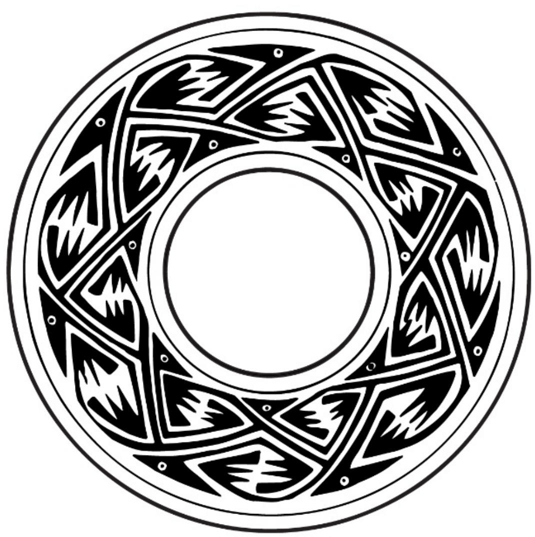
The Archaeology of Shields Pueblo (Site 5MT3807): Excavations at a Mesa-Top Community Center in Southwestern Colorado

Edited by
Susan C. Ryan



Dedication

This interpretive report is dedicated to the memory of Donald Sprague, Crow Canyon Archaeological Center Super Alum and family member. Don participated in 37 Archaeology Research Programs and 47 Cultural Explorations programs from 1993 to 2011, dedicating hundreds of hours to the Crow Canyon Archaeological Center's mission-related research, including research at Shields Pueblo during the 1997–2000 field seasons.

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Acknowledgments

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Shields Pueblo is located on private lands owned by Colorado Mountain College and James and Veda Wilson, who granted Crow Canyon permission to conduct fieldwork at the site. Special thanks are given to both landowners for allowing a large-scale research project to take place on their properties. Thanks also to the Anasazi Heritage Center (the Bureau of Land Management museum and curation facility in Dolores, Colorado) for its support throughout the project—from providing conservation advice in the field and lab to permanently curating all the artifacts, samples, and records associated with Crow Canyon's excavations at the site. Deserving of special recognition are former Manager LouAnn Jacobson, former Museum Curator Susan Thomas, and Supervisory Interpretive Specialist Victoria Atkins.

From initial mapping in the 1980s, through the production of this report decades later, Crow Canyon's study of Shields Pueblo has been a team effort. The sustained support of Crow Canyon's Board of Trustees and the active involvement of our research committee have been crucial to the successful completion of this project—their interest, advice, and encouragement are greatly appreciated. Members of Crow Canyon's Native American Advisory Group offered thoughtful and thought-provoking comments on the design and implementation of this project; as always, their perspectives enriched our own and made for a better report.

Virtually everyone who worked in Crow Canyon's research and education departments from 1997 through 2000 was involved in some aspect of the Shields Pueblo research project, including excavations, lab work, or both. From the beginning of the project, various researchers conducted special analyses, analyzed field and laboratory data, and prepared the collections for curation. Throughout, the Center was aided in its work by undergraduate and graduate student interns, helpers from the local community, and thousands of student and adult participants in the Center's excavation and laboratory programs. Diverse professional colleagues contributed their special skills and expertise to the analyses and interpretation of materials recovered from the site; some authored chapters in this report. It is impossible to individually recognize every staff member, intern, volunteer, participant, and colleague by name, but their individual and collective contributions to the success of the project cannot be overstated. They made this project possible.

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Chapter 1

Introduction

by Andrew I. Duff

Shields Pueblo (Site 5MT3807) was home to dozens of families in the centuries between the late A.D. 700s and the depopulation of the Mesa Verde region by A.D. 1300, after which the lands remained largely untouched until homesteaded in the early twentieth century. The most intensive occupation of Shields Pueblo dates between about A.D. 1050 and 1280, when the site was densely settled and appears to have been central to a larger community of households that resided within a few kilometers of it. By the mid–A.D. 1200s, Goodman Point Pueblo (Site 5MT604; Figure 1.1), located several hundred meters south of Shields Pueblo—literally across the county road—became the central settlement in the vicinity, though some families continued to reside at Shields Pueblo. Between A.D. 1280 and 1300, people remaining in the Mesa Verde region chose to leave, moving to the south, where Pueblo people continue to live today.

Shields Pueblo is located in what is now southwestern Colorado (see Figure 1.1), northwest of Cortez, Colorado, and immediately adjacent to the Goodman Point Unit of the Hovenweep National Monument, on lands owned by Colorado Mountain College and James and Veda Wilson. Shields Pueblo consists of artifact and masonry concentrations distributed over a 35-acre area, which has been disturbed by historical land use, primarily mechanized agriculture (Figure 1.2). Immediately south of the site is the Goodman Point Unit of Hovenweep National Monument, a preserve within which is the large settlement of Goodman Point Pueblo (see Figure 1.1). The research at Shields Pueblo was designed to provide detailed information about the occupational history of the site and to begin building an archaeological database to complement the work the Crow Canyon Archaeological Center (Crow Canyon) has conducted in the central Mesa Verde region. Research conducted at nearby sites includes that at the neighboring Sand Canyon community, comprising archaeological fieldwork at Sand Canyon Pueblo (Kuckelman 2007), Castle Rock Pueblo (Kuckelman 2000), and at the sites of several smaller settlements located in the vicinity (Varien 1999). The Shields Pueblo-Goodman Point settlement group was thought to be the nearest counterpart to the Sand Canyon community. Research at Shields Pueblo provided the opportunity to evaluate models that attempt to account for the sequence of ancestral Pueblo community development, on the basis of the work in the Sand Canyon community.

By working at Shields Pueblo, we hoped to expand our understanding of the nature and timing of population aggregation in the central Mesa Verde region. Crow Canyon archaeologists thought that Shields Pueblo was the ideal location to investigate this because it contained indications of occupation spanning the centuries during which people moved from groups of dispersed residences (A.D. 1000s) to the period when numerous households elected to reside much closer to one another (A.D. 1100s and early 1200s), i.e., the process of “settlement aggregation.” This process was thought to culminate in the construction of Goodman Point Pueblo in the mid-thirteenth century, after which we believe it became the community center, replacing Shields Pueblo in that role.

With permission from the landowners, from 1997 through 2000, Crow Canyon archaeologists, educators, field interns, volunteers, teachers, and hundreds of program participants conducted archaeological fieldwork at Shields Pueblo under State of Colorado Archaeological Permit Nos. 97-21, 98-31, 99-3, and 2000-29. During that span, we examined 18 dense artifact concentrations and conducted test excavations within approximately 50 structures, most of which were subterranean masonry-lined kivas or earthen-walled pit structures. Referencing the results of remote-sensing surveys conducted at Shields Pueblo, we sampled approximately half of the subterranean structures we believe to be present at the site. Analyses of the artifacts recovered were undertaken as fieldwork proceeded, with additional analyses of artifacts and ecofacts completed in the years that followed. The fieldwork and the subsequent analyses, when combined with information gleaned by the Center's sustained archaeological research in the area, makes possible the interpretations included in the following chapters.

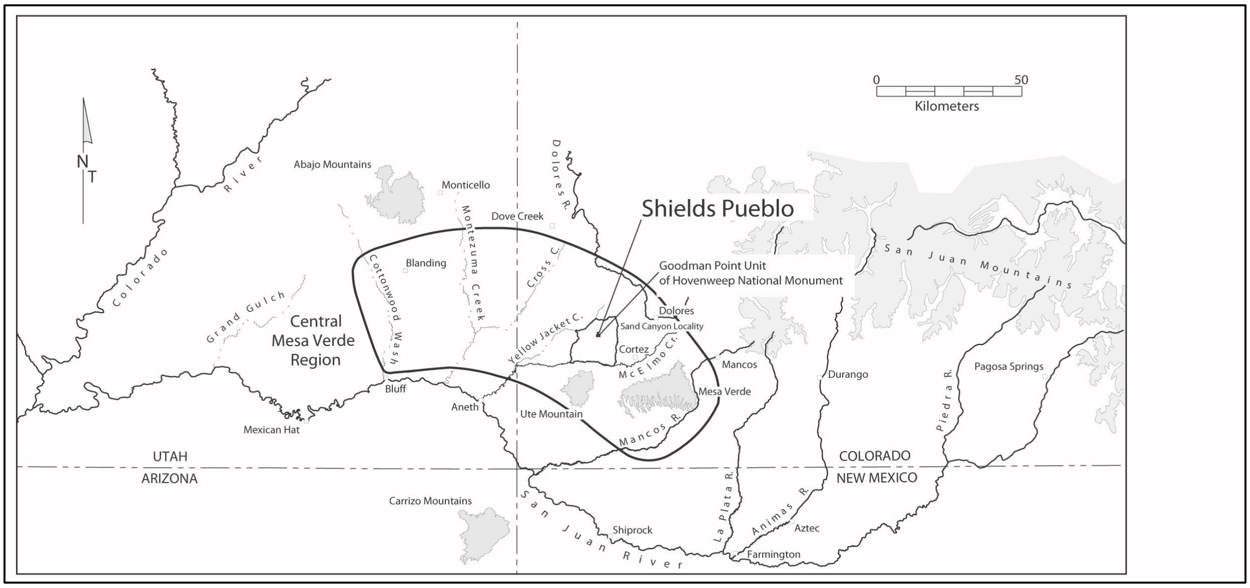

Figure 1.1. The location of Shields Pueblo and the nearby Goodman Point Unit of Hovenweep National Monument in the central Mesa Verde region.

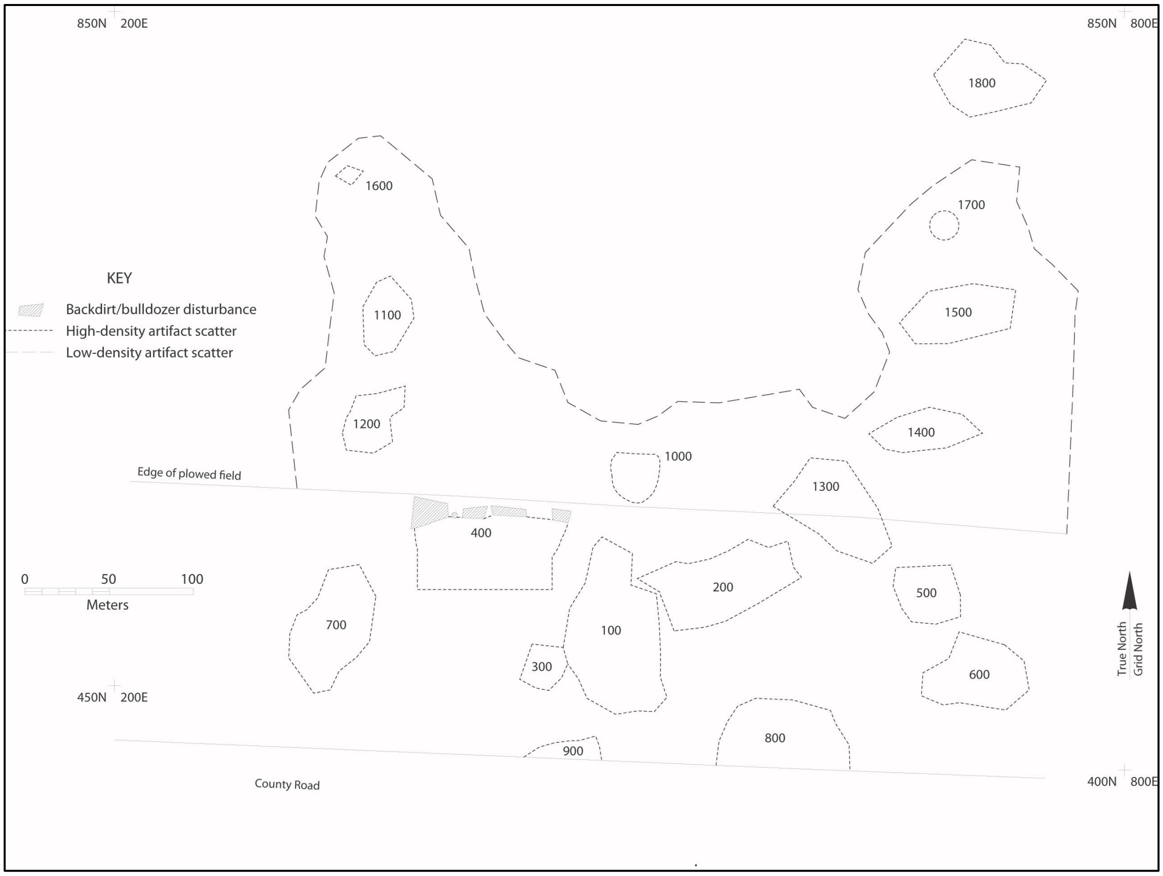

Figure 1.2. Architectural blocks, Shields Pueblo.

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Chapter 2

Research Design and Field Objectives

by Andrew I. Duff

Introduction

Communities Through Time: Migration, Cooperation, and Conflict is the name of the multiyear research design that guided the Crow Canyon Archaeological Center's (Crow Canyon's) 1997–2000 field investigations at Shields Pueblo. This regional research design is structured to examine the development and eventual depopulation of ancient Pueblo communities in the Mesa Verde archaeological region during the A.D. 900–1300 period and incorporates data gathered at the residential, community, and regional levels (Duff et al. 1999). Initially conceived and developed by Mark Varien and Ian Thompson (1996), the research design was expanded and adapted as we learned more about the site, on the basis of field discoveries and analyses during the Shields Pueblo research project. After briefly reviewing the history of research and fieldwork conducted at the site, this chapter outlines the primary questions that guided our research at Shields Pueblo.

The History of Research at Shields Pueblo

Shields Pueblo first came to the attention of the archaeological community when non-scientific excavations uncovered a burial that contained a copper bell (Hayes and Chappell 1962). Copper bells are rare trade items generally associated with Chacoan community centers during the A.D. 1050–1150 period (Vargas 1995). At the time, this was the northernmost recovery of a copper bell. Hayes and Chappell (1962:53) briefly noted the disturbed condition of the site and commented that sherds on the modern ground surface were mostly Mancos, McElmo, and Mesa Verde black-on-white types (Wilson and Blinman 1991), with some earlier types present. This information suggested a Pueblo II–Pueblo III period occupation of the site. Collections from the extensive excavations at Shields Pueblo (including some 80 vessels from mortuary contexts), and at other regional sites conducted in the 1950s and 1960s by Clifford Chappell, were later curated at the Anasazi Heritage Center, located in Dolores, Colorado.

Colorado Mountain College conducted summer fieldwork at Shields Pueblo from 1973 to 1977 (Adler 1988, 1990; Bagwell 1975, 1976, 1977), after purchasing the southern portion of the land on which the site sits. Their excavations uncovered a total of six kivas, and tree-ring dates from some of these excavations suggested occupation at Shields Pueblo dated from the early A.D. 1100s to the early A.D. 1200s (Adler 1988:Table 1, 1990:Table 8). These data indicated an Early Pueblo III period occupation of the site.

In the 1980s, Crow Canyon researchers conducted a full-coverage, pedestrian survey of land surrounding the heads of Goodman and Sand canyons, identifying two ancient residential communities: the Goodman Point and Sand Canyon communities (Adler 1990, 1992; Adler and

Varien 1994). Later, a survey of Lower Sand Canyon documented a third community, the Lower Sand Canyon community (Gleichman and Gleichman 1992).

In 1987, a survey by Crow Canyon recorded the surface remains at Shields Pueblo (Adler 1988:23). Surface artifacts noted during this survey suggested a primary occupation dating between A.D. 1050 and the early A.D. 1200s. Also noted was the agriculturally disturbed nature of the site (Adler 1990:260, 1992). At the level of the community, these survey data demonstrated the increasing concentration of household settlements around Shields Pueblo between A.D. 1050 and 1225, culminating in the near-total population consolidation into Goodman Point Pueblo at about A.D. 1225 (Adler 1990, 1992; Adler and Varien 1994). These settlement-pattern data suggested that Shields Pueblo was the center of the community during the Chaco (A.D. 1050–1150) and post-Chaco (A.D. 1150–1225) periods. Shields Pueblo was thought to have been depopulated in favor of the neighboring Goodman Point Pueblo, located in what is now the Goodman Point Unit of Hovenweep National Monument, at about A.D. 1260 (Figure 2.1). Goodman Point Pueblo is believed to have remained the community center until regional depopulation in the late 1200s.

Much of the research conducted in the Mesa Verde region, as well as most of the previous research conducted by Crow Canyon, had emphasized the later periods of regional occupation, especially settlements dating from the Late Pueblo III period (A.D. 1225–1280). On the basis of the information available in 1996, Shields Pueblo was selected as the ideal location to develop a greater understanding of the historical development of Mesa Verde region communities, especially those dating from the Late Pueblo II and Early Pueblo III periods (ca. A.D. 1050–1225).

The rich research history of the Mesa Verde region, the previous work conducted by Crow Canyon at neighboring sites and communities, the research orientation embedded in "Communities Through Time: Cooperation, Conflict, and Migration" (Varien and Thompson 1996) research design, and the information then known about Shields Pueblo all converged to promote interest in reconstructing the development of community centers over time. We were especially interested in documenting the periods of occupation and changing population levels at Shields Pueblo, in order to better understand the role of community centers. Several additional research questions flow logically from this primary research orientation, all designed to provide supplemental information to better understand human behavior and community dynamics in the region.

Thus, Crow Canyon's excavations at Shields Pueblo during the 1997–2000 seasons (Duff and Ryan 1999, 2000, 2001; Ward 1997) were designed, primarily, to collect artifact and ecofact assemblages from residential structures occupied and depopulated between A.D. 1050 and 1225, the interval during which Shields Pueblo was thought to have been a focal location and community center within the larger Goodman Point community (Adler 1990:260, 1994; Adler and Varien 1994; Varien 1999). The focus of community-level research involves integrating information recovered from Shields Pueblo into the larger framework of the surrounding natural environment and cultural landscape. This landscape was defined, in part, by numerous prehistoric settlements surrounding both Shields Pueblo and Goodman Point Pueblo (Adler 1990, 1992; Varien ed. 1999). Regional-level research compared data gathered from the Goodman

Point community with at least 22 (Lipe and Varien 1999:Table 8-2), and as many as 36 to 44 (Lipe 2002:Table 10.1; Varien 1999:Tables 7.1 and 7.2), contemporaneous and similarly long-lasting communities in the Mesa Verde region (Lipe 2002; Lipe and Varien 1999; Varien 1999; Varien et al. 1996). Other community centers in the Mesa Verde region that have been investigated by Crow Canyon provide key data sets for comparison (see Kuckelman and Coffey 2007; Ortman et al. 2000; Ryan 2008, 2010).

The History of Occupation at Shields Pueblo

Several of our preliminary research questions were related to the timing of initial occupation and the ultimate depopulation of Shields Pueblo. Additionally, a central research goal for the Shields Pueblo project was to estimate population levels during different periods of the settlement and to identify and reconstruct any population fluctuations or periods when the site was unoccupied. To the extent possible, we hoped to link these site trends to community-scale trends associated with occupation and with use of the immediate surrounding area. This entailed collecting data to answer the following questions:

- When was Shields Pueblo first occupied?
- Was the occupation of Shields Pueblo continuous, or were there fluctuations in the residential occupation of the site?
- Were there periods when the site was not a residential location, but was either used or visited?
- How does the occupational pattern evident at Shields Pueblo relate to regional occupational trends? Does it mirror region-wide patterns or deviate from them?
- When were the last occupations at the site?
- Where did the last occupants of Shields Pueblo move to? Did they join other regional communities or did they leave the region?

Assessing Shields Pueblo as a Community Center

Within the history of occupation, we were particularly interested in the A.D. 1050–1225 period (A.D. 1060 reflecting Crow Canyon's current beginning date for the Late Pueblo II period, earlier dated to A.D. 1150 [e.g., Adler 1990, 1992]), the time during which Shields Pueblo appears to have served as a community center for the Goodman Point community. A community center is defined by an area of dense residential and public architecture that was central—often spatially, but also behaviorally and socially—to a cluster of individual settlements that compose a community (Varien 1999:141). Community centers appear to have been more persistently occupied within local areas than were individual households (Varien 1999; Varien and Wilshusen 2002). Community centers contained the largest concentrations of population within the community and had higher population densities throughout the histories of their occupations. It is also possible that power was differentially distributed within ancient ancestral Pueblo communities (i.e., Lipe 2002) and, if so, individuals within community centers may have possessed more power than did individuals occupying outlying community settlements or even those occupying peripheral residences within community centers.

Settlement-pattern data gathered from full-coverage survey documented the clustering of habitation sites around Shields Pueblo (Adler 1990, 1992; Adler and Varien 1994). The presence of residential architecture at Shields Pueblo had also been confirmed by excavations conducted by Colorado Mountain College in the 1970s (Bagwell 1975, 1976, 1977). However, the presence and extent of public architecture remained unknown when Crow Canyon initiated the research project. Thus, an important goal at Shields Pueblo was to identify and investigate public architecture.

Lipe (2002:221) defines public architecture as structures “that differ from ordinary domestic structures.” He also notes that public architecture can be a misnomer, because some of these constructions may have also served to limit persons’ access (Lipe 2002:121). Mesa Verde region community centers contain several unique architectural features thought to represent public architecture. This frequently includes public integrative structures—locations where much, or most of, the community could gather for public discussions, displays, and/or ceremonies (Adler and Wilshusen 1990).

Beginning by the Pueblo I period (A.D. 725–920), great kivas functioned as communal constructions thought to serve integrative purposes within Pueblo communities (Adler and Wilshusen 1990). Great kivas, as an architectural form, persist in most community centers into the Late Pueblo III period (A.D. 1225–1280). Additionally, during the Late Pueblo II period (A.D. 1060–1140), Chaco-style great houses frequently come to be focal constructions within community centers (Lipe and Ortman 2000:101; Lipe and Varien 1999:243, 257; Ryan 2008). Often, great houses are associated with a great kiva.

During the Early Pueblo III period, Late Pueblo II Chaco-style great houses were often reoccupied (Lipe and Varien 1999:300), with substantial modifications to their interior configurations, such as the subdivision of existing rooms or construction of room additions. In other instances, a new type of great house—the McElmo-style great house, often containing several Chacoan hallmarks (Kintigh et al. 1996), was constructed in some locations (Lipe and Ortman 2000:101). In either case, these structures are thought to have served as central structures within communities.

Roads or constructed pathways are another feature frequently associated with community centers, an attribute that appears to have become especially prominent during the peak impact of the Chaco regional system during the Late Pueblo II period (Fowler et al. 1987; Kintigh et al. 1996; Stein and Fowler 1996).

Previous research and preliminary examination of Shields Pueblo suggested that there were several potential examples of public architecture associated with Shields Pueblo. Hints of a prehistoric road connecting Shields Pueblo to the neighboring Sand Canyon community were noted by several historic period residents of the Goodman Point area, though commentary on its precise location and terminus varied (Connolly 1992:42). Alden Hayes reported that in the

1960s, James A. Lancaster pointed out a section of a road several hundred yards long that had the same surface appearance of those in Chaco. It apparently ran from the Goodman Point Ruin on a detached area of Hovenweep National Monument to a large Pueblo III ruin at the head of Sand Canyon (Thompson 1996). Some of Connolly's (1992:42) informants indicated that it originated at Casa Negra, a Pueblo II settlement thought to have been the center of the Sand Canyon community, and extended to Shields Pueblo (see also Adler 1994:98; Varien 1999:147).

One of the few remaining architectural complexes at Shields Pueblo that had been investigated by Colorado Mountain College in the 1970s remained partially exposed at the site (Structures 102, 103, 104, and 121). This roomblock has some features associated with Chaco-style great houses, among them its location at the high point of Shields Pueblo. Alden Hayes visited the site with Sandy Thompson in 1996, and indicated that he believed this roomblock to have been a great house (Thompson 1996). The potential for Shields Pueblo to have had a great house was also noted elsewhere (e.g., Varien ed. 1999:147). Additionally, the copper bell from Shields Pueblo (Hayes and Chappel 1962) further supported the potential of the site to have been a community center during the Chaco period, since that is when copper bells are best represented in the Southwest (Vargas 1995).

Moreover, the presence of a large depression suggested the potential for a great kiva at Shields Pueblo. In his reconstructed sketch map of the Colorado Mountain College work at the site, Adler (1988:Figure 4, 1990:Figure 26) depicted a large depression, with the label "great kiva?" noted in parentheses, in the north-central portion of Shields Pueblo. The depression appeared to be approximately 10 meters in diameter, about the right size for a Chaco period great kiva.

Thus, several lines of evidence converged to suggest that Shields Pueblo was a community center, raising several key research questions for the site and locality, including the following:

- Does Shields Pueblo contain any evidence for public architecture?
- Is there a great kiva at Shields Pueblo?
- Is the preserved roomblock at Shields Pueblo a great house?
- Are there any indications of the prehistoric road preserved at the site?
- Are there activities represented at community centers that are not represented at other residential sites or site clusters within a community?
- Is there any indication of individuals of "high status" at Shields Pueblo?
- What were the relationships between the residents of the community center and those living in surrounding settlements?
- Were the residents of community centers differentiated from the other residents of the community?

Changes in Settlement Configuration and Community Organization

The span during which Shields Pueblo was thought to have been occupied includes the period of Chacoan influence, approximately A.D. 1050–1130/1150, and the post-Chaco period, A.D. 1150–1225. We hoped to determine if settlement organization at Shields Pueblo, and the organization of the larger Goodman Point community, changed from the Chaco to post-Chaco periods. In particular, the Chaco period is associated with a more dispersed settlement pattern, whereas the post-Chaco period is characterized by increased settlement aggregation. Additionally, Adler (1990, 1992) has suggested that the development of multihousehold residences increased during this span. These data also allow us to assess the nature and timing of population aggregation into community centers.

- Did the internal configuration of residential occupation at Shields Pueblo change from the Chaco to the post-Chaco periods?

- Is this span associated with evidence for an increase in the average size of residential habitations?

Environmental Uncertainty and Occupational Continuity

The collapse of the Chaco regional system coincides with a half-century of marked environmental deterioration (Dean and Van West 2002; Ryan 2010; Van West and Dean 2000). Whether or not Shields Pueblo was occupied throughout the A.D. 1130–1180 period is of particular interest. Varien (1999) has suggested that some Mesa Verde region communities may have been temporarily abandoned during this time, but he also notes that occupation at some may have persisted across this period of drought (e.g., Ryan 2010).

- Was Shields Pueblo occupied during the A.D. 1130–1180 drought?

Evidence for Cooperation and/or Conflict from Shields Pueblo

Cooperation and conflict are central properties of all scales of human interaction, ranging from dyads to regional population aggregates to modern nation-states. In many ways, these issues are conceptually intertwined, as similar conditions can foster either cooperation or lead to conflicts between groups at different scales. However, these are also behavioral strategies that are not mutually exclusive; groups can cooperate on some issues, while others are a source of conflict. The nature of cooperation and/or conflict within and between communities is a central component of the “Communities Through Time” research design. However, direct evidence for the role of cooperation and/or conflict is often difficult to recover archaeologically, so we frequently devise indirect measures to address these issues. The work at Shields Pueblo is no exception, and several different strategies were used to collect information that could help answer these questions. Though it is often possible to address these issues at an intrasite level, they are addressed here at the community and regional levels.

Southwestern researchers have suggested two interrelated processes that can exacerbate tensions and lead to conflict: resource uncertainty or unpredictability (Lekson 2002) and population increases that lead to increased competition for resources or lands (LeBlanc 1999:10–12, 32–35). Varien has documented population increases and the increased "packing" of community centers over time, especially within the central Mesa Verde region, and infers that this was likely to stimulate both cooperation and conflict (Varien 1999; Varien et al. 2000:61–62; Varien and Wilshusen 2002).

Competition was likely to occur for access to the most productive lands—i.e., those best suited to agricultural production—both within and between communities (Varien 1999; Varien and Wilshusen 2002:61). It is likely that by the Pueblo II period, communities established social means for communal-level allocation and resolution of disputes related to the need to establish and enforce land-tenure use rights (Adler 1990, 1994; Varien 1999; Varien et al. 2000). However, periods of environmental unpredictability or extended stress (such as those droughts noted for the A.D. 1130–1180 period, and the "great drought" of the late 1200s [Dean and Van West 2002; Van West and Dean 2000]) may have disrupted established dynamics and resulted in conflicts between entities within the region.

Evidence for cooperative activities between communities can be either direct or indirect. Direct evidence for cooperative actions between community members can be evidenced by the recovery of nonlocal materials likely to have arrived through trade relationships. The scale of these relationships can differ, from local exchanges of pottery or other resources, to the presence of materials like obsidian, ocean shell, or pottery vessels that came from areas well outside the Mesa Verde region. These data may also indirectly indicate a period of cooperative relationships at a regional or supra-regional level, when the movement of peoples and goods across community and regional boundaries was facilitated. Similarly, the distances traveled by residents to access materials that were likely procured directly (such as lithic material) may indicate the safety or advisability of freely utilizing territories surrounding, or at some distance from, home settlements. In particular, changes in the use of both local and nonlocal resources, procured either directly or through exchange relationships, can provide indirect indications of the changing nature of regional relationships.

Additional evidence for cooperative relationships is evident in the form of public architecture. As group size increases, public structures frequently accompany settlements, and are thought to serve as locations for public integration, often through ritual (Adler and Wilshusen 1990). Cooperation may also be evidenced through alliances between communities. Alliances may be forged through intermarriage, and mate exchange may have been one strategy of forging connections, bonds, and social ties between communities. Circulation of goods or materials between communities, or evidence for such connections, could provide tangible evidence for connections between different regional communities. Undecorated pottery, in particular, is the type of utilitarian good that often circulates between kin relations, and several Southwestern researchers have argued that the circulation of undecorated pottery between communities may suggest intermarriage.

Several researchers have noted a number of different material correlates that might indicate an increasingly tense or hostile landscape, including defensive features, configurations, or settlement locations; increasingly aggregated settlements; structure or settlement intervisibility relationships; structure or settlement burning; depictions such as rock art; and skeletal evidence for trauma and violent death (LeBlanc 1999; Wilcox and Haas 1994).

Increasingly, direct evidence for hostilities and violent encounters has been documented for, or discussed with respect to, the Mesa Verde region (e.g., Billman et al. 2000; Darling 1999; Hurst and Turner 1993; Kuckelman et al. 2000, 2002; LeBlanc 1998, 1999; Lekson 2002; Marlar et al. 2000; Martin 1997; Turner and Turner 1999; Walker 1998; White 1992). Such evidence has been documented for Castle Rock Pueblo and Sand Canyon Pueblo, both located near Shields Pueblo (Figure 2.2), and both thought to date from the latest occupations of the pueblos, probably after A.D. 1280 (Kuckelman 2000; Kuckelman et al. 2002). These sources include the presence of human remains with evidence for violence and violence as the likely cause of death—a direct indication of conflict, though not of the cause for it.

These various sources provide cues to ask some specific questions about cooperation and conflict using the artifacts recovered from Shields Pueblo, as well as of the occupational history of the site. These include:

- Is there evidence for occupation during periods of resource unpredictability at Shields Pueblo?

- Is there evidence for increased aggregation into Shields Pueblo that corresponds to regional indications of increased stresses or hostilities?

- Are there materials manufactured in other Mesa Verde region communities or localities that were traded or exchanged to residents of Shields Pueblo? If so, what were these materials and their sources?

- Are there materials manufactured outside of the Mesa Verde region that were traded or exchanged to residents of Shields Pueblo? If so, what were these materials and their sources?

- Were utilitarian pottery vessels exchanged between residents of Shields Pueblo and any other communities?

- Is there any temporal patterning in either the pattern of local or long-distance acquisition of materials?

- Is there evidence for the acquisition of materials likely to have been directly procured from surrounding areas within the region? Does this change over time?

- Is there any evidence for connections between Shields Pueblo and other communities in the region?

- Is there any evidence for public architecture at Shields Pueblo? If so, what does the size of it suggest about the scale of the groups that used it? Is it likely to be larger than the residential population at Shields Pueblo?

- Does the location and placement of structures within Shields Pueblo provide any indication of concerns for defense?
- Is there any skeletal evidence of violence at Shields Pueblo?
- Is there evidence that Shields Pueblo was occupied when other sites in the immediate vicinity show direct evidence for violence (after A.D. 1275)?

These questions are addressed in several places within this report, primarily Chapters 4, 5, 14, 15, and various sections discussing architecture.

Human Impacts to the Local Environment

The unexpected temporal depth represented at Shields Pueblo has provided a unique opportunity to evaluate changes to the environment surrounding the site—both those resulting from regional trends in rainfall, and those resulting from human use and alteration of the landscape. The utilization of animal species, patterns in the procurement of construction wood, fuelwood, and gathered resources, and the deposition of pollen were used to differentiate human-induced changes from those resulting from larger-scale environmental processes. Additionally, discrete, well-dated artifact assemblages permit the evaluation of changes in local exchange, regional exchange, and material procurement throughout the occupation of Shields Pueblo.

Several different sources of data provide information that can be used to assess these questions. Ash from hearths, and soil samples from trash deposits contain macrobotanical remains that include plants used for fuel and food, allowing us to document how plant use changed through time (Adams and Petersen 1999; Kohler and Matthews 1988). Samples from sealed contexts on floors preserve the pollen from anthropogenically introduced plants, including taxa that are not typically preserved as macrobotanical remains. Pollen samples from the natural fill immediately above the roof fall in abandoned structures provide a means to reconstruct the natural environment in the period immediately after structures were abandoned. These samples capture pollen that is representative of the local floral community introduced through natural processes (pollen rains), and help us identify taxa that may not have had economic uses, but are useful in environmental reconstruction. The stratigraphic position of these samples allows us to date when these deposits were accumulating. Finally, pollen samples taken from beneath the walls of the circular stone constructions that were likely built in the 1280s (Ryan 2000), and from the natural fill above these features, provided data on environmental conditions at the time of regional depopulation. Together, the macrobotanical, faunal, and pollen remains from well-dated middens, floors, and fills were used to document changes in the use of plants and animals, and human impacts to their sustaining environment, during the centuries-long occupation of Shields Pueblo (Adams and Petersen 1999; Driver 1996; Duff et al. 2010; Kohler 1992; Kohler and Matthews 1988; Redman 1999). We also evaluated the extent to which environmental changes and population growth affected subsistence economies and influenced decisions about when to migrate from the region (Van West and Dean 2000).

These sources of information, and several other lines of inquiry, provide evidence from which the following series of questions can be posed:

- Did the occupants of Shields Pueblo have a significant impact on the local environment?
- What resources were impacted by the occupation?
- Which resources, if any, were suppressed or diminished? Were there any resources that appear to have thrived as a result of the occupation?
- Was the local availability of timber resources affected by timber harvesting for fuel and construction?
- Did hunting by residents of Shields Pueblo impact local faunal populations?
- Did the composition of the nearby plant communities change during the occupation of Shields Pueblo? If so, were the occupants of Shields Pueblo likely responsible for this, or did this result from larger climactic processes?
- What role did impacts to the local environment play in the decision to leave Shields Pueblo?

This series of questions is addressed most directly in the macrobotanical analysis, pollen analysis, and faunal remains chapters (Chapters 6, 7, and 8, respectively) of this report, as well as in Chapter 15.

Shields Pueblo and Mesa Verde Region Communities

Research at Shields Pueblo also examines the relationship between residents of the Goodman Point community and residents of other communities in the Mesa Verde region. Comparison to contemporaneous excavated sites from throughout the Mesa Verde region were used to place the Shields Pueblo excavations in a regional context. Comparative community information derives from neighboring sites known primarily through archaeological survey and the evaluation of surface material. However, excavated data are available for the Mustoe site, a unit pueblo located approximately 1 kilometer (km) southwest of Shields Pueblo (Gould 1982), from numerous dispersed roomblock settlements in the neighboring Sand Canyon community (Varien ed. 1999), from Sand Canyon Pueblo (Bradley 1992, 1993), and from Castle Rock Pueblo (Kuckelman 2000). These sources were used to supplement the comparative database. Finally, assessment of trends in community development, evidenced by the data recovered from Shields Pueblo, were compared with similar information from other Colorado Plateau regions to provide a comparative evaluation of the process of community formation and change during the Chaco and post-Chaco periods.

The comparative framework into which data from Shields Pueblo were integrated derives from both survey and excavation data. The area surrounding Shields Pueblo has been surveyed (Adler

1990), with evaluation of surface remains used to estimate the period of occupation and size of recorded sites. Excavated data are available from several sites within the Sand Canyon locality. The Mustoe site, a multicomponent unit pueblo located approximately 1 km southwest of Shields Pueblo, has been excavated and reported (Gould 1982). Occupation during the Pueblo II and early Pueblo III periods at the Mustoe site provides a local comparative data set for material recovered from Shields Pueblo. Data from Sand Canyon Pueblo (Bradley 1992, 1993), and from several dispersed settlements surrounding this community center (Varien ed. 1999), provide information for both direct comparison and an evaluation of differences between these neighboring communities. The late Pueblo III settlement of Castle Rock Pueblo (Kuckelman 2000), also located within the Sand Canyon locality, provides another comparative resource for the late A.D. 1200s occupation at Shields Pueblo.

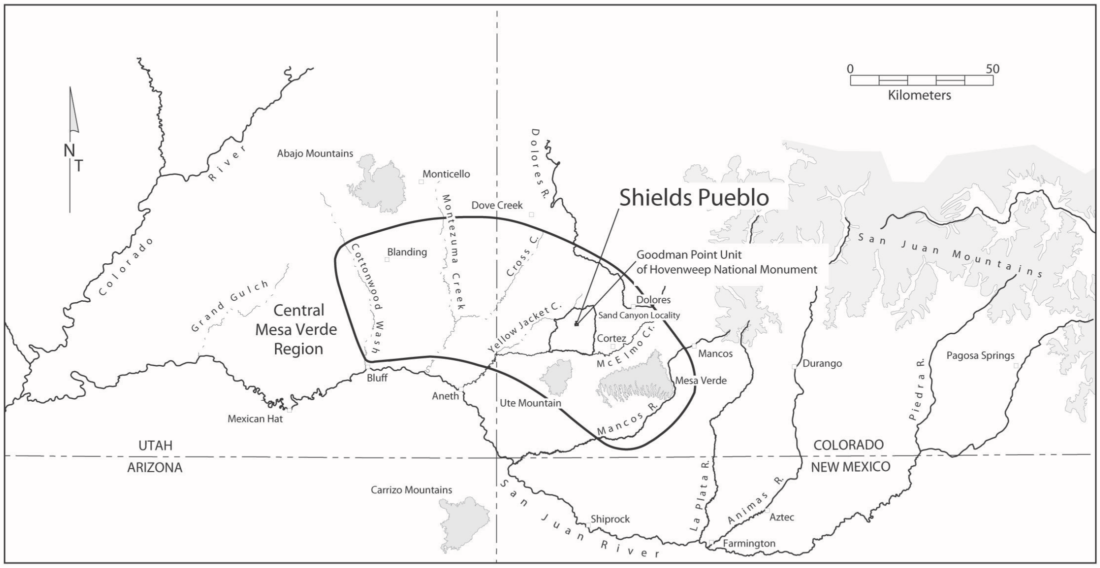

Figure 2.1. The locations of Shields Pueblo and Goodman Point Unit of Hovenweep National Monument in the central Mesa Verde region.

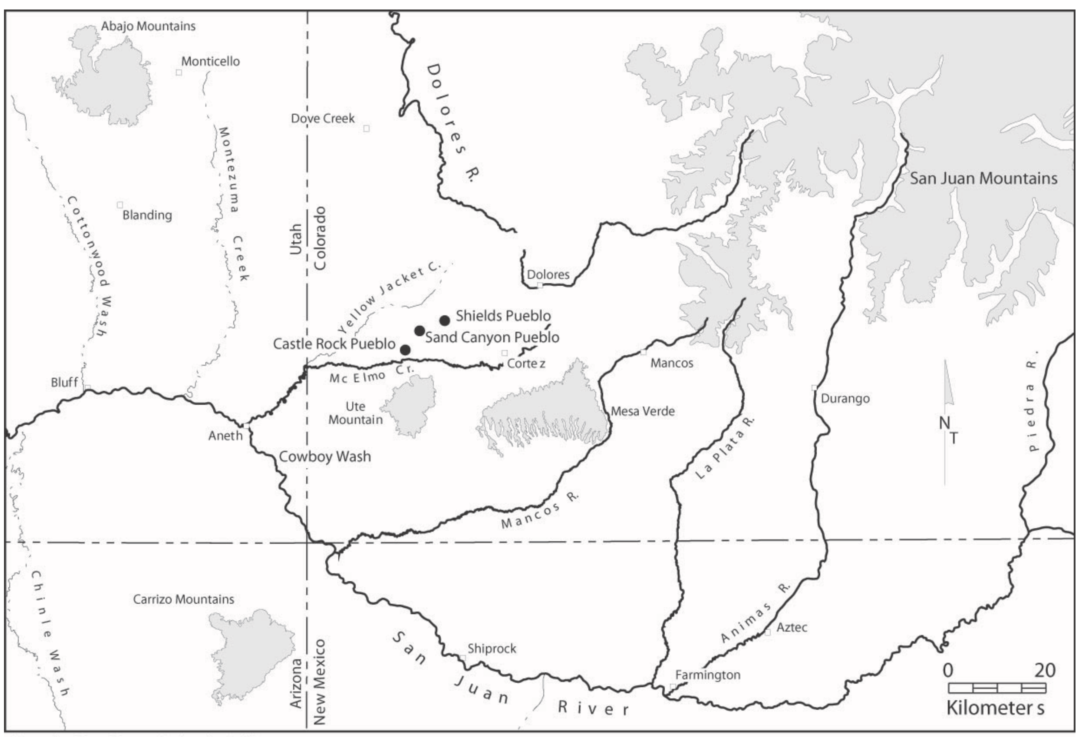

Figure 2.2. The locations of Shields Pueblo, Castle Rock Pueblo, and Sand Canyon Pueblo in southwestern Colorado.

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Chapter 3

Chronology: Shields Pueblo Through Time

by Andrew I. Duff

Introduction

Pottery and tree-ring dates indicate that Shields Pueblo was first occupied during the A.D. 700s, after which occupation waned, and Shields Pueblo was not used for residential purposes for the next two centuries. The occupational pattern at Shields Pueblo mirrors the regional trend, where studies have documented a regional population decline during this interval (Duff and Wilshusen 2000:169; Varien 1999:191; Varien et al. 1996; Wilshusen 1999:226, 228; 2002:105–107; Wilshusen and Ortman 1999). Beginning in the early A.D. 1000s, people again chose to make Shields Pueblo their home, with occupation persisting until at least A.D. 1260. The last two centuries of the site's use appears to have been continuous, though evidence indicates either a decline in occupational intensity or, perhaps, a temporary hiatus in occupation in the middle to late A.D. 1100s.

In the mid–A.D. 1200s, the neighboring Goodman Point Pueblo grew to become a sizable settlement with several hundred rooms, numerous kivas, public architecture, and many residents. We had expected that the occupational intensity of Shields Pueblo would have diminished as its residents elected to move to the nearby Goodman Point Pueblo. Much to our initial surprise, this does not appear to have happened; the occupation and use of Shields Pueblo continued during the occupation of Goodman Point Pueblo. Our last definitive evidence for use of Shields Pueblo comes from a noncutting tree-ring date of A.D. 1258, thus we know at least a few people were constructing a kiva roof (Structure 1402) at about this time. However, sometime after this event, the structures at Shields Pueblo ceased to be used, and the remaining residents either joined other communities in the area or chose to leave the region altogether. The latest use of Shields Pueblo either slightly predates or coincides with the depopulation of the larger Mesa Verde region between A.D. 1280 and 1300 (Duff and Wilshusen 2000; Lipe 1995; Varien 1999; Wilshusen 2002) after which ancestral Pueblo populations seem to have visited the region infrequently.

The Goodman Point area was largely unused until it was homesteaded, though the possibility of early Ute or Athabaskan use of the region remains (Wilshusen and Towner 1999). The Goodman Point area was primarily homesteaded in the years between 1911 and 1925 (Connolly 1992:33), at which point Shields Pueblo and most of the surrounding lands were used for grazing or brought under cultivation. The area may also have been used for grazing before it was settled (Connolly 1992:35). The Goodman Point Unit of Hovenweep National Monument, located immediately south of Shields Pueblo, was set aside for protection by the federal government in 1889 (Connolly 1992:350). Thus, the archaeological sites and natural landscape within its boundaries were protected from homesteading and remain a unique example of relatively unaltered landscape.

This chapter discusses the procedures used to assign dates to the deposits, structures, and features examined during the Shields Pueblo excavation project, and the results of these efforts. Tree-ring dates, pottery assemblage data and, in a few instances, stratigraphic or architectural relationships were used to assign every study unit from Shields Pueblo to as refined and precise a temporal interval as possible. This chapter begins with a discussion of the systematics of dating assignment periods, after which we use these data to discuss the periods of occupation at Shields Pueblo. Chronological relationships within different areas of the site, and the dating of structures and deposits, are also presented. The chapter concludes with a consideration of the population history of Shields Pueblo drawn from these sources of chronological data.

Dating Periods Used in the Shields Pueblo Report

Alfred Kidder (1927), with the assistance of the group of archaeologists then working in the Southwest, established the Pecos Classification system as a means for ordering archaeological sites into a single developmental continuum linked to absolute calendar dates. This influential construct, though based on relatively limited excavated data and lacking an absolute means for assigning calendar dates, has endured because the organizational and behavioral trends identified have proven to be broadly accurate. Most researchers working in the Southwest still use the Pecos Classification as a means of ordering patterning both temporally and organizationally, and we use a modified version of the Pecos Classification here.

The terminology of the Pecos system has become confusing because some researchers use Pecos periods to refer to temporal ranges associated with the original 200-year blocks, while others use the same periods to refer to organizational patterning that has slightly different beginning and ending dates. We use Pecos Classification periods here to refer to organizational developments and patterning; we do not use these as strict temporal divisions linked to the original date ranges assigned at the Pecos Conference (Kidder 1927). Thus, the date ranges noted below deviate from some uses, and this needs to be recognized when using data from Shields Pueblo in regional comparisons, especially to sites excavated many decades ago. Organizational characteristics for each of the Pecos periods are briefly discussed below.

The chronological system used in this report consists of several different, absolutely dated periods arranged from relatively coarse intervals spanning a few centuries, to brief periods lasting approximately 40 years, arranged hierarchically as seen in Table 3.1. The broadest of these are based on the Pecos Classification periods (Pueblo I, Pueblo II, and Pueblo III), with the remaining periods based on finer and finer subdivisions of these. In cases where dating resolution was less precise, we have employed broader date ranges that span one or more Pecos Classification periods or subperiods. Though our ability to assign deposits to absolutely dated temporal intervals in the Southwest is unparalleled, the realities of the complex depositional and post-depositional histories of archaeological sites like Shields Pueblo are such that the majority of our study units are assigned to temporal intervals averaging over a century.

Each study unit from Shields Pueblo was assigned to one of 19 numbered date ranges (see Table 3.1), a period with a specified beginning and ending date. The first 13 date ranges are structured such that the more refined temporal subdivisions of Pecos period subdivisions can be aggregated into the basic Pecos period temporal intervals for broad comparisons that maximize the sample size. For example, assemblages that are dated to various subdivisions of the Pueblo II period can be grouped together into a larger Pueblo II aggregate assemblage for more robust comparisons. Five of the last six numbered date ranges (Date Ranges 14, 15, 17, 18, and 19) span one or more Pecos period or subperiod, thus, these contexts cannot be aggregated for such purposes. Each major component of the dating system is described below, with Pecos subperiods subsumed under the longer-lived Pecos period. Subdivisions of Pecos periods are noted in Table 3.1, and those to which we have assigned assemblages, features, or structures are noted below with their date range number.

Pueblo I Period (Date Range 1, A.D. 725–920)

Several dramatic shifts in population size and settlement organization characterize the Pueblo I period in the northern San Juan region. The period witnesses construction of the first large villages in the northern Southwest, and is associated with the culmination of the first of two major demographic "boom and bust" cycles associated with the Mesa Verde region, a cycle that began about A.D. 600 and ended with the region largely depopulated at the end of the Pueblo I period (Duff and Wilshusen 2000; Varien 1999:191; Wilshusen 1999, 2002; Wilshusen and Ortman 1999).

The Pueblo I period is conventionally associated with the initial construction and use of aboveground structures and development of the "unit-pueblo" pattern, where households are materially characterized by a series of aboveground rooms, a pit structure, and a midden area, replacing the previous pattern of pit structure residential facilities (Cordell 1997:251; Lipe 1989; Plog 1997:80, Figure 61; Prudden 1903). During the Pueblo I period, aboveground structures are made from a variety of different materials, including jacal or wattle-and-daub, and slab-lined and stone masonry walls (Adler 1992:17–18; Cordell 1997:193; Wilshusen 1999:201). The use of stone masonry increases throughout the period, and the depth to which pithouse floors were excavated also increases over time (Wilshusen 1999:201).

The transition "from pithouse to pueblo" is thought to characterize a shift in settlement and subsistence orientation where populations, intending to spend longer periods at specific locations, elect to invest more effort to construct more durable facilities and to devote more architectural space to storage (Gilman 1987). This process seems to be associated with agricultural intensification in the Mesa Verde region, defined after Varien (1999:38) as "increased inputs per land area," a pattern supported for the Pueblo I period as farmers appear to have reduced fallowing periods (Varien 1999:39). Though substantial temporal and spatial variation is evident in Pueblo I period sites in the Mesa Verde region, several settlement-pattern, material-culture, and organizational changes permit subdivision of the Pueblo I period into early and late manifestations.

Early Pueblo I Period (Date Range 4, A.D. 725–800)

Sites dating from this subperiod are primarily hamlets, or relatively small settlements composed of one to a handful of households, each of which had a residence consisting of a pit structure, a few surface rooms, and a midden area (Wilshusen 1999:213–219, Table 7-1). Early Pueblo I subperiod pit structure roofs may have been extended between "50 and 75 cm above the ground surface" (Wilshusen 1999:201), with the structures rectangular to subrectangular in plan, featuring ventilation tunnels and sometimes benches (Wilshusen 1999:201, 203). Early Pueblo I subperiod pottery assemblages are dominated by Chapin Black-on-white and plain gray sherds, but may also include Abajo Red-on-orange types (Ortman, Baxter, et al. 2005; Wilson and Blinman 1999).

Early Pueblo I subperiod structures appear to have been short-lived, perhaps used for l5 to 20 years. There is a lack of public architecture during the Early Pueblo I subperiod, and communities appear to consist of loosely clustered groups of autonomous hamlets encompassing areas several kilometers (km) across (Wilshusen 1999:214, 225). Larger villages, comprising as many as 50 contiguous households, were largely confined to the eastern and western margins of the northern San Juan region (Wilshusen 1999:225; Wilshusen and Ortman 1999:374). Toward the end of the subperiod, there may have been as many as 6,000 people within the northern San Juan region, with the McElmo Dome area among the most densely settled subregions (Wilshusen 1999:234; Wilshusen and Ortman 1999:Figure 3).

Late Pueblo I Period (A.D. 800–920)

The Late Pueblo I subperiod is associated with the region-wide development of large villages, the presence of public architecture in the form of great kivas, and substantially increased populations. Villages consisting of large arcs or crescent-shaped blocks of aboveground surface rooms, representing 20 to 50 households, developed as early as A.D. 825 on Mesa Verde proper, and came to be the dominant settlement pattern throughout the region in the period from A.D. 840- to 880 (Wilshusen 1999:226; Wilshusen and Ortman 1999).

Population increased throughout the northern San Juan region in Late Pueblo I, with population estimates of between 9,500 and 10,500 for A.D. 860; the majority of these people were concentrated in the Dolores River canyon and at Mesa Verde proper (Wilshusen 1999:234; Wilshusen and Ortman 1999:Figure 3). Individual villages often had between 125 and 200 residents, but some settlements may have had as many as 500 people (Wilshusen 1999:232). Wilshusen and Ortman (1999) have documented several material culture and settlement structure differences at village sites in the Dolores area that they argue represent groups with different backgrounds co-residing within the area.

Villages included numerous pit structures and oversized, apparently communal, pit structures enclosed within arcs of surface rooms (e.g., Wilshusen and Ortman 1999:Figure 5). After A.D. 800, structures included more surface architecture constructed with greater amounts of masonry, and deeper pit structures with roofs level with the ground surface (Wilshusen 1999:201, 214). Pottery diagnostic of the Late Pueblo I period includes Moccasin Gray, Chapin and Piedra black-on-white, and Bluff and Deadmans black-on-red (Ortman, Baxter, et al. 2005; Wilson and Blinman 1999).

Communal architecture appears to have been constructed to accommodate and integrate large groups, potentially residents from more than one community (Adler and Wilshusen 1990). Great kivas, oversized pit structures, and differential artifact distributions associated with such structures suggest that communal ritual practices had increased in importance during the Late

Pueblo I period (Blinman 1989; Potter 1997). Positions of influence or leadership may have been linked to sponsoring or hosting feasts, activities linked to communal structures (Blinman 1989; Potter 1997). However, it appears that aspiring leaders were unable to institutionalize emergent control of ritual-based power, in part because disenfranchised community members resisted their attempts to do so (Schachner 2001).

Continued agricultural intensification is indicated by the presence of field houses associated with villages in the Dolores area, suggesting that marking ownership of specific landscape locations became an important component of land tenure systems (Kohler 1992; Wilshusen 1999:230). Despite these substantial changes, Late Pueblo I period villages were relatively short-lived, lasting between 25 and 40 years. After A.D. 880, villages were abandoned, and the few remaining residents in the Dolores area constructed smaller pit structures that appear to have been used for shorter periods. It appears that the majority of the population chose to leave the region altogether. Populations declined regionally, and there appears to have been a relatively large-scale exodus to the southern portions of the northern San Juan region in the vicinity of modern-day Farmington, New Mexico (Wilshusen and Wilson 1995) and, perhaps, to portions of the San Juan Basin surrounding and including Chaco Canyon in New Mexico (Wilshusen and Ortman 1999). Regional population density remained low through the mid-A.D. 900s.

Pueblo II Period (Date Range 2, A.D. 920–1140)

The Pueblo II period in the Mesa Verde region marks the beginning of the second cycle of population growth ("boom and bust") that culminated in the eventual depopulation of the region (Duff and Wilshusen 2000; Varien 1999; Wilshusen 2002). The period begins with low regional population density, with limited evidence for occupation through most of the A.D. 900s (Lipe 2004:107). Varien's (1999) tabulation of all tree-ring cutting dates for the region shows extremely limited tree-harvesting activity through the A.D. 900s, a slight increase in the early A.D. 1000s, and a more notable increase after A.D. 1030 (Varien 1999:Figure 7-17; Lipe and Varien 1999:Figure 8-3). As few sites dating from the early A.D. 900s are known, and no study units from Shields Pueblo date from this period, this span is not discussed extensively in this report. Cortez Black-on-white is the hallmark pottery type indicative of Early Pueblo II period assemblages (Ortman, Baxter, et al. 2005:5–11).

Throughout the Southwest, the Pueblo II period is associated with population increases, especially in the latter portions of the period, correlated with generally favorable environmental conditions that prevailed throughout the period (Dean and Van West 2002:96). Population estimates for the A.D. 900s suggest fewer than 1,000 people may have remained within the region (Duff and Wilshusen 2000:178), with population estimates increasing to between 2,000 and 4,000 by midcentury (Duff and Wilshusen 2000:178; Wilshusen 2002:Figure 5.4). Mesa Verde proper may have been one of the few areas with continuous settlement (Lipe and Varien 1999:255; Varien 1999:137). These data suggest that groups recolonized the region slowly, with the pace of immigration and in situ growth increasing as the Pueblo II period progressed.

The Pueblo II period is characterized by the widespread distribution of "unit-pueblo" (Prudden 1903) settlements, often occurring in small groups, with ancillary surface structures, pit structures, and other features common (Lipe and Varien 1999:242). Structures are found in a variety of settings, suggesting the use of a more diverse set of agricultural strategies than in the earlier Pueblo I period. Use of stone in construction of aboveground rooms becomes nearly universal by the period's end. Communities consist of "dispersed clusters of these small habitation units" (Lipe and Varien 1999:244).

The Pueblo II period is also nearly synonymous with the rise of the Chaco regional system, and the regional integration of populations from across much of the northern Southwest, within what is often referred to as the "Chacoan regional system" or the "Chacoan Phenomenon" (Irwin-Williams 2008). This development seems to have affected populations outside the San Juan Basin primarily after A.D. 1020.

Beginning in the late A.D. 800s, several communities within Chaco Canyon began to construct structures that began modestly—roughly comparable to the scale of Pueblo I period villages known from the Mesa Verde region. However, within two centuries, these structures grew to be larger than any contemporary settlements in the ancestral Pueblo world. These "great houses"—impressive multistoried masonry pueblos, most with several hundred rooms (Lekson 1986)—became the center of a widespread regional system, a network of interconnected settlements with its center in Chaco Canyon. The system is recognized by roads that converge on the canyon and buildings that possess attributes of Chaco Canyon great houses, but are located outside the canyon (Judge 1991; Lekson 1991). These distant sites—here termed great houses—frequently are found within communities comprising dispersed residential structures. At its apogee between A.D. 1050 and 1150, the Chaco regional system extended throughout the Four Corners area and may have incorporated as many as 200 communities (Mahoney and Kantner 2000).

During the Late Pueblo II period, great house structures outside of Chaco Canyon in the central San Juan Basin display many of the building conventions seen in the great houses within Chaco Canyon (Lipe and Varien 1999:258). Within the northern San Juan region, great houses become central to local communities, constructed both within existing and new settlements, and were usually accompanied by a great kiva (Lipe and Varien 1999:258). During this period, it appears that residents within the Mesa Verde region had greater access to nonlocal materials that were probably traded or brought into the region from neighboring regions (Varien et al. 1996:97).

Pottery found throughout the Pueblo II period includes Mancos Corrugated Gray, Cortez and Mancos black-on-white, and Deadmans Black-on-red, the last of these a type that was also manufactured at the end of the Pueblo I period (Ortman, Baxter, et al. 2005:5–20; Wilson and Blinman 1999). Varying frequencies of these types are found during the different Pueblo II subperiods, and are among the means for discriminating between them.

Middle Pueblo II Period (Date Range 5, A.D. 1020–1060)

Beginning in the early A.D. 1000s, population within the Mesa Verde region began to increase (Lipe and Varien 1999:256). A subtle increase in tree harvesting is evident during this interval (Varien 1999:Figure 7.17), indicated by increased building activity associated with returning populations. Settlements usually consist of one or two households, evident as unit pueblos, though multihousehold settlements are also known. Settlements throughout the period tend to favor upland locations where good soils for dry-farming were located, potentially reflecting a shift from the higher elevations that were favorable for agriculture during the Late Pueblo I period (Lipe and Varien 1999:257, 263).

Late Pueblo II Period (Date Range 6, A.D. 1060–1140)

Evidence for continued population growth during the Late Pueblo II period includes a notable increase in tree-harvesting activity, especially toward the latter decades (Varien 1999:Figure 7.17). Population estimates for the Late Pueblo II period range from lows of about 3,500 at A.D. 1060, to as many as 8,900 by the period's end (Duff and Wilshusen 2000:180, Figure 2). Wilshusen's (2002:Figure 5.4) more recent estimates for the central Mesa Verde region (the area encompassing Mesa Verde proper west to Montezuma Creek in southeastern Utah) are higher, ranging from about 6,000 at the period's start to over 10,000 by its conclusion. Population estimates, regardless of the basis of their construction, all suggest that populations across the Colorado Plateau grew substantially during the latter portions of the Pueblo II period.
Late Pueblo II subperiod communities continue to consist of dispersed groups of residential households (Lipe and Ortman 2000:101). Adler (1992:19) indicates that the average McElmo Dome roomblock contained eight surface rooms during this period, but that there was a great deal of variability around this average. Chaco-influenced great house structures come to be the focal point of many regional communities after A.D. 1075 (Adler and Varien 1994; Lipe and Varien 1999:256; Varien et al. 1996), a pattern that usually also includes a subterranean great kiva.

Great houses within Chaco Canyon began to expand dramatically beginning in the Middle Pueblo II period (Lekson 1984:Figure 5.2), but it was during the Late Pueblo II period that almost all structures within Chaco Canyon took on their final form, an undertaking that required unprecedented labor inputs (Lekson 1984:266–269, Figure 5.2). Following this burst in Chaco Canyon construction activity, smaller great house structures begin to be built throughout the Colorado Plateau (e.g., Kantner 2003:Figure 1).

Mancos Black-on-white dominates pottery assemblages of this subperiod, intermixed with the relatively rare occurrence of Cortez Black-on-white at the subperiod's initiation, and McElmo Black-on-white toward the period's end (Wilson and Blinman 1999).

Pueblo III Period (Date Range 3, A.D. 1140–1280)

The Pueblo III period includes the sites for which the Mesa Verde region is best known archaeologically—the magnificent and well-preserved cliff dwellings of Mesa Verde National Park and Hovenweep National Monument. The period is associated with the formation of numerous large and spatially consolidated villages; early in the period these were built in mesa-top locations and, later, in the shelter of cliffs and at the heads of canyons and drainages (Lipe and Ortman 2000; Lipe and Varien 1999:299, 300). The Mesa Verde region in the Pueblo III period is also associated with what has traditionally been one of the biggest questions in Southwestern archaeology: Why was the region depopulated in the late A.D. 1300s? Archaeological research in the region has long emphasized the Pueblo III period, resulting in an unparalleled database of absolutely dated sites, in part due to the excellent preservation of sites found in sheltered contexts. The period is divided into two subperiods, discussed below.

Early Pueblo III Period (Date Range 7, A.D. 1140–1225)

The earliest portions of the Late Pueblo III period remain difficult to interpret, in large part due to a dearth of sites confidently dated to A.D. 1140–1180. A period of profound drought characterized the Mesa Verde region (Dean and Van West 2002; Van West and Dean 2000) and the greater Southwest, between A.D. 1130 and 1180 (Ryan 2010). There is a fall-off of tree-ring cutting dates during this span (Varien 1999:Figure 7.17), suggesting a marked reduction in construction activity. It appears that most areas continued to be occupied, but some communities may have experienced modest declines through emigration early in the subperiod (Lipe and Varien 1999:299). Wood harvesting events begin to increase again in the early A.D. 1200s (Varien 1999:Figure 7.17).

Habitations in the Early Pueblo III period continue to consist of dispersed "unit pueblos," though settlement aggregation is evident at two spatial scales. Adler (1990, 1992:20; Adler and Varien 1994) and Varien (1999:148) note that there is an increase in the average size of roomblocks, suggesting that the number of larger cooperative units consisting of several co-residing and contiguous households increased. Adler (1990, 1992:20, Figure 2.3) has also highlighted an increase in the number of "multi-roomblock habitation sites," sites in which several roomblocks occur in close proximity.

The increase in settlement clustering often occurs around "community centers" (Adler and Varien 1994; Lipe and Varien 1999; Varien 1999:141–143), that is, locations with 50 or more proximate structures that frequently feature public architecture in the form of great houses, great kivas, paths or roads, plazas, towers, and reservoirs. Community centers are "characterized by closely spaced linear roomblocks, each containing several habitation units composed of a kiva and associated surface rooms" (Lipe and Ortman 2000:101). Varien (1999:Table 7.2, Figure 7.9) has documented 44 such community centers dating from the Early Pueblo III period, and has also shown that they became increasingly clustered, with overlap in their immediate site environment catchment areas likely used most intensively for crops. Regionally, population density is highest within the central Mesa Verde region (Lipe and Varien 1999:Figure 9.1).

Community centers continue to be surrounded by isolated or smaller habitation groups, but there is an overall increase in settlement density and a general decrease in settlement spacing during the Early Pueblo III period. Often, community centers continue to focus around great houses constructed during the Chaco period (Lipe and Ortman 2000:101; Lipe and Varien 1999:300), but these are remodeled, often with larger rooms subdivided, and additional unit pueblos constructed nearby. Albert Porter Pueblo (Ryan 2008, 2010) and Wallace Ruin (Bradley 1988) appear to be examples of this process.

Pottery characteristic of the Early Pueblo III period include Dolores and Mesa Verde corrugated gray, traces of Mancos Black-on-white, and McElmo and Mesa Verde black-on-white types (Lipe and Varien 1999:315; Ortman, Baxter, et al. 2005). Mesa Verde Black-on-white is absent from pre–A.D. 1180 assemblages.

Late Pueblo III Period (Date Range 8, A.D. 1225–1280)

Settlement structure changed dramatically during the Late Pueblo III period, with the development of highly aggregated community centers located at the heads of canyons and within the shelter of cliffs (Lipe and Ortman 2000; Lipe and Varien 1999:303; Varien 1999:148–149). The majority of a community's population resided within aggregated villages during the Late Pueblo III period, though some residents continued to live in roomblocks scattered nearby (Varien 1999:149).

Most community centers come to include an increasing number of different public features, including towers, plazas, multiwalled structures, D-shaped structures, and site enclosing walls, many of which enclosed or encompassed springs (Lipe 2002; Lipe and Ortman 2000; Lipe and Varien 1999:319; Varien et al. 1996:99). Great kivas persist into the Late Pueblo III period, but there is a general decrease in these communal features (Lipe 2002:221; Lipe and Varien 1999:319), perhaps with plazas and multiwall structures subsuming some of their previous functions. The size of community centers varied widely—from single sites with approximately 400 surface rooms and 100 kivas (e.g., Sand Canyon Pueblo, Goodman Point Pueblo)—to sites with about 50 structures, such as Castle Rock Pueblo. Lipe (2002) has noted that, regionally, there appear to be two different trends, with some communities including larger, more isolated centers, and others having smaller aggregates or clusters of centers, which may represent multicenter organizational groupings. Total community size—a combination of community centers and their associated dispersed habitation component—reached a maximum of about 700 structures (Lipe 2002:220).

Varien (1999:149, Table 7.3, Figure 7.5) and Lipe (2002:Table 10.2) have documented 59 and 60 community centers, respectively, within the Mesa Verde region. Populations appear to peak during the Late Pueblo III period, with estimates ranging from lows of between 2,000 and 6,000 people (Duff and Wilshusen 2000:Figure 2), to Rohn's (1989:166) improbable high of 30,000. Several authors, using different assumptions and databases, derive population estimates in the range of 10,000 to 15,000 people (Duff and Wilshusen 2000:182; Lipe 2002:214; Lipe and Varien 1999:326; Wilshusen 2002:120).

Late Pueblo III period pottery assemblages are characteristically dominated by McElmo and Mesa Verde black-on-white, with the latter more abundant and becoming increasingly so later within the subperiod (Lipe and Varien 1999:316; Ortman, Baxter, et al. 2005:5–14; Wilson and Blinman 1999). Mesa Verde Corrugated Gray is the dominant gray ware type during the Pueblo III period (Ortman, Baxter, et al. 2005:5–6).

Depopulation of the Mesa Verde Region (post–A.D. 1280)

The second of the population "boom-and-bust" cycles in the Mesa Verde region resulted in its depopulation by the end of the Pueblo III period, usually dated between A.D. 1280 and 1300. The A.D. 1300 date was originally assigned to the end of the Pueblo III period by the Pecos Classification, and approximates the latest date for which we believe there could have been populations continuing to reside within the region. Tree-ring cutting dates for the region peak in the A.D. 1250s, and begin a rapid decline through the 1270s (Varien 1999:Figure 7.17), with the latest cutting dates currently falling about A.D. 1280 (Lipe and Varien 1999:312).

Researchers have suggested several different scenarios for regional depopulation. Lipe (1995) has suggested that population levels peaked in the early A.D. 1200s, and that emigration began by midcentury, accelerating thereafter. Duff and Wilshusen (2000) suggest it likely that populations began to depart in the early 1200s, while others suggest a relatively sudden process initiated and completed in the late 1200s. The exodus of Mesa Verde residents has long been thought to coincide with the "Great Drought" that lasted from A.D. 1276 to 1299 (Douglass 1929).

The organizational transition from aggregated villages, including some very large Pueblo structures such as Goodman Point and Sand Canyon pueblos, to the founding of nucleated, plaza-oriented villages—the hallmark of the subsequent Pueblo IV period—is now dated to A.D. 1275, coinciding with southward migrations or northern San Juan populations (Adams and Duff 2004; Duff 2002). The majority of the structures that date from the Pueblo IV period are found along the reaches of systems that drain into the Rio Grande, and along river valleys in northeastern Arizona and northwestern New Mexico. Thus, the period between A.D. 1275 and 1300 was one of dramatic change for the northern Southwest, with the northern reaches depopulated and the southern and Rio Grande areas receiving migrants from distant areas (Duff 1998; Haury 1958). This set the stage for the integrative developments associated with the Pueblo IV period (Adams and Duff 2004).

Village Ecodynamics Project Periods

Our ability to assess temporal patterning within pottery assemblages has recently been significantly advanced using a Bayesian statistical approach developed by Ortman, Varien, and Gripp (2005). These researchers used assemblages from well-dated contexts, subdivided into relatively fine intervals (reflected in the "Village Project Periods" column of Table 3.1), to better determine what the expected proportions of different pottery types should be for each period. This allowed them to assign a probability value to an assemblage for the likelihood it was created during one of 14 different, relatively finely dated intervals spanning the era of pottery manufacture in the Mesa Verde region (A.D. 400–1280+).

Ortman, Varien, and Gripp's (2005) approach to dating deposits has been incorporated into a larger research endeavor known as the Village Ecodynamics Project, directed by Timothy Kohler from Washington State University (see Washington State University 2014). The Village Ecodynamics Project uses computer simulation to evaluate where people within the Mesa Verde region should have situated their residences (on the basis of both the natural and social environments in which they lived), and also compares these patterns to information about settlement locations known archaeologically. As part of this larger project, Ortman, Varien, and Gripp (2005) have applied the method to a large number of pottery databases representing both excavated and surveyed settlement sites.

Our database for Shields Pueblo uses relatively few of these Village Ecodynamics Project periods, but some deposits or structures have been assigned to periods that correspond to the

Village Ecodynamics Project periods, several of which are noted in Table 3.1. In a few cases, our "Pecos Subperiod" date ranges correspond to "Village Project Periods" date ranges (see Table 3.1). Additionally, Date Range 16 (A.D. 1258–1280, see below), a period that spans from our latest tree-ring date at Shields Pueblo to the approximate date of the region's depopulation, generally corresponds to the latest Village Ecodynamics Project period (A.D. 1260–1280).

Other Analytical Groupings

Several additional date ranges were created to account for periods that span larger groupings of the periods already discussed. We use these date ranges when deposits or structures cannot be assigned to a more precise interval, either because the materials present span several periods or because the associated materials are few, limiting our ability to assign them to a period. These are shown in Table 3.1 and briefly discussed below in numerical order.

Date Range 14 (A.D. 771–1258) spans the period for which we have tree-ring dates from Shields Pueblo. Though used sparingly, this span was assigned to deposits with some indications of material from each of the Pecos periods at the site, or those lacking any temporally diagnostic materials.

Date Range 15 (A.D. 1020–1260) includes the Pecos subperiods beginning with the Middle Pueblo II period and ending in the Late Pueblo III period (see Table 3.1). Established prior to assigning date ranges, no study units from Shields Pueblo were assigned to this date range.

Date Range 16 (A.D. 1258–1280) was used for deposits that date from the latest interval for which we have evidence of use at Shields Pueblo. The span begins with our latest tree-ring date—A.D. 1258—from the site (a noncutting date from a kiva roof beam recovered in Structure 1402), to A.D. 1280, the approximate calendar date for the depopulation of the Mesa Verde region. This date range approximates the final Village Ecodynamics Project modeling period (A.D. 1260–1280). This period spans the last activity at Shields Pueblo and occurred at a time when the population of much of the region was beginning to migrate.

Date Range 17 (A.D. 1060–1225) includes the Pecos subperiods from the Late Pueblo II period through the Early Pueblo III period. This date range was assigned when evidence suggested use across the Pueblo II–Pueblo III period temporal boundary.

Date Range 18 (A.D. 1020–1280) includes the Pecos subperiod beginning with the Middle Pueblo II period and terminating at regional depopulation.

Date Range 19 (A.D. 725–1225) spans the subperiods of Early Pueblo I to Early Pueblo III, used for deposits with evidence from all but the Late Pueblo III period.

Overview of Site Dates

We used several different methods to establish the dates of occupation and use at Shields Pueblo, most of which allow us to assign absolute dates or date ranges to episodes of structure construction and use, and artifact deposition. Tree-ring dating is the most precise of these methods, as it allows tree-ring analysts to determine the last year that a particular piece of wood was alive. However, a number of natural and cultural processes can alter wood, resulting in the need to consider tree-ring dates carefully; some of these are discussed below, followed by presentation of the results on the basis of tree-ring dates. Pottery assemblage data were used to assign deposits from structures, features, middens, and other types of deposits to as precise a temporal period as possible. This technique relies on varying frequencies of well-dated pottery types, and was used to assign dates to the majority of the study units at Shields Pueblo. Finally, stratigraphic relationships were used to bracket the dates of some deposits, largely those that date from the period when Shields Pueblo and the Mesa Verde region were depopulated. Each technique and interpretations for Shields Pueblo are discussed in the following section.

Tree-Ring Dating

Though several hundred pieces of potentially datable burned and unburned wood were recovered and submitted to the Laboratory of Tree-Ring Research at the University of Arizona in Tucson, only 242 of these pieces proved datable. The majority of these dated pieces derive from structural timbers that were part of the roofs of kivas and pit structures that had been burned at abandonment (Schlanger and Wilshusen 1993; Varien 1999; Wilshusen 1986). Additional pieces were recovered from other types of structures and some come from midden contexts, where it is possible, or likely, that the wood had originally been used for fuel prior to being deposited in the midden.

Though not all of the structures excavated were burned when abandoned, those that were provide a picture of wood harvesting events during the centuries of the occupation at Shields Pueblo. We use these data to reconstruct the occupational history of Shields Pueblo. However, prior to doing so, we need to briefly consider assumptions associated with tree-ring dating, and some of the natural and cultural processes that affect wood recovered from archaeological sites. The Laboratory of Tree-Ring Research reports the species of wood and provides dates for the innermost and outermost preserved rings from each sample. These are reported using several additional pieces of information noted by symbols appended to the outer date. The symbols and their explanations are listed in Table 3.2.

Ideally, the outermost ring preserved on a sample coincides with the year the tree died—a cutting or death date—and we can then infer that people cut the tree for its intended use, usually using it within a few years of it being felled (Ahlstrom et al. 1985:58; Dean and Robinson 1978:148). Tree-ring dates with the “B” and/or “r” symbols are “cutting dates.” Dates with the “v” symbol are interpreted as having died or been cut within a few years of the outside date; these are here referred to as “near-cutting dates.” Though not as precise or interpretively useful as a cutting date, these provide a relatively useful approximation for the cutting date. The “vv” symbol means that an unknown number of rings are missing from the sample beyond the outermost preserved ring; such dates are here referred to as “noncutting dates.” The outer portion of the timber could have burned or decomposed, or the loss of rings could result from cultural modifications, such as being cut, trimmed, or squared for use.

Researchers associated with the Laboratory of Tree-Ring Research have developed a series of conventions and procedures used to develop interpretations derived from dated construction timbers recovered from archaeological sites (Ahlstrom et al. 1985; Dean and Robinson 1978). If a cluster or group of cutting dates derives from wood recovered in a structure, we can infer that the structure was constructed at about that time. If there are no clusters of cutting dates, or if only near-cutting dates are present, the latest date from the context serves as the best indication of when the structure was built (Ahlstrom et al. 1985:58–59). Often, however, we have a situation where there are several cutting and/or near cutting dates from a structure that do not cluster, but are spread over a decade or more. In such instances, subjective assessment of the range of dates present is combined with analysis of the associated artifacts assemblage and other architectural characteristics to determine when the structure was most likely to have been constructed. Minimally, the latest date present indicates that the structure was in use until at least that point in time. Similarly, noncutting dates indicate that a structure was in use until at least the latest date represented.

The tree-ring dates from Shields Pueblo demonstrate that occupation at the site occurred in each of the three Pueblo periods of the Pecos classification—Pueblo I, Pueblo II, and Pueblo III. Of the 242 tree-ring dates from Shields Pueblo, 50 (approximately 20 percent) are cutting dates and another 25 (approximately 10 percent) are near-cutting dates (Tables 3.3–3.5). The remaining two-thirds of the sample provided noncutting dates.

When all of the tree-ring dates from Shields Pueblo are plotted (Figure 3.1), one gets the impression of a few periods of early use and relatively persistent occupation from about A.D. 900 until about A.D. 1260. However, this distorts the occupational history of the site. When only cutting dates are included, graphed in 25-year intervals (Figure 3.2), three periods of tree harvesting are evident. Several early cutting dates derive from a single pit structure (Structure 110), constructed during the A.D. 770–780 decade, early in the Pueblo I period. A second period of tree harvesting is evident for the decades between A.D. 1100 and 1150, the latter portion of the Pueblo II period. Finally, and somewhat surprisingly, the greatest evidence for tree harvesting falls in the decades between A.D. 1180 and 1260, during both the Early and Late Pueblo III subperiods, when several kivas were constructed and used at Shields Pueblo, many of which were burned at abandonment.

The patterning evident in Figure 3.2 mirrors region-wide patterning for population and settlement. Shields Pueblo had a small resident population in the Early Pueblo I period, but the site then experienced little or no use until after the recolonization of the region in the later A.D. 1000s. Finally, the regional suppression of tree harvesting associated with the A.D. 1130–1180 drought (Dean and Van West 2002; Ryan 2010; Van West and Dean 2000) is evidenced by a gap at midcentury. The increase and peak of wood harvesting is associated with the Pueblo III period, especially following the drought.

The tripartite temporal patterning in the tree-ring dates is strengthened when near-cutting dates are combined with cutting dates, and graphed in 25-year intervals (Figure 3.3). The same spans are represented; however, the number of Late Pueblo III dates (post–A.D. 1225) is especially evident. Approximately 40 percent of the cutting and near-cutting tree-ring dates fall in this span; this is somewhat surprising because we initially thought that Shields Pueblo was being depopulated in favor of the nearby Goodman Point Pueblo by this time. The second pattern evident when cutting and near-cutting tree-ring dates are analyzed is that the initial use of

Shields Pueblo appears to have occurred slightly earlier than thought. This suggests that Shields Pueblo may have been occupied across the mid–A.D. 1100s drought, something also suggested for the neighboring Sand Canyon community (Varien ed. 1999:138).

The tree-ring samples document a limited Early Pueblo I period presence at Shields Pueblo, with an apparent occupation hiatus that likely lasted nearly two-and-a-half centuries. As population returned to the Mesa Verde region and the Chaco regional system flourished in the late A.D. 1000s to the mid A.D. 1100s, it appears that Shields Pueblo once again came to be home for several households. The tree-ring dates indicate that the A.D. 1100s drought depressed construction activity, but these data could also indicate that occupation persisted at the site. After A.D. 1180, construction activity increased and continued until A.D. 1258, indicating that mesa-top settlements continued to be occupied and used even though the focus of the community had shifted to the neighboring canyon-oriented settlement of Goodman Point Pueblo, likely by A.D. 1240.

Dating by Pottery

The pottery sequence in the Mesa Verde region is well defined and relatively well dated, owing both to consistent stylistic and technological change and the region's unparalleled tree-ring record. Pottery types have been defined by a number of researchers over the years, accompanied by detailed technological and stylistic descriptions, illustrations and examples, and suggested date ranges (Abel 1955; Breternitz et al. 1974; Wilson and Blinman 1999). The descriptions and date ranges provided in the Crow Canyon Archaeological Center (Crow Canyon) laboratory manual (Ortman, Baxter, et al. 2005) were used for this project.

An extension of the pottery descriptions of single types is associated with developing temporally diagnostic pottery assemblages, suites of types that co-occur (Colton 1953), and use of assemblage data to assign sites or deposits to chronological periods. The majority of the deposits at Shields Pueblo were assigned dates on the basis of the properties of assemblages, as well as the presence or absence of particular types. Pottery assemblages associated with different periods in the Mesa Verde region include those noted by Wilson and Blinman (1995, 1999), and lists of types associated with different Pecos periods or subperiods are presented in several sources (e.g., Lipe and Varien 1999:260–261; Ortman et al. 2000:126–127; Wilshusen 1999:207, 209).

The strategy employed by Ortman, Varien, and Gripp (2005) builds on this approach by tabulating pottery assemblages from sites that have been precisely dated, and using these well-dated assemblages to develop an idealized profile for what types should be present, and in what proportions, for each temporal interval. Ortman, Varien, and Gripp's (2005) work has narrowed these temporal intervals to refined spans averaging 40 years. All pottery from Shields Pueblo, grouped by study unit, has been compared against the calibration data set developed by Ortman, Varien, and Gripp (2005), which provides a statistical estimate (ranging from 0 to 1) of the likelihood that an assemblage was created during each of the Village Ecodynamics Project modeling periods. Often, an assemblage will have similar statistical likelihoods of belonging to more than one period, an indication that it was created over a period that spanned more than one modeling period (in the case of adjacent periods with high probabilities), or in more than one span (in the case of likelihoods in non-adjacent modeling periods).

Designation of the date range for each study unit almost always required relying on the recovered pottery. Dating for each study unit was assigned via the consideration of: an assessment of the statistical likelihoods for period assignment based on the Ortman, Varien, and Gripp (2005) approach; a subjective evaluation of the types present; and the presence of any absolutely dated material or stratigraphic relationships with dated proveniences.

Seriation of Study Units

One of the hallmark advances in the archaeology of the early twentieth century was the recognition that aspects of artifact assemblages, especially stylistic characteristics, changed regularly and that this pattern could be used to identify temporal change when evaluated with the aid of stratigraphy (Kidder 1924; Kroeber 1957; Spier 1917). This permitted researchers in the American Southwest to document gradual changes in the popularity of different pottery types in the absence of a mechanism for absolute dating, thus providing a relative chronology.

Quantifying recovered pottery assemblages—tabulating counts and/or relative percentages of pottery assigned to various classes or types—permitted integration of data from numerous sites in a region, and data were used to develop regional chronological sequences (e.g., Kidder 1927). The process of ordering pottery assemblages with respect to time—ceramic seriation—continues to serve as one of the major methodological tools archaeologists have, though the methods for performing seriations have changed over the years (Duff 1996; LeBlanc 1975; Spier 1917). Recently, Correspondence Analysis (CA) has come to be a useful analytical and display method for presentation of ceramic seriation results, and CA was used to assess the temporally diagnostic types associated with pottery assemblages recovered from Shields Pueblo.

CA simultaneously displays both case and variable relationships in the same dimensional space, providing a visual depiction of the relationships of cases to other cases, variables to other variables, and cases and variables to each other (Shennan 1997). When using temporally sensitive pottery types as variables, and archaeological assemblages as the cases, the resulting patterning frequently reflects the changing composition of assemblages in a manner that can be interpreted as time (Duff 1996). This provides a visually intuitive depiction of the relative temporal affiliation of pottery assemblages, and some sense of the density of assemblages associated with different periods. Based on a measure calculated via the Chi-Squared statistic (Shennan 1997), variables and cases that have relatively limited contributions to the variation in the overall data set occur near the central axes of the graphs, whereas those cases and variables that have a profile that deviates strongly are projected away from the graph's origin (0,0). This permits an analyst to assess what variables are largely responsible for the placement of a case in multidimensional space.

To create such as display using the pottery data from study units at Shields Pueblo, a number of pottery categories and some assemblages were modified or deleted. The necessary modifications are noted here. First, a database that included total pottery weights subdivided into each of the pottery categories used in the Crow Canyon analytical system (see Ortman, Baxter, et al. 2005) was generated, with an entry for every study unit designated for Shields Pueblo. This database included a weight value in g for every pottery type, including values of zero. Pottery in the Mesa Verde region can usually be categorized to a type, a recognizable combination of co-occurring attributes, with an absolute date range. For example, Mesa Verde Black-on-white, the most recognizable type associated with the Late Pueblo III period occupation of the region, has a designated date range of A.D. 1180–1280 (Ortman, Baxter, et al. 2005:5–15). For the purposes of this analysis, pottery types or categories from the same ware (gray ware, white ware, red ware) with similar date ranges were combined to increase the sample from a particular period to highlight the temporal dimension of variability within the pottery data set. For example, Chapin Gray, Moccasin Gray, Mancos Gray, Indeterminate Neckbanded Gray, and Indeterminate Local Gray were combined to create the single category "Pueblo I Gray," as all have date ranges associated with the Pueblo I period (see Ortman, Baxter, et al. 2005).

Even pottery that cannot be assigned to a specific type can often be grouped on the basis of some functional or decorative attribute, and this class of materials can be associated with an absolute date range. "Late White Painted" is such a category associated with the period spanning the Pueblo II and Pueblo III periods (A.D. 920–1280) and is used to categorize sherds "with attributes that are recognized as definitely **not** characteristics of pottery made during the Basketmaker III or Pueblo I periods" (Ortman, Baxter, et al. 2005:5–18). Although not as useful as pottery types associated with a narrow temporal range, pottery assigned to this category still has a definitive temporal referent. Often, classes of pottery with broader temporal ranges have among the largest representations within assemblages, especially in situations where post-depositional factors have reduced the size of the average sherd. At Shields Pueblo, the category "Indeterminate Local Corrugated Gray," with an associated temporal span of A.D. 920–1280 (see Ortman, Baxter, et al. 2005), constitutes the single largest proportion of the total assemblage, just under 42 percent. This is followed by "Late White Unpainted," associated with the same temporal range of A.D. 920–1280 (Ortman, Baxter, et al. 2005:5–19), representing another 30 percent of the total Shields Pueblo assemblage. Thus, approximately two-thirds of the pottery recovered from our excavations can only be determined to derive from somewhere within the Pueblo II and Pueblo III periods.

In addition to that noted above (Pueblo I Gray), data aggregations were made for several other categories used in the analysis. These were aggregated as follows: Pueblo II–Pueblo III Gray, a combination of Mummy Lake Gray and Indeterminate Local Corrugated Gray; Pueblo I White Ware, a combination of Chapin and Piedra black-on-white types, with the Early White Painted and Early White Unpainted categories; Pueblo II White ware, a combination of Cortez and Mancos black-on-white types with the category Pueblo II White Painted; Pueblo II–Pueblo III white ware, a combination of Late White Unpainted and Late White Painted categories; Pueblo I Red, a combination of Abajo and Bluff black-on-red types; and, finally, Pueblo I–Pueblo III red ware, combining the Indeterminate Local Red Painted and Indeterminate Local Red Unpainted categories (see Ortman, Baxter, et al. 2005).

Additionally, several of the categories used to categorize archaeological pottery have no associated date ranges, and all such categories lacking a temporal referent or span were deleted. For example, the categories "Unknown Gray" and "Unknown White" have no associated temporal range (Ortman, Baxter, et al. 2005:5–21). Basketmaker Mud Ware was deleted since only eight of the 155 study units from the site contained it, and it represented only one or, at most, a few sherds in these contexts. Finally, all units lacking a combined assemblage weighing at least 100 g were deleted from the analysis.

When these assemblages were analyzed via CA, the resultant data reflect a relatively strong association between the pottery assemblages and time. Figure 3.4 depicts the first two dimensions of the CA, here with only the variables (pottery categories and types by weight) plotted. The first two dimensions of the display account for about 62 percent of the total variability in the data set, with the first dimension (X-axis) primarily differentiating early assemblages on the left from later ones on the right. The second dimension (Y-axis) separates assemblages with Pueblo II period components (top) from other components.

Relationships depicted in a CA display often reflect a horseshoe or “arch” (Duff 1996:101, footnote 4), as is the case here, with that arch reflecting time (see Figure 3.4). Beginning in the lower left, Pueblo I period white ware is set apart from other categories, and as one moves toward the upper left quadrant near the origin, several Pueblo I and Pueblo II period categories occur. Finally, moving from the origin to the lower right quadrant, there is a shift from Pueblo II/Pueblo III period mixed categories to material characteristic of the Pueblo III period. Thus, the relative relationships of the variables used in the analysis—combinations of pottery categories and types—occur along a dimension that accurately reflects an absolute measure of time—calendar years—spanning the periods of site use from the Pueblo I through Pueblo III periods.

Figure 3.5 is a display simultaneously projecting both the pottery variables and assemblages from study units, with the latter displayed as black dots. This display can be interpreted in much the same way as the dated tree-ring samples; there are relatively few contexts with strong Pueblo I period assemblage signatures (lower left), and many assemblages that are characterized by types and categories dating from the Pueblo II period (near the origin in the upper left quadrant), and a relatively tight grouping of cases associated with Pueblo III period materials, seen in the lower right quadrant. The picture that emerges reinforces that derived from the tree-ring data, suggesting a relatively robust presence at Shields Pueblo spanning the Pueblo II and Pueblo III periods. The relatively few cases associated with Pueblo I period types and categories, and the space between these, might also reflect sparse occupation followed by an apparent hiatus in occupation in the A.D. 800–1020 period. Additionally, the fact that relatively few cases are strongly associated with Mesa Verde Black-on-white pottery suggests that few assemblages were being generated during the last decades of the region’s occupation.

Figure 3.6 duplicates Figure 3.5, but highlights a few select cases, and these have been labeled. In the lower left of the graph are Structures 141 and 1318, a Pueblo I period subterranean room and pit structure, respectively. Structures 1307 and 237 are both strongly associated with Pueblo II period materials. In fact, Structure 1307 was later constructed within Structure 1318, with Nonstructure 1321 located about halfway between the two cases. Nonstructure 1321 is a midden deposited within the depression created by Structures 1308 and 1307, and it has a strong Pueblo I component, in addition to Pueblo II materials. Finally, Structures 223, 241, and 1114 are highlighted in the lower right of Figure 3.6. These three kivas all have post–A.D. 1200s tree-ring dates, and are dated to the Pueblo III (Structure 1114) or Late Pueblo III (Structures 223 and 241) periods. Structures 223 and 241 each have a tree-ring date at A.D. 1250 (a noncutting date and cutting date, respectively). Structure 1114 has a cutting date of A.D. 1205, and evidence for continued use.

Figure 3.7 highlights variability than can be interpreted as the temporal signal for an Early Pueblo III component. A CA plot of type and time (see Figure 3.7) indicates that McElmo Black-on-white and Pueblo III gray ware are offset from the remainder of the variables. McElmo Black-on-white persists throughout the Pueblo III period, but declines in popularity as Mesa Verde Black-on-white becomes dominant in the Late Pueblo III period (Ortman, Varien, and Gripp 2005; Wilson and Blinman 1991, 1999). Figure 3.8 depicts time period, type, and weight, with cases and variables plotted and two cases labeled. Structure 146 is strongly associated with McElmo Black-on-white, and is an earthen and masonry pit structure that dates from the Early Pueblo III period. Nonstructure 1115 is a midden deposit that also dates from the Early Pueblo III period.

Alternate data configurations do not provide additional clarity or highlight patterning beyond the general temporal trends just discussed. Both the pottery and tree-ring data substantiate a light Early Pueblo I occupation followed by a more intensive, quite likely continuous occupation spanning the Middle Pueblo III–Late Pueblo III period. Neither data set provides much information about the final decades—between A.D. 1258 and 1280—of occupation or use at Shields Pueblo. Consideration of the temporal affiliation of individual features, structures, kivas, and deposits provides additional insight into the nature of the occupation and depopulation of Shields Pueblo.

Changes Through Time at Shields Pueblo

Each study unit at Shields Pueblo was assigned to a precise temporal interval, with most assigned to a period on the basis of tree-ring dates or associated pottery assemblages. Tables 3.6 and 3.7 present the dates assigned to each study unit, divided by study unit type, listed in general chronological order. The study units listed in Table 3.6 are those assigned to the entire span for which we have tree-ring dates at Shields Pueblo (A.D. 771–1258) or nearly so (A.D. 725–1258). Table 3.6 contains the majority of the study units designated for Shields Pueblo, as we were able to assign most to a Pecos subperiod, though several contexts span either a full Pecos period, or two or more Pecos subperiods. Table 3.6 shows that the ceramic seriation accurately suggests that the majority of the study units from Shields Pueblo date from the Middle Pueblo II to Early Pueblo III periods.

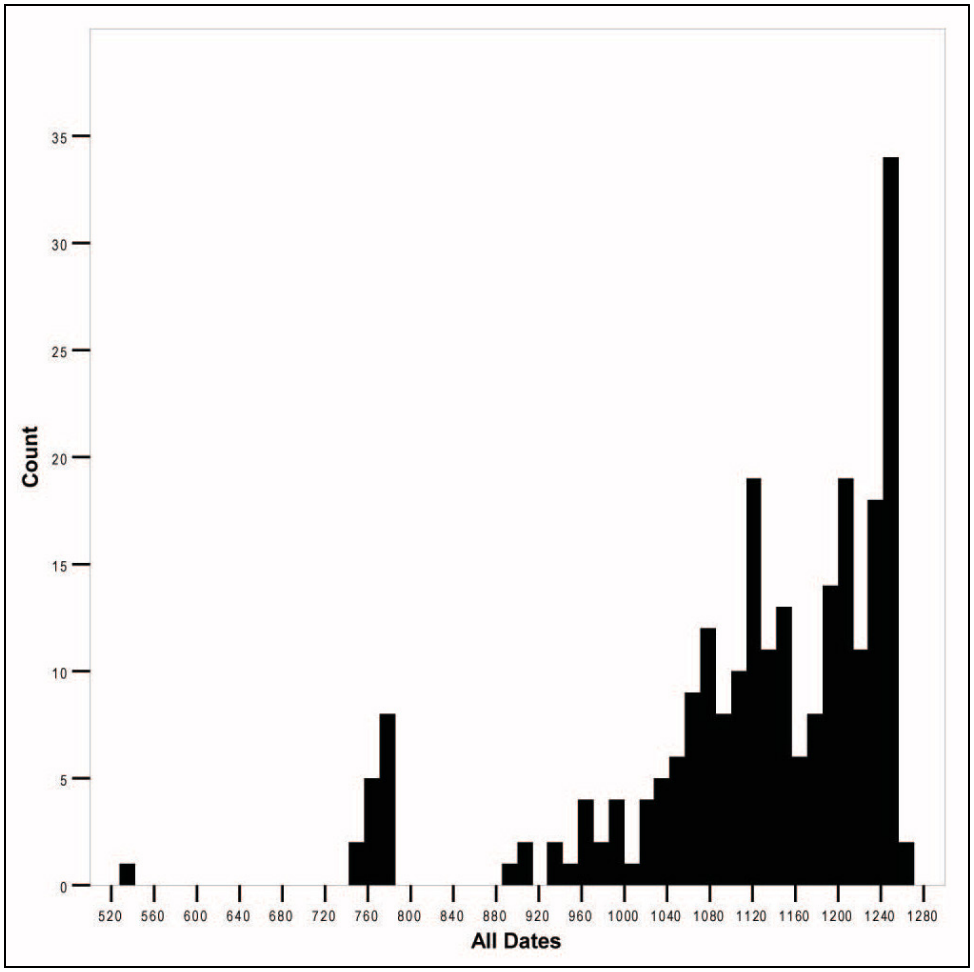

Figure 3.1. All tree-ring dates, Shields Pueblo.

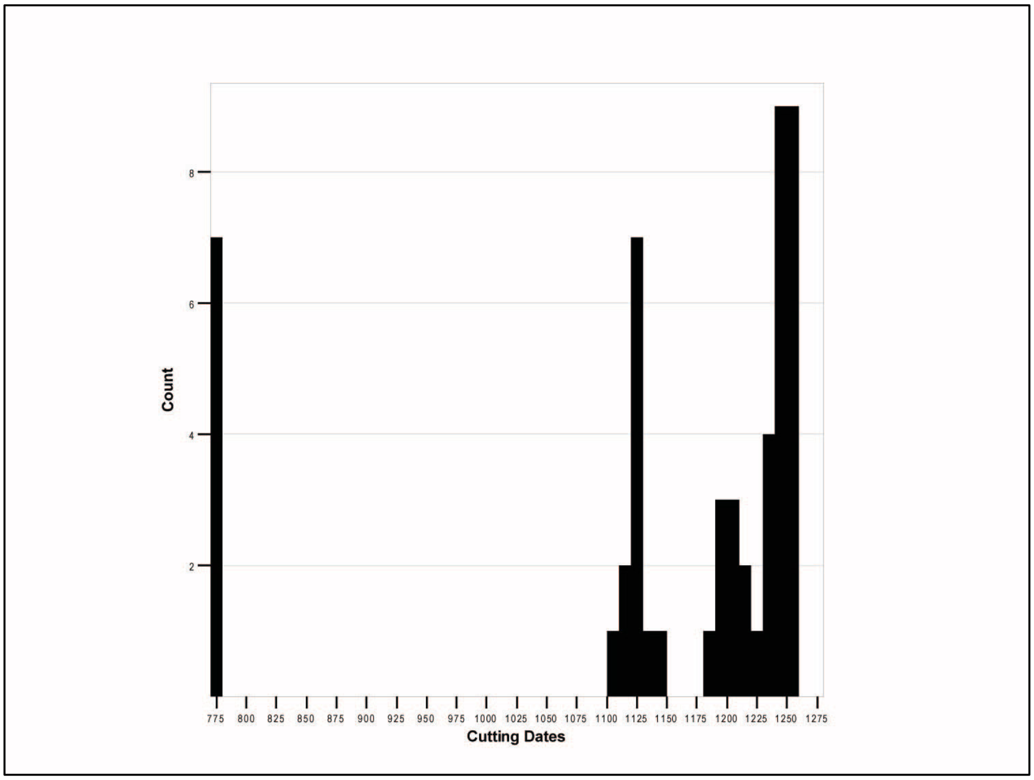

Figure 3.2. Tree-ring cutting dates, Shields Pueblo.

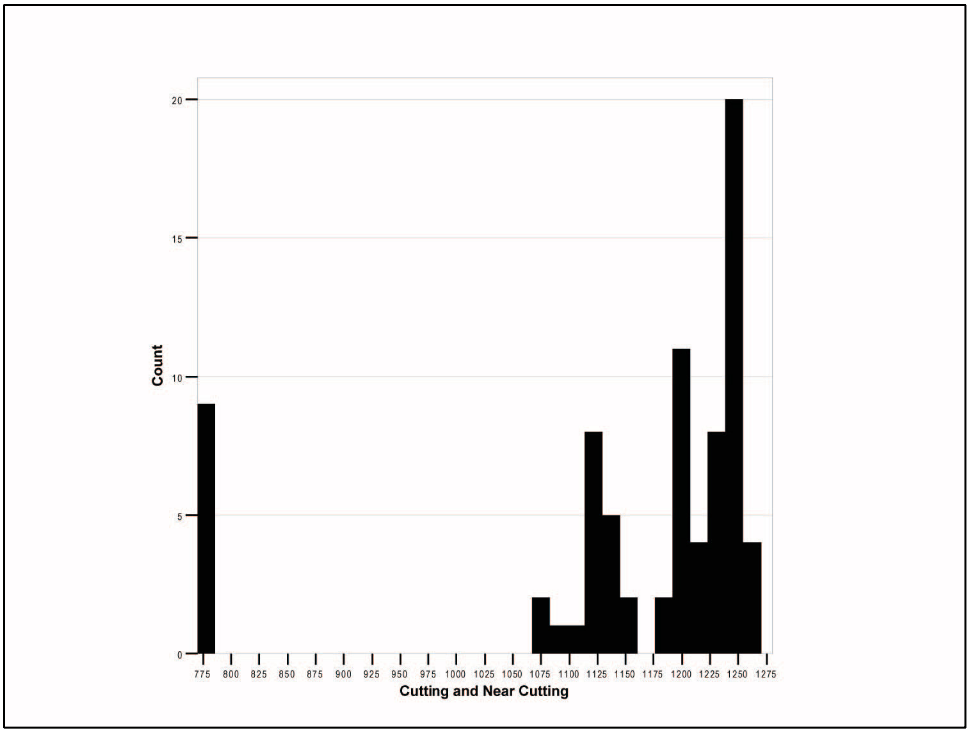

Figure 3.3. Tree-ring cutting and near-cutting dates, Shields Pueblo.

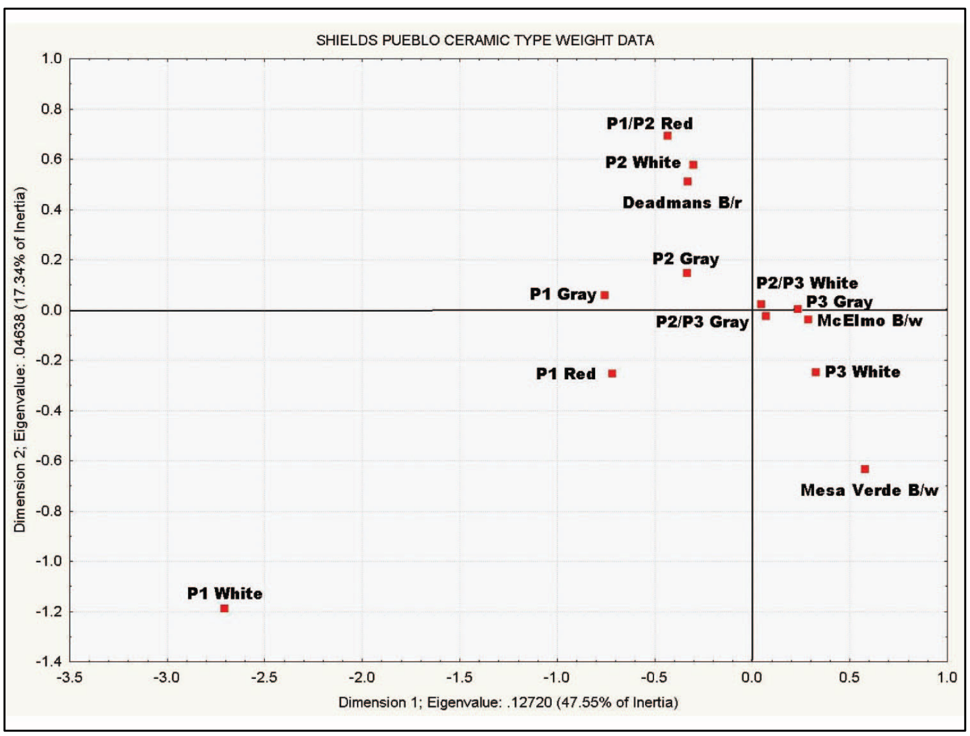

Figure 3.4. Pottery types by weight, Shields Pueblo.

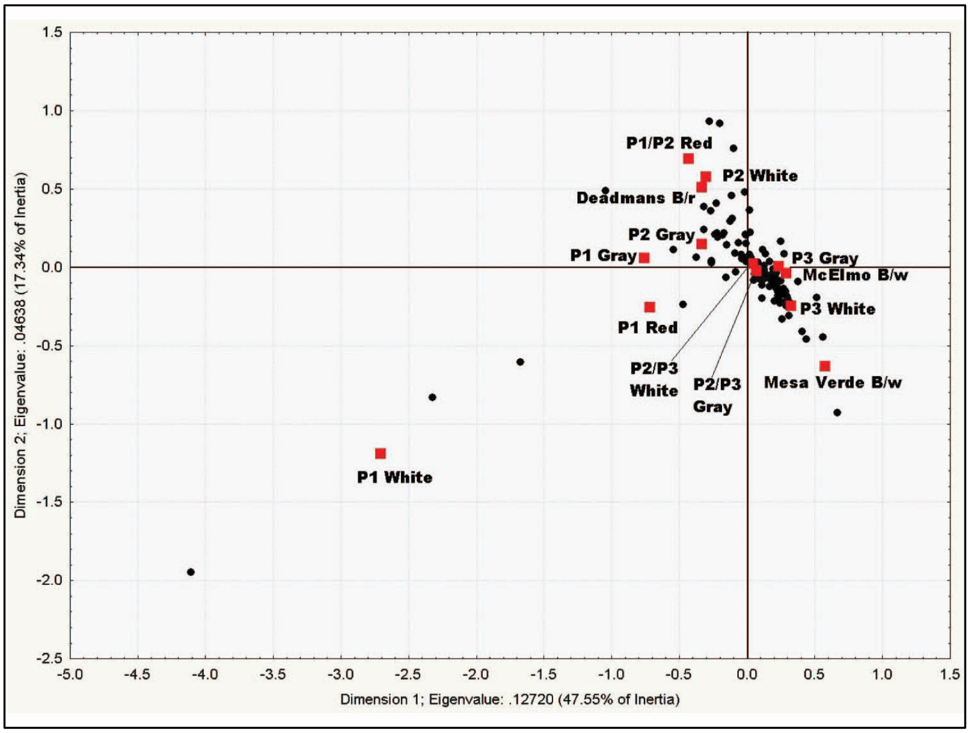

Figure 3.5. Pottery assemblages by time period and type, Shields Pueblo.

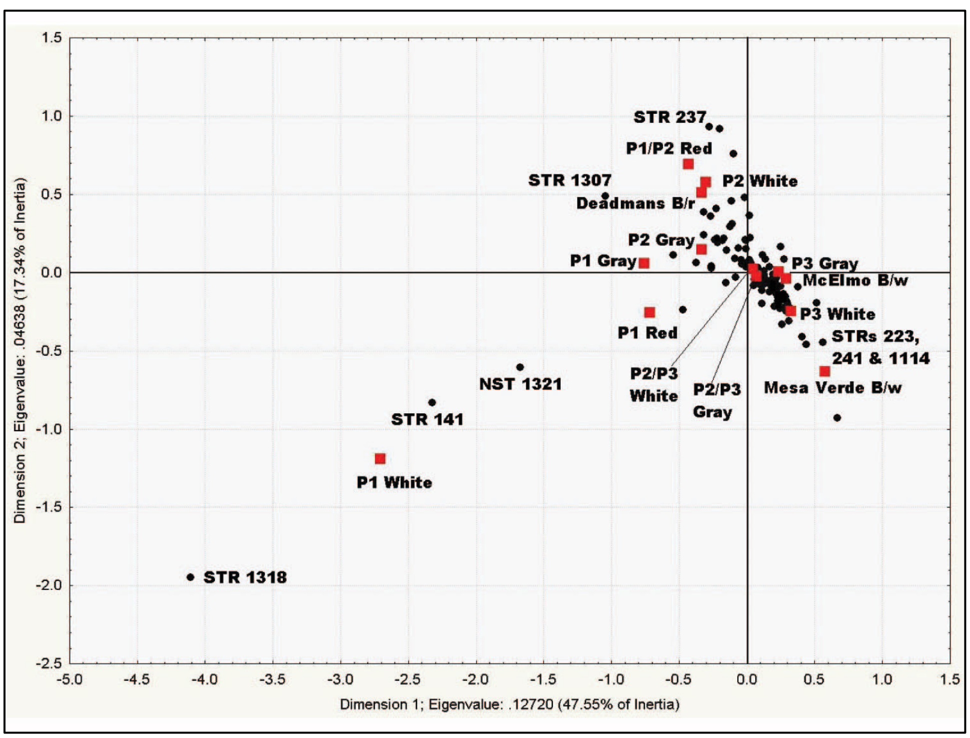

Figure 3.6. Pottery assemblages by time period and type for select study units, Shields Pueblo.

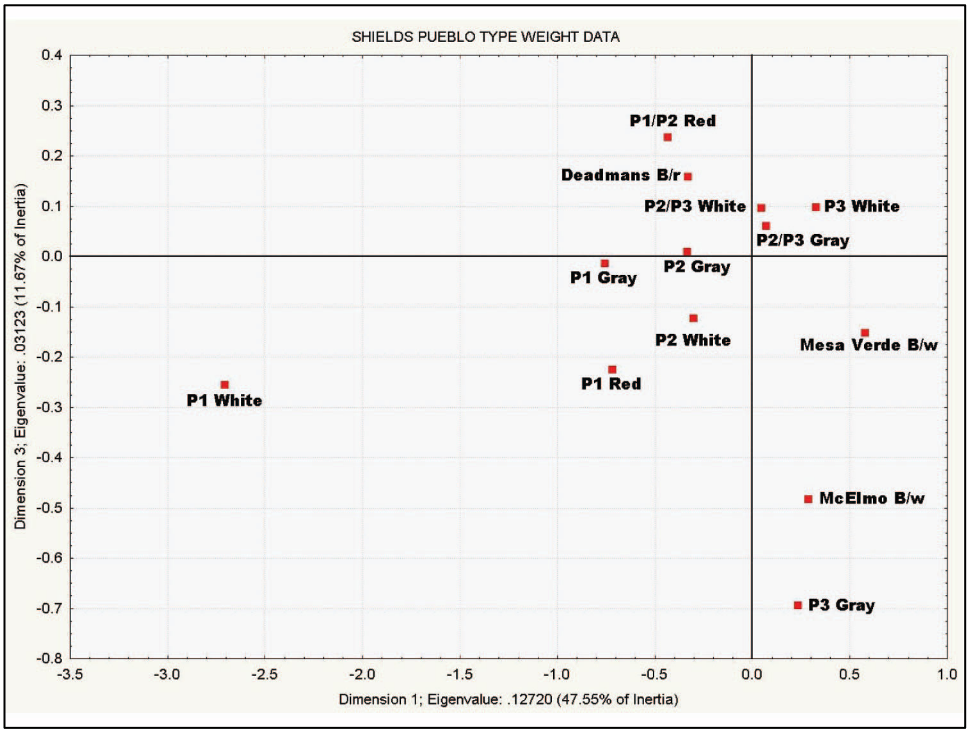

Figure 3.7. Pottery assemblages by time period, type, and weight, Shields Pueblo.

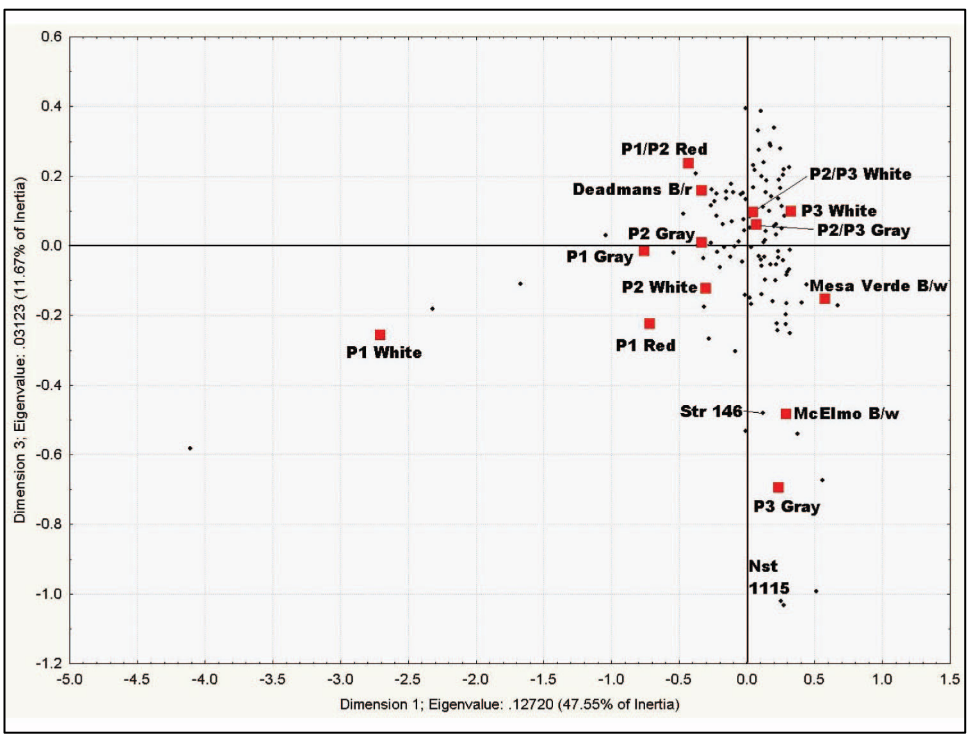

Figure 3.8. Pottery assemblages by time period, type, and weight indicating an Early Pueblo III period cluster, Shields Pueblo.

Table 3.1. Pecos Periods, Pecos Subperiods, Village Ecodynamics Project Periods, and Date Ranges Assigned to Study Units, Shields Pueblo.

						OTHER ANALYTICAL GROUPINGS					
						DATE RANGE NUMBERS					
	Pecos Period		Pecos Subperiod		Village Project Periods	#14	#15	#16	#17	#18	#19
725	PUEBLO I	725	EARLY PUEBLO I	725	EARLY PUEBLO I						725
	(Date Range #1)	800	(Date Range #4)	800	(Date Range #4)	771					
		800	LATE PUEBLO I	800	LATE PUEBLO I						
				840							
				840	LATE PUEBLO I						
				880							
				880	LATE PUEBLO I						
920		920		920							
920	PUEBLO II	920	EARLY PUEBLO II	920	EARLY PUEBLO II						
	(Date Range #2)			980							
				980	EARLY PUEBLO II						
		1020		1020							
		1020	MIDDLE PUEBLO II	1020	MIDDLE PUEBLO II		1020			1020	
		1060	(Date Range #5)	1060	(Date Range #5)						
		1060	LATE PUEBLO II	1060	LATE PUEBLO II				1060		
			(Date Range #6)	1100	(Date Range #9)						
				1100	LATE PUEBLO II						
1140		1140		1140	(Date Range #10)						
1140	PUEBLO III	1140	EARLY PUEBLO III	1140	EARLY PUEBLO III						
	(Date Range #3)		(Date Range #7)	1180	(Date Range #11)						
				1180	EARLY PUEBLO III						
		1225		1225	(Date Range #12)				1225		
		1225	LATE PUEBLO III	1225	LATE PUEBLO III						1225
			(Date Range #8)	1260	(Date Range #13)	1258	1260				
				1260	LATE PUEBLO III			1258			
1280		1280		1280	(see #16)			1280		1280	
1280+	REGIONAL DEPOPULATION										

Table 3.2. Explanations of Symbols Appended to Tree-Ring Outer Dates.

Symbol	Explanation
B	Bark is present.
G	Beetle galleries are present on surface of specimen.
r	Less than a full section is present, but the outermost ring is continuous around the available circumference.
v	A subjective judgment that, although there is no direct evidence of the true outside on the sample, the date is within a very few years of being a cutting date.
vv	There is no way of estimating how far the last ring is from the true outside; many rings may be lost.
+	One or a few rings may be missing near the outside whose presence or absence cannot be determined, because the series does not extend far enough to provide adequate cross dating.
++	A ring count is necessary beyond a certain point in the series because cross dating ceases.

Table 3.3. Study Units with Tree-Ring Dates, Shields Pueblo.

Study Unit	Noncutting Dates	Cutting Dates	Latest Date
PUEBLO I PERIOD			
Structure 110	755vv, 758vv, 763vv, 771+v, 771vv, 772vv, 773vv, 774+v	771+r, 772rG, 774+r, 774+rB, 775+r, 776+rG, 779+r	779+r
PUEBLO II PERIOD			
Structure 104	1101+vv, 1119vv	1127B	1127B
Backhoe Trench 114 (exposed Structure 121)	1110++vv		1110++vv
LATE PUEBLO II–EARLY PUEBLO III PERIOD			
Structure 122	1062vv, 1061++vv	1119r, 1129+B	1129+B
Structure 140	1098vv, 1101vv		1103++B
Backhoe Trench 128 (exposed Structure 140)		1103++B	
Structure 243		1129r, 1131r	1131r
EARLY PUEBLO III PERIOD			
Structure 1316	1051vv, 1144vv, 1149vv, 1172vv, 1174vv, 1205v, 1210v, 1212v		1212v
Structure 1505	937+vv, 947vv, 1007vv, 1022vv, 1117vv, 1155vv	1124r	1155vv
PUEBLO III PERIOD			
Structure 123	1078vv, 1085vv, 1116vv, 1117vv, 1120vv, 1147+v		1147+v
Backhoe Trench 115 (through Structure 123)	1046vv, 1059vv, 1104vv		
Structure 410	1084vv, 1186vv, 1191vv,1199vv	1212r	1212r
Structure 1106	1108vv, 1116vv, 1121++vv	1190rB, 1204r, 1224B	1224B
Structure 1114	1103vv, 1130vv, 1181vv, 1205v	1126r, 1144r, 1205B	1205v
Structure 1205	970vv, 1023vv, 1091vv, 1121vv, 1135vv, 1149vv, 1165++vv, 1188v, 1203vv	1193r, 1194r, 1194r	1203vv
LATE PUEBLO III PERIOD			
Structure 208	1198+v, 1204vv, 1204vv, 1228+vv, 1230vv, 1230++vv, 1245v		1245v
Structure 221	1072vv, 1122vv, 1129vv, 1136++vv, 1194vv, 1210vv, 1225vv, 1229++v, 1231vv, 1238vv, 1238vv, 1242vv	1219++B, 1243B, 1248B	1248B
Backhoe Trench 216	1169++vv		

Study Unit	Noncutting Dates	Cutting Dates	Latest Date
(exposed Structure 221)			
Structure 223	897vv, 998+vv, 1061vv, 1250vv		1256vv
Backhoe Trench 218 (exposed Structure 223)	1146vv, 1256vv		
Structure 224	1076+vv, 1077++vv, 1077++vv, 1095v, 1101vv, 1143vv, 1167vv, 1171vv, 1174+vv, 1211vv, 1215vv, 1219+vv, 1252+v, 1254+v, 1255vv	1238++B, 1248++r, 1251rB, 1252rG, 1253+r, 1255r, 1255r	1255vv
Backhoe Trench 219 (exposed Structure 224)	1056vv, 1239vv, 1246vv, 1250vv		
Structure 241	1135v, 1156vv, 1159vv, 1176vv, 1184vv, 1196vv, 1236+vv, 1247vv	1236+r, 1237++r, 1238r, 1248rB, 1249r, 1249r, 1250r, 1250r	1250r
Structure 405	1248++vv, 1250++vv		1250++vv
Structure 406	989vv, 1038vv, 1038++vv, 1146++v, 1184vv, 1185vv, 1202vv, 1223vv, 1229+v		1229+v
Structure 1315	1024vv, 1092vv, 1195++vv, 1202v, 1203vv, 1204vv, 1207vv, 1227++v	1204r, 1249r, 1251r	1251r
Structure 1408	966vv, 971vv, 979+vv, 1037+vv, 1057++vv, 1060++vv, 1062vv, 1075vv, 1076vv, 1080vv, 1086+vv, 1097vv, 1108vv, 1126+vv, 1141vv, 1145vv, 1150+vv, 1162vv, 1239vv, 1255+vv	1254B, 1254B	1255+vv
Backhoe Trench 1406 (exposed Structure 1408)	1188vv		
TERMINAL PUEBLO III PERIOD			
Structure 1402	530++vv, 1152vv, 1212vv, 1217+vv, 1218vv, 1223++vv, 1235vv, 1238vv, 1249vv, 1251+vv, 1255+vv, 1256+vv, 1258v, 1258v	1252rB	1258v
Backhoe Trench 1403 (exposed Structure 1402)	1042+vv, 1239vv		

Table 3.4. Middens and Extramural Surfaces with Tree-Ring Dates, Shields Pueblo.

Study Unit	Noncutting Dates	Cutting Dates	Latest Date
Middens			
LATE PUEBLO II–EARLY PUEBLO III PERIOD			
Nonstructure 101	909+vv, 962vv, 1127vv		1127vv
Backhoe Trench 127 (through Nonstructure 101)	909vv		
Nonstructure 153	1022vv, 1045vv, 1066vv	1130+r, 1130+rB	1130+r
Nonstructure 154	941vv, 972+vv, 991vv, 1041vv, 1057vv, 1067+v, 1067+v, 1076vv, 1084vv, 1093+vv, 1096vv, 1122vv, 1124vv, 1124vv	1114r	1124vv
Nonstructure 157	1125+v		1125+v
Extramural Surface			
EARLY PUEBLO III PERIOD			
Nonstructure 1102	986+vv, 1199vv		1199vv

Table 3.5. Shrines and Associated Structures with Tree-Ring Dates, Shields Pueblo.

Shrine Study Unit	Constructed within Depression of:	Latest Date
Structure 213	Structure 208	1245v
Structure 229	Structure 225	n/a
Structure 242	Structure 241	1250r
Structure 401	Structure 405	1250++vv
Structure 407	Structure 405	1250++vv
Structure 409	Structure 408	n/a
Structure 1411	Structure 1408	1255+vv
Structure 1412	Structure 1402	1258v

Table 3.6. Study Units, Date Ranges, and Time Periods, Shields Pueblo.

Date Range Number	1	6	2	18	17	7	3	8	16
Span (years A.D.)	725–920	920–1140	1060–1140	1020–1225	1060–1225	1140–1225	1140–1280	1225–1280	1258–1280
Period Name	Pueblo 1	Pueblo II	Late Pueblo II	Middle Pueblo II–Early Pueblo III	Late Pueblo II–Early Pueblo III	Early Pueblo III	Pueblo III	Late Pueblo III	Terminal Pueblo III
Pit structure	**STR 110** STR 136 STR 151 STR 1318	STR 1307 STR 1308	STR 137 STR 138 STR 150		STR 139 STR 237				
Kiva		**STR 122**			STR 234 **STR 243** STR 1414	STR 145 STR 222 STR 1108 STR 1113 **STR 1316** **STR 1505**	**STR 123** **STR 410** STR 803 **STR 1106** **STR 1114** **STR 1205** STR 1206 STR 1416 STR 1504	**STR 208** **STR 221** **STR 223** **STR 224** STR 225 **STR 241** **STR 405** **STR 406** STR 408 **STR 1315** **STR 1408** STR 1505	**STR 1402**
Surface room		STR 102 STR 103 **STR 104** **STR 121**	STR 209 STR 149		**STR 140**				
Subterranean Room	STR 141				STR 124	STR 146 STR 205	STR 411 STR 1209	STR 1413	
Midden		NST 111		NST 226 NST 233 NST 245 NST 1107 NST 1109 NST 1202 NST 1409	**NST 101** NST 152 **NST 153** **NST 154** **NST 157** NST 210 NST 238 NST 239 NST 1103 NST	NST 142	NST 132 NST 201		

Date Range Number	1	6	2	18	17	7	3	8	16
				NST 1418	1303 NST 1310 NST 1312 NST 1320				
Other Cultural Deposit			NST 238 NST 239 NST 1320			NST 1115 NST 1207 AU 1501 AU 1801	AU 602 AU 1702		
Extramural Surface		NST 107 NST 109 NST 119 NST 155 NST 156 NST 204 NST 214 NST 215 NST 250 NST 1317	NST 125 NST 126 NST 129 NST 130 NST 131 NST 203 NST 247 NST 248 NST 251 NST 252 NST 1319			NST 134 NST 503 **NST 1102** NST 1116 NST 1117 NST 1417	NST 108 NST 235	NST 1322	
Other		STR 148	STR 249			STR 246			S**TR 213** **STR 229** **STR 242** STR 401 STR 407 **STR 409** **STR 1411** **STR 1412**

Note: STR = Structure; NST = Nonstructure; AU = Arbitrary Unit. Study units in bold are associated with tree-ring dates.

Table 3.7. Study Units, Date Ranges, and Period Names, Shields Pueblo.

Date Range Number	19	14
Span (years A.D.)	725–1225	771–1258
Period Name	Pueblo I–Early Pueblo III Period	Pueblo I–Late Pueblo III Period
Midden	NST 1321	
Other cultural deposit		AU 105 AU 202 AU 302 AU 402 AU 502 AU 701 AU 801 AU 901 AU 1001 AU 1101 AU 1201 AU 1301 AU 1302 AU 1401 AU 1601 AU 1901
Extramural surface		NST 106 NST 206 NST 207 NST 244

Note: NST = Nonstructure; AU = Arbitrary Unit

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Chapter 4

Population History

by Susan C. Ryan

Introduction

In this chapter, I attempt to diachronically reconstruct the population at Shields Pueblo through the analysis of multiple lines of archaeological evidence as outlined in Chapter 3. These include direct and indirect dating techniques such as tree-ring dating, pottery dating, archaeomagnetic results, accelerator mass spectrometry results, architectural morphology, structure context, structure abandonment mode, and stratigraphic sequences. This chapter begins with a discussion of the various methodologies used to infer the population of an archaeological site followed by a summary of the time periods assigned to cultural deposits at Shields Pueblo. This chapter concludes with a population reconstruction for each major period of occupation at the site.

Inferring population estimates from the archaeological record provides researchers not only with information on how many people occupied a site at any given time, but provides insights into how people in the past structured their economic, political, ritual, and social systems. Furthermore, inferring population allows researchers to determine how villages and communities formed, provides information on migrations and depopulations, and allows us to assess the nature and tempo of regional demographic trends over extended periods of time.

Methods Used for Estimating Population

Several methods of estimating population size have been developed and applied to the archaeological record (Cook 1972; Hassan 1981), including estimates made on the basis of: structure floor area (LeBlanc 1971; Naroll 1962); total number of households present (Churchill 2002; Kuckelman 2000, 2003; Lightfoot 1994); number of rooms (Adler 1990; Hill 1970); number of kivas (Churchill 2002; Kuckelman 2000, 2003; Rohn 1989); number of artifacts (Cook 1972:11–12; Hassan 1981:78–79); amount of food refuse (Cook 1972); area of roomblock rubble on the modern ground surface (Adler 1990; Schlanger 1987); hearth size (Ciolek-Torrello and Reid 1974); site size (Hack 1942), and number of human burials or remains present (Cook 1972). The application of one or more of the above methods is automatically determined by the amount, type, and condition of the material remains present on any given site. Thus, variability may also exist at an intrasite scale as well as at an intersite scale (as exemplified by the variability caused by the extensive mechanical disturbance at Shields Pueblo).

Household: The Unit of Analysis

To begin, a distinction must be made between two terms pertinent to this discussion—"household" and "unit pueblo." A household is a representation of a social group in which members participate in five activities (Wilk and Netting 1984): (1) production; (2) distribution;

(3) transmission; (4) reproduction; and (5) co-residence. Production and distribution serve as the economic base of the household. Transmission is the term used to describe the distribution of resources among household members and subsequent generations. Reproduction refers not only to a biological increase of members but also to the reproduction of social systems within the household (Wilk and Netting 1984). Alternatively, a unit pueblo—also referred to as a "Prudden unit" (Prudden 1903, 1914, 1918)—architecturally consists of a single domestic pit structure or kiva, a block of contiguous surface rooms made of jacal or masonry (five to 10 rooms on average) located immediately north or northwest of the pit structure, and a midden or trash area located to the south or southeast of the pit structure. In the Mesa Verde region, the unit pueblo is interpreted as the architectural representation of a single household composed of a nuclear or small extended family (Lipe 2006:263; Varien 1999:18) dating from approximately A.D. 750 and continuing until regional depopulation in the late A.D. 1200s (Bullard 1962; Lipe 1989:55, 2006:263; Varien 1999:18).

Using Wilk and Netting's (1984) concept of household, Lightfoot (1994) examined household organization at the Duckfoot Site, a small Pueblo I habitation comprising 19 surface rooms and four pit structures located in the central Mesa Verde region. Data from architecture, floor assemblages, feature assemblages, and abandonment mode assemblages were analyzed to infer the activities that took place in pit structures and surface rooms (Lightfoot 1994). Based on these data we inferred that the activities that took place in pit structures and surface rooms were distinct, as were the types of activities that took place among pit structures. Lightfoot (1994) concluded that households at the Duckfoot Site were each represented architecturally by a single pit structure (used for both domestic and ritual activities) and surface rooms had been used for both domestic activities and storage.

Additionally, Lightfoot (1994:147) examined cross-cultural ethnographic literature on the number of occupants per household and concluded that, on average, most households included between 4.2 and 7.0 individuals. Although the number of individuals is not a defining characteristic of Wilk and Netting's (1984) concept of household, it does allow archaeologists to reconstruct how many individuals make up the social group that performed household activities. In sum, I adopt Lightfoot's (1994:147) estimate that beginning at approximately A.D. 750 and continuing until regional depopulation in the late A.D. 1200s, between five and seven individuals resided in a typical household; I also assume that the unit pueblo was an architectural representation of a single household composed of a nuclear or small extended family (Bullard 1962; Lipe 1989:55, 2006:263; Varien 1999:18).

As outlined above, I will use the total number of excavated pit structures and kivas to infer the population size for each period of occupation at Shields Pueblo. There are two reasons for using the total number of pit structures and kivas to infer population size instead of the other methods presented above—such as structure floor area, number of rooms, area of roomblock rubble on the modern ground surface, and hearth size. First, the majority of the site, with the exception of three surface rooms in Architectural Block 100 (Figures 4.1 and 4.2), has been disturbed by mechanized plowing. A significant number of surface rooms constructed throughout the pueblo have been damaged during this process and many more have been demolished. Second, because Shields Pueblo was occupied for several centuries, we infer that most of the Basketmaker III, Pueblo I, and Pueblo II period architecture has been razed or covered over by prehispanic construction activities. Furthermore, it seems likely that some of the pre–Pueblo III period construction materials would have been salvaged for use in the construction of later buildings. Thus, the majority of architecture visible on the modern ground surface—with the exception of the surface rooms in Architectural Block 100—is representative of the Pueblo III period. In sum, population estimates would be inadequate if: (1) they were inferred from methods other than the number of pit structures present on the site; and (2) they were estimated from pit structures visible on the modern ground surface only.

Remote-Sensing Surveys

Remote-sensing surveys were conducted at Shields Pueblo during the 1997 and 1998 field seasons in an effort to supplement our knowledge of architecture indiscernible from the modern ground surface. Specifically, the electrical resistance survey was conducted on 156 20-x-20-meter (m) grid units for a total area of 62,400 m^2 (Figure 4.3) and the magnetometer survey was conducted on 162 20-x-20-m grid units for a total area of 64,800 m^2 (Figure 4.4). Survey results indicate the presence of 181 possible pit structures—in addition to those visible on the modern ground surface—multiple linear features representing possible footpaths, and a number of possible middens and surface rooms. Several lines of evidence led us to infer that the majority of the anomalies represented subterranean structures. First, most of the anomalies were the approximate size and shape of Mesa Verde region pithouses and kivas: they are roughly circular, between 4 and 6 m in diameter, and have a protrusion to the south which typically represents the recess or ventilator shaft. Second, the anomalies occurred in east-west rows within the high-density artifact and architectural debris scatters—a pattern consistent with the known layout of Mesa Verde region household sites (Lipe 1989, 2006). Finally, our 1997 randomly selected test excavations located three subterranean structures all associated with a remote-sensing anomaly. The electrical resistance and magnetometer results exponentially increased the number of pit structures or kivas identified from outward evidence visible on the modern ground surface.

In 1998, Crow Canyon Archaeological Center was granted permission from Colorado Mountain College and James and Veda Wilson to assess the possible pit structures with a 7-centimeter (cm)-diameter auger test to confirm the presence and type of cultural feature present. Testing indicated that 178 of the 181 anomalies identified on the electrical resistance map were indeed prehispanic cultural deposits. Thirteen of the confirmed pit structures were further tested with excavation units, providing information on construction techniques, function, and use-life of the structures.

Periods of Occupation at Shields Pueblo

As noted in Chapter 3, the chronological assignments used in this report consist of multiple, absolutely dated periods ranging from broad spans of time—consisting of a few centuries—to short periods of time spanning only a few decades (Table 4.1). The broadest of these time periods are based on the Pecos Classification system and are referred to in this report as Pueblo I (A.D. 750–900), Pueblo II (A.D. 900–1150), and Pueblo III (A.D. 1150–1280); the shorter time periods are subperiods defined within the broader Pecos periods. Because structures, features, and other cultural deposits may be utilized for more than one generation, many of the study units have been assigned date ranges that span more than one period in the Pecos Classification. The following time periods and subperiods are used most often in this report: Basketmaker III (A.D. 500–750); Pueblo I (A.D. 750–900); Early Pueblo II (A.D. 900–1050); Late Pueblo II (A.D. 1050–1150); Early Pueblo III (A.D. 1150–1225); and Late Pueblo III (A.D. 1225–1280).

For the purposes of this chapter, I will provide population estimates for the following periods and subperiods: Basketmaker III; Pueblo I; Pueblo II; Late Pueblo II; Early Pueblo III; Late Pueblo III; Pueblo III; and Terminal Pueblo III. Note that my intention in the following paragraphs is to reconstruct population estimates; this discussion does not contain overarching information on regional population trends or provide a sociocultural backdrop for the Shields Pueblo reconstruction—for this information, please refer to Chapter 3. In general, the types of pottery found at the site suggest that people were living on the site at least as early as the Basketmaker III period (A.D. 500–750). The most intensive occupation at Shields Pueblo dates from the Late Pueblo II (A.D. 1060–1140) and Pueblo III periods (A.D. 1150–1280). Architectural and artifact data indicate that the settlement reached its maximum extent sometime between A.D. 1100 and 1250. During the middle to late A.D. 1200s, people living in the Mesa Verde region emigrated southward, where descendants of ancestral Pueblo people continue to reside today.

Basketmaker III Period (A.D. 500–750)

Unfortunately, none of the excavation units at Shields Pueblo revealed a Basketmaker III period pit structure. This was likely a consequence of the overarching research design and the methods used to sample the site. For instance, architecture visible on the modern ground surface was more likely to have been tested than architecture covered over by subsequent construction activities (e.g., architecture dating from the Basketmaker and Pueblo I periods). Regardless, pottery data collected from the site suggest that people were living at Shields Pueblo as early as the Basketmaker III period (Table 4.2). As shown in Figure 4.5, Basketmaker III period pottery was found primarily in Architecture Blocks 100, 200, and 1300, and was sparsely present in Blocks 400, 1100, 1400, 1500, and 1900. Thus, it seems likely that the Basketmaker III period occupation had been located primarily in the central portion of the site with secondary locations in the western, northwestern, and northeastern portions. The overall pottery counts and weight percentages are not large from this period, but are indeed present. As indicated in Table 4.2, 512 sherds (0.23 percent), or 4,525.5 g (0.36 percent) of pottery was identified as coming from the Basketmaker III period. Although the Basketmaker III period pottery counts/weights are not significant, they do indicate limited cultural activity during this time. In sum, considering only the presence of pottery from the time period, we can infer that a relatively small population—perhaps one to several households—resided at Shields Pueblo during the Basketmaker III period.

