ARCHEOLOGICAL INVESTIGATIONS AT
THUNDERBIRD LODGE
CANYON DE CHELLY, ARIZONA

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FOREWARD

On two occasions in recent years, the Branch of Cultural Resources Management, Division of Anthropology, received urgent telephone calls from the staff at Canyon de Chelly National Monument regarding the discovery of buried cultural resources within the larger Thunderbird Lodge complex near the mouth of the canyon. In March 1986, parking lot expansion in front of the cafeteria exposed the remains of a small, undocumented outbuilding associated with the early history of the Thunderbird Ranch. Again, in December 1987, remodeling of three buildings exposed archeological deposits associated with these buildings in the very heart of the lodge complex, a historically significant area.

In both instances, development activities in progress exposed archeological materials which needed immediate attention upon the realization that they existed. These "discovery situations" necessitated Branch staff be immediately dispatched to the scene to assess the nature of the deposits, the amount of destruction imposed upon those resources, and to collect, in all forms, any remaining archeological and architectural information. Such emergency situations, coupled with short notice and inclement weather, do not enhance conditions under which data recovery is accomplished. However, in both cases the archeologists involved succeeded in doing just that: recovering all available information in a fast, comprehensive manner. Additionally, they succeeded in taking the limited field data, combined it with other information gleaned from the archives, and provided firm evidence on the history of parts of the Thunderbird Ranch/Lodge previously ignored.

As with the nature of the two projects, and because of the timing of each, these two reports were prepared, and intended to be distributed, separately. However, after many similar call-outs, by the time one was ready for distribution, the other was in progress and the association was obvious. For that reason, the two have been combined into this one volume but are presented individually as time and resources would not permit the rewrite of each into a single report.

I want to thank both authors for their efforts and for reinforcing the fact that important information can be found and interpreted in places where many assume it does not exist, and that those unsuspecting areas need to be treated equally with more obvious archeological/historical resources until proven otherwise.

James E. Bradford
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PREFACE AND ACKNOWLEDGMENTS

It was a cold and windy Friday in mid-March, 1986 when Chief Ranger Reed Detring and Superintendent Roger Siglin presented Peter McKenna with what remained of an adobe building on the south side of the Thunderbird Cafeteria parking lot. What had caught their attention was a scatter of brown glass and woody material a few inches below the surface. But there, to the right of this thin lens of trash, was a wall stub of adobe bricks and the archeological fill of a room. The case of the unknown structure at the Thunderbird Ranch had begun.

Three years after this inauspicious start, a report on the proceedings of that weekend are finally at hand. The existence of this building was completely unknown to National Park Service staff either at the monument or in Regional Office where historic maps are stored. Earlier grading of the parking lot (1965) had done little to improve the visibility of a building made of mud, and even the undisturbed portion that remained bore no surface evidence of its existence.

John Stein joined McKenna that weekend to complete the excavation before construction resumed on Monday. Without John's assistance and good spirits the project likely would not have been completed as, by Sunday evening, a late spring snow storm had backed up along the Defiance Plateau, making further work impossible. Later, John also saved the day as a guide and intermediary during a research trip into the depths of the Window Rock tribal bureaucracy.

During the next two years McKenna worked on various portions of the manuscript and analyses as time permitted between other field and research demands. The various artifact classes were identified and tabulated and notes regarding their interpretation begun; historic artifact analysis was a whole new world. Original field notes, analytical notes, tabulations, interviews, and logs for both projects are on file at the Southwest Regional Office under (SWR) Accession 84 and 115. Ron Ice found dollars in his budget for some ethnobotanical analyses and Nancy Akins kindly volunteered the identification and brief summary on the faunal material. The substance of the technical reports by Akins, Clary, and Toll are presented in full here, but their discussions of analytical method and redundant introductory background have been omitted. Complete copies of these technical reports are available at the NPS Regional Library, Canyon de Chelly National Monument, or with the authors. Their contributions to the interpretation of the structure cannot be understated, but any misinterpretation or transmutation of their work in the final product

remains the author's responsibility.

The big problem was getting a handle on any historical documentation or photographs that might exist. This involved a considerable amount of spinning in circles and a number of people helped in finding the correct path. Within the National Park Service, discussions, informative leads, and facts were provided by Dave Brugge, Beverley Spears, and former Park Superintendents Meredith Guillet and John Cook. Laura Soulliere Harrison and Beverley Spears, in the course of preparing their timely Historic Structures Report on the Thunderbird Ranch, were very helpful in directing us to potential informants and sources, and with encouraging discussions. On a trip to investigate potential archival sources in Window Rock we were assisted by Russ Hartman, Director of the Navajo Tribal Museum; Michael Andrews, former BIA archeologist in Window Rock; Judy Andrews, former caretaker of the St. Michaels Mission photographic archives; anthropologists Klara Kelley with the Navajo Nation Archeology Department, and Alexandra Roberts of the Navajo Nation Historic Preservation Department. All these people provided us with invaluable leads, suggestions, and access to archival or unpublished information or photographs. Lastly, Liz Bauer, former curator at Hubbell Trading Post National Historic Site, opened the post files and archives to our inspection. Clearly without the information and assistance provided by all these people the report would not have been possible and we are grateful for their time and support.

The various sources suggested led to seven visitations: The Special Collections at the University of Arizona Library, the Arizona Archaeological and Historical Society Library and Photographic Archives, the Historical Library and Photographic Archives at the Museum of New Mexico, the Snow Collection of historic photographs at the Navajo Tribal Library, the Special Collections at the University of New Mexico Library, and the archives and photographic collections at Hubbell Trading Post. Map and photographic sources at Canyon de Chelly National Monument and the Southwest Regional Office were likewise consulted. We were unable to visit the Museum of Northern Arizona or Northern Arizona University where the invaluable Day and Hildebrand documents and photographic archives are housed. Likewise, investigation of suggested sources in Gallup, New Mexico has not been possible. Documentary sources, of necessity, relied on secondary material. Some useful photographs in the Hildebrand Collection were available as secondary records at Hubbell Trading Post.

Most of the background work was in various stages of disarray when we were called back to the Thunderbird Lodge in early December 1987. Renovation of Cozy McSparron's original guest cabins was underway and again the historic archeological horizons had paid

the price of expedient "improvements." The push to finish the report on that action spurred the completion of work on the almost moribund Day manuscript.

This report was made infinitely better through the review of Dave Brugge, Jim Bradford, Laura Harrison, and Alexa Roberts and we thank them for their efforts. In the final phases of production Jim Bradford and Walter Wait labored mightily with editorial and formatting changes that elevated the reports to a level worthy of broader distribution. With the completion of the parking lot expansion all vestige of the Day structure was excised from the earth, so that, for better or worse, this thin record is all that remains of Sam Day's adobe building. The same is true for much of the renovated guest units.

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PART I

Archeology in Some Tourist Cottages at Thunderbird Lodge, Canyon de Chelly, Arizona

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INTRODUCTION

The Thunderbird Lodge[1] is located a half mile (0.9 km) south of the Canyon de Chelly Visitor Center at the mouth of the canyon system (Figure 1.1). The lodge, a concession within Canyon de Chelly National Monument, has operated as a trading post, guest headquarters, and social center in the Chinle area since the first post was constructed in 1902 by Sam Day (McNitt 1962:250). The lodge has seen intermittent expansion from its rustic origins in 1902 through 1986 when the most recent improvement, an extensive module of pueblo-style guest rooms, was completed (Harrision and Spears 1988:33). Structural remodeling and landscape modifications in the lodge area have been continuous with marked increase during the last few years. Many of the earlier buildings qualify as historic structures and, accordingly, require an assessment of affect when any undertaking threatens alteration to, or loss of, material and information from original context. The National Park Service is entrusted with fulfilling this obligation to ensure the protection and preservation of historic structures within all park areas.

Off-season remodeling at the Thunderbird Lodge in Buildings 13, 14, and 15 involved extensive alterations to ceilings, walls, floors, and subfloor deposits. Building 13 is a frame and stucco structure with a southern room of adobe, while Buildings 14 and 15 are made of sandstone masonry. The last remodeling of Buildings 13 and 15 occured in the early 1960s when Building 13 was subdivided into two guest units, and concrete floor and tile were laid in Building 15. Building 14 was last remodeled in 1956. The current project was undertaken to install new plumbing and refurbish aging wall and ceiling fabric.

The following report discusses our findings from limited excavation, profiles and elevations prepared primarily for Buildings 13 and 15, and examines those observations in relationship to the known development of the Thunderbird Ranch complex. To accomplish

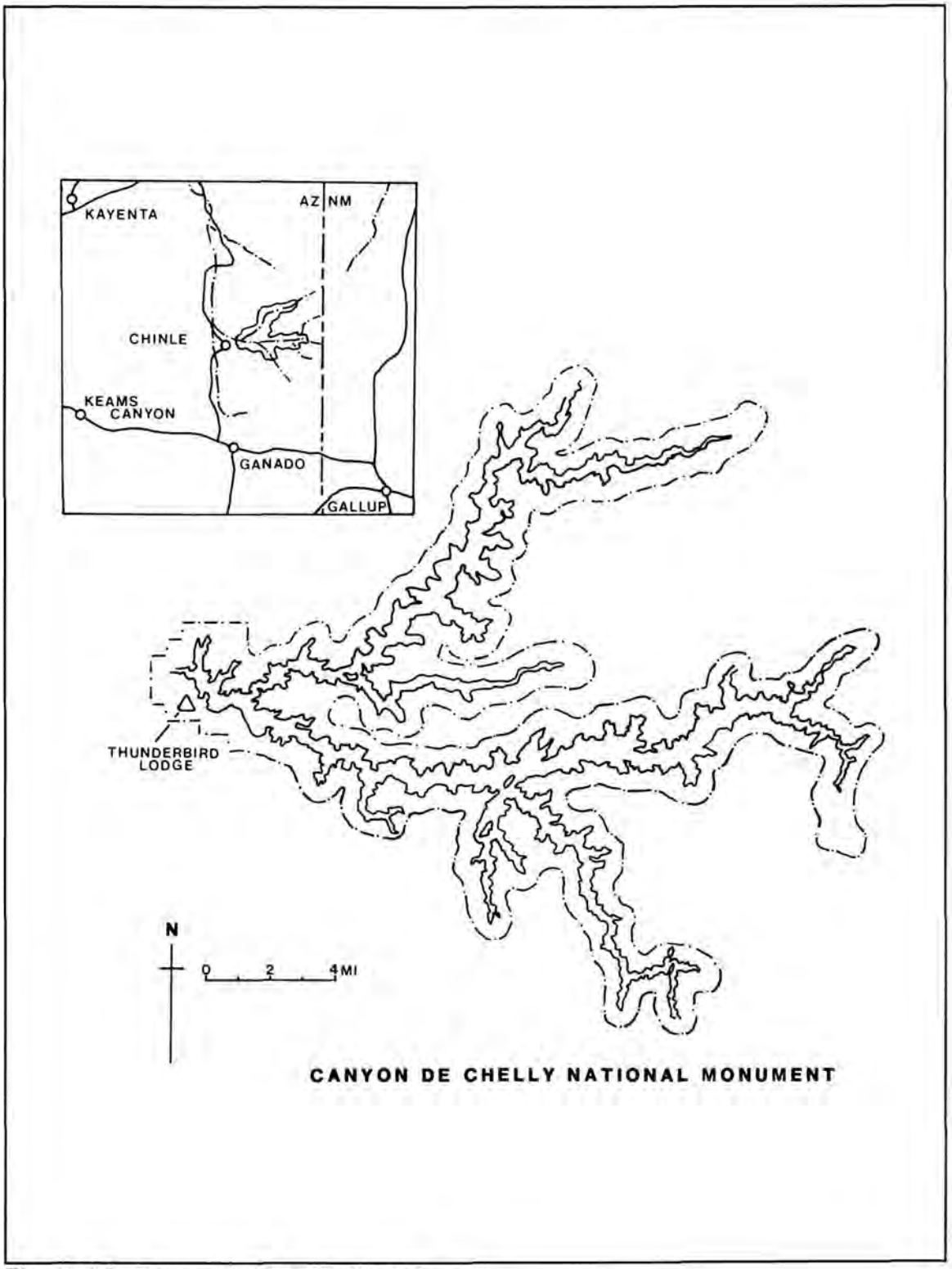

Figure 1.1. Location of the Thunderbird Lodge.

this, an outline of the history of the Thunderbird Ranch is presented, our field methods discussed, archeological artifacts assessed, and comparisons with previous documentation drawn. For a more complete discussion of the history of the Thunderbird Lodge area and the individual buildings therein, the reader should consult Brugge and Wilson's (1976) "Administrative History," and Harrision and Spears' (1988) "Historic Structures Report" which have provided the basis for many of the comparisions and synopses used here.

A BRIEF HISTORY OF THE THUNDERBIRD LODGE

From the outset, the facilities and developments of the Thunderbird Lodge have been centered on a 10-acre parcel of land about a half mile south of Canyon de Chelly's main channel. For slightly over 85 years, the operations at Thunderbird Lodge provided one of the main social and economic centers of the Chinle-Canyon de Chelly area. Since about 1970, food and lodging, canyon tours, souvenir sales and other needs of Canyon de Chelly visitors have been the sole concerns of the Thunderbird Lodge. Despite the recent commitment of the Thunderbird to significantly increase the number of guest rooms, the core of the establishment remains rooted in the trading post complex developed in the first half of the 20th century. This brief history focuses on the development of that landscape and possible factors contributing to the Thunderbird's success. An outline of the Thunderbird's development and some of the main events influencing it's growth and direction are outlined in Table 1.1.

Sam Day's Trading Post

When Sam Day constructed the first trading post on the site in 1902 (McNitt 1962:250), his outbuildings and other support features established a pattern of land use and organization that has continued until the construction of the modern motel units in 1986. The main physical changes at the Thunderbird are outlined in Figure 1.2.

Day's log trading post was accompanied by a fodder barn and a privy to the west and northwest of the post and by an adobe structure southeast of the post. This structure probably served as a multipurpose building for both storage and as overnight accommodations, as was the custom at early trading posts (Utley 1961:19; McNitt 1962:78). About 70 feet to the east of Day's post, a bread oven and work area provided a focal point for daily activities. Beyond these--another 30 to 50 feet east--was a loose rock barrier wall that acted as a traffic control/site boundary and a horse tethering area.[2]

Table 1.1. Outline of Owners, Main Construction and Historical Events at the Thunderbird Lodge, Canyon de Chelly, Arizona.

Date	Owner/Manager	Construction/Historic Event
1902	Sam Day	-Long log trading post, Building 12 (M-250) -bread oven 70 ft east of post (demolished) -privy west of post (demolished) -fodder barn northwest of post (demolished) -rock alignment east of Building 12
1903-04		-extension wing east of living quarters at north end of post (demolished) -adobe customer cabin to southeast of post (demolished 1986)
1905	Charles Weidemeyer Charles Cousins	-wareroom wing west of north end of Building 12
1906?		-adobe ranch house, Building 11 (H&S-58, Note 1 herein)
1909-1919	managers unknown	-cottonwood trees planted in east yard of Building 11 (K-15)
1916	George Kennedy	-a fenced complex of 5 buildings northwest of post including a two-room stable/corral/privy in the area of Building 18, a storage building? west of the ranch house and north of the wareroom, and a smaller storage shed-like building in the area of Building 15 (all now demolished)(K-15,19,23)
1919	Leon H. "Cozy"	-names operation "Thunderbird Ranch"
1920	McSparron	-sandstone masonry guest units, Building 15 (H&S-129)
1922		-sandstone masonry guest units, Building 14 (Mo-Fig.31;cf. H&S-121)
1924		-log barn, Building 18 (H&S-112) -storage? building off northeast corner of Building 18 (Mo-Fig.31) -garage/freight building west of Building 11 (Mo-Fig.31)
1925		-sandstone masonry "stone shed", Building 19 (Mo-Fig.31;cf. H&S-146)
1926		-sandstone masonry laundry, showers, and maid quarters, Building 16 (H&S-135)
1931		-Canyon de Chelly National Monument created with Thunderbird under NPS administrative authority (B&W-15)
1936		-NPS constructed sandstone masonry pump house, Building 3 (H&S-109) -adobe pueblo-style NPS Custodian's house, Building 1 (H&S-175)
1937		-Thunderbird ties into NPS water system and the windmill, pump, and stock tank are demolished (H&S-18, B&W-59)
1940		-first extensive planting of cottonwoods by NPS in Thunderbird Ranch area (H&S-38)
1941		-Buildings 14 and 15 redecorated (H&S-45) -electricity installed at Thunderbird (B&W-60)

Table 1.1 (cont.)

Date	Owner/Manager	Construction/Historic Event
1942		-monument boundaries clarified reaffirming Thunderbird's inclusion in the park (B&W-30)
1943		-NPS constructs cribbed-log hogan east of Building 1 (B&W-83)
1944		-NPS puts flagstone walks and borders around Building 1 (H&S-81)
1946		-frame and split-log employee's quarters, Building 13 (H&S-140)
1948		-storage hogan reroofed (B&W-98) -stone chicken coop north of ranch compound (H&S-26) -flagstone veneer placed on Building 11? (H&S-26, 65)
1950		-NPS adds more flagstone, installs grease rack, and pave behind Building 1 (B&W-113, H&S-80) -NPS jurisdiction over concessionaires reaffirmed (B&W-107-109)
1951		-adobe pueblo-style south room of Building 13 added on (H&S-140) -Building 15 converted from 3 guest rooms to 2 rooms with baths (H&S-129) -NPS campground constructed (H&S-45)
1952		-Building 1 is plastered with cement (H&S-77)
1953		-road from Window Rock to Ganado paved (H&S-29 B&W-113)
1954	J. Nelson, A.B. Nelson and Ida M. Borum	-call operation "The Lodge" -concrete walks around guest rooms (H&S-45)
	-Miles Hedrick	-Building 12 stuccoed (H&S-93)
1956		-Buildings 14 and 15 remodeled (H&S-121)
1957		-Building 12 west wall removed and main building expanded to west (H&S-99) -lunch counter installed in Building 12 (H&S-93)
1958		-road paved between Ganado and Chinle (B&W-144)
1960	Justin La Font	-names operation "Thunderbird Guest Ranch"
1961	(Justin's Inc.)	-full service coffee shop and restuarant style dining -extensive planting of grass, flowers, and shrubs initiated on Thunderbird grounds (H&S-31)
1962		-10-unit guest lodge built north of Buildings 14 and 15 (B&W-173; H&S-29)
1963		-12-unit guest lodge built northeast of Building 14 (B&W-197) -Building 1 becomes NPS employee's quarters (H&S-75)
1962-63?		-Building 13 converted into 2 guest units (#10,11) and completely plastered (H&S-140) -Building 15 rennovated with concrete slab floor, interior plaster, and bathrooms (H&S-129) -dirt insulation in roofs of Buildings 14 and 15 removed (H&S-121)

Table 1.1 (cont.)

Date	Owner/Manager	Construction/Historic Event
1964		-NPS Visitor Center constructed (B&W-271)
1965		-parking lot east of cafeteria paved (H&S-45)
1969		-end of trading post function (Navajo Tribal authority interest ends) and conversion of Building 12 into a cafeteria (B&W-253; H&S-31-32)
1980		-Building 1 assigned by NPS to concessionaire (H&S-75)
1982		-Buildings 14 and 15(?) roofed in red tile (H&S-122)
1984	Mary Jones	-names operation "Thunderbird Lodge"
1985	(White Dove Inc.)	-Building 16 remodeled into luxury Guest Unit 9 (H&S-135)
		-Building 1 becomes motel office for the Thunderbird Lodge (H&S-75)
1986		-parking lot east of cafeteria remodeled (H&S-33)
		-4 frame-and-concrete pueblo-style motel units built west of Building 1 (H&S-33)
1987		-Buildings 13, 14, and 15 remodeled with concrete floors installed in 13 and 14, and all new bathrooms and interior furnishings

Sources:
M = McNitt 1962
K = Kennedy 1965
B&W = Brugge and Wilson 1976
H&S = Harrison and Spears 1988
Mo = Morris 1933

Buildings: (see also Figure 1.3)
1 = Custodians House/Motel Offices,
3 = NPS Pump House
11 = Ranch House/Gift Shop
12 = Trading Post/Cafeteria
13 = Employee Quarters/Guest Units 10-11
14 = Guest Rooms
15 = Guest Rooms
16 = Laundry-Showers/Guest Unit 9
18 = Log Barn
19 = Stone Shed

Building numbers follow those outlined by Harrison and Spears 1988

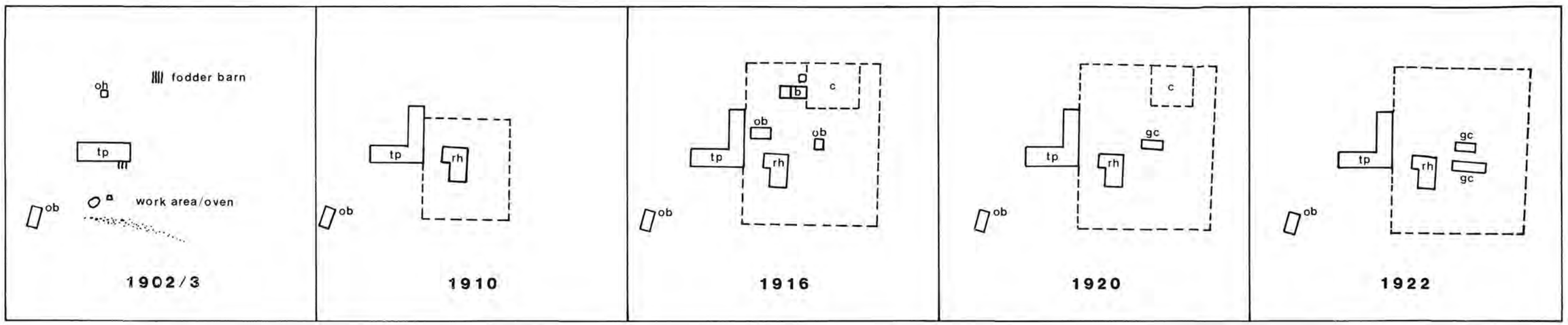

Figure 1.2. Main developmental changes at the Thunderbird Ranch. Key to abbreviations: tp - trading post, oh - outhouse, ob - outbuilding, rh - ranch house, b - barn, c - corral, s - stone shed, ch - custodian's house, gp - gas pump, gc - guest cottage, lb - log barn, lr - laundry room, ph - pump house, eq - employee's quarters.

Day's post was a rectangular 60-by-20-foot building that faced east. The log walls were covered with a pitched roof of corrugated tin while the owner's living quarters, on the north side of the post, were distinguished by a flat-roofed style. Vigas projected to the east of the room, providing shade. In 1903 or 1904, Day increased the size of the living quarters by adding a small room eastward (McNitt 1962:283).

Weidemeyer and Cousins

In 1905, Day sold out to Gallup wholesaler Charles Weidemeyer, who employed veteran trader Charlie Cousins to operate his new Chinle post (McNitt 1962:282). Cousins continued at Chinle until sometime in 1909, probably constructed the adobe ranch house (today's gift shop) for his family, and endured some adventures with the Navajo (McNitt 1962:284-286). During an altercation with local Navajos, Charlie instructed his wife to "go back into the house, lock herself in, and keep away from the windows" (McNitt 1962:286). This occurred early in Cousin's tenure as post operator and "the house" may simply refer to Day's expanded quarters (which by then may have had windows) or to a new ranch house located just north of the trading post. A series of photographs showing the ranch house and its interior, consistantly identified as "Charlie Cousins Trading Post," would place its construction between 1905 and 1909, and probably no later than 1906.

Weidemeyer also seems to have razed Day's old living quarters and installed a wareroom at the north end of the trading post that projected westward, giving the building a distinctive L-shape appearance. The wareroom continued to serve the trading post as a storeroom for incoming freight, for bundles of Navajo wool awaiting shipment, and later as support rooms for the kitchen and dining room.

Kennedy

After the Cousins left, Weidemeyer apparently continued to trade at Chinle but the actual operator of the post after 1909 is unknown. During this period, adobe and masonry structures north and northwest of the trading post continued to be built to meet the expanding needs of post life so that when the Kennedy's purchased the post in 1916 they not only had "the largest house around here at that time" (Kennedy 1965:21), they also had a fenced enclosure with trees and, presumably, at least some of the other outbuildings (Kennedy 1965:Figures on 15, 19, and 23). This fenced enclosure not only kept livestock, campers, and loiterers out of the ranch's work area, but provided a formalized and bounded area in which all subsequent construction developments related to the operation of the

Thunderbird Ranch occurred. The fence remained in place until the mid-1960s.

The Kennedys certainly weren't the first to host non-trading visitors to Canyon de Chelly, but Mrs. Kennedy's enthusiasm for entertaining these intermittent guests probably resulted in more visitors than previous post operators had encountered (Kennedy 1965:21-23). These guests enjoyed the trader's largess without charge, being put up on cots in the ranch house living room or on the porch, and dining at the family table. The allure of Canyon de Chelly did, however, afford the Kennedys some profit in terms of sales to visitors and the ability to support, with some rentals, the only car in the Chinle area (Kennedy 1965:28).

The Kennedys, however, remained essentially traders without investing considerable capital or energy to attract the tourist trade. Although this role had been attempted by J.L. Hubbell with a two-story trading post in Chinle (1900-1917, McNitt 1962:214-215), it fell upon Leon H. "Cozy" McSparron to successfully integrate the business of tourism with a trading enterprise.

"Cozy" McSparron

Cozy, like his predecessors at Chinle, was an experienced trader, having worked with both Hubbell and the Kennedys (Lockwood 1942:68-69; McNitt 1962:215; Kennedy 1965:38). He purchased the trading post from George Kennedy in 1919 and promptly dubbed it the Thunderbird Ranch (Kennedy 1965:38; Harrison and Spears 1988:13).

By the middle of the 1920s, Cozy had installed at least nine new buildings, two of them dedicated to guest accommodations. Two stone buildings were placed north of the ranch house (Buildings 14 and 15), the western one on top of one of Kennedy's storage sheds. The log barn (Building 18) was constructed near the location of the earlier two-room masonry stable and corral, and the stone utility shed (Building 19) followed, also situated in the old Kennedy corral area (cf. Harrison and Spears 1988:121,146). It is a strong possibility that masonry from Kennedy's old two-room stable was used in the construction of Cozy's early guest rooms. The masonry in the northern stable room is very similar to that used in Building 15, while the larger blocks in the southern stable room are similar to those used in either Buildings 14 or 19 (Kennedy 1965:23).

