate the Archaeological Society of New Mexico’s annual excavation field school, first at Gnat Hill and then at the Vidal site. Both sites were also in the path of landfill development.

Betty was the field school manager at both Gnat Hill and Vidal, a position that she held throughout the decade and more of excavation and lab work. Among her many duties every year, she arranged to have the Vidal site opened prior to the arrival of the staff and students and then backfilled it at the end of the session. Rather than being content in supervising this backbreaking work, she was down in the middle of the action, bucking out the dirt alongside the highschool boys she had hired to help. This was no small task considering the increasing size of the great kiva as more and more of it was exposed with each new season. For her archaeological survey certification project, Betty also surveyed the lower reaches of Heaton Canyon in order to document the cultural landscape of the Vidal site.

Since the close of the excavation field school in the early 1990s, Betty has expanded her archaeological horizons to southern California. There, for several years now, she has applied her many talents to a PITA program on the Angeles National Forest. Doug Milburn’s paper in this volume reports on the dating of that site.

And so, it is with great pleasure that the ASNM honors Betty with this volume of collected papers.
Elizabeth Kelley was born in the small town of Manistique, in the Upper Peninsula of Michigan, on October 4, 1925. Even though she was named for several forebears, her parents, Cory Harrison and Anne Schwab Kelley immediately began calling her Betty, the name which since has persisted with family and friends. She was raised in the equally small town of Newberry, Michigan, and was the oldest of seven children. Her father worked for the local Iron Company which made pig iron, and she was raised in the associated company house neighborhood. The row of double houses was inhabited with equally large families, and there were plenty of playmates in those early years. Group and team games were the norm.

Life during the depression years provided for a practical education. My father felt that girls needed special teaching regarding fishing and hunting and began that training early on. However, he soon became tired of being asked if we were lost, so the teaching switched to cleaning of wild game he caught, which my mother refused to do. Family outings to pick berries were a frequent activity in the summer and a good excuse for a picnic. (Hunting and gathering?)

Evening hours at home were times for family activities and gatherings. Education was stressed, and after homework was done, puzzles and card games and family song fests were enjoyed. Father entered the marriage with a subscription to the National Geographic magazine, and early exposure to Southwest archaeology began with the articles in that magazine. Long discussions were held about what it must be like to find something like that and how the people could have lived in such situations. Thus, I was being programmed early on for the interest which blossomed in later life. Education was stressed because my parents were able only to go through the eighth grade. In fact, my mother received her 8th grade certificate...
would be exciting, and more practically, my true interest was in chemistry. World War II was in full swing and choices, which were limited for females at that time, were influenced by that situation. Within a couple of weeks of graduation, an article appeared in the local paper, looking for candidates to attend nursing schools to provide nurses for the armed forces. An application was submitted and accepted, and I became a student Cadet Nurse, even though I had no idea what a nurse was supposed to do. I entered full of fright and shyness. The fright was soon overcome but it took much longer to cope with the shyness, but nursing was certainly the right profession in which to work on it. Having been raised in a small mostly Protestant town did little to prepare me for the sight of the nuns I encountered there. The order of the Daughters of Charity ran the school and, at that time, wore full habits, made famous in the TV program, the Flying Nun.

Three years at St. Mary’s Hospital School of Nursing in Detroit with all the associated war shortages, prepared the way for problem solving and learning all aspects of Nursing. I graduated Magna Cum Laude and soon after applied for a job with the Federal Government. Their offer of $30.00 more a month, a five day work week (instead of six), and liberal vacation and sick leave time made this move desirable.

This began a career which lasted 34 years and included positions in the U.S. Public Health Service and Indian Health hospitals around the country. Transfers to the widespread locations of Baltimore, Detroit, San Francisco and the Navajo and Hopi Reservations satisfied a wanderlust and made it possible to visit all the states of the country early on. The nursing occupation in those post-war years was interesting and challenging because so many new drugs and procedures were being introduced. I was assigned to work in the first Recovery Room and the first Intensive Care Unit. A special assignment in the Phoenix area office of the Indian Health Service in the mid ‘50s was of special interest because of the adventures when she was in her forties. Despite this level of education, they were both knowledgeable and had an interest in all world events, historical, political and natural. They eagerly shared all text books and books brought from the library. I was frequently reminded that I could do anything I wanted if I worked for it.

School years were a happy time even though I was very shy. I participated in athletic activities with bowling, hiking, ice and roller skating dancing the favorites. After graduation from High School in 1943 with Honor Society membership, it was time to consider the future. After reading novels by Lloyd C. Douglas, I thought being a brain surgeon...
it offered. This included stations at Hopi, Whiteriver Apache, Owyhee, Nevada, and Peach Springs, Arizona. From there, I took the only horseback trip of my life to hold clinic for the Supai Indians, and this long before nurses began independent duty. Also at this time, I became acquainted with Indian life and cultures especially on the Hopi reservation.

I transferred to San Francisco in 1957 in order to attend university and obtain the college degree I had always hoped for. Finally, in 1968, I received my BSN in Nursing from the University of California at San Francisco. This was one of the more unpleasant tasks of my life, as “three year” nurses were looked down on by those with degrees, even though the practical aspects of that education prepared us for far more than the degree programs ever could. I would call my mother to tell her how awful it was and to hear her say “Poor Baby.” All she would say was “You can do it.” So much for sympathy.

Figure 3
Betty and siblings, 1994, left to right, Tim Kelley, Judith Mathien, Nancy Kelley, Mary Ellen Lauter, Margaret Brohant, Bill Kelley, and Betty Kelley.

Life in San Francisco started at the end of the Beatnik period and progressed through the Hippie period. The City had many cultural attractions for my enjoyment and I was able to indulge in my great love of classical music and opera. I held season tickets for both seasons and frequently went from an early evening class to the opera with my arm full of books. On one memorable trip to a museum at Berkeley, I was exposed to the Mexican Pre-Columbian cultures. I was entranced and when I reported for duty that afternoon I couldn’t wait to tell my supervisor what I had discovered. She casually informed me that she and her merchant marine husband collected Peruvian and Mexican Pre-Columbian artifacts. She invited me to her apartment to see their things. Every available drawer and closet in their apartment was filled with exciting things. (I was to later inherit the remnants of this collection when she died.)

For most of the years in San Francisco, I lived in North Beach in an apartment house full of old Italians, where my neighbors felt it was their duty to feed me. I acquired a love of eating and cooking Italian food. Days off were frequently spent on fishing, camping and skiing trips to the Sierras. The bowling league and the hospital Officer's Club were social events, as were trips to the ice rink out at the ocean.

After graduation, summer employment was obtained at the Gallup Indian Medical Center so that I could be back in the Southwest which had put a permanent claim on me. Graduate school was bypassed because at that time I had only 10-12 years to go toward retirement and the
job I wanted was available, so the decision to move to Gallup permanently was made.

After three months, I was promoted to the position of Training Supervisor which was the independent sort of job which appealed to me. Teaching was pleasant duty and the Native American Practical Nurses and Nurse's Aids were willing students. One important aspect of this assignment was the woman I was working with. On Monday mornings, she would come to work full of stories about the great archaeological field trips she had been on over the weekend. It only took about two or three Monday mornings until I was ready to sign up for the Gallup Archaeological Society. Then, about a year later, the Gallup landfill was opened in a canyon north of town which was known to have Indian ruins. The city allowed the GAS members to do salvage work to determine the size, characteristics and time frame of the sites. Only about three sites were known on the surface and several more were discovered more than a meter under the sand.

Thus began my education in archaeology. A knowledgeable school teacher, Ralph Thode, and also an active member of the society, became my first teacher. Working with Sylvia Abeyta, we were able to study several of the ruins before they were destroyed by the bulldozer. A two year assignment at Keams Canyon as Director of Nursing and at the Shiprock Indian Hospital as Training supervisor interrupted this developing interest and training, but enhanced my interest in ethnology. About a year after I returned to Gallup, the Archaeological Society of New Mexico decided to put the society's field school in Gallup. I signed up for a week during that first season and soon realized that a manager was needed to coordinate everything. So, with my great ability to speak before thinking too much, I attended the Board Meeting and volunteered to take on managerial responsibilities. Of course, I was accepted, and a 15 year project was begun. The school was moved to the Vidal Site in Heaton Canyon at that time.

I was named chairman of the Field School Committee, and shared with the members the responsibility for obtaining seminar speakers and school directors. During this time, Harry Hadlock was a strong supporter and encouraged me. Eventually, I was able to find these people by myself. In 1980, I retired from Federal Service. At this same time, Stewart Peckham was named school director and Crew Chiefs were named. With these people, schedules were made, and decisions affecting the school were made. A Research Design for the school excavation was

Figure 4
Betty with Sheila Brewer in 1990s on Tiburon Island, Sea of Cortez.
developed, and one part of it was to determine the population distribution around the site for that time period. After a couple of seasons, Regge Wiseman took over as director. These two were a great influence on my development and later decisions.

As I learned more, I became a crew chief and soon after, I enrolled in the Certification program of the ASNM. I took advantage of all the seminars being presented and attended them year after year. I also began acquiring the hours of practical experience needed for the Certification program. After avoiding it as long as I could, I became interested in the microscopic analysis of pottery and eventually completed the analysis of the excavation sherds.

As an off-season project I began surveying the adjacent area to determine the population distribution portion of the Research Design. As I had access to all the information obtained during the early years of excavation in the landfill area, this material was incorporated. After a couple of years, bones were discovered in a motocross track across the canyon. This information convinced me to go to that area to investigate. Sheila Brewer, then a student at the ASNM field school, needed the surveys for her own certification goals, and she joined me in that portion of the canyon. Over 30 sites were found in that area. By then I had the habit and kept exploring the canyon on both sides. The canyon has several locked gates to which I had keys, but I was afraid to go up alone in case of an accident. So, I recruited Sheila and several others to accompany me on that portion of the survey.

This continued for ten years. We surveyed for nearly four miles to the north and decided that we had found enough. Then came time for report writing, and this was a major education. I thought this could be done in three months, and it took three years of research, study and dedication. This was submitted in fulfillment for my certification, which I received in 1993. I am also certified in Rock Art Recording. (Probably the only person who has accomplished both portions of the certification program).

I spent several years on the Board of Directors of ASNM as treasurer and stayed on for many more...
years as Field School consultant. I received the Archaeological Achievement award in 1979. Archaeological publications include two reports of the Heaton Survey in the Collected Papers of ASNM in 1984 and 1991 and four historical reports, both singly and in partnership, in the 2000 anniversary volume. Historical publications include books written for the 75th anniversary of the Catholic Diocese of Gallup and the 75th anniversary of the parish of St. Anthony at Zuni. Currently, I am working on a 50th anniversary report for the school at St. Francis in Gallup.

I find many historical projects to do, including describing, mapping and photographing an old abandoned, vandalized cemetery on the north side of Gallup. This report is being used to encourage Gallup to take over ownership and care of this property. Two winters were spent indexing the Hillcrest cemetery on the west side of Gallup. This opened in 1914 when the old Hillside cemetery was closed and is now considered full. The historical society has the books for one of the mining companies which began functioning in the teen years, and these were indexed.

For the past ten years, I have been attending archaeological and historical projects for the Forest Service and have logged over 2000 hours in projects in New Mexico, Arizona, Nevada, California and northern Michigan. Most of the time has been spent in the Angeles Forest in the San Gabriel Mountains north of Los Angeles. There, I've discovered the lure of non-ceramic archaeology. Most of the projects involve site surveys and mapping, but some earth ovens and rock circle features have been excavated.

My thanks go to all who guided and influenced me throughout my life.
Meet Betty Kelly, a Michigan transplant to the southwest fifty years ago. Gallup residents recognize her as one of our innovative volunteers. Perhaps you know Betty as a dirt digging anthropologist, but Gallupians know her as an information digger who fills in historic gaps.

When asked about her arrival in this area, Betty responds, “I took advantage of opportunities.” With that attitude she made more than the usual contacts.

Betty grew up in the industrial town of Newberry, Michigan. No “Rosie-the-Riveter” community, opportunities for girls in the 1943 graduating class were paths to dead-end jobs. With her father’s order of, “Everyone works in this family,” she searched the want ads in the newspapers for a secretarial job. With a successful job application in Detroit, she continued to check out the paper for other possibilities and found announcement of a scholarship program leading to certification as a nurse for the Indian Health Service.

With acceptance of her successful application to St. Mary’s Nurses Training in hand she entered the four-year program. Within three years she completed the course of study and graduated Magna Cum Laude. Betty would be assigned where needed over the next six years.

Nurse Kelley’s first southwest assignment in 1952 was to the Fort Defiance, Arizona. The health needs of the Navajo people had been addressed since 1868 by nurses and doctors from across the nation. The nearest town, Gallup, New Mexico, was the staging point for all Indian Health Service assignees.

Gallup, only 40 miles over dirt roads and a mountain pass, was and still is a “town” that serves the 100 mile radius of surrounding reservations. Saturday nights off meant a trip to the bright lights. Either the Corral or the Hotel El Rancho with live bands, dancing partners that might even
include an occasional movie star, and lively crowds, was a great place to spend a free evening. Off duty, a carload of nurses would take advantage of the free time—always careful to start back to the Fort by 1:00 AM. Unexpected trouble on the road meant there would still be some traffic because the bars all closed at 2:00.

The nurses were “People Persons” among the Navajo—they talked, asked questions, didn’t try to hurry, and did not intrude on personal information. Thus they found out more about the reservation than BIA personnel who had lived in Fort Defiance for years.

For newcomer Betty, every bit of knowledge was a “big WOW.” From roads to scenery, to people, to ceremonials, Betty was entranced. She bought her first car in the early 50s, for wheels were the symbol of freedom on the res. Her professional assignments to Keams among the Hopi, Shiprock among the Navajo, and wide ranging travel as Educational Director for PHS increasingly brought her into the archaeological field by 1968.

Shortly after applying for a salvage archaeology project at an old mine site on the edge of Gallup named Heaton Canyon, Betty found her avocation. I-40 was under construction through the community, and the salvage operation was to comply with federal survey orders to identify prehistoric sites. From 1970 to 1993, Betty spent her summer vacation and free time identifying the 110 surface sites of the prehistoric Anasazi. Once collected, mapped and catalogued the final count for all historic and prehistoric sites was 148. Foremost among the huge count was the University of New Mexico—Gallup Field School of the Great Kiva at the Vidal Site.

While Betty’s involvement in southwest archaeology is well known by members of the society, it is her community—Gallup, Fort Wingate, McGaffey—activities that have made her distinctive contribution to local history. Interest in recording deteriorating historic sites took her into a survey of abandoned Fort Wingate cemetery. This 1868 location had long been abandoned to bottle hunters, but army records still contained names and plot numbers. Within the scattered records was reference to a little known interlude.

One puzzling entry was that of General C. Romero, a Mexican Officer who had died of natural causes. Betty remembered that a friend held some salvaged records that had been collected from the city dump when Fort Wingate was decommissioned in 1992. Betty offered to put the two boxes of papers, documents, and pictures in order. Calling attention to the officer’s names on the writ of habeas corpus for 5,000 Mexican internees created a bigger puzzle. The date was four years before Pancho Villa. They came by train. Fort Wingate was abandoned at that point.

Figure 2
Betty Kelley in small kiva, 1984 at the Vidal Site.
There were no facilities for that many people even if US Army personnel were stationed there. When friend hit the books it took a full year to unravel the mystery. The resulting paper and pictures on the topic were presented at the Annual Meeting of the New Mexico Historical Society, The Big Bend Conference, and published in the New Mexico Magazine.

Betty began to check the old Hillcrest Cemetery for military identities. Grave markers also identified early residents whose names had long been forgotten. She began a survey of visible and unknown plots from the past. The incomplete records identified 16 blocks of 5,596 plots. Despite possible errors the cemetery is full. Betty's call for community help and interest is responsible for the City of Gallup's increasing refurbishing and maintenance. People care because Betty cared.

Connections have spread interest through the county. Betty's latest projects have included the 1990 Chaco Reunion. Listening to lectures and discussions, locals were reminded of relationships through projects, architecture and arts in our widespread area.

Two intermittent projects have provided invaluable volunteer services. Betty is a regular assistant at the Little Sisters of the Poor. This facility provides a care giving facility for senior citizens. Residents come from across the community and the Navajo Reservation.

The second project is her work with the LDS genealogy center. Any individual may use this service.

The Gallup Historical Society has used her organizational skills to reorganize a major portion of their unusual Southwest Mine records. These documents are only a part of collection donated by Herbert Stacher, former mine manager. From employees to wages to sales, the operation records are housed in the original furnishings of the mine office. These records may be the only complete collection remaining in New Mexico.

Most recently Betty has been involved with a photographic display of the Zuni Mountains Railroads in the Cibola National Forest. The photos and captions have been collected by the Southwest Regional Office of the USDA Forest Service. This logging area and their now vanished railroads were at one time the major revenue producing operations for the "town" of Albuquerque.

Without this Zuni Mountain industry, Gallup would never have become a railhead in 1881. The picture exhibition and related discussions have been held at various locations over the past two years. Perhaps these unique photographs will come to your community in the near future.

Whatever your interest, Betty has had a related experience because, as we know, Betty Kelly "digs" archaeology.
INTRODUCTION

Before the start of the 1940 decade, the archaeology of the Mogollon region in southwest New Mexico and Eastern Arizona had received much less attention than the Anasazi and Hohokam regions to the north and west respectively. Danson (1957:2-3) notes that comparatively little archaeological work had been done in an area:

...roughly marked by the modern towns of Springerville, Arizona, at the northwest point, Magdalena, New Mexico, at the northeast point, while Silver City, New Mexico and Clifton, Arizona mark the southeast and southwest points respectively.

As a result, after World War II, the Peabody Museum (Danson 1957) undertook a major survey, and investigators including Martin and Rinaldo (1950a, 1950b, 1960), Martin, Rinaldo and associates (1939, 1949, 1961), Wheat (1955) and others carried out studies and excavations in the area. As a result, cultural sequences became well defined and pottery types were refined, confirmed or elaborated upon.

Much of the above detailed excavation work done from 1940 through 1960 was carried out significantly south of or east of the northern edge of the Danson area, which, in its northwestern boundaries, stopped south of Quemado, New Mexico. However, Barnett (1974) and McGimsey (1980) chose the Marianna Mesa area north of Quemado for investigation, while Watson Smith (1973) worked on the Williams Site a few miles south of Quemado. Through 1970 and 1980, the Laboratory of Anthropology carried out highway clearance work generally south of the town. Later, an
extensive site survey of a very broad area surrounding Quemado was made by the University of New Mexico, Office of Contract Archaeology (Elyea 1990).

Thus, the development of a significant base of archaeological knowledge was about to start in the Quemado area of New Mexico near the time, in 1971, when the Albuquerque Archaeological Society (AAS) was invited by the owners of the Fisher Ranch to carry out detailed work on a small site on their property. The AAS enthusiastically accepted the offer and designated the project as AS-6. Field work began in October, 1971 and concluded in May, 1975.

The site location, shown in Figure 1, is about fifteen miles north of Quemado, a short distance west of the Continental Divide. It is in the piñon-juniper zone at an elevation of 7,400 ft (2,240 m.) above sea level. Its coordinates are: SW quarter of the NE quarter of the SE quarter, Section 30, Township 4N, Range 14W, in Catron County, New Mexico or 3,825,191 Northing and 745,411 Easting. The site is on the edge of a shallow valley at the base of a volcanic cone which rises to an elevation of 7,724 ft, more than 300 ft above the surrounding terrain.

The land on which the site rests slopes gently to the south and east, and provided ample opportunities for development of agricultural fields onto which local run-offs could be channeled. Evidence of such irrigation works was noted at the base of the basaltic cone near the site.

This report covers the partial excavation of a 21 room Pueblo III pueblo and the full excavation of an earlier pithouse located beneath the site midden.

The pueblo is roughly rectangular, about 18 m east-west by 12 m north-south, containing 21 identified rooms of which eight were excavated, eight more were sampled, and wall outlines were identified for the remaining five. Several firepits were found, but only one exterior doorway and one interior passageway were noted. The walls were masonry, using locally available volcanic and sandstone materials. The rooms were 190 to 260 cm wide and 230 to 310 cm long.

The dump area, mostly south of the room block, slopes down and away from the volcanic cone. Six exploratory areas were laid out to determine the nature of the dump and other possible activities. Trenching in one of these led to the discovery of a pithouse which was about 200 cm by 310 cm in size, and oriented parallel to the room block.

The pithouse was fully excavated and found to have been recessed 25 to 35 cm into the ground, forming low walls of native soil. The floor contained a number of cavities, including four postholes adjacent to the walls and a firepit slightly off center. The pithouse belongs to an earlier period than the Pueblo III roomblock; it is probably Pueblo II, of the Three Circle phase.

ENVIRONMENT, GEOLOGY, FLORA AND FAUNA

Climate

The climate in locations within New Mexico is documented for recent years by Williams and McAllister (1979:8-13). That of the AS-6 site is affected much more by the high elevation, approximately 7000 ft above sea level, than by its latitude. This results in temperatures significantly lower than those found at lower elevations of the same latitude. The mean maximum temperature of July, the warmest month, is 84 degrees and the mean minimum average temperature of the coldest month, January, is 12 degrees. Yearly precipitation has been about 14", and the 110-120 frost-free days, represent periods slightly longer than the growing season.

The rate of evapotranspiration, a combined measure of normal evaporation and release of water by plants into the atmosphere, is about 24 inches per year (Williams and McAllister 1979:14-15, Map
3). Since this is significantly larger than the average precipitation of 14 inches, it certainly implies that supplemental irrigation water was required for the crops, as noted by traces of channeling west of the site at the base of the cone.

Elyea (1990:44) presents a climate reconstruction of the Quemado area from AD 900 to 1350. In addressing times of severe drought, she notes one short drought around AD 1000 and another, of about twenty years duration, ending in 1100; both occurred during the pithouse era. Three periods of moderate drought occurred in the 1200s during the Pueblo III times. Nevertheless, there is no compelling evidence that climate played a decisive role in the abandonment of the site.

**Physiography and Geology**

The AS-6 site lies within the Veteado Mountain quadrangle of west-central New Mexico. Veteado Mountain (elevation 8525 ft above sea level) is about three miles from the AS-6 site. According to Arkell (1984:5):

> During the late Cretaceous, an epieric sea covered much of New Mexico, and the Veteado Mountain area was periodically inundated. These sea level fluctuations resulted in a complex series of interfingering marine and nearshore continental deposits belonging to the Dakota Sandstone, Mancos Shale, Trenton Hermanos Formation and Mesa Verde Group. The latest Cretaceous/Early Tertiary was primarily a period of erosion and non-deposition brought about by Laramide tectonic activity. This left a series of topographic basins into which coarse sandstones and conglomerates of the Baca formation were deposited. The remainder of the geologic history has been characterized by periods of rifting and volcanism, covering most of the area with volcanics and volcanoclastics of the Datil Group and Fence Lake Formation.

This geological history explains the nature of the topography of the immediate AS-6 area. The terrain is characterized by a local volcanic cone rising abruptly from the otherwise gently tilted landscape that slopes southward toward drainage arroyos. It also explains the mixture of construction stones in the pueblo houseblock. The walls contained volcanic rocks as well as various grades of sandstone and mudstone. Important materials for lithic tools found at the site also occur in this geologic environment including chalcedony, quartzite, basalt and vesicular basalt.

Another phenomenon noted by Arkell (1984:11-12) is the highly magnetic qualities of certain volcanic intrusions. This anomaly, encountered at AS-6, resulted in a local deviation of 9° 45' from true north rather than the normal 13° 30'. Night transit shots of the North Star were required to provide the necessary true north reading.

**Flora**

The vegetation of the area is typified by the transition of pinon-juniper woodlands into ponderosa pines. Altogether, 74 plant types were identified in the site area, ranging through grasses, shrubs, flowers and trees, their botanical listing is too voluminous to be included in this report.

**Fauna**

Skeletal remains of the following animals and birds were recovered from the site: pronghorn, deer, mountain sheep, cottontail rabbit, jack rabbit, prairie dog, packrat, woodrat, rock squirrel, pocket gopher, canyon mouse, deer mouse, jumping mouse, and turkey as well as other unidentified rodents and smaller birds. It is to be expected that the gray fox, black bear, coyote, Mexican wolf, badger, mountain lion, bobcat, and striped skunk also inhabited the area.
FIELD METHODS AND LABORATORY PROCEDURES

The AS-6 site rests on a gentle slope along the southeast side of a volcanic cone that rises about 325 ft above it base. The site was laid out in 5 m sq grids that roughly paralleled the walls of the houseblock. The true north reading was 35° 45' east of the site's north and, including the magnetic anomaly caused by the local volcanism, the magnetic north was 45° 30' east. The site datum 0 north 0 west was 1 m north of the northeast corner of Room A1. This datum was also used for vertical measurements (meters below datum—MBD). In summary, for data recording purposes, the grid coordinates were designated as north-south and east-west, even though they lay at angles to the true directions.

Elevation readings were taken at each grid intersection and the Figure 2 site map was prepared to show MBD elevation lines at intervals of 20 cm. This clearly depicts the mounded contours of the
room block and shows that the dump area fell away on about a 5% slope below the room block.

**Field Procedures**

The excavation activity was preceded by the surface collection of sherds, following which the removal of fill from the rooms was started. Work was begun in Room A-1 and thereafter proceeded to the south and west. Whenever possible, vertical provenience control was exercised by natural levels, otherwise by 10 cm levels. The natural provenience designations were: Surface, Above Roof-fall, Roof-fall, Below Roof-fall, and Floor 1, Floor 2, etc. as needed.

All dirt was screened on removal, using a 1/4 inch mesh; when necessary, smaller mesh screens were used. Artifacts were bagged and marked by type and provenience.

Sample areas U through Z were opened in strategic locations outside the room block to help understand the nature of the dump and other places where concentrations of artifacts or surface stones were noted. The provenience control was by 10 cm levels.

Excavations were completed on Rooms A-1, A-2, B-1, B-2, C-1, C-2, D1, D-2 and E-1, but trouble was encountered in defining the east wall of A-2. Partial excavation to clearly understand the nature of the upper walls was completed on Rooms A-3, B-3, B-4, C-3, C-4, D-4 and three walls of D-3. The remainder of the rooms, E-2, E-3, F-1, F-2 and F-3 were opened only as necessary to define the outlines and joints of the walls. The tumble of the F-2 west wall was fully exposed and measured.

In sample area X, a pithouse was encountered, leading to its full excavation.

**Laboratory Procedures**

When received in the laboratory, each artifact was cleaned and marked. Thus, the mixing of the artifacts, necessary for various future studies, could be carried out without fear of losing provenance information. As human resources throughout the study years permitted, the artifacts were identified, classified and then checked for consistency to correct any discrepancies. Computer databases were constructed to provide the data needed for the spreadsheets and charts used in the analyses.
PIII HOUSEBLOCK ARCHITECTURE AND ROOM ATTRIBUTES

The AS-6 houseblock shown in Figure 3 is three to four rooms deep and three to six rooms long. The walls are a mixture of sedentary and volcanic stone, both readily available at the base of the volcanic cone which is immediately adjacent to the site on the north. The stone wall courses were laid in somewhat sandy adobe and are generally two thin-courses wide. Ten of the 21 house block rooms were completely excavated and the wall tops were exposed and recorded on 16 of them.

Figure 4 shows the order of construction of the house block based on the wall joints of those rooms whose walls were exposed and could be examined. The construction seems to have started in the northwest area and additions were made to the east and south.

The details of the special features such as firepits and wall openings associated with each room, and the diagnostic artifacts that would help determine the use of the rooms, are contained in Table 1.

The artifact positions are show in figure 5. In those cases where more than one floor was encountered, supplementary data and drawings of the affected rooms are included in the Figure.

Openings in the walls between rooms D-1 and D-2, between E-1 and E-2, and a passageway to the outside of the pueblo from room A-1 were the only personal communication channels detected. A mixture of stone-lined and open firepits, all located away from the walls, were found in rooms A-1, B-2, C-3 and D-2. No mealing bins were found, but the five manos and two metates recovered from the latest floor in room A-1 suggests this room served a milling purpose.

Room A1 It appears that this room had seen at least two occupations. At the time of the lower floor 2, it was apparently a living room since it contained...
two firepits, probably used at different times. Both firepits were oval in shape; one contained two slabs in the bottom and the other had one vertical slab on the south side. Two hatch covers and a stone axe were on this floor. In the later occupation of floor 1, the firepits had been covered, and a remodeling program had been undertaken to add an entrance and anti-chamber wing wall to the east side. It is likely that the room now served as a mealing center. On the floor were five manos and two metates as well as sherds of more than half of a large Tularosa jar that could have stored the ground meal. Other items included two hatch covers, a bone awl, a hammer stone and an

<table>
<thead>
<tr>
<th>Room</th>
<th>Associated with Floor 1 or Roof Fall</th>
<th>Associated with Floor 2</th>
<th>Associated with Floor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Item No.</td>
<td>Description</td>
<td>Fld No.</td>
</tr>
<tr>
<td>A1</td>
<td>1</td>
<td>Mano</td>
<td>L14</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Mano</td>
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<td></td>
<td>3</td>
<td>Mano</td>
<td>L15</td>
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<td></td>
<td>4</td>
<td>Mano</td>
<td>L11</td>
</tr>
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<td></td>
<td>5</td>
<td>Mano</td>
<td>L17</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Metate</td>
<td>L18</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Metate</td>
<td>L19</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Hatch Cover</td>
<td>L16</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Hatch Cover</td>
<td>L21</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Hammer Stone</td>
<td>L12</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Bone Awl</td>
<td>B2</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Antler</td>
<td>B10</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Tularosa Sherds</td>
<td>C2</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Bone Effigy (RfFall)</td>
<td>B9</td>
</tr>
<tr>
<td>A3</td>
<td></td>
<td>Artifacts in fill</td>
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</tr>
<tr>
<td>B2</td>
<td>1</td>
<td>Mano</td>
<td>L16</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Metate</td>
<td>L17</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Small Ceramic Jar</td>
<td>C11</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Bone Awl</td>
<td>B11</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Paint Material</td>
<td>L21</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Projectile Point</td>
<td>L32</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Knife</td>
<td>L34</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>St Johns Sherds</td>
<td>C7</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Firepit, Wall Slab</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Firepit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Clay Knobs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Bin, NE Corner</td>
<td></td>
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<tr>
<td>B4</td>
<td></td>
<td>Floor Eroded</td>
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</tr>
<tr>
<td>C1</td>
<td>1</td>
<td>Galena &amp; Calcite</td>
<td>L28</td>
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<tr>
<td></td>
<td>2</td>
<td>Hatch Cover</td>
<td>L34</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Mano</td>
<td>L8</td>
</tr>
</tbody>
</table>
antler fragment. Figure 6 is a view of this floor showing the entry way and in-situ artifacts, some of which may have fallen from the collapsed roof.

**Room A3** The ruin mound was generally eroded below the floor level on the south side resulting in little evidence concerning the presence or absence of south walls. Such a wall was missing in Room 3 and the east wall was only one to two courses high. Artifacts, almost all of which were sherds, were found in the fill.

**Room B2** The lower floor 2 of the room contained two roughly circular overlapping ashpits, while the upper floor 1 had a circular firepit in the middle of the room. Except for the south side which was lined with a vertical stone slab, the pit was clay-lined. The upper floor level contained a rounded stone-walled bin in the NW corner whose top was about 50 cm above the floor level. Diagnostic artifacts included a mano, metate, some chipped lithics and fragments of a small ceramic jar.

**Room B4** The room fill was largely rubble and the floor was somewhat indistinct. No artifacts were recovered.

**Room C1** This was a room with only one special feature, an ash pit just below the floor. Many artifacts were on the floor including a hatch cover, several broken slabs, two manos and a metate. Smaller items consisted of a hammerstone, projectile point, scraper, medicine crystals, bone awl and sherds.

**Room C3** The room contained two features, a rectangular stone-lined firepit in the center of the room and the partial stone base in a probable storage bin in the southeast corner. There were many artifacts on the floor; the largest was a hatch cover. Smaller ones included two hammer stones, a shaft straightener, projectile point, scraper, bone pin and bone awl.

**Room D1** This room had been disturbed by pot hunters and the west wall had been removed. The south wall had a passway into D2, and an upright slab protruding from the floor. No other features were detected and all artifacts were in the disturbed fill.

**Room D2** There were three features in this room: a rectangular slab-lined firepit near the center, a small shallow adobe platform in the northwest corner and the passway into room D1. The only floor artifacts recovered were a substantial number of matching sherds from a large corrugated jar and two irregular flat stones. Figure 7 shows the construction of the west and north walls. The west wall is composed of courses of slabs laid flat, except for a large section that had been rebuilt with a mixture of slabs and irregular stones. The north wall, on the other hand, is composed of irregular large stones supported by spalls and small slabs. The construction concepts between the two walls differed.
Room D4  This room, on the south lower edge of the ruin, was largely filled with wall rubble. The walls were only one to two courses in height, the floor had been eroded and the south wall was missing. The three artifacts recovered, a metate, a bone pendant and an Olivella bead, were associated with the floor.

Room E1  Room E1 was next to Room D1, and both had been disturbed. The wall between the two was missing and we were told that the east part of E1 had been fully dug by an earlier owner of the ranch. However, the area near the west wall was undisturbed and a shallow irregular unlined firepit was in the floor. A wall opening was found in the south wall leading into Room E2. No artifacts clearly related to the room were found.

Fallen Wall of Room F2  A section of the west wall of room F2 had tumbled at some point in time. Lying virtually intact just below the present ground surface, the section measured 90 cm in original height. When the 75 cm of standing F2 wall and the thickness of other scattered stones belonging to the wall were added to the fallen portion, an estimated original roof height in the vicinity of 2 m (more than 6 ft) can be projected.

Comparisons with Sandstone Hill and Horsecamp Ruin

Reports have been published on two other pueblo sites in the general area, the Sandstone Hill Pueblo (Barnett 1974) and the much larger Horsecamp Ruin (McGimsey 1980, Site 616).
**Table 2**
Comparison of Room Attributes between Sites AS-6, Sandhill and 616.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>No of Rooms Fully Excavated</th>
<th>Firepits</th>
<th>Mealing Bins</th>
<th>Passway Between Rooms</th>
<th>Doorways</th>
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</thead>
<tbody>
<tr>
<td>AS-6</td>
<td>10</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sandhill</td>
<td>16</td>
<td>9</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>616</td>
<td>23</td>
<td>11</td>
<td>7</td>
<td>2</td>
<td>6</td>
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<tr>
<td>Number of Excavated Rooms with above Features</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS-6</td>
<td>50</td>
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<td>10</td>
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<tr>
<td>Sandhill</td>
<td>56</td>
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<td>12.5</td>
<td>25</td>
<td>18.8</td>
</tr>
<tr>
<td>616</td>
<td>48</td>
<td>30</td>
<td>8.6</td>
<td>26</td>
<td>13</td>
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<tr>
<td>Percentage of Excavated Rooms with above Features</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>AS-6</td>
<td>50</td>
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<td>10</td>
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<tr>
<td>Sandhill</td>
<td>56</td>
<td>0</td>
<td>12.5</td>
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<tr>
<td>616</td>
<td>48</td>
<td>30</td>
<td>8.6</td>
<td>26</td>
<td>13</td>
</tr>
</tbody>
</table>
| Table 2 is a comparison of the usage of rooms as represented by their contents such as firepits, mealing bins, wall openings and passageways into adjacent rooms. The upper portion of the table contains numbers (quantities) while the lower portion states percentages.

When comparing percentages between the three sites, it will be noted that all are reasonably close except for sealed doorways and mealing bins. The differences in both of these can no doubt be explained by the size of the pueblos. Both the AS-6 and Standhill pueblos were small, consisting of 21 and 19 rooms respectively, while site 616 consisted of an estimated 500 to 600 rooms. It is apparent that the large pueblo had been in existence for an extended period of time and had seen considerable remodeling involving sealed passageways. Its large size seems to have fostered more work specializations such as the use of mealing bins.

**PITHOUSE**

During the program, a slight depression and mound were observed in the dump near Station 25S-7W, and it was designated as Area X, to be explored. A floor was soon found, which developed into a shallow rectangular pithouse, approximately 6.1 m east-west and 4.6 m north-south with an entry on the south side. Figure 8 shows the floor layout, pertinent dimensions and the floor artifacts.

The floor averaged 0.36 m below what appears to have been the original ground surface (Figure 9). However, there was a discontinuity in the floor color that suggests that the shape was originally square (or possibly round) and that a section had been added on the east end. The firepit was near the sloping entryway, but had been protected from drafts by a U-shaped deflector whose outline could be traced on the floor. The pithouse roof over the final enlarged version had been supported by four symmetrically placed posts, but three additional posts, two of which were near the entry had also been use. A partially charred/rotted roof beam was found and there were three floor pits next to the walls. Among items found on the floor, the culinary pitcher (plain corrugated Cibola Grayware), the one-hand mano and the cache of Gallup B/W sherd characterize an era earlier than that of the houseblock.

Phases of Mogollon pithouse developments are summarized by Martin et al. (1949:210). The two phases when rectangular shapes were in vogue are San Francisco and Three Circle. A Three Circle phase pithouse with a planview similar to that of the AS-6 unit, but somewhat smaller in size and deeper, is described by Martin
et al. (1939:310-311). Another pithouse, slightly larger than the AS-6 unit and with support beams well away from the walls, is described by Martin and Rinaldo (1950a:260-261) as San Francisco phase, with San Francisco and Three Circle occupation. Overall, the design considerations favor the Three Circle phase, which is dated by Martin et al. (1939:369) as AD 900-1050. This span is earlier but overlaps the two dates of 1000 and 1117 developed by ceramic analysis for the AS-6 pithouse in the Ceramics section of this report.

Beyond the postholes, no evidence of the above-ground structure was found, but the construction of four post pithouses described by Bullard (1962:128) is probably applicable:

Stringers joined the tops of the posts forming a rectangular plate on which were laid the horizontal roof timbers. The sides of the roof were formed by small poles which leaned against the stringers or eaves of the flat part of the roof, their butts placed on the ground surface around the edge of the pit...The framework was covered with smaller sticks or thatch and the entire roof covered over with earth so as to present the appearance of a low mound or truncated pyramid.
OTHER AREAS

Beyond the houseblock, six exploratory trenches shown as areas U, V, W, X, Y, and Z in Figure 2 were laid out to explore for possible other activities and to determine the nature of the dump.

Area U  On the north side of the houseblock near the point where the volcanic cone began its rise, a washed area was noted which contained stones, that appeared to be wall rubble, and artifacts. The surface material was removed, exposing a random jumble of stones with no structural alignments. It was concluded that the area probably served as a stone source and preparation area during the construction of the houseblock. The area also later served as part of the midden.

Area V  The expectation that this trench would expose an extension of the midden area turned out to be true, but sterile soil was reached at a depth of less than 1 m.

Area W  Sterile soil was very shallow at this point, being only about 0.15 m deep. It seems likely that the area was clear of midden material and was part of a plaza.

Area X  This area relates to the pithouse described in an earlier section of this report.

Area Y  The area was laid out for exploration, but it was later determined not to be necessary.

Area Z  This area represented the southern edge of the midden. Sterile soil was encountered between 0.40 and 0.50 m below the surface. A significant number of artifacts was recovered in the fill.