Basketmaker III/Pueblo I Period (A.D. 500–900)

Additionally, there is a robust Basketmaker III/Pueblo I period pottery signature at Shields Pueblo, evidenced by 14,650 sherds, or over 73,054 g (see Table 4.2) of Indeterminate Local Gray Ware pottery. This accounts for 6.46 percent of the overall pottery assemblage by count and 5.82 percent by weight. Indeterminate Local Gray Ware was initially manufactured in the Basketmaker III period and continued to be utilized through the Pueblo I period. As shown in Figure 4.6, Basketmaker III/Pueblo I period pottery was found primarily in Architectural Blocks 100, 200, and 1300, and was sparsely present in Architectural Blocks 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1400, 1500, 1800, and 1900. Thus, it seems likely that the primary Basketmaker III/Pueblo I period occupations had been located in the central portion of the site with secondary locations throughout the rest of Shields Pueblo. It is difficult to know how many households were present at Shields Pueblo during the Basketmaker III/Pueblo I period; however, given that the second-largest pottery signature dates from this period, we can infer that numerous households resided at the site sometime between A.D. 500 and 900.

Pueblo I Period (A.D. 750–900)

As illustrated in Table 4.2, there are 1,739 sherds, or over 8,631 g of pottery—comprising Mancos Gray Neckbanded, Abajo Red-on-orange, Bluff Black-on-red, Early White Unpainted, Indeterminate Neckbanded Gray, Moccasin Gray, Piedra Black-on-white, and Early White Painted—dating from the Pueblo I period. This accounts for 0.77 percent by count and 0.69 percent by weight of the total pottery assemblage. As shown in Figure 4.7, Pueblo I period pottery was found primarily in Architecture Blocks 100, 200, and 1300, and was found in lesser quantities in Architectural Blocks 300, 400, 700, 800, 1100, 1200, 1400, and 1500. Thus, it seems likely that the Pueblo I period occupation had been located primarily in the central portion of the site with secondary locations in the southwestern, south-central, west-central, and east-central portions of Shields Pueblo. This inference is confirmed by the presence of four pit structures dating from the Pueblo I period (Table 4.3). Three of the four structures are located in Architectural Block 100 and the fourth is located in Architectural Block 1300 (see Figure 4.1).

By percentage, there is less pottery dating from the Pueblo I period than that dating from the Basketmaker III/Pueblo I periods combined. This is likely a result of how researchers classify pottery types, specifically Indeterminate Local Gray Ware, which was manufactured for four centuries and spans two Pecos Classification periods. At this time, it is impossible to determine if Indeterminate Local Gray Ware was manufactured in the Basketmaker III period or the Pueblo I period. Thus, it is difficult to know how many households were present at Shields Pueblo during the Pueblo I period; however, it can be stated with confidence that several households resided there sometime between A.D. 750 and 900. Utilizing the structure counts presented in Table 4.3, we can assume that there was a minimum population of 20 to 28 individuals residing at Shields Pueblo during the Pueblo I period, though this estimate should be considered extremely conservative since there are most likely numerous pit structures dating from the Pueblo I period that were not tested during this project.

Pueblo II Period (A.D. 900–1150)

As illustrated in Table 4.2, there are 9,631 sherds, or over 91,696 g of pottery—comprising Deadmans Black-on-red, Mancos Black-on-white, Mancos Corrugated Gray, Pueblo II White Painted, and Cortez Black-on-white—dating from the Pueblo II period. This accounts for 4.25 percent by count and 7.30 percent by weight of the total pottery assemblage. Pueblo II period pottery was found primarily in Architecture Blocks 100, 200, and 1300 and was found in lesser quantities in Architectural Blocks 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1400, 1500, 1600, 1800, and 1900 (Figure 4.8). Thus, it seems likely that the Pueblo II period occupation had been located primarily in the central portion of the site with secondary locations throughout Shields Pueblo. Additionally, we estimate that between six and 11 unit pueblos were constructed during the Pueblo II period—more specifically, three pit structures were constructed during the Late Pueblo II period (A.D. 1060–1140) (see Table 4.3). Assuming five to seven people occupied a single unit pueblo, the overall Pueblo II period minimum population estimate for Shields Pueblo is between 30 and 77 individuals. This estimate is highly conservative as there are most likely numerous pit structures dating from the Pueblo II period that were not tested during this project.

This estimate should not be considered an exact number since not all of the pit structures would have been in use at the same time. Studies of architecture have shown that timbers used to construct pit structures lasted only 10 to 40 years before needing to be replaced, particularly the beams that were in contact with the ground and thus vulnerable to rot and insect infestation (Ahlstrom et al. 1995; Cameron 1990; Gilman 1987; Matson et al. 1988; Nelson and Leblanc 1986; Powell 1983; Schlanger 1987; Varien and Ortman 2005; Varien et al. 2007). Because of this, researchers believe that the average life span of a unit pueblo was approximately 20 years. However, beginning in the mid–A.D. 1100s, the average occupational span of unit pueblos increased from approximately 20 years to an estimated 45 years when, for the first time in the central Mesa Verde region, architecture was constructed with sandstone masonry (Varien 1999; Varien and Ortman 2005). The estimate of 45 years is calculated from pottery accumulations that suggest the amount of time people actually resided in a unit pueblo, and not from the average amount of time that architectural elements could endure (Ryan 2010).

Pueblo III Period (A.D. 1150–1280)

The second strongest architectural signature at Shields Pueblo dates from the Pueblo III period. There are 17,812 sherds or over 197,718 g of pottery (see Table 4.2)—comprising McElmo Black-on-white, Pueblo III White Painted, Mesa Verde Black-on-white, and Mesa Verde Corrugated—dating from the Pueblo III period. This accounts for 7.85 percent by count and 15.74 percent by weight of the overall pottery assemblage. As shown in Figure 4.9, Pueblo III period pottery was found primarily in Architecture Blocks 100, 200, 1100, 1300, and 1400 and was found in lesser quantities in Architectural Blocks 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1500, 1600, 1700, 1800, and 1900. Thus, it seems likely that the Pueblo III period occupation was located primarily in the central, east-central, and northwestern portions of the site with secondary locations throughout Shields Pueblo. On the basis of excavation data, we estimate that between 28 and 33 new unit pueblos were constructed at Shields Pueblo during the Pueblo III period (see Table 4.3). Assuming five to seven people occupied a single unit pueblo, the population estimate for the Pueblo III period is between 140 and 231 individuals. Specifically, we estimate that six new unit pueblos were constructed during the Early Pueblo III period (A.D. 1140–1225), 12 new unit pueblos were constructed during the Late Pueblo III period (A.D. 1225–1280), and one new unit pueblo was constructed during the Terminal Pueblo III period (A.D. 1258–1280) (see Table 4.3). These estimates should be considered highly conservative since there are most likely numerous kivas dating from the Pueblo III period that were not tested during this project.

Summary

Population estimates for Shields Pueblo are based on absolute and relative dating techniques. As outlined above, I used the total number of identified pit structures or kivas to infer the population size for each period of occupation at Shields Pueblo. There are two reasons for using the total number of pit structures or kivas to infer population size instead of the other methods presented above. First, most of the site, with the exception of Architectural Block 100, has been disturbed by mechanized plowing. A significant number of surface rooms have been damaged during this process and many more have been demolished. Second, because Shields Pueblo was occupied for several centuries, we infer that most of the Basketmaker III, Pueblo I, and Pueblo II period architecture has been potentially razed or covered over by prehispanic construction activities. Furthermore, it seems likely that some of the pre–Pueblo III period construction materials may have been salvaged for use in the construction of later structures.

In sum, on the basis of the presence of pottery, we can infer that a relatively small population—perhaps one to several households—resided at Shields Pueblo during the Basketmaker III period. There were at least four households present at Shields Pueblo during the Pueblo I period; on the basis of the robust Basketmaker III/Pueblo I period pottery data (the second-strongest pottery signature at Shields Pueblo dates from this time period), we can confidently infer that numerous pit structures were constructed at the site sometime between A.D. 500 and 920. The second-strongest architectural occupational signature at Shields Pueblo dates from the Pueblo II period. A conservative estimate is that at least six unit pueblos were constructed during this period; thus, the population estimate for the Pueblo II period is between 30 and 77 individuals. The strongest occupational signature at Shields Pueblo dates from the Pueblo III period. Twenty-eight unit pueblos were constructed at Shields Pueblo during this period, resulting in a conservative overall population estimate of between 140 to 196 individuals.

Utilizing the 181 remote-sensing anomalies identified during the electrical resistivity and magnetometer surveys for population reconstruction, we estimate that between 905 and 1,267 individuals resided at Shields Pueblo between the Basketmaker III and Pueblo III periods. This estimate is to be considered conservative, since the remote-sensing surveys were limited in scope and did not collect data from the entire 36-acre site.

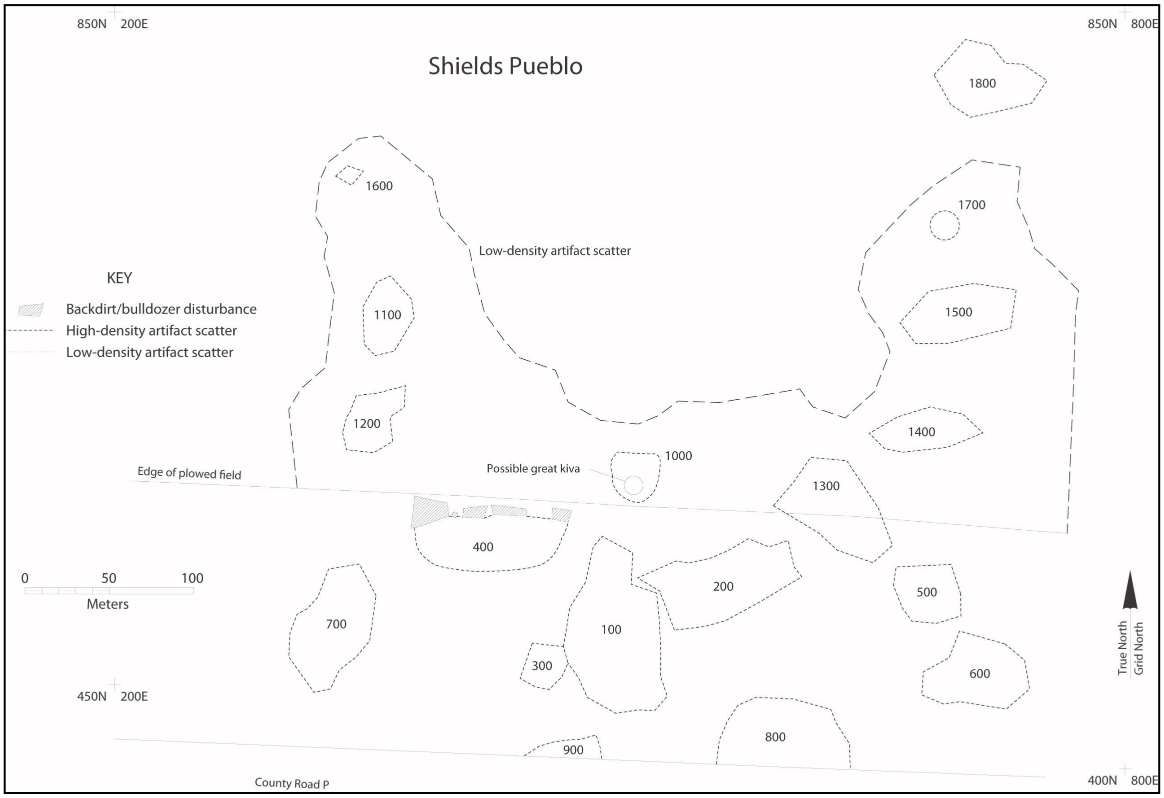

Figure 4.1. Site map with the location of architectural blocks, Shields Pueblo.

Figure 4.2. Remaining intact surface room, Structures 102, 103, and 104 (from foreground to background of photograph), Shields Pueblo.

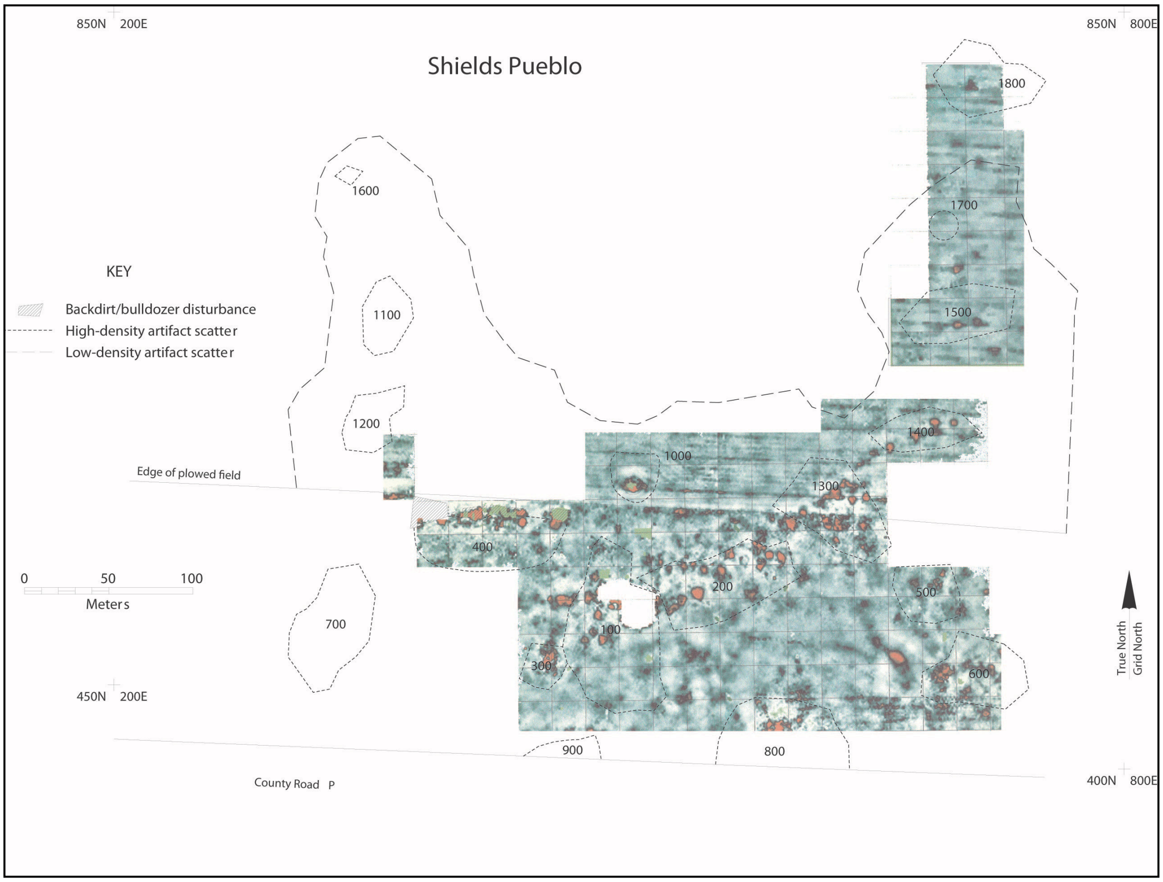

Figure 4.3. Electrical resistivity survey map indicating anomalies (in orange), Shields Pueblo.

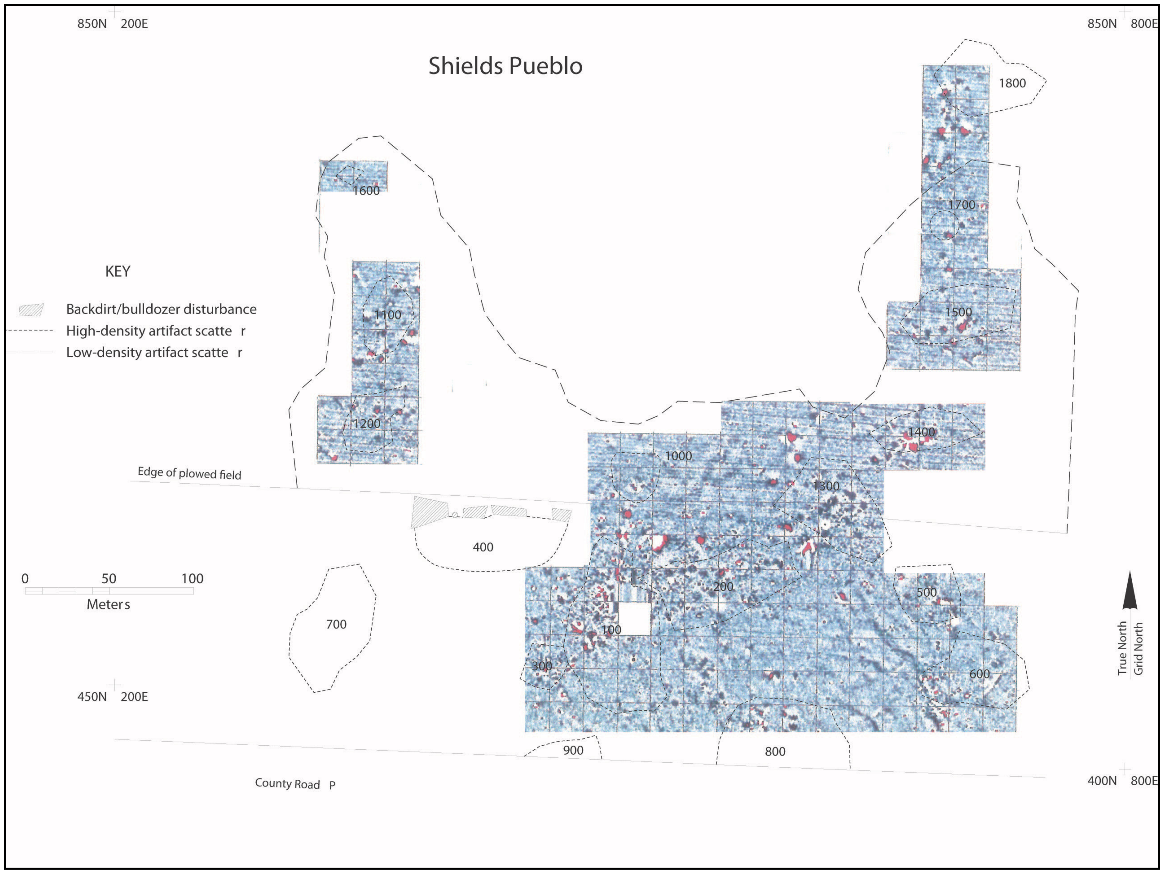

Figure 4.4. Magnetometer survey map indicating anomalies (in red), Shields Pueblo.

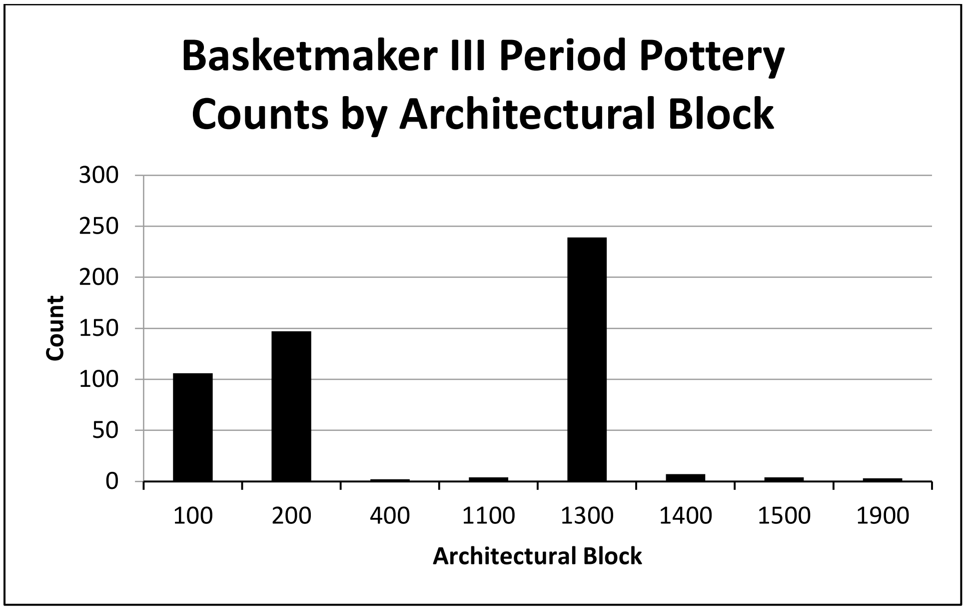

Figure 4.5. Basketmaker III period pottery counts by architectural block, Shields Pueblo.

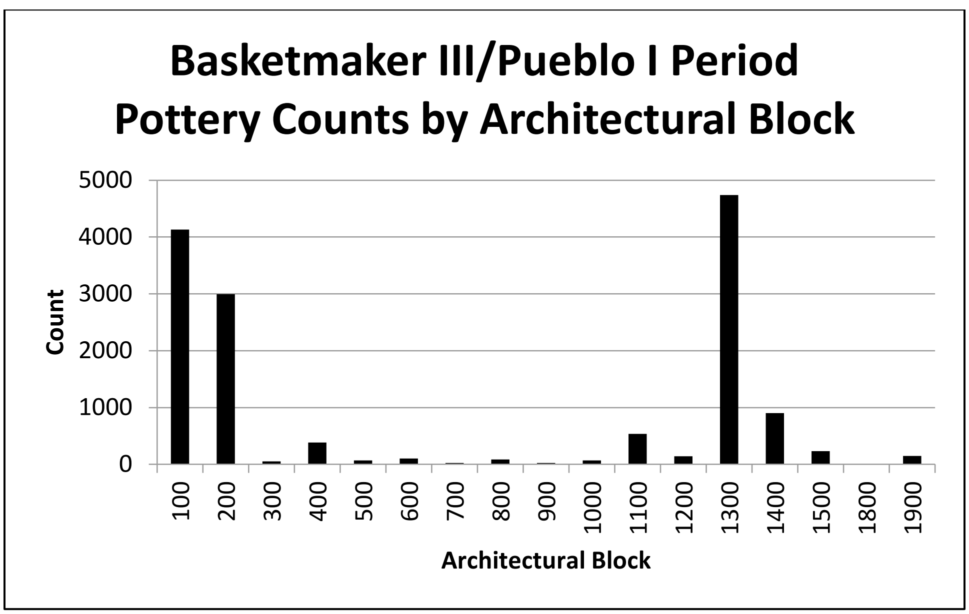

Figure 4.6. Basketmaker III/Pueblo I period pottery counts by architectural block, Shields Pueblo.

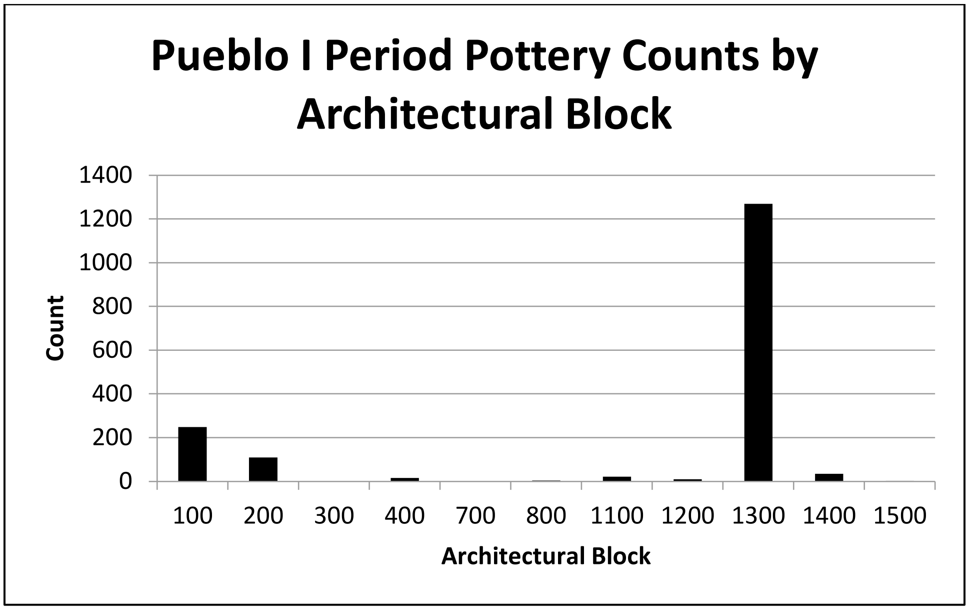

Figure 4.7. Pueblo I period pottery counts by architectural block, Shields Pueblo.

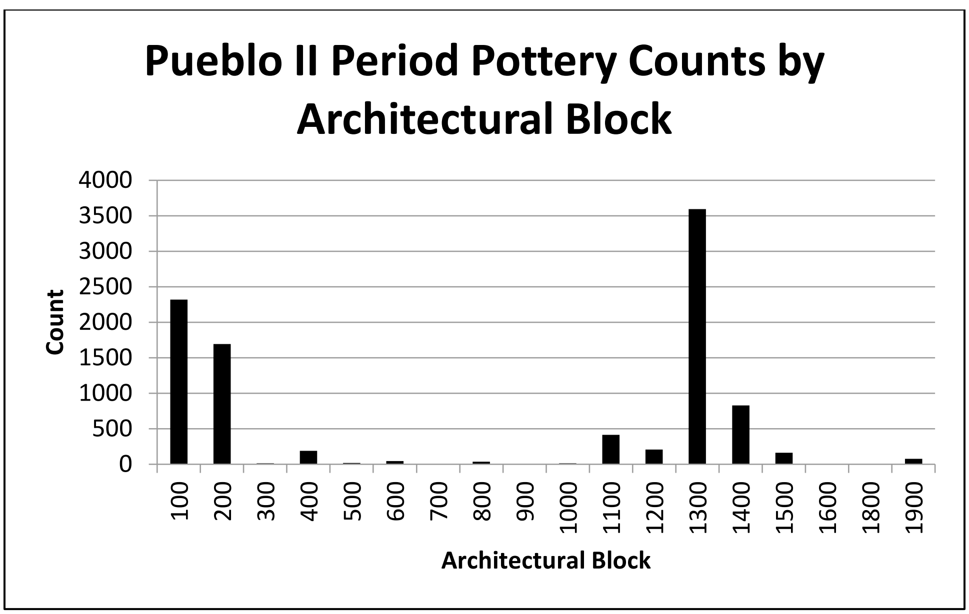

Figure 4.8. Pueblo II period pottery counts by architectural block, Shields Pueblo.

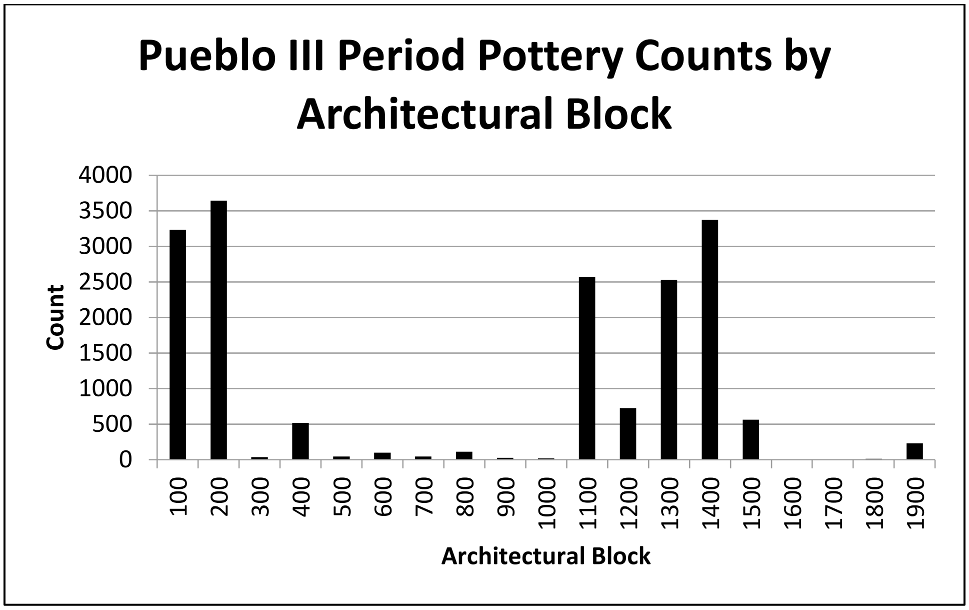

Figure 4.9. Pueblo III period pottery counts by architectural block, Shields Pueblo.

Table 4.1. Date Ranges Assigned to Cultural Deposits at Shields Pueblo.

Time Period	Description
A.D. 725–920	Pueblo I
A.D. 920–1140	Pueblo II
A.D. 1140–1280	Pueblo III
A.D. 725–800	Early Pueblo I
A.D. 1020–1060	Middle Pueblo II
A.D. 1060–1140	Late Pueblo II
A.D. 1140–1225	Early Pueblo III
A.D. 1225–1280	Late Pueblo III
A.D. 1060–1100	Subperiod within the Late Pueblo II period
A.D. 1100–1140	Subperiod within the Late Pueblo II period
A.D. 1140–1180	Subperiod within the Early Pueblo III period
A.D. 1180–1225	Subperiod within the Early Pueblo III period
A.D. 1225–1260	Subperiod within the Late Pueblo III period
A.D. 771–1258	Overall date-range of occupation at Shields Pueblo, as defined by tree-ring cutting dates
A.D. 1020–1260	Late occupation of Shields Pueblo
A.D. 1258–1280	Period between the depopulation of Shields Pueblo and the end of ancestral Pueblo occupation in the central Mesa Verde region
A.D. 1060–1225	Late Pueblo II period through Early Pueblo III period
A.D. 1020–1280	Middle Pueblo II period through Late Pueblo III period
A.D. 725–1225	Early Pueblo I period through Early Pueblo III period
A.D. 920–1280	Pueblo II through Pueblo III period

Table 4.2. Pottery Counts and Weights and Percentage of Pottery Counts and Weights by Time Period, Shields Pueblo.

Pecos Classification Period	N	% by Count	Weight (g)	% by Weight
Basketmaker III	512	0.23	4,525.5	0.36
Basketmaker III/Pueblo I	14,650	6.46	73,054.1	5.82
Pueblo I	1,739	0.77	8,631.7	0.69
Pueblo I/II	173	0.08	462.3	0.04
Pueblo II	9,631	4.25	91,696.6	7.30
Pueblo II/III	179,112	78.97	873,576.5	69.54
Pueblo III	17,812	7.85	197,718.2	15.74
Other	3,175	1.40	6,476.9	0.52
TOTAL	226,804	100%	1,256,141.8	100%

Table 4.3. Pit Structure and Kiva Construction Dates by Date Range, Span, and Period/Subperiod Name.

Date Range Number	1	6	2	18	17	7	3	8	16
Span (Years, A.D.)	725–920	920–1140	1060–1140	1020–1225	1060–1225	1140–1225	1140–1280	1225–1280	1258–1280
Period and Subperiod Name	Pueblo I	Pueblo II	Late Pueblo II	Middle Pueblo II–Early Pueblo III	Late Pueblo II–Early Pueblo III	Early Pueblo III	Pueblo III	Late Pueblo III	Terminal Pueblo III
Pit Structure	**STR 110** STR 136 STR 151 STR 1318	STR 1307 STR 1308	STR 137 STR 138 STR 150		STR 139 STR 237				
Kiva		**STR 122**			STR 234 **STR 243** STR 1414	STR 145 STR 222 STR 1108 STR 113 STR 1316 STR 1505	STR 123 STR 410 STR 803 STR 1106 STR 1114 STR 1205 STR 1206 STR 1416 STR 1504	STR 208 STR 221 STR 223 STR 224 STR 225 STR 241 STR 405 STR 406 STR 408 STR 1315 STR 1408 STR 1505	**STR 1402**

Note: Structure numbers in **bold** are associated with tree-ring cutting dates; see Chapter 3 for tree-ring data.

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Chapter 5

Human Skeletal Remains

by Cynthia Bradley and Andrew I. Duff

Introduction

The Crow Canyon Archaeological Center's (Crow Canyon's) policy on the treatment of human remains and associated artifacts, developed in consultation with the Board of Trustees and Crow Canyon's Native American Advisory Group, specifies that the scientific investigation of archaeological sites will not specifically target human skeletal remains as objects of study. Consistent with this general policy of avoidance, the research design for Shields Pueblo did not call for the excavation of human remains. Nonetheless, eight human remains occurrences and 77 isolated human skeletal elements were found during our four years of fieldwork (Tables 5.1 and 5.2). All the remains are affiliated with the ancestral Pueblo occupation of the site, and all were treated in accordance with the procedures and practices detailed in Crow Canyon's policy statement (Crow Canyon Archaeological Center 2001).

Shields Pueblo and the neighboring Goodman Point Pueblo appear to have been continuously occupied from the early A.D. 1000s until regional depopulation at about A.D. 1300 (Adler 1992:18–21, Table 2.1), with a smaller occupation documented at Shields Pueblo in the late A.D. 700s. At Shields Pueblo, we estimate that population ranged from 30 to 77 individuals during the Pueblo II period to 140 to 231 individuals during the Pueblo III period, on the basis of the number of pit structures dating from these periods (see Chapter 4). Viewed from this perspective, the human remains found during fieldwork represent a small fraction of the total population that lived at Shields Pueblo over time, suggesting that the sample is unlikely to be representative of this larger population. Thus, this sample can provide only limited information about the demographic characteristics and mortuary practices of those who lived at the site in the past. In archaeological reports, the chapters reporting on human skeletal remains often contain analyses based on much larger sample sizes, and can provide critical information that is central to behavioral reconstructions. The nature of the sample of human skeletal remains from Shields Pueblo precludes such detailed analysis. Instead, this presentation is limited to discussion of the methods employed in the analysis, description of the human skeletal remains, and a brief consideration of the inferences warranted given the limitations of the sample.

Methods

Human remains discovered during Crow Canyon's excavations are given one of two possible designations: *human remains occurrence* or *isolated human skeletal element*. A human remains occurrence (HRO) is defined as a burial, grave, substantial articulated remains, or an in situ concentration of human bone (Crow Canyon Archaeological Center 2001). HROs are numbered sequentially as they are discovered. When discovered, to minimize further disturbance, excavation ceases. If present, associated funerary goods are left in situ. After the appropriate parties have been notified, in-field analyses are conducted by physical anthropologists, archaeologists, and/or laboratory personnel. After the documentation has been completed, HROs are covered with sediment.

An isolated human skeletal element (IHSE) is defined as fewer than five bones that are disarticulated (Crow Canyon Archaeological Center 2001). IHSEs recognized in situ are point-located, collected individually, and analyzed in the laboratory. Some isolated bones, especially fragments, are not recognized as human until after they have been submitted to the laboratory. When this occurs, the bone is bagged individually, catalogued, and analyzed. Occasionally, isolated skeletal elements are designated as HROs in the laboratory when they are determined to have derived from a single individual and to have come from a spatially restricted area.

During both the in-field and laboratory analyses, information was systematically recorded for each isolated skeletal element and HRO, using criteria established in *Standards for Data Collection from Human Skeletal Remains* (Buikstra and Ubelaker 1994). Skeletal measurements and inventories, as well as assessments of age, sex, dentition, pathologies, trauma, and nonmetric traits, were recorded on Standardized Osteological Database (SOD) forms developed by Buikstra and Ubelaker (1994) supplemented with forms developed by Crow Canyon. The original observation forms are curated at the Anasazi Heritage Center, located in Dolores, Colorado.

Results

The eight HROs documented at Shields Pueblo constitute the sample for which we have the most detailed information (see Table 5.1), and each is briefly described below. The IHSE sample provides information from more of the overall site area and was used in conjunction with the HRO sample to generate an estimate of the minimum number of individuals represented. However, we must remember that both of these samples are biased and likely to be unrepresentative of the overall population that once lived at Shields Pueblo.

Human Remains Occurrences

HRO 1

HRO 1 (Nonstructure 125, Feature 2) is the formal burial of a young child interred within a slab-lined pit. The pit had been excavated into wind- and water-deposited fill that had accumulated within Structure 110, a pit structure constructed in the late A.D. 700s. After that structure was abandoned, it collapsed and partly filled with naturally deposited sediments; the remaining depression was later filled with midden (Nonstructure 101). The burial pit (Nonstructure 125, Feature 1) had been excavated as these midden deposits were accumulating, and it extended into the underlying natural strata. The pit itself was defined during excavation by the presence of upright and collapsed sandstone slabs. The burial pit and surrounding deposits were heavily disturbed by rodent burrowing. The child’s remains were incomplete and very eroded. An additional isolated human bone recovered in the vicinity was assigned to this HRO in the laboratory. A single worked red ware sherd (not collected), possibly a pendant, was present in the pit and is assumed to have been associated with the child. The types of pottery present in the overlying midden deposit suggest that this individual was interred during the Late Pueblo II period (A.D. 1100–1140).

HRO 2

HRO 2 (Nonstructure 131, Feature 2) is the disarticulated remains of a young adult, probably male, located in a pit (Nonstructure 131, Feature 1) excavated through a midden deposit (Nonstructure 142) into undisturbed native sediment. The pit had been sealed with two large sandstone slabs, and the burial was only partly exposed during excavation. Long bones were all oriented east-west, the longest axis of the pit, and were not in anatomical relation to one another. The positioning of these elements suggests that HRO 2 is a secondary burial in which the bones of a skeletonized individual were gathered and reburied in antiquity. Bone exposed during our excavation showed indications of past postmortem exposure, but there were no indications of trauma or disease. No artifacts were associated with HRO 2 in the area exposed. The types of pottery found in the overlying midden suggest that the reburial occurred sometime during the Early Pueblo III period (A.D. 1140–1225); it is not known how much time elapsed between the death of the individual and the secondary interment.

HRO 3

HRO 3 (Nonstructure 134, Feature 2) is the formal burial of an adult, probably female, estimated to have been between 35 and 50 years old at death. HRO 3 was buried in a pit (Nonstructure 134, Feature 1) excavated into the naturally deposited upper fill of a pit structure (Structure 136)—a context similar to that of HRO 1. The pit structure appears to have been earthen-walled, to have filled in naturally after it collapsed, and to later have been filled or capped with midden deposits. The individual was interred during the period in which the midden was deposited. The presence of several vessel fragments indicates the inclusion of burial goods, including a McElmo Black-on-white bowl, a likely McElmo Black-on-white bowl, and portions of a Mesa Verde corrugated jar (none were collected). These pottery types suggest that the individual was interred sometime in the A.D. 1100s or early 1200s.

HRO 4

HRO 4 (Nonstructure 235, Feature 2) was assigned to the incomplete remains found within the plow-zone stratum associated with a midden (Nonstructure 233) that constitutes the uppermost fill of a pit structure (Structure 234). HRO 4 was designated in the laboratory on the basis of several isolated skeletal elements believed to have derived from a single infant. This individual is thought to have been buried sometime during the Early Pueblo III period (A.D. 1140–1225) within an accumulating midden deposit (relatively near the modern ground surface). The upper portions of the midden and of the inferred burial occur within what is now the severely disturbed plow zone, which may be why an actual burial pit was not detected during excavation.

HRO 5

HRO 5 (Nonstructure 1417, Feature 2) is the formal burial of an older adult, probably male, placed in a burial pit (Nonstructure 1417, Feature 1) excavated into midden deposits located within a pit structure (Structure 1416). Excavation exposed only a small portion of the pelvis and a McElmo or Mesa Verde Black-on-white mug (not collected). The burial pit was capped with a sandstone slab, and the mug was included with the burial. Probable additional funerary goods (not collected) consisted of a fragmented corrugated gray jar and a fragmented black-on-white bowl located near the overlying sandstone slab. The mug and the types of pottery found in the overlying midden suggest that this individual was interred during the Early Pueblo III period (A.D. 1140–1225).

HRO 6

HRO 6 (Nonstructure 1117, Feature 2) appears to be the formal burial of an adult located within a pit (Nonstructure 1117, Feature 1) disturbed by historic-era farming. A broken sandstone slab and human bone fragments were found at the base of midden deposits (Nonstructure 1109). The slab appears to have sealed a burial pit that was later truncated by plowing. Plowing damage and minimal exposure during excavation severely limited assessment of HRO 6. On the basis of the pottery types associated with the midden deposit, it appears that this individual was interred during the Early Pueblo III period (A.D. 1140–1225).

HRO 7

HRO 7 (Structure 1209, Feature 1) appears to be a formal burial placed within a pit structure or underground room (Structure 1209). From the small portion of an adult cranium exposed during excavation, it appeared that the individual had been placed face down on the floor. Thus, the structure itself seems to have served as the burial pit. This individual appears to have been interred during the Early Pueblo III period (A.D. 1140–1225).

HRO 8

HRO 8 (Arbitrary Unit 1302, Feature 1) is a disturbed burial identified in the laboratory on the basis of isolated human skeletal elements recovered from the plow zone (Arbitrary Unit 1302) in a single excavation unit. The individual was an adult, probably male. Isolated elements recovered from adjacent units (IHSEs 49 and 50, see Table 5.2) may also derive from this individual, but they cannot be definitively associated. No burial pit or associated burial goods were detected. Nearby cultural fill (Nonstructure 1303) dates from the Late Pueblo II through Early Pueblo III periods (A.D. 1060–1225). Thus, it is possible that this individual was interred during this time span.

Isolated Human Skeletal Elements

Isolated skeletal elements were exposed in a number of different contexts at Shields Pueblo and their preservation varied from poor to very good. Those from the uppermost stratum of the site—that is, the zone that has been disturbed by historic-era plowing, designated “Arbitrary Unit”—were usually damaged. Natural weathering and damage from roots and rodent activity also affected some of these isolated human skeletal elements. In most cases, the element and an associated age class could be determined for each, but data on sex or other attributes were extremely limited. Table 5.2 provides a description and detailed observational data (when possible to obtain) for each of the 77 IHSEs found during excavation at Shields Pueblo.

Discussion and Summary

Although the human remains data from Shields Pueblo are limited, they do provide some insight into the structure of the population that occupied the site. As with most of the artifacts and structures found at Shields Pueblo, the majority of the documented human remains were from contexts dating from the Late Pueblo II and Pueblo III periods (A.D. 1060–1280). Inferences about population structure can be used to generalize about the last two centuries of occupation only, since the nature and size of the sample do not warrant examination of the earlier periods of occupation or the division of the later occupation into finer temporal periods.

Combined, the IHSEs and HROs at Shields Pueblo represent a minimum of 54 different individuals (Table 5.3). HROs are assumed to represent single individuals, as are isolated elements from the same or immediately adjacent excavation units that were associated with the same age class. Given the number of individuals who probably lived at Shields Pueblo during the eleventh and twelfth centuries, the 54 individuals constitute a relatively small sample, but one that can, nonetheless, provide some insights.

Sex could be determined or suggested for only four individuals; the remains of the others lacked distinctive attributes that would permit such a determination (see Table 5.3). Thus, there are too little data to evaluate sex ratios at Shields Pueblo. Age estimates were possible for a total of 47 individuals (see Table 5.3), but it should be noted that these estimates include several made on the basis of one or more teeth recovered in isolation; the occurrence of teeth (or a tooth) does not necessarily imply the death of that individual. Sixteen individuals could be assigned to one of six specific age categories; another 31 could be classified only as juvenile or adult (most of the latter assessments were based on observation of isolated human skeletal elements). When the 16 individuals identified to one of the specific age categories were grouped into the broader juvenile and adult categories, 19 of the total 47 (40 percent) were juveniles and 28 (60 percent) were adults. When only these 16 individuals are considered, the situation is reversed, with 13 juveniles (81 percent) and three adults (19 percent). The larger sample is slightly skewed in the direction of greater representation of adults than is typical for prehispanic Southwestern mortuary populations (e.g., Grasshopper Pueblo [Hinkes 1983]) in which infants, children, and adolescents typically constitute about 60 percent of the population. This patterning may be a function of bone preservation—that is, bone from more mature individuals tends to preserve better than bone from young individuals—but it is more likely to result from the unrepresentative nature of the Shields Pueblo sample. Inferences about health or injury can often be derived from skeletal observations but, again, the Shields Pueblo remains are too few and too fragmentary to permit systematic analysis.

The eight HROs and 77 IHSEs analyzed from Shields Pueblo provide too limited a data set to answer the types of questions typically addressed using human remains. Even though behavioral and population structure interpretations are limited, the Shields Pueblo excavations do indicate that undisturbed human burials remain intact at the site, despite the heavy impact of agricultural plowing and the targeted pothunting of burials for the objects frequently associated with them.

Table 5.1. Human Remains Occurrences, Shields Pueblo.

HRO No.	Age[a]		Sex	Study Unit	PD	FS No.
	Category	Range (years)				
1	Child	3 to 12	Indeterminate	Nonstructure 125	1006	1
					1006	2
					1006	3
					1006	4
					1006	5
					1006	6
					1006	7
					1006	8
				Nonstructure 101	629*	14
					630*	1
				Structure 110	631*	2
					633*	1
					633*	2
					633*	3
2	Young adult	20 to 35	Probable Male	Nonstructure 131	1010	1
3	Middle adult	35 to 50	Probable Female	Nonstructure 134	1035	1
4	Infant	0 to 3	Indeterminate	Nonstructure 235	1068	13
5	Old adult	Over 50	Probable Male	Nonstructure 1417	1769	1
6	Adult	Over 20	Indeterminate	Nonstructure 1117	1885	1
					1885	2
					2006	1
					2006	2
					2006	3
7	Adult	Over 20	Indeterminate	Structure 1209	2004	1
					2004	4
8	Adult	Over 20	Probable Male	Arbitrary Unit 1302	606*	14
					606*	15
					606*	16
					606*	17
					608*	8
					608*	9
					608*	10
					608*	11
					608*	12

HRO = Human Remain Occurrence; PD = Provenience Designation; FS = Field Specimen.
[a] Based on Buikstra and Ubelaker (1994).
* Recovered as isolated human skeletal element; analyzed and designated as HRO in laboratory.
Note: The results of osteological analysis of the individual bones are on file at Crow Canyon Archaeological Center. Researchers may request access to these materials by contacting the Laboratory Analysis Manager.

Table 5.2. Isolated Human Skeletal Elements, Shields Pueblo.

IHSE Number	Study Unit Number	PD	Comments	Side	Percent of Element	Age Estimate	Sex*
1	NST 101	630	Upper third molar; age based on dental attrition (White 1991:312).	R	100.00	30+ yrs.	0
2	ARB 105	684	Unerupted upper first premolar; age estimate less than 10 years (based on Buikstra and Ubelaker 1994:51); dental enamel hypoplasia at 1.9 millimeters (mm), 3.0 mm, 4.5 mm; one pit at 6.5 mm.	R	98.00		
3	STR 110	631	Indeterminate hand phalanx.		100.00		0
4	STR 110	890	Intermediate hand phalanx.		100.00		0
5	STR 137	1148	Third left maxillary molar. Cusps worn flat, early exposure of dentin – mature adult. Moderate buccal calculus. No caries. Possible cervical caries, distal surface.	L	90.00		0
6	STR 137	1169	Age estimate based on wear and maximum common age of natural tooth loss (based on Buikstra and Ubelaker 1994).		75.00		
7	STR 137	1169			95.00		
8	ARB 202	549	Ramus size is consistent with either an older adolescent or an adult. Gracile.	R	50.00		
9	ARB 202	672	First distal or proximal manual phalanx.		100.00		0
10	ARB 202	672	Very small fragment, femur or tibia.				0
11	ARB 202	672	Possibly fauna.				
12	ARB 202	878	Central incisor (right); extensive wear into dentin. Attrition suggests an age of 30–35 years, based on comparison to White (1991:Figure 16.3). Score = 6.	R	100.00	30–35 yrs.	0

IHSE Number	Study Unit Number	PD	Comments	Side	Percent of Element	Age Estimate	Sex*
13	ARB 202	878	Small calcaneus fragment; consists of facets of sustentaculum tali and small section of talar facet.	R	50.00		0
14	ARB 202	878	Small fragment, vertebral centrum, ring fused to centrum.		60.00		0
15	ARB 202	878	Long-bone fragment; very spongy; possibly condylar fragment. Postmortem breakage, apparently "pot hunting" damage.		5.00		0
16	ARB 202	878	Small mandible fragment. Alveolar region missing, possibly due to recent postmortem breakage. Fragment consists of small section of "chin" area and midsection of arch. Too fragmentary to assess sex.	R	33.00	6–8 yrs.	0
17	ARB 202	1822	Crown only, unerupted upper central incisor; double shoveling.		100.00	4–5 yrs.	
18	ARB 202	1824	Permanent first molar crown, unerupted; some breakage, affecting age estimate. Probably at least 3 years, possibly 4 years.		95.00	4 yrs.	
19	ARB 202	1824	Infant or young child; typical postmortem breakage.		80.00	1–9 yrs.	0
20	ARB 202	549	Anterior half, thin, sharp, medial aspect of pubis. No symphysis present.		95.00		2
21	STR 208	874	Small, thin parietal fragment; possibly the same infant as in PD 877.		95.00		0
22	STR 208	877	Occipital fragment.		100.00		0
23	STR 208	877	Six small fragments; development and appearance consistent with other cranial bones from PD 877.		90.00		
24	STR 208	877	Small, thin parietal fragment.		100.00		0
25	STR 208	877	Three small, thin parietal fragments.		95.00		

IHSE Number	Study Unit Number	PD	Comments	Side	Percent of Element	Age Estimate	Sex*
26	BHT 217	932	Cranial vault fragments. Small section of occipital, five parietal fragments (unsided), three temporal fragments (unsided), small section of right orbit and three miscellaneous fragments. Size and appearance indicate one individual.		70.00		0
27	STR 221	1115	Small vault fragment; thin.		90.00		0
28	NST 233	1949			10.00		
29	ARB 1101	1739	Small vault fragment; possibly from an infant (birth to about 3 years).		90.00		
30	ARB 1101	902	Adolescent/adult based on thickness, bone density.		75.00		0
31	NST 1107	1884	Small worn fragment.				
32	NST 1107	1947	Erupted, deciduous, 18-month and 2-year upper molars, unerupted upper premolar, crown formed, no root.	L	95.00	6 yrs. +/- 24 mos.	
33	NST 1107	1947	Erupted, deciduous, 18-month and 2-year upper molars, unerupted upper premolar, crown formed, no root.	L	95.00	6 yrs. +/- 24 mos.	
34	NST 1107	1947	Erupted, deciduous, 18-month and 2-year upper molars, unerupted upper premolar, crown formed, no root.	L	95.00	6 yrs. +/- 24 mos.	
35	NST 1107	1947	Probably from a child, based on size; typical postmortem breakage.		80.00		
36	NST 1107	2009	Deciduous canine with completely developed root, worn cusp. 6 years +/- 24 months.	L		6 yrs. +/- 24 mos.	0
37	NST 1107	2009	Permanent upper premolar crown, no root development. 6 years +/- 24 months.	L		6 yrs. +/- 24 mos.	0
38	NST 1107	2009	Permanent upper premolar crown, no root development. 6 years +/- 24 months.	L		6 yrs. +/- 24 mos.	0

IHSE Number	Study Unit Number	PD	Comments	Side	Percent of Element	Age Estimate	Sex*
39	NST 1109	1838	Age estimate based on wear into dentin; double shoveling; some hypoplasia (not measured).		100.00	> 24 yrs.	
40	NST 1202	1844	Indeterminate postcranial; most likely ulna fragment; very small fragment; postmortem breakage.		5.00		0
41	BHT 1204	906	Child; age 5–9 based on size.	R	95.00		0
42	STR 1206	1778	First cuneiform.	L	100.00		0
43	STR 1206	1778	Proximal foot phalanx; probably ray 2 or 3.		100.00		0
44	NST 1207	1846	Small molar fragment, very worn cusp; permanent.		5.00		0
45	ARB 1302	607	Age based on size and open distal epiphysis.		40.00		
46	ARB 1302	1202	Typical postmortem breakage, acromion.	R	10.00		0
47	ARB 1302	1203	Deciduous molar crown fragment. Side/position indeterminate. Worn into dentin. Possible interproximal caries. Probably natural antemortem loss.		20.00		0
48	ARB 1302	1208			10.00		
49	ARB 1302	1312	Fragmentary femur head; typical postmortem breakage.		50.00		
50	ARB 1302	1314	Section of frontal with left orbital rim. Blunt supraorbital margin. No cribra orbitalia.	L	80.00		4
51	ARB 1302	1316	One unidentifiable vault fragment, adult; typical postmortem breakage.		90.00		
52	ARB 1302	1316	Two-year molar, some wear.		95.00	3–10 yrs.	0
53	ARB 1302	1316	Indeterminate tooth, no crown.				
54	NST 1312	1881	Crown very worn; age based on dental wear, Lovejoy (1985).		95.00	> 30 yrs.	
55	STR 1302	1876	Broken crown, no root.		10.00		

IHSE Number	Study Unit Number	PD	Comments	Side	Percent of Element	Age Estimate	Sex*
56	STR 1302	1897	Burned; low-intensity heat, dark gray, no peeling.		20.00		0
57	NST 1309	1879	Small manubrium fragment; typical postmortem breakage.		10.00		0
58	NST 1309	1873	Fragmentary femur head with small amount of neck; no tubercles. Postmortem fracture.		10.00		0
59	STR 1309	1895	Small fragment, auricular area; typical postmortem fracture		15.00		0
60	STR 1316	2098	Greater than 6 years old. Crown broken, probably an incisor.		75.00		
61	ARB 1401	1019		L	80.00		0
62	ARB 1401	1022	Premolar crown. Adolescent-young adult based on wear. Dental enamel hypoplasia present (1 line) but not measureable due to breakage. No caries or calculus.				0
63	NST 1409	923			98.00		0
64	NST 1409	924	Five distal condyle fragments.		20.00		0
65	NST 1409	1061	Very small fragment of a distal condyle. Could be to an adolescent's unfused epiphysis or an adult.		25.00		0
66	STR 1413	1134		L	80.00		0
67	STR 1413	1134	Second or third phalanx. Possibly to PD 1134, FS 3 multangular; PD 1134, FS 4, PL 24 calcaneus; PD 1134, FS 5, PL 25 fifth metatarsal; PD 1134, FS 6, PL 26 phalanx.		100.00		0
68	STR 1413	1134	Lesser multangular.	L	100.00		0
69	STR 1413	1134	Gracile.	L	40.00		0
70	STR 1413	1134	Ray 2-4.		95.00		0
71	STR 1413	1159			100.00		0
72	STR 1413	1159	Tiny, thin fragment. Possibly fetal infant.		50.00		

IHSE Number	Study Unit Number	PD	Comments	Side	Percent of Element	Age Estimate	Sex*
73	STR 1416	1765	Head, neck, tubercle, and less than half shaft; typical postmortem breakage.	R	95.00		0
74	STR 1416	2017			100.00		
75	STR 1505	1225	Lower left premolar. Cusps worn but not into dentin. Most likely a young adult, possibly older adolescent.	L	100.00		0
76	STR 1505	1325	Twelve small midshaft fragments. The number of ribs represented is unknown; two fragments are slightly charred. There is both recent and pre-excavation postmortem breakage. Age based on size, robusticity.		50.00		0
77	BHT 1702	1718	Very weathered.				

ARB = Arbitrary Unit; BHT = Backhoe trench; FS = Field Specimen; IHSE = Isolated Human Skeletal Element; NST = Nonstructure; PD = Provenience Designation; STR = Structure.
* 0 = undetermined sex; 1 = female; 2 = probable female; 3 = ambiguous sex; 4 = probable male; 5 = male.

Table 5.3. Demographic Profile and Minimum Number of Individuals Represented by Human Remains, Shields Pueblo.

Age Category[a]	Range in Years[a]	Male/ Probable Male	Female/ Probable Female	Indeterminate Sex	MNI
Infant	Birth to 3			HRO 4; IHSEs 21–25; 27; 29; 32–34	5
Child	3 to 12			HRO 1; IHSEs 6; 16; 17; 18; 36–38; 41; 52	8
Adolescent	12 to 20				0
Young adult	20 to 35	HRO 2			1
Middle adult	35 to 50		HRO 3		1
Old adult	Over 50	HRO 5			1
Juvenile	Birth to 20			IHSEs 2; 19 and 28; 35; 45; 47; 55	6
Adult	Over 20	HRO 8		HRO 6; HRO 7; IHSEs 1, 3, and 4; 5 and 7; 9 and 10; 12–15; 20; 26; 39; 40; 42 and 43; 44; 46; 49 and 50[b]; 51; 54; 56; 57–59; 61; 62; 63–65; 66–71; 73 and 74; 75 and 76; 77	25
Indeterminate	N/A			IHSEs 8; 30; 31; 48; 53; 60; 72	7

HRO = Human Remains Occurrences; IHSEs = Isolated Human Remains Elements; MNI = Minimum Number of Individuals.
[a] Age categories from Buikstra and Ubelaker (1994).
[b] Isolated elements 49 and 50 are potentially related to HRO 8 and were counted together with HRO 8 as a single individual for the estimate of the MNI.

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Chapter 6

Plant Use at Shields Pueblo

by Karen R. Adams

Introduction

Archaeobotanical data contributed to a number of research objectives at Shields Pueblo. A major interest was to reconstruct plant use through time, focusing on plants sought for food, fuel, construction, and other material culture needs. Shields Pueblo is a unique ancient community, having a series of well-documented subperiod occupations that include: (a) Early Pueblo I (A.D. 725–800); (b) Middle Pueblo II (A.D. 1020–1060); (c) Late Pueblo II (A.D. 1060–1140); (d) Early Pueblo III (A.D. 1140–1225); and (e) Late Pueblo III (A.D. 1225–1280). The presence of samples from multiple subperiods permits valuation of changes in plant use over five centuries, with particular attention paid to the Late Pueblo III subperiod, just prior to depopulation of Shields Pueblo and the region. Another important goal was to examine the extent to which domestic activities took place within pit structures (kivas) at Shields Pueblo. Finally, the archaeobotanical record proved useful for reconstructing the surrounding environment through time, and for assessing the local woodland surrounding the pueblo as depopulation of the region approached.

Types of Samples

The archaeobotanical specimens discussed in this report were recovered from flotation samples and macrofossil samples. Flotation samples are standard-sized sediment samples from which plant remains are extracted in the laboratory using a water-separation technique. Of the 495 flotation samples collected at Shields Pueblo, 165 samples (33 percent) have been processed and analyzed for this report. Macrofossil samples are larger pieces of plant remains collected during excavation. These include charred wood fragments, pieces of maize (*Zea mays*), and other types of plant tissue. Of the 1,773 total macrofossil samples collected at Shields Pueblo, 930 (52 percent) were analyzed for this report. *Archaeobotanical Analysis: Principles and Methods* (Adams 2004) presents a detailed discussion of these two sample types and field collection strategies.

Resources

Two documents pertaining to Shields Pueblo and other Crow Canyon Archaeological Center (Crow Canyon) sites support the interpretations provided here. The first, an ethnographic compendium (Rainey and Adams 2004), reports historical uses of plants by American Indians. This compendium represents a thorough examination of southwestern U.S. ethnographic literature, conducted to accumulate information on the range of uses for all plants and their parts recovered from sites excavated by Crow Canyon. The second presents identification criteria

(Adams and Murray 2004) for the plant parts recovered. This document includes metric and non-metric observations on all the archaeobotanical wood and non-wood plant parts that have preserved. Scientific terminology used in these documents and in this report conforms to *A Utah Flora* (Welsh et al. 1987) whenever possible.

Methods

Sample Collection

Archaeologists systematically collected flotation samples from thermal features and from midden deposits. The intent was to determine what foods had been prepared and what wood types had provided fuels for cooking, heat, and light. Thermal features, such as hearths, firepits, and ashpits, have the potential to represent short periods of time where focused activities involving plants can be documented. Midden samples document locations where trash accumulated over time, providing a more long-term perspective on plant use by a household or larger group.

Thermal feature and midden contexts have been the focus of prior Crow Canyon research, providing a comparable archaeobotanical record from a range of comparable archaeological sites. These are also locations where the archaeobotanical record is typically well preserved. Field decisions to acquire flotation samples emphasized features that appeared to have concentrations of plant remains, especially hearths. One bias of this sampling strategy is toward foods prepared using fire, neglecting plants used without fire, which are less likely to preserve, and plant use that might be evidenced in other feature types. The recovery of plant parts from middens partially reduces this bias, as do macrofossil samples collected from a wide array of contexts.

Macrofossils were collected when archaeologists noticed plant materials in any context. These items provide a subjective sample of the larger plant materials at Shields Pueblo, and are considered most useful in: (a) recovering plant parts not present in flotation samples; (b) comparing macrofossils to flotation samples; and (c) providing information on contexts not sampled by flotation, such as roof-fall layers where construction beams and roof-closing layers may still be preserved.

Sample Selection

The tables in this report were developed with contextual data current as of July 2003. All plant remains analyzed from Shields Pueblo derive from one of four contextual categories (Table 6.1). These include: (a) thermal features and ashpits; (b) midden deposits; (c) roof fall; and (d) other. Thermal features are hearths and firepits with ash and botanical remains deposited during the last use(s) of the features. Ashpits contain ash and botanical remains that were moved from an adjacent or nearby hearth. Midden deposits contain refuse that accumulated sometime during the occupation of Shields Pueblo and are likely to represent a variety of activities, some of which involved plants. Roof-fall samples include structural collapse, but exclude samples labeled solely as wall fall. These samples primarily reflect wood used as roof construction elements and the smaller plant materials used as roof-closing layers. Items stored on the rooftops or suspended from roof beams may also be included in this category. Archaeobotanical samples in the "other" category include all the remaining Shields Pueblo contexts from which plant remains have been examined, such as mixed deposits from various contexts, and bench surfaces.

Flotation Samples

Multiple criteria were used to select the large subset of 165 flotation samples for analysis (see Table 6.1). The first goal was to choose samples that spanned the chronological range of Shields Pueblo occupation (A.D. 725–1280), selecting comparable sample numbers from thermal features and middens of each subperiod. The second goal was to provide spatial representation within the site. Finally, samples needed to have both high contextual integrity and visible charred plant remains.

Despite the large overall flotation sample, it is uneven in some respects. For example, there are fewer flotation samples from earlier thermal features and ashpits (N=8–9) than later ones (N=25–35), due to scarcity of earlier contexts. Also, flotation samples are lacking from midden deposits excavated from both the earliest and latest subperiods because Early Pueblo I contexts were scarce and Late Pueblo III middens had been destroyed by historical plowing. This imbalance affects the strength of any interpretations related to long-term patterns of plant use and environmental change.

The majority of thermal features sampled were located inside pit structures (kivas), as surface structures had been destroyed by historical land-use activities (see Chapter 2 for details). Hearths provide the bulk of samples (N=100) from thermal features, along with two ashpits (N=4), a firepit (N=6), and a slab-lined pit with an ash lens (N=2). The interpretive potential of these samples is enhanced by the fact that the pit structures and thermal features can be dated, and the period when the materials were deposited can be reasonably estimated. These samples are used to examine change in plant use and use of pit structures over time.

Midden samples (N=45) provide information on the general use of plants for food, fuel, and possibly other purposes. Most midden samples were taken from refuse found inside abandoned pit structures, because aboveground middens (especially those from the Late Pueblo III subperiod) had been disturbed by historic-era plowing. Midden refuse probably had been deposited over a few years to decades, and is likely to reflect activities associated with pit structures and now-missing surface rooms, courtyards, and other activity areas that had been used by a household or group of households. Since midden refuse can be dated via its provenience, these samples can reflect changes in plant use over time.

Flotation samples from within roof-fall (N=1) and other (N=7) contexts form a final, small subset of samples. Analysis of roof-fall samples can augment what we know about structural timber selection in prehistoric times (i.e., we can identify species and compare to the species identified in roofing material samples submitted to the Laboratory of Tree-Ring Research for dating). Roof-fall samples also offer insights into smaller roof-closing layers, and reveal plant materials associated with roofs that burned in place. Flotation samples from a limited number of other contexts include materials collected from two separate pit structure (kiva) bench surfaces (N=4), materials considered de facto refuse left in place from some activity (N=1), and samples of uncertain interpretation (N=2).

Macrofossil Samples

The goal of examining as many bags of macrofossils as possible was accomplished over a short period of time by a small number of analysts and their assistants (see Table 6.1). The 930 macrofossil samples analyzed reflect the spatial, temporal, and contextual variability at Shields Pueblo within roof fall (N=367), middens (N=220), thermal features and ashpits (N=28), and other contexts (N=309). The majority of these samples (N=851) could be assigned to a time period.

Modified Plant Materials

Modification of plant materials, in the form of cutting, knotting, or other intentional manipulation, often preserves in the archaeobotanical record. Plant specimens were examined for modification during analysis of both flotation and macrofossil samples. A number of modified items including a textile fragment were recovered from six macrofossil samples and a single flotation sample at Shields Pueblo (see Table 6.15).

Sample Size

The large size of the Shields Pueblo archaeobotanical sample enhances our ability to interpret plant use patterns. The combination of 165 analyzed flotation samples and 930 analyzed macrofossil samples makes Shields Pueblo one of the most intensively studied sites for plant remains in the region. Such a large sample size potentially increases the diversity of plant taxa and parts identified, by increasing chances for rarer items to be found. This, in turn, provides a better approximation of the total range of plants utilized by Shields Pueblo inhabitants. Despite the uneven number of flotation samples from early and late subperiod features at Shields Pueblo, this sample size is valuable for both intrasite and intersite comparative studies.

Processing and Analysis

Crow Canyon has adopted a standardized set of laboratory procedures for flotation and macrofossil sample processing, analysis, and recording (Ortman et al. 2005). These can be found along with explanations of sample types and general field collection strategies in *Archaeobotanical Analysis: Principles and Methods* (Adams 2004).

The Data Set

Archaeobotanical samples were analyzed from four contexts and five subperiods (see Table 6.1). Archaeologists identified contexts dating from the two earliest subperiods (Early Pueblo I and Middle Pueblo II) least often, and the corresponding number of analyzed archaeobotanical samples is therefore small. Three later subperiods (Late Pueblo II, Early Pueblo III, and Late Pueblo III) are well represented by flotation and macrofossil samples, with the exception of Late Pueblo III flotation samples from middens. Samples from roof-fall contexts were analyzed most often, revealing roofing materials. Samples from thermal feature/ashpit contexts were analyzed least often.

The list of plant taxa and parts recovered includes three domesticates, 36 wild plants, and at least 23 unidentified botanical specimens (Table 6.2). Over 23,000 individual plant specimens were identified in the flotation and macrofossil samples, and many taxa/parts were present in both sample types. The majority of smaller parts were unique to flotation samples. Taxa/parts identified only in macrofossil or modified vegetal samples included large charred maize (*Zea mays*) parts, a reedgrass (*Phragmites*) stem fragment, *Yucca*-fiber cordage fragments, modified cottonwood/willow (*Populus/Salix*) twigs, a juniper (*Juniperus*) wooden artifact and juniper bark, and saltbush (*Atriplex*) wood.

At Shields Pueblo, the small record of uncharred plant parts has been carefully evaluated, and none can be clearly associated with ancient plant use. Most of these likely entered the site via the activity of rodents and soil cracking. Therefore, the remainder of this report focuses only on charred or partially charred specimens. Complete archaeobotanical data are available in *The Crow Canyon Archaeological Center Research Database* (Crow Canyon Archaeological Center 2003).

Food Use at Shields Pueblo

The list and distribution of charred or partially charred plant specimens considered representative of foods at Shields Pueblo is presented in Table 6.3. This list is based on all flotation and macrofossil samples, assuming food residue can be widely distributed. Only reproductive plant parts (seeds, fruit, etc.) are included in this table, with the exception of maize (*Zea mays*), which includes non-reproductive shank (stem the ear sits upon) specimens as well.

Nearly all of the foods identified were recovered from flotation samples, with macrofossil samples adding only some of the larger maize (*Zea mays*) parts (see Table 6.3). Of the contexts examined, thermal features and ashpits contributed the bulk of information on ancient foods (Table 6.4), likely because foods routinely spilled into fires during parching, or when added to cooking pots set on coals. Also, historically, bits of food offered to deities with a prayer before eating were then tossed into the fire (White 1932:125). Foods not completely consumed by fire in hearths would preserve well when not moved from their original location. On the other hand, food remains deposited into middens from hearth clean-outs are subject to a variety of processes that increase the chances for breakage and degradation. Roof-fall strata might contain foods that were likely being processed or stored on the roof, or that could have been suspended from it.

Domesticated Foods

Domesticated maize (*Zea mays*), beans (*Phaseolus vulgaris*) and squash (*Cucurbita pepo*; Cucurbitaceae) were all recovered from Shields Pueblo. Evidence of maize is present in Early Pueblo I contexts, and the widespread distribution of maize across all subperiods attests to its importance (see Table 6.3). The fact that maize cobs can be utilized as a tinder/fuel source increases chances for their preservation by fire. All three domesticates were being grown by farmers by the Late Pueblo II subperiod. The absence of beans and squash in the earliest two subperiods is more likely due to small sample size and the poor preservation potential of these crops, rather than lack of access or use.

Thirteen Late Pueblo III whole-ear or partial-ear segments with attached kernels were preserved well enough to be described (Table 6.5). These include both round and elliptical ears, with an average number of kernel rows between 10 and 12. The kernels represent both flint (dense endosperm) and flour (porous endosperm) types. These attached kernels are similar to 342 loose kernels recovered from a number of Late Pueblo II through Late Pueblo III contexts within the site, with mean dimensions of 8.0 millimeters (mm) length (range 4–12 mm), 6.9 mm width (range 4–11 mm) and 3.6 mm thickness (range 2–7 mm). Ten maize shanks or shank segments range from 14 to 31 mm in length, from 5 to 20 mm in diameter, and have one to four nodes (where husks arise).

Shields Pueblo maize can be compared to a very large sample of well-preserved, unburned maize cobs and ears described from Mesa Verde sites ranging from the Basketmaker II/III through Pueblo III periods (Cutler and Meyer 1965). There, evidence suggests most of the maize belonged to a widespread and variable race called Pima-Papago. However, a noticeable increase in 8-rowed ears occurred between Pueblo II and Pueblo III, and together, with other maize cob changes, suggests the influx of new maize germplasm to Mesa Verde. At Shields Pueblo, the kernel evidence generally suggests continuity of maize type(s) grown through time. However, the sample of burned ears/ear segments is too small to suggest the type of maize being grown. A number of locations at Shields Pueblo preserved concentrations of a minimum of 50 maize specimens (Table 6.6). Most of these contexts were in six pit structures where maize kernels/ears may have been stored on roofs, or may have been attached in bundles to roof rafters. Most of this maize charred when these pit structures burned at the end of the Late Pueblo III occupation. It is also conceivable the maize may have been intentionally placed on floors, as either offerings or as fuel related to intentional abandonment and burning of the pit structures.

The recovery of squash (*Cucurbita pepo*) and common bean (*Phaseolus vulgaris*) specimens is quite low. Both agricultural products are missing from the earliest two (Early Pueblo I and Middle Pueblo II) subperiods at Shields Pueblo. However, these two domesticates rarely preserve in quantity in open archaeological deposits because they are frequently boiled, rather than parched. Therefore, it is assumed that the level of use of squash and beans was higher at Shields Pueblo than the preserved parts suggest. Three common bean cotyledons (half beans) measure 11 mm (length) x 7 mm (width) x 3 mm (thickness). The single squash seed had smooth, non-frayed edges characteristic of *Cucurbita pepo*.

Focusing only on systematically collected flotation samples, the ubiquity (presence) of domesticates is presented in Table 6.7. Maize parts that indirectly imply access to kernels include leftover waste products (cob, cupule) available for use as fuel or tinder. An important pattern is that maize (*Zea mays*) occurs in 89 to 100 percent of flotation samples during the two earliest subperiods of Shields Pueblo occupation, declines to 78 percent during the Late Pueblo II subperiod, and then declines further to a low of 42.5 percent by Late Pueblo III. Sample size is not an issue here, as the number of flotation samples examined from later subperiods is larger than those examined from the earlier subperiods. Preservation is also not an issue here, as the later subperiods would be expected to have comparable or better preservation, simply due to younger age.

The low ubiquity of *Zea mays* parts in all Late Pueblo III subperiod flotation samples (see Table 6.7) clearly contrasts with the abundance of maize macrofossils previously reported (see Table 6.6). It would be helpful to examine if people had been discarding maize parts into trash heaps at this time, but a lack of Late Pueblo III midden deposits (the result of historical plowing) prevents us from determining if household trash regularly received maize waste products in the time just prior to regional depopulation. One possibility is that the macrofossil record of late Pueblo III burned maize represents an anomalous record of extensive burning of pit structures with harvested crops that occurred only at the end of this last subperiod. This issue is further explored in an examination of food trends through time, later in this chapter.

The recovery of domesticates in archaeological sites implies the presence of people on a landscape through much of the calendar year. Field preparation, planting, tending, harvesting, drying, and storing can span the period from spring through fall, and some field preparations could have occurred during the late winter. Agricultural products can be stored in bulk in year-round storage facilities, so their period of use likely extended through the winter and into the next growing season. The record of maize, squash, and beans at Shields Pueblo suggests occupation during much, and perhaps all, of the calendar year. The record of stored maize on six burned Late Pueblo III pit structure roofs or floors suggests that the burning may have occurred following a harvest. If farmers living at Shields Pueblo aimed to have two to three years of maize in storage in order to buffer annual shortfalls, the pit structures could have burned in any season of the year. However, if only a single season's worth of maize was in storage and then burned before it could be eaten or before kernels were needed for a new planting season, the pit structures could have burned in winter or spring.

Wild Plant Foods

Evidence of 21 wild plant foods was preserved in the form of charred or partially charred seeds or fruit (see Table 6.3). The interpretation that wild plants provided foods is based both on ethnographic records of historical foods (see Rainey and Adams 2004) and the contexts in which the remains were found. Plant parts recovered from thermal features are presumed to have once been prepared there, and parts recovered from ashpits and middens are considered to have accumulated during deposit of refuse materials from the regular cleaning of thermal features and other locations. The interpretation of wild plant parts as foods is strengthened when many archaeological sites in a region reveal similar patterning of these same plant remains in thermal features and middens associated with food preparation and discard (Adams and Bowyer 2002).

Three wild foods were preserved in relatively high quantities (see Table 6.3). Over 700 cheno-am seeds were recovered from contexts in all time periods. These represent weedy plants that occupied formerly cultivated maize fields and other disturbed locations in prehistory. Their decline during the later subperiods may reflect reduction in fallow fields, or a shift in emphasis on resources. Groundcherry (*Physalis*) and prickly pear (*Opuntia*) seeds are the next most common seed types. Groundcherry is also a weedy plant that prefers disturbed soils and is able to produce an abundant mid-summer crop of tiny edible groundcherries, given adequate winter moisture or summer rains. Its presence in all subperiods suggests persistent gathering. Perennial prickly pear plants are stable members of the local landscape that routinely produce edible fleshy fruit, occasionally harvested by Shields Pueblo occupants.

The remaining 18 wild plants occur in relatively low numbers, often with the most specimens dating from Late Pueblo II subperiod contexts. This list includes important late spring/early summer resources (*Descurainia, Rhus aromatica, Stipa hymenoides*) which would have been available before any agricultural products and most other wild plants offered foods. It also includes summer/fall weeds of fallow fields (Cleome*, Helianthus, Portulaca*), and additional perennial resources (*Amelanchier, Echinocereus, Pinus, Prunus virginiana, Scirpus, Sphaeralcea, Yucca baccata*) that can usually be depended upon.

The number of wild plants recovered in flotation samples through time may be affected by low sample size for the earliest two subperiods (see Table 6.7). The total number of all separate wild food taxa is low in the Early Pueblo I period (N=8), remains low through the Middle Pueblo II period (N=7), increases dramatically in the Late Pueblo II period (N =18), and then declines in the Early Pueblo III period (N=13) and again in the Late Pueblo III period (N=10). This Pueblo III decline is not likely due to sample size. In all subperiods, the wild plants recovered represent a mixture of weedy (cheno-ams, *Cleome, Descurainia, Helianthus, Physalis, Portulaca, Solanaceae*) and non-weedy taxa (*Amelanchier utahensis*, *Echinocereus, Juniperus, Leguminosae, Malvaceae, Opuntia, Pinus, Prunus virginiana, Rhus aromatica, Scirpus, Sphaeralcea, Stipa hymenoides, Yucca baccata*), revealing no focus on one or the other group.

The seasons of wild plant gathering suggested by this record are late spring/early summer through fall. These seasons coincide with the seasonality of tasks required of agriculturalists related to field preparation and maintenance, and crop planting, tending, and harvesting. Collection and processing of wild plants can link people to season(s) of resource availability, but because these products can be stored for indefinite periods, the season(s) of use remain unknown.

Food Trends through Time

Since maize (*Zea mays*) and cheno-am seeds are the most commonly occurring foods through time, we compared charred maize parts and cheno-am seeds in flotation samples from last-use thermal feature/ashpit samples to those in longer-used midden samples, hoping to gauge levels of reliance on agricultural products versus common fallow garden weeds by subperiod (Table 6.8). This assumes that pit structure hearths were serving as cooking facilities through time, and that their final fires were not built during any season when cooking occurred elsewhere within the pueblo (e.g., outdoors during the summer). This examination is limited by a lack of comparative midden samples dating from the first subperiod (Early Pueblo I) and from the final decades of the Late Pueblo III subperiod when the last thermal features were built.

The presence of *Zea mays* kernels within thermal features clearly reflects some level of maize processing in pit structures in all subperiods. However, a look at all maize parts together (some of them indirectly representing food use) provides a larger sample size to gauge maize use over time. Maize-part presence is high (100 percent) in Early Pueblo I thermal features, begins a steady decline during the Late Pueblo II subperiod, and reaches a low by Late Pueblo III. Likewise, all maize parts decline in middens from the three sampled subperiods (Middle Pueblo II, Late Pueblo II, and Early Pueblo III), although small sample sizes reduce the strength of this trend. Decline in maize presence may be due to reduced access, or because cobs normally used for tinder/fuel became a food substitute in times of food stress (Hill 1938:46).

Although these patterns suggest a generally declining level of maize use at Shields Pueblo through time, such a decline is not supported by bone chemistry studies for other Pueblo III period archaeological sites in the area, where carbon isotope results indicate considerable reliance on maize and other foods such as amaranth, cactus fruits, and animals that consumed C_4 grasses (Katzenberg 1999). Also, macrofossil and flotation evidence together suggest *Zea mays* plants remained accessible to Shields Pueblo residents during the latter part of its occupation: (a) cobs, cob parts, and cupules occur in the latest three subperiods; (b) shanks occur only in the latest three subperiods; (c) portions of ears dating from the Late Pueblo III subperiod are preserved; (d) the largest number of kernels recovered date from the Late Pueblo III subperiod; (e) the diversity of maize parts is highest in the Late Pueblo III subperiod; and (f) six pit structures had maize on roofs or floors when they burned during the Late Pueblo III subperiod.

Looking at weeds that would have been common in fallow gardens, the cheno-am seed evidence in thermal features/ashpits is highest (84 percent) in the late Pueblo II subperiod and lowest (28.6 percent) in the Late Pueblo III subperiod (see Table 6.8). In middens, however, the presence of cheno-am seeds steadily increases through time to 90.9 percent in Early Pueblo III. People seem to have been generally preparing more and more cheno-am seeds through time, although perhaps not in the last fires built in thermal features during the later subperiods. Finally, the diversity of all remaining domesticated and wild plant foods present in thermal feature/ashpit samples varies considerably by subperiod, from a low of three in the Middle Pueblo II period to a high of 14 in the Late Pueblo II period (see Table 6.8). The diversity of this group of resources varies between subperiod midden samples as well.

These conflicting trends suggest that the plant record within pit structure hearths at Shields Pueblo may not reflect final meals being prepared there, as assumed above. Pit structure hearths may not have been the primary cooking facilities, or may have been the primary cooking facilities only during a season (such as winter) not represented by the final fires. Possibly the season(s) of last use of the pit structure hearths at Shields Pueblo varied among the subperiods for the hearths examined. Because of these uncertainties, evidence of shifting patterns of subsistence seems better examined in the middens.

Changes over Time in Use of All Foods

Broad patterns of domestic and wild plant foods have been summarized graphically, on the basis of evidence within flotation samples (Figure 6.1). As outlined above, maize (*Zea mays*) from middens suggests heavy reliance on it until a decline began in the Late Pueblo II subperiod, while fallow-field weeds (cheno-ams) steadily increase in midden deposits through time, implying increasing reliance on these weeds as foods. The last meals prepared in thermal features appear to have consistently included some maize, but by the Late Pueblo II subperiod the thermal feature record hints that weeds (cheno-ams) were not prepared in pit structures, even as middens reveal their increasing importance. Finally, the overall diversity of wild foods, including both weeds and stable perennial resources, is highest in the Late Pueblo II subperiod, suggesting that food-gathering efforts concentrated on many wild plants, not just the fallow-field weeds.

The Late Pueblo II subperiod (A D. 1060–1140) seems to represent an unusual period of food availability and/or use at Shields Pueblo. This came as the end of a long period of favorable environmental circumstances drew near, prior to a 50-year interval (A.D. 1130–1180) when persistent drought accompanied depressed alluvial water tables, stream-channel entrenchment, and marked reduction in agricultural productivity (Van West and Dean 2000). The ability of the local landscape to support dependable crops had perhaps begun to weaken by Late Pueblo II, due to the accumulating effects of long-term occupation, a continually increasing human population, and the approaching confluence of a number of unfavorable environmental variables.

Examining Food Stress in the Late Pueblo III Period

It is important to try and determine if the Shields Pueblo residents of the Late Pueblo III subperiod were experiencing difficulty acquiring foods immediately prior to regional depopulation. Some Late Pueblo III households had maize on rooftops or floors which were burned when pit structures ceased to be occupied. A declining diversity of wild plants, maize, and cheno-ams in pit structure hearths suggests either hardships in attaining foods, or that foods were not being prepared in those locations. This assessment is hampered by having no comparative data from middens of this period at Shields Pueblo (because the middens have been destroyed by historical plowing).

Fuel Use at Shields Pueblo

The distribution of charred or partially charred non-reproductive plant specimens considered representative of fuels at Shields Pueblo has been assembled from all samples and all contexts (Table 6.9). The most direct evidence of fuel use is charred wood found in hearth samples, whereas less-direct evidence is from midden samples (where refuse accumulated from hearth cleaning events and the discard of materials from construction of tools or other useful household items) (Table 6.10). Since Shields Pueblo middens contained very little burned adobe or sandstone suggestive of construction debris, the majority of charred wood fragments within them are assumed to relate to fuel use. This assumption is supported by ethnographic records of fuel choice among historical groups (Rainey and Adams 2004). Only charred wood and non-reproductive plant parts are examined here, with the exception of *Zea mays*, which offers a convenient tinder/fuel source in leftover cobs and other vegetative parts.

Fuels Chosen, Ubiquity

A variety of plant parts preserved as evidence of fuels in thermal features and ashpits (see Table 6.10). Charred juniper (*Juniperus*) and pine (*Pinus*) wood, along with maize (*Zea mays*) parts, occur most often, followed by sagebrush (*Artemisia; A.* tridentata). The remaining plants do not occur in all subperiods, and have relatively lower presence. Midden samples from the middle three subperiods have many of the same plant taxa as fuels, and mimic the patterning of fuel choice revealed in the thermal features and ashpits.

Nature of the Surrounding Woodland

This record implies the surrounding ancient woodland included many of the same woody trees and shrubs as are present today. Reliance on juniper and pine trees for fuel likely reflects relative availability, as well as quantities of wood produced by these trees. Both sagebrush and rabbitbrush (*Chrysothamnus*) are common components of the modern regional pinyon/juniper woodland and tend to be among the first shrubs to establish themselves in abandoned agricultural fields. The remaining trees and shrubs offer foods and other raw materials that would have been moderately accessible, as they are at present.

Fuel Use Through Time

At Shields Pueblo, thermal features/ashpits provide a view of fuel use through time for heat, light, and cooking (see Table 6.10). However, this view is tempered by low sample counts and a limited number of features dating from the earliest two subperiods (for example, all eight Early Pueblo 1 flotation samples are from a single hearth in Structure 1318). Juniper (*Juniperus*) wood was always a fuelwood of choice, though its use declined in the later three subperiods. Pine (*Pinus*) wood was utilized as fuel in the Early Pueblo I subperiod (87.5 percent), although less so by the Late Pueblo III period (42.9 percent). Secondary use of maize cobs as fuel/tinder was initially high (100 percent), but a decline (76.0 percent) in use began in the Late Pueblo II subperiod and continued through both the Early and Late Pueblo III subperiods (28.6 percent). Although missing the earliest and latest subperiods, the midden record of these three major fuels reflects these trends.

Use of Plant Materials in Construction at Shields Pueblo

Intact roofs sometimes preserve in the archaeological record, providing the basis for interpreting how they were constructed. Roofs often differ in their composition, using beams of various wood types and sizes as well as a variety of closing materials. At Shields Pueblo, evidence of wood types used in roof construction comes only from samples collected from roof fall and roof-fall/wall-fall strata associated with burned pit structures; no surface structures preserved at Shields Pueblo, preventing a look at surface-room construction materials. This look at pit structure roofs includes all charred roof beams submitted to the Laboratory of Tree-Ring Research (Table 6.11), including a small subset of beams that provided cutting dates (Table 6.12). In addition to tree-ring samples, flotation and macrofossil samples from all roof contexts can shed light on smaller roofing elements, including closing materials and plant resources associated with roofs when they burned and collapsed (Tables 6.13 and 6.14).

Major Roofing Elements

The majority of 2,741 charred wood samples sent for tree-ring analysis were identified to various taxonomic levels (see Table 6.11). Samples collected for tree-ring dating are biased toward larger construction elements from burned structures. Clearly juniper (*Juniperus*) trees were preferred by Shields Pueblo occupants, comprising 93 percent of the identified construction elements. Pinyon (*Pinus edulis*) provided beams 5 percent of the time. The remaining beams were identified as Douglas fir (*Pseudotsuga menziesii*), cottonwood/aspen (*Populus*), ponderosa pine (*Pinus ponderosa*), oak (*Quercus*), spruce/fir (*Picea/Abies*), or as non-coniferous elements. Douglas fir, ponderosa pine, and spruce/fir would have required a journey of over 10 kilometers to obtain—for example, south onto Ute Mountain, southeast to Mesa Verde, or north into the canyons of the Dolores River.

A subset of 57 beams provided cutting dates (see Table 6.12). Because this small subset likely reflects preservation more so than construction beam choice through time, it provides only a glimpse at human behavior related to roof construction. Juniper was sought through time, and people used pinyon in the Early Pueblo 1 subperiod, and traveled some distance for Douglas fir in the Early Pueblo III subperiod.

Smaller Elements, Closing Layers

Materials from within flotation and macrofossil samples taken from roofs (Table 6.13) complement the tree-ring record by revealing a preference for juniper (*Juniperus*) beams, along with occasional use of pinyon (*Pinus edulis*). A common choice for closing material was sagebrush (*Artemisia tridentata/Artemisia*). A wide range of other trees/shrubs within Shields Pueblo roofs had either been sought for use as smaller roofing elements or closing layers, or for other reasons.

Construction Materials through Time

Together the tree-ring data (see Table 6.11) and the wood types associated most often with roof fall (Table 6.14) suggest a continued availability of juniper (*Juniperus*) wood and sagebrush (*Artemisia tridentata/Artemisia*) branches for roofing needs throughout the occupation of Shields Pueblo. For the first three subperiods, pine (*Pinus*) wood was recovered in at least half of the roof samples analyzed. A declining availability or declining preference for pine wood is indicated by Early Pueblo III (25 percent), and the trend continues into the Late Pueblo III subperiod (5 percent). A corresponding increase in oak (*Quercus*) and other wood types in the Early and Late Pueblo III subperiods, perhaps based in part on large sample size, suggests other trees/shrubs had been sought to fulfill construction needs as the late A.D. 1200s approached.

Other Plant Materials Associated with Roofs

Non-wood materials recovered within roof strata include likely foods stored on top of or suspended from roof rafters, along with a few other material culture items. Since many of the roofs collapsed onto floors, some of these items could have originally been on floors as well. Maize parts were associated with roofs through much of the occupation (see Table 6.14). Pit structure (kiva) roofs could have provided areas for drying maize brought in from the fields, and for indoor locations to store ears or kernels for planting, possibly hanging in long braids from the major beams or inside seed jars stored on benches or within niches. *Yucca* fiber could well have provided cordage for lashing roofing elements together or for hanging items. A single reedgrass (*Phragmites*) stem preserved from the Early Pueblo I subperiod does not suggest a roofing layer, but rather some other need such as material for making reedgrass cigarettes (Adams 1990).

Other Plant Uses: Modified Plant Remains

Within this data set, six samples contained plant materials intentionally modified by humans (Table 6.15). These include cordage and textile fragments, a wooden tool, and some intentionally split twigs. One sample contained an intrusive, modern cordage fragment. Cordage and textile terminology follows that of Minar (2000:86–87).

Cordage and Textile Fragments

A charred fragment of textile was recovered from within collapsed wall fall and roof fall of an Early Pueblo I pit structure (Structure 141). Lacking finished edges, this small fragment measures 4 x 2 x 0.3 centimeter (cm). Fashioned in a tightly woven plain weave (1 over, 1 under) the fragment is composed of 4 warps per cm and 18 wefts per cm. The coarser warp cordage appears to be composed of 2-ply s-spun Z-twist (2s-Z) *Yucca*-type fiber bundles, and the finer cordage wefts of highly processed 3-ply z-spun S-twist (3z-S) *Yucca*-type fibrils, where *Yucca* fiber bundles have been further separated into individual fibril components. This piece is probably a fragment of twined sandal, with a patterned underside of cordage knots formed by wrapping wefts around previous rows of wefts. Elsewhere in Shields Pueblo, *Yucca* fibers had been used to fashion two pieces of coarser 2s-Z yucca (*Yucca*) fiber cordage, which had then been burned in a firepit in Nonstructure 129, dating from the Late Pueblo II subperiod. This same context also contained a tiny 2z-S cordage knot made of highly processed *Yucca*-type fibrils.

Wooden Tools

In roof fall of Structure 221, dating from the Late Pueblo III subperiod, excavators found a large (13 [incomplete] x 4.5 cm), flat (1.5 cm), entirely smoothed and shaped piece of juniper (*Juniperus*) wood, tapering at one end and rounded on the other. This item best matches a batten (weaving sword), defined as a "smooth, sword-shaped implement varying in length from eight to thirty inches and between one and three inches wide....generally rounded at both ends, and a fairly sharp edge...given to one or both sides" (Kent 1957:485). The purpose of a batten is to keep the shed open for the weft yarn, and each inserted weft is driven down to the partially woven web (Kent 1957:655). A juniper wood batten was recovered from Mug House at nearby Mesa Verde (Rohn 1971:265). Wooden batten fragments are also known from Kiet Siel and Wupatki (Kent 1957:473). The presence of this batten at Shields Pueblo complements the recovery of yucca modified materials, suggesting manufacture of textile and cordage using yucca.

Other Modified Items

Two groups of cottonwood/willow-type (*Populus/Salix*) twigs were found on a prepared floor surface with de facto refuse within Structure 1316. These twigs had been split in half, and their straight edges suggested cutting or shaping. However, they were not in any arrangement suggestive of their original use.

Kivas at Shields Pueblo: Domestic and/or Specialized (Ritual) Use

The use of any structure can be inferred from activities conducted within it, the features it contains, and any material-culture evidence left behind, including perishable plant remains. At Shields Pueblo, flotation and macrofossil samples from thermal features and ashpits contribute important information about activities that occurred within the pit structures (kivas). It is clear from previous sections of this report that wood burned in hearths provided heat and light. If hearths were also locations where foods were regularly prepared, then pit structures were places where cooking was regularly conducted. If not, cooking occurred elsewhere, either within other areas of the pit structures or in other areas of the pueblo. Data presented in this report can address this issue.

In Shields Pueblo pit structures, thermal features and ashpits clearly preserved foods, which suggests cooking and implies domestic activity (see Table 6.4). The macrofossil record of maize that had been in storage on roofs or on floors when a number of pit structures burned (see Table 6.6) supports the idea that maize was being stored, processed, and consumed in pit structures through time. However, the variation in frequency of the two most commonly recovered foods (maize and cheno-am seeds) in pit structure hearths (see Table 6.8), and the variation in overall food diversity through time (see Table 6.7), may have other explanations:

1. Access to foods varied over time. This is supported by the differences in overall food diversity present in the different subperiods (see Table 6.7), and from differences between subperiods in food diversity within thermal features/ashpits and middens (see Table 6.8). If this was the case, then pit structures served as locations for domestic activities as long as foods were available.

2. Food preparation did not consistently take place inside pit structures. Foods could have been prepared in pit structure hearths only during portions of the calendar year. Food preparation may have shifted from pit structure hearths to other locations such as surface rooms or outdoors during warmer seasons of the year. If this explanation is correct, then cooking inside pit structures varied seasonally. It is also possible that the locations of food preparation were not consistent through time. Other data sets may help evaluate these hypotheses.

Additional perspective on foods preserved in thermal features is offered by a recent study of 12 archaeological sites in the local area, including Sand Canyon Pueblo and a number of mesa-top and talus-slope sites (Adams and Bowyer 2002). That study compared patterns of plant remains in flotation samples from thermal features inside multiple structure types to those in middens for two time periods, A.D. 1180–1240 and A.D. 1240–1280. Mesa-top sites dating from the earlier period and another set of sites (Lower Sand Canyon) dating from the later period contained the same suite of plant remains in last-used thermal features as in middens, suggesting no change in activities represented in both feature types. However, at Sand Canyon Pueblo and talus-slope sites dating from A.D. 1240–1280, notably lower diversities of potential foods were preserved in last-used thermal features as compared to middens. Despite the fact that this study included thermal features in all structure types, the pattern of lowered food presence within them is essentially the same as that of Shields Pueblo presented here. That study interpreted these data to suggest increasing food stress, but did not consider the changing nature of pit structure use (either seasonally or through time) as a potential explanation.

Reconstructing the Past Environment

The archaeobotanical record provides a list of many of the plants available to the residents of Shields Pueblo during its long occupation, both as agricultural products and wild resources (see Table 6.1). The record remains silent on other local plants that had not been sought for any reason, or that had been used in places that were not sampled, or that have degraded completely due to fragility. Patterns of plant remains preserved over time provide indicators of changes in surrounding vegetation caused by the occupants of Shields Pueblo. To evaluate this, the plant records from each subperiod reveal the basic vegetation assemblage of the past and how it changed during the centuries-long occupation.

The Ancient and Modern Plant Communities Share Similar Plants

The long list of plants recovered from Shields Pueblo flotation and macrofossil samples (see Table 6.2) suggests that the same pinyon-juniper woodland present in the region today also prevailed in prehistory. The diversity of juniper (*Juniperus*) tree parts (bark fragments, scale leaves, seeds, twigs, wood) and pinyon (*Pinus edulis*) tree parts (bark scale, cone scale, needle, twig, wood) imply these two tree types grew in the vicinity of the pueblo. Other trees/shrubs of the past (*Amelanchier utahensis*, *Artemisia tridentata/Artemisia*, *Atriplex*, *Cercocarpus*, *Ephedra*, *Prunus virginiana*, *Populus/Salix*, *Purshia*, *Quercus*, *Rhus aromatica*) provide a list nearly identical to that of the current surrounding woodland. Likewise, the ancient perennials and annuals are all components of the modern vegetation.

Agricultural Fields Were Located Close to the Pueblo

The preservation of diverse *Zea mays* parts (see Table 6.3) and the quantities of maize in some contexts (see Table 6.6) together imply that agricultural fields were relatively accessible to Shields Pueblo in antiquity. The nearer the fields, the more likely that non-kernel portions of the maize plant (cobs, cupules, shanks) would be carried into the pueblo. This interpretation is supported by the consistent presence of cheno-am seeds (harvested from plants that thrive in the disturbed ground of fallow agricultural fields) through all subperiods. This interpretation is also supported by modern interviews with successful dry-land farmers of the Goodman Point area (Connolly 1990).

Humans Impacted the Pinyon-Juniper Woodland Over Time

In addition to opening the woodland for nearby agricultural fields, the changing fuelwood (see Table 6.10) and construction element (see Table 6.14) records imply other woodland changes. The major fuels (juniper, pinyon, and maize cobs) had all declined by the Late Pueblo III subperiod. Also, the diversity of materials sought for fuel varied over time. The number of fuels in the five subperiods ranges between 5 and 12 (*Artemisia tridentata* and *Artemisia* are considered one fuel type). People used an average of 5.5 fuel types in thermal features/ashpits during the first two subperiods, doubling that to an average of 10.7 types during the last three subperiods. This likely reflects a woodland changing in composition, coupled with the increased fuelwood needs of larger numbers of people. Wood types present in roof debris suggest that people consistently used juniper (*Juniperus*) beams through all subperiods, though their use of pine dropped significantly in the final two subperiods (see Table 6.14). In the later subperiods, people either no longer had access to pinyon trees with branches acceptable for construction, or preferred not to use them. They may also have had to travel longer distances for desirable juniper beams.

Environmental Impact was Greatest Prior to Regional Depopulation

The changing record of fuel and construction-beam use suggests the environment of Shields Pueblo and the nearby Goodman Point community had changed most by the Late Pueblo III subperiod. By then, the people at Shields Pueblo were using fuels that included a number of tree/shrubs offering little heat when burned (see Table 6.10). Types in this category—recovered from more than 20 percent of Late Pueblo III thermal features/ashpits—include sagebrush (*Artemisia tridentata/Artemisia*), serviceberry (*Amelanchier/Peraphyllum*), cottonwood/willow (*Populus/Salix*), and oak (*Quercus*). Oak responds well to fire and thrives in open woodland, suggesting an increasingly open landscape. This opening could have been in response to increased clearing for agriculture, and/or intentional or accidental setting of fires to portions of the landscape. People also had to travel short distances to moist locations for the cottonwood/willow wood, such as the spring located at Goodman Point Pueblo, or the bottom of Sand Canyon and its side drainages. The decline of juniper, pine, and maize parts supports the idea that Late Pueblo III was a subperiod of expanding fuel needs. The use of pine roof beams reaches a low in the final subperiod (see Table 6.14). A reasonable conclusion from all the plant evidence is that by the Late Pueblo III subperiod, human impacts had opened the woodland, altered the availability of major trees, and provided disturbed habitats for weedy plants to thrive.

Summary and Conclusions

Examination of 165 flotation samples and 930 macrofossil samples from Shields Pueblo has provided information on past use of plants for foods, fuels, construction elements, and other needs, and the nature of the surrounding environment. This record includes materials from five subperiods of occupation spanning A.D. 725–1280, permitting a look at changes through time. Particular attention has been paid to the subperiod that preceded regional depopulation. The plant materials have also provided perspective on whether pit structures (kivas) served as locations for domestic activities. The majority of flotation samples represent thermal feature/ashpit or midden contexts. Macrofossil samples came from many contexts, the majority of them from roof fall, and a few intentionally modified plant materials also preserved.

This large archaeobotanical sample makes Shields Pueblo one of the best-sampled sites in the region. These data provide a reasonable approximation of the range of plants sought by Pueblo occupants for food, fuel, construction elements, and raw materials for household needs and tools. An overview of plant patterns at the site presents a condensed view of plant use by subperiod (Table 6.16). Scarcity of thermal feature/ashpits in the earliest two subperiods, and lack of middens from the first and last subperiods, together limit attempts to document long-term patterns of plant use and environmental change. Nevertheless, a number of observations on ancient plant use can be made.

Both domesticates and wild plants were regularly used for food. Sixty-eight percent of Shields Pueblo thermal features/ashpits preserved one or more reproductive parts, making them prime locations to examine food use. Middens, subject to a wider variety of degradation effects, preserved food evidence only 37 percent of the time. Nineteen percent of roof strata examined contained maize parts, which had likely been in storage there.

Farmers living at Shields Pueblo grew three domesticates. *Zea mays* was present in all five subperiods. Both flour- and flint-type kernels preserved and their morphological similarity suggests continuity in maize types grown through time. Maize kernels and ears burned in six Late Pueblo III pit structures may have been in storage, or intentionally burned to close the structures. Evidence of bean (*Phaseolus vulgaris*) and squash (*Cucurbita pepo*; Cucurbitaceae) first appears in Late Pueblo II deposits, and their absence in the earliest two subperiods is thought to result from the small sample size, rather than lack of use.

The abundant maize record presents conflicting evidence regarding its level of use over time. Three trends suggest reduced access to maize in the later subperiods: (a) ubiquity of all maize parts present in all flotation samples declines through time; (b) ubiquity of maize parts in thermal features/ashpits declines through time; and (c) ubiquity of maize parts in middens declines through time, though data are lacking from the first and last subperiods. However, other evidence suggests continued access to maize through time: (a) maize macrofossils are present in all subperiods, and are especially abundant in the last three subperiods, reaching a peak in Late Pueblo III; and (b) bone-chemistry studies from other sites in the region suggest consistent use of maize use through time. Three factors confound an effort to interpret the degree of reliance on maize: (a) thermal features in pit structures may not consistently serve for food preparation, varying seasonally or through time; (b) the Late Pueblo III record of abundant burned maize macrofossils may represent an anomalous situation of multiple pit structures being burned, and over-inflate the record of maize for this subperiod; and (c) a possible change in use of maize parts may have occurred, such as cobs normally burned as a fuel/tinder source became a food in times of food shortage.

Recovery of domesticates implies people occupied the area for much, if not all, of the calendar year, to accomplish all the tasks related to field preparation, crop tending, harvest, and storage. Maize in storage in six Late Pueblo III pit structures burned before it was eaten or planted, suggesting the fires may have occurred following a fall harvest.

Wild plants sought as food include a mix of annual weedy species characteristic of disturbed habitats, such as fallow fields, and perennial species associated with stable landscapes. Seasons of availability of these resources spanned much of the growing season, from late spring/early summer through the fall. Flotation samples from all contexts reveal that the diversity of wild plant foods is lowest in the earliest two subperiods, peaks during Late Pueblo II, and then declines by Late Pueblo III.

The most abundant wild resource, cheno-am seeds, preserved most often in flotation samples of Late Pueblo II thermal features/ashpits, and declined in presence by Late Pueblo III. This trend is countered by what appears to be increasing recovery of cheno-am seeds in midden deposits through time, though there is no midden record available from the earliest and latest subperiods. This suggests that people were gathering and preparing cheno-am seeds more frequently through time, but perhaps not in the last fires built in the sampled thermal features/ashpits.

The most frequently utilized fuels were juniper wood, pine wood, and maize cobs. However, all three of these fuel sources declined in presence in the later subperiods, pine significantly so. This may reflect a general reduction in the pinyon/juniper woodland in the region surrounding Shields Pueblo, with preferential depletion of the locally available pinyon (Pinus *edulis*) most evident. Sagebrush (*Artemisia tridentata/Artemisia*) and a number of other trees or shrubs provided fuels on occasion. The same fuels were utilized in thermal features/ashpits through time, whether or not foods were being prepared in these locations.

Juniper (*Juniperus*) trees were clearly preferred as roof construction elements. Pine (*Pinus*) trees (most likely pinyon) were sought less frequently, as were a number of other tree types not common to the area, such as Douglas fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), and spruce/fir (*Picea/Abies*). These uncommon types would have required travel to Ute Mountain, Mesa Verde, or the canyons of the Dolores River to obtain them. Sagebrush was consistently used as a smaller closing layer in roof construction.

A small number of intentionally modified plant materials preserved at the site. A yucca textile fragment appears to belong to an Early Pueblo I twined sandal. Yucca cordage and knots were recovered from Late Pueblo II subperiod deposits. Split cottonwood/willow twigs were found on an Early Pueblo III floor surface. A juniper batten for weaving preserved in roof fall of a Late Pueblo III pit structure. These items suggest the occupants of Shields Pueblo produced many of their household and personal needs.

The plant record suggests that pit structures (kivas) were locations where food preparation occurred on occasion, and hence can be considered locations of periodic domestic activities. However, the record of plant reproductive parts generally suggests that food preparation also occurred elsewhere in the Pueblo during certain seasons or time periods. Because of this, the midden record seems the best place to examine food use trends through time, despite the fact that middens preserve foods less often than do thermal features.

The Late Pueblo II subperiod from A.D. 1060–1140 saw changes in a number of food indicators, although low sample numbers in earlier subperiods necessitate caution in interpretation. *Zea mays* parts in all contexts, in thermal features/ashpits, and in middens, all began a decline in ubiquity within flotation samples dating from the Late Pueblo II subperiod. Diversity of wild plant foods reached a high then, as did the presence of cheno-am seeds in thermal features/ashpits. These coincide with the end of a long favorable environmental period for the region. Shields Pueblo occupants inhabited a landscape increasingly disturbed by their own activities when a prolonged drought and other environmental difficulties prevailed in A.D. 1130–1180.

Just prior to regional depopulation in the Late Pueblo III subperiod, maize in storage on Shields Pueblo roofs or floors was burned in at least six pit structures, revealing its availability for some households. Since these pit structures were intentionally burned, this maize was intentionally destroyed, perhaps because people were leaving the area for good. Lowered diversity of wild plant foods and ubiquity of cheno-am seeds in pit-structure thermal features/ashpits of this subperiod suggests either: (a) hardship in obtaining food, or (b) that foods were being prepared in other structures or outdoors at this time. Late Pueblo III middens could have shed light on routine food use in this final subperiod, but they were destroyed by plowing during the historic era.

The ancient plant record permitted a look at the surrounding environment. The area surrounding Shields Pueblo included the majority of trees, shrubs, and other wild plants that are present in the area today. The Pueblo was surrounded by pinyon/juniper woodland, accompanied by shrubs such as sagebrush (*Artemisia tridentata/Artemisia*), rabbitbrush, and a number of other woody species that still grow in the region. A reduction in use of juniper and pine woods as fuels by the Late Pueblo III subperiod suggests the woodland opened as agricultural fields were cleared and other landscape disturbance activities occurred. However, living juniper and pinyon trees were close enough that parts such as bark, leaves, needles, twigs, seeds, and cone scales continued to enter the Pueblo on occasion. The presence of agricultural fields relatively close to the Pueblo is implied by the diversity of non-edible *Zea mays* parts recovered (cobs, cupules, shanks), the quantities of maize in some contexts, and the success of modern dry-land farmers in this area. Harvest of cheno-am seeds in fallow fields and other disturbed locations appears to have been a regular endeavor. Many of the wild plants sought as foods still grow in the area today. This includes both annuals of disturbed habitats, and stable landscape perennials.

Prior to regional depopulation in the Late Pueblo III subperiod, Shields Pueblo occupants had opened the pinyon/juniper woodland for agricultural fields. Fuel use of juniper and pine wood and maize cobs had declined, and people were using twice the number of woody fuels than in the earliest two subperiods. This suggests the proportions of individual tree and shrub species in the woodland had shifted. Juniper was still a very important construction element, although acquisition of pine beams had declined. Sagebrush, which can occupy fallow fields, provided the final occupants of Shields Pueblo with a fuel source, in addition to its regular use as a roof-closing layer. Increasing use of cheno-am seeds through time suggests increased presence of fallow fields. The plant evidence generally implies that by the Late Pueblo III subperiod, people had opened the pinyon/juniper woodland to some degree, altered the relative proportions of some of its major taxa, and increased presence of weedy plants in disturbed habitats such as abandoned agricultural fields.

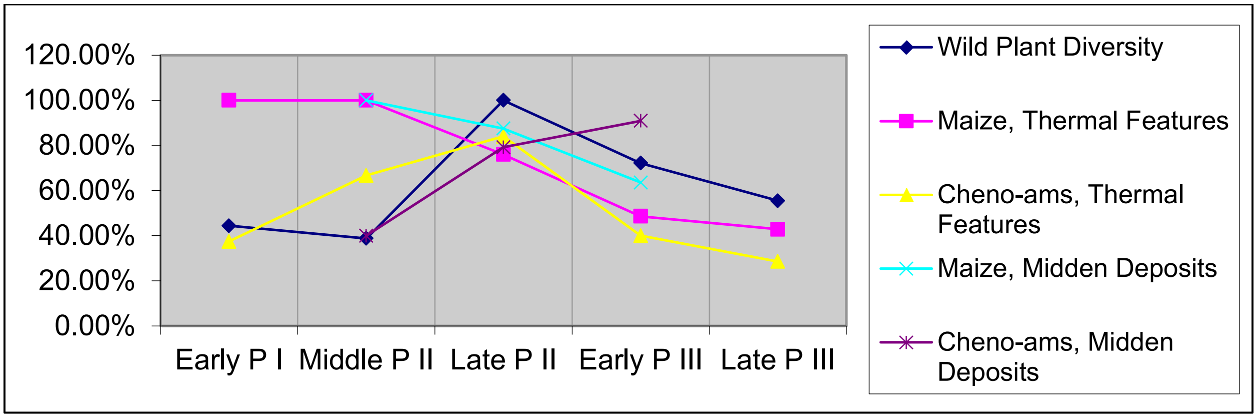

Figure 6.1. Broad patterns of domestic and wild plant foods through time, Shields Pueblo.

Table 6.1. Analyzed Archaeobotanical Samples Organized by Context and Subperiod, Shields Pueblo.

Sample Type	Context	Early Pueblo I Period (A.D. 725–800)	Middle Pueblo II Period (A.D. 1020–1060)	Late Pueblo II Period (A.D. 1060–1140)	Early Pueblo III Period (A.D. 1140–1225)	Late Pueblo III Period (A.D. 1225–1280)	Subperiod Not Assigned	TOTAL
Flotation	Thermal features and ashpits	8	9	25	35	35	0	112
Flotation	Midden	0	10	24	11	0	0	45
Flotation	Roof fall	1	0	0	0	0	0	1
Flotation	Other	0	0	2	0	5	0	7
Macrofossil	Thermal features and ashpits	1	1	9	10	7	0	28
Macrofossil	Midden	0	0	146	40	18	16	220
Macrofossil	Roof fall	22	6	36	116	181	6	367
Macrofossil	Other	30	2	53	27	140	57	309
Other Modified Vegetal	Thermal features and ashpits	0	0	1	0	0	0	1
Other Modified Vegetal	Other	0	0	0	3	1	0	4
Textile	Roof fall	1	0	0	0	0	0	1
Total Number of Samples Analyzed		63	28	296	242	387	79	1,095

Table 6.2. Plant Taxa and Parts Identified in Analyzed Archaeobotanical Samples by Condition, Shields Pueblo.

Scientific Name	Common Name	Part	Condition	N Samples and Specimens			
				Flotation	Macrofossils	Vegetal	Textile
Amelanchier utahensis-type	Utah serviceberry	seed	charred	1			
Amelanchier utahensis-type	Utah serviceberry	seed	uncharred	1			
Amelanchier/ Peraphyllum-type	serviceberry/ peraphyllum	wood	charred	75	37		
Artemisia tridentata-type	big sagebrush	leaf	charred	3			
Artemisia tridentata-type	big sagebrush	wood	charred	186	90		
Artemisia-type	sagebrush	leaf	charred	1			
Artemisia-type	sagebrush	wood	charred	285	811		
Artemisia-type	sagebrush	wood	partially charred	2			2
Atriplex-type	saltbush	wood	charred		5		
Atriplex-type	saltbush	wood	partially charred	2			2
Bromus tectorum-type	cheatgrass	caryopsis	uncharred	1			
Cercocarpus-type	mountain mahogany	wood	charred	9	35		
Cheno-am	goosefoot/ pigweed	embryo	charred	2			
Cheno-am	goosefoot/ pigweed	seed	charred	707			
Cheno-am	goosefoot/ pigweed	seed	uncharred	228			
Chrysothamnus-type	rabbitbrush	wood	charred	45	88		
Cleome-type	beeplant	seed	charred	11			
Compositae-type	sunflower family	achene	uncharred	1			
Cruciferae-type	mustard family	seed	uncharred	19			
Cucurbita pepo-type	pumpkin	seed	charred	1			
Cucurbitaceae-type	gourd family	rind	charred	33	1		
Descurainia-type	tansymustard	seed	charred	10			
Dicotyledon-type	dicots	wood	uncharred		8		
Echinocereus-type	hedgehog	seed	charred	1			

Scientific Name	Common Name	Part	Condition	N Samples and Specimens			
				Flotation	Macrofossils	Vegetal	Textile
Ephedra-type	ephedra	wood	charred	1	4		
Gramineae-type	grass family	caryopsis	charred	46			
Gramineae-type	grass family	caryopsis	uncharred	2			
Helianthus-type	sunflower	achene	charred	3			
Helianthus-type	sunflower	achene	uncharred	11			
Juniperus-type	juniper	bark fragment	charred		6		
Juniperus-type	juniper	scale leaf	charred	14			
Juniperus-type	juniper	seed	charred		1		
Juniperus-type	juniper	twig	charred	71			
Juniperus-type	juniper	wood	charred	1,055	5,493	2	
Juniperus-type	juniper	wood	partially charred	202			202
Juniperus-type	juniper	wood	uncharred		3		
Leguminosae-type	legume (pea) family	seed	charred	1			
Malvaceae-type	mallow family	seed	charred	4			
Malvaceae-type	mallow family	seed	uncharred	15			
Monocotyledon-type	monocots	stem (culm)	charred	4			
Monocotyledon-type	monocots	tissue	charred	57	1		
Opuntia (prickly pear)-type	prickly pear	embryo	charred	39			
Opuntia (prickly pear)-type	prickly pear	seed	charred	166			
Phaseolus vulgaris-type	common bean	cotyledon	charred	2	9		
Phragmites-type	reedgrass	stem (culm)	charred		1		
Physalis-type	groundcherry	berry	charred	5			
Physalis-type	groundcherry	seed	charred	176			
Physalis-type	groundcherry	seed	uncharred	131			
Pinus-type	pine	bark scale	charred	392			
Pinus-type	pine	bark scale	uncharred		1		
Pinus-type	pine	cone scale	charred	6			
Pinus-type	pine	needle	charred	3			

Scientific Name	Common Name	Part	Condition	N Samples and Specimens			
				Flotation	Macrofossils	Vegetal	Textile
Pinus-type	pine	nut (seed)	uncharred		1		
Pinus-type	pine	nutshell	uncharred		1		
Pinus-type	pine	twig	charred	15			
Pinus-type	pine	wood	charred	273	800		
Pinus-type	pine	wood	partially charred	13			13
Populus/Salix-type	cottonwood/ willow	twig	charred			48	
Populus/Salix-type	cottonwood/ willow	wood	charred	104	66		
Portulaca-type	purslane	seed	charred	52			
Prunus virginiana-type	chokecherry	seed	charred	2			
Prunus virginiana-type	chokecherry	seed	partially charred	1			1
Prunus virginiana-type	chokecherry	seed	uncharred		4		
Prunus virginiana-type	chokecherry	wood	charred		1		
Prunus/Rosa-type	chokecherry/ rose	drupe	uncharred		3		
Prunus/Rosa-type	chokecherry/ rose	wood	charred	4	1		
Purshia-type	cliffrose/ bitterbrush	wood	charred	4	10		
Quercus-type	oak	wood	charred	49	44		
Rhus aromatica var. *trilobata*-type	lemonade berry	seed	charred	3			
Rosaceae-type	rose family	wood	charred	1	4		
Scirpus-type	bulrush	achene	charred	20			
Scirpus-type	bulrush	achene	uncharred	3			
Solanaceae-type	potato family	seed	charred	9			
Sphaeralcea-type	globemallow	seed	charred	8			
Sphaeralcea-type	globemallow	seed	uncharred	10			
Stipa hymenoides-type	Indian ricegrass	caryopsis	charred	18			
Stipa hymenoides-type	Indian ricegrass	floret	charred	13			
Stipa hymenoides-type	Indian ricegrass	lemma	charred	52			

Scientific Name	Common Name	Part	Condition	N Samples and Specimens			
				Flotation	Macrofossils	Vegetal	Textile
unknown botanical	unknown	bark fragment	charred		6		
unknown botanical	unknown	berry coat	charred	1			
unknown botanical	unknown	bract	charred	1			
unknown botanical	unknown	bud	charred	2			
unknown botanical	unknown	cone scale	charred	1			
unknown botanical	unknown	disseminule	charred	23			
unknown botanical	unknown	disseminule	uncharred	1			
unknown botanical	unknown	embryo	charred	1			
unknown botanical	unknown	fruit	charred	2			
unknown botanical	unknown	fruit coat	charred	1			
unknown botanical	unknown	fruit top	charred	1			
unknown botanical	unknown	fused mass			2		
unknown botanical	unknown	fused mass	charred		9		
unknown botanical	unknown	leaf	charred	1			
unknown botanical	unknown	organic material	charred	31	7		
unknown botanical	unknown	organic material	uncharred		1		
unknown botanical	unknown	seed	charred	14	1		
unknown botanical	unknown	stem	uncharred		1		
unknown botanical	unknown	tissue	charred	11			
unknown botanical	unknown	twig	charred	5			
unknown botanical	unknown	unknown	charred	11	16		
unknown botanical	unknown	unknown	uncharred		1		
unknown botanical	unknown	wood	charred	11	1		
unknown specimen	unclear if material is botanical or not	black spherical bodies					61
unknown specimen	unclear if material is botanical or not	black spherical bodies	charred	52			
unknown specimen	unclear if material is botanical or	fecal pellet					

Scientific Name	Common Name	Part	Condition	N Samples and Specimens			
				Flotation	Macrofossils	Vegetal	Textile
	not						
unknown specimen	unclear if material is botanical or not	fused mass			1		
Yucca baccata-type	datil yucca	seed	charred	17	2		
Yucca-type	yucca	fiber	charred	1		2	2
Zea mays	maize/corn	cob fragment	charred	18	383		
Zea mays	maize/corn	cob segment	charred	2	219		
Zea mays	maize/corn	cob, whole	charred		1		
Zea mays	maize/corn	cupule	charred	691	519		
Zea mays	maize/corn	ear	charred		1		
Zea mays	maize/corn	ear segment	charred		12		
Zea mays	maize/corn	embryo	charred	6			
Zea mays	maize/corn	fused mass	charred		132		
Zea mays	maize/corn	kernel	charred	349	8,186		
Zea mays	maize/corn	shank	charred		8		
Zea mays	maize/corn	shank segment	charred		2		
Zea mays	maize/corn	stalk segment	charred		8		
TOTAL				5,938	17,048	52	283

Note: The word "type" following a family, genus, or species designation indicates that the ancient botanical specimen is similar to the taxon named, but that other taxa in the area may also have similar-looking parts.

Table 6.3. Plant Foods: Counts of Individual Charred or Partially Charred Non-wood Plant Parts Identified in Flotation and Macrofossil Samples from All Contexts by Subperiod, Shields Pueblo.

			Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Subperiod Not Assigned	TOTAL
Total Number of Flotation and Macrofossil Samples			63	28	296	242	387	79	1,095
Domestic or wild	Taxon	Part	N						
Domestic	*Cucurbita pepo*-type	seed					1		1
Domestic	Cucurbitaceae-type	rind			33	1			34
Domestic	*Phaseolus vulgaris*-type	cotyledon			5	1	2	3	11
Domestic	*Zea mays*	cob fragment		2	129	39	207	24	401
Domestic	*Zea mays*	cob segment	1		56	17	134	13	221
Domestic	*Zea mays*	cob, whole						1	1
Domestic	*Zea mays*	cupule	91	90	369	108	544	8	1,210
Domestic	*Zea mays*	ear					1		1
Domestic	*Zea mays*	ear segment					12		12
Domestic	*Zea mays*	embryo		1	1	2	2		6
Domestic	*Zea mays*	fused mass				54	78		132
Domestic	*Zea mays*	kernel	3	3	140	2,291	5,969	129	8,535
Domestic	*Zea mays*	shank			4	2	1	1	8
Domestic	*Zea mays*	shank segment			1			1	2
Wild	*Amelanchier utahensis*-type	seed				1			1
Wild	cheno-am	embryo			1		1		2
Wild	cheno-am	seed	10	17	435	217	28		707
Wild	*Cleome*-type	seed		2	4	5			11
Wild	*Descurainia*-type	seed			6	1	3		10
Wild	*Echinocereus*-type	seed			1				1

			Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Subperiod Not Assigned	TOTAL
Total Number of Flotation and Macrofossil Samples			63	28	296	242	387	79	1,095
Domestic or wild	Taxon	Part	N						
Wild	Gramineae-type	caryopsis	4	1	31	2	8		46
Wild	*Helianthus*-type	achene			3				3
Wild	*Juniperus*-type	seed						1	1
Wild	Leguminosae-type	seed					1		1
Wild	Malvaceae-type	seed			3		1		4
Wild	*Opuntia* (prickly pear)-type	embryo		2	37				39
Wild	*Opuntia* (prickly pear)-type	seed		7	154	5			166
Wild	*Physalis*-type	berry			5				5
Wild	*Physalis*-type	seed	2	3	126	43	2		176
Wild	*Pinus*-type	cone scale	1		4	1			6
Wild	*Portulaca*-type	seed	4		21	21	6		52
Wild	*Prunus virginiana*-type	seed			2			1	3
Wild	*Rhus aromatica* var. *trilobata*-type	seed			2	1			3
Wild	*Scirpus*-type	achene	3		5	11	1		20
Wild	Solanaceae-type	seed			9				9
Wild	*Sphaeralcea*-type	seed	2		4	1	1		8
Wild	*Stipa hymenoides*-type	caryopsis	1	4	11	1	1		18
Wild	*Stipa hymenoides*-type	floret			13				13

			Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Subperiod Not Assigned	TOTAL
Total Number of Flotation and Macrofossil Samples			63	28	296	242	387	79	1,095
Domestic or wild	Taxon	Part	N						
Wild	*Stipa hymenoides*-type	lemma			2	50			52
Wild	*Yucca baccata*-type	seed		3	16				19
Unknown	unknown botanical	berry coat				1			1
Unknown	unknown botanical	bract	1						1
Unknown	unknown botanical	bud			1		1		2
Unknown	unknown botanical	cone scale				1			1
Unknown	unknown botanical	disseminule			14	1	8		23
Unknown	unknown botanical	embryo	1						1
Unknown	unknown botanical	fruit		1			1		2
Unknown	unknown botanical	fruit coat				1			1
Unknown	unknown botanical	fruit top			1				1
Unknown	unknown botanical	fused mass				1	10		11
Unknown	unknown botanical	seed	1		6	3	4	1	15
TOTAL			125	136	1,655	2,883	7,028	183	12,010

N = number of individual specimens counted.
Note: The word "type" following a family, genus, or species designation indicates that the ancient botanical specimen is similar to the taxon named, but that other taxa in the area may also have similar-looking parts.
Note: Includes all *Zea mays* parts recovered.

Table 6.4. Ubiquity of Charred or Partially Charred Non-wood Plant Parts Considered Foods in All Flotation and Macrofossil Samples from All Contexts, Shields Pueblo.

Context	Number of Samples	Number of Samples with One or More Foods	Percent of Samples with Foods
Thermal features and ashpits	141	96	68.1
Midden deposits	265	98	37.0
Roof fall	369	70	19.0
Other	320	75	23.4

Note: Includes all *Zea mays* parts recovered.

Table 6.5. Metric and Non-Metric Data on 13 Whole or Partial Maize Ears, Shields Pueblo.

Study Unit	PD	FS	Ear Number	Ear Shape	Length (mm)	Rachis Diameter (mm)	Ear Diameter (mm)	Number of Rows	Number of Cupules	Mean Cupule Width (mm)	Number of Kernels	Mean Kernel Length (mm)	Mean Kernel Width (mm)	Mean Kernel Thickness (mm)	Kernel Arrange-ment
STR 224	1309	29	1	E	25	n/a	40	12	5	6.8	4	9.0	7.3	3.3	n/a
STR 224	1309	29	2	E	60	n/a	35	12	5	5.2	4	8.3	7.8	4.5	nonlinear
STR 224	1309	29	3	R	55	5	30	10	5	4.8	4	7.3	7.0	3.0	linear
STR 224	1309	29	4	E	50	n/a	20	12	5	2.8	4	8.3	7.8	3.0	n/a
STR 224	1309	29	5	R	38	4	26	16	5	3.6	4	9.8	8.5	3.8	linear
STR 224	1309	29	6	E	40	n/a	34	10	5	3.6	5	8.2	7.2	3.0	linear
STR 224	1309	29	7	R	30	9	28	12	5	4.0	5	9.2	6.8	3.6	linear
STR 224	1309	29	8	n/a	45	15	24	10	5	4.8	4	8.0	6.8	4.0	nonlinear
STR 224	1256	147	1	R	45	10	30	10	5	6.8	5	8.0	6.8	3.0	linear
STR 224	1256	147	2	R	27	7	20	10	5	6.6	4	8.0	6.0	3.3	nonlinear
STR 224	1256	147	3	R	23	7	23	8	5	7.6	3	7.7	6.0	4.0	n/a
STR 224	1256	147	4	R	19	9	19	10	5	7.0	5	7.2	5.2	4.0	nonlinear
STR 1402	778	26	1	E	75	12	35	12	5	9.6	5	8.2	8.0	4.4	nonlinear
Means, All Maize Ears					40.9	8.7	28.0	11.1		5.6		8.3	7.0	3.6	

PD = Provenience Designation; FS = Field Specimen; E = elliptical, R = round; STR = Structure; n/a = not applicable

Table 6.6. Contexts with More than 50 Charred Maize Specimens Present by Subperiod, Shields Pueblo.

Study Unit	PD	Context
EARLY PUEBLO I		
STR 1318	1247	Maize inside hearth with possibly ephemeral use; 93 total maize parts recovered.
LATE PUEBLO II		
NST 129	918	Maize inside a firepit; 108 total maize parts recovered.
NST 154	744	Possible refuse above a roof; 50 total maize parts recovered.
EARLY PUEBLO III		
STR 1316	2103	Maize associated with a burned roof that collapsed onto the floor; 108 total maize parts recovered.
LATE PUEBLO III		
STR 221	1406	Maize mixed throughout burned roof that collapsed onto the floor; 108 total maize parts recovered.
STR 224	1256, 1309	Maize likely on floor when roof burned and fell on it; 12 incomplete maize ear segments preserved in this location, along with abundant charred kernels and cob segments; 1,729 total maize parts recovered.
STR 225	1117, 1118, 1303, 1307, 1354	Maize kernels either associated with a roof when it burned and fell onto the floor, or possibly on the floor; 1,613 total maize parts recovered.
STR 1106	1886, 2007	Maize associated with a burned roof that collapsed onto the floor, possibly inside pottery vessels that were on top of the roof when it burned; 2,054 total maize parts recovered.
STR 1315	2030, 2036	Maize kernels associated with a roof that burned and fell onto a floor; 827 total maize parts recovered.
STR 1402	750, 756, 778, 929, 1236, 1242	Maize kernels likely stored on or in the rafters of a roof, with whole pottery vessels; roof burned at abandonment and fell directly onto the floor; one complete maize ear preserved in this location; 2,191 total maize parts recovered.

PD = Provenience Designation; NST = Nonstructure; STR = Structure.

Table 6.7. Plant Foods: Ubiquity of Charred or Partially Charred Non-wood Parts in All Flotation Samples by Subperiod, Shields Pueblo.

	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)	
Number of Flotation Samples Analyzed	9		19		51		46		40	
	N	%	N	%	N	%	N	%	N	%
DOMESTICATED TAXA/PARTS										
Cucurbita pepo-type seed									1	2.5
Cucurbitaceae-type rind					2	3.9				
Phaseolus vulgaris-type cotyledon									1	2.5
Zea mays (all parts)	8	88.9	19	100.0	40	78.4	24	52.2	17	42.5
WILD PLANT TAXA/PARTS										
Amelanchier utahensis-type seed							1	2.2		
Cheno-am seed	4	44.4	10	52.6	40	78.4	24	52.2	13	32.5
Cleome-type seed			2	10.5	2	3.9	4	8.7		
Descurainia-type seed					3	5.9	1	2.2	2	5.0
Echinocereus-type seed					1	2.0				
Gramineae-type caryopsis	2	22.2	1	5.3	6	11.8	2	4.3	1	2.5
Helianthus-type achene					2	3.9				
Leguminosae-type seed									1	2.5
Malvaceae-type seed					3	5.9			1	2.5
Opuntia (prickly pear)-type embryo, seed			5	26.3	13	25.5	2	4.3		
Physalis-type berry, seed	1	11.1	3	15.8	9	17.6	9	19.6	1	2.5
Pinus-type cone scale	1	11.1			1	2.0	1	2.2		
Portulaca-type seed	2	22.2			4	7.8	5	10.9	2	5.0

	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)	
Number of Flotation Samples Analyzed	9		19		51		46		40	
Prunus virginiana-type seed					2	3.9				
Rhus aromatica var. *trilobata*-type seed					2	3.9	1	2.2		
Scirpus-type achene	1	11.1			2	3.9	8	17.4	1	2.5
Solanaceae-type seed					1	2.0				
Sphaeralcea-type seed	2	22.2			3	5.9	1	2.2	1	2.5
Stipa hymenoides-type caryopsis, floret, lemma	1	11.1	4	21.1	8	15.7	3	6.5	1	2.5
Yucca baccata-type seed			3	15.8	8	15.7				
Unknown botanical (all parts)	3	33.3	1	5.3	9	17.6	6	13.0	8	20.0
Total number of all separate wild food taxa (except unknowns)	8		7		18		13		10	

N = Number of flotation samples.

Table 6.8. *Zea mays* and Cheno-am Seeds: Ubiquity of Charred Non-wood Plant Parts in Flotation Samples from Thermal Features/Ashpits and Midden Deposits by Subperiod, including the Number of Additional Food Taxa in the Samples, Shields Pueblo.

	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)	
THERMAL FEATURES AND ASHPITS										
Total Number of Flotation Samples	8		9		25		35		35	
Number of Additional Taxa	6		3		14		9		10	
Taxon and Part(s)	N	%	N	%	N	%	N	%	N	%
Cheno-am embryo and seed	3	37.5	6	66.7	21	84.0	14	40.0	10	28.6
Zea mays (all parts)	8	100.0	9	100.0	19	76.0	17	48.6	15	42.9
Zea mays (kernels)	2	25.0	2	22.2	7	28.0	13	37.1	8	22.9
Zea mays (cob parts)	8	100.0	9	100.0	19	76.0	10	28.6	10	28.6
MIDDEN DEPOSITS										
Total Number of Flotation Samples	0		10		24		11		0	
Number of Additional Taxa	–		5		13		9		–	
Taxon and Part(s)	N	%	N	%	N	%	N	%	N	%
Cheno-am embryo and seed	–	–	4	40.0	19	79.2	10	90.9	–	–
Zea mays (all parts)	–	–	10	100.0	21	87.5	7	63.6	–	–
Zea mays (kernels)	–	–	1	10.0	4	16.7	0	0	–	–
Zea mays (cob parts)	–	–	10	100.0	21	87.5	7	63.6	–	–

N=Number of samples containing the taxon/part(s).

Table 6.9. Fuels: Counts of All Charred or Partially Charred Non-reproductive Parts and *Zea mays* Non-food Parts in Flotation and Macrofossil Samples from All Contexts by Subperiod, Shields Pueblo.

Wild or Domestic	Taxon	Part	Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Subperiod Not Assigned
Domestic	*Zea mays*	cob fragment		2	129	39	207	24
Domestic	*Zea mays*	cob segment	1		56	17	134	13
Domestic	*Zea mays*	cob, whole						1
Domestic	*Zea mays*	cupule	91	90	369	108	544	8
Domestic	*Zea mays*	shank			4	2	1	1
Domestic	*Zea mays*	shank segment			1			1
Domestic	*Zea mays*	stalk segment			6			2
Unknown	unknown botanical	bark fragment	1			3	2	
Unknown	unknown botanical	cone scale				1		
Unknown	unknown botanical	leaf			1			
Unknown	unknown botanical	twig			3	2		
Unknown	unknown botanical	wood	6		3	1	2	
Wild	*Amelanchier/ Peraphyllum*-type	wood			33	44	31	4
Wild	*Artemisia tridentata*-type	leaf			1	2		
Wild	*Artemisia tridentata*-type	wood	33	35	72	83	53	
Wild	*Artemisia*-type	leaf			1			
Wild	*Artemisia*-type	wood	69	43	278	226	432	50
Wild	*Atriplex*-type	wood	1		3	1	2	
Wild	*Cercocarpus*-type	wood	1	3	19	11	8	2

Wild or Domestic	Taxon	Part	Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Subperiod Not Assigned
Wild	*Chrysothamnus*-type	wood	3	1	81	29	18	1
Wild	*Ephedra*-type	wood			4	1		
Wild	*Juniperus*-type	bark fragment				6		
Wild	*Juniperus*-type	scale leaf			2	1	11	
Wild	*Juniperus*-type	twig	4	4	40	22	1	
Wild	*Juniperus*-type	wood	457	195	1,671	1,524	2,645	260
Wild	Monocotyledon-type	stem (culm)			4			
Wild	*Phragmites*-type	stem (culm)	1					
Wild	*Pinus*-type	bark scale	25	7	55	271	34	
Wild	*Pinus*-type	cone scale	1		4	1		
Wild	*Pinus*-type	needle		2	1			
Wild	*Pinus*-type	twig	1	2	9		3	
Wild	*Pinus*-type	wood	204	58	364	323	121	16
Wild	*Populus/Salix*-type	twig				48		
Wild	*Populus/Salix*-type	wood		2	41	37	84	6
Wild	*Prunus virginiana*-type	wood				1		
Wild	*Prunus/Rosa*-type	wood			4	1		
Wild	*Purshia*-type	wood		3	2	6	3	
Wild	*Quercus*-type	wood	1	1	32	40	19	
Wild	Rosaceae-type	wood				3	2	

Table 6.10. Fuels: Ubiquity of Charred or Partially Charred Non-reproductive Plant Parts and *Zea mays* Nonfood Parts in Flotation Samples from Thermal Features/Ashpits and Middens by Subperiod, Shields Pueblo.