In any case, Kennedy's masonry buildings were razed and Cozy's new structures used materials in-kind, while replacement structures for livestock used lower cost fabrics more readily available. Also in place by the mid-1920s was another small shed just off the northeast corner of the log barn and a large garage or freight barn west of the ranch house and slightly north of the west end of the wareroom (Morris 1933:Figure 31). The adobe

structure to the southwest of the post continued in use, probably as a two-room guest or freighter's quarters as suggested by chimneys at either end of the building along the south wall (Morris 1933:Figure 31).

All this expansion, plus the price of a new trading post, must have cost Cozy dearly and, in 1923, he may have partially solved his money problem by entering into a confusing multiple ownership with Camille Garcia and Hartley T. Seymour of all three trading posts in Chinle (McNitt 1962:215). By 1932 Cozy was in position to buy out his last partner, Seymour, and once again become sole owner of the Thunderbird (Brugge and Wilson 1976:53). Cozy's desire for sole ownership may have been prompted by his appointment as the first custodian of the new Canyon de Chelly National Monument (Harrison and Spears 1988:17). The previous year, 1931, Canyon de Chelly had been declared a national monument (Brugge and Wilson 1976:15). Cozy could also anticipate the possibility of greater profit associated with an expected increase in visitors. However, things were never to be the same at the Thunderbird Ranch after the establishment of a federal presence in 1936.

Canyon de Chelly National Monument

The declaration of monument status at Canyon de Chelly preserved tribal rights, priority and land ownership in the park, while charging the park service with only the administration of the archeological ruins and natural resources and the right to construct roads and trails and provide for visitation facilities; a unique situation within the National Park Service (Brugge and Wilson 1976:17).

The right to provide for visitor needs brought the Thunderbird Ranch under the administration of the park service as a visitor services concession, while the operation of the trading post came under the authority of the Navajo Tribe and Indian Service. For Cozy, this simply meant double paperwork and double fees, together with monthly concessionaire reports as well as separate agency fees for the concession and trading post operations. Although the boundary of the monument had been determined to include the Thunderbird Ranch by 1941, it took several years to clarify the issue between the concerned agencies (Brugge and Wilson 1976:107-109). During this period of administrative turmoil, Cozy played one agency against another, complaining that low guest-related profits made the concession franchise not worthwhile. He outright refused to comply with some fees and regulations. Basically McSparron was objecting to government interference in his business. He was the only operator of the Thunderbird who witnessed such interagency confusion. Multiple authority over the operation of the Thunderbird Lodge continued until 1969 when

the trading post function ceased, terminating tribal interests (Brugge and Wilson 1976:253).

In 1935, construction of the new custodian's quarters began just south of the Thunderbird Ranch compound. The building was completed in the spring of 1936 and continued to serve as the superintendent's home, park office, and main contact point with visitors until 1963. It was then converted to park service employee housing (Harrison and Spears 1988:75).

Another improvement by the park service in the mid-1930s was the installation of a new water system and pump house, giving McSparron access to a new water supply and the opportunity to get rid of his windmill, stock tank, and pump. The transformation from an independent, rural institution catering to local needs and perspectives to a governmental organization promulgating a national agenda had begun (Brugge and Wilson 1976:59).

World War II Period

The Depression and World War II had a chilling effect on development at the Thunderbird Ranch. Visitation continued to rise during the 1930s, was sharply curtailed by the war, and then resumed its climb at a rate of about 20 percent a year after 1945 (Table 1.2). Construction at the ranch virtually stagnated during this period. Cozy tried, without success, to convince the government to construct new stone buildings at the Thunderbird through its WPA and CCC programs (Harrison and Spears 1988:24).

Apparently only one garage was built by Cozy just west of the existing garage, which was west of the ranch house and the laundry building. But it appears to have been dismantled shortly thereafter (compare 1940 and 1949 photographs in Harrison and Spears 1988:21, 26). Shortages of critical materials prohibited government construction and closed Cozy's canyon tours when tires became unavailable. Because of these construction material shortages, the park staff was forced to erect a storage hogan just east of the custodian's residence using traditional fabrics and Navajo guidance from Tuly Bia (Brugge and Wilson 1976:83).

Soon after the end of the war, private construction and canyon tours resumed at the Thunderbird. Construction was less ambitious than before the war, being largely limited to landscape improvements which promoted the ranch's image of an "oasis in the desert." Extensive plantings of cottonwoods in the Thunderbird area by the park service in 1940 had taken hold, creating a shaded island in an otherwise barren landscape (Boyce 1974:144).

In 1946, Cozy built a frame split-log-covered structure as employee quarters just south of the log barn. He also added another room, of adobe, to the southern end of the building

Year	N of Visitors	% Annual Increase	N of Guests	% Guests of Visitation	Month:	Percent of Visitation by Month 1	2	3	4	5	6	7	8	9	10	11	12
1931	423																
1932-c	395	-6.7															
1933	435	9.2															
1934-c	650	33.1												11			
1935	988	34.2															
1936-c,vc	1,136	13.0									18			19			
1937	1,422	20.1											24				
1938-c,c	1,573	9.6											23				
1939	2,128	26.1									14	17	17				
1940-c	2,738	22.9												20			
1941	1,916	-30.0															
1942	1,549	-19.1															
1943-c,c	403	-74.0															
1944	501	19.6															
1945	600	16.5										15	41				
1946	1,839	15.8															
1947	2,232	17.7															
1948	2,239	0.4															
1949	2,818	20.5															
1950-c	3,715*	24.1															
1951	4,688	20.8															
1952	5,661	17.2															
1953-c,c	7,222	21.6															
1954	8,125*	11.1															
1955	7,988*	-1.7															
1956-c	11,025*	27.5															
1957	13,480*	18.2															
1958-c	15,844	14.7	2,776	17.6		1	3	4	11	11	13	14	23	8	6	3	3
1959	21,048	24.8	3,661	17.4		2	1	8	6	12	13	16	20	11	7	3	1
1960	20,544	-2.4	3,898	19.0		1	1	3	11	16	13	16	18	9	6	5	1
% Guests of Monthly Visitation						107	67	34	16	12	14	15	14	28	32	23	42
1961	26,487	22.4	5,353	20.2		2	4	6	9	12	14	16	17	10	7	2	1
% Guests of Monthly Visitation						24	26	32	28	18	14	13	16	23	29	30	50
1962	25,354	-4.3	5,098	20.1		1	6	4	15	7	11	13	19	11	6	5	2
% Guests of Monthly Visitation						64	11	18	11	25	21	19	18	30	34	14	23

Table 1.2. Visitation and Guest Rates at Canyon de Chelly National Monument.

Year	N of Visitors	% Annual Increase	N of Guests	% Guests of Visitation	Month:	Percent of Visitation by Month 1	2	3	4	5	6	7	8	9	10	11	12
1963-c,c,c	30,036	15.6															
1964-vc	167,000	82.0															
1965	182,785	8.6															
1966-c	344,370	46.9				3	3	3	8	10	14	16	18	10	7	5	3
1967	354,610	2.9				4	4	8	9	10	11	13	14	11	8	6	2
1968-c,c,c	350,440	-1.2				4	4	5	9	12	11	13	14	11	7	5	5
1969	408,310	14.2				7	6	7	10	12	10	14	10	8	7	4	5
1970-c,c	369,090	-9.6				4	5	7	7	8	9	12	13	11	10	7	7
1971	211,110	-42.8				12	6	7	9	3	8	10	12	10	9	8	6
1972-c	254,080	16.9															
1973	246,120	-3.1															
1974-c,c	215,060	-12.6															
1975	274,750	21.7															
1976	308,440	10.9															
1977	361,080	14.6															
1978	351,570	-2.6															
1979	328,090	-6.7															
1980	284,020	-13.4															
1981	330,610	14.1															
1982	373,530	11.5															
1983	386,000	3.2															
1984	432,080	10.7															
1985-c	452,290	4.5															
1986-c	569,020	20.5															
1987																	
					Monthly Visitation Ranking: 1	1						1	10				
					2				1	2	1	8					
					3				1	2	5	2	1	3			
					4					3	3			3	1		
					5				3	1	1			2	1		
					<5	10	11	11	6	3	1			3	9	11	11
														Frequency of Visitation Rank by Month			

* lower figures used as presented by Brugge and Wilson 1976:Appendix 2.
Key: c=change in custodian, vc=new visitors center

Sources: Brugge and Wilson 1976:Appendix 2; files at the Office of Public Affairs, Southwest Region, NPS

Table 1.2 (cont.)

in 1951. A masonry chicken coop, later converted to a "honeymoon cottage," was built north of the core cluster of ranch buildings but has since been demolished (see 1949 photo and 1960 site plan in Harrison and Spears 1988:26,40). One motel unit (Building 15) was remodeled and converted from three rooms to two guest rooms with baths. About this time the ranch house was covered in flagstone and new flagstone walks were installed around guest rooms and the custodian's residence. Cozy, in failing health since the end of World War II, repeatedly attempted to find a buyer for the Thunderbird. He finally was successful in 1954.

End of the Entrepreneur Trader Era

With the departure of Cozy, the personage of the colorful, dynamic trader passed from the pages of the Thunderbird's history, even though the post continued to operate for 15 more years. The Days, Cousins, Kennedys, and McSparrons all had been entrepreneurs in isolated conditions that required a hearty and self-sufficient outlook to business despite their economic dependence on the closest wholesaler (see Utley 1961:17; Kelley 1976).

Cozy's relations with various government agencies, particularly the National Park Service, were severely strained from time to time as would be expected with a previously unfettered businessman suddenly saddled with new, seemingly irrational and unaccountable bureaucratic demands (Brugge and Wilson 1976). Although individuals--particularly those in government service--may have found McSparron somewhat difficult, he was a popular trader with local Navajos and guests alike, apparently offering good tours, excellent meals, fair trade and credit, and full outfitting for canyon tours, movie companies, and archeological expeditions. The Thunderbird Ranch served as a social center for Chinle, featuring card games, boxing matches, and other entertainment as befitted its "oasis" image (Morris 1933:142-145; Smith 1938; Lauritzen 1948:13; Henderson 1953; Brugge and Wilson 1976:53-60; Harrison and Spears 1988:13-28).

It was McSparron's vision more than any other that brought form to the present historic scene at the Thunderbird. While Cozy's development followed the building patterns of his predecessors, he also established a new pattern of structures for guest housing which has since been elaborated on by all subsequent proprietors. These guest quarters and support buildings of stone and wooden additions to the ranch house were located north of the trading post inside the fenced compound. Until 1986, McSparron's buildings were the Thunderbird, and only recent construction has altered an historic pattern of 60 years duration. Cozy's investment in buildings and grounds dedicated to attracting and pleasing

the tourist marked a significant move away from traditional trader roles of barter and stockraising which, to a great extent, depended on the economic well-being of the local Navajo.

Camping

One other factor that affected the appearance of the landscape around the Thunderbird was camping. Formal campgrounds were constructed in 1951 but, prior to that, visitors camped either near the custodian's residence, along the near rim of the canyon, or around the old pump house. Camping around the old pump house was an established custom of the Navajos and their camping requirements usually took precedence over those of other visitors. Likewise, a guest hogan, known as "Cozy's Motel," was located in an unspecified location to the southeast of the trading post and also served as a focal point of camps (Harrison and Spears 1988:16-17).

The number of camps--notably those of Navajos--was fairly constant. However the occasional influx of wage labor, particularly that of movie productions, would swell the encampments around the Thunderbird. Because of this, it was difficult for trader resources to supply the demands of movie companies, guests, and suddenly monied "extras" (Morris 1933:143-144; Brugge and Wilson 1976:84-85).[3] All this resulted in considerable scattered litter and typical camp features such as hearths, miscellaneous pits, and activity areas. The modifications that can be attributed to movie set crews have yet to be pinpointed and identified in the area of the Thunderbird Lodge.

Advent of Motel Management

With the departure of the McSparrons, ownership and operation of the Thunderbird became increasingly oriented to tourist accomodations and day services. The Thunderbird, in the course of its regular operation, became an outlet for wholesale products marketed by the Babbitt franchise (Brugge and Wilson 1976:127). John Nelson, A.B. Nelson, and Ida Borum operated the lodge as absentee landlords. The Nelsons were employees of the extensive Babbitt enterprises in northern Arizona while Ida Borum was the prior owner of the Leupp Trading Post (Brugge and Wilson 1976:127-129).

While no major improvements took place during the seven years the Thunderbird was owned by this group, periodic maintenance projects such as replastering buildings and installing concrete sidewalks in place of the old flagstone walks did occur. The old trading post saw the first of several major face lifts when inspection of the west wall revealed

massive deterioration of the lower logs. To remedy this, the wall was simply removed and rebuilt farther west to include Cozy's old vault inside the post (Harrison and Spears 1988:99).

The major construction that affected the future of the Thunderbird was the paving of reservation roads to Chinle by 1958. Almost immediately after these new roads were completed, a series of startling increases in visitors was noted: an 82 percent increase in 1964 and a 47 percent increase in 1966 (Table 1.2).

At the end of the 1950s, building descriptions and a site plan suggest that 10 buildings made up the core of the Thunderbird Ranch (Harrison and Spears 1988:28,40). A third guest house was mentioned, but it is unknown as to location or size. Although records are somewhat uncertain, the lodging capacity at the Thunderbird in 1959-60 is thought to have been about 24 to 30 persons per night (see Brugge and Wilson 1976:151,158). The discrepency between available services, guest accomodations, and the physical demands of increased visitation would motivate further changes at the lodge during the years to follow.

La Font Ownership

Major changes came to the operation of the Thunderbird during the ownership by the La Fonts. Purchasing the business in 1960, following the unexpected death of John Nelson, the La Fonts quickly changed the tone of service and direction of the entire enterprise. They expanded the suburbia-style planting of grass, flowers and ornamental shrubs, began selling soft drinks in cans because of excessive glass in the area of the "ranch," and ended the informal family-style dining in favor of restaurant-style service. The La Fonts installed a coffee shop, converted the old employee quarters to guest rooms, and added two large, modern multiple-room guest units north of the old core ranch area just in time to capture business from the visitation surge of 1964.

Still, housing shortages were so severe that the La Fonts were forced to install mobile homes to the west and north of the log barn (Harrison and Spears 1988:43). In the rush to provide guests with rustic quarters, old ranch employee rooms were converted to guest rooms. It was probably during this conversion that the old split-log siding was removed from the northern room (Building 13, Unit 10) and the building was finished in boards and plaster, further diminishing the architectural variability of the old ranch area.

Other renovations to older guest units originally built by Cozy McSparron were undertaken, including the installation of concrete slab floors and private bathrooms, and the removal of dirt insulation from roofs in favor of modern insulating materials. All these

changes pointed to a future of complete involvement with the tourist industry, a future realized in 1969 with the closing of the trading post (Brugge and Wilson 1976:253).

Closing of Trading Post

The closure of the trading post marked the end of an era for Canyon de Chelly and the Chinle area. The Thunderbird had been the oldest and longest continually operated post in Chinle at the time of its closure. Business from the trading post apparently had been on the decline since the 1950s (Henderson 1953), a victim of the post-war cash economy and improved roads which made distant cities (with their greater variety of goods and services) more accessible to the once-isolated Navajo (Kelley 1976).

Clearly, the trading post portion of the Thunderbird had been the operation's *raison d'etre* until the late 1960s when the post became a liability in comparison with increasing profits from the operation of motel, dining, and retail gift shop facilities. All the earlier operators had been earnest traders, integrating their lives and concerns with the relatively simple needs of their Navajo customers. They provided barter and pawn opportunities, dry goods, food staples and intermediary services with the alien society of whites. These early operators strengthened their own business by promoting innovation and quality in Navajo wool sales and craft products (Smith 1938; Utley 1961; Kennedy 1965; Trafzer 1971, 1977).

Day promoted Navajo rugs at distant markets (Trafzer 1977:10) and McSparron was instrumental in reviving natural dyes and better quality Navajo rugs and silver work (Neuman 1932:108; Wheelwright in Amsden 1934:224-225; McNitt 1962:251).[4] But the trading business had been changing, as Cozy complained just before he sold the Thunderbird, with gasoline sales up, hay sales down, rug quality deteriorating, and the increased demands for a more varied selection of goods, making the inventory the post was forced to carry increasingly burdensome and risky (Henderson 1953).

Boarding was always of secondary importance to these traders, although it was the most common form of business diversification at isolated posts in the Navajo country (Kelley 1976:Table 4). This was especially true in areas of scenic or archeological attractions such as Canyon de Chelly or Chaco Canyon (Rollins-Griffin 1971).

Surge in Tourism and Modern Management

The abrupt increase in visitation from 30,000 to 167,000 in 1964 was repeated again in 1966 when visitation surged to over 344,000. While visitation flucuated over the next decade, dropping during the mid-1970s oil crisis, it never again fell below the six figure

mark and the potential of catering to the needs of this population could hardly have been lost on the operators of the Thunderbird. The amount of tourist business at the ranch was always tied to visitation rates (see Table 1.2).

Even though our demographic information is incomplete, it can be seen that several patterns relevant to planning for accommodating the tourist trade are evident in Table 1.2. First, despite the meager data, it is apparent that the relative number of monument visitors choosing to stay at the Thunderbird increased through the years. The guest figures rise from about 17 percent, just after the road paving to Chinle, to about 20 percent just prior to the big visitor increases. By the early 1960s, guests at the Thunderbird alone outnumbered the annual park visitation rates from the early 1950s.

Much of the visitor increase after 1964 must have been in the form of drive-through day visitors, as the Thunderbird would have been hard pressed to accommodate a projected 30,000 guests in 1964 to over 100,000 estimated patrons in 1986 (based on visitor/guest accomodations figures above) with the 33 guest units available at the time (Jett 1967:143). Nevertheless, visitor dependence on the Thunderbird's facilities did increase so dramatically that seasonal operation of the motel and restaurant became impractical in the mid-1960s, as witnessed by complaints about the inability of the La Fonts to handle the increased visitation (Brugge and Wilson 1976:232).

The Thunderbird attracted more guests proportionate to park visitation during the winter months than during the summer, although absolute numbers during the summer are always higher for both, so that a sufficient number of patrons were available to justify year-round operation. The improved roads not only increased but also evened out the flow of visitors so that the extreme summer peaks noted before paving became less dramatic and visitation patterns became more predictable. Both conditions are recognized as necessary for sound, tourist-based business ventures (see Jett 1967:37-41).

All other changes at the Thunderbird Ranch since the mid-1960s have been in keeping with the need to serve the increased demands of higher visitation. The construction of a new visitor center in 1964 was the first step in removing the park service presence from the Thunderbird area. Although the old custodian's residence continued to serve as seasonal employee housing during the 1970s, it was transferred to the Thunderbird concessionaire in 1980 and now serves, completely remodeled, as the motel lobby, offices, and home for the motel manager.

With the closing of the trading post the old post building was free to be converted into a cafeteria, the only practical form of service for the numerous visitors and local

patrons that congregate daily for meals or coffee. The landscape continued to be modified into a suburban park-like environment when the gas pumps were removed from the parking lot of the cafeteria which was paved and landscaped in 1965 and again in 1986. The last of the ranch-style support buildings, housing the laundry and showers, was converted into a luxury guest unit beside the gift shop.

The current concessionaire of the Thunderbird Lodge, Mary Jones, is operating under a 20-year contract with the National Park Service. The increase in visitation prompted the park service to include an ambitious program of expansion for guest facilities at the Thunderbird, which Ms. Jones has responded to by building 39 new guest rooms in four modular units west of the old core of the Thunderbird Ranch.

Complementing the new units are new parking lots, lights, updated landscaping in Southwestern style, renovation of the custodian's residence into motel lobby and offices, and the development of a waiting area for tour boarding (Figure 1.3). All these improvements were contractually scheduled and met (see contract USDI-NPS with White Dove, Inc. in Harrison and Spears 1988), with the result of transforming the Thunderbird exclusively into a motel and dining facility offering--quite arguably--the finest accommodations and service in the interior of the Navajo Reservation.

Developmental Overview and Forecast

Operators of the Thunderbird have, through time, responded to the prevailing economic winds with appropriate architectural changes and landscape management. While functioning as a ranch and trading post, a number of utilitarian buildings in a variety of styles and construction fabrics were closely integrated in a fenced compound. The patterns of growth and use of space were established by Day and, as slightly modified by McSparron, continue to the present. With the increase in visitation, decline in retail trade, and shifting of Navajo grazing patterns, the tightly defined operating space of the Thunderbird opened up and new buildings appeared to the north and west of the old compound and trading post.

The rustic character of the working post was slowly modified into a landscape and architectural design unmistakably projecting an image of quality lodging: canopied Erin green grounds, a core of quaint stone buildings surrounded by pleasing modern facilities all capped by red tiled roofs presided over by the pueblo-style motel offices and facade of the old trading post. Modern furnishings complement the guest rooms where once Navajo crafts--the legacy of trading now too dear to serve--adorned the walls and floors.

The old traders survived by serving the physical demands of their customers, by

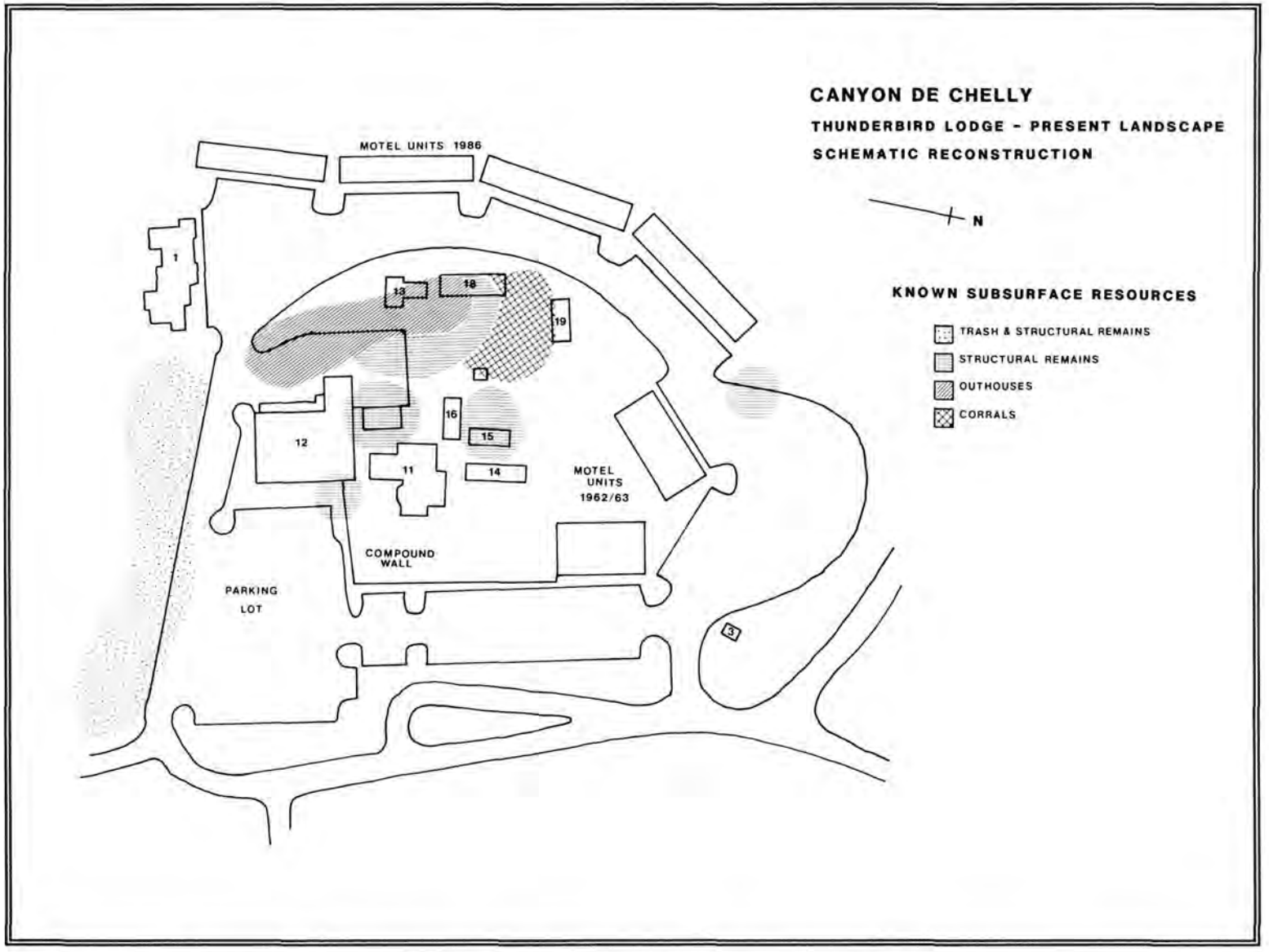

Figure 1.3. Modern building plan of the Thunderbird Lodge showing known areas of historic structures.

promoting unfamiliar products on distant markets, by diversifying where possible and practical, and, most important, by being sympathetic to, and knowledgeable of, Navajo ways, traditions, and values. The current operation at the Thunderbird is possibly more restrained in its business options than were the old traders. Modern stores in Chinle, the improvement of transport systems on the reservation, cash economy and extensive credit all conspire to insure that general merchandise retailing, once atrophied, will not revive.

The future of the lodge is entirely in the hands of tourism. The continued attraction of the lodge would seem to rest on less secure footing than was enjoyed by the old traders with their diversified operations and key mitigative roles between native and Euro-American society. No longer is Euro-American ownership necessary at the Thunderbird where traders formerly provided an indispensible link between white society, government, economics, and the nacient socio/political development of the Navajo Tribe. The lodge is profitable and will continue to remain attractive to tourists until comparable facilities are developed elsewhere in Chinle.

Lastly, the fluctuation of international oil markets has already demonstrated an ability to adversely affect visitation at Canyon de Chelly, and the threat of similar future fluctuations is real. It may well become important to the economic life of the lodge to be sensitive to every possible attraction at Canyon de Chelly that may entice the visitor to spend the extra day, enjoy one more meal, or get that gewgaw in the gift shop. The scenic vistas and archeological sites at Canyon de Chelly will always be the main attractions, but cultivating, preserving, and promoting the historic scene and role of the Thunderbird Ranch remains largely an untapped source of attraction and interpretation by both the National Park Service and the concessionaire.