Table 3
Summary of Flaked Stone Tools Versus Materials.

| Matl. & Code | Tool Types with Code Numbers | No | %
|--------------|-------------------------------|----|---
|              | 1 Scpr End                    | 4 cpr Pln | 7 Multi Tool | 10 Knife | 13 Graver | 17 Biface | 20 Chopper | 24 Wst Flak | 25 Wst Frag |
| Chalcedony   | A 1 32 6 6 1 10 3 13 3 6 20 6 5 0 7 2 2 1 161 | 49 330 | 46.50% |
| Silic Wood   | B 4 18 2 0 0 2 4 5 10 5 1 3 0 3 0 4 8 0 52 76 197 | 27.80% |
| ObsidIzem   | C 1 2 1 0 0 1 0 0 0 0 0 1 0 5 0 0 0 0 0 4 14 | 2.00% |
| Obsid Grnts  | D 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1 5 7 | 1.00% |
| Jasper       | F 4 1 1 1 0 0 0 0 0 0 0 0 0 0 0 2 3 0 4 2 18 | 2.50% |
| Quartzite    | G 1 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 4 1 4 4 23 | 3.20% |
| Basalt       | I 1 5 2 1 0 1 1 2 3 2 0 0 0 0 1 1 0 1 0 1 21 15 58 | 8.20% |
| Argellite    | J 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 1 | 0.10% |
| Hematite     | Q 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 6 | 0.80% |
| Other        | U 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 | 1.60% |
| Total        | 14 67 13 8 1 15 8 10 29 12 8 25 6 15 1 1 9 26 3 171 171 713 | 100.00% |

Percents of Types are taken without counting Codes 19 (Unknown Material), 24 (Waste Flakes) and 25 (Waste Fragments).

*Other* Materials include: Limestone, Malachite, and Rhyolite.
LITHICS

The lithic tools of the AS-6 site represent the Pueblo II and Pueblo III eras to which the pithouse and room block respectively belong. The following discussion considers the usage as well as the materials from which the tools were made.

**Flaked Tools**

Listed in Table 3 is a summary of the flaked stone tools. The categories of Unknown Materials, Waste Flakes, and Waste Fragments are high in number and are largely debris associated with the manufacture of the tools. Since they would distort the tool numbers, they have been omitted from the totals so that the tools themselves can be compared. Scrapers compose 48.1%; cutting tools (saws, cutting edges, knives, chisels, drills and gravers) compose 36.7% and tools associated with hunting (projectile points, preforms and bifaces) 6.9%. The remaining 8.3% were miscellaneous items (multi-tools, cores and choppers).

The materials from which the tools were made are largely available on the local surface, a mixture of sedimentary and volcanic deposits that cover the entire area. Chalcedony and silicified wood account for 75%, followed by basalt and vesicular basalt with almost 8%. The only materials that were imported are possibly some jasper and certainly obsidian. Visual inspection of the latter items conform to obsidian varieties originating in the Jemez Mountains and Mt. Taylor to the north.

**Projectile Points (Figure 10)** Item 1 is probably Archaic and 2 and 3 are of the Basketmaker II. Items 4 and 5 are Basketmaker III-Pueblo I, while 6 and 7 are unknown. Items 8 and 9 are Mogollon types dating late Pueblo I. Items 10 is Mogollon Pueblo III while 11 is also Pueblo III but of a more general type. Items 12 and 13 are probably Pueblo III while 14 is incomplete. Items 4, 6, 7, 11, 12, 13 and 14 are obsidian, and the remainder is chalcedony, among which 1, 2 and 10 are whitened by high heat.

**Other Flaked Tools (Figure 11)** Examples of drills, cutting edges, saw and scrapers were chosen for presentation. The top row items, 1 through 5, are drills. Items 6 and 7 are cutting edges, and 8 and 9 are saws. All items are chalcedony except 10 and 11. Item 10 is an obsidian scraper and 11 is a Folsom scraper made of jasper; it was found on the surface and perhaps was collected by the AS-6 inhabitants as a curiosity.
Table 4
Ground and Pecked Stone Tool Types and Materials Used.

<table>
<thead>
<tr>
<th>Matl &amp; Code</th>
<th>27 Metate</th>
<th>30 Hmrstn Frg</th>
<th>33 Abrader</th>
<th>36 Bead</th>
<th>39 Paint Mtl</th>
<th>45 Axe</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td>20</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>20</td>
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<tr>
<td>E</td>
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<td>1.3</td>
</tr>
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<td>F</td>
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<td>4</td>
<td>3.2</td>
</tr>
<tr>
<td>G</td>
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<td>7.7</td>
</tr>
<tr>
<td>I</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>4.5</td>
</tr>
<tr>
<td>K</td>
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<td>11</td>
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<td>0</td>
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<td>0</td>
</tr>
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<td>T</td>
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<td>3</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
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<td>0</td>
<td>10</td>
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<td>16</td>
<td>19</td>
<td>10</td>
<td>15</td>
<td>155</td>
<td>100</td>
</tr>
</tbody>
</table>

"Other" Tools include: 3 Digging stones, 1 Firedog, 5 Pestles, 5 Worked Hard Stones and 1 Shaft Polisher.

"Other" Materials include: Malachite, Conglomerate, Unknown, Galena, Paint, Ochres and Tuff.

Ground and Pecked Stone Tools

Materials used for ground and pecked stone tools are tabulated in Table 4.

Miscellaneous Ground and Pecked Artifacts (Figure 12)
Number 1 is a pottery polishing stone; 2 is a silicified wood hammerstone; 3 is a grooved piece of hematite that may have been used as an awl sharperener and 4 is a shaft smoother. 5 and 6 are pestles; 7 is a ground stone ball while 8 is a polishing stone probably used on pottery. Among the tools not illustrated are hammerstones, mostly of silicified wood, and hatch covers, shaped slabs and cooking stones that are largely sandstone. Basalt is occasionally represented.

Hatch Covers, Metates and Manos (Figure 13)
All items except the group 7 manos came from the roomblock. Hatchcovers account for items 1, 2 and 4, of which the first two are sandstone and the last is vesicular basalt. Items 3, 5 and 6 are slab-type metates typical of Pueblo III. The first two are sandstone and the last is quartzite. Group 7 manos, recovered from the pithouse, are small and one-hand, indicating use with basin metates. Group 8 manos, found in the houseblock, were
used with slab metates. One mano in each set is vesicular basalt, the rest are sandstone.

CERAMICS

The ceramic sherds of the AS-6 site are typical of those generally found throughout this area of southwestern New Mexico, and tables of the types found are presented in this section. However, because all tree ring specimens recovered were juniper and unsuitable for providing dates, the ceramics are used as the principal base for site dating.

Site Dating

The painted ceramics were the most useful for dating but the utility wares provided some aid.

Painted Ceramics

The full listing of painted wares found on the site is contained in Table 5, which also shows the attributes of the sherds as well as the manners in which some were modified.

Table 5, however, was not directly useful for dating and had to be consolidated into the fewer categories of Table 6 to be manageable. Sherds listed as Reserve or Tularosa are examples of this consolidation, where they were transferred half-and-half to Reserve B/W and Tularosa B/W. In addition, the list was abbreviated to include only the principle types found. The modified list of Table 6 also presents modal dates which

Figure 12
Other pecked and ground stone tools.

Figure 13
Hatch covers, metates and manos.
### Table 5

AS-6 Painted Ceramic Types by Attributes, Entire Site.

<table>
<thead>
<tr>
<th>CERAMIC NAME</th>
<th>BOWL</th>
<th>JAR</th>
<th>DIPPER</th>
<th>TOTAL</th>
<th>%</th>
<th>INCLUDED IN TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RIM</td>
<td>BODY</td>
<td>RIM</td>
<td>BODY</td>
<td>HNDL</td>
<td>BOWL</td>
</tr>
<tr>
<td>Reserve</td>
<td>12</td>
<td>21</td>
<td>3</td>
<td>217</td>
<td>9</td>
<td>0</td>
</tr>
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<td>Reserve or Tularosa</td>
<td>2</td>
<td>18</td>
<td>0</td>
<td>80</td>
<td>1</td>
<td>6</td>
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<tr>
<td>Tularosa</td>
<td>36</td>
<td>77</td>
<td>35</td>
<td>1399</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>White Mtn Wh No Paint</td>
<td>6</td>
<td>32</td>
<td>4</td>
<td>377</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Katuthlanna B/W</td>
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<td>1</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Red Mesa B/W</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Red Mesa or Puerco</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
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<td>Puerco B/W</td>
<td>14</td>
<td>1</td>
<td>8</td>
<td>78</td>
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<td>0</td>
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<tr>
<td>Gallup B/W</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>27</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chaco Series No Paint</td>
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<td>1</td>
<td>17</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Socorro B/W</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>16</td>
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<td>0</td>
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<td>Other B/W</td>
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<td>Puerco B/R</td>
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<td>81</td>
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<td>16</td>
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<td>0</td>
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<td>Wingate Polychrome</td>
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<td>4</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>St Johns B/R or Poly</td>
<td>35</td>
<td>197</td>
<td>5</td>
<td>74</td>
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<td>0</td>
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<td>St Johns Polychrome</td>
<td>91</td>
<td>216</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
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<td>Springerville Poly</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>White Mtn Red No Paint</td>
<td>14</td>
<td>270</td>
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<td>108</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
</tr>
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<td>59</td>
<td>2502</td>
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<td>7</td>
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<td>2561</td>
<td>44</td>
<td>4259</td>
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</table>

### Table 6

AS-6 Painted Ceramics Showing Dates of Manufacture.

<table>
<thead>
<tr>
<th>Ware</th>
<th>Ceramic Type</th>
<th>Dates (AD) of Manufacture</th>
<th>Descriptive References</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Start</td>
<td>Modal</td>
</tr>
<tr>
<td>Cibola Whiteware</td>
<td>Kiatuthlanna B/W</td>
<td>825</td>
<td>875</td>
</tr>
<tr>
<td></td>
<td>Red Mesa B/W</td>
<td>900</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>Reserve B/W</td>
<td>940</td>
<td>1057</td>
</tr>
<tr>
<td></td>
<td>Gallup B/W</td>
<td>1050</td>
<td>1117</td>
</tr>
<tr>
<td></td>
<td>Puerco B/W</td>
<td>1075</td>
<td>1125</td>
</tr>
<tr>
<td>White Mountain Redware</td>
<td>Puerco B/R</td>
<td>1000</td>
<td>1133</td>
</tr>
<tr>
<td></td>
<td>Wingate B/R or Polychrome</td>
<td>1047</td>
<td>1149</td>
</tr>
<tr>
<td>Chaco (Cibola) Whiteware</td>
<td>Tularosa B/W</td>
<td>1100</td>
<td>1200</td>
</tr>
<tr>
<td></td>
<td>Socorro B/W</td>
<td>1150</td>
<td>1217</td>
</tr>
<tr>
<td></td>
<td>St Johns B/R or Polychrome</td>
<td>1075</td>
<td>1258</td>
</tr>
<tr>
<td>White Mountain Redware</td>
<td>Springerville Polychrome</td>
<td>1250</td>
<td>1283</td>
</tr>
</tbody>
</table>
follow Sundt (1987) wherein each modal date is two/thirds of the way between the start and end of the manufacturing period.

The maximum manufacturing time span for all the painted pottery types ranges from AD 825 for Kiatuthlanna B/W, to 1300 for Springerville Polychrome. Only traces of each of these two types were found, which suggests that they represent the End and Start dates respectively of the two types. This reduces the range to 900 through 1250.

More light is thrown on this subject by Table 7 which states the percentages of each type of painted pottery recovered from the Houseblock and Pithouse. It will be noted that many types are close in their percentages because there is much mixing of pottery from different eras throughout the entire site. However, this mixing can be filtered out by identifying the positive differences between Houseblock and Pithouse at each modal date as shown in the sixth and seventh columns.

The positive differences define the dates when its ceramic activity was dominant for each of the two dwellings. The results are plotted in Figure 14 which shows peaks of activity at AD 1149 and 1258 for the Houseblock and 1000 and 1117 for the Pithouse. It is believed that the long bars at 1117 and 1258 provide the best guidance as to the dates of maximum activity for each occupation. The other bars suggest periods of lesser peak activity.

**Culinary Wares**

The types and percentages of culinary wares, together with their dates and descriptive references, are listed in Table 8. Except for Alma wares, there is a heavy overlap in culinary dates limiting the usefulness of culinary wares for dat-

### Table 7
Modal Dates and Percentages of Ceramic Types for the Houseblock and Pithouse.

<table>
<thead>
<tr>
<th>Painted Ceramic</th>
<th>Modal Dates</th>
<th>Percent</th>
<th>%Differences</th>
<th>Positive %Differences</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Houseblock</td>
<td>Pithouse</td>
<td>Hsb-Ph</td>
</tr>
<tr>
<td>Kiatuthlanna B/W</td>
<td>875</td>
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<td>0</td>
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<td>-1.5</td>
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</tr>
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<td>0.1</td>
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<td>41.4</td>
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<td>0.4</td>
<td>0</td>
<td>0.4</td>
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<td>42.2</td>
<td>36.1</td>
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<tr>
<td>Springerville Polychrome</td>
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<td>0.4</td>
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<tr>
<td>Total</td>
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<td>100</td>
<td>100</td>
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Table 8
AS-6 Culinary Ceramics Percentages and Dates of Manufacture.

<table>
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<th>Ceramic Type</th>
<th>Site %</th>
<th>Dates of Manufacture</th>
<th>Descriptive Ref.</th>
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<td>Start</td>
<td>Modal</td>
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<td>Alma</td>
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<td>Alma Plain, Smudge Interior</td>
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<td>Reserve Plain Corrugated</td>
<td>9.1</td>
<td>1000</td>
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<td>Reserve Plain Corrugated, Smudge</td>
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<td>Reserve Indented Corrugated</td>
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<td></td>
<td>Reserve Indented Corrugated Smudge</td>
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Figure 14
Percent of dominant ceramic activity in pithouse and houseblock by date.
ing. However, Alma Plain, an early type, shows modest percentages which indicates that some activity on the site started no later than AD 950.

**Overall Dates**

The painted and culinary wares suggest that the activity associated with the Pithouse could have existed from about AD 950 to the early 1100s, and the Houseblock from the mid 1100s to somewhat beyond 1250. In both cases this seems to be a long time for such a small site. Nevertheless, the pit-house dates, although they are about fifty years later, compare favorably to the 150 year length of time quoted by Martin et al. (1939:369) for the Three Circle phase.

**Illustrations of Ceramic Sherds and Vessels**

**Tularosa B/W and Reserve B/W (Figure 15)**

Illustrated in the Figure are representative sherds of the two types. They often contain the same motifs, but Tularosa, having developed out of the Reserve, appears more dense with a higher percentage of the surface being covered with paint.
St Johns Ware and Culinary Ware (Figure 16)

Most St. Johns sherds were polychrome black and white on red, but a few had only black on red. The culinary wares included early Kana’a Neckbanded, Reserve Corrugated, Tularosa Patterned Corrugated and various varieties of Cibola Graywares.
Reconstructed Vessels (Figure 17)  The large culinary vessel at the left is Reserve Indented Corrugated with a mouth of 37 cm, a girth of 46 cm and a height of 39 cm. Most of it was found in Room D-2. The pitcher in the center is Cibola Plain Corrugated with a mouth of 12.5 cm, a girth of 16 cm and a height of 20 cm. It was found on the floor of the pithouse. The vessel at the right is Tularosa B/W with a mouth of 7 cm, a girth of 38 cm and a height of 30 cm. It was found on the floor of Rooms A-1.

Gaming Pieces (Figure 18)  Although a total of 114 sherds had been modified by shaping, only 15 of these were classified as gaming pieces, and they are all circular in shape.
SPECIAL ARTIFACTS

Artifacts of a special nature include bone tools and items of personal adornment.

Bone Tools (Figure 19) Four bone awls and five bone pins are shown. The awls were presumably used for the perforation of soft materials and the pins for hair ornaments or weaving.

Personal Adornment (Figure 20) Items of personal adornment included pendants, beads and rings. Item 1 is a partial bone finger ring; 2 and 3 are olivella shell beads; and 4 is a bead of calcareous stone. The pendants start with Item 5; Items 5 and 6 are shell; 7 is a piece of thinly ground bone; 8, 9 and 10 are ceramic; 11, 12 and 13 are slabs of hematite that had been ground flat; and 14 is a pendant blank. Not illustrated are two small fragments of turquoise and traces of white, pink and yellow paint pigments.

FAUNAL REMAINS

The faunal remains recovered from the site were unarticulated bones and fragments. Their degree of preservation varied, but it was apparent that many of the rodent bones were of comparatively recent origin. For their identification, Olsen (1964, 1972, 1979), Miles (1973), Miles et al. (1981), Harvey (1973) and a limited comparative collection in the AAS laboratory were used. The results are contained in Table 9.

Calculations made at the bottom of Table 9 determine the predominant sources of the meat diet. The minimum number of animals of each type was determined by scanning the number of bones listed under each type animal that could state the distinct number of animals represented. Unit weights and percentages of unit weights that were edible were obtained from sources including Kayser and Carroll (1988:2-10), Ziegler (1973:30), Cockrum (1982), Terres (1980:974) and White (1953:397-398). The results are summarized in Table 10.
Table 9
Number of Bones or Fragments Versus Type of Bone and Animal.

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<th>Bone Type/Codes</th>
<th>Antelope</th>
<th>Large Animal</th>
<th>Medium Animal</th>
<th>Rabbit, Cotton Tail</th>
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<th>Rat, Pack</th>
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| Percent         | 1.3      | 0.2          | 2.5           | 3.1              | 14.6         | 22.7      | 22.5         | 17.5       | 0.2          | 2.7       | 1.8         |
| Min. No. Animals| 1        | 1            | 8             | 10                | 15           | 3         | 3            | 5          | 1            | 3         | 4          |
| Total Weight    | 250      | 250          | 330           | 80                | 53           | 5.2       | 5.8          | 0.8        | 0.8          | 2.4       | 0.8         |
| % Edible        | 5.0      | 5.0          | 5.0           | 5.0               | 5.0          | 5.0       | 5.0          | 5.0        | 5.0          | 5.0       | 5.0         |

The Table indicates that large and medium animals furnished a major part of the meat diet for the AS-6 pueblo. The level of 77.9% is almost twice that of 42.1% encountered at the AS-8 site of about the same era in north central New Mexico. There the diet relied much more heavily on rabbits and turkeys (Bice, Davis and Sundt 1998: Ch 9:1-4). The altitude at AS-6 is about 1500 ft higher than that of AS-8, doubtless providing a significantly different environment affecting animal availability.

SUMMARY AND COMMENTS
In 1971 the Albuquerque Archaeological Society was invited to investigate a small Pueblo III ruin on the Fisher ranch about 15 miles north of Quemado, New Mexico. The Society accepted the offer and designated the project as AS-6. Field work began in October, 1971 and concluded in May, 1975. The archaeological program entailed the partial excavation of a 21-room houseblock and the full...
excavation of an earlier pithouse found beneath the site midden. The walls of the houseblock were made of stone, using locally available volcanic and sandstone materials. A study of wall joints provided the sequence of room construction, and the roof height was estimated as about six ft.

Some rooms contained firepits and storage bins, but no mealing bins were found. Nevertheless, artifacts resting on the floor of remodeled room A1 indicate this room was devoted to mealing operations.

A Pueblo II, Three Circle phase pithouse was found about 20 m south of the houseblock. It was rectangular in shape, measuring 6.1 m east-west by 4.6 m north-south. The floor was recessed an average of 36 cm below ground level with native soil forming the shallow walls. The single fireplace, located near the south wall entry ramp, was screened from drafts by a deflector. The roof was supported by four posts with additional posts near the entrance. No traces were found of the above-ground walls (or roof sides). However, poles propped against the roof beams and covered with brush and soil is probably an accurate description of the original construction.

Investigations into other areas of the site revealed a locale north of the houseblock that had been used for preparing wall stones. Also, the area immediately south of the houseblock had seen use as a plaza.

A flaked stone industry existed that used mostly locally available materials such as chalcedony and silicified wood. Modest importations of obsidian from the Jemez Mountains and Mt. Taylor were noted. Among these flaked tools was an anomalous Folsom scraper. Ground and pecked stone tools were made of local sandstone, mudstone and basalt.

Among the painted ceramics, Tularosa B/W and St. Johns wares were dominant, and among the culinary wares, Reserve Corrugated accounted for almost 70% of the total. Because all dendro samples were non-datable juniper, ceramic data became the vehicle for dating the site. The ceramic dating method made use of the percentages of painted ware types and their corresponding modal dates. Some of the culinary wares were useful for cross-checking. Overall, the ceramics suggest the pithouse period spanned the years from about AD 950 to the early 1100s, with the period of the houseblock extending from the mid 1100s to somewhat beyond 1250.

Some aspects of the niche occupied by AS-6 among the other Pueblo III sites on the Marianna Mesa can be examined by drawing on information provided by three sources: 1) The Marianna Mesa portion of Danson’s (1957:73) survey, which records sites ranging from sherd areas (scatters) to pueblos with more than 500 rooms, along with any associated ceremonial structures; 2) McGimsey’s (1980) investigation of sites 143, 481 and 616 (LA 10983); 3) Barnett’s (1974) report on Sandstone Hill (NA11-233). A summary of the Danson data is contained in Table 11.

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<th>Animal Group</th>
<th>Codes (See Table H)</th>
<th>% of Meat Diet</th>
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<td>Large and medium animals</td>
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<td>Medium Animals</td>
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Table 11

Danson Sites on Marianna Mesa.

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<th>Sites with and without Ceremonial Structures</th>
<th>Sherd Area</th>
<th>1-2 Rooms</th>
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<th>14-25 Rooms</th>
<th>30-75 Rooms</th>
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<td>Total Sites</td>
<td>7</td>
<td>10</td>
<td>14</td>
<td>9</td>
<td>12</td>
<td>5</td>
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<table>
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<th>Number of Structures by Type or Size</th>
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<th></th>
<th></th>
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<tbody>
<tr>
<td>Small Kivas</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>8</td>
<td>24</td>
<td>10</td>
<td>43</td>
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<tr>
<td>D-Shaped Kivas</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Great Kivas</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Kiva (McGimsey Ceremonial Center)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1</td>
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<td>1</td>
<td>8</td>
<td>27</td>
<td>14</td>
<td>50</td>
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</tbody>
</table>

Table 11 shows that among the small sites containing 14 to 25 rooms, (size range of AS-6 and Sandstone Hill), out of nine sites, seven had a single kiva each, one had two kivas and two had no kivas. It is not known whether the AS-6 and Sandstone Hill sites are among the sites listed by Danson, but if so, they must be the two pueblos without kivas.

Drawing on Table 11 and from pertinent details of the sites excavated by McGimsey and Barnett, the following insights are presented concerning the diverse communities on Marianna Mesa of which AS-6 was a part.

1. The sherd scatters and isolated 1-2 room houses often denote temporary or seasonal field quarters used to facilitate the tending of crops. They had no kivas.

2. The 5-10 room pueblos probably housed one to two extended families that had chosen to reside away from the larger pueblos, perhaps near their agricultural fields. With one exception, they had no kivas and apparently relied on the larger settlements for ceremonial support.

3. Among the 14-25 room pueblos six out of nine had matured to the point where each had one kiva; another had two kivas but the remaining two pueblos were without that local support. AS-6 and Sandstone Hill fall within this size range and neither had a kiva.

4. The 30-75 room pueblos averaged more than two kivas per site, but none were recorded on two sites where kivas could have possibly been missed if no excavation was done.

5. The largest sites of 100 to more than 500 rooms averaged almost three kivas per site.

In conclusion, AS-6 existed among a complex continuum of sites of many sizes where each site had its own history of creation, maturity and decay. It seems quite apparent that neither AS-6 nor Sandstone Hill ever matured to the point of ceremonial self-sufficiency and must have relied on other nearby pueblos for this service. In the case of AS-6, the very large pueblo of Site 616 with more than 500 rooms was slightly more than a mile away and could have provided any needed support.
ACKNOWLEDGEMENTS

Appreciation is extended to Douglass Fischer and the members of his family for providing the AAS with the opportunity to carry out the AS-6 program on the Fisher Ranch. Appreciation is also extended to the volunteer members of the AAS who made this report possible by their devoted field and laboratory work. This work followed the general pattern of other AAS projects in which field and laboratory sessions were held at times that would not interfere with the employment schedules of the members. Because the project was located 100 miles from Albuquerque, field work was scheduled only twice a year over the long Memorial Day and Labor Day weekends. At the Albuquerque laboratory work was conducted in the evenings and on those weekends that did not conflict with field work.

Thanks are given to William Sundt and Marie King for much of the analysis of the ceramics, to Marge Shea for her identification of the faunal remains, to Dudley King for artifact organization and storage records. Special input was provided by Bettie Terry with her analysis and supervisory role in pulling together much of the laboratory and field data on which this report rests. Phyllis Davis and Margaret Bice provided much appreciated editorial support.

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MORTUARY PRACTICES IN THE UPPER FORKS OF THE GILA RIVER INTEGRATIVE STRUCTURES, SMUDGED POTS AND EXTENDED BURIALS

The Upper Forks of the Gila River, in the Mimbres region of southwestern New Mexico is an area that has received little attention from archaeologists. It has been assumed that the Upper Forks contained settlements and assemblages that closely resembled those in the better-studied Mimbres Valley to the east. However, the nearby X-S-X Ruin (LA 50702) on the East Fork of the Gila contains evidence of mortuary practices that suggests this is not the case. Peter McKenna and James Bradford, in their survey of the TJ Ruin, near the Gila Cliff Dwellings National Monument, concluded the site’s ceramics suggested the Upper Forks were “a terra incognita” (McKenna and Bradford 1989:35). Because the ceramic assemblages at known sites, including the Cliff Dwellings, TJ, West Fork, and Diablo, contain white wares believed to come from the northern Cibola region, archaeologists have called the Upper Forks a “contact zone” (McKenna and Bradford 1989:35) and a “boundary area” (Shafer 1995:39-40). It is unclear, aside from the white ware, what this boundary or contact area might look like archaeologically. This paper seeks to begin answering this question through the analysis of burial data from the X-S-X Ruin.

Scholars studying the Mimbres encounter monumental challenges because so much of their data have been destroyed. The high value the international art market places on Mimbres Classic vessels has resulted in the wholesale looting and complete destruction of many large sites. In the past few years, as prices have skyrocketed, archaeologists report looters moving on to small sites, destroying structures and ravaging burials (Chris Turnbow 2003, personal communication). Because of this destruction, Mimbres scholars often return to previous excavation reports and field notes to ask new questions of old material (Ayon and LeBlanc 1984; Hill 1997; Lekson 1990; Woosley and McIntyre 1996). Problems are compounded in the Gila Forks because information about possible Mimbres settlements is sparse. Archaeological work at the Cliff Dwellings post dates unauthorized excavations by Territorial explorers, pothunters and conmen. East of the Cliff Dwellings, the 200+ room TJ ruin has been surveyed but not excavated. The West Fork and Diablo sites were excavated in 1966 as part of a highway salvage project, when money was tight and time was short; the Laboratory of Anthropology in Santa Fe is in the process of analyzing these artifact assemblages and writing the final reports.

East of Diablo, at the confluence of the East and West Forks of the Gila, is the X-S-X Ruin, with late pithouse architecture and 30+ surface rooms that appear to have been occupied between AD 1000 and 1150 (Figure 1). X-S-X is not referenced in the Mimbres literature. Few archaeologists have heard of it, perhaps because the excavator, Robert E. Forrester, was an avocational archaeologist who never formally published his data, although he did send annual field reports and a final report to a few friends, the Forest Service and ARMS (the state of New Mexico’s Archaeological Records Management Section).
Forrester was a retired chemist with no formal training in archaeology. But he understood the scientific method and consulted frequently with professional archaeologists.

The extant X-S-X material consists of Forrester's reports and field photographs of architecture, burials, and whole pots. The artifact assemblages have been dispersed or lost and Forrester reburied all human remains somewhere on the site at the end of each field season. This presents any researcher with severe constraints, although the benefit of using what remains of the X-S-X data outweighs its limitations. No tree-ring samples were collected, but relative occupation dates can be established from the ceramic types Forrester reported. Today, Mimbres scholars use the ceramic micro-seriation system Shafer and Brewington established for NAN Ruin (LA 15049) pottery

(Shafer and Brewington 1995). But Forrester completed his work before the publication of this fine-grained typology and its applicability to ceramics in the Upper Gila has not been demonstrated (Lekson 1986:149). The other major shortcoming of the X-S-X material is that the site has been destroyed and the assemblages lost. The ceramics (1336 pounds of sherds) are not available for the kind of compositional analysis that could help identify local and non-local ceramics and allow the reconstruction of economic and social networks. This is unfortunate since the burial data suggest the Classic period occupation may have been a coresidential situation, with people from the western sector of the Mogollon region living with long-time residents of the Upper Forks. We are unable to return to X-S-X and conduct more work like the Mimbres Foundation did at Galaz (Anyon and LeBlanc 1984:1-2). The site was obliterated in the early 1990s by pothunters using heavy equipment. Even with these flaws, X-S-X is an important site and the 89 inhumations Forrester meticulously recorded provide an avenue for beginning to understand this contact zone in the Gila Forks.

**DATING X-S-X**

Relative dates can be established for the occupation or occupations of X-S-X using the architectural and ceramic typologies scholars have developed for the Mimbres Valley (Burden 2001; Diehl 2001:37-46; Shafer 1982; Shafer and Brewington 1995). In this study the Valley temporal sequences are employed as a heuristic device to roughly date the X-S-X structures and ceramics (Table 1).

The X-S-X architecture indicates site occupation began sometime during the Early Pithouse Period and extended into the Mimbres phase (AD 1000 to 1150). The 30 cobble and adobe surface rooms are of typical Mimbres Classic construction with the exception of one suite (Rooms 15 and 16) which contains a non-conforming exterior door.
Table 1
Mimbres temporal sequence. Adapted from Lekson (1999:Table 1.1) and Diehl and LeBlanc (2001:Table 2.4).

<table>
<thead>
<tr>
<th>Period</th>
<th>Culture Phase</th>
<th>Date Range (a.d.)</th>
<th>Domestic Architecture</th>
<th>Temporally Diagnostic Ceramics</th>
</tr>
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<tr>
<td>Pueblo</td>
<td>Cliff</td>
<td>1375-1450</td>
<td>adobe pueblos</td>
<td>Polychromes</td>
</tr>
<tr>
<td></td>
<td>Black Mt.</td>
<td>1180 (?)-1300</td>
<td>adobe pueblos</td>
<td>Polychromes, Chupadero</td>
</tr>
<tr>
<td></td>
<td>Late Mimbres Classic</td>
<td>1100-1150</td>
<td>masonry &amp; adobe pueblos</td>
<td>Mimbres Classic B/w, Reserve B/w</td>
</tr>
<tr>
<td></td>
<td>Mimbres Early &amp; Middle Classic</td>
<td>1000-1100</td>
<td>masonry &amp; adobe pueblos</td>
<td>Mimbres Classic B/w</td>
</tr>
<tr>
<td>Late Pit House</td>
<td>Three Circle</td>
<td>750-1000</td>
<td>rectangular pithouses</td>
<td>Three Circle R/w, Mimbres Styles I &amp; II</td>
</tr>
<tr>
<td></td>
<td>San Francisco</td>
<td>650-750</td>
<td>rectangular pithouses</td>
<td>Mogollon R/b</td>
</tr>
<tr>
<td></td>
<td>Georgetown</td>
<td>550-650</td>
<td>circular pithouses</td>
<td>San Francisco Red</td>
</tr>
<tr>
<td>Early Pithouse</td>
<td>Cumbre</td>
<td>200-550</td>
<td>Circular &amp; “bean-shaped” pithouses</td>
<td>Red-slipped</td>
</tr>
</tbody>
</table>

and a large, white ash lens. This suite may have served integrative rather than domestic functions. Although there continues to be a debate regarding the nature of the Black Mountain phase that succeeded the Classic Mimbres phase (hence the question mark in Table 1), there is no architectural evidence of the adobe surface structures and round, adobe-lined hearths that are characteristic of this phase (Creel 1999; Shafer 1999a). The temporally diagnostic ceramic types Forrester reported are congruent with the date ranges suggested by the village’s architecture.

The sherds Forrester identified indicate an occupation or occupations from the Early Pithouse through the last Classic period (Figure 2). While the nearby Cliff Dwellings and TJ Ruin contain ceramic evidence of occupations during the Black Mountain and Salado phases, this evidence is absent at X-S-X. Forrester did not report any Chupadero B/w, or Pinedale, St. Johns,

![Figure 2](image)

**Figure 2**
X-S-X sherds: proportions (by weight) of temporally diagnostic slipped and painted sherds.
or Gila Polychromes. He did designate a Reserve/Tularosa category, which theoretically could extend the occupation to AD 1300. However, no whole Tularosa vessels are identified in the reports or photographs and it is likely this category was used to lump the white wares together.

X-S-X Late Pithouse period ceramics comprise more than 50% of the painted and slipped sherds. In the Mimbres area, San Francisco Red (27%) appears at approximately AD 500, while Mogollon Red-on-brown (6%) was made between AD 650 and 750. Three Circle Red-on-white (2%), a short-lived painted brown ware, appears in the Valley between AD 730 and 770. Mimbres Boldface (18%), as understood by Forrester, spanned the period from AD 750 until approximately AD 1000, when the Valley residents shifted from living in pithouses to surface structures (Lekson 1990:Table 1.1). The X-S-X Classic period ceramics that spanned the period from approximately AD 1000 to 1150 include Mimbres Classic (22%), with the late Classic (after AD 1100) represented by the addition of Reserve Black-on-white (<25%). One Three Rivers Red-on-terracotta bowl from a burial has a date range from AD 1150 to at least 1300 and probably later (Regge Wiseman 2003, personal communication), while a McDonald Corrugated sherd (painted on the corrugated exterior, smudged on the interior) was manufactured sometime between AD 1100 and 1300. Temporally, the ceramic assemblage suggests extensive occupations during the Late Pithouse and Classic periods. This relative dating by architecture and ceramics also indicates the occupation of X-S-X was contemporaneous with large communities like NAN and Galaz in the Mimbres Valley.

**AN X-S-X INTRAMURAL CEMETERY**

Archaeological work in the Mimbres Valley indicates the majority of Classic period burials were interred in special intramural cemeteries. Shafer and his students have identified specific rooms or room suites they believe served as ancestral shrines (Burden 2001:261-264; Hill 1997:82-186; Shafer 1999b:100-101). The rooms were usually among the first constructed in a roomblock and contained high densities of burials. The archaeological evidence indicates these rooms were ritually burned and reconstructed over many generations. Architecturally, their most distinguishing feature was an unusual double hearth complex, with one of the bins or hearths serving ritual functions similar to sipapus (Burden 2001:270-27; Shafer 1999b:Figure 11.8, 100). X-S-X also contains several surface rooms with high densities of burials but none contain double hearths. Rooms 15 and 30 lack hearths but do contain numerous burials interred around large lenses of fine white ash. These lenses cover approximately one third of the floor area and do not represent ash overflow from hearths; neither room has a hearth. The ash appears unrelated to any final, formal burning of the rooms. Furthermore, there is no archaeological evidence the lenses were part of cremation ceremonies. There is a primary cremation in one of the other surface rooms but none of the individuals interred in Rooms 15 and 30 had been cremated.

One method for describing the built environment is to study the accessibility of particular structures and individual rooms. Space syntax is an analytic tool developed by architects that can be employed to identify and compare the spatial patterning of the built environment by quantifying the accessibility of rooms and structures (Hillier and Hanson 1984:143-175; Hanson 1998:1-48). Southwestern archaeologists have demonstrated the utility of the method in studies of Chacoan architecture, northern Rio Grande pueblos, and a late Pueblo III community center in the Mesa Verde region (Bradley 1992; Shapiro 1997; Van Dyke 1999). When space syntax was used to measure the accessibility of an intramural cemetery at X-S-X and NAN, the resulting values differed significantly.

Space syntax integration is a measure of rooms' accessibility and may be related to their function.
within a particular culture. The higher the integration value, the more restricted the access to the space. The graphs (Figure 3) depict the spatial configuration of a two room suite at NAN containing a double hearth and at least forty burials and a comparable suite at X-S-X with 13 burials arranged around the edge of a thick ash lens (Forrester 1992:59-62; Shafer 1982:25-27). The NAN suite conforms to the spatial rules governing Mogollon domestic architecture after the transition to above-ground structures. Entry was gained by climbing a ladder set in the courtyard, traversing a portion of at least one roof and descending a second ladder into the suite. The restricted accessibility of the room containing the burials is reflected in its integration value of 0.17. In contrast, the X-S-X suite was accessed directly through an exterior door opening into a courtyard. This more direct route results in a much lower accessibility value (0.05) for the room with the internments. The X-S-X intramural cemetery is three times as accessible or integrated with surrounding spaces as the NAN cemetery. Neither the external doorway affecting the accessibility of Room 15 nor the large ash lens are standard Mimbres Classic architectural features or special features associated with intramural cemeteries.

EXTENDED BURIALS

The positioning of bodies at X-S-X demonstrates a degree of variation not found in the Valley or other Gila Forks sites. Flexure, when all or some of an individual's extremities are at angles from the axis of the trunk that range from 0 to approximately 180 degrees, was the standard burial position in the Mimbres Valley throughout the Pithouse and Classic periods (Gilman 1990:458; Anyon and LeBlanc 1984:180). The custom of placing an individual in an extended position was practiced by Mogollon people to the west, in the Reserve area of New Mexico and east central Arizona below the Mogollon Rim. Extension occurs when the legs are straight, joining the trunk at a 180 degree angle and the arms are parallel to the body (Ubelaker 1984:16). Large Mimbres sites like Galaz and Swarts may include one to three extended burials, but proportionally extended inhumations represent less than 1% of the burial populations (Figure 4). In contrast, 29% of the X-S-X burials (when positioning can be securely identified and fetuses/newborns eliminated from the sample) are extended. The nearby West Fork and Diablo sites on the West Fork of the Gila followed the Mimbres Valley practice; all individuals were flexed to some degree (Hammack 1966:12, 14; Ice 1968:5). This suggests village-by-village variations in Upper Forks burial customs and perhaps differences in religious practices.

There is no evidence that the X-S-X extended burials represent a temporal difference in mortuary practices. Extended burials are scattered throughout the southern roomblock (Figure 1) and interred in rooms with flexed burials, not clustered in a pattern suggesting a separate occu-
occupation. Extended and flexed individuals are buried from the same floors, which also suggests contemporaneity. On the other hand, ceramic grave goods do distinguish extended and flexed X-S-X burials. Smudged brown ware and Mimbres Classic vessels are present in extended and flexed inhumations and in one instance an extended burial contained both types. However, extended burials are more likely to be accompanied by a vessel than flexed internments, and this vessel is likely to be a smudged bowl.

Extended burials during the Mimbres Classic period are rare in the Valley but at least two areas outside the Mimbres area followed this custom after AD 1000 (Figure 4). To the west, between the Gila and the Salt Rivers in the Mogollon area concentrated around Point of Pines, extended burials date to the Reserve Phase, which is roughly contemporaneous with the Late Mimbres Classic (Reid 1989:67; Robinson and Sprague 1965:445). By the Tularosa Phase (beginning around AD 1200), this had become the standard burial position in the area. Extended burials also appear at Pueblo Bonito and small sites within Chaco Canyon around AD 1000 (Akins 1986).