	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)	
THERMAL FEATURES AND ASHPITS										
Total Number of Flotation Samples	8		9		25		35		35	
Scientific Name	N	%	N	%	N	%	N	%	N	%
Amelanchier/Peraphyllum-type					5	20.00	6	17.10	9	25.70
Artemisia tridentata-type			4	44.40	7	28.00	14	40.00	5	14.30
Artemisia-type	8	100.00	4	44.40	16	64.00	8	22.90	11	31.40
Cercocarpus-type			1	11.10			2	5.70	3	8.60
Chrysothamnus-type					11	44.00	3	8.60	2	5.70
Ephedra-type							1	2.90		0.00
Juniperus-type	8	100.00	9	100.00	18	72.00	25	71.40	25	71.40
Pinus-type	7	87.5	6	66.70	15	60.00	22	62.90	15	42.90
Populus/Salix-type					6	24.00	7	20.00	8	22.90
Purshia-type			1	11.10			1	2.90		0.00
Quercus-type					8	32.00	4	11.40	8	22.90
Rosaceae-type									1	2.90
unknown botanical	3	37.5			3	12.00	2	5.70	2	5.70
Zea mays	8	100.00	9	100.00	19	76.00	10	28.60	10	28.60
MIDDEN DEPOSITS										
Total Number of Flotation Samples	0		10		24		11		0	
Scientific Name	N	%	N	%	N	%	N	%	N	%
Amelanchier/Peraphyllum-type	–	–			3	12.50	4	36.40	–	–
Artemisia tridentata-type	–	–	1	10.00	2	8.30	2	18.20	–	–
Artemisia-type	–	–	7	70.00	14	58.30	5	45.50	–	–
Cercocarpus-type	–	–			1	4.20			–	–

	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)	
Chrysothamnus-type	–	–	1	10.00	4	16.70	1	9.10	–	–
Juniperus-type	–	–	9	90.00	24	100.00	11	100.00	–	–
Monocotyledon-type	–	–			1	4.20			–	–
Pinus-type	–	–	7	70.00	17	70.80	7	63.60	–	–
Populus/Salix-type	–	–	1	10.00	2	8.30	2	18.20	–	–
Prunus/Rosa-type	–	–			1	4.20			–	–
Quercus-type	–	–	1	10.00	2	8.30	1	9.10	–	–
unknown botanical	–	–			1	4.20			–	–
Zea mays			10	100.00	21	87.50	7	63.60	–	–

N = Number of samples containing the taxon.

Table 6.11. Counts and Ubiquity of All Tree-Ring Specimen Identifications Made by the Laboratory of Tree-Ring Research, Shields Pueblo.

Tree Species	Number Identified	%
Juniper	2,550	93.03
Pinyon	141	5.14
Douglas fir	20	0.73
Cottonwood or aspen	12	0.44
Ponderosa pine	10	0.37
Nonconiferous	5	0.18
Oak	2	0.07
Spruce/Fir	1	0.04
TOTAL	2,741	100.0

Table 6.12. Counts of Identified Tree-Ring Specimens with Cutting Dates from Roof-Fall Contexts by Subperiod, Shields Pueblo.

	Early Pueblo I (A.D. 725–800)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)
Tree Species	N			
Douglas fir	0	0	1	0
Juniper	4	9	16	23
Pinyon	4	0	0	0

N = Number of individual specimens.

Table 6.13. Construction Materials and Plants Associated with Roofs: Counts of All Charred or Partially Charred Parts in Flotation and Macrofossil Samples from Roofs by Subperiod, Shields Pueblo.

Wild or Domestic	Scientific Name	Part	Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Subperiod Not Assigned
Domestic	Cucurbitaceae--type	rind				1		
Domestic	*Zea mays*	cob fragment			2	19	88	8
Domestic	*Zea mays*	cob segment	1		2	8	42	1
Domestic	*Zea mays*	cupule					50	
Domestic	*Zea mays*	fused mass				54	32	
Domestic	*Zea mays*	kernel	1		7	2,248	2,796	20
Wild	*Amelanchier/ Peraphyllum*-type	wood			2	8	3	3
Wild	*Artemisia tridentata*-type	wood	33			27	41	
Wild	*Artemisia*-type	wood	28	1	15	145	246	14
Wild	*Atriplex*-type	wood	1				1	
Wild	*Cercocarpus*-type	wood		1	3	3	4	1
Wild	cheno-am	seed	2					
Wild	*Chrysothamnus*-type	wood	2		4	5	10	
Wild	*Juniperus*-type	bark fragment				6		
Wild	*Juniperus*-type	wood	149	48	254	921	1,126	59
Wild	*Phragmites*-type	stem (culm)	1					
Wild	*Pinus*-type	wood	73	5	63	99	11	1
Wild	*Populus/Salix*-type	wood				4	13	4
Wild	*Prunus/Rosa*-type	wood				1		
Wild	*Purshia*-type	wood				5	3	
Wild	*Quercus*-type	wood			2	16	2	
Wild	Rosaceae-type	wood				2	1	
Wild	*Yucca*-type	fiber	2					
Unknown	unknown botanical	bark fragment	1			3	1	
Unknown	unknown botanical	fused mass				1	10	
Unknown	unknown botanical	organic material					2	
Unknown	unknown botanical	unknown					16	
Unknown	unknown botanical	wood				1		
TOTAL			294	55	354	3,577	4,498	111

Table 6.14. Construction Materials and Plants Associated with Roofs: Ubiquity of All Charred or Partially Charred Parts in Flotation and Macrofossil Samples from Roofs by Subperiod, Shields Pueblo.

Wild or Domestic	Scientific Name	Part	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)		Subperiod Not Assigned	
Number of Samples Analyzed			N = 24	%	N = 6	%	N = 36	%	N = 116	%	N = 181	%	N = 6	%
Domestic	Cucurbitaceae-type	rind							1	0.9				
Domestic	*Zea mays*	cob fragment, cob segment, cupule, fused mass, kernel	2	8.3			6	16.7	18	15.5	36	19.9	2	33.3
Wild	*Amelanchier/ Peraphyllum*-type	wood					2	5.6	5	4.3	2	1.1	1	16.7
Wild	*Artemisia tridentata*-type	wood	2	8.3					6	5.2	6	3.3		
Wild	*Artemisia*-type	wood	7	29.2	1	16.7	7	19.4	31	26.7	52	28.7	4	66.7
Wild	*Atriplex*-type	wood	1	4.2							1	0.6		
Wild	*Cercocarpus*-type	wood			1	16.7	1	2.8	2	1.7	3	1.7	1	16.7
Wild	cheno-am	seed	1	4.2										
Wild	*Chrysothamnus*-type	wood	2	8.3			2	5.6	4	3.4	6	3.3		
Wild	*Juniperus*-type	bark fragment, wood	18	75.0	5	83.3	29	80.6	93	80.2	135	74.6	5	83.3
Wild	*Phragmites*-type	stem (culm)	1	4.2										
Wild	*Pinus*-type	wood	13	54.2	3	50.0	18	50.0	29	25.0	9	5.0	1	16.7
Wild	*Populus/Salix*-type	wood							2	1.7	7	3.9	2	33.3
Wild	*Prunus/Rosa*-type	wood							1	0.9				
Wild	*Purshia*-type	wood							3	2.6	2	1.1		
Wild	*Quercus*-type	wood					2	5.6	9	7.8	1	0.6		
Wild	Rosaceae-type	wood							1	0.9	1	0.6		
Wild	*Yucca*-type	fiber	1	4.2										
Unknown	unknown botanical	bark fragment, fused mass, organic material, unknown, wood	1	4.2					4	3.4	10	5.5		

Table 6.15. Intentionally Modified Artifacts Made of Wild Plant Materials, Shields Pueblo.

PD	FS	Artifact Category	Study Unit	Feature Number	Feature Type	Fill / Assemblage Position	Fill / Assemblage Type	Subperiod	Scientific Name	Common Name	Description
918	4	other modified vegetal	NST 129	1	firepit	fill: surface feature contents	mixed deposit: other	Late Pueblo II (A.D. 1060–1140)	*Yucca*-type	yucca	2-ply s-spun Z-twist (2s-Z) fiber cordage
918	32	flotation sample	NST 129	1	firepit	fill: surface feature contents	mixed deposit: other	Late Pueblo II (A.D. 1060–1140)	*Yucca*-type	yucca	2-ply z-spun S-twist (2z-S) fiber cordage knot, composed of finely processed individual fibrils
1406	68	other modified vegetal	STR 221			fill: roof fall	collapsed structure: with mixed refuse	Late Pueblo III (A.D. 1225–1280)	*Juniperus*-type	juniper	Incomplete, wooden, *Juniperus*-type batten; both ends present; minimum length 13 cm, 4.5 cm wide, 1.5 cm thick; smoothed on both surfaces and ends; one end tapered and the other rounded.
1277	6	textile	STR 141			fill: wall fall and roof fall	collapsed structure: not further specified	Early Pueblo I (A.D. 725–800)	*Yucca*-type	yucca	2s-Z fiber cordage, forming the warp of a textile fragment.
1277	6	textile	STR 141			fill: wall fall and roof fall	collapsed structure: not further specified	Early Pueblo I (A.D. 725–800)	*Yucca*-type	yucca	3-ply z-spun S-twist (3z-S) fiber cordage, forming the weft of a textile fragment, composed of finely processed individual fibrils

PD	FS	Artifact Category	Study Unit	Feature Number	Feature Type	Fill / Assemblage Position	Fill / Assemblage Type	Subperiod	Scientific Name	Common Name	Description
2107	23	other modified vegetal	STR 1316			surface contact: prepared floor surface	cultural deposit: de facto refuse	Early Pueblo III (A.D. 1140–1225)	*Populus/ Salix*-type	cottonwood/ willow	Appear split or cut in half; edges appear flattened on some; most range between 45 and 70 mm in length and 5 mm in diameter.
2107	22	other modified vegetal	STR 1316			surface contact: prepared floor surface	cultural deposit: de facto refuse	Early Pueblo III (A.D. 1140–1225)	*Populus/ Salix*-type	cottonwood/ willow	Appear split or cut in half; edges appear flattened on some; most range between 45 and 70 mm in length and 5 mm in diameter.

PD = Provenience Designation; FS = Field Specimen; NST = Nonstructure; STR = Structure
Note: All specimens are charred. The word "type" following a family, genus, or species designation indicates that the ancient botanical specimen is similar to the taxon named, but that other taxa in the area may also have similar-looking parts.

Table 6.16. Overview of Plant Patterns in Five Subperiods, Shields Pueblo.

Pattern	Early Pueblo I	Middle Pueblo II	Late Pueblo II	Early Pueblo III	Late Pueblo III
Domesticates recovered	Maize	Maize	Maize, beans, squash	Maize, beans, squash	Maize, beans, squash
Maize (all parts), all contexts	88.9%	100%	78.4%	52.2%	42.5%
Maize (all parts) in thermal features/ashpits	100%	100%	76%	48.6%	42.9%
Maize (all parts) in middens	No samples	100%	87.5%	63.6%	No samples
Maize macrofossils, locations where 50 or more parts preserved	In one hearth		In one firepit; also with refuse above one roof	Associated with roof of one burned pit structure	Associated with roofs or floors of six burned pit structures
Diversity of wild foods	N = 8	N = 7	N = 18	N = 13	N = 10
Cheno-am seeds in thermal features/ashpits	37.5%	66.7%	84.0%	40.0%	28.6%
Cheno-am seeds in middens	No samples	40.0%	79.2%	90.9%	No samples
Top-ranking fuels in thermal features/ashpits	Juniper 100% Pine 87.5% Maize 100% Sagebrush 100%	Juniper 100% Pine 66.7% Maize 100% Sagebrush 44.4%	Juniper 72.0% Pine 60% Maize 76% Sagebrush 64.0%	Juniper 71.4% Pine 62.9% Maize 28.6% Sagebrush 22.9%	Juniper 71.4% Pine 42.9% Maize 28.6% Sagebrush 31.4%
Top-ranking fuels in middens	No samples	Juniper 90.0% Pine 70.0% Maize 100% Sagebrush 70.0%	Juniper 100% Pine 70.8% Maize 87.5% Sagebrush 8.3%	Juniper 100% Pine 63.6% Maize 63.6% Sagebrush 45.5%	No samples
Top-ranking construction elements/closing layers	Juniper 75% Pine 54.2% Sagebrush 29.2%	Juniper 83.3% Pine 50.0%	Juniper 80.6% Pine 50.0% Sagebrush 19.4%	Juniper 80.2% Pine 25.0% Sagebrush 26.7%	Juniper 74.6% Pine 5.0% Sagebrush 28.7%

Percent (%) = ubiquity of charred or partially charred plant parts in flotation samples. N = total number of separate wild food taxa (except unknowns) per subperiod. Earliest two subperiods have small sample sizes.
Note: Based on Tables 6.3, 6.6, 6.7, 6.8, 6.10, and 6.14, above.

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Chapter 7

Pollen Analysis from Shields Pueblo

by Karen R. Adams

Introduction

Botanical remains systematically recovered from Shields Pueblo provide an opportunity to examine the role of plant resources in the subsistence economy of Pueblo Indians over multiple centuries between the Early Pueblo I (A.D. 725–800) and the post–Pueblo III Depopulation (A.D. 1280–1300) periods. This chapter presents the analysis results of pollen samples collected from selected contexts to investigate the following: to detect and interpret ancient patterns of food use through time; to assess the activities that took place within pit structure/kivas at Shields Pueblo; and to examine environmental change and the role of human impacts to the local environment.

Pollen samples from Shields Pueblo were collected to provide insight into the varied use(s) of pit structures/kivas. We can infer the use of these structures from the features they contain, the associated artifacts, large plant materials including seeds and charred wood, and the pollen left from plant usage. We can also infer the extent to which domestic activities (such as the preparation, cooking, and consumption of foods) took place in these structures.

Additionally, the pollen record might reveal changes in the composition of the surrounding plant communities and how these changed over the long-term occupation of Shields Pueblo. Two potential sources of landscape change are human impacts and natural climatic shifts. To distinguish between these two sources, economic plants were identified, changes in plant use were documented, and their response(s) to anthropogenic (human-caused) impacts was assessed.

Finally, pollen data presented here complement interpretations of larger plant remains recovered via flotation samples and as macrofossils collected by archaeologists (see Chapter 6). Some patterns displayed by the pollen data reinforce patterns observed in the larger plant remains, and others diverge to reveal unique aspects of past plant use. Together the pollen data and record of larger plant remains reveal a detailed understanding of past plant use, and provide the best means to reconstruct the prehistoric plant communities in the vicinity of Shields Pueblo.

Nature of Sample Set

A total of 44 pollen samples from Shields Pueblo was analyzed. These samples were collected from sealed contexts on pit structure/kiva floors (N=27), from naturally deposited sediments just above roof fall in pit structures/kivas (N=10), and from the modern ground surface (N=7). These samples represent contexts dating from seven subperiods: Early Pueblo I (A.D. 725–800); Late Pueblo II (A.D. 1060–1140); Early Pueblo III (A.D. 1140–1225); Late Pueblo III (A.D. 1225–1260); Terminal Pueblo III (A.D. 1260–1280); Depopulation (A.D. 1280–1300); and the present day (A.D. 1990–2000). Samples from the modern ground surface provide a set of control samples against which the ancient samples can be compared.

Methods for Analyzing Pollen Samples

The majority of pollen samples were extracted and analyzed by Dr. John Jones at Texas A&M University. All pollen samples discussed here have a minimum count of 200 pollen grains. In some samples, a small number of pollen grains could not be identified, and were labeled "indeterminate." These were only a small fraction of the pollen in any context, and are not discussed further. Four samples collected from the modern ground surface in 1990/1991 were also extracted by Dr. John Jones, but were analyzed and interpreted by Jannifer W. Gish (Gish 1999).

Methods for Interpreting Pollen Samples

Pollen Variables Affecting Interpretation

Pollen data are difficult to interpret, because of varied modes of natural pollen transport (primarily wind and insect) and because it can be difficult to segregate naturally deposited pollen from culturally deposited pollen in archaeological contexts. To interpret pollen from Shields Pueblo, an analytical framework that focused on identifying the mode of deposition (natural vs. cultural), and then defining a set of source areas for the pollen (local, restricted-local, regional) was utilized.

Pollen Depositional Processes

Natural deposition of pollen is influenced by the manner in which plants are pollinated. Pollen grains of wind-pollinated (anemophilous) plants are generally more widespread and occur in higher abundance in natural deposits than do the rarely observed pollen grains of insect-pollinated (entomophilous) plants, which do not travel far from the parent plant. Once pollen has been deposited in sediments at an archaeological site, it can then be moved by water or by the colluvial movement of sediments.

Cultural deposition of pollen occurs when people bring plants or plant parts into a dwelling or settlement to be processed and used. Pollen grains of ancient domesticates such as maize/corn (*Zea mays*), squash (*Cucurbita*), common beans (*Phaseolus vulgaris*), gourd (*Lagenaria siceraria*), and cotton (*Gossypium*) are all assumed to have been culturally deposited; however, two of these (common beans and gourd) are rarely identified in the pollen record, and the pollen of domesticated squash is very difficult to distinguish from pollen of wild members of the squash family. The pollen of wild plants formed within flowers can become attached to fruit or vegetative plant surfaces and be transported during plant gathering and use. For wild plants, the methods utilized to identify human usage of plants differ between those plants that are insect pollinated and those that are wind pollinated.

Approaches for Recognizing Cultural Origin of Pollen Types

More than one line of evidence can be used to build a case for cultural deposition of insect-carried pollen found within ancient dwellings or other archaeological contexts (Bohrer 1981). These include: flower organization, where some flowers trap pollen better than others; modern experiments that determine whether pollen normally travels on harvested plant parts; ecological evidence of preferred plant habitats; and the presence of other plant parts, such as seeds, fruits, or vegetative parts. Evidence suggests that pollen of insect-pollinated plants is often likely to have been culturally deposited, when found in archaeological contexts.

Wind-pollinated types transported by wind currents easily entered ancient dwellings without human assistance. Therefore, for comparative purposes, it is helpful to gather data on the pollen levels of common local plants that occur in modern soil surface samples (Bohrer 1981). When wind-carried pollen types in ancient contexts exceed natural levels by significant amounts, a plausible argument can be made to suggest human transport of plants with pollen attached.

For both modes of pollen transportation, palynologists also pay close attention to the recovery of pollen-grain aggregates or pollen-rich anthers of wind- and insect-carried pollen types (e.g., Gish 1979, 1991). Pollen aggregates are multiple immature to nearly mature pollen grains that stick together in clumps, and occasionally drop onto the ground surface below a plant. In the case of wind-carried types, individual aggregates with large numbers of grains, or the presence of multiple aggregates, are considered evidence of human gathering and transport of a resource. In the case of insect-carried types, simply the presence of aggregates is generally interpreted to reflect human use of a resource.

Finally, the rich ethnographic record of the historic period in the American Southwest often reports historical usage of taxa recovered as pollen grains in the prehispanic record. For all plant taxa recovered in Crow Canyon Archaeological Center (Crow Canyon) sites, an ethnographic compendium (Rainey and Adams 2004) reports extensive historical documentation of plant uses by American Indians in the Southwest, for construction materials, food, fuel, medicine, tools, ritual, and other reasons. Comparison of ethnographic to archaeological records (Huckell and Toll 2004) suggests that Southwestern native societies have used the same plants for centuries.

Pollen Interpretation Groups

The interpretation of pollen data is aided by defining pollen groups. For this study, three source area groups—local, restricted-local, and regional—reflect distance from Shields Pueblo, and each includes a limited number of representative plants (Table 7.1). Although most of the plants from these source areas have been gathered and used by modern and ancient humans, pollen from some of them can also provide perspective on the changing nature of the immediate environment surrounding Shields Pueblo over time. A fourth group of plants includes many resources considered to be economic or potentially economic (Table 7.2), and is utilized to help recognize cultural use of plants within Shields Pueblo structures over time.

Local Plants

Local pollen types are from plants that are present and abundant in the area immediately surrounding Shields Pueblo. These include: (a) plants in the pinyon pine/juniper (*Pinus edulis/Juniperus*) woodland; (b) shrubs such as sagebrush (*Artemisia*) typical of open patches in the woodland and of fallow agricultural fields; and (c) plants of disturbed habitats such as members of the goosefoot family (Chenopodiaceae) and pigweed (*Amaranthus*), together referred to in this report as Cheno-ams. All of these local plants produce pollen carried primarily on wind currents.

Restricted-Local Plants

Restricted-local types are also from plants that grow in the vicinity, but that are restricted to damp or wet locations. Some examples include willow (*Salix*), cattail (*Typha*), and greasewood (*Sarcobatus*). Willow pollen is insect pollinated, and cattail pollen occurs naturally in tetrads (groups of four pollen grains adhering in a clump), restricting its ability to travel far from parent plants. Greasewood is wind pollinated.

Regional Plants

Regional types are from plants that grow primarily in the higher elevations of the region some distance from Shields Pueblo. Some examples include ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga*), spruce (*Picea*), and alder (*Alnus*). Plants within this group are all wind pollinated.

Economic or Potentially Economic Plants

Plants within this group all have known ethnographic use(s), and/or have been interpreted to reflect plant use in other ancient sites in the American Southwest. Economic plants share pollination via insects, or have heavy pollen grains not transported far on wind currents. Potentially economic plants are all wind-pollinated. The wide diversity of historical American Indian uses for these plants—for example, as construction elements, foods, fuel, medicines, in serving ritual needs, and for many other purposes—can be viewed in a large ethnographic compendium (Rainey and Adams 2004), searchable by both scientific and common names.

Other Analytical Issues

Analytical conventions affect how pollen data are interpreted. Because pollen data are traditionally presented as a percentage of the total sample grain count, the representation of each taxon is affected by the relative presence of all other taxa in the sample. If, for example, the pollen from a particular taxon is especially abundant, the percentages of other taxa in the sample are automatically reduced. Despite this limitation, pollen percentages are discussed in this report. Palynologists at times report the concentration of individual pollen taxa (as pollen grains/cubic centimeter [cm] or pollen grains/g of sediment examined). However, interpretations of concentration values are hampered by differences among samples in the amount(s) of time represented by each sample, which can vary by archaeological context or other circumstances.

Pollen Sampling at Shields Pueblo

The pollen sampling strategy at Shields Pueblo (Table 7.3) follows methods that have been developed during a series of projects conducted by Crow Canyon (Ortman et al. 2005). This strategy was designed to enhance ability to interpret pollen sample results by focusing on contexts where both the mode of pollen deposition can be inferred and the period of deposition can be specified. By restricting sampling to locations where primarily cultural or primarily natural pollen deposition is likely, and by specifying when pollen was most likely deposited, inferences about the human use of plants are more secure. Pollen samples important to this sampling strategy include: modern control samples; naturally deposited sediment located just above roof fall in pit structure/kivas; and sealed contexts on pit structure/kiva floors.

Modern Control Samples

Modern control samples (N=7) from the modern ground surface contain pollen deposited by natural processes, primarily wind. Four of these samples were reported previously (Gish 1999), and three new samples were analyzed for this report. The pollen in modern ground surface samples comes from known plant communities. This small number of samples provides a broad understanding of the relationship between particular vegetation communities and the pollen signatures they leave. Presence of insect-carried pollen types most likely reflects samples taken in close proximity to insect-pollinated plants.

Modern control samples serve as a proxy record for natural deposition of pollen in a given location in the past, although there are some limitations to this approach. The modern surface samples derive from biotic communities affected by modern disturbances such as grazing, fire suppression, land development, and new agricultural technologies, and the pollen of historically introduced plants from other continents may be present. Also, the modern samples were collected during the summer growing season, but because ancient pollen deposition occurred during multiple seasons, this might affect presence and abundance of certain types. In addition, any comparison between modern pollen spectra and ancient spectra may be biased by differential preservation of pollen taxa in the ancient samples. However, such comparisons provide a systematic way to identify anomalous pollen percentages in the ancient samples. These anomalies can then be inferred to represent cultural use(s) of plants in the past.

The seven modern samples examined for this study were all acquired during summer growing seasons, when many plants were in the midst of or had just finished pollination. Four of the samples were collected from different settings in the pinyon pine/juniper woodland: one with sagebrush (*Artemisia*) understory, one with saltbush (*Atriplex*) understory, and two with understories of diverse composition (Gish 1999). Two additional samples were gathered in the vicinity of Shields Pueblo: one from an agricultural field that had been fallow for approximately 30 years, and the other from a highly disturbed agricultural field plowed a few months prior to sampling. The final sample is from a sagebrush parkland located within the Goodman Point Ruins Group Unit of Hovenweep National Monument, approximately 200 meters south of the site. Protected by the federal government since 1889, the Goodman Point Unit is a pinyon pine/juniper woodland interspersed with sagebrush parklands that has been spared from historical impacts for over 100 years. The area represents one of the most pristine vegetation communities in the area.

Pit Structure/Kiva Fill Samples

Pit structure/kiva fill samples (N=10) represent four time periods at Shields Pueblo (see Table 7.3). Fill samples above roof fall in pit structure/kivas contain naturally (wind- and water-) deposited sediments that are immediately above culturally deposited roof fall. This fill was deposited soon after the individual structures ceased to be occupied, often when their roofs had been either deliberately burned or dismantled. The deposition of pollen in these sediments is assumed to have occurred within a year or two of structure abandonment (Kilby 1998). The presence of pollen of cultigens or other economic plants in these fill samples is considered evidence of continued use of these plants near these structures, but not in the abandoned structures themselves.

By controlling for time and the mode of deposition, fill samples can be used to reconstruct the natural environment during these four time periods. This provides a record of how the environment may have changed through time. Fill samples from the Terminal Pueblo III (A.D. 1260–1280) and Depopulation (A.D. 1280–1300) periods provide a record of the surrounding environment during this particularly important time. Drought, falling water tables, floodplain erosion, and unpredictable and irregular rainfall following A.D. 1275 (Van West and Dean 2000), and severe cold and drought in the thirteenth century (Petersen 1988, 1994) have all been suggested as stressful for the region's agriculturalists. Comparison of earlier samples with those from the Terminal Pueblo II and Depopulation periods may reveal how the centuries-long occupations of Shields Pueblo and the Goodman Point community altered local plant communities, and the degree to which these kinds of human impacts could have contributed to depopulation of Shields Pueblo and the region.

Finally, when grouped by time period, structure fill samples serve as controls that aid in the interpretation of the pit structure/kiva floor samples. Because these fill samples were likely deposited shortly after the pit structure/kivas were abandoned, they are assumed to date from the same general time period as the structures. Therefore, differences between floor and fill samples dating from the same time period are not likely to be due to changes in the environment over time. Since the deposition in fill samples is due to natural processes, primarily wind deposition, differences between fill and floor samples are most likely due to the economic use of plants resulting in cultural deposition of pollen on pit structure/kiva floors. Economic pollen recovered in fill samples is assumed to derive from continued use of plants in the vicinity of abandoned structures.

Pit Structure/Kiva Floor Samples

Pit structure/kiva floor samples (N=27) represent four time periods at Shields Pueblo (see Table 7.3). These include three floor samples from the Early Pueblo I period, six from the Late Pueblo II period, 11 from the Early Pueblo III period, and seven from the Late Pueblo III period (A.D. 1225–1260).

Floor pollen samples were all collected from beneath stone slabs that rested directly on floor surfaces. Floor sediments were often discolored from structure use. Pollen samples were always collected from thin lenses of discolored floor sediments lying directly beneath the stone slabs. The pollen recovered from pit structure/kiva floors probably contains limited amounts of naturally deposited pollen. Wind-carried pollen grains most likely entered through the smoke hole in the roof or through the ventilation system. Chances of insects depositing pollen on pit structure/kiva floors seem low, increasing the likelihood that pollen from insect-pollinated plants results from people bringing plants into the structures.

Sealed-context pit structure/kiva floor pollen samples can be quite informative. First, they can reflect cultural activities that took place within each structure while it was in use, but they do not generally include pollen deposited following structure abandonment. Second, they offer some insight into the environment during the period of structure use, both via the pollen that entered the structure naturally, and from the plants routinely carried into the structures by humans. Finally, samples from different time periods provide a chance to look at change over time in both cultural plant choice and in the environment.

Results

The pollen samples analyzed from Shields Pueblo are first discussed by context: modern controls, pit structure/kiva fill samples, and pit structure/kiva floor samples. This is followed by an evaluation of any change through time in economic pollen deposition. Finally, environmental change/human impact on vegetation communities through time is assessed. In the following sections, only general use categories (e.g., construction, food, fuel, medicine, ritual, other) are listed for plants considered economic or potentially economic, and readers interested in more details can view detailed historical information on plants and their multiple uses in the ethnographic compendium (see Rainey and Adams 2004).

Modern Control Samples

Pollen within modern control samples represents more than one source area (Table 7.4). For the purposes of this discussion, the four modern samples from pinyon pine/juniper woodland settings (samples 42, 43, 44, and 45) are grouped together and compared to the three samples from open settings around Shields Pueblo that include a long-term fallow agricultural field (sample 1), a recently plowed agricultural field (sample 2), and a sage parkland (sample 3). This small number of modern surface samples requires a level of caution during interpretation.

Local

The modern samples from within pinyon pine/juniper woodland settings contain an average of 41 percent juniper pollen and 28 percent pinyon pine pollen. In open settings, the juniper pollen (28 percent) and pinyon pine pollen (16 percent) averages are both much lower. Sagebrush pollen (9 percent) and Cheno-am pollen (9 percent) averages in pinyon pine/juniper woodland settings also contrast with the open settings, where these taxa are better represented (sagebrush 19 percent, Cheno-am 22 percent). Oaks (*Quercus*) contributed only a small amount of background pollen to both woodland and open settings. Since pollen grains of locally common saltbush (*Atriplex*) are indistinguishable from other Cheno-am pollen grains, and the pollen grains of rabbitbrush (*Chrysothamnus*) are grouped with high-spine Asteraceae (showy-flowered members of the sunflower family), the presence of these two shrubs in the pollen record cannot be known.

Restricted-Local

Local plants that require access to ground moisture are not well represented in the seven modern surface samples. Plants such as willow (*Salix*) and greasewood (*Sarcobatus*) contributed only small amounts of pollen to only two samples each.

Regional

Higher-elevation ponderosa pine trees contributed pollen to six of the seven modern surface samples in percentages ranging from 0.5 to 7.0 percent. Pollen grains of spruce (*Picea*) and Douglas fir (*Pseudotsuga*) are present in limited amounts, as are pine pollen grains not identified to species. It is clear that plants growing some distance from the study area contribute small amounts of pollen to sediments in the area around Shields Pueblo.

Economic or Potentially Economic Plants

Modern surface samples include low levels of pollen types grouped here as economic or potentially economic (see Table 7.4). No single economic type occurs in percentages above 2 percent, consistent with plants dropping small amounts of their pollen to the ground below. Higher percentages of these plants in pit structure/kiva fill and floor samples indicate their use by occupants of Shields Pueblo. Wind-pollinated members of the sunflower family (low-spine Asteraceae) comprise an average of 4 percent of woodland surface pollen and an average of 7 percent of open setting pollen. Likewise, the average for grass (Poaceae) pollen is 2 percent for both woodland and open settings. These natural levels of pollen are compared to pollen recovered from pit structure/kiva fill and floor samples to help recognize significant departures suggestive of cultural plant use or possible environmental shifts. The presence of maize (*Zea mays*) grains in two modern surface samples, some of them as aggregates, may relate to historic-era farming by homesteaders in the early 1900s.

Overview of Modern Control Samples

Generally, locally produced pollen types appear to accurately reflect their surrounding vegetation type. Due to their more closed canopy settings, pinyon pine/juniper woodlands are dominated by pollen of pinyon pine and juniper trees; the samples have a smaller component of local shrub and herbaceous vegetation. Presence of aggregated grains of juniper, pinyon pine, and Cheno-ams in the woodland samples suggest natural deposition of pollen clumps from nearby plants. In contrast, open settings have a larger shrub and herbaceous pollen component, although these settings also receive pollen from nearby woodlands. Pollen grains from restricted-local and regional plants are a minor constituent of local woodland and open settings, indicating that pollen from these plants does not travel far naturally. The pollen of economic or potentially economic plants also occurs in relatively low levels in both woodland and open settings, providing a baseline for evaluating the cultural use of plants at Shields Pueblo during its occupation.

Open settings also contain pollen signatures of human impact. In contrast to the woodlands, the pollen samples from agricultural fields and a sage parkland together have a high average percentage of plants that thrive in disturbed settings (Cheno-ams). They also have more sagebrush pollen from shrubs that moved into agricultural fields after farming stopped. Comparison of the different open settings (see Table 7.4) indicates that the recently plowed agricultural field had a lower disturbed-ground Cheno-am percentage (16 percent) than the field left fallow for 30 years (43 percent). Plowing suppresses weedy plants, but once plowing stops these plants persist in and around fallow fields until perennial plants become established and take over.

Pit Structure/Kiva Fill Samples

Pollen from 10 pit structure/kiva fill samples is assumed to represent natural deposition into the fill of each structure following cessation of use. This permits a look at the pollen types deposited during the Early Pueblo I and Early Pueblo III periods (Table 7.5), and during the Terminal Pueblo III and Depopulation periods (Table 7.6). As with the modern surface samples, fill samples are assumed to reflect the environment of the period they were deposited. The previous section revealed the dominant role of local pollen deposition, in relation to pollen from the other defined source areas.

Local

Local pollen from the two earlier periods of Shields Pueblo are similar, as exemplified by the average amounts of sagebrush and juniper pollen contributed to Early Pueblo I and to Early Pueblo III fills (see Table 7.5). Pinyon pine and Cheno-am pollen are slightly higher in Early Pueblo I period fill than in Early Pueblo III period fill, but these are relatively minor differences. A small background rain of oak pollen is also present. A reasonable conclusion is that the local vegetation around Shields Pueblo was similar in the Early Pueblo I and Early Pueblo III periods.

Compared to the two early periods, the two latest periods reveal important differences in their pollen composition (see Table 7.6). Average sagebrush pollen declined from between 29 and 31 percent in the early periods to 24 percent by Terminal Pueblo III, and declined further in the Depopulation period to 20 percent. Similarly, average juniper pollen declined from an average of 19–20 percent in the earlier periods to 14 percent and then to 10 percent. Average pinyon pine pollen declined slightly in the later periods. In contrast, average Cheno-am pollen increased from an average of 22–24 percent in the early periods to 32 percent of Terminal Pueblo III fill and to 43 percent of Depopulation fill. Oak pollen was identified in small amounts only in the Terminal Pueblo III period. These patterns suggest that notable shifts in local vegetation began during the Terminal Pueblo III period and accelerated in the Depopulation period.

Restricted-Local

Only willow trees contributed pollen in any notable amount to the pit structure/kiva fill samples of all four time periods (see Tables 7.5 and 7.6). Willow pollen increased steadily from Early Pueblo I/Early Pueblo III (1 percent) to Terminal Pueblo III (4 percent) to the Depopulation (7 percent) period. This trend of increased willow pollen in the later two periods could represent increased gathering of willow, or shifts in local vegetation through time.

Regional

Regional pollen types are nearly absent from the fill of all four time periods (see Tables 7.5 and 7.6).

Economic or Potentially Economic Plants

A number of economic or potentially economic pollen types have also preserved in pit structure/kiva fill samples (see Tables 7.5 and 7.6). When comparing the two earlier periods with the two later ones, the same number (N=17) of economic types preserved, although the lists differ. Numerous taxa occur in both early and late fill. However, a few are unique to only the early periods or the later periods. Considering the entire list of economic taxa, maize (*Zea mays*) was processed or consumed in the vicinity of the structures as they filled. Use as food, medicine, and for ritual needs could explain the presence of pollen of plants from the umbel (Apiaceae), pink (Caryophyllaceae), lily (Liliaceae), rose (Rosaceae), and potato/tomato (Solanaceae) families, as well as pollen of beeweed (*Cleome*), thistle (*Cirsium*), prickly pear cactus (*Opuntia*), purslane (*Portulaca*), and globemallow (*Sphaeralcea*), because no pollen from these taxa were recovered in the modern control samples. Pollen of the remaining types may have entered naturally, reflected in their low-level presence in the modern control samples. Among potentially economic types, pollen of wind-pollinated members of the sunflower family (low-spine Asteraceae) has a higher average in the early- and later-period samples (9 percent) than in all modern control samples (5 percent), suggesting that some members of this family were being used to meet people's needs in the vicinity of the structures as they filled.

Pit Structure/Kiva Floor Samples

Pollen grains protected beneath artifacts or sandstone slabs on pit structure/kiva floors are considered to have resulted from cultural use of plants, as well as from some natural entry of pollen through roof openings, ventilator shafts, and possibly carried in on sandals or clothing. A total of 27 sealed floor samples came from four time periods (Tables 7.7, 7.8a, 7.8b).

Floor samples are compared to fill samples to help isolate the economic uses of plants at Shields Pueblo. The Early Pueblo I and Early Pueblo III floor samples are compared to pit structure/kiva fill samples of the same periods. Floor samples from the other periods are compared to fill samples that are reasonably close in time. Comparison to modern control samples (see Table 7.4) is also used to help identify cultural deposition of pollen onto floors. When economic or potentially economic pollen is more abundant in floor samples than in modern control or fill samples, the interpretation is that these plants had been brought into pit structure/kivas by people during use of the structures.

Early Pueblo I Period

Average percentages of sagebrush (*Artemisia*), pinyon pine (*Pinus edulis*), and juniper (*Juniperus*) pollen on three Early Pueblo I floors are quite similar to that in structure fills of the same time period (Table 7.9). Only Cheno-am pollen varied on floors (17 percent) in relation to fill (24 percent). These results suggest that the floor samples received some wind-borne pollen of local origin. However, Early Pueblo I occupants also used these plant resources as food, since they are well-represented in the archaeobotanical record of larger plant parts recovered from Shields Pueblo (see Chapter 6, Plant Use at Shields Pueblo) and since they were eaten by other Ancestral Pueblo people in the immediate (Adams and Bowyer 2002) and larger regions (Huckell and Toll 2004).

Sagebrush (*Artemisia*) pollen in modern control samples (9–19 percent) is notably lower than in Early Pueblo I floor samples (31 percent), suggesting local stands of sagebrush used to be larger (see Table 7.9). The situation is reversed for pinyon pine (*Pinus edulis*) and juniper (*Juniperus*) pollen, implying less local pinyon pine/juniper woodland in prehispanic times than in the present. Only oak (*Quercus*) pollen appears to represent a constant and relatively small component of local vegetation. Environmental disturbance, including the clearing of woodlands, may account for increased sagebrush parkland and decreased pinyon pine/juniper woodland surrounding Shields Pueblo in the Early Pueblo I period.

Restricted-local willow (*Salix*) pollen on Early Pueblo I floors (2 percent) suggests limited cultural use, when compared to both fill (1 percent) and modern control (0.5–3.2 percent) samples (see Table 7.9). Minimal presence of regional ponderosa pine pollen on floors in amounts lower than in modern open settings and woodlands represents only natural entry.

An examination of economic and potentially economic pollen types (see Table 7.9) reveals some taxa present only on floors (umbel family [Apiaceae], hedgehog cactus [*Echinocereus*], lily family [Liliaceae]) or in percentages somewhat higher on floors than in fill (beeweed [*Cleome*], globemallow [*Sphaeralcea*]). These are all considered evidence of foods or of materials for household or other needs when the structures were occupied, and possibly during structure fill. None of these preserved in modern control samples, further supporting the inference of the economic importance of these plants. Pollen percentages of wind-pollinated members of the sunflower (low-spine Asteraceae) and grass (Poaceae) families are also higher on floors than in fill, and higher than in modern control samples, again suggesting they were gathered as foods, medicines, or to meet other household needs. Maize (*Zea mays*) is clearly cultural on Early Pueblo I floors and in fill (see Table 7.9). Remaining taxa preserved in generally lower percentages on floors than in fill, and/or were recovered in modern control samples, and are not considered indicative of plant use in the Early Pueblo I period.

Late Pueblo II Period

Since there are no structure fill samples from this period, Late Pueblo II floor samples are contrasted with Early Pueblo III floor and fill samples (see Table 7.9). Similarities in local pollen on floors of the two periods outweigh the differences, and suggest continued use of sagebrush, pinyon pine, and juniper. An increase in Cheno-am pollen from Early Pueblo I (17 percent) to Late Pueblo II (25 percent) to Early Pueblo III (30 percent) floors is also evidence of continued use (see Table 7.9). As with Early Pueblo I, the differences in local pollen percentages on Late Pueblo II floors vs. Early Pueblo III fill are negligible, suggesting natural entry of local pollen types. From the perspective of modern control samples, the Early Pueblo I pattern of increased sagebrush and reduced presence of pinyon pine and juniper in the local area persists into the Late Pueblo II period. Disturbed habitat for plants in the Cheno-am group remains locally available.

Four restricted-local resources (a member of the sedge family [Cyperaceae], willow [*Salix*], greasewood [*Sarcobatus*], and cattail [*Typha*]) on Late Pueblo II floors likely represent use, as they occur in percentages higher than in Early Pueblo III fill and/or were not recovered in modern control samples (see Table 7.9). Similar to Early Pueblo I, minimal presence of regional ponderosa pine (*Pinus ponderosa*) pollen on Late Pueblo II floors in a percentage lower than in modern open settings and woodlands suggests natural deposition.

Using the criteria defined above to recognize cultural use of economic and potentially economic pollen types, Late Pueblo II floors contained a number of culturally deposited pollen types (see Table 7.9). These include members of the umbel (Apiaceae), lily (Liliaceae), rose (Rosaceae), and grass (Poaceae) families, beeweed (*Cleome*), thistle (*Cirsium*), purslane (*Portulaca*), and a wind-pollinated member of the sunflower family (low-spine Asteraceae), all providing food and raw materials for other needs. Maize pollen on Late Pueblo II floors is also considered cultural. None of the remaining pollen types on Late Pueblo II floors resulted from plant use.

Early Pueblo III Period

A comparison of Early Pueblo III floors with Early Pueblo III fill samples reveals a pattern similar to earlier periods (see Table 7.9). As with the earlier periods, use of local resources is indicated. When contrasted with the modern control samples, the pattern of increased sagebrush (*Artemisia*) and reduced presence of pinyon pine (*Pinus* edulis) and juniper (*Juniperus*) that began in Early Pueblo I persisted through Late Pueblo II and into the Early Pueblo III period. Disturbed ground for plants in the Cheno-am group is still available locally.

Five restricted-local resources (hackberry [*Celtis*], a member of the sedge family [Cyperaceae], willow [*Salix*], greasewood [*Sarcobatus*], and cattail [*Typha*]) on Early Pueblo III floors (see Table 7.9) likely represent a variety of uses for household needs, as they occur in percentages higher than in Early Pueblo III fill and/or were not recovered in modern control samples. Again, minimal presence of ponderosa pine (*Pinus ponderosa*) pollen indicates natural deposition.

The pollen from a number of economic and potentially economic resources suggests that these plants served people's food, medicinal, and other needs in Early Pueblo III structures (see Table 7.9). These include members of the umbel, mustard (Brassicaceae [Cruciferae]), geranium

(Geraniaceae), mint (Lamiaceae), lily, phlox (Polemoniaceae), rose, potato/tomato, grass, and verbena (Verbenaceae) families, along with thistle, purslane, globemallow, yucca (*Yucca*), maize, Mormon tea (*Ephedra*), and a wind-pollinated member of the sunflower family, most of them providing food, medicines, and possibly items for rituals. Recovery of a grass and a mustard anther (anthers are male flowering parts that produce copious amounts of pollen) from floor contexts provides additional evidence for use of these plant resources. Pollen grains of many of these were also recovered in structure fill, suggesting their continued use in the vicinity of structures after abandonment.

Late Pueblo III, Terminal Pueblo III, and Depopulation

The floor samples of Late Pueblo III structures are compared here to Terminal Pueblo III and Depopulation fill samples (see Table 7.9). Late Pueblo III floor samples contain strong indications of sagebrush (*Artemisia*) use and continued use of pinyon pine (*Pinus edulis*), juniper (*Juniperus*), and members of the Cheno-am group. Together these provided food, fuel, construction materials, and other household needs. Following Late Pueblo III structure abandonment, fill samples continue to receive pollen from these plants. Although sagebrush pollen declined and Cheno-am pollen increased through the Depopulation period, pinyon pine and juniper pollen reached their lowest levels of the entire prehispanic sequence. Those persons remaining in the area, either at Shields Pueblo or at Goodman Point Pueblo, would have been faced with a diminished suite of important locally available natural resources.

Restricted-local resources gathered as food and for household needs during the Late Pueblo III period include hackberry (*Celtis*), willow (*Salix*), and a plant in the sedge family (Cyperaceae). Increasing presence of willow in Terminal Pueblo III period fill and Depopulation period fill suggests that people continued to bring willow into Shields Pueblo for various needs. This is supported by presence of a willow anther in a floor sample (see Table 7.9). This suggests that there was enough moisture available for both people and these water-loving trees, even during the period of the “great drought” (Van West and Dean 2000). As with all previous periods, minimal presence of ponderosa pine pollen is not considered indicative of use of this regional resource.

A number of economic and potentially economic plant resources were likely utilized in Late Pueblo III structures. These include members of the umbel (Apiaceae), mustard (Brassicaceae [Cruciferae]), geranium (Geraniaceae), mint (Lamiaceae), rose (Rosaceae), potato/tomato (Solanaceae), and grass (Poaceae) families, along with thistle (*Cirsium*), purslane (*Portulaca*), and both showy-flowered and wind-pollinated members of the sunflower family (high-spine and low-spine Asteraceae, respectively), serving a diversity of food, medicinal, and other needs. As in previous periods, as fill entered the abandoned Late Pueblo III structures, pollen from plants being used in the vicinity, including a maize anther, was included.

Use of Economic Plants through Time

An examination of the pollen data through time reveals patterns in plant use at Shields Pueblo (Table 7.10). Occupants from the Early Pueblo I through Late Pueblo III and into the Depopulation period used locally available sagebrush, pinyon pine, and juniper as construction materials, and members of the Cheno-am group as food. Within this core of locally available plants, sagebrush and juniper pollen declines through time, likely as its local availability decreased. The presence of pinyon pine pollen remains relatively steady, declining only slightly in the later Terminal Pueblo III and Depopulation periods. Cheno-am resource availability also remains steady until spiking in the Terminal Pueblo III and Depopulation periods. Together these patterns suggest an increasingly open landscape and eventual abandonment of agricultural fields, allowing weedy species to encroach on Shields Pueblo as the pueblo occupation declined.

A number of restricted-local resources also served various needs of Shields Pueblo occupants (see Table 7.10). The use of willow was persistent through time, and other plants including hackberry, greasewood, cattail, and a member of the sedge family were primarily utilized in the Late Pueblo II and Early Pueblo III periods. Some of these provided raw materials for household needs and others were gathered as food and possibly for ritual purposes.

Shields Pueblo occupants gathered a number of other economic and potentially economic plants (see Table 7.10). They grew maize throughout the Pueblo's history, and collected grasses and wind-pollinated members of the sunflower family for food or household needs. Many resources were sought in at least three of the four periods studied for pollen.

Considering the types of local, restricted-local, economic, and potentially economic plants represented in the pollen samples, Early Pueblo I occupants utilized the smallest number of plants (N=13). This pattern continued through the Late Pueblo II period, with a few additions (N=16). A notable increase in the diversity of plants used occurred during the Early Pueblo III period, when occupants carried in the highest number of plant resources (N=26) to Shields Pueblo. This is, however, the best-sampled period of the entire sequence. By Late Pueblo III, people were still using many of these same plants (N=21) (see Table 7.10).

What Types of Activities Occurred in Pit Structures/Kivas: Domestic or Ritual?

The presence of economic plants in sealed contexts on pit structure/kiva floors indicates these plants had been processed within these structures. Maize had been routinely carried into these dwellings, along with wild plants. It is clear that the structures served domestic needs, at least for portions of their use, and included activities associated with preparing, cooking, and consuming foods. Pit structures/kivas likely served ritual needs as well.

Environmental Change/Human Impact on the Environment

At a basic level, the recovery of pollen of many of the same plant taxa from both prehispanic and modern samples suggests general similarities between past and present plant communities. However, pollen types within pit structure/kiva fill samples also reflect changes in certain taxa in the immediate environment around Shields Pueblo during its long history.

In terms of local plants, there was a decrease in the pollen of juniper trees, and to a lesser extent pinyon pine trees, from the earliest to the latest contexts sampled (Figure 7.1). The presence of sagebrush pollen also decreased over time. In contrast, Cheno-am pollen—indicative of plants that thrive in disturbed settings—increased over time, culminating in a very high Cheno-am pollen average in the Depopulation period (43 percent). Together these trends suggest a continuous decline in the local pinyon pine/juniper woodland during the history of Shields Pueblo, accompanied by an increasingly open and disturbed landscape. The continuous decline of sagebrush pollen implies that open settings were not routinely progressing through a successional process, which can include invasion of sagebrush into abandoned fields within a few years. Such a pattern might be produced by Shields Pueblo farmers clearing increasingly larger areas of woodland for farming, coupled with a need to shorten field fallow periods during the later periods of occupation.

When compared to the modern pollen control samples (see Figure 7.1), modern pinyon pine/juniper woodlands and modern open settings have higher average pinyon pine and juniper pollen than any of the prehispanic fill samples, implying less available woodland in the vicinity of occupied Shields Pueblo than is present today. In contrast, modern open settings have sagebrush pollen equal to or lower than the Shields Pueblo fill samples, which suggests the presence of sagebrush on the prehispanic landscape (likely occupying fallow fields) was higher relative to the present. Finally, average Cheno-am pollen percentages of modern open settings are similar to the two ancient early periods, but much lower than the final two periods, implying that following the occupation of Shields Pueblo, the presence of weedy plants in the area was considerably higher than in the modern disturbed agricultural landscape. Restricted-local willow pollen percentages from modern open settings are nearly identical to those of the Early Pueblo I period, and maintain rising levels above modern sample levels through the Depopulation period (see Tables 7.4–7.8b). This suggests that damp locations for willow trees persisted through time, and that gathering of willow stems with pollen still attached steadily increased.

Changes seen in pollen input to fill could be due to natural paleoclimatic shifts, human impacts on the environment, or a combination of the two. Previous paleoenvironmental reconstructions for the central Mesa Verde region during A.D. 900–1300 suggest alternating periods of favorable and unfavorable climatic conditions, particularly relating to drought, fluctuating water tables and floodplain conditions, and the predictability and regularity of rainfall (Van West and Dean 2000). Arguments for and against periods of sustained cold temperatures have also been made and countered (Van West and Dean 2000).

Shields Pueblo occupation spans from approximately A.D. 725 to 1300, although it was not occupied continuously. However, during this time span, there were two particularly favorable climatic periods for agriculturalists: from A.D. 1000 to 1130 and from A.D. 1180 to 1250. Two notable unfavorable periods occurred between A.D. 1130 and 1180, and from A.D. 1270 to 1300 (Van West and Dean 2000).

One prediction of the reconstructed paleoenvironmental record might be that fluctuating favorable and unfavorable conditions would result in fluctuating pollen production (Table 7.11). However, this does not appear to be the case for pollen entering sequentially abandoned pit structure/kiva fill samples at Shields Pueblo. Rather, pollen of plants in the immediate vicinity of the pueblo display unilinear trends to either decreasing or increasing through time. Pinyon pine and especially juniper pollen decrease in the later periods of pueblo occupation, inferring woodland clearing for wood needs and for an increase in farmland. As woodlands are opened up, parklands of sagebrush are cleared as well, providing some of the best farmland with deeper soils. Land clearance leads to an increase of weedy plants, such as Cheno-ams, that thrive in open disturbed settings, and that become increasingly available to be gathered as foods. Willows, sensitive to drought, should have been affected by the “Great Drought” of the A.D. 1270–1300s, yet presence of willow pollen was highest in the Depopulation period fill. Damp habitats were still locally available where people could gather willow, possibly in lieu of increasingly less-accessible pinyon pine and juniper. Taken together, these trends seen in the fill-sample pollen clearly suggest that occupation of Shields Pueblo impacted the local environment to a significant degree.

Summary

In total, 44 pollen samples were analyzed, representing three contexts: sealed floor contexts, fill, and modern ground surface. Together these samples provide insight into the use of plants within pit structures/kivas, environmental change, and the effects of long-term occupation at Shields Pueblo on the surrounding landscape. Modern control samples were used to establish a baseline for natural pollen deposition in both woodland and open situations, including levels of pinyon pine/juniper, sagebrush, and other local pollen types, along with the presence or absence of pollen of many plants recognized as useful historically. When compared to 10 prehispanic fill samples, it appears the prehispanic landscape surrounding Shields Pueblo had less pinyon pine/juniper woodland, less sagebrush parkland, and substantially more weedy annuals than at present, especially in the Depopulation period.

Numerous plant resources had been intentionally carried into pit structures/kivas, including maize, other food plants, and plants that served a wide variety of construction, household, and other needs, including for ritual and medicine. Domestic activities included food preparation, cooking, and consumption. This pattern of plant use varied over time, with a spike in wild plant diversity during the Early Pueblo III period.

Human impact on the environment over five centuries was responsible for the pollen patterns in pit structure/kiva fill. Human activities resulted in increased pressure on woodlands and decreased availability of pinyon pine and juniper trees. As lands were being turned into agricultural fields, sagebrush plants decreased in numbers, occasionally returning when some fields were left fallow. Likewise, the increased presence of weedy plants (Cheno-ams) over time implies an increasingly open and disturbed landscape. The final rise in Cheno-am pollen in the Depopulation period (A.D. 1280–1300) suggests that the last tended agricultural fields were beginning the process of plant succession. These congruent patterns of pollen deposition are more likely to result from human activities affecting landscapes than from natural environmental shifts.

Human effects on the environment were unlikely to have been the sole impetus for the end of Shields Pueblo occupation, but were likely to have been a factor. Acquisition of fuelwood and construction beams began to require longer trips. Maize was grown in all periods, but productivity could have been in decline due to overuse of fields and loss of soil nutrients. The greater diversity of wild plants gathered in the Early Pueblo III period could reflect an increasingly anthropogenic landscape surrounding the Shields Pueblo community. When coupled with the environmental difficulties of the A.D. 1270–1300 period, and possibly social tensions as well, Shields Pueblo experienced a complete depopulation similar to that of all other regional communities at the end of the thirteenth century.

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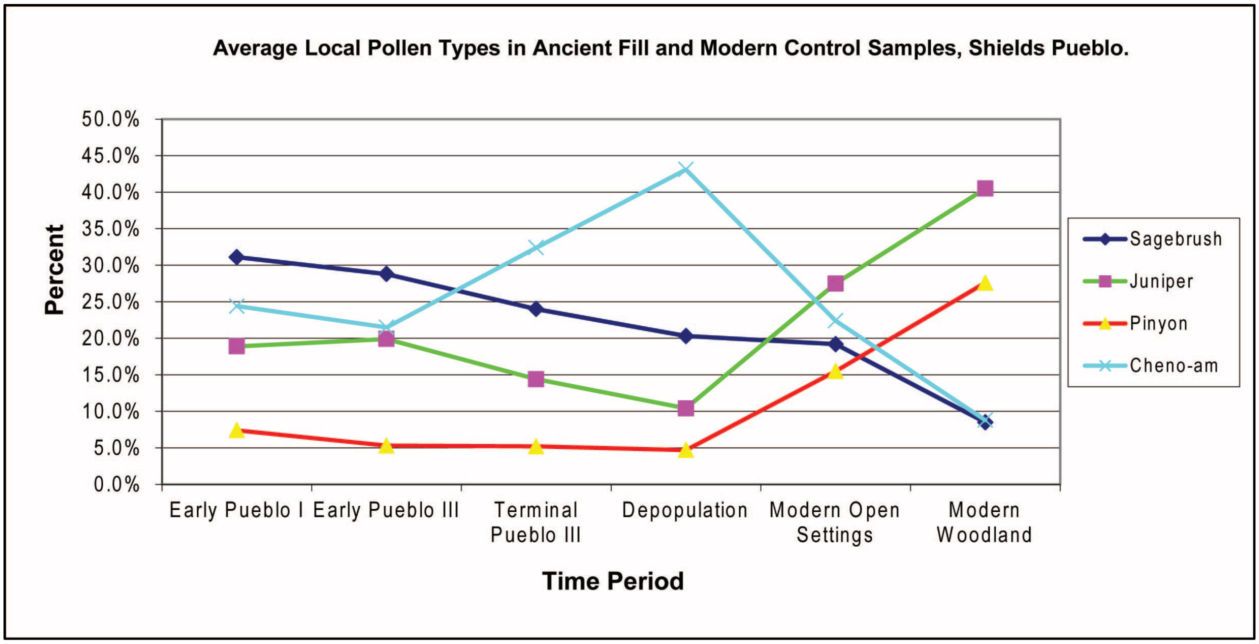

Figure 7.1. Average local pollen types in ancient fill and modern control samples, Shields Pueblo.

Table 7.1. Plant Communities within Local, Restricted-Local, and Regional Pollen Depositional Categories, Shields Pueblo.

Type	Significance
LOCAL	
Artemisia	Dominant shrub, indicative of fallow, formerly disturbed land
Juniperus and Pinus edulis	Dominant forest trees
Quercus	Dominant shrub, especially in steep terrain, and following fire
Cheno-ams	Dominant annuals, indicative of disturbed lands
RESTRICTED-LOCAL	
Acer, *Celtis*, Cyperaceae, *Salix*, *Sarcobatus*, *Typha*	Trees and herbaceous plants in the area that require some access to water
REGIONAL	
Alnus, *Picea*, *Pinus ponderosa*, *Pseudotsuga*	Higher-elevation species present in the region

Table 7.2. Economic and Potentially Economic Plants Recovered in Pollen Samples, Shields Pueblo.

Economic Type	Common Name
Apiaceae	Umbel family
Brassicaceae (Cruciferae)	Mustard family
Caryophyllaceae	Pink family
Cleome	Beeweed
Cirsium	Thistle (some species are native)
Asteraceae (Compositae), high-spine	Showy-flowered members of the sunflower family
Echinocereus	Hedgehog cactus
Eriogonum	Member of the buckwheat family
Euphorbiaceae	Spurge family
Fabaceae (Leguminosae)	Legume family
Gaura	Member of the evening primrose family
Geraniaceae (not *Erodium*)	Geranium family
Lamiaceae (Labiatae)	Mint family
Liguliflorae	Showy-flowered members of the sunflower family
Liliaceae	Lily family
(Platy) Opuntia	Prickly pear cactus
Polemoniaceae	Phlox family
Polygonaceae	Buckwheat family
Portulaca	Purslane
Rosaceae	Rose family
Solanaceae	Potato/tomato family (includes *Physalis*)
Sphaeralcea	Globemallow
Verbenaceae	Verbena family
Yucca	Yucca
Zea mays	Maize (corn)
Potentially Economic Type	
Asteraceae (Compositae), low-spine	Wind-pollinated members of the sunflower family
Ephedra nevadensis; E. Torreyana	Mormon tea (ephedra)
Poaceae (Gramineae)	Grass family

Note: Many of these are included in the ethnographic compendium of historical plant uses by American Indians (Rainey and Adams 2004). Names in parentheses are alternate family names commonly reported in the ethnographic and archaeobotanical literature.

Table 7.3. Number of Pollen Samples by Context and Time Period, Shields Pueblo.

Time Period	Pit Structure/Kiva Floors[a] (N)	Pit Structure/Kiva Fills[b] (N)	Modern Controls[c] (N)	TOTAL
Early Pueblo I (A.D. 725–800)	3	2		5
Late Pueblo II (A.D. 1060–1140)	6			6
Early Pueblo III (A.D. 1140–1225)	11	3		14
Late Pueblo III (A.D. 1225–1260)	7			7
Terminal Pueblo III (A.D. 1260–1280)		3		3
Depopulation (A.D. 1280–1300)		2		2
Present Day (A.D. 1990–2000)			7	7
TOTAL	27	10	7	44

N = Number of samples.

[a] Kiva or pit structure floor samples were collected from beneath objects, usually a sandstone slab or other large artifact, resting directly on the floor; the sediments for the sample were scraped from the floor surface.

[b] Kiva or pit structure fill samples were collected from naturally deposited sediment above roof-fall deposits in abandoned kivas and pit structures. Samples from the Terminal Pueblo III period were collected from natural deposits immediately above roof fall; these probably accumulated a few years after the abandonment of the structure (Kilby 1998). Samples from the Depopulation period were collected from natural deposits 15 and 25 cm above a stone circle (Structure 213) built within the fill of Structure 208 after it was abandoned, and construction of these late stone structures were among the last acts for which we have archaeological evidence from Shields Pueblo. The sediments from which these samples derive accumulated in the decades following the construction of these circles, and they likely accumulated within a decade or two of structure abandonment.

[c] Four modern control samples were collected in 1990 and 1991, from the modern ground surface in areas characterized by four different plant communities during the Sand Canyon Archaeological Project (Gish 1999). Three modern control samples were collected in the spring of 2000, from the plow zone (N=2) and in a sagebrush parkland (N=1) at Shields Pueblo.

Table 7.4. Modern Pollen Control Samples, Present Day (A.D. 1990–2000), Shields Pueblo.

Sample No.	42		43		44		45		1		2		3	
Setting	Pinyon/ Juniper Woodland		Pinyon/ Juniper Woodland		Pinyon/ Juniper Woodland		Pinyon/ Juniper Woodland		Field, Fallow for 30 Years		Field, Plowed Spring 2000		Sagebrush Parkland	
Study Unit	5MT3936		5MT3967		5MT262		5MT1825		ARB 202		ARB 1601		ARB 1901	
Date Sampled	August 1990		June 1991		June 1991		June 1991		August 2000		August 2000		August 2000	
PD	180		225		0		0		544		2063		2190	
FS	1		1		414		1		9		1		1	
PL														
Grains Counted	200		200		200		200		216		220		230	
Concentration	n/a		n/a		n/a		n/a		14,954		11,314		59,143	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
LOCAL														
Artemisia	25	12.5	4	2.0	15	7.5	24	12.0	33	15.3	44	20.0	51	22.2
Juniperus	69	34.5	103	51.5	80	40.0	72	36.0	31	14.4	82	37.3	71	30.9
*Pinus edulis**	61	30.5	53	26.5	60	30.0	47	23.5	19	8.8	26	11.8	60	26.1
Quercus	1	0.5	2	1.0	2	1.0	4	2.0	1	0.5	2	0.9	3	1.3
Cheno-am	9	4.5	16	8.0	15	7.5	30	15.0	93	43.1	34	15.5	20	8.7
RESTRICTED-LOCAL														
Acer														
Celtis														
Cyperaceae														
Salix									7	3.2	1	0.5		
Sarcobatus	1	0.5			1	0.5								
Typha angustifolia														
REGIONAL														
Alnus														
Picea					1	0.5	2	1.0						
Pinus ponderosa	14	7.0	5	2.5	2	1.0	11	5.5	1	0.5	2	0.9		
Pseudotsuga	1	0.5												
ECONOMIC														
Apiaceae														
Brassicaceae							1	0.5	3	1.4			1	0.4
Caryophyllaceae														
Cleome														
Cirsium														
High spine, Asteraceae	1	0.5	4	2.0	1	0.5								
Echinocereus														
Eriogonum													1	0.4
Euphorbiaceae									1	0.5				
Fabaceae													1	0.4
Gaura	1	0.5												
Geraniaceae														

Sample No.	42		43		44		45		1		2		3	
Setting	Pinyon/ Juniper Woodland		Pinyon/ Juniper Woodland		Pinyon/ Juniper Woodland		Pinyon/ Juniper Woodland		Field, Fallow for 30 Years		Field, Plowed Spring 2000		Sagebrush Parkland	
Study Unit	5MT3936		5MT3967		5MT262		5MT1825		ARB 202		ARB 1601		ARB 1901	
Date Sampled	August 1990		June 1991		June 1991		June 1991		August 2000		August 2000		August 2000	
PD	180		225		0		0		544		2063		2190	
FS	1		1		414		1		9		1		1	
PL														
Grains Counted	200		200		200		200		216		220		230	
Concentration	n/a		n/a		n/a		n/a		14,954		11,314		59,143	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ECONOMIC, continued														
Lamiaceae														
Liguliflorae									1	0.5			1	0.4
Liliaceae														
Platyopuntia														
Polemoniaceae														
Polygonaceae									1	0.5				
Portulaca														
Rosaceae														
Solanaceae														
Sphaeralcea														
Verbenaceae														
Yucca														
Zea mays									1	0.5				
POTENTIALLY ECONOMIC														
Low spine, Asteraceae	8	4.0	4	2.0	16	8.0	2	1.0	15	6.9	18	8.2	12	5.2
Ephedra nevadensis	1	0.5	3	1.5	4	2.0	1	0.5	1	0.5	2	0.9	2	0.9
Ephedra torreyana							1	0.5			1	0.5		0.0
Poaceae	6	3.0	3	1.5	2	1.0	3	1.5	3	1.4	4	1.8	4	1.7
INDETERMINATE	2	1.0	3	1.5	1	0.5	1	0.5	5	2.3	4	1.8	3	1.3
Notes:	plus Cheno-am aggregates		plus pinyon pine, juniper, and *Ephedra nevadensis* aggregates		plus pinyon pine aggregates		plus pinyon pine, juniper, Cheno-am, and *Zea* aggregates							

ARB = Arbitrary Unit; N= number of grains identified; % = percentage of the total grains identified within the sample; PD = Provenience Designation; FS = Field Specimen; PL = Point-Location Number; n/a = not applicable.
* Woodland samples include from 1 to 3 grains identified only as *Pinus* (Gish 1999).

Table 7.5. Pollen within Fill Samples from the Early Pueblo I and Early Pueblo III Periods, Shields Pueblo.

Time Period	Early Pueblo I (A.D. 725–800)				Early Pueblo III (A.D. 1140–1225)					
Period Number	1		1		3		3		3	
Sample No.	6		8		15		27		20	
Study Unit	STR 141		STR 110		STR 1108		BHT 802		NST 1409	
PD	1154		427		2081		556		1235	
FS	7		5		9		7		18	
PL									116	
Grains Counted	230		230		237		229		228	
Concentration	5,049		4,500		5,540		1,579		7,462	
	N	%	N	%	N	%	N	%	N	%
LOCAL										
Artemisia	70	30.4	73	31.7	47	19.8	75	32.8	77	33.8
Juniperus	43	18.7	44	19.1	35	14.8	40	17.5	63	27.6
Pinus edulis	17	7.4	17	7.4	15	6.3	14	6.1	8	3.5
Quercus	2	0.9	2	0.9	1	0.4	1	0.4	1	0.4
Cheno-am	60	26.1	52	22.6	93	39.2	37	16.2	21	9.2
RESTRICTED-LOCAL										
Acer										
Celtis										
Cyperaceae			1	0.4						
Salix	2	0.9	4	1.7	4	1.7	3	1.3	4	1.8
Sarcobatus			1	0.4					2	0.9
Typha angustifolia										
REGIONAL										
Alnus	1	0.4								
Picea										
Pinus ponderosa					1	0.4				
Pseudotsuga										
ECONOMIC										
Apiaceae										
Brassicaceae			1	0.4	1	0.4				
Caryophyllaceae			1	0.4						
Cleome	1	0.4								
Cirsium	2	0.9								
High spine, Asteraceae	4	1.7	1	0.4			2	0.9	2	0.9
Echinocereus										
Eriogonum			1	0.4	1	0.4			1	0.4

Time Period	Early Pueblo I (A.D. 725–800)				Early Pueblo III (A.D. 1140–1225)					
Period Number	1		1		3		3		3	
Sample No.	6		8		15		27		20	
Study Unit	STR 141		STR 110		STR 1108		BHT 802		NST 1409	
PD	1154		427		2081		556		1235	
FS	7		5		9		7		18	
PL									116	
Grains Counted	230		230		237		229		228	
Concentration	5,049		4,500		5,540		1,579		7,462	
	N	%	N	%	N	%	N	%	N	%
ECONOMIC, continued										
Euphorbiaceae										
Fabaceae	1	0.4								
Gaura										
Geraniaceae										
Lamiaceae										
Liguliflorae			2	0.9	2	0.8	5	2.2	1	0.4
Liliaceae					2	0.8				
Platyopuntia					1	0.4				
Polemoniaceae										
Polygonaceae										
Portulaca										
Rosaceae									1	0.4
Solanaceae										
Sphaeralcea	1	0.4							1	0.4
Verbenaceae										
Yucca										
Zea mays			1	0.4			1	0.4		
POTENTIALLY ECONOMIC										
Low spine, Asteraceae	11	4.8	14	6.1	18	7.6	28	12.2	31	13.6
Ephedra nevadensis	2	0.9	3	1.3	1	0.4	2	0.9		
Ephedra torreyana	1	0.4	1	0.4	3	1.3	1	0.4	2	0.9
Poaceae	6	2.6	4	1.7	3	1.3	7	3.1	7	3.1
INDETERMINATE	7	3.0	7	3.0	9	3.8	13	5.7	6	2.6

BHT = Backhoe Trench; N= number of grains identified; NST = Nonstructure; STR = Structure; PD = Provenience Designation; FS = Field Specimen; PL = Point-Location Number; % = percentage of the total grains identified within the sample.

Table 7.6. Pollen within Fill Samples from the Terminal Pueblo III and Depopulation Periods, Shields Pueblo.

Time Period	Terminal Pueblo III (A.D. 1260–1280)						Depopulation (A.D. 1280–1300)			
Sample No.	36		37		38		39		40	
Study Unit	STR 213		STR 1411		STR 1412		STR 208		STR 208	
PD	681		1110		1156		675		545	
FS	1		3		33		15		9	
PL			12		16					
Grains Counted	219		220		215		215		219	
Concentration	6,257		4,500		25,800		6,559		10,108	
	N	%	N	%	N	%	N	%	N	%
LOCAL										
Artemisia	54	24.7	57	25.9	46	21.4	35	16.3	53	24.2
Juniperus	22	10.0	31	14.1	41	19.1	24	11.2	21	9.6
Pinus edulis	11	5.0	16	7.3	7	3.3	10	4.7	10	4.6
Quercus			1	0.5	3	1.4				
Cheno-am	79	36.1	57	25.9	76	35.3	93	43.3	94	42.9
RESTRICTED-LOCAL										
Acer										
Celtis										
Cyperaceae			1	0.5	1	0.5				
Salix	16	7.3	5	2.3	2	0.9	23	10.7	5	2.3
Sarcobatus							1	0.5		
Typha angustifolia										
REGIONAL										
Alnus										
Picea										
Pinus ponderosa			1	0.5						
Pseudotsuga										
ECONOMIC										
Apiaceae									1	0.5
Brassicaceae	1	0.5							2	0.9
Caryophyllaceae										
Cleome										
Cirsium	1	0.5			1	0.5	1	0.5		
High spine, Asteraceae										
Echinocereus										
Eriogonum	1	0.5	1	0.5	1	0.5				
Euphorbiaceae										
Fabaceae									1	0.5
Gaura										
Geraniaceae										

Time Period	Terminal Pueblo III (A.D. 1260–1280)						Depopulation (A.D. 1280–1300)			
Sample No.	36		37		38		39		40	
Study Unit	STR 213		STR 1411		STR 1412		STR 208		STR 208	
PD	681		1110		1156		675		545	
FS	1		3		33		15		9	
PL			12		16					
Grains Counted	219		220		215		215		219	
Concentration	6,257		4,500		25,800		6,559		10,108	
	N	%	N	%	N	%	N	%	N	%
ECONOMIC, continued										
Lamiaceae										
Liguliflorae	4	1.8	2	0.9	1	0.5				
Liliaceae					1	0.5				
Platyopuntia	1	0.5								
Polemoniaceae										
Polygonaceae									1	0.5
Portulaca							1	0.5		
Rosaceae										
Solanaceae			1	0.5					1	0.5
Sphaeralcea							1	0.5		
Verbenaceae										
Yucca										
Zea mays	2	0.9	3	1.4			1	0.5		
POTENTIALLY ECONOMIC										
Low spine, Asteraceae	18	8.2	25	11.4	25	11.6	15	7.0	18	8.2
Ephedra nevadensis	3	1.4	3	1.4	1	0.5	1	0.5	1	0.5
Ephedra torreyana		0.0	2	0.9			1	0.5		
Poaceae	1	0.5	9	4.1	4	1.9	1	0.5	5	2.3
INDETERMINATE	5	2.3	5	2.3	5	2.3	7	3.3	6	2.7
Notes:			plus a *Zea* anther						plus a Cheno-am anther	

N= number of grains identified; % = percentage of the total grains identified within the sample;
PD = Provenience Designation; FS = Field Specimen; PL = Point-Location Number.

Table 7.7. Pollen from Pit Structure/Kiva Floor Samples from the Early Pueblo I and Late Pueblo II Periods, Shields Pueblo.

Time Period	Early Pueblo I (A.D. 725–800)						Late Pueblo II (A.D. 1060–1140)											
Sample No.	4		5		7		9		10		11		12		16		17	
Study Unit	STR 141		STR 141		STR 110		STR 138		STR 139		STR 139		STR 237		STR 234		STR 234	
PD	1282		1282		1426		1966		1859		1859		1257		1357		1357	
FS	25		26		13		2		9		10		9		29		28	
PL	18		19		9		56		11		12		2		12		20	
Grains Counted	219		238		250		227		234		219		227		220		221	
Concentration	2,776		5,423		6,522		13,620		7,262		4,867		6,486		6,387		10,751	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
LOCAL																		
Artemisia	74	33.8	77	32.4	66	26.4	75	33.0	61	26.1	29	13.2	84	37.0	54	24.5	50	22.6
Juniperus	46	21.0	42	17.6	53	21.2	23	10.1	38	16.2	36	16.4	42	18.5	41	18.6	35	15.8
Pinus edulis	10	4.6	9	3.8	19	7.6	22	9.7	9	3.8	8	3.7	14	6.2	8	3.6	29	13.1
Quercus	3	1.4	3	1.3	2	0.8	3	1.3	5	2.1	2	0.9	3	1.3	4	1.8	2	0.9
Cheno-am	35	16.0	45	18.9	39	15.6	44	19.4	48	20.5	79	36.1	40	17.6	60	27.3	58	26.2
RESTRICTED-LOCAL																		
Acer					2	0.8												
Celtis																		
Cyperaceae			1	0.4	1	0.4											1	0.5
Salix	5	2.3	6	2.5	6	2.4	8	3.5	13	5.6	31	14.2	5	2.2	11	5.0	9	4.1
Sarcobatus									1	0.4								
Typha angustifolia											1	0.5						
REGIONAL																		
Alnus																		
Picea																		
Pinus ponderosa	1	0.5			1	0.4	3	1.3					1	0.4			2	0.9
Pseudotsuga																		
ECONOMIC																		
Apiaceae			3	1.3	21	8.4	1	0.4							1	0.5		
Brassicaceae	1	0.5					2	0.9	5	2.1	4	1.8					2	0.9
Caryophyllaceae																		
Cleome					2	0.8			3	1.3					1	0.5		
Cirsium	1	0.5											3	1.3	1	0.5		

Time Period	Early Pueblo I (A.D. 725–800)						Late Pueblo II (A.D. 1060–1140)											
Sample No.	4		5		7		9		10		11		12		16		17	
Study Unit	STR 141		STR 141		STR 110		STR 138		STR 139		STR 139		STR 237		STR 234		STR 234	
PD	1282		1282		1426		1966		1859		1859		1257		1357		1357	
FS	25		26		13		2		9		10		9		29		28	
PL	18		19		9		56		11		12		2		12		20	
Grains Counted	219		238		250		227		234		219		227		220		221	
Concentration	2,776		5,423		6,522		13,620		7,262		4,867		6,486		6,387		10,751	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ECONOMIC, continued																		
High spine, Asteraceae	1	0.5	3	1.3			1	0.4	2	0.9			1	0.4			1	0.5
Echinocereus			1	0.4														
Eriogonum	1	0.5	3	1.3	1	0.4			1	0.4	2	0.9						
Euphorbiaceae																		
Fabaceae			1	0.4	1	0.4	1	0.4									1	0.5
Gaura																		
Geraniaceae																		
Lamiaceae																		
Liguliflorae			1	0.4					1	0.4			1	0.4				
Liliaceae					5	2.0	1	0.4										
Platyopuntia																		
Polemoniaceae																		
Polygonaceae	1	0.5					1	0.4							1	0.5		
Portulaca							1	0.4										
Rosaceae									1	0.4					2	0.9		
Solanaceae																		
Sphaeralcea	1	0.5	2	0.8														
Verbenaceae																		
Yucca																		
Zea mays			2	0.8			1	0.4	1	0.4					2	0.9	2	0.9
POTENTIALLY ECONOMIC																		
Low spine, Asteraceae	25	11.4	18	7.6	19	7.6	26	11.5	24	10.3	17	7.8	15	6.6	18	8.2	11	5.0
Ephedra nevadensis			1	0.4	1	0.4	1	0.4	4	1.7			3	1.3			1	0.5
Ephedra torreyana									1	0.4	1	0.5					1	0.5

Time Period	Early Pueblo I (A.D. 725–800)						Late Pueblo II (A.D. 1060–1140)											
Sample No.	4		5		7		9		10		11		12		16		17	
Study Unit	STR 141		STR 141		STR 110		STR 138		STR 139		STR 139		STR 237		STR 234		STR 234	
PD	1282		1282		1426		1966		1859		1859		1257		1357		1357	
FS	25		26		13		2		9		10		9		29		28	
PL	18		19		9		56		11		12		2		12		20	
Grains Counted	219		238		250		227		234		219		227		220		221	
Concentration	2,776		5,423		6,522		13,620		7,262		4,867		6,486		6,387		10,751	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
POTENTIALLY ECONOMIC, continued																		
Poaceae	5	2.3	9	3.8	4	1.6	4	1.8	7	3.0	2	0.9	7	3.1	10	4.5	9	4.1
INDETERMINATE	9	4.1	11	4.6	7	2.8	9	4.0	9	3.8	7	3.2	8	3.5	6	2.7	7	3.2

N= number of grains identified; STR = Structure; % = percentage of the total grains identified within the sample; PD = Provenience Designation; FS = Field Specimen; PL = Point-Location Number.

Table 7.8a. Pollen on Pit Structure/Kiva Floors from the Early Pueblo III Period, Shields Pueblo.

Time Period	Early Pueblo III (A.D. 1140–1225)																					
Sample No.	13		14		18		19		21		22		23		24		25		26		41	
Study Unit	STR 1108		STR 1108		STR 1416		STR 1416		STR 222		STR 122		STR 145		STR 1504		STR 803		STR 803		STR 1205	
PD	2153		2153		1766		1766		1114		1179		1387		1324		1127		1127		1995	
FS	10		9		2		1		8		7		50		18		17		20		20	
PL	18		21		5		10		8		15		14		17		6		13		112	
Grains Counted	230		247		227		215		221		223		212		229		224		232		232	
Concentration	5,595		4,537		13,324		9,675		8,464		7,871		7,338		6,245		3,992		5,423		7,413	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
LOCAL																						
Artemisia	61	26.5	63	25.5	60	26.4	60	27.9	36	16.3	32	14.3	34	16.0	52	22.7	75	33.5	49	21.1	120	51.7
Juniperus	26	11.3	28	11.3	32	14.1	24	11.2	26	11.8	32	14.3	11	5.2	37	16.2	36	16.1	32	13.8	15	6.5
Pinus edulis	29	12.6	24	9.7	9	4.0	24	11.2	11	5.0	9	4.0	5	2.4	29	12.7	14	6.3	11	4.7	4	1.7
Quercus	4	1.7	2	0.8	2	0.9	2	0.9	1	0.5	4	1.8	1	0.5	3	1.3	1	0.4	2	0.9	2	0.9
Cheno-am	42	18.3	50	20.2	80	35.2	67	31.2	81	36.7	91	40.8	121	57.1	56	24.5	44	19.6	76	32.8	31	13.4
RESTRICTED-LOCAL																						
Acer																						
Celtis																					1	0.4
Cyperaceae																						
Salix	8	3.5	12	4.9	3	1.3	3	1.4	18	8.1	8	3.6	3	1.4	6	2.6	5	2.2	12	5.2	8	3.4
Sarcobatus									1	0.5												
Typha angustifolia			1	0.4																		
REGIONAL																						
Alnus																						
Picea																						
Pinus ponderosa			1	0.4			3	1.4					1	0.5							2	0.9
Pseudotsuga																						
ECONOMIC																						
Apiaceae	3	1.3			2	0.9			1	0.5									1	0.4	1	0.4
Brassicaceae			3	1.2	1	0.4			2	0.9	3	1.3	2	0.9	2	0.9			3	1.3	1	0.4
Caryophyllaceae																						
Cleome																						
Cirsium															1	0.4						

Time Period	Early Pueblo III (A.D. 1140–1225)																					
Sample No.	13		14		18		19		21		22		23		24		25		26		41	
Study Unit	STR 1108		STR 1108		STR 1416		STR 1416		STR 222		STR 122		STR 145		STR 1504		STR 803		STR 803		STR 1205	
PD	2153		2153		1766		1766		1114		1179		1387		1324		1127		1127		1995	
FS	10		9		2		1		8		7		50		18		17		20		20	
PL	18		21		5		10		8		15		14		17		6		13		112	
Grains Counted	230		247		227		215		221		223		212		229		224		232		232	
Concentration	5,595		4,537		13,324		9,675		8,464		7,871		7,338		6,245		3,992		5,423		7,413	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ECONOMIC, continued																						
High spine, Asteraceae			1	0.4	2	0.9									1	0.4						
Echinocereus																						
Eriogonum			3	1.2	1	0.4			1	0.5									2	0.9	2	0.9
Euphorbiaceae																						
Fabaceae	1	0.4	2	0.8													1	0.4				
Gaura																						
Geraniaceae																	1	0.4				
Lamiaceae											1	0.4										
Liguliflorae			3	1.2	1	0.4					2	0.9			2	0.9	5	2.2	2	0.9		
Liliaceae	1	0.4	1	0.4							1	0.4			1	0.4			1	0.4		
Platyopuntia																						
Polemoniaceae									1	0.5												
Polygonaceae					1	0.4																
Portulaca													1	0.5								
Rosaceae			1	0.4			1	0.5			1	0.4										
Solanaceae									2	0.9												
Sphaeralcea	1	0.4	2	0.8	1	0.4															1	0.4
Verbenaceae							1	0.5														
Yucca	3	1.3																				
Zea mays			1	0.4			1	0.5	1	0.5							1	0.4			12	5.2
POTENTIALLY ECONOMIC																						
Low spine, Asteraceae	23	10.0	23	9.3	14	6.2	16	7.4	30	13.6	24	10.8	19	9.0	24	10.5	25	11.2	26	11.2	16	6.9
Ephedra nevadensis	5	2.2	2	0.8	2	0.9	2	0.9					1	0.5	4	1.7	3	1.3	1	0.4	1	0.4

Time Period	Early Pueblo III (A.D. 1140–1225)																					
Sample No.	13		14		18		19		21		22		23		24		25		26		41	
Study Unit	STR 1108		STR 1108		STR 1416		STR 1416		STR 222		STR 122		STR 145		STR 1504		STR 803		STR 803		STR 1205	
PD	2153		2153		1766		1766		1114		1179		1387		1324		1127		1127		1995	
FS	10		9		2		1		8		7		50		18		17		20		20	
PL	18		21		5		10		8		15		14		17		6		13		112	
Grains Counted	230		247		227		215		221		223		212		229		224		232		232	
Concentration	5,595		4,537		13,324		9,675		8,464		7,871		7,338		6,245		3,992		5,423		7,413	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
POTENTIALLY ECONOMIC, continued																						
Ephedra torreyana	1	0.4	2	0.8							3	1.3			1	0.4	1	0.4	1	0.4		
Poaceae	14	6.1	13	5.3	5	2.2	6	2.8	4	1.8	7	3.1	9	4.2	5	2.2	6	2.7	3	1.3	6	2.6
INDETERMINATE	8	3.5	9	3.6	11	4.8	5	2.3	5	2.3	5	2.2	4	1.9	5	2.2	6	2.7	10	4.3	9	3.9
Notes:	plus a grass anther										plus a mustard anther											

N = number of grains identified; % = percentage of the total grains identified within the sample; PD = Provenience Designation; FS = Field Specimen; PL = Point-Location Number.

Table 7.8b. Pollen on Pit Structure/Kiva Floors from the Late Pueblo III Period, Shields Pueblo.

Time Period	Late Pueblo III (A.D. 1225–1280)													
Sample No.	29		30		31		32		33		34		35	
Study Unit	STR 1402		STR 1408		STR 1408		STR 208		STR 208		STR 1106		STR 1106	
PD	951		952		1198		712		712		2077		2077	
FS	18		34		53		1		2		4		5	
PL	21		44		59		17		19		150		151	
Grains Counted	236		231		219		221		218		225		212	
Concentration	1,699		2,446		1,301		24,862		9,055		12,789		15,682	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
LOCAL														
Artemisia	92	39.0	87	37.7	73	33.3	40	18.1	50	22.9	67	29.8	74	34.9
Juniperus	8	3.4	13	5.6	35	16.0	34	15.4	26	11.9	29	12.9	25	11.8
Pinus edulis	10	4.2	21	9.1	16	7.3	11	5.0	13	6.0	17	7.6	17	8.0
Quercus	5	2.1	1	0.4	1	0.5	1	0.5	1	0.5	1	0.4	3	1.4
Cheno-am	55	23.3	36	15.6	34	15.5	94	42.5	88	40.4	31	13.8	46	21.7
RESTRICTED-LOCAL														
Acer														
Celtis														
Cyperaceae					1	0.5								
Salix	3	1.3	6	2.6	9	4.1	6	2.7	2	0.9	3	1.3	3	1.4
Sarcobatus							1	0.5						
Typha angustifolia														
REGIONAL														
Alnus														
Picea														
Pinus ponderosa	3	1.3	1	0.4					1	0.5			1	0.5
Pseudotsuga														
ECONOMIC														
Apiaceae							1	0.5			1	0.4		
Brassicaceae	2	0.8							1	0.5	1	0.4		
Caryophyllaceae														
Cleome													1	0.5
Cirsium									1	0.5	1	0.4		
High spine, Asteraceae											1	0.4		
Echinocereus							1	0.5						
Eriogonum							1	0.5					1	0.5
Euphorbiaceae														
Fabaceae					2	0.9							2	0.9
Gaura														
Geraniaceae									1	0.5				
Lamiaceae											1	0.4		

Time Period	Late Pueblo III (A.D. 1225–1280)													
Sample No.	29		30		31		32		33		34		35	
Study Unit	STR 1402		STR 1408		STR 1408		STR 208		STR 208		STR 1106		STR 1106	
PD	951		952		1198		712		712		2077		2077	
FS	18		34		53		1		2		4		5	
PL	21		44		59		17		19		150		151	
Grains Counted	236		231		219		221		218		225		212	
Concentration	1,699		2,446		1,301		24,862		9,055		12,789		15,682	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
ECONOMIC, continued														
Liguliflorae			1	0.4	7	3.2					1	0.4		
Liliaceae														
Platyopuntia														
Polemoniaceae														
Polygonaceae														
Portulaca			1	0.4										
Rosaceae	2	0.8												
Solanaceae	1	0.4									1	0.4		
Sphaeralcea	1	0.4	4	1.7			3	1.4	1	0.5				
Verbenaceae	1	0.4												
Yucca														
Zea mays	12	5.1	13	5.6					2	0.9	3	1.3		
POTENTIALLY ECONOMIC														
Low spine, Asteraceae	29	12.3	29	12.6	26	11.9	16	7.2	22	10.1	45	20.0	28	13.2
Ephedra nevadensis			1	0.4	1	0.5	2	0.9	2	0.9	3	1.3	1	0.5
Ephedra torreyana			1	0.4							1	0.4		
Poaceae	3	1.3	8	3.5	8	3.7	5	2.3	2	0.9	10	4.4	7	3.3
INDETERMINATE	9	3.8	8	3.5	6	2.7	5	2.3	5	2.3	8	3.6	3	1.4
Notes:			willow anther											

N = number of grains identified; % = percentage of the total grains identified within the sample; PD = Provenience Designation; FS = Field Specimen; PL = Point-Location Number.

Table 7.9. Mean Pollen Percentages in Floor and Fill Samples through Time (based on Tables 7.5–7.8b) and in Modern Control Samples (based on Table 7.4).

Time Period	Early Pueblo I (A.D. 725–800) Floor	Early Pueblo I (A.D. 725–800) Fill	Late Pueblo II (A.D. 1060–1140) Floor	Early Pueblo III (A.D. 1140–1225) Floor	Early Pueblo III (A.D. 1140–1225) Fill	Late Pueblo III (A.D. 1225–1280) Floor	Terminal Pueblo III (A.D. 1260–1280) Fill	Depopulation (A.D. 1280–1300) Fill	Modern Control Samples (A.D. 2000) Open Settings	Modem Control Samples (A.D. 1990/1991) Woodlands
No. of Samples	N=3	N=2	N=6	N=11	N=3	N=7	N=3	N=2	N=3	N=4
LOCAL										
Artemisia	30.7%	31.1%	26.1%	25.6%	28.8%	30.8%	24.0%	20.3%	19.2%	8.5%
Juniperus	19.9%	18.9%	15.9%	12.0%	19.9%	11.0%	14.4%	10.4%	27.5%	40.5%
Pinus edulis	5.3%	7.4%	6.7%	6.8%	5.3%	6.7%	5.2%	4.7%	15.6%	27.6%
Quercus	1.2%	0.9%	1.4%	1.0%	0.4%	0.8%	0.6%		0.9%	1.1%
Cheno-am	16.8%	24.4%	24.5%	30.0%	21.5%	24.7%	32.4%	43.1%	22.4%	8.8%
RESTRICTED-LOCAL										
Acer										
Celtis				<0.1%		0.1%				
Cyperaceae		0.2%	0.1%	<0.1%		2.0%	0.3%			
Salix	2.4%	1.3%	5.8%	3.4%	1.6%	0.1%	3.5%	6.5%	1.2%	0.3%
Sarcobatus		0.2%	0.1%	<0.1%	0.3%			0.3%		
Typha angustifolia			0.1%	<0.1%						
REGIONAL										
Alnus		0.2%								
Picea										0.4%
Pinus ponderosa	0.3%		0.4%	0.3%	0.1%	0.4%	0.2%		0.5%	4.0%
Pseudotsuga										0.1%
ECONOMIC										
Apiaceae	3.2%		0.2%	0.3%		0.1%		0.3%		
Brassicaceae	0.2%	0.2%	1.0%	0.7%	0.1%	0.2%	0.2%	0.5%		0.1%

Time Period	Early Pueblo I (A.D. 725–800) Floor	Early Pueblo I (A.D. 725–800) Fill	Late Pueblo II (A.D. 1060–1140) Floor	Early Pueblo III (A.D. 1140–1225) Floor	Early Pueblo III (A.D. 1140–1225) Fill	Late Pueblo III (A.D. 1225–1280) Floor	Terminal Pueblo III (A.D. 1260–1280) Fill	Depopulation (A.D. 1280–1300) Fill	Modern Control Samples (A.D. 2000) Open Settings	Modem Control Samples (A.D. 1990/1991) Woodlands
No. of Samples	N=3	N=2	N=6	N=11	N=3	N=7	N=3	N=2	N=3	N=4
ECONOMIC, continued										
Caryophyllaceae		0.2%							0.6%	
Cleome	0.3%	0.2%	0.3%			0.1%				
Cirsium	0.2%	0.5%	0.3%	<0.1%		0.1%	0.3%	0.3%		
High spine, Asteraceae	0.6%	1.1%	0.4%	0.2%	0.6%	0.1%				0.8%
Echinocereus	0.1%					0.1%				
Eriogonum	0.7%	0.2%	0.2%	0.4%	0.3%	0.1%	0.5%		0.1%	
Euphorbiaceae									0.2%	
Fabaceae	0.3%	0.2%		0.1%		0.3%		0.3%	0.1%	
Gaura										0.1%
Geraniaceae				<0.1%		0.1%				
Lamiaceae				<0.1%		0.1%				
Liguliflorae	0.1%	0.5%	0.1%	0.6%	1.1%	0.6%	1.1%		0.3%	
Liliaceae	0.7%		0.1%	0.2%	0.3%		0.2%			
Platyopuntia					0.1%		0.1%			
Polemoniaceae				<0.1%						
Polygonaceae	0.2%		0.2%	<0.1%				0.3%	0.2%	
Portulaca			0.1%	<0.1%		0.1%		0.3%		
Rosaceae			0.2%	0.1%	0.1%	0.1%				
Solanaceae				0.1%	0.1%	0.1%	0.1%	0.3%		
Sphaeralcea	0.4%	0.2%		0.2%		0.6%		0.3%		
Verbenaceae				<0.1%		0.1%				
Yucca				<0.1%						

Time Period	Early Pueblo I (A.D. 725–800) Floor	Early Pueblo I (A.D. 725–800) Fill	Late Pueblo II (A.D. 1060–1140) Floor	Early Pueblo III (A.D. 1140–1225) Floor	Early Pueblo III (A.D. 1140–1225) Fill	Late Pueblo III (A.D. 1225–1280) Floor	Terminal Pueblo III (A.D. 1260–1280) Fill	Depopulation (A.D. 1280–1300) Fill	Modern Control Samples (A.D. 2000) Open Settings	Modem Control Samples (A.D. 1990/1991) Woodlands
No. of Samples	N=3	N=2	N=6	N=11	N=3	N=7	N=3	N=2	N=3	N=4
ECONOMIC, continued										
Zea mays	0.3%	0.2%	0.4%	0.6%	0.1%	1.8%	0.8%	0.3%	0.2%	
POTENTIALLY ECONOMIC										
Low spine, Asteraceae	8.9%	5.5%	8.2%	9.6%	11.1%	12.5%	10.4%	7.6%	6.8%	3.8%
Ephedra nevadensis	0.3%	1.1%	0.7%	0.8%	0.4%	0.6%	1.1%	0.5%	0.8%	1.1%
Ephedra torreyana		0.4%	0.2%	0.3%	0.9%	0.1%	0.3%	0.3%	0.2%	0.1%
Poaceae	2.6%	2.1%	3.0%	3.0%	2.5%	2.8%	2.1%	1.4%	1.6%	1.8%
INDETERMINATE	3.8%	3.0%	3.4%	3.1%	4.0%	2.8%	2.3%	3.0%	1.8%	0.9%
Notes:				plus a Poaceae anther, a Brassicaceae anther		plus a *Zea mays* anther				

Table 7.10. Presence of Pollen Types Recovered on Pit Structure/Kiva Floors that are Considered Representative of Plant Use at Shields Pueblo through Time.

Plant Taxon	Early Pueblo I Floors	Late Pueblo II Floors	Early Pueblo III Floors	Late Pueblo III Floors
LOCAL				
Artemisia	X	X	X	X
Juniperus	X	X	X	X
Pinus edulis	X	X	X	X
Cheno-am	X	X	X	X
RESTRICTED-LOCAL				
Celtis			X	X
Cyperaceae		X	X	X
Salix	X	X	X	X
Sarcobatus		X	X	
Typha angustifolia		X	X	
ECONOMIC				
Apiaceae	X		X	X
Brassicaceae			X	X
Cirsium		X	X	X
Cleome	X	X		
Echinocereus	X			
Geraniaceae			X	X
Lamiaceae			X	X
Liguliflorae				X
Liliaceae	X	X	X	
Polemoniaceae			X	
Portulaca		X	X	X
Rosaceae		X	X	X
Solanaceae			X	X
Sphaeralcea	X		X	X
Verbenaceae			X	X
Yucca			X	
Zea mays	X	X	X	X
POTENTIALLY ECONOMIC				
Low spine Asteraceae	X	X	X	X
Ephedra Torreyana			X	
Poaceae	X	X	X	X
TOTAL TAXA	13	16	26	21

Note: Some of these types were also recovered in fill samples.

Table 7.11. Pollen Trends and Possible Explanations for These Trends, Shields Pueblo.

Pollen Trend	Human Impact	Environment
Pinyon pine and especially juniper pollen both decrease through time.	Woodlands were being thinned as people sought building timbers and fuelwood, and cleared land for agricultural fields.	Alternating favorable and unfavorable climatic periods from A.D.1000–1300 should result in up-and-down fluctuations in pollen input of major nearby plants, not in unidirectional trends downward.
Sagebrush pollen decreases through time.	Continuous clearing of sagebrush parklands to plant maize reduced population of sagebrush plants.	Alternating favorable and unfavorable climatic periods from A.D.1000–1300 should result in up-and-down fluctuations in pollen input of major nearby plants, not in unidirectional trends downward.
Cheno-ams increase through time, spike to 43 percent in the Depopulation period.	Increasing amounts of land had been cleared for farming and other activities such as tree harvesting; spike at end indicates full invasion by disturbed-ground plants into recently vacated fields.	Same explanation as above; as annuals, plants in this group would be especially sensitive to drought, yet their presence is highest of all during and following a severe drought of the final two periods, suggesting very high populations on the landscape.
Willow increases through time.	Less-preferred wood types are being sought as woodlands are thinned of more-preferred pinyon pine and juniper trees.	Presence of willow pollen should be lowest, not highest, during the severe drought of A.D. 1270–1300; damp habitats still available in the vicinity of Shield Pueblo.

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Chapter 8

Faunal Remains from Shields Pueblo

by Tiffany Rawlings and Jonathan Driver

Introduction

Excavations at Shields Pueblo were part of Crow Canyon Archaeological Center's (Crow Canyon's) long-term research into the Ancestral Pueblo occupation of the central Mesa Verde region, guided by the *Communities Through Time: Migration, Cooperation, and Conflict* research design (Duff et al. 1999; see Chapter 2 in this report). Materials from Shields Pueblo provide considerable time depth to the study of the history of the Goodman Point community on the McElmo Dome. Overviews of the animal bone assemblages from sites in the northern San Juan region suggest significant change in the use of animal resources (Driver 2002). Notable trends include: a reduction in the use of deer (*Odocoileus* sp.), especially during the Pueblo III period (A.D. 1140–1280); the introduction of domestic turkey (*Meleagris gallopavo*) as a food item in the Pueblo II period (A.D. 900–1140) and an intensification in its use during the Pueblo III period; and an increased ratio of cottontails (*Sylvilagus* sp.) to jackrabbits (*Lepus* sp.), also most noticeable during the Pueblo III period. Detailed faunal studies on other sites excavated by Crow Canyon in the region bounded by the McElmo and Yellow Jacket drainages have also been undertaken (Driver 2000, 2002; Driver et al. 1999; Muir 1999; Muir and Driver 2003). However, most of these studies have been on sites dating from within the Pueblo III period. Muir (1999) has discussed temporal trends within this period, and Muir and Driver (2003) attempted to look at change through time at Yellow Jacket Pueblo (Site 5MT5), and at least one of the regional trends—a decrease in deer in the Pueblo III period—seems to be evident at that site. However, the difficulty of assigning subassemblages to chronological periods prevented detailed analysis. The faunal assemblage from Shields Pueblo, however, can be assigned to subperiods, permitting additional analyses.

There is good evidence for multiple periods of use at Shields Pueblo, separated by periods when the pueblo (and possibly the larger region) was not used for permanent settlement (see Chapters 3 and 4 in this report). Tree-ring dates provide evidence for the construction and maintenance of structures from the Pueblo I through Pueblo III periods, although the settlement was uninhabited from about A.D. 800 until the early A.D. 1000s. The evidence for Pueblo II and Early Pueblo III period structures was not as great as expected, and the Late Pueblo III occupation was more substantial than anticipated prior to excavation. The site does provide us with more time depth than other sites excavated in the central Mesa Verde region, but the largest collections derive from Late Pueblo III period occupations. We therefore have the opportunity for further comparison of the Shields Pueblo faunal assemblages with Pueblo III period assemblages recovered from sites in the nearby Sand Canyon locality.

In this chapter we report data in one of two formats: either as a site assemblage, or as subassemblages. The faunal assemblage (Table 8.1) includes all faunal specimens excavated at Shields Pueblo. This assemblage is necessarily mixed, but is dominated by Late Pueblo III period material. Subassemblages, described in more detail below, consist of material that can be assigned to a precise chronological position on the basis of stratigraphy, associated artifacts, and/or tree-ring dates. Because of factors such as natural and cultural disturbance, bioturbation, and a lack of stratigraphic resolution, not all specimens from the site assemblage can be assigned to a precise chronological subassemblage. Data from the entire assemblage are accessible in the online companion database. These data include provenience information for each specimen, thus allowing future researchers to undertake new analyses if additional chronological information is obtained.

Our research goals are as follows:

- to summarize the data on the site assemblage and the subassemblages
- to investigate the taphonomy of the site assemblage
- to examine the human use of the more-common species
- to investigate changes in fauna use through time at the site
- to investigate the correlation between human population change and faunal use
- to investigate intrasite spatial variation
- to compare the species composition of the site assemblage and subassemblages with other sites in this locality

Data from Shields Pueblo have been used as part of a Ph.D. dissertation by the senior author, and a more detailed contextual analysis is included in this work (Rawlings 2005).

Methods

Consistent use of the same methods for identification and description of specimens provides greater comparability between assemblages. Methods employed for the analysis of the Shields Pueblo animal-bone assemblage follow a protocol established for zooarchaeological studies on sites excavated by Crow Canyon, described in detail elsewhere (Driver et al. 1999). In brief, for each specimen we recorded information on its provenience, taxonomic category, skeletal element, side (left or right), portion of skeletal element present, state of epiphyseal fusion, breakage patterns, length, cortical thickness of long bones, and any natural or cultural modification. Our analysis included all bone artifacts recovered from the site. Following Driver (1992), we considered "identifiable" to mean any specimen for which we could identify the skeletal element (e.g., mandible, thoracic vertebra, tibia). Specimens for which a skeletal element could not be specified (e.g., long bone) were considered unidentifiable. All descriptive data were standardized using a coding system (Driver et al. 1999).

Quantification methods used in this report are primarily based on number of identified specimens (NISP), minimum number of elements (MNE), and minimum animal units (MAU) (see Lyman 1994 and Reitz and Wing 1999). NISP is the basic count of specimens. NISP data include all complete or fragmentary skeletal elements that can be identified to a particular taxonomic category.

MNE is commonly used as a method for assessing the representation of different skeletal elements of a particular taxon. Essentially, MNE calculates the smallest number of skeletal elements necessary to account for the specimens recovered. For example, an assemblage that contains two distal humeri and three proximal humeri from a deer has an MNE value of 3, because at least three complete humeri were needed to produce the five fragments. (Although not widely discussed, it is important to note that MNE values are minimum, not actual, counts. The actual number of elements that produced the five humeri fragments could range from a minimum of three to a maximum of five). In this analysis, we did not differentiate between left and right sides or mature and immature specimens when calculating MNE.

MAU is produced by dividing MNE by the number of times that element occurs in the body of a living animal. In the example above, the MNE of three humeri would be divided by 2 (there are two humeri in the body) resulting in an MAU of 1.5. If the MNE of deer cervical vertebrae was 24, the MAU would be 3.4, since there are seven cervical vertebrae in the mammal body. Essentially, MAU normalizes element frequency counts by taking into account the fact that some elements are more common than others. Once the data are normalized, one can look at the frequency of skeletal elements in the assemblage in relation to expected frequencies, and thus detect variation due to natural and cultural factors.

The Assemblages

Shields Pueblo has provided a very large faunal assemblage of 40,940 specimens, of which approximately 54 percent were unidentifiable (see Table 8.1). This percentage is consistent with other sites nearby. Although there are occasional outliers, most small assemblages display between 40 percent and 60 percent unidentified specimens (Driver et al. 1999). When large assemblages are considered, the value is typically just over 50 percent unidentified. This is evident at Castle Rock Pueblo (54 percent), Woods Canyon Pueblo (51 percent), Yellow Jacket Pueblo (57 percent), and for the aggregated data from Crow Canyon's Sand Canyon Archaeological Project: Site Testing (53 percent). The only assemblage where identification rates were significantly better than at Shields Pueblo is Sand Canyon Pueblo, where only 38 percent of the faunal assemblage was unidentified (Muir 1999). This is likely due to differences of preservation unique to Sand Canyon Pueblo, rather than inter-observer variation, as Muir also undertook many of the identifications for Yellow Jacket Pueblo, where unidentified specimens are more common than at Sand Canyon Pueblo.

NISP values for all taxa are presented in Table 8.1. Minimum number of individuals have not been calculated, for reasons documented in Grayson (1984). Like other assemblages in the region, birds and mammals dominate. There are negligible quantities of reptiles and amphibians, although these values would undoubtedly be increased if finer mesh had been used during screening. The bird assemblage is heavily dominated by turkey (*Meleagris gallopavo*), and the vast majority of these are probably domestic turkey (Munro 1994). Isotopic analysis of turkey bone (discussed below) confirms that turkeys were eating large quantities of maize, suggesting that they were being fed surplus grain; this is further evidence that they were domesticated.

Non-turkey bird remains exhibit a pattern common to this region (Table 8.2). Raptors (Falconiformes), owls (Strigiformes), and ravens (*Corvus corax*) were symbolically important species (Tyler 1979), and their recovery from some sites suggests an association with structures used for ceremony and ritual (Muir and Driver 2004). As is typical for sites in this area, we find hawks (Falconiformes) and owls, with eagles (Falconiformes) being rare in Pueblo III period assemblages. In fact, Shields Pueblo is the only excavated site in the locality to produce an eagle specimen from a Pueblo III period context (see Table 8.2), even though we have now examined tens of thousands of specimens from the locality. Other wild birds were eaten for food and included Galliformes (grouse and quail) and Columbiformes (usually doves). Woodpeckers (Piciformes) appear regularly in these site assemblages, and were probably hunted for their striking plumage.

The mammal assemblage is dominated by the lagomorphs—cottontails and jackrabbits (*Sylvilagus* sp. and *Lepus* sp., respectively) (see Table 8.1). Artiodactyls (hoofed mammals) are not common, but were probably very important culturally. Because of skeletal similarities between deer (*Odocoileus* sp.), bighorn sheep (*Ovis canadensis*), and pronghorn antelope (*Antilocapra americana*), many artiodactyl bones cannot be identified confidently to genus, but it is likely that deer are the most common of the medium-sized artiodactyls. The range of other mammals is consistent with that found at larger assemblages in the locality. All of the identified taxa either live in the region today, or have been recorded there in historical times. A common problem for Southwestern zooarchaeologists is to assess the extent to which fossorial rodents are intrusive to the archaeological deposits. This is addressed below in discussions of the site's taphonomy.

As apparent from Table 8.1, many specimens cannot be identified to the level of the species. This is partly due to the fragmentary nature of many specimens, but also because there are insufficient morphological landmarks to confidently distinguish closely related taxa. For example, it is likely that more than one species of cottontail rabbit lived in the area, but it is extremely difficult to distinguish cottontail species on the basis of the skeleton. We have followed the practice of identifying specimens to a taxonomic level that we believe is justified by morphological characteristics, such as shape and size. However, we have also used some taxonomic categories that are not based simply on the hierarchical system of zoological nomenclature. For example, in some cases we have used size to qualify an identification (e.g., medium carnivore, small bird, etc.). It should be noted that most specimens in the category "large bird" are probably turkey, and for some analyses we consider turkey and large bird as a single group.

Subassemblages for each chronological period are presented in Table 8.3. The subperiods include the following: Subperiod 3 A.D. 725–800; Subperiod 6 A.D. 1020–1060; Subperiod 7 A.D. 1060–1150; Subperiod 8 A.D. 1150–1225; and Subperiod 9 A.D. 1225–1280.

Taphonomy

Tabulation of common categories of bone modification (Table 8.4) shows no significant difference in the frequency of bone modification by period. We therefore examine the taphonomy of the site assemblage as a whole. Faunal assemblages are subject to nonrandom destruction of specimens between initial deposition of bones and their subsequent burial and preservation (Lyman 1994). Because the degree or rate of bone destruction is often correlated with bone density, one way to investigate destruction of bone is to examine the relative frequency of denser and less-dense regions of the same skeletal element. In conditions of good preservation, one would expect roughly equal ratios of dense to less-dense parts of the same element. Under poorer conditions of preservation, less-dense parts of the element will be preferentially destroyed.

In the first set of analyses, we have selected mammalian long bones that have marked differences in the densities of their proximal and distal ends. It is likely that long bones arrived on the site as complete specimens, although some may have been broken subsequently by either cultural processes (e.g., butchery) or natural processes (e.g., weathering). Table 8.5 provides data on proximal and distal ends of two major long bones (humerus and tibia) for two common small mammals—cottontail (*Sylvilagus* sp.) and prairie dog (*Cynomys* sp.). In every case the weaker long bone ends are less common, and the denser ends outnumber the less-dense ends by a ratio of approximately 3:1. A similar analysis can be performed on the bones of the much larger artiodactyls, most of which are probably deer. Table 8.6 shows that for these elements the destruction of the less-dense bones is even more pronounced than for the smaller mammals. This may be because some of the smaller mammals are intrusive, and therefore their bones have not been deposited on the surface, and have not been subject to taphonomic processes for as long as ancient specimens (see discussion below). However, it may also be due to the fact that smaller specimens tend to become buried more quickly than larger specimens, and are therefore less affected by a wide range of taphonomic agents. Finally, one should note that large bones are likely more attractive to scavenging carnivores (especially domestic dogs [*Canis familiaris*]), and may therefore suffer differential destruction when the scavengers target long bone ends with higher nutritional values (Lyman 1994:Figure 7.17).

Table 8.7 displays data from a wider range of artiodactyl skeletal elements. Here MNE values have been converted to MAU by dividing MNE by the number of times the element occurs in the skeleton of an individual animal. The MAU values have then been expressed as a percentage of the element with the highest MAU. Under conditions of perfect preservation, all percent MAU values should be 100. These data show that some elements, or parts of elements, are significantly underrepresented. The ranked MAU values are then compared against two indices of skeletal preservation. Brain (1981) proposed a tripartite division of artiodactyl skeletons in which parts of the skeleton are ranked according to their potential for survival. Brain's index is based upon collection of specimens from recently occupied villages in southern Africa, where humans, dogs, and natural processes all contributed to bone destruction. Lyman (1994) provides data on bone density of a wide range of skeletal elements from a number of species, including deer. Brain's system is therefore based on actual studies, with less control of variables that influence bone loss. Lyman's density data are empirically derived approximations of an element's resistance to mechanical forces (but see Lam and Pearson 2004, 2005 for a critique).

We suggest that the Shields Pueblo assemblage of artiodactyls has been affected by processes similar to those that created the assemblages observed by Brain (1981). There is a strong correlation between what preserved at Shields Pueblo and what preserves in African villages. The correlation is also reasonably good with Lyman's (1994) more quantitative data on bone density. Notably, the high-density parts of the skeleton are well represented at Shields Pueblo, and the specimens with the lowest density tend to be the least well represented. The slightly weaker correlation with Lyman's data is probably because bone preservation is affected by more factors than just bone density. For example, scavenging carnivores may be influenced by the ease with which a bone can be chewed, or by the amount of meat left on the specimen when it was discarded, as well as by bone density. Nevertheless, elements with the highest densities (e.g., > 0.4) are clearly better represented than lower-density elements.

We therefore argue that the discrepancies between "natural" element frequencies and the frequencies seen at Shields Pueblo are likely the result of post-depositional forces. These forces are most clearly seen in the analysis of larger animals, but differential destruction of weaker long bone ends in smaller mammals suggests that such processes acted on most of the assemblage. Similar conclusions have been reached for other sites in this region (Driver 2000; Driver et al. 1999; Muir and Driver 2003), thus we expect our results to be broadly comparable to previously studied assemblages from other sites. We also note the general similarity in proportion of unidentified specimens at sites in the area, and this suggests comparable taphonomic processes.

Common Taxa at Shields Pueblo and Use by Humans

Unless noted otherwise, in this section we refer to the site assemblage, rather than the more precisely dated subassemblages. It is important to note that meat and animal fat were probably a minor part of the diet measured by their overall contribution to energy or the bulk composition of food. However, animal foods would have supplied protein and important nutrients, such as fat-soluble vitamins (Wing and Brown 1979:60). It is also important to note that the act of hunting was socially and ritually important, that meat was probably highly valued, and that animal by-products (such as skins or feathers) played significant roles in religious activities (Muir and Driver 2004).

Cottontails (*Sylvilagus* sp.) and jackrabbits (*Lepus* sp.) were important in the diet of the ancestral Pueblo people. Throughout the northern San Juan region they were a dietary staple in most periods. Lagomorphs have relatively high reproductive rates and small home ranges, so they are able to recover from predation and to survive in landscapes that contain fields and other human modifications. Potter (1997) has suggested that lagomorphs were important in communal feasts because they were readily obtainable at any time. Some of the ethnographic data on rabbit drives are summarized by Shaffer and Gardner (1995).

We expect that the smaller cottontails and larger jackrabbits would have been hunted locally, and brought back to the village as complete carcasses. This is not easy to demonstrate from the faunal data, because some skeletal elements of smaller mammals are unlikely to be recovered during normal archaeological screening procedures. In Table 8.8, we compare the NISP of selected skeletal elements with the naturally occurring frequency in a live-animal skeleton. If complete skeletons were represented in the collection, we would expect to obtain roughly the same value whenever we divided the NISP of an element with its NISP value in a natural skeleton. However, there are large differences between the observed and expected patterns. In part this is due to size differences between elements. As can be seen from Table 8.8, most of the skeletal elements that are well represented are large and robust. Small skeletal elements, such as phalanges and ribs that easily pass through a 6-millimeter (mm) screen, are poorly represented. A few elements such as cervical and thoracic vertebrae, if well preserved, should be trapped by a screen, but these are fairly fragile, and less likely to survive post-depositional processes or even the process of excavation. In addition, vertebrae may have been processed for food by grinding

(Hockett 1995) and this could also account for their poor representation. One should also note that long, thin specimens (such as ulna and radius) survive quite well, probably because these elements are fairly robust and do not pass easily through a screen in spite of their narrow dimensions. Given the similar representation of robust elements from different areas of the body (e.g., mandible, humerus, innominate, tibia) there is good reason to think that complete skeletons were being returned to the pueblo. Evidence of cultural modification to cottontail and jackrabbit specimens is relatively low, and is summarized in Table 8.9.

As discussed below (see Table 8.12) isotopic analysis of turkey bones was undertaken, and compared with lagomorph bones. Although the main reason for analyzing lagomorph bones was to provide a control sample of wild herbivores' diets, some interesting results emerged. Both cottontail and jackrabbit display similar carbon isotope values. This contrasts with another study (Katzenberg 1991) of these two genera in New Mexico. Katzenberg (1991) found evidence for different diets in the two genera, likely reflecting use of different habitats (woodland versus grassland). The cottontail values in New Mexico were very similar to those in this study, whereas jackrabbit diets in New Mexico suggested greater reliance on open grassland landscapes. The Colorado data do not show this difference, suggesting that both cottontails and jackrabbits had been obtained from a similar habitat.

Even though rodents are common on the modern landscape, they occur in much smaller quantities than cottontails and jackrabbits at Shields Pueblo (see Table 8.1). This may simply be due to their generally smaller size—many of the skeletal elements of packrats (*Neotoma* sp.) or gophers (*Thomomys* sp.) would pass through a 6-mm mesh during screening. Of the common rodents, prairie dog (*Cynomys* sp.) is the largest, and would supply quantities of meat similar to a cottontail rabbit. Analysis of long bones (Table 8.10) shows that prairie dog specimens were more likely to be recovered as whole specimens, whereas cottontails were more fragmentary. We suggest that the higher frequency of complete prairie dog specimens results from the fact that more specimens were intrusive and derive from in situ underground deaths, whereas a higher proportion of cottontails were procured by humans, butchered, and then discarded at the site. Evidence of modification on rodent bones is slight, although the percentage of burned bone is similar to that for cottontail rabbits (Table 8.11).

In common with other sites in this region, turkey (*Meleagris gallopavo*) from Shields Pueblo is probably domestic, although we did not take osteometric measurements to test this hypothesis. However, we have determined the stable isotope composition of a small sample of turkey bones. Tiffany Rawlings selected the specimens, and Cheryl Takahashi in Erle Nelson's laboratory at Simon Fraser University extracted collagen. The carbon and nitrogen isotopes (C^{13} and/or N^{15}) were measured by Iso-Analytical Limited. Nitrogen was not run on lagomorph bones, because we can presume that lagomorphs were vegetarians.

These data (Table 8.12) show that turkeys were consuming significant quantities of C^4 plants. It is very likely that this is a reflection of a diet consisting mainly of maize (*Zea mays*), and this suggests that turkeys were mainly kept in close proximity to people and fed surplus. We also sampled specimens of jackrabbit and cottontail, as representative of populations living in the wild on local vegetation, and these display carbon isotope values consistent with foraging for local, wild-plant foods. Nitrogen analysis can be used to determine the trophic level at which an animal feeds. Turkey nitrogen isotopes suggest a mainly vegetarian diet, showing that turkeys were not eating large quantities of animal food, such as insects. The carbon results are consistent with unpublished data reported for turkey for Sand Canyon Pueblo (Annie Katzenberg, personal communication). It therefore appears that turkeys were being used to convert surplus grain to meat. This implies that there was not only enough maize for human subsistence needs, but a surplus that was available to feed domestic birds.

All parts of the turkey skeleton are represented. Table 8.13 shows MNE values for selected areas of the turkey skeleton, and there is reasonably good representation of the bones that are likely to survive and to be identified from different areas of the skeleton. Of interest are the relatively high values for the bones of the lower leg—tibiotarsus and tarsometatarsus. There may have been some selective curation of these elements taking place, because they were favored for use in bone tools. This is especially obvious for the tibiotarsus, which was made into artifacts about twice as often as any other turkey element and which is also the most common long bone in the sample. Table 8.14 summarizes cultural modification to turkey bone (the sample includes all specimens identified in the "large bird" category). These exhibit slightly higher percentages of modification than jackrabbit specimens (see Table 8.9), but a higher percentage of modified turkey specimens are artifacts and a higher percentage exhibit cut marks. This likely relates to the larger size of turkey, the greater need to butcher them (hence the cut marks), and the greater suitability of the long bones for artifacts such as awls and tubes.

Population Growth: Change in Fauna and Human Population

One of the primary explanations for culture change in the Southwest is human population growth and expansion. The relationship between human population and the rate of faunal deposition at Shields Pueblo can be measured by using a rough proxy for population. Because of the lack of surface architecture, the rate of pottery deposition is used to estimate general trends in human population at Shields Pueblo. In order for this method to be useful, pottery weights must be corrected by establishing the rate of deposition (dividing the total pottery weight in g by the number of years in the dated subphase, then dividing by the total area excavated [square meters or m^2]). This method relies on the assumption that the rate of pottery deposition is constant (Ortman et al. 2000). Thus, it must be stressed that this method may only provide a rough estimation of change in human population.

Faunal deposition is calculated in a similar manner to pottery so that both categories of evidence can be compared. Table 8.15 illustrates the rates of deposition for ceramics and faunal remains. It is interesting to note that there is an inverse relationship between population and faunal deposition from the Late Pueblo II/Early Pueblo III transition to the Late Pueblo III period (A.D. 1150–1225) (Figure 8.1). This relationship seems to indicate a population threshold. Once this level of human population was reached at Shields Pueblo, the availability of meat resources seems to have dropped rapidly. If specific taxonomic indices are considered, artiodactyls drop off notably as population increases (see A index on Figure 8.2), while the use of cottontails (L index) increases steadily, and turkey (T index) seems to mirror the trends in human population (see Figure 8.2).

Intrasite Analysis: Chronology and Space

Intrasite analysis is concerned with two questions:

1. What is the change in the relative frequencies of artiodactyls, lagomorphs, and turkeys/large birds over time at Shields Pueblo?

2. Are there any spatial correlations with faunal remains?

There are two distinctive periods of occupation at Shields Pueblo. The earliest substantial occupation began in the Pueblo I period (A.D. 725–800). Shields Pueblo was then unoccupied for a period of about 200 years. The site was reoccupied in the mid–Pueblo II period (A.D. 1020) and remained settled until regional depopulation around A.D. 1280. Table 8.16 shows the change in the relative frequencies of economically important taxa over time. Frequency was measured both in terms of relative NISP counts and as taxonomic indices (defined by Driver 2002).

These data show that the relative frequency of artiodactyls stays relatively low throughout the span of occupation with one exception: immediately after Shields Pueblo was reoccupied, there was an increase in the frequency of artiodactyl remains. This increase is not surprising given that the pueblo had been abandoned, allowing the local artiodactyl population to rebound from previous exploitation. This trend continued into the Late Pueblo II period (A.D. 1060–1140). At the onset of the Pueblo III period, the relative frequency of artiodactyls drops dramatically and remains low until the pueblo was abandoned.

The relative frequency of lagomorphs was measured both in terms of the frequency of all lagomorphs and as the lagomorph index (measuring the relative frequency of cottontails as compared to jackrabbits and nonspecific lagomorphs). As expected, lagomorphs dominate in relation to the other selected taxa; and cottontails dominate in relation to other lagomorphs. This pattern has been seen repeatedly at Pueblo II and Pueblo III period sites in the central Mesa Verde region (Driver 2002).

Turkey/large bird frequencies do not appear at first to be patterned in relation to chronology, even though at the regional level we see intensification of turkey production during the Pueblo III period. Most problematic are middle and Late Pueblo II period assemblages. The seemingly anomalous abundance of turkey in the first half of the Pueblo II period is due to the occurrence of at least five turkey burials from Structure 1308 (subterranean kiva). Unlike the scattered, broken bones of other turkeys, these burials probably do not reflect consumption, but they have skewed the NISP figures for this period. If these data are excluded, then there is an increase in turkey in the Pueblo III period when compared to earlier periods.

If taxonomic indices are compared, an interesting pattern emerges: the artiodactyl index declines as the ratio of *Sylvilagus* to *Lepus* increases (Figure 8.3). We interpret this as evidence for either intensive hunting pressure on local populations or agricultural intensification, or possibly a combination of both processes. As large mammals became scarce, hunting of lagomorphs intensified. Within the lagomorphs, larger jackrabbits were preferred over smaller cottontails, and they also experienced a population decline due to this intensive hunting. It is also possible that clearance of woodland in the northern Southwest created a favorable habitat for cottontails (Driver and Woiderski 2006), in contrast to the situation farther south in the Sonoran and Chihuahuan Deserts, where agricultural intensification may favor jackrabbits (Szuter 1991). There are no discernible correlations between the artiodactyl index and the turkey index.

We assume that the absolute NISP values are more a reflection of excavation volumes and the density of trash deposits, rather than any evidence of intensive hunting or processing. Therefore, we rely on relative frequencies when investigating spatial and contextual variation. Table 8.17 shows the frequency (NISP and percent NISP) of major taxa by architectural block within the site. Table 8.18 illustrates the frequency of major taxa in structure and nonstructure contexts.

Unlike Sand Canyon Pueblo and Yellow Jacket Pueblo, artiodactyls are not strongly associated with particular architectural blocks at Shields Pueblo. Instead, artiodactyl specimens are fairly evenly distributed across various architectural components of the site. This may be because Shields Pueblo did not contain the social structures that resulted in the specialized architecture of the two other sites and the unusual assemblages associated with them. Instead, like Castle Rock Pueblo, there seems to have been fairly even access to a relatively small quantity of artiodactyls. An alternative explanation is that such structures did exist at Shields Pueblo, but these have not been preserved, located, and/or excavated.

Because architectural blocks contain a mix of structures and middens dating from different time periods, it is unlikely that spatial analysis at this level will reveal much useful information. Data shown in Table 8.17 suggest that the greatest degree of variation is the result of differences in the frequencies of turkey and cottontail, but no clear pattern emerges when data are aggregated at this scale.

As indicated in Figure 8.4, when faunal remains from structures and nonstructures are compared (see Table 8.18), there seems to be little difference between these two major classes of context, even though such differences have been seen at other sites (Driver 2000). More detailed analysis of contexts and time periods may reveal patterns that we have not been able to detect at this relatively coarse scale of analysis.

Comparison with Other Sites

Table 8.19 provides data on the relative frequency of the most common taxa and/or culturally important taxa from the larger assemblages on the McElmo Dome. Three sites (Sand Canyon Pueblo, Castle Rock Pueblo, and Woods Canyon Pueblo) date from the Late Pueblo III period. Yellow Jacket Pueblo contains both Pueblo II and Pueblo III period material. The total Shields Pueblo assemblage is a mix of mainly Pueblo II and Pueblo III period deposits, but the Pueblo III assemblage can also be isolated.

Shields Pueblo and Yellow Jacket Pueblo both have higher ratios of jackrabbits to cottontails than the other sites, and this is probably due to the physical location of the sites above the canyon rims, with better access to more open landscapes. Sand Canyon and Yellow Jacket Pueblos both have higher quantities of deer, and this is expressed well in the variation in the artiodactyl index. As discussed elsewhere (Muir and Driver 2003, 2004), deer remains in Pueblo III period sites seem to be concentrated around tower complexes. No such contexts were identified at Shields Pueblo, and deer is less common than at other large Pueblo III period sites.

The relative quantity of turkey is quite variable. Like Yellow Jacket and Castle Rock Pueblos, the ratio of turkey to lagomorphs (cottontails and jackrabbits) is relatively low at Shields Pueblo, but the ratio increases at Sand Canyon and Woods Canyon Pueblos. Both of the latter are canyon rim–oriented sites, but it is difficult to argue that this would ever deter their inhabitants from raising turkeys. Possibly, canyon-oriented sites had less access to arable land to produce the surplus corn needed for turkey production, although this again seems unlikely in the case of Sand Canyon Pueblo.

Conclusions

It is not surprising that Shields Pueblo should yield a faunal assemblage with many similarities to other assemblages from this area that have been previously studied. The site is within a day's walk of most of the other sites from which fauna has been reported, and there is relatively minor environmental variation across the locality. The taphonomic factors influencing the Shields Pueblo assemblage also seem similar to those found at other sites. The two most common sources of meat would have been lagomorphs (jackrabbits and cottontails) and domestic turkey. The former could have been trapped or hunted in communal drives. The latter were fed significant quantities of corn, suggesting that agricultural surplus was being converted to protein via domestic animals.

Larger mammals, most of which are deer, were consumed less frequently. Analysis of body parts shows that entire carcasses were being brought back to the pueblo. As with other sites in the region, there is no evidence for long-distance movement of meat or of selective distribution of certain body parts.

As with other sites in the region, there is a range of other bird and mammalian species in the assemblages, but in relatively small quantities. Birds are disproportionately weighted to the top predators—raptors and owls—because feathers from these kinds of bird were probably symbolically important (Tyler 1979). Domestic dogs dominate the carnivore assemblage. Wild carnivores are quite rare, but encompass a wide range of species.

The most obvious trend through time is in the artiodactyls, most of which are deer. These are most common from A.D. 1020–1060, the period in which the site was reoccupied following a two-century occupational hiatus. At other time periods they are rare, and appear to become even scarcer in the final two phases of the occupation. Lagomorphs are common in all periods. It is interesting to note that when the site was reoccupied, the ratio of cottontails to jackrabbits reaches its lowest value. This may also be related to the human preference for larger prey (i.e., jackrabbits) when humans reoccupied an area that had not been intensively hunted for some years. Generally, optimal foraging theory proposes that predators will take prey with larger body size, so we would expect that lagomorph hunters would preferentially select jackrabbits over cottontails. Following the reoccupation, the proportion of jackrabbits to cottontails declines.

There is relatively little that can be said about intrasite variation of fauna. In part this may be due both to the excavation strategy that attempted to sample large numbers of structures, and to the fact that structures from several periods were found in most of the areas of the site extensively tested. Historical disturbance associated with plowing removed most of the surface structures, contexts that often did not include large numbers of faunal remains. The result of this necessary emphasis is a loss of information about architectural context for faunal samples, so it is difficult to relate faunal assemblages to the different depositional and architectural contexts in which they occur. The long-term occupation of the pueblo, combined with historic-era plowing of the site's surface, has resulted in a blurring of contextual and temporal information.

Overall, the faunal assemblages from Shields Pueblo add another important sample to those obtained from other excavations, and provide some of the first detailed evidence for in situ change through time in the central Mesa Verde region.

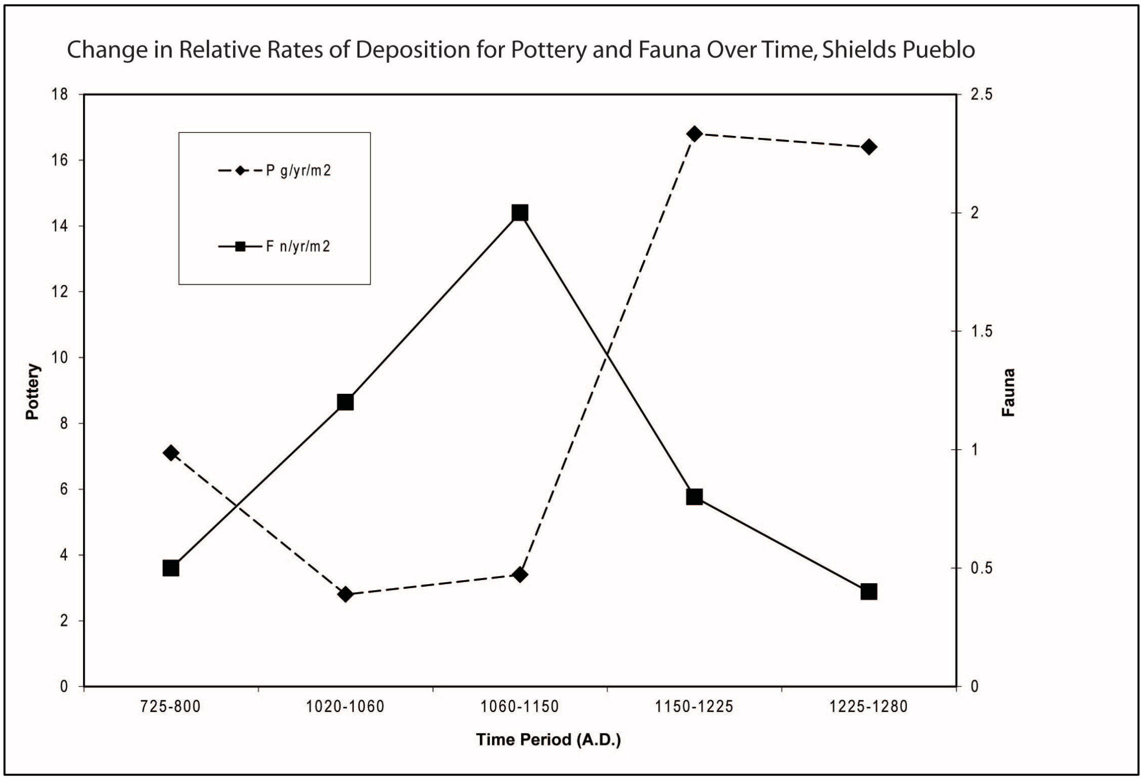

Figure 8.1. Change in relative rates of deposition for pottery and fauna over time, Shields Pueblo.

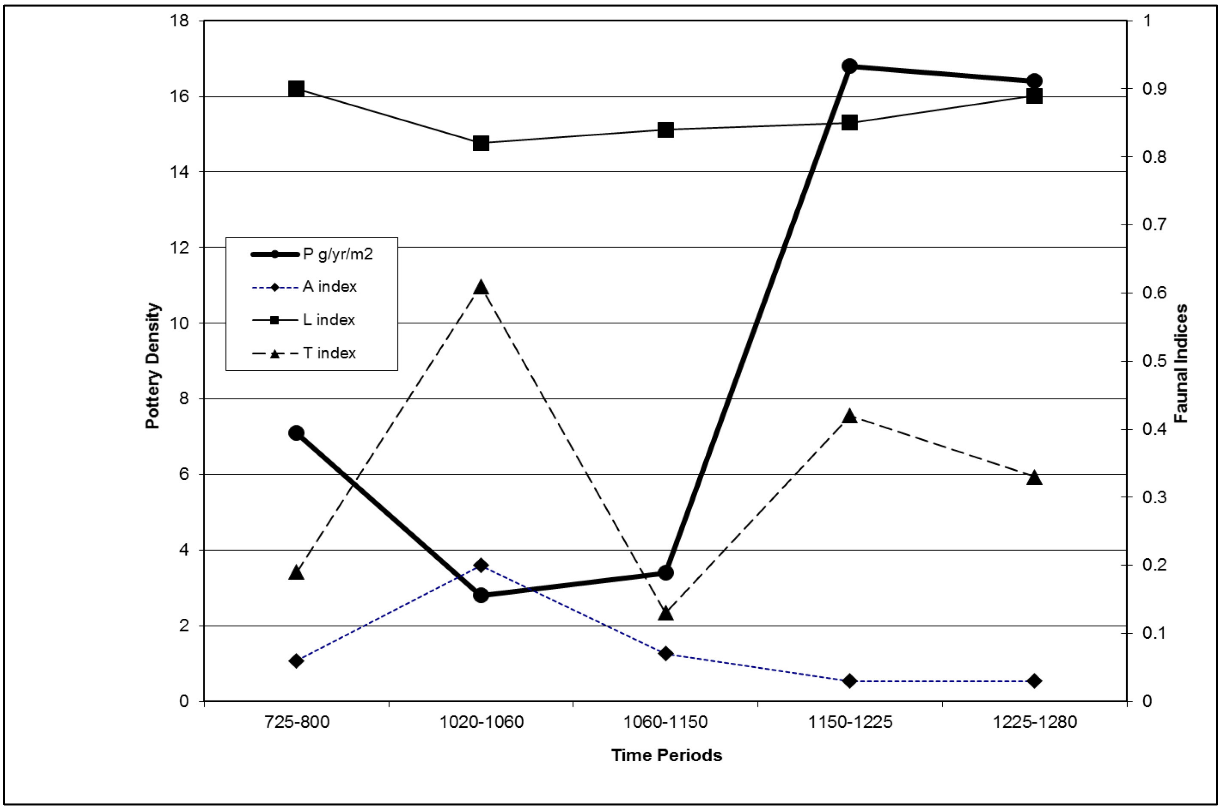

Figure 8.2. Pottery deposition rates compared to faunal indices over time, Shields Pueblo.
(Note: A index = artiodactyls; L index = lagomorphs, T index = turkeys.)