FIELD METHODS

Standard field methods were used to record above and below grade elevations. Because the primary cultural deposits already had been excavated, no extensive or exact horizontal controls for provenience were established. The majority of subgrade work entailed establishing arbitrary baselines in order to profile deposits.

All subgrade profiles and excavation were carried out using the metric system and later converted to the English system. Because construction was done in the English system, wall elevations, above grade profiles and floor plans were prepared in the English system of measure. The arbitrarily placed 1-by-1-meter test unit along Building 13's west wall was

dug in two 10 centimeter levels with only the north half of the test carried to the bottom of the second level. Fill from this test was hand excavated and screened through 1/4-inch mesh.

Although no subgrade profile was done in Building 13, notes were taken on the exposed stratigraphy in the test and in the sewer line pit. Soil profiles and notes on Building 15, as for Building 13, recorded layer thickness, general composition, Munsell soil colors, grain size, and measured counts of specific background inclusions such as charcoal flecks, in each layer. All artifacts were recovered from the test unit in Building 13 as a sample, but only those casually observed in the profile and loose dirt of Building 15's utility trench were recovered; no excavation or screening was done in Building 15.

Work in Building 14 had progressed so far as to make subfloor investigation impractical. Only general observations, therefore, were made on the exposed original fabric. Further documentation of all involved buildings and the surrounding setting was accomplished with a series of black-and-white photographs.

BUILDING 13

Work was undertaken in Guest Unit 10 of Building 13 in order to examine exposed subgrade surfaces and/or features. Building 13 is located directly west of the ranch house/gift shop across a small parking lot (Figure 1.4). Renovation of this room entailed complete interior remodeling, including installation of new walls, new ceiling, and replacement of the old wood and joist floor with a concrete slab. All interior furnishings, closure material, and subfloor deposits had been removed when archeological work began (Figure 1.5). The main concern in Building 13 was to test for evidence of an earlier structure or deposits under Unit 10.

As discussed by Harrison and Spears (1988:140-141), Cozy McSparron constructed Building 13 in 1946. The original structure consisted solely of what is now Unit 10, a guest room approximately 28 feet north-south by 13 feet east-west (Figure 1.6). The exterior of this frame structure was of log slab-siding. The slab-siding was subsequently removed, probably by the La Fonts in the early 1960s when the structure was converted into a guest room and covered with tar paper, plaster, and a pinkish-beige paint in an apparent attempt to match the color of the sandstone masonry buildings elsewhere on the ranch. McSparron originally had constructed the building as workers' quarters, which it remained through the tenure of the Nelsons in the 1950s. In 1951 the more substantial adobe room, Unit 11, was

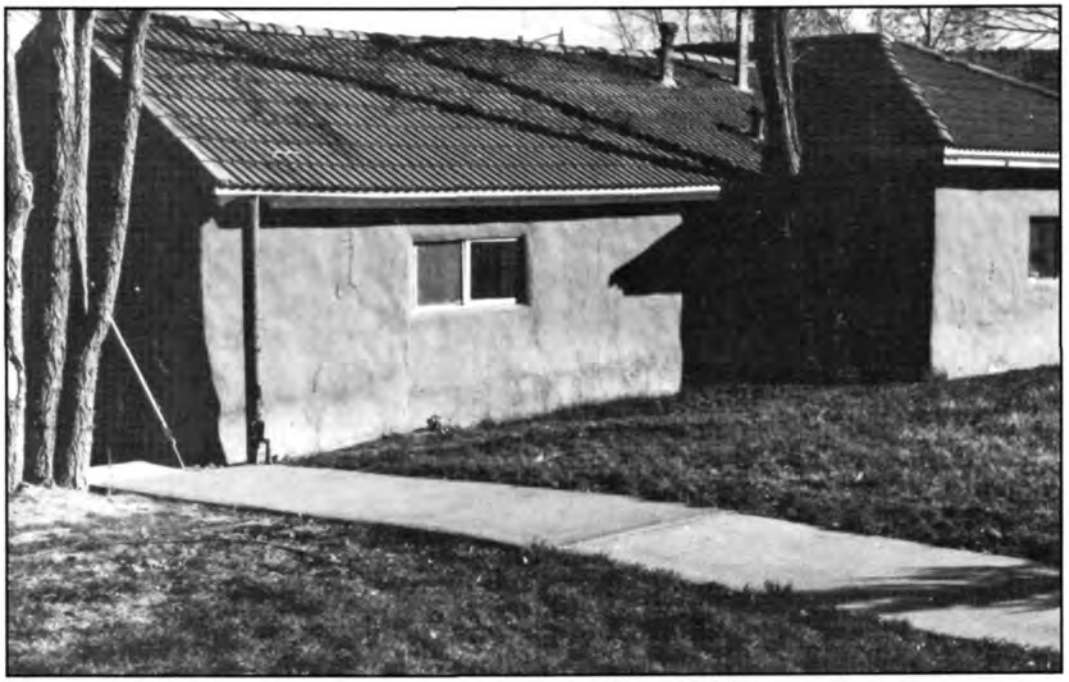

Figure 1.4 Building 13 showing the west elevation of Guest Unit 10.

Figure 1.5 Interior of Guest Unit 10 showing razed interior prior to rennovation. Looking south into Guest Unit 11.

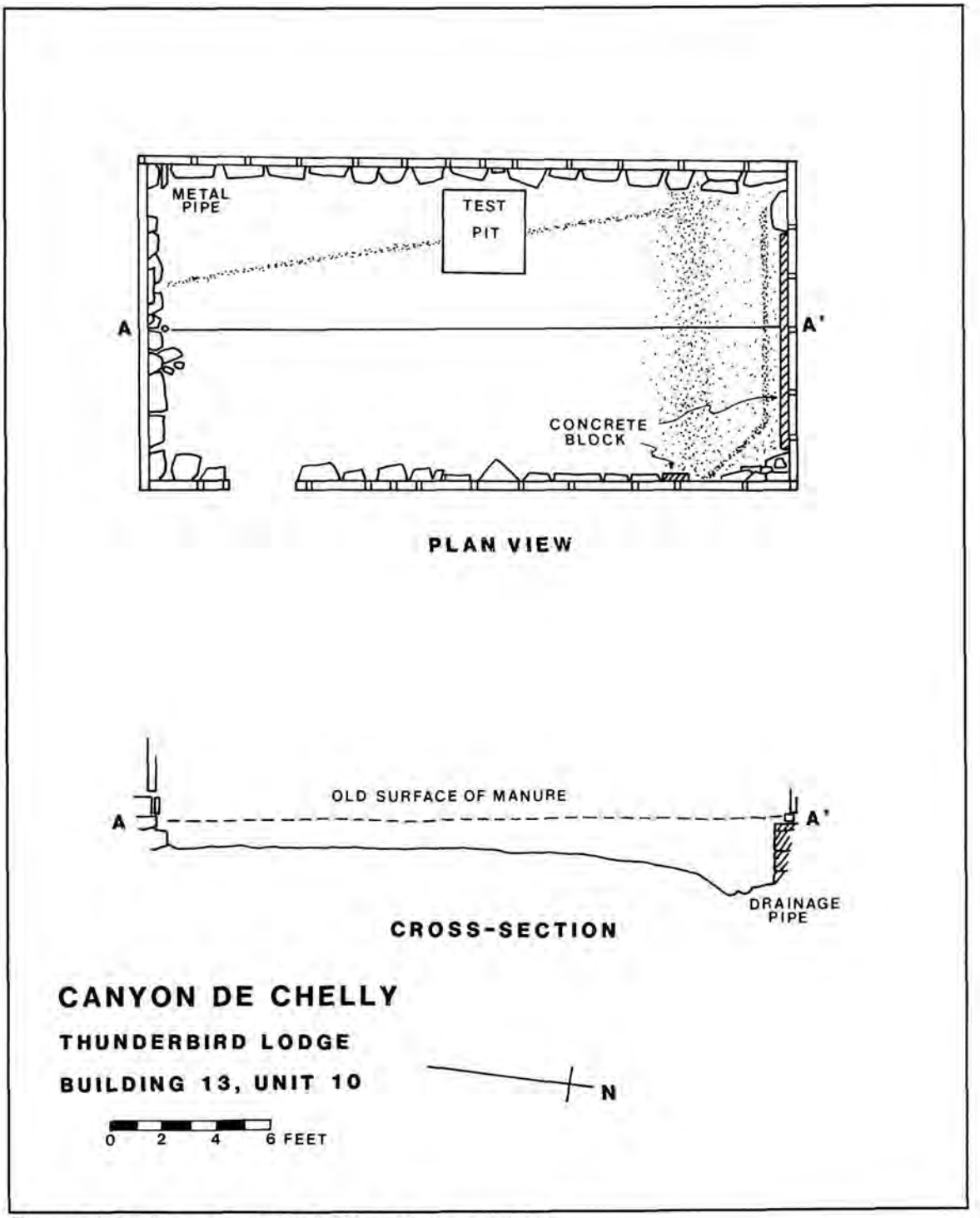

Figure 1.6. Plan and profile of Building 13, Guest Unit 10.

added to the south side of the structure, bringing Building 13 to its present form.

Subfloor fill was primarily of manure, either sheep or horse, about 2 to 6 inches thick. Period photographs (ca. 1940, Harrison and Spears 1988:21) show the area to be a fenced work area with a corral some distance behind the trading post; perhaps the manure came from cleaning the log barn (Building 18) to the north of the Building 13 site and not from a corral on the spot. This layer, undoubtedly containing artifacts from the 1940s and 1950s, had been completely removed when our work began. The only clues to its existence were stains on the foundation stone and loose, dry remnants on the ground surface.

To test for deposits or structural disturbance predating Building 13, a 1-meter-square grid was set along the west wall under the window (Figure 1.6). After the removal of the 1-inch of disturbed surface material, hard, sterile reddish-brown, high-clay soils were encountered for the remainder of the 4-inch deep level. The north half of the grid was continued another 4 inches with similar results and testing was discontinued. The south side of the sewer trench along the north wall was also faced and inspected for subfloor evidence of earlier occupation. This showed a deeper but similar profile to the test pit with sterile substrate extending to about 20 inches below the surface. No evidence of earlier structures or deposits was found.

Removal of the manure layer revealed the natural eastern gradient of the slope. Soft, friable sandstone blocks had been used as foundation stones on all four walls; repairs in the 1960s had largely replaced the north wall stones with concrete blocks. A single row of stones was used along the west wall, but up to two sandstone courses were used under the east wall to compensate for slope.

Resting directly on the sandstone foundation were the balloon-frame and plaster walls. Interior wall elevations were prepared which reveal renovations probably related to the room's conversion from employee quarters to a guest room (Figure 1.7). All but the south wall showed a regular pattern of 2 x 4 inch pine cross members occurring at two levels: one level about 6 to 8 inches and another level about 50 to 52 inches above the base plate. This created a lattice of cells normally 22 to 26 inches wide and about 16 inches high for a total wall height of 7.5 feet. The frame cells were, apparently, simple open spaces between the exterior and interior sheathing material with no evidence of insulation or other packing noted.

Exterior sheathing was of 1 x 12 inch boards covered by tar paper, plaster, and paint. Interior sheathing and finishes were of a Celotex board, wallpaper, and paint. A truss construction of 2 x 6 inch boards acted as a roof frame with horizontal beams providing

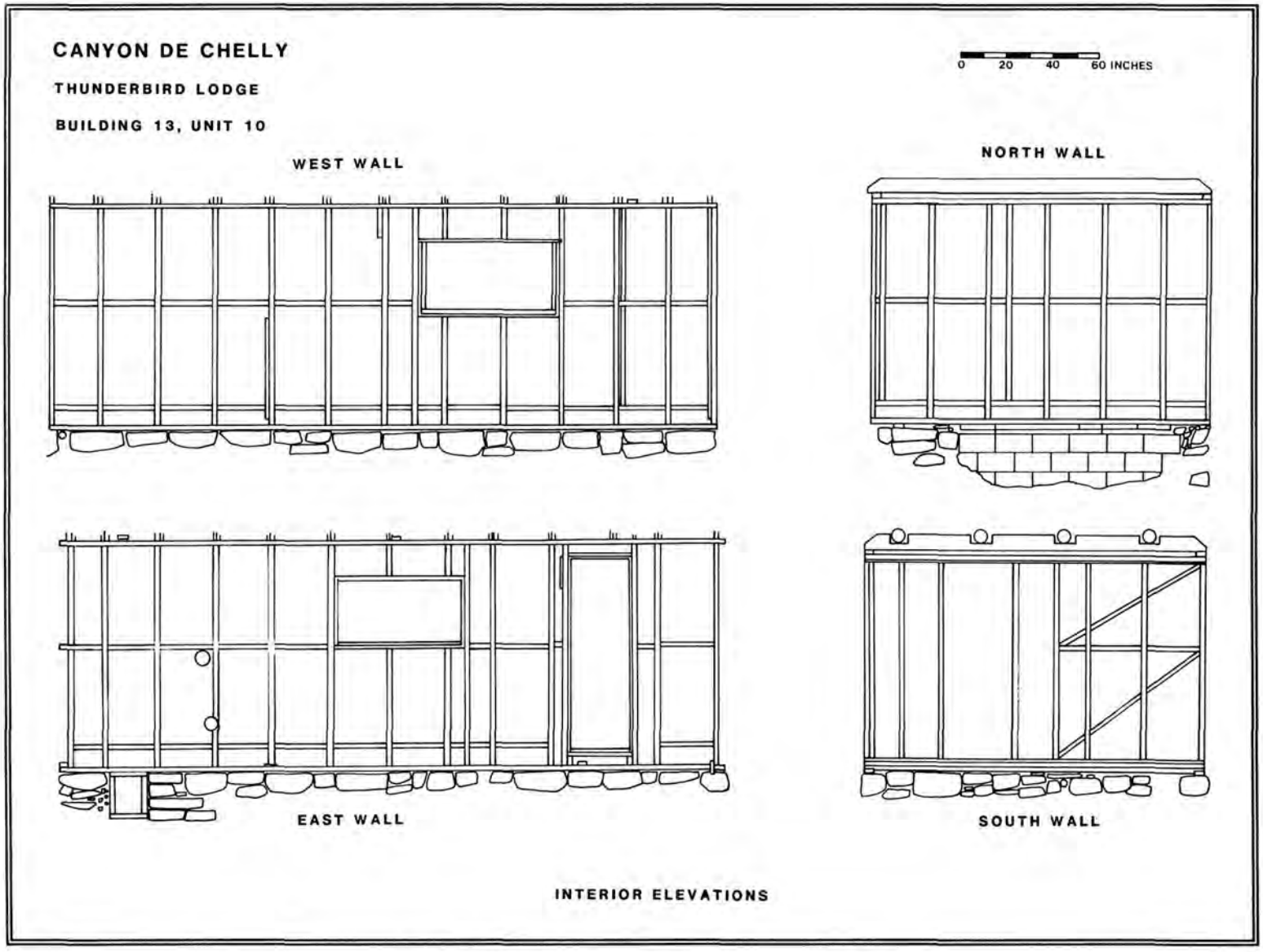

Figure 1.7. Elevations of Building 13, Guest Unit 10.

the ceiling foundation centered over the vertical wall studs. The original south wall had been demolished, probably in 1951, and replaced with a simple stud partition framework between Guest Units 10 and 11. Viga butts from the ceiling of Guest Unit 11 were housed in a notched 2 x 6 inch board which was part of the southernmost roofing truss for Guest Unit 10. The vigas were not functional or visible in Guest Unit 10 when the ceiling was in place.

Comparison with floor plans and exterior photos (see Harrison and Spears 1988:142-145) shows that the basic window and door plans have remained unchanged, but that interior fixtures have been considerably altered. Floor plans presented in Harrison and Spears (1988) do not reflect the period of use for rooms as pictured in their text, but rather represent the last remodeling for the guest rooms.

The east wall of Unit 10 shows two blocked vents and the roof exhibits another blocked vent in the northwest quadrant. These blocked vents, and the roof vent pictured in Harrison and Spears' 1955 northeast view of Building 13, probably represent heating, possibly cooking facilities in the room during its use as employee quarters; none of these vents are currently visible on the structure exterior.

Toilet, shower, and laundry facilities were located in Building 16 (remodeled into "luxury" Guest Unit 9 in 1985) directly east of Building 13 so that none of these facilities account for these earlier utility ports in Building 13. The more recent renovations show as piping and venting insets on the north part of the west wall, and as pipelines along the foundations and floor. The water heater roof vent is still in place in the southwest roof quadrant.

Harrison and Spears (1988) show a shower in the northwest portion of the floor plan, and this facility is structurally reflected in the waterline cutouts in the framing studs and the additional subfloor 2 x 4 inch showerpan brace extending from beneath the northwest portion of the north wall base plate. Installation of the sewer line required subfloor excavation along the north wall where the remains of 4 inch cast iron sewer pipe was located, and the dismantling of the northeast sandstone foundation and its replacement with concrete and concrete blocks around a wood-frame utility opening in the east wall foundation.

A subfloor waterline trench was noted running from the water heater in the southwest corner to the shower in the northeast corner with the sewer line running east along the north wall. Structural evidence of other bathroom facilities, such as the toilet on the east wall or the lavatory centered on the north wall, was not evident in the framing.

BUILDING 14

Constructed in 1922 as part of Cozy McSparron's effort to improve guest accomodations, Building 14 (Guest Units 3, 4, 5, 7) was located just north of the ranch house (Building 11) and east of Building 15. This created a dual set of buildings parallel to one another along a north/south axis and separated by a narrcw passageway that provided an enclosed space for guests. Further construction of shower and laundry room facilities in 1926 (Building 16) enhanced the secluded quality of the guest cottages and adjacent ranch house. In doing this, McSparron developed facilities that would not only be comfortable and attractive, but also well removed from the trading post proper. These changes modified both the economic and social role as well as the local landscape of the Thunderbird Ranch.

Built with Navajo labor, Building 14 originally was a simple stone structure with rusticated masonry, a hipped roof covered with asphalt roll, and few interior elaborations. A layer of dirt, acting as a readily available insulating material, covered the ceiling. Subsequent remodelings to both exterior and interior fabric occurred in 1941, 1956, and 1982. Collectively, these changes improved the facilities of the cottage while continuing to integrate the structure into an overall plan of tourist accomodations (Harrison and Spears 1988:121). During this same time period, the compound north and west of the trading post reflected shifts in tourism from the "dude ranch" concept to one focused on automobile travel and increasing privacy. Additional buildings containing stables, garage facilities, and further guest lodging were constructed to the west along with a wire boundary fence. Eventually these rustic aspects of the landscape were replaced with "modern" motel units and ornamental plantings giving, as previously noted, a suburban quality to the entire complex. In particular, the wire fence that played such a prominent role in demarcating the tourist from trading post areas was removed, heralding the end of the trading post as an active component of the Thunderbird Ranch. At present, Building 14 continues to serve as guest accomodations reminiscent of an earlier reservation hospitality.

During the most recent renovation of Building 14, a number of architectural and archeological observations were accomplished. These observations, in conjunction with those detailed by Harrison and Spears (1988:121-123), summarize the present condition of Building 14 as well as any underlying archeological deposits. With dimensions of 62 by 17 feet, Building 14 is constructed of irregularly coursed sandstone masonry set in cement mortar. Present fenestrations include two doors and two windows on the west and two doors and four windows on the east. Formerly, the building had four doors with four windows on the

west and only four windows on the east. The hipped roof, composed of wooden 2 x 4 inch members, recently has been modified from an asphalt roll roofing to red tile, producing a hybrid Mission-style appearance (Harrison and Spears 1988:55). Although these modifications have transformed the exterior of Building 14 in fundamental ways, it still retains the basic characteristics and charm of early 20th century stone architecture on the Navajo Reservation.

By contrast, the interior of Building 14 has undergone substantial alterations to structural fabric, floor plan, and decorative detail. The ongoing remodeling continues this process by virtually gutting the cottage of ceiling, wall partition, and flooring elements (Figure 1.8). At the same time, there has been substantial disturbance of subfloor deposits, possibly containing archeological materials and features.

Removal of acoustic tiles from the ceiling exposed parallel, 6-inch-diameter vigas spaced at 2-foot intervals running perpendicular to the long axis of the building. Covering the vigas, a 1 x 6 inch milled wood decking, exhibiting earlier wall partition junctures indicative of room and bath dimensions, remains from the 1941 remodeling efforts. Repeated renovations of ceiling elements in Building 14 have produced some damage to both upper and lower surfaces of numerous vigas. In some cases this has resulted in portions of vigas being intentionally cut out to facilitate remodeling, while in others damage simply occurred in conjuction with various guttings of the building. Despite the removal of interior wall partitions--which in some instances exposed original stone, plaster, and paint fabric--the load-bearing walls appear to be intact from the last remodeling of the building. Finally, the original wood flooring has been removed and the floor joists sawn off flush with the walls. Below the floor, a dead space of approximately 2 feet existed historically. This space is presently being filled with earth removed from under the concrete floor in Building 15 and sterile fill in preparation for a concrete pad. Taken together, these changes have substantially altered the interior of Building 14 and therefore make any assessment as to interior characteristics virtually impossible.

As part of the remodeling construction, two trenchs were excavated beneath the area of the bathrooms and perpendicular to the long axis of the building. Both trenches extended across the entire width of the structure and were approximately 20 inches wide by 12 to 18 inches deep. Stratigraphic profiles of the trenches exhibited a mixed, variably consolidated matrix with well-compacted clays appearing at the bottom; a situation similar to that seen in Test Unit 1, Building 13. Further, both trenches intersected the east and west walls, exposing subgrade foundations with very poorly defined builder's trenches in profile. The

Figure 1.8 Interior of Building 14 after razing. Fill dirt is being added preparatory to pouring a concrete slab floor.

southernmost trench ran through the wall of the structure revealing a foundation of coursed tabular granite slabs and occasional chinking stones bonded with cement mortar.

Another small trench, 27 inches square, was open along the north wall of Building 14. This trench contained a barely visible builder's trench composed of small gravel, angular construction rubble, and charcoal flecks.

Although no evidence of archeological features or materials was noted for any of the construction trenches, there remains the distinct possiblity that pre-1920 deposits of one sort or another underlie Building 14. Examination of historic photographs indicates the presence of both structures and activity areas (i.e. trash dumps, processing areas, etc.) north and west of the ranch house in the approximate area of Building 14. This situation has been further complicated by the addition of fill containing archeological deposits from beneath Building 15, creating in the process a reversal in depositional stratigraphy and archeological associations.

BUILDING 15

Built as the first of the three stone visitor's cottages in 1920, Building 15 (Guest Units 6 and 8) is a rectangular structure 41 by 18 feet. Although smaller than its counterparts, Building 15 exhibited such similar characteristics as rusticated sandstone masonry set in cement mortar, tabular slab foundations of metamorphic rock, a hipped roof with asphalt roll roofing, earthen ceiling insulation, simple fenestrations, and rudimentary interior design (Figure 1.9).

Renovations of Building 15 occurred sometime prior to 1951, again in 1956, and from 1962 to 1963. These modifications altered the interior from three to two guest rooms, added a bath, and removed dirt insulation from the ceiling. The only substantial changes to exterior architecture occurred when the door and window openings for the center guest room were blocked (1951) and the asphalt roll roofing exchanged for one of red tiles (1982).

As with Building 14, the following statements concerning architectural and archeological characteristics merely expand upon the detailed coverage of Harrison and Spears (1988:129-130). At present, interior features--including ceiling coverings, wall plaster in some places, room partitions, and the central third of the concrete floor--all have been removed by remodeling.

Acoustic tiles and cardboard sheets covering the ceiling were pulled down, exposing the original 1 x 8 inch honey-colored milled decking and the fragmentary remains of

Figure 1.9 Building 15 during remodeling. Looking north toward motel unit built in 1965.

Figure 1.10 Interior of Building 15 after razing, showing removed central section of concrete floor.

previous room partitions. For the most part, interior walls of whitewashed plaster remain intact. However, in areas where partitions were extracted, there are exposed portions of stone construction and earlier plasterings which, in a few cases, indicate substantial damage. The floor, with the exception of the area removed to refurbish utilities, remains intact. Any assessments of original interior fabric or detail must remain speculative.

The section of floor torn out, which was removed prior to any archeological examinations, measures 14 by 8.5 feet and averages just over 16 inches in depth. It revealed a segment of the structural foundations, a poorly defined foundation footing trench, and a relatively complex stratigraphy composed of construction and occupational debris (Figure 1.10).

After the exposed profiles of both north and south trench faces were cleaned, four distinct layers or strata were identified (see Figures 1.11-1.12):

Layer 1 consists of a concrete slab covered with 9-inch-square gray-and-white linoleum tiles. This slab ranges from 3 to 8 inches in thickness (thinning towards the walls) and is composed of small-to-medium-sized gravels in a well-compacted, fine-grained matrix. Anchoring the base of the slab is a 6-inch-square mesh of 0.1 inch wire.

Layer 2, prepared as a level surface for the overlying concrete pad or an earlier wooden floor, exhibits a 4 to 4.3-inch thick zone of loosely compacted sand with occasional quartzite cobbles. The Munsell soil color for this zone is light reddish brown (5YR 6/4).

Layer 3 is a complex deposit of intermixed charcoal and stained lenses (subunits) incorporating varying amounts of clay, sand, and adobe-like materials. With an overall thickness ranging from 5.5 to 8 inches, this layer represents a well-defined occupational zone containing intact surfaces, artifacts, and fragmentary evidence for an earlier structure. Sub-units A through E define thin lenses of differing character and depositional history. Briefly described, these include:

Sub-unit A: Thin, 0.4 inch deposit of fine grained plaster-like material with Munsell soil color of very pale brown (10YR 5/3).

Sub-unit B: Dark, 0.4 to 0.8 inch thick ash stained deposit of adobe clay (5YR 4/4-4/3, reddish brown to dark reddish brown) containing large charcoal flecks and dense streaks of ash.

Sub-unit C: Relatively thin, pale deposit of very fine silty clays which lack charcoal flecking or ash stains. Munsell soil color of light reddish brown (5YR 6/3).

Sub-unit D: Although separated by Sub-unit C, this deposit may be part of Sub-unit B, albeit with markedly less frequencies of ash and charcoal. Munsell soil color of dark

Figure 1.11 View of north profile face in Building 15.