The presence of extended burials and Reserve white ware sherds indicate ties between X-S-X residents and northern settlements around Chaco and the Cibola areas. The Cibola ceramics at Upper Gila sites is indicative of some type of
interaction between the Gila Forks and the north, but it will not be possible to determine whether this white ware was manufactured in the Forks or imported until compositional analyses are performed on Upper Gila assemblages (Bettison 2001: Figure 1.4; McKenna and Bradford 1989:36). The X-S-X extended burials accompanied by smudged bowls do suggest strong relationships with Mogollon people to the west. Smudging technology began in east central Arizona between AD 600 and 800 (Haury 1940:87-93) and it is unclear when it arrived in the Gila Forks area. The Laboratory of Anthropology’s ongoing work with the West Fork and Diablo ceramic assemblages indicates that smudged ceramics do not appear in substantial quantities until the Classic period. It is known that smudging is not a technological style that can be transferred by a visual observation of the finished product; potters had to teach other potters (Zedeno 1994:20).

GRAVE GOODS:
SMUDGED CERAMICS

Smudged vessels are identified by their deep, lustrous black finish. The effect is achieved through extensive polishing and the creation of reducing atmosphere by the addition of an organic material such as grass at the end of the firing cycle (Hawley 1930; Shepherd 1995:80). Bowls with smudged interiors are the most common form. Only two types are also painted – McDonald Corrugated and Starkweather Smudged (Colton and Hargrave 1937; Rinaldo and Bluhm 1956:171-177).

Smudged vessels are an understudied ware. Interest peaked by the 1950s with Rinaldo and Bluhm’s work on Mogollon ceramics. The absence of painted decoration in most of the Mogollon region until around AD 1100 has led some archaeologists to conclude that bowls with this lustrous black finish served social and religious functions similar to Mimbres painted vessels (Haury 1940:68; Peckham 1990:43). In the Valley, archaeologists have focused on the painted ceramics because design changes can be correlated with tree-ring dates and probably because the figurative decorations contain considerable information about Mimbres lifeways and ideology (Shafer 1999b:100-104). Current archaeological data concerning the manufacturing sources of smudged ceramics in Upper Forks and Valley assemblages is limited. The one published compositional analysis that includes smudged sherds from an Upper Forks site suggests this type was produced somewhere in the Upper Gila and exchanged with residents of the Mimbres Valley (James, Brewington, and Shafer 1995:114-116). However, no clay samples have been analyzed that might confirm this interpretation. Regardless of manufacturing locus, the possible trade of smudged vessels into the Valley did not extend to the practice of placing them in burials.

The association of smudged bowls with X-S-X burials does not conform to the standard burial practice of the Mimbres Valley, where Mimbres Classic Black-on-white vessels were the traditional ceramic accompaniment. Currently, the most complete information on ceramics in Classic Mimbres Valley burials is the Galaz data compiled by the Mimbres Foundation. All intramural burials with ceramic grave goods from this period contained at least one Mimbres Classic pot (Anyon and LeBlanc 1984:Table 11.2). In contrast, 13% of the X-S-X Classic period intramural burials with ceramics were accompanied by a Mimbres Black-on-white vessel. Smudged vessels, which Anyon and LeBlanc (1984:153) tentatively identify as intrusive, appear in the Galaz assemblage but only one Classic period burial contains a smudged pot (0.2%) as compared to X-S-X where 38% of the inhumations with a vessel included a smudged bowl. Other sites in the Upper Gila do not evidence this proportion of burials with smudged ware. Two Classic period cremations at Saige-McFarland (LA 5421), a site on the Gila south of the Upper Forks, do have smudged bowls (Lekson 1990:45). However, the small size of the burial population (10 individuals) and the vessels'
associations with cremations makes their presence difficult to interpret. With the exception of X-S-X and Saige-McFarland, the practice of using smudged bowls as grave goods appears to be spatially restricted to the Mogollon region west of the Upper Gila where both extended and flexed inhumations are accompanied by smudged bowls (Breternitz 1959: 67; Martin and Rinaldo 1949:222; Mick-O'Hara 1999:221-234; Nesbitt 1938:54-55).

The expectation that burial practices in the Upper Forks will conform to those in the Mimbres Valley is not supported by the smudged bowls in X-S-X burials. These ceramics, while not painted with the dramatic geometric and figurative Mimbres designs, represent a greater expenditure of a potter's time and energy than decorated vessels (Patricia Crown 2003, personal communication). Although there are problems with predicting ceramic function from archaeologically derived correlates, archaeologists interpret vessels with elaborate surface treatments like smudging that are recovered from special deposits as having been originally manufactured for use as serving vessels and for placement in ritual contexts (Bray 1982; Rice 1987:239). The apparently purposeful placement of two complete, matching smudged bowls on the floor of an X-S-X room suggests these vessels were also associated with the ritual closings of rooms. Four Saige-McFarland smudged bowls appear in similar contexts. Smudged bowls also appear in special contexts during the later, Salado phase occupation of the Upper Gila (ca. AD 1300-1450) as the cover bowls for polychrome jars containing cremations (Wallace 1998:169-176).

CONCLUSIONS

X-S-X is illustrative of the value archaeologists can derive from the study of old site reports. Despite the challenges and frustrations of working with woefully incomplete material, the surviving data provide valuable insights into the nature of a boundary area. The burial customs practiced by the residents of X-S-X differed significantly from those in the Mimbres Valley and suggest some residents had migrated to the community, probably from the Mogollon area in east central Arizona. The inclusion of smudged bowls in burials was never adopted in the Mimbres Valley. The bowls' lustrous black surfaces represent a technological style developed by Mogollon potters working in areas west of the Upper Forks and may have carried symbolic meanings that differed from Mimbres iconography.

The distribution of X-S-X smudged vessels and extended inhumations indicates this was an integrated community, despite the residents' different burial customs. Immigrants did not build spatially and architecturally distinct roomblocks or bury their dead in separate cemeteries, as was the case at Grasshopper (Riggs 2001:193-203). Ceramic grave goods at X-S-X followed no spatial or temporal pattern. Rooms with high densities of burials contained inhumations with smudged and painted vessels and in one instance an individual was buried with a smudged and a Mimbres bowl. The co-occurrence of flexed and extended inhumations accompanied by smudged and Mimbres Black-on-white bowls in the same rooms, buried from the same floor levels, suggests the immigrants and original X-S-X residents had intermarried.

The explanation of the intramural cemetery with its external doorway and large ash lens surrounded by burials is more problematic because there appears to be no precedent in the Mogollon area. The ash, probably the remains of multiple episodes of burning, could be viewed as a variation of the Valley's double hearth complex that had been transformed to meet the ritual needs of a group that was not under the direct influence of the larger Mimbres Valley communities to the east. On the other hand, the unusual exterior doorway and the remains of multiple, ritual fires may have been an invention of the X-S-X community to address the need for social integration among a group with different traditions and perhaps even different languages. The NAN and
Swarts intramural cemeteries served social groups; their spatial configuration made access difficult. The hatchway entrances can be interpreted as an architectural mechanism for excluding ritual participants from others in the community. In contrast, the high accessibility of the X-S-X suite suggests this space was configured to draw in the entire village and perhaps visitors. The room suite may have been the community's integrative structure, where rituals were conducted that created new stories about the ancestors by tying the immigrants to the new land while continuing to honor the practices of the old homeland. In larger communities like NAN and Swarts, this eclecticism might not have been tolerated. The scale of X-S-X may explain a portion of its diversity.

The missing assemblages mean we will never be able to answer all the questions we have about X-S-X, but the burial data can still inform future explorations of the Gila Forks in particular and the Mimbres world in general. The presence of burial practices from Mogollon areas in Arizona provides significant archaeological evidence in support of the contention that the Gila Forks was a contact zone where immigrants were able to settle and intermarry. The site is a good example of how the examination of burial practices can provide a strong line of evidence for the presence of contact or boundary areas that are only suggested by compositional and petrographic studies identifying non-local ceramic styles constructed of local materials.

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INTRODUCTION

The Jicarilla Apache and Moache Ute peoples lived in the area now known as Cimarron, New Mexico. In 1851, in an attempt to stop the raiding by the Jicarilla Apache, a treaty was proposed in which the Jicarilla Apache agreed to stay within a specific area. They would also grow crops, stop the raiding, and return captives and stolen property. The United States government would render aid and assistance (Tiller 1983:451). For two years the Jicarilla abided by the terms but the US government never ratified the treaty.

After several years of conflict and pursuit, a peace treaty was signed in Abiquiu on September 10, 1855 between the United States government and the Jicarilla Apache and Ute. As a consequence of the treaty, two agencies were established in 1856, one in Abiquiu and the other in Taos. The purpose of the agency was to stop raids and other forms of conflict of the Jicarilla and Ute with the Hispanic and Euroamerican farmers and ranchers. By issuing rations for food, the United States government hoped that conflict could be avoided (Tiller 1983:451).

In 1861, an agency was established in Cimarron, a village in the Beaubien-Maxwell Land Grant owned by Lucien B. Maxwell. The Cimarron Agency replaced the Taos Agency, which was closed in part because of the problem of easy access to liquor and the resulting problems. Kit Carson, the first Indian Agent at Taos, believed that remoteness of the Cimarron village would provide a more stable setting for the Jicarilla and Ute to increase their agricultural skills with resulting self sufficiency as farmers (Murphy 1983:121-122) and not as traditional hunters and gathers.

Although there were protests from ranchers on the east side of the Sangre de Cristo Mountains, plans were made and completed to establish an agency in Cimarron. While Kit Carson was the agent for the Taos Agency, the Cimarron Agency was initially assigned to William F. M. Arney, who had no experience in the west or with Indians. The agency buildings were constructed on 1,280 acres leased from Maxwell for $20.00 a year. Arney arranged for agency buildings to be constructed on the Ponil Drainage above its confluence with the Cimarron River. The complex of adobe buildings included a school, council chamber, offices, and a residence for the agent at a construction cost of $2,000.00, which was paid to Maxwell. In April 1862 Arney left to move his family to the agency (Murphy 1983:123-124).

Maxwell and Carson initially settled at Rayado in 1848 to provide supplies and services to the military and travelers on the Santa Fe Trail. In the Spring of 1859 Maxwell moved his ranch headquarters from along the south bank of the Rayado Creek north to the south bank of the Cimarron River. Nearby he built in the summer of 1864 a stone building for a grist mill to grind corn and wheat into flour. It reportedly was capable of processing 15,000 pounds of wheat into 44 barrels of flour (Murphy 1983:110).
Maxwell benefited from the agency since he provided most of the supplies given to the Jicarilla and Ute. For example, he sold primarily corn and wheat to the agency along with beef, lamb and other supplies. The invoice to the government was $2,827.11. With the Civil War in the east, prices increased to a point where Maxwell billed the agency for $10,559.00 worth of good in the first half of 1862 (Murphy 1983:125). Because of his remote location on the frontier, Maxwell held the competitive edge for providing supplies to the military at Fort Union and the Cimarron Agency.

Hunting deer and other game was an important part of the Jicarilla Apache and Moache Utes subsistence system. The intrusion of Hispanic and Euroamerican ranchers and other settlers into traditional hunting areas resulted in raids on cattle herds for food. In October 1862, the Jicarilla and Utes stressed the need for meat. To stop raids on livestock herds, the agency provided 60 head of cattle, presumably from Maxwell's herds, to the Jicarilla and Ute peoples (Murphy 1983: 126). Over the next years, Maxwell continued to provide supplies to the military and the Cimarron Agency. Because of this, his influence and actions were crucial to keeping the peace with the settlers and military and the Jicarilla and Ute (Murphy 1983:133-135).

Arney and later agents for the Cimarron Agency faced many difficulties with administering the agency. For example, in 1868, Erasmus B. Denison, a new Indian Agent, reported that the Cimarron Indian Agency buildings in the lower Poñil drainage had been destroyed by floods (Murphy 1983:139). This area later became the ranch of Manly M. Chase, who purchased 1000 acres on the lower Poñil and established his headquarter there (Murphy 1972:139).

Maxwell was a dominant personality as well as the most influential landowner in the area. He probably had more influence over the Native American population than the military did. Maxwell allowed his Cimarron flourmill to be used as a distribution point for rations to the Jicarilla Apace and Utes (Murphy 1983: 129). This influence appears to have been a point of conflict Maxwell and those Indian Agents after Kit Carson.
Table 1
Chronology of the Cimarron District (after Glassow 1972a: Table 1).

<table>
<thead>
<tr>
<th>Period or Phase</th>
<th>Date</th>
<th>Dating Method</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jicarilla Phase</td>
<td>A.D. 1750-1900</td>
<td>Ceramic</td>
<td>Cimarron Micaceous</td>
</tr>
<tr>
<td>Cojo Phase</td>
<td>A.D. 1550-1759</td>
<td>Ceramic</td>
<td>Cimarron Plain; Neck banded, Incised, Punctate, and/or Santa Fe Black-on-white</td>
</tr>
<tr>
<td>Cimarron Phase</td>
<td>A.D. 1200-1300</td>
<td>Ceramic</td>
<td>Taos Incised or Punctate</td>
</tr>
<tr>
<td>Poñil Phase</td>
<td>A.D. 1100-1250</td>
<td>Ceramic</td>
<td>Kiathurhlanna or Red Mesa Black-on-white</td>
</tr>
<tr>
<td>Escritores Phase</td>
<td>A.D. 900-1100</td>
<td>Ceramic</td>
<td>1460 +/- 50 (UCLA 1407), circular stone wall structures</td>
</tr>
<tr>
<td>Vermejo Phase</td>
<td>A.D. 400-700</td>
<td>Radiocarbon sample</td>
<td>Projectile point styles</td>
</tr>
<tr>
<td>Archaic Period</td>
<td>Pre-A.D. 400</td>
<td>Projectile point styles</td>
<td>Stemmed dart points</td>
</tr>
<tr>
<td>Lithic Period</td>
<td>?</td>
<td>Projectile point styles</td>
<td>Folsom point</td>
</tr>
</tbody>
</table>

JICARILLA APACHE
ARCHAEOLOGY IN THE CIMARRON DISTRICT

The cultural chronology of the Cimarron area (Table 1) was developed by Michael Glassow (1972a, 1972b, 1980), based on his doctoral research while directing the summer archaeology program at Indian Writings in the 1960s. Kirkpatrick provided a regional synthesis of the Cimarron District with northeastern New Mexico (1977) while Cordell (1979a, 1979b) included the Cimarron District in her synthesis of northern Rio Grande.

Archaeological evidence places the Jicarilla Apache in the area as early as the mid 1500s (D. Gunnerson 1974; J. Gunnerson 1959, 1969). Gunnerson's (1969) excavations included sites in the lower Poñil River Valley. Skinner (1964) excavated multicomponent rock shelter in the North Poñil Canyon, overlooking the North Poñil Creek. He recovered a cache of wheat seeds plus a notched rasp and a yucca fire board of the types that have been documented as being used by the Jicarilla Apache and Utes. The wheat is thought to have been distributed to the Ute and/or Jicarilla Apache as part of the ration allotment, a part of the terms for staying on the reservation. Glassow (1972a) also excavated a Cojo phase site in the North Poñil.

RATION TOKENS

Frank Alpers, a resident of Cimarron village, originally collected the ration tokens. He was a member of the Manley Chase family, pioneer settlers in the 1870s. Alpers was an avocational archaeologist who recorded archaeological sites in the Cimarron area (Alpers 1963). Upon his death at age 77 in 1989, his sister Abrey Alpers inherited his various collections including prehistoric and historic artifacts. She later donated his collections to the New Mexico Farm and Ranch Heritage Museum. These ration tokens are part of the collections of the agricultural museum.

The tokens were carefully washed by hand using small brushes to remove the dirt and then were air-dried. The ration tokens were measured using English standard, the measurement of the time.

The circular tokens were measured at the widest diameter. The noncircular tokens were placed
<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Shape</th>
<th>Size (inches)</th>
<th>Design</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>96.048.0828.1</td>
<td>Rectangular</td>
<td>1 x 1 3/8</td>
<td>Horse head</td>
<td>Facing right; Figure 3 (top)</td>
</tr>
<tr>
<td>96.048.0828.2</td>
<td>Rectangular</td>
<td>1 1/8 x 1 1/4</td>
<td>Horse head</td>
<td>Facing right head over a number or letter; Figure 3 (bottom)</td>
</tr>
<tr>
<td>96.048.0828.3</td>
<td>Rectangular</td>
<td>7/8 x 1 5/16</td>
<td>Numbers 3 and 5</td>
<td>Number 3 is stamped over Number 5</td>
</tr>
<tr>
<td>96.048.0828.4</td>
<td>Rectangular</td>
<td>1 5/16 x 1 3/16</td>
<td>Numbers 3 and 5</td>
<td>Number 3 is stamped over Number 5</td>
</tr>
<tr>
<td>96.048.0828.5</td>
<td>Rectangular</td>
<td>1 9/16 x 1 5/16</td>
<td>Numbers 3 and 5</td>
<td>Number 5 is stamped over Number 3; left side has crimped seam; right side is jagged; Figure 4 (top)</td>
</tr>
<tr>
<td>96.048.0828.6</td>
<td>Rectangular</td>
<td>1 11/16 x 1 3/16 x 11/16 (right side)</td>
<td>Number 5</td>
<td>Number 5 stamped over unidentifiable stamp design; right side cut at an angle</td>
</tr>
<tr>
<td>96.048.0828.7</td>
<td>Square</td>
<td>1 x 1</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.8</td>
<td>Diamond</td>
<td>1 3/16 x 1 3/16</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.9</td>
<td>Rectangular</td>
<td>1 1/16 x 1 3/4</td>
<td>Heart and Number 5</td>
<td>Heart design with a small number 5</td>
</tr>
<tr>
<td>96.048.0828.10</td>
<td>Square</td>
<td>1 x 1 1/16</td>
<td>Heart</td>
<td>Heart with unidentifiable design at base of heart</td>
</tr>
<tr>
<td>96.048.0828.11</td>
<td>Rectangular</td>
<td>3/4 x 1</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.12</td>
<td>Square</td>
<td>13/16 x 13/16</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.13</td>
<td>Diamond</td>
<td>1 3/8 x 1 3/8</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.14</td>
<td>Diamond</td>
<td>1 3/8 x 1 3/8</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.15</td>
<td>Square</td>
<td>3/4 x 1 5/16</td>
<td>Club or clover leaf</td>
<td>Does not resemble other number 3 designs; Figure 5</td>
</tr>
<tr>
<td>96.048.0828.16</td>
<td>Square</td>
<td>1 x 1 5/16</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.17</td>
<td>Diamond</td>
<td>1 1/4 x 1 3/16</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.18</td>
<td>Rectangular</td>
<td>1 5/16 x 1 15/16</td>
<td>Numbers 5 and 0</td>
<td>Two number 3's stamped over each other; partial heart design</td>
</tr>
<tr>
<td>96.048.0828.19</td>
<td>Rectangular</td>
<td>1 7/16 x 1</td>
<td>Number 3 and heart</td>
<td>Two number 3's stamped over each other; partial heart design</td>
</tr>
<tr>
<td>96.048.0828.20</td>
<td>Square</td>
<td>1 x 1</td>
<td>Heart</td>
<td>Token broken into two pieces</td>
</tr>
<tr>
<td>96.048.0828.21</td>
<td>Rectangular</td>
<td>9/16 x 1</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.22</td>
<td>Square</td>
<td>1 x 7/8</td>
<td>Heart</td>
<td>Heart design; ragged edges</td>
</tr>
<tr>
<td>96.048.0828.23</td>
<td>Square</td>
<td>13/16 x 7/8</td>
<td>Heart</td>
<td>Heart design; right edge is seam crimp; solder spots on surface</td>
</tr>
<tr>
<td>96.048.0828.24</td>
<td>Diamond</td>
<td>7/8 x 1</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.25</td>
<td>Diamond</td>
<td>13/16 x 3/4</td>
<td>Heart and 0</td>
<td>Heart design with 0 stamped on upper right of heart; Figure 6 (left)</td>
</tr>
<tr>
<td>96.048.0828.26</td>
<td>Square</td>
<td>15/16</td>
<td>Heart</td>
<td>Heart design is left of center</td>
</tr>
<tr>
<td>96.048.0828.27</td>
<td>Rectangular</td>
<td>1 x 3/4</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.28</td>
<td>Diamond</td>
<td>1 1/16 x 13/16</td>
<td>Heart</td>
<td>Heart design; seam edge present; solder spots on surface; Figure 6 (center)</td>
</tr>
<tr>
<td>96.048.0828.29</td>
<td>Rectangular</td>
<td>1 1/16 x 5/16</td>
<td>Heart</td>
<td>Heart design in lower 2/3; solder bar across upper 1/3; Figure 6 (right)</td>
</tr>
<tr>
<td>96.048.0828.30</td>
<td>Square</td>
<td>7/8 x 3/4</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.31</td>
<td>Square</td>
<td>13/16 x 7/8</td>
<td>Heart and 0</td>
<td>Heart design with horizontal 0 at the base of the heart</td>
</tr>
<tr>
<td>96.048.0828.32</td>
<td>Diamond</td>
<td>3/4 x 13/16</td>
<td>Heart</td>
<td>Heart design slightly left of center</td>
</tr>
<tr>
<td>96.048.0828.33</td>
<td>Square</td>
<td>15/16 x 15/16</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.34</td>
<td>Diamond</td>
<td>3/4 x 1</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.35</td>
<td>Rectangular</td>
<td>13/16 x 1 1/8</td>
<td>Numbers 3 and 5</td>
<td>Number 5 stamped on one side with smaller number 3 stamped on the reverse side</td>
</tr>
<tr>
<td>96.048.0828.36</td>
<td>Square</td>
<td>1 7/16 x 1 1/2</td>
<td>Number 3</td>
<td>Number 3 has bottom curve cut through metal; right side has can seam; Figure 4 (bottom)</td>
</tr>
<tr>
<td>96.048.0828.37</td>
<td>Square</td>
<td>1 x 3/4</td>
<td>Heart</td>
<td>Heart design; upper left and lower right sides have very small tabs from shears</td>
</tr>
<tr>
<td>96.048.0828.38</td>
<td>Rectangular</td>
<td>1 7/8 x 7/8</td>
<td>Number 5</td>
<td>Number 5 has bottom curve cut through metal</td>
</tr>
<tr>
<td>96.048.0828.39</td>
<td>Diamond</td>
<td>3/4 x 7/8</td>
<td>Heart</td>
<td>Heart design</td>
</tr>
<tr>
<td>96.048.0828.40</td>
<td>Rectangular</td>
<td>3/8 x 7/8</td>
<td>Number 3s</td>
<td>Two number 3s stamped over each other; short side cut at slight diagonal</td>
</tr>
</tbody>
</table>
into square, rectangular, and diamond categories based on visual appearance and not exact measurements. The diamond category is basically a square token with the design not being parallel to the sides. Consequently, the token has a diamond orientation instead of square when the design is vertical.

The first group of tokens has two copper minted circular disks (96.48.830). On one side is stamped U.S. Subsistence Department, plus a federal eagle facing left and holding two arrows in one claw and an olive branch with at least four leaves in the other claw. The letters and eagle image are raised on this side of the token. The reverse side is stamped “ONE RATION”.

The second group consists primarily of square and rectangular shapes of tin (96.48.828). All are hand cut and have numbers and/or heart, club (shamrock), or other possible images stamped on the front or back surface.

The third group is primarily circular shaped (96.48.829). These also have been cut from tin and stamped with the same set of images as the square and rectangular group.

**Manufactured Tokens**

The formal ration tokens have been modified by stamping letters and numbers over the manufactured designs. The first token measures 1 inch in diameter and 3/64 of an inch thick. This token
Table 3
Circular Ration Tokens.

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Size (inches)</th>
<th>Design</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>96.048.0829.1</td>
<td>1</td>
<td>Number 5 and heart</td>
<td>Number 5 is stamped over heart design</td>
</tr>
<tr>
<td>96.048.0829.2</td>
<td>1</td>
<td>Numbers 3 and 6</td>
<td>A clear number 3 and possible number 6</td>
</tr>
<tr>
<td>96.048.0829.3</td>
<td>1</td>
<td>Number 3</td>
<td>A faint (light stamped) number 3</td>
</tr>
<tr>
<td>96.048.0829.4</td>
<td>1</td>
<td>Number 3 and heart</td>
<td>A clear number 3 stamped over a heart design; Figure 7 (left)</td>
</tr>
<tr>
<td>96.048.0829.5</td>
<td>1</td>
<td>Numbers 3 and 5</td>
<td>Number 3 appears to be stamped over number 5</td>
</tr>
<tr>
<td>96.048.0829.6</td>
<td>1</td>
<td>Numbers 3 and 5 and heart</td>
<td>Heart design with a small number 3 (5 mm) and small 5 (4 mm) on one side; Figure 7 (right); reverse has a large number 5;</td>
</tr>
<tr>
<td>96.048.0829.7</td>
<td>1</td>
<td>Numbers 3 and 5</td>
<td>One side has large and faint number 3; opposite side has two smaller number 5s (6 mm)</td>
</tr>
<tr>
<td>96.048.0829.8</td>
<td>1</td>
<td>Number 3 and heart</td>
<td>Number 3 is stamped over heart design</td>
</tr>
<tr>
<td>96.048.0829.9</td>
<td>1</td>
<td>Unidentifiable</td>
<td>Stamped design is present but not identifiable</td>
</tr>
<tr>
<td>96.048.0829.10</td>
<td>1</td>
<td>Numbers 3 and 5</td>
<td>Number 3 is stamped over number 5</td>
</tr>
<tr>
<td>96.048.0829.11</td>
<td>1</td>
<td>Number 3</td>
<td>Number 3 (large) is stamped on both sides</td>
</tr>
<tr>
<td>96.048.0829.12</td>
<td>7/8</td>
<td>Number 5</td>
<td>Number 5 design; edges very irregular</td>
</tr>
<tr>
<td>96.048.0829.13</td>
<td>15/16</td>
<td>Number 5</td>
<td>Number 5 design</td>
</tr>
<tr>
<td>96.048.0829.14</td>
<td>1</td>
<td>Number 3</td>
<td>Number 3 design</td>
</tr>
<tr>
<td>96.048.0829.15</td>
<td>1</td>
<td>Number 3 and heart</td>
<td>Number 3 (large) is stamped on one side; the reverse has a heart design</td>
</tr>
<tr>
<td>96.048.0829.16</td>
<td>1</td>
<td>Unidentifiable</td>
<td>Stamp design not identifiable due to rust</td>
</tr>
<tr>
<td>96.048.0829.17</td>
<td>1</td>
<td>Number 5</td>
<td>Number 5 design</td>
</tr>
<tr>
<td>96.048.0829.18</td>
<td>1</td>
<td>Number 3 and heart</td>
<td>Number 3 (large) is stamped on one side; the reverse has a heart design</td>
</tr>
<tr>
<td>96.048.0829.19</td>
<td>1</td>
<td>Number 5 ?</td>
<td>Number 5 design may be present</td>
</tr>
<tr>
<td>96.048.0829.20</td>
<td>1</td>
<td>Numbers 3 and 5 and heart</td>
<td>Number 3 on one side; heart and small number 5 (5/16) is on reverse</td>
</tr>
<tr>
<td>96.048.0829.21</td>
<td>1</td>
<td>Number 3</td>
<td>Number 3 faintly stamped on one side</td>
</tr>
<tr>
<td>96.048.0829.22</td>
<td>1</td>
<td>Number 3 and heart</td>
<td>Number 3 stamped on one side; a heart is stamped on reverse side; broken</td>
</tr>
<tr>
<td>96.048.0829.23</td>
<td>1</td>
<td>Number 3 and heart</td>
<td>Number 3 stamped on one side; a heart is stamped on the reverse side</td>
</tr>
<tr>
<td>96.048.0829.24</td>
<td>1</td>
<td>Number 3 and heart</td>
<td>Number 3 stamped on one side; a heart is stamped on the reverse side</td>
</tr>
</tbody>
</table>

has a heart stamped on the side with “ONE RATION”. It is offset and a portion of the heart is missing (Figure 1 [left], Figure 2 [left]).

The second token also measures 1 inch in diameter by 3/64 of an inch thick. It has a hand stamped “B” over the eagle image. It also has a large 3 stamped over the word “SUBSISTENCE”. The reverse side has a heart stamped in the center and the imprint of the 3 from the front side is visible (Figure 1 [right], Figure 2 [right]).
Handmade Tokens

In the square and rectangular shaped group, a sample of 40 items was selected from the 176 total. The sample was selected based on sorting through the collection and picking out those that appeared to be in the best condition. Of the 30 circular tokens, the 24 tokens in good condition were analyzed.

These tokens appear to have been cut from tin cans. This is based on the presence of solder on some of the tokens. Can seams are also present on other tokens. The Cimarron Agency was active during the Civil War. Copper and other metals were very important to the war effort, and probably very scarce on the western frontier.

The square and rectangular tokens (Table 2) were compared to the circular tokens (Table 3). The most common symbol is a heart on the square and rectangular tokens. In contrast, the numbers 3 and 5 are more common on the circular tokens than the heart. The number 0 appears only on the square and rectangular tokens, usually in association with the heart stamp. Two rectangular tokens have a horse head in profile. The horse head is facing to the right.

It is interesting that several of the circular tokens appear to have been originally stamped with a large number 5. At some later point, a similar size number 3 was stamped over the number 5. On the circular tokens, the heart stamp is found with the number 3 on several tokens but only a few have the number 5 and heart.

DISCUSSION

In this study, the two formal copper tokens are the important links to interpreting the square, rectangular and circular tokens. The copper tokens were produced as a formal government issued product. They were designed to serve as ration tokens. This is evident from the design elements associated with the wording and design.

The common link between the formal ration tokens and the hand cut tokens is the presence of the stamped heart and the number 3. While none of the analyzed tin tokens had a letter B, it is possible that it is present on one or more of the unanalyzed tokens. The square, rectangular, and circular tin tokens appear to have been cut from tin cans. This inference is based on the presence of solder on some of the tokens and the presence
of a can seam on other tokens. Given that it was the time of the Civil War with metal being needed for the war effort, it makes sense that a common material such as tin from cans be recycled into ration tokens.

The tokens were probably cut by hand based on the slightly ragged edges and irregular shape. These were then stamped with an appropriate symbol or number. The stamps used to imprint the numbers and the heart symbol produced a very formal appearance on the token. These were also probably imprinted by hand given the variability in the placement of the design. For example, some of the squares have the heart oriented with the square. But others have the heart turned so the token has a diamond shape when the heart is vertical.

At this time we do not know meaning of the numbers of 3, 5 and 0 and the symbols of heart, horse head, and club/clover leaf. Rations to the Jicarilla and Utes were primarily beef and corn and wheat flour. More research is needed to learn about the use of these tokens and the distribution of rations at the Cimarron Agency.

ACKNOWLEDGEMENTS

I would like to thank several individuals whose assistance made this study possible. Toni Laumbach, Chief Curator, New Mexico Farm and Ranch Museum, brought these tokens to my attention and assisted with coordinating the analysis and photography. Sue and Tom Hanning and Debbie Hulett-Samaniego and Corky Samaniego washed and cleaned the tin tokens. Debbie, Corky and Wilma and Bobbie Hutson measured and identified the various stamped designs on the tin tokens. This was complicated at times by over-stamping with different numbers and symbols and the poor condition of the metal. John Fitch photographed the copper and tin tokens, bringing out the details of the stamped images to clarify the identification. Thank you, my friends, for all your help.
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It was a typical dry, hot day in early August of 1997, as a small group of Plateau Sciences Society members spent the day investigating Anasazi petroglyphs along Interstate 40 between the Geronimo Trading Post and Winslow, Arizona. On our way back to Gallup, we decided to turn off on the Pinta overpass because we had heard that there were some rock art panels on the base of a cliff bordering the north side of the Rio Puerco (of the West) valley.

We had little trouble finding the panels, and since this was to be our last stop, most of the members used up what film was still left in their cameras.

Then, as we were about to leave, someone spotted what looked like a large cross in a shallow crevice at the top of the cliff. With the aid of binoculars, we were able to discern a cross, and what appeared to be a human figure with something that might be a flag or banner. However, as it was getting late and we were hot and tired, we decided to come back at a later date, and climb up to the panel.

About two weeks later, a couple of us went back to the site and climbed up to the panel. What an awesome sight (site) (Figure 1)! The cross was carved into the west flank of the crevice and is about six ft in height (Figure 2). It is composed of two sets of parallel lines, about six inches apart, with the base slightly flared. There are no embellishments or associated carvings.

On the opposite side of the crevice are three elements: a rendition of the Mexican flag, a soldier, and a cannon (Figure 3). The flag, on a pole that has tassels on the top, has two carved incisions indicating the three segments of the flag: green (next to the pole), white and red (Figure 4). On the center, or white panel, are all the components of the traditional emblem of the Republic of Mexico: A Nopal (cactus) growing out of the rocks surrounded by water. On top of this is a Mexican Golden Eagle standing on its left foot, and grasping a snake in its beak and right claw. The wings are outstretched and the eagle’s head is facing away from the pole. Over this is what appears to be a sunburst.

The soldier, practically full size, is facing the flag, but not quite holding it. He wears a high-peaked...
sombrero, a jacket with a high collar, a belt, and trousers with a thin stripe down the side. Only the tops of his boots, or shoes are carved. Contrary to all soldiers of that time period, his sword scabbard appears to be worn on the right side (only a left-handed person would wear his sword in that manner).

But most unusual is the cannon (Figure 5). It definitely is a cannon, but not the type that would be taken along on a field expedition (which would be mounted on wheels). Instead, it seems to be a large-bore barrel mounted on a base of stones or bricks. This is the type of armament usually associated with the defense of a fortress.

Much to our chagrin, there was neither a name nor a date. About the only thing that seemed certain was that all four elements were done at the same time and by the same person. It is doubtful that all the detailed carvings could have been accomplished in the span of a few hours.

So now the questions begin to formulate:

1. Who could have executed the panel, and when?
2. How long could it have taken?
3. Why here?
4. Why this style of cannon?
5. Is the flag correct for its time period?
6. Are there any other similar panels to compare it with?

In general terms, the presence of the Mexican flag dates it between 1821 and 1846, the 25-year span between independence from Spain and conquest by the United States.

As to who executed the panels, the most likely assumption is a soldier in the Mexican Army who had a fair knowledge of the uniform of the period and the intricacies of the emblem on the flag. It
might also be safe to assume that he had a couple of days to finish the project, which included time spent climbing up to the site (not an easy task). This would imply that the military expedition he was affiliated with was encamped below in the valley of the Rio Puerco (of the West). For whatever reason, the duration of the encampment was probably longer than just overnight.

In terms of site location, my first assumption was that it was on the route of the centuries-old trail between Zuni and the Hopi villages Earlier Spanish, as well as Mexican period expeditions, routinely travelled to the Hopi villages by way of Jemez, Laguna and Zuni.

There is a slight problem, however. No one I contacted, including Zuni archaeologists and historians, had any idea where the trail was. Even T. J. Ferguson and Richard Hart, in their publication, *A Zuni Atlas* (1985:54-55) simply show two broad lines on their Major Zuni Trails map, indicating two branches of a Zuni-Hopi trail. Both trails are well east of the panel location.

Two historic events collaborate the possibility of two trails. In late 1776 the Dominguez-Escalante party was returning to Zuni (Fr. Velez de Escalante's home mission) from the Hopi villages (Briggs 1976). The cartographer who accompanied the expedition, Don Bernardo Miera y Pacheco, two years later rendered a map of the entire region traversed by the expedition, but did not indicate any of the trails. The route they took can only be inferred by the notations recorded by Escalante in his diary.

From all indications, they took the east branch - leaving Walpi (on First Mesa) on Nov. 19, camping in Keam's...
Canyon on the twentieth, and spending the next night at "Ojito del Penasco" (Steamboat Springs). They made a dry camp on Nov. 22 (somewhere just west of Klagatoh) and continued on to Ojo de San Jose (near Houck). After a most cold and strenuous ride, they arrived at the Pueblo of Zuni on the night of Nov. 24.

Four years later Fr. Escalante guided the newly appointed governor, Juan Bautista de Anza, from Zuni to Hopi by a more westerly route (Twitchell 1918). Anza was leading a caravan of wagons and carretas loaded with supplies and foodstuffs to deliver to the Hopis, who were suffering from a prolonged drought. Their trail took them on a more direct northwest route from Zuni to Walpi by way of Navajo Spring and Talahogan Spring (at the base of Antelope Mesa and the ruins of Awatobi) and must have been defined to the point that it was passable by wagons.

However, either route, or branch did not come close to the panel so it is doubtful that it was carved, or executed by any of the Mexican period military expeditions (there were at least three) that travelled to the Hopi country by way of Zuni.

This, then narrows it down to one possible expedition.

On September 14, 1836, an expedition led by Gov. Albino Perez, composed of nearly 2,000 men in three divisions under the respective commands of Lt. Jose Caballero, Lt. Francisco Garcia and Lt. Jose Silva, went into the field to wage war against the Navajos (Correll 1979). Most of their actions took place in the vicinity, and to the west of Zuni. It is quite possible then that their march took them through the valley of the Rio Puerco (of the West). They were in the field through the end of October and during the campaign 19 Navajo warriors and one woman were killed and over 1,500 sheep were captured as "spoils of war." One of the division commanders, Lt. Francisco Garcia, was killed during the campaign, and was given ecclesiastical burial at the Zuni mission.

Again, by a process of elimination, this seems to be the most logical occurrence, and motive, for the execution of this panel. With regards to the individual figures, however, there are still some puzzles, with the exception of the cross, which is simply what it is meant to be – a Christian cross.

The cannon, on the other hand, is a real mystery. It is extremely doubtful that the 1836 expedition (or any other Mexican-era expedition, for that matter) would utilize artillery as part of their military operations, especially against fast-moving Apaches or Navajos. And, if by chance a cannon was a part of their field armament, it would most probably be a smaller caliber piece mounted on wheels. A logical interpretation might be that the image is a symbol of, Mexican military strength.

The uniform of the soldier is non-specific enough to adequately describe anything worn by the paramilitary, or militia of that time period. Except for the handful of professional soldiers stationed in the province, the vast majority of the men who participated in these expeditions were ordinary civilians. A high collared waistcoat, wide belt, and a stripe down the trouser seam, along with the common and popular sombrero could very well resemble what most of the militia were wearing. The only puzzle is the placement of the sword on the right side. Since a soldier would tend to draw out the sword with his right hand, the scabbard is always worn on the left side. The only possible exception is when the soldier is left-handed.

The most intriguing enigma, however, is the flag. The flag of Mexican independence was decreed by that country's first president, Augustin de Iturbide, on Nov. 2, 1821 (Cisneros 1984). This flag consisted of three vertical stripes: green, white and red. The emblem, emblazoned on the center white stripe is an adaptation of an ancient Aztec legend (see above for details).

When the president declared himself Emperor Augustin I, a royal crown was placed over the eagle. After Apr. 14, 1823, when Augustin was deposed and the Mexican Republic was estab-
lished, the crown was removed. There is no evidence, at the national level, anyway, that the crown was ever replaced by another symbol.