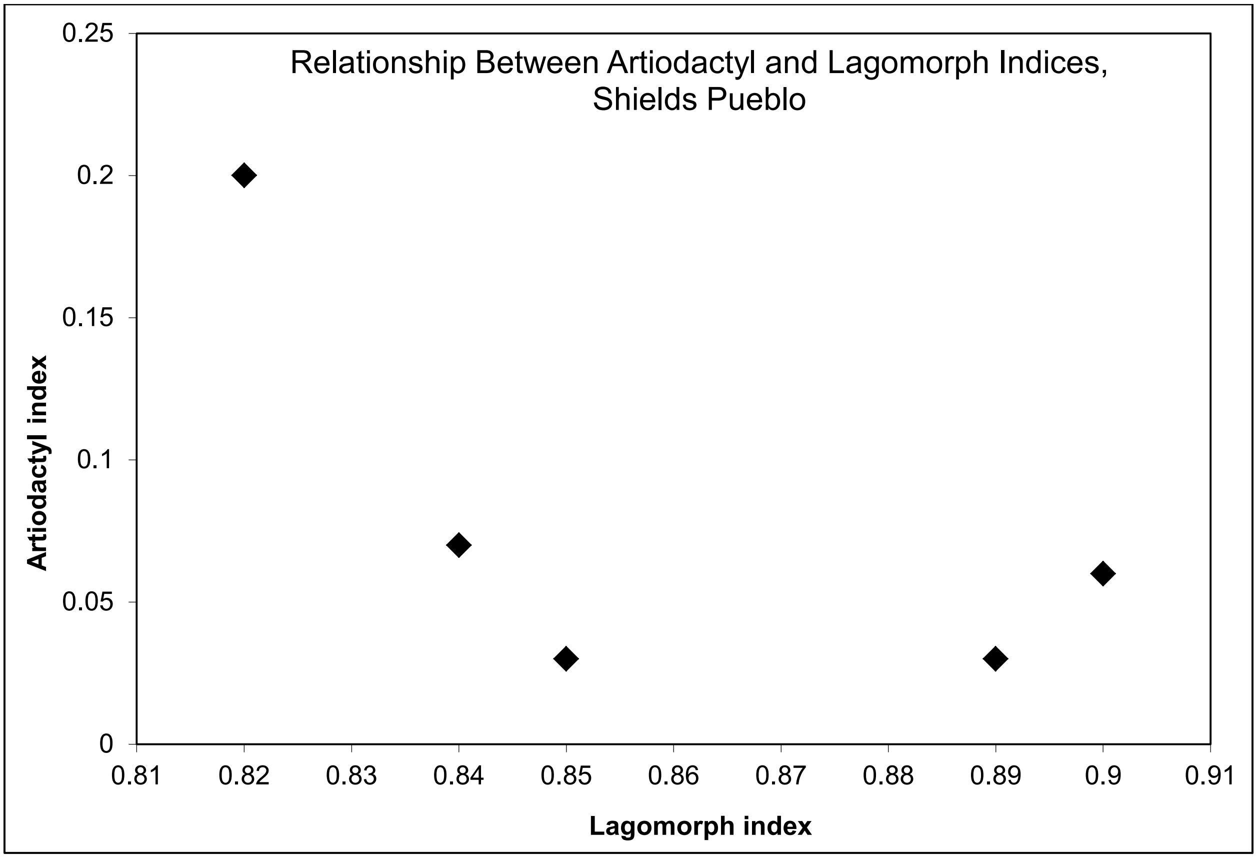

Figure 8.3. Relationship between artiodactyl and lagomorph indices, Shields Pueblo. Each point represents the assemblage from a different subperiod.

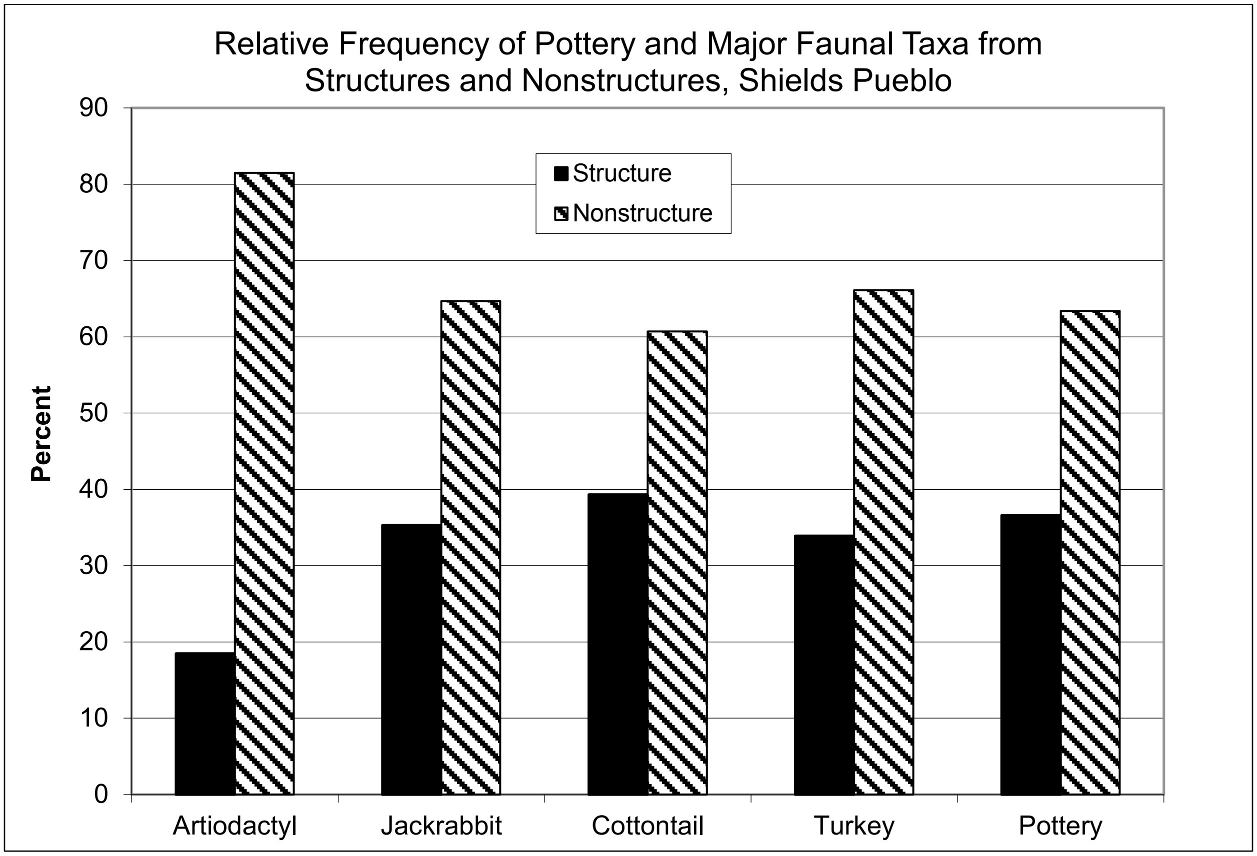

Figure 8.4. Relative frequency of pottery and major faunal taxa from structures and nonstructures, Shields Pueblo.

Table 8.1. Number of Identified Specimens of All Site Assemblage Taxa, Shields Pueblo.

Order	Taxon	Common Name	NISP	Percent All Taxa
Insectivora	Insectivora	insectivores	1	0.00
Soricomorpha	Soricidae	shrews	1	0.00
Lagomorpha	Lagomorpha	rabbits and hares	74	0.40
	Lepus sp.	jackrabbit or hare	1,685	8.98
	Sylvilagus sp.	cottontail	8,054	42.9
Rodentia	Rodentia	rodents	157	0.84
	Sciuridae	squirrels	113	0.60
	Spermophilus sp.	ground squirrels	1	0.00
	Cynomys sp.	prairie dog	730	3.90
	Thomomys sp.	pocket gopher	480	2.56
	Muridae	deer mice, voles, etc.	6	0.03
	Peromyscus sp.	mice	43	0.23
	Neotoma sp.	wood rat (packrat)	202	1.07
	Neotoma cinerea	bushy-tailed wood rat	2	0.01
	Microtus sp.	vole	3	0.02
	Erethizon dorsatum	porcupine	22	0.12
	Castor canadensis	beaver	31	0.17
	small rodent	wood rat (packrat) or smaller	67	0.36
Carnivora	Carnivora	carnivore	18	0.09
	Canidae	dogs, wolves	72	0.38
	Canis sp.	dog, wolf, coyote	207	1.10
	Canis latrans	coyote	5	0.02
	Canis lupus	wolf	2	0.01
	Canis familiaris	domestic dog	129	0.69
	Vulpes sp.	red or kit fox	4	0.02
	Vulpes vulpes	red fox	2	0.01
	Mustela frenata	long-tailed weasel	1	0.00
	Gulo luscus	wolverine	1	0.00
	Taxidea taxus	badger	8	0.04
	Felidae	cats	6	0.03
	Felis concolor	mountain lion	1	0.00
	Lynx sp.	lynx or bobcat	17	0.09
	small carnivore	smaller than fox	19	0.10
	medium carnivore	fox size or larger	7	0.04
Artiodactyla	Artiodactyla	artiodactyls	191	1.02
	Cervidae	deer family	57	0.30
	Cervus elephus	elk (wapiti)	4	0.01
	Odocoileus sp.	deer	581	3.10

Order	Taxon	Common Name	NISP	Percent All Taxa
Artiodactyla, continued	*Antilocapra americana*	pronghorn antelope	2	0.01
	Ovis canadensis	bighorn sheep	6	0.03
	medium artiodactyl	deer-sized artiodactyl	3	0.02
	large artiodactyl	elk/bison–sized artiodactyl	7	0.04
Miscellaneous	small mammal		7	0.04
	medium mammal		203	1.10
	large mammal		10	0.05
Total Mammals			*13,242*	*70.53*
Falconiformes	Falconiformes	vultures, hawks, eagles	13	0.07
	Cathartes aura	turkey vulture	1	0.00
	Haliaeetus leucocephalus	bald eagle	2	0.00
	Accipiter gentilis	goshawk	1	0.01
	Buteo jamaicensis	red-tailed hawk	5	0.02
Galliformes	Galliformes	grouse, etc.	2	0.01
	Tetraonidae	grouse	9	0.05
	Meleagris gallopavo	turkey	4,195	22.35
Columbiformes		pigeon/dove	4	0.02
Strigiformes	Strigiformes	owls	3	0.01
	Bubo virginianus	great horned owl	5	0.03
	Asio otus	long-eared owl	6	0.04
Piciformes	Piciformes	woodpeckers	11	0.07
	Picoides pubescens	downy woodpecker	1	0.01
Passeriformes	Passeriformes	perching birds	2	0.01
	Corvus corax	raven	4	0.02
Miscellaneous	small bird	smaller than robin	27	0.14
	medium bird	smaller than mallard	91	0.48
	large bird	larger than mallard	1,024	5.46
Total Birds			*5,406*	*28.80*
Amphibia	amphibians		8	0.00
Reptilia	snakes	snakes	96	0.50
Total Amphibians and Reptiles			*104*	*0.60*
Gastropoda	land snail	land snail	6	0.00
Total Gastropoda			*6*	*0.00*
Total Identified			*18,758*	*45.82*
Unidentified			*22,182*	*54.18*
TOTAL			40,940	100.00

Table 8.2. Numbers of Bird Specimens by Category for Other Sites Excavated by Crow Canyon Archaeological Center.

Taxon	Castle Rock Pueblo	Sand Canyon Pueblo	Woods Canyon Pueblo	Yellow Jacket Pueblo	Sand Canyon Archaeological Project: Site Testing	Shields Pueblo
Eagle	0	0	0	0	0	1
Other raptors	38	46	0	8	22	18
Owls	5	4	1	4	0	12
Raven	1	14	0	1	3	4
Other birds*	8	79	5	57	20	25

* Excludes turkey and specimens identified only as “small,” “medium,” or “large” bird.

Table 8.3. Number of Identified Specimens by Chronological Subassemblages, Shields Pueblo.

Subperiod	Taxon	NISP
Subperiod 3	Tetraonidae	2
	Meleagris gallopavo	34
	Large bird	2
	Insectivora	1
	Lepus sp.	14
	Sylvilagus sp.	134
	Rodentia	2
	Sciuridae	22
	Cynomys sp.	45
	Thomomys sp.	13
	Neotoma sp.	1
	Canis sp.	1
	Cervidae	9
	Odocoileus sp.	2
	Unidentified	149
Subperiod 3 Total		*431*
Subperiod 6	Amphibia	2
	Meleagris gallopavo	255
	Large bird	28
	Medium bird	7
	Small bird	13
	Lepus sp.	108
	Sylvilagus sp.	246
	Rodentia	16
	Small rodent	3
	Cynomys sp.	52
	Thomomys sp.	42
	Peromyscus sp.	6
	Neotoma sp.	10
	Erethizon dorsatum	3
	Castor canadensis	3
	Canidae	1
	Canis sp.	107
	Artiodactyla	10
	Large artiodactyl	1
	Cervidae	36
	Large mammal	1
	Medium mammal	16

Subperiod	Taxon	NISP
	Small mammal	1
	Unidentified	764
Subperiod 6 Total		*1,731*
Subperiod 7	Amphibia	5
	Snake	91
	Falconiformes	4
	Buteo jamaicensis	2
	Haliaeetus leucocephalus	2
	Meleagris gallopavo	678
	Strigiformes	2
	Bubo virginianus	1
	Large bird	582
	Medium bird	25
	Small bird	6
	Lagomorpha	55
	Lepus sp.	678
	Sylvilagus sp.	3,203
	Rodentia	50
	Small rodent	16
	Sciuridae	22
	Cynomys sp.	348
	Thomomys sp.	96
	Peromyscus sp.	17
	Neotoma cinerea	1
	Neotoma sp.	73
	Erethizon dorsatum	7
	Castor canadensis	7
	Carnivora	11
	Medium carnivore	4
	Small carnivore	1
	Canidae	25
	Canis sp.	52
	Canis latrans	4
	Canis familiaris	18
	Taxidea taxus	2
	Felidae	3
	Felis concolor	1
	Lynx sp.	7
	Artiodactyla	15
	Large artiodactyl	2
	Medium artiodactyl	3
	Cervidae	295

Subperiod	Taxon	NISP
	Cervus elephus	2
	Odocoileus sp.	106
	Antilocapra americana	1
	Ovis canadensis	2
	Large mammal	10
	Medium mammal	78
	Small mammal	4
	Unidentified	1,621
Subperiod 7 Total		*8,238*
Subperiod 8	Snake	1
	Falconiformes	1
	Buteo jamaicensis	1
	Galliformes	2
	Tetraonidae	5
	Meleagris gallopavo	1,687
	Asio otus	6
	Piciformes	11
	Picoides pubescens	1
	Corvus corax	1
	Large bird	293
	Medium bird	24
	Small bird	3
	Lagomorph	7
	Lepus sp.	343
	Sylvilagus sp.	2,033
	Rodentia	59
	Large rodent	2
	Small rodent	25
	Sciuridae	43
	Cynomys sp.	162
	Thomomys sp.	221
	Muridae	6
	Peromyscus sp.	12
	Neotoma sp.	53
	Erethizon dorsatum	2
	Castor canadensis	15
	Carnivora	3
	Medium carnivore	2
	Small carnivore	17
	Canidae	36
	Canis sp.	4
	Canis familiaris	96

Subperiod	Taxon	NISP
	Mustela frenata	1
	Taxidae taxus	5
	Felidae	1
	Felis concolor	2
	Lynx sp.	4
	Artiodactyla	13
	Cervidae	57
	Ovis canadensis	1
	Medium mammal	48
	Small mammal	2
	Unidentified	1,038
Subperiod 8 Total		*6,349*
Subperiod 9	Amphibia	1
	Large bird	20
	Medium bird	6
	Small bird	1
	Accipiter gentiles	1
	Meleagris gallopavo	266
	Soricidae	1
	Lepus sp.	59
	Sylvilagus sp.	482
	Rodentia	9
	Small rodent	4
	Sciuridae	8
	Cynomys sp.	23
	Thomomys sp.	16
	Peromyscus sp.	5
	Neotoma sp.	22
	Erethizon dorsatum	2
	Castor canadensis	2
	Carnivora	1
	Canis sp.	12
	Canis familiaris	1
	Felidae	1
	Artiodactyla	7
	Cervidae	10
	Odocoileus sp.	2
	Ovis canadensis	1

Subperiod	Taxon	NISP
	Medium mammal	8
	Unidentified	288
Subperiod 9 Total		*1,259*

Table 8.4. Percentage of All Modified Faunal Specimens in Each Subassemblage, Shields Pueblo.

Subperiod	Modification					
	Artifact (%)	Burned: Black (%)	Burned: White (%)	Carnivore Chewing (%)	Cut Marks (%)	Rodent Gnawing (%)
3	0.20	4.20	1.40	1.90	0.20	0.00
6	2.60	5.20	1.10	0.80	0.20	0.20
7	1.40	2.00	1.20	1.60	0.20	0.30
8	1.30	3.20	1.10	1.10	0.40	0.30
9	1.30	6.00	4.00	1.50	0.40	0.30

Table 8.5. Frequency of Weaker (Proximal) Long Bone in Cottontail and Prairie Dog Tibiae and Humeri, Shields Pueblo.

	Prairie Dog (*Cynomys*)				Cottontail (*Sylvilagus*)			
Element	Whole	Proximal Fragment	Distal Fragment	% Weaker End	Whole	Proximal Fragment	Distal Fragment	% Weaker End
Humerus	21	2	75	19	42	55	506	15
Tibia	15	1	23	30	59	197	393	36
Humerus and tibia	36	3	98	23	95	252	899	28

Note: Whole long bones are included in this count, so the "% weaker end" incorporates counts from whole bones.

Table 8.6. Proximal and Distal Ends of Artiodactyl Humeri, Radii, and Tibiae, Shields Pueblo.

	Less Dense			More Dense		
	Proximal Humerus	Distal Radius	Proximal Tibia	Distal Humerus	Proximal Radius	Distal Tibia
Count	6	1	11	9	13	16
Total	18			38		
Percentage	32%			68%		

Table 8.7. Parts of Major Skeletal Elements of Artiodactyls, Ranked by Percent MAU, Compared to Brain's (1981) Potential Survival Ratings and Lyman's (1994) Deer-Bone Density Data, Shields Pueblo.

Element	Part	MNE	MAU	% MAU	Survival Rating*	Bone Density (g/cm^3)†
Radius	distal	1	0.5	7.70	intermediate	0.43
Thoracic	central	11	0.9	13.80	low	0.24
Rib	dorsal	11	0.9	13.80	low	0.25
Humerus	proximal	3	1.5	25.10	low	0.24
Femur	proximal	4	2.0	30.70	intermediate	0.36
Lumbar	central	12	2.4	36.90	intermediate	0.30
Tibia	proximal	6	3.0	46.20	low	0.30
Femur	distal	7	3.5	53.80	intermediate	0.28
Humerus	distal	8	4.0	61.50	high	0.39
Metapodial	proximal	20	5.0	76.90	high	0.55
Radius	proximal	12	6.0	92.30	high	0.42
Metapodial	distal	25	6.3	96.90	high	0.50
Scapula	glenoid	13	6.5	100.00	high	0.36
Tibia	distal	13	6.5	100.00	high	0.50

* See Brain (1981)
† See Lyman (1994)
Note: g/cm^3 = grams per cubic centimeter.

Table 8.8. Cottontail (*Sylvilagus* sp.) Skeletal Elements Compared to Natural Frequency in a Skeleton.

Element	NISP	Natural	% NISP	NISP/ Natural	Size* (mm)
Metacarpus	26	10	0.40	2.6	4
Phalanx	135	54	1.90	2.5	4
Thoracic	74	12	1.00	6.2	14
Rib	185	24	2.60	7.7	4
Cervical	36	7	0.50	5.1	11
Sacrum	18	1	0.30	18.0	23
Lumbar	165	7	2.30	23.6	14
Metatarsus	562	8	7.90	70.3	5
Calcaneus	291	2	4.10	145.5	8
Maxilla	379	2	5.50	189.5	12
Radius	389	2	5.50	194.5	6
Ulna	419	2	5.90	209.5	7
Femur	592	2	8.30	296.0	12
Scapula	647	2	9.10	323.5	25
Humerus	652	2	9.10	326.0	8
Tibia	810	2	11.40	405.0	10
Mandible	871	2	12.20	435.5	27
Innominate	878	2	12.30	439.0	21

* Minimum dimension, in mm, of a modern skeleton of a mature *S. nuttalli.*

Table 8.9. Cultural Modifications on Lagomorph Bones, Shields Pueblo.

Taxon	Burned	Cut Mark	Artifact	Total Modified	Total NISP	Percent Modified
Cottontail (*Sylvilagus*)	344	5	17	366	8,054	4.5%
Jackrabbit (*Lepus*)	16	3	27	146	1,685	8.7%

Table 8.10. Fragmentation of Major Long Bones in *Cynomys* and *Sylvilagus*, Shields Pueblo.

	Prairie Dog (*Cynomys*)				Cottontail (*Sylvilagus*)			
Element	Whole	Proximal	Distal	Percent Whole	Whole	Proximal	Distal	Percent Whole
Humerus	23	2	55	29%	42	65	506	7%
Femur	17	13	7	46%	18	267	232	4%
Tibia	15	3	23	37%	59	222	394	19%

Table 8.11. Cultural Modifications on *Cynomys* Bones, Shields Pueblo.

Burned	Cut Mark	Artifact	Total Modified	Total NISP	Percent Modified
29	0	0	29	730	4%

Table 8.12. Isotope Values for Samples of Jackrabbit, Cottontail, and Turkey Collagen, Shields Pueblo.

Simon Fraser University ID	$\delta^{13}C$ vs PDB (‰)	$\delta^{15}N$ v AIR (‰)	C (%)	N (%)	C:N
MEG-1	−8.41	7.11	45.94	15.76	2.91
MEG-3	−7.69	7.47	46.41	15.99	2.90
MEG-4	−9.13	6.12	46.05	14.95	3.08
MEG-6	−10.11	6.52	46.45	15.88	2.93
MEG-8	−9.28	8.23	46.85	15.99	2.93
MEG-10	−8.80	7.74	46.92	16.00	2.93
MEG-11	−9.06	7.64	46.61	15.73	2.96
MEG-14	−9.49	8.08	47.08	15.66	3.01
MEG-17	−9.87	7.86	46.67	15.87	2.94
MEG-18	−9.34	7.95	46.11	15.86	2.91
LEP-12b	−19.56		44.31		
LEP-2	−19.02		46.17		
LEP-7	−19.17		45.35		
LEP-16	−9.77		44.88		
SYL-5	−19.11		45.75		
SYL-9	−19.04		45.33		
SYL-13b	−18.19		45.38		
SYL-15b	−20.36		45.14		

Note the anomalous value for LEP-16.
C = carbon; N = nitrogen; LEP = jackrabbit, MEG = turkey; SYL = cottontail

Table 8.13. Minimum Number of Elements of Selected Turkey/Large Bird Elements, Shields Pueblo.

Element	MNE	% MNE	Natural	% Natural	Artifacts
Mandible	15	1.40	2	4.90	
Cervical	126	11.90	13	31.70	
Thoracic	47	4.40	6	14.60	
Scapula	70	6.60	2	4.90	7
Coracoid	101	9.50	2	4.90	
Humerus	84	6.80	2	4.90	1
Radius	72	6.80	2	4.90	15
Ulna	56	5.30	2	4.90	17
Carpometacarpus	50	4.70	2	4.90	
Innominate	65	6.10	2	4.90	
Femur	32	3.00	2	4.90	1
Tibiotarsus	176	16.60	2	4.90	39
Tarsometatarsus	165	15.60	2	4.90	18
TOTAL	1,059		41		

Table 8.14. Cultural Modifications to Turkey/Large Bird Bones, Shields Pueblo.

Burned	Cut Marks	Artifacts	Total Modified	Total NISP	% Modified
321	54	99	474	5,219	9%

Table 8.15. Rate of Deposition of Pottery and Faunal Remains, Shields Pueblo.

POTTERY					
Subperiod	Years	Pottery Weight (g)	Area (m^2)	P (g/year)	P (g/year/m^2)
3 (A.D. 725–800)	75	5,817.7	11.0	77.6	7.1
6 (A.D. 1020–1060)	40	4,152.2	37.2	103.8	2.8
7 (A.D. 1060–1150)	90	13,587.7	44.8	150.9	3.4
8 (A.D. 1150–1225)	75	127,531.6	101.0	1,700.4	16.8
9 (A.D. 1225–1280)	55	57,185.0	63.5	1,039.7	16.4
FAUNAL REMAINS					
Subperiod	Years	Faunal Count (NISP)	Area (m^2)	F (NISP/year)	F (NISP/year/m^2)
3 (A.D. 725–800)	75	431	11.0	5.7	0.5
6 (A.D. 1020–1060)	40	1,840	37.2	46.0	1.2
7 (A.D. 1060–1150)	90	8,223	44.8	91.4	2.0
8 (A.D. 1150–1225)	75	6,349	101.0	84.7	0.8
9 (A.D. 1225–1280)	55	1,260	63.5	22.9	0.4

Note: P = rate of deposition of pottery (g/year and g/year/m^2).
F = rate of deposition of faunal remains (NISP/year and NISP/year/m^2).

Table 8.16. Number of Identified Specimens and Indices for Selected Taxon per Subperiod, Shields Pueblo.

Subperiod	Taxon	NISP	Index
3 (A.D. 725–800)	Artiodactyla	10	0.06
	lagomorph	147	0.90
	turkey/large bird	35	0.19
6 (A.D. 1020–1060)	Artiodactyla	101	0.20
	lagomorph	342	0.82
	turkey/large bird	280	0.61
7 (A.D. 1060–1150)	Artiodactyla	400	0.07
	lagomorph	3,916	0.84
	turkey/large bird	714	0.13
8 (A.D. 1150–1225)	Artiodactyla	71	0.03
	lagomorph	2,365	0.85
	turkey/large bird	1,416	0.42
9 (A.D. 1225–1280)	Artiodactyla	20	0.03
	lagomorph	524	0.89
	turkey/large bird	263	0.33

Table 8.17. Number of Identified Specimens of Selected Taxa from Each Architectural Block, Shields Pueblo.

Taxon	Architectural Block								
	100	200	400	800	1100	1200	1300	1400	1500
Artiodactyl	275 (7%)	33 (2%)	0	1	15 (2%)	2	246 (13%)	37 (3%)	0
Jackrabbit (*Lepus*)	475 (11%)	165 (9%)	1	1	129 (15%)	11	314 (16%)	75 (5%)	7
Cottontail (*Sylvilagus*)	2,849 (68%)	1,203 (62%)	10	8	359 (43%)	176 (68.5%)	740 (29%)	510 (35%)	12
Turkey (*Meleagris gallopavo*)	583 (14%)	584 (28%)	16	9	335 (40%)	68 (26.5%)	624 (32%)	841 (58%)	7

Table 8.18. Relative Frequency (Percent NISP) of Selected Taxa from Structures and Nonstructures, Shields Pueblo.

Taxon	Structure		Nonstructure	
	N	%	N	%
Artiodactyl	110	3	486	7
Jackrabbit (*Lepus*)	434	11	797	11
Cottontail (*Sylvilagus*)	2,377	61	3,678	53
Turkey (*Meleagris gallopavo*)	1,024	26	1,995	29

Table 8.19. Comparison of Relative Frequencies of Major Taxonomic Groups and Derived Indices from Sand Canyon Pueblo, Yellow Jacket Pueblo, Woods Canyon Pueblo, Castle Rock Pueblo, and Shields Pueblo on the McElmo Dome.

Taxon	SCP	YJP	WCP	CRP	Shields Pueblo–Total	Shields Pueblo–Pueblo III Period
Turkey (*Meleagris gallopavo*)	3,408	1,103	645	695	5,219	1,979
Percent	52%	40%	75%	41%	33%	40%
Cottontail (*Sylvilagus*)	2,337	1,155	201	849	8,054	2,515
Percent	36%	42%	23%	50%	51%	50%
Jackrabbit (*Lepus*)	135	259	11	105	1,685	402
Percent	2%	9%	1%	6%	11%	8%
Artiodactyl	668	236	4	56	851	91
Percent	10%	9%	1%	3%	5%	2%
TOTAL	6,548	2,753	861	1,705	15,809	4,987
Lagomorph index	0.95	0.82	0.95	0.89	0.83	0.86
Artiodactyl index	0.21	0.14	0.02	0.06	0.07	0.03
Turkey index	1.38	0.78	3.04	0.73	0.35	0.4

Note: SCP = Sand Canyon Pueblo; YJP = Yellow Jacket Pueblo; WCP = Woods Canyon Pueblo; CRP = Castle Rock Pueblo.

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Chapter 9

An Introduction to the Artifact Analyses of Shields Pueblo

by Jonathan D. Till

Introduction

This chapter introduces the analyses of artifacts recovered from Shields Pueblo (Site 5MT3807) during Crow Canyon Archaeological Center's (Crow Canyon's) excavations at the site during the 1997–2000 field seasons. Excluded from consideration here are archaeobotanical materials and faunal remains, which are examined in Chapters 6, 7, and 8. As an introductory chapter, we here discuss the methodology of the Crow Canyon laboratory, the disposition of the artifact data and the artifacts themselves, and the previous artifact studies from Shields Pueblo; articulate how the study of cultural materials can address research questions developed for the Shields Pueblo excavation project, and summarize the contents of the material culture chapters that follow.

Many of the tables and figures used in the artifact chapters were generated using the artifact data as they existed in the autumn of 2006. Researchers who use our database in the future may notice minor discrepancies between the tables and figures in these reports and the current data available through the research database on Crow Canyon's website (Crow Canyon Archaeological Center 2003). Any such discrepancies are the result of corrections to occasional errors discovered in the data over time. These corrections are likely to be minor, and should not affect any patterns in the data presented in this report. In the course of preparing the artifact chapters, substantial effort was expended to organize and edit the field context and artifact data from the site. As a result of this effort, the artifact databases have changed considerably; therefore, the data presented in this report may differ substantially from preliminary data presented in past research papers or presentations. In such cases, the data presented in this report should supersede those presented in previous writings.

Processing of Artifacts in the Laboratory

The artifact assemblage from Shields Pueblo was cataloged and analyzed as it came in from the field between 1997 and 2000. The analysis procedures used may be found in *The Crow Canyon Archaeological Center Laboratory Manual, Version 1* (Ortman et al. 2005). Although this document was not published until after the completion of fieldwork at Shields Pueblo, the lab staff used most of the procedures described in the manual. Throughout this report we highlight those cases where the procedures used to analyze Shields Pueblo artifacts deviate from the current practices outlined in Version 1 of the laboratory manual (Ortman et al. 2005).

Definitions of Analytic Categories

All objects were classified into various stone, bone, pottery, vegetal, and other categories as defined in Ortman et al. (2005). Although changes in analytical categories have taken place over time, both current and discontinued analytical categories are available in the online laboratory manual (Ortman et al. 2005). A significant change in analytical methods that took effect while processing the Shields Pueblo artifact assemblage was the creation of a new bulk artifact category, "bulk sherds small."

Disposition of Materials

Curation

All artifacts, ecofacts, and other samples collected from Shields Pueblo by Crow Canyon, with the exception of wood samples submitted for tree-ring dating, are currently curated at the Anasazi Heritage Center in Dolores, Colorado. The collections are indexed to the artifact databases accessible through this report, and all curated objects are available for future study through the Anasazi Heritage Center. Tree-ring samples that produced dates, along with samples that might potentially be datable in the future, are curated at the Laboratory of Tree-Ring Research, University of Arizona, Tucson, Arizona.

Human Remains and Associated Funerary Objects

Crow Canyon adheres to a strict policy regarding human remains and associated funerary objects, in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA). Human remains and associated funerary objects were not collected from Shields Pueblo. For more information regarding human remains, see Chapter 5.

Destructive Analyses

A variety of artifacts and samples recovered from Shields Pueblo have been subjected to destructive analysis. Portions of a small number of pottery rim sherds were used in studies of pottery production and exchange utilizing instrumental neutron activation analysis (Glowacki 1995; Glowacki et al. 1995; Pierce et al. 2002). These sherds are identified in the comments field of the pottery data table, which can be accessed through our online research database (Crow Canyon Archaeological Center 2003). Small portions of numerous sherds were also removed to facilitate temper identifications. Finally, samples submitted for tree-ring dating that possessed little dating potential have been discarded by the Laboratory of Tree-Ring Research.

Previous Studies of Shields Pueblo Artifacts

Thus far, few studies have been published that use artifact data from Shields Pueblo. Perhaps of greatest note is an article written by Alden Hayes and Clifford Chappell (1962) that reported on a rare copper bell recovered from the site. Glowacki (2006) includes several sherds from Shields Pueblo in the neutron activation studies that she summarizes in her dissertation. Arakawa (2006) used chipped stone data from the site to inform his dissertation, which explores the distribution and use of raw lithic materials in the Four Corners region during the Pueblo period.

The Shields Pueblo Project Research Design

The research design for the Shields Pueblo Research Project was initially developed by Varien and Thompson (1996). In Chapter 2, Duff summarizes the research design by articulating an outline of research questions and issues that became the focus for Crow Canyon's investigations at Shields Pueblo (see Duff et al. [1999]). This list of research domains includes:

- history of occupation
- assessing Shields Pueblo as a community center
- changes in settlement configuration and community organization
- environmental uncertainty and occupational continuity
- cooperation and/or conflict
- human impacts to the local environment
- Shields Pueblo and Mesa Verde region communities

The research domains are revisited here to describe how an analysis of the Shields Pueblo artifact assemblage might best address these problems. We also examine some of the specific questions that Duff poses for these domains in Chapter 2.

History of Occupation

Determining the span of time during which Shields Pueblo was occupied, from its establishment to its final depopulation, is one of the primary goals for this research domain. Further, we hope to recover details regarding occupational history of Shields Pueblo, including determinations for the length and intensity of on-site occupations as well as occupational hiatuses.

Chapter 2 directly addresses this research domain. However, the following artifact assemblage chapters supplement and clarify what Chapter 2 reports, especially through the consideration of temporally diagnostic artifacts such as pottery. Whereas questions of chronology can best be settled with absolute dating techniques such as tree-ring dating, pottery assemblage data can help date those contexts that do not have dendrochronological samples, or can be used to corroborate such samples. Pottery assemblages from relatively undisturbed contexts are particularly useful for this purpose. We use assemblage-based methods developed by Wilson and Blinman (1999) and Ortman (2003), and attribute-based methods developed by Hegmon (1991) and refined by Ortman (1995), to date pottery assemblages.

The Shields Pueblo research design asks several questions pertinent to the final years of occupation at the site. These include:

When were the last occupations at the site?

Where did the last occupants of Shields Pueblo move to?

Did they join other regional communities or did they leave the region altogether?

The history of the Mesa Verde region is characterized by apparent trends in emigration and immigration (Cameron 1995; Duff and Wilshusen 2000; Wilshusen 2002). Our examination of population growth and decline processes at Shields Pueblo helps us understand how the site maps onto these trends; however, the question still remains as to the destinations and origins of these populations. Floor assemblages may provide insights into whether or not structural abandonments at Shields Pueblo preceded short-distance moves or long-distance migrations (see Chapter 14). For migrations, nonlocal pottery wares and lithic material sources may suggest extraregional relationships that could have fostered or even encouraged a long-distance move.

Assessing Shields Pueblo as a Community Center

In Chapter 2, Duff poses several questions that have a direct bearing on the role of Shields Pueblo as a community center, particularly during the period of time that spans the Middle Pueblo II through Early Pueblo III periods. These questions include:

Is the preserved roomblock [in Architectural Block 100] *at Shields Pueblo a great house?*

Are there any indications of a prehistoric road preserved at the site?

Are there activities represented at community centers that are not represented at other residential sites or site clusters within a community?

The investigation of Shields Pueblo provides an excellent opportunity to examine the development of community organization through time and at multiple scales. Architectural features on the site suggest that Shields Pueblo could have served to integrate the surrounding community during the Pueblo II period. These features include a possible great house in Architectural Block 100 and a possible road alignment that stretches between the Casa Negra great house and Shields Pueblo (Duff and Ryan 1999). In the following chapters, artifact assemblage data from Block 100 are compared with data from the other architectural blocks on the site to see if any significant differences exist to support or refute the hypothesis that a great house existed at Shields Pueblo. Additionally, artifact assemblages from architectural blocks along the possible road alignment are scrutinized and compared with those that are not along the alignment.

The Shields Pueblo research design also asks whether or not there is any evidence of social-status differences, both within the site and between Shields Pueblo and other nearby sites with contemporaneous occupations. Intrasite and intersite data used to address these questions crosscut a variety of artifact types, including pottery (Chapter 10), chipped stone (Chapter 11), and personal adornment and nonlocal items (Chapter 13). Functional differences associated with architectural variation might be apparent in differing pottery form and ware signatures, differing ratios of local to nonlocal pottery types, variation in the occurrence of preciosities, and evidence for feasting ritual.

Changes in Settlement Configuration and Community Organization

In the research design chapter of this report, Duff emphasizes the specific problem of community aggregation with regards to the overarching settlement/organization research domain. The following artifact chapters address this domain more generally. Given the considerable time depth at Shields Pueblo, we have the opportunity to examine its evolution as a community center from the so-called Chaco to post-Chaco eras. Does site organization at Shields Pueblo change during this interval? If Shields Pueblo is a community center during the Pueblo II period, does it maintain this position into the Pueblo III period? Comparisons between artifact assemblages at the intrasite level between the Chaco-era and post-Chaco–era components may help resolve this question. These later assemblages are compared with other community center assemblages excavated by Crow Canyon in the vicinity (e.g., Sand Canyon and Castle Rock Pueblos) to more effectively discuss this transition. Pottery data from Sand Canyon and Castle Rock Pueblos, particularly the bimodal distribution in serving-bowl size and studies of exterior bowl design, suggest that feasting events at community centers may have been an important ritual means of integrating the community (Ortman 2000; Ortman and Bradley 2002). Do the pottery data from the Late Pueblo III component at Shields Pueblo indicate that the pueblo continued to function as a community center, especially with regard to feasting events? Pottery data from the Late Pueblo III component at Shields Pueblo are compared with data from contemporaneous sites within the region, including community centers such as Sand Canyon and Castle Rock Pueblos (see Chapter 10).

At the larger geographic scale, some archaeologists have proposed that regional post-Chaco influences may have centered on Aztec Ruin in extreme northwestern New Mexico (e.g., Cameron and Duff 2008; Lekson 1999). Influences from Aztec Ruin may be qualified, perhaps, by the presence or absence of pottery from the region around Aztec Ruin.

Environmental Uncertainty and Occupational Continuity

The research design for this report poses a single basic question for this problem:

Was Shields Pueblo occupied during the A.D. 1130–1180 drought?

Pottery assemblage data from Shields Pueblo address this problem by providing corroborating evidence for occupation during this span of time. The contribution of these data is discussed in Chapter 4.

Cooperation and/or Conflict

The themes of cooperation and conflict were central to the research design developed for Shields Pueblo (Duff et al. 1999). Evidence for either are pertinent to the entire history of Shields Pueblo, but are perhaps most salient to the Pueblo II and Pueblo III period occupations of the site. Duff (see Chapter 2) lists a set of questions that address this research domain, more than a few of which can be probed by an examination of the artifact assemblage from Shields Pueblo. These questions include:

Are there materials manufactured in other Mesa Verde region communities or localities that were traded or exchanged to residents of Shields Pueblo?

Are there materials manufactured outside of the Mesa Verde region that were traded or exchanged to residents of Shields Pueblo?

Were utilitarian pottery vessels exchanged between residents of Shields Pueblo and any other communities?

Are there any temporal associations in either the pattern of local or long-distance acquisition of materials?

Is there evidence for the acquisition of materials likely to have been directly procured from surrounding areas within the region? Does this change over time?

Is there any evidence for connections between Shields Pueblo and other communities in the region?

Expanding in scale, the question arises whether or not Chaco-era occupants of Shields Pueblo were directly influenced by people from Chaco Canyon in northwestern New Mexico. To address these questions, we examine the degree to which such connections could have occurred, through the analyses of pottery and lithic raw material types (Chapters 10 and 11, respectively). A sample of pottery was analyzed for temper and may offer data pertinent to intraregional and interregional trade (see Chapter 10).

Is there any artifactual evidence for violence, either direct or indirect, at Shields Pueblo?

With regard to evidence for conflict, our discussions include any evidence for violence, either direct or indirect, at Shields Pueblo. To accomplish this, we examine the contexts in which certain artifacts (e.g., projectile points and axes) were found. The conditions under which the final depopulation of Sand Canyon and Castle Rock Pueblos occurred strongly indicate violent events in the last days of occupation at those settlements.

Human Impacts to the Local Environment

Under this research domain, Crow Canyon archaeologists consider the impact of anthropogenic environmental change, as well as larger environmental processes, on the sustainability of communities (Dean 1988, 1996). The research most pertinent to this domain includes dendrochronological studies, paleobotanical studies, and faunal studies. The material culture data sets discussed in the artifact report chapters have little direct bearing on the domain of environment.

Definitions of Artifact Assemblage Groupings for Analysis

We summarize the analyses of artifacts from Shields Pueblo in terms of two aggregate units, one spatial and the other temporal. The spatial unit consists of "architectural blocks" or, more simply, "blocks." The temporal units that we use throughout the artifact analysis chapters are equivalent to the "subperiods" defined by Duff in Chapter 3. The spatial and temporal units are not mutually exclusive. In other words, a single block may have multiple temporal components assigned to it, and a particular temporal component might incorporate provenience designations (PDs) from multiple blocks.

Blocks

Crow Canyon archaeologists defined 18 architectural blocks for Shields Pueblo. These blocks, numbered 100 through 1800, were defined on the basis of clusters of artifact and rubble scatters that were apparent at the modern ground surface (Duff and Ryan 1999). These spatial units include study units that are structural (e.g., kivas), nonstructural (e.g., middens), and arbitrary excavation units (see the online field manual [Crow Canyon Archaeological Center 2001] for further description of these study unit types).

Components

Temporal components are assigned to study units on the basis of multiple lines of evidence such as tree-ring data, the architectural style and abandonment mode of kivas, stratigraphy, and pottery data. These data are discussed in greater detail in Chapter 3. Table 9.1 summarizes the eight components we recognize for Shields Pueblo.

Measures of Abundance

Please note that we use several measures of abundance throughout the artifact chapters to quantify the amounts of artifactual materials observed within the site. These measures include absolute counts and weights, as well as relative measures. The relative measures include percentages and the ratio of the number of objects of a specific artifact type relative to the amount (measured in terms of weight) of cooking pottery recovered from a particular architectural block or associated with a particular component. These weights, considered in relation to architectural block and component, are provided in Table 9.2 and Table 9.3. Cooking pottery is used as a standard of abundance based on the assumption that households discarded cooking pottery at a constant rate through time (Lightfoot 1994; Varien 1999; Varien and Mills 1997; Varien and Potter 1997). It is critical to understand that we assume that most or all of the architectural blocks investigated at Shields Pueblo contained (or were) year-round habitations, or at least the residents/users of these blocks produced, used, and discarded cooking pottery in the same way households would. We emphasize those architectural blocks or components that have substantial cooking-pottery assemblage weights, and loosely impose an arbitrary threshold of 10 kilograms of cooking pottery on an architectural-block or component assemblage before making generalizations about that block or component. For example, Table 9.2 shows that Block 300 only has 665.5 g of cooking pottery associated with it. Individual artifact to cooking-pottery ratios associated with that block would tend to be high relative to other architectural block ratios because of its small cooking-pottery assemblage. Therefore, given the relatively small assemblage size for that architectural block (as characterized by the amount of cooking pottery), we avoid making generalizations about Block 300.

It is important to note that our analysis of pottery changed somewhat as the Shields Pueblo artifact assemblage was being analyzed. During the last year of the project (2000), the laboratory staff began screening all artifacts coming into the lab though ½-inch mesh to separate small sherds from large sherds, resulting in two different catalog categories for pottery: “bulk sherds small” and “bulk sherds large.” The former was weighed, but not subjected to further analysis. The latter was analyzed according to those methods established in the online laboratory manual (Ortman et al. 2005). It seems initially possible that this change in methods part-way through the project could affect our results, particularly regarding our use of cooking pottery as a measure for the relative abundances of different artifact categories from the site (discussed above). Using the results from an experimental data set (Elkins 2000), we estimated the amounts of cooking pottery expected to be found within the “bulk sherds small” data set and compared those results to the actual analyzed data set. The percentage differences between these results, calculated for the Shields Pueblo temporal components, only differ slightly (from 0.5 to 3.8 percent), indicating that the trends that we report in the follow chapters, using cooking pottery as a relative measure of abundance, are still valid.

Organization of Artifact Chapters

The following artifact chapters are largely organized by material type. The chapters are organized into sections, a list of which can be accessed by selecting the table of contents for each chapter. Selecting a chapter heading in the table of contents will allow you to go directly to the chapter of interest without having to scroll through the entire report. Explanations of field context information can be found in the online field manual (Crow Canyon Archaeological Center 2001).

The chapters that follow are: Chapter 10, summarizing the pottery data from the site; Chapter 11, reviewing data for the chipped-stone artifacts from Shields Pueblo; Chapter 12 then examines the data from ground-stone artifacts as well as those stone objects that are polished and pecked; Chapter 13 considers all “other” artifact types from Shields Pueblo, and includes “other stone and mineral” items, gizzard stones, “objects of personal adornment” (e.g., pendants and beads), bone tools, and artifacts that are nonlocal in origin; and finally, Chapter 14, which is a synthesis of all the artifactual data from Shields Pueblo.

Table 9.1. Components and Date Ranges Assigned, Shields Pueblo.

Component	Date Range
Early Pueblo I	A.D. 725–800
Middle Pueblo II	A.D. 1020–1060
Late Pueblo II	A.D. 1060–1140
Late Pueblo II through Early Pueblo III	A.D. 1060–1225
Early Pueblo III	A.D. 1140–1225
Late Pueblo III	A.D. 1225–1280
Middle Pueblo II through Late Pueblo III	A.D. 1020–1280
Unassigned	Not applicable

Table 9.2. Cooking-Jar Pottery Weight by Architectural Block, Shields Pueblo.

Architectural Block	Cooking-Jar Pottery Weight (g)
Unassigned	1,208.9
100	105,595.9
200	117,515.6
300	665.5
400	17,434.9
500	1,117.3
600	3,125.4
700	569.0
800	3,769.0
900	555.9
1000	1,036.3
1100	50,749.2
1200	25,778.8
1300	125,616.4
1400	87,746.7
1500	9,291.1
1600	109.3
1700	59.5
1800	376.0
1900	5,035.0
TOTAL	557,355.7

Table 9.3. Cooking-Jar Pottery Weight by Component, Shields Pueblo.

Component	Cooking-Jar Pottery Weight (g)
Early Pueblo I (A.D. 725–800)	3,105.2
Middle Pueblo II (A.D. 1020–1060)	29,671.6
Late Pueblo II (A.D. 1060–1140)	100,285.3
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	10,186.9
Early Pueblo III (A.D. 1140–1225)	148,604.2
Late Pueblo III (A.D. 1225–1280)	69,972.4
Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)	95.8
Subperiod unassigned	193,483.6
TOTAL	555,405.0

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Chapter 10

Pottery

by Jonathan Till, Jamie Merewether, Robin Lyle, and Scott Ortman

Introduction

This chapter reviews and discusses the pottery assemblage recovered from Shields Pueblo. Initially the chapter provides data for the unmodified pottery sherd assemblage, and then proceeds to an overview of the modified and shaped sherds. Pottery vessel data are then examined. Following the vessel data, this chapter then summarizes several sets of specialized analyses including pottery rim-arc analysis, pottery design studies, pottery production and exchange studies, and finally basket-impressed pottery.

Pottery is the most abundant class of artifacts found at the site. Of the approximately 340,000 artifacts collected, two-thirds are pottery. The vast majority of the pottery assemblage consists of unmodified sherds, which result from the breakage of pottery vessels.

During cataloging, pottery artifacts are placed in one of six categories: bulk sherds large, bulk sherds small, modified sherds, shaped sherds, unfired sherds, and "other ceramic artifacts" (see the Crow Canyon Archaeological Center [Crow Canyon] online laboratory manual, Ortman et al. 2005). Basic data for modified and shaped sherds are collected at this time, including weight and condition. After cataloging, analysis is done for all pottery artifacts, except for those objects classified as "bulk sherds small" and "other ceramic artifacts."

It should be noted that cataloging procedures were modified during the Shields Pueblo project. In previous Crow Canyon projects, all unmodified pottery artifacts were cataloged as "bulk sherds" and all were examined during our typological analysis (Ortman et al. 2005). The change in cataloging procedures was implemented during this project because of the condition of the pottery assemblage.

The land in and around Shields Pueblo was used in historical times for farming. Modern farming techniques and other ground-disturbing activities had a great effect on artifacts that were on or near the surface. Artifacts had been displaced horizontally as well as vertically. In addition, artifact condition was affected. Pottery sherds, in particular, were fragmented due to the ground-disturbing activities. The extent to which these activities affected the sherd assemblage is illustrated by looking at the average weight of a sherd recovered from Shields Pueblo compared to the average weight of a sherd recovered from several of the other sites that Crow Canyon excavated (Table 10.1). The average weight of the sherds at Shields Pueblo is small compared to sherds from most of the other sites listed in the table. Average sherd weight is even smaller when we calculate the average weight of the sherds found on the modern ground surface or in the uppermost stratum (3.3 g per sherd). Yellow Jacket Pueblo is the only site that had a smaller average sherd weight than Shields Pueblo (4.6 g). This is probably because many of Crow

Canyon's excavation units at Yellow Jacket Pueblo were intentionally placed in historically disturbed areas of the site where previous excavation had damaged the area and the artifacts.

The small size of the unmodified pottery sherds at Shields Pueblo, as well as the damage done to them, made pottery analysis a difficult and time-consuming task. In 2000, the Crow Canyon laboratory staff modified the processing and analysis methods for the bulk pottery artifacts. Sherds were separated into "bulk sherds small" (those that could be screened through ½-inch mesh) and "bulk sherds large" (sherds that were larger than ½ inch). The "bulk sherds small" artifacts were cataloged and curated, but they did not go through pottery analysis. All the "bulk sherds large" artifacts were analyzed. Even with this change in procedure, over 90 percent (by weight) of the unmodified pottery sherds that were collected from Shields Pueblo were analyzed.

The Crow Canyon pottery analysis is a sherd-based typological analysis that assigns either a formal Mesa Verde pottery type (e.g., Mancos Black-on-white), or a grouped type (e.g., Late White Painted), to each sherd. Vessel form, vessel part, paint type or surface treatment, count, and weight are also recorded. A comment section is available for description or further clarification. The Crow Canyon online laboratory manual (Ortman et al. 2005) presents a description of the procedures, definitions of the pottery terms, and the pottery types that are used in this analysis.

Unmodified Sherds

Pottery was by far the most common type of artifact recovered from the excavations at Shields Pueblo. More than 225,000 sherds, weighing more than 1,250.65 kilograms (kg), were collected.

The unmodified sherd data from Shields Pueblo are summarized in this section with tables. In most tables, the data are organized into general ware categories and then by pottery type. Within each ware category, the pottery types are arranged in chronological order. The formal pottery types are listed first, followed by the more general, grouped types. Sherds typed as "unknown white," "unknown gray," or "unknown red" are listed separately at the end because such sherds may or may not represent local wares. In addition, "nonlocal" pottery sherds are tallied within these tables. Although the specific types, or even wares, are not listed here, this information may be provided within the comments field in the Crow Canyon pottery database (Crow Canyon Archaeological Center 2003).

In many of the following tables we present count and weight data as well as the percentage of the total for both count and weight. Count and weight data provide interesting and complementary information. The use of sherd weight and count as measures of abundance is discussed by Pierce and Varien (1999). They explain the relative merits of using counts vs. weights as measures of abundance when examining sherd data from a site. Both measures have their value but the data are more informative when both measures are presented.

The most common pottery types are grouped types, particularly Indeterminate Local Corrugated Gray, Late White Unpainted, and Late White Painted. These grouped types comprise a higher percentage of the total pottery assemblage by count than by weight. In contrast, the most common formal types are more abundant by weight than by count. In order for a sherd to be typed as one of the formal pottery types, it needs to exhibit specific attributes for surface treatment, finish, and design. In general, a larger (and heavier) sherd has more diagnostic attributes and is more likely to be assigned to a specific pottery type, whereas a smaller sherd has fewer diagnostic characteristics and is more likely to be recorded as one of the grouped pottery types.

Comparisons of count and weight can also tell us about the average size of a sherd within a particular group (e.g., ware, type, or form) relative to the pottery assemblage being considered. When the percentage of a pottery group's count is higher than the percentage of its weight, this indicates that the sherds within that group are smaller than the average sherd in the assemblage. Conversely, when the percentage of a pottery group's weight is higher than the count, then the sherds of that particular group are larger than the average sherd. The latter case is generally true of sherds that are assigned to specific pottery types, because the formal pottery types are generally more easily identified on larger sherds. When the two measures are similar, we can conclude that the size and weight of sherds are close to the size and weight of the average sherd in the assemblage being considered.

By Ware and Type

By Total Inventory

Table 10.2 lists the total unmodified sherd assemblage at Shields Pueblo by the count and weight of each pottery type. The three types with the highest percent by count and weight are Indeterminate Local Corrugated Gray, Late White Unpainted, and Late White Painted. While these are grouped types, they do indicate a time span of the Pueblo II through Pueblo III periods. Only 18 percent of the sherds at Shields Pueblo were assigned to formal Mesa Verde types. The most common by count and weight is Mancos Black-on-white, followed by McElmo Black-on-white, and then Mesa Verde Black-on-white. The fourth most common type, by weight only, is Mesa Verde Corrugated Gray.

Pottery types representing the Basketmaker III, Pueblo I, and Early Pueblo II periods were also identified, but in small quantities. These types include Basketmaker Mudware, Chapin Gray, Moccasin Gray, Mancos Gray, Indeterminate Neckbanded Gray, Chapin Black-on-white, Piedra Black-on-white, Cortez Black-on-white, Early White Painted, Early White Unpainted, Abajo Red-on-orange, Bluff Black-on-red, Deadmans Black-on-red, Indeterminate Local Red Painted, and Indeterminate Local Red Unpainted. The presence of these types (1.2 percent of the total unmodified pottery assemblage by both count and weight) may represent a very small-scale occupation and/or use of this location during these time periods. Clearly the largest occupation(s) of the site occurred during years spanning the Middle Pueblo II through Late Pueblo III periods.

By Temporal Component

Table 10.3 and Table 10.4 show the count and weight for each pottery type, arranged by general ware category, for the eight temporal components identified at the site. The following paragraphs focus on the six most-specifically defined components at Shields Pueblo: Early Pueblo I, Middle

Pueblo II, Late Pueblo II, Late Pueblo II through Early Pueblo III, Early Pueblo III, and Late Pueblo III.

The earliest component identified for the site, Early Pueblo I, is obviously affected by mixing. Indeterminate Local Corrugated Gray, Late White Unpainted, Late White Painted, and several other types occur in frequencies that are not characteristic of the Pueblo I period. Many of these inconsistencies can be explained by the fact that the surface of Shields Pueblo had been disturbed in historical times by agricultural activities and also by undocumented excavations. In addition to the disturbance of the site in modern times, the later occupations of the pueblo during the Pueblo II and III periods also probably affected the early assemblages. The ground-disturbing activities of these later times, such as kiva and pit excavations, would have mixed the deeper, earlier deposits.

Discounting Indeterminate Local Corrugated Gray, Indeterminate Local Gray is the most common type, and Chapin Gray is the most common formal type in the Early Pueblo I component (see Table 10.3 and Table 10.4). Both types are at their highest percentages in this period and both decline in later component assemblages. The white ware types of the Pueblo I period (Chapin Black-on-white and Piedra Black-on-white) occur only in small amounts in this component and at the site in general. Early White Unpainted, a grouped type, is found in higher percentages by both count and weight relative to other component assemblages. The small amounts of Chapin Black-on-white and Piedra Black-on-white are understandable since their designs are sparsely applied to the vessels. Even in an assemblage with greater frequencies of Pueblo I sherds, we would expect to have more sherds typed as Early White Unpainted than Early White Painted, Chapin Black-on-white, or Piedra Black-on-white.

In the Middle Pueblo II component, the plain gray ware pottery types decrease in both count and weight while Mancos Corrugated Gray and Indeterminate Local Corrugated Gray increase. Indeterminate Local Corrugated Gray accounts for over 45 percent of the Middle Pueblo II component assemblage. The most common white ware type is Late White Unpainted. Cortez Black-on-white has its highest frequency in this component, but Mancos Black-on-white is the most frequent formal white ware type and is most frequent in this component.

In the Late Pueblo II component, the plain gray ware pottery types continue to decline in occurrence and all the corrugated types maintain a high frequency in count and weight. Mesa Verde Corrugated Gray is the most common formal corrugated type in this component; this differs from the Middle Pueblo II component where Mesa Verde Corrugated Gray and Mancos Corrugated Gray were nearly equal in frequency. Mancos Black-on-white is the most common formal white ware type in this component.

In the Early Pueblo III component the plain gray ware pottery types virtually disappear, and the corrugated types increase to around 50 percent of the pottery assemblage for both count and weight. Mesa Verde Corrugated Gray increases in frequency as Mancos Corrugated Gray decreases. Mancos Black-on-white is no longer the most dominant white ware type, and is surpassed in frequency by McElmo Black-on-white. There is also a noticeable increase in the count and weight of Mesa Verde Black-on-white. Late White Painted declines in both count and weight from the Late Pueblo II component, while the frequency of Pueblo III White Painted increases.

In the Late Pueblo III component, as in earlier components, Indeterminate Local Corrugated Gray makes up over one-half of the unmodified sherd assemblage by count. Mesa Verde Corrugated Gray almost doubles in frequency over the previous component. Mesa Verde Black-on-white also increases in frequency relative to the preceding period. The grouped type, Late White Painted, continues to decrease in count and weight. Comparing the frequencies of the pottery types in the Late Pueblo III component with idealized frequencies for the A.D. 1200s (Ortman et al. 2007:Table 4), it seems likely that the occupation of Shields Pueblo at this time dates primarily from the early to mid–A.D. 1200s.

The combined Late Pueblo II through Early Pueblo III component shows many of the same trends as the Late Pueblo II and Early Pueblo III components. However, the count and weight frequencies of most of the pottery types are more similar to the percentages from the Late Pueblo II component, suggesting that most of the materials from this grouped component are, in general, earlier than Early Pueblo III.

By Architectural Block

Table 10.5 and Table 10.6 present the pottery analysis data by architectural block, pottery type, and count and weight. The 188 sherds that were not assigned to a block do not appear in these tables.

Even though the artifact assemblage at Shields Pueblo is mixed, some trends are apparent in the pottery type frequencies as they relate to architectural block, providing insight into when some of these areas were used. Blocks 100, 200, and 1300 yielded the greatest amounts of pottery by count and weight of all the blocks, which may reflect the duration of occupation in these portions of the pueblo, the intensity of deposition in these places, the intensity of excavation in these blocks, or some combination of these factors. Regardless, all pottery types are represented in Blocks 100, 200, and 1300, indicating that these areas of the site had been used throughout all the temporal components represented at Shields Pueblo.

The distribution of pottery types in Blocks 300, 400, 500, 600, 700, 800, 900, and 1000 are very similar to each other. The pottery assemblages in these blocks are small relative to other areas of the site. There is little or no Pueblo I pottery in these places; Mancos Black-on-white, McElmo Black-on-white, and Mesa Verde Black-on-white are the most common formal pottery types, but their numbers are fairly small. This suggests that these areas had been used from the Late Pueblo II period through the Late Pueblo III period.

Blocks 1100 and 1200 have substantial assemblage sizes. Whereas both architectural blocks are in the northwest corner of the site, their differing type frequencies suggest different occupational histories. In Block 1100, the most common type is McElmo Black-on-white, while the next most frequent is Mesa Verde Black-on-white. In Block 1200, Mancos Black-on-white is the most frequent type by weight, followed by McElmo Black-on-white and then Mesa Verde Black-on-white. It appears as though the assemblage from Block 1200, or at least a portion of it, represents an earlier occupation than the assemblage from Block 1100.

Block 1400 has the fourth largest pottery assemblage of all the blocks at the site. All pottery types are represented, although Pueblo I pottery occurs in very small numbers. McElmo Black-on-white has the highest percentage by weight, followed by Mesa Verde Black-on-white and then Mancos Black-on-white. It seems likely that a mix of temporal components is represented here that includes a Late Pueblo II component as well as a Late Pueblo III component. Block 1500 is similar to Block 1400, although its assemblage size is much smaller.

The pottery assemblages from Blocks 1600, 1700, and 1800 are small, but suggest occupation during the Late Pueblo II and Pueblo III components.

Block 1900 consists of a sample of artifacts from surface collection units from areas across the site that are not within designated architectural blocks. A small number and percentage of Early Pueblo I and Early Pueblo II sherds are in the assemblage. A relatively high number of McElmo Black-on-white sherds, followed by Mancos Black-on-white sherds, were collected. The assemblage from Block 1900 reflects the complexity and depth of the Puebloan occupation of the site.

White Ware Sherds by Type and Finish

Crow Canyon distinguishes two distinct kinds of finish on decorated Mesa Verde White Ware pottery. Carbon paint is believed to derive from certain plants, such as Rocky Mountain beeweed (*Cleome serrulata*) and tansy mustard (*Descurainia richardsonii*). The leaves of the plants were probably boiled in water to create a thick, dark-colored liquid that could be painted on a polished vessel. Mineral paint was derived from ground iron, manganese, or a copper-rich rock that is mixed with water so the mineral is held in liquid suspension. Carbon paint may have been mixed into the mineral solution to act as a binder for the mineral-rich slurry. The term “mixed paint,” as used by the Crow Canyon laboratory staff, refers to a sherd that is painted with both mineral paint and carbon paint. “Indeterminate paint” is used when the paint type cannot be identified. This designation is usually used with sherds that have extreme wear or weathering.

Table 10.7 and Table 10.8 list the counts and weights of the unmodified, painted white ware sherds by type and finish. Mineral paint is found on nearly 15 percent of all the painted sherds. There is a fairly close correspondence in the frequency data between the two tables, suggesting that sherd size played little role in the distinction of paint types. Both tables indicate a clear trend in the decreasing frequency of the use of mineral paint through time, and a concomitant increase in the frequency of carbon paint.

In the Shields Pueblo assemblage, Chapin Black-on-white, a type diagnostic for the Basketmaker III and Early Pueblo I periods, was painted with both carbon and mineral paint in nearly equal numbers. On Piedra Black-on-white, a Pueblo I period pottery type, more than one-half of the sherds have mineral paint and between one-third and one-half are decorated with carbon paint. None of the Cortez Black-on-white sherds found at Shields Pueblo was identified as having carbon paint. However, by definition, this type does not have carbon paint. The use of mineral paint declines in frequency in the formal types that follow, and it never reaches such high proportions again. About 1 in 3 Mancos Black-on-white sherds is painted with mineral paint. On McElmo Black-on-white sherds, fewer than 1 in 10 is painted with mineral paint. The use of mineral paint on Mesa Verde Black-on-white sherds is even less, diminishing in frequency to only 1 in 20 sherds. The frequencies of paint types as they are associated with particular pottery types is discussed further below.

A spatial trend is also apparent in the frequency of particular paint types on white ware pottery. While it is clear that carbon paint is very common to the Pueblo III period white ware pottery in the Sand Canyon locality (Ortman 2000a; Till and Ortman 2007), mineral-painted white ware evidently continues to be common in thirteenth-century sites located northwest of the Sand Canyon locality, in the bean-field and canyon country along the Utah–Colorado border west of Pleasant View, Colorado (Ortman 2000a; Wilson 1991), as well as in southeastern Utah (Hurst 1992).

According to this model of paint distributions during the Pueblo III period, we should see very low mineral-paint frequencies in the Pueblo III temporal components at Shields Pueblo. The data in Table 10.7 and Table 10.8 do show low mineral-paint frequencies for the Pueblo III period components at Shields Pueblo, but they are not nearly as low as what has been documented for Sand Canyon and Castle Rock pueblos (Ortman 2000a).

There could be several reasons for the discrepancies in paint-type frequencies between the Pueblo III sites of the Sand Canyon locality. First, Shields Pueblo may not have been contemporaneous with the other large Pueblo III sites in the Sand Canyon locality. The chronologies of both Sand Canyon Pueblo and Castle Rock Pueblo indicate that these sites were primarily constructed and occupied late in the thirteenth century. Second, there may have been a bias against the identification of mineral paint during the analysis of pottery from Sand Canyon Pueblo (Ortman 2002; Till and Ortman 2007), resulting in an inflated frequency of carbon-painted white ware pottery from the Late Pueblo III period. Finally, it is possible, though unlikely, that there was a difference in paint-type preferences between the Pueblo III period communities represented by Sand Canyon and Shields pueblos.

Total Inventory by Ware and Form

Eight form categories were used in the analysis of pottery from Shields Pueblo: bowl, jar, ladle, mug, kiva/seed jar, canteen, other, and unknown. Table 10.9 and Table 10.10 present the ware categories and pottery form data by count and by weight, respectively, for each temporal component. The percentages of each ware-form combination are also given in each table.
The data show that the ratio of jars to bowls is rather consistent through time. Jars are always the most common form, followed by bowls. For most temporal components, three out of four sherds are from jars and the remaining one is from a bowl. This ratio is true even in the Early Pueblo I component if we assume that the corrugated jar sherds are intrusive and we remove them from the calculations. In the Early Pueblo I component, gray ware jars are the most common ware-form combination, followed by white ware jars and then white ware bowls. The ware-form frequencies change in the Middle Pueblo II assemblage where corrugated jars are by far the most frequent, followed by white ware bowls and then white ware jars. This pattern continues in all

subsequent temporal components. The frequency of corrugated jars increases through all the temporal components between the Late Pueblo II and the Late Pueblo III periods, where the corrugated jars are shown to make up more than 56 percent of the pottery assemblage. As corrugated jars increase in frequency through time, the white-ware jar and white-ware bowl frequencies decrease, although the frequency of white-ware jar sherds decreases more acutely than white-ware bowl sherd frequency. The counts and weights of other forms like ladles, mugs, and kiva jars increase through time, although they are not common in any time period. The peak frequencies for these less-common forms occur during the Early Pueblo III component, with a modest decrease evident in the Late Pueblo III component.

Ortman (2002:Table 10) found the same general set of ware/form ratios in the early and Late Pueblo III components. He suggests that the activities that resulted in this pottery deposition were consistent across many habitation sites during the Pueblo III period. Furthermore, Ortman hypothesized that there was an increase in communal feasting during the Late Pueblo III period over that in the Early Pueblo III. This change in ritual/ceremonial practice is suggested by an increase in cooking-jar size as well as the number of cooking jars (Ortman 2002). Both of these trends result in an overall increase in the frequency of cooking pottery sherds recovered from Late Pueblo III pottery assemblages.

Rim Sherds by Ware and Type

Table 10.11 and Table 10.12 present the data for rim sherds by ware, type, and temporal component. The analysis data from rims should provide a more precise picture of the pottery types found in a sherd assemblage because rim sherds more often have attributes that allow them to be assigned to a formal pottery type. Table 10.11 presents the data by count, and Table 10.12 presents the data by weight.

A comparison of the rim sherd data in the "Total" columns from Table 10.11 and Table 10.12 with the data from the entire pottery sherd assemblage in Table 10.2 shows that the frequencies of the formal pottery types increase in the rim tables, and that the frequencies of the more general grouped types decline. When comparing the frequency data in Table 10.11 and Table 10.12, formal pottery types tend to occur in higher frequencies when using weight as a measure of abundance. The higher frequencies of formal types by weight indicate that rim sherds assigned a formal type are generally larger than the average rim sherd. The opposite is true of the grouped types: they tend to have higher frequencies when count is used as a measure of abundance than when weight is used, indicating that these rim sherds are smaller than the average rim sherd in the assemblage. Thus, the frequency of Indeterminate Local Corrugated Gray rim sherds by count is much higher than the frequency by weight of that type

A comparison between the data in Table 10.11 and Table 10.12 shows some notable exceptions to this general rule. For example, the difference in frequency between count and weight for the Mancos Black-on-white type is small. This may be because Mancos Black-on-white rim sherds are easier to identify, even when they are small. In contrast, differences in frequency between count and weight for the McElmo Black-on-white and Mesa Verde Black-on-white types are considerably greater. This may result from the fact that the two formal types need to be distinguished from each other as well as the grouped type, Pueblo III White Painted. McElmo

Black-on-white, Mesa Verde Black-on-white, and Pueblo III White Painted share many of the same characteristics, so a larger rim sherd with more painted design is usually required to assign a rim sherd to one of the formal types.

White Ware Rims by Type, Finish, and Component

Table 10.13 presents the counts of painted white-ware rim sherds of specific pottery types (Mancos Black-on-white, McElmo Black-on-white, and Mesa Verde Black-on-white) according to their paint type and association with relatively well-defined components. Table 10.14 presents weights for the same groups. These tables present data that essentially corroborate patterns established earlier for pottery types and finish. Further, the temporal dimension for paint preferences is clearly reflected in these data.

The assemblage of Mancos Black-on-white rims in the Middle Pueblo II component indicates the preference for mineral paint during the mid-1000s (see Table 10.13 and Table 10.14). By the early to mid-1100s, there is an apparent shift in paint preference. About 75 percent of Mancos Black-on-white rims (by both count and weight) documented for the Late Pueblo II component, and in later components, have carbon paint; in contrast, painted white-ware pottery in the Middle Pueblo II component is clearly dominated by mineral paint.

Rim Sherds by Ware and Form

Table 10.15 and Table 10.16 present rim-sherd counts and weights, respectively, by ware, form, and temporal component. As noted earlier, rim sherds are more often assigned to a particular form than body sherds because they tend to have more characteristics diagnostic of form (see Ortman et al. [2005] for more details regarding form identification by rim).

As observed by Ortman (2002), the close correspondence between frequencies of count and weight for ware-form combinations indicates that sherd size does not significantly affect the analysts' ability to assign rim sherds to particular wares and forms.

Although white-ware bowl and corrugated gray-ware jar sherds are most common among both body and rim sherds (compare Table 10.9 and Table 10.10 with Table 10.15 and Table 10.16), the relative frequencies of these two wares by part varies considerably. Corrugated-jar body sherds are nearly twice as frequent as are their rims. White-ware bowl rim sherds, on the other hand, are more than twice as frequent as are their body sherds. As Ortman (2002:46) notes, this is due to the variation in rim circumference between these two ware-form categories. The best way to estimate the relative number of vessels per ware-form category is through rim-arc analysis, where the total degrees of arc for each ware-form category may be estimated.

Pierce and Varien (1999) demonstrate that while rim-arc analyses yield the most precise results for estimating ware-form frequency, summaries of rim sherd tallies for these ware-form categories are better indicators of vessel-form frequencies than are summaries of body sherds.

Table 10.15 and Table 10.16 indicate that white-ware bowl rims are significantly more prevalent than white-ware jar rims. Bowls are the most common form in every component. This could be explained in part by the fact that bowls have more rim for their size than jars; indeed, if bowls increased in size through time then there would be even more bowl-rim sherds. On the other hand, if jars increased in size there would not be the same proportional increase in the number of jar rims, because the jar diameter at the rim would not increase as much relative to the number of body sherds. It appears that white ware bowls are the most common vessel form at Shields Pueblo, followed by corrugated jars and then white ware jars and white ware ladles. Canteens, mugs, and kiva/seed jars are all relatively rare.

As was evident in the data for all sherds, the primary difference in the relative frequency of vessel wares and forms between the early and Late Pueblo III components is a higher percentage of corrugated jars in the late component and a corresponding decrease in the percentage of white ware forms. Again, as Ortman (2002) notes, this may be due to an increase in the frequency with which food was prepared for communal events during the later part of the thirteen century. Corrugated cooking jars at community centers tend to be larger than those at contemporaneous residential sites. This suggests that food could have been prepared for larger groups of people, or that more food was being prepared in general at these community centers.

Studies of midden composition in Chaco Canyon have revealed that the trash mounds of great houses—the structures most analogous to community centers in the central Mesa Verde region—also contain relatively more corrugated-jar sherds and fewer white-ware bowl sherds than the middens of smaller residential sites. Chaco researchers have also interpreted this pattern as evidence of periodic communal gathering and feasting (Toll 2001:72).

Modified and Shaped Sherds

A number of sherds that had been modified or shaped after their parent vessels broke were recovered from Shields Pueblo. Modified sherds possess at least one abraded edge, which often preserves evidence of use as an informal tool after its parent vessel fragmented. This tool type is generally associated with pottery production. The edges of these artifacts are used to shape the wet clay by scraping. Approximately 5 percent of the modified sherds were made from local gray ware sherds, whereas almost 94 percent were made from local white ware sherds (Table 10.17). This suggests that sherds with fine temper and paste were preferred for use as scrapers during pottery manufacture. Gray ware sherds, with their coarse temper, may have gouged the soft, wet surfaces of unfired pottery. Table 10.17 also indicates that potters did not make modified sherd tools from sherds of any particular form.

Table 10.18 illustrates the spatial distribution of these artifacts by architectural block. The ratio of the number of modified sherds to the weight of cooking pottery indicates some variation by architectural block. Blocks 1100, 100, and 1300 have higher frequencies of this artifact type relative to the other architectural blocks with reasonable sample sizes.

Table 10.19 indicates that modified sherds are particularly associated with the Late Pueblo II component. Blocks 100 and 1300 have a number of features associated with the Pueblo II period, thus accounting for the higher frequencies of modified sherds. Architectural Block 1100, however, is dominated by Pueblo III components. This location, which has the highest frequency of modified sherds, may have been a locus that emphasized pottery production. This subject is discussed in later sections of this chapter.

In contrast with modified sherds, shaped sherds have edges that were intentionally flaked, ground, or both to make a specific shape. Perforated sherds with shaped edges were classified as sherd pendants and are discussed in Chapter 13. Sherds with shaped edges but lacking a perforation, such as disks, triangles, and rectangles, were classified as shaped sherds and are included here. These shaped sherds may have been pendant blanks, gaming pieces, or other nonutilitarian items. The data in Table 10.17 indicate the use of white ware and red ware sherds over gray ware sherds in the production of shaped sherds. These data suggest an aesthetic preference for decorated sherds in the production of items of adornment. Table 10.18 shows the distribution of these materials by architectural block, and Table 10.19 examines their association with temporal components.

Shaped sherds are most abundant in Block 100. This may indicate a concentration of adornments, or adornment-making activities, in the vicinity of Block 100. Adornments are discussed further in Chapter 13. Table 10.19 indicates that the relative density of shaped sherds declined through time. The Late Pueblo II component has the highest shaped-sherd to cooking-pottery ratio among the specific components. Again, this may suggest that adornments were more common, or more commonly made, during this time period.

Pottery Vessels

Vessels were identified and assigned vessel numbers when the object was obviously complete, or when enough of the vessel was present that one or more dimensions of the vessel was measurable. Forty-nine complete or partial vessels were collected from Shields Pueblo. Data collected from these vessels are summarized in Table 10.20. Table 10.21 summarizes the provenience information for these vessels. The most common ware-form combination is white ware bowls (N=17), which were found in a variety of contexts. All vessels were apparently produced locally. Photographs for each vessel are available in the Crow Canyon research database (Crow Canyon Archaeological Center 2003).

Pottery Rim-Arc Analysis

Rim-arc data may be used to estimate vessel forms and sizes (e.g., Ortman 2000a), as well as to generate minimum vessel number estimates for assemblages (e.g., Lightfoot 1994). In the case of Shields Pueblo, the size distributions for cooking jars and white ware bowls are calculated by component to address questions pertaining to social organization spanning the Pueblo II and III periods. The results of these calculations are then compared with data from contemporaneous assemblages in the vicinity. The methods for rim-arc analysis are described in the online laboratory manual (Ortman et al. 2005).

White Ware Bowls by Component

Soon after the fieldwork for the Shields Pueblo project was completed, Crow Canyon research staff selected a sample of white-ware bowl rims from Shields Pueblo for rim-arc analysis. This was accomplished by querying the Crow Canyon database and selecting white-ware bowl rim sherds from proveniences that were determined to belong to the four specific phases spanning the Pueblo III period: A.D. 1140–1180, A.D. 1180–1225, A.D. 1225–1260, and A.D. 1260–1280. These phase determinations were made on the basis of tree-ring dates, stratigraphy, initial assessments of pottery assemblages, and architecture. Subsequent analyses have resulted in some changes to these initial phase determinations. This was fortuitous in that the changes resulted in some of the analyzed sample being reassigned to the Pueblo II period, particularly the years that span A.D. 1020–1060 and A.D. 1060–1140 (the Middle and Late Pueblo II components). In addition to specifying component associations, our database query selected only those sherds that weighed more than 2.0 g; sherds weighing less would probably not yield reliable rim-arc data.

In a number of cases, analysts were not able to estimate the size class of a given sherd. In these situations, the arc of the sherd in question was not estimated. The rim-arc measurements of 786 bowl rims were calculated for this analysis. Table 10.22 and Figure 10.1 provide the results of this analysis.

A bimodal distribution of bowl sizes is indicated by the data from the Late Pueblo III component. The modes for this bimodal distribution center upon an 8- or 9-centimeter (cm) radius and a 14-cm radius. The modes are very similar to, or the same as, the modes reported for Castle Rock and Sand Canyon pueblos (Ortman 2000a:Figure 4; Till and Ortman 2007:Figure 10) and for the Late Pueblo III component at Woods Canyon Pueblo (Ortman 2002:Figure 9). A bimodal distribution is not apparent for the Early Pueblo III component. This is consistent with the observation made by Ortman (2000a) that the bimodal distribution of bowl sizes is associated with the formation of large villages during the Late Pueblo III period, and not with the earlier communities of the thirteenth century. The bowl-rim samples analyzed from Shields Pueblo also indicate that similar bimodal bowl-rim distributions did not occur during the Pueblo II period. However, the curves for the Pueblo II and Early Pueblo III components suggest the possibility of a "tighter" bimodal curve, with modes centered upon a 9-cm radius and an 11-cm radius. Actually, a slight intermediate peak at the 11-cm radius occurs in the bimodal curve for the Late Pueblo III bowl assemblage as well.

Although the Late Pueblo III bimodal bowl distribution is apparent at Shields Pueblo, the pattern does not appear to be as strong as at community centers such as Sand Canyon, Castle Rock, and Woods Canyon pueblos. This is indicated by the relatively low proportion of the total degrees of arc represented by the large bowl mode in Figure 10.1. In contrast, the large bowl mode reaches a frequency of about 0.2 at Sand Canyon and Castle Rock pueblos (Ortman 2000a:Figure 4). The lower proportion of large bowls at Shields Pueblo may simply indicate their presence in the Late Pueblo III households of Shields Pueblo, but not their intensive use as at the larger villages. It may also be indicative of less-frequent or smaller-scale community ritual. A third possibility is that the bimodal pattern is less pronounced because the Late Pueblo III component at Shields Pueblo is earlier than at large villages such as Sand Canyon, Woods Canyon, and Castle Rock pueblos. This third scenario is significant since it would indicate that food consumption traditions characteristic of the late thirteenth century initiated prior to the construction of these large villages.

Corrugated and Gray Ware Jars by Component

The rim-arc measurements of 593 cooking jar rim sherds were calculated for this analysis. Of these, analysts could estimate the rim radius of 289 sherds from specific phases in the Pueblo II and Pueblo III periods.

As with the white-ware bowl rim sherds, we examine rim-arc data to address the issue of social integration. Ortman (2000a) and Till and Ortman (2007) note that larger cooking jars are found at Late Pueblo III community centers relative to contemporaneous, small habitation sites. Furthermore, Crow Canyon's research indicates that cooking jars tend to be larger in the large, Late Pueblo III period villages than cooking jars from Early Pueblo III assemblages (Ortman 2000a, 2002:Figure 2). Ortman observes that since household size does not appear to change during the Pueblo III period, it seems most likely that the larger size of jars from the Late Pueblo III period indicates that more large servings of food were being prepared in the large villages than in the smaller, contemporaneous habitation sites or in sites dating from the Early Pueblo III period.

Rim-arc data for cooking pottery recovered from Pueblo III period contexts at Shields Pueblo indicate patterns similar to those observed by Ortman. Figure 10.2 and Table 10.23 demonstrate an increase in the average cooking-jar rim radius from the Early Pueblo III to the Late Pueblo III components. This suggests that the occupants of Shields Pueblo during the Late Pueblo III period participated in the preparation of large amounts of food, perhaps for large groups of people. As noted for the white-ware bowl rim-arc data, if there was not much overlap between the final occupation of Shields Pueblo and the adjacent Goodman Point Pueblo, the cooking-jar rim-arc data for Shields Pueblo may indicate that food consumption traditions had their start before the construction of the large, aggregated communities of the late A.D. 1200s.

As noted earlier, Crow Canyon researchers have had little opportunity to consider Pueblo II period artifact assemblage data before the excavation of Shields Pueblo. Although sample sizes are small, the data from the Middle and Late Pueblo II components suggest bimodal distributions of rim radius measurements. The fact that samples dating from both components possess the same pattern (with modes centered around a 6- to 9-cm radius and an 11- to 12-cm radius) suggests that these distributions are not a product of sampling error.

Pottery Design Studies

Details of the designs painted on white ware bowls were recorded for a sample of 1,547 rim sherds from Shields Pueblo. This analysis focused on rim sherds from black-on-white serving bowls because such sherds are common in artifact assemblages, and the sherds often preserve enough decoration to characterize the entire parent vessel. Furthermore, by restricting analysis to a single vessel form, we control for potential biases in decorative and disposal practices across vessel forms. We selected samples for analysis using the following criteria: 1) sherds from secondary refuse deposits located to the south of, or in the fill of, tree-ring dated pit structures; 2) sherds from proveniences representative of each major period of occupation at the site; 3) sherds associated with pit structures dating from A.D. 1180–1225 throughout the village; 4) sherds from contexts representing the final years of occupation at the pueblo; 5) all bowl rims classified as Chapin Black-on-white, Piedra Black-on-white, or Early White Painted; and 6) all bowl rims on which a basket impression was noted on the exterior surface during pottery analysis. Table 10.24 summarizes the seven sample groups chosen for analysis on these bases.

The system used in recording designs was developed for a previous study by Ortman (2000b); readers should refer to this publication for background, an explanation of the terminology used, and definitions of categories. Briefly, we recorded attributes that are analogues of the patterns and textures of woven articles preserved in contemporaneous cliff dwellings across the Mesa Verde region. Ortman (2000b) argues that the dominance of textile imagery in pottery designs, and patterns in the use of this imagery, indicate that ancestral Pueblo people in the Mesa Verde region viewed pottery as the conceptual mirror-image of woven objects.

In this analysis we control for vessel fragmentation (Schiffer 1989) by considering only the largest sherd of each group noted as being from the same vessel during analysis. We also control for contamination to some extent by excluding rims classified as Mesa Verde Black-on-white from contexts that were dated to the Middle Pueblo II or Late Pueblo II periods. We also control for variable preservation of designs across sherds by using a three-value logic that distinguishes sherds on which a given attribute occurs from those on which it definitely does not occur, and those on which there is insufficient evidence to tell. Thus, the effective sample size—the number of times the presence or absence of an attribute can be determined—varies from attribute to attribute using the same sample of sherds. To produce accurate estimates of attribute proportions in an assemblage, then, one must consider the number of sherds on which the presence or absence of each attribute could be determined, rather than the total number of sherds in the assemblage. Table 10.25 lists the analogous features we recorded and tabulates the number of times each was observed on “vessels” in the samples selected for analysis, excluding the “Late Pueblo II through Early Pueblo III” sample. Table 10.26 presents corresponding sample sizes for each attribute for each of the samples.

Chronological Distribution of Design Attributes

One of the questions we address using these data is the chronological distribution of the design attributes we recorded. Table 10.27 presents attribute proportions calculated from the counts and sample sizes presented in Table 10.25 and Table 10.26. The samples are presented in chronological order (with the exception of basket-impressed sherds, which appear in the second-to-last column). Cells which correspond to periods during which specific design attributes are attested in textile media are shaded, on the basis of Ortman’s previous research (2000b:Table 2). It is apparent from these data that most attributes exhibit unimodal distributions through time, and are therefore suitable for seriation work. In addition, the design attributes we recorded occur rarely, if ever, during time periods for which they are unattested in various textile media. If one allows for a few misclassifications and intrusive sherds, it becomes very likely that none of these design attributes were present in the local pottery style prior to their invention in various textile media. This replicates the pattern identified by Ortman (2000b:Table 6) using data from other sites, and adds further support to the inference that numerous innovations in the local pottery style derived from developments in textile industries. Especially noteworthy is the fact that a sample of Early Pueblo I period designs was analyzed for this study (but not in Ortman [2000b]), and in this case the list of attributes present is limited to those derived from the limited textile media known for this period, including coiled basketry and non-loom-based weavings (belts, aprons, sashes). Design attributes inferred to derive from twill-plaited basketry and tapestry weaves on an upright or backstrap loom are totally absent from designs dating from this period.

Dating the End of Occupation at Shields Pueblo

One of the important questions about Shields Pueblo is whether the village remained occupied during the final decades of ancestral Pueblo occupation in the Mesa Verde region. We address this question here using the refined dating potential of design-attribute data from Shields Pueblo and other sites in the Upper Sand Canyon area. The Shields Pueblo samples we include in this analysis derive from midden deposits associated with tree-ring-dated pit structures ranging from the A.D. 1220s to the A.D. 1250s, and undated pit structures associated with large numbers of Mesa Verde Black-on-white sherds. We interpret these assemblages as trash from specific households dating from the thirteenth century occupation at Shields Pueblo. In Ortman's (2000b) previous research, comparable design-attribute data were also collected from several small settlement sites excavated during the Sand Canyon Archaeological Project site testing program (Varien 1999), and from specific household trash deposits at Sand Canyon Pueblo (Kuckelman 2007). These additional sites are all located 4 to 6 km west of Shields Pueblo, and were likely part of the ancestral Pueblo community immediately adjacent to Shields Pueblo (see Ortman and Varien 2007). Tree-ring data from Sand Canyon Pueblo suggest that the excavated household units at that village had been constructed between A.D. 1252 and 1274 (Ortman and Bradley 2002; Kuckelman 2003). The locations and dates from two of the tested sites, Lester's Site and Lookout House, suggest that houses were constructed in these locations during this same period and as part of the Sand Canyon community. Four additional tested sites are well-dated to earlier decades of the thirteenth century, and are interpreted as representing households that moved into Sand Canyon Pueblo in the A.D. 1250s and 1260s (Varien 1999). We interpret these sites as having been residences for members of the Sand Canyon community prior to construction of Sand Canyon Pueblo. To distinguish these households from the later households in this community, we label them as being from the "Casa Negra" community, after the name of the great house site predating Sand Canyon Pueblo (see Varien 1999:Table 7.9). Table 10.28 presents the household-trash assemblages we include in this analysis and the number of "vessels" examined from each, using the same criteria described earlier in this section.

Table 10.29 presents "estimated" attribute counts for each of these household pottery assemblages. We produced these estimates by multiplying the number of "vessels" examined from each household by the ratio of attribute presences to attribute presences and absences among the examined sherds from that household, and then rounding off the result to the nearest whole number. One can conceptualize these estimates as counts that would likely occur if the presence or absence of every attribute could be assessed for every analyzed sherd. Figure 10.3 and Table 10.30 present the results of a correspondence analysis of these data. In this analysis, household assemblages from the Sand Canyon community cluster on the right side of Figure 10.3, whereas household assemblages from the communities surrounding Shields Pueblo and the "Casa Negra community" are interspersed on the left side.

It is reasonable to interpret this scatter of points as a seriation for several reasons (see Figure 10.3). First, the arrangement of households along the first axis corresponds to trends in tree-ring dates: household assemblages from Sand Canyon Pueblo on the right side of the chart are associated with tree-ring dates in the A.D. 1260s and 1270s, whereas household assemblages from the Shields Pueblo and "Casa Negra" communities, on the left side, are associated with dates from the early A.D. 1200s through the 1250s. Second, the design attribute loadings on this first axis correspond to their sequence of appearance, growth, and decline in the attribute proportions for Shields Pueblo chronological components presented in Table 10.27 (see also Ortman 2000a:Table 6). In other words, the correspondence analysis places these design attributes in chronological order, such that design attributes most common in earlier contexts load negatively, or on the left-hand side of Figure 10.3, and attributes most common in the latest contexts load positively, or on the right-hand side of Figure 10.3. So, for example, exterior band designs (e.g., "coiled band design" in Table 10.27, Table 10.29, and Table 10.30) are rare in assemblages associated with households from the Shields Pueblo and "Casa Negra" communities, and are more common in assemblages associated with households from the Sand Canyon community. The same can be said for attributes derived from twill-tapestry weaving (subsumed under "interior design attributes" in Table 10.27, Table 10.29, and Table 10.30). Third, the household assemblages examined for this study all appear to have accumulated over similarly short periods of time: the households at Sand Canyon Pueblo were occupied for 25 to 30 years at the most; the households from the "Casa Negra community" appear to have been occupied for a single domestic cycle; and we specifically chose contexts from Shields Pueblo that appeared to represent unmixed assemblages associated with the use of specific domestic structures. Finally, our choice of samples from a restricted geographic area controls for spatial variation in pottery decoration within a given time period, and rules this out as an explanation for the observed patterns.

On the basis of these lines of argument, we can reasonably interpret Figure 10.3 as a relative chronology of the examined households, which in turn supports the inference that Shields Pueblo was no longer occupied during the final few decades of ancestral Pueblo occupation in the central Mesa Verde region. This analysis also shows that, using design-attribute data, pottery dating from the final few decades of pueblo occupation in this region can be distinguished from pottery dating from earlier decades of the thirteenth century.

Pottery Production and Exchange

Evidence related to the production and exchange of pottery artifacts contributes directly to the discussion of local and extralocal exchange networks, and indirectly to the research issues of social organization and migration. The following section considers the direct and indirect lines of evidence for pottery production at the local level.

Direct evidence for pottery production includes pottery-making tools (e.g., polishing stones, *pukis*, and possibly some modified sherds), facilities or features used to make pottery (such as pottery kilns), and unfired pottery and clay. Indirect evidence for local pottery production and exchange includes the temper data recovered from white ware and gray ware sherds from Shields Pueblo.

Polishing Stones as Direct Evidence for Pottery Production

Polishing stones are small, very smooth, and very hard stones or pebbles that exhibit evidence of abrasive wear. Traces of potting clay have been observed on polishing stones in the northern Southwest, indicating the use of these items in pottery production (Geib and Callahan 1988). Pierce and Varien (1999) have reported traces of clay adhering to the surfaces of such items from sites near Sand Canyon Pueblo, suggesting that these objects had been used to polish white ware vessels. As discussed below, a few such instances were also documented at Shields Pueblo.

Table 10.31 lists the types of stone out of which polishing stones were made. As has been documented at the nearby Sand Canyon Pueblo, many of these items are described as "unknown stone" (Till and Ortman 2007:Table 31). Some of these artifacts are probably alluvial cobbles, which often hinders a positive identification of material type. A few of these are apparently gastroliths, the highly polished gizzard stones of dinosaurs. Gastroliths may derive from the Morrison Formation, exposures of which occur in the vicinity of the site. One noticeable departure from the Sand Canyon Pueblo polishing-stone assemblage occurs in the frequency of Morrison quartzite. Only one polishing stone recovered from Sand Canyon Pueblo was made of this material (Till and Ortman 2007:Table 31), whereas Morrison quartzite is the second-most common polishing stone material at Shields Pueblo. Table 10.31 indicates that this apparent preference for Morrison quartzite is not associated with any particular temporal component. It is possible that material availability, either for alluvial cobbles or Morrison quartzite, may be the source of this variability between sites. Another possibility may lie in analytical differences between the two projects—perhaps analysts simply did not discern this material type during analysis of the Sand Canyon Pueblo assemblage.

Table 10.32 gives the distribution of polishing stones by study unit across Shields Pueblo. Till and Ortman (2007) note that most of the polishing stones found on structural surfaces at Sand Canyon Pueblo were located in kivas. Since most of the surface masonry rooms at Shields Pueblo were obliterated in recent times, the occurrence of these items in this particular type of structural context cannot be evaluated. Table 10.32 does indicate that polishing stones were recovered from both the floor and roof-fall contexts of kivas/pit structures. Furthermore, it appears that these objects were found associated with architectural blocks across the entire site. This suggests that white-ware pottery production was a common activity that occurred at the household level. Table 10.32 also documents a few cases where possible potting clay adhered to polishing stones.

Pukis as Direct Evidence for Pottery Production

Puki is a Tewa term for "sherd containers," which are part of a potter's tool kit (Swink 2004:95). These objects are shallow, almost plate-like vessels that were used as an initial supporting mold for a green, or unfired, vessel. Very often these objects were made from the bases of corrugated jars.

Like polishing stones and modified sherds, the documentation of these items may help determine the location of pottery production. Only two occurrences of possible *pukis* or sherd containers at Shields Pueblo were noted. One of these, Vessel 43, is described in Table 10.20 and Table 10.21.

It was recovered from the bench of Structure 1316, a kiva. The other instance of a sherd container is a surface find (Provenience Designation [PD] 895, Field Specimen [FS] 2) that consists of a single sherd recovered from the Block 1100. The sherd consists of a Late White Painted bowl body sherd.

Unfired Clay and Pottery as Direct Evidence for Pottery Production

The most direct evidence for pottery manufacture in an archaeological setting is fully formed vessels, in situ and as yet unfired. At this delicate, terminal stage, the vessel is fragile and transported only with great care. The final step in making durable pottery is firing.

Fired pottery is extremely durable and, even when broken, survives centuries with much information intact. By contrast, an unfired vessel and its broken remains are extremely fragile. This “green ware” melts quickly into a lump of inconspicuous clay when wet. If the unfired pottery does manage to survive in the archaeological record, it quickly becomes vulnerable to moisture when exposed during excavation. Because of its fragile nature, unfired pottery, pot sherds, and the various processing or manufacturing stages involved in pottery making are not always identified or preserved during excavation. When such materials are fortuitously recovered, it is vital to glean as much information from them as possible.

Such an opportunity to characterize unfired clay and pottery presented itself at Shields Pueblo. Excavations from 1997 through 2000 produced 23 unfired clay samples and 30 unfired pottery specimens. These materials were distributed throughout the site and presented a two-fold opportunity. First, it was possible to develop simple analytical procedures to identify, evaluate, and interpret the variations in paste and temper present in the assemblage. Second, and most importantly, this assemblage could shed light on the intricacies of pottery manufacture and social dynamics within Shields Pueblo through time.

Methods

All field specimens classified as “clay” or “unfired sherds” were initially considered for this analysis. The clay samples were first tested with a few drops of water to confirm that the material was unfired and then examined for evidence of processing (such as grinding, coiling, and balling), and for the presence of temper. Non-pottery clay materials such as adobe, plaster, mortar, caliche, or ochre were not included in this analysis. A binocular microscope was used to examine the temper. Unprocessed lumps of clay were examined for the presence of natural layering. Texture, plasticity, and color were described for each sample.

Items that had been cataloged as unfired sherd samples were tested with water to confirm that they were unfired. Fired specimens were reclassified accordingly. The unfired sherd samples were examined for scrape marks, coils, temper, corrugated surface treatment, curvature, polish, and paint. In addition, vessel form, vessel part, and other distinguishing characteristics were documented. In addition, distortions caused by moisture or other pre-firing failures were noted. Broken edges were microscopically examined for temper and clay properties. These general observations were recorded and, when possible, pottery ware and types were noted.

Three different destructive analysis procedures were developed and used with those specimens large enough, and apparently durable enough, to endure further analysis. In one procedure, temper was separated from the surrounding matrix clay in order to evaluate and quantify the temper material. The second procedure involves the firing of a subset of the unfired clay and sherd specimens to measure shrinkage and enhance temper examination. Finally, test tiles were made from rehydrated raw clay and unfired sherd samples to demonstrate color changes using two different firing procedures: replica trench-kiln firing and commercial kiln firing. In addition to documenting color changes, the test tile firing also permits an evaluation of clay handling properties. Samples that were too small or fragile for further study were not analyzed.

Observations of Unfired Clay

Table 10.33 summarizes observations made of the unfired clay and unfired sherd specimens recovered from Shields Pueblo. Of the 23 clay samples initially recorded for Shields Pueblo, only 16 were unfired. The remaining seven samples appear to be fired clay (intentional or accidental) and were not included in further study.

Six of the 16 unfired clay samples were recovered from midden contexts in Blocks 100, 200, 1300, and 1400. The remaining 10 unfired clay samples were recovered from structures in Blocks 100, 200, 800, 1100, and 1200. Of these, eight are from subterranean kivas and two from subterranean rooms. Block 100 yielded nearly 70 percent of the unfired clay by weight, and Blocks 200 and 1300 provided most of the remainder.

The initial observations of unfired clay paste and temper, recorded in Table 10.33, are impressionistic and visually descriptive as they are based on exposed surfaces only. Of the 16 samples of unfired clay, 11 appear to contain temper while five either do not or are inconclusive. Of this latter group, three samples are identified as an unprocessed gray clay that exhibits natural, unaltered layers. The fourth sample contains no temper, but appears to have been worked while wet. Because of its light color and fine waxy texture, the fifth sample lacking temper is presumed to be slip clay, but it is too small to test further by our methods.

Microscopic examination of the surfaces from the 11 unfired clay samples containing temper indicates several different paste types. Six of the tempered, unfired clay samples appear to contain crushed-sherd temper and are designated as white ware pastes. Three of these contain only sherd temper, while the remaining three contain a mix of crushed sherds, igneous rock, and sandstone. Three other unfired clay samples contain coarse, abundant rock temper and were determined to be corrugated gray ware pastes. The two remaining samples, which are very similar to each other, contain coarse rock or sandstone particles, but were inconclusive as to paste type.

Unfired Pottery

There were 30 unfired sherd samples excavated from Shields Pueblo, but only 28 of these proved to be unfired. The remaining two original samples, found to be fired, were reclassified as pottery or other ceramic artifacts.

Table 10.33 shows that unfired sherds were recovered from Blocks 100, 200, 800, 1100, 1200, 1300, and 1400. The unfired sherds derive from a variety of contexts, including subterranean kivas, both subterranean and surface rooms, and middens. All 28 unfired sherd specimens show evidence for some degree of vessel formation. Although the weights of the samples vary dramatically (ranging from 0.6 g to 3,739.4 g), it was possible to record some data, summarized in Table 10.33, for each item.

When temper and paste show consistent composition and quality throughout a sample, it is assumed to represent a single episode of pottery making. Although all the material from a given sample may derive from a single vessel, it may also be the case that the entire vessel is not present. Eight of the unfired sherd samples represent portions of a single vessel each. Two very large samples (PD 1995, FS 29, Point Location [PL] 115 and PD 2148, FS 8, PL 34) contain numerous and varied rim sherds that appear to be from two or more unfinished vessels each. In the largest specimen, which weighs 3,739.4 g, variation among the sherds suggests at least five unfired corrugated vessels are probably represented. The 13 individual unfired rim sherds in this one specimen can be typed as nine Indeterminate Local Corrugated Gray sherds and four Mesa Verde Corrugated sherds.

Indented corrugations are evident in 11 of the unfired sherd samples. In total, 29 unfired corrugated rim sherds were identified from the unfired sherd assemblage. In some cases, rim and body sherds appear to have been smashed or distorted while still moist. Some sherds were stuck together, while others were crumbly, making evaluation and cleaning difficult. Temper size varied from medium to coarse. Quantity varied as well. Tempering materials are discussed in further detail in the Test Tile Analysis section below.

Seven of the corrugated samples appear to be from jars (including the multiple rim and vessel specimens). The vessel forms for the remaining four samples are unknown but, by convention, most corrugated gray ware vessels are assumed to be jars. Plain gray ware sherds were found in 10 of the unfired specimen samples and include nine rim sherds. In several cases little useful information was visible. Most sherds, however, are scraped on both sides or are smooth without scrape marks. Coils were mostly obliterated. The unfired gray ware rim sherds in this study were formed from a single coil. Rim-arc and rim-eversion data were not measurable for any case. Most of the plain gray ware sherds are relatively thin and the temper particles are fine- to medium-grained. Five of the 10 unfired plain gray ware sherd samples appear to be from jars, four are from unknown vessel forms, and one is from a bowl.

White ware pastes were identified in four unfired sherd samples. Two of these samples (PD 1127, FS 13, PL 11 and PD 1127, FS 16, PL 10) comprise three pieces of a ladle handle that refit into a complete handle. Although somewhat flattened and distorted, it clearly exhibits both the terminal end and the end attaching to the ladle bowl (Figure 10.4). When refitted, the handle measures 20.3 centimeters cm long and has five distinct holes (at 2-cm intervals) perforating the flattened upper surface of the handle. There is no evidence of slip, polish, or paint. The vessel was either broken at this stage of manufacture or left unfinished and broken later. The style and construction is consistent with Pueblo II and III pottery types.

Of the two other unfired white ware sherd samples, one appears to be a bowl (on the basis of two refitting rims). These rim sherds are small and warped. The fourth sample contains two body sherds of unknown form.

Temper Recovery and Identification

Temper-clay separation and recovery was done with four raw clay and six unfired sherd specimens (Table 10.34). Because the samples were selected largely on the basis of specimen volume, not all areas of the site or time periods are reflected. All samples start out as 25 g, but the process of recovery is imprecise and a small amount of the clay is never fully recovered. The percentages of temper are therefore calculated on the basis of the total weight of materials recovered (clay and temper). This calculation tends to slightly over-represent the amount of temper. In this study all aplastic materials in the clay, whether naturally occurring or deliberately added, are treated as temper.

The inclusions recovered from the four unfired clay samples consist of sandstone materials; one of the samples included both sandstone and igneous rock. The clay sample from Structure 234, which contained a large fraction of igneous rock and sandstone temper, is probably clay prepared for corrugated pottery production. The sandstone temper in all four clay samples is composed of weathered sandstone particles, individual sand grains, and very fine debris of unknown composition. The three clay samples with only sandstone as temper contain less than 10 percent temper by weight each. The small amount and worn nature of the sandstone particles suggest these three clay samples may not have been mixed with temper, but were collected as a "self-tempered" clay. It is also possible that these three unfired clays mixed with debris on the site during periods of deposition and were not ready, or intended for, pottery manufacture.

The six samples of unfired pottery selected for temper recovery are all composed of corrugated sherds (see Table 10.34). All six contain substantial amounts of temper, ranging from almost 15 percent to over 45 percent by weight. The largest proportion of temper in all six samples (see Table 10.34), was captured in the Mesh 14 sieve (greater than 1.4 millimeters [mm] but less than 2.8 mm). This contrasts with the unfired clay samples where temper particles are predominately very fine, caught in the Mesh 60 sieve (greater than 250 microns but less than 710 microns). In all cases but one, a second material accompanies the igneous rock. Sandstone is found mixed with igneous rock in three samples. In the other two samples, crushed corrugated pottery sherds are mixed with igneous rock.

Detailed microscopic examination and identification is possible when temper particles are removed from the pottery paste. The cleaned temper retains a clay residue that can be removed with a weak detergent rinse. Photomicrographs of temper particles captured in the Mesh 7 sieve (greater than 2.8 mm but less than 4.75 mm) are shown in Figure 10.5, Figure 10.6, and Figure 10.7.

Table 10.35 compares two estimates of temper material, quantity, and particle sizes with actual measurements of recovered temper. Temper particle size and abundance are estimated using procedures described in Ortman et al. (2005). The initial estimates were based upon a surface examination of unfired clay and sherds. The 10 samples where temper was recovered can be viewed as a test of our ability to estimate temper composition on the basis of what is observed in a sherd's cross-section. As shown in the "Error" column, the quantity is only accurate two out of 10 times. In all other instances, the quantity of temper was significantly underestimated. Also shown is a lack of precision in visual identification of temper material type. While igneous rock is indeed present in the corrugated sherd samples, in four cases sandstone and/or sherd temper is overlooked as a second temper material. Perhaps the inherently coarse paste clay in the unfired, corrugated-sherd samples masks the presence of crushed-sherd temper.

Post-Firing Analysis

Eleven individual unfired sherds and one ball of unfired but tempered clay were fired in a replica trench kiln under the guidance and supervision of Greg Wood and Paul Ermigiotti. Atmosphere in the kiln was oxidizing at first, then reducing; finally, the kiln was buried with clean dirt. This firing method has successfully produced painted white ware pottery with clays from the northern Mesa Verde region (Swink 2004; Greg Wood, personal communication 2004). The individual unfired samples were weighed, and then photographed for identification. We placed all 12 test samples in a pottery vessel for firing. When the kiln was cooled and opened, we recovered the samples and weighed them again. The results are shown in Table 10.36.

Table 10.36 shows that each sample experienced a loss in weight between their unfired and fired states. Among the corrugated sherds, the loss in weight ranges from 0.7 percent to 17.9 percent, with an average loss of 9.8 percent. The single gray-ware sherd sample lost a little more than the average for the corrugated sherds. The two white ware samples, one the terminal end of the ladle described previously and the other a small ball of unfired clay, lost 8.9 percent and 13.4 percent of their weight, respectively. With the exception of one of the four sherds from PD 1995, FS 29, PL 115, the average shrinkage during firing is just over 10 percent.

After post-firing weights were recorded for the above samples, a small nip was removed from each. The fresh break was examined under a binocular microscope in order to identify the temper material, relative size of the temper, and its abundance (see Table 10.36). A comparison of the post-firing data in Table 10.36 with the pre-firing data (in Table 10.34 and Table 10.35) reveals three instances where secondary temper material was not identified in the post-firing data. In two cases, sandstone was not documented. This may be due to the small amounts of this material in the samples. In the case where sherd temper was initially observed in a sample of corrugated pottery, but not in the post-firing sample, a bias against the detection of sherd temper in gray ware pottery may be indicated.

These procedures are accurate for individual grains, but do not address ranges of particle size, resulting in an underestimation of temper quantity. Abundance estimates assume consistent particle size and do not allow for various sizes. In the three overlapping examples in the preceding paragraph, all corrugated, our standard procedure significantly underestimates the abundance of temper.

Test Tile Analysis

As noted earlier, test tiles were produced from rehydrated unfired clay and unfired sherd samples to evaluate the handling properties of the clay as the tiles were being made and to document color change. Ten samples were chosen for test tiles, including unfired sherds (N=7) and unfired clay samples (N=3).

Tiles 1 and 2 were made from two samples of unfired, plain gray ware body sherds. Both samples contained moderate amounts of crushed, coarse, igneous-rock temper. The rehydrated clay paste was easily formed into tiles.

Tiles 3 through 7 were formed from corrugated body sherds. All five appeared to contain coarse to very coarse, igneous-rock temper. In Tile 5, temper was so abundant it became difficult to shape or smooth the surfaces. In all cases, the corrugated pottery paste was plastic and adequately sticky to hold the temper without becoming crumbly. Identification of temper material was not the specified goal in this tile manufacture, but as mentioned above, the presence of crushed sherd temper in Tile 5 was overlooked during tile production.

The unfired clay samples (Tiles 8, 9, and 10) were all very plastic and easy to shape into tiles when worked by hand. During manipulation, it appeared as though there was no temper at all except for a few larger particles. However, in one case (Tile 10), several rocks were large enough to protrude from the surface and interfere with tile formation, and were removed.

Table 10.37 summarizes the color data for the test tiles. To evaluate color change, the 10 dried tiles were each split into three different groups: Parts A, B, and C. Part A of each tile was set aside as a control. Part B of each was fired in the replica trench kiln described in the preceding section. The third portion of each tile, Part C, was fired in a commercial electric kiln until it reached 930 degrees Celsius. Figure 10.8 shows each of the 10 tiles with Parts A, B, and C refitted after their respective treatments. Note that a small nip was removed from Part B in each tile to facilitate temper examination.

The colors of the two plain gray ware samples from Structure 103 (Tiles 1 and 2) appear to be identical across each of the three parts, suggesting that both samples could have derived from the same vessel or batch of prepared clay. Their similarities in paste and temper composition support this conclusion.

Tiles 3, 4, 5, 6, and 7 were made from unfired corrugated sherds that were recovered from subterranean kivas in Blocks 1100, 1200, and 1300. These tiles are distinct in color from those produced from the plain gray ware and unfired clay samples, particularly in the Part A portions of the tiles (see Table 10.37; see Figure 10.8). In contrast, the Part B tiles from the plain gray and corrugated sherds are similar in that they are "light gray" (see Table 10.37; see Figure 10.8). Likewise, the Part C portions of tiles from the corrugated and plain gray ware exhibit only minor variability.

Two of the three unfired clay sample tiles (Tiles 8 and 9) derive from Structure 123. Table 10.37 indicates that both have similar color descriptions across Parts A, B, and C. These color similarities, the samples' provenience, and the similarity in handling between these two pastes suggest that the two unfired clay specimens are from the same source. The intended use of this material remains indeterminate; however, Tiles 8 and 9 do not match the characteristics of the gray ware sherds represented by Tiles 1–7, suggesting that the clay was not intended for gray-ware production.

The final tile (Tile 10) was made from an unfired clay sample recovered from Nonstructure 1310, a midden. The tile is described as "light brownish gray" in Parts A and B, and has a Munsell color that is unique in this sample of 10 tiles (see Table 10.37). However, as with the plain gray and corrugated tiles, the Part C color description is "red yellow," which is somewhat similar to the Part C portions of the plain gray and corrugated sample tiles.

Analysis Results and Discussion

This section considers the results of the analyses of the unfired clay and unfired pottery. The following discussion is organized primarily by architectural block, but also incorporates our observations of pottery production activities by temporal component.

Block 100 produced the greatest concentration of unfired clay, comprising four samples (see Table 10.33). Two relatively large specimens are from PD 624 and are probably from the same source in Structure 123, a subterranean kiva dating from the Early Pueblo III period. This structure was previously excavated by Colorado Mountain College (Duff and Ryan 2000). The earlier excavation, as well as subsequent weathering and mixing, have compromised the integrity of this sample. The color of the unfired clay from this structure is not consistent with the other unfired clay samples recovered from Shields Pueblo, and we could not identify the geologic source of this clay. It is possible the clay is of nonlocal origin, which implies trade outside the local resource area. It is also possible that this clay is local and was intended for uses other than pottery-making. The remaining two clay samples from Block 100 came from midden areas and were too small for further testing. Thus, the unfired clay data from Block 100 produced minimal evidence of localized pottery production, but may indicate the importation of nonlocal clay.

In contrast to the unfired clay samples, the unfired sherds from Block 100 yielded useful information (see Table 10.33). Two samples from Structure 103, a masonry surface structure, are both plain gray ware sherds with igneous rock temper and identical Munsell colors. The five rims from the two samples are of similar conformation. Thus, it seems that these two specimens represent the presence of one unfired jar. One unfired corrugated gray-ware rim sherd and two similar samples of unfired plain gray-ware body sherds were recovered from Structure 124, a subterranean room. Like the unfired sherds from Structure 103, these items contain crushed igneous-rock temper. All of the unfired sherds from Block 100 date from the Late Pueblo II period. Gray ware pottery, some corrugated but mostly plain, was produced in both surface and subterranean rooms in Block 100 during this period. No direct evidence of white ware production was found. In sum, the unfired sherd assemblage from Block 100 shows convincing evidence that cooking pottery was produced in this general location.

Block 200 yielded five specimens of unfired clay, four of which were analyzed further (see Table 10.33). The largest sample comprises gray ware paste from Structure 234, a subterranean kiva dating from the Early Pueblo III period. Over 20 percent of this specimen consisted of crushed igneous-rock and sandstone temper. Two small samples from Structure 205, a subterranean room dating from the Early Pueblo III period, contain sherd temper, which indicates white ware clay. The fourth analyzed specimen from Block 200 is an unknown clay that may not have been processed; it dates from the Late Pueblo III period.

One single example of unfired pottery, consisting of two white ware bowl sherds that refit, was recovered from Block 200 (see Table 10.33). These slightly distorted or warped bowl rim sherds contain crushed-sherd temper. The sherds were recovered from the fill of the hearth in Structure 243, which dates from the Late Pueblo II period (A.D. 1060–1140). Combined with the unfired clay samples from Block 200, it is clear that white ware and gray ware pottery production took place in this area from the Late Pueblo II through the Late Pueblo III periods.

Pottery production in Block 800 is indicated by the recovery of both unfired sherds and unfired paste clay from Structure 803, which dates from the Early Pueblo III period (see Table 10.33). Two small samples of unfired gray-ware paste clay were recovered from the floor of the structure. In addition, a cluster of unfired white ware sherds was found on the floor of Structure 803. These sherds compose a single, but incomplete, ladle handle. In addition, a small sample of unknown gray ware sherds, including two refitting rims, was recovered from the wall and roof of Structure 803. These gray ware sherds exhibit marks and distortions that were probably caused during deposition and burial. Both the white-ware ladle and the unknown gray-ware rim sherds are tempered with crushed igneous rock. The data indicate that both white ware and gray ware vessels were produced by the occupants of Structure 803 during the Early Pueblo III period.

Evidence of pottery production in Block 1100 consists of a small, unfired clay sample as well as several unfired sherd specimens. The clay sample (see Table 10.33, PD 2153) may represent slip clay, and was retrieved from the floor of Structure 1108, which dates from the Early Pueblo III period.

Three samples of unfired sherds were collected from Block 1100. These samples came from the floor of Structure 1114. The largest sample contained a few fired sherds, but the majority were unfired corrugated-jar body sherds. The five unfired corrugated rims in this sample derive from a single jar. The temper is crushed igneous rock that contains hornblende phenocrysts. The two other unfired sherd samples from Structure 1114 are corrugated body sherds that contain the same distinctive crushed igneous-rock temper as the first sample. The proximity of the sherds with each other, and the similarity in the sherds' temper, suggest that all three samples may be from the same vessel or pottery manufacturing episode. The distinctive rock temper material is readily available from the slopes of Ute Mountain and from the McElmo Creek drainage. Thus, the unfired clay and unfired pottery samples from Block 1100 indicate that both white ware and corrugated gray ware pottery were being manufactured in this portion of the site during the Early Pueblo III period.

A small amount of unfired and unground clay, and a much larger quantity of unfired pottery, were recovered from Block 1200 (see Table 10.33). The unfired clay was obtained from a backhoe trench that was excavated to investigate Structure 1205, a subterranean kiva dating from the Early Pueblo III period. Nearly 5,000 g of unfired corrugated gray ware sherds were recovered from fill above the floor of this structure, and from the floor itself. The largest of the three samples contained hundreds of unfired corrugated body sherds, 13 unfired rim sherds, and a number of previously fired sherds. At least five separate jars are represented. Four rims could be typed as Mesa Verde Corrugated. The two smaller samples contained only body sherds. Igneous rock was the primary temper choice in all three samples, but crushed sandstone was also observed.

During the Early Pueblo III period, and shortly before abandonment of Structure 1205, the inhabitants of this structure were engaged in the production of corrugated pottery. Assuming that all of the pottery from these unfired vessels was recovered, and assuming that our estimate of the number of vessels is correct, then these jars would have been quite small. Analysis of vessels from the nearby thirteenth-century site, Sand Canyon Pueblo, indicate that "small" corrugated jars weigh an average of about 1,100 g, "medium" corrugated jars weigh about 3,200 g, and "large" corrugated jars weigh about 4,100 g (Till and Ortman 2007). Therefore, while it is possible that the unfired sherd assemblage considered here represents five small corrugated jars, it seems more likely that we have overestimated the number of jars represented, or have recovered only a portion of the vessels, or that the vessels were only partially constructed at the time of the structure's abandonment.

The combination of large amounts of unfired pottery and the much smaller amount of unground, unfired clay indicate that the residents of Structure 1205 were engaged in pottery-making. It is tempting to consider that the volume of unfired pottery suggests a level of production above that expected for a single household. Lightfoot (1994:Table 4.7) presents the information necessary to derive an estimate for the average momentary number of cooking jars in a single household from the Duckfoot Site, which dates from the Pueblo I period. Assuming that the number of households represented at the site is three, and dividing his "systemic frequency" estimates by this number, it appears there are two vessels per size class of cooking jar (small, medium, and large), yielding a total of six cooking vessels. Using these data to suggest what the systemic assemblage of cooking pottery might be for the occupants of Shields Pueblo, we suggest that the occupants of Structure 1205 were intending to replace their entire cooking-pottery assemblage, or that they were producing cooking pottery for exchange with other households.

Block 1300 provided evidence for pottery production through the presence of both unfired clay as well as unfired pottery. The unfired clay from Block 1300 came from a single specimen from a midden, Nonstructure 1310, which dates from the Late Pueblo II through Early Pueblo III period (A.D. 1060–1225). This sample was analyzed further and contains only sandstone temper. The intended pottery type remains indeterminate.

The unfired sherds from Block 1300 came from midden as well as structural contexts. The three midden samples derive from Nonstructure 1320, which dates from the Late Pueblo II period. The unfired sherds include two white-ware body sherds that refit; a small, unfired disk; and several unknown gray ware sherds from a single vessel. The white ware sherds contain crushed-sherd and igneous-rock temper; the disk and gray ware sherds have igneous-rock temper only.

Structure 1316, which dates from the Early Pueblo III period, yielded four unfired sherds, all of which are unfired corrugated gray ware sherds with crushed igneous-rock and sandstone temper. Two of these were recovered from a bench surface and may represent one or two unfired vessels. Both samples contain a distinctive red streaking in the unfired crushed rock temper, suggesting that they may be from the same batch of paste clay. Two other samples were collected from the floor of Structure 1316. These are both relatively large samples, and are tempered with abundant crushed igneous rock as well as crushed corrugated pottery. The crushed corrugated sherds used as temper also contain igneous rock temper. In both floor-context cases, over 40 percent of the paste, by weight, is temper. These samples are similar enough to each other to have been from the same episode of pottery manufacture. Though the midden evidence from Block 1300 is more varied, the bench and floor of Structure 1316 were clearly used in corrugated pottery production. In sum, the unfired sherd and clay data from Block 1300 indicate that both white ware and gray ware pottery were being produced in this location during the Middle Pueblo II through Early Pueblo III periods.

Both unfired clay and unfired sherds were recovered from several contexts in Block 1400. Midden 1418, which is associated with the Early Pueblo III period, yielded two small samples of unfired clay, both of which appear to represent white-ware paste (see Table 10.33).

A modest amount of unfired sherd material was recovered from several contexts in Block 1400. Midden 1418 yielded three small, unfired sherd samples from secondary refuse above wall or roof fall. These items include clay with some evidence of sherd morphology and several sherds (including a rim sherd) from the same vessel. The quantities of temper are small, but comprise igneous rock and sandstone. Structure 1408, which dates from the Late Pueblo III period, yielded a sample of unfired sherds from the roof fall of the structure. The sample comprises one rim sherd and several body sherds from a gray ware jar, all of which are tempered with igneous rock. Two samples of unfired pottery came from the plow zone of Block 1400, yielding several unfinished gray-ware bowl sherds and a group of sherd- and igneous rock–tempered white-ware body sherds. Thus, although sample sizes are relatively small, Block 1400 did yield evidence for the production of both white-ware and cooking pottery. The midden and kiva samples span the Pueblo III period.

In summary, unfired clay and unfired sherds indicate the production of pottery through time in most or all portions of the site. During the Late Pueblo II period, cooking pottery was being produced in Block 100 and white ware pottery in Block 200. By the Early Pueblo III period, occupants of Blocks 800, 1100, and 1200 were producing both white ware and corrugated gray ware pottery. The occupants of Block 1200 may have manufactured more cooking pottery than necessary for a single household. The habitants of Block 1300 made both white ware and gray ware pottery in the years spanning the Late Pueblo II to Early Pueblo III periods. The scant data from Block 1400 indicate pottery production in this location of the pueblo during the Late Pueblo III period.

The production of corrugated pottery predominates at Shields Pueblo, although white ware vessels were also locally produced. Igneous rock was the principal temper material for corrugated and plain gray ware pottery, as well as for white ware pottery. While crushed sherds and sandstone were both used as temper and would have been readily available at Shields

Pueblo, the potters preferred igneous rock. Temper data are discussed more thoroughly in the section below.

Temper Data as Indirect Evidence for Pottery Production and Exchange

Pottery temper, the nonplastic material added to paste clay during manufacture, has the pragmatic effect of reducing shrinkage and cracking during the firing of a vessel. Furthermore, temper material type and temper size have functional values for the vessel being created. For example, gray ware pottery is tempered with relatively large grains of lithic material. This type of temper improves resistance to the thermal stresses of cooking, the most common use for gray ware vessels.

For the analyst, temper is useful for identifying the origin of a raw material used to make pottery, and by association, the origin of the pottery itself. This is particularly true for rock temper, which can be readily associated with specific geologic sources. For example, pottery that is tempered with igneous rock derived from andesite or diorite porphyries is presumed to originate from the Mesa Verde region of southwestern Colorado and southeastern Utah (Wilson and Blinman 1995:36). In contrast, pottery with igneous-rock temper that is characterized by the presence of trachyte and biotite mica is presumed to originate from the Chuska Mountains region of northwestern New Mexico. Thus, the presence of pottery tempered with nonlocal temper materials such as trachyte is indicative of interregional pottery exchange.

We use two analytical techniques in our examination of pottery temper in this report. In the first technique (described in Ortman et al. 2005), an analyst uses a binocular microscope to examine a fresh cross-section break on a sherd. The sherds selected for analysis using this technique derive from the same samples of white-ware bowl rim sherds and cooking-jar rim sherds selected for rim-arc studies.

The second technique, petrographic analysis, is much more intensive. Petrography uses polarized light to examine a "thin-section" of a sherd (Shepard 1961:139–140, 157–159). A petrographic microscope allows the analyst to determine how the transparent material in a thin-section affects the polarized light that passes through it. Substances in a thin-section affect polarized light in ways that are specific to the substance being examined.

Temper data yielded by the first technique are discussed below, and are considered in terms of their ware, form, and component. Results from the second analysis technique, petrographic analysis, are presented after the discussions of the binocular microscope analysis data.

Binocular Analysis of Temper from White Ware Bowls and Gray Ware Jars by Component

Table 10.38 shows the distributions of dominant temper types in white ware bowls through time. Figure 10.9 presents a graphic representation of the percentages of these materials. Most of the components are characterized by high frequencies of igneous-rock and sherd temper, with the former predominating over the latter in most cases. During the Late Pueblo II component, however, sherd temper is slightly dominant over igneous-rock temper. Figure 10.9 suggests that multi-lithic sand temper is also fairly common during the Early Pueblo I component; however, this is probably due to the small sample size of sherds from that time period.

Table 10.39 shows the distributions of dominant temper types in corrugated jars through time. Figure 10.10 illustrates the percentages of the temper types. Clearly, igneous rock is the favored material across all of these periods. There does seem to be a general trend in the increasing frequency of igneous rock, and a concomitant decrease in crushed-sandstone temper, from the Pueblo II to the Pueblo III periods.

Petrographic Analysis of a Sample of Sherds from Shields Pueblo

Nineteen pottery sherds from Shields Pueblo were selected for petrographic analysis. The primary goal of the analysis was to check determinations made for temper materials with the naked eye and binocular microscope. For example, laboratory staff identified pottery sherds with mica, which is identifiable macroscopically, as being possible Chuska-ware sherds. Several sherds with this temper material were selected to see if other materials, such as trachyte, might be present to verify our determinations that these sherds are nonlocal pottery types. Several nonlocal pottery sherds, identified as having trachyte temper, were selected for petrographic analysis to further characterize the possible source of the temper. Finally, several Mesa Verde–ware sherds were selected to better describe the variation in local temper materials. For example, on the basis of binocular observation, two sherds were determined to contain metamorphic rock and sandstone; we wished to confirm this determination independently.

Petrographic analysis results corroborate the unaided macroscopic observations as well as those made with a binocular microscope. The most salient point is that while mica is present in many of the sherds in this sample, the other temper materials in these sherds are consistent with local temper materials. The most common igneous temper is augite and/or hornblende diorite, a material that is common to Sleeping Ute Mountain and its associated drainages. However, there is evidence of variation in locally produced pottery. For example, the two sherds that had been determined to have metamorphic rock and sandstone under binocular observation were further characterized by petrographic analysis as containing “fossiliferous/non-fossiliferous chert/silicified limestone.”

The three sherds that had been typed as nonlocal pottery on the basis of the presence of trachyte temper were also described more thoroughly. These sherds also included biotite mica. Based on previous studies (Mills et al. 1997), analyses indicate that this temper is most consistent with the Beautiful Mountain trachyte source in the Chuska Mountains of northwestern New Mexico/northeastern Arizona. However, recent work by Gerhardt et al. (2006) indicates that sources of minette, which yield minerals consistent with those found in trachyte-tempered pottery, occur locally in the dikes and diatremes in and around Mesa Verde National Park. Thus, it is possible that the three “nonlocal” sherds described here, and other “nonlocal” sherds with trachyte temper, may actually have local origins.

Temper Data from Southwestern Colorado

Table 10.40 and Table 10.41 cross-reference pottery temper profiles of sites from various geographic locales in southwestern Colorado through time. Both tables list the "sites/site groups" by their distance from the Sleeping Ute Mountain, the likely source for most of the igneous rock temper, with the closest sites at the top of the table ("Ute" and "Sand Canyon") and the most distant site locations at the bottom of the table ("Cahone Mesa" and "Dove Creek"). Ortman (2000a) has discussed the positive correlation between geographic proximity to igneous rock sources and the frequency of igneous rock as white-ware pottery temper from assemblages that date from the late thirteenth century.

The gray-ware pottery assemblage at Shields Pueblo is somewhat distinguished by its high frequency of igneous-rock temper, particularly for the Late Pueblo III component (see Table 10.40). Similar high frequencies during the Pueblo II and Early Pueblo III periods have also been reported for sites excavated near what is now the Ute Mountain Ute reservation. However, Late Pueblo III component assemblages from sites located on the Ute Mountain Ute reservation and from nearby Sand Canyon Pueblo have relatively depressed igneous-rock temper frequencies compared to Shields Pueblo. Moving farther to the north and west, there is the general tendency for the frequency of igneous-rock temper to decline dramatically, and to be replaced by metamorphosed rock or sandstone. However, in that cluster of early sites identified within the "Dove Creek" area, the frequency of igneous-rock temper picks up again rather dramatically. Since the sites from this cluster are fairly close to those on "Cahone Mesa," it is possible that methodological differences between the analyses for these projects account for these disparities, or that materials were identified differently. It is also possible, however, that a material source for igneous rock (perhaps the Dolores river valley) was available to the occupants of the "Dove Creek" cluster but was not as available to the nearby "Cahone Mesa" group.

As noted earlier, the white-ware pottery assemblage from Shields Pueblo exhibits high frequencies of both igneous-rock and sherd temper, with the former dominant over the latter (see Table 10.41). Pueblo II and Early Pueblo III components from the Ute Mountain Ute reservation group also have relatively high frequencies of these temper material types, but with sherd temper dominant over igneous temper. In the Late Pueblo III component from this group, however, sherd temper becomes strongly dominant, and the frequency of igneous-rock temper drops dramatically. A similar temper signature is apparent for Sand Canyon Pueblo. However, Ortman (2000a:Table 21) documents the higher occurrence of igneous-rock temper in contemporaneous hamlets within the Sand Canyon locality. Of these, however, Shields Pueblo still has the highest occurrence of igneous temper. Ranging farther afield, igneous temper declines with frequency just as with cooking pottery. Within the "Cahone Mesa" and "Dove Creek" groups, igneous temper occurs with considerable frequency in the Basketmaker III period, but declines in later centuries. Sandstone is a fairly common temper type during the Basketmaker III and Pueblo I periods, but is replaced by pottery temper during the Pueblo II period. However, the use of sherd temper seems fairly well established during the Pueblo I period in the Shields Pueblo assemblage.

Basket-Impressed Pottery

This section presents the results of an analysis of the basket-impressed pottery recovered from Shields Pueblo. The analysis was designed to collect data from the basket impressions to illuminate prehistoric basketry technology. Of the many thousands of sherds that were analyzed from Shields Pueblo, only 176 were basket-impressed. Some of these sherds refit across old breaks. These were counted as single sherds, yielding a total of 153 basket-impressed sherds.

Basket impressions on pottery vessels are usually found on the exteriors of bowl sherds. To make a basket-impressed bowl, the clay coils were pressed into the interior of a bowl-shaped basket. Once the clay bowl was completely constructed, but still in the basket, the interior of the bowl was scraped and smoothed. This surface could have been slipped, polished, and painted at this time or after the vessel had dried and was removed from the basket. In most cases, the exterior of the bowl was not slipped, painted, or polished; however, there are a few examples where slip and paint were applied to the basket-impressed exterior.

Basket-impressed pottery has been documented and discussed in other collections from the Four Corners region (e.g., Morris and Burgh 1941; Oppelt 1999). Morris and Burgh (1941) note that the pottery-impressed sherds range in age from the Basketmaker through the Pueblo III periods. Oppelt (1999) presents descriptive pottery and basketry data from approximately 100 basket-impressed sherds and 14 whole and partial vessels from the Mesa Verde region. Although basket-impressed pottery sherds have not been found in large numbers in any pottery assemblage, basket-impressed sherds are still more common than the prehistoric baskets in which the pottery vessels had been made. Through the analysis of these sherds, we have an opportunity to learn more about prehistoric basketry technology and its development. The analysis focuses on coiled basketry since, as discussed below, the great majority of basket-impressed pottery from Shields Pueblo documents this particular basketry technique.

Basket-Impressed Pottery Analysis Terminology

All basket-impressed sherds from Shields Pueblo were assigned "item numbers" during pottery analysis to facilitate further study (see Ortman et al. 2005). The analysis designed for basket-impressed pottery was to collect data about the baskets in which the bowls had been made. All of the analysis was done by Crow Canyon laboratory staff and adult research program participants.

The analysis of basket-impressed pottery is based on classifications of prehistoric basketry. Three basic kinds of basketry construction techniques are frequently distinguished: plaited, twined, and coiled (e.g., Adovasio 1977). Plaited baskets are made of thin plant strips that are woven over and under each other. Twined basketry is made with horizontal elements that are woven around parallel, stationary, vertical elements. Coiled baskets are made of horizontal elements, referred to as the "foundation," that are held together by vertical elements, referred to as the "stitching." At Shields Pueblo, only a few bowl sherds are from vessels made in plaited baskets and none were made in twined baskets. The majority of basket-impressed sherds are from bowls made in coiled baskets.

Construction techniques for coiled baskets vary by the number and kinds of material used to make a basket's foundation (e.g., one-rod and two-rod) and the arrangement of the foundation elements that make up the coils (e.g., stacked rods and bunched rods) (Adovasio 1977:60–72). For the basket-impressed sherds, we simplified the coiled-basketry classifications to a short list of types that we felt would create a distinctive, identifiable appearance on a pottery vessel. These types, which are described further below, are one-rod, stacked, and bunched.

A one-rod basket was made with one element as the foundation. The basket was started with a single piece of foundation material that was coiled, with thin strips of vegetal material (such as yucca) used to stitch the coils together. Coiling continued until the desired size was achieved. The foundation material was often a split rod (usually willow or sumac), a bundle of vegetal material (such as shredded juniper bark), or a rod surrounded by a bundle. One-rod baskets are distinctive. The height of the foundation is low, the indentation between the coils (or coil depth) is pronounced, and the indentation is usually deeper than other foundation types.

A stacked foundation was made by placing several horizontal elements on top of one another, yielding one foundation coil. This foundation type is distinguished by tall coils and long stitches. The coil height is much greater than the height of a one-rod foundation, but the coil depth is shallower.

The construction techniques used to make bunched foundations are variable, but usually involved the placement of foundation materials next to each other and on top of one another. In cross-section, bunched foundations often appear triangular (Adovasio 1977:Figure 69). Baskets with bunched foundations might have thicker walls than the one-rod or stacked-foundation baskets. Coil height and stitch length of baskets with bunched foundations are intermediate to baskets with one-rod and stacked foundations, but coil depth is generally greater than in baskets with stacked and one-rod foundations.

Finally, coiled baskets are distinguished further by their "stitching" technique, which is the process by which the horizontal coils were bound together by vertical elements. We recognize two types of stitching techniques in our analysis of basket-impressed pottery: "interlocking" and "non-interlocking" (Adovasio 1977:62). An interlocking stitch produces a diagonal pattern in the sides of the basket, whereas a non-interlocking stitch produces a parallel pattern in the weave. These patterns are distinctive on basket-impressed pottery as well. We use a third stitch type, "unknown," to describe those instances where the stitch type could not be discerned. This is used when basket-impressions are obscured by smearing (which occurred during construction of the pottery vessel), use wear, or weathering.

Basket-Impressed Pottery Analysis Data

Table 10.42 provides the counts and frequencies of basket-impressed sherds by pottery type. The highest percentages of basket-impressed sherds were typed as Late White Unpainted and Late White Painted, indicating that basket-impressed vessels were made during the Pueblo II and/or Pueblo III periods. The next most-frequent pottery type was Mancos Black-on-white, a type common to the Pueblo II period. Pottery types identified with the Pueblo III period, including Pueblo III White Painted and McElmo Black-on-white, occur in very low frequencies.

Mesa Verde Black-on-white, the most common formal type in the Late Pueblo III period, was not documented. These results suggest that pottery made within baskets was most common at Shields Pueblo during the Pueblo II period.