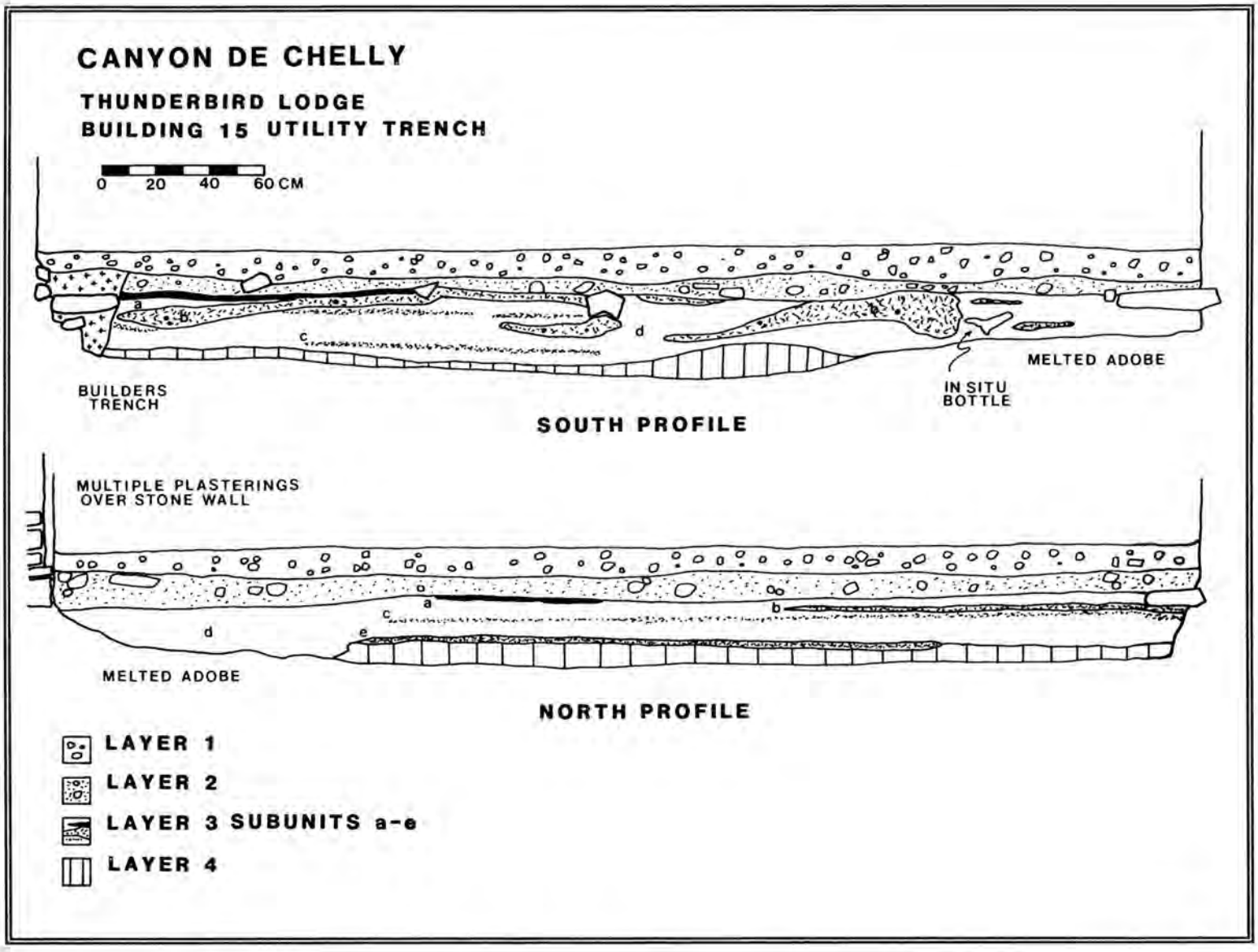

Figure 1.12. Subfloor profiles of Building 15, Guest Units 6 and 8.

yellowish brown (10YR 4/4).

Sub-unit E: Same characteristics as Sub-unit C, but separated by Sub-unit D.

Layer 4 is a sterile substrate composed of well-compacted clays mixed with caliche fragments and spider webbing throughout. The exposed thickness of this layer ranges from 0.8 to 3 inches until it is abruptly truncated by a compacted area of melted adobe extending over 3 feet from the west wall of the structure. Although imparting very limited amounts of archeological information, this feature may represent a collapsed adobe building constructed sometime between 1910 and 1916. Showing up in a rather hazy photograph from 1917 (Kennedy 1938:15), the structure appears to be a single-story rectangular adobe with a flat roof located just northwest of the ranch house (Building 11). At some point between the taking of this photograph and the construction of Building 15, the adobe must have been razed and the area used for a variety of activities including trash disposal, preparation of construction materials, ash dumps, etc.; all of which combined to produce the depositional characteristics of Layer 3. When Building 15 was constructed in 1920, the footing trenches cut through the occupational deposits, providing a *terminus ante quem* (a date before which the layer must have been deposited) for Layer 3. A final capping of these archeological deposits occurred in the early 1960s when the concrete floor replaced a pre-existing wooden one.

The discovery of archeological evidence such as this is certainly informative, especially when supported by other types of documentation. Yet there remains the problem of having disrupted cultural resources in a haphazard and destructive fashion. Unfortunately, this is an all too common occurrance in cultural landscapes that have undergone profound modification.

In the case of Building 15, inappropriate excavation of subfloor deposits resulted in the removal of occupational surfaces, artifact associations, and architectural remains. This was done ostensibly under the assumption that archeological features could not possibly be intact after so much change. The situation was further complicated by the subsequent deposition of these materials in Building 14 as noted previously. Therefore, not only did incautious excavation damage extant resources in Building 15, it also led to further complicating the depositional history and archeology of Building 14.

ARTIFACTS

Although the number of artifacts recovered is limited, it is clear that the assemblages from Buildings 13 and 15 are markedly different (Table 1.3). The artifacts from Building 13 were all recovered from the upper loose, disturbed dirt left over after the removal of the manure stratum and are uniformly small and largely related to the interior razing preparatory to remodeling. The assemblage from Building 15, however, is mostly subsistence related.

The majority of items from the Building 13 test are all very recent in nature--largely common wire nails with no square cut nails present which might suggest an earlier historic construction on the site (see Fontana and Greenleaf 1962:44-66). The majority of the nails, rusted and "new," are bent, reflecting their removal and incidental discard during interior razing. Rusted wire nails are primarily of the larger construction variety and may represent discards from the earlier renovation episode when the split-log exterior was removed, or they may represent introduced inclusions from the manure deposit. In contrast, the majority of the new nails represent interior closure and finishing pieces designed to hold Celotex to wall studs and molding along wall joints.

The absence of staples and staple or nail holes on the interior faces of wall studs suggest the building walls were never insulated. The remainder of the materials apparently relate to bathroom fixtures and bathroom construction; according to floor plans, the placement of the test unit was adjacent to the bathroom.

Building 15 materials are almost entirely bottle glass, representing about eight bottles (Table 1.3). The colors and forms, particularly the bulb neck of the largest specimen, suggest these bottles are largely beer bottles which may have been brought in by freighters, guests, or even the Kennedys for personal use or entertainment of guests. Even though the Days were notorious teetotalers (Trafzer 1971:21-24) and it is unlikely they would have permitted such goings-on at their trading post, the limited glass assemblage does suggest the Kennedy period for accumulation. The glass sample is undoubtedly biased because of the nature of the collection, but, as it stands, is certainly of different derivation and period than the Building 13 collection.

The limited amount of glass offers the most information in terms of time and possible functions in the Building 15 subfloor deposit. The majority of bottles are for carbonated beverages, probably beer. The exception to the beer bottle assemblage is a

TABLE 1.3. Artifacts Recovered From Thunderbird Lodge Buildings 13 and 15.

Building 13, Unit 10 (1x1m test) 0-10 cm bpgs (below present ground surface)

linoleum fragments			5
wall plaster			2
wall cardboard			8
chrome nut			1
copper fixture washer			1
stopper chain link			1
Nails:	new	rusted	
8 d	1	1	2
20d	-	1	1
wire nail fragment	-	8	8
brad-head finishing			
4 d	1	-	1
8 d	1	1	2
lath-nails			
2.5 d	4	-	4
large-head roofing nails 1.25"	9	-	9
total items			45

Building 15 Units 6 & 8 Layer 3, trash

large mammal (Bos?) long bone fragment	1
white glaze ironstone cup fragment	1
earthenware tile pipe fragment	1
glass	14
total items	17

Summary of Glass from Building 15: weight

Glass Color	N	%	gms	%gms	mean gms
brown	2	14.3	28.3	11.5	14.1
amber	1	7.1	4.7	1.9	-
purple, clear	2	14.3	35.9	14.6	18.0
aqua	3	21.4	35.5	14.5	11.8
natural, greenish	6	42.9	141.2	57.5	23.5*
total	14	100%	245.6	100%	17.5

Summary of glass from Building 15: thickness

Glass color	n	range-mm	mean	s.d	body	neck	base	finish	BN**
brown	1	3.8	-	-	1	-	-	crown	1
amber	1	3.0	-	-	1	-	-	-	1
purple, clear	2	4.3	-	-	2	-	-	-	1
aqua	2	2.5-4.2	3.4	1.202	1	-	1	crown	2
natural,greenish	6	4.0-4.8	4.4	0.290	4	-	1	crown	3

*mean for natural greenish glass less bottle neck is 4.6 gms.
** BN=estimated *minimum number of bottles*

flat-sided bottle of purple glass suggesting a possible liniment or tonic bottle that may have been stored in the adobe shed in the area. All bottle closures are crown caps with mold seams which are of two varieties: 1) those that do not extend to the finish, and 2) continuous seam through the finish produced by automated bottle machines (see Ward et al. 1977:230-240; Wozniak 1983:323-324; Berge 1980:74-80, 127-128).

Automatic bottle machines began production in 1903, while crown cap closures appeared in 1892 and replaced all other soft drink and beer closures between 1912 and 1920 (Ward et al. 1977:Table 9.1; Berge 1980:80). Obliteration of the seam on the finish of two specimens, and the continuation of the seam through the finish on the brown bottle, reflect this period (1917) of technological transition. Bottle production at the end of World War I saw the appearance of improved, fully automated bottling machines that standardized bottle thickness, reduced the amount of glass used, and left the mold line visible through the finish (Berge 1980:77).

Glass colors also confirm a date between 1900 and 1920 because of the absence of clear glass (which began appearing after 1930) and the presence of purple glass (ending in 1917) in association with aqua, amber, and brown beer bottle glass which overlap this period in terms of relative production span (Ward et al. 1977:40). The amber glass, in particular, points to the World War I period since it was during this time that the glass additive selenium, which causes the amber hue under certain conditions, replaced magnesium (causing "purple glass"); this being primarily due to the disruption of trade with the major supplier, Germany (Kendrick in Berge 1980:78).

Although the primary use of most of these bottles appears to have been for carbonated beverages, the likelihood of reuse is enhanced in isolated locations, such as turn-of-the-century Chinle, where any of those present could have been used as storage containers unrelated to consumables. Nevertheless, the Building 15 trash deposit, with its trace of domestic animal bone, serving ware, and beverage bottles, would seem to be of domestic origin; probably during the Kennedy years at the ranch predating the construction of Building 15.

CONCLUSIONS

Throughout its history, the Thunderbird Lodge has served a variety of functions ranging from isolated trading post to an active hub for economic, social, and tourist activities. As with so many of the early trading posts scattered across the reservation, the Thunderbird emerged as a conduit between the broader U.S. economy and Navajo society. With this the trading post became a center of social interaction for people separated by long distances, a harsh environment, and the demands of a pastoral way of life. However, in contrast to the relatively small operations so characteristic of trading posts, the Thunderbird diversified by providing support and accomodations to scientific expeditions, motion picture studios, and an increasing number of tourists. Located in the spectacular setting of Canyon de Chelly, the tourist influx gradually came to dominate the Thunderbird and its activities; turning the once dusty, inconspicuous cluster of buildings into the quintessential "dude ranch."

The local landscape, as depicted through existing buildings and historical photographs, reflected the change from trading post to resort. As illustrated in Figure 1.2, modifications indicating a shift away from the trading and ranching functions towards guest accomodations began in 1920 with the construction of Building 15. Using architectural traditions brought to northeastern Arizona in the 19th century, Cozy McSparron continued to expand tourist accomodations and facilities to a point where tourism and trading were physically segregated. With the creation of Canyon de Chelly National Monument in 1931, and the construction of the custodian's house five years later, little remained of the first trading post complex. Twenty years later the Thunderbird Lodge had been transformed from ramshackle trading post to "garden in the desert," while at the same time remaining a somewhat modified focal point of local economic and social activities. At present, the collection of quaint buildings and neatly manicured grounds reveal few clues to the earlier trading post landscape as it developed through time.

Despite the substantial changes documented for the Thunderbird Lodge, considerable archeological resources remain intact below the present surface. Recent examination of areas assumed to be devoid of subsurface features encourage this view, and provide yet another body of information reflective of past landscapes and activites at Thunderbird Lodge. These investigations revealed evidence of pre-existing structures, complex activity areas, dump sites, and scattered artifacts. More than anything else, this information indicates the

possibility of other archeological features throughout the Thunderbird Lodge area, and thus necessitates that any future remodeling efforts be preceeded by detailed archeological examinations. As noted before, cultural landscapes of even limited duration generally exhibit very complex patterns of human activity. Although extant historical, architectural, and photographic evidence exhibit a great deal of information, only archeological data can give clues to activities often considered too insignificant to have been preserved or documented in the past.

PART 2

An Adobe Building at Sam Day's Trading Post, Chinle, Arizona

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INTRODUCTION

In March, 1986, National Park Service staff at Canyon de Chelly National Monument discovered a previously undetected adobe structure during remodeling of the Thunderbird Cafeteria parking lot. Earth-moving equipment used in expanding the parking lot exposed historic fabric and associated trash deposits along the foot of the hill just south of the cafeteria.

Staff from the National Park Service Southwest Regional Office, Division of Anthropology visited the site and determined that excavation would be required to salvage archeological information before construction continued. Excavation revealed that the remains were a small portion of the southeastern quarter of a room with a masonry fireplace. The structure to which this room belonged was an outbuilding in the historic Thunderbird Ranch complex, and one probably associated with the initial development of the trading post sometime between 1902 and 1930.

As with any discovery situation, the first questions to be addressed are of the "when, who, and for what" nature. In attempting to answer questions of time, construction, and function, this report examines, through the available historical records and archeological evidence, the early growth and development of the trading post that became the Thunderbird Lodge.

LOCATION AND SETTING

The Thunderbird Ranch or Lodge has served as a guest facility and dining establishment at the mouth of Canyon de Chelly since the second decade of this century. Located on a southern oxbow of the Chinle Wash, about a half mile south of the National Park Service Visitor Center, the Thunderbird Lodge, today, still serves as a lodging and restaurant concession for visitors to the area (Figure 2.1). Modern motel units surround a core of old stone buildings, extensively remodeled guest quarters, a stuccoed log trading post which is now the cafeteria, and the old residence of the monument custodian; a building which now serves as the motel lobby and offices.

What was formerly a virtually treeless landscape with a tiny patch of grass in front of the ranch house is, today, an expanse of grass, mature cottonwood trees, decorative stone walls, ornamental junipers, and other shrubs and plants.

The lodge's normal environment is one of low shrubs and grasses (Harlan and Dennis 1986) and, if the immediate area around the ranch had not been modified, the exposed geology and water table would ensure the absence of trees on terraces around the bottom land. When not stripped by overgrazing, the surrounding area is normally dominated by low growths of galleta grass (*Hilaria jamesii*), snakeweed (*Gutierrezia sarothrae*) and rabbit brush (*Chrysothamnus nauseosus*).

TRADING OPERATIONS IN THE CHINLE AREA

The Chinle area, at the mouth of Canyon de Chelly, has seen active trading since the Navajos returned from confinement at Fort Sumner, New Mexico in 1868. A number of posts have been called the "Chinle Trading Post," including the one which became the Thunderbird Ranch and eventually was designated as the lodging concession for Canyon de Chelly National Monument. There is some confusion surrounding the early history of the

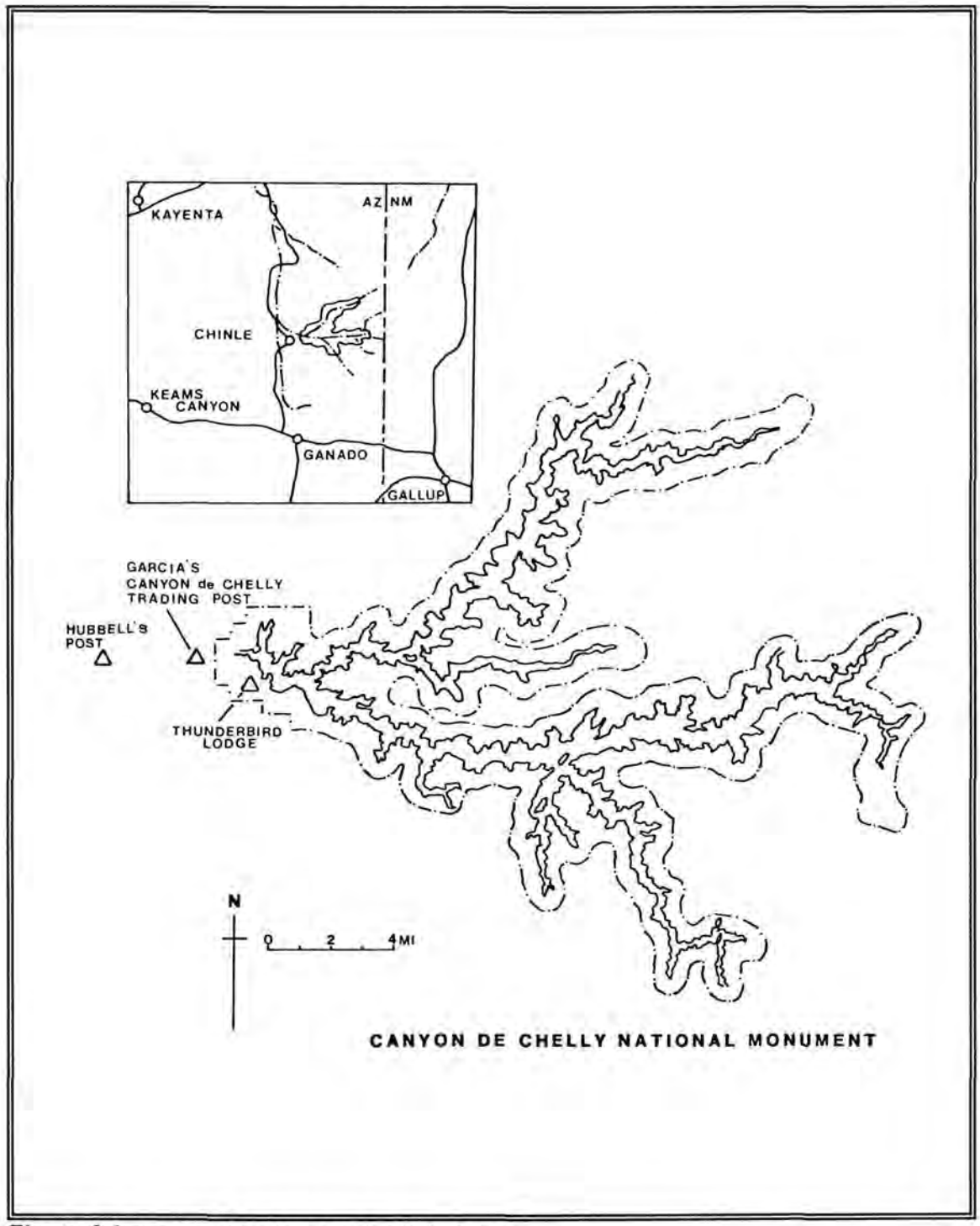

Figure 2.1. Location of trading posts in Chinle, Arizona.

of post development, beginning with the reported establishment of the Sam Day Chinle Post in 1902 through its development to about 1930.

General Trading Operations

According to McNitt's *The Indian Traders* (1962), about 1882, a Mexican by the name of Naakii Yazzie was trading out of a tent somewhere in Chinle, 14 years after the Navajos returned from the Bosque Redondo. But because Yazzie was unlicensed, he was soon ejected from the area by Indian Agent Denis Riordan (McNitt 1962:213). Other unlicensed traders, including Sam Day, also had a fling at tent-camp trading in the mid-1880s (Van Valkenburgh 1941:39.)

The first licensed trading post for Chinle was established in 1886, by J. L. Hubbell and C. N. Cotton. The post was in a stone hogan on the south bank of the Chinle Wash about half a mile west of the mouth of Canyon de Chelly. By 1887, traders had expanded the building to a four-room structure. However, because business was so bad, they sold the post, beginning a rapid succession of ownership by different traders, including: Mike Donovan in 1887; Washington P. and Thomas J. Lingle in 1888; and, in 1889, B. J. Mooney, James F. Boyle, and John W. Boehm (McNitt 1962:214). For a period in 1905 the post was closed but served as a home for an "agency farmer" (McNitt 1962:282, 284). Under these different owners, the post was constantly enlarged and modified and began to take final form in 1912 with the construction of a gable-roofed stone building by John or Kirk Dean. Camillo Garcia purchased the post in 1912 and further enlarged the structure (Kelley 1987; Spears 1987). It became known as "Garcia's Canyon de Chelly Trading Post."

Hubbell and Cotton opened another post about 1900 on the site of the Chinle Post Office, a structure since converted into the police station (McNitt 1962:214). This post was an impressive two-story structure of dark red sandstone with eight guest rooms on the second floor. It was the first attempt in Chinle to bank on Canyon de Chelly tourism for income. Although Hubbell made the post a stop on his stage line, the anticipated commercial tourism failed to develop and Hubbell sold his interest in the post to Cotton about 1917 (McNitt 1962d:214-215). In 1923 the post was permanently closed by the

new owners, Camillo Garcia, Hartley T. Seymour and Leon H. "Cozy" McSparron, who jointly owned all three Chinle trading posts at the time (McNitt 1962:215). Three licensed, permanent trading posts operated during the first decades of the century: 1) Garcia's at the expanded Hubbell post west of the mouth of Canyon de Chelly, 2) Hubbell's newer post/motel a few miles farther west in what is now downtown Chinle, and 3) McSparron's Thunderbird Ranch just south of the canyon (Figure 2.1).

Garcia's expanded version of the original Hubbell post played an important role in the local stock reduction program in the 1930s and 1940s, and later made a successful transition to "modern" department store and supermarket (McNitt 1962:361; Gorman 1974:24). The old post finally closed in December 1985 (Kelley 1987), a victim of newer, more efficient stores in Chinle.

McSparron had operated Thunderbird Ranch since 1919 (Kennedy 1965:38). He was quick to see the potential opportunities following the failure of Hubbell's post/motel and installed several small stone buildings for guest accomodations. Cozy's construction of small buildings was a practical hedge against investing in specialized structures, such as Hubbell's massive post, as small buildings could still be used for utilitarian purposes should the anticipated tourist trade fail to develop. This building program formed the core of the present successful Thunderbird Lodge, serving tourists visiting Canyon de Chelly National Monument (Harrison and Spears 1988; McKenna and Travis, this volume).

Judging from the turnover of traders, business had never been exceptional at any of the three posts. But in 1923, Hubbell's competitors consolidated, stabilizing business at the two surviving posts. Garcia and McSparron, in this way, were able to enjoy long tenures in Chinle. While both posts offered the usual trading post staples and services, Garcia apparently emphasized stock transactions and diversifed his retail market; while McSparron offset the instability of a trading economy by catering to tourists.

Despite a photo by Ben Wittick labeled "Chinle Trading Post circa 1887,"[5] evidence clearly indicates that McSparron's post was most likely established in 1902 (McNitt 1962:250; Trafzer 1971:19). Varying opinions on the post's establishment date are summarized in Table 2.1. Hegeman's

Table 2.1. Published Dates of Establishment of Day's Trading Post.

Reference	Date	Remarks
Amsden 1934:177, Plate 85b	"year unknown" "about 1890"	Wittick photo MNM
Henderson & Abbott, 1943:42	1899	
Wilken 1955:25-26	1902	
Utley 1959:51	1898	Wittick photo MNM
Utley 1961:9	1898	Wittick photo MNM
McNitt 1962:250	1902	
:283n	1890	Wittick photo MNM
Hegeman 1963:200	1870	
Trafzer 1971:9	1902	
1973:261	1902	Wittick photo shown
1977:8	1902	
De Lauer 1975:45	Late 1870s	Artist's rendering of Wittick photo
James 1976:64	1890	Wittick photo MNM
:65	1902	
Harrison and Spears 1988:2	1902	Wittick photo shown

Two things are apparent from this list: 1) dates earlier than 1902 are clearly associated with Ben Wittick's photo of Day's post, and 2) authors having done more substantial research on the early history of the post or early trading in the Chinle area invariably agree on the 1902 date even when Whittick's photo is presented. Utley was misled by McSparron's faulty memory (Utley 1959:51).

(1963:200) date of 1870 must be discounted because the essence of the text consists of romanticized memoirs. Moreover, trading posts generally were not established in the interior of the reservation until after the railroad was constructed in 1881 (Kelley 1986:24-27).

The Day family biographer, Clifford Trafzer (1971), and Wilken (1955:43-44, 84), place Sam Day in Cienega Amarilla in the late 1890s, and report that the Day family moved to Bill Meadow's trading post just southeast of Chinle in 1901, remaining there about a year before establishing the Chinle post. This information was obtained from the Day Collection at Northern Arizona University and at the Franciscan Archives in St. Michaels, Arizona. Harrison and Spears (1988) state that all documentation favors the 1902 date, making the Wittick photos in question some of the last that he took, probably in 1903 the year of his untimely death by snakebite (Cesarini 1961).

The Day-McSparron Post

Between 1902 and 1930, this Chinle trading post was owned by at least four people: Sam Day (1902-1905), Charles Weidemeyer (1905-1916), George Kennedy (1916-1919), and Cozy McSparron (1919-1954) (Harrison and Spears 1988; McKenna and Travis, this volume). Charles Cousins operated the post for Weidemeyer until 1909, after which the operator(s) and ownership are uncertain. Cousins initiated certain developments such as the ranch house and private fencing that were further developed and formalized by McSparron. After the Cousins left Chinle, trading continued at the post as the Kennedy's purchased it in 1916 as a fully furnished and operative business with a defined work compound, outbuildings, house, and expanded trading post (Kennedy 1965:21; McKenna and Travis, this volume).