So, it can only be assumed that the sunburst on the panel reflected a local variation of the national flag. For example, a flag captured during the Mexican War (1846-48) and on display at the Pennsylvania War Museum is devoid of any symbol over the eagle's head. The frontal view of the eagle, with both wings outstretched persisted into the early decades of the 20th Century. When Mexico finally gained a degree of stability under the rule of the Institutional Revolutionary Party in the 1930s, the eagle was (and still is) depicted in profile, with the head facing to the left (front) and the left wing in a semi-flexed position.

To my knowledge, this is the only instance where the Mexican flag has been depicted in rock art. This was confirmed in a discussion with Dr. Tom Chavez, director of the Hispanic Cultural Center in Albuquerque. There is a carving of an eagle and snake on a large boulder next to the old road from Gallup to the Hubbell Trading Post in Ganado, Arizona. It is located a few miles east of Rock Springs, and about eight miles northwest of Gallup. It has a date of 1916, and was probably executed by a Mexican teamster working with one of Hubbell's freight wagons.

This project has stimulated an interest in two related projects that could be on-going for years to come. First, a more thorough attempt to define the trail (or trails) between the ancient provinces of Cibola (Zuni) and Tusayan (Hopi), and secondly, conduct an inventory of Spanish and Mexican period rock art. Any suggestions, or assistance on either project would be gratefully appreciated.

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AN ANALYSIS OF THE MOHR-SAMPLE COLLECTION FROM SITE L/102, RIO ARRIBA COUNTY, NEW MEXICO

INTRODUCTION

In 2002 the New Mexico Bureau of Land Management (BLM), in cooperation with the Museum of Indian Arts and Culture, established a fellowship program to encourage research and analysis of BLM collections curated by the Museum. The purpose of this fellowship is to create and foster interest in research projects that focus on archaeological collections made from public lands and housed in public curatorial institutions.

From February to July of 2003, I served as the first New Mexico Bureau of Land Management Research Fellow in Residence at the Museum of Indian Arts and Culture, Laboratory of Anthropology in Santa Fe, New Mexico. During my residency I examined a portion of the Mohr-Sample Collection (Collection) that pertained to L/102, a site located in Rio Arriba County, New Mexico. The Collection represents surveys, excavations and research conducted by Drs. Albert D. Mohr and L. Laetitia Sample on ten Largo-Gallina sites (Table 1) in north central New Mexico.

Table 1
Largo-Gallina sites in Mohr-Sample Collection.

<table>
<thead>
<tr>
<th>SITE</th>
<th>YEAR EXCAVATED</th>
<th>LA#</th>
<th>OTHER #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galumpki</td>
<td>1974</td>
<td>64913</td>
<td>29RA195</td>
</tr>
<tr>
<td>Karl Pen</td>
<td>1967</td>
<td>134370</td>
<td>29RA123</td>
</tr>
<tr>
<td>L/102</td>
<td>1972-73</td>
<td>11633</td>
<td>29RA138</td>
</tr>
<tr>
<td>Locacion Grande</td>
<td>1950s</td>
<td>None</td>
<td>29RA80</td>
</tr>
<tr>
<td>Owl Point</td>
<td>1973-74</td>
<td>46307</td>
<td>29RA207</td>
</tr>
<tr>
<td>Scorpion House</td>
<td>1975</td>
<td>57386</td>
<td>29RA193; NM-01-33542, BLM</td>
</tr>
<tr>
<td>Scorpion: Summit House*</td>
<td>1976</td>
<td>127386</td>
<td>29RA197</td>
</tr>
<tr>
<td>T.P. Site**</td>
<td>1974</td>
<td>6292</td>
<td>29RA190</td>
</tr>
<tr>
<td>Trio</td>
<td>1975</td>
<td>57398</td>
<td>29RA208</td>
</tr>
<tr>
<td>Two Lynx</td>
<td>1967</td>
<td>None</td>
<td>29RA65</td>
</tr>
</tbody>
</table>

*May also be 29RA236  ** May also be 29RA158
Mexico during various segments of their careers from the late 1950s to the mid-1970s. In 2000 their son, Karl Mohr, placed a portion of the collection from their research with the Museum of New Mexico where it is now stored and curated at the Museum of Indian Arts and Culture, Laboratory of Anthropology in Santa Fe, New Mexico.

Research of Largo-Gallina sites is meager in comparison to other prehistoric sites in the American Southwest. This apathy may be attributed to several reasons. During the 1970s much emphasis was placed on the Chaco project and Chacoan sites that perhaps drained the resources needed to investigate Largo-Gallina sites. Another cause may be attributed to the fact that Largo-Gallina architecture and artifacts are lackluster in comparison to those found at other Ancestral Puebloan sites. Furthermore, the remote location of many of these sites, which are found on high mesas, hogbacks and in difficult terrain, makes it difficult to reach the sites, possibly deterring archaeologists from attempting to investigate these sites. Lastly, since the Largo-Gallina are not commonly known, there is a general naivete among both the general public and scholars at large who are not aware of this unique branch of the Ancestral Puebloan culture. To dispel this indifference, information needs to be disseminated about the Largo-Gallina to encourage others to research extant literature and archaeological collections, such as the Mohr-Sample Collection.

Therefore, this paper will begin with a discussion of the careers of Drs. Mohr and Sample and their contributions to prehistoric archaeology. I will then provide an overview of the Largo-Gallina branch and the existing literature. A description of the site and its structures as well as a synopsis of my examination of certain artifacts from the Collection will follow. I will then conclude with some observations and conclusions on my findings as well as some recommendations for further research.

WHO WERE MOHR AND SAMPLE?

Information found in the associated records (William D. Finlayson to Duane Anderson, letter and unpublished report, October 28, 2000, Archaeological and Ethnographic Research and Collections of Albert D. Mohr and L. Laetitia Sample, 1946-1995, Museum of Indian Arts and Culture, Laboratory of Anthropology, Santa Fe) indicates that Drs. Mohr and Sample studied and worked together most of their lives.

After World War II, they undertook undergraduate studies at the University of California at Berkeley. In 1950 and 1952, Mohr, with the assistance of Sample, worked in Southern California at the Cachuma Reservoir for the Smithsonian River Basin survey and salvage project. After working on this project, they studied aboriginal turquoise mining in California and Nevada and performed ethnographic studies of the Yakima and Wishram in Washington State.

From 1955-1960 Mohr and Sample performed surveys and salvage excavations for various gas and pipeline companies in Arizona, Utah, Colorado, and New Mexico. Mohr served as a senior archaeologist with the U.S. Department of Interior Salvage Program under the direction of Jesse Nusbaum while Sample worked as an archaeologist who reported directly to Nusbaum. During this period they became familiar with Largo-Gallina sites. Materials from Locacion Grande, one of the sites investigated during the 1950s, are included in the Collection.

During a portion of 1961 Mohr worked as an archaeologist for the Mesa Verde Museum Association. In that year Mohr and Sample enrolled in the Ph.D. program at the University of Wisconsin, Madison, where Mohr focused on the Neolithic occupations of Western Japan while Sample focused on the Paleolithic and Neolithic occupations of Korea. While working on their doctorates, they assisted each other with their par-
ticular research. Among other things, they were visiting scholars in 1963-64 at Yonsei University in Seoul, Korea where Sample became a member of the graduate faculty of the Department of History.

Sample served as an assistant professor at Louisiana State University from 1967-68 while Mohr served as an instructor at Tulane University from 1966-68. In 1967 the Two Lynx and Karl Pen sites were excavated. The materials from these sites are included in the Collection. During this period Sample and Mohr also received their doctoral degrees in 1967 and 1968, respectively.

In 1968 they joined the staff at University of Toronto, Erindale College. From 1968-1976 Sample served as a visiting associate professor, research associate, special lecturer and tutor. From 1972-1976, she directed several summer field schools, excavating the following Largo-Gallina sites: Galumpki, L/102, Owl Point, Scorpion House, Scorpion: Summit House, T.P. and Trio. Mohr performed research with Sample from 1972-1975 and served as an associate professor from 1968-1986. In 1978 Sample left Toronto and became an adjunct faculty member at Arizona State University.

Mohr conducted further research of the Largo-Gallina in 1981-1982 while Sample conducted short field trips to the Gobernador and Largo-Gallina areas from 1982-1990. They continued to work on publications of their research until Dr. Mohr became ill in 1995.

LARGO-GALLINA BRANCH

The Largo-Gallina Branch is one of seven geographic variants of the Ancestral Puebloan culture that also includes the Chaco, Cibola, Kayenta, Little Colorado, Mesa Verde and Rio Grande branches (Dean 1998). Located “east of the San Juan Basin and northwest of the Rio Grande regions of north-central New Mexico” (Anchuetz 1998:444), the Largo-Gallina branch has been somewhat understudied in comparison to some of the other branches, such as the Chaco and Mesa Verde branches. For purposes of this paper I will use the terms Largo-Gallina and Gallina intermittently to refer to the culture as well as the people who occupied the geographic area mentioned above.

Nevertheless, the Largo-Gallina people are depicted by archaeologists and others as living in cultural isolation from other Ancestral Puebloan people with “very little material evidence of interior or intra-regional trade in the Gallina region” (Sleeter 1987:100). Furthermore, the Largo-Gallina cultural traits remained noticeably stable during their period of existence (Lange 1956). In addition, research has shown that there is evidence of violence and warfare at various Largo-Gallina sites (Lange 1940; Bahti 1949; Chase 1976; Mackey and Green 1979).

The time period in which the Largo-Gallina occupied their area slightly varies by source. Hall (1944) designates AD 1106-1254 as the dates of occupation while F. Ellis (1988) places their occupation from AD 1050-1300. More recently Anchuetz (1998) divides the Largo-Gallina branch into the early Gallina phase (AD 1000-1200) and the later Gallina phase (AD 1200-1275).

Anchuetz (1998) further distinguishes the earlier phase with its small settlements of one to three structures from the later phase that is typified by two to eight circular pithouses and rectangular, masonry surface structures or unit houses with one to four rooms. The contemporaneous use of surface structures with pithouses distinguishes the Largo-Gallina from other Ancestral Puebloan groups. In addition to pithouses and unit houses, architectural forms at Largo-Gallina sites also include Pueblo-like structures with contiguous rooms, cliffhouses and towers (Hibben 1948a). The use of towers for communication purposes (A. Ellis 1991) and for either defense or storage (Mackey and Green 1979) has been the subject of deliberation.
One of the artifacts that is distinctive of Largo-Gallina material culture is the conical-bottom shaped pottery that has alluded to a Woodland connection (Hibben 1948b). Other artifacts that have generally been characteristic of the material culture include, but are not limited to, elbow shaped pipes, arrow straighteners and bone and antler worked implements (Hibben 1938, 1948; Mera 1938).

OVERVIEW OF RESEARCH

The following overview represents a major, but not exhaustive, listing of research completed on the Largo-Gallina. Cope (1879), a paleontologist with the 1874 expedition of the Chief Engineer of the U.S. Army, was considered the first person to record his observations of ruins in the Gallina region, particularly noting the remoteness of the sites to water. It was not until forty-three years later that Douglas (1917) recorded his observations of Gallina architecture and artifacts while conducting surveys under the direction of the United States General Land Office.

During the 1930s Mera (1938) and Hibben (1938) wrote about the various sites they surveyed and researched under the auspices of the Laboratory of Anthropology and the University of New Mexico (respectively) in near proximity to each other that possessed similar architectural features and artifacts in the Largo-Gallina area. Mera used the term “Largo cultural phase” to refer to the cultural manifestation that dwelled in the area “drained by the western tributaries of the Upper Chama and southeastermost affluents of the San Juan rivers” (1938:236). Hibben referred to the cultural manifestation as the “Gallina phase” after the Gallina River that flowed through an area where several hundreds of sites were found. He embraced the area bounded on the north by the Jicarilla Apache reservation, on the east by the Chama River, on the south by the Jemez and San Pedro Mountains and on the west by Continental Divide.

During the next decade Hibben (1940) completed his dissertation, The Gallina Culture of North Central New Mexico, the first extensive study of the Largo-Gallina. Blumenthal (1940) also described the excavation of several Gallina sites, Cerrito, Cuchillo and Nogales Cliff House sites while Lange (1940) reviewed cranial material from 38 burials excavated in the late 1930s at the Cuchillo, Nogales Cliff House, Gavilan and Tapecitos sites. Lange (1941) also completed his thesis in which he compared the Evans site to other previously excavated Largo-Gallina sites. Hall (1944) was the first to combine the words, Largo and Gallina, that were used by Mera (1938) and (1938), respectively, to describe archaeological phases in the same geographical area. Several articles also appeared on architectural forms and features (Hibben 1948a; Bahri 1949; Schulmann 1949) as well as pottery (Hibben 1949).

During the 1950s more research on the Largo-Gallina began to appear. These included articles pertaining to architectural features, such as pit houses (Green 1956) and surface structures (Green, Danfelser and Vivian 1958) as well as a thesis completed on the Leeson, Burtones and Largo cliffhouses (Kleindienst 1956). Wilkinson (1958) wrote the first article that concentrated exclusively on Gallina arts and crafts.

In the 1960s Green published articles on the Hormigas site (1962) and the Carricito community (1964) while Pattison (1968) completed her thesis on the Nogales Cliff House. Reed also analyzed an early Gallina burial consisting of an adult female and associated pottery which he determined as being “Anasazi of the Southwest Plateau type” (1963:34).

With the increase of cultural resource management work during the 1970s, several articles and publications appeared on survey projects and investigations of Gallina sites (Dick 1976; Fiero 1978; Peckham, Enloe and Smith 1974; Seaman 1976, 1983) in addition to further studies relating to skeletal remains (Chase 1976). From 1971-
1981 Adams State College, under the direction of Herbert W. Dick, excavated 45 various sized structures and surveyed approximately 53,800 acres (Dick 1988). The University of California, Berkeley, and the University of California, Santa Barbara, also conducted archaeological and paleoecological investigations in the Largo-Gallina area under the direction of Sally J. Holbrook and James C. Mackey. A dissertation by Holbrook (1975) and subsequent articles (Holbrook and Mackey 1976; Mackey and Holbrook 1978) revealed that the Largo-Gallina experienced changing environmental conditions with increased aridity toward the end of their occupation. In his thesis Snow (1976) analyzed findings at the Owl Point site, one of the sites that is included in the Collection.

Articles in the 1980s discussed the Rattlesnake Ridge site (Bice 1980), settlement patterns (Dick 1980); comparison of pithouse and surface houses (Dick and Davidson 1984) and results of surveys and inventories (Seaman 1983). Sleeter (1987) completed a thesis in which he examined cultural interaction of the prehistoric Largo-Gallina by studying settlement patterns in the Largo-Gallina region. F. Ellis (1988) published the first and only known book to date dedicated exclusively to the Largo-Gallina.

In 1990 the Largo-Gallina were the subject of a symposium presented at the annual meeting of the Society for American Archaeology where Florence Hawley Ellis and Cheryl Muceus, among others, presented papers. Anschuetz (1991) presented a paper at the annual conference of the Society of Ethnobiology in which he reevaluated the abandonment of the Gallina district. F. Ellis (1991) raised the question as to whether the Gallina had kivas A. Ellis (1991), presented some theories on the purpose of towers in the Gallina area. Turner, Turner and Green (1993) looked at the possible existence of cannibalism at Largo-Gallina sites, concluding that it did not take place. Hatch, et al. (1994) described the results of eight seasons of fieldwork conducted at the Rattlesnake Ridge site by the Archaeology Seminar of the Ghost Ranch Conference Center at Abiquiu, New Mexico under the direction of Florence Hawley Ellis. Anschuetz (1998) applied the phrase “Largo-Gallina Branch” to the geographical area occupied by the Largo-Gallina Ancestral Puebloans and further depicted their cultural history and attributes.

Therefore, this overview of Largo-Gallina research literature reveals that the following topics are prevalent: (1) architectural analyses; (2) environmental analyses; (3) burial and skeletal analyses; (4) settlement patterns; (5) pottery; (6) site specific studies; (7) survey and salvage projects; (8) general characteristics; and (9) arts and crafts. However, much of this literature is merely descriptive in nature. In addition, it fails to analyze and synthesize various attributes at a site or fails to perform analysis on a broader scale, with some exceptions (i.e., Anschuetz 1991; Mackey and Holbrook 1977; Sleeter 1987; Turner, Turner and Green 1993). Nevertheless, such broad-based studies are not as prevalent as those relating to other Ancestral Puebloan branches, such as the Chaco and Mesa Verde Branches.

**L/102 SITE OVERVIEW**

The L/102 site, also known at the Twit and T site, is located in Rio Arriba County, “about 8 miles west of Lindreth on the north side of Cañada Larga at the point on a mesa between Billy Rice Canyon and Leeson Canyon” (Mohr and Sample 1972:1). The elevation is approximately 7,000 ft. The site is situated on land owned and managed by New Mexico Bureau of Land Management. It is situated on a low sandstone bench on the edge of a piñon-juniper woodland looking to the Cañada Larga in a southwest and west direction. Investigations at the site in 1972 and 1973 (Mohr and Sample 1972; Sample and Mohr 1975) revealed the existence of six structures; Structures A-F and two refuse areas. Structure A was in poor condition and was not excavated.
Structure B, located at the western end of the site, has six equal size rooms and is approximately 25 ft sq (Figure 1). Some of the visible walls reached up to nine ft tall. While the structure had been vandalized and some of the floors destroyed, the excavations detected that no conventional features, such as hearths or bins, existed in the structure. It also had been completely burned, as evidenced by the large amount of burnt corn found in the pothunter's back dirt. Sample and Mohr (1975) speculated that the structure had been used for storage due to the lack of interior features and the existence of burnt corn.

Structure C has 12 rooms, is approximately 33 x 29 ft and has walls reaching six ft high (Figure 2). The exterior walls appear to have been constructed first, followed by construction of the east-west walls and then further divided by north-south walls. Floor plugs found throughout the structure evidence the existence of an air circulation system. The east and west systems of vents were plugged during the first and second occupations, respectively. Mohr and Sample (1972) speculated that the rooms with hearths, Rooms 2 and 11, and later Room 7 were used for residential purposes and that the doors to Rooms 4 to 7 and to Rooms 10 to 11 implied a close connection. An unusual eastern exterior entrance to Room 9 suggested that the room was possibly a living area. Room
Figure 3
Structure D, Mealing Bin in NE Corner of Room 1.
(Catalogue No. F00579, Mohr-Sample Collection, Museum of Indian Arts and Culture, Laboratory of Anthropology)

most likely was used for storage due to its raised floor and quantities of burnt corn and broken refired pottery. This structure was gutted by fire, cleaned out and reoccupied during a second occupation. Rooms 2 and 7 were renovated and a raised floor was added to Room 12.

At the eastern end of the site is Structure D, approximately 30 x 22 ft in size with 6 rooms (Figure 3). Burning was evident in Room 5 and the central ventilator area. Sample and Mohr (1975) speculated that Room 1, located in the northern half of the structure, most likely was the habitation area due to the existence of a firepit, U-shaped deflector, four roof support posts and heavy wing walls with interior bins. A mealing bin also was found in the northeast corner of this room. Sample and Mohr (1975) further imply that Structure D may have been occupied continuously and that the residents dumped refuse into Structure C.

Structure E, located between Structures B and C, appears to have begun as a four-room structure with walls that were not as massive as the other structures. While the excavation of this structure was not completed, it still revealed that additional rooms with Gallina-like features were added on over a period of time.

Structure F, located south of Structures B and C, was discovered during the excavation of the eastern part of the refuse area below Structure B. It consists of a pithouse structure and is estimated to be about 18 ft in diameter with no bench. A stockade also was found at the west end of the refuse area. While this structure was not completely excavated, the stockade appeared to form a semicircular enclosure around the bedrock enclosing Structure F (Sample and Mohr 1975).

There also are two refuse areas at the site, one below Structure B and another south of Structure C. Several inhumations were found in the refuse areas.

Sample and Mohr (1975) believe that building stones from Structures A and E were removed and used for other structures. They further speculate that the earliest structures may have been Structure A; Room 1-4, Structure E; Structure F and the stockade. Therefore, Structures A and E may have been abandoned during the period that Structures B, C and D were constructed.

Tree ring samples were taken from certain rooms in all of these structures, except Structure E, and tested. The results were as follows: Room 3,
Table 2
Attributes of structures and areas at L/102.

<table>
<thead>
<tr>
<th>STRUCTURES AND AREAS</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>EAST REFUSE</th>
<th>WEST REFUSE</th>
<th>REMARKS</th>
</tr>
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<tbody>
<tr>
<td>Abandoned</td>
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<td>Burial(s)</td>
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<td>X</td>
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<td>1197-1244</td>
<td>1239</td>
<td>1243</td>
<td>1222</td>
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<tr>
<td>Ventilator Shaft</td>
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<tr>
<td>Wing Wall</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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</tbody>
</table>
Structure B - AD 1197-1244; Room 3, Structure C - AD 1239; Room 4, Structure D - AD 1243; and the pithouse, Structure F - AD 1222. (Laboratory of Tree-Ring Research, Archaeological Date Report for New Mexico 29RA138, May 5, 1976, Mohr-Sample Collection, Box 180, Museum of Indian Arts and Culture, Laboratory of Anthropology, Santa Fe, New Mexico). Additional attributes of the various structures and areas of the site are shown in Table 2.

EXAMINATION OF ARTIFACT ASSEMBLAGES

The Collection consists of approximately 195 cubic ft of artifacts and seven linear ft of associated records. Ceramics comprise the majority of artifacts in the collection followed by groundstone, paleobotanical or vegetal materials and lithics. While the associated records, consist of, but are not limited to, artifact catalogs, photographs, site plans, field notes and written reports, the type of records pertaining to each site varies. Therefore, after reviewing museum catalog records and all seven linear ft of the associated records, I determined that the following sites would be most conducive for research based upon the number of extant artifacts and associated records: L/102, T.P. and Scorpion House. Therefore, during the length of my residency, I examined approximately 24 cubic ft of artifacts from L/102.

The artifacts in the collection consist of the following materials: ceramics, lithics, groundstone, paleobotanical materials, fauna, human remains, soil samples, seeds, wood, adobe, ash and charcoal. Ceramics comprise the largest component of the collection. During the fellowship I examined the contents from the following assemblages: ceramics, lithics, groundstone, fauna and human remains.

Ceramic Assemblage

Ceramic sherds were typed according to the following classifications: grayware, black on white, black on red, corrugated or undetermined. As a general rule, any white, light gray or red sherds with a painted decoration on them were considered to be black on white or black on red. Sherds that appeared to be white or light gray were considered black on white since they might have been an undecorated part of a black on white vessel. Corrugated ceramics were easy to detect and therefore presented no problem. Undecorated gray colored sherds were classified as grayware. However, sooty or dirty undecorated sherds that appeared to be various shades of red were classified as undetermined since they may have been subjected to intense heat that changed the color of the clay due to its iron content.

The type of decoration on the sherd, such as lines, squares, dots and triangles; the placement of the design (i.e., inside or outside); and any impressed, ribbed or punctated designs also was noted. Forty-one various decorations, reflecting various shapes, were denoted.

Specific colors were in many instances difficult to detect due to dirt and possible exposure to heat and environmental conditions. Furthermore, some sherds reflected more than one color, making it difficult to assign a particular color. Nevertheless, twenty-two colors or variations thereof were detected.

A total of 64 types of objects were identified during the examination of all artifacts. This includes thirty-one types that applied to ceramics.

An “other” category noted thirty-four characteristics about the ceramic not otherwise noted, such as smoothness or coarseness and evidence of fillets, fire clouds or spirit openings.

Overall, I examined approximately 7,600 catalogued artifacts, representing approximately 18 cubic ft, from the ceramic assemblage that included, but were not limited to sherds, partially reconstructed vessels, vent plugs and pipes. This number is approximate since each sherd in bags containing large numbers of similar sherds bearing the same field catalogue number were not always
Table 3
Distribution of ceramic wares.

<table>
<thead>
<tr>
<th>NUMBER OF SHERDS EXAMINED IN STRUCTURE</th>
<th>BY CERAMIC TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grayware</td>
</tr>
<tr>
<td>Structure B</td>
<td>860</td>
</tr>
<tr>
<td>Structure C</td>
<td>1351</td>
</tr>
<tr>
<td>Structure D</td>
<td>2167</td>
</tr>
<tr>
<td>Structure E</td>
<td>1137</td>
</tr>
<tr>
<td>Total</td>
<td>5515</td>
</tr>
</tbody>
</table>

PERCENTAGE IN EACH STRUCTURE BY CERAMIC TYPE

| B | 72 | 19 | 1 | 0 | 7 |
| C | 54 | 16 | 1 | 0 | 28 |
| D | 85 | 13 | 0 | 0 | 2 |
| E | 84 | 7  | 1 | 0 | 8 |

counted separately, but assigned an approximate number for counting purposes.

As seen in Table 3, grayware overwhelming comprised over 50% of the sampling for each structure. Black and white ceramics comprised less than 20% of the assemblages for each structure. Black on red and corrugated comprised 1% or less. However, the undetermined ceramics comprised 28% of the assemblage in Structure C. The inability to type these sherds may be attributed to the deposition of dirt or soot on the sherd due to conflagration. The types of objects represented by the assemblage, such as rims and vessel bottoms, indicate a predominance of ceramic vessels. However, it is worth noting other types of ceramic objects found in the various structures.

Worked sherds also were found in Structures B-E, indicating that broken sherds were recycled and used for other sources, possibly for gaming pieces or scrapers used to smooth pottery. What appeared to be a part of a ceramic female effigy artifact was found in the midden for Structure B. Objects represented by the ceramic assemblage for Structure C included the following: a canteen, a conical bottom vessel, a dipper, a miniature vessel, a pot stopper and a vent plug. The assemblage for Structure D contained a portion of a conical vessel, an elbow pipe and a vent plug. A portion of a pipe and scrapers were found in the assemblage for Structure E.

While it was difficult to ascertain the color of some ceramics, concentrations of ceramics of various shades of red may specify areas that were subjected to heat due to conflagration or simply indicated ceramics that were overfired. Nevertheless, sherds from Structure B in some cases were various shades of red, salmon or pink, possibly indicating a change in color due to intense heat and high iron content in the clay. Sherds from Room 2 in Structure C that could not be typed also were var-
ious shades of red, salmon and pink, perhaps indicating areas where the fire in Structure C was concentrated.

The other category was intended to note various attributes that may be pertinent to further research, such as studying sherds with fillet rims. By knowing where these sherds are located, they can be retrieved at a later time for further research.

**Lithic and Groundstone Assemblages**

I also examined a small sampling of the lithic assemblage, approximately 150 artifacts totaling 0.75 cubic ft. This sampling was unremarkable with the exception of a small foot from a possible effigy found in Structure D. Otherwise, this sampling appeared to represent the types of lithic objects that are normally found at prehistoric Southwestern sites and provide insight into possible activities conducted at L/102. Artifacts indicative of household production, such as tool making, included ten projectile points, ten scrapers, five hammerstones, a drill, a knife blade, a core, a pebble hammer, and a worked stone. Three pendants, a disc bead, a turquoise bead, and a white bead exemplify some examples of artifacts used for ornamentation. Possible evidence of food production and storage activities are demonstrated by a possible mano and three pot stoppers. A pipe fragment may be indicative of leisure or special activities.

Another quarter size box was examined that contained both lithics and approximately 7 groundstone artifacts. Within that box were four round cylinders, a hammerstone, a hammerstone fragment and a pebblestone. While hammerstones and pebble stones are common artifacts, the purpose of the cylinders remains a mystery, presenting an interesting topic for future research.

While I personally did not examine and count all of the lithics assemblage, information found in the associated records provided an accounting of the types of lithics found at L/102 and shown in Table 4.

Of the entire assemblage monoface manos and biface manos comprised 24% and 25%, respectively, of all lithic objects, representing 49% of the entire lithic assemblage. Pecking stones comprised 31% of the assemblage while all other objects represented less than 10% of the entire assemblage.

**Faunal Assemblage**

I also examined over 150 faunal materials representing 1.25 cubic ft as well as an entire whole box (1 cubic ft) containing both ceramics and faunal material. The majority of the faunal material that was examined consisted of bone fragments, such as jaws, teeth and fangs, from small mammals. Unpublished papers found in the associated records indicate that cottontail rabbits predominated the faunal assemblages in the various structures at L/102 (Carter n.d.; Sullivan 1981).

<table>
<thead>
<tr>
<th>OBJECT</th>
<th>NUMBER OF ARTIFACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uniface Manos</td>
<td>162</td>
</tr>
<tr>
<td>Biface Manos</td>
<td>171</td>
</tr>
<tr>
<td>Metates</td>
<td>39</td>
</tr>
<tr>
<td>Hand Abraded</td>
<td>54</td>
</tr>
<tr>
<td>Grooved Abraded Slabs</td>
<td>4</td>
</tr>
<tr>
<td>Cooking Slabs</td>
<td>2</td>
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<tr>
<td>Red Painted Slab</td>
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<tr>
<td>Shaped Slabs</td>
<td>15</td>
</tr>
<tr>
<td>Pecking Stones</td>
<td>214</td>
</tr>
<tr>
<td>Pebble Hammers</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>683</strong></td>
</tr>
</tbody>
</table>
Included in this assemblage were 16 bone awls of various sizes from Structures B-E. In addition, several white bone beads were found in Structures B and D as well as some eggshell fragments from Structure D and the surface area of Pithouse F. Nine worked bone artifacts were also found in Structures C, D and possibly E.

**Human Remains**

I also examined human remains at L/102 to ascertain whether I could identify evidence of trauma on the individuals. Therefore, I examined 1.5 cubic ft contained the remains from Burials 4, 5 and 6.

Undocumented information in the associated records listed eight burials, six found in the West Refuse area, 1 in the East Refuse Area and 1 in Structure D. It also listed the provenience and the name of the excavator. However, the number of inhumations found at L/102 was later reduced to six (Sullivan and Katzenberg n.d. This report indicated that two of the eight individuals were combined with other burials based on age, parts present and the size of the bones. However, the report does not indicate which burials were combined with each other. This appeared to have affected Burial 4, one of the set of human remains I examined since the cited report only referred to Burials 1, 2, 5, 6, 7 and 8.

Nevertheless, according to the undocumented information previously mentioned, Burial 4 represented a small child found in the West Refuse area. Some of the skeletal materials were in very poor condition and had already deteriorated. Those still visible appeared to include a tibia, innominate, sacrum, left scapula, left femur, inner ear bone and some teeth. No apparent evidence of trauma was detected.

Burial 5 was also found in the West Refuse area. However, I only found a lumbar and thoracic vertebrae in the box pertaining to that burial. The mentioned report indicated that this burial had evidence of joint degeneration.

Burial 6, also found in the West Refuse, appeared to be male based on the narrow sciatic notch of the innominate. These skeletal remains contained most of the vertebral column, specifically lumbar vertebrae 1-5; thoracic vertebrae 1-5; and cervical vertebrae 1, 2, 3 and 7. Also included were some carpals and metatarsals, the right scapula and left fibula. While these remains also did not show any apparent evidence of trauma, the report indicated that this burial also had evidence of joint degeneration as well as dental attrition.

**OBSERVATIONS RELATING TO L/102**

In summary, I examined 7 linear ft of associated records during February and March of 2003 and over 7,600 artifacts, representing approximately 22 cubic ft of artifacts, from site L/102 during April, May and July of 2003. While the artifacts examined only reflect a portion of the entire assemblage, they still offer an opportunity to make inferences about social, political and economic structure at L/102.

As indicated in the overview of Largo-Gallina research, I inferred that lack of interest in the Largo-Gallina might be due to unimpressive architecture and artifacts. This sampling, with few exceptions, confirms the paucity of artifacts tantamount to those found at other prehistoric southwestern sites, such as those associated with the Chaco and Mesa Verde branches.

Table 3 ascertained that grayware, a utilitarian ware, predominated the ceramic types in all structures at L/102. The lesser amount of decorated sherds, particularly black on white, such as the dipper found in Structure C, may indicate that decorated ceramics had limited usage, such as for special events and occasions.

Among the grayware assemblage were numerous rims and sherds and vessel bottoms along with conical bottom shaped vessels found in Structures C and D. A pot stopper was also found in
Structure C. These artifacts may be indicators of everyday subsistence type activities, such as eating, cooking and storage, at L/102. Other artifacts, such as the large percentage of monoface and biface manos, may indicate that food production played an important role at L/102. The predominance of cottontail rabbit in the faunal assemblage may indicate that it was a readily available food source that was hunted by the inhabitants of L/102.

Other artifacts found in the assemblage may shed some light about possible household production activities. Worked sherds found throughout the site may indicate their usage for scraping pottery although no evidence of pottery making was found. Bone awls found throughout the site as well as scrapers may suggest that hide production was a common activity at the site. Cores, hammerstones, knife blades and projectile points are indicative of tool making. Pendants found in Structure B as well as bone beads found in Structures B and D indicate that ornamentation was important to the residents and that these artifacts may have been made at L/102. Worked bone objects also were found in Structure C, D, and E that were possibly used as tools.

Worked sherds, possibly used as gaming pieces and pipes used for smoking, may be indicators of leisure activities at L/102. The latter also may have had a role in ceremonial or ritual activities.

While the possible existence of sipapus in Gallina structures has been suggested (F. Ellis 1991), neither kivas as known at other prehistoric Southwestern sites nor structures dedicated to ceremonial or ritual usage have been found at Largo-Gallina sites. The only possible indications of ceremonial or ritual activity at L/102 were the partial female figure and small foot that might be part of an effigy pottery vessel, found in Structures C and D, respectively. Corn goddess figures, called ttiponi, were found at Scorpion House, at the Evans site (Lange 1944) and at other Ancestral Puebloan sites. However, figures at Scorpion House and Evans were made from sandstone, being flat on one end and pointed on the other. On the other hand, effigy pottery is one of the most common ceremonial features, along with murals, found in unit houses at Largo-Gallina sites (Mackey and Green 1979). Other artifacts from L/102 that may have some ritual significance are a red painted slab and the hematite concretion.

Green (1964) suggests that the care taken to construct bins in Largo-Gallina structures with their fitted covers, slab floors and vent plugs may imply that they stored seeds and corn for ceremonial purposes rather than for everyday storage. Therefore, "the Largo-Gallina household may be said to have retained the ceremonial functions connected with crop fertility within the household unit, rather than centering them around the community as in other religions" (Green 1964:33). He further implies that storage was then a community function with its own architectural structure. Therefore, perhaps Structure B at L/102 served that purpose.

Dick (1980) associated the lack of recognizable ceremonial structures as being an indicator of a dispersive society, one in which there were scattered or widely-spread habitations. This contrasts with a cohesive society that lives in tight habitations, such as contiguous room villages. In comparing an Anasazi dispersive society with the present day Navajo, he notes that the nuclear family is the basic social unit of the Navajo and that the individual is important. This contrasts with a cohesive society, such as that of the Zuni, where emphasis is placed on the entire community and its general welfare. This may substantiate Green's inference that ceremonial activities at Largo-Gallina sites were confined to the household rather than the community as a whole.

The existence of the mealing bin in Structure D along with a large percentage of manos and burnt corn in Structure B may indicate that corn was one of the main, if not the principal, sources of}
food at L/102. Corn also may have been played a role in the ritual household practices at the site.

CONCLUSIONS

I tend to agree with Mohr and Sample that Structures B-D were possibly constructed after A and E were abandoned due to the condition of Structure A and the different architecture in Structure E. Furthermore, the cutting dates for Structures B-D place their construction about the same time.

Little has been said about Structure F, the pit-house. Due to the fact that limited excavation took place at that structure and few, if any, artifacts were found relating to that structure, it is difficult to make any inferences about its relationship to the site.

If Structure B was used solely for storage, presumably for corn, I argue that someone maintained possible political control over the collection and dispersal of all storage items, whatever they might have been. Furthermore, there may have been a requirement for each family unit to contribute a certain amount for storage purposes.

Economically, nothing in the assemblage yet to date implies that trading took place between L/102 and other communities. The assemblage does imply that possible production activities took place that included tool making, hide production and food production. Corn also appears to be a predominant food source that would have been cultivated as well as small mammals, such as the cottontail rabbit, that would have been hunted. However, the finding of ornaments, such as pendants and beads, does not clearly indicate that they were made at the site. Furthermore, there is nothing definitive to indicate that pottery was made at the site or obtained from other sources.

All of the burials, with the exception of a child buried in Structure D, were found in refuse areas. The fact that only that child was buried in a structure may have some intended meaning or indicate that the family living in that structure had some sort of privileged status.

Therefore, residents at L/102 appear to have maintained a fairly subsistence standard of living. While Structures B and C and part of D were burned, there is little evidence to indicate whether it was caused by intruding neighbors or set deliberately for ritual or cleansing purposes. It seems that if food were in short supply, it would be a valuable commodity not only to the residents, but also to those who sought food due to limited food resources. On the other hand, witchcraft may have played a role in the burning of structures at Largo-Gallina sites (Dick 1988; Hatch et al. 1994). The fact that Structure C was also burned, but later cleaned out and reoccupied may indicate that there was in inherent reason to return to the site, provided it was the same group of people who returned.

Furthermore, the inhabitants at L/102 appear to have been a dispersed society in which the family, the household unit was the main social unit. The lack of ceremonial or ritual structures at the site may support this and further suggests that ritual activities were most likely practiced on an individual rather than community basis.

FUTURE RESEARCH

As previously indicated, research of the Largo-Gallina is sparse in comparison to other prehistoric groups in the American Southwest. However, collections, such as the Mohr-Sample Collection, have the ability to increase our knowledge of this unique branch of the Ancestral Puebloan culture. Yet published materials relating to sites in the Collection only include two diminutive reports on L/102 (Mohr and Sample 1972; Sample and Mohr 1975); another small report on the T.P. site (Mohr and Somopoulos 1976) and a thesis on the Owl Point site (Snow 1976). More detailed research on the numerous artifacts in the Collection, such as the ceramics,
can provide invaluable information about the mineral content of the clay that may help up determine whether the Largo-Gallina at this site participated in trade with their neighbors or remained isolated as conjectured.

This study has merely scratched the surface to understanding only one of the sites in the Mohr-

Sample Collection. Whatever the reason the Largo-Gallina may have been forgotten from time to time, they keep rearing their heads so that we will one day find out who they were, where they came from and what contributions they may have made. This will solve one of the greatest mysteries of the archaeology of the American Southwest.

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Turner, Cristy G., II, Jacqueline A. Turner and Roger C. Green

Wilkinson, Nancy M.
Just past the first tributary east of Chetro Ketl where the cliff face comes to a point, lies 29SJ1924. When excavated in 1930 by a School of American Research/University of New Mexico student, Richard Vann, unusual vegetal materials were interpreted as ceremonial in nature and the site was thought to represent a place where these items were cached (Vann 1930). Later Lloyd M. Pierson (1949) identified Be 86 as a talus house in which two rooms had been excavated. In 1970-1971 the presence of a ramp led R. Gwinn Vivian (1983a) to consider this site as part of the Chaco road network. During the 1972 Chaco Project survey Thomas C. Windes noted the “possible” presence of 10 to 20 rooms, two pecked holes in a cliff crevice to the east, and rock art at 29SJ1924. Data from survey and excavation records will be presented for this site, which has been known as “a Cacique’s sanctum,” Be 86, F-3, 29SJ1924, and LA 41924.