Table 10.43 shows the frequencies of paint types for those basket-impressed sherds that could be assigned to temporal period. The table indicates that most basket-impressed sherds are unpainted. However, of those that are painted, the majority are decorated with carbon paint. As discussed earlier in this chapter, the use of carbon paint suggests manufacture in the Late Pueblo II through Pueblo III periods in the Sand Canyon locality. Mineral paint was used less frequently in this area from the Late Pueblo II through Pueblo III periods. Given the pottery-type and paint-type frequencies, we suggest that most of the basket-impressed pottery retrieved from Shields Pueblo derived from the Late Pueblo II period.

Temper was examined microscopically on five bowl rim sherds (PD 879, FS 2, Item 8; PD 1039, FS 27, Item 1; PD 1149, FS 5, Item 20; PD 1168, FS 29, Item 11; and PD 1900, FS 1, Item 13). Four of the sherds have crushed-sherd and igneous-rock temper, and the fifth sherd (PD 1149, FS 5, Item 20) has quartz sand in addition to crushed-sherd and igneous-rock temper. Although this is a very small sample, these temper types suggest that the basket-impressed vessels had been made locally.

Table 10.44 shows the foundation types and stitching techniques of the coiled, basket-impressed sherds from Shields Pueblo. The most common foundation type in this assemblage is the bunched foundation. Although the stitch technique could not be identified on many of the sherds, the non-interlocking stitch does occur with some frequency. Other coiled foundation types, including the one-rod and stacked-rod types, were found but in small numbers. The two sherds from Shields Pueblo with indications of plaited basketry are not included in Table 10.44.

Comparative Basketry Data

Merewether and Ortman (2005) assembled a data set of basketry information from sites in the Four Corners region. Their data derive from Morris and Burgh (1941), Adovasio (1977), Horn et al. (2003), and Adovasio and Gunn (1986). In addition, Merewether and Ortman summarize the data from two burned baskets (one plaited and one coiled) from Albert Porter Pueblo (Ryan 2003). These data are presented here to compare against the basket-impressed pottery data from Shields Pueblo.

Table 10.45 summarizes some of the basketry data gathered by Morris and Burgh (1941) from sites scattered across the northern Southwest. Table 10.46 summarizes basketry data from a body of specific sites, including: Antelope House in Canyon de Chelly (Adovasio and Gunn 1986): Horse Rock Ruin, a dry cave site in Utah (Adovasio 1977); Site 5MT5498, a small pueblo near Dolores, Colorado (Horn et al. 2003), and Albert Porter Pueblo (Site 5MT123) in southwestern Colorado (Ryan 2003). The relative high frequency of plaited-weave artifacts is apparent in both tables. As noted earlier, this basketry type is only rarely associated with the basket-impressed sherds from Shields Pueblo. The frequency of plaited-weave artifacts, or fragments of these artifacts, reflects the great variety of artifact types that the plaited-weave technique is associated with, including bands, bags, mats, ring baskets, pot rests, and tumps (Adovasio and Gunn

1986:329–367). Ring baskets are probably the plaited-weave artifact type used most frequently in pottery making (when forming pottery in a plaited-weave object). Higher relative occurrences of the plaited-weave technique may also indicate the greater absolute numbers of artifacts that are made with the plaited weave relative to the other weaving techniques. Finally, the plaited-weave technique probably yields the highest surface area per unit of labor invested, relative to other weaving techniques.

The data compiled by Morris and Burgh (1941) include a large number of baskets and basket fragments from contexts that date from the Basketmaker and Pueblo III periods; however, few contexts from the Pueblo I or Pueblo II periods were documented. Table 10.45 indicates that the most common foundation-stitch combination from the Basketmaker periods is the two-rod and bundle bunched, non-interlocking stitch; excepting the plaited-weave technique, the next most-common foundation-stitch combination is the one-rod, interlocking stitch. The Morris and Burgh sample suggests that during the Pueblo III period, baskets were made with a larger variety of foundation-stitch combinations than in the Basketmaker III period. The most common foundation-stitch combinations in the Pueblo III period are three-rod bunched, non-interlocking and the two-rod and bundle bunched, non-interlocking stitch.

Ignoring the large numbers of plaited artifacts, Table 10.46 also indicates a higher frequency of bunched, non-interlocking construction techniques relative to other techniques. This tentatively supports the notion of a generally preferred method for making baskets in the later Pueblo periods. However, it also underscores the diversity in construction techniques implemented in during this later time interval.

A Comparison of Basketry Data with Basket-Impressed Sherd Data

Figure 10.11 illustrates the frequencies of basketry-construction techniques represented by basket-impressed sherds from Shields Pueblo relative to the frequency of construction techniques presented earlier in Table 10.46. To provide larger sample sizes, the temporal data from Table 10.46 have been collapsed into two time periods: Pueblo I/Pueblo II and Pueblo III.

The frequencies illustrated in Figure 10.11 show how the fragmentary nature of pottery obscures the identification of stitching as it is used in bunched basketry. Though tentative, the frequencies of one-rod, interlocking stitch and bunched, interlocking stitch foundations suggest that the Shields Pueblo basket-impressed pottery assemblage is probably more representative of a Pueblo I/Pueblo II basketry assemblage than a Pueblo III assemblage.

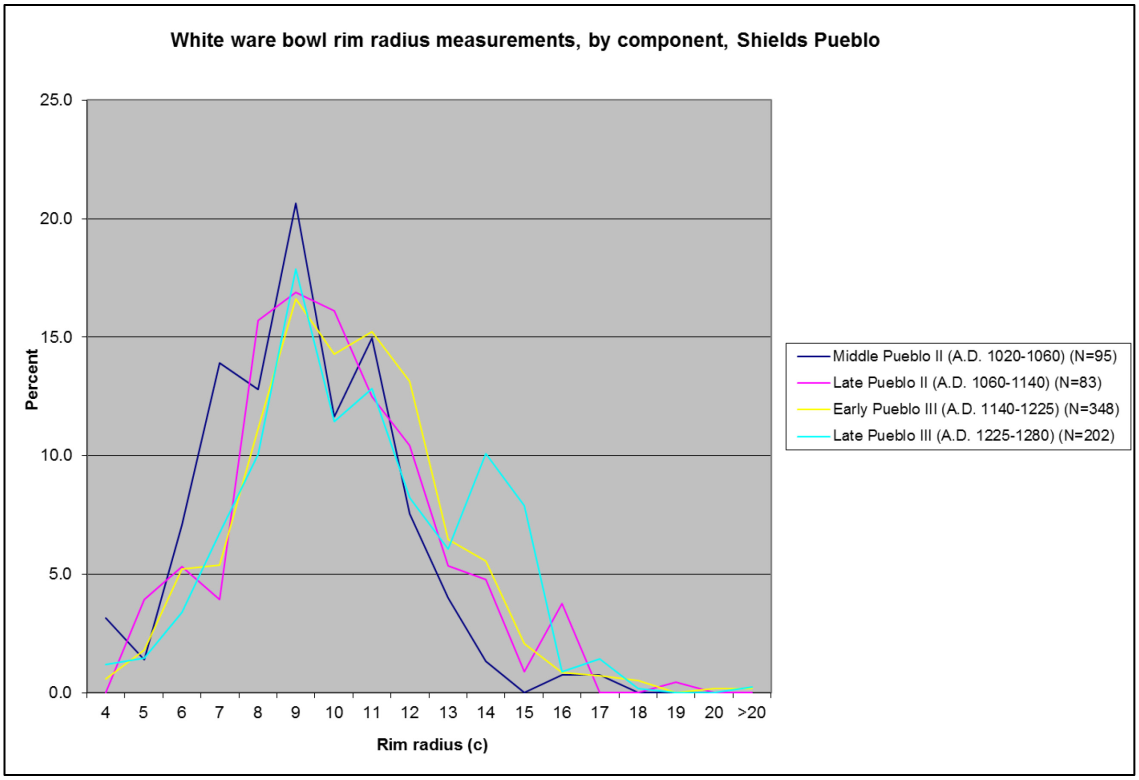

Figure 10.1. Rim radius measurements of white ware bowls, by component, Shields Pueblo.

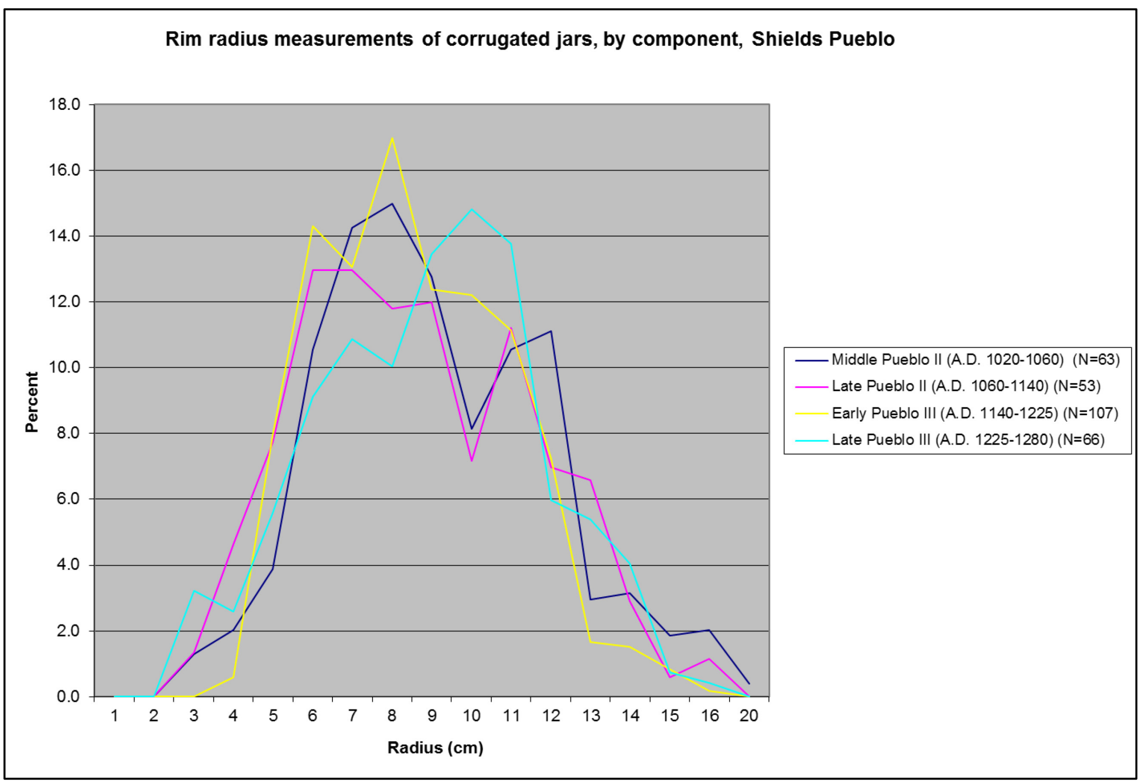

Figure 10.2. Rim radius measurements of corrugated jars, by component, Shields Pueblo.

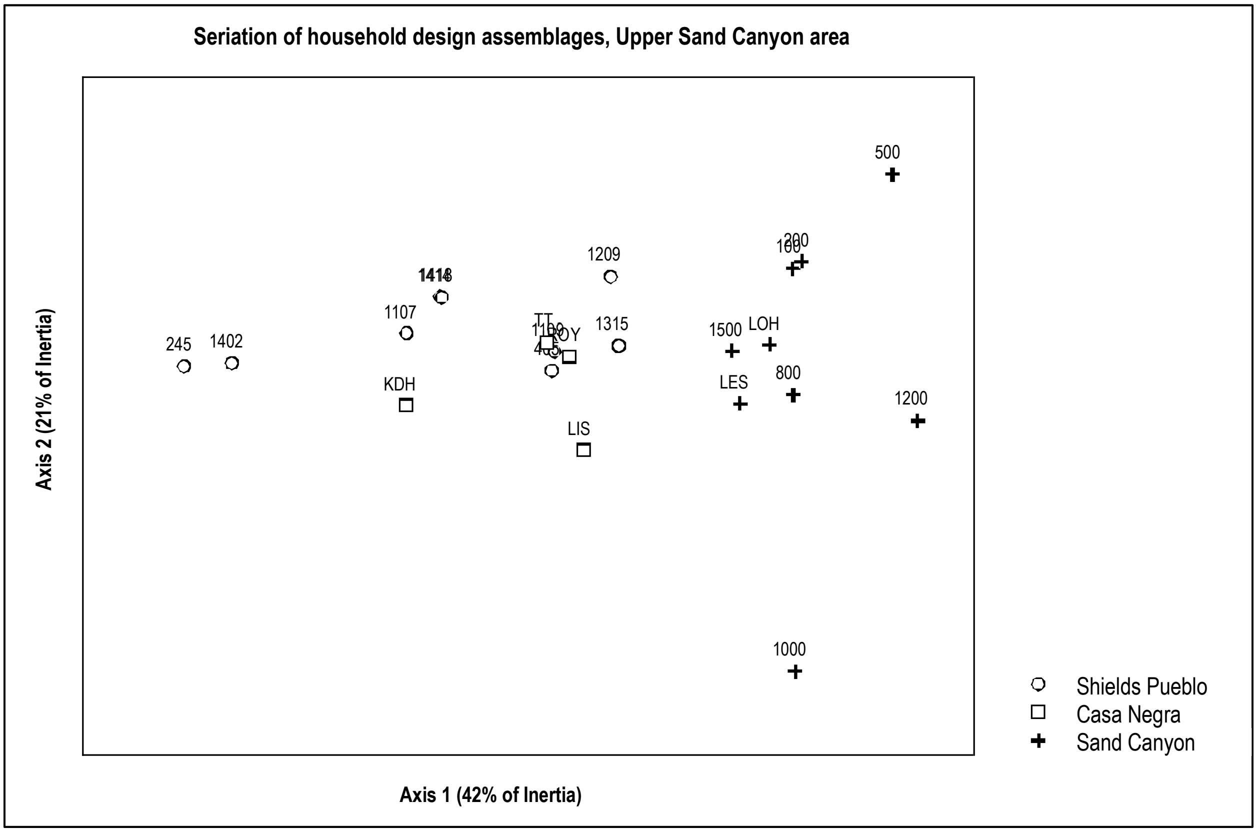

Figure 10.3. Seriation of household design assemblages, Upper Sand Canyon area.

Figure 10.4. Unfired ladle handle, Shields Pueblo.

Figure 10.5. Temper (Mesh 7) from PD 2148, FS 8, PL 34, Shields Pueblo. The temper materials depicted here consist of crushed igneous rock only.

Figure 10.6. Temper (Mesh 7), PD 2107, FS 26, PL 14, Shields Pueblo. Temper material consists of crushed, gray ware pottery that is itself tempered, as well as crushed igneous rock.

Figure 10.7. Temper (Mesh 7), PD 2107, FS 27, PL 14, Shields Pueblo.

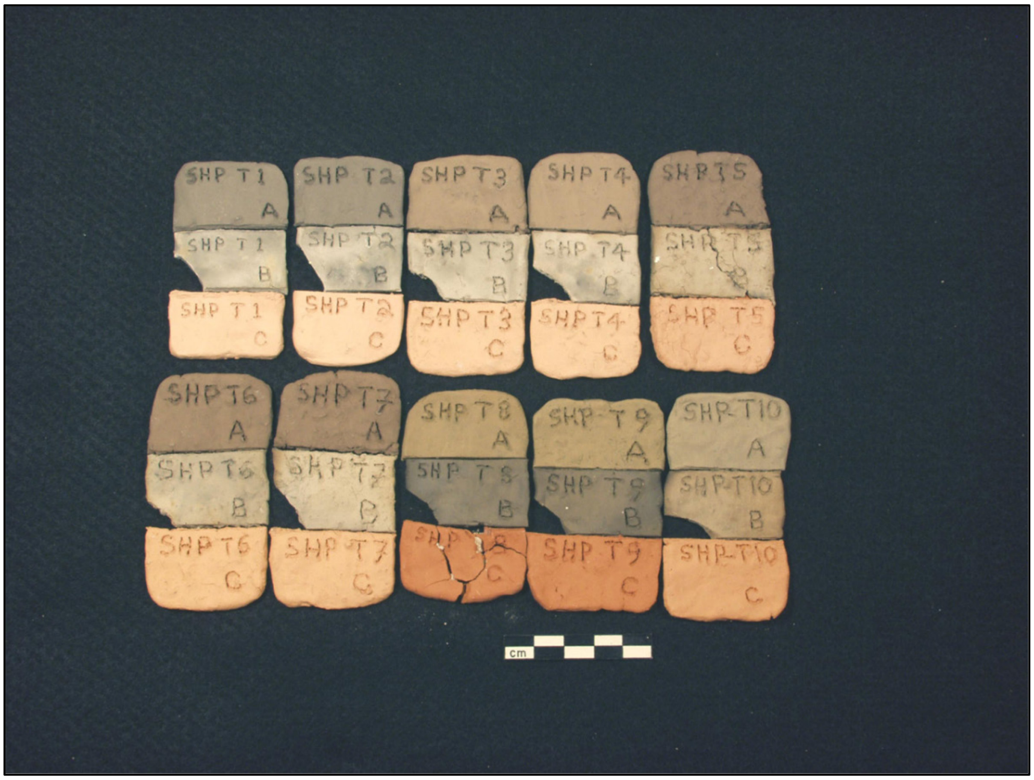

Figure 10.8. Clay tiles, Shields Pueblo. Top, left to right: Tiles 1–5; Bottom, left to right: Tiles 6–10.

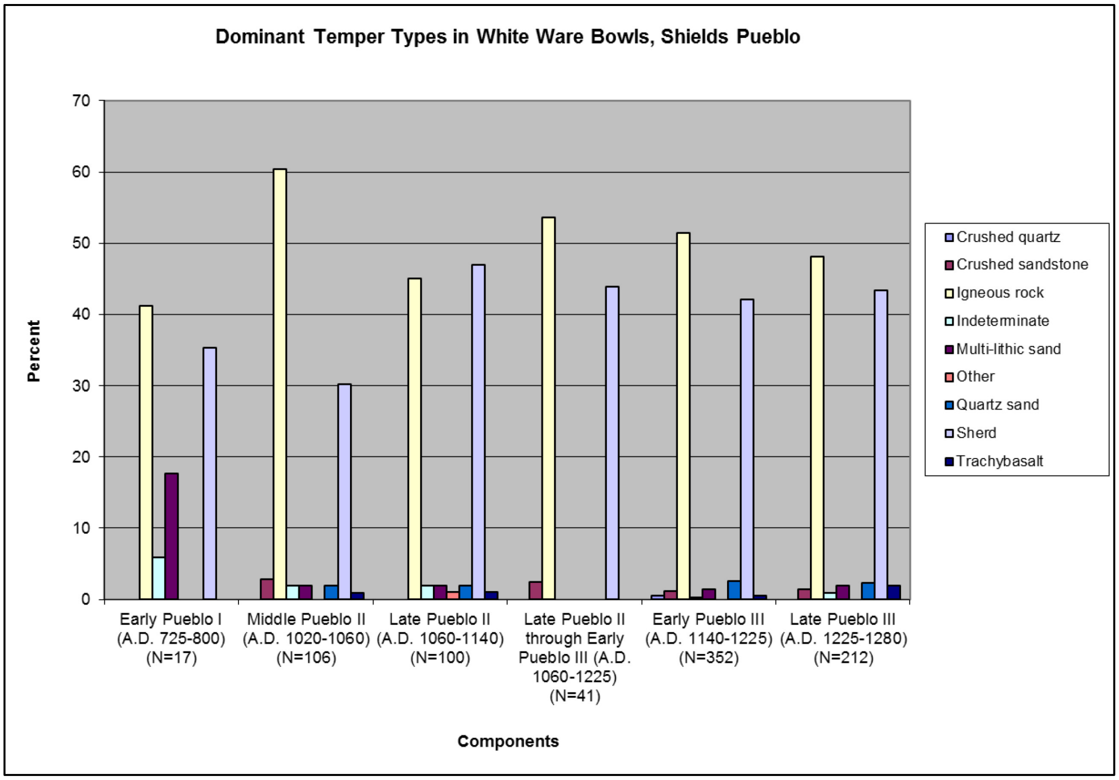

Figure 10.9. Dominant temper types in white ware bowls, Shields Pueblo.

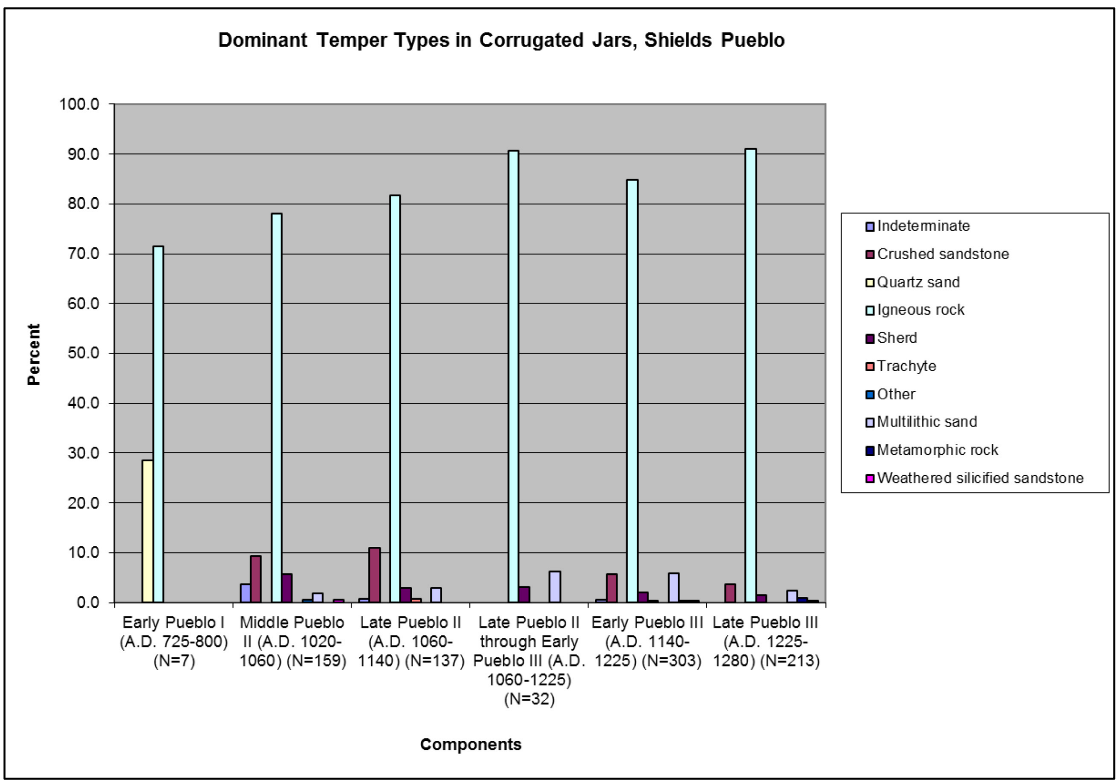

Figure 10.10. Dominant temper types in corrugated jars, Shields Pueblo.

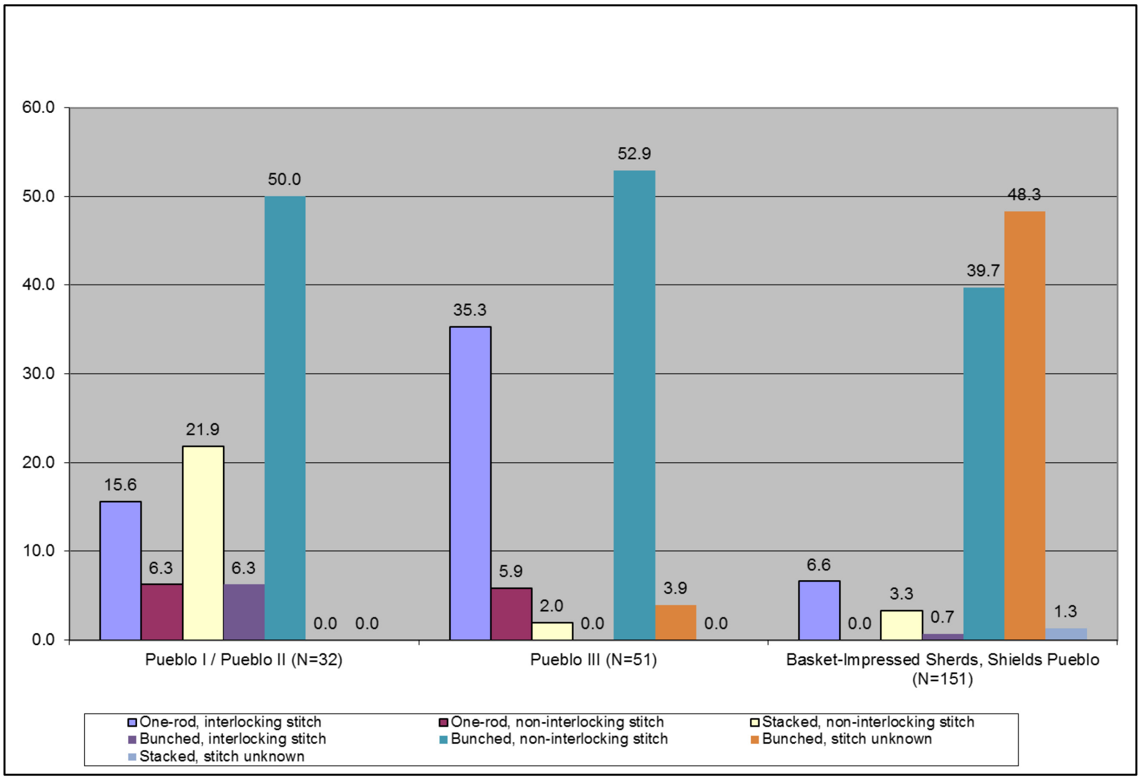

Figure 10.11. Comparison of basketry data from select Pueblo period sites with basket-impressed pottery from Shields Pueblo by percentage of occurrence.

Table 10.1. Average Sherd Weights from Selected Sites, Southwestern Colorado.

Site Number	Site Name	Total Sherd Assemblage		Average Sherd Wt. (g)
		N	Total Wt. (g)	
5MT765	Sand Canyon Pueblo	127,673	1,464,639.4	11.5
5MT11842	Woods Canyon Pueblo	22,504	142,481.7	6.3
5MT1825	Castle Rock Pueblo	41,943	265,142.3	6.3
5MT3807	Shields Pueblo	225,833	1,250,717.9	5.5
5MT5	Yellow Jacket Pueblo	66,229	306,433.3	4.6

Table 10.2. Total Pottery Sherd Counts and Weights, by Type, Shields Pueblo.

Pottery Ware and Type	N	% by Count	Wt. (g)	% by Wt.
MUD WARE				
Basketmaker Mudware	9	0.00	84.9	0.01
PLAIN GRAY WARE				
Chapin Gray	344	0.15	2,839.6	0.23
Moccasin Gray	9	0.00	46.0	0.00
Mancos Gray	22	0.01	149.3	0.01
Indeterminate Neckbanded Gray	3	0.00	22.7	0.00
Indeterminate Local Gray	14,600	6.47	72,679.8	5.81
CORRUGATED GRAY WARE				
Mancos Corrugated Gray	1,060	0.47	10,926.0	0.87
Mesa Verde Corrugated Gray	1,812	0.80	31,387.0	2.51
Mummy Lake Gray	9	0.00	273.4	0.02
Indeterminate Local Corrugated Gray	105,556	46.74	515,002.8	41.18
WHITE WARE				
Chapin Black-on-white	159	0.07	1,601.0	0.13
Piedra Black-on-white	86	0.04	764.8	0.06
Cortez Black-on-white	112	0.05	1,115.9	0.09
Mancos Black-on-white	7,864	3.48	76,314.7	6.10
McElmo Black-on-white	4,709	2.09	72,530.9	5.80
Mesa Verde Black-on-white	1,965	0.87	30,359.8	2.43
Early White Painted	145	0.06	666.2	0.05
Early White Unpainted	1,440	0.64	6,815.9	0.54
Pueblo II White Painted	462	0.20	2,662.7	0.21
Pueblo III White Painted	9,238	4.09	62,778.4	5.02
Late White Painted	23,407	10.37	107,618.7	8.61
Late White Unpainted	49,380	21.87	246,790.7	19.73
Indeterminate Local White Painted	159	0.07	397.2	0.03
Indeterminate Local White Unpainted	753	0.33	1,966.1	0.16

Pottery Ware and Type	N	% by Count	Wt. (g)	% by Wt.
RED WARE				
Abajo Red-on-orange	20	0.01	106.0	0.01
Bluff Black-on-red	12	0.01	54.7	0.00
Deadmans Black-on-red	64	0.03	196.6	0.02
Indeterminate Local Red Painted	40	0.02	87.3	0.01
Indeterminate Local Red Unpainted	133	0.06	375.1	0.03
NONLOCAL				
Other Gray Nonlocal	8	0.00	142.5	0.01
Other Red Nonlocal	420	0.19	2,056.5	0.16
Other White Nonlocal	49	0.02	372.1	0.03
Polychrome	36	0.02	353.6	0.03
UNKNOWN				
Unknown Gray	104	0.05	124.6	0.01
Unknown Red	55	0.02	109.7	0.01
Unknown White	18	0.01	34.2	0.00
Unknown Pottery	1,564	0.69	839.0	0.07
TOTAL	225,826	100.00	1,250,646.4	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.3. Pottery Sherd Counts by Pottery Type and Temporal Component, Shields Pueblo.

(a) Table 10.3, Early Pueblo I through Early Pueblo III

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	N	%	N	%	N	%	N	%	N	%
MUD WARE										
Basketmaker Mudware	1	0.06			1	0.00			2	0.00
PLAIN GRAY WARE										
Chapin Gray	14	0.82	51	0.61	21	0.06	5	0.13	9	0.02
Moccasin Gray	1	0.06			5	0.01			1	0.00
Mancos Gray					4	0.01	3	0.08	2	0.00
Indeterminate Neckbanded Gray	1	0.06								
Indeterminate Local Gray	417	24.44	958	11.44	3,479	9.86	274	6.96	1,646	3.80
CORRUGATED GRAY WARE										
Mancos Corrugated Gray	8	0.47	124	1.48	211	0.60	14	0.36	189	0.44
Mesa Verde Corrugated Gray	14	0.82	23	0.27	342	0.97	24	0.61	443	1.02
Mummy Lake Gray					7	0.02			2	0.00
Indeterminate Local Corrugated Gray	546	32.00	3,804	45.43	15,273	43.27	1,820	46.23	21,227	49.04
WHITE WARE										
Chapin Black-on-white	1	0.06	62	0.74	24	0.07	3	0.08	9	0.02
Piedra Black-on-white	6	0.35	16	0.19	22	0.06	1	0.03	5	0.01
Cortez Black-on-white			21	0.25	36	0.10	1	0.03	13	0.03
Mancos Black-on-white	44	2.58	544	6.50	2,282	6.46	172	4.37	1,214	2.80
McElmo Black-on-white	33	1.93	36	0.43	795	2.25	124	3.15	1,284	2.97
Mesa Verde Black-on-white	5	0.29	10	0.12	67	0.19	34	0.86	718	1.66
Early White Painted	1	0.06	47	0.56	35	0.10	2	0.05	13	0.03
Early White Unpainted	79	4.63	372	4.44	265	0.75	20	0.51	49	0.11
Pueblo II White Painted	2	0.12	101	1.21	88	0.25	6	0.15	83	0.19
Pueblo III White Painted	52	3.05	98	1.17	818	2.32	163	4.14	2,365	5.46
Late White Painted	107	6.27	651	7.77	4,133	11.71	421	10.69	4,434	10.24
Late White Unpainted	339	19.87	1,357	16.20	7,069	20.02	802	20.37	9,050	20.91

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	N	%	N	%	N	%	N	%	N	%
Indeterminate Local White Painted	3	0.18	12	0.14	23	0.07	1	0.03	20	0.05
Indeterminate Local White Unpainted	3	0.18	20	0.24	78	0.22	2	0.05	137	0.32
RED WARE										
Abajo Red-on-orange	6	0.35	2	0.02	4	0.01			2	0.00
Bluff Black-on-red			4	0.05	3	0.01			2	0.00
Deadmans Black-on-red			8	0.10	17	0.05	2	0.05	7	0.02
Indeterminate Local Red Painted	4	0.23	6	0.07	3	0.01	1	0.03	2	0.00
Indeterminate Local Red Unpainted	5	0.29	14	0.17	26	0.07	7	0.18	10	0.02
NONLOCAL										
Other Gray Nonlocal			2	0.02	3	0.01			2	0.00
Other Red Nonlocal	1	0.06	19	0.23	91	0.26	4	0.10	58	0.13
Other White Nonlocal			5	0.06	14	0.04	3	0.08	8	0.02
Polychrome					3	0.01			1	0.00
UNKNOWN										
Unknown Gray					21	0.06			3	0.01
Unknown Red	2	0.12	4	0.05	16	0.05	2	0.05	3	0.01
Unknown White			1	0.01	2	0.01			1	0.00
Unknown Pottery	11	0.64	2	0.02	20	0.06	26	0.66	275	0.64
TOTAL	1,706	100.00	8,374	100.00	35,301	100.00	3,937	100.00	43,289	100.00
% of Total Site Assemblage		0.76		3.71		15.66		1.75		19.20

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 10.3, Late Pueblo III, Middle PII–Late PIII, Unassigned, and Total

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%
MUD WARE								
Basketmaker Mudware					5	0.00	9	0.00
PLAIN GRAY WARE								
Chapin Gray					243	0.20	343	0.15
Moccasin Gray					2	0.00	9	0.00
Mancos Gray					13	0.01	22	0.01
Indeterminate Neckbanded Gray	1	0.01			1	0.00	3	0.00
Indeterminate Local Gray	437	3.45	2	5.13	7,373	6.13	14,586	6.47
CORRUGATED GRAY WARE								
Mancos Corrugated Gray	63	0.50			448	0.37	1,057	0.47
Mesa Verde Corrugated Gray	254	2.01			712	0.59	1,812	0.80
Mummy Lake Gray							9	0.00
Indeterminate Local Corrugated Gray	6,844	54.03	20	51.28	55,820	46.45	10,5354	46.72
WHITE WARE								
Chapin Black-on-white	2	0.02			58	0.05	159	0.07
Piedra Black-on-white	2	0.02			34	0.03	86	0.04
Cortez Black-on-white	2	0.02			39	0.03	112	0.05
Mancos Black-on-white	270	2.13	1	2.56	3,326	2.77	7,853	3.48
McElmo Black-on-white	338	2.67			2,091	1.74	4,701	2.08
Mesa Verde Black-on-white	281	2.22			845	0.70	1,960	0.87
Early White Painted					47	0.04	145	0.06
Early White Unpainted	39	0.31			616	0.51	1,440	0.64
Pueblo II White Painted	10	0.08			172	0.14	462	0.20
Pueblo III White Painted	667	5.27			5,064	4.21	9,227	4.09
Late White Painted	1,071	8.46	4	10.26	12,564	10.45	23,385	10.37
Late White Unpainted	2,285	18.04	12	30.77	28,412	23.64	49,326	21.87
Indeterminate Local White Painted	3	0.02			97	0.08	159	0.07
Indeterminate Local White Unpainted	23	0.18			490	0.41	753	0.33
RED WARE								
Abajo Red-on-orange					5	0.00	19	0.01

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%
Bluff Black-on-red					3	0.00	12	0.01
Deadmans Black-on-red					30	0.02	64	0.03
Indeterminate Local Red Painted	1	0.01			23	0.02	40	0.02
Indeterminate Local Red Unpainted	1	0.01			70	0.06	133	0.06
NONLOCAL								
Other Gray Nonlocal					1	0.00	8	0.00
Other Red Nonlocal	23	0.18			224	0.19	420	0.19
Other White Nonlocal	2	0.02			17	0.01	49	0.02
Polychrome	25	0.20			7	0.01	36	0.02
UNKNOWN								
Unknown Gray	4	0.03			76	0.06	104	0.05
Unknown Red	6	0.05			22	0.02	55	0.02
Unknown White					14	0.01	18	0.01
Unknown Pottery	12	0.09			1,216	1.01	1,562	0.69
TOTAL	12,666	100.00	39	100.00	120,180	100.00	225,492	100.00
% of Total Site Assemblage		5.62		0.02		53.30		100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.4. Pottery Sherd Weights by Pottery Type and Temporal Component, Shields Pueblo.

(a) Table 10.4, Early Pueblo I through Early Pueblo III

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	N	%	N	%	N	%	N	%	N	%
MUD WARE										
Basketmaker Mudware	13.1	0.13			14.6	0.01			7.6	0.00
PLAIN GRAY WARE										
Chapin Gray	248.2	2.48	983.9	1.53	213.6	0.09	33.4	0.14	65.2	0.02
Moccasin Gray	4.0	0.04			30.3	0.01			6.2	0.00
Mancos Gray					47.8	0.02	11.2	0.05	12.2	0.00
Indeterminate Neckbanded Gray	3.8	0.04								
Indeterminate Local Gray	2,343.1	23.40	7,047.5	10.94	22,832.1	9.49	1,466.4	6.13	9,450.0	2.96
CORRUGATED GRAY WARE										
Mancos Corrugated Gray	39.1	0.39	1,807.9	2.81	2,390.7	0.99	120.3	0.50	2,088.8	0.65
Mesa Verde Corrugated Gray	460.1	4.60	549.1	0.85	6,657.2	2.77	312.3	1.31	9,099.3	2.85
Mummy Lake Gray					234.8	0.10			38.6	0.01
Indeterminate Local Corrugated Gray	2,606.0	26.03	27,314.6	42.41	91,362.9	37.99	9,754.3	40.78	137,456.2	43.04
WHITE WARE										
Chapin Black-on-white	1.0	0.01	927.8	1.44	183.7	0.08	7.9	0.03	30.9	0.01
Piedra Black-on-white	71.7	0.72	175.4	0.27	267.8	0.11	18.9	0.08	41.6	0.01
Cortez Black-on-white			365.1	0.57	320.5	0.13	6.8	0.03	112.3	0.04
Mancos Black-on-white	330.1	3.30	7,370.6	11.44	26,882.1	11.18	1,616.6	6.76	13,942.8	4.37
McElmo Black-on-white	520.2	5.20	437.2	0.68	12,664.5	5.27	2,033.2	8.50	23,945.7	7.50
Mesa Verde Black-on-white	126.6	1.26	83.2	0.13	941.5	0.39	516.5	2.16	12,157.6	3.81
Early White Painted	0.5	0.00	303.5	0.47	148.6	0.06	7.5	0.03	49.9	0.02
Early White Unpainted	643.2	6.42	2,447.9	3.80	1,277.2	0.53	79.2	0.33	213.5	0.07
Pueblo II White Painted	7.9	0.08	821.3	1.28	525.1	0.22	15.9	0.07	510.9	0.16
Pueblo III White Painted	425.0	4.24	593.8	0.92	5,877.8	2.44	1,293.8	5.41	20,579.0	6.44
Late White Painted	304.7	3.04	3,630.4	5.64	23,603.0	9.81	1,991.3	8.32	24,999.3	7.83
Late White Unpainted	1,778.2	17.76	8,989.8	13.96	42,664.0	17.74	4,556.6	19.05	63,563.0	19.90

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	N	%	N	%	N	%	N	%	N	%
Indeterminate Local White Painted	9.5	0.09	74.2	0.12	116.6	0.05	2.4	0.01	35.1	0.01
Indeterminate Local White Unpainted	4.9	0.05	131.9	0.20	235.1	0.10	1.8	0.01	350.7	0.11
RED WARE										
Abajo Red-on-orange	32.0	0.32	8.6	0.01	19.0	0.01			22.3	0.01
Bluff Black-on-red			25.3	0.04	6.6	0.00			5.1	0.00
Deadmans Black-on-red			19.8	0.03	80.3	0.03	2.2	0.01	10.5	0.00
Indeterminate Local Red Painted	5.1	0.05	16.6	0.03	13.2	0.01	2.5	0.01	3.3	0.00
Indeterminate Local Red Unpainted	16.0	0.16	80.7	0.13	103.4	0.04	19.4	0.08	16.1	0.01
NONLOCAL										
Other Gray Nonlocal			11.4	0.02	62.1	0.03			53.7	0.02
Other Red Nonlocal	4.0	0.04	134.9	0.21	452.7	0.19	18.1	0.08	242.7	0.08
Other White Nonlocal			39.5	0.06	179.6	0.07	7.5	0.03	51.1	0.02
Polychrome					15.2	0.01			14.3	0.00
UNKNOWN										
Unknown Gray					35.0	0.01			5.1	0.00
Unknown Red	5.0	0.05	9.5	0.01	42.8	0.02	2.7	0.01	9.7	0.00
Unknown White			1.5	0.00	4.2	0.00			3.3	0.00
Unknown Pottery	8.8	0.09	2.0	0.00	13.5	0.01	21.7	0.09	140.4	0.04
TOTAL	10,011.8	100.00	64,404.9	100.00	240,519.0	100.00	23,920.4	100.00	319,334.0	100.00
% of Total Site Assemblage		0.80		5.16		19.27		1.92		25.58

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 10.4, Late Pueblo III, Middle PII–Late PIII, Unassigned, and Total

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%
MUD WARE								
Basketmaker Mudware					49.6	0.01	84.9	0.01
PLAIN GRAY WARE								
Chapin Gray					1,263.4	0.27	2,807.7	0.22
Moccasin Gray					5.5	0.00	46.0	0.00
Mancos Gray					78.1	0.02	149.3	0.01
Indeterminate Neckbanded Gray	6.1	0.00			12.8	0.00	22.7	0.00
Indeterminate Local Gray	2,672.2	2.14	8.1	4.70	26,778.1	5.76	72,597.6	5.82
CORRUGATED GRAY WARE								
Mancos Corrugated Gray	941.6	0.76			3,505.7	0.75	10,894.1	0.87
Mesa Verde Corrugated Gray	5,965.0	4.79			8,343.9	1.79	31,387.0	2.51
Mummy Lake Gray							273.4	0.02
Indeterminate Local Corrugated Gray	63,068.4	50.60	95.8	55.57	181,686.1	39.06	513,344.4	41.13
WHITE WARE								
Chapin Black-on-white	10.7	0.01			439.0	0.09	1,601.0	0.13
Piedra Black-on-white	20.9	0.02			168.5	0.04	764.8	0.06
Cortez Black-on-white	7.8	0.01			303.4	0.07	1,115.9	0.09
Mancos Black-on-white	3,219.6	2.58	31.2	18.10	22,841.0	4.91	76,233.9	6.11
McElmo Black-on-white	8,962.6	7.19			23,905.7	5.14	72,469.2	5.81
Mesa Verde Black-on-white	5,938.9	4.77			10,543.7	2.27	30,308.1	2.43
Early White Painted					156.3	0.03	666.2	0.05
Early White Unpainted	191.4	0.15			1,963.5	0.42	6,815.9	0.55
Pueblo II White Painted	54.3	0.04			727.3	0.16	2,662.7	0.21
Pueblo III White Painted	6,755.7	5.42			27,192.4	5.85	62,717.5	5.02
Late White Painted	6,627.4	5.32	3.3	1.91	46,327.1	9.96	107,486.4	8.61
Late White Unpainted	19,552.7	15.69	34.0	19.72	105,366.9	22.65	246,505.2	19.75
Indeterminate Local White Painted	8.8	0.01			150.6	0.03	397.2	0.03
Indeterminate Local White Unpainted	91.9	0.07			1,149.8	0.25	1,966.1	0.16
RED WARE								
Abajo Red-on-orange					18.2	0.00	100.1	0.01

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%
Bluff Black-on-red					17.7	0.00	54.7	0.00
Deadmans Black-on-red					83.8	0.02	196.6	0.02
Indeterminate Local Red Painted	1.4	0.00			45.2	0.01	87.3	0.01
Indeterminate Local Red Unpainted	2.1	0.00			137.3	0.03	375.1	0.03
NONLOCAL								
Other Gray Nonlocal					15.3	0.00	142.5	0.01
Other Red Nonlocal	214.2	0.17			989.9	0.21	2,056.5	0.16
Other White Nonlocal	6.9	0.01			87.5	0.02	372.1	0.03
Polychrome	286.3	0.23			37.8	0.01	353.6	0.03
UNKNOWN								
Unknown Gray	10.4	0.01			74.1	0.02	124.6	0.01
Unknown Red	5.8	0.00			34.2	0.01	109.7	0.01
Unknown White					25.2	0.01	34.2	0.00
Unknown Pottery	10.8	0.01			640.6	0.14	837.8	0.07
TOTAL	12,4633.9	100.00	172.4	100.00	465,165.4	100.00	1,248,161.6	100.00
% of Total Site Assemblage		9.99		0.01		37.27		100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.5. Pottery Sherd Counts by Architectural Block and Pottery Type, Shields Pueblo.

(a) Table 10.5, Blocks 100, 200, 300, 400, and 500

Pottery Type and Ware	100		200		300		400		500	
	N	%	N	%	N	%	N	%	N	%
MUDWARE										
Basketmaker Mudware	2	0.00	4	0.01						
PLAIN GRAY WARE										
Chapin Gray	96	0.20	132	0.31						
Moccasin Gray	4	0.01	2	0.00						
Mancos Gray	10	0.02	3	0.01						
Indeterminate Neckbanded Gray	1	0.00	1	0.00						
Indeterminate Local Gray	4,130	8.39	2,997	7.08	51	6.98	386	5.09	67	5.32
Mancos Corrugated Gray	189	0.38	204	0.48	1	0.14	36	0.47	1	0.08
Mesa Verde Corrugated Gray	382	0.78	417	0.99	6	0.82	44	0.58	1	0.08
Mummy Lake Gray	7	0.01	1	0.00						
Indeterminate Local Corrugated Gray	21,912	44.53	20,080	47.45	299	40.90	3698	48.73	562	44.64
WHITE WARE										
Chapin Black-on-white	8	0.02	11	0.03			2	0.03		
Piedra Black-on-white	7	0.01	7	0.02						
Cortez Black-on-white	25	0.05	13	0.03						
Mancos Black-on-white	2,019	4.10	1,408	3.33	12	1.64	142	1.87	19	1.51
McElmo Black-on-white	979	1.99	1,040	2.46	12	1.64	104	1.37	10	0.79
Mesa Verde Black-on-white	151	0.31	444	1.05	2	0.27	61	0.80	3	0.24
Early White Painted	17	0.03	12	0.03						
Early White Unpainted	197	0.40	78	0.18	1	0.14	15	0.20		
Pueblo II White Painted	63	0.13	64	0.15	1	0.14	12	0.16		
Pueblo III White Painted	1,723	3.50	1,744	4.12	16	2.19	311	4.10	31	2.46
Late White Painted	5,568	11.32	4,474	10.57	93	12.72	792	10.44	157	12.47
Late White Unpainted	1,0940	22.23	8,551	20.21	229	31.33	1947	25.66	359	28.51

Pottery Type and Ware	100		200		300		400		500	
	N	%	N	%	N	%	N	%	N	%
Indeterminate Local White Painted	24	0.05	21	0.05					11	0.87
Indeterminate Local White Unpainted	149	0.30	200	0.47	3	0.41	13	0.17	15	1.19
RED WARE										
Abajo Red-on-orange	12	0.02	3	0.01						
Bluff Black-on-red	1	0.00	3	0.01			1	0.01		
Deadmans Black-on-red	23	0.05	4	0.01						
Indeterminate Local Red Painted	7	0.01	8	0.02			3	0.04		
Indeterminate Local Red Unpainted	54	0.11	26	0.06			3	0.04	1	0.08
NONLOCAL										
Other Gray Nonlocal	1	0.00								
Other Red Nonlocal	97	0.20	96	0.23	4	0.55	11	0.14		
Other White Nonlocal	14	0.03	9	0.02						
Polychrome	5	0.01	1	0.00			1	0.01		
UNKNOWN										
Unknown Gray	25	0.05	67	0.16						
Unknown Red	22	0.04	6	0.01						
Unknown White	6	0.01	6	0.01						
Unknown Pottery	335	0.68	180	0.43	1	0.14	6	0.08	22	1.75
TOTAL EACH BLOCK	49,205	100.00	42,317	100.00	731	100	7,588	100	1,259	100

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 10.5, Blocks 600, 700, 800, 900, and 1000

Pottery Type and Ware	600		700		800		900		1000	
	N	%	N	%	N	%	N	%	N	%
MUDWARE										
Basketmaker Mudware										
PLAIN GRAY WARE										
Chapin Gray										
Moccasin Gray										
Mancos Gray					1	0.05				
Indeterminate Neckbanded Gray										
Indeterminate Local Gray	102	5.03	25	4.73	88	4.49	25	5.40	67	7.23
Mancos Corrugated Gray	7	0.34	1	0.19	4	0.20	1	0.22	3	0.32
Mesa Verde Corrugated Gray	6	0.30	1	0.19	9	0.46	4	0.86	4	0.43
Mummy Lake Gray										
Indeterminate Local Corrugated Gray	1,100	54.21	236	44.61	1,071	54.70	221	47.73	459	49.51
WHITE WARE										
Chapin Black-on-white										
Piedra Black-on-white										
Cortez Black-on-white										
Mancos Black-on-white	35	1.72	10	1.89	26	1.33	4	0.86	9	0.97
McElmo Black-on-white	27	1.33	7	1.32	22	1.12	2	0.43	4	0.43
Mesa Verde Black-on-white	11	0.54	4	0.76	10	0.51	2	0.43	2	0.22
Early White Painted										
Early White Unpainted					3	0.15				
Pueblo II White Painted	2	0.10			5	0.26			1	0.11
Pueblo III White Painted	54	2.66	34	6.43	72	3.68	20	4.32	11	1.19
Late White Painted	203	10.00	70	13.23	214	10.93	57	12.31	98	10.57
Late White Unpainted	456	22.47	119	22.50	412	21.04	120	25.92	251	27.08
Indeterminate Local White Painted	6	0.30	3	0.57	4	0.20			6	0.65

Pottery Type and Ware	600		700		800		900		1000	
	N	%	N	%	N	%	N	%	N	%
Indeterminate Local White Unpainted	4	0.20	14	2.65	13	0.66	3	0.65	4	0.43
RED WARE										
Abajo Red-on-orange										
Bluff Black-on-red			1	0.19						
Deadmans Black-on-red	2	0.10								
Indeterminate Local Red Painted					1	0.05				
Indeterminate Local Red Unpainted	1	0.05					1	0.22	1	0.11
NONLOCAL										
Other Gray Nonlocal										
Other Red Nonlocal	4	0.20			1	0.05			1	0.11
Other White Nonlocal										
Polychrome										
UNKNOWN										
Unknown Gray					2	0.10			2	0.22
Unknown Red										
Unknown White										
Unknown Pottery	9	0.44	4	0.76			3	0.65	4	0.43
TOTAL EACH BLOCK	2,029	100	529	100	1,958	100	463	100	927	100

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(c) Table 10.5, Blocks 1100, 1200, 1300, 1400, and 1500

Pottery Type and Ware	1100		1200		1300		1400		1500	
	N	%	N	%	N	%	N	%	N	%
MUDWARE										
Basketmaker Mudware					1	0.00	2	0.01		
PLAIN GRAY WARE										
Chapin Gray	2	0.01			109	0.23	3	0.01	2	0.03
Moccasin Gray					3	0.01				
Mancos Gray	2	0.01	1	0.01	4	0.01	1	0.00		
Indeterminate Neckbanded Gray							1	0.00		
Indeterminate Local Gray	535	2.50	143	1.62	4,691	9.72	902	3.03	232	3.09
Mancos Corrugated Gray	54	0.25	30	0.34	371	0.77	128	0.43	22	0.29
Mesa Verde Corrugated Gray	179	0.84	47	0.53	353	0.73	302	1.02	42	0.56
Mummy Lake Gray				0.00	1	0.00				
Indeterminate Local Corrugated Gray	10,344	48.33	4,825	54.69	21,426	44.39	14,144	47.57	3,826	50.89
WHITE WARE										
Chapin Black-on-white	2	0.01			129	0.27	2	0.01	2	0.03
Piedra Black-on-white			5	0.06	61	0.13	3	0.01		
Cortez Black-on-white	4	0.02			66	0.14	2	0.01		
Mancos Black-on-white	305	1.43	176	1.99	2,825	5.85	663	2.23	141	1.88
McElmo Black-on-white	570	2.66	114	1.29	727	1.51	921	3.10	92	1.22
Mesa Verde Black-on-white	360	1.68	118	1.34	190	0.39	543	1.83	41	0.55
Early White Painted	1	0.00	1	0.01	109	0.23	2	0.01	2	0.03
Early White Unpainted	18	0.08	2	0.02	1,082	2.24	25	0.08		
Pueblo II White Painted	48	0.22	3	0.03	228	0.47	29	0.10		
Pueblo III White Painted	1,461	6.83	448	5.08	1,172	2.43	1,605	5.40	387	5.15
Late White Painted	1,989	9.29	812	9.20	4,626	9.58	3,149	10.59	709	9.43
Late White Unpainted	5,048	23.59	2,002	22.69	9,584	19.86	6,824	22.95	1,758	23.38
Indeterminate Local White Painted	15	0.07	1	0.01	56	0.12	2	0.01	9	0.12

Pottery Type and Ware	1100		1200		1300		1400		1500	
	N	%	N	%	N	%	N	%	N	%
Indeterminate Local White Unpainted	143	0.67	25	0.28	82	0.17	28	0.09	51	0.68
RED WARE										
Abajo Red-on-orange					4	0.01	1	0.00		
Bluff Black-on-red	1	0.00			4	0.01	1	0.00		
Deadmans Black-on-red	3	0.01			26	0.05	6	0.02		
Indeterminate Local Red Painted	2	0.01			17	0.04	1	0.00	1	0.01
Indeterminate Local Red Unpainted	1	0.00	1	0.01	41	0.08	2	0.01		
NONLOCAL										
Other Gray Nonlocal	2	0.01			4	0.01	1	0.00		
Other Red Nonlocal	27	0.13	11	0.12	97		64	0.22	5	0.07
Other White Nonlocal	3	0.01			17		5	0.02		
Polychrome					3		25	0.08		
UNKNOWN										
Unknown Gray					6	0.01			2	0.03
Unknown Red	4	0.02	2	0.02	12	0.02	9	0.03		
Unknown White					5	0.01	1	0.00		
Unknown Pottery	278	1.30	56	0.63	137	0.28	334	1.12	194	2.58
TOTAL EACH BLOCK	21,401	100	8,823	100	48,269	100	29,731	100	7,518	100

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(d) Table 10.5, Blocks 1600, 1700, 1800, 1900, and Total

Pottery Type and Ware	1600		1700		1800		1900		TOTAL ALL BLOCKS
	N	%	N	%	N	%	N	%	N
MUDWARE									
Basketmaker Mudware									9
PLAIN GRAY WARE									
Chapin Gray									344
Moccasin Gray									9
Mancos Gray									22
Indeterminate Neckbanded Gray									3
Indeterminate Local Gray					6	2.70	149	5.78	14,596
Mancos Corrugated Gray							8	0.31	1,060
Mesa Verde Corrugated Gray	1	2.00					14	0.54	1,812
Mummy Lake Gray									9
Indeterminate Local Corrugated Gray	19	38.00	12	31.58	103	46.40	1,094	42.40	105,431
WHITE WARE									
Chapin Black-on-white							3	0.12	159
Piedra Black-on-white							2	0.08	85
Cortez Black-on-white							2	0.08	112
Mancos Black-on-white	1	2.00			1	0.45	63	2.44	7,859
McElmo Black-on-white			1	2.63	1	0.45	75	2.91	4,708
Mesa Verde Black-on-white			3	7.89	1	0.45	17	0.66	1,963
Early White Painted							1	0.04	145
Early White Unpainted							19	0.74	1,440
Pueblo II White Painted					2	0.90	4	0.16	462
Pueblo III White Painted			3	7.89	11	4.95	126	4.88	9,229
Late White Painted	10	20.00	4	10.53	22	9.91	345	13.37	23,392
Late White Unpainted	19	38.00	15	39.47	75	33.78	645	25.00	49,354

Pottery Type and Ware	1600		1700		1800		1900		TOTAL ALL BLOCKS
	N	%	N	%	N	%	N	%	N
Indeterminate Local White Painted							1	0.04	159
Indeterminate Local White Unpainted							6	0.23	753
RED WARE									
Abajo Red-on-orange									20
Bluff Black-on-red									12
Deadmans Black-on-red									64
Indeterminate Local Red Painted									40
Indeterminate Local Red Unpainted							1	0.04	133
NONLOCAL									
Other Gray Nonlocal									8
Other Red Nonlocal							2	0.08	420
Other White Nonlocal							1	0.04	49
Polychrome							1	0.04	36
UNKNOWN									
Unknown Gray									104
Unknown Red									55
Unknown White									18
Unknown Pottery							1	0.04	1,564
TOTAL EACH BLOCK	50	100	38	100	222	100	2,580	100	225,638

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.6. Pottery Sherd Weights by Architectural Block and Pottery Type, Shields Pueblo.

(a) Table 10.6, Blocks 100, 200, 300, 400, and 500

Pottery Type and Ware	100		200		300		400		500	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUDWARE										
Basketmaker Mudware	27.7	0.01	22.6	0.01						
PLAIN GRAY WARE										
Chapin Gray	573.8	0.23	723.9	0.29						
Moccasin Gray	17.8	0.01	12.0	0.00						
Mancos Gray	40.5	0.02	30.7	0.01						
Indeterminate Neckbanded Gray	3.8	0.00	6.1	0.00						
Indeterminate Local Gray	20,073.1	8.14	12,320.3	4.98	138.8	7.38	1,263.3	3.75	122.5	4.41
Mancos Corrugated Gray	1,717.2	0.70	2,124.6	0.86	1.0	0.05	337.1	1.00	2.6	0.09
Mesa Verde Corrugated Gray	6,790.8	2.75	8,809.5	3.56	31.5	1.68	894.0	2.65	1.5	0.05
Mummy Lake Gray	203.2	0.08	8.7	0.00						
Indeterminate Local Corrugated Gray	96,899.8	39.31	106,586.5	43.11	633.0	33.67	16,203.8	48.10	1,113.2	40.04
WHITE WARE										
Chapin Black-on-white	75.6	0.03	46.0	0.02			4.7	0.01		
Piedra Black-on-white	84.2	0.03	71.1	0.03						
Cortez Black-on-white	193.5	0.08	105.5	0.04						
Mancos Black-on-white	18,401.2	7.46	12,075.8	4.88	65.4	3.48	828.9	2.46	86.4	3.11
McElmo Black-on-white	14,206.1	5.76	17,930.1	7.25	124.3	6.61	1,358.1	4.03	49.5	1.78
Mesa Verde Black-on-white	1,872.4	0.76	7,771.8	3.14	4.7	0.25	853.4	2.53	8.2	0.29
Early White Painted	61.1	0.02	34.5	0.01						
Early White Unpainted	1,069.5	0.43	256.9	0.10	0.7	0.04	88.8	0.26		
Pueblo II White Painted	247.4	0.10	307.6	0.12	2.4	0.13	41.5	0.12		
Pueblo III White Painted	9,918.0	4.02	13,331.0	5.39	37.3	1.98	2,029.8	6.03	134.3	4.83
Late White Painted	23,849.1	9.67	19,737.3	7.98	252.9	13.45	2,713.1	8.05	403.9	14.53
Late White Unpainted	48,638.4	19.73	43,364.4	17.54			7,009.3	20.81	831.5	29.91

Pottery Type and Ware	100		200		300		400		500	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Indeterminate Local White Painted	60.6	0.02	33.8	0.01				567.1	30.16	0.31
Indeterminate Local White Unpainted	303.2	0.12	750.7	0.30	5.7	0.30	24.3			0.35
RED WARE										
Abajo Red-on-orange	58.6	0.02	15.0	0.01						
Bluff Black-on-red	1.6	0.00	6.5	0.00			3.5	0.01		
Deadmans Black-on-red	82.8	0.03	18.2	0.01						
Indeterminate Local Red Painted	11.3	0.00	12.9	0.01			2.6	0.01		
Indeterminate Local Red Unpainted	132.7	0.05	57.8	0.02			3.5	0.01	0.4	0.01
NONLOCAL										
Other Gray Nonlocal	5.8	0.00								
Other Red Nonlocal	417.3	0.17	423.6	0.17	13.5	0.72	24.6	0.07		
Other White Nonlocal	163.6	0.07	78.1	0.03						
Polychrome	26.6	0.01	14.3	0.01			2.4	0.01		
UNKNOWN										
Unknown Gray	62.0	0.03	46.3	0.02						
Unknown Red	38.9	0.02	9.4	0.00						
Unknown White	6.5	0.00	6.4	0.00						
Unknown Pottery	187.9	0.08	113.5	0.05	1.7	0.09	2.5	0.01	7.6	0.27
TOTAL EACH BLOCK	246,523.7	100.00	247,263.5	100.00	1,880.0	100	33,689.2	100	2,780.0	100

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 10.6, Blocks 600, 700, 800, 900, and 1000

Pottery Type and Ware	600		700		800		900		1000	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUDWARE										
Basketmaker Mudware										
PLAIN GRAY WARE										
Chapin Gray										
Moccasin Gray										
Mancos Gray					1.9	0.02				
Indeterminate Neckbanded Gray										
Indeterminate Local Gray	301.3	4.85	53.7	3.38	310.7	3.99	82.5	7.23	149.0	6.82
Mancos Corrugated Gray	35.1	0.56	5.7	0.36	30.0	0.39	3.3	0.29	18.0	0.82
Mesa Verde Corrugated Gray	36.0	0.58	1.2	0.08	166.3	2.14	77.3	6.78	40.5	1.85
Mummy Lake Gray										
Indeterminate Local Corrugated Gray	3,054.3	49.11	562.1	35.40	3,572.7	45.90	475.3	41.66	977.8	44.74
WHITE WARE										
Chapin Black-on-white										
Piedra Black-on-white										
Cortez Black-on-white										
Mancos Black-on-white	176.1	2.83	100.3	6.32	220.0	2.83	28.0	2.45	64.2	2.94
McElmo Black-on-white	228.8	3.68	39.7	2.50	246.5	3.17	30.0	2.63	11.9	0.54
Mesa Verde Black-on-white	125.2	2.01	35.3	2.22	215.4	2.77	25.5	2.24	76.3	3.49
Early White Painted										
Early White Unpainted					4.8	0.06				
Pueblo II White Painted	2.9	0.05			5.8	0.07			3.5	0.16
Pueblo III White Painted	230.0	3.70	159.5	10.05	428.2	5.50	69.2	6.07	68.2	3.12
Late White Painted	572.7	9.21	222.3	14.00	794.5	10.21	128.7	11.28	276.9	12.67
Late White Unpainted	1,397.4	22.47	381.6	24.03	1,757.7	22.58	215.4	18.88	481.9	22.05
Indeterminate Local White Painted	18.4	0.30	1.0	0.06	2.6	0.03			4.3	0.20

Pottery Type and Ware	600		700		800		900		1000	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Indeterminate Local White Unpainted	3.6	0.06	11.3	0.71	22.4	0.29	0.8	0.07	8.6	0.39
RED WARE										
Abajo Red-on-orange										
Bluff Black-on-red			11.9	0.75						
Deadmans Black-on-red	6.2	0.10								
Indeterminate Local Red Painted					0.1	0.00				
Indeterminate Local Red Unpainted	0.3	0.00					0.3	0.03	1.1	0.05
NONLOCAL										
Other Gray Nonlocal										
Other Red Nonlocal	23.0	0.37			3.5	0.04			0.7	0.03
Other White Nonlocal										
Polychrome										
UNKNOWN										
Unknown Gray					0.6	0.01			1.7	0.08
Unknown Red										
Unknown White										
Unknown Pottery	7.4	0.12	2.1	0.13			4.5	0.39	0.7	0.03
TOTAL EACH BLOCK	6,218.7	100	1,587.7	100	7,783.7	100	1,140.8	100	2,185.3	100

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(c) Table 10.6, Blocks 1100, 1200, 1300, 1400, and 1500

Pottery Type and Ware	1100		1200		1300		1400		1500	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUDWARE										
Basketmaker Mudware					11.8	0.00	22.8	0.01		
PLAIN GRAY WARE										
Chapin Gray	34.7	0.03			1,489.8	0.51	12.3	0.01	5.1	0.03
Moccasin Gray					16.2	0.01				
Mancos Gray	17.3	0.01	2.3	0.00	47.0	0.02	9.6	0.00		
Indeterminate Neckbanded Gray							12.8	0.01		
Indeterminate Local Gray	2,946.4	2.53	667.7	1.37	27,553.9	9.48	5,113.6	2.47	804.4	3.99
Mancos Corrugated Gray	488.2	0.42	355.5	0.73	4,203.4	1.45			129.7	0.64
Mesa Verde Corrugated Gray	2,396.9	2.06	1,185.7	2.43	5,603.8	1.93	1,400.6	0.68	365.2	1.81
Mummy Lake Gray					61.5	0.02	4,893.3	2.36		
Indeterminate Local Corrugated Gray	47,824.5	41.11	24,237.7	49.58	116,014.4	39.89	81,430.1	39.32	8,796.2	43.63
WHITE WARE										
Chapin Black-on-white	9.7	0.01			1,431.6	0.49	13.1	0.01	4.1	0.02
Piedra Black-on-white			41.6	0.09	539.2	0.19	9.1			
Cortez Black-on-white	31.4	0.03			758.8	0.26	15.9			
Mancos Black-on-white	2,966.5	2.55	2,543.1	5.20	29,512.2	10.15	8,135.7	3.93	707.9	3.51
McElmo Black-on-white	8,222.6	7.07	2,452.8	5.02	9,970.6	3.43	15,993.1	7.72	978.3	4.85
Mesa Verde Black-on-white	4,715.3	4.05	1,525.9	3.12	1,947.0	0.67	10,580.0	5.11	388.9	1.93
Early White Painted	3.0	0.00	4.2	0.01	548.8	0.19	2.9	0.00	8.9	0.04
Early White Unpainted	62.3	0.05	4.3	0.01	5,171.0	1.78	80.9	0.04		
Pueblo II White Painted	219.2	0.19	25.3	0.05	1,569.0	0.54	208.9	0.10		
Pueblo III White Painted	9,104.9	7.83	3,356.7	6.87	7,212.9	2.48	14,112.0	6.81	1,517.9	7.53
Late White Painted	9,693.1	8.33	3,094.7	6.33	23,248.5	7.99	18,836.0	9.10	1,662.5	8.25
Late White Unpainted	27,087.6	23.29	9,178.6	18.78	52,120.9	17.92	45,092.0	21.77	4,619.7	22.92
Indeterminate Local White Painted	32.9	0.03	4.6	0.01	214.6	0.07	5.4	0.00	5.0	0.02

Pottery Type and Ware	1100		1200		1300		1400		1500	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Indeterminate Local White Unpainted	136.0	0.12	131.5	0.27	403.0	0.14	83.8		61.1	0.30
RED WARE										
Abajo Red-on-orange					26.7	0.01	5.7	0.00		
Bluff Black-on-red	3.6	0.00			25.3	0.01	2.3	0.00		
Deadmans Black-on-red	4.0	0.00			67.2	0.02	18.2	0.01		
Indeterminate Local Red Painted	3.1	0.00			53.5	0.02	1.4	0.00	2.4	0.01
Indeterminate Local Red Unpainted	1.7	0.00	0.8	0.00	169.7	0.06	3.5	0.00		
NONLOCAL										
Other Gray Nonlocal	54.9	0.05			67.7	0.02	14.1	0.01		
Other Red Nonlocal	85.4	0.07	47.2	0.10	491.3	0.17	20.5	0.01	28.9	0.14
Other White Nonlocal	17.3	0.01			83.1	0.03	474.1	0.23		
Polychrome					17.9	0.01	286.3	0.14		
UNKNOWN										
Unknown Gray					11.2	0.00			2.8	0.01
Unknown Red	7.0	0.01	6.7	0.01	36.5	0.01	3.2	0.00		
Unknown White					18.1	0.01	11.2	0.01		
Unknown Pottery	159.1	0.14	20.5	0.04	81.1	0.03	179.5	0.09	69.8	0.35
TOTAL EACH BLOCK	116,328.6	100	48,887.2	100	290,799.3	100	207,083.9	100	20,158.8	100

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(d) Table 10.6, Blocks 1600, 1700, 1800, 1900, and Total

Pottery Type and Ware	1600		1700		1800		1900		TOTAL ALL BLOCKS
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)
MUDWARE									
Basketmaker Mudware									84.9
PLAIN GRAY WARE									
Chapin Gray									2,839.6
Moccasin Gray									46.0
Mancos Gray									149.3
Indeterminate Neckbanded Gray									22.7
Indeterminate Local Gray					49.5	5.51	705.8	5.33	72,656.5
Mancos Corrugated Gray							74.0	0.56	9,525.4
Mesa Verde Corrugated Gray	8.8	3.54					84.6	0.64	27,894.2
Mummy Lake Gray									5,166.7
Indeterminate Local Corrugated Gray	100.5	40.41	59.5	29.07	376.0	41.86	4,876.4	36.80	513,793.9
WHITE WARE									
Chapin Black-on-white							16.2	0.12	1,601.0
Piedra Black-on-white							17.4	0.13	762.6
Cortez Black-on-white							10.8	0.08	1,115.9
Mancos Black-on-white	2.2	0.88			2.6	0.29	343.8	2.59	76,260.2
McElmo Black-on-white			10.4	5.08	1.5	0.17	668.0	5.04	72,522.4
Mesa Verde Black-on-white			13.7	6.69	8.9	0.99	185.9	1.40	30,353.8
Early White Painted							2.8	0.02	666.2
Early White Unpainted							76.6	0.58	6,815.9
Pueblo II White Painted					12.1	1.35	17.2	0.13	2,662.7
Pueblo III White Painted			7.7	3.76	79.1	8.81	906.3	6.84	62,703.0
Late White Painted	55.5	22.31	13.6	6.64	94.9	10.57	1,789.9	13.51	107,440.2
Late White Unpainted	81.7	32.86	99.8	48.75	273.6	30.46	3,416.0	25.78	246,614.7
Indeterminate Local White Painted							5.4	0.04	397.2

Pottery Type and Ware	1600		1700		1800		1900		TOTAL ALL BLOCKS
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)
Indeterminate Local White Unpainted							10.3	0.08	1,966.1
RED WARE									
Abajo Red-on-orange									106.0
Bluff Black-on-red									54.7
Deadmans Black-on-red									196.6
Indeterminate Local Red Painted									87.3
Indeterminate Local Red Unpainted							3.2	0.02	375.1
NONLOCAL									
Other Gray Nonlocal									142.5
Other Red Nonlocal							23.3	0.18	1,602.8
Other White Nonlocal							9.5	0.07	825.7
Polychrome							6.1	0.05	353.6
UNKNOWN									
Unknown Gray									124.6
Unknown Red									101.7
Unknown White									42.2
Unknown Pottery							1.1	0.01	839.0
TOTAL EACH BLOCK	248.7	100	204.7	100	898.2	100	13,250.6	100	1,248,912.8

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.7. White Ware Sherd Counts by Type and Finish, Shields Pueblo.

Pottery Type and Ware	Finish								TOTAL	% Carbon	% Mineral
	Carbon Paint		Mineral Paint		Mixed Paint		Indeterminate Paint				
	N	%	N	%	N	%	N	%			
Chapin Black-on-white	220	0.21	256	1.42	2	0.14	11	2.49	489	44.99	52.35
Piedra Black-on-white	86	0.08	171	0.95	2	0.14	4	0.90	263	32.70	65.02
Cortez Black-on-white			320	1.78	6	0.42		0	326	0.00	98.16
Mancos Black-on-white	12,626	11.80	8,335	46.27	597	41.89	34	7.69	21,592	58.48	38.60
McElmo Black-on-white	11,502	10.75	947	5.26	159	11.16	5	1.13	12,613	91.19	7.51
Mesa Verde Black-on-white	5,130	4.80	208	1.15	52	3.65	4	0.90	5,394	95.11	3.86
Early White Painted	186	0.17	247	1.37	2	0.14	6	1.36	441	42.18	56.01
Pueblo II White Painted	239	0.22	1,107	6.14	10	0.70	3	0.68	1,359	17.59	81.46
Pueblo III White Painted	22,915	21.42	711	3.95	133	9.33	34	7.69	23,793	96.31	2.99
Late White Painted	53,814	50.31	5,569	30.91	462	32.42	322	72.85	60,167	89.44	9.26
Indeterminate Local White Painted	245	0.23	144	0.80		0.00	19	4.30	408	60.05	35.29
TOTAL	106,963	100.00	18,015	100.00	1,425	100.00	442	100.00	126,845	84.33	14.20
% of Total		84.33		14.20		0.08		0.08			

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.8. White Ware Pottery Weights by Type and Finish, Shields Pueblo.

Pottery Type and Ware	Finish								TOTAL	% Carbon	% Mineral
	Carbon Paint		Mineral Paint		Mixed Paint		Indeterminate Paint				
	N	%	N	%	N	%	N	%			
Chapin Black-on-white	2,740.44	0.33	2,485.92	1.67	8.40	0.06	157.00	4.83	5,391.76	50.83	46.11
Piedra Black-on-white	1,000.00	0.12	1,353.18	0.91	5.40	0.04	163.60	5.03	2,522.18	39.65	53.65
Cortez Black-on-white			3,313.62	2.23	131.10	0.94			3,444.72		96.19
Mancos Black-on-white	137,303.23	16.43	78,586.52	52.83	5,816.22	41.68	291.80	8.98	221,997.77	61.85	35.40
McElmo Black-on-white	188,471.32	22.55	15,623.98	10.50	2,652.72	19.01	178.80	5.50	206,926.82	91.08	7.55
Mesa Verde Black-on-white	82,661.35	9.89	3,605.64	2.42	1,463.10	10.48	29.20	0.90	87,759.29	94.19	4.11
Early White Painted	709.94	0.08	1,439.87	0.97	2.80	0.02	19.20	0.59	2,171.81	32.69	66.30
Pueblo II White Painted	1,176.00	0.14	6,953.16	4.67	115.80	0.83	1.80	0.06	8,246.76	14.26	84.31
Pueblo III White Painted	165,453.27	19.79	5,150.52	3.46	788.42	5.65	503.60	15.49	171,895.81	96.25	3.00
Late White Painted	255,841.90	30.61	29,634.73	19.92	2,970.60	21.29	1,864.35	57.35	290,311.58	88.13	10.21
Indeterminate Local White Painted	510.76	0.06	614.22	0.41			41.20	1.27	1,166.18	43.80	52.67
TOTAL	835,868.21	100.00	148,761.36	100.00	13,954.56	100.00	3,250.55	100.00	1,001,834.68	83.43	14.85
% of Total		83.43		14.85		1.39		0.32			

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.9. Pottery Sherd Counts by Ware, Form, and Temporal Components, Shields Pueblo.

(a) Table 10.9, Early Pueblo I through Early Pueblo III

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	N	%	N	%	N	%	N	%	N	%
MUD WARE										
Bowl										
Jar									1	0.00
Other					1	0.00				
Unknown	1	0.06							1	0.00
PLAIN GRAY WARE										
Bowl			5	0.06	10	0.03			2	0.00
Jar	426	24.97	988	11.80	3,496	9.90	280	7.11	1,649	3.81
Ladle					1	0.00				
Mug									1	0.00
Kiva/seed jar	4	0.23	12	0.14	2	0.01	1	0.03		
Canteen										
Other			2	0.02						
Unknown	3	0.18	2	0.02			1	0.03	6	0.01
CORRUGATED GRAY WARE										
Bowl					4	0.01			7	0.02
Jar	568	33.29	3,951	47.18	15,829	44.84	1858	47.19	21,854	50.48
Kiva/seed jar										
Unknown										
WHITE WARE										
Bowl	256	15.01	1,400	16.72	7,613	21.57	822	20.88	9,213	21.28
Jar	368	21.57	1,753	20.93	7,036	19.93	750	19.05	8,244	19.04
Ladle	6	0.35	51	0.61	328	0.93	37	0.94	505	1.17
Mug	1	0.06	6	0.07	43	0.12	8	0.20	109	0.25
Kiva/seed jar	1	0.06	10	0.12	23	0.07	2	0.05	28	0.06
Canteen			1	0.01	7	0.02			7	0.02
Other			2	0.02	12	0.03	2	0.05	8	0.02

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	N	%	N	%	N	%	N	%	N	%
Unknown	43	2.52	124	1.48	673	1.91	131	3.33	1,280	2.96
RED WARE										
Bowl	13	0.76	25	0.30	40	0.11	6	0.15	17	0.04
Jar			9	0.11	11	0.03	2	0.05	4	0.01
Ladle										
Kiva/seed jar									1	0.00
Unknown	2	0.12			2	0.01	2	0.05	1	0.00
NONLOCAL										
Bowl	1	0.06	16	0.19	75	0.21	5	0.13	60	0.14
Jar			8	0.10	34	0.10	2	0.05	8	0.02
Ladle										
Mug					1	0.00			1	0.00
Kiva/seed jar										
Other			1	0.01						
Unknown			1	0.01	1	0.00				
UNKNOWN										
Bowl	1	0.06	5	0.06	14	0.04	2	0.05	2	0.00
Jar	2	0.12	2	0.02	14	0.04			7	0.02
Kiva/seed jar										
Other										
Unknown	10	0.59			31	0.09	26	0.66	273	0.63
TOTAL	1 ,706	100.00	8,374	100.00	35,301	100.00	3,937	100.00	43,289	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 10.9, Late Pueblo III, Middle PII–Late PIII, Unassigned, and Total

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%
MUD WARE								
Bowl					2	0.00	2	0.00
Jar					3	0.00	4	0.00
Other							1	0.00
Unknown							2	0.00
PLAIN GRAY WARE								
Bowl					26	0.02	43	0.02
Jar	432	3.41	2	5.13	7,572	6.30	14,845	6.58
Ladle							1	0.00
Mug							1	0.00
Kiva/seed jar					4	0.00	23	0.01
Canteen					1	0.00	1	0.00
Other							2	0.00
Unknown	6	0.05			29	0.02	47	0.02
CORRUGATED GRAY WARE								
Bowl	1	0.01					12	0.01
Jar	7,160	56.53	20	51.28	56,977	47.41	108,217	47.99
Kiva/seed jar					2	0.00	2	0.00
Unknown					1	0.00	1	0.00
WHITE WARE								
Bowl	2,490	19.66	4	10.26	24,398	20.30	46,196	20.49
Jar	2,117	16.71	6	15.38	20,956	17.44	41,230	18.28
Ladle	111	0.88	1	2.56	654	0.54	1,693	0.75
Mug	34	0.27			101	0.08	302	0.13
Kiva/seed jar	20	0.16			40	0.03	124	0.05
Canteen	4	0.03			7	0.01	26	0.01
Other	8	0.06			69	0.06	101	0.04
Unknown	209	1.65	6	15.38	7,630	6.35	10,096	4.48
RED WARE								
Bowl	1	0.01			103	0.09	205	0.09

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%
Jar					17	0.01	43	0.02
Ladle					1	0.00	1	0.00
Kiva/seed jar	1	0.01					2	0.00
Unknown					10	0.01	17	0.01
NONLOCAL								
Bowl	46	0.36			213	0.18	416	0.18
Jar	4	0.03			26	0.02	82	0.04
Ladle					1	0.00	1	0.00
Mug					1	0.00	3	0.00
Kiva/seed jar					1	0.00	1	0.00
Other					2	0.00	3	0.00
Unknown					5	0.00	7	0.00
UNKNOWN								
Bowl	5	0.04			27	0.02	56	0.02
Jar	7	0.06			92	0.08	124	0.05
Kiva/seed jar					1	0.00	1	0.00
Other					5	0.00	5	0.00
Unknown	10	0.08			1,203	1.00	1,553	0.69
TOTAL	12,666	100.00	39	100.00	120,180	100.00	225,492	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.10. Pottery Sherd Weights by Ware, Form, and Temporal Component, Shields Pueblo.

(a) Table 10.10, Early Pueblo I through Early Pueblo III

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUD WARE										
Bowl										
Jar									2.0	0.00
Other					14.6	0.01				
Unknown	13.1	0.13							5.6	0.00
PLAIN GRAY WARE										
Bowl			86.4	0.13	71.5	0.03			5.3	0.00
Jar	2,527.0	25.24	7,679.3	11.92	23,014.0	9.57	1,507.6	6.30	9,498.1	2.97
Ladle					6.3	0.00				
Mug									26.8	0.01
Kiva/seed jar	69.3	0.69	218.5	0.34	32.0	0.01	3.2	0.01		
Canteen										
Other			31.7	0.05						
Unknown	2.8	0.03	15.6	0.02			0.2	0.00	3.4	0.00
CORRUGATED GRAY WARE										
Bowl					125.5	0.05			40.1	0.01
Jar	3,105.2	31.02	2,9671.6	46.07	100,520.1	41.79	10,186.9	42.59	148,642.8	46.55
Kiva/seed jar										
Unknown										
WHITE WARE										
Bowl	1,691.90	16.90	10,849.97	16.85	56,982.28	23.69	6,284.00	26.27	79,661.62	24.95
Jar	2,383.00	23.80	14,332.76	22.25	51,302.36	21.33	4,614.26	19.29	68,884.96	21.57
Ladle	76.90	0.77	643.20	1.00	5,377.13	2.24	740.40	3.10	7,489.31	2.35
Mug	3.40	0.03	42.30	0.07	461.90	0.19	92.70	0.39	1,867.20	0.58
Kiva/seed jar	21.80	0.22	124.50	0.19	254.82	0.11	4.50	0.02	462.53	0.14
Canteen			19.50	0.03	28.50	0.01			91.60	0.03
Other			131.60	0.20	86.60	0.04	2.50	0.01	86.94	0.03
Unknown	46.50	0.46	208.24	0.32	1,213.76	0.50	410.00	1.71	1,988.11	0.62
RED WARE										

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Bowl	51.20	0.51	87.10	0.14	169.69	0.07	17.40	0.07	44.70	0.01
Jar			63.90	0.10	50.20	0.02	3.50	0.01	7.60	0.00
Ladle										
Kiva/seed jar									3.60	0.00
Unknown	1.90	0.02			2.60	0.00	3.20	0.01	1.40	0.00
NONLOCAL										
Bowl	4.00	0.04	115.66	0.18	513.50	0.21	18.30	0.08	267.83	0.08
Jar			65.70	0.10	190.57	0.08	7.30	0.03	81.60	0.03
Ladle										
Mug					3.10	0.00			12.40	0.00
Kiva/seed jar										
Other			4.08	0.01						
Unknown			0.30	0.00	2.40	0.00				
UNKNOWN										
Bowl	2.00	0.02	11.00	0.02	29.80	0.01	2.70	0.01	5.80	0.00
Jar	5.00	0.05	2.00	0.00	37.20	0.02			21.70	0.01
Kiva/seed jar										
Other										
Unknown	6.80	0.07			28.50	0.01	21.70	0.09	131.00	0.04
TOTAL	10,011.80	100.00	64,404.90	100.00	240,518.98	100.00	23,920.36	100.00	319,333.98	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 10.10, Late Pueblo III, Middle PII–Late PIII, Unassigned, and Total

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUD WARE								
Bowl					15.50	0.00	15.50	0.00
Jar					34.10	0.01	36.10	0.00
Other							14.60	0.00
Unknown							18.70	0.00
PLAIN GRAY WARE								
Bowl					113.70	0.02	276.90	0.02
Jar	2,657.61	2.13	8.10	4.70	27,917.25	6.00	74,808.92	5.99
Ladle							6.30	0.00
Mug							26.80	0.00
Kiva/seed jar					19.50	0.00	342.50	0.03
Canteen					4.50	0.00	4.50	0.00
Other							31.70	0.00
Unknown	20.70	0.02			83.00	0.02	125.70	0.01
CORRUGATED GRAY WARE								
Bowl	2.60	0.00					168.20	0.01
Jar	69,972.41	56.14	95.80	55.57	193,483.60	41.59	555,678.49	44.52
Kiva/seed jar					48.10	0.01	48.10	0.00
Unknown					4.00	0.00	4.00	0.00
WHITE WARE								
Bowl	26,446.23	21.22	14.30	8.29	121,850.23	26.20	303,780.53	24.34
Jar	21,632.32	17.36	18.20	10.56	101,775.50	21.88	264,943.36	21.23
Ladle	1,779.40	1.43	31.20	18.10	7,707.48	1.66	23,845.02	1.91
Mug	628.30	0.50			1,020.70	0.22	4,116.50	0.33
Kiva/seed jar	376.50	0.30			509.30	0.11	1,753.95	0.14
Canteen	11.40	0.01			24.70	0.01	175.70	0.01
Other	159.80	0.13			318.00	0.07	785.44	0.06
Unknown	408.70	0.33	4.80	2.78	8,029.34	1.73	12,309.45	0.99
RED WARE								
Bowl	1.40	0.00			242.65	0.05	614.14	0.05
Jar					45.50	0.01	170.70	0.01
Ladle					6.50	0.00	6.50	0.00
Kiva/seed jar	2.10	0.00					5.70	0.00
Unknown					7.60	0.00	16.70	0.00

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
NONLOCAL								
Bowl	488.60	0.39			997.51	0.21	2,405.40	0.19
Jar	18.80	0.02			92.80	0.02	456.77	0.04
Ladle					2.40	0.00	2.40	0.00
Mug					3.20	0.00	18.70	0.00
Kiva/seed jar					1.60	0.00	1.60	0.00
Other					24.60	0.01	28.68	0.00
Unknown					8.40	0.00	11.10	0.00
UNKNOWN								
Bowl	3.10	0.00			39.40	0.01	93.80	0.01
Jar	16.60	0.01			83.60	0.02	166.10	0.01
Kiva/seed jar					3.60	0.00	3.60	0.00
Other					3.80	0.00	3.80	0.00
Unknown	7.30	0.01			643.70	0.14	839.00	0.07
TOTAL	124,633.87	100.00	172.40	100.00	465,165.36	100.00	1,248,161.65	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.11. Pottery Rim Counts by Pottery Type and Temporal Component, Shields Pueblo.

(a) Table 10.11, Early Pueblo I through Early Pueblo III

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	N	%	N	%	N	%	N	%	N	%
MUD WARE										
Basketmaker Mudware	1.00	0.86			1.00	0.03			1.00	0.03
PLAIN GRAY WARE										
Chapin Gray	8.00	6.90	20.00	3.08	17.00	0.58	5.00	1.67	8.00	0.22
Moccasin Gray	1.00	0.86			3.00	0.10			1.00	0.03
Mancos Gray					1.00	0.03				
Indeterminate Local Gray	5.00	4.31	29.00	4.47	47.00	1.62	9.00	3.01	26.00	0.73
CORRUGATED GRAY WARE										
Mancos Corrugated Gray	8.00	6.90	122.00	18.80	211.00	7.25	14.00	4.68	189.00	5.28
Mesa Verde Corrugated Gray	14.00	12.07	23.00	3.54	341.00	11.72	24.00	8.03	426.00	11.91
Mummy Lake Gray					7.00	0.24			2.00	0.06
Indeterminate Local Corrugated Gray	10.00	8.62	53.00	8.17	247.00	8.49	26.00	8.70	275.00	7.69
WHITE WARE										
Chapin Black-on-white			19.00	2.93	7.00	0.24	1.00	0.33	2.00	0.06
Piedra Black-on-white	2.00	1.72	9.00	1.39	7.00	0.24	1.00	0.33		
Cortez Black-on-white			2.00	0.31	6.00	0.21			5.00	0.14
Mancos Black-on-white	12.00	10.34	147.00	22.65	746.00	25.64	57.00	19.06	350.00	9.78
McElmo Black-on-white	11.00	9.48	17.00	2.62	375.00	12.89	48.00	16.05	660.00	18.45
Mesa Verde Black-on-white	2.00	1.72	8.00	1.23	28.00	0.96	20.00	6.69	325.00	9.09
Early White Painted		0.00	9.00	1.39	10.00	0.34	1.00	0.33	4.00	0.11
Early White Unpainted	8.00	6.90	26.00	4.01	22.00	0.76	2.00	0.67	2.00	0.06
Pueblo II White Painted		0.00	21.00	3.24	19.00	0.65	1.00	0.33	19.00	0.53
Pueblo III White Painted	8.00	6.90	19.00	2.93	119.00	4.09	22.00	7.36	459.00	12.83
Late White Painted	12.00	10.34	42.00	6.47	389.00	13.37	34.00	11.37	392.00	10.96
Late White Unpainted	9.00	7.76	66.00	10.17	264.00	9.07	33.00	11.04	404.00	11.29
Indeterminate Local White Painted					6.00	0.21			1.00	0.03

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	N	%	N	%	N	%	N	%	N	%
Indeterminate Local White Unpainted	1.00	0.86	2.00	0.31	4.00	0.14			7.00	0.20
RED WARE										
Abajo Red-on-orange	3.00	2.59			1.00	0.03				
Bluff Black-on-red			1.00	0.15					1.00	0.03
Deadmans Black-on-red			2.00	0.31	4.00	0.14			1.00	0.03
Indeterminate Local Red Painted					1.00	0.03				
Indeterminate Local Red Unpainted	1.00	0.86	1.00	0.15	1.00	0.03			1.00	0.03
NONLOCAL										
Other Gray Nonlocal			2.00	0.31	3.00	0.10			2.00	0.06
Other Red Nonlocal			6.00	0.92	11.00	0.38	1.00	0.33	11.00	0.31
Other White Nonlocal			1.00	0.15	2.00	0.07			1.00	0.03
Polychrome										
UNKNOWN										
Unknown Gray					6.00	0.21			2.00	0.06
Unknown Red			1.00	0.15	1.00	0.03				
Unknown White					1.00	0.03				
Unknown Pottery			1.00	0.15	2.00	0.07				
TOTAL	116.00	100.00	649.00	100.00	2,910.00	100.00	299.00	100.00	3,577.00	100.00
% of Total Site Assemblage		0.72		4.02		18.02		1.85		22.15

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 10.11, Late Pueblo III, Middle PII–Late PIII, Unassigned, and Total

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%
MUD WARE								
Basketmaker Mudware					4.00	0.05	7.00	0.04
PLAIN GRAY WARE								
Chapin Gray					27.00	0.36	85.00	0.53
Moccasin Gray							5.00	0.03
Mancos Gray					4.00	0.05	5.00	0.03
Indeterminate Neckbanded Gray	8.00	0.76			90.00	1.19	214.00	1.33
Indeterminate Local Gray					27.00	0.36	85.00	0.53
CORRUGATED GRAY WARE								
Mancos Corrugated Gray	61.00	5.78			448.00	5.94	1,053.00	6.52
Mesa Verde Corrugated Gray	165.00	15.63			711.00	9.43	1,704.00	10.55
Mummy Lake Gray							9.00	0.06
Indeterminate Local Corrugated Gray	88.00	8.33			776.00	10.29	1,475.00	9.13
WHITE WARE								
Chapin Black-on-white					19.00	0.25	48.00	0.30
Piedra Black-on-white	1.00	0.09			12.00	0.16	32.00	0.20
Cortez Black-on-white	1.00	0.09			13.00	0.17	27.00	0.17
Mancos Black-on-white	84.00	7.95	1.00	50.00	903.00	11.98	2,300.00	14.24
McElmo Black-on-white	177.00	16.76			1,072.00	14.22	2,360.00	14.62
Mesa Verde Black-on-white	115.00	10.89			392.00	5.20	890.00	5.51
Early White Painted					12.00	0.16	36.00	0.22
Early White Unpainted					37.00	0.49	97.00	0.60
Pueblo II White Painted	1.00	0.09			38.00	0.50	99.00	0.61
Pueblo III White Painted	127.00	12.03			880.00	11.67	1,634.00	10.12
Late White Painted	94.00	8.90			985.00	13.07	1,948.00	12.06
Late White Unpainted	122.00	11.55	1.00	50.00	989.00	13.12	1,888.00	11.69

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%
Indeterminate Local White Painted					8.00	0.11	15.00	0.09
Indeterminate Local White Unpainted					29.00	0.38	43.00	0.27
RED WARE								
Abajo Red-on-orange							4.00	0.02
Bluff Black-on-red							2.00	0.01
Deadmans Black-on-red					7.00	0.09	14.00	0.09
Indeterminate Local Red Painted					1.00	0.01	2.00	0.01
Indeterminate Local Red Unpainted	1.00	0.09			1.00	0.01	6.00	0.04
NONLOCAL								
Other Gray Nonlocal					1.00	0.01	8.00	0.05
Other Red Nonlocal	5.00	0.47			34.00	0.45	68.00	0.42
Other White Nonlocal	1.00	0.09			1.00	0.01	6.00	0.04
Polychrome	3.00	0.28			3.00	0.04	6.00	0.04
UNKNOWN								
Unknown Gray	2.00	0.19			23.00	0.31	33.00	0.20
Unknown Red					1.00	0.01	3.00	0.02
Unknown White					4.00	0.05	5.00	0.03
Unknown Pottery					13.00	0.17	16.00	0.10
TOTAL	1,056.00	100.00	2.00	100.00	7,538.00	100.00	16,147.00	100.00
% of Total Site Assemblage		6.54		0.01		46.68		100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.12. Pottery Rim Weights by Pottery Type and Temporal Component, Shields Pueblo.

(a) Table 10.12, Early Pueblo I through Early Pueblo III

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUD WARE										
Basketmaker Mudware	13.10	0.86			14.60	0.04			2.00	0.00
PLAIN GRAY WARE										
Chapin Gray	175.18	11.45	542.30	6.81	179.80	0.54	33.40	0.97	63.40	0.13
Moccasin Gray	4.00	0.26			17.20	0.05			6.20	0.01
Mancos Gray					9.00	0.03				
Indeterminate Local Gray	56.80	3.71	290.60	3.65	205.60	0.62	44.80	1.30	89.35	0.19
CORRUGATED GRAY WARE										
Mancos Corrugated Gray	39.10	2.56	1,800.08	22.62	2,390.70	7.15	120.30	3.48	2,088.80	4.38
Mesa Verde Corrugated Gray	460.10	30.08	549.10	6.90	6,647.44	19.89	312.30	9.04	8,698.32	18.25
Mummy Lake Gray					234.80	0.70			38.60	0.08
Indeterminate Local Corrugated Gray	22.60	1.48	266.10	3.34	985.89	2.95	94.50	2.73	1,076.30	2.26
WHITE WARE										
Chapin Black-on-white			278.35	3.50	78.60	0.24	2.10	0.06	3.70	0.01
Piedra Black-on-white	45.80	2.99	115.14	1.45	104.64	0.31	18.90	0.55		
Cortez Black-on-white			81.70	1.03	60.40	0.18			27.60	0.06
Mancos Black-on-white	128.00	8.37	2,356.55	29.61	10,974.01	32.84	751.80	21.75	3,862.84	8.10
McElmo Black-on-white	259.80	16.99	163.10	2.05	6,141.91	18.38	1,006.40	29.12	13,417.06	28.15
Mesa Verde Black-on-white	42.20	2.76	56.10	0.70	484.00	1.45	339.10	9.81	6,615.50	13.88
Early White Painted			59.20	0.74	54.25	0.16	2.50	0.07	9.70	0.02
Early White Unpainted	97.10	6.35	213.50	2.68	122.90	0.37	8.00	0.23	29.50	0.06
Pueblo II White Painted			233.68	2.94	84.50	0.25	3.00	0.09	127.10	0.27
Pueblo III White Painted	95.50	6.24	95.50	1.20	694.84	2.08	279.90	8.10	4,652.83	9.76
Late White Painted	22.40	1.46	220.20	2.77	2,080.25	6.23	139.10	4.02	2,533.88	5.32
Late White Unpainted	50.60	3.31	508.40	6.39	1,524.51	4.56	297.20	8.60	4,158.12	8.72
Indeterminate Local White Painted					37.24	0.11			1.10	0.00

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Indeterminate Local White Unpainted	0.90	0.06	18.44	0.23	8.80	0.03			23.50	0.05
RED WARE										
Abajo Red-on-orange	7.80	0.51			2.10	0.01				
Bluff Black-on-red			4.90	0.06					3.60	0.01
Deadmans Black-on-red			8.10	0.10	29.00	0.09			2.20	0.00
Indeterminate Local Red Painted					9.70	0.03				
Indeterminate Local Red Unpainted	8.60	0.56	3.80	0.05	0.30	0.00			3.10	0.01
NONLOCAL										
Other Gray Nonlocal			11.40	0.14	62.10	0.19			53.70	0.11
Other Red Nonlocal			73.36	0.92	139.30	0.42	3.00	0.09	65.70	0.14
Other White Nonlocal			4.08	0.05	9.30	0.03			12.60	0.03
Polychrome										
UNKNOWN										
Unknown Gray					18.70	0.06			2.80	0.01
Unknown Red			4.30	0.05	5.10	0.02				
Unknown White					2.40	0.01				
Unknown Pottery			0.80	0.01	1.60	0.00				
TOTAL	1,529.58	100.00	7,958.78	100.00	33,415.48	100.00	3,456.30	100.00	47,669.10	100.00
% of Total Site Assemblage		0.91		4.75		19.93		2.06		28.43

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 10.12, Late Pueblo III, Middle PII–Late PIII, Unassigned, and Total

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUD WARE								
Basketmaker Mudware					28.80	0.05	58.50	0.03
PLAIN GRAY WARE								
Chapin Gray					127.90	0.24	1,121.98	0.67
Moccasin Gray							27.40	0.02
Mancos Gray					28.30	0.05	37.30	0.02
Indeterminate Neckbanded Gray	65.60	0.34			327.02	0.60	1,079.77	0.64
Indeterminate Local Gray					127.90	0.24	1,121.98	0.67
CORRUGATED GRAY WARE								
Mancos Corrugated Gray	930.50	4.78			3,505.70	6.48	10,875.18	6.49
Mesa Verde Corrugated Gray	4,591.97	23.58			8,312.82	15.36	29,572.05	17.64
Mummy Lake Gray							273.40	0.16
Indeterminate Local Corrugated Gray	534.00	2.74			2,387.11	4.41	5,366.50	3.20
WHITE WARE								
Chapin Black-on-white					109.80	0.20	472.55	0.28
Piedra Black-on-white	4.70	0.02			67.90	0.13	357.08	0.21
Cortez Black-on-white	4.50	0.02			129.50	0.24	303.70	0.18
Mancos Black-on-white	1,251.20	6.43	31.20	96.30	7,296.69	13.48	26,652.29	15.90
McElmo Black-on-white	5,542.57	28.47			12,318.32	22.76	38,849.16	23.17
Mesa Verde Black-on-white	2,627.76	13.50			5,823.71	10.76	15,988.37	9.54
Early White Painted					47.90	0.09	173.55	0.10
Early White Unpainted					119.90	0.22	590.90	0.35
Pueblo II White Painted	3.00	0.02			192.40	0.36	643.68	0.38
Pueblo III White Painted	1,613.90	8.29			4,418.14	8.16	11,850.61	7.07
Late White Painted	765.10	3.93			4,128.72	7.63	9,889.65	5.90

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Late White Unpainted	1,360.60	6.99	1.20	3.70	4,235.62	7.83	12,136.25	7.24
Indeterminate Local White Painted					23.10	0.04	61.44	0.04
Indeterminate Local White Unpainted					85.90	0.16	137.54	0.08
RED WARE								
Abajo Red-on-orange							9.90	0.01
Bluff Black-on-red							8.50	0.01
Deadmans Black-on-red					23.40	0.04	62.70	0.04
Indeterminate Local Red Painted					2.00	0.00	11.70	0.01
Indeterminate Local Red Unpainted	2.10	0.01			5.30	0.01	23.20	0.01
NONLOCAL								
Other Gray Nonlocal					15.30	0.03	142.50	0.08
Other Red Nonlocal	118.70	0.61			282.10	0.52	682.16	0.41
Other White Nonlocal	6.00	0.03			3.20	0.01	35.18	0.02
Polychrome	40.30	0.21			17.90	0.03	58.20	0.03
UNKNOWN								
Unknown Gray	7.50	0.04			37.30	0.07	66.30	0.04
Unknown Red					2.80	0.01	12.20	0.01
Unknown White					5.00	0.01	7.40	0.00
Unknown Pottery					12.60	0.02	15.00	0.01
TOTAL	19,470.00	100.00	32.40	100.00	54,122.15	100.00	167,653.79	100.00
% of Total Site Assemblage		11.61		0.02		32.28		100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.13. Variation in Paint Types of Diagnostic White Ware Rims by Count and Component, Shields Pueblo.

Component	Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)	
Paint Type	N	%	N	%	N	%	N	%	N	%
MANCOS BLACK-ON-WHITE										
Carbon paint	55.0	37.4	540.0	72.4	36.0	63.2	263.0	75.1	61.0	72.6
Mineral paint	87.0	59.2	178.0	23.9	20.0	35.1	81.0	23.1	19.0	22.6
Mixed paint	5.0	3.4	24.0	3.2	1.0	1.8	4.0	1.1	4.0	4.8
Indeterminate paint			4.0	0.5			2.0	0.6		
TOTAL	147.0	100.0	746.0	100.0	57.0	100.0	350.0	100.0	84.0	100.0
MCELMO BLACK-ON-WHITE										
Carbon paint	15.0	88.2	346.0	92.3	44.0	91.7	609.0	92.3	165.0	93.2
Mineral paint	2.0	11.8	25.0	6.7	4.0	8.3	47.0	7.1	11.0	6.2
Mixed paint			4.0	1.1			4.0	0.6	1.0	0.6
Indeterminate paint										
TOTAL	17.0	100.0	375.0	100.0	48.0	100.0	660.0	100.0	177.0	100.0
MESA VERDE BLACK-ON-WHITE										
Carbon paint	6.0	75.0	25.0	89.3	20.0	100.0	312.0	96.0	109.0	94.8
Mineral paint	2.0	25.0	2.0	7.1			10.0	3.1	3.0	2.6
Mixed paint			1.0	3.6			3.0	0.9	3.0	2.6
Indeterminate paint										
TOTAL	8.0	100.0	28.0	100.0	20.0	100.0	325.0	100.0	115.0	100.0

Table 10.14. Variation in Paint Types of Diagnostic White Ware Rims by Weight and Component, Shields Pueblo.

Component	Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)	
Paint Type	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MANCOS BLACK-ON-WHITE										
Carbon paint	656.2	27.85	8,284.4	75.49	593.2	78.90	2,894.4	74.93	917.4	73.32
Mineral paint	1,574.5	66.81	2,106.1	19.19	157.5	20.95	924.8	23.94	248.2	19.84
Mixed paint	125.9	5.34	537.7	4.90	1.1	0.15	31.7	0.82	85.6	6.84
Indeterminate paint		0.00	45.8	0.42		0.00	12.0	0.31		0.00
TOTAL	2,356.6	100.00	10,974.0	100.00	751.8	100.00	3,862.8	100.00	1,251.2	100.00
MCELMO BLACK-ON-WHITE										
Carbon paint	145.0	88.90	5,726.9	93.24	825.7	82.04	12,327.1	91.88	5,326.6	96.10
Mineral paint	18.1	11.10	373.9	6.09	180.7	17.96	985.2	7.34	197.4	3.56
Mixed paint		0.00	41.1	0.67		0.00	104.7	0.78	18.6	0.34
Indeterminate paint		0.00		0.00		0.00		0.00		0.00
TOTAL	163.1	100.00	6,141.9	100.00	1,006.4	100.00	13,417.1	100.00	5,542.6	100.00
MESA VERDE BLACK-ON-WHITE										
Carbon paint	38.2	68.09	448.7	92.71	339.1	100.00	6,255.0	94.55	2,553.9	97.19
Mineral paint	17.9	31.91	8.0	1.65		0.00	232.0	3.51	34.1	1.30
Mixed paint		0.00	27.3	5.64		0.00	128.5	1.94	39.8	1.51
Indeterminate paint		0.00		0.00		0.00		0.00		0.00
TOTAL	56.1	100.00	484.0	100.00	339.1	100.00	6,615.5	100.00	2,627.8	100.00

Table 10.15. Pottery Rim Counts by Ware and Form, Shields Pueblo.

(a) Table 10.15, Early Pueblo I through Early Pueblo III

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	N	%	N	%	N	%	N	%	N	%
MUD WARE										
Bowl										
Jar									1	0.03
Other					1	0.03				
Unknown	1	0.86								
PLAIN GRAY WARE										
Bowl			4	0.62	10	0.34			2	0.06
Jar	10	8.62	30	4.62	56	1.92	13	4.35	33	0.92
Kiva/seed jar	4	3.45	12	1.85	2	0.07	1	0.33		
Canteen										
Other			2	0.31						
Unknown			1	0.15						
CORRUGATED GRAY WARE										
Bowl					4	0.14				
Jar	32	27.59	198	30.51	802	27.56	64	21.40	892	24.94
Kiva/seed jar										
Unknown										
WHITE WARE										
Bowl	47	40.52	270	41.60	1,588	54.57	172	57.53	2,016	56.36
Jar	12	10.34	73	11.25	212	7.29	21	7.02	261	7.30
Ladle	4	3.45	26	4.01	144	4.95	21	7.02	252	7.05
Mug	1	0.86	4	0.62	12	0.41	1	0.33	36	1.01
Kiva/seed jar	1	0.86	9	1.39	17	0.58	2	0.67	25	0.70
Canteen			1	0.15	2	0.07			6	0.17

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	N	%	N	%	N	%	N	%	N	%
Other			2	0.31	4	0.14			2	0.06
Unknown			2	0.31	23	0.79	3	1.00	32	0.89
RED WARE										
Bowl	4	3.45	3	0.46	5	0.17			2	0.06
Jar			1	0.15	2	0.07				
Ladle										
Kiva/seed jar									1	0.03
NONLOCAL										
Bowl			5	0.77	13	0.45	1	0.33	12	0.34
Jar			3	0.46	3	0.10			2	0.06
Ladle										
Mug										
Kiva/seed jar										
Other			1	0.15						
UNKNOWN										
Bowl			1	0.15	4	0.14				
Jar			1	0.15	4	0.14			1	0.03
Kiva/seed jar										
Unknown					2.00	0.07			1	0.03
TOTAL	116.00	100.00	649.00	100.00	2,910.00	100.00	299.00	100.00	3,577.00	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 10.15, Late Pueblo III, Middle PII–Late PIII, Unassigned, and Total

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%
MUD WARE								
Bowl					2	0.03	2	0.01
Jar					2	0.03	3	0.02
Other							1	0.01
Unknown							1	0.01
PLAIN GRAY WARE								
Bowl					10	0.13	26	0.16
Jar	8	0.76			105	1.39	255	1.58
Kiva/seed jar					4	0.05	23	0.14
Canteen					1	0.01	1	0.01
Other							2	0.01
Unknown					1	0.01	2	0.01
CORRUGATED GRAY WARE								
Bowl							4	0.02
Jar	314	29.73			1,932	25.63	4,234	26.22
Kiva/seed jar					2	0.03	2	0.01
Unknown					1	0.01	1	0.01
WHITE WARE								
Bowl	557	52.75			4,244	56.30	8,894	55.08
Jar	67	6.34	1	50.00	528	7.00	1,175	7.28
Ladle	59	5.59	1	50.00	292	3.87	799	4.95
Mug	8	0.76			31	0.41	93	0.58
Kiva/seed jar	13	1.23			35	0.46	102	0.63
Canteen	3	0.28			7	0.09	19	0.12
Other	2	0.19			6	0.08	16	0.10
Unknown	13	1.23			246	3.26	319	1.98
RED WARE								

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%
Bowl					8	0.11	22	0.14
Jar							3	0.02
Ladle					1	0.01	1	0.01
Kiva/seed jar	1	0.09					2	0.01
NONLOCAL								
Bowl	7	0.66			36	0.48	74	0.46
Jar	2	0.19					10	0.06
Ladle					1	0.01	1	0.01
Mug					1	0.01	1	0.01
Kiva/seed jar					1	0.01	1	0.01
Other							1	0.01
UNKNOWN								
Bowl					6	0.08	11	0.07
Jar	2	0.19			18	0.24	26	0.16
Kiva/seed jar					1	0.01	1	0.01
Unknown					16	0.21	19	0.12
TOTAL	1,056	100.00	2	100.00	7,538	100.00	16,147	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.16. Rim-Sherd Weights by Ware, Form, and Component, Shields Pueblo.

(a) Table 10.16, Early Pueblo I through Early Pueblo III

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUD WARE										
Bowl										
Jar									2.00	0.00
Other					14.60	0.04				
Unknown	13.10	0.86								
PLAIN GRAY WARE										
Bowl			71.10	0.89	71.50	0.21			5.30	0.01
Jar	166.68	10.90	510.40	6.41	308.10	0.92	75.00	2.17	153.65	0.32
Kiva/seed jar	69.30	4.53	218.50	2.75	32.00	0.10	3.20	0.09		
Canteen										
Other			31.70	0.40						
Unknown			1.20	0.02						
CORRUGATED GRAY WARE										
Bowl					125.50	0.38				
Jar	521.80	34.11	2,615.28	32.86	10,133.33	30.33	527.10	15.25	11,902.02	24.97
Kiva/seed jar										
Unknown										
WHITE WARE										
Bowl	553.70	36.20	3,165.92	39.78	17,836.60	53.38	2,258.20	65.34	27,578.21	57.85
Jar	126.50	8.27	662.44	8.32	1,829.48	5.47	202.40	5.86	3,164.01	6.64
Ladle	36.90	2.41	293.20	3.68	2,484.65	7.44	359.70	10.41	3,448.68	7.23
Mug	3.40	0.22	24.80	0.31	56.80	0.17	9.00	0.26	714.70	1.50
Kiva/seed jar	21.80	1.43	101.50	1.28	171.72	0.51	4.50	0.13	432.73	0.91
Canteen			19.50	0.25	10.10	0.03			24.70	0.05

Pottery Type and Ware	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Other			131.60	1.65	37.40	0.11			25.70	0.05
Unknown			0.90	0.01	24.10	0.07	14.20	0.41	73.70	0.15
RED WARE										
Bowl	16.40	1.07	13.70	0.17	38.70	0.12			5.30	0.01
Jar			3.10	0.04	2.40	0.01				
Ladle										
Kiva/seed jar									3.60	0.01
NONLOCAL										
Bowl			38.76	0.49	148.60	0.44	3.00	0.09	78.30	0.16
Jar			46.00	0.58	62.10	0.19			53.70	0.11
Ladle										
Mug										
Kiva/seed jar										
Other			4.08	0.05						
UNKNOWN										
Bowl			4.30	0.05	10.70	0.03				
Jar			0.80	0.01	15.90	0.05			2.50	0.01
Kiva/seed jar										
Unknown					1.20	0.00			0.30	0.00
TOTAL	1,529.58	100.00	7,958.78	100.00	33,415.48	100.00	3,456.30	100.00	47,669.10	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 10.16, Late Pueblo III, Middle PII–Late PIII, Unassigned, and Total

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUD WARE								
Bowl					15.50	0.03	15.50	0.01
Jar					13.30	0.02	15.30	0.01
Other							14.60	0.01
Unknown							13.10	0.01
PLAIN GRAY WARE								
Bowl					57.60	0.11	205.50	0.12
Jar	65.60	0.34			401.52	0.74	1,680.95	1.00
Kiva/seed jar					19.50	0.04	342.50	0.20
Canteen					4.50	0.01	4.50	0.00
Other							31.70	0.02
Unknown					0.10	0.00	1.30	0.00
CORRUGATED GRAY WARE								
Bowl							125.50	0.07
Jar	6,056.47	31.11			14,153.53	26.15	45,909.53	27.38
Kiva/seed jar					48.10	0.09	48.10	0.03
Unknown					4.00	0.01	4.00	0.00
WHITE WARE								
Bowl	10,595.23	54.42			31,337.21	57.90	93,325.07	55.67
Jar	1,066.70	5.48	1.20	3.70	3,408.32	6.30	10,461.05	6.24
Ladle	975.10	5.01	31.20	96.30	3,208.35	5.93	10,837.78	6.46
Mug	111.80	0.57			283.40	0.52	1,203.90	0.72
Kiva/seed jar	286.10	1.47			420.40	0.78	1,438.75	0.86
Canteen	7.70	0.04			24.70	0.05	86.70	0.05
Other	116.40	0.60			23.60	0.04	334.70	0.20
Unknown	14.30	0.07			291.62	0.54	418.82	0.25
RED WARE								

Pottery Type and Ware	Late Pueblo III (A.D. 1225–1280)		Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)		Unassigned		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Bowl					24.20	0.04	98.30	0.06
Jar							5.50	0.00
Ladle					6.50	0.01	6.50	0.00
Kiva/seed jar	2.10	0.01					5.70	0.00
NONLOCAL								
Bowl	148.80	0.76			311.30	0.58	728.76	0.43
Jar	16.20	0.08					178.00	0.11
Ladle					2.40	0.00	2.40	0.00
Mug					3.20	0.01	3.20	0.00
Kiva/seed jar					1.60	0.00	1.60	0.00
Other							4.08	0.00
UNKNOWN								
Bowl					8.40	0.02	23.40	0.01
Jar	7.50	0.04			25.20	0.05	51.90	0.03
Kiva/seed jar					3.60	0.01	3.60	0.00
Unknown					20.50	0.04	22.00	0.01
TOTAL	19,470.00	100.00	32.40	100.00	54,122.15	100.00	167,653.79	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.17. Modified and Shaped Sherds by Ware and Form, Shields Pueblo.

Artifact Category	Form	Ware												TOTAL	
		Corrugated Gray		Plain Gray		White		Red		Nonlocal		Unknown			
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
Modified Sherds	bowl					870	48.8	10	66.7	14	100.0			894	47.0
	jar	76	100.0	13	100.0	828	46.5	5	33.3					922	48.5
	kiva/seed jar					2	0.1							2	0.1
	ladle					35	2.0							35	1.8
	mug					3	0.2							3	0.2
	other					13	0.7							13	0.7
	unknown					30	1.7					3	100.0	33	1.7
	TOTAL MODIFIED	76	100.0	13	100.0	1,781	100.0	15	100.0	14	100.0	3	100.0	1,902	100.0
Shaped Sherds	bowl					247	60.2	18	90.0	15	83.3			280	57.3
	jar	37	100.0	4	100.0	155	37.8	2	10.0	3	16.7			201	41.1
	unknown					8	2.0							8	1.6
	TOTAL SHAPED	37	100.0	4	100.0	410	100.0	20	100.0	18	100.0			489	100.0

Table 10.18. Modified and Shaped Sherds by Architectural Block, Shields Pueblo.

Architectural Block	Modified Sherds			Shaped Sherds			Cooking Pottery Wt. (g)
	N	%	R^1	N	%	R^2	
100	161	22.97	1.52	44	25.29	0.42	105,595.9
200	119	16.98	1.01	33	18.97	0.28	117,515.6
300	1	0.14	1.50				665.5
400	21	3.00	1.20	4	2.30	0.23	17,434.9
500	5	0.71	4.48				1,117.3
600	3	0.43	0.96	1	0.57	0.32	3,125.4
700	1	0.14	1.76				569.0
800	5	0.71	1.33				3,769.0
1000	2	0.29	1.93				1,036.3
1100	88	12.55	1.73	14	8.05	0.28	50,749.2
1200	16	2.28	0.62	8	4.60	0.31	25,778.8
1300	175	24.96	1.39	43	24.71	0.34	125,616.4
1400	87	12.41	0.99	23	13.22	0.26	87,746.7
1500	6	0.86	0.65	4	2.30	0.43	9,291.1
1900	11	1.57	2.18				5,035.0
TOTAL	701	100.00		174	100.00		

Notes: Percentages shown as totals may not add up to exactly 100% due to rounding.
R^1 = Ratio of the number of modified sherds/kg of cooking pottery. R^2 = Ratio of the number of shaped sherds/kg of cooking pottery.

Table 10.19. Shaped and Modified Sherds by Component, Shields Pueblo.

Component	Shaped Sherds				Modified Sherds		
	N	%	Cooking pottery wt. (g)	R^1	N	%	R^2
Early Pueblo I (A.D. 725–800)	0.0	0.00	3,105.2	0.00	1	0.14	0.32
Middle Pueblo II (A.D. 1020–1060)	9	5.17	29,671.6	0.30	23	3.29	0.78
Late Pueblo II (A.D. 1060–1140)	37	21.26	100,285.3	0.37	161	23.03	1.61
Early Pueblo III (A.D. 1140–1225)	43	24.71	148,604.2	0.29	142	20.31	0.96
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	9	5.17	10,186.9	0.88	20	2.86	1.96
Late Pueblo III (A.D. 1225–1280)	12	6.90	69,972.4	0.17	46	6.58	0.66
Subperiod not assigned	64	36.78	193,483.6	0.33	306	43.78	1.58
TOTAL	174	100.00	555,309.2	0.31	699	100.00	1.26

Notes: Percentages shown as totals may not add up to exactly 100% due to rounding.
R^1 = Ratio of the number of shaped sherds to kg of cooking pottery. R^2 = Ratio of the number of modified sherds to kg of cooking pottery.

Table 10.20. Pottery Vessel Data, Shields Pueblo.

(a) Table 10.20

Vessel No.	Photo No.	Pottery Type	Vessel Form	Vessel Condition	Maximum Diameter (mm)	Maximum Diameter Height (mm)	Orifice Diameter (mm)	Orifice Height (mm)	Rim Diameter (mm)	Rim Height (mm)
1	7933, 7934	Mesa Verde Black-on-white	bowl	partial					376	
2	7984, 7985, 7986	McElmo Black-on-white	mug	partial					28	
3	8051	Mesa Verde Black-on-white	bowl	partial					260	
4	7935, 7936	Pueblo III White Painted	olla	partial			85		120	
5		Mancos Black-on-white	ladle	nearly complete						
6	7931, 7932	McElmo Black-on-white	bowl	partial					220	
7	7927, 7928	Mesa Verde Black-on-white	mug	partial					76	105
8		McElmo Black-on-white	bowl	partial					285	155
9		Late White Painted	ladle	partial						
10		McElmo Black-on-white	mug	partial	100	12			88	101
11	7952, 7954	Wingate Polychrome	bowl	partial					268	
12	7960, 7961	McElmo Black-on-white	bowl	partial	206	206	195	88	235	90
13	8030, 8035	Mesa Verde Corrugated Gray	jar	partial			204		260	
14	7896, 7898	Mesa Verde Corrugated Gray	wide-mouth jar	partial			232		280	
15	7991	Mancos Black-on-white	bowl	partial					360	
16	7958	Chapin Gray	jar	partial			140	35	140	
17	8004, 8005	McElmo Black-on-white	jar	partial						
18	7920, 7922	Mancos Black-on-white	ladle	partial	110	404			110	50
19	7945, 7947	McElmo Black-on-white	bowl	partial		75			82	64

Vessel No.	Photo No.	Pottery Type	Vessel Form	Vessel Condition	Maximum Diameter (mm)	Maximum Diameter Height (mm)	Orifice Diameter (mm)	Orifice Height (mm)	Rim Diameter (mm)	Rim Height (mm)
20	7888, 7890	Mancos Black-on-white	jar	partial					80	
21	8041, 8047	Mesa Verde Corrugated Gray	wide-mouth jar	partial	275	180	190	290	236	320
23	7956, 7957	McElmo Black-on-white	bowl	partial					288	6
25		McElmo Black-on-white	bowl						280	
26		Mesa Verde Corrugated Gray	wide-mouth jar	partial					10	
27	7892, 7893	McElmo Black-on-white	other	partial					104	
28	7925, 7926	McElmo Black-on-white	bowl	partial					244	110
29	7906	Indeterminate Local Corrugated Gray	other	nearly complete	255	55	250			
30		Other White Nonlocal	bowl	partial		2			19	
31	7992, 7993	McElmo Black-on-white	ladle	partial					96	51
33	7939, 7980	Mancos Black-on-white	ladle	partial					108	50
34	7970, 7972	Mancos Corrugated Gray	jar	partial	210		140	17	160	
35	8006, 8011	Indeterminate Local Corrugated Gray	wide-mouth jar	partial	430	430	195	30	220	330
36	7923, 8052	Pueblo III White Painted	mug	partial	100				40	86
37	7942, 7943	Indeterminate Local Corrugated Gray	bowl	partial					35	3
38	7944, 7946	McElmo Black-on-white	mug	partial					80	74
39	7913, 7917	McElmo Black-on-white	bowl	partial					162	80
40	7966, 7969	McElmo Black-on-white	ladle	partial					140	61
41	7997, 7998	Mancos Black-on-white	jar	partial					144	
42	7900, 7901	McElmo Black-on-white	bowl	partial	200		200		200	
43	7902, 7904	Late White Unpainted	sherd container	nearly complete						
44	7982, 7983	McElmo Black-on-white	ladle	partial	120	61				

Vessel No.	Photo No.	Pottery Type	Vessel Form	Vessel Condition	Maximum Diameter (mm)	Maximum Diameter Height (mm)	Orifice Diameter (mm)	Orifice Height (mm)	Rim Diameter (mm)	Rim Height (mm)
45	7930, 8134	Mesa Verde Black-on-white	bowl	partial	185	77			180	77
47	7948, 7949	Late White Unpainted	miniature mug	complete	42	20	25	50	28	60
48	7911, 7912	Mancos Black-on-white	jar	partial						
49	7963, 7964	Mancos Black-on-white	jar	partial					92	
50	8064, 8065	Mesa Verde Black-on-white	bowl	partial					184	
51	7987, 7990	McElmo Black-on-white	bowl	partial					148	65
52	7894, 7895	McElmo Black-on-white	bowl	partial					180	

(b) Table 10.20

Vessel No.	Total Volume (ml)	Reconstructed Portion Present (%)	Portion Present (%)	Weight of Portion Present (g)	Comments
1			20	154	4 rims refit; PD 47 FS14 Items 4–7, 11; partial bowl with thin slip on interior. Design: one thick framing line at rim, four thin parallel lines then another thick line. Ticks on rim.
2			35	67	4 sherds refit; PD 922 FS23. Approx. 40% of the rim is present. Design is banded, continuous and all over, ticks on rim. Slip on the interior lip and the body exterior is thick and well polished.
3			10	225	PD 922 FS24, 2 sherds refit. Approx. 19% of rim present. Exterior is unslipped with fire clouds, interior slip is thin, rim has zoned ticking. Geometric band design on interior.
4			30	107	PD 664 FS12 PL7, 3 rim sherds. 60% of unpainted, corrugated rim and neck of an olla. Neck height is 50 mm. Exterior of neck is indented corrugated, interior has thin, white slip. Zones of ticking on rim.
5					PD 894 FS13 PL8. Cup of ladle is almost complete.
6			15	163	PD 1011 FS1 PL1. Approx. 25% of rim. Unslipped interior and exterior. Interior has carbon paint, geometric design in a band extending 24 mm below rim, no ticks, fire cloud on rim and on exterior.
7			15	45	PD 934 FS2, 6 pieces refit. Exterior design is a banded all-over design, zigzagged ticking on the rim. The slip is thick on the exterior and on the interior of the rim lip. 5% of the rim is present.
8	5,650		75	927	PD 740 FS6, 31 pieces. Approximately 20% of the rim is present. Faint remnants of painted design on the interior of the bowl. Slightly flattened base.
9			35	256	PD 756 FS54 PL74. 1 rim sherd in 2 refitting fragments, recent break. Less than half the diameter of the ladle cup and the handle attachment is present. The cup shape is of a later style but the vessel is crudely made with an unslipped surface. The vessel height and cup diameter cannot be determined. Shape of bowl and rim form suggests Mancos Black-on-white; steep walled and pointed rim. Paint type is carbon but design is too faint to be discerned.
10			40		PD 1068 FS3 PL2 (3 sherds); 1 is rim and partial handle; estimated rim arc template 185 degrees of arc; mug was a possible funerary object, reburied 10/99.
11			15	236	PD 1242 FS24; 3 groups that refit, forming parts of base, side and rim, 8% of rim; painted on 2 surfaces. Exterior has white slip, red paint, stepped design (solid and hatcher); interior has red slip and faint black paint, stepped, hatched and solid design.
12	1,600		80	630	PD 1407 FS9; triangles filled with diagonal hatcher hang from rim line, some have drip lines, sloppy execution, rim with simple ticking; burned and clouded some of which happened after deposition.

Vessel No.	Total Volume (ml)	Reconstructed Portion Present (%)	Portion Present (%)	Weight of Portion Present (g)	Comments
13			40	1,666	PD 1407, FS13; many refits, rims and body sherds; large jar but not enough to get measurements; corrugated with 2 straight, raised coils spaced 70 mm apart throughout the jar.
14		5			Rim diameter was estimated using rim-arc template. PD 1245 FS10 PL3 (2 pieces refit). Indented corrugation with plain rim, 15 mm high.
15		10			15% of rim circumference is present, rim diameter is estimated using rim-arc template. PD 1272 FS15 PL10 (1 rim sherd only). Unslipped exterior and interior, fire cloud on exterior, geometric design on interior that extends up onto the rim, also 5 ticks show on rim.
16		20			Approximately 30% of the rim is present. PD 1282 FS13.
17		25			PD 1306 FS33 PL 29; 2 sherds, all refit. 6 pieces assembled. There is no rim. Interior no slip. Exterior slipped. Mineral paint. All over scroll geometric design.
18	350	70			PD 1254 FS 5 PL 4. Handle length equals 72 mm and is incomplete; end broken off and smoothed.
19		30			PD 1075 FS 31. Carbon paint. One piece with about 1/3 of the circumference present, small part of the base. Exterior has fire cloud. Rim ticks, no exterior design.
20					PD 1205 FS 2. Just under 50% of circumference present. Vessel includes rims and bodies from Mancos Black-on-white jar with mineral paint.
21		30			PD 1171 FS 2 PL8. Vessel has large amount of biotite—nonlocal? All sherds from PD-FS appear to be from a single vessel with consistent corrugation style, coil thickness, and multiple clusters of refit sherds. Moderate sooting on rim and one side.
23		10			PD 1782 FS 1 Item 7. Repair hole near rim. Very weathered section of a large painted white ware bowl. Rim arc is approx. 35 degrees with 5 barely visible bands of carbon paint.
25					PD 1763 FS 2 PL 11. Not collected, possible funerary item, reburied. Total sherds equals 18. Design is similar to Vessel 24 in style, execution, and design. Paint is not even thickness and was likely applied multiple times in places. Lines are not perfectly parallel between or within a line. Exterior is thinly slipped and not well smoothed, the coils can be felt. Vessel thickness is even and parallel. One section is fire clouded on interior. Flat rim with thick carbon paint. Estimated height of completed bowl is 130 mm; estimated diameter, based on rim arc, is 28.
26		16			PD 1065 FS 22 PL94. Sherds have residue adhered to interior surfaces. 49 sherds, 4 rims refit. Decision made on 2/05/03 not to refit due to residue on the interior body and rim sherds. Nature of residue is currently unknown.

Vessel No.	Total Volume (ml)	Reconstructed Portion Present (%)	Portion Present (%)	Weight of Portion Present (g)	Comments
27		60			PD 1407 FS 18,20. Has contracting stem/orifice much more than is typical for a bowl. Interior is unslipped, exterior has thin slip, polish. Carbon paint. Poorly executed design. Vessel is well formed.
28		20			PD 1994 FS 9 PL 108. Approximately 20% of the rim is present. Slipped on interior. Exterior has extensive sooting. Rim has zoned ticking. From rim to the beginning of base consists of a band of alternating design. Carbon paint. Repair hole.
29	1,040	95			PD 2107 FS 14 PL 10. Looks as if the vessel was once a jar, broken and the lower half used. The edges of the vessel have been modified roughly, shaped to become the rim. The vessel is broken into 12 pieces, all which refit. Depth is very shallow. Vessel found on the floor of Structure 1316 in association with a possible pottery production area. This vessel is possibly a puki.
30		45			PD 983 FS22 and PD 894 FS9. Sherd container created from Gallup Black-on-white bowl. Volume could not be estimated because there was so little remaining.
31	190	65			PD 2014 FS 12 Item 34. Exterior is not slipped with 2 small fire clouds. Interior has light slip. Design is two bands of triangles between rim and bottom with no ticks.
33	115	40			PD 1855 FS 4 Item 29. Approximately 17% of rim present. Interior and exterior polished but not slipped. Exterior design consists of 3 parallel lines between rim and the middle of the handle. Paint is mineral.
34		20			PD 1903 FS1, 12. Lots of decoration present, incising basket impressions, patterned corrugation. Clapboard corrugation on neck, indented corrugation on body.
35		50			PD 1452 FS 14 PL 21 (some as FS 23). A partially reconstructible cooking vessel with sooting on the lower half. Vessel was assembled using numerous sherds from PDs 1452, 1451, 1819, 1075.
36		25			PD 2107 FS 19 PL 8. One piece of mug, complete, profile and handle. Well polished, carbon paint with intact strap handle, a 103-degree arc rim and 144-degree arc bottom. Fire cloud obscures some of the design, but rim ticks and bird forms on handle are visible.
37		20			PD 1978 FS8. Very rare, corrugated gray bowl or plate. Base to rim present. This vessels consist of 1 sherd. Abrasion on rim, vessel base and smoothed on the interior bottom of vessel.
38		20			PD 1762 FS 19 Item 22. Approximately 17% of rim is present. Interior lip slipped, exterior thickly slipped. Sooting on bottom 1/4 of handle and base of mug.
39		20			PD 1762 FS 19 Item 9. Image of head, neck, arms, and hands of a figure painted near the center of the vessel; an apparent skeletal arms and hands possibly playing the flute. Unslipped bowl. Rim has some ticking and the band design is alternating

Vessel No.	Total Volume (ml)	Reconstructed Portion Present (%)	Portion Present (%)	Weight of Portion Present (g)	Comments
40	454	40			PD 1978 FS 8 Item 22, 1 piece. Complete profile, base to rim. Handle broken at cup. Use wear on left side from right-handed use. Unslipped, sooting on exterior. Continuous ticks on the rim, moderate use wear on rim.
41		30			PD 1762 FS 36 PL 6, 16 pieces. Interior lip has slip. Exterior has thick white slip. Two framing lines at the base of the neck. Other PDs possibly associated with this vessel, see companion database.
42		30			PD 2150 FS 1. Design is black carbon paint on white slip on interior. Tick marks on squared rim are 1.0–1.5 mm wide and evenly spaced. Three framing lines at rim with triangular pendants hanging from third framing line. A single line runs around the middle of the vessel. The bottom section is missing. Six pieces are present and all refit.
43		99			PD 1937 FS 1 PL 2. Original vessel form listed as jar, then reshaped into sherd container. Unpainted white ware jar. Flattened bowl shape, possible use as a puki.
44		40			PD 2126 FS 1. Two repair holes.
45	1,080	75			PD 1992 FS 22 PL 13. Fire cloud both interior and exterior. Two repair holes on either side of break near the rim. Additional sherds refit (from PD 1992) making for a nearly complete refit of the rim. Vessel is well slipped and polished. Organic paint. Rim is ticked. Interior design is classic Mesa Verde banded design.
47	33	95			PD 1807 FS 18 PL 1. Fire clouding on base and one side of vessel. Handle is circular in cross-section.
48		30			PD 1762 FS 36. Eight pieces refit for side of jar with handle. Two more sections refit. Total of 19 sherds in vessel refit.
49					PD 1978 FS 8 Items 23–25, 3 pieces. Some of the breaks appear to be recent. Neither interior nor exterior is slipped. Continuous scroll design. Mineral paint.
50					PD 1763 FS 35 Items 4, 6, 7, 10. Slipped on interior and exterior. Ticking on rim. Thick framing lines below rim, followed by four thick lines. Negative design below framing lines.
51		25			PD 1407 FS 4 PL 38. Three sherds refit. Portion of rim burned after original break. Unslipped. Carbon paint.
52		10			PD 1864 FS 1 Items 1–5. Zoned rim ticking. No slip, carbon paint.

Table 10.21. Pottery Vessel Context Information, Shields Pueblo.