McSparron's purchase of the post in 1919 began the longest period of ownership (35 years). It was a time when development reflected structural separation between the ranch living areas for owners and guests and the trading post operation (McKenna and Travis, this volume). Because of these changes, the value and role of any building outside the fenced compound probably became sufficiently diminished that its abandonment occurred during the 1920s. The adobe building being examined in this report, which lay outside of the fenced compound, lacks any archival or photographic documentation after 1930. A site plan of the Thunderbird Ranch, prepared in 1931 by the National Park Service, does not show the building, and pictures of the area taken during the construction of the Custodian's residence in 1935 show only a foot trail crossing the building site (Harrison and Spears 1988:19, 36).

Very few photographs have been located to document the construction or even the existence of Day's adobe structure. Although others may exist in the Day Collection at the Northern Arizona University, only four are known at present: 1) Wittick's 1902-03 northwest overview of the complex (MNM #15988, herein Figure 2.3), 2) a pre-1910 view to the northeast between the post and adobe outbuilding (BIA Branch of Operations, Cat. #620-66-677), 3) a ca. 1906 overview of the post complex to the west (MNA #MS 168-6-23), and 4) a ca. 1925 overview to the north (Morris 1933:Figure 31). Other period photos show peripheral developments to the adobe structure or beaten

footpaths between structures at the post which signify building locations out of the frame.

The two Wittick photos presented here (Figures 2.2 and 2.3) are the most widely published early photos of Day's trading post (for a listing see McKenna and Travis, this volume, Note 1). They both look northwest of Day's post, with Figure 2.3 taken at a slightly higher elevation, revealing outbuildings to the west of the post. These photos, and a third showing a southwest view of the post (Trafzer 1977:9), were all shot at the same time, judging from the consistent position of a wheelbarrow just north of the bread oven near where the Day family laundry is hanging on the north side of the post.

The Wittick photos show the entire development of Day's post. The post's central structure is the 60-by-20-foot trading post with a corrugated metal-covered and gabled roof. Attached to the north end of the post was the flat viga-and-dirt-roofed living quarters of the Days. A privy was situated about 100 feet west of the trading post and a structure for grain and fodder to the northwest. Some 150 feet east of the post was an alignment of large rocks that apparently formed one of the post's boundaries. Navajo horses can be seen tethered to the rocks in this alignment in Figure 2.3. Midway between the rocks and the post were a bread oven and work area. In the foreground of Figure 2.3 is the beginning of a dugout with leveling fill from the excavation piled to the north; two horses stand on the excavation's eastern margin. This excavation marks the beginning of work on Day's adobe outbuilding.

No photographs show the front (north) elevation of the outbuilding. The Bureau of Indian Affairs (BIA) photograph and the 1925 picture shown by Morris (1933) indicate the building had two chimneys in the two southern corners, suggesting two rooms. A small, high window can be seen toward the north end of the east wall (Figure 2.4). Also evident in Figure 2.4 is that the roof was sloped to the south with drainage to the back of the building. Other appointments to the building are speculative but the chimneys suggest two rooms may have been present and that each may have had its own entrance and window on the north elevation.

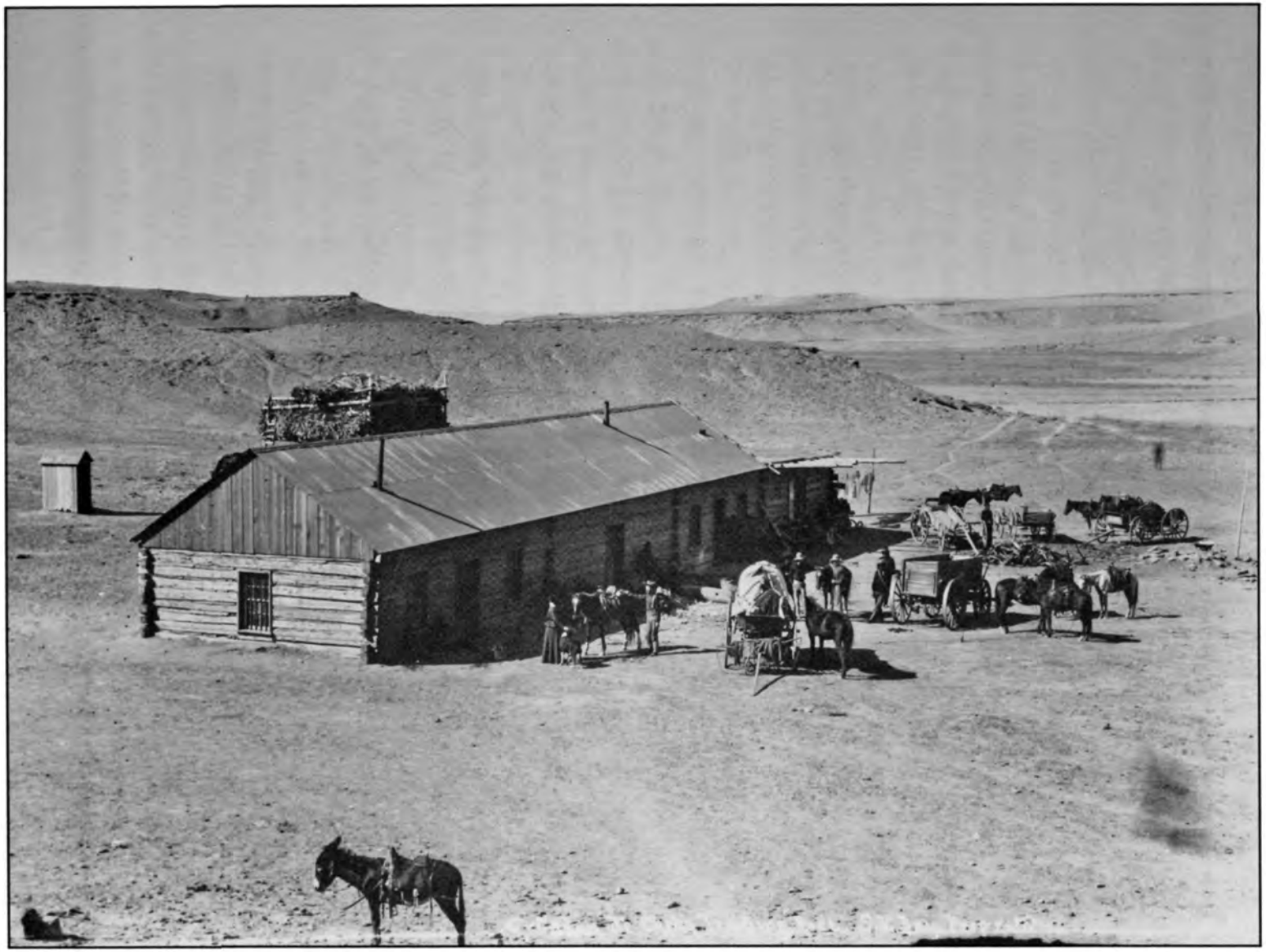

Figure 2.2. Sam Day's trading post (1902-03) showing privy and corn crib/fodder storage building to the west of post at Chinle, Arizona. Photo by Ben Wittick, courtesy School of American Research Collections in the Museum of New Mexico: Neg. No. 16032.

Figure 2.3. Sam Day's trading post (1902-03) with the excavation for the adobe structure in foreground. Day's flat-roofed living quarters are on the north end of the post with various activity areas and customers in front of the post. Photo by Ben Wittick, Courtesy School of American Research Collections in the Museum of New Mexico: Neg. No. 15988.

Figure 2.4. Overview to the west of Cousin's Chinle trading post operation showing the adobe structure to the south of the main complex. Photo courtesy of the Museum of Northern Arizona.

The general development of the Day-McSparron landscape shows a trend toward increasingly formalized activity areas. Cousins erected a slat fence to separate the trading post business from domestic activities around the ranch house. While Cousin's experiences with "unruly" Navajos from Chinle (McNitt 1962:284-286) may have contributed to the incentive for fencing, a simple desire to separate personal space from business was probably more important. The fence ran from the northeast corner of the trading post to the east and then jogged north, eventually enclosing a separate yard east of the ranch house (Figure 2.5). By the mid-teens, a wire-fenced work compound had been established to the north of the trading post (Figure 2.4 and Kennedy 1965:15), enclosing the trader's home and a variety of utilitarian buildings such as storage sheds and livery/auto stables. The 1920s saw the addition of the guest accommodations in the compound. Only the trading post, wareroom, and adobe outbuilding were outside this compound (Figure 2.4 and Kennedy 1965:15). The area just in front of the post, which was first used for wagon parking and horse tethering, eventually became the parking lot.

Although no actual documentation has been found on the specific use of the adobe building, some inferences can be made on the basis of photographs, architecture, and floor-associated materials. There was a well-worn foot path between the trading post and the structure (Figure 2.6), indicating frequent and direct interaction between the two buildings. Hitching posts were situated nearby (Figure 2.5).

It is known that Day, Wiedemeyer, and Kennedy all extended hospitality to visitors, but none attempted lodging as a source of revenue; Hubbell had the market cornered at his Chinle post. The Kennedys put up Anglo visitors on their porch and living room floor (Kennedy 1965:22), but no mention is made of outbuilding accommodations for Anglo visitor use. By inference the adobe structure was in use for something else. Kennedy (1965:25) provides a clue when she writes: "That same night, an Indian man rode into our place and asked permission to spend the night in our camp house, which was for the use of those who cared to stay all night after coming so far to do their trading." Because other outbuildings within the Kennedy compound were utilitarian structures or sheds too small to serve as a "camp house," Day's old adobe outbuilding must have served as overnight

Figure 2.5. Weidemeyer's trading post under Cousin's management (circa 1906) showing the leveling pediment in front of the adobe structure and the eastern elevation of the post complex.

Figure 2.6. View to the northwest of Cousin's trading post showing footpaths to the adobe structure (southeast) and outbuildings west of the post. Photo courtesy of the Museum of Northern Arizona.

quarters for long distance customers. As a customers' "camp house," it was one of the most elaborate structures of its kind on the reservation, as most customer lodges took the form of a "hogan" rather than a "kin" (see Jett and Spencer 1981:29). Guest hogans, usually built by Navajos, lacked fireplaces but were stocked with utensils and wood for visitors use (McNitt 1962:78; Utley 1961:19); otherwise furnishings and appointments were rudimentary.

Construction of the adobe structure was within the scope of Navajo building practices in the early 1900s, even if the use of adobe bricks was uncommon (Jett and Spencer 1981). The form of the building, the unusual use of adobe brick, and the use of fireplaces suggest that Day, or perhaps an Hispanic foreman, directed the actual construction. In the adobe structure, floors of packed dirt contrast with the plank floors of the trading post and ranch house. Doorways and windows were also installed, as was customary when materials were supplied by the trader (McNitt 1962:78). Viga-split-juniper-and-dirt roofs were a common form of closure at the time, also being used in Day's living quarters, at the north end of the trading post, and later on McSparron's first guest rooms. Fireplaces with chimneys are known in Navajo constructions of the period and were practical for heating rooms separately (Jett and Spencer 1981:25-28). Dugouts were more often used for cool-food or wool storage, but the presence of fireplaces in this adobe structure suggest it was used primarily for habitation.

A Morris photo from the mid-1920s (Morris 1933:Figure 31) shows a freight train delivering goods to one of McSparron's barns within the compound. Traders frequently had freight shipments coming in or going out, so that accommodations for teamsters were a necessity. With Cozy's development of tourist cabins within the ranch compound, the adobe structure may have served in housing ranch workers, freighters, or even hardier guests.

ARCHEOLOGY OF THE DAY ADOBE STRUCTURE

The results of fieldwork and laboratory studies on materials recovered from the excavated portion of the adobe structure are discussed in this section.

Room 1 of the adobe structure was about 100 feet south of the present

Thunderbird Cafeteria. Construction for the expansion of the cafeteria parking lot had removed all visible signs of the structure, down to a 5-by-1.5-foot segment of the southeast room corner contained in the western half of a 18-by-10-foot balk (Figure 2.7). No evidence of the structure's west or north wall remained, much less any indication of multiple rooms, because blading had removed fill down to the sterile substratum. A thin lens of trash was visible 30 feet north of the room in a small balk left as a core for a traffic pier (Figure 2.8). This indicates that archeological integrity of the entire structure, although considerably degraded on the north, existed along with a scattering of extramural trash prior to parking lot expansion.

Field Methods

Largely because of the structure's condition, the remainder of Room 1 was excavated in as simple and expedient manner as possible. Pre-excavation profiles of the balk's north and west faces were done to record the relationship of the structure to the existing slope, hill geomorphology, and to identify any internal layering in Room 1 (Figures 2.9, 2.10, and 2.11).

Topsoil was then peeled back and the tops of the walls exposed. Excavation proceeded in natural layers (i.e. without arbitrary subdivision by measured levels). A portion of the fill from each layer was put through a quarter-inch screen to determine artifact content. Recovered artifacts from upper layers was negligible and only Layer 3, associated with primary floor fill deposition, was completely screened. Unscreened material was carefully troweled and backdirt scatter monitored. All excavation was done by hand with shovels and trowels.

Information was maintained by layer or general locality with respect to Room 1. Only floor-associated artifacts were plotted directly onto field maps. Two general surface collections were made for comparative purposes with room materials; one from the grader disturbed area around the balk and another from the undisturbed balk surface. An arbitrary two inches of Layer 3 above Floor 1 was excavated and identified as "floor fill." Floor depth below surface ranged from 3.2 to 3.6 feet.

The southeast corner of Room 1, on top of the fireplace, acted as a general "surface" field datum, but no permanent datum was established. The

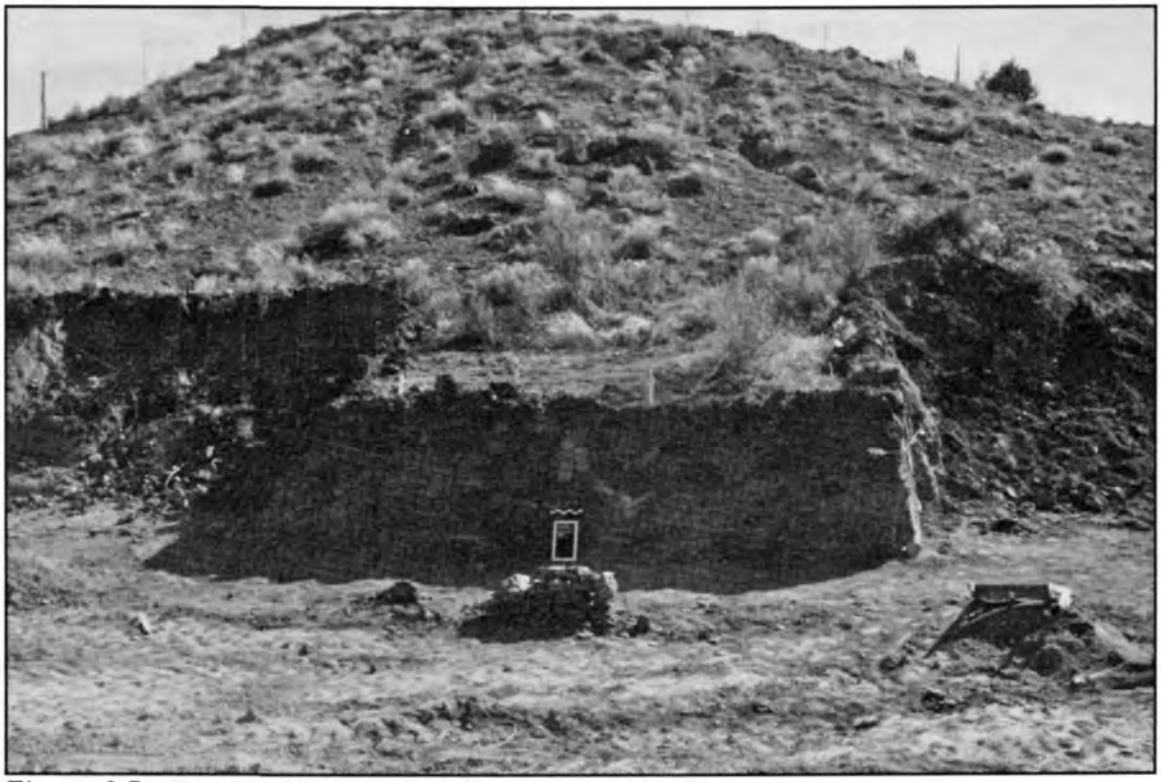

Figure 2.7. Overview of balk remnant left by heavy equipment.

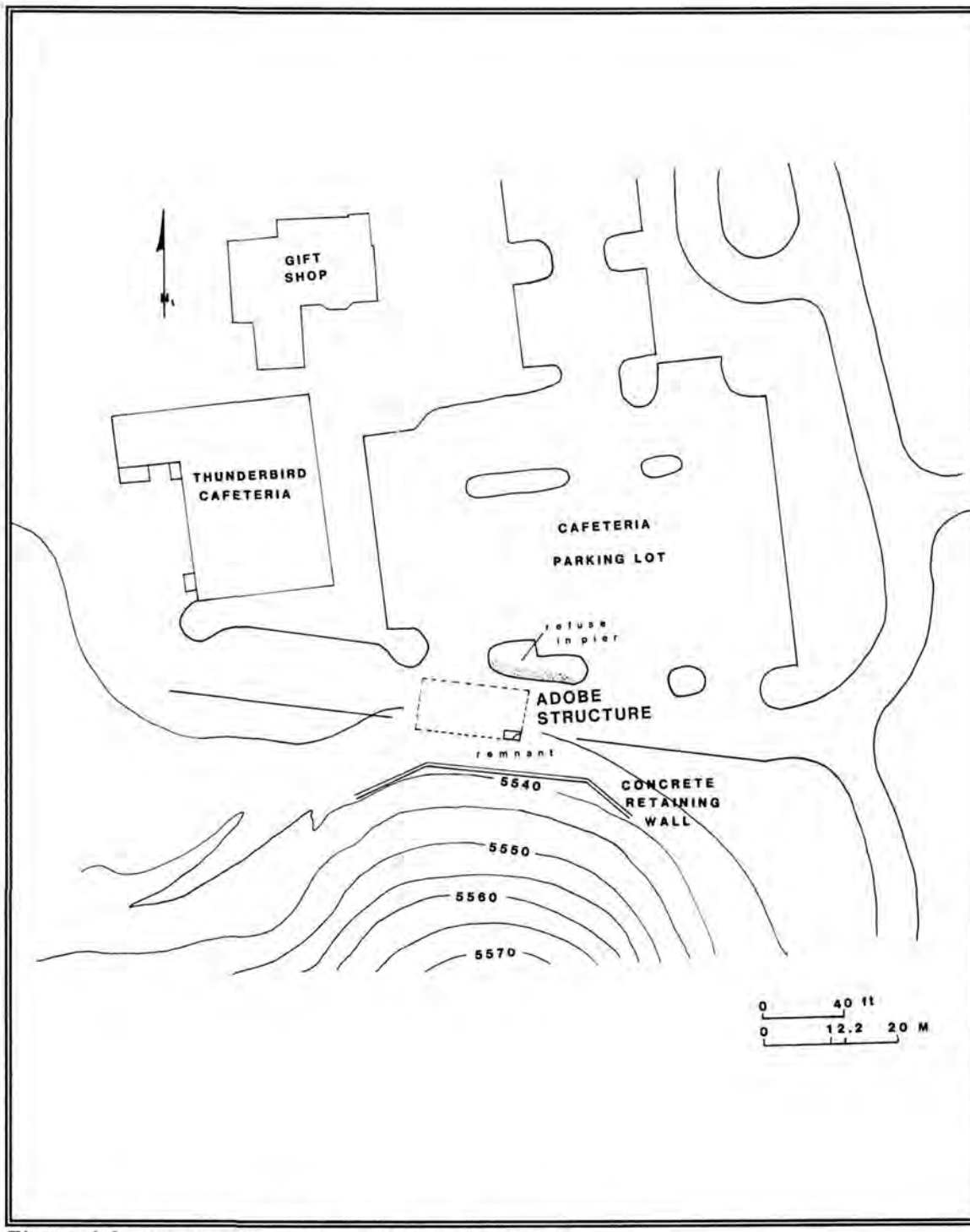

Figure 2.8 Site plan showing location of the adobe structure.

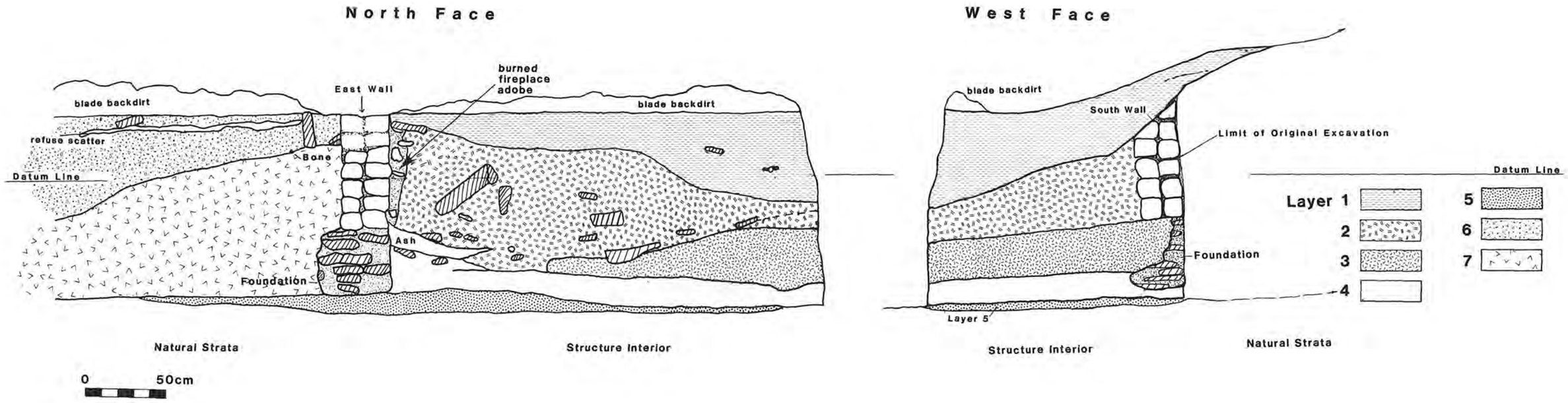

Figure 2.9 Stratigraphic profiles of Day's adobe structure.

Figure 2.10. Profiling the north balk. Note wall stub and hearth ash to the right of worker.

Figure 2.11. View of west profile showing stratigraphy.

position of the structure, with respect to current construction, was provided by Brian Lippert of the Denver Service Center (NPS). He used subdatums established during the parking lot construction to plot the fireplace location. Lippert's information, together with this study's field notes, made it possible to prepare a general site plan (Figure 2.8).

A black-and-white photographic record was maintained on all phases of the excavation. All field notes, draft maps, photographs, and artifacts are housed at the Southwest Regional Office, Division of Anthropology, in Santa Fe, New Mexico.

Stratigraphy and Archeological Fill

The stratigraphic record of the adobe structure 1) indicates that it was originally constructed as at least a partial dugout, 2) traces the sequence of the building's reuse and remodeling, and 3) identifies an uninterrupted period of structural decay. Seven layers were delineated during profiling and excavation (Figure 2.9), five of which represent the internal sequence to Room 1. The other two pertain to the slope geomorphology and extramural deposits. Comparative details of the deposits are shown in Table 2.2.

Layers 1 through 4 occur within Room 1 and contain recent trash, melted adobe, structural adobe, wood splints from roof decomposition, rock from the collapsed chimney, and floor material. Chimney decomposition seems to have begun shortly after abandonment, as chimney and fireplace masonry was located almost directly on the floor. The chimney collapse and rapid filling of the structure may have been promoted by roof salvaging operations, such as the razing of the upper portions of the building to remove primary beams.

A thin layer of ash (<1 inch) was spread over Floor 1. No structural wood was recovered from Room 1, only charcoal, fireplace-associated charred wood, and roofing splints. Floors 1 and 2 were made of dark reddish brown puddled adobe separated by a thin layer of ash (1 inch) and 0.4 to 1 inch of animal dung.

Layers 6 and 7 were only observed in the balk to the east of Room 1. Layer 6 was a heterogeneous, textured layer of reddish brown soil, including a mixture of structural melt, slope wash and rocks, as well as a thin layer of

Table 2.2. Stratigraphic Details of Deposits in Day's Adobe Structure.

Layer	Color	Grain	Remarks
Layer 1	5YR5/4 reddish brown	1/16-1/8 mm very fine	Room 1, homogeneous slope wash; some rock and mortar clasts present; root zone with recent trash. General organic staining to layer.
Layer 2	5YR6/4 light reddish brown	1/16-1/8 mm very fine	Room 1, structural rubble; homogeneous matrix texture primarily decomposed adobe. Smoke blackened masonry.
Layer 3	5YR6/4	1/8-1/2 mm fine-medium	Room 1, roof fall and structural rubble; abundant juniper splints/bast and multiple fine lenses of gray clay and reddish brown adobe. Less rock than Layer 2.
Layer 4	5yr3/4-4/4 dark reddish brown to reddish brown	1/4-1/2 mm medium	Room 1, flooring; clay layer with calcium carbonate inclusions. No rock. Sublayer of manure between two flooring episodes.
Layer 5	5YR3/1 very dark grey	<1/16 mm very fine	Hill substrate; natural layer of gray shale/clay.
Layer 6	10YR6/4 light reddish brown	1/16-1/4 mm very fine-fine	Hill topsoil; heterogeneous textured layer of trash. Texture is blocky and irregular; some rock is present; root zone is present.
Layer 7	5YR4/4-3/4 dark reddish brown to reddish brown	1/4-1/2 mm medium	Hill B-horizon; contains some gray shale inclusions. Massive, general undifferentiated deposit between Layers 5 and 6.

vegetation and trash. This thin layer of trash, about 13 to 25 inches below the surface, may represent the old occupational surface associated with the adobe structure. Layer 7, directly below Layer 6, was a darker, reddish brown soil containing gray shale clay. It was devoid of cultural material and appeared to be a naturally developing soil deposit at the base of the slope into which Room 1 was constructed. Soil from Layer 7 is very similar to that used for adobes in Room 1 and probably represents the source of fabric.

Layer 5 was the residual shale/clay substratum of the hill. It appeared to be the source of mortar for foundation, fireplace, and wall construction. It was into Layer 5 that the southern elevation of Room 1 was primarily dug.