SURVEY DATA AND INTERPRETATIONS

The designation, Be 86, appears in Pierson’s (1949:76) Master’s thesis to describe a linear or rectangular shaped site located on a talus that measured approximately 800 sq. ft. (73.6 sq. m), in which an excavated area (32 x 25 ft.; 9.75 x 7.6 m) was noted. He thought 11 rooms were indicated, but only a “trace” of ceramics was found. Although his 1955 survey cards for the National Park Service (NPS) record Be 86 as a talus house with a crack in the cliff just east of this house that may represent a trail to the top of the mesa, he made no mention of this site in his history of Chaco Canyon (Pierson 1956). Pierson’s photograph of this site (Figure 1) shows the remains of the excavation, which he attributed to the School of American Research around 1934.

As part of his 1970-1971 study of road-related features, Vivian (1983a:A-16) identified feature F-3 as a ramp, formerly recorded as Be 86 by the University of New Mexico field school survey. The top of the ramp is approximately 8 m below the rim of the cliff, and the ramp appears to have been built on a natural talus. The ramp is 7.5 m wide and estimated to be at least a meter high. It extends over 10 m from the cliff face to the canyon bottom. One side is formed by the cliff wall; masonry on the retaining wall is not well faced. A previously excavated test pit located near the top of the ramp revealed a rubble core. No modification of the cliff face directly above the ramp was reported. Vivian presumed access to the cliff top was by a log ladder. He shows F-3 as one of three places (including F-1 and F-2) in this area where descent from a road on the first mesa to the canyon bottom was probable (Vivian 1983a:Figure A-2).

During the 1972 NPS Chaco Project inventory survey, Windes recorded site 29SJ1924 (previously designated Bc 86) as a possible 10-to-20 room unit. On his 1972 sketch map (Figure 2), several linear rock alignments were indicated; one near the bottom of the talus in a cleared area is approximately 16 m long. An excavated area approximately 7 m long extends south from the cliff face.
Figure 1

View of excavated area of Bc 86 (later designated 29SJ1924) showing condition of wall in 1955. Young child at right hand side of photograph stands next to the cliff on the north side of the excavation. Contour of downslope side of ramp and possible rock alignment on lower side of ramp on left side of photograph suggest continuity up hill and east of the excavation, toward the photographer. Photographer was probably standing east of the excavation and in front of the large rock at the bottom of the crevice. Compare with site map (Figure 2). (Photograph taken by Lloyd M. Pierson in 1955. Courtesy of Chaco Culture NHP Museum Archive; Negative No. 59,386 in the Pierson survey series.)

Windes described exposed walls as being constructed of simple/compound masonry in poor condition. Although very little trash was found, he thought it may have been a Pueblo II or Early Pueblo III ruin. Based on this information, 29SJ1924 appeared on a list of tested, excavated, and vandalized sites (Truell 1986: Table 2.1).

Windes also identified two pecked holes in the crevice approximately 5 m above and to the east of the ramp top that might have held a cross beam, which possibly functioned as a step or platform. This site was included in the Remote Sensing Division’s examination of road-related features in 1973. Figures 3 and 4 illustrate the passage through the crevice and the

Figure 2

Sketch map of 29SJ1924 made during the Chaco Project survey in 1972 by Thomas C. Windes. (Courtesy of Chaco Culture NHP Museum Archive, site record form.)
hole on the north and south sides of the crevice walls. The two other stairways located nearby were assigned Smithsonian Institution numbers: 29SJ1525 (for Vivian's F-1) that is just east of this site and 29SJ1524 (for Vivian's F-3) that is 20 to 40 m to the west.

In 1982, John D. Schelberg added a note to the survey card, which indicates that Dick Vann apparently knows something about the excavation. Later, Windes (1987) was reasonably sure the site represents a ramp associated with the road network, probably comparable to that found at 29SJ1925 (Vivian's B-5; Vivian 1983a:Figure A-1 and Pattison 1985:Figure 8), located in the rincon east of Chetro Ketl (Figure 5).

Petroglyphs located toward the western stairway (29SJ 1524) were examined in 1978 by the Archaeological Society of New Mexico Rock Art Field School team. One set consisted of vertical lines in the sandstone cliff, and another probably represents a kokopelli figure. Other unidentifiable images were recorded.

In summary, several field surveys include this site which was identified either as a talus house or a ramp that leads to an access point to the top of the cliff. The identity of the person(s) who had excavated in the talus was unknown, but Schelberg recognized that Vann knew something about it. A student paper (Vann 1930) filed in the Chaco Culture NHP Museum Archive has now been linked to this site.
THE SCHOOL OF AMERICAN RESEARCH/UNIVERSITY OF NEW MEXICO EVALUATION

Activities carried out in conjunction with the School of American Research/University of New Mexico's field sessions in Chaco Canyon have never been fully reported (Lister and Lister 1981). In addition to work at Chetro Ketl, a number of excavations at smaller sites were carried out. Discovery of this site and its excavation took a serendipitous route:

In the course of a walk along the cliff, Dick Vann, a member of the class, came upon a most interesting cache of cultural material under an overhanging ledge of rock on the north side of the canyon. There were beads and arrow points and a pair of shoes that are entirely new and different from anything that has been found in the vicinity before. They are woven of what appears to be cotton string and human hair. The soles are made of broad leaf yucca. The feet are very long and broad and the tops come up to what would be ankle height on a man. They are remarkably well preserved (Stamm 1930:24).

Vann (1930:4) indicated he discovered the site in June, 1930, because "bunches of reeds and willow boughs with many pieces of yucca fibre and string [were] protruding through the talus" after they were exposed during the winter rains. He excavated this area; Phil Drucker, another field school student, illustrated Vann's brief report.

The site, as described by Vann (1930), consisted mainly of the cliff for the rear wall. A small section of poorly constructed wall along the west side

Figure 5
Map showing the location of 29SJ1924 with regard to other road-related features and sites in the area. (Courtesy of Chaco Culture NHP Museum Archive. This figure also appears in Windes 1987:Figure 5.2; Windes 1991:Figure 11.4.)
Table 1
Artifacts recovered from 29SJ1924.

<table>
<thead>
<tr>
<th>Item</th>
<th>No.</th>
<th>Material</th>
<th>Comments</th>
<th>Vann (1930) Plates Nos.</th>
<th>MNM Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandals</td>
<td>1 pair</td>
<td>Yucca</td>
<td>Ankle high. Nearly perfect condition. Made of coiled yucca cord with bear hair and grass interwoven loosely knit cord. 11 inches long and 4 inches wide across the toe. Would not survive rough usage.</td>
<td>Plate V</td>
<td>43417/11 a and b</td>
</tr>
<tr>
<td>Sandal</td>
<td>2 fragments</td>
<td>Yucca</td>
<td>Broad, coarse yucca leaf, jog-toed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 fragment</td>
<td>Yucca</td>
<td>Fine and tightly woven, jog-toed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quivers</td>
<td>2</td>
<td>Reeds, bound with yucca string</td>
<td>Cylinder-like quivers (one is perfect). One is 28 inches long; the other is 14 inches long.</td>
<td>Plate IV: F</td>
<td></td>
</tr>
<tr>
<td>Arrowshafts</td>
<td>2</td>
<td>Reed</td>
<td>Hollow water reed</td>
<td>Plate III: A, B</td>
<td></td>
</tr>
<tr>
<td>Arrow point</td>
<td>1</td>
<td>Wood-mountain mahogany</td>
<td></td>
<td>Plate III: C</td>
<td></td>
</tr>
<tr>
<td>Ceremonial stick fragment</td>
<td>1</td>
<td>Wood</td>
<td>Twilled, under two and over two. One mat is 20 inches long x 9 inches wide and in excellent state of preservation</td>
<td>Plate III: E</td>
<td></td>
</tr>
<tr>
<td>Mats and matting</td>
<td>Many fragments</td>
<td>Water reeds</td>
<td>Every stage of cord production represented (whole leaves, split leaves, leaves pounded and boiled into thin fiber).</td>
<td>Plate IV: G</td>
<td></td>
</tr>
<tr>
<td>Cord production:</td>
<td>75 percent of artifacts</td>
<td>Yucca fiber</td>
<td>Two strands most common, but strand types contain 1, 2, 3, 4, and 5. 1, L, and M have two strands. J has four strands.</td>
<td>Plate II</td>
<td></td>
</tr>
<tr>
<td>Strings and threads</td>
<td></td>
<td>Most of yucca</td>
<td>Bunched together, possibly a blanket. Core is made of yucca fiber string of the two-strand variety. Rabbit fur and split feathers are woven around and between strands</td>
<td>Plate II: K</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 ?</td>
<td>Fur and feather string</td>
<td>The longest single strand is 15 inches.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloth</td>
<td>Few fragments</td>
<td>Cotton</td>
<td>All small. Woven in plain checkerboard weave.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 pieces</td>
<td>Buckskin</td>
<td>Tanned pieces</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 piece</td>
<td>Rabbitskin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turkey feathers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetal</td>
<td>Knotted yucca leaves</td>
<td></td>
<td>Tied with square knot</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Corn cobs and kernels</td>
<td></td>
<td>Includes popcorn</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beans</td>
<td></td>
<td>Several varieties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Ceremonial item&quot;</td>
<td>1</td>
<td>Hematite</td>
<td></td>
<td>Plate III: D</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Several pieces</td>
<td>Deer antlers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Polishing stones</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
of the cache was placed as if to even up the cliff profile. A series of benches were laid on a rock foundation that formed the floor (Vann 1930). The masonry of the wall and benches (Figure 6) did not compare with the “splendid” masonry seen in Chetro Ketl and other large pueblos. The uppermost bench consisted of three strata, with excellently preserved material recovered from each stratum. Also illustrated was a hole in the bench to the left of the “shoe box affair” in which the pair of “high top ceremonial slippers” had been found. No measurements for any features were provided.

Natchipani, a Zuni interpreter for the field schools, suggested these artifacts may represent a cache of ceremonial items. Natchipani reported that once a ceremony was over, some objects were discarded; others were hidden for safe keeping. Usually the cache of objects was located outside the pueblo.

Vann suggested the placement of the materials at this site may have been reminiscent of historic Zuni customs. He proposed that the objects he recovered were purposefully set on the bench and covered with several inches of mud. Thus, Vann chose “A Cacique’s Sanctum” as the name for this site; he did not entertain any other interpretations.

Vann recovered several unusual items. Although I have not been able to discover a list of field specimens collected from this site, some were mentioned in Vann’s (1930) text (Table 1) and illustrated by Drucker. Where possible, I compare these items with those recovered from Pueblo Bonito (Judd 1954; Pepper 1920), where several were recovered in rooms set aside as burial repositories (Akins 1986), e.g., Room 32, Room 320, and Room 326.

Ceremonial objects included two hollow water reeds shaped as arrows (Figure 7A and B). Another wooden arrow point, made of Mountain mahogany (Figure 7C), can be compared with one from Room 32 in Pueblo Bonito illustrated by Pepper (1920:Figure 40c) and another from Room 226 (Judd 1954:Figure 67). Judd (1954:253) indicated that wooden arrows were common in the early Pueblo sites.

A highly polished hematite object may be similar to others found in Chaco Canyon. Judd (1954: 286-287) indicated these were ubiquitous at Pueblo Bonito. They were identified as medicine
Frances Joan Mathien

shafts made from hollow water reeds; C is made from mountain mahogany. D is polished hematite piece. E is the remains of a ceremonial stick.

(illustration by Drucker in Vann [1930], courtesy of Chaco Culture NHP Museum Archive.)

stones; a Zuni account indicates these were used in deer hunting. Drucker's illustration (Figure 7D) may be compared with one from Pueblo Bonito (Judd 1954:Figure 84) and one from 29SJ633 (Mathien 1991:Figure 9.5).

Ceremonial sticks were recovered in large numbers in Pueblo Bonito, especially from Room 32. Drucker's illustration (Figure 7E) and Vann's text suggest the top of one was similar to those illustrated by Pepper (1920:Figure 53). Room 32 at Pueblo Bonito was filled with a number of unusual objects. Included were rare ceramic pieces (Pepper 1920:Figures 47 and 48), a hematite bird inlaid with turquoise (Pepper 1920:Figure 50), an unusual lignite ornament (Pepper 1920:Figure 51), jar covers, an unusual painted board (Pepper 1920:Figure 65), a quiver of arrows, at least 81 arrows made of reeds with wooden foreshafts, 49 projectile points, as well as over 300 ceremonial sticks in four distinct styles. Pepper's Zuni men recounted how these sticks were used in games that were played to divine the year's fate. This room also had one burial in the southwest corner and is one of four rooms that Akins (1986:112-118) included in the northern burial repository suite. Judd (1954:26) suggested Room 32 was used until quite late because the burial was...
placed 6 in. (15.2 cm) above the door sill and there were two Mesa Verde mugs among the grave goods that were pushed through the door before it had been sealed. Later excavation in the western burial repository by Judd (1954:268-272) uncovered several ceremonial sticks in Room 320. Additional ceremonial sticks were found in a repository in Kiva N. Judd documented several uses of ceremonial sticks by Hopi, Zuni, and Acoma.

Two cylinder like quivers were recovered. Both were made of water reed and bound together by yucca strings. One was in perfect condition (Figure 8F); it was 28 in. (71.1 cm) long; the other was 14 in. (35.6 cm) long.

Other items recovered included a few pieces of cotton string that were less than 0.1 in. (0.25 cm) in diameter and not tightly twisted. One piece was dyed a dark brown. The few small fragments of cotton cloth were woven in a checker board weave. A large piece of fur and feather string was found bunched together and suggested the remains of a blanket. A two-strand yucca fibre string provided a core for soft rabbit fur and split feathers (Figure 9K). A few pieces of human hair string of the two strand type were also recovered; the longest measured 15 in. (38.1 cm).

Fragments of mats and matting are represented. Composed of flattened water reed, the matting weave was twilled (under two and over two) (Figure 8G) and is similar to one illustrated by Judd (1954:Plate 11f) that was recovered in Room 320B at Pueblo Bonito. One 9 x 20 in. (22.8 x 50.8 cm) mat was in good condition; it was not illustrated.

About 75 percent of the remains were yucca. “Yards upon yards of yucca fibre string were found” (Vann 1930:6). One possible use for yards of yucca fiber may be to make headbands such as the one illustrated by Judd (1954:Figure 46 and plate 46c). Also found in Room 320 at Pueblo Bonito, it was made from 13 or 14 three-strand braids that are one-eighth inch wide and bunched and wrapped with two-ply string at each end.

“Every stage in the production of yucca cord was represented, whole leaves, split, and leaves pounded and coiled into thin fibre ready for spinning or weaving” (Vann 1930:6). Although two strand strings were most common, the types included one, two, three, four, and five strands (Figure 9). The yucca cord illustrated in Figure 9L resembles the tassels illustrated in Judd (1954:Figures 73 and 74).
Additional items included a few fragments of worked skin and two pieces of tanned buckskin, and one rabbit skin piece. Vann indicated that knotted pieces of yucca leaves (tied with a square knot), corn and corn kernels, beans of several varieties, pieces of deer antler, polishing stones, and turkey feathers were also uncovered.

The pair of shoes noted by Stamm (1930:24) is the most interesting of the footwear items from this site. Because of their construction, Vann considered them high top ceremonial slippers. Made of coiled yucca cord with "bear hair" and grass interwoven among the loosely knit cords, they are ankle high and measure 11 in. (27.9 cm) in length and 4 in. (10.16 cm) across the toe. Figure 10, Drucker's illustration of one of the shoes, can be compared to Figure 11, a photograph on file in the Chetro Ketl collection in the Chaco Culture NHP Museum Archive. Figure 12, found in the same collection, probably represents the other shoe. The photographs were compared and matched with two items in the collection at the Museum of Indian Arts and Culture of the Museum of New Mexico. The latter are catalogued as coming from Chetro Ketl (Cat. Nos. 4317/11 a and b). These items had been separated from the rest of the Chetro Ketl collection that is housed in the Museum of New Mexico Laboratory of Anthropology.

Shoes or looped shoe-socks are infrequent finds in the Southwest. Kent (1983:50-51, Figures 18 and 19) indicated that bags and foot gear made of yucca, apocynum, and human hair are known both prehistorically and historically. She reported complete specimens of hair cord leggings were recovered from Hidden House, and socks were found at Mesa Verde. Although running further up the leg, the looped shoe-sock from Two Mummy Ruin in Nitsie Canyon (Kent 1983:Figure 17) resembles that illustrated by Drucker (Figure 10). The shoe-socks from Two Mummy Ruin were con-
structured by looping string around the edges of the sandal sole; successive rows of mesh added height. This practice existed by Pueblo II and probably earlier; the technique of making single-element foot gear continues to be seen in historic wool or heavy cotton leggings and socks (Kent 1983:246-247). Although they are not commonly recovered, they may have been made over a wide area of the early Puebloan world.

In addition to these items, two fragments of a broad, coarse yucca leaf sandal and one fine, tightly woven yucca sandal were recovered. All were described as jog-toed in shape.

No other information on this site is included in Vann’s short report. Many of the items are similar to those found in Pueblo Bonito, either with burials or in unusual circumstances that suggest their importance, possibly as ceremonial objects. Based on the types of material recovered and the number of unusual items, Vann recommended more attention be paid to the small talus units in the vicinity of Chetro Ketl.

DISCUSSION

When information from Vann’s excavation was compared to Windes’s survey map and Vivian’s description of the road ramp, I was intrigued by the different interpretations of this site. Thus, I reviewed Vivian’s (1983a) descriptions of these features and visited the site on November 19, 2003 in an attempt to understand the functions this site may have had. I was accompanied by Roger Moore, the Vanishing Treasurer’s Archaeologist at Chaco Culture National Historical Park, and Joyce M. Raab, recently retired archivist for the park. After considerable examination of the site, we concluded that Windes’s 1972 survey map reflects what is currently visible on the ground. This site is similar to the ramp, B-5 or 29SJ1925, described below, but we could not explain the “walls” on the east and west side of the excavation or the artifacts.

Vivian (1983b:3-91) indicated that ramps are poorly documented features. Although Hayes (1981:48) included 11 sites with similar features in his Chaco Project survey report and Pattison (1988) documented 20 ramps or stacked rock masonry steps, not all are Puebloan in origin and not all provide access to a cliff top. In his study,
Vivian (1983a:A-5) thought that the ramps at B-5, F-3, and C-4 were built in a similar manner to provide a platform for ladder access to either a landing or the top of the cliff.

C-4 is a platform behind Room 1934-3 at the Talus Unit No. 1 (Lekson 1985); thus, it is less comparable to F-3 than is B-5. C-4’s platform is 5 to 6 m below two notches cut into the cliff face and a series of hand-and-toe holds that provide access to the cliff top. Vivian (1983a:A-15) proposed that a log set into the notches would have provided a landing that could be accessed via ladder from the platform.

Feature B-5 (also known as Bc 87, 29SJ1925) was designated by Pierson (1949) as a 15-room talus unit. As a ramp (Vivian 1983a:A-5), it would have provided users of the road segment on the cliff above (B or RS 40E) with access to the canyon floor in the rincon east of Chetro Ketl (Figure 5). The height of the mound is approximately 10 m below the cliff edge. Visible wall alignments were defined (Figure 13), and a trench was excavated across the southern end of the ramp. Vivian’s test revealed two parallel walls footed on a 45 cm thick foundation of large, roughly shaped stones. The walls are approximately 2.2 m apart and are placed on a sand talus. The sand fill with small rubble rocks reaches a height of 1.2 m on the north and 45 cm on the south. Veneer is present only on the cliff-facing side of these walls; a gray clay floor surface was noted between the walls. Even though erosion had washed away the northern end of the ramp, Vivian (1983a:A-5, Figure A.1) concluded that the ramp did not reach the top of the cliff; it probably provided a landing which served as a base for a log ladder.

The interpretation of F-3, or 29SJ1924, as a road ramp would not be unusual if Windes had not drawn two rock alignments perpendicular to the cliff and Vann (1930) had not documented a wall beneath the cliff and the features that held several items that are considered ceremonial in nature. The resemblances between B-5 and F-3 include the use of the cliff face at one side of the ramp (compare Figures 14 and 15), probably a roughly faced retaining wall, and rubble rock fill. The wall alignments shown in the lower half of the site map (Figure 2) probably indicate reinforcing walls that maintain the structure and mark the downslope edges of the ramp. Although the work in 1930 disturbed a section of the ramp, the contour of the downslope side of the ramp that is visible in Figure 1 suggests it may have extended south of the excavation and upward toward the large boulder at the bottom of the crevice. Figure 16 was taken from the bottom of the ramp and looks northeast toward the crevice or access to the mesa top. Based on its location and direction, it is possible that the wall segment behind the step-like configuration under the cliff face represents the retain-
ing wall closest to the cliff face. If so, the step-like feature described by Vann would have been added after the retaining wall was built, but before the ramp was filled in.

The two possible wall alignments perpendicular to the cliff and a cross wall toward the southern end of these alignments, noted by both Pierson and Windes and shown on Figure 2, suggest the presence of a room. Vivian (personal communication, 2003) did not recognize any alignments and thought the excavation exposed only rubble. In 2003, the rubble is closely packed and irregular (Figure 17), and it is easy to see how both Vivian and Windes could provide different interpretations for the borders of Vann’s excavation. It is possible that he cleared the area in a methodical manner, e.g., a rectangular shaped pit, and threw the material over the ramp behind him. This would explain the numerous sandstone rocks downslope of the pit; in that area the rocks create a distinctly different appearance from the rest of the grass topped ramp surface (Figure 16). If all the rubble fill had been packed close together, it might suggest alignments.

The differences in stone masonry illustrated by Drucker (Figure 6) and comments by Vann about three distinct layers to the east of the shoe-box suggest that there were several episodes of use of this area. Thus, the “shoe box” and single “post hole” on the bench to its left merit further examination. The masonry on the lowest bench is composed of thinner slabs that are fitted closer

Figure 14
Ramp at B-5 or 29SJ1925. The wide stairway at the end of Road Segment 40E that comes off the first bench of the cliff is in the upper right. Drainage through this shallower cut has destroyed the northern end of the ramp and formed an arroyo in the valley bottom. The small arroyo is located between the two large rocks at the bottom of the cliff and behind the sandy floor that is visible in the lower half of this photograph. (Photograph by writer, November 19, 2003.)

Figure 15
Ramp at F-3 or 29SJ1924 is left of center. Note differences between the bedrock of the talus on the right side and the rubble ramp on the left side. The excavated area is the shallow pit on the right side of the ramp in the approximate center of the photograph. (Photograph by writer, November 19, 2003.)
together; in contrast, the “shoe box” and back wall are composed of larger and somewhat less well fitted stones that have more mortar between them. If the ramp was filled later, the rubble would have covered this earlier configuration.

Possible functions for the round hole in the upper left bench include a place for offerings or to hold an upright log, possibly a single pole ladder. That it, or the shoe box, functioned as a ladder support is unlikely because there are no marks on the cliff face above this area that indicate assistance for a climber trying to reach the top, which is approximately 10 m above the ramp level and slightly higher above the shoe box. A log ladder, therefore, would have to have been much longer than typical primary beams recorded in great houses, which average 2.6 m (Lekson 1984:30). The distance here is also greater than the 5 to 6 m between the platform and the landing estimated at Talus Unit No. 1 and is closer to the 8 m Vivian (1983a) records from the ramp to the top of the cliff at B-5 (Bc 87, 29SJ1925). Such a comparison may not be warranted because Vivian noted that erosion has removed the northern end of the ramp (Figure 14) that would link it to the stairway ascending the upper cliff wall at that site, making the distance even less.

The cache of objects that are similar to those used historically by a cacique would be an unusual offering in an early Pueblo III road-related site, and would offer an intriguing glimpse into practices of this early Puebloan period. Vivian (personal
communication, November 2003) thought that many of the artifacts might have been discarded materials, but neither of us can dismiss the high-topped shoes, the yards upon yards of cordage, and Vann’s comments about the placement of so much vegetal material in a site with three intentionally plastered layers along the right side of the “shoe box.”

One can speculate on why a pair of shoes was placed in a feature buried by road-related construction. If, as Roney (1992) suggests, roads functioned as ceremonial features, Vann’s designation of these items as ceremonial offerings may be correct. Shoes for walking could have been an appropriate dedicatory offering prior to completion of the ramp, especially if the construction of these features was accomplished after appropriate ceremonies over a period of time and by different labor crews.

Both Vivian (1983) and Windes (1991) recognized that this road-related feature aligns with a staircase and road to Tsin Kletzin on the south side of the canyon. Following Fritz (1978, 1987), there are three stairways in this area; they may represent one side of a duality expressed in conjunction with three similar staircases west of Pueblo Bonito (Figure 5). These suggestions, however, are still conjecture.

In conclusion, I agree with Vivian and Windes that this site is a ramp used to assist descent from the cliffs above the valley floor at one place along the road network. Without additional information from the excavator (Vann is now deceased), a complete list of artifacts, better provenience information for the artifacts (very limited for the shoes curated at the Museum of Indian Arts and Culture; the others have not yet been segregated from the rest of the Chetro Ketl collection), and additional research, there is little hope for better understanding the contents and meaning of this site. Whether it had a long history that included reuse of an earlier feature or features is undetermined, but the unusually well-preserved vegetal materials recovered during the 1930 excavation add to its intrigue.

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This paper relates to the prehistory of the San Gabriel Mountain Range north of metropolitan Los Angeles in southern California. The San Gabriel Mountains, along with the Castaic Mountains (Sierra Pelona, Sawmill, and Liebre Mountains) to the northwest, comprise centralized segments of the east-west trending Transverse Mountain Ranges that separate coastal basins and adjacent valleys from the Mojave Desert. Compared to other areas in California, the prehistory of the San Gabriel Mountains remains poorly understood.

Remnants of prehistoric thermal food cooking features constructed and used by Native Californians, commonly referred to as "roasting pits" or "earth ovens," are frequently encountered on interior and desert facing slope zones of the San Gabriel Mountains. For purposes of this paper, the term "earth oven" will be used at widest scope to recognize thermal features comprised of pits or depressions purposefully excavated into surrounding earthen matrices that are filled with burned rocks, extremely dark sediments, and associated carbonized plant remains (cf. Berryman et al. 2001:2.13).

Between 1993 and 2003, the writer directed a series of Angeles National Forest archaeological investigations, several sponsored under auspices of the USDA-Forest Service’s Passport-in-Time program, that focused on earth ovens at three levels of analysis: survey, excavation, and special studies (Milburn 1995, 1997, 1998, 2002, 2003). One of these Angeles Forest investigations was conducted during 2001 at CA-LAN-3013, the "Switchback Earth Ovens," situated in the northern San Gabriel Mountain foothills (Figure 1).
The purpose of this paper is twofold: First, to present radiocarbon ages of charcoal, plant resin, and organic sediments from CA-LAN-3013. These indicate earth oven firings were initiated approximately 7600 CYBP, which represents the earliest reported evidence of heated-rock food cooking in southern California. The writer will suggest that early habitation at CA-LAN-3013 relates to shifts in subsistence and settlement patterns coinciding with warming and drying climatic conditions near the terminus of the early Holocene. Secondly, to provide summary descriptions of archaeological and ethnohistoric earth oven features in the San Gabriel Mountains and environs as context for discussion of the ovens exposed at CA-LAN-3013.

LANDSCAPE PROPERTIES OF EARTH OVENS

San Gabriel Mountains

The steep and rugged San Gabriel Mountain Range, considered one of the most faulted and fractured regions in the world (Ryan 1991), extends westward approximately 100 km from Cajon Pass to San Fernando Pass with a maximum width of about 40 km. The San Gabriel Mountains are separated from the San Bernardino Mountains by Cajon Canyon to the east and from the Castaic Mountains by Soledad Canyon to the northwest. Most elevations of the San Gabriel Mountains range 1219 m to 1524 m; however, many peaks exceed 2100 m and the tallest, Mount San Antonio, reaches 3068 m. The San Gabriels form the headwaters of the coastal draining Los Angeles and San Gabriel Rivers and contribute significantly to the Santa Ana and Santa Clara River systems. Little Rock Creek, Big Rock Creek, and smaller desert drainages flow northerly towards dry lakes on the floor of the Antelope Valley or towards the Mojave River.

Landscape Distribution

Earth ovens recorded in the San Gabriel Mountains are concentrated between 915 m and 1830 m elevations at lower montane and desert montane zones from Cajon Pass to San Fernando Pass, including the Mescal, Big Rock, Little Rock, and Soledad Canyons watersheds, and also at upper elevations of the Big Tujunga and Pacoima Canyons drainages. The lower montane vegetation zones contain patches of conifer/live oak forests in otherwise chaparral-dominated landscapes while the desert montane zones are comprised of piñon - juniper woodlands at mid-elevations and desert chaparral/scrub along the dry desert margins. Yucca (Yucca whipplei) is a constant plant variable at all earth oven locations in the San Gabriel Mountains. Current or past distributions of piñon pine (Pinus monophylla), manzanita (Arctostaphylos sp), and scrub oak (Quercus sp) are constants at desert facing earth oven locations (Milburn 1998).

Landforms containing earth oven deposits are predominantly saddles, benches, and knobs on ridges, alluvial terraces along creeks in canyons and valleys, and stream abandoned terraces on side slopes of canyons. Landform attributes of earth oven sites are relatively level surfaces, soil matrices of sufficient depth and horizontal extent to contain features, proximity to desirable vegetable food to be cooked, proximity to fuel wood for firing the ovens, and availability of stone raw material for structural and/or heating elements. Sources of water are clearly not a factor in the geographic location of earth ovens (Milburn 1998; cf. King et al. 1974).

Landscape Setting of CA-LAN-3013

CA-LAN-3013 is situated at 1402 m elevation in a northern San Gabriel Mountain transitional vegetation zone comprised of elements of desert chaparral, piñon-juniper woodland, and yellow pine forest communities. Site deposits are contained on a stream abandoned alluvial terrace on the east canyon wall roughly 10 m above current elevation of deeply incised bed of Cruthers Creek, an intermittent contributor to the internally desert draining Big Rock Creek system. The terrace is comprised of well-developed soil/sediments derived from mixed-source alluvial and colluvial parent
materials with granitic and metamorphic outcrops. About 40% of the terrace’s approximate 950 sq m surface area has been affected by modern trails, roads, and water conveyance systems.

CULTURAL SETTING

Ethnographic Earth Ovens

Earth ovens and similar kinds of features, described as a “simple, effective, fundamental and enduring [human] response to problems of collecting and processing food” (Campling 1991:94-95), are known for the entire North American continent, except the Arctic (Driver 1961:67), including throughout most of prehistoric southern California (Drucker 1937). Food cooking in earth ovens is specifically attributed to ethnographic culture groups inhabiting the San Gabriel Mountains, including the Gabriélino/Fernandeño (Harrington 1942:9), Tataviam (King et al. 1974), and Serrano/Vanyume (Bean and Smith 1978:571). These groups spoke related Takic languages of the Uto-Aztecan family and utilized similar patterns of broad-spectrum subsistence; however, differential distributions of plants and animals within their respective territories resulted in divergent subsistence foci.

The southern slopes of the western San Gabriel Mountains were largely within the territory of various Gabriélino/Fernandeño groups, now generally referred to as the Gabriélino (Tong-va). One of the most numerous, wealthy, and socially complex groups in southern California, the Gabriélino inhabited much of what is now coastal Los Angeles and Orange Counties, including some Channel Islands. Oak acorn (Quercus sp) was a staple food of the Gabriélino, particularly at interior areas where marine foods were not available (McCawley 1996:116).

The Tataviam (Alliklik) were a little known culture group who occupied the Upper Santa Clara River drainages from Piru Canyon to Soledad Pass, including a segment of the northern San Gabriel Mountains, the Castaic Mountains, and the southernmost margins of the Antelope Valley (Earle 1990:94; Johnson and Earle 1990; cf. King and Blackburn 1978). Primary Tataviam foods are suggested as including yucca (Yucca whipplei), acorns (Quercus sp), and sage (Salvia sp) (King and Blackburn 1978).

Serrano and Vanyume (Beñeme) groups, referred to in this paper as the Serrano, inhabited the desert slopes of the San Gabriels at the CA-LAN-3013 study area. Related Serrano clan groups also inhabited the southeastern Antelope Valley, San Bernardino Mountains, and upper Mojave River drainage (Earle 1990; Earle et al. 1995; cf. Bean and Smith 1978). Serranos utilized various wild game and more than 200 plants from a wide range of habitats as food resources (Altschul et al. 1985:59); however, desert margin groups emphasized mid-elevation montane staples that included piñon pine nut (Pinus monophylla), other kinds of pine nuts (Pinus sp), juniper berries (Juniperus californica), oak acorns (Quercus sp), and yucca (Yucca whipplei) (Earle et al. 1995:2.14-2.23; cf. Bean and Smith 1978:571). Interestingly, in addition to using earth ovens for cooking foods, Serrano and several other Takic groups used earth oven-like features for ritualistic “roasting” of girls during adolescence ceremonies (Strong 1987:30, 81-82, 118, 173, 255-256; see Kroeber 1925:673-675).

Accounts of Gabriélino, Tataviam, and Serrano uses of earth ovens are scanty; however, ethnographic earth ovens are described for several neighboring groups, including the Cahuilla (e.g. Barrows 1900; Bean and Saubel 1972:31-34; Dozier 1996; Schneider et al. 1996), Chumash (see Hudson and Blackburn 1981:213; Priestley 1937:50), Kitanemuk (see Hudson and Blackburn 1981:214), and Kawaiisu (Zigmond 1981). Ethnographic accounts indicate common elements of earth oven construction and use with inter-group and intra-group variations. Common elements include a pit dug into the ground sometimes lined with stone, fuel wood ignited on the
Earth ovens in the Central Transverse Ranges are most often ascribed as having been used for cooking yucca (Yucca whipplei) stalks or basal heart rosette and, less commonly, small mammals, marine invertebrates, hard seeds, bulbs, and greens (see Bean and Smith 1978:571; Berryman et al. 2001; Hudson and Blackburn 1981:213-214; King 1993; King et al. 1974; Strudwick and Sturm 1995; Wessel and McIntyre 1986). Similar to many areas in the ethnographic Great Basin, roasting of green pinon cones in earth oven to extract nuts is suggested for desert montane zones of the San Gabriel Mountains (Milburn 1998; see Earle et al. 1995:2.14; Fowler 1986:64-65). Analogic relevance of ethnohistoric descriptions of earth ovens to archaeological remains found in the San Gabriel Mountains likely pertains, with any degree of confidence, to only several hundreds of years before European contact. The archaeological record provides a number of additional perspectives regarding antecedent adaptations.

Archaeological Earth Ovens

Cultural Sequences. The desert foothills of the San Gabriel Mountains along southern margins of the Antelope Valley are geographically more closely identified with the Great Basin than with southern California coastal areas; however, no widely accepted prehistoric cultural chronology has been developed for the region. Regional researchers commonly cite coastal sequences (e.g. Wallace 1955; King 1990) or sequences established for the greater Mojave Desert (e.g. Bettinger and Taylor 1974; Sutton 1988; Warren 1984; Warren and Crabtree 1986). For purposes of this paper, the writer will use broad periods reflective of Holocene environmental changes and coinciding cultural shifts in the Mojave Desert: Paleoarchaic (ca. 10,000 to 7,500 CYBP), Early (ca 7,500 to 4,500 CYBP), Middle (ca 4,500 to 2,000 CYBP), and Late (ca 2,000 to 150 CYBP) (cf.; Berryman et al. 2001:2.2-2.3; Warren 1984; Warren and Crabtree 1986).

Paleoarchaic. Environmental changes towards the end of the Pleistocene are probably associated with a shift from hunting larger mammals to increased exploitation of marsh and wetland-associated small game and plant gathering by highly mobile Great Basin Paleoarchaic groups. Little is known about these widely dispersed groups but they appear to have frequently shifted residential locations within very large foraging territories to extract necessary subsistence and other resources (Bamforth 1989; Jones et al. 2003). Paleoarchaic sites in the California Mojave Desert and southern San Joaquin Valley tend to be located on valley floors where shallow lakes, marshes, and wetlands provided primary resources, including waterfowl, small mammals, and plants (e.g. Jones et al. 2003; Moratto 1984:93; Warren and Crabtree 1986:184, 193-194).

Early Period. The Early Period reflects the effects of middle Holocene climatic warming and drying conditions on the archaeological record. Locations of Early Period sites tend to be situated in upland zones well above the valley floors suggesting a shift in subsistence and settlement patterns that included exploitation of upland food resources (Jones et al. 2003:7; Warren 1984:409-411; Warren and Crabtree 1986:187). A primary marker for the Early Period is the use of flat or shallow milling stones and hand stones to grind small seeds, acorns, and other plant foods (Jones et al. 2003; Warren 1984:409-411).

Middle Period. The Middle Period is characterized by generally cooler and moister climatic conditions, more intensive occupation of the Mojave Desert, and expansion of trade between coastal, interior valley, and desert areas (Warren 1984). By the end of this period there was a shift away from mobile foraging strategies to collecting subsistence system patterns that included residential
bases, outlier field encampments, and limited-function resource procurement locations (Earle et al. 1995:3.14). Reoccurring exploitation of most ecological zones throughout the San Gabriel Mountains is indicated about 2000 CYBP (see Milburn 1997, 2003).

**Late Period.** The Late Period is associated with an efflorescence of highly distinct material culture, expansion of trade networks, and elaboration of political and social organization that appears directly ancestral to ethnohistoric cultures in southern California (Barryman et al. 2001:2.3). Portions of this period reflect effects of the Medieval Warm Interval that included a series of severe droughts between about 1000 - 900 CYBP and 800 - 650 CYBP. These droughts caused significant environmental deterioration throughout southern California and the American Southwest and may have provided impetus for westward migrations of Great Basin groups into the Antelope Valley and upper Mojave River corridor (Earle et al. 1995:3.13-3.15). Permanent villages established after about 1000 CYBP may be related to the migrations and resulting competition for land and need for territorial definition (Altschul et al. 1985:85-86).

**Forms of Earth Ovens.** The writer recognizes three fundamentally different kinds of oven structures in the archaeological record of the San Gabriel Mountains: **earthen pit ovens**, **stone-lined ovens**, and **burnt rock middens** (cf. Milburn 1998). These terms are intended as descriptive of feature morphology and not to imply any specific function. The writer has suggested that formal patterning of different kinds of earth ovens may reflect characteristics of distinct culture groups in the San Gabriel Mountains (Milburn 1998).

**Earthen Pit Ovens.** Earthen pit ovens exposed so far in the San Gabriel Mountains are characterized archaeologically by evidence of ignition of fuel wood in bottoms of lenticular earthen pits, numerous heating stones placed over the fires, and placement of food amongst or on the final stone layer. Diameters of earthen pit oven concavities range from about 1.2 m to 2.75 m with concavity depths varying from 30 cm to about 90 cm. Deposits of burnt rock and darkened sediments extend outward from the centralised feature up to 20 m. Radiocarbon ages of charcoal retrieved from earthen firing pits range widely from approximately 4100 CYBP to 1800 CYBP and suggest these kinds of features related primarily to the Middle Period.

**Stone-lined Ovens.** Stone-lined ovens exhibit deliberately placed cobbles or slabs on floors and walls of oven concavities and evidence of ignition of fuel wood on top of the stone firing platforms, placement of a stone cobbles cooking platform over the fuel, and dry heat baking of foods contained beneath a mound of earth. Some stone-lined features are relatively elaborate, including double or triple-walled linings and deliberate shaping of some structural elements. Oven structures vary from concave unpatterned cobbled firing basins to flat single stone firing platforms with upward radiating slabs. Diameters of stone-lined ovens range from 1.2 m to 2.2 m and depths of firing concavities from 33 cm to 45 cm (Milburn 1998). Ages of stone-lined ovens in the San Gabriel Mountains range from approximately 2,000 CYBP until about 160 CYBP, and thus relate to the Late Period (see Milburn 1998).