Vessel No.	PD No.	Pottery Type	Form	Study Unit		Subperiod	Fill Assemblage Position		Fill Assemblage Type	
1	47	Mesa Verde Black-on-white	bowl	Structure	103	Late Pueblo II (A.D. 1060–1140)	fill	not further specified	mixed deposit	recent disturbance
2	922	McElmo Black-on-white	mug	Backhoe Trench	1407	Unassigned	fill	not further specified	mixed deposit	postabandonment and cultural refuse
3	922	Mesa Verde Black-on-white	bowl	Backhoe Trench	1407	Unassigned	fill	not further specified	mixed deposit	postabandonment and cultural refuse
4	664, 642	Pueblo III White Painted	jar	Structure, Backhoe Trench	1402, 1403	Late Pueblo III (A.D. 1225–1280)	fill	above wall/roof fall	mixed deposit	postabandonment and cultural refuse
5	894	Mancos Black-on-white	ladle	Nonstructure	157	Late Pueblo II (A.D. 1060–1140)	fill	not further specified	cultural deposit	mixed refuse
6	1011	McElmo Black-on-white	bowl	Structure	123	Early Pueblo III (A.D. 1140–1225)	surface contact	prepared floor surface	mixed deposit	recent disturbance
7	934	Mesa Verde Black-on-white	mug	Backhoe Trench	219	Unassigned	fill	not further specified	mixed deposit	postabandonment and cultural refuse
8	740	McElmo Black-on-white	bowl	Backhoe Trench	128	Unassigned	fill	not further specified	mixed deposit	postabandonment and cultural refuse
9	756	Late White Painted	ladle	Structure	1402	Late Pueblo III (A.D. 1225–1280)	fill	roof fall	collapsed structure	with de facto refuse
10	1068	McElmo Black-on-white	mug					funerary		
11	1242	Wingate Polychrome	bowl	Structure	1242	Late Pueblo III (A.D. 1225–1280)	surface contact	prepared floor surface	collapsed structure	de facto refuse

Vessel No.	PD No.	Pottery Type	Form	Study Unit		Subperiod	Fill Assemblage Position		Fill Assemblage Type	
12	1407	McElmo Black-on-white	bowl	Structure	221	Late Pueblo III (A.D. 1225–1280)	surface contact	prepared floor surface	cultural deposit	de facto refuse
13	1407	Mesa Verde Corrugated Gray	jar	Structure	221	Late Pueblo III (A.D. 1225–1280)	surface contact	prepared floor surface	cultural deposit	de facto refuse
14	1245	Mesa Verde Corrugated Gray	jar	Nonstructure	1320	Late Pueblo II (A.D. 1060–1140)	fill	above wall/roof fall	cultural deposit	secondary refuse
15	1272	Mancos Black-on-white	bowl	Structure	124	Late Pueblo II (A.D. 1060–1140)	fill	roof fall	collapsed structure	with mixed refuse
16	1282	Chapin Gray	jar	Structure	141	Early Pueblo I (A.D. 725–800)	surface contact	prepared floor surface	construction deposit	clean fill
17	1306	McElmo Black-on-white	jar	Structure	221	Late Pueblo III (A.D. 1225–1280)	surface contact	prepared floor surface	cultural deposit	de facto refuse
18	1257	Mancos Black-on-white	ladle	Structure	237	Late Pueblo II (A.D. 1060–1140)	surface contact	and fill above	collapsed structure	not further specified
19	1075	McElmo Black-on-white	bowl	Structure	224	Late Pueblo III (A.D. 1225–1280)	fill	roof fall	collapsed structure	with mixed refuse
20	1205	Mancos Black-on-white	jar	Backhoe Trench	1304	Unassigned	fill	not further specified	mixed deposit	postabandonment and cultural refuse
21	1171	Mesa Verde Corrugated Gray	jar	Structure	139	Early Pueblo III (A.D. 1140–1225)	fill	wall fall and roof fall	collapsed structure	with de facto refuse
23	1782	McElmo Black-on-white	bowl	Nonstructure	1202	Early Pueblo III (A.D. 1140–1225)	fill	not further specified	cultural deposit	secondary refuse

Vessel No.	PD No.	Pottery Type	Form	Study Unit		Subperiod	Fill Assemblage Position		Fill Assemblage Type	
25	1763	McElmo Black-on-white	bowl	Nonstructure	1418	Early Pueblo III (A.D. 1140–1225)	fill	above wall/roof fall	cultural deposit	secondary refuse
26	1065	Mesa Verde Corrugated Gray	jar	Structure	1408	Late Pueblo III (A.D. 1225–1280)	fill	roof fall	collapsed Structure	with de facto refuse
27	1407	McElmo Black-on-white	other	Structure	221	Late Pueblo III (A.D. 1225–1280)	surface contact	prepared floor surface	cultural deposit	de facto refuse
28	1994	McElmo Black-on-white	bowl	Structure	1205	Early Pueblo III (A.D. 1140–1225)	fill	roof fall	collapsed Structure	with de facto refuse
29	2107	Indeterminate Local Corrugated Gray	other	Structure	1316	Early Pueblo III (A.D. 1140–1225)	surface contact	prepared floor surface	cultural deposit	de facto refuse
30	983	Other White Nonlocal	bowl	Nonstructure	130	Late Pueblo II (A.D. 1060–1140)	fill	not further specified	cultural deposit	secondary refuse
31	2014	McElmo Black-on-white	ladle	Nonstructure	1107	Early Pueblo III (A.D. 1140–1225)	fill	upper	cultural deposit	secondary refuse
33	1855	Mancos Black-on-white	ladle	Nonstructure	153	Late Pueblo II (A.D. 1060–1140)	fill	above wall/roof fall	cultural deposit	secondary refuse
34	1903	Mancos Corrugated Gray	jar	Nonstructure	1310	Middle Pueblo II (A.D. 1020–1060)	fill	surface feature contents	cultural deposit	secondary refuse
35	1452	Indeterminate Local Corrugated Gray	jar	Structure	224	Late Pueblo III (A.D. 1225–1280)	surface contact	prepared floor surface	cultural deposit	de facto refuse
36	2107	Pueblo III White Painted	mug	Structure	1316	Early Pueblo III (A.D. 1140–1225)	surface contact	prepared floor surface	cultural deposit	de facto refuse

Vessel No.	PD No.	Pottery Type	Form	Study Unit		Subperiod	Fill Assemblage Position		Fill Assemblage Type	
37	1978	Indeterminate Local Corrugated Gray	bowl	Nonstructure	1320	Late Pueblo II (A.D. 1060–1140)	fill	above wall/roof fall	cultural deposit	secondary refuse
38	1762	McElmo Black-on-white	mug	Nonstructure	1418	Early Pueblo III (A.D. 1140–1225)	fill	above wall/roof fall	cultural deposit	secondary refuse
39	1762	McElmo Black-on-white	bowl	Nonstructure	1418	Early Pueblo III (A.D. 1140–1225)	fill	above wall/roof fall	cultural deposit	secondary refuse
40	1978	McElmo Black-on-white	ladle	Nonstructure	1320	Late Pueblo II (A.D. 1060–1140)	fill	above wall/roof fall	cultural deposit	secondary refuse
41	1762	Mancos Black-on-white	jar	Nonstructure	1418	Early Pueblo III (A.D. 1140–1225)	fill	above wall/roof fall	cultural deposit	secondary refuse
42	2150	McElmo Black-on-white	bowl	Structure	1114	Early Pueblo III (A.D. 1140–1225)	fill	surface feature contents	cultural deposit	primary refuse
43	1937	Late White Unpainted	sherd container	Structure	1316	Early Pueblo III (A.D. 1140–1225)	surface contact	bench surface	collapsed Structure	with mixed refuse
44	2126	McElmo Black-on-white	ladle	Nonstructure	1115	Early Pueblo III (A.D. 1140–1225)	fill	not further specified	cultural deposit	not further specified
45	1992	Mesa Verde Black-on-white	bowl	Structure	241	Late Pueblo III (A.D. 1225–1280)	surface contact	prepared floor surface	cultural deposit	mixed refuse
47	1807	Late White Unpainted	miniature mug	Nonstructure	1310	Middle Pueblo II (A.D. 1020–1060)	fill	lower	mixed deposit	postabandonment and cultural refuse
48	1762	Mancos Black-on-white	jar	Nonstructure	1418	Early Pueblo III (A.D. 1140–1225)	fill	above wall/roof fall	cultural deposit	secondary refuse

Vessel No.	PD No.	Pottery Type	Form	Study Unit		Subperiod	Fill Assemblage Position		Fill Assemblage Type	
49	1978	Mancos Black-on-white	jar	Nonstructure	1320	Late Pueblo II (A.D. 1060–1140)	fill	above wall/roof fall	cultural deposit	secondary refuse
50	1763	Mesa Verde Black-on-white	bowl	Nonstructure	1418	Early Pueblo III (A.D. 1140–1225)	fill	above wall/roof fall	cultural deposit	secondary refuse
51	1407	McElmo Black-on-white	bowl	Structure	221	Late Pueblo III (A.D. 1225–1280)	surface contact	prepared floor surface	cultural deposit	de facto refuse
52	1864	McElmo Black-on-white	bowl	Nonstructure	153	Late Pueblo II (A.D. 1060–1140)	fill	wall fall and roof fall	collapsed Structure	with mixed refuse

Table 10.22. Degrees of Rim-Arc Measurements for White Ware Bowl Rims, by Component and Radius Estimates, Shields Pueblo.

(a) Table 10.22, Rim Radius Estimates: 4–13 cm

Component	Rim Radius Estimates (cm)									
	4	5	6	7	8	9	10	11	12	13
Early Pueblo I (A.D. 725–800)				60		76		49	45	85
Middle Pueblo II (A.D. 1020–1060)	90	40	201	395	364	587	331	425	215	114
Late Pueblo II (A.D. 1060–1140)		85	115	85	339	365	348	270	225	116
Early Pueblo III (A.D. 1140–1225)	55	172	495	512	1,055	1,577	1,356	1,445	1,247	613
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)			67		20	60	92	148	217	47
Late Pueblo III (A.D. 1225–1280)	70	87	200	397	592	1,052	675	755	485	357
Unassigned			35			40	72	20	50	13
TOTAL	215	384	1,113	1,449	2,370	3,757	2,874	3,112	2,484	1,345

(b) Table 10.22, Rim Radius Estimates: 14–>20 cm, Totals

Component	Rim Radius Estimates (cm)								Total Degrees of Arc Measurements	Total Number of Sherds
	14	15	16	17	18	19	20	>20		
Early Pueblo I (A.D. 725–800)	13	45							373	12
Middle Pueblo II (A.D. 1020–1060)	38		21	21					2,842	95
Late Pueblo II (A.D. 1060–1140)	103	19	81			10			2,161	83
Early Pueblo III (A.D. 1140–1225)	526	196	81	69	49		18	17	9,483	348
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	117	24	31	12	10				845	35
Late Pueblo III (A.D. 1225–1280)	594	464	52	85	11			15	5,891	202
Unassigned									230	11
TOTAL	1,391	748	266	187	70	10	18	32	21,825	786

Table 10.23. Degree of Rim-Arc Measurements for Cooking Pottery Rims, by Component and Radius Estimates, Shields Pueblo.

(a) Table 10.23, Rim Radius Estimates 1–10 cm

Component	Rim Radius Estimates (cm)									
	1	2	3	4	5	6	7	8	9	10
Early Pueblo I (A.D. 725–800)					35	20	40			
Middle Pueblo II (A.D. 1020–1060)			35	55	105	285	385	405	345	220
Late Pueblo II (A.D. 1060–1140)			35	120	200	335	335	305	310	185
Early Pueblo III (A.D. 1140–1225)				35	475	855	780	1,015	740	730
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		70		60	155	60	50	80	90	35
Late Pueblo III (A.D. 1225–1280)			155	125	270	440	525	485	650	715
Unassigned	120	105	20	65	105		160	10	50	15
TOTAL	120	175	245	460	1,345	1,995	2,275	2,300	2,185	1,900

(b) Table 10.23, Rim Radius Estimates 11–16 cm, 20 cm, and Totals

Component	Rim Radius Estimates (cm)							Total Degrees of Arc Measurements	Total Number of Sherds
	11	12	13	14	15	16	20		
Early Pueblo I (A.D. 725–800)								95	4
Middle Pueblo II (A.D. 1020–1060)	285	300	80	85	50	55	11	2,701	63
Late Pueblo II (A.D. 1060–1140)	290	180	170	75	15	30		2,585	53
Early Pueblo III (A.D. 1140–1225)	665	432	100	90	50	10		5,977	107
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	15				20			635	12
Late Pueblo III (A.D. 1225–1280)	665	289	260	195	35	20		4,829	66
Unassigned	25							675	11
TOTAL	1,945	1,201	610	445	170	115	11	17,497	316

Table 10.24. Design Attribute Analysis Samples, Shields Pueblo.

Sample	Dates	Context and Comments	Number of Rims Examined
Early Pueblo I	A.D. 725–800	All bowl rims originally classified as Chapin Black-on-white, Piedra Black-on-white, or Early White Painted.	98
Middle Pueblo II	A.D. 1020–1060	NST 1310, 1311, 1321; STR 1307	172
Late Pueblo II	A.D. 1060–1140	NST 152, 153, 154, 238, 1309, 1320; STR 1308	162
Late Pueblo II through Early Pueblo III	A.D. 1060–1225	NST 101, 226, 1313; STR 1414	61
Early Pueblo III	A.D. 1140–1225	NST 142, 210, 245, 1103, 1107, 1109, 1202, 1409, 1418; STR 1209, 140	689
Late Pueblo III	A.D. 1225–1280	STR 208, 221, 223, 224, 241, 405, 406, 1315, 1402, 1408	350
Basket-impressed sherds	A.D. 1020–1225	All bowl rims on which a basket impression was noted during pottery analysis.	15
TOTAL			1,547

Note: NST = Nonstructure; STR = Structure

Table 10.25. Design Attribute Counts, Shields Pueblo.

	Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Basket-impressed Sherds	TOTAL
Number of "vessels" examined	55	151	134	626	272	11	1,249
EXTERIOR ATTRIBUTES							
Coiled-basket texture (impression/corrugation)	1	5	0	6	1	11	24
No exterior paint	53	137	127	565	237	0	1,119
Isolated design	0	2	3	8	2	0	15
Plaited selvage design (continuous line-based design)	0	0	1	10	11	0	22
Coiled band design (geometric band design)	0	0	0	8	8	0	16
RIM ATTRIBUTES							
Colored rim coil (line on rim)	30	59	15	16	3	1	124
Rim stitching (ticks)	0	18	34	319	140	2	513
Patterned rim stitching (ticking)	0	1	0	29	14	0	44
False-braided rim (Xs, zig-zags)	0	0	0	11	3	0	14
No rim paint	25	60	71	189	85	8	438
FRAMING ATTRIBUTES							
No framing lines	51	121	93	255	108	7	635
Rim coil (one thick framing line)	2	8	8	71	32	1	122
Alternating colored coils (multiple thick framing lines)	0	2	15	94	30	0	141
Coil texture (thin framing lines)	2	2	10	54	22	1	91
Rim coil and texture (one thick, multiple thin framing lines)	0	3	1	112	48	0	164

	Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Basket-impressed Sherds	TOTAL
Colored coils and texture (multiple thick and thin framing lines)	0	0	1	5	3	0	9
Colored stitching (tick marks between lines)	0	0	3	15	5	0	23
INTERIOR DESIGN ATTRIBUTES							
Coiled-basketry color pattern	18	27	7	78	21	2	153
Coiled-basketry texture pattern (framing line band)	0	1	2	20	9	0	32
Simple plaiting (checkerboard)	0	9	12	21	8	1	51
Twill-plaiting texture pattern	0	20	13	10	7	1	51
Twill-plaiting color pattern	0	8	10	20	11	1	50
Non-loom band design	1	12	11	34	13	1	72
Plain-tapestry band design	0	2	2	33	18	0	55
Twill-tapestry texture (background hachure)	0	0	3	40	18	0	61
Twill-tapestry band design	0	0	1	40	31	0	72
Twill-tapestry all-over design	0	0	1	2	1	0	4
Non-textile design	3	12	4	14	2	0	35

Table 10.26. Design Attribute Observations, Shields Pueblo.

	Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Basket-impressed Sherds	TOTAL
Number of "vessels" examined	55	151	134	626	272	11	1,249
EXTERIOR ATTRIBUTES							
Coiled-basket texture (impression/corrugation)	53	139	130	589	257	11	1,179
No exterior paint	55	151	134	624	272	11	1,247
Isolated design	54	146	132	600	264	11	1,207
Plaited selvage design (continuous line-based design)	54	144	132	597	259	11	1,197
Coiled band design (geometric band design)	54	146	133	600	264	11	1,208
RIM ATTRIBUTES							
Colored rim coil (line on rim)	55	144	121	598	258	11	1,187
Rim stitching (ticks)	55	144	121	598	258	11	1,187
Patterned rim stitching (ticking)	55	144	121	598	258	11	1,187
False-braided rim (Xs, zig-zags)	55	144	121	598	258	11	1,187
No rim paint	55	144	128	583	252	11	1,173
FRAMING ATTRIBUTES							
No framing lines	55	151	131	608	254	10	1,209
Rim coil (one thick framing line)	43	139	124	588	235	9	1,138
Alternating colored coils (multiple thick framing lines)	43	134	127	591	237	9	1,141
Coil texture (thin framing lines)	43	140	127	591	237	9	1,147
Rim coil and texture (one thick, multiple thin	43	139	124	588	235	9	1,138

	Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Basket-impressed Sherds	TOTAL
framing lines)							
Colored coils and texture (multiple thick and thin framing lines)	43	139	124	588	235	9	1,138
Colored stitching (tick marks between lines)	52	133	111	510	218	7	1,031
INTERIOR DESIGN ATTRIBUTES							
Coiled-basketry color pattern	26	98	81	398	179	7	789
Coiled-basketry texture pattern (framing line band)	49	122	98	384	166	7	826
Simple plaiting (checkerboard)	26	92	72	356	163	7	716
Twill-plaiting texture pattern	26	92	72	356	163	7	716
Twill-plaiting color pattern	26	92	72	356	163	7	716
Non-loom band design	26	92	72	356	163	7	716
Plain-tapestry band design	26	92	72	356	163	7	716
Twill-tapestry texture (background hachure)	26	90	72	356	163	7	714
Twill-tapestry band design	26	90	72	356	163	7	714
Twill-tapestry all-over design	26	92	72	356	163	7	716
Non-textile design	26	98	81	398	179	7	789

Table 10.27. Design Attribute Proportions, Shields Pueblo.

	Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Basket-impressed Sherds	TOTAL
Number of "vessels" examined	55	151	134	626	272	11	1,249
EXTERIOR ATTRIBUTES							
Coiled basket texture (impression/corrugation)	.019	.036	.000	.010	.004	1.000	.020
No exterior paint	.964	.907	.948	.905	.871	.000	.897
Isolated design	.000	.014	.023	.013	.008	.000	.012
Plaited selvage design (continuous line-based design)	.000	.000	.008	.017	.042	.000	.018
Coiled band design (geometric band design)	.000	.000	.000	.013	.030	.000	.013
RIM ATTRIBUTES							
Colored rim coil (line on rim)	.545	.410	.124	.027	.012	.091	.104
Rim stitching (ticks)	.000	.125	.281	.533	.543	.182	.432
Patterned rim stitching (ticking)	.000	.007	.000	.048	.054	.000	.037
False-braided rim (Xs, zig-zags)	.000	.000	.000	.018	.012	.000	.012
No rim paint	.455	.417	.555	.324	.337	.727	.373
FRAMING ATTRIBUTES							
No framing lines	.927	.801	.710	.419	.425	.700	.525
Rim coil (one thick framing line)	.047	.058	.065	.121	.136	.111	.107
Alternating colored coils (multiple thick framing lines)	.000	.015	.118	.159	.127	.000	.124
Coil texture (thin framing lines)	.047	.014	.079	.091	.093	.111	.079
Rim coil and texture (one thick, multiple thin framing lines)	.000	.022	.008	.190	.204	.000	.144
Colored coils and texture (multiple thick and thin framing lines)	.000	.000	.008	.009	.013	.000	.008

	Early Pueblo I (A.D. 725–800)	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Basket-impressed Sherds	TOTAL
Colored stitching (tick marks between lines)	.000	.000	.027	.029	.023	.000	.022
INTERIOR DESIGN ATTRIBUTES							
Coiled-basketry color pattern	.692	.276	.086	.196	.117	.286	.194
Coiled-basketry texture pattern (framing line band)	.000	.008	.020	.052	.054	.000	.039
Simple plaiting (checkerboard)	.000	.098	.167	.059	.049	.143	.071
Twill-plaiting texture pattern	.000	.217	.181	.028	.043	.143	.071
Twill-plaiting color pattern	.000	.087	.139	.056	.067	.143	.070
Non-loom band design	.038	.130	.153	.096	.080	.143	.101
Plain-tapestry band design	.000	.022	.028	.093	.110	.000	.077
Twill-tapestry texture (background hachure)	.000	.000	.042	.112	.110	.000	.085
Twill-tapestry band design	.000	.000	.014	.112	.190	.000	.101
Twill-tapestry all-over design	.000	.000	.014	.006	.006	.000	.006
Non-textile design	.115	.122	.049	.035	.011	.000	.044

NOTE: Shaded cells indicate time periods during which the given design attribute is attested in textile collections (after Ortman 2000b:Table 2).

Table 10.28. Household Assemblages Used in Seriation Analysis, Shields Pueblo and Upper Sand Canyon Area.

Site Number	Site Name	Household*	Study Unit	Community	Number of Vessels
5MT3807	Shields Pueblo	1107	1107	Goodman Point	194
5MT3807	Shields Pueblo	1109	1109	Goodman Point	31
5MT3807	Shields Pueblo	1209	1209	Goodman Point	28
5MT3807	Shields Pueblo	1414	1414	Goodman Point	183
5MT3807	Shields Pueblo	1418	1418	Goodman Point	57
5MT3807	Shields Pueblo	245	245	Goodman Point	111
5MT3807	Shields Pueblo	1315	1315	Goodman Point	22
5MT3807	Shields Pueblo	1402	1402	Goodman Point	62
5MT3807	Shields Pueblo	405	405	Goodman Point	53
5MT3930	Roy's Ruin	1	ROY	"Casa Negra community"	107
5MT3936	Lillian's Site	1	LIS	"Casa Negra community"	79
5MT5152	Kenzie Dawn Hamlet	3	KDH	"Casa Negra community"	29
5MT3951	Troy's Tower	1	TT	"Casa Negra community"	58
5MT10459	Lookout House	1	LOH	Sand Canyon	122
5MT765	Sand Canyon Pueblo	501	500	Sand Canyon	102
5MT10246	Lester's Site	1	LES	Sand Canyon	111
5MT765	Sand Canyon Pueblo	102	100	Sand Canyon	141
5MT765	Sand Canyon Pueblo	1004	1000	Sand Canyon	166
5MT765	Sand Canyon Pueblo	1206	1200	Sand Canyon	124
5MT765	Sand Canyon Pueblo	208	200	Sand Canyon	147
5MT765	Sand Canyon Pueblo	808	800	Sand Canyon	71
5MT765	Sand Canyon Pueblo	1502	1500	Sand Canyon	58

* For households from the Goodman Point community, the number in the "Household" column refers to the study unit of the analyzed sherds; for households from the "Casa Negra" and Sand Canyon communities, this number refers to the study unit number of the pit structure that formed the nucleus of each household.

Table 10.29. Estimated Attribute Counts for Household Design Assemblages, Shields Pueblo and Upper Sand Canyon Area.

(a) Table 10.29, Exterior Decoration and Rim Decoration

Decorative Zone:			Exterior Decoration					Rim Decoration				
Site Name	Label	Vessels	No Exterior Paint	Coiled Basket Texture	Isolated Design	Plaited Selvage Design	Coiled Band Design	No Rim Paint	Colored Rim Coil	Rim Stitching	Patterned Rim Stitching	False-Braided Rim
Shields Pueblo	1107	194	180	0	2	3	4	64	3	106	8	6
Shields Pueblo	1109	31	26	0	1	2	2	10	1	14	3	2
Shields Pueblo	1209	28	24	0	0	2	1	9	0	14	2	1
Shields Pueblo	1414	183	18	0	0	2	0	7	1	10	2	1
Shields Pueblo	1418	57	58	0	1	3	1	22	0	31	4	2
Shields Pueblo	245	111	160	3	1	3	2	61	8	90	12	1
Shields Pueblo	1315	22	48	0	2	5	1	17	0	29	5	2
Shields Pueblo	1402	62	104	1	3	3	1	37	1	60	6	2
Shields Pueblo	405	53	44	0	0	5	2	18	0	26	4	2
Roy's Ruin	ROY	107	87	0	1	6	2	33	4	51	12	4
Lillian's Site	LIS	79	66	1	2	4	2	25	1	37	10	3
Troy's Tower	TT	29	49	1	1	3	1	19	1	28	5	3
Kenzie Dawn Hamlet	KDH	58	26	0	0	1	1	10	1	14	2	1
Lester's Site	LES	111	75	1	4	6	9	36	0	46	14	11
Lookout House	LOH	122	78	2	5	12	7	38	3	60	13	4
Sand Canyon Pueblo	500	102	97	0	4	13	12	54	1	48	14	19
Sand Canyon Pueblo	100	141	125	0	3	7	10	58	2	71	20	11
Sand Canyon Pueblo	1000	166	78	0	4	8	21	25	0	75	18	5
Sand Canyon Pueblo	1200	124	73	0	4	14	37	47	1	70	19	4
Sand Canyon Pueblo	200	147	73	0	5	8	8	36	1	44	10	5
Sand Canyon Pueblo	800	71	47	0	1	4	12	23	0	32	9	4
Sand Canyon Pueblo	1500	58	40	0	1	5	9	18	0	27	7	3

(b) Table 10.29, Framing Area and Interior Pattern

Decorative Zone:			Framing Area							Interior Pattern										
Site Name	Label	Vessels	No Framing Lines	Rim Coil	Alternating Colored Coils	Coil Texture	Rim Coil and Texture	Colored Coils And Texture	Colored Stitching	Coiled Color	Coiled Texture	Simple Plaiting	Twill-Plaiting Texture	Twill-Plaiting Color	Non-Loom Band	Plain-Tapestry Band	Twill-Tapestry Texture	Twill-Tapestry Band	Twill-Tapestry All-Over	Non-Textile Pattern
Shields Pueblo	1107	194	69	29	30	19	48	1	12	30	14	4	2	11	18	18	20	30	2	9
Shields Pueblo	1109	31	8	5	7	3	6	0	1	5	2	0	1	4	1	3	5	4	0	0
Shields Pueblo	1209	28	6	5	3	2	10	0	0	4	4	0	0	1	1	3	3	4	0	0
Shields Pueblo	1414	183	7	4	3	2	5	0	0	3	1	1	1	1	1	3	2	3	0	0
Shields Pueblo	1418	57	21	9	9	6	18	1	2	6	4	0	2	2	8	9	5	10	0	2
Shields Pueblo	245	111	87	19	27	23	23	2	2	41	5	13	6	12	23	12	22	18	3	4
Shields Pueblo	1315	22	16	9	9	3	18	2	1	9	3	0	1	3	1	7	11	14	0	1
Shields Pueblo	1402	62	58	12	17	7	14	1	4	22	8	11	5	6	8	12	11	5	0	5
Shields Pueblo	405	53	21	9	10	4	9	1	2	5	5	0	2	7	2	4	10	11	0	1
Roy's Ruin	ROY	107	34	18	18	6	28	5	1	10	11	4	1	6	1	10	20	15	0	1
Lillian's Site	LIS	79	25	13	14	5	24	2	11	9	8	1	2	9	2	6	19	9	3	2
Troy's Tower	TT	29	20	11	8	3	19	1	2	8	2	1	1	10	1	3	7	12	0	1
Kenzie Dawn Hamlet	KDH	58	12	4	4	3	7	1	3	3	2	0	1	2	4	2	8	3	0	0
Lester's Site	LES	111	25	19	20	9	34	3	6	8	7	2	1	9	1	11	24	19	2	5
Lookout House	LOH	122	26	30	23	5	37	3	5	7	17	3	2	6	1	11	18	37	2	1
Sand Canyon Pueblo	500	102	23	25	19	20	48	3	5	7	33	1	2	6	1	6	3	44	0	1
Sand Canyon Pueblo	100	141	26	26	24	21	56	10	6	8	22	5	2	11	2	13	17	54	0	4
Sand Canyon Pueblo	1000	166	36	37	11	3	23	10	7	5	9	0	3	14	2	12	43	16	11	6

Decorative Zone:			Framing Area							Interior Pattern										
Site Name	Label	Vessels	No Framing Lines	Rim Coil	Alternating Colored Coils	Coil Texture	Rim Coil and Texture	Colored Coils And Texture	Colored Stitching	Coiled Color	Coiled Texture	Simple Plaiting	Twill-Plaiting Texture	Twill-Plaiting Color	Non-Loom Band	Plain-Tapestry Band	Twill-Tapestry Texture	Twill-Tapestry Band	Twill-Tapestry All-Over	Non-Textile Pattern
Sand Canyon Pueblo	1200	124	21	24	24	12	52	10	5	14	12	8	1	8	1	15	28	37	0	5
Sand Canyon Pueblo	200	147	11	16	17	6	48	3	1	11	10	1	4	8	2	12	6	30	0	5
Sand Canyon Pueblo	800	71	15	13	9	8	20	3	6	9	6	1	2	6	1	5	8	19	2	1
Sand Canyon Pueblo	1500	58	17	10	6	8	16	1	1	6	4	0	1	4	3	5	9	18	0	2

Table 10.30. Axis 1 Loadings for Design Attributes from Correspondence Analysis of Estimated Attribute Counts, Shields Pueblo and Sand Canyon Area.

	Dimension 1 Loading
EXTERIOR ATTRIBUTES	
Coiled basket texture (impression/corrugation)	−.6594
No exterior paint	−.1342
Isolated design	.3475
Plaited selvage design (continuous line-based design)	.3852
Coiled band design (geometric band design)	.7147
RIM ATTRIBUTES	
Colored rim coil (line on rim)	−.5502
Rim stitching (ticks)	−.0490
No rim paint	−.0019
Patterned rim stitching (ticking)	.2598
False-braided rim (Xs, zig-zags)	.4194
FRAMING ATTRIBUTES	
No framing lines	−.3769
Coil texture (thin framing lines)	−.0288
Alternating colored coils (multiple thick framing lines)	−.0068
Colored stitching (tick marks between lines)	.0722
Rim coil (one thick framing line)	.1697
Rim coil and texture (one thick, multiple thin framing lines)	.2433
Colored coils and texture (multiple thick and thin framing lines)	.4924
INTERIOR DESIGN ATTRIBUTES	
Non-loom band design	−.8825
Simple plaiting (checkerboard)	−.5110
Coiled-basketry color pattern	−.4167
Twill-plaiting texture pattern	−.2729
Non-textile design	−.0395
Plain-tapestry band design	−.0048
Twill-plaiting color pattern	.0217
Twill-tapestry texture (background hachure)	.0759
Twill-tapestry all-over design	.1818
Coiled-basketry texture pattern (framing line band)	.3252
Twill-tapestry band design	.3466

Note: Attributes are presented in chronological order within each decorative zone.

Table 10.31. Polishing Stones, by Material, Shields Pueblo.

Material		N	%
Local	conglomerate	1	1.20
	Dakota quartzite	2	2.41
	igneous	2	2.41
	Morrison chert/siltstone	1	1.20
	Morrison quartzite	18	21.69
	quartz	2	2.41
Unknown	unknown chert/siltstone	3	3.61
	unknown quartzite	42	50.60
	unknown stone	10	12.05
	other mineral	2	2.41
TOTAL		83	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.32. Polishing Stones, Provenience and Context, Shields Pueblo.

Count	Study Unit		Study Unit Description	Fill Assemblage Position		Fill Assemblage Type	
2	Arbitrary Unit	105	noncultural	fill	not further specified	mixed deposit	recent disturbance
2	Structure	123	subterranean kiva	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1	Structure	137	earth-walled pit structure	fill	roof fall	collapsed structure	with mixed refuse
1	Structure	139	earth-walled pit structure	fill	roof fall	collapsed structure	with mixed refuse
3	Nonstructure	152	midden	fill	not further specified	cultural deposit	secondary refuse
5	Nonstructure	152	midden	fill	wall fall and roof fall	collapsed structure	with mixed refuse
2	Nonstructure	153	midden	fill	above wall/roof fall	cultural deposit	secondary refuse
2	Nonstructure	153	midden	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1	Arbitrary Unit	202	noncultural	fill	not further specified	mixed deposit	recent disturbance
1	Structure	205	subterranean room	fill	not further specified	cultural deposit	secondary refuse
1	Structure	221	subterranean kiva	fill	roof fall	collapsed structure	with mixed refuse
1	Structure	224	subterranean kiva	fill	roof fall	collapsed structure	with mixed refuse
1	Structure	225	subterranean kiva	fill	surface feature contents	cultural deposit	primary refuse
1	Nonstructure	238	midden	fill	not further specified	collapsed structure	with mixed refuse
1	Backhoe Trench	240	not further specified	fill	not further specified	mixed deposit	postabandonment and cultural refuse
2	Structure	241	subterranean kiva	fill	roof fall	collapsed structure	with de facto refuse
1	Structure	241	subterranean kiva	surface contact	prepared floor surface	cultural deposit	mixed refuse
2	Nonstructure	245	midden	fill	above wall/roof fall	cultural deposit	secondary refuse
1	Arbitrary Unit	701	noncultural	surface contact	modern ground surface	mixed deposit	recent disturbance
1	Arbitrary Unit	801	noncultural	surface contact	modern ground surface	mixed deposit	recent disturbance
2	Structure	803	subterranean kiva	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1	Arbitrary Unit	1101	noncultural	fill	not further specified	mixed deposit	recent disturbance
1	Backhoe Trench	1104	not further specified	fill	not further specified	mixed deposit	postabandonment and cultural refuse
2	Nonstructure	1107	midden	fill	upper	cultural deposit	secondary refuse
1	Structure	1108	subterranean kiva	fill	above wall/roof fall	cultural deposit	not further specified
1	Arbitrary Unit	1201	noncultural	surface contact	modern ground surface	mixed deposit	recent disturbance

Count	Study Unit		Study Unit Description	Fill Assemblage Position		Fill Assemblage Type	
3	Nonstructure	1202	midden	fill	not further specified	cultural deposit	secondary refuse
1	Structure	1205	subterranean kiva	surface contact	and fill above	collapsed structure	with de facto refuse
1	Structure	1206	subterranean kiva	fill	surface feature contents	cultural deposit	primary refuse
1	Arbitrary Unit	1302	noncultural	fill	above wall/roof fall	mixed deposit	recent disturbance
5	Arbitrary Unit	1302	noncultural	fill	not further specified	mixed deposit	recent disturbance
2	Structure	1308	earth-walled pit structure	fill	roof fall	collapsed structure	with mixed refuse
2	Nonstructure	1309	midden	fill	above wall/roof fall	cultural deposit	secondary refuse
7	Nonstructure	1320	midden	fill	above wall/roof fall	cultural deposit	secondary refuse
1	Nonstructure	1321	midden	fill	above wall/roof fall	cultural deposit	secondary refuse
2	Arbitrary Unit	1401	noncultural	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1	Arbitrary Unit	1401	noncultural	fill	not further specified	mixed deposit	recent disturbance
1	Structure	1402	subterranean kiva	fill	roof fall	collapsed structure	with de facto refuse
1	Structure	1402	subterranean kiva	fill	wall fall	mixed deposit	postabandonment and cultural refuse
4	Nonstructure	1409	midden	fill	not further specified	cultural deposit	secondary refuse
1	Structure	1413	subterranean room	fill	upper	postabandonment deposit	natural processes
1	Structure	1414	subterranean kiva	surface contact	other feature surface	collapsed structure	with mixed refuse
1	Structure	1414	subterranean kiva	surface contact	prepared floor surface	cultural deposit	de facto refuse
3	Backhoe Trench	1415	not further specified	fill	not further specified	mixed deposit	postabandonment and cultural refuse
4	Nonstructure	1418	midden	fill	above wall/roof fall	cultural deposit	secondary refuse
1	Arbitrary Unit	1901	noncultural	surface contact	modern ground surface	mixed deposit	recent disturbance

Table 10.33. Contexts and Analysis of Unfired Clay and Pottery Sherds, Shields Pueblo.

(a) Table 10.33, Clay Samples – Context and Analysis

PD	FS	PL	Wt. (g)	Sample Description	Temper	Ware or Type+	Study Unit Type	Study Unit Description	Subperiod
40*	6*		0.1	Very small, sandy, porous and worn. **FIRED**			ARB 302	noncultural	Subperiod not assigned
47*	13*		0.0	Tiny piece, hard, tapered at ends. **FIRED**			STR 103	masonry surface structure	Late Pueblo II (A.D. 1060–1140)
58*	8*		2.5	No apparent shape or temper. **FIRED**			ARB 202	noncultural	Subperiod not assigned
624	2		815.3	Several large lumps	sandstone	indeterminate	STR 123	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
624	25	3	372.9	Similar to 624–2 above	sandstone	indeterminate	STR 123	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
902*	31*		11.2	Irregular, unshaped clump. **FIRED**			ARB 1101	noncultural	Subperiod not assigned
905	9		21.3	Raw unground clay	none	unknown	Backhoe Trench 1203	not further specified	Subperiod not assigned
1022*	29*		24.1	Fragment of thick coil, finger prints, no temper. **FIRED**			ARB 1401	noncultural	Subperiod not assigned
1127	14	8	6.3	Three pieces clay	rock	corrugated	STR 803	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
1127	15	7	2.0	One small piece clay	rock	corrugated	STR 803	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
1152	3		6.7	12 small, shaped pieces clay	none	indeterminate	NST 142	midden	Early Pueblo III (A.D. 1140–1225)
1182	16		1.2	Gray clay, unprocessed	none	unknown	NST 238	midden	Late Pueblo II (A.D. 1060–1140)
1186	12	9	331.4	Big ball and pieces clay	rock	corrugated	STR 234	subterranean kiva	Early Pueblo III (A.D. 1140–1225)

PD	FS	PL	Wt. (g)	Sample Description	Temper	Ware or Type+	Study Unit Type	Study Unit Description	Subperiod
1354	35		8.7	Six small, crumbly pieces clay	none	unknown	STR 225	subterranean kiva	Late Pueblo III (A.D. 1225–1280)
1356	18		2.8	Two + pieces white ware clay	sherd	white ware	STR 205	subterranean room	Early Pueblo III (A.D. 1140–1225)
1358	37		0.7	1 piece white ware paste	rock/sherd	white ware	STR 205	subterranean room	Early Pueblo III (A.D. 1140–1225)
1358*	42*		2.0	Several small pieces, rock temper at surface. **FIRED**			STR 205	subterranean room	Early Pueblo III (A.D. 1140–1225)
1810*	52*		2.4	Broken ball of clay, no temper. **FIRED**			ARB 1302	noncultural	Subperiod not assigned
1855	21		0.3	2 pieces clay, prob. white ware	sherd	white ware	NST 153	midden	Late Pueblo II (A.D. 1060–1140)
1903	91		171.6	Several lumps clay	sandstone/ sherd	white ware	NST 1310	midden	Middle Pueblo II (A.D. 1020–1060)
2018	36		32.7	3 balls clay, prob. white ware	sherd/ igneous rock	white ware	NST 1418	midden	Early Pueblo III (A.D. 1140–1225)
2018	56		2.9	Crumbles of white ware paste	sherd	white ware	NST 1418	midden	Early Pueblo III (A.D. 1140–1225)
2153	12	11	7.4	Pieces of slip clay, white and waxy texture	none	slip	STR 1108	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
TOTAL			1,826.6						

* These seven fired clay samples were not analyzed further.
Note: ARB = Arbitrary Unit; STR = Structure; NST = Nonstructure. + "Ware" is recorded unless there is evidence to support a more specific pottery "type". "Indeterminate", "unknown", "other ceramic" or "slip" is used when appropriate and "ware" and "type" are not supported by evidence.

(b) Table 10.33, Unfired Sherds – Context and Analysis

PD	FS	PL	Wt. (g)	Sample Description	Temper	Form	Ware or Type+	Study Unit Type	Study Unit Description	Subperiod
47	36		53.1	4 rims, 1 body and tempered lumps, same vessel	igneous rock	jar	gray ware	STR 103	masonry surface structure	Late Pueblo II (A.D. 1060–1140)
47	37	2	103.9	1 rim, bal. in tempered lumps, prob. same vessel	igneous rock	jar	gray ware	STR 103	masonry surface structure	Late Pueblo II (A.D. 1060–1140)
557	11		2.8	2 rims refit, ext. scored or impressed	igneous rock	unknown	gray ware	STR 803	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
641	7		5.4	5 frags. w/ scraped interior, unfinished exterior	igneous rock	bowl	gray ware	ARB 1401	noncultural	Subperiod not assigned
952	39	34	35.3	1 rim, 7 body, balance of small fragments	igneous rock	jar	gray ware	STR 1408	subterranean kiva	Late Pueblo III (A.D. 1225–1280)
985	22		9.3	Single rim	igneous rock	jar	corrugated	STR 124	subterranean room	Late Pueblo II (A.D. 1060–1140)
1127	13	11	53.9	Ladle handle end w/ 2 holes, not slipped	igneous rock	ladle	late white ware	STR 803	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
1127	16	10	119.2	3 frags. handle, all refit w/ 1127-13-11 above	igneous rock	ladle	late white ware	STR 803	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
1161	107		12.3	14+ white ware body sherds	sherd/ igneous rock	unknown	late white ware	ARB 1401	noncultural	Subperiod not assigned
1271	29		7.7	2 frags refit, no coils visible	igneous rock	jar	gray ware	STR 124	subterranean room	Late Pueblo II (A.D. 1060–1140)
1271	32		69.5	12 body sherds, same vessel, uniform gray clay	igneous rock	jar	gray ware	STR 124	subterranean room	Late Pueblo II (A.D. 1060–1140)

PD	FS	PL	Wt. (g)	Sample Description	Temper	Form	Ware or Type+	Study Unit Type	Study Unit Description	Subperiod
1448	6		11.3	2 refitting bowl rim sherds, warped or distorted	sherd	bowl	late white ware	STR 234	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
1875	58		1.8	2 refitting body sherds, form unknown	sherd/ igneous rock	unknown	late white ware	NST 1320	midden	Late Pueblo II (A.D. 1060–1140)
1935	5		3.9	2 refitting frags. of small indented disc	igneous rock	unknown	other ceramic	NST 1320	midden	Late Pueblo II (A.D. 1060–1140)
1937	5	3	24.3	30+ I cm diameter sherds, one vessel, red inclusions	igneous rock	unknown	corrugated	STR 1316	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
1937	7	5	211.8	Many small body sherds, from same vessel	igneous rock	jar	corrugated	STR 1316	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
1978	2		11.4	7 smoothed body sherds, 1 vessel, black phenocrysts	igneous rock	unknown	gray ware	NST 1320	midden	Late Pueblo II (A.D. 1060–1140)
1995	11		998.6	Large number of small body sherds	igneous rock	jar	corrugated	STR 1205	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
1995	29	115	3,739.4	Huge mixed bag, 16 rims, 5+ vessels, some sherds fired	igneous rock	jar	corrugated **	STR 1205	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
1995	31	115	84.1	Hundreds very small sherds, probably corrugated	igneous rock	jar	corrugated	STR 1205	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
2017	37		0.8	3 small pieces clay, 1 is possible sherd	none	unknown	indetermina te	NST 1418	midden	Early Pueblo III (A.D. 1140–1225)
2017	55		8.5	5 sherds, 1 is a rim, same vessel	sandstone/ igneous rock	unknown	gray ware	NST 1418	midden	Early Pueblo III (A.D. 1140–1225)

PD	FS	PL	Wt. (g)	Sample Description	Temper	Form	Ware or Type+	Study Unit Type	Study Unit Description	Subperiod
2018	43		0.6	several small probable sherds, telltale sherd surfaces	igneous rock	unknown	gray ware	NST 1418	midden	Early Pueblo III (A.D. 1140–1225)
2107	26	14	1,045.8	8 rims, 2 near bottoms, many body, same vessel	igneous rock	jar	corrugated	STR 1316	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
2107	27	14	464.6	Large number of small body sherds, abundant temper	igneous rock	unknown	corrugated	STR 1316	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
2148	8	34	905.4	Large number sherds, some fired, 5 unfired rims	igneous rock	jar	corrugated	STR 1114	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
2148	9	33	114.0	30+ med to small body sherds	igneous rock	unknown	corrugated	STR 1114	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
2148	10	32	36.7	6+ crumbly body sherds	igneous rock	unknown	corrugated	STR 1114	subterranean kiva	Early Pueblo III (A.D. 1140–1225)
TOTAL			8,135.4							

** Of the 13 unfired rim sherds in this sample, 9 are Indeterminate Local Corrugated and 4 are Mesa Verde Corrugated.
Note: + "Ware" is recorded unless there is evidence to support a more specific pottery "type". "Indeterminate", "unknown", "other ceramic" or "slip" is used when appropriate and "ware" and "type" are not supported by evidence.

Table 10.34. Unfired Clay and Pottery, Temper Recovery and Identification, Shields Pueblo.

Artifact Category	PD	FS	PL	Study Unit	Study Unit Description	Ware	Total Sample Wt. (g)	Temper Material Type(s)*	Temper Wt. (g) Recovered from Screens					
									Mesh 7	Mesh 14	Mesh 25	Mesh 60	TOTAL	%
Unfired clay	624	2		Structure 123	subterranean kiva	indeterminate	23.8	sandstone	0.0	0.0	0.2	0.8	1.0	0.0
	624	25	3	Structure 123	subterranean kiva	indeterminate	23.6	sandstone	0.0	0.0	0.6	1.7	2.3	0.1
	1186	12	9	Structure 234	subterranean kiva	corrugated	22.0	igneous/ sandstone	0.2	0.1	1.3	3.2	4.8	0.2
	1903	91		Nonstructure 1310	midden	indeterminate	24.0	sandstone	0.2	0.2	0.1	1.0	1.4	0.1
Unfired sherds	2148	8	34	Structure 1114	subterranean kiva	corrugated	23.8	igneous	0.9	2.8	1.6	2.0	7.2	0.3
	1995	11		Structure1205	subterranean kiva	corrugated	24.4	igneous/ sandstone	0.2	2.4	0.8	0.3	3.6	0.1
	1995	29	115	Structure 1205	subterranean kiva	corrugated	17.9	igneous/ sandstone	0.1	2.6	0.8	0.1	3.6	0.2
	1937	7	5	Structure 1316	subterranean kiva	corrugated	23.9	igneous/ sandstone	0.5	2.6	1.9	1.1	6.0	0.3
	2107	26	14	Structure 1316	subterranean kiva	corrugated	24.5	sherd/ igneous	1.7	4.6	2.4	2.0	10.8	0.4
	2107	27	14	Structure 1316	subterranean kiva	corrugated	25.0	igneous/ sherd	2.1	5.3	1.7	2.3	11.4	0.5

* Most abundant material listed first.

Table 10.35. Unfired Clay and Sherds, Temper Analysis Comparisons, Shields Pueblo.

PD	FS	PL	Artifact Category	Ware	Initial Temper Estimate			Fired Temper Estimate			Recovered Temper Analysis			Error
					Material	%	Size	Material	%	Size	Material	%	Size*	Initial vs. Recovered
624	2		clay	indeterminate	rock/ sandstone	5	coarse				crushed sandstone	4.4	Mesh 60	0%
624	25	3	clay	indeterminate	rock/ sandstone	5	coarse				crushed sandstone	9.9	Mesh 60	−5%
1186	12	9	clay	corrugated	mixed rock	5					igneous rock and crushed sandstone	21.6	Mesh 60	−17%
1903	91		clay	indeterminate	sandstone	15	very coarse				crushed sandstone	30.1	Mesh 60	−3%
2148	8	34	unfired sherd	corrugated	igneous rock	15	coarse	igneous rock	15	coarse	igneous rock	14.8	Mesh 14	−15%
1995	11		unfired sherd	corrugated	igneous rock	15	coarse				igneous rock and crushed sandstone	19.9	Mesh 14	0%
1995	29	115	unfired sherd	corrugated	rock/ sandstone	3	very coarse	igneous rock	5	coarse	igneous rock and crushed sandstone	6.0	Mesh 14	−5%
1937	7	5	unfired sherd	corrugated	igneous rock	15	coarse	igneous rock	15	coarse	igneous rock and crushed sandstone	25.1	Mesh 14	−10%
2107	26	14	unfired sherd	corrugated	igneous rock	15	coarse	igneous rock	15	coarse	sherd and igneous rock	43.9	Mesh 14	−29%
2107	27	14	unfired sherd	corrugated	igneous rock	25	coarse				igneous rock and sherd	45.5	Mesh 14	−21%

* Predominate particle size by weight.

Table 10.36. Unfired Clay and Pottery, Post-Firing Changes in Weight, Shields Pueblo.

Artifact Category	PD	FS	PL	Study Unit		Study Unit Description	Ware	Temper Type	Temper Abundance (by percent) and Size	Prefiring Wt. (g)	Postfiring Wt. (g)	Net Loss in Wt. (g)	Percent Loss in Wt. (g)
Unfired sherd	1271	32		Structure	124	subterranean room	plain gray	igneous rock/ sandstone	5/coarse	6.9	6.2	0.7	10.3%
Unfired sherd	1127	16	10	Structure	803	subterranean kiva	white	igneous rock	5/fine-medium	15.5	14.2	1.4	8.9%
Unfired sherd[1]	2148	8	34	Structure	1114	subterranean kiva	corrugated	igneous rock	15/coarse	10.0	9.0	1.0	9.8%
Unfired sherd	2148	9	33	Structure	1114	subterranean kiva	corrugated	igneous rock	15/medium-coarse	8.8	7.9	0.9	10.2%
Unfired sherd	2148	10	32	Structure	1114	subterranean kiva	corrugated	igneous rock	15/medium-coarse	8.2	7.5	0.7	8.6%
Unfired sherd[1,2]	1995	29	115	Structure	1205	subterranean kiva	corrugated	igneous rock	5/coarse	20.0	16.4	3.6	17.9%
Unfired sherd[1,2]	1995	29	115	Structure	1205	subterranean kiva	corrugated	igneous rock	5/coarse	11.0	9.9	1.0	9.5%
Unfired sherd[1,2]	1995	29	115	Structure	1205	subterranean kiva	corrugated	igneous rock	5/coarse	12.5	11.0	1.4	11.5%
Unfired sherd[1,2]	1995	29	115	Structure	1205	subterranean kiva	corrugated	igneous rock	5/coarse	18.2	18.1	0.1	0.7%
Unfired sherd[1]	1937	7	5	Structure	1316	subterranean kiva	corrugated	igneous rock	15/coarse	7.8	7.1	0.8	9.6%
Unfired sherd[1]	2107	26	14	Structure	1316	subterranean kiva	corrugated	igneous rock	15/coarse	9.1	8.3	0.8	8.9%
Unfired clay	2018	36		Non-structure	1418	midden	white	igneous rock	3/fine-medium	5.2	4.5	0.7	13.4%

[1] These samples are also summarized in Tables 34 and 35.
[2] Four unfired sherds from this same very large mixed specimen were selected for testing.

Table 10.37. Unfired Clay and Pottery, Test-Tile Color and Munsell Notations and Descriptions, Shields Pueblo.

Tile No.	Artifact Category	PD	FS	PL	Study Unit		Study Unit Description	Pottery Ware	Part A		Part B		Part C	
									Color Description	Munsell Color	Color Description	Munsell Color	Color Description	Munsell Color
1	unfired sherd	47	36		STR	103	masonry surface structure	plain gray	gray	5YR 5/1	light gray	7/N	pink	5YR 8/4
2	unfired sherd	47	37	2	STR	103	masonry surface structure	plain gray	gray	5YR 5/1	light gray	7/N	pink	5YR 8/4
3	unfired sherd	1995	29	115	STR	1205	subterranean kiva	corrugated	pinkish gray	7.5YR 6/2	light gray	7/N	pink	5YR 8/4
4	unfired sherd	1995	31	115	STR	1205	subterranean kiva	corrugated	pinkish gray	7.5YR 6/2	light gray	7/N	pink	5YR 8/4
5	unfired sherd	2107	27	14	STR	1316	subterranean kiva	corrugated	brown	7.5YR 5/2	light gray	10YR 7/2	red yellow	5YR 7/6
6	unfired sherd	2148	8	34	STR	1114	subterranean kiva	corrugated	brown	7.5YR 5/2	light gray	2.5Y 7/1	red yellow	5YR 7/6
7	unfired sherd	2148	9	33	STR	1114	subterranean kiva	corrugated	brown	7.5YR 5/2	light gray	2.5Y 7/1	red yellow	5YR 7/6
8	clay	624	2		STR	123	subterranean kiva	indeterminate	light yellowish brown	10YR 6/3	reddish gray	10YR 5/1	light red	2.5YR 6/8
9	clay	624	25	3	STR	123	subterranean kiva	indeterminate	light yellowish brown	2.5Y 6/3	reddish gray	2.5Y 5/1	light red	2.5YR 6/8
10	clay	1903	91		NST	1310	midden	indeterminate	light brownish gray	2.5Y 6/2	light brownish gray	10 YR 6/2	red yellow	5YR 7/6

Note: Part A is the control portion of the sample. It is dried, but unfired. Part B is the portion of the sample that was fired in the replica trench kiln. Part C is the portion of the sample that was fired in a commercial electric kiln. Munsell colors are provided by *Munsell Soil Color Chart* (1994).

Table 10.38. Dominant Temper Material Frequencies in White Ware Bowls by Component, Shields Pueblo.

Temper	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Crushed quartz									2	0.6					2	0.2
Crushed sandstone			3	2.8			1	2.4	4	1.1	3	1.4			11	1.3
Igneous rock	7	41.2	64	60.4	45	45.0	22	53.7	181	51.4	102	48.1	17	94.4	438	51.8
Indeterminate	1	5.9	2	1.9	2	2.0			1	0.3	2	0.9			8	0.9
Multi-lithic sand	3	17.6	2	1.9	2	2.0			5	1.4	4	1.9			16	1.9
Other					1	1.0									1	0.1
Quartz sand			2	1.9	2	2.0			9	2.6	5	2.4			18	2.1
Sherd	6	35.3	32	30.2	47	47.0	18	43.9	148	42.0	92	43.4	1	5.6	344	40.7
Trachybasalt		0.0	1	0.9	1	1.0		0.0	2	0.6	4	1.9			8	0.9
TOTAL	17	100.0	106	100.0	100	100.0	41	100.0	352	100.0	212	100.0	18	100.0	846	100.0

Table 10.39. Dominant Temper Material Frequencies in Corrugated Jars by Component, Shields Pueblo.

Temper	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)		Unassigned		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Indeterminate			6	3.8	1	0.7			2	0.7					9	1.0
Crushed sandstone			15	9.4	15	10.9			17	5.6	8	3.8	4	14.8	59	6.7
Quartz sand	2	28.6													2	0.2
Igneous rock	5	71.4	124	78.0	112	81.8	29	90.6	257	84.8	194	91.1	21	77.8	742	84.5
Sherd			9	5.7	4	2.9	1	3.1	6	2.0	3	1.4	1	3.7	24	2.7
Trachyte					1	0.7			1	0.3					2	0.2
Other			1	0.6											1	0.1
Multi-lithic sand			3	1.9	4	2.9	2	6.3	18	5.9	5	2.3	1	3.7	33	3.8
Metamorphic rock									1	0.3	2	0.9			3	0.3
Weathered silicified sandstone			1	0.6					1	0.3	1	0.5			3	0.3
TOTAL	7	100.0	159	100.0	137	100.0	32	100.0	303	100.0	213	100.0	27	100.0	878	100.0

Table 10.40. Dominant Gray Ware Temper Types for Southwestern Colorado Sites by Temporal Component.

Sites/Site Groups	Dominant Temper Type	Component (%)				
		Basketmaker III	Pueblo I	Pueblo II	Early Pueblo III[12]	Late Pueblo III
Ute Mountain Ute Reservation[1]	sandstone[8]			4.1	1.4	26.3
	igneous[9]			94.5	94.4	71.2
	sherd			0.5	1.4	0.8
	sand[10]					
	metamorphic[11]					
	other			0.9	2.8	1.6
Sand Canyon Pueblo[2]	sandstone					14.1
	igneous					70.6
	sherd					
	sand					
	metamorphic					4.7
	other					10.6
Shields Pueblo[3]	sandstone			10.1	5.9	3.8
	igneous		71.4	79.7	84.8	91.1
	sherd			4.4	2.0	1.5
	sand		28.6	2.4	5.9	2.3
	metamorphic				0.3	0.9
	other			3.3	1.0	0.5
Woods Canyon Pueblo[4]	sandstone				10.5	12.7
	igneous				13.2	18.2
	sherd					
	sand				7.9	5.5
	metamorphic				65.8	60.0
	other				2.6	3.3
Yellow Jacket Pueblo[5]	sandstone				7.3	17.5
	igneous				65.6	36.8
	sherd					
	sand				16.7	8.8
	metamorphic				6.3	33.3
	other				4.1	
Cahone Mesa[6]	sandstone	82.9	93.2	97.4	93.4	93.6
	igneous	13.4	5.1	2.2	0.8	6.1
	sherd	0.3		0.3	1.7	0.1
	sand	2.6	0.8	0.1		
	metamorphic					
	other	0.9	0.8		4.1	0.1

Sites/Site Groups	Dominant Temper Type	Component (%)				
		Basketmaker III	Pueblo I	Pueblo II	Early Pueblo III[12]	Late Pueblo III
Dove Creek[7]	sandstone	33.5	43.7			
	igneous	63.7	55.7			
	sherd	0.3				
	sand	0.5	0.6			
	metamorphic					
	other	1.9				

Notes: [1] Data from Errickson (1995:Table 2.32). [2] Data from Bevilacqua (2003:Appendix 4).
[3] Data from Table 10.39, this report. [4] Data from Ortman (2002:Table 27). [5] Data from Ortman (2003:Table 25).
[6] Data from Wilson (1991:Tables A.13, A.14, A.15, A.17, and A.18). All of the sites summarized here are found south of Lowry Ruin on Cahone Mesa.
[7] Data from Wilson (1999:Table 9.5). Wilson reports the analysis results for six Basketmaker III sites, which exhibit considerable variability, but suggest two modes in temper distributions: one dominated by igneous rock, and one in which igneous rock and sandstone are co-dominant. We report here the percentages for the total Basketmaker III assemblage.
[8] Others have distinguished conglomerate and fine-grained sandstones. As this was not done consistently, these are lumped here under a single material type name.
[9] This material type name identifies apparent local igneous materials.
[10] This material type name includes what some other researchers have identified as two or more types of sand.
[11] For Sand Canyon and Shields pueblos, this material type name includes chert and chalcedony. However, Ortman (2002, 2003) defines this material as "silicified or metamorphosed sandstone." This distinction is important considering the high quantities of this material type documented for Woods Canyon and Yellow Jacket pueblos.
[12] In most cases for this table, "Early Pueblo III" is understood to span A.D. 1150 to 1225. However, in the case of the Ute Mountain assemblages summarized here, this span is slightly earlier, extending from A.D. 1125 to 1175.

Table 10.41. Dominant White Ware Temper Types for Southwestern Colorado Sites by Temporal Component.

Sites/Site Groups	Dominant Temper Type	Component (%)				
		Basketmaker III	Pueblo I	Pueblo II	Early Pueblo III[12]	Late Pueblo III
Ute Mountain Ute Reservation[1]	sandstone[8]			2.8	1	4.7
	igneous[9]			30.3	28.1	5.1
	sherd			58.4	57.3	74.3
	sand[10]					
	metamorphic[11]					
	other			9.2	13.5	15.9
Sand Canyon Pueblo[2]	sandstone					12.6
	igneous					8.2
	sherd					76.4
	sand					1.9
	metamorphic					
	other					0.9
Shields Pueblo[3]	sandstone			1.5	1.1	1.4
	igneous		41.2	52.9	51.4	48.1
	sherd		35.3	38.3	42.0	43.4
	sand		17.6	3.9	4.0	4.3
	metamorphic					
	other		5.9	3.4	1.5	2.8
Woods Canyon Pueblo[4]	sandstone				5.6	14.7
	igneous					2.9
	sherd				93.0	82.4
	sand				1.4	
	metamorphic					
	other					2.9
Yellow Jacket Pueblo[5]	sandstone					16.5
	igneous					1.1
	sherd					82.4
	sand					
	metamorphic					
	other					
Cahone Mesa[6]	sandstone	47.2		2.8	0.5	2
	igneous	38.2		1.1		1.3
	sherd			90.3	91.2	91.2
	sand	12.5		1.4		0.4
	metamorphic					
	other	2.1		4.3	8.3	5.1

Sites/Site Groups	Dominant Temper Type	Component (%)				
		Basketmaker III	Pueblo I	Pueblo II	Early Pueblo III[12]	Late Pueblo III
Dove Creek[7]	sandstone	18.9	65.5			
	igneous	74.7	27.6			
	sherd	0.7				
	sand	4.9	6.9			
	metamorphic					
	other	0.7				

[1] Data from Errickson (1995:Table 2.33). [2] Data from Till and Ortman (2007:Table 34). [3] Data from Table 10.38, this report. [4] Data from Ortman (2002:Table 26). [5] Data from Ortman (2003:Table 24).
[6] Data from Wilson (1991:Tables A.13, A.14, A.15, A.17, and A.18). All of the sites summarized here are found south of Lowry Ruin on Cahone Mesa.
[7] Data from Wilson (1999:Table 9.5). The Basketmaker III column in this table reports the percentages for the total Basketmaker III assemblage (from six sites) summarized by Wilson. The white ware sample from the Pueblo I site summarized here is very small (N=29).
[8] Others have distinguished conglomerate and fine-grained sandstones. As this was not done consistently, these are lumped here under a single material type name.
[9] This material type name identifies apparent local igneous materials.
[10] This material type name includes what some other researchers have identified as two or more types of sand.
[11] For Sand Canyon and Shields pueblos, this material type name includes chert and chalcedony. However, Ortman (2002, 2003) defines this material as "silicified or metamorphosed sandstone." This distinction is important considering the high quantities of this material type documented for Woods Canyon and Yellow Jacket pueblos.
[12] In most cases for this table, "Early Pueblo III" is understood to span A.D. 1150 to 1225. However, in the case of the Ute Mountain assemblages summarized here, this span is slightly earlier, extending from A.D. 1125 to 1175.

Table 10.42. Basket-Impressed Sherds by Type, Shields Pueblo.

Pottery Type	N	%
Indeterminate Local Gray	2	1.3
Indeterminate Local Corrugated Gray	1	0.7
Mancos Black-on-white	30	19.6
McElmo Black-on-white	3	2.0
Early White Unpainted	1	0.7
Pueblo III White Painted	3	2.0
Late White Painted	39	25.5
Late White Unpainted	73	47.7
Indeterminate Local White Unpainted	1	0.7
TOTAL	153	100.0

` Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 10.43. Basket-Impressed Pottery by Paint Type and Period, Shields Pueblo.

Paint Type	Pueblo II		Pueblo II/ Pueblo III		Pueblo III	
	N	%	N	%	N	%
No paint	30	50.85	1	100.00	12	48.00
Carbon	27	45.76			12	48.00
Mineral	2	3.39			1	4.00
TOTAL	59	100.00	1	100.00	25	100.00

Table 10.44. Basket-Impressed Pottery by Coiled Foundation Type and Stitch Type, Shields Pueblo.

Foundation Type	Stitch Type				TOTAL
	Unknown	Interlocking	Non-interlocking	Other	
Unknown	2				2
Bunched	73	1	60		134
One rod		10			10
Stacked rod	2		3		5
Plaited				2	2
TOTAL	77	11	63	2	153

Table 10.45. Morris and Burgh (1941) Basketry Construction Data by Period.

Foundation and Stitch Type	Basketmaker Unspecified	Basketmaker II	Basketmaker III	Pueblo I	Pueblo II	Pueblo III
Bundle, non-interlocking			3			
Single whole rod, interlocking	9		2	2		5
Single whole rod, non-interlocking						2
Bundle with rod core, non-interlocking		3				
Rod with lateral bundle, non-interlocking		1				
Half-rod and bundle stacked, non-interlocking & interlocking		1				
Half-rod and bundle stacked, non-interlocking & interlocking		1				
Half-rod and bundle stacked, non-interlocking						6
2-rod and bundle stacked, non-interlocking						1
2-rod and bundle bunched, non-interlocking	175	29	90+	2	1	27
3-rod stacked, non-interlocking						2
3-rod bunched, interlocking						1
3-rod bunched, non-interlocking						37+
Plaited			8			29
TOTAL	184	35	103+	4	1	110+

Note: All data are from sites in the northern Southwest.

Table 10.46. Basketry Data from Select Pueblo II–III Period Sites.

Foundation and Stitch Type	5MT5498/ Pueblo II	Horse Rock Ruin/ Late Pueblo II (A.D. 1130–1145)	Antelope House/ Pueblo I–II	Antelope House/ Pueblo III	Albert Porter Pueblo/ Early Pueblo III
Bundle, stitch type unknown				2	
One-rod, interlocking stitch		1	4	18	
One-rod, non-interlocking stitch		2		2	
Rod and bundle, non-interlocking stitch				1	
Stacked, non-interlocking stitch	1	5	1	1	
Bunched, interlocking stitch			2		
Bunched, non-interlocking stitch	8	1	7	26	1
Plaited	4	5	29	387	1
TOTAL	13	14	43	437	2

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Chapter 11

Chipped-Stone Artifacts

by Jonathan D. Till

Introduction

This chapter summarizes and discusses the chipped-stone artifacts recovered from Shields Pueblo. The first section provides background information for the lithic raw material types found at the site. The chipped-stone tools from Shields Pueblo are then considered in light of these material types, by architectural block and temporal component. I then turn to the analysis of "bulk" chipped-stone artifacts (i.e., debitage), which are also discussed in terms of architectural block and component. I examine formal chipped-stone tools, which include bifaces, drills, and projectile points, and conclude with a discussion of the chipped-stone artifact data.

Lithic Raw Materials

Definitions of Raw Material Categories

Although knowledge of lithic material–procurement sites in southwestern Colorado is somewhat limited, sufficient geological and archaeological data exist to permit several coarse groupings of raw lithic materials relative to the location of Shields Pueblo: local, semilocal, and nonlocal. We have used these groupings in the raw material analyses of a few other sites, investigated by Crow Canyon Archaeological Center (Crow Canyon), in the immediate vicinity (Ortman 2000; Till and Ortman 2007). At the time that the chipped-stone artifacts from Shields Pueblo were analyzed, Crow Canyon's material-type categories were slightly less discriminating than our current typology, which is described in our online laboratory manual (Ortman et al. 2005), and in greater detail in Gerhardt's (2001) "Lithic Source Materials Classification Standards."

Local Raw Materials

Local raw materials are of poor to good quality, and occur within the geological strata exposed in the vicinity of Shields Pueblo, particularly to the south of the site. Several large drainages flowing from north to south cut into the stratigraphy of the McElmo Dome before entering the east-to-west-trending McElmo Creek. These drainages, from west to east, are Sand Canyon, Goodman Canyon, and Trail Canyon. The head of Goodman Canyon is less than 1 kilometer (km) to the east and south of Shields Pueblo, whereas the other two drainages are both within 5 km to the east and west. McElmo Creek and its broad canyon lie approximately 5 km to the south. Just south of McElmo Creek is Ute Mountain, an intrusive laccolithic mountain that is one of several similar features in the Four Corners region (Ekren and Houser 1965:5–6). Excepting perhaps sandstone, no raw lithic materials are available within the immediate vicinity of the site. However, the site's setting near the canyon complexes mentioned above places it within ready reach of a variety of lithic source materials. Borrowing from Arakawa's recent work (2006:Figure 3.1), these material sources are listed in Table 11.1 and depicted in Figure 11.1.

The Cretaceous-era formations in the area provide several materials. Dakota Formation sandstones outcrop in the immediate vicinity of Shields Pueblo, and harbor Dakota quartzite, a material favored for the local production of formal bifacial tools. Although the closest known source of this material is in upper Sand Canyon near Stanton's Site (Site 5MT10508) (Ortman 2000), exposures of this stratigraphic unit nearby in Goodman Canyon make it reasonable to expect that other sources of Dakota quartzite may be even closer. Both the Dakota and underlying Burro Canyon formations contain fine-grained sandstones as well as coarser conglomerates.

Several Jurassic-era strata would have been reasonably available to the occupants of Shields Pueblo, but the Brushy Basin Member of the Morrison Formation in particular was an important lithic materials source. The Brushy Basin Member of the Morrison Formation immediately underlies the Dakota and Burro Canyon formations and yields both Morrison chert/siltstone and Morrison quartzite. A third material type, Brushy Basin chert, also comes from this stratum, but is discussed with the semilocal materials below.

Other materials that are here considered local include the slates and shales that are available in the Mancos and the Dakota formations, both of which outcrop in the canyons throughout the uplands of southwestern Colorado. Igneous rock sources are found just south of McElmo Creek along the northern flanks of Sleeping Ute Mountain.

Semilocal Raw Materials

Semilocal lithic raw materials are of relatively good quality and occur less widely in their geological strata of origin than do local raw materials. These materials are certainly found within the Mesa Verde region, but are not found within the immediate vicinity of Shields Pueblo. As a result, such materials were potentially local but probably more difficult to obtain, possibly requiring special collecting trips. This ambivalence in determining what is "local" and what is "semi-local" is reflected in Arakawa's (2006:Table 3.1) dissertation in which he refers to these materials as "local or semi-local." Agate/chalcedony and petrified wood occasionally occur within the Burro Canyon and Dakota formations, as well as in other formations that outcrop farther away. Jet occasionally occurs within shale and coal-bearing deposits of the Dakota, Mancos, and Menefee formations. The closest known source of Burro Canyon chert to Shields Pueblo is on Cannonball Mesa, a little more than 15 km to the west-southwest. Perhaps the best-known source of Brushy Basin chert is the Four Corners Brushy Basin Quarry (Site UT-C-57-41) near the Four Corners monument, approximately 40 km south of Shields Pueblo (Green 1985:71–72; Wenker 1999:90–97). Arakawa (2006:Figure 3.1) also plots several Brushy Basin sources to the west of Shields Pueblo.

Nonlocal Raw Materials

These lithic materials are high quality and definitely are not within easy walking distance of Shields Pueblo; thus they must have been acquired through special collecting trips or trade. Red jasper comes from Triassic and Permian formations of the Monument Upwarp and Elk Ridge Uplift in southeastern Utah, west of Cottonwood Wash. The closest obsidian sources include the Jemez Mountains and Mount Taylor of New Mexico, and the San Francisco Peaks in Arizona (Shackley 1988, 1995). Narbona Pass chert (also known as Washington Pass chert) occurs only in the Chuska Mountains of northeastern Arizona (Gerhardt 2001; Warren 1967). This material, known for its burnt orange color and its incredible luster, is often associated with the "Chacoan phenomenon" of the North American Southwest (Cameron 2001).

Artifact Type vs. Raw Material

The following subsections consider chipped-stone tools in terms of the whole site assemblage, by architectural block, and by component. Chipped-stone artifacts are grouped into the following types: cores and core tools (cores and modified cores); flake tools (modified flakes); and formal tools (bifaces, drills, and projectile points). For definitions of these artifact types, see Ortman et al. (2005).

Chipped-Stone Tools, Whole Site Assemblage

Table 11.2 summarizes the entire chipped-stone tool assemblage (N=2,362) by artifact type and material type. This table demonstrates clearly the prevalence of local and semilocal materials in the chipped-stone tool assemblage. Morrison quartzite and Morrison chert/siltstone are the most common chipped-stone tool materials in the entire assemblage; however, there are clearly some preferences for particular material types in the production of certain tools. For example, Dakota quartzite appears to be the favored material for formal chipped-stone tools (such as projectile points, drills, and bifaces). The fact that the majority of the cores also consist of materials from the Morrison may suggest the degree to which prehistoric lithic-reduction activities were focused on these materials types.

Chipped-Stone Tools, By Architectural Block

Several interesting patterns emerge when considering chipped-stone tools and their distributions by architectural block (Table 11.3). Because some blocks were excavated more intensively than others, the frequencies of chipped-stone tool types are measured as the ratio of total number of a tool type from a particular architectural block to kilograms (kg) of cooking pottery recovered from that same architectural block. This assumes that the amounts of cooking pottery produced, used, and discarded within each roomblock will remain relatively constant.

First, in terms of artifact types by architectural block, it is interesting to note that cores are relatively over-represented in Block 1100, and relatively under-represented in Block 1400. This may indicate a differential focus, by architectural block, on the activity of chipped-stone tool production. This is considered further below with the discussion of chipped-stone debris.

The frequencies of two categories of formal chipped-stone tools—drills and projectile points—are also of note here. Again, using cooking pottery as a leveling mechanism, Table 11.3 shows that both drills and projectile points are most commonly found in Block 100. The frequency of drills in Block 100 is nearly twice that of any other location. This suggests that the activities associated with the use of drills, such as tool and ornament manufacture, were emphasized in this location relative to others. Similarly, projectile point manufacture and/or use was also a focus of activity in Block 100.

The identification of material types that compose tools is important to the research domain of social organization. Table 11.4 addresses the distribution of chipped-stone tools, by material type, for the architectural blocks defined at Shields Pueblo. Block 1300 is distinguished by the highest concentration of obsidian projectile points (N=4). Three of these items are from the Jemez Mountains, whereas the fourth is the only obsidian artifact from Shields Pueblo that is sourced to Mount Taylor (Shackley 2002). Other concentrations of tools made from nonlocal and semilocal materials include Blocks 100, 200, 1100, and 1300. Only one of the chipped stone tools in Block 100 was made from a material that is clearly "nonlocal." For reasons discussed above, this dearth of nonlocal materials in Block 100 comes as some surprise.

Chipped-Stone Tools, By Component

Table 11.5 illustrates the distribution of chipped-stone tool types by component. Again, the tool number to cooking-pottery weight ratio is used to examine relative frequencies of these tool types by component. When looking for temporal trends in the assemblage data from Shields Pueblo, it is best to look at the Middle Pueblo II, Late Pueblo II, Early Pueblo III, and Late Pueblo III components. The sample size from the Early Pueblo I component is probably too small, and the time depth represented by the Late Pueblo II through Early Pueblo III, and the Middle Pueblo II through Late Pueblo III, components is probably too great to be meaningful. The component "Subperiod not assigned" is, of course, nonspecific to temporal designation and therefore useless to making generalizations according to trends through time.

Table 11.5 indicates trends of declining frequencies for several sets of chipped-stone tool types from the Late Pueblo II component through the Late Pueblo III component. These tool types include cores, modified flakes, bifaces, and drills. The lower numbers of cores and bifaces may indicate a reduced emphasis on formal chipped-stone tool production during the Pueblo III period. Likewise, the reduction in the relative amounts of drills may indicate a decrease in the attention given to craft production through time. Table 11.5 also indicates a relatively high frequency in the presence of projectile points during the Late Pueblo II component, a significant decrease in the frequency of this tool type during the Early Pueblo III component, and then a slight increase in frequency for the Late Pueblo III component. The higher frequency of projectile points during the Late Pueblo II component may indicate a greater focus on hunting or human conflict during this time span (A.D. 1060–1140), or the incorporation of this tool type into ceremonial/ritual activities associated with the great house at Shields Pueblo. The lower frequency of projectile points in the Pueblo III period suggests that hunting for large game may not have been as important to ancestral Pueblo subsistence strategies as it had been during the Pueblo II period.

Table 11.6 shows the distribution of chipped-stone tools by material type and component. There are several trends in material type that are of interest. There is a decrease in the relative amounts of Dakota quartzite cores from the Late Pueblo II to Late Pueblo III components, and a concomitant increase in Morrison quartzite cores. It is possible that the increase in the number of

Morrison quartzite cores may be associated with the apparent increased preference for this material in informal flake tools. Interestingly, Table 11.6 also indicates that Dakota quartzite is strongly preferred as the material for projectile points in the Late Pueblo III component. At first glance, this relatively coarse-grained material may not seem the ideal material for producing a tool as formal as a projectile point. However, the material may fracture more predictably than some of the more fine-grained local materials, resulting in it being the preferred material for projectile points. Dakota quartzite is also common in the manufacture of projectile points during the earlier Pueblo II components; however, the semilocal material, agate/chalcedony, is also quite common during the Pueblo II period.

Table 11.6 makes apparent a high relative abundance of modified flakes made from Brushy Basin chert/siltstone in the Middle Pueblo II and Late Pueblo II components. The high frequency of this material type in the Pueblo II period is indicated in other contemporaneous assemblages from the Mesa Verde region. The Hawkins Preserve site in Cortez, Colorado, exhibits a very high frequency of this material type in spite of its considerable distance from Brushy Basin chert sources (Till and Ortman 2007). Ward (2004:199) notes that Brushy Basin chert occurs in high frequencies at the Bluff Great House Site in Bluff, Utah, and that it is commonly used in "modified debitage," much like the Shields Pueblo assemblage. Ward (2004:196) also observes that it is not used in the production of formal lithic tools, a pattern that is repeated in the Shields Pueblo assemblage (see Table 11.6). The highest frequency of Brushy Basin chert/siltstone in the debitage assemblage also corresponds with the Pueblo II period (discussed further below).

Table 11.6 also demonstrates considerable stability in material preferences for specific tool types over time. This is particularly true for bifaces made from Dakota quartzite, modified flakes made from Dakota quartzite and Morrison chert/siltstone, perhaps cores made from Morrison chert/siltstone and Morrison quartzite, and modified flakes made from Burro Canyon chert.

Except for the modified flakes made from Burro Canyon chert, Table 11.6 shows that occurrences of chipped-stone tools made from semilocal materials decrease in relative abundance from the Pueblo II to the Pueblo III components. This may be due, in part, to changes in Pueblo society social environment. Research conducted within the Four Corners region within the past decade suggests how violence could have restricted the movement of people across the landscape, and ultimately brought about the "Balkanization" of Pueblo societies in the late 1200s (e.g., LeBlanc 1999; Lekson 1999; Lipe 2002:229). An alternative to this is that the Pueblo people switched from an extensive land-use strategy in the Pueblo II period to an intensive land-use strategy in the Pueblo III period as the result of regional packing, which lead to the use of natural resources across a smaller geographic area. It is also possible that as communities became more dense and occupied less territory, their exchange networks became more localized, resulting in decreased access to lithic material sources, especially those farther away from the community in question.

At Woods Canyon Pueblo, Ortman (2002) observes an increase in the use of finer-grained Morrison Formation materials (Morrison chert/siltstone), relative to larger-grained Morrison Formation materials (Morrison quartzite), for informal chipped-stone tools (cores, core tools, and flake tools) from the Early Pueblo III component to the Late Pueblo III component. No such trend is apparent at Shields Pueblo. Due to small sample sizes, no significant changes in the use of raw material types across chipped-stone tool types are apparent through time.

Mass Analysis of Chipped-Stone Debris

All of the bulk chipped stone recovered from Shields Pueblo was counted and weighed during artifact cataloging (see Chapter 3 of the online laboratory manual [Ortman et al. 2005] for more details about this process). A more detailed analysis of bulk chipped stone, based on a technique developed by Ahler (1989), documented lithic raw material, flake size class, and the presence/absence of cortex on the debitage from Shields Pueblo. Details for the analysis of bulk chipped stone are described in Chapter 9 of the online laboratory manual (Ortman et al. 2005). Approximately one-half of the bulk chipped stone recovered from Shields Pueblo was analyzed in this way. Table 11.7 and Table 11.8 show the relative amounts of the bulk chipped stone (i.e., debitage) analyzed from each architectural block and component. In one instance, Table 11.8 shows that the weight of bulk chipped stone recorded during analysis was greater than the weight recorded during cataloging. This is probably due to occasional discrepancies and errors made during the cataloging process. Such small errors had little effect on the analysis as a whole.

In the following paragraphs, chipped-stone debris data are summarized for those samples that were selected for the more detailed analysis discussed above. Readers are advised to consider the sample sizes reported in Table 11.7 and Table 11.8 when considering these summaries and the patterns they suggest.

Chipped-Stone Debris, Whole Site Assemblage

By Raw Material

Table 11.9 provides the counts and weights of chipped-stone debitage of various raw materials for the whole site. For the chipped-stone debitage assemblage of Woods Canyon Pueblo, also a multicomponent site, Ortman (2002) notes that the coarser-grained materials (i.e., quartzite) are more abundant by weight than by count, while finer-grained materials (e.g., cherts and siltstones) are more abundant by count than weight. Table 11.9 demonstrates that a similar pattern exists for the Shields Pueblo chipped-stone debitage assemblage for the Morrison Formation materials, indicating that flakes of Morrison chert/siltstone tend to be smaller than average and flakes of Morrison quartzite tend to be larger than average. However, the size signature that Ortman describes for Dakota quartzite flakes at Woods Canyon Pueblo is not replicated at Shields Pueblo. The Dakota quartzite flakes recovered from Shields Pueblo tend to be smaller than average. Considering that many of the small, formal lithic tools are made from Dakota quartzite, this may not be such a surprise. Typically, the production of such items yields many small flakes, a characteristic of the later stages of lithic reduction (Whittaker 1994:274–280).

By Cortex and Size

Table 11.10 and Table 11.11 present the counts and weights of chipped-stone debris of various raw materials for the whole site, distinguishing between pieces with and without cortex, by size category. In addition to absolute numbers, the tables present the percentages of these items for each material-type category. The smallest size grade, “<1/4 inch,” is conditioned by field recovery techniques: most of the fill from the site was excavated through ¼-inch mesh, selecting against the recovery of smaller items and resulting in the relative dearth of these tiny objects.

In terms of count, Table 11.10 indicates that most of the debitage for all material types (generally more than 70 percent for each type) does not have cortex. This is true regardless of grain size. However, this same table also shows that most of the flakes for each material from the “1 inch” size grade do have cortex present. This is likely due to the earlier stage of reduction that is generally represented by larger flakes. The “1/2 inch” and smaller size-grade assemblages have proportionately greater amounts of flakes without cortex than with cortex.

Table 11.11 also reflects the larger-than-average size of flakes with cortex. This trend is particularly evident for the larger size-grade categories, where percent by weight is much greater than percent by number.

Chipped-Stone Debris by Temporal Component

By Material

Table 11.12 suggests that there may be some slight differences in the use of local lithic materials through time. Dakota quartzite is more favored during the Early Pueblo I component than in the other components; however, this apparent preference may be a reflection of the fairly small sample size from this component. The Middle Pueblo II component has the lowest percentage of Dakota quartzite, but the highest frequency of Brushy Basin chert/siltstone. Given that Dakota quartzite is most frequently associated with formal chipped-stone tools in all components (see Table 11.6), it is unlikely that the lower frequency of this material in chipped-stone debris is associated with a diminished preference for Dakota quartzite as a material used in the production of formal tools during the Middle Pueblo II component. Rather, the increased frequency of Brushy Basin chert/siltstone may have displaced the frequency of Dakota quartzite. As noted above, flakes of Brushy Basin chert/siltstone are commonly used as informal flake tools (i.e., modified flakes) during the Pueblo II period.

The other common local materials, Morrison chert/siltstone and Morrison quartzite, occur in similar frequencies through time, suggesting that their use through time was fairly consistent. The particularly consistent rates of Morrison chert/siltstone (ranging between 23 and 27 percent) may be a reflection of the easy availability of this material to Shields Pueblo occupants through time. It may also be a function of the apparent utility of this material, which was used for a variety of tool types. However, there is a slight decrease in the frequency of Morrison chert/siltstone from the Pueblo II components to the Pueblo III components, and a concomitant slight increase in the frequency of Morrison quartzite for the same time span.

During the Pueblo III components, Morrison quartzite reaches its greatest frequency, composing just over 50 percent of the debitage assemblages. Although the frequency of all chipped-stone tools is low during the Pueblo III components relative to earlier components, the tools with which Morrison quartzite is most associated (see Table 11.2), particularly modified flakes and possibly peckingstones (discussed in Chapter 12), are the chipped-stone tool types most prevalent during the Pueblo III components (see Table 11.5). It seems likely that the higher rates of Morrison quartzite debitage are associated with the production of these informal tools during the Pueblo III period.

I noted earlier that the greatest frequency of semilocal debitage materials occurs during the Pueblo II components. Though the sample size is small, Table 11.12 indicates that the highest frequencies of nonlocal debitage occur during the Late Pueblo II and Early Pueblo III components. The greater frequencies of debitage made from both semilocal and nonlocal materials during the Pueblo II components, and perhaps during the Early Pueblo III component, may indicate greater movement and/or communication among and between populations prior to the mid-twelfth century, and certainly prior to the mid-thirteenth century.

By Size

Table 11.13 and Figure 11.2 suggest some differences in flake-size distributions by component. Graphic representations of these distributions may be used to show reduction strategies reflected in an assemblage (Patterson 1990). Patterson argues that concave curves tend to be representative of a bifacial reduction strategy. None of the curves in Figure 11.2 has this shape. Indeed, the curves become more convex from the Pueblo II components to the Pueblo III components, with the most convex curve in the Late Pueblo III component. Instead, the strategies reflected here may be more oriented toward core reduction, perhaps with the intention of producing flakes to accommodate a more expedient chipped-stone tool technology.

Table 11.14 and Figure 11.3, Figure 11.4, and Figure 11.5 illustrate how these changes in flake-size distributions occur in some of the more common material types. Perhaps the most striking observation in the curves for the three most abundant materials (Dakota quartzite, Morrison chert/siltstone, and Morrison quartzite) indicate a consistent through-time trend developing a more convex curve, indicating a progressive reliance on a core-reduction strategy. Further, these curves suggest a decrease in reliance on bifacial-reduction strategy, which is consistent with the earlier observation that projectile points become less relatively frequent in the Pueblo III period. This trend is particularly apparent for Dakota quartzite (see Figure 11.3), the material most favored for projectile points.

The curves for the Early Pueblo I component vary for all three of these materials, suggesting bifacial reduction strategy for Dakota quartzite and a core reduction strategy for Morrison chert/siltstone. However, the sample size of debitage from the Early Pueblo I component is fairly small (see Table 11.8), warranting caution in interpretations for this particular sample.

Chipped-Stone Debris by Architectural Block

By Material

Table 11.15 shows the frequencies with which chipped-stone debitage materials occurred in each architectural block. For those blocks with a sample size of 400+ flakes, the relative amounts of the local materials are fairly constant. However, there are a few notable divergences in the frequencies of Dakota quartzite and Morrison quartzite. Blocks 1200 and 100 have relatively higher percentages of Dakota quartzite compared to the other material types in the lithic assemblages of these blocks. Morrison quartzite has a fairly consistent frequency across most architectural blocks with sample sizes larger than 400 flakes. Of these, Block 100 exhibits the lowest frequency. The relatively high frequency of Dakota quartzite and the low frequency of Morrison quartzite in Block 100 may indicate an emphasis on the production of formal tools in this location.

As predominantly fine-grained materials (e.g., cherts, jasper, etc.), the semilocal and nonlocal lithic materials are also associated with the production of formal chipped stone tools (see Table 11.2). Table 11.15 indicates that the two roomblocks with the highest percentages of these extralocal materials are Blocks 1300 and 100. Brushy Basin chert/siltstone is the dominant extralocal material in these two assemblages. In contrast, the dominant extralocal material in Block 1100, which has the third-highest percentage of total extralocal materials, is Burro Canyon chert. The highest absolute numbers of nonlocal materials (i.e., obsidian and Washington Pass chert) occur in the Block 100/200/1300 cluster. This cluster of architectural blocks, which is oriented along an ancient road, may be associated with the Chaco-era component of the site, particularly Blocks 100 and 1300.

By Size

Table 11.16 shows the distribution of debitage size categories by architectural block, and Figure 11.6 illustrates the percentages that each size category contributes to the architectural-block debitage assemblages with counts greater than 400 (note: Blocks 400, 1200, and 1500 have relatively small counts, but are still considered here). The smallest size category, "<1/4 inch," is conditioned by field recovery techniques and therefore should not be further considered. The variation in size-category frequencies between assemblages is small, suggesting similar reduction strategies between architectural blocks.

Analysis of Formal Bifacial Tools

A total of 415 formal biface tools, comprising projectile points (N=198), bifaces (N=156), and drills (N=61), was recovered from Shields Pueblo. Table 11.3, Table 11.4, and Table 11.5 show their distribution according to component and architectural block in relation to the amounts of corrugated pottery recovered from those same study-unit groups. The following sections consider and discuss the analytical and distributional data for bifaces and drills, then projectile points.

Bifaces and Drills

Bifaces can represent the rejected remains of projectile points, drills, or other formal chipped-stone tools that were discarded during their manufacture, use, or repair. Alternatively, bifaces can be tools themselves, such as knives or scrapers. The fragmentary nature of many of these objects (Table 11.17) suggests that many of these items may be the remains of drills or projectile points. Drills were used to perforate materials such as soft stone, wood, bone, or animal hide. These objects can be either highly formal or expedient, but are generally distinguished by a polished or worn bit or tip.

Table 11.2 shows that the most common material type for bifaces and drills, as well as projectile points, is Dakota quartzite. The prehistoric preference for this material in the production of formal chipped-stone tools is well evidenced in site assemblages from southwestern Colorado (e.g., Ortman 2002:Table 38, 2003:Table 33; Pierce et al. 1999:Table 15.22; Till and Ortman 2007).

Table 11.17 illustrates how the condition of bifaces, drills, and projectile points structures their recognition. For example, the high percentage of biface fragments probably includes the less-diagnostic midsections and/or tips of drills and bifaces. The relatively low numbers of drill fragments likely reflects the difficulty of recognizing this artifact type without having most or all of the object present.

Table 11.3 and Table 11.5 show the distribution of bifaces and drills by architectural block and component, as well as their relative frequencies through the ratio of the numbers of these artifacts to the kilograms of cooking pottery recovered by architectural block and component. Table 11.3 shows some variability by architectural block in the relative abundances of these artifact types. For example, Block 100 demonstrates relatively higher numbers of both bifaces and drills relative to other architectural blocks, suggesting that biface tool manufacture and craft production were activities that received more attention in this portion of the settlement than in others. This is especially true with regard to the relative numbers of drills. Bifaces generally occur in nearly the same frequencies across most of the well-represented roomblocks except Blocks 1100 and 1200, where lower numbers may indicate less emphasis on bifacial tool production. This may especially be the case with Block 1200, which also has a low frequency of cores (see Table 11.3).

Table 11.5 indicates some modest fluctuations in the frequencies of these artifact types through time, particularly bifaces (the component-specific sample sizes for drills are quite small). From the Late Pueblo II through the Late Pueblo III periods, a small but steady decline in the relative frequency of bifaces is apparent, suggesting a slight decrease in the focus on formal stone-tool production over time. In part, this slight decrease in production may be due to the availability of recyclable tools on the landscape.

Projectile Points

A total of 198 projectile points was recovered from Shields Pueblo, 190 of which were subjected to further detailed analysis. Table 11.18 presents the available data for the eight projectile points that were not analyzed further. The other 190 projectile points were analyzed according to the methods described in Ortman et al. 2005. The basic analysis data for these objects are provided in Table 11.19.

Table 11.20 describes the frequencies of lithic material types by projectile point type. About one-half of all the projectile points are made from a local material, Dakota quartzite. This preference for Dakota quartzite as a projectile point material was also evident in the nearby Sand Canyon Pueblo assemblage (Till and Ortman 2007). The percentage of points made from extralocal materials at Shields Pueblo (about 34 percent) approximates that at Sand Canyon Pueblo (about 37 percent). However, while Till and Ortman (2007) indicate that most of the points associated with the Pueblo III occupation of Sand Canyon Pueblo were made from local materials, the data presented in Table 11.20 do not suggest the same for Shields Pueblo. Approximately one-third of the Pueblo II and Pueblo III period points are made from extralocal materials, most of which are fine-grained materials (a general characteristic of projectile point materials). Interestingly, all of the Desert Side-notched points, a point type associated with the Pueblo III and historic periods, are made exclusively of local materials. The frequencies of points from these periods suggests that extralocal materials were available for use more often with point types associated with the Pueblo II and Early Pueblo III occupations of Shields Pueblo, whereas the Late Pueblo III occupants did not tend to use these materials in the production of projectile points. (However, see the section below regarding projectile point type distributions by component.)

Projectile points are easier to identify than drills because of their distinctive morphology; hence, more fragments are recorded for the former (see Table 11.17). Table 11.21 indicates that the condition of projectile types reflects their "life-history." Thus, there are relatively more Pueblo II–III period points that are complete than Archaic period points. The converse is also true: there are relatively more Archaic points that are recorded as fragments than there are Pueblo II–III period points. Those points classified as "not further specified" have the highest occurrence of fragmentary items; many of these artifacts were probably identifiable as projectile points, but due to their breakage during use or manufacture, they could not be identified further to type.

By Architectural Block

Of those architectural blocks with relatively large sample sizes, Blocks 100 and 1300 clearly dominate the projectile point artifact category, both in terms of absolute and relative numbers (see Table 11.3). Table 11.22 provides distribution data for specific projectile point types by architectural block. At a little over 54 percent, the Lancaster Side-notched point type is the most abundant point type at Shields Pueblo. Originally described as Types 22, 23, and 24 in Ortman et al. (2005), this type corresponds with the Lancaster Side-notched type defined by Firor et al. (1998:334), which they note is the "Style C" type described by Hayes and Lancaster (1975:145). There is considerable variability in this point type, but its general characteristics are that it is a relatively small, triangular, side-notched point with either a straight or expanding-stem base. The bottom of the base can be convex, concave, or straight, and there is a high degree of variability in its length:width ratio (ranging from 1:1 to 4:1 or even higher). Notch height is almost always one-third the point's height from its base or less. Archaeologists of the Four Corners region generally agree that this type was commonly made between A.D. 1000 and 1300 (e.g., Ellis 1998; Firor et al. 1998; Hayes and Lancaster 1975; Loosle 1988).

In all of the architectural blocks, the Lancaster Side-notched is the dominant point type. However, Block 1300 also has relatively high percentages of Basketmaker and earlier Pueblo period types. At 25 percent of the block's projectile point assemblage, the Pueblo II and III period occupants of this architectural block may have purposefully curated these early-style points from earlier sites, or the points may derive from a Basketmaker III or Early Pueblo I component in the immediate vicinity of Block 1300. Architecture, tree-ring data, and pottery data (see Tables 10.5 and 10.6 in Chapter 10) document one or more such early components in this location. The projectile point assemblage from Block 1300 further indicates the presence of a Basketmaker III/Pueblo I period component in this location.

By Component

Table 11.23 describes the distribution of projectile point types by component. The Early Pueblo I period artifact assemblage includes only two points, one of which is a Basketmaker III–Pueblo I projectile point type. While only a small sample, the points help corroborate the early temporal component for the history of Shields Pueblo.

In contrast to the Pueblo III components of the site, the Late Pueblo II component appears to possess a disproportionate amount of projectile points from the Archaic and Basketmaker/Pueblo periods. This is true for both absolute and percentage measures provided in Table 11.23. The difference is even more striking when considering the ratio of these early projectile point types to kilograms of cooking pottery, which is much higher in the Late Pueblo II component relative to the Pueblo III components.

It is possible that the association of the Late Pueblo II component with some of the earlier point types, particularly the point types assigned to the Basketmaker/Pueblo period in Table 11.5, is conditioned by the occupational history of Shields Pueblo. As noted earlier, the pottery and projectile points from Architectural Block 1300 appear to indicate a Basketmaker III or Early Pueblo I component. Perhaps materials from this earlier component mixed with the later, Late Pueblo II artifact assemblage. However, this does not necessarily explain the presence of the Archaic period points in the Late Pueblo II component assemblage.

Several other scenarios exist to explain the large fraction of early points associated with the Late Pueblo II component. It is possible that the movement of Pueblo III period peoples was more restricted than that of Pueblo II period peoples, providing the former with less access to the broad, Four Corners region landscape and its many, earlier sites, resulting in less curation of earlier projectile point types. Another possibility is that the technological preferences of the Pueblo III period peoples excluded the earlier Archaic and Basketmaker/Pueblo period point types, which tend to be larger than the Pueblo II–III period point types. A third, intriguing possibility is that the Late Pueblo II component population of Shields Pueblo sought earlier period points, perhaps for their historical value. This value may have played an important role in the material culture of the ceremonial/ritual lifeways of the Chaco-era occupants of Shields Pueblo.

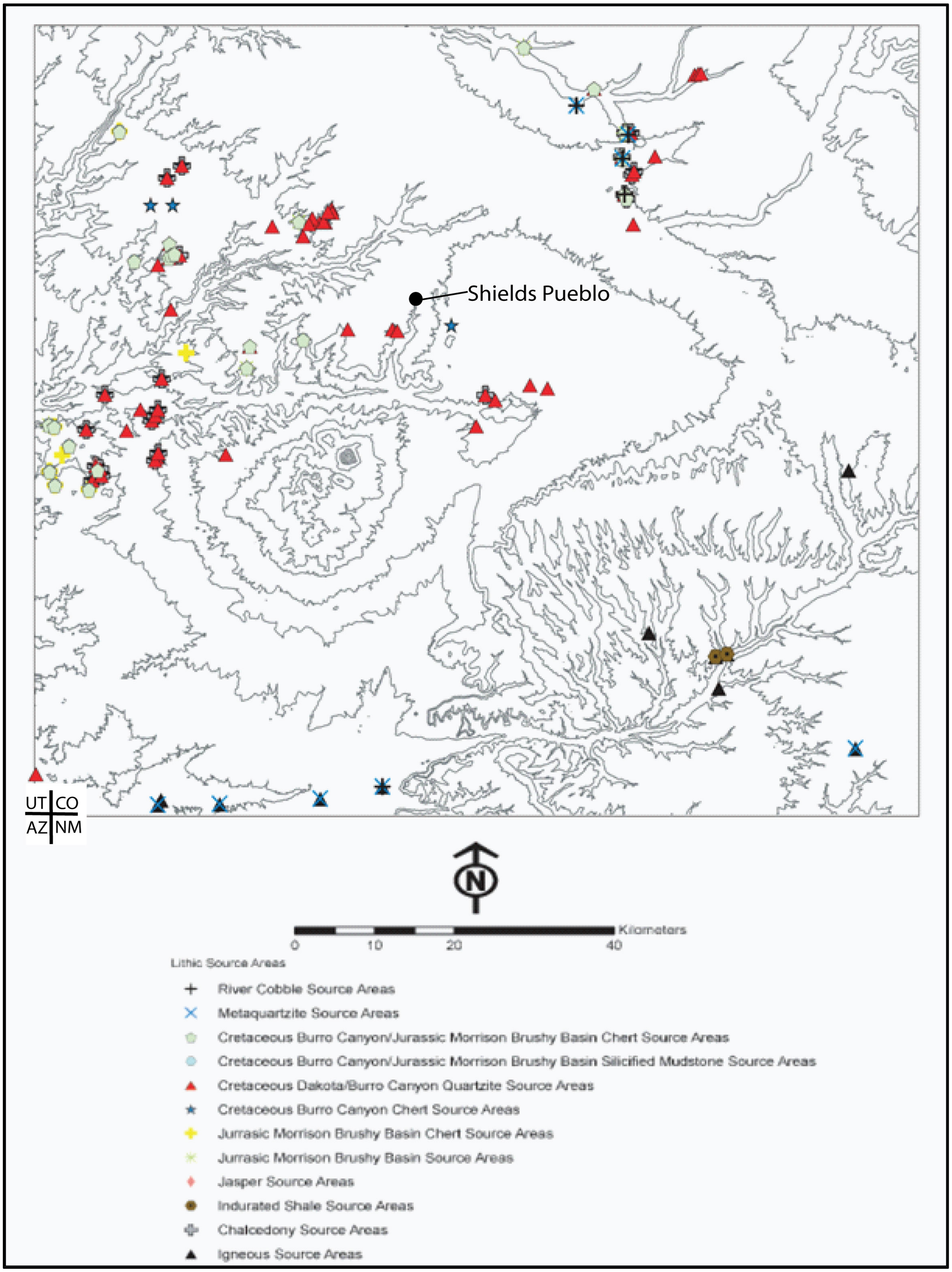

Figure 11.1. Lithic material sources map, adapted from Arakawa (2006:Figure 3.1).

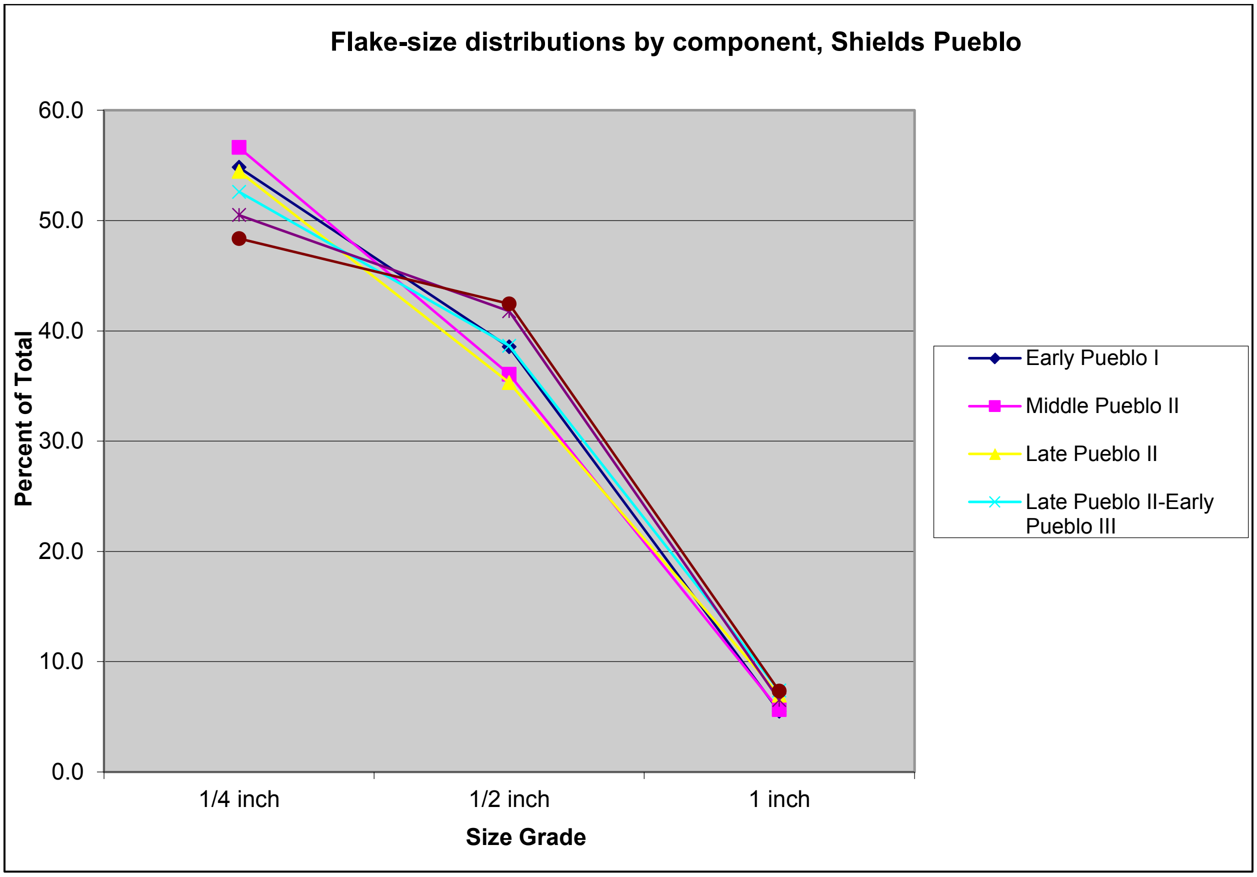

Figure 11.2. Flake-size distributions by component, Shields Pueblo.

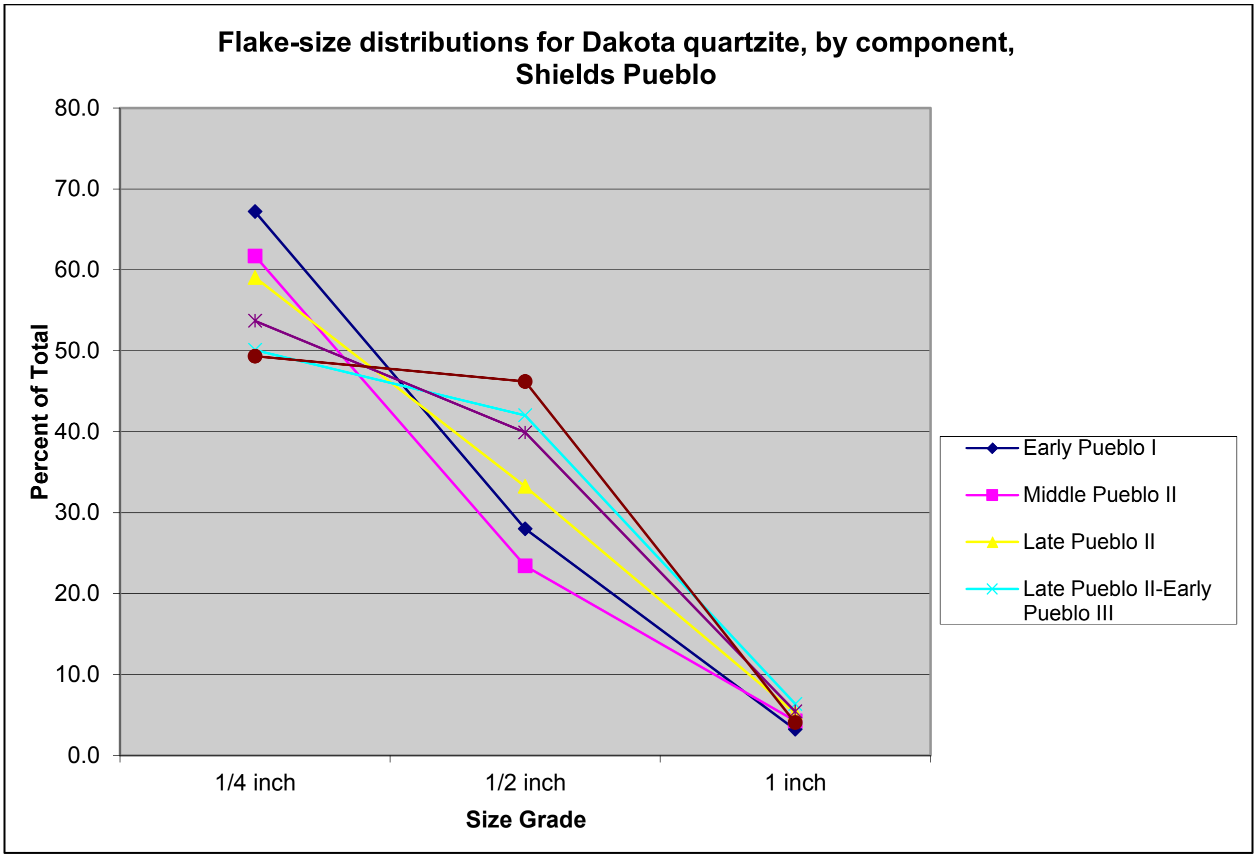

Figure 11.3. Flake-size distributions for Dakota quartzite by component, Shields Pueblo.

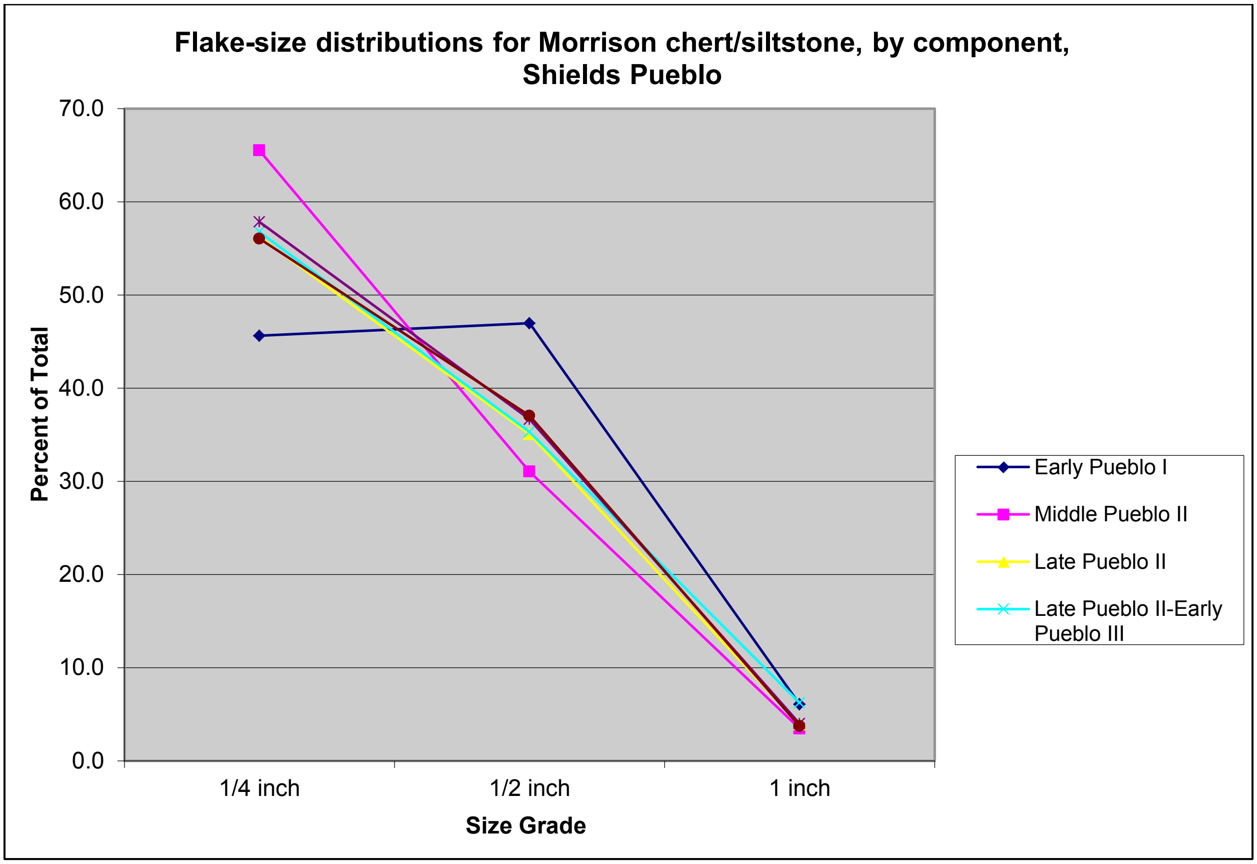

Figure 11.4. Flake-size distributions for Morrison chert/siltstone by component, Shields Pueblo.

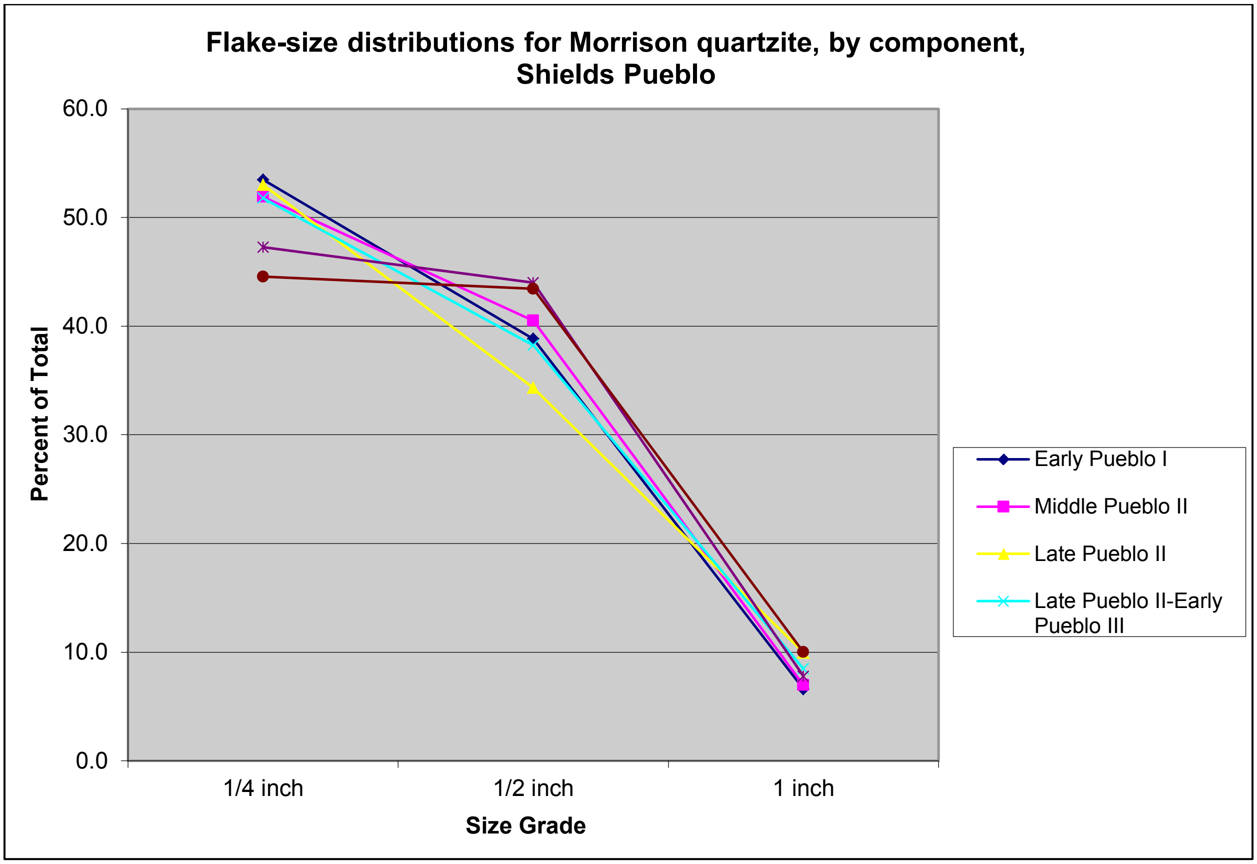

Figure 11.5. Flake-size distributions for Morrison quartzite by component, Shields Pueblo.

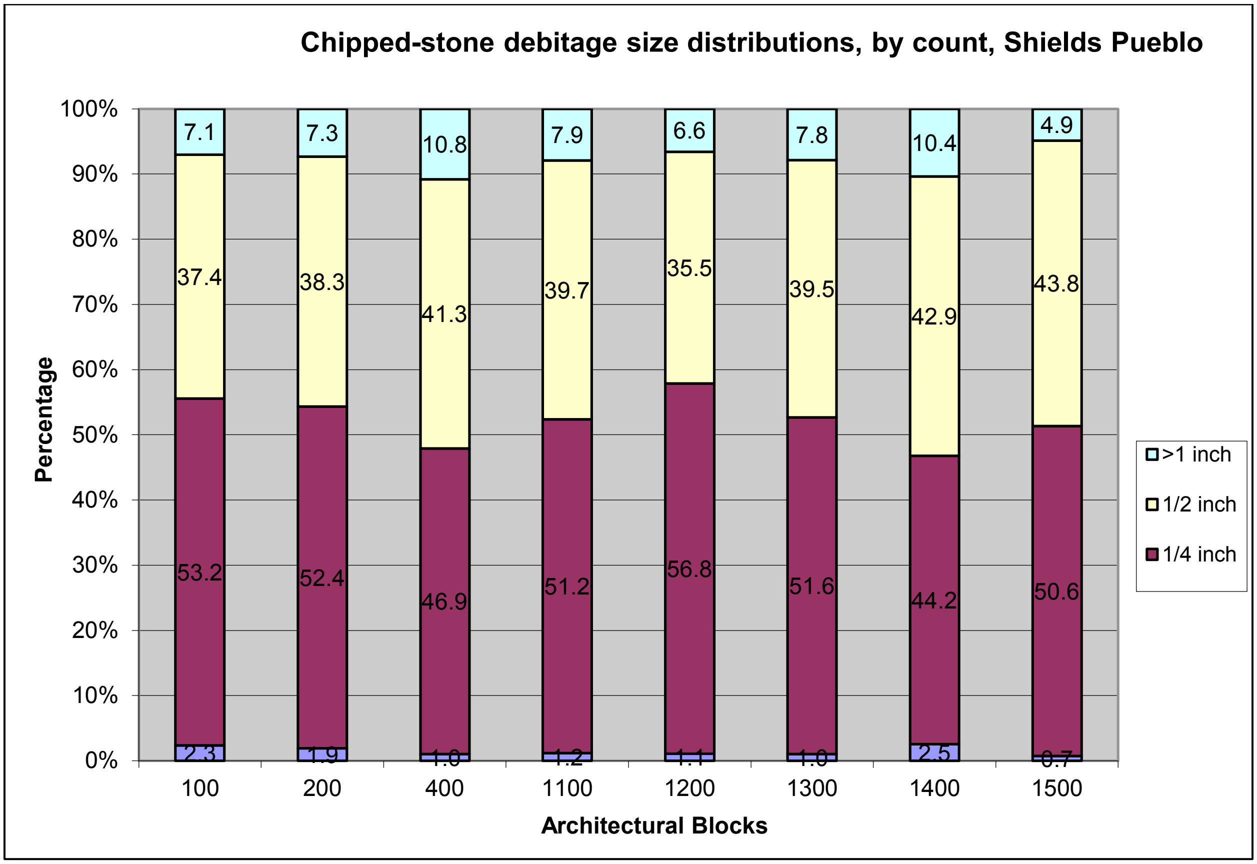

Figure 11.6. Chipped-stone debitage size distributions by count, Shields Pueblo.

Table 11.1. Material Types and their Locations.

Material Types	Name Used for This Research	Local, Semilocal, or Nonlocal
Cretaceous Burro Canyon/Jurassic Morrison Brushy Basin chert	Morrison	local
Cretaceous Burro Canyon/Jurassic Morrison Brushy Basin silicified mudstone	Morrison	local
Cretaceous Dakota/Burro Canyon chert	Kdbq	local or semilocal
Jurassic Morrison Brushy Basin chert	Jmbc	local or semilocal
Chalcedony	chalcedony	local or semilocal
Igneous	igneous (IGN)	local or semilocal
Red jasper	red jasper (RJS)	local or semilocal
Indurated shale	indurated shale (IDS)	local or semilocal
Silicified mudstone	silicified mudstone	local
Metaquartzite	metaquartzite	local
Obsidian	obsidian (OBS)	nonlocal
Narbona Pass chert	Narbona Pass chert (NPC)	nonlocal

Table 11.2. Chipped-Stone Tools by Material Type, Shields Pueblo.

Material Class	Raw Material	Core		Modified Core		Modified Flake		Biface		Drill		Projectile Point		Chipped-Stone Tool		TOTAL	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Local Materials	conglomerate					1	0.08									1	0.04
	Dakota quartzite	52	8.87	3	6.98	206	15.71	80	51.28	24	39.34	90	45.45	1	14.29	456	19.31
	igneous	1	0.17						0.00							1	0.04
	Morrison chert/siltstone	267	45.56	15	34.88	459	35.01	12	7.69	11	18.03	13	6.57	1	14.29	778	32.94
	Morrison quartzite	186	31.74	10	23.26	356	27.15	5	3.21	4	6.56	1	0.51	2	28.57	564	23.88
	quartz											1	0.51			1	0.04
	sandstone	1	0.17			2	0.15							2	28.57	5	0.21
	slate/shale	1	0.17			1	0.08									2	0.08
	SUBTOTAL	*508*	*86.69*	*28*	*65.12*	*1,025*	*78.18*	*97*	*62.18*	*39*	*63.93*	*105*	*53.03*	*6*	*85.71*	*1,808*	*76.55*
Semilocal	agate/ chalcedony	4	0.68			23	1.75	12	7.69	5	8.20	27	13.64			71	3.01
	Brushy Basin chert/siltstone	42	7.17	7	16.28	150	11.44	1	0.64	5	8.20	1	0.51			206	8.72
	Burro Canyon chert	21	3.58	6	13.95	88	6.71	30	19.23	6	9.84	24	12.12			175	7.41
	petrified wood					1	0.08	2	1.28			3	1.52			6	0.25
	red jasper					4	0.31	3	1.92	2	3.28	10	5.05	1	14.29	20	0.85
	SUBTOTAL	*67*	*11.43*	*13*	*30.23*	*266*	*20.29*	*48*	*30.77*	*18*	*29.51*	*65*	*32.83*	*1*	*14.29*	*478*	*20.24*

Material Class	Raw Material	Core		Modified Core		Modified Flake		Biface		Drill		Projectile Point		Chipped-Stone Tool		TOTAL	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Nonlocal	obsidian			1	2.33	4	0.31			2	3.28	5	2.53			12	0.51
	nonlocal chert/siltstone	1	0.17			3	0.23	2	1.28			4	2.02			10	0.42
	Washington Pass chert	1	0.17			2	0.15									3	0.13
	SUBTOTAL	*2*	*0.34*	*1*	*2.33*	*9*	*0.69*	*2*	*1.28*	*2*	*3.28*	*9*	*4.55*			*25*	*1.06*
Unknown	unknown chert/siltstone	8	1.37	1	2.33	8	0.61	9	5.77	1	1.64	19	9.60			46	1.95
	unknown quartzite	1	0.17			3	0.23									4	0.17
	unknown stone									1	1.64					1	0.04
	SUBTOTAL	*9*	*1.54*	*1*	*2.33*	*11*	*0.84*	*9*	*5.77*	*2*	*3.28*	*19*	*9.60*			*51*	*2.16*
TOTAL		586	100.00	43	100.00	1,311	100.00	156	100.00	61	100.00	198	100.00	7	100.00	2,362	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 11.3. Chipped-Stone Tools by Architectural Block, Shields Pueblo.

(a) Table 11.3

Architectural Block	Core			Modified Core			Modified Flake			Biface			Chipped-Stone Tool		
	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]
100	120	20.48	1.14	11	25.58	0.10	250	19.07	2.37	34	21.79	0.32	2	28.57	0.02
200	92	15.70	0.78	8	18.60	0.07	199	15.18	1.69	40	25.64	0.34			
300	1	0.17	1.50				2	0.15	3.01						
400	18	3.07	1.03	1	2.33	0.06	47	3.59	2.70	4	2.56	0.23			
500	3	0.51	2.69			0.00	8	0.61	7.16						
600	1	0.17	0.32				6	0.46	1.92						
800		0					2	0.15	0.53	2	1.28	0.53			
900		0					2	0.15	3.60						
1000	1	0.17	0.96	1	2.33	0.96	2	0.15	1.93						
1100	84	14.33	1.66	3	6.98	0.06	128	9.76	2.52	8	5.13	0.16			
1200	17	2.90	0.66	1	2.33	0.04	30	2.29	1.16	3	1.92	0.12			
1300	162	27.65	1.29	14	32.56	0.11	433	33.03	3.45	36	23.08	0.29	3	42.86	0.02
1400	60	10.24	0.68	3	6.98	0.03	152	11.59	1.73	26	16.67	0.30	2	28.57	0.02
1500	18	3.07	1.94	1	2.33	0.11	23	1.75	2.48	3	1.92	0.32			
1800	1	0.17	2.66				2	0.15	5.32						
1900	8	1.37	1.59				25	1.91	4.97						
TOTAL	586	100.00		43	100.00		1,311	100.00		156	100.00		7	100.00	

R[1] = Ratio of the number of artifacts to kilograms of cooking pottery. Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 11.3

Architectural Block	Drill			Projectile Point			TOTAL		Cooking Pottery Weight (g) by Block
	N	%	R[1]	N	%	R[1]	N	%	
100	22	36.07	0.21	53	26.77	0.50	492	20.83	105,595.90
200	10	16.39	0.09	31	15.66	0.26	380	16.09	117,515.58
300	2	3.28	3.01				5	0.21	665.50
400	1	1.64	0.06	2	1.01	0.11	73	3.09	17,434.90
500							11	0.47	1,117.30
600				3	1.52	0.96	10	0.42	3,125.40
800				1	0.51	0.27	5	0.21	3,769.00
900							2	0.08	555.90
1000				2	1.01	1.93	6	0.25	1,036.30
1100	6	9.84	0.12	13	6.57	0.26	242	10.25	50,749.21
1200	2	3.28	0.08	9	4.55	0.35	62	2.62	25,778.85
1300	10	16.39	0.08	58	29.29	0.46	716	30.31	125,616.35
1400	8	13.11	0.09	23	11.62	0.26	274	11.60	87,746.75
1500				3	1.52	0.32	48	2.03	9,291.10
1800							3	0.13	376.00
1900							33	1.40	5,035.05
TOTAL	61	100.00		198	100.00		2,362	100.00	

R[1] = Ratio of the number of artifacts to kilograms of cooking pottery. Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 11.4. Chipped-Stone Tools by Material Type and Architectural Block, Shields Pueblo.

(a) Table 11.4, Local Materials

Artifact Category	Block	Local Materials															
		Conglomerate		Dakota Quartzite		Igneous		Morrison Chert/Siltstone		Morrison Quartzite		Quartz		Sandstone		Slate/Shale	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Core	100			10	1.69	1	12.50	46	4.95	46	4.63						
	200			11	1.86			41	4.41	31	3.12						
	300							1	0.11								
	400			2	0.34			10	1.08	5	0.50						
	500									2	0.20			1	6.67		
	600																
	1000							1	0.11								
	1100			5	0.85			47	5.06	24	2.41						
	1200			2	0.34			8	0.86	3	0.30						
	1300			13	2.20			86	9.26	37	3.72						
	1400			7	1.18			16	1.72	28	2.82					1	50.00
	1500			1	0.17			8	0.86	7	0.70						
	1800							1	0.11								
	1900			1	0.17			2	0.22	3	0.30						
SUBTOTAL				*52*	*8.80*	*1*	*12.50*	*267*	*28.74*	*186*	*18.71*			*1*	*6.67*	*1*	*50.00*
Modified core	100			2	0.34			1	0.11	3	0.30						
	200							3	0.32	4	0.40						
	400							1	0.11								
	1000							1	0.11								
	1100							1	0.11	2	0.20						
	1200																
	1300			1	0.17			6	0.65								
	1400							1	0.11	1	0.10						
	1500							1	0.11								
SUBTOTAL				*3*	*0.51*			*15*	*1.61*	*10*	*1.01*						

Artifact Category	Block	Local Materials															
		Conglomerate		Dakota Quartzite		Igneous		Morrison Chert/Siltstone		Morrison Quartzite		Quartz		Sandstone		Slate/Shale	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Modified flake	100	1	33.33	37	6.26			89	9.58	74	7.44					1	50.00
	200			35	5.92			69	7.43	54	5.43						
	300							1	0.11								
	400			5	0.85			18	1.94	14	1.41						
	500			2	0.34			3	0.32	2	0.20						
	600							4	0.43	2	0.20						
	800			1	0.17					1	0.10						0.00
	900									2	0.20						
	1000							1	0.11								
	1100			24	4.06			46	4.95	38	3.82			1	6.67		
	1200			7	1.18			8	0.86	11	1.11						
	1300			62	10.49			152	16.36	107	10.76			1	6.67		
	1400			20	3.38			51	5.49	38	3.82						
	1500			7	1.18			7	0.75	4	0.40						
	1800							1	0.11	1	0.10						
	1900			6	1.02			9	0.97	8	0.80						
SUBTOTAL		*1*	*33.33*	*206*	*34.86*			*459*	*49.41*	*356*	*35.81*			*2*	*13.33*	*1*	*50.00*
Biface	100			15	2.54			4	0.43	1	0.10						
	200			23	3.89			2	0.22	2	0.20						
	400			1	0.17												
	800				0.00			1	0.11								
	1100			4	0.68			1	0.11								
	1200			3	0.51												
	1300			17	2.88			2	0.22	2	0.20						
	1400			15	2.54			1	0.11								
	1500			2	0.34			1	0.11								
SUBTOTAL				*80*	*13.54*			*12*	*1.29*	*5*	*0.50*						

Artifact Category	Block	Local Materials															
		Conglomerate		Dakota Quartzite		Igneous		Morrison Chert/Siltstone		Morrison Quartzite		Quartz		Sandstone		Slate/Shale	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Drill	100			6	1.02			5	0.54	3	0.30						
	200			5	0.85			1	0.11								
	300			1	0.17			1	0.11								
	400							1	0.11								
	1100			1	0.17			2	0.22	1	0.10						
	1200			2	0.34												
	1300			6	1.02												
	1400			3	0.51			1	0.11								
SUBTOTAL				*24*	*4.06*			*11*	*1.18*	*4*	*0.40*						
Projectile point	100			25	4.23			3	0.32	1	0.10						
	200			14	2.37												
	400				0.00												
	600			2	0.34												
	800			1	0.17												
	1000			1	0.17												
	1100			5	0.85												
	1200			5	0.85			1	0.11								
	1300			28	4.74			8	0.86								
	1400			7	1.18			1	0.11			1	100.00				
	1500			2	0.34												
SUBTOTAL				*90*	*15.23*			*13*	*1.40*	*1*	*0.10*	*1*	*100.00*				
Chipped-stone tool	100							1	0.11					1	6.67		
	1300			1	0.17					1	0.10			1	6.67		
	1400									1	0.10				0.00		
SUBTOTAL				*1*	*0.17*			*1*	*0.11*	*2*	*0.20*			*2*	*13.33*		
TOTAL		1	100	456	100	1	100	778	100	564	100	1	100	5	100	2	100

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 11.4, Semilocal Materials and Nonlocal Materials

Artifact Category	Block	Semilocal Materials										Nonlocal Materials					
		Agate/ Chalcedony		Brushy Basin Chert/Siltstone		Burro Canyon Chert		Petrified Wood		Red Jasper		Nonlocal Chert/Siltstone		Obsidian		Washington Pass Chert	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Core	100	1	1.39	10	4.69	2	1.02										
	200			8	3.76												
	300																
	400			1	0.47												
	500																
	600					1	0.51										
	1000																
	1100	1	1.39	3	1.41	2	1.02									1	33.33
	1200	1	1.39			3	1.53										
	1300			17	7.98	6	3.06					1	10.00				
	1400	1	1.39	1	0.47	5	2.55										
	1500			2	0.94												
	1800																
	1900					2	1.02										
SUBTOTAL		*4*	*5.56*	*42*	*19.72*	*21*	*10.71*					*1*	*10.00*			*1*	*33.33*
Modified core	100			1	0.47	3	1.53										
	200			1	0.47												
	400																
	1000																
	1100																
	1200			1	0.47												
	1300			4	1.88	2	1.02							1	8.33		
	1400					1	0.51										
	1500																
SUBTOTAL				*7*	*3.29*	*6*	*3.06*							*1*	*8.33*		

Artifact Category	Block	Semilocal Materials										Nonlocal Materials					
		Agate/ Chalcedony		Brushy Basin Chert/Siltstone		Burro Canyon Chert		Petrified Wood		Red Jasper		Nonlocal Chert/Siltstone		Obsidian		Washington Pass Chert	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Modified flake	100	2	2.78	30	14.08	11	5.61							2	16.67	1	33.33
	200	3	4.17	27	12.68	4	2.04			3	14.29	1	10.00	1	8.33		
	300		0.00	1	0.47												
	400	3	4.17	4	1.88	2	1.02										
	500					1	0.51										
	600																
	800																
	900																
	1000																
	1100	1	1.39	7	3.29	9	4.59			1	4.76					1	33.33
	1200	3	4.17	1	0.47												
	1300	8	11.11	62	29.11	35	17.86	1	16.67			1	10.00	1	8.33		
	1400	3	4.17	13	6.10	25	12.76										
	1500			3	1.41	1	0.51					1	10.00				
	1800																
	1900			2	0.94												
SUBTOTAL		*23*	*31.94*	*150*	*70.42*	*88*	*44.90*	*1*	*16.67*	*4*	*19.05*	*3*	*30.00*	*4*	*33.33*	*2*	*66.67*
Biface	100	5	6.94	1	0.47	5	2.55										
	200					8	4.08			1	4.76	2	20.00				
	400					2	1.02										
	800	1	1.39														
	1100	1	1.39							1	4.76						
	1200		0.00														
	1300	3	4.17			9	4.59	1	16.67								
	1400	2	2.78			6	3.06	1	16.67	1	4.76						
	1500		0.00														
SUBTOTAL		*12*	*16.67*	*1*	*0.47*	*30*	*15.31*	*2*	*33.33*	*3*	*14.29*	*2*	*20.00*				

Artifact Category	Block	Semilocal Materials										Nonlocal Materials					
		Agate/ Chalcedony		Brushy Basin Chert/Siltstone		Burro Canyon Chert		Petrified Wood		Red Jasper		Nonlocal Chert/Siltstone		Obsidian		Washington Pass Chert	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Drill	100	3	4.17	2	0.94	2	1.02							1	8.33		
	200					3	1.53										
	300																
	400																
	1100	1	1.39	1	0.47												
	1200																
	1300	1	1.39	2	0.94	1	0.51										
	1400									2	9.52			1	8.33		
SUBTOTAL		*5*	*6.94*	*5*	*2.35*	*6*	*3.06*			*2*	*9.52*			*2*	*16.67*		
Projectile point	100	9	12.50			5	2.55	2	33.33	2	9.52	1	10.00				
	200	3	4.17	1	0.47	7	3.57			4	19.05	1	10.00				
	400									1	4.76						
	600	1	1.39														
	800																
	1000					1	0.51										
	1100	2	2.78			2	1.02							1	8.33		
	1200	1	1.39														
	1300	7	9.72			5	2.55	1	16.67			1	10.00	4	33.33		
	1400	4	5.56			4	2.04			2	9.52	1	10.00				
	1500									1	4.76						
SUBTOTAL		*27*	*37.50*	*1*	*0.47*	*24*	*12.24*	*3*	*50.00*	*10*	*47.62*	*4*	*40.00*	*5*	*41.67*		
Chipped-stone tool	100																
	1300																
	1400									1	4.76						
SUBTOTAL										1	4.76						
TOTAL		71	100.00	206	100.00	175	100.00	6	100.00	20	100.00	10	100.00	12	100.00	3	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(c) Table 11.4, Unknown Materials and Totals

Artifact Category	Block	Unknown Materials						TOTAL	
		Unknown Chert/Siltstone		Unknown Quartzite		Unknown Stone			
		N	%	N	%	N	%	N	%
Core	100	3	6.00	1	6.25			120	5.08
	200	1	2.00					92	3.90
	300							1	0.04
	400							18	0.76
	500							3	0.13
	600							1	0.04
	1000							1	0.04
	1100	1	2.00					84	3.56
	1200							17	0.72
	1300	2	4.00					162	6.86
	1400	1	2.00					60	2.54
	1500							18	0.76
	1800							1	0.04
	1900							8	0.34
SUBTOTAL		*8*	*16.00*	*1*	*6.25*			*586*	*24.81*
Modified core	100	1	2.00					11	0.47
	200							8	0.34
	400							1	0.04
	1000							1	0.04
	1100							3	0.13
	1200							1	0.04
	1300							14	0.59
	1400							3	0.13
	1500							1	0.04
SUBTOTAL		*1*	*2.00*					*43*	*1.82*

Artifact Category	Block	Unknown Materials						TOTAL	
		Unknown Chert/Siltstone		Unknown Quartzite		Unknown Stone			
		N	%	N	%	N	%	N	%
Modified flake	100	2	4.00					250	10.58
	200	1	2.00	1	6.25			199	8.43
	300							2	0.08
	400	1	2.00					47	1.99
	500							8	0.34
	600							6	0.25
	800							2	0.08
	900							2	0.08
	1000			1	6.25			2	0.08
	1100							128	5.42
	1200							30	1.27
	1300	3	6.00					433	18.33
	1400	1	2.00	1	6.25			152	6.44
	1500							23	0.97
	1800							2	0.08
	1900							25	1.06
SUBTOTAL		*8*	*16.00*	*3*	*18.75*			*1,311*	*55.50*
Biface	100	3	6.00					34	1.44
	200	2	4.00					40	1.69
	400	1	2.00					4	0.17
	800							2	0.08
	1100	1	2.00					8	0.34
	1200							3	0.13
	1300	2	4.00					36	1.52
	1400							26	1.10
	1500							3	0.13
SUBTOTAL		*9*	*18.00*					*156*	*6.60*

Artifact Category	Block	Unknown Materials						TOTAL	
		Unknown Chert/Siltstone		Unknown Quartzite		Unknown Stone			
		N	%	N	%	N	%	N	%
Drill	100							22	0.93
	200	1	2.00					10	0.42
	300							2	0.08
	400							1	0.04
	1100							6	0.25
	1200							2	0.08
	1300							10	0.42
	1400					1	50.00	8	0.34
SUBTOTAL		*1*	*2.00*			*1*	*50.00*	*61*	*2.58*
Projectile point	100	5	10.00					53	2.24
	200	1	2.00					31	1.31
	400	1	2.00					2	0.08
	600							3	0.13
	800							1	0.04
	1000							2	0.08
	1100	3	6.00					13	0.55
	1200	2	4.00					9	0.38
	1300	4	8.00					58	2.46
	1400	3	6.00					23	0.97
	1500							3	0.13
SUBTOTAL		*19*	*38.00*					*198*	*8.38*
Chipped-stone tool	100							2	0.08
	1300							3	0.13
	1400							2	0.08
SUBTOTAL								*7*	*0.30*
TOTAL		46	100.00	4	100.00	1	100.00	2,362	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 11.5. Chipped-Stone Tools by Component, Shields Pueblo.