Architecture

The construction of Room 1 was begun by digging into the north facing hillslope about 100 feet southeast of Sam Day's old trading post. The southern elevation was constructed against the hill's clay substratum from a little over four feet below original ground surface. Basic construction seems to have been compound adobe walls set on foundations of sandstone and mortar. A puddled adobe floor was laid and a masonry fireplace constructed in the southeast corner. Measured comparison with the trading post in historic photographs suggests the adobe structure was a simple rectangle 45 by 12 feet and oriented slightly south-of-east in its long dimension. The excavated area represented about 10 percent of the structure's entire floor space (Figure 2.12).

Foundation construction was of unworked, irregular, tabular sandstone slabs set in a hard, gray clay mortar in five or six courses about 18 inches wide and 17 inches high (Figure 2.13). Walls were offset from the foundations in a complementary manner to allow for bonding space in the (unexposed) southeast corner. Four courses of foundation stone were exposed above the floor along the south wall, but the fireplace covered the remainder of the east elevation (Figure 2.14). The 6-inch foundation offset on the south wall was covered with a coping of adobe that gave the wall the appearance of a continuous vertical elevation slightly belled at the base (Figure 2.15). There was no evidence that exposed foundation stone was plastered or in any way covered on the room's interior.

Wall stubs exposed in the north and west profiles both showed compound adobe brick construction. Adobe blocks were coursed in the common running style (Packard 1981:206) and uniformly measured 6 by 3.5 by 12 inches in size (Figure 2.12). Adobes were made of reddish brown clay similar to that described for Layer 7. Brick mortar joints were a gray clay no more than 0.6 inch thick. Both walls rose a little over two feet above the foundation with seven courses of brick visible in profile (Figure 2.13). A thin slurry of reddish brown adobe covered the south wall which obscured mortar bonds and smoothed the general wall surface. No paint or whitewash was

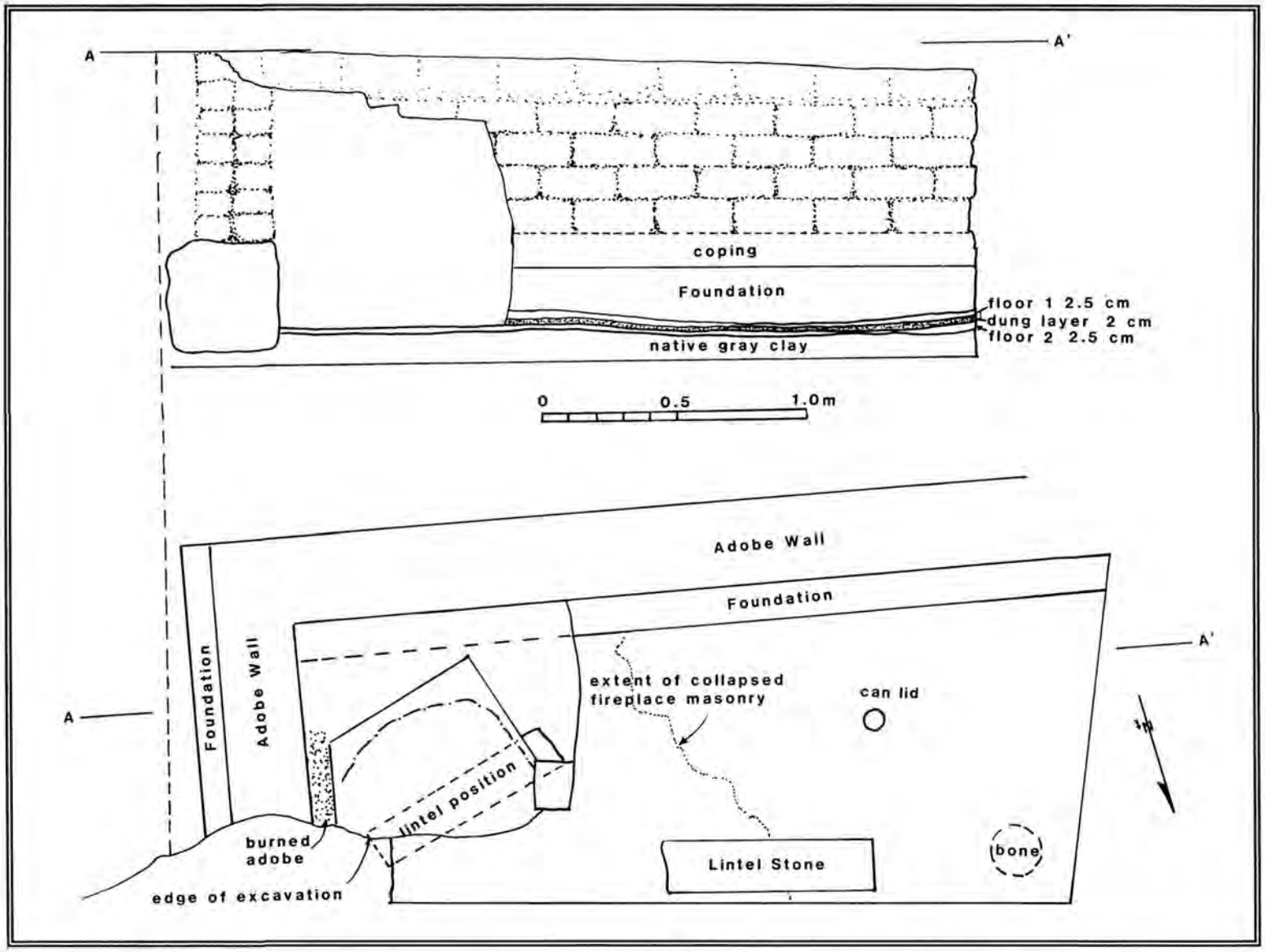

Figure 2.12 Floor and profile plans of the excavated remnant of Day's adobe structure.

Figure 2.13 Detail of north end of east wall adobe (30cm scale to north).

Figure 2.14 Detail of beehive-style masonry fireplace (30 cm scale to north).

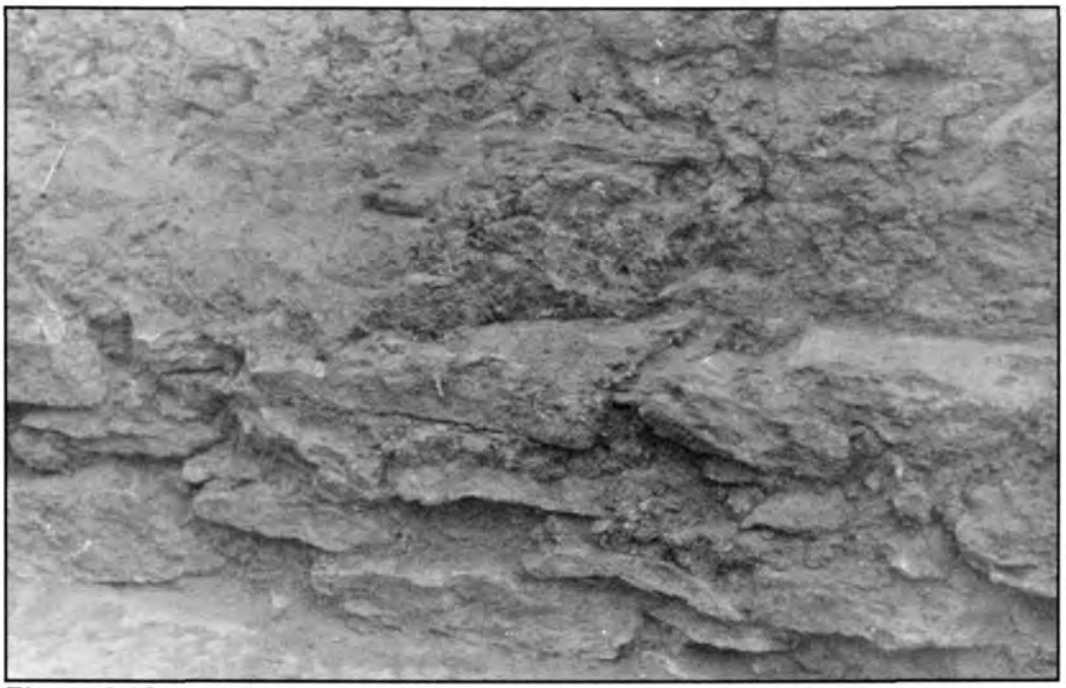

Figure 2.15 Detail of south wall foundation on room interior showing adobe coping between adobe brick wall and stone foundation.

noted on the room interior.

If the roof was razed, the decomposition of interior elevations may account for the "slurry" and "coping" noted on the south wall and the wall/foundation juncture (Figure 2.15). Room 1 interior appearance may have been more rude than its appearance in archeological context. The amount of adobe melt in the room fill suggested walls were full height adobe, as opposed to being restricted to a below-grade lining with a wooden superstructure.

The fireplace was built of masonry in a rounded, beehive-style (Figure 2.14). A single masonry course was laid to provide a foundation for hearth and fireplace walls. The nine courses of remaining masonry abutted the south wall with the west face of the fireplace, extending about 2 feet into the room. The hearth was not symmetrically constructed, being slightly offset to the east-of-center, so that the western facade was the main beehive facing (Figures 2.16 and 2.17). Firebox dimensions were about 24 inches wide by 16 inches deep and an estimated 26 inches high. The remaining masonry leveled at this height (Figure 2.17) with evidence of a lintel notch suggesting this was the elevation of the hearth opening; the lintel stone was located on the floor in front of the fireplace (Figure 2.12). East wall adobes, appear to have been protected from thermal deterioration by a mortared layer of sandstone spalls which were fire reddened. No attachment anchors for tools, such as cooking hooks, a screen, or fuel grate, were noted in the hearth.

Both floors were smooth and devoid of features other than the fireplace (Figure 2.18). No evidence of any room fenestration or other wall features was noted in the remaining walls, although one window is visible in historic photographs of the east elevation (Figure 2.4).

Figure 2.16 Overview of excavated room remnant (30cm scale to north).

Figure 2.17 Collapsed fireplace. John Stein pointing to location of fireplace top beside mantel stone notch.

Figure 2.18 Overview of excavated room remnant: view to south.

MATERIAL CULTURE

The excavation and collection of material from the surface and grader-disturbed areas resulted in the recovery of nearly 300 items of material culture, ethnobotanical samples, faunal remains, and some selected charcoal for tree-ring dating. Some of the material associated with the adobe structure is illustrated in Figure 2.19. The object of the analyses was to use the artifacts to determine the period of occupation(s) and any changes in function of the adobe structure.

Dry Goods

Glass shards were by far the most common artifact recovered. Approximately 82 bottles are represented by the 235 shards (Table 2.3). The vast majority of glass (91 percent) came from other than deep fill within the structure and only a minor amount (4 percent) could be associated with the floor(s). The single largest amount was recovered from Layer 1, but this upper fill assemblage showed temporal mixing like materials from grader-disturbed and balk surface. No whole bottles were recovered; the largest specimen being the lower third of a natural green glass bottle, probably a soft drink container dating between 1903 and 1917.

Glass was tabulated by color, by the portion of the container represented, and by weight and thickness to help in estimating the minimal number of bottles present. The number of bottles was estimated by a three-step procedure: 1) unique portions, including closures, shoulders and bases within each color group, 2) variation in thickness, gradations of color and patination, and 3) similarities across proveniences. Because the collection was relatively small, this was done through simple inspection and sorting. The data tables provide an inventory and summary characterization of the type, relative frequency of glass varieties and bottles, and glass provenience (Tables 2.3, and 2.4). While greater numbers and variety of bottles are undoubtedly present, their recognition was not significant to the present study. Two counts for bottles were derived by this procedure: 1), a simple count by provenience, and 2) another based on interprovenience inspection (compared in Table 2.4). The relative distribution of estimated bottles in both cases was

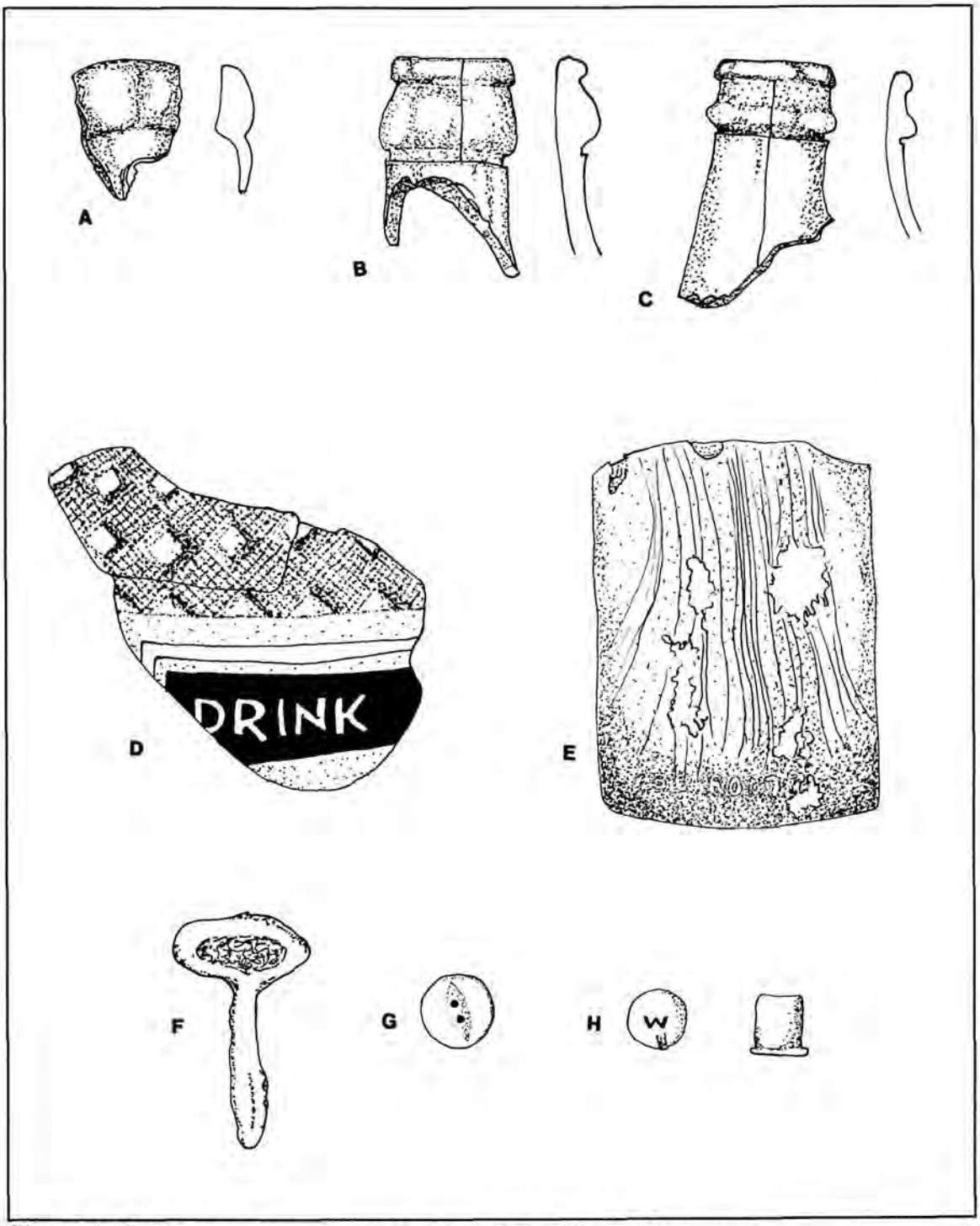

Figure 2.19 Selected artifacts recovered from excavation at Day's adobe structure.

	N	gms	body	neck	base	finish	flat	BN	Remarks
Surface: balk (7.7%)									
clear	12	46.2	11			crown		1	Nestle's
natural, greenish	4	16.6	3			soda		2	Hutchenson-Spring soda, Coke bottle
brown	1	3.0	1					1	
"7up" green	1	0.8	1					1	stipple bottle
Surface: graded (16.6%)									
clear	12	124.6	9		2	crown		4	blue paint embossed diamonds soda bottle red-on-white paint soda bottle 1 stipple bottle, 1 clear soda bottle (n/r)
natural, greenish	8	280.6	6		2			4	2(?) Coke bottles
natural, pale green	8	74.2	5		1		2	4	
aqua	4	19.6	3	1				1	
brown	4	79.0	2	1	1			1	
"7up" green	2	3.5	2					1	stipple bottle
purple	1	4.5	1					1	
Profile E of Rm 1 (25.5%)									
clear	17	17.4	15	1	1			6	stipple bottle (n/r)
natural, greenish	7	18.5	6		1			4	
natural, pale green	6	15.0	4				2	3	
aqua	15	27.0	13			2 crowns		1	
brown	8	23.9	8					1	
amber	4	4.1	4					1	
"7up" green	1	1.2		1				1	
olive green	1	1.7	1					1	"Moosehead" beer-bottle green
purple	1	0.8	1					1	
Trash Lens E of Rm 1 (1.7%)									
brown	4	13.5	3		1			1	
Room 1:									
Profile Clearing (6.4%)									
clear	6	18.1	3			crown	2	3	stipple bottle (n/r)
natural, greenish	4	10.3	4					2	
natural, pale green	1	8.3	1					1	1 label embossed
aqua	1	3.9	1					1	internal flaws/bubbles
brown	3	8.8	3					2	1 label embossed
Layer 1 (32.8%)									
clear	41	120.1	30	2	8	crown		9	7 label embossed for 3 (n/r) stipple sodas, 2 wine bottle frags, 2 condiment bottle frags, 1 plain soda, 2 thin bottles, 1 other bottle
natural, greenish	9	9.4	9					2	
natural, pale green	7	20.1	7					2	
aqua	5	19.2	5					1	

Table 2.3 Inventory of Glass from Excavations at the Thunderbird Cafeteria Parking Lot Expansion and Day's Adobe Structure.

			Body Part						
	N	gms	body	neck	base	finish	flat	BN*	Remarks
Room 1 cont.									
Layer 1 cont.									
brown	12	46.3	10	1		crown		2	
amber	1	2.3	1					1	
"7up" green	1	2.9	1					1	dimple bottle
pearl	1	2.5	1					1	Ball jar glass seal
Layer 2 (1.7%)									
clear	4	54.9	4					1	gallon jug
Layer 2-3 (2.6%)									
clear	3	12.7	2				1	2	1 medicine bottle-embossed
aqua	2	4.5	2					1	
brown	1	10.0	1					1	
Layer 3 (roof fall, 0.8%)									
clear	1	1.2					1		
aqua	1	25.2			1			1	internal flaws/bubbles
Floor 1/Ly 3 (3.0%)									
clear	2	14.5	1				1	1	
natural, greenish	3	10.9	3					2	
aqua	1	9.4	1					1	
brown	1	3.4	1					1	
Floor 2 (1.3%)									
clear	3	0.6	1		1		1	1	
Total	235	1195.2	191	7	19	8	10	81	

Table 2.3 continued.

essentially the same, providing a foundation for use of bottles rather than simple class frequency.

Two basic types of glass are present; bottles and flat glass. Flat glass probably is mostly from windows but a variety of other sources, such as flat-sided bottles, picture frames, watches, mirrors, etc. are possible. At least two kinds of flat glass were found: 1) a thick pane over 2 mm (n=7) and 2) fragile glass less than 2 mm (n=3). The thicker glass occurred mostly in upper fill and surface contexts while thin glass was found exclusively in lower fill and floors. The presence of pane-strength glass on lower fill probably represents window(s) in the structure.

Most of the glass came from carbonated beverage bottles (Table 2.3) with beer and soft drink bottles equally represented. Bottles unassignable to a specific category probably were also used for soft drinks. Aqua colored bottles, common in the early part of the 20th century, were used for a wide variety of products including beer (Berge 1980:86; Fike 1987:13), and round-body beer bottles were common in this glass color (Ward et al. 1977:240; Berge 1980:136-139). The lack of flattish aqua glass is suggestive of low product diversity in the container inventory.

The remaining bottles appeared to be largely non-carbonated beverage containers: one pint wine bottle, a thin green glass with small stippled texturing like that found on some modern prune juice bottles, and a clear gallon jug in which apple and other fruit juices are sold. A single, rectangular medicine or linament bottle with raised lettering was found, and two label-embossed bottles, also possibly medicines or bitters, were found during profile clearing. Soda and beer bottles were plentiful in the disturbed fill and surface areas, and beer containers were present down to the floor of the structure. The casual discard of beverage containers is probably most associated with trading post business until 1960 when bottle sales were discontinued because of the amount of broken glass around the post (Brugge and Wilson 1976:162). This surface material is not all recent discard as it includes Hutchinson-Spring soda bottles and those from Owen's automatic bottle machine which date before 1920. These items possibly were used around the adobe structure itself.

The variety of containers increases in association with the structure;

Table 2.4 Summary of Glass Data and Estimated Number of Bottles.

Type	Freq. n	Freq. %	Weight gms	Weight %	Weight x gms
clear	101	43.0	410.3	34.3	4.1
natural, greenish	35	14.9	346.3	29.0	9.9
natural pale green	22	9.4	117.6	9.8	5.3
(Coke Bottles)	-	-	-	-	-
aqua	29	12.3	108.8	9.1	3.8
brown	34	14.5	187.9	15.1	5.5
amber	5	2.1	6.4	0.5	1.3
"7up" green	5	2.1	8.4	0.7	1.7
olive green	1	0.4	1.7	0.1	1.7
purple	2	0.9	5.3	0.4	2.7
pearl	1	0.4	2.5	0.2	2.5
flat glass	-	-	-	-	-
Totals	235	100%	1195.2	99.2%	-

Type	Thickness - mm n	range	x	s.d.	cv
clear	63	1.0-6.1	3.173	0.877	27.6
natural, greenish	23	2.1-5.3	3.896	0.849	21.9
natural, pale green	21	2.6-6.0	3.976	1.095	27.5
(Coke bottles)	6	3.4-8.9	5.430	1.836	33.8
aqua	19	3.4-6.6	4.779	0.977	20.4
brown	33	3.0-6.3	4.473	0.803	18.0
amber	4	3.3-4.8	3.860	0.586	58.6
"7up" green	4	1.8-2.8	2.300	0.381	16.6
olive green	1	-	-	-	-
purple	2	2.5-3.5	3.00	0.500	16.7
pearl	1	-	-	-	-
flat glass	10	1.8-4.5	2.45	0.792	32.3
Totals	187	1.0-8.9	3.73	1.186	31.3

Type	Est. Bottles	% Est.	BN	%BN
clear	25	31.3	28	34.6
natural, greenish	16	20.0	16	19.8
natural, pale green	10	12.5	10	12.3
(Coke bottles)	2	-	-	-
aqua	7	8.8	6	7.4
brown	12	15.0	11	13.6
amber	2	2.5	2	2.5
"7up" green	4	5.0	4	4.9
olive green	1	1.2	1	1.2
purple	2	2.5	2	2.5
pearl	1	1.2	1	1.2
Totals	82	100%	81	100%

BN = Bottle Number, s.d.= Standard Deviation, cv = Coefficient of Variation

beverages still predominate, but storage, medicinal, condiment, and probably other product categories are present (Table 2.5). Bottles from lower fill and upper floor proveniences may be the result of immediate post-abandonment discard of general post-related activity. Alluvial filling undoubtedly accounts for later contributions, particularly in Layer 1 where post-1948 "no-return" soft drink bottles occur, but also redeposited are structure-associated discards from the immediate area. The difference between discard associated with the structure and post-abandonment discard is quite striking, especially since the trading post continued to provide a variety of glass container products which were also likely to be discarded in the area of the adobe structure. Most of these products, other than beverages, apparently were removed from the ranch area and eventually discarded.

In any case, the variety of structure-associated glass discards alone suggests that the structure functioned as habitation, at least part of the time, and that the locality was not subsequently used as a dump for refuse derived from the operation of the dude ranch.

Extensive discussion of technological hallmarks of glass manufacture have been presented by a number of authors and need not be fully reviewed here (Lorrain 1968; Ward et al. 1977; Berge 1980). Pertinent chronological markers are summarized in Table 2.6. These keys, plus ongoing technological improvements which resulted in more uniform walls using less glass, are reflected in the collection to suggest abandonment and filling of the adobe structure during the 1920s.

The gallon jug in Layer 3 (and other shards) show the severe opaque flaking of pre-1930s glass. Most of the datable pre-1930 amber and aqua glass is associated with the structure itself. Modern clear and natural glass predominates in surface and grader-disturbed material with natural, greenish glass occurring in the structure. The absence of painted-label soda bottles in the structure is another good pre-1932 index of structural aggradation to grade by that time. The almost exclusive use of crown cap style closures again suggests that most deposits began in the early decades of the 20th century. Slight changes in form and thickness of the closure collar reflect standardization and technical improvements in bottle production through time. Large size, "no-return" soft drink bottles clearly post-date the filling of the

A. Bottle Colors

Provenience	clear	brown	amber	aqua	olive green	"7-up" green"	purple	pearl	natural greenish	pale green	N
Surface/graded	5	3		1		2	1		6	4	22
Profile clearing	5	5	1	2	1	2	1		6	4	27
Structure fill*	13	3	1	3				1	2	2	25
[deep fill >Ly 1	3	1		2						]	
Floor 1	1	1		1					2		5
Floor 2	1										1
Total	25	12	2	7	1	4	2	1	16	10	80

B. Bottle Function

Provenience	Soda	Beer	Wine	Juices?	Whiskey/ Condiment?	Bulk/ Storage	Medicine	Beverages/ Unknown	N
Surface/graded	9	4		2				7	22
Profile clearing	4	7					2?	14	27
Structural fill*	4	6	1	1	1	2	1	9	25
[deep fill >Ly1		3				1	1	1]	
Floor 1		2						3	5
Floor 2								1	1
Total	17	19	1	3	1	2	3	34	80
Percent	21.2	23.8	1.2	3.8	1.2	2.5	3.8	42.5	100.0%

* includes trash lens east of room

Table 2.5 Bottle Distribution by Color and Function at Day's Adobe Structure.