**Burnt Rock Middens.** Burnt rock middens are denoted in this paper as deposits of burned rock rubble and darkened sediments with no discernable centralised oven feature. Burnt rock middens appear to be relatively uncommon in the San Gabriel Mountains. Burnt rock middens investigated by the writer range from 40 cm to 90 cm in depth and approach 20 m in diameter. Radiocarbon ages of the three burnt rock middens excavated by the writer in the San Gabriels range from 2290 CYBP to 1750 CYBP, or transition from Middle to Late Periods. It is noted that these features appear to be somewhat similar in structure and size to the domed burnt rock middens described for central Texas (e.g. Black et al. 1997;
Collins 1991; Creel 1986, 1991; Weir 1976). So far, distinctive annular “ring middens” described for the eastern Mojave Desert, southern Nevada, Arizona, New Mexico, southern Utah, southern Colorado, western Texas, and northern New Mexico have not been detected in the San Gabriel Mountains (see Casetetter, et al. 1938; Greer 1965; Schneider et al.1996; Weir 1976).

**BURNED ROCK MIDDEN AT CA-LAN-3013**

Surface indications of cultural deposits at CA-LAN-3013 include one bedrock grinding slick, one unifacial grinding slab artifact, and two indistinct loci of burnt rocks and darkened sediments. The 2001 investigation at CA-LAN-3013 was designed to examine northernmost of the cultural deposits, designated as Locus 1, through excavation of a series of 1 m sq data recovery units in 10 cm arbitrary levels. When completed, these data recovery units comprised an 18 m north-south trench that ranged in depth from 40 to 200 cm (Figure 2).

The excavation at Locus 1 exposed an approximate 17.5 m diameter cumulative earth oven feature comprised of two distinct vertical zones, or stratigraphic units, of burnt rocks and associated darkened sediments situated 20 cm to 80 cm below the surface and extending to depths between 45 cm and 1.95 m. The uppermost zone consists of thousands of densely compacted, burned cobbles that range in thickness from about 25 cm to 80 cm. Directly below the rock rubble are extremely dark organic residues that range in thickness from approximately 5 cm to 35 cm. Remnants of several firing pits are present in this zone; however, no primary centralized feature is discernable and the feature is thus defined by the writer as a burnt rock midden (Figures 3 and 4).

Eleven artifacts were recovered at CA-LAN-3013, including four grinding hand stones (manos), three grinding slabs (metates), two cooking slabs (“griddles” or “hot plates”), a chopping tool, and an obsidian pressure flake. With exceptions of a grinding slab and an opportunistic mano, the artifacts were found broken and/or burned within the burnt rock rubble deposit. The slab griddles, or hot plates, one of which exhibits bifacial grinding surfaces, were retrieved from the top of the rubble platform (Figure 5). It is noted that large grinding slabs on upper surfaces of burnt rock middens have been reported elsewhere (e.g. Black 1997: 86). The writer interprets the slabs at CA-LAN-3013 as last used for cooking of foods, perhaps representing prehistoric versions of historically known Chumash “frying pans” or comals (Hudson and Blackburn 1981:196-200).

Soil/sediments removed from excavation units were processed through 3.18 mm mesh dry screens. In marked contrast to copious amounts of wood charcoal yielded by many earth oven fea-
tures in the San Gabriel Mountains, very little charcoal was retrieved as at CA-LAN-3013, suggesting that carbonized materials had over time largely decomposed into fine-grained residues. A few specimens of charcoal (totaling 4.3 gm) and six very small fragments of burnt bone (< 1 gm) were retrieved from top of the rock platform. No charcoal or bone was collected from the lower levels of the feature. A variety of soil/sediment samples was collected, including a series of columns retrieved in 10 cubic cm increments from east walls of various units.

DATING OF CARBONIZED ORGANICS

Two clasts of charcoal retrieved from the top of the burnt rock rubble and two samples of fine-grained burnt organic residues from the lowest levels of the deposit were forwarded to Beta Analytic, Inc., Miami, Florida, for radiocarbon analysis. Results of accelerated mass spectrometry (AMS) dating of the charcoal specimens (Beta-155554 and -155555) indicate Middle and Late Period deposition; however, ages of the fine-grained organics (Beta-155556 and -155577), relate to the early Middle Period (see Table 1).

Some explanation of the dating of fine-grained organic residues may be useful. For a number of reasons, age determinations of fine-grained organic matter in archaeological deposits are not frequently attempted; however, this has great potential in some situations (Stein 1992:204-205). Effective interpretation of ages of fine-grained organics in archaeological context can best be achieved by separating the matter to be dated from the other sources of organics, specifically organics associated with soil formation near the surface. Fine-grained organics of sedimentological origin located near the bottom of the deposit and, thus, supposedly removed from effects of soil formation, can provide meaningful radiometric ages (Stein 1992: 205). In this case, the fine-grained
organics, postulated as representing rapidly buried residues of fire-building activities, are located directly above sterile Pleistocene alluvial gravels and are largely protected from introduction of most organics by overlying layers of compacted burnt stone rubble.

It is recognized that ages obtained from fine-grained organic residues are not absolute dates but, rather, represent mean residence times for all decomposed organic carbon in the samples. In other words, the dates are indicative of a mixture of the ages of death for organic matter deposited in the same vicinity, presumably, in this case, plants burnt as fuel to heat the earth ovens. However, due to potential dilution of age by downward transportation of younger organic matter, the ages of fine-grained organics must be considered as minimum ages for the cultural deposits from which they were retrieved.

Due to the relatively early radiometric ages indicated for the fine-grained organics, selected soil/sediment column samples were subjected to flotation and wet screening to recover additional carbonized organics suitable for more precise dating of site deposits. This process resulted in recovery of numerous small flecks of wood charcoal and carbonized plant resin (pine pitch) as well as two small pieces of bone and 11 fragments of freshwater invertebrate shell (Compass Rose 2003). Two pieces of carbonized materials that were retrieved as float from the same units and levels as the previously dated fine-grain organic samples were forwarded to Beta Analytic, Inc. in 2003. These specimens (Beta -180868 and 180869), comprised of individual clasts of wood charcoal and carbonized plant resin, were subjected to AMS measurements. The ages of 7600 CYBP and 7675 CYBP are approximately 1,000 calendar years earlier than the ages of the fine-grain organic sediments from which they were retrieved (see Table 1).

### Table 1
Radiocarbon Dating at CA-LAN-3013.

<table>
<thead>
<tr>
<th>Lab No.</th>
<th>Sample</th>
<th>Measured C\textsuperscript{14} Age</th>
<th>C\textsubscript{13}/C\textsubscript{12} Ratio</th>
<th>Conventional C\textsuperscript{14} Age</th>
<th>Calibrated Result-2</th>
<th>Intercept C\textsuperscript{14} Age with Calibration Curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta-155554</td>
<td>C</td>
<td>560 +/- 40BP</td>
<td>-23.9 o/oo</td>
<td>580 +/- 40BP</td>
<td>650 to 530BP</td>
<td>550BP</td>
</tr>
<tr>
<td>Beta-155555</td>
<td>C</td>
<td>1780 +/- 50BP</td>
<td>-22.7 o/oo</td>
<td>1820 +/- 50BP</td>
<td>1870 to 1610BP</td>
<td>1730BP</td>
</tr>
<tr>
<td>Beta-155556</td>
<td>OS</td>
<td>5550 +/- 50BP</td>
<td>-22.4 o/oo</td>
<td>5590 +/- 50BP</td>
<td>6460 to 6290BP</td>
<td>6390BP</td>
</tr>
<tr>
<td>Beta-155557</td>
<td>OS</td>
<td>5830 +/- 60BP</td>
<td>-22.3 o/oo</td>
<td>5870 +/- 60BP</td>
<td>6790 to 6530BP</td>
<td>6670BP</td>
</tr>
<tr>
<td>Beta -180868</td>
<td>C</td>
<td>6750 +/- 80BP</td>
<td>-18.2 o/oo</td>
<td>6750 +/- 80BP</td>
<td>7710 to 7465BP</td>
<td>7600BP</td>
</tr>
<tr>
<td>Beta-180869</td>
<td>CR</td>
<td>6840 +/- 40BP</td>
<td>-24.3 o/oo</td>
<td>6850 +/- 40BP</td>
<td>7740 to 7610BP</td>
<td>7675BP</td>
</tr>
</tbody>
</table>

\textsuperscript{a}C = charcoal; OS = organic sediment; CR = carbonized plant resin
\textsuperscript{b}all calibrations were done with CALIB4.3 (Struiver et al. 1998)
DISCUSSION

The early habitation at CA-LAN-3013 corresponds to shifting subsistence and settlement adaptations of small highly mobile southern Great Basin culture groups as the result of the warming and drying climate at the terminus of the Paleoarchaic Period (see Jones et al. 2003). This is reflected in the archaeological record of the greater Great Basin region by shifts in site locations from valley floors to upland woodland zones and in subsistence foci from wetland resources to desert margin montane seeds and other plant foods. Evidence for late Paleoarchaic or early Archaic group habitation along desert foothills of the San Gabriel Mountains includes a burnt mule deer (*Odocoileus hemionus*) astragalus (talus) bone excavated by the writer from a site along Santiago Creek, with a radiocarbon age of 7240 +/-40 CYBP, calibrated to about 8020 CYBP (Beta-146419). Also, Wohlgemuth (1995) retrieved obsidian debitage from a site in Little Rock Canyon with hydration rim measurements between 14.5 to 16.2 microns that, when adjusted to hydration rates determined for Coso obsidian in the southwestern Mojave Desert, suggest probable deposition during the early Holocene. Wohlgemuth suggests human habitation at CA-LAN-1304 extending “up to 5000 - 7000 years, or more” (1995:24, 43).

Processing of plant foods with milling implements and cooking foods in earth ovens were the foci of Archaic habitation at CA-LAN-3013. The milling tools are consistent with those at other upland Archaic sites in the Mojave Desert region; however, Archaic earth ovens have not been reported elsewhere in the greater southern California area (see Berryman et al. 2001:2.18). Early Archaic earth ovens are known from other regions in the Far West, including a 7000-year old roasting pit reported from the Willamette Valley (Cheatham 1988).

Data suggest that the formation of the burnt rock midden at CA-LAN-3013 resulted from construction, use, expansion, and maintenance of overlapping and intersecting firing pits over an extended span of time; however, other formation scenarios cannot be entirely ruled out (see Black 1997). The firing of the ovens occurred in the bottom of earthen firing pits, followed by addition of layers of numerous heating stones. Cooking processes probably involved placing food on the heated stone rubble cap and, sometimes, cooking foods on surfaces of slab griddles placed on the heated platforms.

Current distributions and densities of vegetation species at the study area suggest that Cruthers Creek Canyon represented a resource-rich patch for early inhabitants. Primary attractants may have included canyon live oaks (*Quercus chrysolepis*), scrub oak (*Quercus* sp.), manzanita (*Arctostaphylos* sp.), holly-leaf cherry (*Prunus ilicifolia*), coffee berry (*Rhamnus* sp.), yucca (*Yucca whipplei*), piñon (*Pinus monophylla*), Jeffrey pine (*Pinus jeffreyi*), and Coulter pine (*Pinus coulteri*). Paucity of flaked lithics and faunal remains suggest hunting was not a central site activity; however, small faunal species, including freshwater invertebrates, were occasionally cooked in the earth ovens.

Radiocarbon data suggest that the site was also inhabited during the Middle and Late Periods; however, much of the occupational history at CA-LAN-3013 remains undefined due to a roughly 6850-year gap between radiocarbon ages of carbonized organics retrieved from highest and lowest levels of the burnt rock midden.
CONCLUSION

Great Basin culture-affiliated groups initiated heated rock food cooking in earthen pits at CA-LAN-3013 along Cruthers Creek during the transition from the Paleoarchaic to Archaic Periods. Initial habitation at the site corresponds with early Holocene warming and drying climatic conditions and shifts in subsistence foci to upland plant resources along the margins of the Mojave Desert. The approximate 7600 CYBP radiocarbon ages of carbonized organics from CA-LAN-3013 provide the earliest evidence of earth oven firings in the greater southern California area.

END NOTES

1. Dates in this paper are given in calendar years before present (CYBP). Radiocarbon ages are fully corrected for $^{13}$C/$^{12}$C and calibrated via CALIB 4.3 curve time scales (Stuiver et al. 1998). Dates denoted by 'ca' are estimated by the writer as appropriate for culture history sequences of the northern San Gabriel Mountains.

2. In terms of the geological time scale, the Holocene is generally divided into Early (10,000 to 7,500 years ago), Middle (7500 to 4,500 years ago), and Late (after 4,500 years ago) (see Grayson 1993:193-221).

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The writer acknowledges the archaeological skills and persistent good humor of Forest Service and PIT volunteer excavators at CA-LAN-3013 who endured repeated episodes of rain, snowfall, wind, and cold temperatures.

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INTRODUCTION

Railroad logging in the first half of the twentieth century left distinctive marks on the landscape, economy and people of New Mexico. McGaffey—a place and an archaeological site—illustrates how the boom and bust cycle of railroad logging figures importantly in the history of west central New Mexico.

McGaffey is located 18 miles southeast of Gallup, NM, in the Zuni Mountains. Today you would describe the spot as scenic. A campground and lake at this 8000 ft high locale in the Cibola National Forest are used for recreation, particularly by people from McKinley County. From 1912 to 1930, however, McGaffey was a thriving railroad logging town and sawmill, with close connections to a nearby farming community called Page. In 1920 more than 200 people called the McGaffey/Page area home. The pattern of life in this community was tied to statewide and national events, such as the building of the transcontinental railroad, Anglo land settlement in the West, immigration from Europe, revolution in Mexico, and even the way commercial aviation developed. McGaffey’s history was also tied to the life and death of one man, Amasa B. McGaffey.

THE WARP AND WEFT OF HISTORY—LINES OF EVIDENCE

The interwoven threads of place, time, and people give us what I think of as the blanket of our history. I imagine this concept has occurred to others. Researching that history is like trying to reweave the blanket. You set up the warp threads — archival records and archaeological data can provide this neat, square framework. The woof or weft threads that are interwoven in the framework give color and texture to the blanket; I see family photos and oral histories, each person’s life, as these threads. By pulling together the information for the warp threads and then weaving in the color of the human stories you can start to see the whole pattern of the blanket.

The purpose of this paper is to share some preliminary snapshots of what life was like in the mountain boomtown of McGaffey in the early decades of the 20th century. I would like to put on the loom some of the warp threads by sharing with you a few things learned from archival research. Then I’ll use a few oral histories and newspaper articles to help personalize the statistics, that is, to fill in color and texture in the blanket of McGaffey’s history.

We are lucky to have many different lines of evidence available about McGaffey. Vernon Glover, in Zuni Mountain Railroads (Glover and Hereford 1986) began the research. He used documentary sources to pull together an excellent summary of railroad logging in the mountains, including that done by the McGaffey Company. He also collected quite a number of historical photos. When the Forest Service planned to renovate McGaffey Campground in 1991 we knew from Glover’s work that we would need to be concerned with the historical remains of the logging town, as well as a network of logging railroad grades. Mt. Taylor
Ranger District archaeologists completed an archaeological survey of a large area around the campground and, as expected, discovered many features and trash areas connected with the sawmill and town. To date roughly 900 contiguous acres have been inventoried in the McGaffey area and about 150 features or artifact areas are recorded as part of site LA 74167 (Popelish 1991, 1992, 1994, Popelish and Nicoll 1995). Those archaeological remains still retaining integrity are considered eligible to the National Register of Historic Places as an historic district and are being managed for protection. The site so far as I know is the only railroad logging town in the Zuni Mountains to still have standing structures. These are a school building on private land and the dozen company houses located on National Forest land that are now used as summer homes by private people. Though the mill was dismantled, its concrete foundations provide a good ‘footprint’ on site interpretation of past events.

Finding the archaeological remains raised many questions about what life was like at McGaffey. We knew that people are still alive who had lived at McGaffey when it was a thriving industrial town or at Page when fields stretched in all directions. A volunteer, Dorothy Brooks, took on the task of collecting oral histories and gathered together a binder of newspaper articles and wonderful historical photos. Dorothy (with help from Amy Armaw who interviewed three siblings) taped the stories of 21 people, men and women who were born in the years between 1906 and 1928. Elizabeth Kelley, also as a volunteer, transcribed and indexed by topic all of those interviews (approximately 300 pages of transcripts). Plateau Sciences Society has made this volume of the collected oral histories available in limited copies in local libraries (Plateau Sciences Society 2002). The Society also has produced ‘Memories of McGaffey’, a photographic exhibit that showcases more than 60 of the historical photos.¹

Over the years, I have been trying to add to our body of collected information of the two communities through relevant census records, birth/death records, New Mexico’s Blue Books, census summaries, and USDA Forest Service files. Here I’ll focus on the 1920 Federal Census of Page, New Mexico, Precinct 16 (US Department of Commerce, Bureau of the Census 1920) as it encompasses both McGaffey and the nearby farming community of Page. My research into the 1930 federal census and the homestead records is in its initial stages, and I’m just beginning to track families through earlier and later censuses as well as to analyze the census records for broad patterns.

BRIEF HISTORY OF MCGAFFEY/PAGE

The McGaffey Company was only one of a number of railroad logging enterprises in the Zuni Mountains, all of which developed because of the Atlantic-Pacific transcontinental railroad. The Albuquerque to Arizona section of this railroad was built in 1880-1881. The closest timber for ties in the western part of New Mexico was located south of the railroad line on the northern slopes of the Zuni Mountains. The early 1880s spurt of tie hacking was the beginning of what was to become intensive logging in the mountains—an activity that eventually encompassed nearly the whole range. Timber harvesting using railroads started in 1890 in a small way but really got going with the American Lumber Company in 1903. Easy access to markets, as well as the demand for ties, made railroad logging economically feasible in this area (Glover and Hereford 1986).

This was timber harvesting with little regard for the sustainability of the forest. That fact had to do with the emphasis of the times on exploitation rather than conservation and also with the patterns of land ownership. The Zuni National Forest did not originate until 1909, and then it administered only one township/range in the middle of the mountain and a few very scattered parcels of land elsewhere. To help finance construction, the Atlantic and Pacific Railroad received odd-numbered sections of land within 40 miles each side of
the route of the transcontinental railroad in the territories. The logging companies bought the timber on the railroad sections and later on state land. There were virtually no logging regulations and very few seed trees were left. Areas were high-graded (cutting the biggest and the best) and then repeatedly entered for small trees for railroad ties and for props for Gallup’s coalmines. By 1940, only 5000 acres of the 300,000+ acres in the Zuni Mountains still contained virgin timber (USDA Forest Service 1940a:5). At that time the Forest Service began to acquire land that the logging companies no longer wanted and the current configuration of National Forest in the mountains started to evolve.

Amasa B. McGaffey, a descendant of colonial stock, came to New Mexico from Vermont in 1891 at about age 21. His older brother, Lucius K. had moved to New Mexico seven years before and had figured prominently in the history of Roswell (Twitchell 1917:230-231, 237-238). Amasa, or A.B. as he was commonly called, began his career in the Southwest by working as a cow-puncher, a station agent for the railroad (Telling 1952:57), and a crockery merchant in Albuquerque (The Albuquerque Daily Citizen 1899, US Department of Commerce 1900). He married Mabel Fox in 1894 and they raised 4 children. After the turn of the century McGaffey began to run commissaries for the American Lumber Company camps and also started sub-contracting to cut ties. In 1911, his business expanded with the formation of the McGaffey Contracting Company (later the McGaffey Company) and the construction of a railroad to connect with the transcontinental line, about 15 miles east of Gallup, at Perea (Glover and Hereford 1986:51). He soon was recognized as a prominent Albuquerque businessman.

McGaffey’s was the only railroad enterprise in the western end of the Zuni Mountains. Unlike the American Lumber Company, which shipped logs to a large mill in Albuquerque, McGaffey constructed his own mill in the mountains and shipped out only finished lumber. Mr. McGaffey had company houses erected at his mill and brought in people who had the skills to run the sawmill and the steam locomotives.

Within about 5 years of its construction, the mill was totally consumed by a fire: a new mill was quickly built. Output was increased somewhat (to 57,000 board ft per day) and by the 1920s the town and mill were booming (Glover and Hereford 1986:53). The town boasted two schools, a Catholic Church, a commissary, a cookhouse, and a bunkhouse, as well as streets of company housing (Figure 1). Just to the east, a community of immigrant farmers, begun earlier to support small, late 1800s sawmills such as Red Rock (Telling 1952:262, 269), started to expand to fill the demand for feed for horses and food for the people of McGaffey. At the peak of McGaffey’s operation, a Shay locomotive, geared for the hills, delivered 12 carloads of large-diameter Ponderosa pine logs to the mill daily, six days a week. Another steam locomotive made a bi-weekly or tri-weekly run of finished lumber to the transcontinental line to be shipped to markets. On the return trip, besides coal to fuel the sawmill, it often brought empty boxcars so the Page farmers could ship their hay and vegetables to Gallup (Glover and Hereford 1986:53-55).

SPECIFIC THREADS OF MCGAFFEY’S HISTORY

We’ll begin with the population figures to give us some background. The 1920 census recorded 222 people in the McGaffey-Page area. By comparison, there were 284 counted in nearby Fort Wingate, 318 in the Mormon community of Ramah to the south and 3920 in Gallup (not including the coal mining communities of Mentmore, Gibson and Gamerco) (US Department of Commerce, Bureau of the Census 1931).

According to the census summaries (US Department of Commerce, Bureau of the Census
The population of the McGaffey-Page area grew to a high of 648 in 1930, then fell to 338 in 1940 and 201 in 1950. Now that the individual records from the 1930 census are available (US Department of Commerce, Bureau of the Census 1930), I question the high of 648 in 1930, for a number of reasons. First, there seems to be some confusion (which I will not describe in detail here) by 1930 census takers concerning in what precinct McGaffey and Page residents should be placed. Further, according to the census records, nearly all of the increase in population between 1920 and 1930 is the result of the addition of Navajo Indians. I'm still researching this but at present it appears that these are Navajos who, in the 1920 census, were counted as residing at Crownpoint, 30 miles northeast of McGaffey on the Indian Reservation. Navajos certainly worked at McGaffey. For example, one informant said 40-50 Navajos worked for the McGaffey Company in 1918 (Havens 1979). However, I think the addition of nearly 500 Navajos to the McGaffey/Page residents in 1930 is an error on the part of the census takers or else results from a major change in the boundaries of the enumeration district. Finally, the census was taken in early May of 1930 when logging had already ceased and only the planing mill at McGaffey was still in operation (Glover and Hereford 1986:62). It seems unlikely, therefore, that large numbers of Navajos would still be working for the company. No logging or sawmill jobs are listed under occupation for these nearly 500 Navajos in Precinct 16 in 1930. Obviously there is more work to be done to establish the number of people through time in the McGaffey and Page community, with a major

Figure 1
A view to the south of the McGaffey sawmill and lumberyard sometime after the fire in 1917.
A portion of the town is visible in the background.
(Courtesy of Octavia Fellin Public Library, Gallup, NM, photo archives #1102)
question being: Did the population continue to grow after 1920, in fact, to triple?

According to the federal census of 1920, there were 52 households in McGaffey/Page. More than half of the households were married couples with children. These 29 families included 109 children, an average of 3-4 children per family. Looking more closely, we find that 14 of the 29 families, that is about half, had five or more children at the time of the census. The county birth records show that family size for families at McGaffey could range as high as 12 and oral histories indicate some even larger families.

McGaffey's 1920 population was young. A third of the people enumerated in the census were under age 11; more than half were under age 21. Only 16% of the community was more than 40 years old. In addition to the families, there were 52 single men (includes a few married men living without their spouses). This group of men ranges in age from 21 to 60; most are 21-40. These single men, who had jobs in the mill or in the woods, made up about 23% of the population.

An example from one of the oral histories provides insight to the size and membership of resident families. The woman informant lived at McGaffey two different times: before she was married in 1925, and after she was married in 1927-30. She says of the first time:

...my father and stepmother were separat-ed and my dad took us to McGaffey. I was about 16, I think, and we stayed, the six children, 5 girls and 1 boy, and I was the oldest so I was mother to these kids, I guess you would say, so we lived in McGaffey a year and went to school...On my dad's side I had an aunt. Of course, she had 7 children and I couldn't expect her to help us and my grandma, she was close to 80, so she couldn't help. So we did have a struggle and I done all the work except the sewing. (Plateau Sciences Society 2002:Tape 15, page 1)

An examination of the county's birth and death records for McGaffey and Page for the sawmill era of the town (1911-1930) shows that life could be rather grim at times. Forty-five deaths are recorded from McGaffey or Page between 1914, when records began to be kept, through 1929. It should be noted that these records are incomplete. For instance, of six obituaries of McGaffey people in the Gallup newspapers from 1915 to 1918 (Spiros 1979), three are not listed in the death records. However, the death records may show broad patterns. If so, the McGaffey-Page records indicate that more than a third (36%) of the deaths from 1914 through 1929 are children under the age of 4. All too often a death record closely follows a baby's birth record. Sixteen percent of the deaths were the result of accidents or injuries, some of them from the sawmill operations or from logging. One woman committed suicide by poison and one man died of "homicide traumatism." More usual were deaths from diseases; this accounts for 58% of the recorded deaths. Death from influenza or pneumonia accounted for 13 lives and various other diseases another 13. The latter often included the death of infants from illnesses like diarrhea. Finally, six children died at birth and two mothers died in childbirth during those 15 years.

Informants gave us details on quite a number of accidents and deaths. For example, three people from an immigrant family from Croatia are listed in the death records and many of the children are in the birth records. One of the informants tells the story of this family, a family that included 10 children in all. She says:

[One of the boys] was the janitor, to sweep the class rooms and carry enough wood in for the next day and then take the ashes out...He got paid, though, I don't know how much...He got to do it because it was a real poor family. See, they didn't have a mother. Their mother died in childbirth with twins. So the father kept one of the twins and gave the other twin to his broth-
er. The older girls raised this younger boy. ...These two little twins was the last babies in the family, so they had a lot of older kids. They raised the little boy until he was 10 years old and then he got shot accidentally...His sister run over to my place and got my mother but [the boy] was gone. [The family also] had a son that died, got an infection in his tooth with blood poisoning, but he was older. He had already died, then the mother died, she hemorrhaged to death...But you know, the man kept that family together. He never got married or nothing until all his kids was grown and gone...I'll have to give him credit, he didn't have much, but what he had he shared with his kids. (Plateau Sciences Society 2002:Tape 23, page 15)

A very prominent characteristic of McGaffey was the diversity of people, its multiculturalism. Ethnic diversity was a salient feature of American logging camps throughout the West. For example, Adams (1961:51-52) notes that the “racial roll call” for workers of railroad logging companies on the west coast included Swedes, Bulgarians, Piute Indians, Japanese, Hindus and Chinese. Conflicts between whites and the Japanese and Chinese sometimes occurred. One company had railroad crews composed of Americans, Mexicans, Negroes, Apaches, and Navajos. “All races worked in harmony” except the traditional enemies, the Apaches and Navajos, who could not work in the same gang (Adams 1961:52).

The 1920 census shows that about 50% of the people at McGaffey were immigrants from East European countries of Croatia, Slovenia, Austria, Poland and Russia, 20% were born in the United States, 16-17% were from Old Mexico, 5-6% were from Scandinavian countries, and finally, a few were from Canada, Ireland, and England. This is quite a variety of ethnic groups, but interestingly the 1920 census does not include any Navajo or Zuni Indians, although we know they worked there. In addition, in the oral histories and else-

where there are a few references to African-Americans at McGaffey.

How did these groups of people from different backgrounds relate to each other at McGaffey? That question is certainly not fully answered yet. For the most part it appears that tolerance prevailed. However, one informant related the story of a tense situation when black workers were hired to work on a ranch and were not allowed to buy anything at the McGaffey store (Plateau Sciences Society 2002:Tape 11, pages 13-14). In his autobiography For Me, the Sun, Roy A. Stamm, an Anglo farmer, provides an example of the kinds of working relationships that occurred between different groups:

Another good break was when two Zuni wagons freighting goods to an outfit east of us were overtaken by nightfall just outside our gate and spent that night at our ranch. Their drivers sized up our lay-out...and liked what they saw. These came back a week later and brought others with them. Zunis had never worked off their Reservation but we broke the ice and before we pulled out many also were working for the sawmill. Though Zuni teams generally could pull only 8” plows, the men as a whole were fair workers; those that were not we weeded out. I let them alone, paid well and never pushed too hard. Before I realized it they called me 'Uncle' and had feathered prayer sticks all over the place; those are messages to their gods. We built a half dozen cabins and pitched several tents to accommodate them; these last with board floors and walls. All had cook stoves, rough tables and benches, and all tents and cabins were scattered to lessen the danger from fire.

After plowing the whole day the Zunis would unhook their plows, slap their teams into a brisk trot and run behind them to camp. By the roads, usually this was a mile or two distant which meant nothing to a
Zuni. To them, a short race is five miles and a long one at least twenty or thirty miles. (Carson and Carson 1999:214)

As for elsewhere in the West, waves of immigration provided settlers and workers to the McGaffey/Page area. Some farmers emigrated from Europe to the Zuni Mountains in the late 1800s, while others first settled in Gallup to work in the coalmines and later bought land at McGaffey and became farmers or ranchers. The 1920 census shows a pattern of married couples (farmers) immigrating to the United States from Europe primarily between 1900 and 1910, with the single men (mill or woods workers) immigrating mostly in the decade from 1910 to 1920. It is possible that the single men immigrated specifically to work at the McGaffey mill.

More than 890,000 Mexicans legally immigrated to the United States between 1910 and 1920 (Baxman 1998). McGaffey was a destination for a few of these people who were fleeing political, economic and social chaos in Old Mexico as a result of revolution. According to the census, all of the 23 Mexicans counted at McGaffey in 1920 had immigrated to the US in 1909 or later. This immigration from Mexico continued into the 1920s. Of the 33 McGaffey people enumerated in the 1930 census who were born in Mexico, 16 of them arrived in the US in 1920 or later. Oral histories relate that the Mexicans, many more than were enumerated in the census, lived in Torreon, a shantytown west of the mill. Archaeological remains, in the form of house depressions, trash concentrations, a cemetery, and even a handmade birdhouse still in place in the fork of a pine, were recorded during survey, even though the area was ‘cleaned up’ by government work crews during the Depression years (Popelish and Nicoll 1995).

The 1920 census indicates that many of the people at McGaffey and Page were first generation immigrants. There was very little marriage across ethnic boundaries. For more than 55% of the married couples in 1920, both the wife and husband were European and for all but one of these couples the spouses were both from the same country. (I’ve not yet researched how often spouses were from the same community in the old country, but indications are that it was common). For 18% of the married couples both people were from the United States and for another 18% both were from Mexico. There are only two ‘mixed’ marriages—in one a Russian and a Canadian (in Russia before coming to US) and in another a Slovenian and a person born in New Mexico, but of immigrant parents.

Perhaps typical of the immigrant farmers is the story of the family of one informant whose father emigrated from Austria (called Slovenska in the 1920 census) in the early 1880s at age 22. He worked in various coalmines in both the eastern and western United States, including at Gibson, near Gallup. While in the San Francisco area he married an Austrian immigrant; both spoke Slovak. He then moved back to New Mexico and homesteaded at Page in the late 1890s or early 1900s. They had 12 children, five of whom died before their 4th birthday. The father brought his younger brother to America and he also settled at Page. He married an immigrant from Yugoslavia, and they have seven children (Balok 2002).

Occupations are listed in the census, of course, and also in the birth records for the parents of the child born. In the 1920 census, all but three families were on farms. Seventy-one percent of these 24 farm families were of East European descent. The rest were born in the United States, either native New Mexicans or people from other states. The heads of three other families had non-farm occupations; two were sawyers for a lumber camp and one was a woodchopper for the Forest Service). Data collected to date indicates that the Page farmers, if not prosperous, were managing. Because of the ready markets of the logging community and nearby Gallup, and their opportunity to do secondary wage labor at the mill or in the woods, the farmers at Page likely fared better than most American farmers did in the 1920s (see Andrist 1970:39).
Figure 2

McGaffey Company employees in front of two American Hoist and Derrick log loaders. These loaders could be moved along atop the flatcars after a car was loaded with logs. In the left background, note the big wheels that were pulled by horses to skid logs.
(Courtesy of Octavia Fellin Public Library, Gallup, NM, photo archives #1308, Susan Clark Kirk Collection)

According to the 1920 census, the single men had a variety of jobs associated with the mill and with logging, such as swamper, sawyer, laborer, teamster, corral boss, timekeeper, cook, foreman, saw filer, loader, well digger and roustabout (see Figure 2). Sawyers and teamsters were most numerous. Some expected occupations, such as mechanic or millwright, train engineer, and mill foreman, do not appear in the 1920 census but do in the 1930 census or the birth and death records. Using the 1920 census, I looked at the different types of jobs the single men had and the ethnic background of the people in those jobs. Most of the jobs appear to have been done by people from quite a variety of backgrounds. For example, both the teamsters (17 people) and the sawyers (14 people) were from 8 different countries (various East European countries, the United States, Mexico, Scandinavian countries, and Ireland). A man from Croatia might be a cook, a waiter, a sawyer, a teamster or a laborer at McGaffey.

The oral histories fill in details of what people did in their work. For instance, the husband of one informant was a ratchet setter at the mill, an occupation not specifically listed in the 1920 census. She described the job as follows:

They put the logs on this carriage...He had to roll the log, put it where they take the bark off...He was real good in arithmetic, math, my husband, because he
learned it there...The sawyer would tell him with his hands, you know, what size the next board was going to be...And he had to turn the log a certain way and set it how thick it was going to be...they couldn't hear so they used their hands...It was so noisy...the saws, you know. (Plateau Sciences Society 2002:Tape 15, page 11)

The informant said her husband was paid in company money (seco or scrip), $2.25 for a 10-hour day (Plateau Sciences Society 2002:Tape 15, page 12). The seco money could be used at the company store with the bill deducted from your next paycheck. We know that in 1924 a teamster running a big wheel for the McGaffey Company made $3.50 per day and an engineer or blacksmith made $5.00 a day. A woods foreman was nearer the high end with a daily pay of $8.00 (Randles 1924).

The average annual earnings for a person in the United States in the 1920s was $1,236 (Kingwood College Library 2003). If yearly salaries are figured based on working 6 days of the week (the norm), and working all year, it appears that many McGaffey workers were receiving less than the average salary (teamsters would be making $1092 for instance), and a few were receiving double the average ($8.00/day = $2496/year).

The census records are informative but clearly do not reveal many facets of the McGaffey story. What did people think of the McGaffey Company, and how did they view their community? The oral histories give glimpses into the answers, as do newspaper articles. From these sources I get the sense that this was a place people liked to work, a lively town almost cocky in its self-assuredness. Although fairly remote, McGaffey was a little metropolis with amenities that many other communities did not have at the time. Electricity was generated by the powerhouse at the mill, and water was piped into town from a pond at the east end of town. Ice cut on the lake was stored and could be readily bought. Scrap wood from the mill was available for firewood for woodstoves. The commissary "handled everything...You could even buy horseshoes and harnesses, even some farm equipment..." (Plateau Sciences Society 2002:Tape 1, page 3). Travel to Gallup was perhaps easier than in some succeeding decades because one could catch the gasoline-powered speeder and whiz down the rails to the transcontinental railroad to catch a train to Gallup. Life could still be quite harsh at times, but the town appears to have seen itself as progressive.

A sense of community and camaraderie is often evident in the oral histories. The early Gallup newspapers also give hints of this. A column called "McGaffey Village Hot Points" was filed weekly in the mid-teens in the Carbon City News. A similar column sometimes appeared in The Gallup Independent. The news articles are quite fascinating. McGaffey’s social life is described in a tongue-in-cheek manner, with nicknames for people and many ‘in’ jokes. It is sometimes hard to tell at this distance of time what is serious reporting and what is not. People knew each other’s business and felt confident enough to chide them about it. One example is: “Mr. Sidney Hicks became intoxicated Saturday afternoon and tried to drive his yoke of steers into the butcher shop. He was prevented by the narrowness of the door. There have been other complaints of narrowness of butchers’ doors lately.” (The Gallup Independent 1915).

At times McGaffey residents appear to have viewed Gallup as Gallup residents might today view Albuquerque. In 1915 McGaffey folks talked of going to the “circus” in Gallup (Carbon City News 1915) and of how McGaffey is “destined to be the metropolis of McKinley county yet” and could house the jail and courthouse if only Gallup didn’t need them so (The Gallup Independent 1915).

Social groups and entertainments seem to have been abundant, especially considering the size of the town. In the 19 teens there was a motorcycle club, a sewing club, a Spanish American club, a
football team, and at least one formal band. Music played a big role and accordions, guitars, violins, and pianos are mentioned. The Alhambra Hall had a social club that organized dances. In 1915 it appears that the community was even planning a moving picture theatre. Weddings, First Communions, and other church events were important milestones and appropriately celebrated. Box socials were held to make money for the schools. Picnics, rodeos, boat races, sledding and skating parties, cockfights, parades, women's footraces—McGaffey hosted them all. A big “Indian Jubilee” made a splash in 1919 (Gallup Herald 1919) and July Fourth celebrations routinely went on for a week. People traveled from Gallup, Ramah and elsewhere to attend dances at McGaffey even into the 1940s.

Such events were only one way Gallup and McGaffey were connected. A thorough investigation of the relationships (economic, familial, social and other) between the two towns would be a valuable research contribution.

THE END OF THE BOOM

What became of the flourishing, multi-ethnic community of McGaffey? A 1929 news headline, “Death Rides the Airlanes,” describes the event that precipitated the decline of the town (The Gallup Independent 1929).

Mr. McGaffey began the boom of this sawmill town and his death at age 60 ended it. For business reasons, he often traveled between Los Angeles and Albuquerque. His eldest son, Herbert, told him in 1929 that he had to try flying, that it was the latest thing (Plateau Sciences Society 2002:Tape 11, page 6). On September 3, he boarded a TAT (Transcontinental Air Transport, precursor to TWA) plane for his first and only flight. The Ford Tri-motor disappeared en route and rumor had it that it went down near Zuni. After many days of searching in several areas, the plane wreckage was discovered on the side of 11,000 ft-high Mt. Taylor, near Grants. During a storm the plane had crashed into the mountain; all 8 aboard perished. Charles Lindbergh, who was one of the people involved in starting the TAT commercial airline, had come to help in the search (Reinhold 1982). He did not want commercial flight to be aborted. After this crash, calls went out for greater safety measures, such as better communication and weather reporting. Eventually, a system of bright beacon was developed to guide commercial planes (Thompson 2001).