(a) Table 11.5, Early Pueblo I through Early Pueblo III

Artifact Category	Early Pueblo I (A.D. 725–800)			Middle Pueblo II (A.D. 1020–1060)			Late Pueblo II (A.D. 1060–1140)			Late Pueblo II through Early Pueblo III (A.D. 1060–1225)			Early Pueblo III (A.D. 1140–1225)		
	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]
Core	5	0.85	1.61	32	5.46	1.08	133	22.70	1.33	22	3.75	2.16	157	26.79	1.06
Modified core				5	11.63	0.17	8	18.60	0.08				6	13.95	0.04
Modified flake	12	0.92	3.86	100	7.63	3.37	272	20.75	2.71	21	1.60	2.06	268	20.44	1.80
Biface	1	0.64	0.32	2	1.28	0.07	41	26.28	0.41	2	1.28	0.20	24	15.38	0.16
Drill	2	3.28	0.64	2	3.28	0.07	15	24.59	0.15	2	3.28	0.20	7	11.48	0.05
Projectile point	2	1.01	0.64	13	6.57	0.44	62	31.31	0.62	4	2.02	0.39	32	16.16	0.22
Chipped-stone tool				1	14.29		3	42.86	0.03	1	14.29	0.10			
TOTAL	22	0.93	7.08	155	6.56	5.22	534	22.61	5.32	52	2.20	5.10	494	20.91	3.32
Cooking pottery weight (g) by component	3,105.20			29,671.62			100,285.34			10,186.90			148,604.22		

R[1] = Ratio of the number of artifacts to kilograms of cooking pottery.

(b) Table 11.5, Late Pueblo III, Middle PII–Late PIII, Unassigned, and Total

Artifact Category	Late Pueblo III (A.D. 1225–1280)			Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)			Unassigned			TOTAL		
	N	%	R^1	N	%	R^1	N	%	R^1	N	%	R^1
Core	26	4.44	0.37				211	36.01	1.09	586	100.00	1.06
Modified core	1	2.33	0.01				23	53.49	0.12	43	100.00	0.08
Modified flake	45	3.43	0.64				593	45.23	3.06	1,311	100.00	2.36
Biface	9	5.77	0.13				77	49.36	0.40	156	100.00	0.28
Drill	3	4.92	0.04				30	49.18	0.16	61	100.00	0.11
Projectile point	19	9.60	0.27				66	33.33	0.34	198	100.00	0.36
Chipped-stone tool							2	28.57	0.01	7	100.00	0.01
TOTAL	103	4.36	1.47	0	0.00	0.00	997	42.21	5.15	2,362	100.00	4.25
Cooking pottery weight (g) by component	69,972.41			95.80			193,483.60			555,405.09		

R^1 = Ratio of the number of artifacts to kilograms of cooking pottery.

Table 11.6. Chipped-Stone Tools by Component and Material Type, Shields Pueblo.

(a) Table 11.6, Local Materials

Artifact Category	Component	Local Materials															
		Conglomerate		Dakota Quartzite		Igneous		Morrison Chert/ Siltstone		Morrison Quartzite		Quartz		Sandstone		Slate/Shale	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Core	Early Pueblo I (A.D. 725–800)							2	40.0	2	40.0						
	Middle Pueblo II (A.D. 1020–1060)							24	75.0	4	12.5						
	Late Pueblo II (A.D. 1060–1140)			18	13.5			52	39.1	41	30.8						
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)			3	13.6			6	27.3	12	54.5						
	Early Pueblo III (A.D. 1140–1225)			15	9.6			70	44.6	51	32.5					1	0.6
	Late Pueblo III (A.D. 1225–1280)			2	7.7			9	34.6	14	53.8						
	Subperiod unassigned			14	6.6	1	0.5	104	49.3	62	29.4			1	0.5		
SUBTOTAL				*52*	*8.9*	*1*	*0.2*	*267*	*45.6*	*186*	*31.7*			*1*	*0.2*	*1*	*0.2*
Modified core	Middle Pueblo II (A.D. 1020–1060)							3	60.0								
	Late Pueblo II (A.D. 1060–1140)			1	12.5			2	25.0	3	37.5						
	Early Pueblo III (A.D. 1140–1225)							3	50.0	2	33.3						

Artifact Category	Component	Local Materials															
		Conglomerate		Dakota Quartzite		Igneous		Morrison Chert/ Siltstone		Morrison Quartzite		Quartz		Sandstone		Slate/Shale	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Modified core, cont.	Late Pueblo III (A.D. 1225–1280)									1	100.0						
	Subperiod unassigned			2	8.7			7	30.4	4	17.4						
SUBTOTAL				*3*	*7.0*			*15*	*34.9*	*10*	*23.3*						
Modified flake	Early Pueblo I (A.D. 725–800)			1	8.3			4	33.3	6	50.0						
	Middle Pueblo II (A.D. 1020–1060)			4	4.0			41	41.0	27	27.0			1	1.0		
	Late Pueblo II (A.D. 1060–1140)	1	0.4	45	16.5			83	30.5	75	27.6					1	0.4
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)			53	19.8			88	32.8	70	26.1			1	0.4		
	Early Pueblo III (A.D. 1140–1225)			3	14.3			6	28.6	7	33.3						
	Late Pueblo III (A.D. 1225–1280)			7	15.6			12	26.7	18	40.0						
	Subperiod unassigned			93	15.7			225	37.9	153	25.8						
SUBTOTAL		*1*	*0.1*	*206*	*15.7*			*459*	*35.0*	*356*	*27.2*			*2*	*0.2*	*1*	*0.1*

Artifact Category	Component	Local Materials															
		Conglomerate		Dakota Quartzite		Igneous		Morrison Chert/ Siltstone		Morrison Quartzite		Quartz		Sandstone		Slate/Shale	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Biface	Early Pueblo I (A.D. 725–800)																
	Middle Pueblo II (A.D. 1020–1060)			1	50.0												
	Late Pueblo II (A.D. 1060–1140)			20	48.8			6	14.6								
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)			12	50.0			2	8.3	1	4.2						
	Early Pueblo III (A.D. 1140–1225)			1	50.0												
	Late Pueblo III (A.D. 1225–1280)			4	44.4												
	Subperiod unassigned			42	54.5			4	5.2	4	5.2						
SUBTOTAL				*80*	*51.3*			*12*	*7.7*	*5*	*3.2*						
Drill	Early Pueblo I (A.D. 725–800)			1	50.0			1	50.0								
	Middle Pueblo II (A.D. 1020–1060)			2	100.0												
	Late Pueblo II (A.D. 1060–1140)			3	20.0					2	13.3						
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)			5	71.4			1	14.3								

Artifact Category	Component	Local Materials															
		Conglomerate		Dakota Quartzite		Igneous		Morrison Chert/ Siltstone		Morrison Quartzite		Quartz		Sandstone		Slate/Shale	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Drill, cont.	Early Pueblo III (A.D. 1140–1225)			2	100.0												
	Late Pueblo III (A.D. 1225–1280)			3	100.0												
	Subperiod unassigned			8	26.7			9	30.0	2	6.7						
SUBTOTAL				*24*	*39.3*			*11*	*18.0*	*4*	*6.6*						
Projectile point	Early Pueblo I (A.D. 725–800)							1	50.0								
	Middle Pueblo II (A.D. 1020–1060)			6	46.2			1	7.7								
	Late Pueblo II (A.D. 1060–1140)			27	43.5			6	9.7								
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)			13	40.6			1	3.1			1	3.1				
	Early Pueblo III (A.D. 1140–1225)			1	25.0			1	25.0								
	Late Pueblo III (A.D. 1225–1280)			12	63.2												
	Subperiod unassigned			31	47.0			3	4.5	1	1.5						
SUBTOTAL				*90*	*45.5*			*13*	*6.6*	*1*	*0.5*	*1*	*0.5*				

Artifact Category	Component	Local Materials															
		Conglomerate		Dakota Quartzite		Igneous		Morrison Chert/ Siltstone		Morrison Quartzite		Quartz		Sandstone		Slate/Shale	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Chipped-stone tool	Middle Pueblo II (A.D. 1020–1060)									1	100.0						
	Late Pueblo II (A.D. 1060–1140)							1	33.3					2	66.7		
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)																
	Unassigned			1	50.0					1	50.0						
SUBTOTAL				*1*	*14.3*			*1*	*14.3*	*2*	*28.6*			*2*	*28.6*		
TOTAL		1	0.0	456	19.3	1	0.0	778	32.9	564	23.9	1	0.0	5	0.2	2	0.1

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 11.6, Semilocal Materials and Nonlocal Materials

Artifact Category	Component	Semilocal Materials										Nonlocal Materials					
		Agate/ Chalcedony		Brushy Basin Chert/ Siltstone		Burro Canyon Chert		Petrified Wood		Red Jasper		Nonlocal Chert/ Siltstone		Obsidian		Washington Pass Chert	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Core	Early Pueblo I (A.D. 725–800)	1	20.0														
	Middle Pueblo II (A.D. 1020–1060)			2	6.3	2	6.3										
	Late Pueblo II (A.D. 1060–1140)			17	12.8	2	1.5										
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)					1	4.5										
	Early Pueblo III (A.D. 1140–1225)	1	0.6	8	5.1	6	3.8										
	Late Pueblo III (A.D. 1225–1280)			1	3.8												
	Subperiod unassigned	2	0.9	14	6.6	10	4.7					1	0.5			1	0.5
SUBTOTAL		*4*	*0.7*	*42*	*7.2*	*21*	*3.6*					*1*	*0.2*			*1*	*0.2*
Modified core	Middle Pueblo II (A.D. 1020–1060)			1	20.0									1	20.0		
	Late Pueblo II (A.D. 1060–1140)			2	25.0												
	Early Pueblo III (A.D. 1140–1225)			1	16.7												
	Late Pueblo III (A.D. 1225–1280)																
	Subperiod unassigned			3	13.0	6	26.1										
SUBTOTAL				*7*	*16.3*	*6*	*14.0*							*1*	*2.3*		
Modified flake	Early Pueblo I (A.D. 725–800)			1	8.3												
	Middle Pueblo II (A.D. 1020–1060)	2	2.0	16	16.0	8	8.0							1	1.0		

Artifact Category	Component	Semilocal Materials										Nonlocal Materials					
		Agate/ Chalcedony		Brushy Basin Chert/ Siltstone		Burro Canyon Chert		Petrified Wood		Red Jasper		Nonlocal Chert/ Siltstone		Obsidian		Washington Pass Chert	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Modified flake, cont.	Late Pueblo II (A.D. 1060–1140)	4	1.5	44	16.2	14	5.1	1	0.4					1	0.4	1	0.4
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	5	1.9	26	9.7	18	6.7			3	1.1	1	0.4	1	0.4		
	Early Pueblo III (A.D. 1140–1225)			4	19.0	1	4.8										
	Late Pueblo III (A.D. 1225–1280)			3	6.7	2	4.4				0.0	1	2.2				
	Subperiod unassigned	12	2.0	56	9.4	45	7.6			1	0.2	1	0.2	1	0.2	1	0.2
SUBTOTAL		*23*	*1.8*	*150*	*11.4*	*88*	*6.7*	*1*	*0.1*	*4*	*0.3*	*3*	*0.2*	*4*	*0.3*	*2*	*0.2*
Biface	Early Pueblo I (A.D. 725–800)	1	100.0														
	Middle Pueblo II (A.D. 1020–1060)					1	50.0										
	Late Pueblo II (A.D. 1060–1140)	5	12.2	1	2.4	6	14.6										
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	2	8.3			4	16.7			1	4.2	1	4.2				
	Early Pueblo III (A.D. 1140–1225)					1	50.0										
	Late Pueblo III (A.D. 1225–1280)					3	33.3					1	11.1				
	Subperiod unassigned	4	5.2			15	19.5	2	2.6	2	2.6		0.0				
SUBTOTAL		*12*	*7.7*	*1*	*0.6*	*30*	*19.2*	*2*	*1.3*	*3*	*1.9*	*2*	*1.3*				

Artifact Category	Component	Semilocal Materials										Nonlocal Materials					
		Agate/ Chalcedony		Brushy Basin Chert/ Siltstone		Burro Canyon Chert		Petrified Wood		Red Jasper		Nonlocal Chert/ Siltstone		Obsidian		Washington Pass Chert	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Drill	Early Pueblo I (A.D. 725–800)																
	Middle Pueblo II (A.D. 1020–1060)																
	Late Pueblo II (A.D. 1060–1140)	2	13.3	3	20.0	3	20.0							1	6.7		
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)													1	14.3		
	Early Pueblo III (A.D. 1140–1225)																
	Late Pueblo III (A.D. 1225–1280)																
	Subperiod unassigned	3	10.0	2	6.7	3	10.0			2	6.7						
SUBTOTAL		*5*	*8.2*	*5*	*8.2*	*6*	*9.8*			*2*	*3.3*			*2*	*3.3*		
Projectile point	Early Pueblo I (A.D. 725–800)																
	Middle Pueblo II (A.D. 1020–1060)	2	15.4									1	7.7		0.0		
	Late Pueblo II (A.D. 1060–1140)	12	19.4					2	3.2	1	1.6	1	1.6	1	1.6		
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	3	9.4							5	15.6						
	Early Pueblo III (A.D. 1140–1225)		0.0							1	25.0						
	Late Pueblo III (A.D. 1225–1280)	1	5.3							1	5.3	1	5.3				
	Subperiod unassigned	9	13.6	1	1.5	8	12.1	1	1.5	2	3.0	1	1.5	4	6.1		
SUBTOTAL		27	13.6	1	0.5	8	4.0	3	1.5	10	5.1	4	2.0	5	2.5		

Artifact Category	Component	Semilocal Materials										Nonlocal Materials					
		Agate/ Chalcedony		Brushy Basin Chert/ Siltstone		Burro Canyon Chert		Petrified Wood		Red Jasper		Nonlocal Chert/ Siltstone		Obsidian		Washington Pass Chert	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Chipped-stone tool	Middle Pueblo II (A.D. 1020–1060)																
	Late Pueblo II (A.D. 1060–1140)																
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)									1	100.0						
	Unassigned																
SUBTOTAL										*1*	*14.3*						
TOTAL		71	3.0	206	8.7	175	7.4	6	0.3	20	0.8	10	0.4	12	0.5	3	0.1

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(c) Table 11.6, Unknown Materials and Totals

Artifact Category	Component	Unknown Materials: Unknown Chert/Siltstone N	%	Unknown Quartzite N	%	Unknown Stone N	%	TOTAL N	%
Core	Early Pueblo I (A.D. 725–800)							5	100.0
	Middle Pueblo II (A.D. 1020–1060)							32	100.0
	Late Pueblo II (A.D. 1060–1140)	2	1.5	1	0.8			133	100.0
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)							22	100.0
	Early Pueblo III (A.D. 1140–1225)	5	3.2					157	100.0
	Late Pueblo III (A.D. 1225–1280)							26	100.0
	Subperiod unassigned	1	0.5					211	100.0
SUBTOTAL		*8*	*1.4*	*1*	*0.2*			*586*	*100.0*
Modified core	Middle Pueblo II (A.D. 1020–1060)							5	100.0
	Late Pueblo II (A.D. 1060–1140)							8	100.0
	Early Pueblo III (A.D. 1140–1225)							6	100.0
	Late Pueblo III (A.D. 1225–1280)							1	100.0
	Subperiod unassigned	1	4.3					23	100.0
SUBTOTAL		*1*	*2.3*					*43*	*100.0*
Modified flake	Early Pueblo I (A.D. 725–800)							12	100.0
	Middle Pueblo II (A.D. 1020–1060)							100	100.0
	Late Pueblo II (A.D. 1060–1140)	2	0.7					272	100.0
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	1	0.4	1	0.4			268	100.0
	Early Pueblo III (A.D. 1140–1225)							21	100.0
	Late Pueblo III (A.D. 1225–1280)	1	2.2	1	2.2			45	100.0
	Subperiod unassigned	4	0.7	1	0.2			593	100.0
SUBTOTAL		*8*	*0.6*	*3*	*0.2*			*1,311*	*100.0*
Biface	Early Pueblo I (A.D. 725–800)							1	100.0
	Middle Pueblo II (A.D. 1020–1060)							2	100.0
	Late Pueblo II (A.D. 1060–1140)	3	7.3					41	100.0
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	1	4.2					24	100.0

Artifact Category	Component	Unknown Materials						TOTAL	
		Unknown Chert/Siltstone		Unknown Quartzite		Unknown Stone			
		N	%	N	%	N	%	N	%
Biface, cont.	Early Pueblo III (A.D. 1140–1225)							2	100.0
	Late Pueblo III (A.D. 1225–1280)	1	11.1		]			9	100.0
	Subperiod unassigned	4	5.2					77	100.0
SUBTOTAL		*9*	*5.8*					*156*	*100.0*
Drill	Early Pueblo I (A.D. 725–800)							2	100.0
	Middle Pueblo II (A.D. 1020–1060)							2	100.0
	Late Pueblo II (A.D. 1060–1140)	1	6.7					15	100.0
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)							7	100.0
	Early Pueblo III (A.D. 1140–1225)							2	100.0
	Late Pueblo III (A.D. 1225–1280)							3	100.0
	Subperiod unassigned					1	3.3	30	100.0
SUBTOTAL		*1*	*1.6*			*1*	*1.6*	*61*	*100.0*
Projectile point	Early Pueblo I (A.D. 725–800)							2	100.0
	Middle Pueblo II (A.D. 1020–1060)	1	7.7					13	100.0
	Late Pueblo II (A.D. 1060–1140)	5	8.1					62	100.0
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	6	18.8					32	100.0
	Early Pueblo III (A.D. 1140–1225)	1	25.0					4	100.0
	Late Pueblo III (A.D. 1225–1280)	1	5.3					19	100.0
	Subperiod unassigned	5	7.6					66	100.0
SUBTOTAL		*19*	*9.6*					*198*	*100.0*
Chipped-stone tool	Middle Pueblo II (A.D. 1020–1060)							1	100.0
	Late Pueblo II (A.D. 1060–1140)							3	100.0
	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)							1	100.0
	Unassigned							2	100.0
SUBTOTAL								*7*	*100.0*
TOTAL		46	1.9	4	0.2	1	0.0	2,362	100.0

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 11.7. Quantities of Debitage Analyzed Relative to Total Recovered Debitage by Architectural Block, Shields Pueblo.

Architectural Block	Total Count (N)	Total Analyzed (N)	% of Total Count	Total Wt. (g)	Total Wt. Analyzed (g)	% of Total Wt.
100	13,536	6,048	44.7	63,225.1	27,538.2	43.6
200	9,397	4,720	50.2	45,835.1	21,810.6	47.6
300	108	65	60.2	264.9	158.0	59.6
400	1,526	574	37.6	5,886.4	2,878.5	48.9
500	294	107	36.4	990.9	344.3	34.7
600	234	35	15.0	1,087.9	165.2	15.2
700	94	27	28.7	431.4	107.1	24.8
800	258	117	45.3	1,350.1	571.6	42.3
900	99	24	24.2	330.8	68.8	20.8
1000	81	3	3.7	474.8	38.1	8.0
1100	5,452	2,823	51.8	27,225.7	14,077.3	51.7
1200	1,534	560	36.5	6,778.5	2,767.3	40.8
1300	16,348	8,792	53.8	79,137.0	42,721.3	54.0
1400	5,803	2,759	47.5	33,661.9	15,273.7	45.4
1500	1,146	411	35.9	4,873.5	1,856.5	38.1
1600	3	0	0.0	34.1	0	0.0
1700	6	0	0.0	26.4	0	0.0
1800	26	0	0.0	273.9	0	0.0
1900	445	6	1.3	3,432.2	47.7	1.4
TOTAL	56,390	27,071	48.0	275,320.6	130,424.2	47.4

Table 11.8. Quantities of Debitage Analyzed Relative to Total Recovered by Component, Shields Pueblo.

Component	Total Count (N)	Total Analyzed (N)	% of Total Count	Total Wt. (g)	Total Wt. Analyzed (g)	% of Total Wt.
Early Pueblo I (A.D. 725–800)	605	602	99.50	2,496.3*	2,516.7*	100.82*
Middle Pueblo II (A.D. 1020–1060)	3,923	3,563	90.82	19,967.9	17,926.3	89.78
Late Pueblo II (A.D. 1060–1140)	13,111	8,421	64.23	63,734.1	39,791.4	62.43
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	1,117	575	51.48	5,513.9	2,448.3	44.40
Early Pueblo III (A.D. 1140–1225)	10,957	7,232	66.00	56,768.2	37,494.0	66.05
Late Pueblo III (A.D. 1225–1280)	2,551	1,730	67.82	13,427.3	8,429.9	62.78
Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)	22	0	0.00	102.4	0.0	0.00
Unassigned	24,067	4,946	20.55	113,145.9	21,675.7	19.16
TOTAL	56,353	27,069	48.03	275,155.9	130,282.3	47.35

* The weight of bulk chipped stone recorded during analysis was greater than the weight recorded during cataloging, probably due to occasional discrepancies and errors made during the cataloging process.

Table 11.9. Chipped-Stone Debitage by Material, Shields Pueblo.

Material		Count		Weight (g)	
		N	%	Wt.	%
Local materials	conglomerate	30	0.11	85.4	0.07
	Dakota quartzite	3,323	12.27	15,329.5	11.75
	gypsum/calcite/barite	1	0.00	1.1	0.00
	igneous	19	0.07	105.8	0.08
	Morrison chert/siltstone	6,711	24.79	26,694.9	20.47
	Morrison quartzite	13,476	49.78	71,528.7	54.84
	quartz	2	0.01	218.8	0.17
	sandstone	528	1.95	4,585.5	3.52
	slate/shale	152	0.56	912.5	0.70
Semilocal materials	agate/chalcedony	428	1.58	899.6	0.69
	Brushy Basin chert/siltstone	1,203	4.44	5,158.1	3.95
	Burro Canyon chert	1,010	3.73	4,468.4	3.43
	petrified wood	4	0.01	12.5	0.01
	red jasper	20	0.07	32.3	0.02
Nonlocal materials	nonlocal chert/siltstone	2	0.01	6.2	0.00
	obsidian	52	0.19	54.3	0.04
	Washington Pass chert	8	0.03	15.2	0.01
Unknown/other materials	unknown chert/siltstone	72	0.27	150.6	0.12
	unknown quartzite	21	0.08	102.5	0.08
	unknown stone	7	0.03	55.4	0.04
	other mineral	2	0.01	7.0	0.01
	TOTAL	27,071	100.00	130,424.3	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 11.10. Chipped Stone Debitage Count by Raw Material, Cortex Category, and Size Grade, Shields Pueblo.

Material Type		Cortex Category	Size Grade								TOTAL	
			1 inch		1/2 inch		1/4 inch		<1/4 inch			
			N	%	N	%	N	%	N	%	N	%
Local materials	conglomerate	absent					7	23.33			7	23.33
		present	1	3.33	10	33.33	12	40.00			23	76.67
	Dakota quartzite	absent	95	2.86	828	24.92	1,410	42.43	54	1.63	2,387	71.83
		present	144	4.33	527	15.86	260	7.82	5	0.15	936	28.17
	gypsum/calcite/ barite	absent					1	100.00			1	100.00
	igneous	absent			3	15.79	5	26.32			8	42.11
		present	1	5.26	5	26.32	5	26.32			11	57.89
	Morrison chert/ siltstone	absent	193	2.88	1,673	24.93	3,323	49.52	127	1.89	5,316	79.21
		present	224	3.34	751	11.19	417	6.21	3	0.04	1,395	20.79
	Morrison quartzite	absent	483	3.58	3,698	27.44	6,002	44.54	207	1.54	10,390	77.10
		present	720	5.34	1,663	12.34	689	5.11	14	0.10	3,086	22.90
	quartz	present	2	100.00							2	100.00
	sandstone	absent	18	3.41	27	5.11	13	2.46			58	10.98
		present	80	15.15	204	38.64	183	34.66	3	0.57	470	89.02
	slate/shale	absent	7	4.61	54	35.53	51	33.55			112	73.68
		present	8	5.26	17	11.18	15	9.87			40	26.32
Semilocal materials	agate/chalcedony	absent	5	1.17	74	17.29	276	64.49	10	2.34	365	85.28
		present	6	1.40	34	7.94	23	5.37			63	14.72
	Brushy Basin chert/siltstone	absent	25	2.08	355	29.51	472	39.24	6	0.50	858	71.32
		present	37	3.08	212	17.62	96	7.98			345	28.68
	Burro Canyon chert	absent	19	1.88	259	25.64	425	42.08	11	1.09	714	70.69

Material Type		Cortex Category	Size Grade								TOTAL	
			1 inch		1/2 inch		1/4 inch		<1/4 inch			
			N	%	N	%	N	%	N	%	N	%
		present	41	4.06	175	17.33	79	7.82	1	0.10	296	29.31
Semilocal materials, cont.	petrified wood	absent					2	50.00			2	50.00
		present			2	50.00					2	50.00
	red jasper	absent			5	25.00	12	60.00			17	85.00
		present			2	10.00	1	5.00			3	15.00
Nonlocal/ unknown materials	obsidian	absent			9	17.31	32	61.54	2	3.85	43	82.69
		present			4	7.69	5	9.62			9	17.31
	nonlocal chert/ siltstone	absent			1	50.00	1	50.00			2	100.00
	unknown chert/ siltstone	absent	1	1.39	16	22.22	36	50.00	2	2.78	55	76.39
		present			13	18.06	4	5.56			17	23.61
	unknown quartzite	absent	2	9.52	5	23.81	6	28.57			13	61.90
		present			2	9.52	6	28.57			8	38.10
	unknown stone	absent			4	57.14	1	14.29			5	71.43
		present	1	14.29			1	14.29			2	28.57
	Washington Pass chert	absent			2	25.00	5	62.50			7	87.50
		present					1	12.50			1	12.50
	other mineral	absent			1	50.00	1	50.00			2	100.00

NOTE: Percentages are reported by material type.

Table 11.11. Chipped-Stone Debitage Weights by Raw Material, Cortex Category, and Size Grade, Shields Pueblo.

Material Type		Cortex Category	Size Grade								TOTAL	
			1 inch		1/2 inch		1/4 inch		<1/4 inch			
			Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Local materials	conglomerate	absent					6.6	7.68			6.6	7.68
		present	26.7	31.26	37.9	44.38	14.2	16.63			78.8	92.27
	Dakota quartzite	absent	1,903.7	12.42	3,767.2	24.58	1,066.1	6.95	6.4	0.04	6,743.4	43.99
		present	4,695.0	30.63	3,585.9	23.39	303.9	1.98	1.3	0.01	8,586.1	56.01
	gypsum/calcite/ barite	absent					1.1	100.00			1.1	100.00
	igneous	absent			11.9	11.25	5.2	4.91			17.1	16.16
		present	21.7	20.51	61.9	58.51	5.1	4.82			88.7	83.84
	Morrison chert/ siltstone	absent	4,300.8	16.11	8,472.0	31.74	2,392.2	8.96	11.9	0.04	15,176.9	56.85
		present	5,911.1	22.14	5,125.4	19.20	479.1	1.79	2.5	0.01	11,518.0	43.15
	Morrison quartzite	absent	12,077.0	16.88	18,458.8	25.81	4,798.3	6.71	30.2	0.04	35,364.3	49.44
		present	23,457.3	32.79	11,868.8	16.59	835.9	1.17	2.4	0.00	36,164.3	50.56
	quartz	present	218.8	100.00							218.8	100.00
	sandstone	absent	422.5	9.21	151.0	3.29	12.2	0.27			585.6	12.77
		present	2,516.6	54.88	1,313.9	28.65	168.9	3.68	0.4	0.01	3,999.8	87.23
	slate/shale	absent	240.1	26.31	257.9	28.26	36.9	4.05			534.9	58.62
		present	224.2	24.57	143.1	15.68	10.2	1.12			377.5	41.37

Material Type		Cortex Category	Size Grade								TOTAL	
			1 inch		1/2 inch		1/4 inch		<1/4 inch			
			Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Semilocal materials	agate/ chalcedony	absent	80.6	8.96	294.2	32.70	190.7	21.20	1.2	0.13	566.6	62.98
		present	121.6	13.52	185.3	20.60	26.2	2.91			333.1	37.02
	Brushy Basin chert/siltstone	absent	518.1	10.04	1,644.3	31.88	420.1	8.14	2.0	0.04	2,584.5	50.11
		present	976.2	18.93	1,484.4	28.78	113.0	2.19			2,573.6	49.90
	Burro Canyon chert	absent	432.7	9.68	1,239.7	27.74	357.8	8.01	1.9	0.04	2,032.1	45.48
		present	1,222.3	27.35	1,114.9	24.95	98.9	2.21	0.2	0.00	2,436.3	54.52
	petrified wood	absent					2.4	18.88			2.4	18.88
		present			10.1	80.80					10.1	80.80
	red jasper	absent			18.1	56.04	6.0	18.58			24.1	74.61
		present			7.6	23.53	0.6	1.86			8.2	25.39
Nonlocal/ unknown materials	obsidian	absent			17.7	32.60	21.3	39.23	0.3	0.55	39.3	72.38
		present			12.2	22.47	2.8	5.16			15.0	27.62
	nonlocal chert/ siltstone	absent			5.5	88.23	0.8	12.26			6.2	100.00
	unknown chert/ siltstone	absent	17.7	11.75	50.0	33.20	29.4	19.52	0.3	0.20	97.4	64.67
		present			49.4	32.80	3.8	2.52			53.2	35.33
	unknown quartzite	absent	60.5	59.02	15.6	15.22	4.4	4.29			80.5	78.54
		present			14.6	14.24	7.4	7.22			22.0	21.46
	unknown stone	absent			20.5	37.00	0.8	1.44			21.3	38.45
		present	31.7	57.22			2.4	4.33			34.1	61.55
	Washington Pass chert	absent			12.8	84.21	1.8	11.84			14.6	96.05
		present					0.6	3.95			0.6	3.95
	other mineral	absent			5.7	81.43	1.3	18.57			7.0	100.00

NOTE: Percentages are reported by material type.

Table 11.12. Chipped-Stone Debitage by Material and Component, Shields Pueblo.

Material		Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)		Unassigned		TOTAL	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Local materials	conglomerate	2	0.33	1	0.03	3	0.04	1	0.17	9	0.12	8	0.46	6	0.12	30	0.11
	Dakota quartzite	125	20.76	279	7.83	1,129	13.41	92	16.00	838	11.59	224	12.95	635	12.84	3,322	12.27
	gypsum/calcite/barite			1	0.03											1	0.00
	igneous					7	0.08	3	0.52					9	0.18	19	0.07
	Morrison chert/siltstone	149	24.75	951	26.69	2,144	25.46	120	20.87	1,678	23.20	407	23.53	1,262	25.52	6,711	24.79
	Morrison quartzite	273	45.35	1,774	49.79	3,887	46.16	306	53.22	3,912	54.09	897	51.85	2,426	49.05	13,475	49.78
	quartz			1	0.03							1	0.06			2	0.01
	sandstone	12	1.99	87	2.44	243	2.89	10	1.74	125	1.73	23	1.33	28	0.57	528	1.95
	slate/shale	3	0.50	4	0.11	57	0.68	1	0.17	28	0.39	41	2.37	18	0.36	152	0.56
Semilocal materials	agate/chalcedony	2	0.33	57	1.60	154	1.83	4	0.70	131	1.81	25	1.45	55	1.11	428	1.58
	Brushy Basin chert/siltstone	10	1.66	341	9.57	487	5.78	22	3.83	122	1.69	22	1.27	199	4.02	1,203	4.44
	Burro Canyon chert	22	3.65	52	1.46	238	2.83	14	2.43	346	4.78	69	3.99	269	5.44	1,010	3.73
	petrified wood			1	0.03					1	0.01			2	0.04	4	0.01
	red jasper	2	0.33	4	0.11	4	0.05	1	0.17	4	0.06	1	0.06	4	0.08	20	0.07

Material		Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)		Unassigned		TOTAL	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Nonlocal materials	nonlocal chert/ siltstone													2	0.04	2	0.01
	obsidian			3	0.08	30	0.36			10	0.14	2	0.12	7	0.14	52	0.19
	Washington Pass chert			1	0.03	4	0.05			2	0.03			1	0.02	8	0.03
Unknown materials	unknown chert/ siltstone			4	0.11	26	0.31			21	0.29	7	0.40	14	0.28	72	0.27
	unknown quartzite			1	0.03	5	0.06	1	0.17	4	0.06	3	0.17	7	0.14	21	0.08
	unknown stone			1	0.03	3	0.04			1	0.01			2	0.04	7	0.03
	other mineral	2	0.33													2	0.01
	TOTAL	602	100.00	3,563	100.00	8,421	100.00	575	100.00	7,232	100.00	1,730	100.00	4,946	100.00	27,069	100.00

Table 11.13. Chipped-Stone Debitage by Component and Size, Shields Pueblo.

Component	1 inch		1/2 inch		1/4 inch		<1/4 inch		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Early Pueblo I (A.D. 725–800)	33	5.5	232	38.5	330	54.8	7	1.2	602	100.0
Middle Pueblo II (A.D. 1020–1060)	310	8.7	1,307	36.7	1,901	53.4	45	1.3	3,563	100.0
Late Pueblo II (A.D. 1060–1140)	629	7.5	3,276	38.9	4,385	52.1	131	1.6	8,421	100.0
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	43	7.5	195	33.9	320	55.7	17	3.0	575	100.0
Early Pueblo III (A.D. 1140–1225)	611	8.4	2,920	40.4	3,573	49.4	128	1.8	7,232	100.0
Late Pueblo III (A.D. 1225–1280)	126	7.3	735	42.5	837	48.4	32	1.8	1,730	100.0
Unassigned	361	7.3	1,968	39.8	2,532	51.2	85	1.7	4,946	100.0
TOTAL	2,113	7.8	10,633	39.3	13,878	51.3	445	1.6	27,069	100.0

Table 11.14. Chipped-Stone Debitage for Common Materials by Size and Component, Shields Pueblo.

Material Size	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)	
	N	%	N	%	N	%	N	%	N	%	N	%
Dakota quartzite												
1 inch	4	3.2	20	7.2	72	6.4	8	8.7	73	8.7	9	4.0
1/2 inch	35	28.0	100	35.8	470	41.6	26	28.3	362	43.2	104	46.4
1/4 inch	84	67.2	149	53.4	568	50.3	55	59.8	397	47.4	110	49.1
<1/4 inch	2	1.6	10	3.6	19	1.7	3	3.3	6	0.7	1	0.4
SUBTOTAL	125	100.0	279	100.0	1,129	100.0	92	100.0	838	100.0	224	100.0
Morrison chert/siltstone												
1 inch	9	6.0	63	6.6	130	6.1	7	5.8	117	7.0	15	3.7
1/2 inch	70	47.0	316	33.2	772	36.0	43	35.8	615	36.7	151	37.1
1/4 inch	68	45.6	558	58.7	1,202	56.1	67	55.8	907	54.1	228	56.0
<1/4 inch	2	1.3	14	1.5	40	1.9	3	2.5	39	2.3	13	3.2
SUBTOTAL	149	100.0	951	100.0	2,144	100.0	120	100.0	1,678	100.0	407	100.0
Morrison quartzite												
1 inch	18	6.6	183	10.3	342	8.8	23	7.5	352	9.0	89	9.9
1/2 inch	106	38.8	659	37.1	1,495	38.5	99	32.4	1,604	41.0	390	43.5
1/4 inch	146	53.5	914	51.5	1,986	51.1	174	56.9	1,884	48.2	400	44.6
<1/4 inch	3	1.1	18	1.0	64	1.6	10	3.3	72	1.8	18	2.0
SUBTOTAL	273	100.0	1,774	100.0	3,887	100.0	306	100.0	3,912	100.0	897	100.0

Material Size	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)		Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)	
	N	%	N	%	N	%	N	%	N	%	N	%
Agate/chalcedony												
1 inch					3	1.9	1	25.0	1	0.8		
1/2 inch			11	19.3	36	23.4	1	25.0	37	28.2	10	40.0
1/4 inch	2	100.0	45	78.9	114	74.0	2	50.0	86	65.6	15	60.0
<1/4 inch			1	1.8	1	0.6			7	5.3		
SUBTOTAL	2	100.0	57	100.0	154	100.0	4	100.0	131	100.0	25	100.0
Brushy Basin chert/siltstone												
1 inch	1	10.0	25	7.3	22	4.5			9	7.4	1	4.5
1/2 inch	1	10.0	159	46.6	238	48.9	10	45.5	66	54.1	8	36.4
1/4 inch	8	80.0	156	45.7	226	46.4	11	50.0	46	37.7	13	59.1
<1/4 inch			1	0.3	1	0.2	1	4.5	1	0.8		
SUBTOTAL	10	100.0	341	100.0	487	100.0	22	100.0	122	100.0	22	100.0
Burro Canyon chert												
1 inch			1	1.9	9	3.8	1	7.1	32	9.2	3	4.3
1/2 inch	7	31.8	22	42.3	115	48.3	9	64.3	146	42.2	29	42.0
1/4 inch	15	68.2	29	55.8	111	46.6	4	28.6	168	48.6	37	53.6
<1/4 inch					3	1.3						
SUBTOTAL	22	100.0	52	100.0	238	100.0	14	100.0	346	100.0	69	100.0

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 11.15. Chipped-Stone Debitage by Architectural Block and Material Type, Shields Pueblo.

(a) Table 11.15, Blocks 100, 200, 300, 400, 500, and 600

Material Type		100		200		300		400		500		600	
		N	%	N	%	N	%	N	%	N	%	N	%
Local materials	conglomerate	3	0.0	13	0.3				0.0	1	0.9		
	Dakota quartzite	976	16.1	578	12.2	4	6.2	86	15.0	22	20.6	8	22.9
	gypsum/calcite/barite												
	igneous	11	0.2	1	0.0							1	2.9
	Morrison chert/siltstone	1,416	23.4	1,243	26.3	31	47.7	126	22.0	22	20.6	5	14.3
	Morrison quartzite	2,834	46.9	2,319	49.1	21	32.3	301	52.4	49	45.8	16	45.7
	quartz							1	0.2				
	sandstone	121	2.0	103	2.2	2	3.1	5	0.9				
	slate/shale	28	0.5	39	0.8			5	0.9				
Semilocal materials	agate/chalcedony	70	1.2	83	1.8			11	1.9				
	Brushy Basin chert/siltstone	312	5.2	134	2.8	6	9.2	15	2.6	6	5.6		
	Burro Canyon chert	214	3.5	169	3.6	1	1.5	19	3.3	6	5.6	4	11.4
	petrified wood	2	0.0										
	red jasper	6	0.1	5	0.1								
	nonlocal chert/siltstone	2	0.0										
Nonlocal materials	obsidian	21	0.3	12	0.3					1	0.9		
	Washington Pass chert	1	0.0	2	0.0								
Unknown materials	unknown chert/siltstone	23	0.4	12	0.3			4	0.7			1	2.9
	unknown quartzite	6	0.1	6	0.1			1	0.2				
	unknown stone			1	0.0								
	other mineral	2	0.0										
	TOTAL	6,048	100.0	4,720	100.0	65	100.0	574	100.0	107	100.0	35	100.0

(b) Table 11.15, Blocks 700, 800, 900, 1000, 1100, and 1200

Material Type		700		800		900		1000		1100		1200	
		N	%	N	%	N	%	N	%	N	%	N	%
Local materials	conglomerate									4	0.1	1	0.2
	Dakota quartzite	2	7.4	31	26.5					218	7.7	99	17.7
	gypsum/calcite/barite												0.0
	igneous			2	1.7	2	8.3			2	0.1		
	Morrison chert/siltstone	2	7.4	21	17.9	9	37.5	2	66.7	660	23.4	127	22.7
	Morrison quartzite	19	70.4	53	45.3	11	45.8	1	33.3	1,584	56.1	306	54.6
	quartz												
	sandstone			1	0.9					51	1.8	5	0.9
	slate/shale	1	3.7							13	0.5	2	0.4
Semilocal materials	agate/chalcedony			2	1.7					52	1.8	4	0.7
	Brushy Basin chert/siltstone	1	3.7	1	0.9	1	4.2			29	1.0	4	0.7
	Burro Canyon chert	2	7.4	3	2.6	1	4.2			199	7.0	9	1.6
	petrified wood												
	red jasper			2	1.7					1	0.0		
	nonlocal chert/siltstone												
Nonlocal materials	obsidian									1	0.0	1	0.2
	Washington Pass chert											1	0.2
Unknown materials	unknown chert/siltstone			1	0.9					7	0.2	1	0.2
	unknown quartzite									2	0.1		
	unknown stone												
	other mineral												
	TOTAL	27	100.0	117	100.0	24	100.0	3	100.0	2,823	100.0	560	100.0

(c) Table 11.15, Blocks 1300, 1400, 1500, 1900, and Totals

Material Type		1300		1400		1500		1900		TOTAL	
		N	%	N	%	N	%	N	%	N	%
Local materials	conglomerate	4	0.0	4	0.1					30	0.11
	Dakota quartzite	885	10.1	368	13.3	44	10.7	2	33.3	3,323	12.28
	gypsum/calcite/barite	1	0.0							1	0.00
	igneous									19	0.07
	Morrison chert/siltstone	2,327	26.5	624	22.6	95	23.1	1	16.7	6,711	24.79
	Morrison quartzite	4,237	48.2	1,504	54.5	219	53.3	2	33.3	13,476	49.78
	quartz	1	0.0							2	0.01
	sandstone	207	2.4	31	1.1	1	0.2	1	16.7	528	1.95
	slate/shale	51	0.6	12	0.4	1	0.2			152	0.56
Semilocal materials	agate/chalcedony	167	1.9	32	1.2	7	1.7			428	1.58
	Brushy Basin chert/siltstone	636	7.2	42	1.5	16	3.9			1,203	4.44
	Burro Canyon chert	227	2.6	128	4.6	28	6.8			1,010	3.73
	petrified wood	1	0.0	1	0.0					4	0.01
	red jasper	5	0.1	1	0.0					20	0.07
	nonlocal chert/siltstone									2	0.01
Nonlocal materials	obsidian	15	0.2	1	0.0					52	0.19
	Washington Pass chert	4	0.0							8	0.03
Unknown materials	unknown chert/siltstone	16	0.2	7	0.3					72	0.27
	unknown quartzite	4	0.0	2	0.1					21	0.08
	unknown stone	4	0.0	2	0.1					7	0.03
	other mineral									2	0.01
	TOTAL	8,792	100.0	2,759	100.0	411	100.0	6	100.0	27,071	100.00

Table 11.16. Chipped-Stone Debitage by Architectural Block and Size Category, Shields Pueblo.

Architectural Block	Size Category								TOTAL
	<1/4 inch		1/4 inch		1/2 inch		1 inch		
	N	%	N	%	N	%	N	%	N
100	142	2.35	3,218	53.21	2,261	37.38	427	7.06	6,048
200	91	1.93	2,474	52.42	1,809	38.33	346	7.33	4,720
300	3	4.62	35	53.85	26	40.00	1	1.54	65
400	6	1.05	269	46.86	237	41.29	62	10.80	574
500	0	0.00	64	59.81	37	34.58	6	5.61	107
600	0	0.00	14	40.00	18	51.43	3	8.57	35
700	0	0.00	12	44.44	14	51.85	1	3.70	27
800	0	0.00	50	42.74	61	52.14	6	5.13	117
900	0	0.00	10	41.67	14	58.33	0	0.00	24
1000	0	0.00	1	33.33	0	0.00	2	66.67	3
1100	34	1.20	1,445	51.19	1,120	39.67	224	7.93	2,823
1200	6	1.07	318	56.79	199	35.54	37	6.61	560
1300	90	1.02	4,539	51.63	3,473	39.50	690	7.85	8,792
1400	70	2.54	1,220	44.22	1,183	42.88	286	10.37	2,759
1500	3	0.73	208	50.61	180	43.80	20	4.87	411
1900	0	0.00	1	16.67	3	50.00	2	33.33	6

Table 11.17. Bifaces, Drills, and Projectile Points by Condition, Shields Pueblo.

Artifact Type	Complete		Incomplete		Fragmentary		TOTAL	
	N	%	N	%	N	%	N	%
Biface	19	12.2	15	9.6	122	78.2	156	100.0
Drill	36	59.0	16	26.2	9	14.8	61	100.0
Projectile point	63	31.8	77	38.9	58	29.3	198	100.0

Table 11.18. Data Available for Unanalyzed Projectile Points, Shields Pueblo.

PD	FS	PL	Study Unit	Component	Material Type	Condition
919	16	1	Structure 124	Late Pueblo II (A.D. 1060–1140)	agate/ chalcedony	complete
983	7	13	Nonstructure 130	Late Pueblo II (A.D. 1060–1140)	Burro Canyon chert	complete
1371	38		Nonstructure 1310	Middle Pueblo II (A.D. 1020–1060)	unknown chert/ siltstone	complete
1371	6		Nonstructure 1310	Middle Pueblo II (A.D. 1020–1060)	Burro Canyon chert	complete
1371	5		Nonstructure 1310	Middle Pueblo II (A.D. 1020–1060)	Dakota quartzite	complete
1904*	9*		Nonstructure 1310	Middle Pueblo II (A.D. 1020–1060)	Dakota quartzite	complete
1814	12		Nonstructure 1320	Late Pueblo II (A.D. 1060–1140)	unknown chert/ siltstone	complete
90010	4		Arbitrary Unit 1301	Subperiod not assigned	agate/ chalcedony	fragmentary

* Comment from Field Specimen table for this item: “Possibly ceremonial.”

Table 11.19. Projectile Point Analysis Data, Shields Pueblo.
(Note: Eight projectile points were identified during the cataloging phase of documentation, but were missing at the time of analysis. These items are described in Table 11.18.)

(a) Table 11.19, Projectile Point Analysis Data, part 1 of 3

PD	FS	PL	Projectile Point Type	Primary Function	Portion Present	Length (cm)	Width (cm)	Thick (cm)	Stem Width (cm)	Notch Location
19	3		Projectile point, not further specified	arrow point	base broken		1.05	0.25		indeterminate
48	16		Small side-notched, unspecified base (PII–PIII)	arrow point	base missing	1.67	1.08	0.17		indeterminate
48	17		Lancaster Side-notched (PII–PIII)	arrow point	base broken	2.32		0.37		side
48	18		Lancaster Side-notched (PII–PIII)	arrow point	tip and base broken	2.25		0.35	0.52	side
82	14		Projectile point, not further specified	arrow point	midsection only		1.69	0.35	1.25	corner
118	5	1	Rosegate series (BMII–PII)	arrow point	base broken		1.14	0.33	0.54	
218	4	1	Lancaster Side-notched (PII–PIII)	arrow point	base broken	1.94		0.26	0.95	side
234	19		Lancaster Side-notched (PII–PIII)	arrow point	base/stem only			2.8	1.3	side
283	4		Large corner-notched, concave blade (BMIII–PI)	arrow point	tip and shoulder broken	2.9	1.51	0.37	0.48	no notches
313	4		Desert Side-notched (Numic)	arrow point	tip broken	2.01	1.22	0.3	0.51	side
335	3	1	Lancaster Side-notched (PII–PIII)	arrow point	base broken	2.38	3.5	0.3	0.99	side
376	8		Lancaster Side-notched (PII–PIII)	arrow point	tip and base broken		1.05	0.4	0.7	side
416	5		Lancaster Side-notched (PII–PIII)	arrow point	complete	1.97	1.07	0.27	0.45	side
487	8		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.45	1.37	0.33	1.09	side
516	4		Cottonwood Triangular (PII–Historic)	arrow point	complete	2.5	1.62	0.4	1.34	side

PD	FS	PL	Projectile Point Type	Primary Function	Portion Present	Length (cm)	Width (cm)	Thick (cm)	Stem Width (cm)	Notch Location
549	40	3	Lancaster Side-notched (PII–PIII)	arrow point	shoulder/side broken	2.71	1.24	0.33	0.63	side
605	4		Rosegate series (BMII–PII)	arrow point	tip broken		1.48	0.36	1.09	corner
611	9	1	Lancaster Side-notched (PII–PIII)	arrow point	complete	2.62	1.62	0.54	1.09	side
626	17		Lancaster Side-notched (PII–PIII)	arrow point	base broken	1.93	1.11	0.32	0.53	side
627	6		Projectile point, not further specified	arrow point	shoulder and base broken	1.9	1.33	0.27		indeterminate
628	10	1	Lancaster Side-notched (PII–PIII)	arrow point	tip broken	2.52	1.24	0.35	0.7	side
631	12		Projectile point, not further specified	arrow point	base broken		1.58	0.37		indeterminate
636	6		Rosegate series (BMII–PII)	arrow point	tip and base broken		1.4	0.36	0.51	corner
647	10		Lancaster Side-notched (PII–PIII)	arrow point	tip and shoulder broken		1.57	0.39	1.06	side
660	8		Projectile point, not further specified	arrow point	base broken			0.2		indeterminate
668	5		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.17	1.29	1.34	0.72	side
672	10		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	2.71	1.12	0.3	0.73	side
672	40		Lancaster Side-notched (PII–PIII)	arrow point	complete	1.87	1.17	0.35	0.66	side
684	8		Desert Side-notched (Numic)	arrow point	tip and base broken		1.43	0.29	0.78	side
684	9		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	2.15	1.34	0.33	0.85	side
686	22	5	Lancaster Side-notched (PII–PIII)	arrow point	base broken	1.9	1.06	0.25	0.68	side
692	16	9	Lancaster Side-notched (PII–PIII)	arrow point	complete	3	1.5	0.31	0.78	no notches
706	10		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.23	1.14	0.35	0.69	side

PD	FS	PL	Projectile Point Type	Primary Function	Portion Present	Length (cm)	Width (cm)	Thick (cm)	Stem Width (cm)	Notch Location
735	4		Elko Corner-notched (Archaic)	atlatl dart	tip and base broken			0.35		corner
740	14		Sudden Side-notched (Archaic)	atlatl dart	tip and base broken	2.14	0.82	0.41	1.45	side
742	2	9	Large corner-notched, concave blade (BMIII–PI)	arrow point	tip and base broken		1.79	0.37		indeterminate
744	10	18	Lancaster Side-notched (PII–PIII)	arrow point	complete	2.6	1.35	0.24	0.95	side
744	11	14	Lancaster Side-notched (PII–PIII)	arrow point	tip broken	3.52	1.4	0.4	0.86	side
745	19	25	Medium corner-notched (Middle to Late PII)	arrow point	shoulder and base broken		1.83	0.25	0.68	indeterminate
750	9	68	Lancaster Side-notched (PII–PIII)	arrow point	complete	2.61	1.22	0.36	0.82	side
765	6		Projectile point, not further specified	arrow point	tip and base broken		1.58	0.45		indeterminate
765	7		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	1.86	1.08	0.31		side
771	39		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.3	1.55	0.37	1.55	side
778	2		Projectile point, not further specified	arrow point	tip and base broken		1.7	0.45		indeterminate
874	4		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	2.53	1.6	0.33	0.98	side
886	16		Projectile point, not further specified	arrow point	tip broken	3.46	1.81	0.54	0.88	corner
898	3		Lancaster Side-notched (PII–PIII)	arrow point	complete	2	1.2	0.22	0.76	side
902	13		Small side-notched, unspecified base (PII–PIII)	arrow point	tip and base broken		1.1	0.28	0.61	side
919	19	2	Sudden Side-notched (Archaic)	atlatl dart	tip and shoulder broken	2.92	2.18	0.48	1.44	side
923	23		Small side-notched, unspecified base (PII–PIII)	arrow point	tip and base broken			0.31	0.91	side

PD	FS	PL	Projectile Point Type	Primary Function	Portion Present	Length (cm)	Width (cm)	Thick (cm)	Stem Width (cm)	Notch Location
923	24		Armijo complex (Archaic)	atlatl dart	shoulder/side broken	3.21		0.57		base
924	49		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	2.3	1.48	0.5	0.94	side
930	19		Projectile point, not further specified	arrow point	tip and base broken		1.45	0.3	0.8	indeterminate
930	20		Projectile point, not further specified	arrow point	base broken		1.1	0.24	0.67	indeterminate
938	22		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.32	0.26	0.72	side
938	47		Rosegate series (BMII–PII)	arrow point	tip and base broken		1.24	0.27	0.64	corner
940	30		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.31	0.32	0.66	side
982	2		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	2.11	1.27	0.26	0.78	side
984	2	3	Desert Side-notched (Numic)	arrow point	tip broken		1.45	0.27	0.92	side
987	1	1	Elko Corner-notched (Archaic)	arrow point	tip and base broken	2.13	1.9	0.48	0.79	corner
1042	1	1	Lancaster Side-notched (PII–PIII)	arrow point	shoulder/side broken	3.05	1.19	0.32		side
1044	14		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.12	0.23	0.63	side
1048	4		Lancaster Side-notched (PII–PIII)	arrow point	base broken	1.98	1.21	0.21	0.73	side
1050	21		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.4	1.16	0.29	0.84	side
1052	20		Lancaster Side-notched (PII–PIII)	arrow point	tip and base broken		0.35	0.25	0.93	side
1060	13		Projectile point, not further specified	arrow point	base broken		1.21	0.21		indeterminate
1060	14	5	Lancaster Side-notched (PII–PIII)	arrow point	complete	2.34	1.57	0.29	0.81	side

PD	FS	PL	Projectile Point Type	Primary Function	Portion Present	Length (cm)	Width (cm)	Thick (cm)	Stem Width (cm)	Notch Location
1060	15	6	Lancaster Side-notched (PII–PIII)	arrow point	tip broken	2.38	1.38	0.25	0.7	side
1094	9		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.59	1.1	0.34	0.76	side
1098	34		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	2.31	1.28	0.31	0.75	side
1099	35		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.37	1.05	0.26	0.52	side
1105	2		Large corner-notched, concave blade (BMIII–PI)	arrow point	tip and shoulder broken	3.23	1.58	0.32	0.42	corner
1122	57		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.65	1.39	0.3	0.91	side
1123	4		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	3.04	1.29	0.31	0.79	side
1149	42		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.5	1.27	0.29	0.79	side
1156	13		Rosegate series (BMII–PII)	arrow point	base broken	2.49	1.22	0.37	0.56	corner
1160	13		Lancaster Side-notched (PII–PIII)	arrow point	tip and base broken	2.04	1.21	0.25	0.93	side
1161	98		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.86	1.42	0.27	0.92	side
1167	9		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.47	0.25	0.84	side
1168	12		Elko Corner-notched (Archaic)	atlatl dart	tip and base broken		2.59	0.52	1.36	indeterminate
1168	32		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.82	1.33	0.31	0.85	side
1173	18		Rosegate series (BMII–PII)	arrow point	tip and base broken		1.38	0.28	0.58	corner
1174	25	118	Lancaster Side-notched (PII–PIII)	arrow point	complete	2.85	1.22	0.29	0.57	side
1177	5		Projectile point, not further specified	indeterminate	base/stem only		1.59	0.59	1.36	no notches
1182	9		Elko Corner-notched (Archaic)	atlatl dart	tip broken	3.75	1.88	0.49	0.9	corner

PD	FS	PL	Projectile Point Type	Primary Function	Portion Present	Length (cm)	Width (cm)	Thick (cm)	Stem Width (cm)	Notch Location
1196	2		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	3.61	1.28	0.41	0.77	side
1199	26		Projectile point, not further specified	arrow point	base broken		1.85	0.42	0.89	indeterminate
1201	13		Lancaster Side-notched (PII–PIII)	arrow point	shoulder/side broken	1.68	1.29	0.34	0.88	side
1203	3		Large corner-notched, concave blade (BMIII–PI)	arrow point	shoulder and base broken	1.33	1.1	0.22	0.51	side
1203	4		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.02	0.32	0.65	side
1212	10		Desert Side-notched (Numic)	arrow point	complete	2.5	1.47	0.32	0.99	sides and base
1212	11		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	2.91	1.5	0.31	0.9	side
1212	12		Lancaster Side-notched (PII–PIII)	arrow point	complete	1.88	1.33	0.15	0.81	side
1221	20		Elko Corner-notched (Archaic)	atlatl dart	complete	4.26	2.03	0.57	0.92	corner
1221	21		Lancaster Side-notched (PII–PIII)	arrow point	base broken	3.36	1.44	0.36	0.97	side
1233	3		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.91	1.33	0.26	0.84	side
1258	26		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.33	1.18	0.23	0.69	side
1270	6		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.01	1.09	0.24	0.59	side
1271	17		Large corner-notched, concave blade (BMIII–PI)	arrow point	tip broken		1.59	0.37	0.5	no notches
1278	28		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.5	1.5	0.3	0.45	corner
1278	29		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.07	1.19	0.19	1.01	side
1295	19		Contracting stemmed (PII–PIII)	arrow point	complete	2.92	1.47	0.49	0.59	no notches

PD	FS	PL	Projectile Point Type	Primary Function	Portion Present	Length (cm)	Width (cm)	Thick (cm)	Stem Width (cm)	Notch Location
1303	5		Elko Side-notched (Archaic)	atlatl dart	complete	4.12	1.62	0.55	1.26	side
1307	14		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	2.11	1.41	0.24	0.54	side
1310	4		Projectile point, not further specified	arrow point	base/stem only		1.14	0.27		side
1310	21		Rosegate series (BMII–PII)	arrow point	tip broken	1.65	1.13	3	0.58	side
1312	6		Contracting stemmed (PII–PIII)	indeterminate	tip and shoulder broken		0.9		0.32	side
1312	45		Projectile point, not further specified	indeterminate	tip and base broken		1.25	0.32	0.74	indeterminate
1314	74		Large corner-notched, concave blade (BMIII–PI)	arrow point	shoulder and base broken	2.61	1.33	0.3	0.48	corner
1314	75		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.3	0.35	0.77	side
1316	19		Lancaster Side-notched (PII–PIII)	arrow point	base broken	2.6	1.23	0.25	0.67	side
1354	24		Desert Side-notched (Numic)	arrow point	base broken	1.91		0.29		side
1355	8	13	Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.3	0.26	0.79	side
1366	9		Large corner-notched, concave blade (BMIII–PI)	arrow point	tip and base broken	1.48	1.27	0.21	0.44	indeterminate
1368	3		Projectile point, not further specified	arrow point	base/stem only		1.55	0.31	1.03	indeterminate
1371	40		Large corner-notched, concave blade (BMIII–PI)	arrow point	shoulder/side broken			0.23		corner
1373	25		Medium side-notched	arrow point	base/stem only		1.33	0.17	0.67	side
1374	39		Elko Eared (Archaic)	blade (knife or spear)	tip broken	3.45	2.74	0.54	2.12	side
1451	3		Elko Corner-notched (Archaic)	atlatl dart	tip and shoulder broken			0.47	1.1	corner
1736	14		Large corner-notched, concave blade (BMIII–PI)	arrow point	tip and base broken	3	1.39	0.37	0.66	no notches

PD	FS	PL	Projectile Point Type	Primary Function	Portion Present	Length (cm)	Width (cm)	Thick (cm)	Stem Width (cm)	Notch Location
1737	9		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.15	0.29	0.69	side
1740	7		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.07	1.48	0.27	0.88	side
1777	5		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.17	0.26	0.47	side
1777	21		Medium side-notched	indeterminate	base/stem only		1.25	0.22	0.65	side
1777	24		Projectile point, not further specified	arrow point						indeterminate
1782	17		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.4	0.21	0.67	side
1800	29		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.37	1	0.32	0.65	side
1807	5		Projectile point, not further specified	arrow point	tip and base broken		1.6		0.45	indeterminate
1810	50		Lancaster Side-notched (PII–PIII)	arrow point	tip and base broken		1.51	0.39	0.96	side
1822	11		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.4	1.39	0.3	1.08	side
1824	30		Projectile point, not further specified	arrow point	tip and base broken		1.01	0.19	0.64	indeterminate
1824	50		Large corner-notched, concave blade (BMIII–PI)	arrow point	shoulder and base broken		1.8	0.36	0.55	indeterminate
1826	13		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.39	1.45	0.34	0.99	side
1826	26		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.07	1.16	0.21	0.65	side
1827	9		Lancaster Side-notched (PII–PIII)	arrow point	tip and shoulder broken		1.38	0.33	1	side
1836	5		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.13	0.25	0.73	side
1836	6		Projectile point, not further specified	arrow point	tip and base broken			0.21		indeterminate
1839	3		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.14	1.2	0.26	0.72	side

PD	FS	PL	Projectile Point Type	Primary Function	Portion Present	Length (cm)	Width (cm)	Thick (cm)	Stem Width (cm)	Notch Location
1843	4		Lancaster Side-notched (PII–PIII)	arrow point	base/stem only		1.2	0.26	0.86	side
1845	5		Medium corner-notched (Middle to Late PII)	arrow point	base missing		1.38	0.24	0.71	indeterminate
1855	6		Lancaster Side-notched (PII–PIII)	arrow point	tip and base broken	2.2	1.41	0.22	0.54	side
1863	6		Desert Side-notched (Numic)	arrow point	complete	2.04	1.23	0.26	0.83	side
1864	12		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.07	1.07	0.36	0.74	side
1875	72		Projectile point, not further specified	arrow point	base/stem only	0.63	1.53	0.22	0.76	indeterminate
1878	10		Small side-notched, unspecified base (PII–PIII)	arrow point	tip and base broken		1.02	0.27	0.55	side
1879	12		Rosegate series (BMII–PII)	arrow point	base broken	3.56	1.34	0.44	0.69	corner
1879	35		Rocker Side-notched (Archaic)	atlatl dart	tip and shoulder broken	3.57	2.39	0.49	1.12	side
1879	39		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	1.85	1.1	0.31	0.55	side
1881	7		Lancaster Side-notched (PII–PIII)	arrow point	complete	1.98	1	0.25	0.62	side
1882	25		Lancaster Side-notched (PII–PIII)	arrow point	base broken	2.22	1.44	0.34	0.88	side
1884	21		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.63	1.15	0.27	0.61	side
1884	44		Projectile point, not further specified	arrow point	base missing		1.07	0.27	0.76	indeterminate
1884	93		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.14	0.3	0.72	side
1895	11		Lancaster Side-notched (PII–PIII)	arrow point	complete	1.94	1.18	0.35	0.83	side
1899	17		Projectile point, not further specified	arrow point	partial midsection			0.35		indeterminate
1900	6		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.01	1.01	0.31		side

PD	FS	PL	Projectile Point Type	Primary Function	Portion Present	Length (cm)	Width (cm)	Thick (cm)	Stem Width (cm)	Notch Location
1900	19		Projectile point, not further specified	arrow point	base broken	1.52	1.04	0.21	0.56	indeterminate
1900	34		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.49	1.19	0.27	0.63	side
1900	35		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.47	1.26	0.32	0.79	side
1903	6		Lancaster Side-notched (PII–PIII)	arrow point	base/stem only		1.57	0.28	0.69	side
1905	15		Lancaster Side-notched (PII–PIII)	arrow point	tip and base broken	2.09	1.4	0.32	0.9	side
1921	11		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.31	0.24	0.89	side
1925	4		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.1	0.24	0.7	side
1925	35		Lancaster Side-notched (PII–PIII)	arrow point	tip broken	3.55	1.55	0.4	0.9	side
1930	9		Desert Side-notched (Numic)	arrow point	complete	1.59	1.15	0.25	0.49	side
1933	4		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.26	0.33	0.8	side
1935	24		Large corner-notched, concave blade (BMIII–PI)	arrow point	shoulder/side broken	1.89	1.27	0.25	0.4	corner
1935	25		Elko Eared (Archaic)	atlatl dart	tip broken	3.11	2.73	0.51	1.71	side
1935	26		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.39	1.14	0.38	0.69	side
1935	27		Large side-notched (Archaic)	arrow point	tip broken	1.55	1.15	0.31	1.26	side
1935	28		Rosegate series (BMII–PII)	arrow point	complete	2.28	1.21	0.27	0.39	corner
1935	29		Rosegate series (BMII–PII)	arrow point	tip broken	2.05	1.4	0.2	0.99	side
1935	73		Projectile point, not further specified	arrow point	base broken			0.23		indeterminate
1935	74		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.72	1.34	0.29	0.81	side
1935	75		Large corner-notched, concave blade (BMIII–PI)	arrow point	tip and shoulder broken		1.42	0.37	0.53	indeterminate

PD	FS	PL	Projectile Point Type	Primary Function	Portion Present	Length (cm)	Width (cm)	Thick (cm)	Stem Width (cm)	Notch Location
1935	76		Desert Side-notched (Numic)	arrow point	base broken	2.07	1.15	0.34	0.8	side
1950	9		Lancaster Side-notched (PII–PIII)	arrow point	tip and base broken	2.95		0.42	0.82	side
1972	7	15	Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.17	0.21	0.71	side
1975	36		Lancaster Side-notched (PII–PIII)	arrow point	tip and base broken	2.13		0.3		side
1976	23		Large corner-notched, concave blade (BMIII–PI)	arrow point	tip and shoulder broken		1.56	0.44	0.48	corner
1976	52		Archaic corner-notched, not further specified	blade (knife or spear)	tip and base broken			0.51	1.1	indeterminate
1978	10		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.04	1.16	0.22	0.74	side
1982	23		Rosegate series (BMII–PII)	arrow point	complete	1.8	1.25	0.25	0.46	no notches
1994	14		Large corner-notched, concave blade (BMIII–PI)	arrow point	complete	2.94	1.32	0.39	0.5	no notches
2007	40		Lancaster Side-notched (PII–PIII)	arrow point	complete	2.37	1.49	0.24	1.03	side
2009	72		Lancaster Side-notched (PII–PIII)	arrow point	tip broken		1.17	0.37	0.75	
2016	19		Cottonwood Triangular (PII–Historic)	indeterminate	base/stem only	1.23	1.5	0.37		side
2017	26		Small side-notched, concave base (Late PII)	arrow point	tip broken	0.99	0.92	0.22	0.56	side
2034	15		Projectile point, not further specified	atlatl dart	base broken	2.43	1.75	0.48	0.93	indeterminate
2081	4		Lancaster Side-notched (PII–PIII)	arrow point	tip and base broken	2.87	1.15	0.23	0.6	side

(b) Table 11.19, Projectile Point Analysis Data, part 2 of 3

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
19	3		Projectile point, not further specified	straight	straight	indeterminate or incomplete	finished, unusable	other non-bipolar flake
48	16		Small side-notched, unspecified base (PII–PIII)	straight	straight	sides	unfinished, usable	other non-bipolar flake
48	17		Lancaster Side-notched (PII–PIII)	straight	straight		finished, unusable	bifacially-reduced blank
48	18		Lancaster Side-notched (PII–PIII)	straight	straight		finished, unusable	bifacially-reduced blank
82	14		Projectile point, not further specified	straight	straight	sides	unfinished, unusable	other non-bipolar flake
118	5	1	Rosegate series (BMII–PII)	concave	concave	base	finished, unusable	other non-bipolar flake
218	4	1	Lancaster Side-notched (PII–PIII)	straight	straight		finished, usable	other non-bipolar flake
234	19		Lancaster Side-notched (PII–PIII)	indeterminate	indeterminate	indeterminate or incomplete	unfinished, usable	other non-bipolar flake
283	4		Large corner-notched, concave blade (BMIII–PI)	concave	concave	base	finished, usable	bifacially-reduced blank
313	4		Desert Side-notched (Numic)	convex	convex	base	finished, unusable	other non-bipolar flake
335	3	1	Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	bifacially-reduced blank
376	8		Lancaster Side-notched (PII–PIII)	straight	straight	sides	finished, unusable	other non-bipolar flake
416	5		Lancaster Side-notched (PII–PIII)	convex	convex	shoulder	finished, usable	bifacially-reduced blank
487	8		Lancaster Side-notched (PII–PIII)	indeterminate	indeterminate	shoulder	finished, usable	other non-bipolar flake
516	4		Cottonwood Triangular (PII–Historic)	straight	straight	base	unfinished, usable	other non-bipolar flake
549	40	3	Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	other non-bipolar flake

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
605	4		Rosegate series (BMII–PII)	concave	concave	shoulder	finished, unusable	other non-bipolar flake
611	9	1	Lancaster Side-notched (PII–PIII)	convex	convex	shoulder	finished, usable	other non-bipolar flake
626	17		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	bifacially-reduced blank
627	6		Projectile point, not further specified	convex	convex	indeterminate or incomplete	finished, unusable	other non-bipolar flake
628	10	1	Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	bifacially-reduced blank
631	12		Projectile point, not further specified	concave	concave	shoulder	finished, unusable	bifacially-reduced blank
636	6		Rosegate series (BMII–PII)	indeterminate	indeterminate	shoulder	finished, unusable	bifacially-reduced blank
647	10		Lancaster Side-notched (PII–PIII)	straight	straight		finished, unusable	other non-bipolar flake
660	8		Projectile point, not further specified	straight	straight		finished, unusable	other non-bipolar flake
668	5		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	bifacially-reduced blank
672	10		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake
672	40		Lancaster Side-notched (PII–PIII)	concave	concave	base	finished, usable	bifacially-reduced blank
684	8		Desert Side-notched (Numic)	indeterminate	indeterminate	base	finished, unusable	indeterminate
684	9		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	other non-bipolar flake
686	22	5	Lancaster Side-notched (PII–PIII)	convex	convex	shoulder	finished, usable	other non-bipolar flake
692	16	9	Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	other non-bipolar flake
706	10		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
735	4		Elko Corner-notched (Archaic)	indeterminate	indeterminate	indeterminate or incomplete	unfinished, unusable	bifacially-reduced blank
740	14		Sudden Side-notched (Archaic)	straight	straight	base	unfinished, unusable	bifacially-reduced blank
742	2	9	Large corner-notched, concave blade (BMIII–PI)	straight	straight	shoulder	finished, unusable	bifacially-reduced blank
744	10	18	Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	other non-bipolar flake
744	11	14	Lancaster Side-notched (PII–PIII)	straight	straight	shoulder	finished, usable	bifacially-reduced blank
745	19	25	Medium corner-notched (Middle to Late PII)	straight	straight	sides	finished, unusable	other non-bipolar flake
750	9	68	Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	other non-bipolar flake
765	6		Projectile point, not further specified	convex	convex	indeterminate or incomplete	finished, unusable	bifacially-reduced blank
765	7		Lancaster Side-notched (PII–PIII)	convex	convex	base	unfinished, unusable	other non-bipolar flake
771	39		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	other non-bipolar flake
778	2		Projectile point, not further specified	straight	straight	indeterminate or incomplete	finished, unusable	bifacially-reduced blank
874	4		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	bifacially-reduced blank
886	16		Projectile point, not further specified	straight	straight	shoulder	finished, unusable	bifacially-reduced blank
898	3		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	other non-bipolar flake
902	13		Small side-notched, unspecified base (PII–PIII)	concave	concave	sides	finished, unusable	bifacially-reduced blank
919	19	2	Sudden Side-notched (Archaic)	straight	straight	base	finished, unusable	bifacially-reduced blank
923	23		Small side-notched, unspecified base (PII–PIII)	straight	straight	base	finished, unusable	bifacially-reduced blank

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
923	24		Armijo complex (Archaic)	straight	straight		finished, unusable	other non-bipolar flake
924	49		Lancaster Side-notched (PII–PIII)	straight	straight	sides	finished, unusable	bifacially-reduced blank
930	19		Projectile point, not further specified	convex	convex	shoulder	finished, unusable	other non-bipolar flake
930	20		Projectile point, not further specified	convex	convex		unfinished, unusable	other non-bipolar flake
938	22		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	bifacially-reduced blank
938	47		Rosegate series (BMII–PII)	convex	convex	shoulder	finished, unusable	other non-bipolar flake
940	30		Lancaster Side-notched (PII–PIII)	indeterminate	indeterminate	base	finished, unusable	bifacially-reduced blank
982	2		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	bifacially-reduced blank
984	2	3	Desert Side-notched (Numic)	convex	convex	base	unfinished, unusable	other non-bipolar flake
987	1	1	Elko Corner-notched (Archaic)	convex	convex	shoulder	finished, unusable	bifacially-reduced blank
1042	1	1	Lancaster Side-notched (PII–PIII)	straight	straight	sides	finished, unusable	other non-bipolar flake
1044	14		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	indeterminate
1048	4		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	other non-bipolar flake
1050	21		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake
1052	20		Lancaster Side-notched (PII–PIII)	convex	convex	base	unfinished, unusable	other non-bipolar flake
1060	13		Projectile point, not further specified	straight	straight	shoulder	finished, unusable	bifacially-reduced blank
1060	14	5	Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
1060	15	6	Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake
1094	9		Lancaster Side-notched (PII–PIII)	concave	concave	shoulder	unfinished, usable	biface thinning flake
1098	34		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	bifacially-reduced blank
1099	35		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	other non-bipolar flake
1105	2		Large corner-notched, concave blade (BMIII–PI)	concave	concave	sides	finished, unusable	bifacially-reduced blank
1122	57		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake
1123	4		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	bifacially-reduced blank
1149	42		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	other non-bipolar flake
1156	13		Rosegate series (BMII–PII)	convex	convex	sides	finished, usable	bifacially-reduced blank
1160	13		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	other non-bipolar flake
1161	98		Lancaster Side-notched (PII–PIII)	convex	convex	sides	finished, usable	other non-bipolar flake
1167	9		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	other non-bipolar flake
1168	12		Elko Corner-notched (Archaic)	convex	convex	shoulder	finished, unusable	bifacially-reduced blank
1168	32		Lancaster Side-notched (PII–PIII)	convex	convex	shoulder	finished, usable	other non-bipolar flake
1173	18		Rosegate series (BMII–PII)	straight	straight	shoulder	finished, unusable	other non-bipolar flake
1174	25	118	Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	bifacially-reduced blank
1177	5		Projectile point, not further specified	indeterminate	indeterminate	shoulder	finished, unusable	indeterminate

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
1182	9		Elko Corner-notched (Archaic)	straight	straight	base	finished, usable	bifacially-reduced blank
1196	2		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	bifacially-reduced blank
1199	26		Projectile point, not further specified	concave	concave	shoulder	finished, unusable	other non-bipolar flake
1201	13		Lancaster Side-notched (PII–PIII)	convex	convex	sides	finished, usable	bifacially-reduced blank
1203	3		Large corner-notched, concave blade (BMIII–PI)	straight	straight	shoulder	finished, unusable	other non-bipolar flake
1203	4		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	bifacially-reduced blank
1212	10		Desert Side-notched (Numic)	convex	convex	base	finished, usable	other non-bipolar flake
1212	11		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	other non-bipolar flake
1212	12		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake
1221	20		Elko Corner-notched (Archaic)	convex	convex	shoulder	finished, usable	bifacially-reduced blank
1221	21		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	other non-bipolar flake
1233	3		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	other non-bipolar flake
1258	26		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake
1270	6		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake
1271	17		Large corner-notched, concave blade (BMIII–PI)	straight	straight	shoulder	finished, unusable	bifacially-reduced blank
1278	28		Lancaster Side-notched (PII–PIII)	convex	convex	sides	finished, usable	bifacially-reduced blank
1278	29		Lancaster Side-notched (PII–PIII)	concave	concave	shoulder	finished, usable	biface thinning flake

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
1295	19		Contracting stemmed (PII–PIII)	straight	straight	shoulder	finished, usable	bifacially-reduced blank
1303	5		Elko Side-notched (Archaic)	convex	convex	sides	finished, usable	bifacially-reduced blank
1307	14		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	other non-bipolar flake
1310	4		Projectile point, not further specified	indeterminate	indeterminate	base	finished, unusable	bifacially-reduced blank
1310	21		Rosegate series (BMII–PII)	convex	convex	shoulder	finished, unusable	bifacially-reduced blank
1312	6		Contracting stemmed (PII–PIII)	indeterminate	indeterminate	shoulder	unfinished, unusable	other non-bipolar flake
1312	45		Projectile point, not further specified	indeterminate	indeterminate	shoulder	finished, unusable	bifacially-reduced blank
1314	74		Large corner-notched, concave blade (BMIII–PI)	concave	concave	sides	finished, unusable	bifacially-reduced blank
1314	75		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	bifacially-reduced blank
1316	19		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	bifacially-reduced blank
1354	24		Desert Side-notched (Numic)	convex	convex		finished, unusable	other non-bipolar flake
1355	8	13	Lancaster Side-notched (PII–PIII)	indeterminate	indeterminate	base	finished, unusable	bifacially-reduced blank
1366	9		Large corner-notched, concave blade (BMIII–PI)	straight	straight	sides	finished, unusable	other non-bipolar flake
1368	3		Projectile point, not further specified			base	finished, unusable	indeterminate
1371	40		Large corner-notched, concave blade (BMIII–PI)	convex	convex	shoulder	unfinished, unusable	other non-bipolar flake
1373	25		Medium side-notched	indeterminate	indeterminate	base	unfinished, unusable	other non-bipolar flake
1374	39		Elko Eared (Archaic)	convex	convex	sides	unfinished, unusable	other non-bipolar flake

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
1451	3		Elko Corner-notched (Archaic)	straight	straight	shoulder	finished, unusable	bifacially-reduced blank
1736	14		Large corner-notched, concave blade (BMIII–PI)	convex	convex	sides	finished, unusable	other non-bipolar flake
1737	9		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	bifacially-reduced blank
1740	7		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake
1777	5		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	bifacially-reduced blank
1777	21		Medium side-notched	indeterminate	indeterminate	sides	unfinished, unusable	indeterminate
1777	24		Projectile point, not further specified	indeterminate	indeterminate		unfinished, unusable	other non-bipolar flake
1782	17		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	bifacially-reduced blank
1800	29		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	bifacially-reduced blank
1807	5		Projectile point, not further specified	straight	straight	sides	unfinished, unusable	other non-bipolar flake
1810	50		Lancaster Side-notched (PII–PIII)	concave	concave	sides	finished, unusable	bifacially-reduced blank
1822	11		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake
1824	30		Projectile point, not further specified	convex	convex	shoulder	finished, unusable	other non-bipolar flake
1824	50		Large corner-notched, concave blade (BMIII–PI)	straight	straight	shoulder	finished, unusable	bifacially-reduced blank
1826	13		Lancaster Side-notched (PII–PIII)	convex	convex	shoulder	finished, usable	other non-bipolar flake
1826	26		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake
1827	9		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	other non-bipolar flake

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
1836	5		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	bifacially-reduced blank
1836	6		Projectile point, not further specified	straight	straight		finished, unusable	bifacially-reduced blank
1839	3		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	other non-bipolar flake
1843	4		Lancaster Side-notched (PII–PIII)	indeterminate	indeterminate	base	finished, unusable	indeterminate
1845	5		Medium corner-notched (Middle to Late PII)	concave	concave	shoulder	finished, unusable	bifacially-reduced blank
1855	6		Lancaster Side-notched (PII–PIII)	convex	convex	shoulder	finished, unusable	bifacially-reduced blank
1863	6		Desert Side-notched (Numic)	convex	convex	base	finished, usable	other non-bipolar flake
1864	12		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	bifacially-reduced blank
1875	72		Projectile point, not further specified	indeterminate	indeterminate	base	finished, unusable	bifacially-reduced blank
1878	10		Small side-notched, unspecified base (PII–PIII)	convex	convex	shoulder	finished, unusable	bifacially-reduced blank
1879	12		Rosegate series (BMII–PII)	convex	convex	shoulder	finished, usable	bifacially-reduced blank
1879	35		Rocker Side-notched (Archaic)	convex	convex	base	finished, unusable	bifacially-reduced blank
1879	39		Lancaster Side-notched (PII–PIII)	convex	convex	shoulder	finished, unusable	bifacially-reduced blank
1881	7		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	other non-bipolar flake
1882	25		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	other non-bipolar flake
1884	21		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	bifacially-reduced blank
1884	44		Projectile point, not further specified	straight	straight	shoulder	finished, unusable	other non-bipolar flake

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
1884	93		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	bifacially-reduced blank
1895	11		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	bifacially-reduced blank
1899	17		Projectile point, not further specified	indeterminate	indeterminate		finished, unusable	indeterminate
1900	6		Lancaster Side-notched (PII–PIII)	convex	convex	sides	finished, usable	other non-bipolar flake
1900	19		Projectile point, not further specified	convex	convex	shoulder	finished, unusable	other non-bipolar flake
1900	34		Lancaster Side-notched (PII–PIII)	convex	convex	shoulder	finished, usable	other non-bipolar flake
1900	35		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	bifacially-reduced blank
1903	6		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	bifacially-reduced blank
1905	15		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	other non-bipolar flake
1921	11		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	other non-bipolar flake
1925	4		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	other non-bipolar flake
1925	35		Lancaster Side-notched (PII–PIII)	convex	convex	shoulder	finished, unusable	other non-bipolar flake
1930	9		Desert Side-notched (Numic)	convex	convex	base	finished, usable	bifacially-reduced blank
1933	4		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	other non-bipolar flake
1935	24		Large corner-notched, concave blade (BMIII–PI)	concave	concave	sides	finished, usable	other non-bipolar flake
1935	25		Elko Eared (Archaic)	convex	convex	base	finished, unusable	bifacially-reduced blank
1935	26		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, usable	other non-bipolar flake

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
1935	27		Large side-notched (Archaic)	straight	straight	base	finished, unusable	bifacially-reduced blank
1935	28		Rosegate series (BMII–PII)	straight	straight	shoulder	finished, usable	other non-bipolar flake
1935	29		Rosegate series (BMII–PII)	convex	convex	base	finished, unusable	other non-bipolar flake
1935	73		Projectile point, not further specified	straight	straight		unfinished, unusable	bifacially-reduced blank
1935	74		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, usable	other non-bipolar flake
1935	75		Large corner-notched, concave blade (BMIII–PI)	straight	straight	sides	finished, unusable	bifacially-reduced blank
1935	76		Desert Side-notched (Numic)	straight	straight	base	finished, unusable	other non-bipolar flake
1950	9		Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	bifacially-reduced blank
1972	7	15	Lancaster Side-notched (PII–PIII)	convex	convex	base	finished, unusable	other non-bipolar flake
1975	36		Lancaster Side-notched (PII–PIII)	convex	convex		finished, unusable	other non-bipolar flake
1976	23		Large corner-notched, concave blade (BMIII–PI)	concave	concave	shoulder	finished, unusable	other non-bipolar flake
1976	52		Archaic corner-notched, not further specified	straight	straight	base	finished, unusable	bifacially-reduced blank
1978	10		Lancaster Side-notched (PII–PIII)	convex	convex	shoulder	finished, usable	other non-bipolar flake
1982	23		Rosegate series (BMII–PII)	straight	straight	shoulder	finished, usable	other non-bipolar flake
1994	14		Large corner-notched, concave blade (BMIII–PI)	straight	straight	shoulder	finished, usable	bifacially-reduced blank
2007	40		Lancaster Side-notched (PII–PIII)	straight	straight	base	finished, unusable	biface thinning flake
2009	72		Lancaster Side-notched (PII–PIII)	straight	straight		finished, unusable	bifacially-reduced blank

PD	FS	PL	Projectile Point Type	Base Shape	Side Shape	Maximum Width Location	Use-Phase	Blank Form
2016	19		Cottonwood Triangular (PII–Historic)	straight	straight	base	finished, unusable	bifacially-reduced blank
2017	26		Small side-notched, concave base (Late PII)	indeterminate	indeterminate	base	finished, unusable	indeterminate
2034	15		Projectile point, not further specified	convex	convex	shoulder	finished, unusable	bifacially-reduced blank
2081	4		Lancaster Side-notched (PII–PIII)	convex	convex	shoulder	finished, unusable	other non-bipolar flake

(c) Table 11.19, Project Point Analysis Data, part 3 of 3

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
19	3		Projectile point, not further specified	finished biface	no use-wear	none	Lateral break
48	16		Small side-notched, unspecified base (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
48	17		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break
48	18		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
82	14		Projectile point, not further specified	unfinished biface (pressure flaking, notching)	no use-wear	none	Compound hinge/step occurrence
118	5	1	Rosegate series (BMII–PII)	finished biface	no use-wear	none	Bending fracture/end shock
218	4	1	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
234	19		Lancaster Side-notched (PII–PIII)	unfinished biface (pressure flaking, notching)	no use-wear	none	Bending fracture/end shock
283	4		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	none	Limited potential for further work/use
313	4		Desert Side-notched (Numic)	finished biface	no use-wear	none	Lateral break
335	3	1	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
376	8		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break
416	5		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
487	8		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
516	4		Cottonwood Triangular (PII–Historic)	bifacially-edged blank	no use-wear		Limited potential for further work/use
549	40	3	Lancaster Side-notched (PII–PIII)	finished biface	utilization of blade	none	Limited potential for further work/use

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
605	4		Rosegate series (BMII–PII)	finished biface	no use-wear	none	Lateral break
611	9	1	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
626	17		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
627	6		Projectile point, not further specified	finished biface	no use-wear	none	Bending fracture/end shock
628	10	1	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break
631	12		Projectile point, not further specified	finished biface	no use-wear	none	Bending fracture/end shock
636	6		Rosegate series (BMII–PII)	finished biface	utilization of blade	sides	Bending fracture/end shock
647	10		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
660	8		Projectile point, not further specified	finished biface	no use-wear	none	Lateral break
668	5		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
672	10		Lancaster Side-notched (PII–PIII)	finished biface	tip re-sharpened	base	Limited potential for further work/use
672	40		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Limited potential for further work/use
684	8		Desert Side-notched (Numic)	finished biface	no use-wear	base	Material flaw/quality
684	9		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
686	22	5	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
692	16	9	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
706	10		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
735	4		Elko Corner-notched (Archaic)	unfinished biface (pressure flaking, notching)	no use-wear	none	Bending fracture/end shock
740	14		Sudden Side-notched (Archaic)	unfinished biface (pressure flaking, notching)	no use-wear	none	Crescentic chunk from margin
742	2	9	Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	none	Lateral break
744	10	18	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
744	11	14	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Limited potential for further work/use
745	19	25	Medium corner-notched (Middle to Late PII)	finished biface	no use-wear	indeterminate	Bending fracture/end shock
750	9	68	Lancaster Side-notched (PII–PIII)	finished biface		none	Limited potential for further work/use
765	6		Projectile point, not further specified	finished biface	no use-wear	none	Bending fracture/end shock
765	7		Lancaster Side-notched (PII–PIII)	unfinished biface (pressure flaking, notching)	no use-wear	none	Compound hinge/step occurrence
771	39		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
778	2		Projectile point, not further specified	finished biface	no use-wear	none	Lateral break
874	4		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
886	16		Projectile point, not further specified	finished biface	indeterminate	none	Bending fracture/end shock
898	3		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
902	13		Small side-notched, unspecified base (PII–PIII)	finished biface	no use-wear	none	Lateral break
919	19	2	Sudden Side-notched (Archaic)	finished biface	no use-wear	none	Bending fracture/end shock

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
923	23		Small side-notched, unspecified base (PII–PIII)	finished biface	no use-wear	indeterminate	Lateral break
923	24		Armijo complex (Archaic)	finished biface	utilization of blade	sides	Bending fracture/end shock
924	49		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break
930	19		Projectile point, not further specified	finished biface	no use-wear	none	Bending fracture/end shock
930	20		Projectile point, not further specified	unfinished biface (pressure flaking, notching)	no use-wear	none	Bending fracture/end shock
938	22		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
938	47		Rosegate series (BMII–PII)	finished biface	no use-wear	none	Bending fracture/end shock
940	30		Lancaster Side-notched (PII–PIII)	unfinished biface (pressure flaking, notching)	no use-wear	none	Bending fracture/end shock
982	2		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	sides	Crescentic chunk from margin
984	2	3	Desert Side-notched (Numic)	unfinished biface (pressure flaking, notching)	no use-wear	none	Lateral break
987	1	1	Elko Corner-notched (Archaic)	finished biface	no use-wear	none	Bending fracture/end shock
1042	1	1	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
1044	14		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Bending fracture/end shock
1048	4		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1050	21		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
1052	20		Lancaster Side-notched (PII–PIII)	unfinished biface (pressure flaking, notching)	no use-wear	none	Bending fracture/end shock
1060	13		Projectile point, not further specified	unfinished biface (pressure flaking, notching)	no use-wear	none	Bending fracture/end shock
1060	14	5	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1060	15	6	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1094	9		Lancaster Side-notched (PII–PIII)	unfinished biface (pressure flaking, notching)	no use-wear	none	Limited potential for further work/use
1098	34		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
1099	35		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break
1105	2		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	none	Lateral break
1122	57		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Limited potential for further work/use
1123	4		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1149	42		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Limited potential for further work/use
1156	13		Rosegate series (BMII–PII)	finished biface	no use-wear	none	Limited potential for further work/use
1160	13		Lancaster Side-notched (PII–PIII)	bifacially-edged blank	no use-wear	none	Heat fracture
1161	98		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1167	9		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
1168	12		Elko Corner-notched (Archaic)	finished biface	no use-wear	indeterminate	Lateral break

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
1168	32		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1173	18		Rosegate series (BMII–PII)	finished biface	no use-wear	none	Lateral break
1174	25	118	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Limited potential for further work/use
1177	5		Projectile point, not further specified	finished biface	indeterminate	base	Bending fracture/end shock
1182	9		Elko Corner-notched (Archaic)	finished biface	no use-wear	none	Impact fracture
1196	2		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1199	26		Projectile point, not further specified	finished biface	no use-wear	none	Lateral break
1201	13		Lancaster Side-notched (PII–PIII)	finished biface	tip re-sharpened	none	Limited potential for further work/use
1203	3		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	indeterminate	Bending fracture/end shock
1203	4		Lancaster Side-notched (PII–PIII)	finished biface	indeterminate	none	Bending fracture/end shock
1212	10		Desert Side-notched (Numic)	finished biface	no use-wear	none	Limited potential for further work/use
1212	11		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Lateral break
1212	12		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1221	20		Elko Corner-notched (Archaic)	finished biface	no use-wear	none	Limited potential for further work/use
1221	21		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break
1233	3		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Limited potential for further work/use
1258	26		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
1270	6		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1271	17		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	none	Bending fracture/end shock
1278	28		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1278	29		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1295	19		Contracting stemmed (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1303	5		Elko Side-notched (Archaic)	finished biface	no use-wear	base	Limited potential for further work/use
1307	14		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break
1310	4		Projectile point, not further specified	unfinished biface (pressure flaking, notching)	no use-wear	base	Lateral break
1310	21		Rosegate series (BMII–PII)	finished biface	no use-wear	none	Bending fracture/end shock
1312	6		Contracting stemmed (PII–PIII)	unfinished biface (pressure flaking, notching)	no use-wear	none	Lateral break
1312	45		Projectile point, not further specified	finished biface	indeterminate	indeterminate	Bending fracture/end shock
1314	74		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	none	Bending fracture/end shock
1314	75		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break
1316	19		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break
1354	24		Desert Side-notched (Numic)	finished biface	no use-wear	none	Lateral break
1355	8	13	Lancaster Side-notched (PII–PIII)	finished biface	indeterminate	base	Lateral break

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
1366	9		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	indeterminate	Bending fracture/end shock
1368	3		Projectile point, not further specified	finished biface	indeterminate	none	Bending fracture/end shock
1371	40		Large corner-notched, concave blade (BMIII–PI)	unfinished biface (pressure flaking, notching)	no use-wear	none	Lateral break
1373	25		Medium side-notched	unfinished biface (pressure flaking, notching)	no use-wear	none	Lateral break
1374	39		Elko Eared (Archaic)	unfinished biface (pressure flaking, notching)	no use-wear	none	Lateral break
1451	3		Elko Corner-notched (Archaic)	finished biface	no use-wear	none	Indeterminate
1736	14		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	none	Bending fracture/end shock
1737	9		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Bending fracture/end shock
1740	7		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1777	5		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Impact fracture
1777	21		Medium side-notched	unfinished biface (pressure flaking, notching)	indeterminate	indeterminate	Bending fracture/end shock
1777	24		Projectile point, not further specified	unfinished biface (pressure flaking, notching)	indeterminate	indeterminate	Bending fracture/end shock
1782	17		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break
1800	29		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1807	5		Projectile point, not further specified	unfinished biface (pressure flaking, notching)	no use-wear	indeterminate	Compound hinge/step occurrence

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
1810	50		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
1822	11		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1824	30		Projectile point, not further specified	finished biface	no use-wear	none	Lateral break
1824	50		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	indeterminate	Lateral break
1826	13		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1826	26		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1827	9		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Bending fracture/end shock
1836	5		Lancaster Side-notched (PII–PIII)	finished biface	indeterminate	none	Impact fracture
1836	6		Projectile point, not further specified	finished biface	indeterminate	indeterminate	Lateral break
1839	3		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Impact fracture
1843	4		Lancaster Side-notched (PII–PIII)	finished biface	indeterminate	base	Bending fracture/end shock
1845	5		Medium corner-notched (Middle to Late PII)	finished biface	no use-wear	none	Bending fracture/end shock
1855	6		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break
1863	6		Desert Side-notched (Numic)	finished biface	no use-wear	none	Limited potential for further work/use
1864	12		Lancaster Side-notched (PII–PIII)	finished biface	tip re-sharpened	none	Indeterminate
1875	72		Projectile point, not further specified	unfinished biface (pressure flaking, notching)	no use-wear	indeterminate	Material flaw/quality
1878	10		Small side-notched, unspecified base (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
1879	12		Rosegate series (BMII–PII)	finished biface	no use-wear	sides	Limited potential for further work/use
1879	35		Rocker Side-notched (Archaic)	finished biface	no use-wear	base	Impact fracture
1879	39		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Heat fracture
1881	7		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1882	25		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Heat fracture
1884	21		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1884	44		Projectile point, not further specified	unfinished biface (pressure flaking, notching)	no use-wear	none	Lateral break
1884	93		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
1895	11		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Limited potential for further work/use
1899	17		Projectile point, not further specified	finished biface	indeterminate	indeterminate	Lateral break
1900	6		Lancaster Side-notched (PII–PIII)	refined biface (flake scars past centerline)	no use-wear	none	Limited potential for further work/use
1900	19		Projectile point, not further specified	finished biface	no use-wear	none	Lateral break
1900	34		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1900	35		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1903	6		Lancaster Side-notched (PII–PIII)	finished biface	indeterminate	none	Lateral break
1905	15		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1921	11		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Lateral break

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
1925	4		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Bending fracture/end shock
1925	35		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
1930	9		Desert Side-notched (Numic)	finished biface	no use-wear	none	Limited potential for further work/use
1933	4		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
1935	24		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	none	Limited potential for further work/use
1935	25		Elko Eared (Archaic)	finished biface	tip re-sharpened	none	Bending fracture/end shock
1935	26		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1935	27		Large side-notched (Archaic)	finished biface	no use-wear	base	Bending fracture/end shock
1935	28		Rosegate series (BMII–PII)	finished biface	no use-wear	none	Limited potential for further work/use
1935	29		Rosegate series (BMII–PII)	finished biface	no use-wear	none	Impact fracture
1935	73		Projectile point, not further specified	unfinished biface (pressure flaking, notching)	no use-wear	none	Bending fracture/end shock
1935	74		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1935	75		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	indeterminate	Bending fracture/end shock
1935	76		Desert Side-notched (Numic)	finished biface	no use-wear	none	Compound hinge/step occurrence
1950	9		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Bending fracture/end shock
1972	7	15	Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Bending fracture/end shock
1975	36		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	indeterminate	Lateral break

PD	FS	PL	Projectile Point Type	Biface Reduction Phase	Use Wear Type	Edge Grinding	Reason for Rejection
1976	23		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	none	Lateral break
1976	52		Archaic corner-notched, not further specified	finished biface	indeterminate	indeterminate	Lateral break
1978	10		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Limited potential for further work/use
1982	23		Rosegate series (BMII–PII)	finished biface	no use-wear	none	Limited potential for further work/use
1994	14		Large corner-notched, concave blade (BMIII–PI)	finished biface	no use-wear	none	Limited potential for further work/use
2007	40		Lancaster Side-notched (PII–PIII)	unfinished biface (pressure flaking, notching)	no use-wear	none	Crescentic chunk from margin
2009	72		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	base	Lateral break
2016	19		Cottonwood Triangular (PII–Historic)	finished biface	no use-wear	none	Bending fracture/end shock
2017	26		Small side-notched, concave base (Late PII)	finished biface	tip re-sharpened	none	Limited potential for further work/use
2034	15		Projectile point, not further specified	finished biface	no use-wear	none	Bending fracture/end shock
2081	4		Lancaster Side-notched (PII–PIII)	finished biface	no use-wear	none	Impact fracture

Table 11.20. Projectile Point Type by Material Type, Shields Pueblo.

(a) Table 11.20, Local Materials

Period	Point Types	Local Materials									
		Burro Canyon Chert		Dakota Quartzite		Morrison Chert/ Siltstone		Morrison Quartzite		Quartz	
		N	%	N	%	N	%	N	%	N	%
Archaic	Archaic corner-notched, not further specified										
	Armijo complex (Archaic)										
	Elko Corner-notched (Archaic)			4	4.5						
	Elko Eared (Archaic)					2	15.4				
	Elko Side-notched (Archaic)			1	1.1						
	Large side-notched (Archaic)										
	Rocker Side-notched (Archaic)			1	1.1						
	Sudden Side-notched (Archaic)			1	1.1						
	SUBTOTAL			*7*	*8.0*	*2*	*15.4*				
Basketmaker /Pueblo	Large corner-notched, concave blade (BMIII–PI)	3	13.6	4	4.5	2	15.4				
	Rosegate series (BMII–PII)	1	4.5	6	6.8	1	7.7				
	SUBTOTAL	*4*	*18.2*	*10*	*11.4*	*3*	*23.1*				
Pueblo II	Medium corner-notched (Middle to Late PII)			1	1.1						
	Small side-notched, concave base (Late PII)			1	1.1						
	SUBTOTAL			*2*	*2.3*						

Period	Point Types	Local Materials									
		Burro Canyon Chert		Dakota Quartzite		Morrison Chert/ Siltstone		Morrison Quartzite		Quartz	
		N	%	N	%	N	%	N	%	N	%
Pueblo II–III	Contracting stemmed (PII–PIII)										
	Cottonwood Triangular (PII–Historic)	1	4.5	1	1.1						
	Lancaster Side-notched (PII–PIII)	14	63.6	45	51.1	6	46.2			1	100.0
	Small side-notched, unspecified base (PII–PIII)			2	2.3						
	SUBTOTAL	*15*	*68.2*	*48*	*54.5*	*6*	*46.2*			*1*	*100.0*
Pueblo III–Historic	Desert Side-notched (Numic)	1	4.5	6	6.8	1	7.7				
	SUBTOTAL	*1*	*4.5*	*6*	*6.8*	*1*	*7.7*				
Not Specified	Medium side-notched			2	2.3						
	Projectile point, not further specified	2	9.1	13	14.8	1	7.7	1	100.0		
	SUBTOTAL	*2*	*9.1*	*15*	*17.1*	*1*	*7.7*	*1*	*100.0*		
	TOTAL	22	100.0	88	100.0	13	100.0	1	100.0	1	100.0

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 11.20, Semilocal Materials and Nonlocal Materials

Period	Point Types	Semilocal Materials								Nonlocal Materials						TOTAL	
		Agate/ Chalcedony		Brushy Basin Chert/ Siltstone		Petrified Wood		Red Jasper		Nonlocal Chert/ Siltstone		Obsidian		Unknown Chert/ Siltstone			
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Archaic	Archaic corner-notched, not further specified	1	4.0													1	0.5
	Armijo complex (Archaic)													1	5.9	1	0.5
	Elko Corner-notched (Archaic)							1	10.0					1	5.9	6	3.2
	Elko Eared (Archaic)															2	1.1
	Elko Side-notched (Archaic)															1	0.5
	Large side-notched (Archaic)	1	4.0													1	0.5
	Rocker Side-notched (Archaic)															1	0.5
	Sudden Side-notched (Archaic)													1	5.9	2	1.1
	SUBTOTAL	*2*	*8.0*					*1*	*10.0*					*3*	*17.6*	*15*	*7.9*
Basketmaker/ Pueblo	Large corner-notched, concave blade (BMIII–PI)	2	8.0	1	100.0							1	20.0	1	5.9	14	7.4
	Rosegate series (BMII–PII)									1	25.0			2	11.8	11	5.8
	SUBTOTAL	*2*	*8.0*	*1*	*100.0*					*1*	*25.0*	*1*	*20.0*	*3*	*17.6*	*25*	*13.2*
Pueblo II	Medium corner-notched (Middle to Late PII)													1	5.9	2	1.1
	Small side-notched, concave base (Late PII)														0.0	1	0.5
	SUBTOTAL													*1*	*5.9*	*3*	*1.6*
Pueblo II–III	Contracting stemmed (PII–PIII)											1	20.0	1	5.9	2	1.1
	Cottonwood Triangular (PII–Historic)															2	1.1

Period	Point Types	Semilocal Materials								Nonlocal Materials						TOTAL	
		Agate/ Chalcedony		Brushy Basin Chert/ Siltstone		Petrified Wood		Red Jasper		Nonlocal Chert/ Siltstone		Obsidian		Unknown Chert/ Siltstone			
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Pueblo II–III, cont.	Lancaster Side-notched (PII–PIII)	16	64.0			2	66.7	8	80.0	2	50.0	2	40.0	7	41.2	103	54.2
	Small side-notched, unspecified base (PII–PIII)	1	4.0							1	25.0				0.0	4	2.1
	SUBTOTAL	*17*	*68.0*			*2*	*66.7*	*8*	*80.0*	*3*	*75.0*	*3*	*60.0*	*8*	*47.1*	*111*	*58.4*
Pueblo III–Historic	Desert Side-notched (Numic)															8	4.2
	SUBTOTAL															*8*	*4.2*
Not Specified	Medium side-notched															2	1.1
	Projectile point, not further specified	4	16.0			1	33.3	1	10.0			1	20.0	2	11.8	26	13.7
	SUBTOTAL	*4*	*16.0*			*1*	*33.3*	*1*	*10.0*			*1*	*20.0*	*2*	*11.8*	*28*	*14.8*
	TOTAL	25	100.0	1	100.0	3	100.0	10	100.0	4	100.0	5	100.0	17	100.0	190	100.0

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 11.21. Projectile Points by Type and Condition, Shields Pueblo.

Period	Point Types	Condition						TOTAL	
		Complete		Incomplete		Fragmentary			
		N	%	N	%	N	%	N	%
Archaic	Archaic corner-notched, not further specified					1	1.8	1	0.5
	Armijo complex (Archaic)			1	1.3			1	0.5
	Elko Corner-notched (Archaic)	1	1.8	2	2.6	3	5.3	6	3.2
	Elko Eared (Archaic)	1	1.8			1	1.8	2	1.1
	Elko Side-notched (Archaic)	1	1.8					1	0.5
	Large side-notched (Archaic)					1	1.8	1	0.5
	Rocker Side-notched (Archaic)			1	1.3			1	0.5
	Sudden Side-notched (Archaic)			2	2.6			2	1.1
	SUBTOTAL	*3*	*5.4*	*6*	*7.8*	*6*	*10.5*	*15*	*7.9*
Basketmaker/ Pueblo	Large corner-notched, concave blade (BMIII–PI)	1	1.8	9	11.7	4	7.0	14	7.4
	Rosegate series (BMII–PII)	2	3.6	6	7.8	3	5.3	11	5.8
	SUBTOTAL	*3*	*5.4*	*15*	*19.5*	*7*	*12.3*	*25*	*13.2*
Pueblo II	Medium corner-notched (Middle to Late PII)					2	3.5	2	1.1
	Small side-notched, concave base (Late PII)			1	1.3			1	0.5
	SUBTOTAL			*1*	*1.3*	*2*	*3.5*	*3*	*1.6*
Pueblo II–III	Contracting stemmed (PII–PIII)	1	1.8			1	1.8	2	1.1
	Cottonwood Triangular (PII–Historic)	1	1.8			1	1.8	2	1.1
	Lancaster Side-notched (PII–PIII)	44	78.6	47	61.0	12	21.1	103	54.2
	Small side-notched, unspecified base (PII–PIII)	1	1.8	1	1.3	2	3.5	4	2.1
	SUBTOTAL	*47*	*83.9*	*48*	*62.3*	*16*	*28.1*	*111*	*58.4*
Pueblo III–Historic	Desert Side-notched (Numic)	3	5.4	3	3.9	2	3.5	8	4.2
	SUBTOTAL	*3*	*5.4*	*3*	*3.9*	*2*	*3.5*	*8*	*4.2*
Not Specified	Medium side-notched					2	3.5	2	1.1
	Projectile point, not further specified			4	5.2	22	38.6	26	13.7
	SUBTOTAL			*4*	*5.2*	*24*	*42.1*	*28*	*14.7*
	TOTAL	56	100.0	77	100.0	57	100.0	190	100.0

Table 11.22. Projectile Point Type by Architectural Block, Shields Pueblo.

(a) Table 11.22, Blocks 100, 200, 400, 600, 800, and 1000

Period	Type	Architectural Block											
		100		200		400		600		800		1000	
		N	%	N	%	N	%	N	%	N	%	N	%
Archaic	Archaic corner-notched, not further specified												
	Armijo complex (Archaic)												
	Elko Corner-notched (Archaic)	3	5.9	2	6.5								
	Elko Eared (Archaic)												
	Elko Side-notched (Archaic)			1	3.2								
	Large side-notched (Archaic)												
	Rocker Side-notched (Archaic)												
	Sudden Side-notched (Archaic)	2	3.9										
	SUBTOTAL	*5*	*9.8*	*3*	*9.7*								
Basketmaker/ Pueblo	Large corner-notched, concave blade (BMIII–PI)	2	3.9	1	3.2	1	50.0						
	Rosegate series (BMII–PII)	2	3.9	1	3.2							1	50.0
	SUBTOTAL	*4*	*7.8*	*2*	*6.5*	*1*	*50.0*					*1*	*50.0*
Pueblo II	Medium corner-notched (Middle to Late PII)	1	2.0										
	Small side-notched, concave base (Late PII)												
	SUBTOTAL	*1*	*2.0*										
Pueblo II–III	Contracting stemmed (PII–PIII)												
	Cottonwood Triangular (PII–Historic)							1	33.3				
	Lancaster Side-notched (PII–PIII)	30	58.8	24	77.4	1	50.0	1	33.3	1	100.0	1	50.0
	Small side-notched, unspecified base (PII–PIII)	1	2.0										
	SUBTOTAL	*31*	*60.8*	*24*	*77.4*	*1*	*50.0*	*2*	*66.7*	*1*	*100.0*	*1*	*50.0*
Pueblo III–Historic	Desert Side-notched (Numic)	4	7.8	1	3.2			1	33.3				
	SUBTOTAL	*4*	*7.8*	*1*	*3.2*			*1*	*33.3*				
Not Specified	Medium side-notched												
	Projectile point, not further specified	6	11.8	1	3.2								
	SUBTOTAL	*6*	*11.8*	*1*	*3.2*								
	TOTAL	51	100.0	31	100.0	2	100.0	3	100.0	1	100.0	2	100.0

(b) Table 11.22, Blocks 1100, 1200, 1300, 1400, 1500, and Totals

Period	Type	Architectural Block											
		1100		1200		1300		1400		1500		TOTAL	
		N	%	N	%	N	%	N	%	N	%	N	%
Archaic	Archaic corner-notched, not further specified					1	1.9					1	0.5
	Armijo complex (Archaic)							1	4.3			1	0.5
	Elko Corner-notched (Archaic)									1	33.3	6	3.2
	Elko Eared (Archaic)					2	3.8					2	1.1
	Elko Side-notched (Archaic)											1	0.5
	Large side-notched (Archaic)					1	1.9					1	0.5
	Rocker Side-notched (Archaic)					1	1.9					1	0.5
	Sudden Side-notched (Archaic)											2	1.1
	SUBTOTAL					*5*	*9.6*	*1*	*4.3*	*1*	*33.3*	*15*	*7.9*
Basketmaker/ Pueblo	Large corner-notched, concave blade (BMIII–PI)	1	7.7	1	11.1	7	13.5	1	4.3			14	7.4
	Rosegate series (BMII–PII)					6	11.5	1	4.3			11	5.8
	SUBTOTAL	*1*	*7.7*	*1*	*11.1*	*13*	*25.0*	*2*	*8.7*			*25*	*13.2*
Pueblo II	Medium corner-notched (Middle to Late PII)			1	11.1							2	1.1
	Small side-notched, concave base (Late PII)							1	4.3			1	0.5
	SUBTOTAL			*1*	*11.1*			*1*	*4.3*			*3*	*1.6*
Pueblo II–III	Contracting stemmed (PII–PIII)					1	1.9	1	4.3			2	1.1
	Cottonwood Triangular (PII–Historic)							1	4.3			2	1.1
	Lancaster Side-notched (PII–PIII)	9	69.2	5	55.6	20	38.5	10	43.5	1	33.3	103	54.2
	Small side-notched, unspecified base (PII–PIII)	1	7.7			1	1.9	1	4.3			4	2.1
	SUBTOTAL	*10*	*76.9*	*5*	*55.6*	*22*	*42.3*	*13*	*56.5*	*1*	*33.3*	*111*	*58.4*
Pueblo III–Historic	Desert Side-notched (Numic)					2	3.8					8	4.2
	SUBTOTAL					*2*	*3.8*					*8*	*4.2*
Not specified	Medium side-notched			1	11.1	1	1.9					2	1.1
	Projectile point, not further specified	2	15.4	1	11.1	9	17.3	6	26.1	1	33.3	26	13.7
	SUBTOTAL	*2*	*15.4*	*2*	*22.2*	*10*	*19.2*	*6*	*26.1*	*1*	*33.3*	*28*	*14.7*
	TOTAL	13	100.0	9	100.0	52	100.0	23	100.0	3	100.0	190	100.0

Table 11.23. Projectile Point Type by Component, Shields Pueblo.

(a) Table 11.23, Early Pueblo I through Early Pueblo III

Period	Type	Early Pueblo I (A.D. 725–800)		Middle Pueblo II (A.D. 1020–1060)		Late Pueblo II (A.D. 1060–1140)		Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	
		N	%	N	%	N	%	N	%
Archaic	Archaic corner-notched, not further specified					1	1.7		
	Armijo complex (Archaic)								
	Elko Corner-notched (Archaic)					3	5.1		
	Elko Eared (Archaic)			1	11.1	1	1.7		
	Elko Side-notched (Archaic)								
	Large side-notched (Archaic)					1	1.7		
	Rocker Side-notched (Archaic)					1	1.7		
	Sudden Side-notched (Archaic)					1	1.7		
	SUBTOTAL			*1*	*11.1*	*8*	*13.6*		
Basketmaker/ Pueblo	Large corner-notched, concave blade (BMIII–PI)	1	50.0	1	11.1	5	8.5		
	Rosegate series (BMII–PII)					5	8.5		
	SUBTOTAL	*1*	*50.0*	*1*	*11.1*	*10*	*16.9*		
Pueblo II	Medium corner-notched (Middle to Late PII)					1	1.7		
	Small side-notched, concave base (Late PII)								
	SUBTOTAL					1	1.7		
Pueblo II–III	Contracting stemmed (PII–PIII)							1	25.0
	Cottonwood Triangular (PII–Historic)								
	Small side-notched, unspecified base (PII–PIII)			1	11.1	1	1.7		
	Lancaster Side-notched (PII–PIII)			3	33.3	31	52.5	2	50.0
	SUBTOTAL			*4*	*44.4*	*32*	*54.2*	*3*	*75.0*
Pueblo III–Historic	Desert Side-notched (Numic)					4	6.8		
	Subtotal					4	6.8		
Not specified	Medium side-notched								
	Projectile point, not further specified	1	50.0	3	33.3	4	6.8	1	25.0
	SUBTOTAL	*1*	*50.0*	*3*	*33.3*	*4*	*6.8*	*1*	*25.0*
	TOTAL	2	100.0	9	100.0	59	100.0	4	100.0

(b) Table 11.23, Early Pueblo III, Late Pueblo III, Unassigned, and Totals

Period	Type	Early Pueblo III (A.D. 1140–1225)		Late Pueblo III (A.D. 1225–1280)		Unassigned		TOTAL	
		N	%	N	%	N	%	N	%
Archaic	Archaic corner-notched, not further specified							1	0.5
	Armijo complex (Archaic)	1	3.1					1	0.5
	Elko Corner-notched (Archaic)	1	3.1	1	5.3	1	1.5	6	3.2
	Elko Eared (Archaic)							2	1.1
	Elko Side-notched (Archaic)			1	5.3			1	0.5
	Large side-notched (Archaic)							1	0.5
	Rocker Side-notched (Archaic)							1	0.5
	Sudden Side-notched (Archaic)					1	1.5	2	1.1
	SUBTOTAL	*2*	*6.3*	*2*	*10.5*	*2*	*3.1*	*15*	*7.9*
Basketmaker/ Pueblo	Large corner-notched, concave blade (BMIII–PI)	1	3.1	1	5.3	5	7.7	14	7.4
	Rosegate series (BMII–PII)			1	5.3	5	7.7	11	5.8
	SUBTOTAL	*1*	*3.1*	*2*	*10.5*	*10*	*15.4*	*25*	*13.2*
Pueblo II	Medium corner-notched (Middle to Late PII)	1	3.1					2	1.1
	Small side-notched, concave base (Late PII)	1	3.1					1	0.5
	SUBTOTAL	*2*	*6.3*					*3*	*1.6*
Pueblo II–III	Contracting stemmed (PII–PIII)					1	1.5	2	1.1
	Cottonwood Triangular (PII–Historic)	1	3.1			1	1.5	2	1.1
	Small side-notched, unspecified base (PII–PIII)	1	3.1			1	1.5	4	2.1
	Lancaster Side-notched (PII–PIII)	19	59.4	11	57.9	37	56.9	103	54.2
	SUBTOTAL	*21*	*65.6*	*11*	*57.9*	*40*	*61.5*	*111*	*58.4*
Pueblo III–Historic	Desert Side-notched (Numic)	1	3.1	1	5.3	2	3.1	8	4.2
	SUBTOTAL	*1*	*3.1*	*1*	*5.3*	*2*	*3.1*	*8*	*4.2*
Not specified	Medium side-notched	1	3.1			1	1.5	2	1.1
	Projectile point, not further specified	4	12.5	3	15.8	10	15.4	26	13.7
	SUBTOTAL	*5*	*15.6*	*3*	*15.8*	*11*	*16.9*	*28*	*14.7*
	TOTAL	32	100.0	19	100.0	65	100.0	190	100.0

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Chapter 12

Ground-Stone, Battered, and Polished-Stone Tools

by Jonathan D. Till

Introduction

This chapter summarizes the ground-stone, battered, and polished-stone tools from Shields Pueblo. For information regarding these artifact categories, and for definitions of the tool types within these categories, the reader is referred to Ortman et al. (2005).

Ground-Stone Tools

This section covers the ground-stone artifact assemblage from Shields Pueblo. Ground-stone artifacts consist primarily of objects that are associated with food processing (e.g., manos and metates), although at least one artifact type, abraders, is used in the manufacture and/or processing of materials other than food (e.g., arrow shaft shaping, pigment processing, pendant manufacture, etc.). In total, 1,624 ground-stone items were recovered from Shields Pueblo. Following a summary of the ground-stone tool assemblage by material and condition, this section discusses the distribution of ground-stone tools by architectural block and component.

By Material

Not surprisingly, nearly all ground-stone artifacts are made of coarse-grained materials. Over 90 percent of the total ground-stone artifact assemblage is made of sandstone, and over 6 percent is made of conglomerate sandstone (Table 12.1). These materials are readily available in the area's exposed bedrock (especially the Dakota sandstone).

Table 12.1 indicates an interesting difference between one-hand manos and two-hand manos. Relatively few one-hand manos are conglomerate sandstone (N=1, or 3.3 percent of all one-hand manos), whereas a much higher fraction of two-hand manos consists of this material (14.5 percent of all two-hand manos). This distinction may be because the people who made these manos preferred one material type over another, or had one material type more available to them; a third possibility may be that the distinction resulted from the development of grinding technologies and practices through time. One-hand manos are generally associated with the Archaic and Basketmaker periods, whereas two-hand manos are more diagnostic of the later Pueblo periods. In the Pueblo period, an intensive grinding strategy developed that involved several stages of processing: the initial stage of grinding involved a coarse-grained metate and mano that resulted in a coarse flour; subsequent stages used finer-grained tools, with the end product being a fine flour (e.g., Adams 2002:124; Bartlett 1933). This same process is evident in the ethnographic record for modern Pueblos (e.g., Bartlett 1933:4; Kamp 1998:129). Thus, a certain frequency of coarse-grained, conglomerate sandstone is expected for two-hand manos, reflecting the intensive grinding strategy of the later Pueblo period. The higher frequency of two-hand manos made from conglomerate sandstone may result from this intensive grinding strategy.

By Condition

Table 12.2 summarizes the condition of ground-stone tool types recovered from Shields Pueblo. The artifact type with the highest percentage of "complete" items is abrader. This probably reflects the overall smaller size of these objects, which tend to fit in the user's palm. The most common "fragmentary" artifact type is, by definition, the "indeterminate ground stone" category. This category consists of objects that cannot be ascribed to a particular artifact category beyond "ground stone" due to their fragmented condition. Similarly, those items identified as simply "mano" tend to be almost entirely "fragmentary." Their condition is such that a determination could not be made whether these objects were one-hand or two-hand manos.

By Architectural Block

Table 12.3 illustrates the distribution of ground-stone tools by architectural block. In terms of absolute numbers, the highest numbers of ground-stone artifacts come from Blocks 100 and 1300. However, considering the total ground-stone artifact to cooking-pottery weight ratios, Blocks 100, 1100, and 1300 stand out as having the highest frequencies of these materials. The ground-stone assemblage from Block 1100 is characterized for relatively higher numbers of manos and indeterminate ground stone, but not metates. In contrast, Blocks 100 and 1300 are notable for their consistent representation of most ground-stone artifact categories.

Table 12.3 also shows that Block 1300 yielded basin and trough metates, which are also indicative of Basketmaker and early Pueblo period affiliations. This corroborates pottery and projectile point data from Block 1300, which indicate the presence of a Basketmaker III/Early Pueblo I component in this location. Another earlier ground-stone artifact type, one-hand manos, is well represented in Blocks 100, 200, and 1300. Again, these objects may indicate the presence of an earlier occupation in these locations, or it may be that these objects had been curated by later occupants of Shields Pueblo.

Abraders exhibit the least variation in their relative numbers by architectural block. These items are typically small, portable objects and are relatively expedient in their construction. Their size, and the ease with which they are made, may well condition the frequency with which they occur within the architectural blocks.

In contrast to abraders, two-hand manos occur less evenly across the site. Block 100 displays the highest frequencies of two-hand manos in all measures of abundance. This, coupled with its high numbers of slab metates, indicates an emphasis on food processing in this location, more so than in other areas of the site. The association of higher frequencies of food-preparation tools with a great house in Block 100 suggests that intensive food preparation, possibly associated with ritual events, took place in this area.

By Component

Table 12.4 summarizes the ground-stone artifact data for Shields Pueblo by component. The table suggests the mixture of materials on the site. For example, the basin metate fragment (see Table 12.2) recorded on the site is documented with the Middle Pueblo II component, which probably postdates the common use of this metate type. Another example of mixing may be the high occurrence of one-hand manos (N=15), which are usually associated with the Archaic and Basketmaker periods, in the Early Pueblo III component. However, later occupants of Shields Pueblo may have curated these items of earlier time periods for their own use.

Interestingly, Table 12.4 does suggest an overall decrease in the total amount of ground-stone artifacts, relative to cooking pottery, through time. This may suggest the recycling of ground-stone tools during the Pueblo III period occupations at Shields Pueblo, but particularly at the time of, or just after, the final depopulation of Shields Pueblo. The recycling of these hefty, high energy–input items may indicate that the site's final occupants made a short move, or that a population was nearby that could have recycled these objects (e.g., the villagers of nearby Goodman Point Pueblo). However, this total ground stone to cooking pottery ratio may be conditioned in large part by the indeterminate ground stone category. The more specific categories of ground-stone artifacts (e.g., two-hand manos, slab metates) vary by component, and do not suggest any reasonably consistent trends. It is also possible that ground-stone items had increasing use-lives through time.

Battered and Polished-Stone Tools

This section summarizes analyses of various types of artifacts that result from reduction through use or through shaping by battering and/or polishing (N=932). Unlike the ground-stone assemblage, the battered and polished-stone tools represent a wide variety of activities, even within a given artifact category. For example, those items that are described as "axe" may have been used to cut trees, shape wood, grub sage, or may have been used as a weapon.

By Material

Table 12.5 summarizes the battered and polished-stone tool assemblage of Shields Pueblo by material. This table shows that Morrison quartzite, a relatively coarse-grained material, appears to have been the preferred material type for several artifact categories, including axes, mauls, and peckingstones. Peckingstones, which are the most frequent battered and polished-stone tool type, are also commonly made with Dakota quartzite and Morrison chert/siltstone. The high frequency of unknown materials among polishing stones is probably due to the use of alluvial cobbles of unknown origin, cobbles from conglomerate sandstone, or dinosaur gastroliths.

By Condition

Table 12.6 documents the condition of battered and polished-stone artifacts from Shields Pueblo. Axes that were too fragmented to be identified as either single- or double-bitted were classified under the generic category of "axe." Similarly, those objects defined under the category of “axe/maul” probably consist of a portion of the poll and/or hafting groove, but not enough of the object to infer its use as either an axe or a maul.

By Architectural Block

Table 12.7 summarizes the distributions of battered and polished-stone tools at Shields Pueblo by architectural block. Most of the artifact categories are represented only in small numbers. Peckingstones occur in the greatest quantities, particularly in Block 100. Ortman and Bradley (2002:47–48) discuss how an abundance of peckingstones, relative to other artifact categories, may indicate a focus on construction activities. Using data from the Pueblo Alto in New Mexico and Sand Canyon Pueblo in southwestern Colorado, they make an argument for contrasting construction activities and strategies. Specifically, they argue that relative to other activities, construction was emphasized at the Pueblo Alto great house in Chaco Canyon. Architectural data, setting, and the presence of a prehistoric road indicate that Block 100 harbors the remains of a possible great house at Shields Pueblo. Like Pueblo Alto, it may be that more time was given to the construction and shaping of great house masonry in this location, hence the relative abundance of peckingstones. Alternatively, peckingstones may have been used in the construction and maintenance of ground-stone tools such as manos and metates, which would then be an indirect measure of food-preparation activities. As noted earlier, the highest numbers of ground-stone artifacts also occur in Block 100.

By Component

Table 12.8 summarizes the distributions of battered and polished-stone tools at Shields Pueblo by component. Because of the low numbers in most of the tool categories, it is difficult to make reliable generalizations about changing frequencies through time. However, the larger sample size of polishing stones and peckingstones suggests an overall trend in decreasing frequencies of these tool types from the Late Pueblo II through the Late Pueblo III components. It is possible that the higher number of peckingstones during the Late Pueblo II component is associated with elevated levels of construction, or perhaps more intensive masonry-construction techniques at this time. It may also be that peckingstones had been removed or recycled from the later components of the site for construction activities at other nearby Late Pueblo III settlements, particularly Goodman Point Pueblo. Finally, it is possible that the Pueblo III period inhabitants of Shields Pueblo recycled masonry stone from earlier structures, resulting in less need for shaping and thus less need for peckingstones.

The through-time decrease in the ratio of polishing stones to cooking pottery could be taken to indicate a reduction in amounts of white ware pottery being produced per household at Shields Pueblo through time, although this seems unlikely. Two nearby Late Pueblo III component sites, Castle Rock Pueblo and Sand Canyon Pueblo, have polishing stone to cooking pottery ratios of 0.13 and 0.07, respectively (Castle Rock Pueblo yielded 21 polishing stones and 165,477 g of cooking pottery; Sand Canyon Pueblo yielded 65 polishing stones and 906,776 g of cooking pottery). Thus, the Late Pueblo III period component at Shields Pueblo appears to have a quantity of polishing stones that is comparable to other, contemporaneous sites.

Table 12.1. Ground-Stone Tools by Material Type, Shields Pueblo.

(a) Table 12.1

Material	Mano		One-hand Mano		Two-hand Mano		Metate		Basin Metate	
	N	%	N	%	N	%	N	%	N	%
conglomerate	11	15.7	1	3.3	46	14.5	2	15.4		
Dakota quartzite					7	2.2				
igneous	5	7.1	1	3.3	6	1.9				
Morrison quartzite	1	1.4	1	3.3						
Morrison silicified sandstone										
sandstone	52	74.3	23	76.7	258	81.4	11	84.6	1	100.0
slate/shale										
unknown quartzite	1	1.4	4	13.3						
TOTAL	70	100.0	30	100.0	317	100.0	13	100.0	1	100.0

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 12.1

Material	Trough Metate		Slab Metate		Abrader		Stone Mortar		Indeterminate Ground Stone		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
conglomerate			7	9.5	4	4.1			31	3.1	102	6.3
Dakota quartzite									6	0.6	13	0.8
igneous					1	1.0			6	0.6	19	1.2
Morrison quartzite					3	3.1			6	0.6	11	0.7
Morrison silicified sandstone									1	0.1	1	0.1
sandstone	7	100.0	67	90.5	90	91.8	3	100.0	958	94.8	1,470	90.5
slate/shale									2	0.2	2	0.1
unknown quartzite									1	0.1	6	0.4
TOTAL	7	100.0	74	100.0	98	100.0	3	100.0	1,011	100.0	1,624	100.0

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 12.2. Ground-Stone Tools by Condition, Shields Pueblo.

Artifact Category	Condition						TOTAL	
	Complete		Incomplete		Fragmentary			
	N	%	N	%	N	%	N	%
Mano			2	2.86	68	97.14	70	4.31
One-hand mano	11	36.67	5	16.67	14	46.67	30	1.85
Two-hand mano	25	7.89	21	6.62	271	85.49	317	19.52
Metate					13	100.00	13	0.80
Basin metate					1	100.00	1	0.06
Trough metate					7	100.00	7	0.43
Slab metate	7	9.46			67	90.54	74	4.56
Stone mortar	1	33.33			2	66.67	3	0.12
Abrader	52	53.06	6	6.12	40	40.82	98	6.03
Indeterminate ground stone					1,011	100.00	1,011	62.25
TOTAL	96	5.91	34	2.09	1,494	92.00	1,624	99.93

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 12.3. Ground-Stone Artifacts by Architectural Block, Shields Pueblo.

(a) Table 12.3

Architectural Block	Mano			One-hand Mano			Two-hand Mano			Metate			Basin Metate		
	N	%	R^1	N	%	R^1	N	%	R^1	N	%	R^1	N	%	R^1
100	13	18.6	0.12	8	26.7	0.08	81	25.6	0.77	3	23.1	0.03			
200	6	8.6	0.05	7	23.3	0.06	58	18.3	0.49						
300															
400	2	2.9	0.11	2	6.7	0.11	8	2.5	0.46						
500							1	0.3	0.90						
600							2	0.6	0.64	1	7.7	0.32			
700															
800							4	1.3	1.06						
900															
1000															
1100	9	12.9	0.18	2	6.7	0.04	29	9.1	0.57	2	15.4	0.04			
1200	1	1.4	0.04	2	6.7	0.08	9	2.8	0.35	1	7.7	0.04			
1300	23	32.9	0.18	7	23.3	0.06	61	19.2	0.49	6	46.2	0.05	1	100.0	0.01
1400	13	18.6	0.15	2	6.7	0.02	59	18.6	0.67						
1500	2	2.9	0.22				3	0.9	0.32						
1600															
1900	1	1.4	0.20				2	0.6	0.40						
TOTAL	70	100.0		30	100.0		317	100.0		13	100.0		1	100.0	

R^1 = Ratio of the number of artifacts to kilograms of cooking pottery. Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 12.3

Architectural Block	Trough Metate			Slab Metate			Abrader			Stone Mortar			Indeterminate Ground Stone			TOTAL			Cooking Pottery by Weight (g) by Block
	N	%	R^1	N	%	R^1	N	%	R^1	N	%	R^1	N	%	R^1	N	%	R^1	
100	1	14.3	0.01	22	29.7	0.21	19	19.4	0.18	1	33.3	0.01	257	25.4	2.43	405	24.9	3.84	105,596
200				15	20.3	0.13	25	25.5	0.21	2	66.7	0.02	175	17.3	1.49	288	17.7	2.45	117,516
300							1	1.0	1.50				4	0.4	6.01	5	0.3	7.51	665
400	1	14.3	0.06	5	6.8	0.29	1	1.0	0.06				24	2.4	1.38	43	2.6	2.47	17,435
500		0.0	0.00	1	1.4	0.90							6	0.6	5.37	8	0.5	7.16	1,117
600	1	14.3	0.32	1	1.4	0.32	2	2.0	0.64				10	1.0	3.20	17	1.0	5.44	3,125
700													1	0.1	1.76	1	0.1	1.76	569
800				2	2.7	0.53	5	5.1	1.33				11	1.1	2.92	22	1.4	5.84	3,769
900				1	1.4	1.80							4	0.4	7.20	5	0.3	8.99	556
1000				1	1.4	0.96							2	0.2	1.93	3	0.2	2.89	1,036
1100				3	4.1	0.06	8	8.2	0.16				122	12.1	2.40	175	10.8	3.45	50,749
1200				2	2.7	0.08	3	3.1	0.12				28	2.8	1.09	46	2.8	1.78	25,779
1300	4	57.1	0.03	17	23.0	0.14	22	22.4	0.18				257	25.4	2.05	398	24.5	3.17	125,616
1400				4	5.4	0.05	12	12.2	0.14				92	9.1	1.05	182	11.2	2.07	87,747
1500													12	1.2	1.29	17	1.0	1.83	9,291
1600													1	0.1	9.15	1	0.1	9.15	109
1900													5	0.5	0.99	8	0.5	1.59	5,035
TOTAL	7	100.0		74	100.0		98	100.0		3	100.0		1,011	100.0		1,624	100.0		

R^1 = Ratio of the number of artifacts to kilograms of cooking pottery. Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 12.4. Ground-Stone Artifacts by Component, Shields Pueblo.

(a) Table 12.4

Component	Mano			One-hand Mano			Two-hand Mano			Metate			Basin Metate		
	N	%	R^1	N	%	R^1	N	%	R^1	N	%	R^1	N	%	R^1
Early Pueblo I (A.D. 725–800)							8	2.5	2.58						
Middle Pueblo II (A.D. 1020–1060)	10	14.3	0.34	1	3.3	0.03	20	6.3	0.67	3	23.1	0.10	1	100.0	0.03
Late Pueblo II (A.D. 1060–1140)	16	22.9	0.16	4	13.3	0.04	58	18.3	0.58	3	23.1	0.03			
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)							5	1.6	0.49						
Early Pueblo III (A.D. 1140–1225)	24	34.3	0.16	15	50.0	0.10	89	28.1	0.60	4	30.8	0.03			
Late Pueblo III (A.D. 1225–1280)	2	2.9	0.03	4	13.3	0.06	47	14.8	0.67						
Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)							1	0.3	10.44						
Unassigned	18	25.7	0.09	6	20.0	0.03	89	28.1	0.46	3	23.1	0.02			
TOTAL	70	100.0		30	100.0		317	100.0		13	100.0		1	100.0	

R^1 = Ratio of the number of artifacts to kilograms of cooking pottery. Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 12.4

Component	Trough Metate			Slab Metate			Abrader			Stone Mortar			Indeterminate Ground Stone			TOTAL			Cooking Pottery by Weight (g) by Block
	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	
Early Pueblo I (A.D. 725–800)	1	14.3	0.32	4	5.4	1.29							10	1.0	3.22	23	1.4	7.41	3,105.2
Middle Pueblo II (A.D. 1020–1060)				3	4.1	0.10	5	5.1	0.17				51	5.1	1.72	94	5.8	3.17	29,671.6
Late Pueblo II (A.D. 1060–1140)	2	28.6	0.02	14	18.9	0.14	19	19.4	0.19				220	21.8	2.19	336	20.7	3.35	100,285.3
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)							6	6.1	0.59				28	2.8	2.75	39	2.4	3.83	10,186.9
Early Pueblo III (A.D. 1140–1225)	1	14.3	0.01	9	12.2	0.06	25	25.5	0.17				221	21.9	1.49	388	23.9	2.61	148,604.2
Late Pueblo III (A.D. 1225–1280)	1	14.3	0.01	7	9.5	0.10	8	8.2	0.11	1	33.3	0.01	42	4.2	0.60	112	6.9	1.60	69,972.4
Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)													3	0.3	31.32	4	0.2	41.75	95.8
Unassigned	2	28.6	0.01	37	50.0	0.19	35	35.7	0.18	2	66.7	0.01	436	43.3	2.25	628	38.7	3.25	193,483.6
TOTAL	7	100.0		74	100.0		98	100.0		3	100.0		1,011	100.0		1,624	100.0		

R[1] = Ratio of the number of artifacts to kilograms of cooking pottery. Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 12.5. Battered and Polished-Stone Tools by Material Type, Shields Pueblo.