Date	Event	Comment	Reference
1873	bottled beer first shipped west	pasteurization of beer permits transport	Berge 1980:73
1873-1910	Hutchinson-stopper	for soft drinks	Ward et al 1977:Table 9.1
1880	brown glass	to present	Ward et al. 1977:240
	mason jars	distributed nationally by Ball Brothers	Ward et al. 1977:Table 9.1
1880-1910	aqua glass		Ward et al. 1977:240
1880-1917	purple glass	magneseum additive	Ward et al. 1977:240; Berge 1980:76
1892	crown cap patented	beverages, sauces, major change in bottle finishes replaces all beer & soft drink closures 1912-1920	Ward et al. 1977:Table 9.1; Berge 1980:80
1903	automatic bottle machine	Owen's model; seam passes through lip	Ward et al. 1977:Table 9.1; Berge 1980:76
1907	soft drink bottles	first made on automatic bottle machines	Ward et al. 1977:Table 9.1
1917	gob-feeder automatic bottle machine	decline of Owen's model	Berge 1980:77
1914-1930	amber glass	WWI production when magnesum, supplied by Germany, was replaced by selenium	Ward et al. 1977:240; Berge 1980: 77-78
1924	soda bottles, 8 & 10 oz.	standardization of sizes	Ward et al. 1977:Table 9.1
<1930	opalescent glass	smoky, opaque flakes of alkaline carbonates from decomposing glass	Berge 1980:78
>1930	clear, colorless glass		Ward et al. 1980:240
1932	application of colored lettering	to soda bottles	Berg 1980:80
1934	soda bottle, 12 oz.	becomes popular	Ward et al. 1977:Table 9.1
1935	beer can introduced	reduction in bottles	Ward et al. 1977:Table 9.1
1938	no-return bottles, beer	to compete with n/r cans	Ward et al. 1977:Table 9.1
1948	no-return & large bottles, soda		Berge 1980:82
1955	crown caps with plastic liners	replaces cork liners	Ward et al. 1977:Table 9.1

Table 2.6 Chronological Hallmarks for Early Twentieth Century Glass.

structure (Tables 2.3 and 2.5). Beer bottles alone are present but beer cans were introduced in 1930 (Berge 1980:262). These temporal markers indicate the use of the structure up to the mid-1920s, with fill complete before 1932.

Other miscellaneous artifacts reflect the intrusion of recent material in Layer 1 compared with scant earlier material in the lower fill and floors. The mixed assemblage of plastic, aluminum, paper, and so forth reflects the variety of casual discard of a wide variety of refuse around the perimeter of the Thunderbird Ranch (Table 2.7). The wheel weight and starter switch are items that were frequently lost and discarded next to roadways and parking lots.

Other classes of material are related to the installation of underground utilities in the structure such as the electrical or telephone cables noted on the east face of the balk. One segment of rubber wire insulation (0.3-inch diameter with a 0.2-inch cavity) was recovered from Layer 1. Electricity was first installed at the Thunderbird Ranch in 1941 (Brugge and Wilson 1976:60). Likewise, numerous pieces of turquoise-colored sewer pipe were present (not collected) and the remains of the pipeline trench indicated the line had been put through the structure; sewer line installation in 1965 was one instance of structural disturbance (Harrison and Spears 1988:30). But the majority of material represents the discard of nonspecific broken junk, personal items of low value, and other refuse.

A very limited number of items came from structural fill and floors (Table 2.7). Items from the fill included a white, two-hole, shirt or blouse button of shell (0.5-inch diameter) with holes centered in a decorative lenticular inset. There was also a flat tobacco can and a rolled steel can fragment. Artifacts recovered during the profile clearing also can be related to lower room fill and include numerous can fragments, a roll-strip can opener (such as was used for containers of sardines or coffee), a ceramic doll fragment, and a leather strip. The two leather strips from the room may represent harness or tack trimming. The lateral edges on both specimens are dressed with the interior edge showing as the cleaner, more recent cut. The ends taper together, again suggesting tack trimming and not fragments of the feather strip for turned-soles on shoes, a common type of shoe sole produced between 1912 and 1926 (Anderson 1968:62). In contrast, a cemented shoe sole

	Surface		E. of Rm 1	Room 1						
	balk	graded	trash lens	Profiles	Layer 1	Layer 2	Layer 3	Floor 1	Floor 2	N
rubber shoe sole (p)		1								1
Presidential gum card (t)	1									1
wheel weight 107.5 gms (m)	1									1
metal handle (mm)		1								1
plastic comb (p)					1					1
rubber wire insulator (u)					1					1
beverage screw cap (Al) (c)					1					1
brass plano-covex washer (u)					1					1
car starter switch (m)					1					1
bracket for 1.25" pipe (mm)					1					1
misc. metal (mm)					3					3
ceramic doll part (t)				1						1
2-hole shell button (p)							1			1
flat tobacco can (c)							1			1
nails, common wire (con)				1			3	6	2	12
staples (con)				1				2	3	6
crown cap - cork seal (c)								1		1
cans/can lids (c)	1		3	10		1		1		16
key-style can opener (c)				1						1
leather strips (a)				1					1	2
bullet casing (w)									1	1
unknown material (?)									1	1
N	3	2	3	15	9	1	5	10	8	56

	nails		staples	
	straight	bent	straight	bent
Profiles	1		1	
Room 1				
Layer 2-3	1			
Layer 3	1	1		
floor fill	2			
Floor 1		2		1(sm)
Fireplace hearth	1(7d)	1(8d)	1(sm)	1(sm)
Floor 2		2(8d)		2(lg)
Totals	6	6	2	4

Key to ( ) codes on Table 14

Table 2.7 Miscellaneous Artifacts from the Thunderbird Cafeteria Parking Lot Expansion.

was recovered from the grader-disturbed surface. This well worn, fabric reinforced sole represents standard post-1926 shoe production (Anderson 1968:64) and is similar to canvass or rubberized shoes or boots used today in casual wear or for irrigation. However, both leather specimens have one dressed surface. Unlike feathering strips in shoes, apparently these pieces were cut from different tack. The largest piece of leather, from Floor 2, is 0.2 inch thick and 3.7 inches long and may have come from a saddle as its original curvature does not suggest harness. The smaller leather strip, from profile clearing, is thin (0.07 inch) and apparently represents other trimming.

Many of the durable items were developed at or just prior to the turn of the century. The roll-strip style can opener, introduced in 1895, still continues in use today, but did not appear on coffee cans until 1917 (Fontana and Greenleaf 1962:89; Berge 1980:261). The doll fragment, probably an appendage, was of flesh-colored porcelain, a common material in doll construction after 1880. After 1909, the universal use of anatomically adult appendages gave way to naturalized infant styles such as the present specimen (Noel-Hume 1976:317-318).

The tin cans were all of the open-top Packer's or "sanitary" type introduced in 1902 but not generally available until after 1922 (Fontana and Greenleaf 1962:72-73). Cans from the adobe structure were all badly rusted and fragmented. Only two cans were complete enough to determine size: one, a crushed, potted meat can from the balk surface, and, the other, an 8 oz. can lid from Floor 1. The tall, size 8 oz. can was popular for a number of fruits and vegetables (The Canning Trade Almanac 1944:140). Flattish, slightly kidney-shaped tobacco cans were first produced in 1892 (Berge 1980:261) and continue to be sold in both the hinged "Prince Albert" and loose-lid "Velvet" style. A "Velvet" style can was recovered from Layer 3.

A single rimfire cartridge was found on Floor 2. Dimensions on this cartridge (in inches: base dia. .350, rim dia. .400, case length .425, neck dia. .350) best match the data for 9 mm caliber rifles, pistols and shotguns (Barnes 1985:311; Suydam 1969:80-81). These small caliber weapons were used for small game and parlor tricks. Because of the inexpensive, light, blackpowder loads, they were popular guns for children and for potting varmints or slaughtering small stock around ranch houses. The load itself is generally

uncommon in the United States, being designed mostly for European weapons, but odd calibers periodically filtered onto the reservation because of their lower value (Scott Berger, personal communication 1988).

Production on rimfire cartidges for the 9 mm ball began about 1908 and continues. Although no pistols for this caliber were produced in the United States, the round could be chambered in the American-made Winchester Model 36 bolt-action, single-shot shotgun (Suydam 1960:80). The present specimen is a copper casing with a "W" impressed into the base, indicating it was manufactured by the Winchester Repeating Arms Company (WRACo, as specified by Suydam 1960:168). The depth of the hammer impression and the crimped rim indicate the cartridge was fired from a shotgun, probably the Winchester Model 36. The load would have been sufficient to dispatch sheep at close range.

Finally, a few badly rusted common wire nails and staples were recovered (Table 2.7). Common wire nails (and staples) were predominantly used in construction about 1890, 40 years after their introduction (Nelson 1968). Although these fasteners may have been used in construction of the adobe structure, the staples are more often used for fencing -- the larger for heavy duty sheep fence and the smaller on barbed wire. Larger, heavy-duty construction nails and staples were found exclusively on Floor 2. The abundance of straight nails in the fill suggest these came from decomposing wood either from the razed structure or from discarded splinters containing nails. In contrast, more bent nails occur directly on the floor and may represent pulls during roof dismantling. In early buildings, nails also frequently acted as pegs for hanging harness or other personal possessions and their presence may, in part, reflect such use.

Ethnobotantical Material

Flotation and pollen samples were taken from the firebox (ash), an adobe brick, and from floors and fill to assist in understanding the construction, use, and abandonment environment of the structure through associated plant remains. Pollen samples from floors were dominated by weedy species (86 to 88 percent), primarily ragweed, sunflower and Cheno-

ams, as were the seeds recovered by flotation (Clary 1987; Toll 1983:2-3). These samples represent the pollen rain and macrofloral evidence on the upper floor and, in large part, the sheep grazing diet revealed by the manure on the lower floor.

Overall, the ethnobotanical record shows a continuity in flora in the area and through the use of the structure. Also present in the pollen samples were small amounts of maize, suggesting that either corn fields were close by or maize was being eaten in the structure. The similarity in counts between the floor and adobe brick pollen samples, including maize, suggests no basic change in the local plant community around the building, although the lower counts in the adobe brick might suggest less weedy vegetation was present as shown in early photographs of the Day period. The generally low pollen counts, and lack of macrofloral evidence, however, diminish the possibility that the adobe structure was last used for the storage of grain crops, hay, or other cultigens.

Karen Clary (1987) provided the results and summary of the pollen analysis from which much of the following is taken. Clary found the preservation of pollen was variable in the four samples. Absolute pollen concentrations ranged from 304,635 pollen grains to 302 grains of pollen per gram of sediment (Table 2.8). Samples with less than 1,000 pollen grains per gram of sediment were considered to be unreliable for statistical interpretations (Hall 1981:205), although taxa present in samples with low numbers are useful for the comparison of presence/absence of taxa. Half of the samples (2) contained sufficient numbers of pollen for a standard 200 grain count.

Of the four samples analyzed, pollen from the firebox was poorly preserved and not diagnostic. Pollen counts from the east wall adobe brick were low and consisted of the more prolific, decay-resistant, and easily identifiable taxa such as Cheno-ams and the sunflower family. This suggested that the source of the soil materials was from a non-trash context and not from an exposed surface, which would have had a wider and more abundant spectrum of pollen. The presence of maize in the adobe brick suggests that a source of the adobe straw may have been maize plants.

Floor 1, composed of ash-stained clay, had pollen which was 86 percent

POLLEN TYPE	RELATIVE FREQUENCIES IN ADOBE STRUCTURE ROOM 1			
	Floor 1	Floor 1 Fireplace/ash	Floor 2	East Wall Adobe Brick
Arboreal				
Coniferous				
Abies sp. (fir)			R	
Picea sp. (spruce)			R	
Pinus sp. (pine)	6	(3)		(1)
Pinus edulis (pinyon)	+	R	2	
Pinus ponderosa (ponderosa pine)			+	
Non-Coniferous				
Quercus sp. (oak)	+		1	
Salix sp. (willow)			2	
Populus sp. (cottonwood)	2		1	
Juglans sp. (walnut)	+			
Ulmus sp. (elm)	R			
Non-Arboreal				(3)
Grasses, Herbs and Shrubs				
Cheno-ams (chenopod-amaranth)	14	(4)	21	(10)
Sarcobatus sp. (greasewood)			1	
Gramineae (grasses)	7	(1)	6	
High-Spine *Asteraceae* (high spine sunflowers)	5		10	
Low-Spine *Asteraceae* (low spine sunflowers)	29		47	(5)
Artemisia sp. (sage)			1	
Ambrosia sp. (ragweed)	31		4	
Ephedra sp. (Mormon-tea)	1		+	
Portulaca sp. (purselane)	R			
Sphaeralcea sp. (globemallow)			R	
Zea mays L. (maize)	+		R	(4)
Unidentified	2	(1)	3	(1)
Total	215	9	214	25
Percent	100		100	
Absolute Number of Pollen Grains/Gram of Sediment	51,000	582	304,635	302

Key to Symbols:
"+" indicates a frequency of less than 1%.
"( )" indicates real numbers in samples with less than 200 pollen grains.
"R" indicates a rare occurrence (1-10 pollen grains) in larger fraction residue scan.

Table 2.8 Relative Frequencies of Pollen From Day's Adobe Structure.

weedy species, primarily ragweed, sunflower family, and Cheno-ams. This condition is suggestive of an invasion of disturbed soils by colonizing weedy species, the pollen of which is settling onto Floor 1. The only identified cultigen is maize (*Zea mays L.*), which occurs in scant quantity. Arboreal taxa are lightly represented by pine, oak, cottonwood, walnut, and elm.

Floor 2 was also of clay but was overlain by manure, perhaps from sheep, indicating intermittant use as a livestock pen. Like the sample from Floor 1, this one was well-preserved and composed of weedy species, primarily the sunflower family, Cheno-ams, grasses, and ragweed. This pollen spectrum is again reflective of disturbed soil conditions and invasion by weedy annuals and perennials. Based on the presence of manure, this pollen spectrum may represent plant foods eaten by livestock. If so, scant maize pollen suggests that livestock were not fed cultivated plants but were instead grazed on available weeds.

The pollen record represented in the samples analyzed fits well with the general description of the denuded landscape that existed in the early part of the twentieth century. The high concentration of the pollen from weedy herbaceous and shrubby species indicates disturbed soils that suppport colonizing taxa and a general lack of tree species, at least in the vicinity of the sampling locations. The sample taken from Floor 2 may also be indicative of the grazing diet of livestock during an occupational hiatus of the structure. Although the pollen record from the adobe brick gives no indication of differences between construction and post-construction environments, it does suggest that the adobe was mixed with straw from corn plants or from soils bearing corn pollen (a field, perhaps). Maize pollen was encountered in three of the four samples, indicating that it was being used either as a foodstuff in the context of the features sampled (in particular the floors) and/or was under cultivation in the general vicinity.

Mollie Toll identified the macrobotanical materials using voucher specimens at the Castetter Lab for comparison, and reviewed flotation and larger woody samples at 7x to 45x. Toll (1987) provides the following summary of results and conclusions.

On Floor 1, macrobotanical specimens included ash, decomposed wood splints, and a peanut shell. Analysis showed weedy annuals make up all of

the seeds recovered by flotation. Cheno-ams were prominent (as in the pollen) with pigweed, goosefoot, and patata making up 84 percent in the flotation 1sample. Ragweed was an additional significant component in pollen, and knotweed in flotation only. All of these species are invaders in disturbed ground situations, producing abundant pollen and small seeds. Pigweed and goosefoot were major prehistoric food sources utilized as tender greens in spring or early summer and later in summer for their seed crop, at many western Anasazi sites (for example see Antelope House, Hall and Dennis 1986). Yet abundance of this readily dispersed pollen and seed type, together with many taxa not economically useful, provide no substantive case for economic utility of the Cheno-am specimens at Thunderbird Ranch.

The fireplace produced the only carbonized materials found. The single charred stickleaf seed and one unknown are very likely miscellaneous ambient seeds tracked or blown in and then charred when the fireplace was in use (Table 2.9). Peach pits (uncharred but with ash and charcoal matrix adhering) were also present in the fireplace (Table 2.10). All charcoal in the fireplace was coniferous, with a little more pinyon than juniper (Table 2.11).

Floor 2 flotation repeats many of the taxa found on Floor 1 (pigweed, goosefoot, patata, nightshade family) and adds pinyon and several weedy taxa (winged pigweed, dicoria, carrot family). None of the seeds were charred and most taxa have no record of significant human use.

Roof fall, Layer 3 in the structure, produced watermelon seeds and peanut shells (Table 2.10) as well as the majority of wooden splints (Table 2.12) interpreted as roofing material. Over 90 percent of these wooden splints were juniper, a popular roofing material in both Puebloan (Hall and Dennis 1986) and historic Navajo (Jett and Spencer 1981) contexts. Juniper was readily available in Canyon de Chelly and on the surrounding mesas (Harlan and Dennis 1986).

Macrobotanical materials from the upper fill layers included watermelon seeds and peach pits (Table 2.10). Layer 2, containing the bulk of the watermelon seed, consisted of melted adobe mixed with upslope wash, and overlying the roof fall. Layer 1, varying between 6 and 24 inches thick, included surface trash and the root zone, together with some structural rubble. Both upper fill layers present considerable opportunity for inclusion of post-

Table 2.9 Flotation Results, Species Inventory, Day's Adobe Structure.

Taxon	Floor 1	Fireplace	Floor 2
WOODY PERENNIALS:			
Pinus edulis pinyon			cone scale
GRASSES:			
cf. *Panicum* panic grass			2
WEEDY ANNUALS:			
Amaranthus pigweed	50	1	24
Chenopodium goosefoot	2		4
Cycloloma atriplicifolium winged pigweed			1
Monolepis patata	19		2
cf. *Dicoria* dicoria			1
Mentzelia stickleaf		1*	
Polygonum knotweed	42		
Portulaca purslane	13		9
Solanaceae nightshade family	1		2†
cf. Umbelliferae hemlock family			1
Unknown	2	1*	
TOTAL SEEDS	129	3	46
Number of taxa	7	3	10
Number of taxa charred	0	2	0

*Carbonized
† cf. *Lycium* (wolfberry)

occupational debris, including vegetal items.

Table 2.10. Measurements of Macrobotanical Remains.

	Prunus persica (peach pits) (mm)				Citrullis vulgaris (watermellon seeds) (mm)				Arachis hypogea (peanut shell)
Provenience	[frag]	L	W	Th	[frag]	L	W	Th	[f]
East of wall stub	[1]	-	-	-	-	13.5	7.6	1.2	-
Layer 1	-	13.7	-	-	-	-	-	-	-
Room 1	-	15.2	-	13.8	-	-	-	-	-
Rm1,layer 2	-	-	-	-	[+5]	13.7	7.8	2.5	-
	-	-	-	-	-	13.7	8.0	2.0	-
	-	-	-	-	-	12.2	6.9	-	-
	-	-	-	-	-	13.7	7.5	3.0	-
Rm1,Layer 3	-	-	-	-	-	13.2	8.5	2.0	[2]
Rm1,Floor 1	-	-	-	-	-	-	-	-	[2]
Rm1,Fireplace	-	26.9	22.7	16.2	-	-	-	-	-
	-	32.2	25.1	17.4	-	-	-	-	-
Total N [fragments]		4 [1]				6 [5]			[4]
Average Dimentions (mm)		22.0	23.9	15.8		13.3	7.7	2.1	

The modern cultivars present an interesting assemblage in the structure. The four peach pits recovered from this site vary widely in size--two in the fireplace were distinctly larger than the two found in the upper fill (Table 2.10). All peach pits fell within the wide range of variation observed among 183 pits recovered from various Navajo Indian Irrigation Project and Navajo Mines Archeological Project sites of the historic period (averaging 26.2 mm in length; Donaldson and Toll 1981, 1982; Toll 1983). Such variability, especially when it includes smaller specimens, is indicative of the stressful or poorly controlled growing conditions often found outside of commercial cultivation (e.g., unpruned trees, older trees, trees grown without adequate water).

Introduced by the Spanish, peaches quickly became the most popular orchard crop and were grown widely in the Southwest in the historic period. Canyon de Chelly, in particular, has been a center of peach production, attracting Navajos and Anglos alike during the harvest season (Van Valkenburgh 1941:18; Elmore 1944:54; Kennedy 1965:23; Trafzer 1977:8). At Walpi, peach pits were by far the most common remains (98 percent) of domesticated drupes; apricots, plums and cherries were miles away in both abundance and ubiquity (Gasser 1980:Table 26).

Watermelon seeds from the Thunderbird Ranch site were very fragile, with the outer seed coat often missing or eroded. Variability in thickness of the specimens is due mostly to differences in deterioration. In contrast to peach pits, watermelon seeds were relatively uniform in size and shape. Four of the six measurable seeds were found in Layer 2 and may be from a single fruit. Watermelon, also introduced by the Spanish, was considered by Whiting (1939:92) to be "almost a staple food" for the Hopis during the 1930s. Watermelon seeds were the single most common plant remains recovered during excavations at Walpi (62 percent of all plant specimens, Gasser 1980:87). Most of these seeds (89 percent) were found in storage or religious rooms.

All peanut shell fragments were flattened. The outside seed coat was eroded and sometimes missing; partitions and the corky inner layer were more likely to be intact. Whiting (1939:12-13, 79) attested that peanuts, as well as almonds, may have been grown by the Hopi after introduction in the 1930s. Peanuts were the most common (57 percent) and widespread domesticated nut found in excavations at Walpi (Gasser 1980:50). Peanuts were probably more an item associated with Anglo visitors or travelers, as suggested by the Navajo reference to them as "white man's pinons" (Elmore 1944:55).

To summarize the evidence of the flotation and macrofloral remains, all the vegetal artifacts, except roofing splints and fireplace charcoal, which can be reliably linked with human use were modern cultivars. The latter can be reliably linked with human utilization. Roofing materials were predominantly juniper, as is frequently the case in both prehistoric and historic building remains from the area. Charcoal was weighted towards pinyon, with juniper as a firewood supplement. Modern cultivars included

peaches and watermelons introduced by the Spanish in the sixteenth century. Peanuts were introduced to northeast Arizona at about the time the Thunderbird Ranch was built. Flotation produced very few materials, most of which were unburned seeds of noneconomic weedy annuals. A charred stickleaf seed recovered from the fireplace probably was intrusive during the use of the structure.

Table 2.11. Charcoal Composition From Fireplace.

Taxon	Pieces	%	Weight	%
Juniperus juniper	8	40	2.0g	32
Pinus edulis pinyon	9	45	3.6g	57
Undetermined conifer	3	15	0.7g	11
Total	20	100%	6.3g	100%

Table 2.12. Taxanomic Composition of Unburned Wood from Roof Fall (Layer 3).

	Roof Fall		Floor 1		Total %	
Taxon	N	weight	N	weight	N	weight
Juniperus juniper	25	129.0g	19	79.9g	94	91
Pinus ponderosa ponderosa pine	-	-	1	6.2g	2	3
Undetermined conifer	2	13.7g	-	-	4	6
Total	27	142.7g	20	86.1g	100%	100%

Faunal Remains

Identification and summary comments on the faunal assemblage was provided by Akins (1986) which are incorporated into the following discussion. A total of 44 bones was recovered during excavation. Fifteeen elements were picked up on the balk surface and in the area of grader disturbance and the rest were recovered from structure fill.

Some sheep are present but goats may also be represented as many elements are indistinguishable between the two species. Other unidentified artiodactyls (hoofed animals) make up most of the remaining fauna. These unidentified species also likely represent sheep/goats so that these species may constitute as much as 75 percent of the faunal remains. At least one cow bone was present. Some of the elements may represent native species such as deer, antelope or mountain sheep, but the assemblage impresses as one denoid of native species, as is often the case where domestic animals are a food source (Table 2.13).

Far fewer individuals are represented than the actual bone count suggests. In the structure itself, most of the bone, some of which was articulated, was associated with Layer 3 and Floor 1 and represents a single sheep; there is no duplication of elements to suggest more than one animal. Besides the material from room fill, faunal remains are of questionable utility in evaluating structure use or post-occupational activity. Few individuals are represented in the remaining collection. Within the room, bone from upper fill is most susceptible to post-occupational contributions. In the grader-disturbed area and the balk surface, more individuals are undoubtedly present. The number is uncertain since surface material may have, in part, been derived from bladed room fill. This material cannot justifiably be used in interpreting the structure. The overall assemblage, however, is remarkably consistent and suggests this area of the Thunderbird Ranch was used as a dump for domestic refuse, including faunal remains.

If the bone from upper fill and surface contexts was associated with disturbed room fill, this would produce a considerably different interpretive picture than do those remains associated with the floor level. Lower leg and foot bones on the structure floor may simply be discards from the butchering

A. INVENTORY

Species Identification	Element & Side	Comment: age, butchering, exposure, etc.
FS 1 General Surface - graded area		
1 *Ovis aries*	left humerus shaft	immature or young adult; ends bashed or chewed; exfoliated
2 small to medium artiodactyl	left humerus shaft frag.	
3 small artiodactyl (sheep/goat)	long bone shaft frag.	slight root etching
4 large artiodactyl (horse/cow)	long bone shaft frag.	both ends sawn; slightly checked
5 large artiodactyl	thorasic vertebra spine	checked
6 medium to large artiodactyl	long bone shaft frag.	
FS 2 Profile Clearing - grader/slump dirt east of east wall stub		
1 *Bos* cf. *tarus*	hyoid frag.	
2-3 medium to large artiodactyl	rib shaft frag.	
4 small artiodactyl	rib shaft frag.	
5 small to medium artiodactyl	right distal ulna	not mature
6-8 small artiodactyl	long bone shaft frag.	
9 small artiodactyl	skull frag.	
10 large mammal	unknown frag.	possibly skull & probably pathological; knife cut marks
FS 3 Profile clearing west of east wall stub		
1 small artiodactyl	rib shaft frag.	
FS 4 Trash lens/woodpile scatter; east of east wall stub		
1 *Ovis/Capra*	left lower rib, proximal and 1/3 shaft	slight checking; small knife cut diagonal to shaft proximal, dorsal, posterior area
FS 5 Layer 1		
1 *Ovis/Capra*	thorasic vertebrae spine	
2 small to medium artiodactyl	right scapula body frag.	very checked
3 small to medium artiodactyl	long bone shaft frag.	checked
4 large artiodactyl	rib shaft frag.	checked; 4 diagonal knife cuts anterior
5 medium mammal	unknown frag.	carnivore gnawed
FS 7 Surace of balk above Room 1		
1 *Ovis aries*	right scapula, head & most of body	
FS 8 Room 1, Layer 2 - structural melt		
1 large artiodactyl	left scapula, blade frag.	very checked; knife cuts diagonal to body

Table 2.13 Faunal Remains from Day's Adobe Structure.