At the mill, Herbert McGaffey was devastated and ordered round the clock operations until all of the logged timber was sawed. The mill closed in 1930 and was salvaged. “The heart just went out of it” as one person put it (Plateau Sciences Society 2002:Tape 11, page 8). McGaffey’s death precipitated what may have been coming in any event because of the Depression and the lack of big timber left to cut. Small, portable mills dotted the landscape after 1930 and provided some families with jobs. Others left for the mines in Gallup or for work elsewhere. The town of McGaffey hung on for a while. School, a single class of about 15 pupils, continued until about 1950. The remaining residents enjoyed dances, rodeos, skiing and even golfing. But eventually the store and post office closed, the latter in 1944 (Julyan 1996:223). Families tried to hold onto their land; many farms converted to cattle ranching. In 1940, 75 people at McGaffey were still dependent on farming (USDA Forest Service 1940b:4). One farm family, with roots at Page dating from the late 1800s, continues to this day to ranch year-round. A government-run transient camp and development of the area for National Forest recreation occurred in the later years of the 1930s. The road was paved and the railroad tracks became historic remains. Subdividing for residential housing is the current trend for some of the private land.
FINAL THOUGHTS

In the future I hope to continue to string more warp threads on the loom to enlarge this blanket of history, i.e., to have it encompass more facets of McGaffey life. For example, business and employee records of the McGaffey Company and blueprints of the mill hopefully will be located. As well, only minor subsurface investigations have taken place to date and much remains to be done to connect archaeological lines of evidence with the known history. Comparison of the 1920 and 1930 census results will help us understand the changes that occurred in the population through time. Finally, I hope to have the good fortune to weave in the multiple, fine weft threads of additional personal stories and family photos so that the blanket of McGaffey's history can become tightly woven, colorful and deeply textured.

END NOTES

1. Both of these projects were partially funded by the Historic Preservation Division, State of New Mexico, 228 East Palace Avenue, Santa FE, NM 87501. Federal funds from the National Park Service, U.S. Department of the Interior, were used in part for the funding.

2. The New Mexico Blue Books show that the number of people from McGaffey and Page voting in the 1919, 1924 and 1928 elections varies only by a handful of people. By 1940 that number has dropped by about two thirds though the census summary says the population is about 100 more in 1940 than in 1920.

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Bats, found throughout the subarctic climates, make up one of the largest and most diversified groups of mammals. Over 950 species are known in the world and more than 25 of these are found in New Mexico (Findley et al. 1975:21-66; Hill and Smith 1992:1). The bats of Carlsbad Caverns are one of the many famous tourist attractions of New Mexico and have drawn observers from around the globe. Although today rarely noted by the diurnal urbanite, bats are of great interest to mammalogists and other scientists who study the animals, their behavior, and their diseases.

Ubiquitous as they are in the state, bats were surely known to the early Native Americans and yet they seem to be rarely depicted in rock art and other esthetic endeavors of those people. Archaeological and ethnological data suggest that the bat contributed little to the nutritional needs of the early residents of New Mexico and evidence is lacking for a role in material culture. Careful examination of the rock art symbols of the Largo-Gobernador Canyons, however, reveal several instances of bat icons with interesting associations, and so the animal is the subject of this paper.

Largo Canyon and its major tributaries of Blanco and Carrizo Canyons, along with Gobernador Canyon to the immediate north, drain down from the Continental Divide to the San Juan River. These canyons have cut the land into an area of plateaus and mesas, and the canyon walls provide hundreds of miles of cliff surfaces that have served as canvasses for rock artists for over 1500 years. Two of the landforms thus created by the canyons, now known as Huerfano Mesa and Gobernador Knob, are sacred to the Navajo people of today and play a significant role in their myth and ceremony. These prominences are central to the area known as Dinétah.

The approximate boundary of Dinétah has been previously described (Rogers 2002) and is comprised of parts of western Rio Arriba and eastern San Juan counties. Dinétah is not a part of the Navajo Reservation. Ceremonial practitioners and other Navajos interested in their traditions often visit the rock art sites in the area, however, as they recognize symbols still present in their rituals and drypaintings. These men and women will willingly describe and discuss these rock art icons with outsiders who show respect for the sites and who join them on visits to the canyons. This offers the student of Navajo rock art a unique opportunity to understand petroglyphs and pictographs made several hundred years ago.

Archaeology has established Navajo presence in Dinétah from about A.D. 1540 to an apparent exodus from the area around 1760. Navajo tradition would place them there much earlier and history records their presence at least until the mid nineteenth century and again after the return from Fort Sumner. According to legend, this is an area where the mythological Holy People lived and where many present day ceremonies were first begun. The rock art, religious in nature, is thought to have been created during the earlier portion of this occupation, probably during the seventeenth and eighteenth centuries.
BATS ON THE ROCK

The bat image shown in Figure 1 has been previously published (Roessell 1983:116; Schaafsma 1975:44, 1980:322, 1992:31). The icon bears several minor anatomically incorrect details, such as the double wing claws, no indication of feet, and lack of a fourth major wing bone, but is otherwise quite well done. Dr. Michael Boland, mammalogist with the University of New Mexico, has examined photographs of this image (personal communication, 2003). He believes this represents a member of the Vespertilionid family, or evening bats.

The evening bats are one of the most common families of bats in New Mexico and about 15 species have been reported from the Dinétah area. If the elongated ears are truly correct, then Figure 1 is probably an image of the Pallid Bat (Antrozus pallidus). This species is moderately large, frequently roosts in relatively open shallow caves, and feeds on large arthropods, such as centipedes, on the ground.

The bat in Figure 1 is part of a large, complex panel (Figure 4). Other icons represent serpents and other zoomorphs, anthropomorphs, insects, and birds. The relationship of these varied glyphs, if any, is presently unknown to Navajo ceremonialists and others who
Figure 2 shows another member of the Vesper-tilionid family, again with anatomical errors that make further refinement of the species impossible. Besides lacking the major bones in the wings as in Figure 1, the legs and feet are depicted as arising from the wings instead of the body. This bat is coupled with a bird glyph that may represent a crane or heron. Possibly carved by the same artist, this association of bat and bird is not apparent to traditional Navajos of today who have visited the site.

Figure 3 shows yet another bat, this time so stylized that only the animal can be identified. Lightly incised into the rock, it is accompanied by an identical bat icon to its left that cannot be adequately photographed because of a large juniper growing only 20 cm away. These two petroglyphs are the only images present at this site. It is interesting that these bat images also lack feet and the fourth wing bone.

While beyond the geographic scope of this paper, Jane Kolber (personal communication, 2003) reports a bat petroglyph found at a Navajo rock art site in Chaco Canyon. A review of a photograph of this image shows the animal portrayed to be quite similar to the ones found in the Largo-Gobernador district. It also lacks the fourth major wing bones and feet.

These errors of anatomy are perhaps forgivable, for many people today cannot accurately draw a bat. However, they are so consistent that one wonders if the artists were copying from a previously produced pattern or as learned from a teacher. This is the method of drypainting reproductions as practiced in Navajo ritual today. Those Navajos who wish to learn a ceremony spend many years in the company of an established practitioner, learning the songs and prayers that must be done in exact sequence, and the drypainting that accompany that particular ritual. These drypaintings are then reproduced for each occasion of the ceremony, exactly as learned and with only minor variations allowed. An “error,” such as that of bat anatomy, would thus be carried forward. It is not uncommon to see images in present-day sand paintings that are not faithful reproductions of the natural world. The rock art collection is perhaps too small for such a comparison but continued observation will be carried out.
BATS AMONG THE STARS

Since bats are nocturnal animals, it is perhaps not surprising to find bat petroglyphs associated with star icons. It is especially interesting to find bat images alongside identifiable patterns of star groups. Chamberlain (1983) first noted star patterns in the rock art of Dinétah at the panel illustrated in Figure 4.

There are eight major constellations recognized by Navajo astronomers and some thirty minor ones. These eight constellations are represented in dry-paintings and as drilled holes in gourd rattles used in the Night Chantways, and are well known to ceremonial practitioners. Chamberlain’s 1983 (Figures 4.1-4.3) study of the panel in Figure 4 revealed two examples of the belt and sword of Orion (First Slim One or Atse'ets'ozi), one example of the Pleiades (Dilyehé), and one example of “Rabbit Tracks” (Gah Heet'e'ii), the tail of our constellation Scorpius. Once alerted to the significance of these “dot patterns,” other examples were found, sometimes associated with a bat icon (Chamberlain and Rogers 2001, 2003).

Figure 5 illustrates a rather conventional bat image alongside a pattern of eleven pits which we suggest represent stars, perhaps the Navajo constellation First Big One, or ‘Atse'e'tsoh. It is noteworthy that the second pit down in the vertical pattern shown in Figure 5 is slightly larger and deeper than the others, in the position that would represent Antares, the most prominent star in Scorpius and one of the brightest stars in the summer sky.

The Navajo astronomers divide our constellation Scorpius into two separate asterisms; First Big One is, at least in part, the head and body of the scorpion and Rabbit Tracks is the tail and stinger. The Skidi Pawnee also divide Scorpius in this manner (Chamberlain 1982:116-120, 133-134) and perhaps other Native American groups do as well.
The Navajo constellation First Big One makes its appearance in the predawn sky in December and disappears from the evening sky in September. This figure has been said to represent an old man with a cane and is symbolic of long life and happiness, the ultimate goal of Navajo ritual. The extent and exact pattern of stars making up this constellation is uncertain. One informant, for example, indicated that it included some of the stars of Saggitarius as well as most of Scorpius (Griffin-Pierce 1992:166).

Many Navajo rituals cannot be performed when thunder is common and bears and snakes are active. Prominent in the summer sky, First Big One continues to represent the ceremonial values those rites ensure, even when the liturgies cannot be conducted. This, then, is the importance of this constellation in Navajo astronomy and philosophy.

Figure 6 illustrates a very rudimentary bat figure along with four pits indicating Rabbit Tracks, or Gah Heet'e'ii. This asterism has been reported in a previous paper (Rogers and Chamberlain 2003) and is known to the Navajo as “the hunter’s guide.” First appearing in the morning sky in February and disappearing in the evening twilight of late August, the presence of these four stars in the sky precludes big game hunting.
Figure 7 shows another unconventional representation of a bat along with an asterism familiar to many, the Big Dipper. This pattern is so carefully done that even the double stars, Alcor and Mizar, in the center of the dipper handle are depicted. For the Navajos, this is Revolving Male, or Náhakoos Bik'ii, the male figure which revolves around the central fire of heaven, the Fire Star, which the world knows as Polaris. On the other side of Fire Star, opposite Revolving Male, would be Revolving Female, Náhokoos Ba'aa'di, formed by the bright stars of the constellation Cassiopeia in the shape of a “W”.

This set of stars, Revolving Male, Fire Star and Revolving Female, signify important values for Navajo people. The balance they have in the heavens is a striking portrayal of the principle of living in harmony and balance with nature and each other that is a hallmark of Navajo philosophy. Always present in the sky, the Male and Female revolving about the Fire represent the importance of duty to family, working together in harmony around home-fires. The dipper pattern, Revolving Male, is one of the most frequent Navajo symbols of the night, often shown on sand paintings, ceremonial gourd rattles and, as in figure 7, rock art.

**BATS IN THE SAND AND MYTH**

Bats are often included in the drypaintings of many of the Navajo ceremonials practiced today. Navajo drypaintings, or sand paintings, have been of interest to ethnologists since Matthews' initial report of 1885 and many have since been recorded. Usually depicted as a guardian of the eastern opening, Bat is often paired with Big Fly or the Sun's tobacco pouch. Highly stylized, such a bat is illustrated in Figure 8 and once again demonstrates anatomical inaccuracies. Wyman (1983: 130) noted that a drypainting, used only for special purposes during Plumeway, has bats as its main theme but did not illustrate it.

The Navajo word for bat is jaa'abaani, or “buckskin ears,” and the animal is considered a benefi-
cent being in mythology and ceremony. In a well-known tale (e.g. Zolbrod 1984:236-241), Bat Woman rescued Monster Slayer from the rock pinnacle after he had slain the giant birds. When the Holy People were at a loss in how to proceed in solving some problem, Bat often suggested an appropriate course of action. Never a protagonist in the myths, Bat was instead a helper.

Reichard (1950:383) noted that Bat was considered a messenger of the night, just as Big Fly was the messenger of the day. These deities together served as mentors and monitors for the Holy Ones, intervening in disputes and solving problems, and occasionally rescuing the hero or heroine of the myths from some mishap. In present day ceremonial practice, Big Fly is more commonly portrayed than Bat but perhaps that was not true for the Dinétah era.

Roessell (1983:116) noted that “[t]he bat represents power in war and travel. Medicine is sprinkled on the bat to help in these endeavors.” Miguelito, Reichard’s informant, stated “that at one time medicine men could talk to bats and that bats could converse with lightning” (Bahti 1999:93). Perhaps Bat once played a role in ceremonies no longer performed.

Many of the rock art images of Dinétah can no longer be related to the ceremonial practices of today. Navajo observers often associate some of these with “protection,” and believe that they were once part of rituals now forgotten. Other icons, such as shields and the Shield Bearing Warrior images found in Dinétah have been suspected to be war symbols in Navajo rock art (Rogers 2003), and perhaps Bat could be classified similarly. War and raid ceremonials have not been practiced since the 1868 return from Fort Sumner and the rituals and imagery have long been forgotten.

**BATS IN THE ART OF NATIVE AMERICAN CULTURES**

The Mayans associated Bat with death and darkness and the animal was represented on ceramics and had its own glyph (Hill and Smith 1992:158). Bat is also found among the zoomorphic representations on Mimbres pottery (Brody 1977:184; Snodgrass 1973:37). Brody’s example has a distinctly bird-like head and most have unexplained geometric motifs on the wings.

Bats seem to be rarely portrayed in the rock art of the Native American cultures in New Mexico. After a review of the rock art literature available to the general public, only Sims, writing in Dutton (1963:218), has been found to depict bats. She diagramed three bats located at Comanche Gap near Santa Fe, one of which had been anthropomorphed. Dutton herself (1963:136) described images she found in kiva murals as bats. A Zuni informant provided this identification and an inspection of her illustrations show an arrow point shaped icon with a bifid tail, done entirely in black paint. This shape is identical to those of birds illustrated elsewhere in her work and brings up an interesting point. Did the Puebloan artists interpret bats as birds? If so, perhaps we are identifying Puebloan bat glyphs as avian, not recognizing the animal actually depicted, and thus the lack of reporting in the rock art literature.
CONCLUSIONS

Several students of the Navajo rock art of Dinétah (Copeland 2001; Schaafsma 1975) have noted the influence of Pueblo religion on the iconography found there and have even suggested that perhaps Puebloans were sometimes the actual artists. Bat images, however, seem to be common solely to the Navajo and appear not only in the Dinétah inventory of rock art, but also in the drypaintings of rituals practiced today. As Parsons (1939:931) so succinctly stated, "Bat figures prominently in Navajo, but not in Pueblo, ceremonialism."

The association of bat iconography with star patterns has not previously been reported. This relationship is unknown to present day Navajo observers and may represent imagery related to a form of ritual no longer practiced. The study of rock art is the study of ideas formulated centuries ago. The reason why some bat glyphs are associated with star patterns and some are not and why some star patterns are found with bats and some are not is an enigma not soon to be resolved.

Our studies of Navajo petroglyphs and pictographs are ongoing and we hope in the future to establish more relationships between the rock art symbols and Navajo ceremonialism as practiced today, and with the imagery of other Southwestern Native American cultures.

ACKNOWLEDGEMENTS

This study could not have been carried out without the assistance of the many Navajo men and women who have accompanied us on our field journeys. Don Dinetdeal, Harry Walters, and Avery Denny, of the Department of Diné Studies, Diné College, Tsaile, Arizona, have been valuable informants and good friends. Dr. Michael Boland, of the University of New Mexico, assisted us with bat identification and anatomy. David M. Brugge, Albuquerque, read an early draft of the manuscript, made significant observations, and encouraged us to continue. Our wives, Liz and Marré, have patiently waited while we wandered the canyons; they now have proof in writing that their husbands have gone completely batty. To all who have educated us and encouraged us, ahee'he', and thank you.
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COTTONWOOD FALLS (42SA5222) AND ITS PLACE IN SOUTHEASTERN UTAH’S PREHISTORIC LANDSCAPE

INTRODUCTION

Cottonwood Falls (42SA5222) is a prominent archaeological site in middle part of the South Cottonwood drainage in southeastern Utah (Figure 1); it is named for a nearby waterfall that has been exposed by historic erosion. Features at the site include prehistoric road segments, a great kiva, unit pueblos, and room blocks on top of a ridge. All of the significant pottery types produced by the Mesa Verde culture are present in the middens, suggesting that Cottonwood Falls was occupied over a period of at least 400 years. It is not clear how much of that occupation was seasonal or whether there were periods of abandonment, but the continuity of the ceramic record indicates that there were no extended periods of time during which the site was vacant from Pueblo I through Pueblo III. A Basketmaker III occupation of the site seems probable as well. Two population peaks occurred at the site, one during Pueblo I, and the second during late Pueblo II/Pueblo III.

Some archaeologists consider Cottonwood Falls and several other sites in southeastern Utah to be Chacoan style great houses (Fowler and Stein 2001:Figure 9-1; Irwin 2002:14, 15; Mahoney 2000; Mahoney and Kantner 2000:Figure 1.2). While the Edge of the Cedars Pueblo (Hurst 2000), the Arch Canyon Ruin (Severance 2003:Figure 5, 197), and the Bluff Great House (Jalbert and Cameron 2000), have some Chacoan style architecture, none is visible at Cottonwood Falls. Therefore, the designation of this site as a Chacoan great house with an associated Chacoan community needs to be reexamined.
Evidence from this and other sites in the area indicates that the people responsible for creating and maintaining the major features at Cottonwood Falls came from outside the area and settled in the South Cottonwood drainage during Pueblo I in order to take advantage of the large area suitable for farming in the upper part of the drainage. This site appears to have been the ceremonial/control/redistribution center for that farming community, beginning in the first half of the AD 800s and lasting until abandonment in the AD 1200s. The farming area most likely associated with Cottonwood Falls, especially during Pueblo I, is located on Milk Ranch Point, about 13 km to the northwest.

Environmental Setting

The South Cottonwood drainage is over 72 km long. Headwaters range in elevation from 2650 m on the east side of Elk Ridge to more than 3200 m on the south side of the Abajo Mountains. The drainage joins the San Juan River at Bluff, Utah at an elevation of 1310 m. Cottonwood Falls is located on a meander near the midpoint of the drainage where it cuts through the Brushy Basin Member of the Morrison Formation (Figure 2). This formation is primarily composed of many layers of sandstone and mudstone and is exposed in most of the northern tributaries of the San Juan River east of Comb Ridge in southeastern Utah (Craig and Shaw 1975:162). On the north side of the meander is a 15 m-high ridge of the Morrison Formation that is capped with a lens of sandstone. Below the ridge is a terrace of ancient stream deposits made up of a mixture of igneous rock cobbles from the Abajo Mountains, sandstone cobbles washed down from other geologic formations, and alluvial soil. Nine m below this terrace, the stream has cut through floodplain deposits of sand and gravel deposits to bedrock. The elevation at the Cottonwood Falls site datum is 1604 m.

In recent years, water has been present in the South Cottonwood drainage during the cooler months but absent in the summer except during flash floods. That water was probably available
year round in the drainage during most of the prehistoric occupation is indicated by several short linear depressions going from archaeological sites to the South Cottonwood streambed, the lack of prehistoric trails in the vicinity of springs in the area, and the lack of pottery near those springs.

In southeastern Utah, about half the moisture comes in the summer and half in the winter (Peterson 1988:94). Since the elevation at Cottonwood Falls is about 250 m higher than at Bluff (about 34 km to the south as the crow flies), the average annual rainfall is greater than the approximately 20 cm received there. However, it is less than the 34 cm average at Blanding, which is 11 km to the northeast and about 250 m higher.

The vegetation at Cottonwood Falls is dominated by sagebrush. A piñon/juniper woodland covers nearby exposures of the Morrison Formation. The South Cottonwood floodplain has a four-wing saltbrush and sagebrush community, and the riparian area along the streambed has a cottonwood/willow/tamarisk community.

Historic Impacts

All of the land in the vicinity of Cottonwood Falls is owned by the Bureau of Land Management. Cattle have never been excluded from grazing in the area and have made significant impacts on the soil and vegetation as well as on archaeological sites.

Early settlers would have known about Cottonwood Falls, starting in the 1880s when Bluff was colonized by the Mormons. Digging for “relics” at the site most likely dates from the late 1800s and probably includes investigations by the 1893 Hyde Exploring Expedition led by Richard Wetherill as they moved up South Cottonwood from Bluff (McNitt 1966:61).

A significant amount of the land within 5 km of the site has severe mining impacts. Vanadium mining started a short distance north of Cottonwood Falls in the late 1930s and grew into a uranium boom in the area starting in the 1940s (Huppe 2002). In addition to destroying archaeological sites while prospecting, some miners destroyed other sites by using heavy equipment to look for pots and burials in their spare time. Bulldozed seismic lines from oil and gas exploration have also affected archaeological sites.

Additional impacts resulted from road construction in the area, including highway U-95 and County Road 268. Road building destroyed an undocumented number of archaeological sites in the area as well as part of the midden at Cottonwood Falls.

More than 50% of Cottonwood Falls shows evidence of historic impacts. In addition to several two-track roads across the site, much of the surface of the terrace was scraped and the dirt pushed into piles on the south end of the site. Heavy equipment was used to dig in the three largest middens and create a large trench on the hillside to the east of the ridge top structures. Pot hunting is also indicated by four large craters excavated into the rubble mound on the top of the ridge and numerous holes in the midden below the ridge. Digging probably took place in the great kiva as well. However, in spite of all of these impacts, the site still has much research potential.

Background of Project

In 1988, Blanding archaeologist Winston Hurst chartered a light plane to try to relocate the South Cottonwood prehistoric road described by Albert R. Lyman, an early San Juan County resident (Lyman 1970:2, 1973:29-31). In addition to relocating that prehistoric road north of Bluff, Hurst also identified prehistoric roads at Cottonwood Falls (Hurst et al. 1993).

As a result of this discovery, BLM archaeologist Dale Davidson added Cottonwood Falls to the “Trail of the Ancients” self-guided auto tour of archaeological sites in southeastern Utah. Unfortunately, no mitigation was done at the site to prepare for visitation by unguided tourists. Therefore, I volunteered to conduct a controlled surface collection of sherds at the site for the
Bureau of Land Management so that at least a representative collection of the pottery would exist. I received permission from Davidson to proceed with the project in the summer of 1989. After laying out a 10 x 10m grid on the 45,000 m sq site, I spent 19 days collecting approximately 25,000 sherds and making a detailed field map of the site. Over the next several years, I analyzed 12,000 sherds using a microscope to aid in the recording of an average of 17 variables for each sherd. The sherds are curated at the Edge of the Cedars Museum in Blanding.

In this paper I describe the occupations at Cottonwood Falls, discuss some of the other sites in the vicinity, and give my interpretation as to how Cottonwood Falls relates to the rest of the South Cottonwood drainage.

THE COTTONWOOD FALLS SITE

Cottonwood Falls is not a typical residential site. Even though it was used for more than 400 years, the features are very focused, and there is no general scattering of household refuse as at nearby residential sites. As a result, only a limited mixing of sherds from different periods is seen over much of the site, and distinct features dating from different periods can still be identified. As noted above, the middens at this site contain all of the significant types of pottery made by the Mesa Verde culture in southeastern Utah from Basketmaker III through Pueblo III times. The ceramic data indicate that a population peak occurred during Pueblo I (AD 750-900), probably starting in the early AD 800s. This peak was followed by a significant dip in population during early/mid Pueblo II (AD 900-1060). A second population peak occurred during late Pueblo II/Pueblo III (AD 1060-1300).

Figure 3 shows the locations of the significant prehistoric features discussed in this section. The lines around the three major features show the areas for which ceramic data are included in Table 1. The shaded area in Feature 5 indicates the ceramic collection units that have not been analyzed.

Because some pottery types can be recognized only by rims while others can be recognized by body...
sherds, I have included both rim counts and total counts in Table 1. The rim counts probably give a better indication of the quantities of each type on the site. About 16% of the sherds were diagnostic; the rest fell into non-diagnostic residual categories which are not reported here.

Less than 0.3% of the pottery analyzed was imported. Most of these sherds were found in Feature 5. The majority were from the Kayenta area, with Pueblo I, II, and III types represented. There were also four sherds of Chuskan pottery as well as 24 unidentifiable sherds that could have been either local or imported. The lack of significant amounts of imported pottery was surprising. It appears that the people using this site were primarily interacting with other people in the South Cottonwood drainage rather than with other areas.

On a site with so many pottery types present, only broad time periods for features can be established (Table 1). Another problem is that the start and end dates for most types of Mesa Verde pottery were established in southwestern Colorado and may not be accurate in southeastern Utah. One example is Mancos Black-on-white. In southwestern Colorado the use of this type ends before the production of Mesa Verde Black-on-white begins (Oppelt 2002:31, 33); in southeastern Utah, Mancos Black-on-white can be found on most sites that also have Mesa Verde Black-on-white (Brew 1946:291; Severance 2003:196). Therefore, Mancos Black-on-white is almost useless as a time indicator if later pottery types are present. That is the reason I lumped the late Pueblo II and Pueblo III time periods into one 240 year division. All of the dates in this paper for Mesa Verde pottery are from Oppelt (2002).

**Description of Features**

Feature 1 is a midden that was exposed when the prehistoric road (PR-1) east of the great kiva was constructed. It consists mostly of fire-cracked rock, ashy soil, lithics and ceramics. Its depth appears to be less than 40 cm. Because it is primarily exposed in the prehistoric road cut, the extent of the midden is not clear, and there is no indication of any structures in the area. The ceramics are mostly Chapin Gray, Plain Gray, and

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#### Table 1.
Ceramic data for selected areas of Cottonwood Falls and site totals.

<table>
<thead>
<tr>
<th></th>
<th>Great Kiva</th>
<th>Unit Pueblo</th>
<th>Ridge</th>
<th>Site Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rims</td>
<td>Total</td>
<td>Rims</td>
<td>Total</td>
</tr>
<tr>
<td>Mesa Verde Corrugated</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Mesa Verde Black-on-white</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>McElmo Black-on-white</td>
<td>2</td>
<td>4</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>Dolores Corrugated</td>
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<td>1</td>
<td>0</td>
<td>0</td>
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<td>Tincup Polychrome</td>
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<td>0</td>
</tr>
<tr>
<td>Mancos Black-on-white</td>
<td>1</td>
<td>20</td>
<td>10</td>
<td>36</td>
</tr>
<tr>
<td>Mancos Corrugated</td>
<td>4</td>
<td>7</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Cortez Black-on-white</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Deadmans Black-on-red</td>
<td>7</td>
<td>27</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Mancos Gray</td>
<td>2</td>
<td>15</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Piedra Black-on-white</td>
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<td>3</td>
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<td>0</td>
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<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Moccasin Gray</td>
<td>3</td>
<td>17</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Bluff Black-on-red</td>
<td>8</td>
<td>23</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Abajo Red-on-orange</td>
<td>3</td>
<td>17</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dolores Red</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chapin Black-on-white</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chapin Gray</td>
<td>23</td>
<td>35</td>
<td>7</td>
<td>12</td>
</tr>
</tbody>
</table>
Chapin Black-on-white, which would indicate a Basketmaker III midden. However, the presence of one Bluff Black-on-red sherd, a Pueblo I type that came into use about AD 780, confuses the issue. Either this midden predates the beginning of Pueblo I at AD 750 and has one sherd left by a later occupation, or it is a post AD 780 Pueblo I midden. My impression is that it is a Basketmaker III midden because there is no indication of a nearby pit structure, a common occurrence at Basketmaker III sites in southeastern Utah where nature has filled in any associated depressions. In either case, the midden clearly predates the construction of the prehistoric road.

Feature 2 is a small midden in an eroded section of PR-2 on the south end of the site. The diagnostic ceramics are: Abajo Red-on-orange, Bluff Black-on-red, Deadmans Black-on-red, Chapin Gray, Moccasin Gray, Mancos Gray, Piedra Black-on-white, and White Mesa Black-on-white, all of which were produced during Pueblo I. The ground nearby has been bladed by heavy equipment, so there is no way of knowing whether a structure existed that was related to this midden. It is possible that it is related only to the prehistoric road.

Feature 3 appears to be the remains of several Pueblo I rectangular rooms. The cobble bases of two walls and a scattering of cobbles are all that is left. No pit structure can be seen and there is no distinct midden. If a midden for this feature had been located to the east, it would have been destroyed when the nearby prehistoric road (PR-3) was constructed. Sherds dominated by Chapin Gray and Plain Gray along with a few sherds of Bluff Black-on-red, Deadmans Black-on-red, and Mancos Gray suggest a Pueblo I use of this structure, which is reinforced by the lack of shaped stones used for its construction. Sherds from the later occupations were also found in this area including generic indented corrugated and Pueblo II/Pueblo III whiteware.

Feature 4 is the 19 m-diameter great kiva and associated midden. This kiva is only partially below the original ground surface. It is surrounded by a 1 m-high "collar" that is about 5 m wide and appears to consist of the soil excavated from the kiva as well as additional soil from the area on the east side of the kiva where a shallow swale is visible. Outlines of several rooms are visible on top of this "collar" as well as the remains of a room block about 2 x 10 m in size on the north side. The rubble is about 70 cm high. All visible walls are of "simple" construction. ("A simple wall is a single stone in width" [Lekson 1986:17].) The kiva depression is about 1.8 m deep; therefore, it would appear that the floor is not far below the present surface. The inner wall of the kiva is visible in several places and indicates an inner diameter of about 13 m. Based on its construction with coursed masonry of cobbles and a few pieces of roughly shaped sandstone, the great kiva probably dates to Pueblo II or Pueblo III. However, the midden, which is located to the southwest, is primarily Pueblo I (Table 1). Its depth appears to be less than 50 cm and contains the usual ashy soil, fire-cracked rock, lithics, and ground stone in addition to sherds.

It is difficult to determine the extent of historic disturbance to this feature. It appears that heavy equipment was used to destroy any rooms that may have been present on the south and east areas of the collar. The midden was also damaged by heavy equipment which left large holes and piles of dirt. The kiva might have been dug out by pot hunters because there is less fill here than I see at other great kiva depressions in southeastern Utah.

Feature 5 consists of the ridgetop structures and associated midden. As this is the most visible part of the site, the rooms were probably located here in order to offer a view the surrounding area and be visible from other sites. The view of the floodplain and adjacent area from the top of the ridge is somewhat limited by the topography. Upstream, the view extends to the junction with Brushy Basin Wash, 1.7 km away. A meander about 1.4 km
Figure 4

The ridge on the north side of Cottonwood Falls as seen from the west.
County Road 268 cuts through the west side of the midden of Feature 5.

downstream cuts off the view in that direction. Above the floodplain, the benches and rims of the drainage can be seen as far away as 5 km.

The north side of the ridgetop has an east-west room block built on the sandstone lens (Figure 4). The few wall tops that are exposed show simple construction of cobbles with a few pieces of roughly shaped sandstone. There are no curved walls that might indicate the presence of kivas. Four substantial looters' pits have been dug into this rubble mound. All appear to have been excavated to floor level. The rubble height varies to a maximum of about 2.5 m and covers about 700 m sq on the upper level. Because there is little indication of room size, any estimate of the number of rooms would be speculation.

Figure 4 also shows the bench that was carved into the hillside below the top of the ridge. More room blocks are located here along with open areas that appear to be plazas. The exposed wall alignments are similar to those on top of the ridge. The room rubble is generally less than 2.5 m high and covers about 500 m sq. No kiva walls are evident. On the south side of this bench, at its edge, are retaining walls of simple construction.

The midden for Feature 5 is the most extensive at the site, containing about 80% of the sherds collected. Its composition is similar to the other middens. The sherd density is greatest southwest of the bench near the cut for County Road 268. This road cut indicates that there is no significant depth to the midden in this area; it is a sheet midden less than 8 cm thick. Most of the ashy soil, as seen in looters’ pits, is directly south of the southeastern room block. The midden’s depth here appears to be less than 80 cm, which is shallow for a site that was used for such a long time. This part of the midden had a high percentage of Pueblo I sherds compared to late Pueblo II/Pueblo III sherds. The presence of Pueblo I sherds on the surface indicates that little stratigraphy remains in the midden.

Features 6, 7, and 8 are grouped together. Feature 6 is a unit pueblo with a 10 m diameter pit struc-
ture. It appears that sometime after it was constructed, the area adjacent to it (Feature 8) became a primary focus of the site which resulted in Feature 6 being abandoned and a new unit pueblo (Feature 7) being constructed a short distance away. The room block at Feature 6 has been stone-robbed. Only a few scattered rocks are left on a slightly raised area next to a shallow depression about 30 cm deep. It is not clear when this feature was in use. The construction of Feature 7 probably destroyed the midden belonging to Feature 6, and sherds from the occupation of Feature 7 mask any from the occupation of the earlier structure. However, there are a few Pueblo I sherds in Feature 7's midden which may have been redeposited from the midden at Feature 6. If this is the case, Feature 6 might be a pit structure from the Pueblo I time period. Another possible source of the Pueblo I sherds could be an unidentified feature in the area that was disturbed when one or both unit pueblos were constructed. The kiva depression at Feature 7 is 12 m in diameter and about 60 cm deep. The room block's rubble mound is about 15 x 6 m in size and has a maximum height of about 80 cm. The room block's visible walls are of simple construction utilizing cobbles and a few pieces of roughly shaped sandstone. As stated above, the midden is probably a combination of the refuse from both unit pueblos. Its depth, as seen in a trench probably made by a road grader, appears to be less than 30 cm and contains the same materials as the other middens. The pottery is dominated by Mancos Black-on-white and McElmo Black-on-white (Table 1), therefore the primary occupation of this feature occurred after Pueblo I.

Feature 8 is a large shallow oval-shaped depression 20 x 25 m in size that is the focal point for three of the prehistoric roads (PR-2, PR-3, and PR-5). There is no indication that it was intentionally excavated, and it is almost completely devoid of sherds and other cultural material. This depression appears to have been the destination for people coming onto the site from the south using prehistoric road PR-3 during the late Pueblo II/Pueblo III time period.

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**Table 2.**

Measurements for the prehistoric road segments.

<table>
<thead>
<tr>
<th>Road Segment</th>
<th>Typical Width</th>
<th>Typical Depth</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR-1</td>
<td>9 m</td>
<td>.5 m</td>
<td>200 m</td>
</tr>
<tr>
<td>PR-2</td>
<td>10 m</td>
<td>.75 m</td>
<td>150 m</td>
</tr>
<tr>
<td>PR-3</td>
<td>13 m</td>
<td>2 m</td>
<td>120 m</td>
</tr>
<tr>
<td>PR-4</td>
<td>6 m</td>
<td>.8 m</td>
<td>50 m</td>
</tr>
<tr>
<td>PR-5</td>
<td>10 m</td>
<td>1.2 m</td>
<td>61 m</td>
</tr>
<tr>
<td>PR-6</td>
<td>10 m</td>
<td>2 m</td>
<td>100 m</td>
</tr>
<tr>
<td>PR-7</td>
<td>5 m</td>
<td>.5 m</td>
<td>53 m</td>
</tr>
</tbody>
</table>

Feature 9 is a structure that was built on the southeast edge of the terrace adjacent to PR-1 and an associated midden. The structure is rectangular, 3 x 3.5 m, and constructed of cobbles and pieces of roughly shaped sandstone. In the prehistoric road cut next to this feature is a small midden of ashy soil, fire-cracked rock and sherds along with a small slab-lined feature of indeterminate size. The sherds are from the Pueblo I and late Pueblo II/Pueblo III periods. This feature seems to be associated only with the prehistoric road and appears to be a “shrine” (Stein and McKenna 1988:55).

**Prehistoric Roads**

The locations of the prehistoric roads are shown on Figure 3. Table 2 shows their length, typical width, and typical depth. PR-1 appears to be the main South Cottonwood route. Because of the topography and location of features at Cottonwood Falls, it is the only feasible location for the through road. While it is well defined when seen from the south, the road fades out on the north end of the cobble terrace where it starts downhill to cross the drainage. I have noticed that this is a common attribute of prehistoric roads in southeastern Utah. Apparently it was
more important to show people coming from the south where to walk than people coming from the north. The road that we see now was constructed after Basketmaker III because it cuts through a midden from that time period (Feature 1). The road in its present form probably dates to late Pueblo II/Pueblo III as does the structure (Feature 9) which is adjacent to it.

PR-2 is the shallowest and least visible of the road segments on the site even though it is up to 10 m wide. It appears to have provided access from the south to the shallow depression (Feature 8). Its width is typical of post-Pueblo I prehistoric roads that I have found in southeastern Utah, but the time of its construction is not clear. The presence of Pueblo I sherds (Feature 2) on the south end may indicate its use at that time.

PR-3 is the main access route for the site, ending at the large shallow depression. It is more than 2 m deep where it cuts through the edge of the terrace. An artificial ridge made up of material removed from the road was created along its east side. The cut that is visible probably represents the late Pueblo II/Pueblo III version of the road.

PR-4 is cut through the cobble terrace from the south and goes to the remains of the cobble structure that appears to date to Pueblo I (Feature 3). This suggests that it was constructed during the same time period. The few sherds along PR-4 are mostly Chapin Gray and Plain Gray along with one Abajo Red-on-orange sherd which would confirm a Pueblo I date even though a few later sherds are also present. In addition, PR-4 is narrower than the nearby prehistoric road (PR-3) that apparently was constructed at a later time. Roads built before the Pueblo II time period characteristically are narrower than later ones (John Stein, personal communication 2002).

PR-5 is most visible where it cuts through the cobble terrace. It appears to connect 42SA23801, a Pueblo II/Pueblo III site 330 m to the southwest (see location in Figure 5), with the shallow depression (Feature 8) at Cottonwood Falls. The prehistoric road was probably constructed at the same time as 42SA23801.

There is no indication as to when PR-6 and PR-7 were constructed. PR-6 goes from the terrace at the base of the ridge down to the drainage. Its purpose is not clear. It may have been a route from the north to the shallow depression, or it might have been an access route for the ridgetop feature. PR-7 is a narrow linear depression that goes from the ridgetop structures down to the drainage. It could have been used by the people on the ridgetop going to and from the stream.

Figure 5
Some of the archaeological sites that appear to have a relationship with Cottonwood Falls.
Occupations

Because of the overlap in time of use for most pottery types, I used selected types to identify the occupations.

Basketmaker III (AD 500-750). Although the evidence is somewhat ambiguous, the first identifiable settlement at the site appears to have been during Basketmaker III. As numerous Basketmaker III sites have been identified in this part of the South Cottonwood drainage, it would be not surprising to find a settlement here. The significant quantities of Chapin Gray pottery (AD 575-900) may indicate that presence; however, later occupations have obscured this possible early occupation except at Feature 1. The presence of Chapin Gray and Chapin Black-on-white (AD 575-900) and the lack of Abajo Red-on-orange (AD 700-850) in this midden would indicate use during the AD 575-700 time period.

Pueblo I (AD 750-900). Significant quantities of Abajo Red-on-orange and Bluff Black-on-red (AD 780-940+) in the middens are evidence that the first major occupation of the site occurred during Pueblo I and that it probably started in the early AD 800s. The combination of the Pueblo I room block (Feature 3) and the prehistoric road segment leading to it (PR-4) imply that the formalization of the route up the South Cottonwood drainage started much earlier than had previously been thought (Hurst and Till 2002:21, 22; Severance 1999:191). The construction of a prehistoric road up the South Cottonwood drainage would have taken a high degree of organization among an extended group of people and indicates a level of planning during the Pueblo I occupation that has not previously been apparent in southeastern Utah.