	Species Identification	Element & Side	Comment: age, butchering, exposure, etc.
FS 9	Room 1, Layer 2 - roof fall		
1	Ovis aries	left illium	slight checking; young adult - not sexable
2	Ovis aries	left metatarsal; complete	checked
3	Ovis aries	left metacarpal; complete	checked
4	Ovis aries	right metacarpal; complete	small knife cut parallel to axis, proximal
5-6	Ovis aries	phalanx 1; complete	1 front, 1 rear foot
FS 10	Room 1 floor fill (5cm above floor)		
1	Ovis aries	phalanx 1; complete	front foot
2	Ovis aries	phalanx 2; complete	front foot
FS 11	Room 1 fireplace clearing, Layers 2-3		
1	Ovis/Capra	left upper rib; mostly complete	not mature; knife cut posterior edge just below head
2-3	Ovis/Capra	thorasic vertebra spines	
4	small artiodactyl	metatarsal shaft frag.	
5	small artiodactyl	long bone shaft frag.	
6	medium to large mammal	unknown frag. (zygomat?)	rodent gnawed
FS 12	Room 1 Floor 1		
1	Ovis/Capra	right radius shaft	not mature; carnivore gnawed
2	Ovis aries	phalanx 3	checked
3	Ovis/Capra	tarsal	checked
FS 14	Room 1 Floor 2		
1	small to medium mammal	long bone shaft frag.	

B. SUMMARY OF FAUNAL REMAINS

Species		N	%
Ovis aries	(domestic sheep)	11	25.0
Ovis/Capra	(domestic sheep or goat)	7	15.9
Bos cf. tarus	(domestic cow)	1	2.3
small artiodactyl	(size of sheep/goat)	9	20.4
small-medium artiodactyl	(size of sheep to deer)	4	9.1
medium-large artiodactyl	(size of deer to cow)	4	9.1
large artiodactyl	(size of cow or horse)	5	11.4
medium mammal	(size of dog to sheep)	1	2.3
medium to large mammal	(size of dog to cow)	1	2.3
large mammal	(size larger than deer)	1	2.3
Total		44	100.1%

Table 2.13 Continued

process, a discard pattern at Euro-American sites, if not Navajo sites, where sections of low food value, such as lower legs, are routinely discarded on the site during butchering (Bayham 1975:40; Lyman 1977:69-70; cf. Binford and Bertram 1977:94-95, 100). The faunal evidence from the room might then suggest that one of the last uses of the structure was that of a dumping pit from butchering. If, however, the other bone in the area is from displaced room fill, a more generalized refuse dumping becomes the scenario of last use as portions of high food value, such as vertebral, rib and pelvic sections, are present (Binford and Bertram 1977:95).

Prime animals were selected for butchering. Although fused metapodials (fusion between 1.5 and 2.0 years) were present, other immature elements (humerus, radius, ulna, illium) suggest animals less than three years were selected (Silver 1963:Table A). Butchering marks were infrequent, being limited to one skinning cut on a metapodial, knife marks indicating separation of ribs from vertebrae, and one large mammal bone (cow or horse size) which was sawn at both ends. Although there are insufficient butchering marks (and bone) present to merit an analysis, the presence of knife cuts on sheep and goat bones, and sawn bones from large mammals, mirrors the most common butchering methods recorded at the Hubbell Trading Post on these species (sheep and goats, 82 percent cut; cows 77 percent sawn, Bayham 1975:Table A).

Bone from the room showed some moderate erosion (checking, Table 2.13) as well as carnivore and rodent gnawing, which suggests the structure was open for a time after the bone was discarded. Other bones outside the structure show similar conditions, including root etching, which again suggests exposure or shallow deposition, possibly in the structure or on the associated buried surface outside the building. Carnivore gnawing, most likely by dogs, is a clear sign that the faunal remains have undergone attrition and that the assemblage represents only a portion of the original discard. The remains of younger animals are most adversely affected in such circumstances (Binford and Bertram 1977).

Again, such a small collection is of limited utility. In this instance it confirms the presence of some species as food items: domestic sheep and cows. The treatment of some elements suggest use in soups and stews. Feet and

lower legs, probably discarded during the butchering process, were located on the structure floor, but the extent of building destruction precludes observation of whether or not this was sporadic, occasional disposal or a bone pit indicative of a large-scale butchering site.

Tree-Ring Dates

Ten tree-ring specimens of fireplace charcoal were submitted to the Laboratory of Tree-ring Research for analysis. Of these, two were undatable juniper while eight were pinyon that produced dates ranging from A.D. 1724++vv to 1891++GB (Table 2.14). Substantial outer ring loss was sustained by all specimens with the exception of the 1891 date, making the dates generally inconclusive (Robinson 1987).

Table 2.14. Tree-ring Dates from the Adobe Structure Fireplace.

Provenience	TRL CAT#	Field#	Species	Date
Structure 1, fireplace	CDC-191	4	Pinyon	1724++vv
Structure 1, fireplace	CDC-194	7	Pinyon	1732 vv
Structure 1, fireplace	CDC-192	5	Pinyon	1792 vv
Structure 1, fireplace	CDC-190	3	Pinyon	1795 vv
Structure 1, fireplace	CDC-195	8	Pinyon	1833 vv
Structure 1, fireplace	CDC-197	10	Pinyon	1840++vv
Structure 1, fireplace	CDC-193	6	Pinyon	1841++vv
Structure 1, fireplace	CDC-188	1	Pinyon	1891++GB

For all practical purposes, no coniferous wood exists in the immediate Thunderbird Ranch area. Stands of pinyon occur several miles to the east, while juniper occurs closer but not at the ranch. The pinon-juniper mix in fireplaces is a popular and, here, an intentional combination which outranks juniper as mixed fuel. Because no wood dates to the construction and occupation of the post (1902), this likely represents collection of deadwood for fuel either by McSparron, incoming freighters, by Navajos for sale at the post

or cut in the employ of McSparron, or even by guests returning from Canyon de Chelly who were aware of the need for wood back at the ranch. The beetle galleries on the 1891 specimen, in particular, point to use of deadwood for the fireplace.

THE SHORT LIFE AND HARD TIMES OF DAY'S CUSTOMER CABIN

None of the conditions necessary to the satisfaction of many historic archeology goals were met in the case of Day's adobe structure. No record or literature exists which confirmed its former existence, purpose, or nature. Old photos alone provided mute council. No ethnohistorical sources were located that could provide additional information. Last, and undoubtedly worst, construction had removed all but a pitiful structural ort as well as the associated extramural occupational surface.

With these limitations the sample hardly can be called adequate, much less representative; factors to be weighed when considering interpretations. Likewise, the fundamental imperfection of the data warn against elaborate analytical approaches and models. In the case of Day's adobe building, were it not for the outright destruction of the majority of the archeological information, the suspected unique nature of the structure might have frustrated the tidy resolution of popular problem orientations involving questions of ethnicity, social units, and function.

The admitted goals of this report have been quite conservative; that is, to answer questions of who, when, and for what involving the structure. The preceding discussion and analysis has answered the who and when question: Sam Day in 1902 or 1903. The question of function has, however, entertained several possibilities and the following summary attempts to draw together the main points of the study to discuss the likelihood that the structure was used primarily as a customer cabin. The construction of customer quarters was unique to either the Euro-American or Navajo architectural traditions, and represents an entirely new addition to market landscapes in the historic Southwest. Accommodations for clientele reflected the desire of the trader for Navajo business and represented an investment in courtesy and concern

on the traders' behalf for customers traveling long distances. As such, these accomodations were financed by the trader but were constructed and used largely by Navajos.

When Sam Day had the adobe structure built, he was no greenhorn to life on the reservation. His trial-by-fire over a fencing issue at his first home in Cienega Amarilla is a time-honored parable for the period as the "right way" to gain the cooperation, trust, and friendship of Navajos. The lesson: "money talks" (Wilken 1955:24, McNitt 1962:247-248; Trafzer 1971:17-18; 1977:2-3). In this instance, Day was mortally challenged by a local leader, Short Hair, for attempting to fence springs and prime pasture lands on Day's new homestead. Sam averted the clash and gained the support of Short Hair and his followers by offering them an exhorbitant $1.50 a day if they would build the fence for him. The fence went up.

The building of a "guest hogan" was customary for traders in the early 1900s. What better way to establish good business relations, avoid ill-will, and generate community interest, support, and knowledge of the new business than to hire local people in the building of the customer lodge. The attractiveness of the lodge was probably a factor in deciding which post to patronize. The trading post in those days was the equivalent of today's shopping mall, acting not only as a center for the sale of Navajo products, but as a centralized locality for coveted goods, social interaction, and architectural spectacle (Utley 1959:56; 1961; Roberts 1986). Day knew of the keen competition for the trading "dollar" at Chinle and may have added to his post's draw by providing the most attractive customer accommodations in the area. Such dollar-based cynicism is not completely justified, however, as Day was a true friend of the Navajos, and providing nice housing may well have been an extension of his natural feelings. Rectangular houses were less frequently used as Navajo domiciles during this period as, aside from proscriptions in the Blessingway, they were more costly and less efficient because of their greater size and maintenance costs. Early "kins" (square buildings) often served as storage structures. There was a growing prestige factor, however, in the construction and use of "white man" style houses which may well have influenced a customer's choice of trading posts--assuming credit was not an issue (see Jett and Spencer 1981:109-111).

It is likely that Navajos built the structure, as it conforms in most respects to the Navajo vernacular of the period in size, appointments, and finishing techniques which are also manifest in the 1920s guest cabins of known Navajo construction contracted by Cozy McSparron. These buildings all compare favorably in overall dimensions and individual room sizes (Table 2.15). The similarity in size, form, and the use of adobe brick and carefully masoned stone strongly suggests they were all built to the specifications of the trader. In one of Day's rooms, a Navajo family, perhaps occupying a hogan about 13 to 16 feet across with 137 to 214 square feet of floor space, would literally have been staying at the "Ritz" right next to the candy store.

The sequence of floors in the structure suggests that its possible use as a customer's cabin was not continuous. The building's usefulness as a cabin, however, can be traced at least as far as the Kennedys' tenure, if Mrs. Kennedy's remarks about their "Indian" lodger pertain to the adobe structure. It appears that the building's use as a sheep pen took place early in McSparron's ownership, and probably signaled a change in attitude toward providing customer lodging by Cozy.

That it did not immediately end the building's use for human occupation is shown by the reflooring over manure, again in a native-style packed-earth floor. Cozy wasn't particularly fussy about subfloor conditions for housing people connected with the post or ranch operation. He was still flooring directly over stable (manure) deposits in 1948 when the employees' quarters were built (Building 13, Guest Unit 11, Table 2.15; see also McKenna and Travis, this volume). This lack of sanitary preparation may well have been one of the factors in speeding the adobe structure abandonment. One can imagine what the living conditions must have been like in the adobe structure if, as recently as 1985-1987, there were chronic guest complaints about the "funny smell" in Guest Unit 11. The 40-year-old subfloor manure deposits were one of the reasons for the room's complete renovation (Mary Jones, personal communication 1987). There is, of course, no telling how long the adobe structure was used as a sheep pen, possibly with a fenced corral on the front. By the mid-1920s, however, it appears to have been back in use as a place of human habitation.

Events at the Thunderbird Ranch suggest the customer cabin's

Table 2.15. Comparative Living Space in Historic Guest Rooms at the Day and McSparron Trading Post.

	Overall Dimensions sq ft.	<1950 Early Rooms sq ft.	>1950 Modern Rooms sq ft.
Adobe Structure	45x12=540		
2 rooms		270	
3 rooms		180	
Building 15	38x14.5=551		
Guest Rooms 1-3		183	
Guest Rooms 6, 8			273
Building 14	57x13=741		
Guest Rooms 1-4		185	
Guest Rooms 7, 3			169
Guest Rooms 5, 4			189
Building 13	23x14.5 +		
Guest Room 10	19.5x11=548		234
Guest Room 11			215
Average sq ft/room		183	236

Room 15 early = 1920-1951, modern = 1951-1988
Room 14 early = 1925-1956, modern = 1956-1988

revitalization may have been short-lived (see Harrison and Spears 1988; McKenna and Travis, this volume). Between 1920 and 1924, McSparron began architectural and business changes that ultimately influenced the future of the Thunderbird Ranch. During this period, Cozy had tourist cottages built within his fenced ranch compound and erected a log barn with an attached corral. The stock facilities were in roughly the same location as Kennedy's masonry garage/livery and corrals. It may have been during this period that the adobe structure served as Cozy's receiving pen for sheep. This arrangement may not have been satisfactory as it was too accessible to the public in general, liable to coyote or dog predation in particular, and possibly

conveyed the wrong "image" to tourist clientele Cozy was seeking to attract.

At any rate, about 1925, Cozy built a new stone "sheep shed" and corral (now known as the "stone shed") north and just east of the log barn which was roughly the same size and shape as the adobe structure but had the added thermal advantage of facing south. Complementary replacement of functional structures suggest the new sheep shed replaced the jury-rigged arrangement at Day's old customer cabin. With the refurbishment of the adobe structure, McSparron may have returned to the practice of housing long-distance customers, but more likely expanded the structure's clientele to include freighters, mail carriers, and "tougher" overflow guests.

However, part-time wage labor was becoming more common in the Chinle area, including the production of Hollywood movies, such as *Redskin* in 1928 or 1929, numerous government and mission construction projects, and the steadily growing potential for fleecing the "dudes." The Navajo response to this was to move *en masse* to encampments around the Thunderbird Ranch (or Chinle area) and stay until the work was over and the post bought out. It would not have taken very many of these events to begin eroding the utility of Day's customer cabin in the eyes of McSparron, who, more and more, was turning his attention to developments within his compound.

To infrequent visitors and touring Anglos, Cozy was a "good scout" and "warm-hearted" (Morris 1933:144; Smith 1938:11). To his peers he was a boaster and his whole operation was a bit too touristy and overdone (Hegeman 1963: Brugge and Wilson 1976; Harrison and Spears 1988:13-15). While the Navajos testified to his friendship and value as an economic ally (Henderson 1953), he was still the man who controlled many of the purse strings in the area. Not surprisingly, then, Cozy was many things to many people; but consistently he was a businessman increasingly concerned with the lodging aspect of his operation (Brugge and Wilson 1976). Although Cozy later built a traditional guest hogan near his post (Smith 1938:13), the use of Day's customer cabin probably eroded and ceased due to McSparron's increasing investment in, and formal organization of his business holdings within the ranch compound.

Increasing customer visitation and the establishment of regularized Navajo camp localities in the immediate neighborhood probably further

weakened Cozy's need or desire for a large tourist-style structure outside the Thunderbird compound, so that during the late 1920s the structure was abandoned and probably razed. The site remained open for a period during which it was used for non-intensive dumping, at least for discards from butchering possibly associated with any of the Navajo camps in the area. With a growing eyesore on his hands, McSparron probably had the remainder of the structure demolished and filled in, accounting for its complete obliteration by 1932.

The impact of construction in this particular case has had its most adverse effect on the evidence of foodstuffs and material culture. The remains of foodstuffs are restricted to the more durable portions of peaches, peanuts, and watermelons, all native cultigens of some standing in northeast Arizona at the time of the structure's abandonment. Corn, the common denominator of native subsistence, is so scant as to suggest only incidental inclusion in the pollen spectrum and not storage or processing within the structure. The custom of traders supplying countertop treats to their customers (Utley 1961:18-19) could account for the presence of these foodstuffs as easily as their acquisition from local producers, Hopi sources, or as travel foods. Again, the lack of evidence of cultigens suggests the structure was not used for storage of corn (or other grain products) and that full-scale meals were not prepared on-site. Such findings reinforce the impression of subsistence on "convenience foods" requiring little preparation and time. Like the diet of today's traveler, the "McDonald's Syndrome" seems evident in the use of the customer's cabin.

Consideration of the material recovered likewise supports some of the historical reconstruction. The nature of the material culture associated with the structure differs from post abandonment deposition (Table 2.16). Consumables, here largely represented by soft drink and beer bottles, dominate the post-occupational collections. Later discard is characterized by convenience food packaging. Strong evidence of convenience foods (cans, bottles, fruit) found in association with other utilitarian categories (including potential multipurpose storage vessels, weapons, personal items, animal transport, medicines, and construction/storage hooks in the general collection) make a strong appeal to the nature of use being habitation.

	Surface/ Graded	Profile Clearing	Structural* Fill	[>Layer 1]	Floor 1	Floor 2	N	%N
Consumables (c)	16	22	22	7	6		66	43.7
Personal (p)	1	1	2	1	1	1	6	4.0
Toys (t)	1	1					2	1.3
Weapons (w)						1	1	0.7
Medicine (med)		2?	1	1			3	2.0
Motorized Transport (m)	1		1				2	1.3
Animal Transport (a)		1				1	2	1.3
Storage (s)			2	1			2	1.3
Construction (con)		2	10	5	8	5	25	16.6
Utilities (u)			2				2	1.3
Miscelaneous metal (mm)		1	4				5	3.3
Unknown (?)	7	14	9	1	3	2	35	23.2
Total	26	44	53	[16]	18	10	151	
Percent	17.2	29.2	35.1		11.9	6.6		100.0%

*includes trash lens east of structure

Note: totals assembled from previous tables with contributors of vegetal consumables n=5, glass bottles n=80, flat glass in construction or personal use n=10, dry goods n=56 for total of 151. Vegatal foods were tallied by taxa presence and not frequency. The single sheep in structural fill was not tabulated under consumbables nor were juniper splints included in the construction category.

Table 2.16 Functional Classification of Artifacts Within Major Proveniences at Day's Adobe Structure.

The assemblages between the two flooring episodes are remarkable only in the lack of identifiable food containers on the lower floor but, here too, at least one beverage bottle may be present in the "unknown" category. It is difficult to assign much of the lower floor material to human habitation. The artifacts, in fact, may result from incidental discard during the building's use as a sheep pen. The small caliber cartridge could indicate sheep dispatch as much as varmint hunting, the heavier construction grade staples often employed in sheep fence are present, and the marked breakage of the glass all point to this possibility. It is during the final use of the room, then, that a trend to convenience foods, so evident in the most recent deposits, begins to take shape. One interpretation of this trend is the return of the structure to the role of transient housing.

Recognition of the material correlates of ethnicity, social units, and function are usually approached from three data classes: food remains, ceramics (e.g. containers), and architecture (McGuire 1982:163). Invariably, results of these studies alone are less than satisfactory in the absence of historical documentation and informant sources (Fontana and Greenleaf 1962; Kelly and Ward 1972; McGuire 1979). This has been particularly true in historical frontier situations where power between groups has not yet become differentiated and the various groups are flexible, accomodating to one another's needs and values (McGuire 1982). Scarce and valued items of industrial society are usually more accessible to all who can afford them (they are not stigmatized by ethnic values that arise as a consequence to disproportionate power), while food choices are more eclectic and the regional vernacular architecture predominates (after McGuire 1982).

In the case of Day's customer cabin, we are apparently confronted with a development unique to the early Navajo Reservation trading post, i.e. entrepreneural *gratis* investment in customer welfare. The separation of historical evidence from archeological evidence would have resulted in a far less complete interpretation (or informed speculation) about the role of the structure in the changing scene at the Day-McSparron post. One reconstruction of the building's history, function, and role within the early Day-McSparron trading post complex has been tendered. With the discovery of further documentation this may change, but what seems evident is the

early shift, reflected in alterations to the architectural landscape, in business commitment to Navajo customers versus non-Navajo tourists at The Thunderbird Trading Post.

NOTES

1. Because of the evolution of the Thunderbird Lodge, it has been variously refered to as a ranch, trading post, and lodge. These names are used interchangeably in this document, generally refering to the period when that term was in use.

2. Photographs inspected in the development of Table 1.1 and the history section are as follows:

Period	Source	Subject Shown in Reference
1902-1915	MNM #15988 Wittick 1902-03	Overview of Day's post to northwest
	Utley 1961:13 James 1976:64 Trafzer 1973:262 Harrison and Spears 1988:5	
	MNM #16031 Wittick 1902-03	Detailed view of Day's post to southwest
	Trafzer 1977:9 Harrison and Spears 1988:4	
	MNM #16032 Wittick 1902-03	Elevated view as MNM #15988
	Amsden 1934:Plate 85 Harrison and Spears 1988:94	
	"Day Collection" 1902-05	Navajos with bear pelt in front of post's southeast corner
	McNitt 1962:226 Trafzer 1973:226 Grant 1978:137	
	BIA-BO #620-66-677 1902-06	Not published; on wall in Thunderbird Cafeteria
	MNA #168-6-23 1905-09	Overview of post and buildings
	MNA #168-6-23 1905-09	Detail of main post and ranch house
	MNA #168-6-19 1905-09	Detail of Cousin's post interior

Period	Source	Subject Shown in Reference
	SWM #8843 1905-09	Post and ranch house with horses and wagons
	SWM #8841 1902-05	Post behind freight wagon and horses with scattered refuse
1910-1920	Kennedy 1965:15 1917	Overview of complex
	Kennedy 1965:15 1917	Post, east elevation
	Kennedy 1965:17 1917	Interior of trading post
	Kennedy 1965:18 1916	Interior of ranch house
	Kennedy 1965:19 1916	Ranch house west elevation
	Kennedy 1965:23 1917	Stables east elevation
	Kennedy 1965:37-38 1918	Bears at ranch house
1921-1930	Morris 1933:Fig.31 1925	Overview of complex to northwest
1931-1940	Files:Canyon de Chelly 1940	Overview of complex to northwest
	Harrison and Spears 1988:9.21	
	MNM #89349 1940	View south to ranch house between guest rooms
	Harrison and Spears 1988:8.22	
	Files: Canyon de Chelly 1935	Overview to southeast of custodian's residence construction.
	Harrison and Spears 1988:11.19	
1941-1950		1943; View of trading post to west
	Henderson and Abbott 1943:16	
	MNM #46028 Snow 1949	Overview of complex to northwest
	Harrison and Spears 1988:12.26	
	James 1976:65	
1951-1960	Files:Canyon de Chelly NM 1953	Overview of custodian's residence and west portion of Thunderbird complex
	Harrison and Spears 1988:27	
	Files:Canyon de Chelly NM 1955	North elevation, trading post
	Files:Canyon de Chelly NM 1955	East elevation, trading post
	Harrison and Spears 1988:95	
	Files:Canyon de Chelly NM 1955	South and west elevations, trading post
	Harrision and Spears 1988:97	
	Harrision and Spears 1988:96	
	Files:Canyon de Chelly 1955	South elevation, ranch house

Period	Source	Subject Shown in Reference
	Harrison and Spears 1988:61	
	Files:Canyon de Chelly NM 1955	North elevation, ranch house
	Harrison and Spears 1988:63	
	Files:Canyon de Chelly NM 1955	East elevation of log barn
	Harrison and Spears 1988:114	
	Files:Canyon de Chelly NM 1955	West elevation of Building 14
	Harrison and Spears 1988:124	
	Files:Canyon de Chelly NM 1955	North elevation, Building 15
	Harrison and Spears 1988:131	
	Files:Canyon de Chelly NM 1955	East elevation, Building 16
	Harrison and Spears 1988:136	
	Files:Canyon de Chelly NM 1955	South elevation, Building 16
	Harrison and Spears 1988:137	
	Files:Canyon de Chelly NM 1955	West elevation, Building 13
	Harrison and Spears 1988:143	
	Files:Canyon de Chelly NM 1955	East elevation, Building 13
	Harrison and Spears 1988:142	
	Files:Canyon de Chelly NM 1955	East elevation, stone shed
	Harrison and Spears 1988:148	
	Files:Canyon de Chelly NM 1955	East elevation, trading post
	Harrison and Spears 1988:41	
	Harrison and Spears 1988:98	
	Files:Canyon de Chelly NM 1955	South elevation, storage hogan
	Harrison and Spears 1988:42	
1961-1970	Unknown source	Gift shop, motel office, and grounds
	James 1976:63	
	Files:Canyon de Chelly NM 1965	Overview to north of complex
	Harrison and Spears 1987:15.1	
	Harrison and Spears 1988:44	
	Files:Canyon de Chelly NM 1965	Overview to northwest of complex
	Harrison and Spears 1988:43	

MNM=Museum of New Mexico; MNA=Museum of Northern Arizona; SWM=Southwest Museum; BIA-BO=Bureau of Indian Affairs, Branch of Operations. Harrison and Spears' 1987 figures are not numbered and numbers cited here and in the text are sequential decimal places from the last previously numbered text pages. Harrison and Spears (1987) is the first draft of a 1988 manuscript which included photographs omitted from the 1988 text.

3. Movie or television productions at Canyon de Chelly based wholely or partially at Thunderbird Lodge are as follows:

Date	Title	Source
1917	A Modern Musketeer	Kennedy 1965:34
1929	Redskin	Morris 1933:143; Kennedy 1965:34; Dimmitt 1965:1398
1942	Desert Song	Brugge and Wilson 1976:84 Dimmitt 1965:390
1944	Queen of the Nile	Brugge and Wilson 1976:84-85
1946	Sea of Grass	Brugge and Wilson 1976:90; Dimmitt 1965:1503
1948	When a Man's a Man	Brugge and Wilson 1976:98; (1935) Dimmitt 1965:1927
1957	The Big Country	Brugge and Wilson 1976:139; Dimmitt 1965:130
1967	MacKenna's Gold	Brugge and Wilson 1976:245; (1969); Limbacher 1985:302
1985	Poltergeist II	(1987); Gertner 1987:349
1987	Good Morning America	ABC (TV)

Dates at left are dates of production in the Canyon de Chelly area which are found in the citation following the movie title. Release dates differing from that of the production follow along with the supporting trade publication citation.

4. Although Camille Garcia downplays (McNitt 1962:251) Wheelwright's early role in helping McSparron stimulate the rug revival and suggests her contribution did not come until much later than 1930, Wheelwright's claim (Amsden 1934:224) that she assisted (with ideas and dollars) McSparron about 1920 must be accorded precedence given the time it took Amsden to write and publish his book (1929-1934, see Hodge in Amsden 1934:iv); an effort which preceeds Garcia's statement. Cozy's vigor at developing his business during the early 1920s is unquestioned, as exemplified by the rate of construction, and his willingness to branch out in a completely new line (guest rooms) suggests that he may well have been bold enough, especially when prompted by seed money, to attempt convincing local weavers that a revival of their craft would be profitable for all concerned.

5. Wittick's photo would seem to be the source of the confusion. Inspection of this photo at the Museum of New Mexico Historical Photo Archives suggests "scribe error" has been operative in the photo's distribution. Written on the back of the file photo, in round, clear, recent hand, is the inscription "Chinle Trading Post circa 1887." As was the case with copies of the photo purchased for this report, the erroneous date is perpetuated on receipts and invoices where it is given weight as information coming from a state archive.

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