The Pueblo I sherds in the midden exposed in PR-1 next to Feature 9, the shrine, might indicate a prehistoric road and shrine were located here during Pueblo I as well as during late Pueblo II/Pueblo III. Feature 2, the small Pueblo I midden at the south end of PR-2, is ambiguous. It may also indicate a prehistoric road existed at this location during Pueblo I, but the evidence is not clear. The Pueblo I midden at the Great Kiva (Feature 4) indicates the presence of a structure of some type here at that time.

The midden at Feature 5 indicates a significant Pueblo I presence on top of the ridge. It would not have been a typical Pueblo I site with an arc of rooms with one or more pit structures in front because of the narrowness of the ridge, the sandstone base on the north side, and the cobbles that make up the surface of the bench. I suggest that rooms for the storage and redistribution of crops grown at higher elevation locations, along with rooms for those who were in charge of that function, were built on top of the ridge in Pueblo I. A Pueblo I site of this type has a precedent. Klesert (1982) proposes that Standing Fall House, a 55-room cliff ruin located on the north end of Black Mesa in Northeastern Arizona, was constructed for a similar purpose during Pueblo I. "All analyses suggest, independently, that Standing Fall House was not used primarily as a year-round habitation site. It is hypothesized that the site was the seasonal locus for a system of storage and redistribution of maize involving an integrated network of otherwise spatially distinct communities. Further, this economic network apparently existed during Pueblo I and continued until early Pueblo II at the site" (Klesert 1982:39).

Early to Middle Pueblo II (AD 900-1060). This is the period that is least visible at Cottonwood Falls. It appears that the area west of Blanding was sparsely populated at this time (Severance 2003:195, 199) and the Cottonwood Falls area was no exception. Cortez Black-on-white (A.D. 900-1000+), the best ceramic indicator for early Pueblo II, is not common west of Blanding. In my experience, most sherds of this type are found at sites along the prehistoric road system. I identified just two rim sherds at Cottonwood Falls. As the other pottery types used during this period were in use during earlier and later periods, they are not much help in dating an occupation to this time.
Late Pueblo II/Pueblo III (AD 1060-1300). The large quantity of McElmo Black-on-white (AD 1075-1300) on the site indicates a population peak during this time. Most of the features visible at Cottonwood Falls also appear to date to this 240 year period, including all of the prehistoric roads except PR-4.

I have found more prehistoric road segments at Cottonwood Falls than at any other site that I have looked at in southeastern Utah, another indication of the importance of this location. The focus for PR-2, PR-3, and PR-5 appears to be Feature 8, the shallow depression. I interpret this feature as public space for those delivering or taking goods to or from other parts of the drainage. It is not clear if PR-6 relates to Feature 8, but it might. PR-2, PR-3, PR-5 and PR-6 do not directly interact with any of the structures on the site. PR-1 interacts only with Feature 9, the shrine. Only PR-4 and PR-7 go toward structures.

The location of the later unit pueblo (Feature 7) near PR-3 implies that it controlled the access to Feature 8. Feature 6 might have performed this task in earlier times, but apparently it was built in an inconvenient location and it appears to have been abandoned before Feature 7 was constructed.

Not much can be learned from the great kiva. The construction style could date to any time within Pueblo II or Pueblo III as do the post-Pueblo I sherds in the midden. There is no evidence, other than the use of similar building materials, that the great kiva was built or used at the same time as the latest structures on top of the ridge; but it clearly was an important part of the site.

The structures on the ridgetop appear to have been the primary reason this site was established. Excavations would be required to provide a definitive answer to their purpose; however, I propose that most of these rooms were used to store crops for later redistribution. This use appears to have started in the AD 800s and continued until the site was abandoned in the AD 1200s. If a crop surplus existed, it could have been traded to people living along the prehistoric road system as far away as New Mexico.

While other researchers see a Chacoan great house on top of the ridge, I do not. The criteria established for Chacoan great houses in New Mexico are not met: all visible walls are of simple construction (no rubble core or massive walls are visible), there is no evidence of blocked-in kivas, and there is no wall enclosing the structures. The ceramics indicate that the second population peak probably occurred after Chaco collapsed. In addition, only a small fraction of the pottery at the site is imported. Mahoney proposes (1999:Figure 2) 11 kivas on top of the ridge, even though no curved walls or kiva depressions are in evidence, just looters' pits. I would not be surprised if kivas are present, but their walls are not visible on the surface. Mahoney (2000:21) also claims a total of more than 50 rooms even though few walls are visible; the actual room total may be lower. Whatever its function may have been, Cottonwood Falls would have been an impressive sight to people traveling north on the South Cottonwood prehistoric road. Its importance in the South Cottonwood drainage should not be underestimated.

**NEARBY ARCHAEOLOGICAL SITES ASSOCIATED WITH COTTONWOOD FALLS**

Numerous archaeological sites dating from Basketmaker III through Pueblo III are found in the area around Cottonwood Falls. Several within 2 km appear to have had direct connections with it by prehistoric roads and/or line-of-sight. Many of these sites have a Pueblo I component as well as a later occupation. These multiple occupation sites appear to represent a return to ancestral locations by Pueblo II/Pueblo III people who were reclaiming ownership. Sites shown on Figure 5 will be discussed; those with a Pueblo I occupation will be discussed first.
North of Cottonwood Falls is a multiple-component residential site, 42SA10338. A unit pueblo with a 10.7 m-diameter kiva depression on the south side is the most obvious feature here. The midden contains Pueblo I and late Pueblo II/Early Pueblo III sherds. A linear depression goes from the kiva towards Cottonwood Falls; however, the destination for this prehistoric road segment may have been just the drainage. A depression 9.6 m in diameter is 14 m to the northeast of the unit pueblo; no associated room block is visible. Sixty-one m east of the unit pueblo is a Basketmaker III midden that consists mostly of fire-cracked rock and Plain Gray sherds. On the north side of this midden, wall bases are exposed in a modern road cut. To the west of the unit pueblo is a prehistoric road that goes toward the Brushy Basin drainage. This prehistoric road is narrower than most, indicating that it may have been built during Pueblo I. The northerly continuation of the South Cottonwood prehistoric road is in the floodplain in this area; I have not been able to determine its exact location.

South of Cottonwood Falls, astride the South Cottonwood prehistoric road, is 42SA10340. Nine m to the west of the prehistoric road is a unit pueblo with a 9 m-diameter kiva depression and a 12 m-long room block on the north side. The remains of several additional structures are southwest of the kiva depression. Cottonwood Falls is in view from the site. A linear depression goes southwest from the unit pueblo toward the South Cottonwood drainage. It was probably the route used for getting water. The midden area is extensive. West of the prehistoric road, the midden contains Pueblo I, II and III sherds. On the east side of the prehistoric road is a Pueblo I room block and large midden to the southwest which ties in with the west midden. This site appears to be a residential area that is closely related to Cottonwood Falls. I interpret it as being the gatekeeper and suggest that the people living here decided who was allowed to go to Cottonwood Falls and who had to bypass the site and continue up the drainage on the South Cottonwood road.

Farther south and within sight of Cottonwood Falls is a large Pueblo I habitation site, 42SA23809. It consists of an arc of rooms 28 m long as well as a few other room outlines. South of the arc of rooms is a great kiva depression that is 16.7 m in diameter. The site also includes a Pueblo II/Pueblo III unit pueblo and associated midden. The South Cottonwood prehistoric road passes on the west side of the site about 43 m from the arc of rooms.

On top of the ridge 90 m west of the prehistoric road is a completely bulldozed site, 42SA14692. Too little remains to determine its size, but the midden has late Pueblo II/Pueblo III sherds. It also had a clear view of Cottonwood Falls.

Northwest of Cottonwood Falls and in sight is another unit pueblo, 42SA23814 that appears to date to the late Pueblo II/Pueblo III period. The kiva depression is 10.7 m in diameter, and the room block is on the north side. The associated midden is small. The site has a much larger Pueblo I midden with no associated room block or pit structure.

To the southwest is 42SA23801. This site has a 13.7 m-diameter great kiva depression with room blocks on the north and west sides. The midden contains sherds from Pueblo II and Pueblo III. Judging from the relatively small midden, either this was not a residential site or it was only used for a short period. A prehistoric road appears to have connected this site to Cottonwood Falls. (See PR-5 in Figure 3 for the location of the remaining segment of this road.)

Northwest of Cottonwood Falls is 42SA16297. It is a late Pueblo II/Pueblo III unit pueblo that was built on a bench more than 60 m above the floodplain. Unfortunately, bulldozers have significantly damaged the site. The kiva depression appears to be about 9 m in diameter and the room block appears to wrap around the north half of the depression. Cottonwood Falls, as well as most of the sites discussed in this section, can be seen from this location. This site is so far above the flood-
plain that I feel it is more than a residential site. It probably served a ceremonial function related to Cottonwood Falls.

Two above-ground kivas are located equidistant from Cottonwood Falls. About 1.7 km north and in view is a 4.6m-diameter Pueblo III kiva (42SA23807) built on top of a narrow ridge at the junction of the Brushy Basin and South Cottonwood drainages. Outlines of rooms are also visible on the talus slope below the kiva. About 1.7 km southeast, another late kiva, 4 m in diameter, and several associated structures were constructed on a bench under the east rim of the drainage (42SA25560). The few sherds present at this site indicate a late Pueblo II/Pueblo III occupation. As with 42SA23807, it appears that the site was located to allow visual communication with Cottonwood Falls. This site in turn is related to a Pueblo III site near the bottom of the drainage, 42SA10334, that is not visible from Cottonwood Falls. The route between the two sites is indicated by a short linear depression leading uphill from 42SA10334 to a natural route that continues to 42SA25560.

There are many other sites of various size within 2 km of Cottonwood Falls including late Pueblo II/Pueblo III pottery kilns and check dams. There is no way of knowing how many were associated with Cottonwood Falls, but the indications are that a complex community existed in this part of the drainage, starting in Pueblo I and lasting well into Pueblo III. An additional indication of the importance of this site is the high visibility of the prehistoric roads in the vicinity of Cottonwood Falls. As the distance from the site increases, the prehistoric roads become more difficult to identify.

THE RELATIONSHIP OF COTTONWOOD FALLS TO THE REST OF THE SOUTH COTTONWOOD DRAINAGE

The Pueblo I Time Period

In a previous paper (Severance 2003), I discussed a significant change that apparently occurred in the prehistoric occupation west of the Blanding area during Pueblo I. This change is represented by the radical shift in the distribution of pottery made from the iron-rich clays of the Chinle Formation which are exposed at the base of Comb Ridge about 7 km west of Cottonwood Falls. During Basketmaker III, the percentage of pottery made from these clays was surprisingly consistent in middens across southeastern Utah from Alkali Ridge on the east to Cedar Mesa on the west. This suggests to me a highly mobile and/or socially homogeneous society occupied southeastern Utah at that time. During Pueblo I, the distribution of pottery made with the same clays changes dramatically. The percentages increase in middens close to the clay source and decrease with the distance from the source. I interpret this as a disruption of the lifestyle that existed during Basketmaker III and propose that it was caused by outsiders moving into the South Cottonwood drainage during the early part of the Pueblo I period to take advantage of the abundant farmland at elevations from about 1650 m to about 2375 m. The movement of a large group of people into the South Cottonwood drainage would not have been unprecedented. Wilshusen and Blinman (1992: 253) “argue that the key to Pueblo I is to see it as a period of rapid formation of village communities and aggregation of population in certain locales.” Wilshusen and Ortman (1999) discuss the immigration of a large group of people into the Dolores area in southwestern Colorado during Pueblo I; I suggest that a similar immigration took place in the South Cottonwood drainage in the early AD 800s.
The presence of a large number of Pueblo I farmsteads on Milk Ranch Point and in other areas in the upper part of the South Cottonwood drainage has been documented in several archaeological survey reports (DeBloois 1975; Green 1971; Irwin 2002). DeBloois (1975:78) reports that 334 sites, or 55% of the total number of sites recorded on Milk Ranch Point, were Pueblo I sites. The site density was 19 sites per sq mile compared to 4 sites per sq mile during Basketmaker III.

Although Milk Ranch Point was a preferred farming location during Pueblo I, it was not a desirable place to spend the winter. A much more pleasant place would have been in one of the Pueblo I villages located along the San Juan River at Bluff.

At an elevation of 2100 m, where I live south of Monticello, Utah, pinto beans are planted the first week in June. On Milk Ranch Point in prehistoric times, the soil was probably warm enough by that time and at that elevation for corn to be planted. Crops would have been harvested before the beginning of winter. Therefore it is reasonable to assume that during Pueblo I people lived and farmed at the higher elevations from sometime in May until mid-November at the latest. They would have spent the rest of the year in the lower parts of the South Cottonwood drainage or along the San Juan River near Bluff.

Cottonwood Falls is low enough in elevation that it would have not have been snowed in for long periods in the winter. It would have been a good location to serve as a storage/redistribution center for moving crops from the farming area on Milk Ranch Point to people living in their winter homes.

If Cottonwood Falls was the ceremonial/control/redistribution center for the farming operation, then how were communications maintained between the farming area and Cottonwood Falls? In the fall of 2002, I found a boulder-top communications site (42SA25559) that appears to have been a relay point in a line-of-sight communications system between Cottonwood Falls and Milk Ranch Point (Figure 6). It is located on the talus slope below the rim of the Brushy Basin drainage about 3 km north of Cottonwood Falls. I have found numerous sites of this type in the drainages of southeastern Utah, usually on talus slopes.

Figure 6
The line-of-sight distance between 42SA25559 and Milk Ranch Point is approximately 14 km.
They have several traits in common: they are on top of boulders, they are not defensive sites because most are relatively easy to ascend, and they all appear to date to the late Pueblo II/Pueblo III period. The significant difference at this site is the presence of pottery from Pueblo I in addition to sherds from late Pueblo II/Pueblo III.

In order to check the possible use of this site for relaying communications between Cottonwood Falls and Milk Ranch Point, a friend was stationed at 42SA25559 with a mirror while I went to the largest Pueblo I site on Milk Ranch Point, 42SA11800. This site covers 28,000 m² just below the rim of Whiskers Draw and includes several structures built on top of rock outcrops. It is about 14 km from 42SA25559 at an elevation of 2210 m. There was a clear line of sight between the two locations, and even though the day was somewhat overcast, the mirror flashes were very obvious. It would appear that this Pueblo I site (which also has a late Pueblo II/Pueblo III component) had a close connection with Cottonwood Falls. No doubt there are other sites in the farming area that were part of the communications system from Pueblo I through Pueblo III. This visual communication system is another indication that a highly organized farming venture was established during Pueblo I.

The Late Pueblo II/Pueblo III Time Period

The situation during late Pueblo II/Pueblo III, the other population peak at Cottonwood Falls, appears to be more complex than it was during Pueblo I. It is not clear where the crops stored at Cottonwood Falls were being sent during this period. Most habitation sites in the lower part of the drainage were smaller and more dispersed than the earlier Pueblo I sites. Therefore the crops were probably distributed over a larger area than previously.

After the collapse of Chaco at about AD 1150, farmers flooded back into the area (Stuart 2000:125, 126), and the farming area controlled by Cottonwood Falls apparently expanded. The “rit-ual landscape” around Cottonwood Falls appears to have expanded also. The late Pueblo II/Pueblo III above-ground kiva sites discussed above appear to have been located so that people could see and be seen by others at Cottonwood Falls. A late Pueblo II/Pueblo III communications site was constructed on a boulder below the east rim of the drainage about 2.5 km southeast of Cottonwood Falls (42SA25561). This location appears to have been chosen to allow communications with people living near the South Cottonwood floodplain several km south of Cottonwood Falls. It can also be seen from the elevated kiva site, 42SA25560. By this time, farming was taking place at lower elevations in addition to most of the areas used during Pueblo I. This is indicated by the large number of check dams that can be found in the shallow drainages on the benches below the rims of South Cottonwood and Brushy Basin in the vicinity of Cottonwood Falls as well as on the benches and in the drainages of Black Mesa, about 3.5 km south of Cottonwood Falls. All of the archaeological sites associated with these dams appear to be from the late Pueblo II/Pueblo III period. A close relationship between Black Mesa and Cottonwood Falls at this time is indicated by a prehistoric road crossing the top of Black Mesa in the direction of the South Cottonwood drainage. All of the structural sites associated with this prehistoric road are from the late Pueblo II/Pueblo III time period. The road goes to a herradura (“a low masonry structure in Direct Association with the roadway” [Kincaid, et al. 1983:9-14]) on the rim of Black Mesa that has a clear view of Cottonwood Falls. Several other late Pueblo II/Pueblo III sites were built in locations on Black Mesa that had a clear view of Cottonwood Falls. Unlike many of the sites around Cottonwood Falls, they were not located on top of Pueblo I sites. These Black Mesa sites can also be seen from sites on White Mesa to the east; therefore, the visual communications system appears to have involved a much greater area than during the Pueblo I time period. As with the rest of southeastern Utah, the South Cottonwood drainage appears to have been abandoned by AD 1300.
SUMMARY

This paper attempts to describe some of the complexity of the settlement pattern in the South Cottonwood drainage. Cottonwood Falls appears to have been the center of an extensive farming enterprise that existed from Pueblo I into Pueblo III. Therefore, it provides an opportunity to take a fresh look at the Pueblo I culture and how it evolved in southeastern Utah. An inventory of an extended area surrounding Cottonwood Falls is needed to determine how many more archaeological features were built in locations that had a clear view of the site. In 2002 I identified another herradura (made out of vertical slabs, an unusual method of construction) and a nearby avanzada (a two room structure in an elevated position above the prehistoric route [Nials et al 1987:14]) about 4 km north of Cottonwood Falls in the Brushy Basin drainage (42SA25558). As Cottonwood Falls can be seen from the avanzada, there probably was a relationship between the two sites. Many other sites in the area await recording.

The amount of farmland available in the various heads of the South Cottonwood drainage is much greater than one group of people would have been able to control, suggesting that other farming centers in the drainage may have existed. Possible locations for these are Red Knobs (42SA1964) and the Edge of the Cedars Pueblo (42SA700) in the South Cottonwood drainage and the Arch Canyon Ruin (42SA5271) in the Comb Wash drainage (Figure 1). All of these sites had multiple occupations starting in Pueblo I or earlier. The question of the relationship of the Bluff Great House (42SA22674), another site with multiple occupations, to Cottonwood Falls and other contemporary sites is another research issue that needs to be addressed.

It is possible that the organizational knowledge that created the Chaco Phenomenon came from places like the South Cottonwood drainage where a highly organized farming enterprise appears to have been put into place several hundred years before the florescence at Chaco.

ACKNOWLEDGMENTS

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ENDNOTES

1 The complete report, “A Controlled Surface Collection and Analysis of Ceramics at 42SA5222 (Cottonwood Falls), Southeastern Utah,” is on file with the Edge of the Cedars Museum in Blanding Utah.

2 Some archaeologists consider kiva depressions 10 m or greater in diameter to be possible great kivas. I have found so many depressions in southeastern Utah this size or larger that an arbitrary minimum size appears to be necessary. I consider only depressions 13.7 m (45 ft) in diameter or larger to be possible great kivas. Even with this restriction, I have located 23 depressions in southeastern Utah that are at least this large. Thirteen are in the South Cottonwood drainage. If depressions 10 m or more in diameter are considered to be possible great kivas, then there are at least 10 within 2 km of Cottonwood Falls, a highly unlikely number. The 13.7 m-limit reduces the number of possible great kivas in the same area to three. Only excavations can determine which depressions are actually great kivas.

3 Investigations at the Lowry Ruin in southwestern Colorado may offer some insights about the long-term occupation at Cottonwood Falls. Kendrick and Judge (2000:119) state: “From our perspective, households occupied the location as early as Basketmaker III times and controlled resources within the immediate area during a long period of time.” Kendrick and Judge (2000:129) further state: “The presence of pit structures below or in the immediate vicinity of the Lowry Ruin prior to the Chaco era, and the building’s incremental growth through time, strongly indicate a local household or lineage was responsible for its construction.”

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Old Data, New Possibilities: Exploring Activity Synchrony Among Late Prehistoric Villages in the Galisteo Basin of North-Central New Mexico

The development of the tree-ring dating method, the building of a data base, and the construction of chronologies started in the early 20th century (Robinson et al. 1973). The Galisteo Basin of north-central New Mexico was one of the early focal points of that research (Smiley et al. 1953). However, as so often is the case, far more samples from the basin gave inconclusive, non-cutting dates, rather than the more reliable cutting dates. Accordingly, conventional wisdom tells us that relatively few of the hundreds of dated samples are of value to our studies of regional chronology and human occupation of the basin.

As archaeologists we tend to ignore non-cutting dates because of the uncertainty of their meaning. This has left us in the unfortunate position of having spent a great deal of time, effort, and resources in collecting and processing data that are considered as having limited or no value. Is this true? Cannot ways be devised to extract useful conclusions, or even working hypotheses, from these data? A previous study has already shown us that non-cutting tree-ring dates do have utility in instances where large numbers of them are available for a given site (Wiseman 1995).

The purpose of the present paper is to explore the tree-ring data for a number of late prehistoric and early historic sites in north-central New Mexico (Figure 1). Since non-cutting dates are usually more numerous than cutting dates at most sites (Table 1), we combine both types of dates to construct. Although one of the main thrusts of the tree-ring dating program is to discover actual building events and sequences, an undetermined number of tree-samples cannot be confidently assumed to be building timbers. Other uses, such as for fuel for heating rooms, cooking food, firing pottery, and the like, are undoubtedly represented among the samples as well.

Figure 1
Study region and sites.
Table 1
Tree-ring dates by precision category for the study sites.

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<th>Site</th>
<th>Precision Symbol</th>
<th>+v</th>
<th>v</th>
<th>++ C*</th>
<th>Cutting (B,G,L, c,r) **</th>
<th>Total</th>
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<td>Pueblo Largo</td>
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<td>25</td>
<td>55 15%</td>
<td>366</td>
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<tr>
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<td>17</td>
<td>28</td>
<td>5</td>
<td>20 29%</td>
<td>70</td>
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<tr>
<td>Colina Verde</td>
<td>vv</td>
<td>23</td>
<td>91</td>
<td>17</td>
<td>132 50%</td>
<td>263</td>
</tr>
<tr>
<td>Las Madres</td>
<td>+v</td>
<td>32</td>
<td>96</td>
<td>16</td>
<td>23 14%</td>
<td>167</td>
</tr>
<tr>
<td>LA 27</td>
<td>++</td>
<td>13</td>
<td>118</td>
<td>7</td>
<td>79 36%</td>
<td>217</td>
</tr>
<tr>
<td>Pueblo Alamo</td>
<td>+</td>
<td>1</td>
<td>28</td>
<td>5</td>
<td>18 29%</td>
<td>52</td>
</tr>
<tr>
<td>Upper Arroyo Hondo</td>
<td></td>
<td>4</td>
<td>25</td>
<td>2</td>
<td>13 30%</td>
<td>44</td>
</tr>
<tr>
<td>Arroyo Hondo</td>
<td></td>
<td>1</td>
<td>43</td>
<td>5</td>
<td>96 66%</td>
<td>145</td>
</tr>
<tr>
<td>Arrowhead</td>
<td></td>
<td>7</td>
<td>23</td>
<td>4</td>
<td>26 43%</td>
<td>60</td>
</tr>
<tr>
<td>Pecos</td>
<td></td>
<td>10</td>
<td>61</td>
<td>3</td>
<td>49 40%</td>
<td>123</td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td>1-40</td>
<td>23-246</td>
<td>2-25</td>
<td>13-132 14-66%</td>
<td>44-366</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>14.8</td>
<td>75.9</td>
<td>8.9</td>
<td>51.1 35%</td>
<td>150.7</td>
</tr>
<tr>
<td>Median</td>
<td></td>
<td>20</td>
<td>146</td>
<td>13.5</td>
<td>79 40%</td>
<td>205</td>
</tr>
</tbody>
</table>

* C= a symbol used for convenience here in lieu of the cutting date symbols shown in the column
** Percentages indicate proportion of cutting dates in the entire sample from the site.

Thus, the present study looks at the dates, and especially the numbers of dates, as representing occupational activity and intensity. With this in mind, certain patterns emerge from the resulting tree-ring curves. Importantly, peaks and valleys coordinate through several of the curves, resulting in synchrony that requires further investigation.

RECONSTRUCTION OF PREHISTORIC POPULATION ACTIVITY IN THE UPPER GALISTEO BASIN AND ADJACENT AREAS

Tree-ring data for this study concern prehistoric and historic sites in and around the Galisteo Basin, including the southern Santa Fe bajada and the upper Pecos Valley. Only ten sites with large numbers of dates are included (Warren et al. 1972, 1973). Unfortunately, several key sites (for instance, Pueblo She, Pueblo Blanco, San Lazaro, Galisteo, San Marcos) are not in the study sample because few or no dates are currently available for them.

Data generation consisted of grouping all tree-ring dates by site into 5 year intervals (Figure 2). Cutting dates are grouped within their appropriate increment, but non-cutting dates are grouped in the following half decadal increment as a crude approximation of their real dates. The groups were then graphed, resulting in what we believe to be general characterizations of occupation activity and intensity through time at each site.

Activity does not distinguish between episodes of construction and daily hearth use for cooking and heating. Since it seems likely that old timbers may have been salvaged from abandoned parts of the study sites, or even brought in from nearby ruins, we believe that the tree-ring dates should be viewed in a more general sense as activity of the inhabitants and only incidentally as an expression of that particular study site.

Occupation intensity, expressed by high and low segments of the curves, is even more tentative. In some instances, single proveniences produced many or most of the dates.
In order not to crowd the data too closely because of the limitations of the non-cutting dates, we look at the curves on half-decadal and decadal bases. Several features of the curves are immediately obvious:

1. Two types of curves emerge. The more common one, the multi-peak curve exemplified by Pueblo Largo and Pecos Pueblo, has several peaks, interspaced by valleys which may indicate periods of low activity (reduced population?).

The other type of curve, the single, long activity peak exemplified by Colina Verde and Las Madres, displays one continuous period of presumably more or less steady activity.

2. Both types of curves share a distinct feature. Each activity peak is followed by an abrupt decline or fall-off, including the final peak that signals site abandonment. Given other evidence for an probable abandonment in the middle of the Arroyo Hondo curve (followed by reoccupation; see Schwartz 1980), one has to wonder about the meaning of the abrupt declines after all peaks at sites with multi-peak curves. Do some or all of these fall-offs signal partial or even full abandonments of these sites, however short those abandonments might have been?

Obviously, our assumptions about continuity of occupation of so-called long-lived pueblos must be reconsidered. The implications for estimating regional population size at any one point in time, as well as through time, are stunning.

3. Certain peaks and valleys among the curves for all of the study sites display correspondences. These may be summarized by event and decade as follows. The beginning dates for most of the villages in the study sample are difficult to ascertain at the present time because their tree-ring sequences start with few, scattered dates that are not possible to interpret without corroborative information. Thus, we cannot be certain in every instance just when a village started.
AD 1240s: Three villages – Pueblo Largo, Colina Verde, and Pueblo Alamo – share an initial activity increase that led to the major peaks in the 1270s. LA 27 appears to have experienced a slight decline in the 1240s, but this later reversed as a major peak occurred during the late 1260s.

AD 1280s: Early in the 1280s activity decreased markedly at Pueblo Largo and LA 27 possibly at Colina Verde. If the decrease in activity posited for the early 1280s did occur at Colina Verde, it was immediately reversed during later in that decade. Pueblo Alamo evidently was abandoned by the early 1280s.

AD 1290s: Major activity peaks occurred at Pueblo Largo, LA 27, and at Upper Arroyo Hondo Pueblo to the north. A decline from the peak of the late 1280s appears to have set in at Colina Verde.

AD 1301 to 1305: Sharp declines in activity took place at three villages, Pueblo Largo, Colina Verde, and LA 27. This decline was a continuation of that started in the 1290s at Colina Verde. It also appears to have begun somewhat earlier at Upper Arroyo Hondo Pueblo as well. At this same time, activity appears to have been increasing overall at Las Madres, leading eventually to the “single peak” occupation at that village.

AD 1306 to 1310: Declines continued at Pueblo Largo and LA 27. Colina saw a sharp increase in activity during this half decade. Activity at Upper Arroyo Hondo apparently began the momentum toward its final peak of the decade that followed.

AD 1311 to 1320: Activity continued to decline at Pueblo Largo, LA 27, and Upper Arroyo Hondo and resumed again at Colina Verde. Evidently, LA 27 was abandoned either at the end of this decade or in the following one. By way of contrast, Arroyo Hondo Pueblo appears to have begun working towards a minor activity peak that occurred in the following decade.

AD 1321 to 1330: Activity during this decade saw new peaks at Pueblo Largo, Colina Verde, and Arroyo Hondo Pueblo. Las Madres appears to have remained steady or dipped slightly. Upper Arroyo Hondo Pueblo was either abandoned or soon would be. LA 27 was abandoned during this decade if not shortly before.

AD 1331 to 1350: Pueblo Largo and Arroyo Hondo Pueblo experienced significant reductions in activity, and Colina Verde was abandoned. In fact, Schwartz (1980) believes that Arroyo Hondo Pueblo was abandoned at this time, then reoccupied. Las Madres appears to have seen fluctuating levels of activity but ultimately reached its highest peak during these two decades.

AD 1351 to 1360: Pueblo Largo may have experienced a minor peak, and Las Madres started its decline. Arroyo Hondo Pueblo appears to have enjoyed a new but short peak of activity.

AD 1361 to 1370: Activity at Pueblo Largo continued at a low level, and that at Las Madres and Arroyo Hondo Pueblo declined noticeably. Arrowhead Ruin in the upper Pecos Valley was founded during this decade.

AD 1371 to 1380: In the southern basin, low levels of activity continued at Pueblo Largo, and Las Madres declined even further. On the southern Santa Fe bajada and in the upper Pecos Valley activity at Arroyo Hondo Pueblo and Arrowhead Ruin started picking up. Schwartz (1980) believes that Arroyo Hondo Pueblo was either rehinated or inhabited on a full-time basis during this decade.

AD 1381 to 1390: During this period, or perhaps the preceding one, activity at Pueblo Largo seems to have been slowly increasing, while Las Madres evidently was abandoned. Significantly, both Arroyo Hondo Pueblo and Arrowhead Ruin experienced their highest levels of activity.

AD 1391 to 1400: Activity at Pueblo Largo was clearly on the rise. Both Arroyo Hondo Pueblo and Arrowhead Ruin declined and may have been abandoned during this decade. However, the possibility of an abandonment of Arroyo Hondo
Pueblo at this time is not recognized by Schwartz (1980).

AD 1401 to 1410: Activity at Pueblo Largo continued to increase, and Arroyo Hondo Pueblo may have been occupied for a third time (but see comments above). Arrowhead Ruin probably was abandoned during this decade.

AD 1411 to 1420: Activity at Pueblo Largo continued to increase. Arroyo Hondo Pueblo was abandoned for the last time.

AD 1421 to 1430: Activity spiked for the last time at Pueblo Largo, which corresponds with a major spike at San Cristobal. Unfortunately, San Cristobal is so poorly sampled for tree-rings that we do not know its tree-ring history other than for this particular decade. However, the San Cristobal surface pottery collection ranges from Santa Fe and Galisteo black-on-whites on the early end to Rio Grande Glaze VI at the late end, indicating habitation as early as Pueblo Largo and lasting into the historic period (Smiley, Stubbs, and Bannister 1953).

AD 1431 to 1440: Activity at Pueblo Largo declined during this decade, but, perhaps for the first time, it increased significantly at Pecos Pueblo in the upper Pecos Valley.

AD 1441 to 1450: For all intents and purposes, Pueblo Largo was virtually abandoned during this decade. Activity at Pecos Pueblo continued, though evidently at a slower pace.

AD 1451 to 1480: Activity at Pecos Pueblo appears to have been minimal and may even have involved either abandonment or seasonal use. However, one must keep in mind that this thoroughly investigated village is poorly represented by tree-ring material; during the early years of the project, the importance of keeping charred wood specimens was unknown (Kidder 1958) as the development of the tree-ring-dating method was in its infancy.

AD 1481 to 1500: Activity at Pecos Pueblo began a steady increase that continued well into the 1500s.

DISCUSSION

Several important criticisms can be leveled at this study. Perhaps one of the more subtle ones is whether or not the tree-ring samples retrieved from a given site actually reflect occupation of that particular site. For instance, Curtis F. Schaafsma (personal communication, 2003), in discussing aspects of this study with the writer, expressed his conviction that the wood remnants recovered from Pueblo Largo and Las Madres that date prior to 1340 were salvaged from earlier sites and reused in these large, later villages. It is also very possible, particularly in the case of Pueblo Largo where many parts of this very large site were not excavated, that earlier architectural components remain undiscovered beneath the later buildings. This is clearly demonstrated for Pecos Pueblo (Kidder 1958).

Whatever the case, the wood and the dates derived from them do, very likely, represent activities from the immediate environs of the study sites, if not from the actual study sites themselves. Thus, the population dynamics inferred from the tree-ring curves probably do reflect to a strong degree the demographic processes of the study sites, and/or the populations at those particular locales.

Another criticism is to what degree the tree-ring samples from each site actually reflect intensities of activities, whether at the study sites or in the vicinities of the study sites. Do the tree-ring series represent the full span of occupation for each site? And, do the samples accurately reflect periods of greater activity versus lesser inactivity?

Table 2 summarizes counts of rooms and kivas, and the number and types of extramural proveniences. But, we do not know in most cases whether the samples were recovered from structure fills, floor
Table 2
Proveniences of tree-ring specimens by site and by physiographic location.

<table>
<thead>
<tr>
<th>Site</th>
<th>Site Size</th>
<th>Collection Proveniences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GALISTEO BASIN SITES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pueblo Largo</td>
<td>489 ground floor rooms</td>
<td>19 rooms, 2 kivas, &quot;tower&quot;, 11+ tests</td>
</tr>
<tr>
<td>San Cristobal</td>
<td>hundreds of rooms in several roomblocks</td>
<td>excavations in 2 roomblocks, 1 kiva, and &quot;rooms around kiva&quot;</td>
</tr>
<tr>
<td>Colina Verde</td>
<td>6 or more room blocks (est. total of 40 or more rooms-RNW)</td>
<td>6 rooms, 1 trench</td>
</tr>
<tr>
<td>Las Madres</td>
<td>dozens of rooms</td>
<td>47 rooms, 2 trenches, 7 tests</td>
</tr>
<tr>
<td>LA 27</td>
<td>&quot;small pueblo&quot; (Robinson et al. 1973); &quot;about 50 rooms&quot; (ARMS site file, MNM)</td>
<td>5 rooms, plus, &quot;SE side&quot; &quot;center group of rooms&quot;</td>
</tr>
<tr>
<td><strong>SANTA FE BAJADA SITES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pueblo Alamo</td>
<td>40 to 60 rooms</td>
<td>unspecified</td>
</tr>
<tr>
<td>Arroyo Hondo Pueblo</td>
<td>hundreds of rooms</td>
<td>24 rooms, 1 kiva</td>
</tr>
<tr>
<td>Upper Arroyo Hondo Pueblo</td>
<td>50 to 60 rooms</td>
<td>unspecified</td>
</tr>
<tr>
<td><strong>UPPER PECOS RIVER VALLEY SITES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrowhead Ruin</td>
<td>79 rooms and kiva</td>
<td>5 rooms, 1 kiva, 4 unspecified</td>
</tr>
<tr>
<td>Pecos Pueblo</td>
<td>hundreds of rooms</td>
<td>21 rooms, 1 kiva, 13 misc. provs.</td>
</tr>
</tbody>
</table>

contact situations, deposits below floors, or from stratified, extramural refuse deposits. However, it is clear that only small percentages of most sites were sampled. Thus, we cannot be certain as to how representative the tree-ring series are of the total occupation and occupation histories for each site.

The degree to which the tree-ring data can be interpreted quantitatively is a related problem. Given the fact that the excavations at most of the study sites represent only small samples of the sites, such samples can be easily skewed in a quantitative sense. Although we cannot fully assess the effects of this problem on our results, the reader is reminded that this study is preliminary in form and therefore is best viewed as an heuristic device. We consider it important in this regard that two or more sites share temporal peaks and valleys, suggesting that they real.

But perhaps the most important criticism of the this analysis is that, because of the imprecision of the non-cutting dates, our definition of decadal activity levels may be off. That is, events we attribute to a specific decade may actually have occurred in the following one, or the one after that. Certainly, when it comes to Arroyo Hondo Pueblo, the divergences between our reconstruction and that of Schwartz (1980) are noteworthy.

Thus, we acknowledge that precise temporal accuracy may not be possible by using the data in this manner. However, these data do illustrate two fundamental principles: (1) large numbers of non-cutting tree-ring dates do have utility in archaeological studies, and (2) that utility, in this case, suggests a synchrony in activities at the study sites. If nothing else, these results are a heuristic devise for future studies; the phenomena thus highlighted should be investigated in more detail as opportunities arise.
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ERRATA

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Page 55. Replace Table 3 with the following table.

Table 3
Data from Farabee regarding Mesa Tierra skull comparisons.

<table>
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<tr>
<th>Measurement</th>
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<th>Saladoan population</th>
<th>Cibolan population</th>
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<td>1280 cc</td>
<td>1313 cc</td>
<td></td>
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<tr>
<td>Cephalic index</td>
<td>82.3 cm</td>
<td>88.47</td>
<td>88.86</td>
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<tr>
<td>Breadth-height index</td>
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<td>Upper facial index</td>
<td>56.1</td>
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</tr>
<tr>
<td>Total facial index</td>
<td>94.3</td>
<td>88.1</td>
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<tr>
<td>Gnathic index</td>
<td>81.02</td>
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<td>97.5</td>
</tr>
<tr>
<td>Alveolo-subnasal angle</td>
<td>52E</td>
<td>70E</td>
<td></td>
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<td>Nasal index</td>
<td>56.5</td>
<td>51.6</td>
<td>51.9</td>
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<td>Orbital index</td>
<td>94.6</td>
<td>91.1</td>
<td>88.5</td>
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</tbody>
</table>
CONTRIBUTORS

Sally Noe—
Betty Kelley: She Digs
More than Dirt

Richard A. Bice—
The AS-6 Pueblo and Pithouse
Site (LAI12133) North of
Quemado, New Mexico

Leslie G. Cohen—
Mortuary Practices in the
Upper Forks of the Gila River:
Integrative Structures, Smudged
Pots and Extended Burials

David T. Kirkpatrick—
Indian Subsistence Ration
Tokens from the Cimarron
Indian Agency, Cimarron,
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Martin Link—
The Enigmatic Mexican Flag

Paula A. Massouh—
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Sample Collection from Site
L/102, Rio Arriba County,
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Frances Joan Mathien—
A “Cacique’s Sanctum” or Road
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Douglas H. Milburn—
Radiocarbon Ages of Carbonized
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Indicating Approximate 7600
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near Mojave Desert Verge of the
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Linda Popelish—
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of McGaffey’s History

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Observations in Largo-
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Rock Art: Bats

Owen Severance—
Cottonwood Falls (42SA5222)
and Its Place in Southeastern
Utah’s Prehistoric Landscape

Regge N. Wiseman—
Old Data, New Possibilities:
Exploring Activity Synchrony
among Late Prehistoric Villages
in the Galisteo Basin of
North-Central New Mexico