(a) Table 12.5

Material		Axe		Single-Bitted Axe		Double-Bitted Axe		Axe/Maul		Maul		Tchamahia	
		N	%	N	%	N	%	N	%	N	%	N	%
Local	conglomerate												
	Dakota quartzite												
	igneous	1	8.3	1	12.5			1	7.1	1	11.1		
	Morrison chert/siltstone											1	25.0
	Morrison quartzite	10	83.3	7	87.5	1	100.0	13	92.9	6	66.7	2	50.0
	quartz												
	sandstone												
	slate/shale											1	25.0
Semilocal	agate/chalcedony												
	Brushy Basin chert/siltstone												
	Burro Canyon chert												
	red jasper												
Unknown	unknown chert/siltstone												
	unknown quartzite	1	8.3							2	22.2		
	unknown stone												
	other mineral												
	unrecorded material												
TOTAL		12	100.0	8	100.0	1	100.0	14	100.0	9	100.0	4	100.0

(b) Table 12.5

Material		Polishing Stone		Polished Igneous Stone		Polishing/ Hammerstone		Hammerstone		Peckingstone		TOTAL	
		N	%	N	%	N	%	N	%	N	%	N	%
Local	conglomerate	1	1.2							2	0.3	3	0.3
	Dakota quartzite	2	2.4					1	8.3	135	17.2	138	14.8
	igneous	2	2.4	2	100.0			2	16.7	7	0.9	17	1.8
	Morrison chert/siltstone	1	1.2			1	25.0			151	19.3	154	16.5
	Morrison quartzite	18	21.7			2	50.0	2	16.7	430	54.9	491	52.7
	quartz	2	2.4					1	8.3			3	0.3
	sandstone									10	1.3	10	1.1
	slate/shale											1	0.1
Semilocal	agate/chalcedony									1	0.1	1	0.1
	Brushy Basin chert/siltstone									7	0.9	7	0.8
	Burro Canyon chert									21	2.7	21	2.3
	red jasper									1	0.1	1	0.1
Unknown	unknown chert/siltstone	3	3.6							4	0.5	7	0.8
	unknown quartzite	42	50.6			1	25.0	4	33.3	12	1.5	62	6.7
	unknown stone	10	12.0					1	8.3	1	0.1	12	1.3
	other mineral	2	2.4									2	0.2
	unrecorded material							1	8.3	1	0.1	2	0.2
TOTAL		83	100.0	2	100.0	4	100.0	12	100.0	783	100.0	932	100.0

Table 12.6. Battered and Polished-Stone Artifacts by Condition, Shields Pueblo.

Artifact Category	Condition								TOTAL	
	Complete		Incomplete		Fragmentary		Unknown			
	N	%	N	%	N	%	N	%	N	%
Axe					12	11.88			12	1.29
Single-bitted axe	8	0.99							8	0.86
Double-bitted axe			1	5.88					1	0.11
Axe/maul					14	13.86			14	1.50
Maul	7	0.86	2	11.77					9	0.97
Tchamahia					4	3.96			4	0.43
Polishing stone	69	8.50	2	11.77	12	11.88			83	8.91
Polished igneous stone			1	5.88	1	0.99			2	0.21
Polishing/hammerstone	2	0.25			2	1.98			4	0.43
Hammerstone	8	0.99	2	11.77	1	0.99	1	50.00	12	1.29
Peckingstone	718	88.42	9	52.94	55	54.46	1	50.00	783	84.01
TOTAL	812		17		101		2		932	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 12.7. Battered and Polished-Stone Artifacts by Architectural Block, Shields Pueblo.

(a) Table 12.7

Architectural Block	Axe			Single-Bitted Axe			Double-Bitted Axe			Axe/Maul			Maul			Tchamahia			Polishing Stone		
	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]
100	2	16.7	0.02							3	21.4	0.03	2	22.2	0.02	2	50.0	0.02	18	21.7	0.17
200	1	8.3	0.01	1	12.5	0.01	1	100.0	0.01	4	28.6	0.03	2	22.2	0.02	1	25.0	0.01	12	14.5	0.10
300																					
400																					
500																					
600																					
700																			1	1.2	1.76
800																			3	3.6	0.80
1100				1	12.5	0.02				2	14.3	0.04	1	11.1	0.02	1	25.0	0.02	5	6.0	0.10
1200																			6	7.2	0.23
1300	6	50.0	0.05	3	37.5	0.02				1	7.1	0.01	2	22.2	0.02				18	21.7	0.14
1400	2	16.7	0.02	3	37.5	0.03				4	28.6	0.05	2	22.2	0.02				19	22.9	0.22
1500	1	8.3	0.11																		
1900																			1	1.2	0.20
TOTAL	12	100.0		8	100.0		1	100.0		14	100.0		9	100.0		4	100.0		83	100.0	

R[1] = Ratio of the number of artifacts to kilograms of cooking pottery. Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 12.7

Architectural Block	Polished Igneous Stone			Polishing Stone/ Hammerstone			Hammerstone			Peckingstone			TOTAL		Cooking Pottery Weight (g) by Block
	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	
100	1	50.0	0.01				1	8.3	0.01	199	25.4	1.88	228	24.5	105,595.9
200				1	25.0	0.01	2	16.7	0.02	112	14.3	0.95	137	14.7	117,515.6
300										1	0.1	1.50	1	0.1	665.5
400										21	2.7	1.20	21	2.3	17,434.9
500										2	0.3	1.79	2	0.2	1,117.3
600										2	0.3	0.64	2	0.2	3,125.4
700													1	0.1	569.0
800										2	0.3	0.53	5	0.5	3,769.0
1100				1	25.0	0.02	2	16.7	0.04	86	11.0	1.69	99	10.6	50,749.2
1200							2	16.7	0.08	41	5.2	1.59	49	5.3	25,778.8
1300							1	8.3	0.01	166	21.2	1.32	197	21.1	125,616.4
1400	1	50.0	0.01	2	50.0	0.02	4	33.3	0.05	124	15.8	1.41	161	17.3	87,746.7
1500										9	1.1	0.97	10	1.1	9,291.1
1900										18	2.3	3.57	19	2.0	5,035.0
TOTAL	2	100.0		4	100.0		12	100.0		783	100.0		932	100.0	

R[1] = Ratio of the number of artifacts to kilograms of cooking pottery. Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 12.8. Battered and Polished-Stone Artifacts by Component, Shields Pueblo.

(a) Table 12.8

Component	Axe			Single-Bitted Axe			Double-Bitted Axe			Axe/Maul			Maul			Tchamahia			Polishing Stone		
	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]
Early Pueblo I (A.D. 725–800)																					
Middle Pueblo II (A.D. 1020–1060)	2	16.7	0.07										1	11.1	0.03				1	1.2	0.03
Late Pueblo II (A.D. 1060–1140)	2	16.7	0.02							2	14.3	0.02	2	22.2	0.02	3	75.0	0.03	25	30.1	0.25
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)				2	25.0	0.20							1	11.1	0.10				2	2.4	0.20
Early Pueblo III (A.D. 1140–1225)	3	25.0	0.02							6	42.9	0.04	2	22.2	0.01	1	25.0	0.01	24	28.9	0.16
Late Pueblo III (A.D. 1225–1280)	1	8.3	0.01	2	25.0	0.03													9	10.8	0.13
Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)				3	37.5	31.32															
Unassigned	4	33.3	0.02	1			1	100.0	0.01	6	42.9	0.03	3	33.3	0.02				22	26.5	0.11
TOTAL	12	100.0	0.02	8	100.0	0.01	1	100.0	0.00	14	100.0	0.03	9	100.0	0.02	4	100.0	0.01	83	100.0	0.15

R[1] = Ratio of the number of artifacts to kilograms of cooking pottery. Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 12.8

Component	Polished Igneous Stone			Polishing/ Hammerstone			Hammerstone			Peckingstone			TOTAL		Cooking Pottery By Weight (g)
	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	
Early Pueblo I (A.D. 725–800)										5	0.6	1.61	5	0.5	3,105.2
Middle Pueblo II (A.D. 1020–1060)										42	5.4	1.42	46	4.9	29,671.6
Late Pueblo II (A.D. 1060–1140)							1	8.3	0.01	218	27.8	2.17	253	27.1	100,285.3
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	1	50.0	0.10	1	25.0	0.10	1	8.3	0.10	24	3.1	2.36	32	3.4	10,186.9
Early Pueblo III (A.D. 1140–1225)				1	25.0	0.01	4	33.3	0.03	186	23.8	1.25	227	24.4	148,604.2
Late Pueblo III (A.D. 1225–1280)	1	50.0	0.01				2	16.7	0.03	46	5.9	0.66	61	6.5	69,972.4
Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)										2	0.3	20.88	5	0.5	95.8
Unassigned				2	50.0	0.01	4	33.3	0.02	260	33.2	1.34	303	32.5	193,483.6
TOTAL	2	100.0	0.00	4	100.0	0.01	12	100.0	0.02	783	100.0	1.41	932	100.0	555,405.1

R[1] = Ratio of the number of artifacts to kilograms of cooking pottery. Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

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Chapter 13

Other Artifacts, Objects of Adornment, and Nonlocal Materials

by Jonathan Till and Robin Lyle

Introduction

This chapter considers all "other" artifact types from Shields Pueblo, and includes stone disks, "other stone artifacts," gizzard stones, mineral samples, "other" artifacts (a category which subsumes items such as basketry or effigies), bone tools, historical artifacts, "objects of personal adornment" (e.g., pendants and beads), and artifacts that are "extralocal" in origin. For more specific information regarding these artifact categories, see Ortman et al. (2005).

Stone Disks

The majority of stone disks recovered from Shields Pueblo may have functioned as jar lids, or "sandstone covers" (Rohn 1971:196–199). These objects have been found covering the mouths of corrugated jars set into the floors and/or surfaces of Mesa Verde's Mug House, and within proximity to other corrugated jars (Rohn 1971:198). Table 13.1 details the material, condition, weight, and context of the 15 stone disks recovered from Shields Pueblo.

Other Stone Artifacts

The category "other stone artifacts" captures the wide variety of modified artifacts that do not match the definitions of any other stone artifact category. These artifacts have been cataloged as "other modified stone/mineral." Table 13.2 lists these items individually, and summarizes the weight, condition, provenience information, and comments recorded with these artifacts.

Gizzard Stones

Turkey gizzard stones, identified and collected in the field, were examined in the laboratory. Using a gizzard stone profile set forth by Lyle (2002), all stones were evaluated for characteristics of wear, maximum size, and clustering. No detailed study was conducted to identify the raw materials from which the gizzard stones were formed. Stones that did not fit the normal profile of wear or size (less than 2 centimeters in diameter) were reclassified as pebbles or noncultural materials. Artifacts identified in the field as pebbles were also examined for the characteristics of gizzard stones and reclassified as necessary. Groups of four or more gizzard stones recovered together (same Provenience Designation [PD] and Field Specimen [FS]) were described as "clusters" for this report.

In total, 1,787 gizzard stones were recovered from Shields Pueblo. Of these, 1,062 were found in 154 clusters (four or more, in this analysis) and from 116 different PDs. These stones appear to be mainly various types of worn chipped stone and small evenly worn pebbles without cement. One piece of worn obsidian and one worn potsherd were also gizzard stones.

Following studies by Lyle (2002, 2004), where each cluster of gizzard stones represents at least one bird, it appears that approximately 154 individual turkeys were either butchered or died within the excavated areas at Shields Pueblo. The additional 725 isolated gizzard stones recovered (one, two, or three per FS) do indicate that additional turkeys were at the site, but because individual stones are small and mobile they are probably not reliable indicators of bird numbers or primary deposition.

Mineral Samples

A total of 345 "mineral samples" was collected from Shields Pueblo. Table 13.3 lists those field specimens with data recorded in either the "material" or "comments" fields of the Crow Canyon Archaeological Center (Crow Canyon) research database (Crow Canyon Archaeological Center 2003) that provides information regarding the substance of the mineral sample. About one-third of the mineral sample field specimens have such information (N=110). In addition to PD, FS, and Point Location (PL), Table 13.3 also describes the contexts within which these samples occurred. Forty-four of the samples are composed of fossil shell or fossil-shell impressions. Sixteen of the samples may comprise a variety of pigments that include red, yellow, blue, and green colors.

Other Artifacts

Table 13.4 summarizes the "other artifacts" recovered from Shields Pueblo. These items include a cylinder, four effigy fragments, four gaming pieces, and a textile fragment (perhaps from a woven mat). In addition to material and condition data, the table provides information regarding the context in which each specimen was found.

Bone Artifacts

The bone artifacts recovered from Shields Pueblo were identified during the analysis of faunal remains. These items vary considerably in form and function, and include objects that fall under the classification of "personal adornment" (beads, pendants, rings, and perhaps most of the bone tubes) as well as more pedestrian tool classifications (antler tools, awls, needles, and scrapers). A third category, "other modified bone," identifies those objects (usually fragmentary) for which specific artifact classification was not, or could not be, made. Definitions for these artifact types may be found in Ortman et al. (2005). Awls are the most common of the bone artifacts (N=220), followed by "other modified bone" artifacts (N=194) and tubes (N=94).

By Architectural Block

Table 13.5 describes the bone artifacts in terms of their association with architectural blocks. In summarizing the distribution of these items between architectural blocks for which a large sample was obtained, Blocks 100, 1300, and 1400 yielded the most bone artifacts in terms of absolute numbers, percentages, and in the ratio of the number of artifacts to cooking pottery (among those blocks which are most extensively sampled). Block 200 also yielded appreciable quantities of bone artifacts.

As noted above, awls are the most common bone artifact type. In a study of the bone awls from Sand Canyon Pueblo, Bullock (1992) notes evidence for multiple functions for the artifact type, including basket-making, weaving, and leather-working. Table 13.5 indicates that Blocks 100 and 1400 have the highest awl:cooking pottery ratios; Block 1300 also yielded appreciable quantities of bone awls. Thus, it appears that Blocks 100 and 1400 could have been foci for the craft production activities associated with this tool type.

By Component

When considering artifact diversity, Table 13.6 indicates that the Middle Pueblo II component, in spite of its smaller sample size, has the greatest diversity of bone artifacts represented at Shields Pueblo. However, when accounting for the sheer quantity of bone artifacts alone, Table 13.6 demonstrates that the Late Pueblo II component has the most bone artifacts in terms of absolute number, percent, and bone artifact:cooking pottery ratios. The Early Pueblo III component provides the second greatest quantity of bone artifacts. In contrast, the Late Pueblo III component yielded much smaller numbers of these items.

Bone awls, being the most abundant bone artifact type, mirror the observations made above. There appears to be a steady decline in the frequency of this tool type from the Late Pueblo II component to the Late Pueblo III component. Indeed, during this latest component of the site, bone awls are present with about one-third the frequency in which they are present in the Late Pueblo II period assemblage. This may indicate more craft production occurring in association with the Late Pueblo II component of the site. Data from other Late Pueblo III period sites suggest that the awl to cooking pottery ratio for the Late Pueblo III component at Shields Pueblo is low (Table 13.7). Still, relative to the Late Pueblo II component at Shields Pueblo, many fewer bone awls being were being used during the Late Pueblo III period, reinforcing the interpretation that craft production was an activity emphasized during the Late Pueblo II occupation at Shields Pueblo.

Historical Artifacts

The landscape encompassing and including Shields Pueblo has been heavily modified by farming practices in the modern era. The recovery of numerous historical or modern artifacts reflects the impacts of recent use on and around the site. Table 13.8 summarizes these items. In addition, the table describes the contexts in which these materials were recovered. Not surprisingly, the majority of the 173 field specimens that document historical remains were recovered from a fill assemblage type that is described as “mixed deposit/recent disturbance.”

Objects of Personal Adornment

Table 13.9 lists the “objects of personal adornment” recovered from Shields Pueblo, detailing material, condition, and provenience and contextual data. These items include beads, bone tubes, pendants, and a ring fragment.

By Architectural Block

Table 13.10 and Figure 13.1 summarize these items in terms of their association with architectural block. An interesting pattern emerges when considering the number of items recovered in relation to the amount of cooking pottery from each architectural block. For those architectural blocks with over 10 kilograms (kg) of cooking pottery (Blocks 100, 200, 400, 1100, 1200, 1300, and 1400), the blocks in the central and eastern portions of the site (Blocks 100, 200, 1300, and 1400) have considerably more personal adornment items than do blocks in the northern and western portions of the site (Blocks 400, 1100, and 1200). The former group is associated with the road alignment that terminates at the site. These "road alignment blocks" also have the only turquoise and shell adornment items, while those to the west yielded neither of these exotic adornment materials.

By Component

Table 13.11 and Figure 13.2 show the distribution of personal adornment objects with respect to their component associations. Although the absolute numbers of adornments are small, the basic trend of decreasing relative amounts of adornments from the Pueblo II period to the Pueblo III period is clear. The variation between the ratios of adornment items to cooking pottery for these components indicates that adornments were present nearly twice as often in the Middle Pueblo II component as in the Late Pueblo II and Early Pueblo III components, and more than twice as often as in the Late Pueblo III component personal-adornment assemblage. The high relative number of adornments in the Late Pueblo II/Early Pueblo III component (see Figure 13.2) is probably due to the small sample size (N=8). Table 13.11 indicates that no shell or turquoise was found in association with the Late Pueblo III component. In contrast, all of the turquoise was found in contexts associated with the Early Pueblo III period or earlier. This may well be the case with shell items also, although two shell artifacts derive from the "subperiod unassigned" component. This discussion of nonlocal materials continues in the section below.

Extralocal Artifacts

We consider extralocal artifacts to comprise two basic material groups: lithic artifacts and pottery artifacts. For the sake of simplicity, we include "shell" in the lithic artifacts group. As with the chipped-stone materials, we understand "extralocal" artifacts to comprise semilocal items (produced and/or procured within the Mesa Verde region, but not within the immediate vicinity of Shields Pueblo) as well as nonlocal items (produced and/or procured outside the Mesa Verde region). An ambivalence inherent in the distinction between local and semilocal materials was noted in Chapter 11. Furthermore, the consideration of debitage materials may be problematic since only about one-half of the total debitage assemblage from Shields Pueblo was analyzed. With these caveats in mind, we exclude debitage made from semilocal materials in the following discussion of extralocal artifacts (but include tools made from semilocal materials). However, we do include debitage made from nonlocal materials—obsidian and Washington Pass chert are such distinctive materials that we believe most, if not all, of these objects were identified and documented during the cataloging of the Shields Pueblo collection.

Table 13.12 summarizes the extralocal lithic items recovered from Shields Pueblo by material. Many of the objects consist of semilocal materials, particularly Brushy Basin chert/siltstone and Burro Canyon chert, the sources of which may be relatively nearby, but not immediately available within the Sand Canyon locality.

Most of the extralocal lithic materials consist of fine-grained, silica-rich stone (e.g., cherts, chalcedony, obsidian). Table 13.12 indicates that most of the items made from these materials are debitage or formal chipped-stone tools. In contrast, many of the shell and turquoise items are adornments. The turquoise items identified as mineral/stone sample do not appear to be worked and may represent unprocessed turquoise.

Obsidian is the predominant nonlocal material recovered from Shields Pueblo. The occurrences of obsidian are detailed in Table 13.13, which also provides the sources of the individual items. Obsidian artifacts were sourced by means of an x-ray fluorescence (XRF) spectrometer at the Archaeological XRF Laboratory, University of California, Berkeley (Shackley 2002). Most of the sources are found within the Jemez Mountains of northern New Mexico.

Table 13.14 examines the extralocal pottery from Shields Pueblo by form and type. Specific nonlocal pottery types are not identified here, but are simply summarized as nonlocal gray, red, or white wares. "Polychrome" and "unknown red" items are presumed to be nonlocal in origin, and are probably either Tsegi Orange Ware or White Mountain Red Ware pottery sherds (discussed further below).

Bowl sherds are by far the most numerous of the forms represented by the extralocal pottery assemblage. Ortman (2003) notes that the most common extralocal ware/form combination at Yellow Jacket Pueblo is the red ware/bowl combination, suggesting the value of these items as favored trade items. Table 13.14 suggests this trend is also apparent at Shields Pueblo. However, among the nonlocal gray ware and white ware items, jar sherds predominate.

Nearly one-third of the extralocal pottery consists of the semilocal San Juan Red Ware. By count, most of the pottery to which a formal type name could be assigned consists of Deadmans Black-on-red (N=64). The next most frequent San Juan Red Ware type is Abajo Red-on-orange (N=20). The latter is indicative of the Early Pueblo I component recognized for Shields Pueblo, whereas the former is more indicative of the Middle Pueblo II component.

For obvious reasons, the pottery sherds most readily identifiable as being nonlocal are red ware sherds. Attributes such as surface color, paste color, and temper make specific nonlocal red wares easy to distinguish. These wares tend to be either Tsegi Orange Ware (N=199; see Table 13.16), which originated in the Kayenta region of northeastern Arizona, and White Mountain Red Ware (N=195; see Table 13.16), which derived from the Puerco region of west-central New Mexico/east-central Arizona. These sherds are distinguished in the "comments" column of the Crow Canyon pottery database (see Crow Canyon Archaeological Center 2003) and are discussed further below in terms of their association with architectural blocks and components.

By Architectural Block

Table 13.15 provides information regarding the distribution of total extralocal pottery and lithic items by architectural block, using absolute numbers, percentages, and item to cooking-pottery weight ratios as measures of abundance. To minimize the effect of small sample size on the latter measure, Figure 13.3 accounts for these relative data from the blocks with a cooking pottery sample size of at least 10 kg. Clearly, Blocks 100 and 1300 possess the greatest relative amounts of extralocal items (see Figure 13.3). Block 100 has the highest absolute, percentage, and ratio measures for extralocal pottery artifacts, and the second highest absolute, percentage, and ratio measures for lithic artifacts. Block 1300 has the highest absolute, percentage, and ratio measures for extralocal lithic artifacts, and the second highest absolute, percentage, and ratio measures for pottery artifacts.

Like the personal adornment items, the greatest amounts of extralocal artifacts occur within those blocks that are associated with the road alignment (Blocks 100, 200, 1300, and 1400). The three well-sampled blocks that are not associated with this alignment (Blocks 400, 1100, and 1200) have the lowest amounts of total extralocal artifacts. Block 1500, which is also associated with the road alignment and is just shy of having a cooking-pottery sample size of 10 kg, would be among the group of blocks with the lower amounts of extralocal items.

Table 13.16 provides the site-wide distribution data for nonlocal red ware sherds, and Figure 13.4 illustrates the frequencies of the two nonlocal red wares, White Mountain Red Ware and Tsegi Orange Ware. These distributions are striking. The nonlocal red ware assemblages in Blocks 100 and 1300 are dominated by Tsegi Orange Ware. Block 200, which is located between 100 and 1300, has nearly equal amounts of the two wares. The assemblages for the other blocks are dominated by White Mountain Red Ware. It is possible that the Pueblo II period components in Blocks 100 and 1300, which are perhaps most strongly represented in these locations, could account for the prevalence of Tsegi Orange Ware. In contrast, is seems likely that the Pueblo III period components of the site could account for the White Mountain Red Ware.

Table 13.17 tallies the nonlocal gray and white ware pottery by architectural block, and includes vessel form and part as well as comments contained within the Crow Canyon pottery database (Crow Canyon Archaeological Center 2003). Interestingly, nearly all of these sherds are found within the architectural blocks associated with the road alignment. Only five nonlocal white ware/gray ware sherds, recovered from the Block 1100 assemblage, are associated with blocks that are not along the road alignment.

The "Comments" column in Table 13.17 indicates that the most common white wares that could be identified were Cibola White Ware (see Ortman et al. [2005] for descriptions of these wares), and the two most frequently identified types from this ware were Gallup Black-on-white and Chaco Black-on-white. Citing Breternitz (1966), Windes (1977) notes that the former is associated with the Pueblo II through Early Pueblo III periods (A.D. 1000–1125), while the latter dates from the Late Pueblo II through Early Pueblo III periods (A.D. 1050–1125 or 1200). Two of the three sherds described as Rosa Black-on-white, an Upper San Juan Tradition pottery type associated with Basketmaker III and Pueblo I period pottery designs (Wilson and Blinman 1993:18–22), are in the Block 1300 assemblage. The presence of these sherds in Block 1300 is not inconsistent with the earlier assertion that this portion of the site harbors the remains of the earliest ancestral Pueblo occupation at the site.

By Component

Table 13.18 describes the distribution of total extralocal pottery and lithic items by component, using absolute numbers, percentages, and item to cooking-pottery weight ratios as measures of abundance. To minimize the effect of small sample size on the latter measure, Figure 13.5 accounts for these relative data from components with a cooking-pottery sample size of 10 kg or greater, eliminating the Early Pueblo I component from this graph. Table 13.18 shows a high item:cooking-pottery weight ratio for this component, with pottery contributing mostly to this high ratio. It is likely that this is due to a greater frequency of San Juan Red Ware sherds, a semilocal pottery ware that was more prevalent during the Pueblo I and Pueblo II periods.

In terms of the distribution of total extralocal items by component, Table 13.18 and Figure 13.5 show a substantial decrease in the relative amounts of extralocal items from the Pueblo II components to the Pueblo III components. An even more dramatic decrease is indicated between the Early Pueblo I component and later components. This pattern of decreasing frequency of extralocal items through time is consistent with the idea that land-use pattern and perhaps social interactions became less extensive and more intensive with time, ultimately resulting in the "Balkanization" of the ancestral Pueblo landscape of the thirteenth century (Lekson 1999; Lipe 2002:229; Lipe and Varien 1999:351).

Although the total numbers of nonlocal red ware sherds are fairly small (approximately 200 sherds each of White Mountain Red Ware and Tsegi Orange Ware), their distribution by component is intriguing (Table 13.19 and Figure 13.6). The production of both wares commenced in the mid-eleventh century. Thus, it comes as little surprise that only one sherd of these wares, which was likely intrusive, was found in a context assigned to the Early Pueblo I component. From the Middle Pueblo II through Early Pueblo III components, Tsegi Orange Wares predominate. However, during the Late Pueblo III component, White Mountain Red Ware sherds clearly dominate the nonlocal red ware assemblage. This may suggest a decline in contacts, or even affiliation, between the occupants of Shields Pueblo and the Tsegi region to the west over the years spanning the middle 1000s to the late 1200s, and a strengthening of ties to the south over this same period of time.

Table 13.20 provides details pertinent to the nonlocal white and gray ware pottery, but does so by component. It is striking that none of these sherds are associated with the Late Pueblo III component. Over 40 percent of these sherds are associated with the Pueblo II period components, and a little over 20 percent are associated with the Early Pueblo III component.

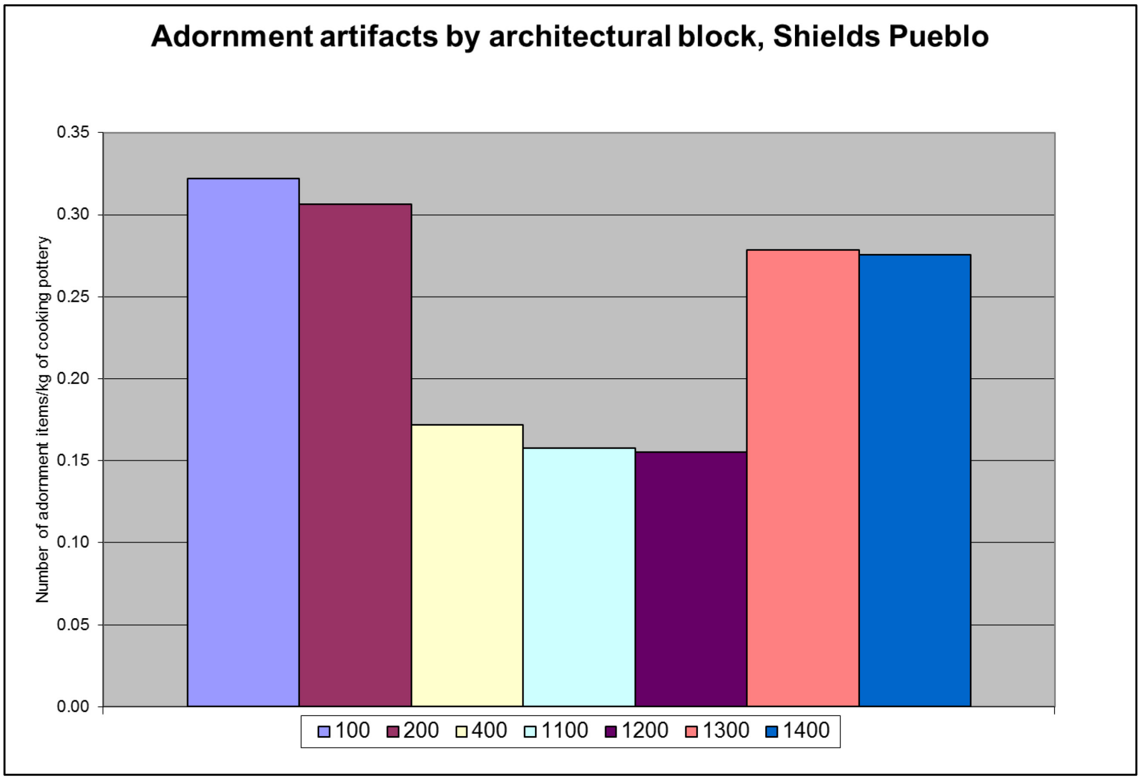

Figure 13.1. Adornment artifacts by architectural block, Shields Pueblo.

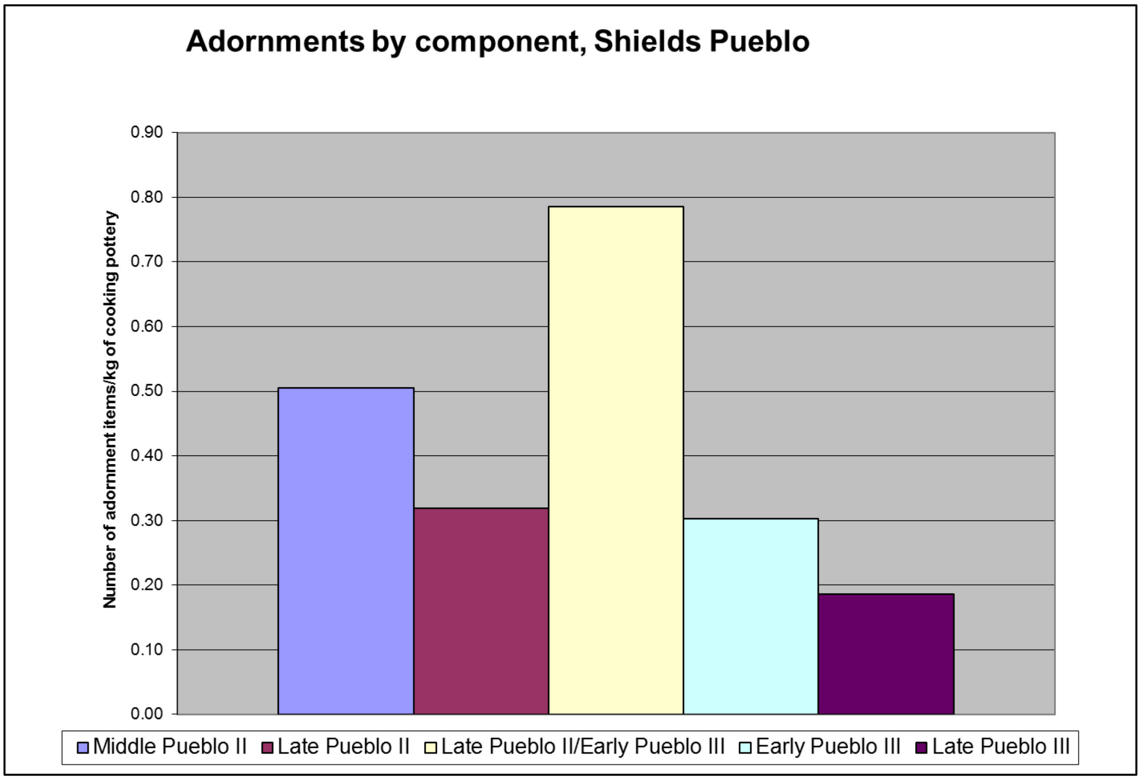

Figure 13.2. Adornments by component, Shields Pueblo.

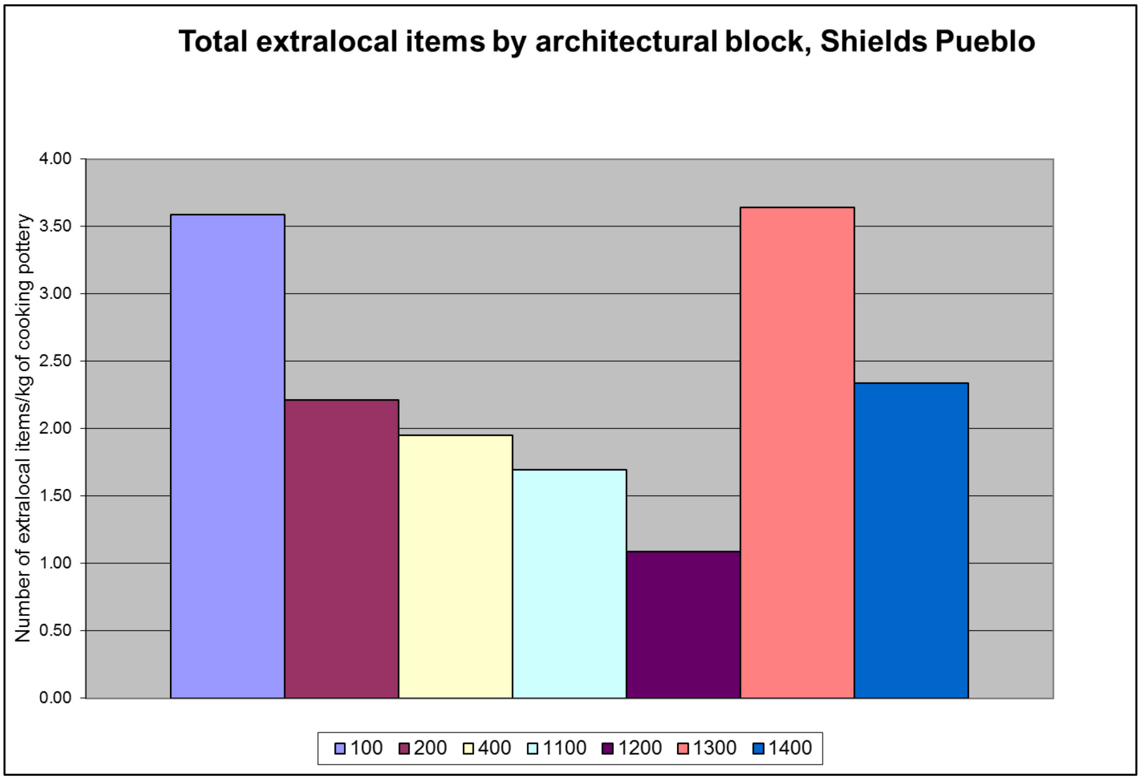

Figure 13.3. Total extralocal items by architectural block, Shields Pueblo.

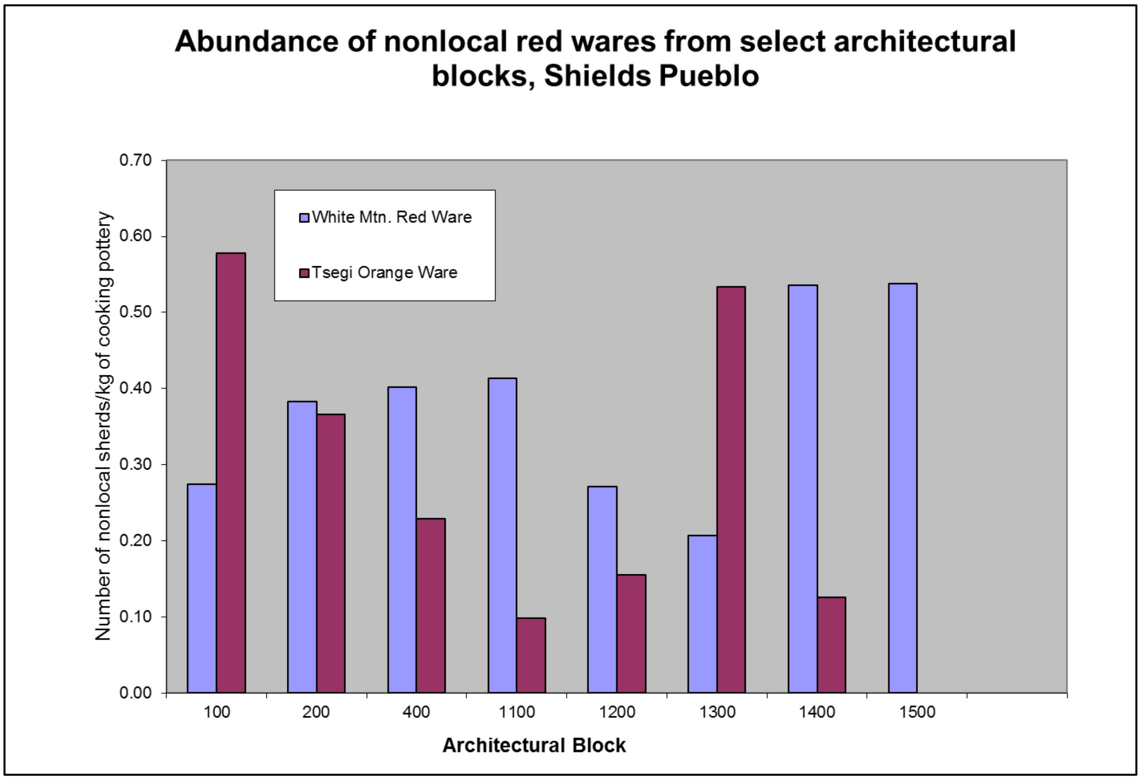

Figure 13.4. Abundance of nonlocal red wares from select architectural blocks, Shields Pueblo.

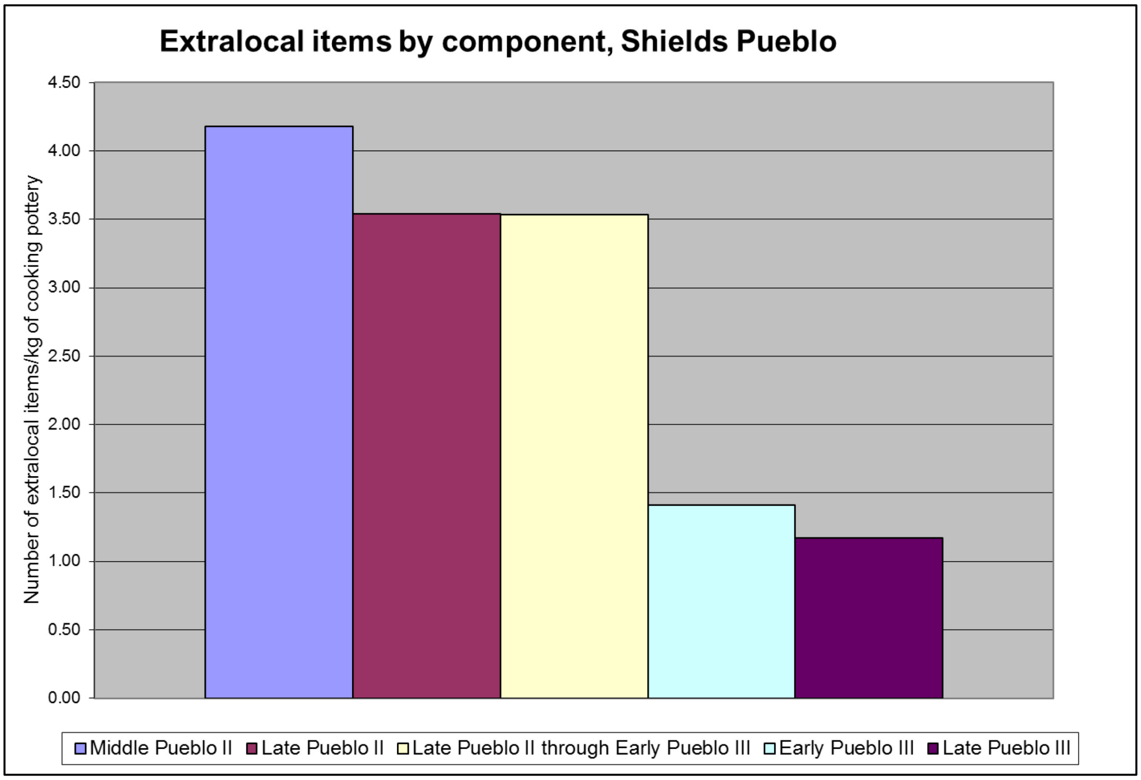

Figure 13.5. Extralocal items by component, Shields Pueblo.

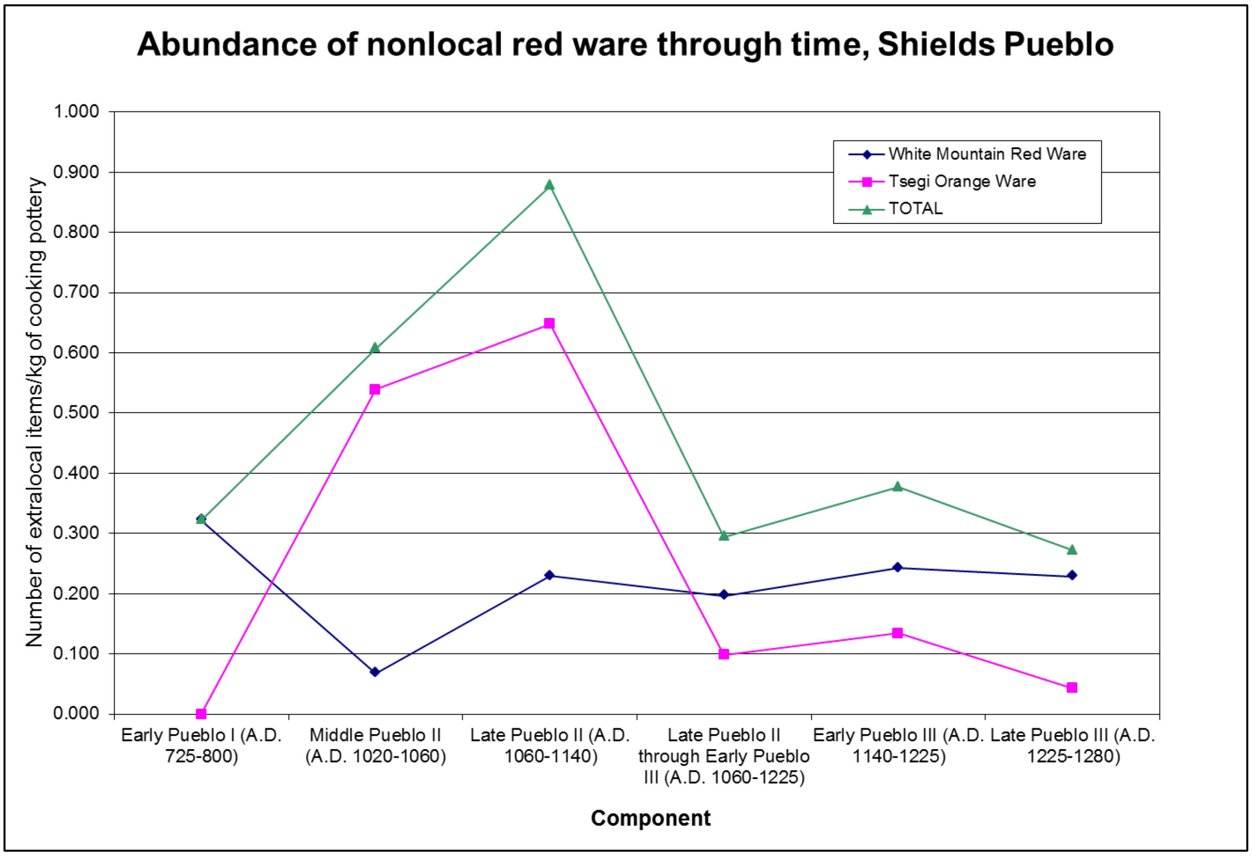

Figure 13.6. Abundance of nonlocal red ware through time, Shields Pueblo.

Table 13.1. Stone Disks, Shields Pueblo.

PD	FS	Material	Condition	Wt. (g)	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
					Type*	Number	General	Specific	General	Specific
742	6	sandstone	fragmentary	35.6	structure	110	fill	above wall/roof fall	postabandonment deposit	natural processes
1161	33	sandstone	complete	25.4	arbitrary unit	1401	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1161	34	sandstone	complete	77.3	arbitrary unit	1401	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1161	35	sandstone	complete	81.2	arbitrary unit	1401	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1161	36	sandstone	complete	103.7	arbitrary unit	1401	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1168	10	sandstone	complete	8.3	nonstructure	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1199	92	sandstone	complete	78.2	backhoe trench	1415	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1199	93	sandstone	complete	20.7	backhoe trench	1415	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1212	41	sandstone	incomplete	75.7	nonstructure	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1265	2	sandstone	complete	76.8	nonstructure	239	fill	not further specified	cultural deposit	secondary refuse
1314	67	sandstone	fragmentary	10.1	arbitrary unit	1302	fill	not further specified	mixed deposit	recent disturbance
1887	4	sandstone	incomplete	48.8	backhoe trench	1110	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1947	49	sandstone	complete	29.6	nonstructure	1107	fill	upper	cultural deposit	secondary refuse
2018	25	sandstone	fragmentary	103.6	nonstructure	1418	fill	above wall/roof fall	cultural deposit	secondary refuse
2089	12	unknown chert/siltstone	incomplete	54.2	structure	405	fill	roof fall	collapsed structure	with mixed refuse

Table 13.2. Other Modified Stone/Mineral Artifacts, Shields Pueblo.

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
48	27		slate/shale	fragmentary	0.7	Small spall w/ one heavily polished surface	STR	104	fill	not further specified	mixed deposit	recent disturbance
48	35		Morrison quartzite	fragmentary	55.0	Thin tabular fragment w/ high polish on both surfaces and one edge	STR	104	fill	not further specified	mixed deposit	recent disturbance
65	5		sandstone	fragmentary	0.1		ARB	202	surface contact	modern ground surface	mixed deposit	recent disturbance
148	4		igneous	fragmentary	7.3	Fragment of cobble with grinding on one edge	ARB	502	fill	not further specified	mixed deposit	recent disturbance
188	3		sandstone	fragmentary	4.2	Ground on two edges w/ a bevel	ARB	202	fill	not further specified	mixed deposit	recent disturbance
365	10		igneous	fragmentary	9.7	Possible non-local igneous; fragment of cobble with grinding on one edge	ARB	801	surface contact	modern ground surface	mixed deposit	recent disturbance
547	4		Brushy Basin chert/siltstone	fragmentary	33.8	Thin and tabular fragment with high polish on both surfaces	BHT	212	fill	not further specified	mixed deposit	postabandonment and cultural refuse
549	18		sandstone	fragmentary	114.0	Possible stone disc	ARB	202	fill	not further specified	mixed deposit	recent disturbance
549	23		sandstone	complete	1.0	Small, smooth fragment with smoothed edge	ARB	202	fill	not further specified	mixed deposit	recent disturbance
564	6		Morrison quartzite	fragmentary	102.9	Fragment of highly polished artifact	ARB	1401	surface contact	modern ground surface	mixed deposit	recent disturbance
570	3		slate/shale	fragmentary	0.6	Possible pendant fragment	ARB	1401	fill	not further specified	mixed deposit	recent disturbance
606	13		igneous	fragmentary	69.0	Fragment of highly polished artifact	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
611	8	5	sandstone	fragmentary	169.8	Thin, ground on both sides, sides shaped	ARB	1302	fill	not further specified	cultural deposit	secondary refuse
617	45		Morrison chert/siltstone	fragmentary	2.1	2 pieces refit; possible pendant blank	ARB	105	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
621	3		sandstone	complete	7.1	Thin, rectangular piece; smoothed on all sides	BHT	115	fill	not further specified	mixed deposit	postabandonment and cultural refuse
624	36		jet	fragmentary	2.3	Possible pendant blank	STR	123	fill	not further specified	mixed deposit	postabandonment and cultural refuse
627	11		turquoise	fragmentary	0.7	Thin polished, one rounded end	NST	101	fill	not further specified	cultural deposit	secondary refuse
630	19		sandstone	fragmentary	64.7	Flat and oval-shaped fragment, lightly polished on all surfaces; very similar to PD 1222 FS 4	NST	101	fill	not further specified	cultural deposit	secondary refuse
634	25	4	Morrison quartzite	fragmentary	55.9	Bit end w/ battering, highly polished, no hafting element	NST	101	fill	upper	mixed deposit	postabandonment and cultural refuse
647	19		unknown quartzite	fragmentary	406.7	Large polished fragment, slight battering along edge	ARB	1401	fill	not further specified	mixed deposit	recent disturbance
647	23		unknown stone	complete	4.3	Small stone ball, may be slightly ground in small area	ARB	1401	fill	not further specified	mixed deposit	recent disturbance
658	7		unknown chert/siltstone	fragmentary	3.4	Thin, tabular, ground on surface and edges	NST	1202	fill	not further specified	mixed deposit	recent disturbance
668	20		other mineral	complete	0.3	Small very ground piece of hematite	ARB	1401	fill	not further specified	mixed deposit	recent disturbance
674	5		other mineral	fragmentary	6.4	Hematite; extensive polishing and grinding on all surfaces; oblong, finger-like shape	ARB	202	fill	not further specified	mixed deposit	recent disturbance
686	5		Brushy Basin chert/siltstone	complete	0.3	Small, square, polished on both surfaces, possible bead blank	NST	154	fill	above wall/roof fall	cultural deposit	secondary refuse
692	21		Morrison chert/siltstone	fragmentary	14.2	Possible tchamahia fragment; thin tabular fragment polished on both surfaces and edge	ARB	105	fill	below a cultural surface	natural deposit	during occupation

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
704	6		sandstone	complete	23.5		STR	205	fill	not further specified	cultural deposit	secondary refuse
708	7	57	sandstone	complete	114.8		STR	208	fill	roof fall	collapsed structure	with mixed refuse
708	14		slate/shale	fragmentary	12.5	Thin, highly polished w/ one shaped edge	STR	208	fill	roof fall	collapsed structure	with mixed refuse
716	8		slate/shale	fragmentary	0.6	Very thin, polished on both surfaces and one edge, possible pendant fragment	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
765	33		unknown stone	complete	0.3	Small disc shape, ground on both flat surfaces and on edges	ARB	1501	fill	not further specified	mixed deposit	recent disturbance
771	44		other mineral	fragmentary	4.4	Polished hematite	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
884	7		slate/shale	fragmentary	0.2	2 pieces refit; tiny polished artifact	ARB	105	fill	not further specified	mixed deposit	recent disturbance
894	34	11	Morrison quartzite	complete	32.7	Square, thin, polished on both surfaces and all edges; green stone	NST	157	fill	not further specified	cultural deposit	mixed refuse
902	29		sandstone	fragmentary	2.1	3 pieces (refit) half of possible circular pendent blank	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
902	30		Dakota quartzite	fragmentary	1.8	Thin, tabular, partially polished on both surfaces and two edges; possible pendant blank fragment	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
910	37	32	unknown quartzite	fragmentary	254.0	Polished and battered	STR	1205	fill	roof fall	collapsed structure	with de facto refuse
919	7		Morrison quartzite	complete	3.9	Possible pendant blank; triangular, polished on all surfaces	STR	124	fill	not further specified	mixed deposit	postabandonment and cultural refuse
919	28		sandstone	fragmentary	19.6	Thin, tabular, highly polished on two surfaces and one edge	STR	124	fill	not further specified	mixed deposit	postabandonment and cultural refuse

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
922	20		unknown quartzite	fragmentary	49.8	Polished on two surfaces and on one end	BHT	1407	fill	not further specified	mixed deposit	postabandonment and cultural refuse
924	5		sandstone	fragmentary	21.0	Ground on both surfaces and on one end; possible pendant blank	NST	1409	fill	not further specified	cultural deposit	secondary refuse
924	38		slate/shale	fragmentary	1.7	Smoothed on part of one surface	NST	1409	fill	not further specified	cultural deposit	secondary refuse
924	63		sandstone	complete	9.2	Thin, round disc, no polishing, surfaces have black deposit (mica)	NST	1409	fill	not further specified	cultural deposit	secondary refuse
951	11	6	petrified wood	incomplete	6.6	Rectangular, polished on all surfaces	STR	1402	surface contact	bench surface	cultural deposit	de facto refuse
951	19	16	petrified wood	complete	4.9	Rectangular, thin, polished on all surfaces	STR	1402	surface contact	bench surface	cultural deposit	de facto refuse
951	25		sandstone	complete	58.5	Pot lid?; thin and round, shaped by flaking of the edges	STR	1402	surface contact	bench surface	cultural deposit	de facto refuse
965	18		slate/shale	fragmentary	0.3	Small, thin, formally shaped, polished on both surfaces and 2 edges	NST	1103	fill	not further specified	cultural deposit	secondary refuse
983	2	14	unknown chert/siltstone	fragmentary	3.8	2 fragments refit, recent break; possible pendant; oval-shaped, very thin, all edges and surfaces are ground	NST	130	fill	not further specified	cultural deposit	secondary refuse
983	19		Morrison chert/siltstone	fragmentary	50.6	Small, rectangular shaft straightener, ground on all surfaces except at the break, groove on both surfaces, one groove is deeper than the other	NST	130	fill	not further specified	cultural deposit	secondary refuse

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
983	20		sandstone	fragmentary	8.5	Possible shaft straightener, ground on all edges except at the break, groove on one surface	NST	130	fill	not further specified	cultural deposit	secondary refuse
983	25		clay	fragmentary	2.6	Small and thin; striations on one surface might be recent	NST	130	fill	not further specified	cultural deposit	secondary refuse
985	4		igneous	fragmentary	41.7	Possible PIS fragment; Ute Mtn igneous	STR	124	fill	not further specified	mixed deposit	postabandonment and cultural refuse
992	56		unknown chert/siltstone	fragmentary	0.5	Red color, both surfaces and two edges polished	STR	224	fill	roof fall	collapsed structure	with mixed refuse
997	22		igneous	fragmentary	327.3	Possible hammerstone	BHT	227	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1003	55		sandstone	fragmentary	146.5	Ground on both sides; intentionally shaped; sandal last	NST	154	fill	roof fall	collapsed structure	with mixed refuse
1037	30		sandstone	complete	39.5	Pebble, 5 cm, w/ flakes removed and some grinding evident	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1037	31		slate/shale	fragmentary	9.5	One smoothed surface, one smoothed edge	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1037	37		unknown chert/siltstone	fragmentary	1.9		ARB	105	fill	not further specified	mixed deposit	recent disturbance
1039	8		igneous	fragmentary	100.2	Modified cobble with limited battering and grinding on some surfaces	BHT	135	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1044	21		slate/shale	fragmentary	0.7	Small, highly polished surface and edge	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1044	40		Morrison quartzite	fragmentary	4.7	Highly polished on one surface	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1044	41		Morrison quartzite	fragmentary	3.1	Polished on 2 small surfaces	ARB	105	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
1044	43		unknown chert/siltstone	fragmentary	21.3	Shaped round edge, flate edge	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1048	11		other mineral	fragmentary	1.5	1 piece of polished hematite	ARB	202	fill	not further specified	mixed deposit	recent disturbance
1050	5		unknown chert/siltstone	fragmentary	1.6	Polished on 1 surface, smoothing on 1 surface, 1 edge smoothed	ARB	202	fill	not further specified	mixed deposit	recent disturbance
1052	12		slate/shale	fragmentary	0.2	Hourglass shape, flat, one edge smoothed	ARB	202	fill	not further specified	mixed deposit	recent disturbance
1052	17		sandstone	fragmentary	2.6	2 surfaces and curved edge highly polished; black matte surface	ARB	202	fill	not further specified	mixed deposit	recent disturbance
1060	22		sandstone	fragmentary	10.7	Very fine-grained sandstone.	NST	1409	fill	not further specified	cultural deposit	secondary refuse
1061	47		unknown quartzite	fragmentary	6.1	Narrow small ground item that has a partial drill hole at both ends and is very ground on all sides	NST	1409	fill	not further specified	cultural deposit	secondary refuse
1061	58		igneous	fragmentary	57.7	Battered along edge	NST	1409	fill	not further specified	cultural deposit	secondary refuse
1061	61		sandstone	complete	4.4	Small ball, flotation sample	NST	1409	fill	not further specified	cultural deposit	secondary refuse
1063	12		pigment	complete	4.9	Hematite stick	STR	1408	fill	roof fall	collapsed structure	with de facto refuse
1072	11		Morrison quartzite	fragmentary	2.1	One surface highly polished	STR	222	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1072	14		Morrison quartzite	fragmentary	0.6	Multiple striations on one side	STR	222	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1073	1		sandstone	complete	96.9	Shaft straightener	STR	222	fill	roof fall	collapsed structure	with de facto refuse
1073	26		unknown chert/siltstone	fragmentary	4.5	Multiple scratches on both sides and edges	STR	222	fill	roof fall	collapsed structure	with de facto refuse
1090	7		caliche	fragmentary	0.5	Surfaces smoothed, one edge curved	STR	139	fill	wall fall and roof fall	collapsed structure	with mixed refuse

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
1095	7		sandstone	complete	129.0	Pecked stone ball, one flat surface	BHT	128	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1098	35		slate/shale	fragmentary	14.9	Count = 3; thin slate, polished on one surface	NST	152	fill	not further specified	cultural deposit	secondary refuse
1099	31		slate/shale	fragmentary	6.8	Thin stone; highly polished on one surface	NST	152	fill	not further specified	cultural deposit	secondary refuse
1107	45		jet	fragmentary	0.5	Shaped square edges and weathering cracks	NST	1409	fill	not further specified	cultural deposit	secondary refuse
1120	16		Morrison quartzite	fragmentary	9.7	Polished on 1 edge; utilized on the other	STR	221	fill	roof fall	collapsed structure	with mixed refuse
1148	19		sandstone	incomplete	24.6	Ground on two surfaces, worked edge	NST	152	fill	not further specified	cultural deposit	secondary refuse
1149	30		Morrison quartzite	incomplete	136.2	Probable tchamahia, reworked, ground smooth w/striations	NST	152	fill	not further specified	cultural deposit	secondary refuse
1161	75		Morrison quartzite	fragmentary	17.5	Rectangular shape, smoothed one surface	ARB	1401	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1161	91		petrified wood	complete	17.5	Petrified wood, highly polished all surfaces, grooved on one end, (cylidrical shape)	ARB	1401	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1168	8		sandstone	incomplete	1.5	Square shaped, polished; hole started; preform pendant?	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1168	50		jet	fragmentary	0.2	Polished on one side, very small, thin tab shape	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1168	65		sandstone	fragmentary	17.8	Thin, both sides very ground and a worked edge	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1169	11		Morrison quartzite	fragmentary	3.1	Highly polished, possible axe fragment	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1169	54		jet	complete	1.3	Pendant blank, polished, one edge finished	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
1173	27		igneous	fragmentary	7.3	4 fragments from same artifact, highly polished surface on edge piece	NST	153	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1184	35		sandstone	fragmentary	35.5	Maybe piece of shaped slab	STR	224	fill	roof fall	collapsed structure	with mixed refuse
1185	6		Morrison quartzite	fragmentary	1.4	Highly polished surface, possibly from axe/maul	BHT	236	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1196	12		slate/shale	fragmentary	11.2	One surface is highly polished; edges shaped into semi-round shape	NST	1409	fill	wall fall	mixed deposit	postabandonment and cultural refuse
1199	59		sandstone	fragmentary	150.0		BHT	1415	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1199	67		Morrison chert/siltstone	fragmentary	0.5	Small, flat fragment with polishing on one surface	BHT	1415	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1199	100		unknown stone	complete	1.0	Possibly shale, soft, one surface ground thin tubular shape	BHT	1415	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1201	7		Morrison quartzite	fragmentary	91.5	Two sides have flaked edges	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1202	70		sandstone	fragmentary	13.6	One highly polished surface	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1207	14		sandstone	fragmentary	5.1	3 worked edges, both surfaces ground	BHT	1306	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1211	23		sandstone	incomplete	5.5	2 mm diameter × 1 mm thick, donut-shaped with hole in middle, one surface ground	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1212	34		sandstone	complete	2.2	Small block, surfaces and sides are ground; rectangular	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1220	8		gypsum/ calcite/barite	complete	3.4	Polished	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
1220	27		sandstone	fragmentary	25.7	Possible child's sandal last? The 6 pieces fit together, outside edges all smoothed	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1222	4		igneous	fragmentary	92.0	Highly polished	BHT	1502	fill	not further specified	mixed deposit	recent disturbance
1253	17		Morrison quartzite	fragmentary	190.6	Battering along edge; possible axe/maul fragment	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1255	8		caliche	complete	0.7	Small circle of caliche	STR	234	fill	roof fall	collapsed structure	with mixed refuse
1255	9		clay	complete	5.1	Small shaped pieces of unfired clay	STR	234	fill	roof fall	collapsed structure	with mixed refuse
1260	21		slate/shale	fragmentary	1.8	Ground on one surface; very thin	NST	238	fill	not further specified	cultural deposit	secondary refuse
1269	6		Morrison quartzite	fragmentary	18.1	Very smooth edge, and one surface smooth	STR	146	fill	roof fall	collapsed structure	other
1278	11		sandstone	incomplete	63.2	Shaft straightener ground on all surfaces except broken edge, groove on one side	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1278	12		sandstone	incomplete	56.7	Shaft straightener ground on all surfaces except broken edge, groove on one side	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1287	22		unknown chert/siltstone	fragmentary	2.5	Shaped edges, thin pendant shape; reddish color stone	STR	137	fill	roof fall	collapsed structure	with mixed refuse
1287	23		slate/shale	fragmentary	0.7	Highly polished on one side	STR	137	fill	roof fall	collapsed structure	with mixed refuse
1295	18		sandstone	fragmentary	6.6	Fragment of a very sharp angled groove, one smooth surface adjacent	STR	1414	fill	roof fall	collapsed structure	with de facto refuse
1296	3		igneous	fragmentary	620.7	Possible hammerstone	STR	1414	fill	not further specified	post-aband. deposit	natural processes

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
1310	58		sandstone	fragmentary	2.0	2 ground surfaces, rectangular shape, very thin	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1312	39		Morrison quartzite	fragmentary	6.8	Possible axe/maul fragment, 2 edges polished	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1314	72		sandstone	fragmentary	0.6	Looks like a pendant fragment	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1368	31		sandstone	fragmentary	120.0	Limited flaking	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1374	16		unknown chert/siltstone	fragmentary	0.6	Very thin, 2 edges smoothed straight, probable pendant blank	NST	1310	fill	upper	cultural deposit	secondary refuse
1631	2		igneous	fragmentary	100.3	Triangular in cross-section; polished	ARB	1901	surface contact	modern ground surface	mixed deposit	recent disturbance
1730	18		slate/shale	fragmentary	0.9	Highly polished flake free unknown artifact	BHT	1105	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1731	64		Morrison quartzite	fragmentary	3.4	Well ground/polished; possible axe or tchamahia fragment; other fragment in PD 1284 FS 103	NST	1107	fill	upper	cultural deposit	secondary refuse
1732	68	23	other mineral	complete	0.8	Polished hematite	STR	1106	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1749	14		unknown chert/siltstone	complete	0.7	Square in shape; polished	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1765	13	16	jet	complete	12.6	One side and ends are ground	STR	1416	fill	roof fall	collapsed structure	not further specified
1781	22			fragmentary	2.3	Ground on two surfaces, one utilized edge	ARB	1201	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1798	4		Morrison quartzite	fragmentary	106.2	Flaked, battered and polished; possible axe/maul fragment	ARB	402	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
1807	12		sandstone	fragmentary	101.2	Shaped edges, no grinding	NST	1310	fill	lower	mixed deposit	postabandonment and cultural refuse
1812	5		Morrison quartzite	fragmentary	10.0	Fragment polished artifact	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1816	32		sandstone	fragmentary	126.6	Shaped, curved edge	NST	1321	fill	above wall/roof fall	cultural deposit	secondary refuse
1822	18		Morrison quartzite	complete	3.8	Flake with heavy grinding on two edges	ARB	202	fill	not further specified	mixed deposit	recent disturbance
1824	44		Morrison quartzite	fragmentary	1.9	Highly polished, 2 surfaces, rectangular square shape	ARB	202	fill	not further specified	mixed deposit	recent disturbance
1827	20		Dakota quartzite	fragmentary	669.1	Battered along one edge; one side possibly polished	NST	238	fill	not further specified	collapsed structure	with mixed refuse
1832	39		Morrison quartzite	fragmentary	2.2	2 cm long, all surfaces polished except broken end, tapered end, conical shape	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1832	42		unknown stone	incomplete	2.6	Possible pendant fragment, square shape, polished one surface, all edges polished	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1832	47		Morrison chert/siltstone	fragmentary	3.5	Fragment from polished artifact; possible axe/maul	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1834	27		obsidian	incomplete	1.9	Triangular in shape; ground on all surfaces	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1845	7		Morrison quartzite	fragmentary	0.2	Highly polished artifact fragment	STR	1205	fill	roof fall	collapsed structure	with de facto refuse
1854	10		quartz	complete	1.0	Flaked and polished on both ends of crystal	NST	101	fill	not further specified	cultural deposit	secondary refuse
1874	5		unknown chert/siltstone	fragmentary	17.2	Fine-grained smoothed both surfaces, smooth edges	NST	1310	fill	upper	cultural deposit	secondary refuse

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
1878	9		unknown stone	fragmentary	5.3	Squared, rounded tips, tapered, smoothed edges	NST	1310	fill	upper	cultural deposit	secondary refuse
1879	20		slate/shale	fragmentary	0.7	Flake from polished artifact	NST	1309	fill	above wall/roof fall	cultural deposit	secondary refuse
1879	21		Morrison quartzite	fragmentary	0.7	Flake from highly polished artifact	NST	1309	fill	above wall/roof fall	cultural deposit	secondary refuse
1879	26		sandstone	complete	11.3	Sherd, circle 3.5 cm diameter	NST	1309	fill	above wall/roof fall	cultural deposit	secondary refuse
1879	32		unknown material	fragmentary	3.1	Smoothed on all surfaces, polished on one	NST	1309	fill	above wall/roof fall	cultural deposit	secondary refuse
1880	10		sandstone	fragmentary	2.5	One edge ground	NST	1310	fill	lower	mixed deposit	postabandonment and cultural refuse
1881	19		unknown stone	fragmentary	0.6	Worked on both sides and one edge, polished	NST	1312	fill	not further specified	cultural deposit	not further specified
1885	10		Morrison chert/siltstone	fragmentary	2.9	Slightly ground on two surfaces	NST	1109	fill	not further specified	cultural deposit	secondary refuse
1897	27		gypsum/ calcite/barite	complete	2.3	Ground circular piece	NST	1321	fill	above wall/roof fall	cultural deposit	secondary refuse
1898	12		agate/ chalcedony	complete	123.1	Shaped and ground	NST	1321	fill	above wall/roof fall	cultural deposit	secondary refuse
1900	50		sandstone	incomplete	118.9	Edges shaped, grinding on convex surface, uniform size; piki dish?	NST	1320	fill	above wall/roof fall	cultural deposit	secondary refuse
1903	31		unknown stone	fragmentary	0.4	Thin flat square shape	NST	1310	fill	surface feature contents	cultural deposit	secondary refuse
1907	38		igneous	incomplete	941.5	Four-sided rectangular artifact with grinding on each side; possible battering on one tip	STR	1205	fill	roof fall	collapsed structure	with de facto refuse
1916	27		slate/shale	fragmentary	109.7	Highly polished except for broken end, long rectangular shape, tapered end	NST	245	fill	above wall/roof fall	cultural deposit	secondary refuse

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
1917	8		igneous	fragmentary	412.4	Extremely smooth surface, rounded edges	BHT	240	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1926	36		Morrison chert/siltstone	complete	0.9	All surfaces smoothed, small rectangular, thin	NST	245	fill	above wall/roof fall	cultural deposit	secondary refuse
1929	17		sandstone	fragmentary	3.9		NST	1309	fill	above wall/roof fall	cultural deposit	secondary refuse
1933	14		quartz	complete	0.5	Striations perpendicular to fracture; rounded on tip	NST	1310	fill	upper	cultural deposit	secondary refuse
1935	23		Morrison quartzite	fragmentary	2.2	Flake from highly polished artifact	NST	1320	fill	above wall/roof fall	cultural deposit	secondary refuse
1935	43		sandstone	fragmentary	1.3	Shaped, ground and polished	NST	1320	fill	above wall/roof fall	cultural deposit	secondary refuse
1935	103		Morrison quartzite	fragmentary	3.8	Cylindrical piece, flake from highly polished artifact	NST	1320	fill	above wall/roof fall	cultural deposit	secondary refuse
1940	12		Morrison quartzite	fragmentary	19.0	Smoothed surfaces and edges	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1944	20		sandstone	fragmentary	6.3	Two edges ground	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1944	21		unknown chert/siltstone	fragmentary	0.7	Possible pendant blank worked on both edges	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1947	30		slate/shale	fragmentary	1.9	Polished surface, one edge polished, thin, flat	NST	1107	fill	upper	cultural deposit	secondary refuse
1947	51		sandstone	fragmentary	4.0	One surface ground, two edges guiding rounded end	NST	1107	fill	upper	cultural deposit	secondary refuse
1949	56		sandstone	fragmentary	4.3	Two surfaces smoothed	NST	233	fill	above wall/roof fall	cultural deposit	mixed refuse
1953	2	28	sandstone	fragmentary	239.9	Refits with PD 1953 FS 3; edges shaped by flaking, some grinding on one surface	STR	241	arch. deposit	construction	collapsed structure	not further specified

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
1953	3	28	sandstone	fragmentary	61.7	Refits with PD 1953 FS 2; edges shaped by flaking, some grinding on one surface	STR	241	arch. deposit	construction	collapsed structure	not further specified
1954	57		igneous	fragmentary	25.0	Fragment of polished artifact	STR	241	fill	roof fall	collapsed structure	with de facto refuse
1971	15		igneous	fragmentary	181.4	Slight battering along one side	STR	124	fill	surface feature contents	cultural deposit	primary refuse
1978	32		sandstone	complete	30.2	Partially ground on one surface, round shape; flat disk	NST	1320	fill	above wall/roof fall	cultural deposit	secondary refuse
1981	23		sandstone	fragmentary	7.7	Edges shaped, ground surface; flat, tabular shape	NST	1309	fill	above wall/roof fall	cultural deposit	secondary refuse
1982	8		other mineral	complete	5.5	Polished hematite	NST	1320	fill	roof fall	collapsed structure	with mixed refuse
1994	13		sandstone	incomplete	25.5	Lightly ground two surfaces, rectangular shape	STR	1205	fill	roof fall	collapsed structure	with de facto refuse
1996	5		other mineral	complete	0.7	Hematite; highly polished	STR	1209	fill	upper	cultural deposit	not further specified
2000	4		Morrison quartzite	fragmentary	178.5	River cobble with battered edge, one large flake removed	STR	1209	fill	roof fall	collapsed structure	not further specified
2000	7		pigment	fragmentary	3.0	Ground hematite	STR	1209	fill	roof fall	collapsed structure	not further specified
2000	8		Morrison chert/siltstone	fragmentary	3.1	One edge of flake ground smoothed	STR	1209	fill	roof fall	collapsed structure	not further specified
2009	24		other mineral	fragmentary	1.9	Polished hematite	NST	1107	fill	upper	cultural deposit	secondary refuse
2009	45		sandstone	incomplete	1.9		NST	1107	fill	upper	cultural deposit	secondary refuse
2009	48		sandstone	fragmentary	11.6	All edges are ground and both surfaces are ground	NST	1107	fill	upper	cultural deposit	secondary refuse
2009	62		sandstone	fragmentary	0.4	Triangular; thin shape	NST	1107	fill	upper	cultural deposit	secondary refuse

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
2010	5		gypsum/ calcite/barite	fragmentary	0.9	Flat; ground both surfaces, two edges ground	STR	1113	fill	roof fall	collapsed structure	with de facto refuse
2011	14		fossil	incomplete	0.2	Highly polished, incised fossil shell	STR	1106	fill	roof fall	collapsed structure	with de facto refuse
2014	19		sandstone	incomplete	3.0	Ground on one surface; grooved in middle, keyhole shape	NST	1107	fill	upper	cultural deposit	secondary refuse
2014	20		Morrison quartzite	fragmentary	4.9		NST	1107	fill	upper	cultural deposit	secondary refuse
2016	32		slate/shale	fragmentary	3.7	Ground both surfaces, faint striations, thin, particularly shaped	NST	1418	fill	upper	cultural deposit	secondary refuse
2017	29		slate/shale	fragmentary	0.7	2 polished faces, 2 polished edges; probable pendant fragment	NST	1418	fill	above wall/roof fall	cultural deposit	secondary refuse
2018	30		sandstone	fragmentary	1.5	Flat shape; two worked edges	NST	1418	fill	above wall/roof fall	cultural deposit	secondary refuse
2028	37		unknown quartzite	fragmentary	88.4	Slight battering	STR	1316	fill	roof fall	collapsed structure	with mixed refuse
2081	11		sandstone	complete	974.9	Anvil stone, made from mano	STR	1108	fill	above wall/roof fall	cultural deposit	not further specified
2091	45		Morrison quartzite	fragmentary	15.9	Fragment of highly polished artifact	STR	405	fill	roof fall	collapsed structure	with mixed refuse
2099	6		Morrison quartzite	fragmentary	37.5	Smoothed all sides, broken both ends; long rectangular	NST	1309	fill	above wall/roof fall	cultural deposit	secondary refuse
2099	16		slate/shale	fragmentary	3.0	Smoothed on one side only	NST	1309	fill	above wall/roof fall	cultural deposit	secondary refuse
2106	28		slate/shale	complete	2.1	Thin rectangular; one beveled edge, smoothed both sides	STR	1316	fill	roof fall	collapsed structure	with de facto refuse
2119	4		sandstone	fragmentary	3.2	Keyhole shape, ground all surfaces; possible effigy head	STR	241	fill	surface feature contents	cultural deposit	primary refuse

PD	FS	PL	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
2119	5		slate/shale	fragmentary	1.5	Tabular fragment, worked all edges	STR	241	fill	surface feature contents	cultural deposit	primary refuse
2132	13		slate/shale	complete	6.2	One edge barely worked	STR	1108	fill	above wall/roof fall	cultural deposit	not further specified
90007	3		unknown stone	fragmentary	67.3		ARB	1301	fill	not further specified	mixed deposit	recent disturbance

Note: ARB = Arbitrary Unit, BHT = Backhoe Trench, NST = Nonstructure; STR = Structure.

Table 13.3. Mineral Samples with Comments or Material Identification, Shields Pueblo.

PD	FS	PL	Material	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
						Type	No.	General	Specific	General	Specific
9	4				fossil shell	ARB	302	fill	not further specified	mixed deposit	recent disturbance
47	22				calcite	STR	103	fill	not further specified	mixed deposit	recent disturbance
104	2				fossil shell	ARB	402	fill	not further specified	mixed deposit	recent disturbance
199	28				Ute Mountain igneous	ARB	105	surface contact	modern ground surface	mixed deposit	recent disturbance
453	5				fossil shell	ARB	502	fill	not further specified	mixed deposit	recent disturbance
611	55		Morrison quartzite	32.4		ARB	1302	fill	not further specified	cultural deposit	secondary refuse
617	19				1 Ute Mountain and 1 Abajo igneous	ARB	105	fill	not further specified	mixed deposit	recent disturbance
627	15		conglom-erate	2.8		NST	101	fill	not further specified	cultural deposit	secondary refuse
629	17				green: copper based	NST	101	fill	not further specified	cultural deposit	secondary refuse
631	9				green: copper based	STR	110	fill	upper	postaband onment deposit	natural processes
672	26				river cobble fragment	ARB	202	fill	not further specified	mixed deposit	recent disturbance
712	3	16	sandstone	1,423.9	red pigment on center of one surface, no grinding present	STR	208	surface contact	prepared floor surface	constructi on deposit	clean fill
713	22				fossil shell	STR	208	fill	roof fall	collapsed structure	with mixed refuse
716	16				fossil shell	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
724	61				fossil shell	ARB	1101	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Material	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
						Type	No.	General	Specific	General	Specific
756	46				fossil shell	STR	1402	fill	roof fall	collapsed structure	with de facto refuse
756	57	80	sandstone	290.4	probable architectural element; brownish green plaster adheres to one surface	STR	1402	fill	roof fall	collapsed structure	with de facto refuse
759	13				fossil shell	ARB	1501	fill	not further specified	mixed deposit	recent disturbance
763	4				fossil shell	ARB	1501	surface contact	modern ground surface	mixed deposit	recent disturbance
877	5				Soft green-blue material embedded in dirt. Possibly azurite, malachite or green clay.	STR	208	fill	above wall/roof fall	cultural deposit	secondary refuse
884	1				fragments of fossil shell	ARB	105	fill	not further specified	mixed deposit	recent disturbance
886	30				fossil shell	ARB	105	fill	not further specified	mixed deposit	recent disturbance
891	47	9	sandstone	1,006.4		STR	110	fill	upper	mixed deposit	postabando nment and cultural refuse
924	40		sandstone	7.2	cylindrical; probably concretion	NST	1409	fill	not further specified	cultural deposit	secondary refuse
938	33				fossil shell	ARB	202	fill	not further specified	mixed deposit	recent disturbance
940	1				fossil shell	ARB	202	fill	not further specified	mixed deposit	recent disturbance
945	5				fossil shell impression in sandstone	ARB	1401	fill	not further specified	mixed deposit	recent disturbance
985	1	7			possible azurite	STR	124	fill	not further specified	mixed deposit	postabando nment and cultural refuse

PD	FS	PL	Material	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
						Type	No.	General	Specific	General	Specific
985	36		igneous	101.0		STR	124	fill	not further specified	mixed deposit	postabandonment and cultural refuse
993	8				fossil shell	STR	205	fill	not further specified	cultural deposit	secondary refuse
1037	34		unknown quartzite	8.5		ARB	105	fill	not further specified	mixed deposit	recent disturbance
1044	47				one piece might be slightly ground	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1060	18				fossil shell	NST	1409	fill	not further specified	cultural deposit	secondary refuse
1061	31				fossil shell	NST	1409	fill	not further specified	cultural deposit	secondary refuse
1099	3				spherical iron concretion	NST	152	fill	not further specified	cultural deposit	secondary refuse
1099	40		unknown quartzite	1.9		NST	152	fill	not further specified	cultural deposit	secondary refuse
1106	33				fossil shell	NST	1409	fill	not further specified	cultural deposit	secondary refuse
1121	17		unknown stone	3.0	too small for polishing; too large for gizzard	STR	221	fill	roof fall	collapsed structure	with mixed refuse
1149	37				fossil shell	NST	152	fill	not further specified	cultural deposit	secondary refuse
1160	29				fossil shells	NST	1409	fill	not further specified	cultural deposit	secondary refuse
1182	2				fossil shell	NST	238	fill	not further specified	cultural deposit	secondary refuse
1182	11				2 small pieces of malachite or chrysocolla	NST	238	fill	not further specified	cultural deposit	secondary refuse
1184	38				fossil shell	STR	224	fill	roof fall	collapsed structure	with mixed refuse
1186	8				small pieces of metallic material	STR	234	fill	wall fall and roof fall	collapsed structure	with mixed refuse

PD	FS	PL	Material	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
						Type	No.	General	Specific	General	Specific
1194	7		unknown quartzite	14.6	struck in half	STR	1414	fill	wall fall	mixed deposit	postabandonment and cultural refuse
1199	27				fossil shell	BHT	1415	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1199	101				possibly shale	BHT	1415	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1203	55				fossil shell	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1211	5		unknown quartzite	13.4		NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1220	23				fossil shell	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1258	12		unknown quartzite	28.5		NST	238	fill	not further specified	cultural deposit	secondary refuse
1264	7				fossil shell	STR	234	fill	roof fall	collapsed structure	with mixed refuse
1293	9				fossil shell	NST	1409	fill	wall fall	mixed deposit	postabandonment and cultural refuse
1301	4				fossil shell	STR	234	fill	roof fall	collapsed structure	with mixed refuse
1310	23				fossil shell	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1310	36		conglomerate	9.3		ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1314	13				fossil shell	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1316	63				fossil shell	ARB	1302	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Material	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
						Type	No.	General	Specific	General	Specific
1358	43	22	igneous	73.4		STR	205	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1370	7		igneous	5.9		ARB	1302	fill	above wall/roof fall	mixed deposit	recent disturbance
1371	33		igneous	28.5	3 pieces	NST	1310	fill	upper	cultural deposit	secondary refuse
1374	5		igneous	12.7		NST	1310	fill	upper	cultural deposit	secondary refuse
1379	4				small unmodified chunk	STR	141	fill	surface feature contents	collapsed structure	with mixed refuse
1731	45		unknown stone	10.2		NST	1107	fill	upper	cultural deposit	secondary refuse
1736	7				fossil shell	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1736	33				fossil: mollusk	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1737	15				Pigment stone? Striations present	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1747	5				fossil shell	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1774	37				fossil mollusk shell	ARB	1201	fill	not further specified	mixed deposit	recent disturbance
1782	14		sandstone	4.3	circular shape	NST	1202	fill	not further specified	cultural deposit	secondary refuse
1798	20				fossil shell	ARB	402	fill	not further specified	mixed deposit	recent disturbance
1807	14		unknown quartzite	71.5	river cobble fragment	NST	1310	fill	lower	mixed deposit	postabandonment and cultural refuse
1810	52				small clay nub, shaped by hand; fired but untempered	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1812	14				shell fossil	ARB	1302	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Material	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
						Type	No.	General	Specific	General	Specific
1818	4				fossil shell	ARB	202	fill	not further specified	mixed deposit	recent disturbance
1818	16				oxidized	ARB	202	fill	not further specified	mixed deposit	recent disturbance
1834	10		sandstone	7.8	refitted recent break-tubular shape, possible naturally formed	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1855	21				sherd temper – possible unfired whiteware	NST	153	fill	above wall/roof fall	cultural deposit	secondary refuse
1857	8				highly ground and polished surface	STR	139	fill	roof fall	collapsed structure	with mixed refuse
1864	17				yellow pigment	NST	153	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1869	16		conglom-erate	53.3		NST	153	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1871	8				shaped, mineral pigment	STR	138	fill	roof fall	collapsed structure	not further specified
1875	36				fossil shell	NST	1320	fill	above wall/roof fall	cultural deposit	secondary refuse
1875	57				yellow pigment	NST	1320	fill	above wall/roof fall	cultural deposit	secondary refuse
1880	12				possibly hematite	NST	1310	fill	lower	mixed deposit	postabandonment and cultural refuse
1881	8				fossil: shell	NST	1312	fill	not further specified	cultural deposit	not further specified
1903	91				contains no temper; unfired	NST	1310	fill	surface feature contents	cultural deposit	secondary refuse
1923	20		sandstone	2.1	sandstone tube	ARB	202	fill	not further specified	mixed deposit	recent disturbance
1925	39				possible iron	ARB	202	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Material	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
						Type	No.	General	Specific	General	Specific
1926	10				fossil shell	NST	245	fill	above wall/roof fall	cultural deposit	secondary refuse
1926	48				fossil shell	NST	245	fill	above wall/roof fall	cultural deposit	secondary refuse
1929	18		Burro Canyon chert	3.9		NST	1309	fill	above wall/roof fall	cultural deposit	secondary refuse
1933	11				hematite	NST	1310	fill	upper	cultural deposit	secondary refuse
1935	9				1 piece highly ground and polished	NST	1320	fill	above wall/roof fall	cultural deposit	secondary refuse
1947	55		sandstone	4.7	concretion	NST	1107	fill	upper	cultural deposit	secondary refuse
1949	64				light green in color, soft in texture	NST	233	fill	above wall/roof fall	cultural deposit	mixed refuse
1950	7		Morrison chert/ siltstone	8.3		STR	241	fill	roof fall	collapsed structure	with de facto refuse
1981	19				Looks like melted slag, it is porous, light weight and looks like several materials melted together.	NST	1309	fill	above wall/roof fall	cultural deposit	secondary refuse
1981	26				cobble fragment	NST	1309	fill	above wall/roof fall	cultural deposit	secondary refuse
2017	34				fossil shells	NST	1418	fill	above wall/roof fall	cultural deposit	secondary refuse
2018	36				unfired, tempered, corrugated clay	NST	1418	fill	above wall/roof fall	cultural deposit	secondary refuse

PD	FS	PL	Material	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
						Type	No.	General	Specific	General	Specific
2018	56				unfired clay	NST	1418	fill	above wall/roof fall	cultural deposit	secondary refuse
2018	58				refits, probable pigment – hematite?	NST	1418	fill	above wall/roof fall	cultural deposit	secondary refuse
2027	2				fossil shell	NST	1321	fill	above wall/roof fall	cultural deposit	secondary refuse
2028	38				Hard glob of material, yellow in color, probably pigment, hematite? The corners of the chunk show wear, as if rubbed on something.	STR	1316	fill	roof fall	collapsed structure	with mixed refuse
2029	13				possibly turquoise	NST	1321	fill	roof fall	collapsed structure	with mixed refuse
2034	7		conglom-erate	107.6		NST	1321	fill	roof fall	collapsed structure	with mixed refuse
2107	21	6			coarse, ground stone; possible temper material	STR	1316	surface contact	prepared floor surface	cultural deposit	de facto refuse
2120	27				light green; soft	NST	233	fill	above wall/roof fall	cultural deposit	mixed refuse
2153	7				2 pieces refit, might be calcium carbonate	STR	1108	surface contact	and fill above	collapsed structure	with de facto refuse

Note: ARB = Arbitrary Unit, BHT = Backhoe Trench, NST = Nonstructure; STR = Structure.

Table 13.4. Other Artifacts, Shields Pueblo.

PD	FS	Artifact Category	Material	Condition	Wt. (g)	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
							Type	No.	General	Specific	General	Specific
940	40	cylinder	other mineral	complete	1.6	highly polished hematite	ARB	202	fill	not further specified	mixed deposit	recent disturbance
344	4	effigy	sandstone	fragmentary	1.2	possible foot of figurine	ARB	502	fill	not further specified	mixed deposit	recent disturbance
1000	15	effigy	clay	incomplete	12.2	late white painted animal head and neck	BHT	230	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1899	9	effigy	clay	fragmentary	12.8	dog's head	NST	1321	fill	above wall/roof fall	cultural deposit	secondary refuse
1976	45	effigy	clay	fragmentary	6.3	2 pieces: possible neck and head	NST	1320	fill	above wall/roof fall	cultural deposit	secondary refuse
336	11	gaming piece	unknown quartzite	complete	4.7	small, formally shaped rectangle with polishing on all sufaces and edges, complete groove at midpoint	ARB	202	fill	not further specified	mixed deposit	recent disturbance
1374	45	gaming piece	unknown bone	complete	0.5	incised cross-hatched lines on one side	NST	1310	fill	upper	cultural deposit	secondary refuse
1813	84	gaming piece	unknown bone	complete	0.8		NST	1310	fill	upper	cultural deposit	secondary refuse
1932	14	gaming piece	shell	complete	0.2	round with incised cross-hatched lines on one side	NST	1310	fill	lower	cultural deposit	mixed refuse
1277	6	textile	other vegetal		0.5	small piece of matting or textile	STR	141	fill	wall fall and roof fall	collapsed structure	with mixed refuse

Note: ARB = Arbitrary Unit, BHT = Backhoe Trench, NST = Nonstructure; STR = Structure.

Table 13.5. Bone Artifacts by Architectural Block, Shields Pueblo.

(a) Table 13.5

Architectural Block	Antler Tool			Bead			Awl			Needle		
	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]
100	2	100.00	.019	2	66.67	.019	57	25.91	.540			
200							40	18.18	.340	1	50.00	.009
400							1	0.45	.057			
600												
800							3	1.36	.796			
1000												
1100							12	5.45	.237			
1200							8	3.64	.310	1	50.00	.039
1300				1	33.33	.008	52	23.64	.414			
1400							47	21.36	.536			
1900												
TOTAL	2	100.00	.004	3	100.00	.006	220	100.00	.405	2	100.00	.004

R[1] = Ratio of artifact count to kilograms of cooking pottery.

(b) Table 13.5

Architectural Block	Scraper			Tube			Gaming Piece			Pendant		
	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]
100	4	25.00	.038	18	19.15	.170						
200	4	25.00	.034	26	27.66	.221						
400				1	1.06	.057						
600				1	1.06	.320						
800												
1000												
1100	1	6.25	.020	6	6.38	.118						
1200				3	3.19	.116						
1300	5	31.25	.040	20	21.28	.159	3	100.00	.024	2	100.00	.016
1400	2	12.50	.023	19	20.21	.217						
1900												
TOTAL	16	100.00	.029	94	100.00	.173	3	100.00	.006	2	100.00	.004

R[1] = Ratio of artifact count to kilograms of cooking pottery.

(c) Table 13.5

Architectural Block	Ring			Other Modified Bone			TOTAL			Cooking Pottery Wt. (kg) by Block
	N	%	R^1	N	%	R^1	N	%	R^1	
100	1	100.00	.009	45	23.20	.426	129	24.02	1.222	105.6
200				30	15.46	.255	101	18.81	.860	117.5
400				3	1.55	.172	5	0.93	.287	17.4
600					0.00	.000	1	0.19	.320	3.1
800				2	1.03	.531	5	0.93	1.327	3.8
1000				1	0.52	.965	1	0.19	.965	1.0
1100				18	9.28	.355	37	6.89	.730	50.7
1200				9	4.64	.349	21	3.91	.815	25.8
1300				62	31.96	.493	145	27.00	1.153	125.7
1400				23	11.86	.262	91	16.95	1.037	87.7
1900				1	0.52	.199	1	0.19	.199	5.0
TOTAL	1	100.00	.002	194	100.00	.357	537	100.00	.988	543.4

R^1 = Ratio of artifact count to kilograms of cooking pottery.

Table 13.6. Bone Artifacts by Component, Shields Pueblo.

(a) Table 13.6

Component	Antler Tool			Bead			Awl			Needle		
	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]
Middle Pueblo II (A.D. 1020–1060)				1	33.33	.034	10	4.55	.337			
Late Pueblo II (A.D. 1060–1140)	1	50.00	.010	1	33.33	.010	83	37.73	.828			
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)							2	0.91	.196			
Early Pueblo III (A.D. 1140–1225)							64	29.09	.431	2	100.00	.013
Late Pueblo III (A.D. 1225–1280)							18	8.18	.257			
Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)							1	0.45	10.438			
Unassigned	1	50.00	.005	1	33.33	.005	42	19.09	.217			
TOTAL	2	100.00	.004	3	100.00	.005	220	100.00	.398	2	100.00	.004

R[1] = Ratio of artifact count to kilograms of cooking pottery.

(b) Table 13.6

Component	Scraper			Tube			Gaming Piece			Pendant		
	N	%	R[1]	N	%	R[1]	N	%	R[1]	N	%	R[1]
Middle Pueblo II (A.D. 1020–1060)	1	6.25	.034	6	6.38	.202	3	100.00	.101	2	100.00	.067
Late Pueblo II (A.D. 1060–1140)	7	43.75	.070	24	25.53	.239						
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)				1	1.06	.098						
Early Pueblo III (A.D. 1140–1225)	2	12.50	.013	34	36.17	.229						
Late Pueblo III (A.D. 1225–1280)				8	8.51	.114						
Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)												
Unassigned	6	37.50	.031	21	22.34	.109						
TOTAL	16	100.00	.029	94	100.00	.170	3	100.00	.005	2	100.00	.004

R[1] = Ratio of artifact count to kilograms of cooking pottery.

(c) Table 13.6

Component	Ring			Other Modified Bone			TOTAL			Cooking Pottery Wt. (kg) by Component
	N	%	R^1	N	%	R^1	N	%	R^1	
Middle Pueblo II (A.D. 1020–1060)				18	9.28	.607	41	7.64	1.382	29.67
Late Pueblo II (A.D. 1060–1140)				67	34.54	.668	183	34.08	1.825	100.29
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)				3	1.55	.294	6	1.12	.589	10.19
Early Pueblo III (A.D. 1140–1225)	1	100.00	.007	46	23.71	.310	149	27.75	1.003	148.60
Late Pueblo III (A.D. 1225–1280)				19	9.79	.272	45	8.38	.643	69.97
Middle Pueblo II through Late Pueblo III (A.D. 1020–1280)							1	0.19	10.438	0.10
Unassigned				41	21.13	.212	112	20.86	.579	193.48
TOTAL	1	100.00	.002	194	100.00	.351	537	100.00	.972	552.30

R^1 = Ratio of artifact count to kilograms of cooking pottery.

Table 13.7. Awl to Cooking Pottery Weight Ratios for Late Pueblo III Period Sites, Southwestern Colorado.

Site Number	Site Name/Component	Total Cooking Pottery Wt. (g)	Number of Bone Awls	Number of Bone Awls per kg of Cooking Pottery
5MT1825	Castle Rock Pueblo	165,476.6	66	0.40
5MT3967	Catherine's Site	22,369.9	10	0.45
5MT10246	Lester's Site	14,856.9	6	0.40
5MT10459	Lookout House	22,382.2	8	0.36
5MT181	Mad Dog Tower	2,744.1	1	0.36
5MT262	Saddlehorn Hamlet	10,218.8	5	0.49
5MT765	Sand Canyon Pueblo	906,775.7	319	0.35
5MT3807	Shields Pueblo (Late Pueblo III)	69,972.4	18	0.26
5MT10508	Stanton's Site	20,527.9	23	1.12
5MT11842	Woods Canyon Pueblo (Late Pueblo III)	41,535.7	11	0.26

Table 13.8. Historical Artifacts, Shields Pueblo.

PD	FS	PL	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
				Type	No.	General	Specific	General	Specific
3	3		1 nail	ARB	302	fill	not further specified	mixed deposit	recent disturbance
22	1		1 piece of metal	ARB	202	fill	not further specified	mixed deposit	recent disturbance
30	4		1 piece of metal	ARB	105	fill	not further specified	mixed deposit	recent disturbance
30	6		1 piece of porcelain	ARB	105	fill	not further specified	mixed deposit	recent disturbance
34	5		1 piece of metal	ARB	302	fill	not further specified	mixed deposit	recent disturbance
48	4		1 small nail, 1 piece of white glass, 39 small pieces of tar shingles	STR	104	fill	not further specified	mixed deposit	recent disturbance
48	31		1 small piece of shingle or tar paper	STR	104	fill	not further specified	mixed deposit	recent disturbance
48	32	16	10 pieces of tar paper	STR	104	fill	not further specified	mixed deposit	recent disturbance
48	91		59 pieces of tar paper	STR	104	fill	not further specified	mixed deposit	recent disturbance
48	92	7	33 pieces of tar paper	STR	104	fill	not further specified	mixed deposit	recent disturbance
48	93	8	68 pieces of tar paper	STR	104	fill	not further specified	mixed deposit	recent disturbance
69	5		1 piece of glass	ARB	105	surface contact	modern ground surface	mixed deposit	recent disturbance
70	8		6 pieces of glass	ARB	105	surface contact	modern ground surface	mixed deposit	recent disturbance
73	2		1 piece of purple glass	ARB	105	surface contact	modern ground surface	mixed deposit	recent disturbance
81	5		1 piece of slightly purple glass, 2 pieces of metal, 1 small metal spring, 1 fragment of clear glass	ARB	105	fill	not further specified	mixed deposit	recent disturbance
82	6		1 metal fragment, 1 piece of blue glass	ARB	105	fill	not further specified	mixed deposit	recent disturbance
94	3		1 piece of glass	ARB	402	surface contact	modern ground surface	mixed deposit	recent disturbance
97	6		1 piece of metal	ARB	402	fill	not further specified	mixed deposit	recent disturbance
101	3		1 piece of metal	ARB	402	fill	not further specified	mixed deposit	recent disturbance
107	7		1 rusted curtain hook	ARB	402	fill	not further specified	mixed deposit	recent disturbance
108	2		1 piece of glass	ARB	402	fill	not further specified	mixed deposit	recent disturbance
123	2		1 metal fragment	ARB	701	surface contact	modern ground surface	mixed deposit	recent disturbance
124	2		1 piece of metal	ARB	701	surface contact	modern ground surface	mixed deposit	recent disturbance
125	4		2 pieces of glass, 3 pieces of rubber	ARB	701	fill	not further specified	mixed deposit	recent disturbance
126	4		10 pieces of metal, 2 pieces of glass	ARB	701	fill	not further specified	mixed deposit	recent disturbance
127	2		1 piece of glass, 1 bullet casing, 8 pieces of metal	ARB	701	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
				Type	No.	General	Specific	General	Specific
128	3		3 nails, 4 metal fragments, 3 pieces of porcelain, 1 piece of melted brown glass	ARB	701	fill	not further specified	mixed deposit	recent disturbance
177	3		3 metal fragments	ARB	402	fill	not further specified	mixed deposit	recent disturbance
183	7		8 pieces of porcelain	ARB	402	surface contact	modern ground surface	mixed deposit	recent disturbance
198	5		2 clear glass fragments	ARB	105	fill	not further specified	mixed deposit	recent disturbance
199	9		1 metal fragment	ARB	105	surface contact	modern ground surface	mixed deposit	recent disturbance
200	3		1 piece of rubber?	ARB	105	surface contact	modern ground surface	mixed deposit	recent disturbance
200	7		Tin beer can	ARB	105	surface contact	modern ground surface	mixed deposit	recent disturbance
204	4		2 fragments greenish glass, 1 fragment brown ceramic	ARB	105	fill	not further specified	mixed deposit	recent disturbance
208	3		1 fragment of historical ceramic	ARB	105	fill	not further specified	mixed deposit	recent disturbance
221	4		1 piece of metal	ARB	701	fill	not further specified	mixed deposit	recent disturbance
222	2		6 pieces of clear glass, 2 porcelain fragments, 2 pieces of metal	ARB	701	fill	not further specified	mixed deposit	recent disturbance
223	3		10 metal fragments, 1 metal pipe fragment, 4 round nails, 1 metal tack/grommet, 5 clear glass fragments, 2 porcelain fragments, 1 piece of coal slag	ARB	701	fill	not further specified	mixed deposit	recent disturbance
224	2		1 clear glass fragment	ARB	701	fill	not further specified	mixed deposit	recent disturbance
225	4		2 pieces of glass, 1 piece of china, 17 pieces of metal	ARB	701	fill	not further specified	mixed deposit	recent disturbance
226	2		2 clear glass fragments, 2 metal fragments	ARB	701	fill	not further specified	mixed deposit	recent disturbance
227	2		8 sheet metal fragments, 2 wire fragments	ARB	701	fill	not further specified	mixed deposit	recent disturbance
228	3		1 piece of porcelain	ARB	701	fill	not further specified	mixed deposit	recent disturbance
229	1		1 piece of slag	ARB	701	surface contact	modern ground surface	mixed deposit	recent disturbance
229	5		2 glass fragments, 1 fragment of heavy white glass possibly from the top of a gas pump, 4 metal fragments	ARB	701	surface contact	modern ground surface	mixed deposit	recent disturbance
230	1		8 pieces of glass, 1 piece of porcelain, 2 shotgun shells, several tin cans, 1 piece of chain, 1 piece of a harness	ARB	701	surface contact	modern ground surface	mixed deposit	recent disturbance

PD	FS	PL	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
				Type	No.	General	Specific	General	Specific
231	5		1 clear glass fragment	STR	103	fill	not further specified	mixed deposit	recent disturbance
234	3		4 green glass fragments	STR	102	fill	not further specified	mixed deposit	recent disturbance
234	13		1 green glass fragment, 4 metal fragments	STR	102	fill	not further specified	mixed deposit	recent disturbance
234	24		1 metal base, 30 metal fragments, 4 porcelain fragments, 1 earthenware fragment, 35 clear glass fragments	STR	102	fill	not further specified	mixed deposit	recent disturbance
236	2		1 clear glass fragment	STR	102	fill	not further specified	mixed deposit	recent disturbance
251	3		1 metal fragment	ARB	801	fill	not further specified	mixed deposit	recent disturbance
257	2		3 impressed black tar paper fragments	ARB	901	fill	not further specified	mixed deposit	recent disturbance
259	3		1 wire, 9 tar paper fragments with imprints	ARB	901	fill	not further specified	mixed deposit	recent disturbance
262	3		Metal staple, 1 .22 slug, 1 fragment of metal	ARB	901	fill	not further specified	mixed deposit	recent disturbance
264	2		1 piece of porcelain, 17 fragments of rusted metal	ARB	701	surface contact	modern ground surface	mixed deposit	recent disturbance
265	3		4 metal fragments, 1 glass fragment, 1 porcelain fragment	ARB	701	surface contact	modern ground surface	mixed deposit	recent disturbance
266	1		3 rubber band fragments, curtain hook, 5 metal fragments, 2 porcelain fragments, 1 mason jar ring, 6 nails, 1 metal box, 8 pieces of coal, 5 leather fragments, 13 pieces of clear glass and 2 large pieces of a drinking glass, circular frame for a broach, 2 pieces of white glass	ARB	701	surface contact	modern ground surface	mixed deposit	recent disturbance
267	1		2 metal fragments, 5 porcelain fragments, 2 glass fragments, 1 lump of coal	ARB	701	surface contact	modern ground surface	mixed deposit	recent disturbance
267	6		4 pieces of tar	ARB	701	surface contact	modern ground surface	mixed deposit	recent disturbance
268	3		1 nail, 7 glass fragments, 3 metal fragments	ARB	701	fill	not further specified	mixed deposit	recent disturbance
269	2		10 glass fragments, 9 metal fragments, 9 nails, 2 porcelain fragments, 3 pieces of slag	ARB	701	fill	not further specified	mixed deposit	recent disturbance
270	3		1 nail, 1 piece of porcelain	ARB	701	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
				Type	No.	General	Specific	General	Specific
271	2		1 metal fragment, 1 porcelain fragment	ARB	701	fill	not further specified	mixed deposit	recent disturbance
273	3		1 fragment of metal, 1 nail, 1 piece of ceramic, 1 piece of slag	ARB	701	fill	not further specified	mixed deposit	recent disturbance
274	5		1 fragment of porcelain	ARB	701	fill	not further specified	mixed deposit	recent disturbance
286	3		1 metal can fragment	ARB	701	sterile	undisturbed sediment or geologic deposit	noncultural deposit	not further specified
294	3		3 metal fragments, 1 nail, 1 porcelain fragment, 3 clear glass fragments, 2 green glass fragments, 1 white glass fragment, 1 orange glass (carnival) fragment	ARB	701	fill	not further specified	mixed deposit	recent disturbance
294	6		1 green glass fragment	ARB	701	fill	not further specified	mixed deposit	recent disturbance
294	8		5 nails, 1 metal fragment, 5 clear glass fragments, 3 porcelain fragments, 2 pen stoppers	ARB	701	fill	not further specified	mixed deposit	recent disturbance
295	2		1 fragment of clear glass, 1 fragment of porcelain with blue lines	ARB	701	fill	not further specified	mixed deposit	postabandonment and cultural refuse
352	3		5 metal fragments	ARB	901	fill	not further specified	mixed deposit	recent disturbance
367	4		1 piece of metal	ARB	901	fill	not further specified	mixed deposit	recent disturbance
376	6		1 nail, 1 clear glass fragment, 1 metal fragment	ARB	105	fill	not further specified	mixed deposit	recent disturbance
381	3		1 porcelain fragment	ARB	105	fill	not further specified	mixed deposit	recent disturbance
381	10		1 clear glass fragment	ARB	105	fill	not further specified	mixed deposit	recent disturbance
401	3		2 metal fragments	ARB	602	fill	not further specified	mixed deposit	recent disturbance
414	2		1 plastic stopper	ARB	602	fill	not further specified	mixed deposit	recent disturbance
416	4		1 bullet	ARB	602	fill	not further specified	mixed deposit	recent disturbance
468	3		1 metal wire	ARB	602	fill	not further specified	mixed deposit	recent disturbance
534	2		1 nail, 2 white glass fragments, many small fragments of burned tar paper	STR	104	fill	not further specified	mixed deposit	recent disturbance
616	12		4 metal fragments	ARB	105	fill	not further specified	mixed deposit	recent disturbance
616	17		2 pieces of metal	ARB	105	fill	not further specified	mixed deposit	recent disturbance
616	32		3 pieces of metal	ARB	105	fill	not further specified	mixed deposit	recent disturbance
616	35		rim of plate	ARB	105	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
				Type	No.	General	Specific	General	Specific
617	4		2 wood fragments, 1 clear glass fragment	ARB	105	fill	not further specified	mixed deposit	recent disturbance
617	26		8 pieces of metal	ARB	105	fill	not further specified	mixed deposit	recent disturbance
617	28		2 pieces of glass	ARB	105	fill	not further specified	mixed deposit	recent disturbance
617	32		1 glass fragment, 1 fragment of plastic, 5 metal pieces	ARB	105	fill	not further specified	mixed deposit	recent disturbance
618	5		1 green glass fragment	BHT	112	fill	not further specified	mixed deposit	postabandonment and cultural refuse
624	18		2 metal fragments, 1 glass fragment	STR	123	fill	not further specified	mixed deposit	postabandonment and cultural refuse
624	31		1 piece of glass	STR	123	fill	not further specified	mixed deposit	postabandonment and cultural refuse
625	10		2 pieces of metal	ARB	105	fill	not further specified	mixed deposit	recent disturbance
625	19		5 pieces of metal, 1 piece of wire	ARB	105	fill	not further specified	mixed deposit	recent disturbance
625	39		2 pieces of glass	ARB	105	fill	not further specified	mixed deposit	recent disturbance
626	13		1 piece of wood	ARB	105	fill	not further specified	mixed deposit	recent disturbance
626	15		1 piece of glass	ARB	105	fill	not further specified	mixed deposit	recent disturbance
626	18		2 pieces of metal	ARB	105	fill	not further specified	mixed deposit	recent disturbance
627	22		1 piece of metal	NST	101	fill	not further specified	cultural deposit	secondary refuse
628	21		1 glass fragment, 1 porcelain fragment	NST	101	fill	not further specified	cultural deposit	secondary refuse
630	29		1 metal fragment	NST	101	fill	not further specified	cultural deposit	secondary refuse
632	10		1 piece of metal	ARB	105	surface contact	modern ground surface	mixed deposit	recent disturbance
634	19		1 metal fragment	NST	101	fill	upper	mixed deposit	postabandonment and cultural refuse
636	10		1 piece of clear glass,1 piece of metal	ARB	105	fill	not further specified	mixed deposit	recent disturbance
643	3		3 pieces of wire	ARB	1401	fill	not further specified	mixed deposit	recent disturbance
656	4		3 metal fragments	ARB	1201	fill	not further specified	mixed deposit	recent disturbance
668	7		1 nail	ARB	1401	fill	not further specified	mixed deposit	recent disturbance
674	13		1 shotgun shell, 1 nail	ARB	202	fill	not further specified	mixed deposit	recent disturbance
685	8		2 fragments of metal from looter's pit	STR	110	fill	upper	mixed deposit	postabandonment and cultural refuse
690	8		2 pieces of plastic	ARB	105	fill	not further specified	mixed deposit	recent disturbance
690	9		1 piece of metal	ARB	105	fill	not further specified	mixed deposit	recent disturbance
696	5		1 metal fragment	ARB	202	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
				Type	No.	General	Specific	General	Specific
884	4		9 nails, tacks, and bolts; 1 wire; 1 metal chunk; 32 fragments metal; 21 fragments porcelain; 1 aluminum Coors beer can; 36 fragments green glass; 35 fragments clear glass; 5 fragments purple glass	ARB	105	fill	not further specified	mixed deposit	recent disturbance
884	23		3 fragments of blue glass, 1 fragment of clear glass, 1 fragment of metal	ARB	105	fill	not further specified	mixed deposit	recent disturbance
884	29		1 porcelain doll arm	ARB	105	fill	not further specified	mixed deposit	recent disturbance
886	11		29 metal fragments, 5 nails/tacks, 4 wire fragments, 1 screw, 1 rivet, 2 button fragments, 1 foil fragment, 23 porcelain fragments, 2 white glass fragments, 1 rubber fragment, 29 clear glass fragments, 18 green glass fragments, 3 pink glass fragments	ARB	105	fill	not further specified	mixed deposit	recent disturbance
889	9		1 piece of metal	NST	101	fill	not further specified	cultural deposit	secondary refuse
890	8		2 metal fragments	STR	110	fill	upper	mixed deposit	postabandonment and cultural refuse
891	36		1 metal fragment	STR	110	fill	upper	mixed deposit	postabandonment and cultural refuse
893	6		13 pieces	ARB	105	fill	not further specified	cultural deposit	not further specified
893	26		1 glass fragment, 2 tile fragments	ARB	105	fill	not further specified	cultural deposit	not further specified
894	5		2 glass fragments, 1 nail	NST	157	fill	not further specified	cultural deposit	mixed refuse
900	3		1 metal fragment	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
918	19		1 fragment clear glass; bag comment: from rodent burrow area; changed from PD 1004 FS 1	NST	129	fill	surface feature contents	cultural deposit	primary refuse
918	29		Fragment of rubber ring-shaped object?; changed from PD 1004 FS 11	NST	129	fill	surface feature contents	cultural deposit	primary refuse
919	20		1 tile fragment	STR	124	fill	not further specified	mixed deposit	postabandonment and cultural refuse
984	27		1 fragment clear glass	STR	124	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1023	12		No comment provided	ARB	1401	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
				Type	No.	General	Specific	General	Specific
1037	2		No comment provided	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1040	1		1 piece of glass, 1 button, 1 piece of metal, 1 piece of porcelain	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1042	3		No comment provided	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1042	13		15 pieces of clear glass, 2 pieces of porcelain, 1 nail	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1044	6		3 rusty nails, 3 porcelain fragments, 1 .22 bullet shell, 10 pieces of white glass, 1 piece of green glass	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1044	48		2 pieces of porcelain, 1 piece of plastic	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1045	11		1 piece of rusted metal, 1 piece of glass	NST	153	fill	not further specified	mixed deposit	recent disturbance
1094	6		1 piece of modern porcelain	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1098	1		1 piece of wire, 2 pieces of porcelain, 1 piece of clear glass	NST	152	fill	not further specified	cultural deposit	secondary refuse
1099	2		2 pieces of clear glass	NST	152	fill	not further specified	cultural deposit	secondary refuse
1099	41		1 piece of white and blue porcelain, 5 pieces of clear glass, 1 piece of green glass	NST	152	fill	not further specified	cultural deposit	secondary refuse
1149	22		1 piece of clear glass	NST	152	fill	not further specified	cultural deposit	secondary refuse
1169	6		Metal fragment	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1199	99		Historical wood, cut with sharp tool	BHT	1415	fill	not further specified	mixed deposit	postabandonment and cultural refuse
1211	36		Small fragment of wire	NST	152	fill	wall fall and roof fall	collapsed structure	with mixed refuse
1280	4		1 piece of clear glass	STR	137	fill	roof fall	collapsed structure	with mixed refuse
1368	45		Nail	ARB	1302	fill	not further specified	mixed deposit	recent disturbance
1608	3		One piece of historical ceramic	ARB	1901	surface contact	modern ground surface	mixed deposit	recent disturbance
1743	9		Metal	NST	153	fill	above wall/roof fall	collapsed structure	with mixed refuse
1747	7		1 piece of glass, 1 nail	ARB	105	fill	not further specified	mixed deposit	recent disturbance
1796	1		2 pieces of metal	ARB	402	fill	not further specified	mixed deposit	recent disturbance
1829	10		No comment provided	ARB	1101	fill	not further specified	mixed deposit	recent disturbance

PD	FS	PL	Comments	Study Unit		Fill Assemblage Position		Fill Assemblage Type	
				Type	No.	General	Specific	General	Specific
1834	8		Glass fragment	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1919	5		Pliers	ARB	202	fill	not further specified	mixed deposit	recent disturbance
1938	15		Glass	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
1940	7		Glass	ARB	1101	fill	not further specified	mixed deposit	recent disturbance
2030	57		Blue-green glass neck of a canning jar	STR	1315	fill	roof fall	collapsed structure	with mixed refuse
2063	6		1 shotgun shell	ARB	1601	fill	not further specified	mixed deposit	recent disturbance

Note: ARB = Arbitrary Unit, BHT = Backhoe Trench, NST = Nonstructure; STR = Structure.

Table 13.9. Objects of Personal Adornment, Shields Pueblo.

Type	PD	FS	PL	Material	Condition	Study Unit	Study Unit Description	Fill Assemblage Position		Fill Assemblage Type		Comments
bead	48	20		unknown bone	complete	STR 104	masonry surface structure	fill	not further specified	mixed deposit	recent disturbance	
bead	622	3		unknown bone	complete	BHT 116	not further specified	fill	not further specified	mixed deposit	recent disturbance	
bead	629	13	1	turquoise	complete	NST 101	midden	fill	not further specified	cultural deposit	secondary refuse	circular; blue-green
bead	629	20	1	turquoise	complete	NST 101	midden	fill	not further specified	cultural deposit	secondary refuse	oval; blue-green
bead	629	21	1	turquoise	complete	NST 101	midden	fill	not further specified	cultural deposit	secondary refuse	somewhat circular; blue-green
bead	629	22	1	turquoise	complete	NST 101	midden	fill	not further specified	cultural deposit	secondary refuse	somewhat circular; blue-green
bead	629	23	1	turquoise	complete	NST 101	midden	fill	not further specified	cultural deposit	secondary refuse	somewhat circular; blue-green
bead	936	8		shell	complete	STR 205	subterranean room	fill	not further specified	cultural deposit	secondary refuse	olivella
bead	951	10	7	other mineral	incomplete	STR 1402	subterranean kiva	surface contact	bench surface	cultural deposit	de facto refuse	cylindrical; iron mineral, dark reddish brown
bead	983	6	16	shell	complete	NST 130	extramural surface	fill	not further specified	cultural deposit	secondary refuse	olivella
bead	1235	14		clay	complete	NST 1409	midden	fill	wall fall	mixed deposit	postabandon-ment and cultural refuse	cylindrical; gray
bead	1842	11		unknown stone	complete	STR 1206	subterranean kiva	fill	roof fall	collapsed structure	with mixed refuse	circular; dark gray
bead	1874	35		shell	complete	NST 1310	midden	fill	upper	cultural deposit	secondary refuse	cylindrical in shape
bead	1874	36		shell	complete	NST 1310	midden	fill	upper	cultural deposit	secondary refuse	circular in shape with wider hole than FS 37
bead	1874	37		shell	complete	NST 1310	midden	fill	upper	cultural deposit	secondary refuse	circular in shape with small hole

Type	PD	FS	PL	Material	Condition	Study Unit	Study Unit Description	Fill Assemblage Position		Fill Assemblage Type		Comments
bead	2110	2	8	unknown bone	complete	STR 1307	earth-walled pit structure	surface contact	prepared floor surface	cultural deposit	mixed refuse	
bone tube	473	12			complete	ARB 602	noncultural	fill	not further specified	mixed deposit	recent disturbance	
bone tube	874	19			fragmentary	STR 208	subterranean kiva	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	902	3			fragmentary	ARB 1101	noncultural	fill	not further specified	mixed deposit	recent disturbance	
bone tube	929	49			incomplete	STR 1402	subterranean kiva	surface contact	prepared floor surface	cultural deposit	de facto refuse	
bone tube	940	45			complete	ARB 202	noncultural	fill	not further specified	mixed deposit	recent disturbance	small drilled hole at one end
bone tube	1073	33			incomplete	STR 222	subterranean kiva	fill	roof fall	collapsed structure	with de facto refuse	
bone tube	1107	51			fragmentary	NST 1409	midden	fill	not further specified	cultural deposit	secondary refuse	3 pieces refit, recent break
bone tube	1120	18			complete	STR 221	subterranean kiva	fill	roof fall	collapsed structure	with mixed refuse	small tube; 3 pieces, refit
bone tube	1149	49			fragmentary	NST 152	midden	fill	not further specified	cultural deposit	secondary refuse	
bone tube	1161	41			complete	ARB 1401	noncultural	fill	not further specified	mixed deposit	postabandonment and cultural refuse	
bone tube	1188	5			fragmentary	STR 237	earth-walled pit structure	fill	roof fall	collapsed structure	not further specified	
bone tube	1199	83			complete	BHT 1415	not further specified	fill	not further specified	mixed deposit	postabandonment and cultural refuse	
bone tube	1199	86			complete	BHT 1415	not further specified	fill	not further specified	mixed deposit	postabandonment and cultural refuse	

Type	PD	FS	PL	Material	Condition	Study Unit	Study Unit Description	Fill Assemblage Position		Fill Assemblage Type		Comments
bone tube	1211	32			complete	NST 152	midden	fill	wall fall and roof fall	collapsed structure	with mixed refuse	
bone tube	1221	66			fragmentary	NST 152	midden	fill	wall fall and roof fall	collapsed structure	with mixed refuse	
bone tube	1221	67			fragmentary	NST 152	midden	fill	wall fall and roof fall	collapsed structure	with mixed refuse	
bone tube	1221	69			fragmentary	NST 152	midden	fill	wall fall and roof fall	collapsed structure	with mixed refuse	
bone tube	1279	11			complete	NST 152	midden	fill	wall fall and roof fall	collapsed structure	with mixed refuse	
bone tube	1317	7	17		complete	STR 1308	earth-walled pit structure	fill	roof fall	collapsed structure	with mixed refuse	
bone tube	1334	34	19		complete	STR 146	subterranean room	fill	roof fall	collapsed structure	with de facto refuse	
bone tube	1762	48		unknown bone	complete	NST 1418	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	chipped on edges
bone tube	1822	25		unknown bone	fragmentary	ARB 202	noncultural	fill	not further specified	mixed deposit	recent disturbance	groove and snap break
bone tube	1853	10		unknown bone	incomplete	STR 139	earth-walled pit structure	fill	roof fall	collapsed structure	with mixed refuse	
bone tube	1876	16		unknown bone	fragmentary	NST 1311	cultural deposit, type unknown	fill	not further specified	cultural deposit	not further specified	
bone tube	1899	10		unknown bone	incomplete	NST 1321	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1903	90		unknown bone	fragmentary	NST 1310	midden	fill	surface feature contents	cultural deposit	secondary refuse	
bone tube	1916	45			fragmentary	NST 245	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	

Type	PD	FS	PL	Material	Condition	Study Unit	Study Unit Description	Fill Assemblage Position		Fill Assemblage Type		Comments
bone tube	1916	46			fragmentary	NST 245	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1926	63		unknown bone	complete	NST 245	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1926	64		unknown bone	incomplete	NST 245	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1929	54			fragmentary	NST 1309	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1935	154		unknown bone	complete	NST 1320	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1935	166		unknown bone	fragmentary	NST 1320	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1959	45		unknown bone	incomplete	NST 245	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1959	46		unknown bone	incomplete	NST 245	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1959	47		unknown bone	incomplete	NST 245	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1959	48		unknown bone	complete	NST 245	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1959	55		unknown bone	incomplete	NST 245	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	1980	27		unknown bone	fragmentary	STR 1315	subterranean kiva	fill	roof fall	collapsed structure	with mixed refuse	
bone tube	1993	8		unknown bone	incomplete	NST 238	midden	fill	not further specified	collapsed structure	with mixed refuse	

Type	PD	FS	PL	Material	Condition	Study Unit	Study Unit Description	Fill Assemblage Position		Fill Assemblage Type		Comments
bone tube	2009	4			fragmentary	NST 1107	midden	fill	upper	cultural deposit	secondary refuse	
bone tube	2014	31		unknown bone	fragmentary	NST 1107	midden	fill	upper	cultural deposit	secondary refuse	
bone tube	2014	32		unknown bone	fragmentary	NST 1107	midden	fill	upper	cultural deposit	secondary refuse	
bone tube	2016	39		unknown bone	complete	NST 1418	midden	fill	upper	cultural deposit	secondary refuse	
bone tube	2017	58		unknown bone	complete	NST 1418	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	2017	61		unknown bone	incomplete	NST 1418	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
bone tube	2034	13		unknown bone	fragmentary	NST 1321	midden	fill	roof fall	collapsed structure	with mixed refuse	
bone tube	2035	17			fragmentary	STR 1308	earth-walled pit structure	fill	roof fall	collapsed structure	with mixed refuse	
bone tube	2120	30		unknown bone	fragmentary	NST 233	midden	fill	above wall/roof fall	cultural deposit	mixed refuse	
pendant	313	5		sandstone	incomplete	ARB 602	noncultural	fill	not further specified	mixed deposit	recent disturbance	diamond-shaped; red-orange
pendant	623	10		unknown stone	fragmentary	BHT 117	not further specified	fill	not further specified	mixed deposit	postabandon-ment and cultural refuse	black
pendant	625	36	1	clay	complete	ARB 105	noncultural	fill	not further specified	mixed deposit	recent disturbance	rectilinear; red slip?
pendant	672	41	3	slate/shale	complete	ARB 202	noncultural	fill	not further specified	mixed deposit	recent disturbance	triangular; black
pendant	745	20	26	slate/shale	complete	NST 154	midden	fill	roof fall	collapsed structure	with mixed refuse	rectilinear; black
pendant	874	11		clay	fragmentary	STR 208	subterranean kiva	fill	above wall/roof fall	cultural deposit	secondary refuse	red-orange

Type	PD	FS	PL	Material	Condition	Study Unit	Study Unit Description	Fill Assemblage Position		Fill Assemblage Type		Comments
pendant	898	22		unknown stone	fragmentary	ARB 1101	noncultural	fill	not further specified	mixed deposit	recent disturbance	rectilinear; burnt on exterior surface; black
pendant	923	5		shell	incomplete	NST 1409	midden	fill	not further specified	cultural deposit	secondary refuse	abalone, circular
pendant	996	1		Burro Canyon chert	complete	ARB 202	noncultural	surface contact	modern ground surface	mixed deposit	recent disturbance	rectilinear; whitish orange
pendant	1039	31		shell	incomplete	BHT 135	not further specified	fill	not further specified	mixed deposit	postabandon-ment and cultural refuse	marine shell, bivalve; circular with cut-out center
pendant	1076	17		turquoise	complete	STR 222	subterranean kiva	fill	roof fall	collapsed structure	with de facto refuse	rectilinear; light blue
pendant	1106	2		unknown chert/siltsto ne	incomplete	NST 1409	midden	fill	not further specified	cultural deposit	secondary refuse	triangular with serrated edges; white and black; hole started but not completed
pendant	1149	26		clay	complete	NST 152	midden	fill	not further specified	cultural deposit	secondary refuse	rectilinear; light brown
pendant	1196	18		shell	complete	NST 1409	midden	fill	wall fall	mixed deposit	postabandon-ment and cultural refuse	triangular
pendant	1208	39		clay	incomplete	ARB 1302	noncultural	fill	not further specified	mixed deposit	recent disturbance	rectilinear; black-on-red (Deadmans?)
pendant	1212	33		unknown stone	fragmentary	NST 152	midden	fill	wall fall and roof fall	collapsed structure	with mixed refuse	black
pendant	1316	95		sandstone	fragmentary	ARB 1302	noncultural	fill	not further specified	mixed deposit	recent disturbance	whitish
pendant	1348	4	12	turquoise	complete	STR 1414	subterranean kiva	surface contact	prepared floor surface	cultural deposit	de facto refuse	rectilinear; blue-green
pendant	1371	8		Brushy Basin chert/ siltstone	fragmentary	NST 1310	midden	fill	upper	cultural deposit	secondary refuse	banded colors, predominantly brown

Type	PD	FS	PL	Material	Condition	Study Unit	Study Unit Description	Fill Assemblage Position		Fill Assemblage Type		Comments
pendant	1374	36		slate/shale	incomplete	NST 1310	midden	fill	upper	cultural deposit	secondary refuse	burned red color; circular with no center?
pendant	1374	44		unknown bone	complete	NST 1310	midden	fill	upper	cultural deposit	secondary refuse	burned
pendant	1452	15		Morrison chert/ siltstone	complete	STR 224	subterranean kiva	surface contact	prepared floor surface	cultural deposit	de facto refuse	triangular; gray
pendant	1745	35		shell	incomplete	NST 153	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	v-shaped
pendant	1810	8		Morrison quartzite	complete	ARB 1302	noncultural	fill	not further specified	mixed deposit	recent disturbance	rectilinear but with one curved corner; black
pendant	1822	22		shell	fragmentary	ARB 202	noncultural	fill	not further specified	mixed deposit	recent disturbance	resembles side-notched projectile point or a lobed-circle form (sensu Hurst and Pachak 1992)
pendant	1872	42		unknown bone	incomplete	NST 1321	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	
pendant	1878	15	2	clay	complete	NST 1310	midden	fill	upper	cultural deposit	secondary refuse	square with two holes; light gray
pendant	1894	5		unknown stone	fragmentary	NST 1303	midden	fill	not further specified	cultural deposit	secondary refuse	black; serrated edge
pendant	1895	24		shell	complete	NST 1309	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	V-shaped with two holes
pendant	1916	43		shell	complete	NST 245	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	rectilinear; cracked
pendant	1923	9		Brushy Basin chert/ siltstone	incomplete	ARB 202	noncultural	fill	not further specified	mixed deposit	recent disturbance	rectilinear; banded colors, predominantly light gray
pendant	1929	25		clay	incomplete	NST 1309	midden	fill	above wall/roof fall	cultural deposit	secondary refuse	

Type	PD	FS	PL	Material	Condition	Study Unit	Study Unit Description	Fill Assemblage Position		Fill Assemblage Type		Comments
pendant	1947	53		clay	complete	NST 1107	midden	fill	upper	cultural deposit	secondary refuse	circular; light gray
pendant	1949	52		unknown chert/ siltstone	incomplete	NST 233	midden	fill	above wall/roof fall	cultural deposit	mixed refuse	square diamond-shaped; yellow
pendant	2087	7		gypsum/ calcite/ barite	fragmentary	STR 406	subterranean kiva	fill	surface feature contents	cultural deposit	primary refuse	striations and possible hole started both surfaces, 2 pieces refit
pendant	2091	46		unknown stone	complete	STR 405	subterranean kiva	fill	roof fall	collapsed structure	with mixed refuse	pendant blank, no hole; rectilinear; blue-green
ring	1741	9		unknown bone	fragmentary	STR 139	earth-walled pit structure	fill	roof fall	collapsed structure	with mixed refuse	highly polished, possibly burned

Note: ARB = Arbitrary Unit, BHT = Backhoe Trench, NST = Nonstructure; STR = Structure.

Table 13.10. Objects of Personal Adornment by Architectural Block, Shields Pueblo.

(a) Table 13.10, Blocks 100, 200, 400, and 600

Artifact Type	Material	100		200		400		600	
		N	%	N	%	N	%	N	%
Bead	clay								
	other mineral								
	shell	1	2.94	1	2.78				
	turquoise	5	14.71						
	unknown bone	2	5.88						
	unknown stone								
SUBTOTAL		*8*	*23.53*	*1*	*2.78*				
Bone tube	unknown bone	18	52.94	26	72.22	1	33.33	1	50.00
SUBTOTAL		*18*	*52.94*	*26*	*72.22*	*1*	*33.33*	*1*	*50.00*
Pendant	Brushy Basin chert/siltstone			1	2.78				
	Burro Canyon chert			1	2.78				
	clay	2	5.88	1	2.78				
	gypsum/calcite/ barite					1	33.33		
	Morrison chert/ siltstone			1	2.78				
	Morrison quartzite								
	sandstone							1	50.00
	shell	2	5.88	2	5.56				
	slate/shale	1	2.94	1	2.78				
	turquoise			1	2.78				
	unknown bone								
	unknown chert/siltstone			1	2.78				
	unknown stone	2	5.88			1	33.33		
SUBTOTAL		*7*	*20.59*	*9*	*25.00*	*2*	*66.67*	*1*	*50.00*
Ring	unknown bone	1	2.94						
SUBTOTAL		*1*	*2.94*						
TOTAL		34	100.00	36	100.00	3	100.00	2	100.00
Percent of total count		23.13		24.49		2.04		1.36	
Weight (kg) of cooking pottery		105.60		117.52		17.43		3.13	
Adornment items/kg of cooking pottery		0.32		0.31		0.17		0.64	

(b) Table 13.10, Blocks 1100, 1200, 1300, 1400, and Total

Artifact Type	Material	1100		1200		1300		1400		TOTAL	
		N	%	N	%	N	%	N	%	N	%
Bead	clay							1	4.00	1	0.68
	other mineral							1	4.00	1	0.68
	shell					3	8.57			5	3.40
	turquoise									5	3.40
	unknown bone					1	2.86			3	2.04
	unknown stone			1	25.00					1	0.68
SUBTOTAL				*1*	*25.00*	*4*	*11.43*	*2*	*8.00*	*16*	*10.88*
Bone tube	unknown bone	6	75.00	3	75.00	20	57.14	19	76.00	94	63.95
SUBTOTAL		*6*	*75.00*	*3*	*75.00*	*20*	*57.14*	*19*	*76.00*	*94*	*63.95*
Pendant	Brushy Basin chert/ siltstone					1	2.86			2	1.36
	Burro Canyon chert									1	0.68
	clay	1	12.50			3	8.57			7	4.76
	gypsum/ calcite/ barite									1	0.68
	Morrison chert/ siltstone									1	0.68
	Morrison quartzite					1	2.86			1	0.68
	sandstone					1	2.86			2	1.36
	shell					1	2.86	2	8.00	7	4.76
	slate/ shale					1	2.86			3	2.04
	turquoise							1	4.00	2	1.36
	unknown bone					2	5.71			2	1.36
	unknown chert/ siltstone							1	4.00	2	1.36
	unknown stone	1	12.50			1	2.86			5	3.40
SUBTOTAL		*2*	*25.00*			*11*	*31.43*	*4*	*16.00*	*36*	*24.49*
Ring	unknown bone									1	0.68
SUBTOTAL										*1*	*0.68*

Artifact Type	Material	1100		1200		1300		1400		TOTAL	
		N	%	N	%	N	%	N	%	N	%
TOTAL		8	100.00	4	100.00	35	100.00	25	100.00	147	100.00
Percent of total count		5.44		2.72		23.81		17.01		100.00	
Weight (kg) of cooking pottery		50.75		25.78		125.62		87.75		533.56	
Adornment items/kg of cooking pottery		0.16		0.16		0.28		0.28		0.28	

Table 13.11. Objects of Personal Adornment by Material Type and Component, Shields Pueblo.

Artifact Category	Material	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo III (A.D. 1225–1280)	Unassigned	TOTAL
Bead	clay				1			1
	other mineral					1		1
	shell	3	1		1			5
	turquoise			5				5
	unknown bone	1	1				1	3
	unknown stone				1			1
SUBTOTAL		*4*	*2*	*5*	*3*	*1*	*1*	*16*
Bone tube	unknown bone	6	24	1	34	8	21	94
SUBTOTAL		*6*	*24*	*1*	*34*	*8*	*21*	*94*
Pendant	Brushy Basin chert/siltstone	1					1	2
	Burro Canyon chert						1	1
	clay	1	2		1	1	2	7
	gypsum/calcite/barite					1		1
	Morrison chert/siltstone					1		1
	Morrison quartzite						1	1
	sandstone						2	2
	shell		2		3		2	7
	slate/shale	1	1				1	3
	turquoise			1	1			2
	unknown bone	2						2
	unknown chert/siltstone				2			2
	unknown stone		1	1		1	2	5
SUBTOTAL		*5*	*6*	*2*	*7*	*4*	*12*	*36*
Ring	unknown bone				1			1
SUBTOTAL					*1*			*1*
TOTAL		15	32	8	45	13	34	147
Percent of total count		10.20	21.77	5.44	30.61	8.84	23.13	100.00
Weight (kg) of cooking pottery		29.67	100.29	10.19	148.60	69.97	193.48	552.20
Adornment items/kg of cooking pottery		0.51	0.32	0.79	0.30	0.19	0.18	0.27

Table 13.12. Extralocal Lithic Items by Material Type, Shields Pueblo.

(a) Table 13.12, Semilocal Materials

Artifact Type		Semilocal Materials											
		Agate/ Chalcedony		Brushy Basin Chert/ Siltstone		Burro Canyon Chert		Jet		Petrified Wood		Red Jasper	
		N	%	N	%	N	%	N	%	N	%	N	%
Objects of personal adornment	bead												
	pendant			2	0.14	1	0.08						
	shell												
Chipped stone	core	4	0.80	42	2.96	21	1.74						
	debitage	428	85.09	1,203	84.72	1,010	83.54			4	21.05	20	48.78
	micro-debitage	1	0.20										
	modified flake	23	4.57	150	10.56	88	7.28			1	5.26	4	9.76
Formal chipped-stone tools	chipped-stone tool											1	2.44
	biface	12	2.39	1	0.07	30	2.48			2	10.53	3	7.32
	drill	5	0.99	5	0.35	6	0.50					2	4.88
	projectile point	27	5.37	1	0.07	24	1.99			3	15.79	10	24.39
Other lithic items	peckingstone	1	0.20	7	0.49	21	1.74					1	2.44
	gaming piece												
	mineral/stone sample	1	0.20			2	0.17	1	16.67	6	31.58		
	modified core			7	0.49	6	0.50						
	other modified stone/mineral	1	0.20	2	0.14			5	83.33	3	15.79		
	TOTAL	503	100.00	1,420	100.00	1,209	100.00	6	100.00	19	100.00	41	100.00

(b) Table 13.12, Nonlocal Materials and Total

Artifact Type		Nonlocal Materials										TOTAL	
		Nonlocal Chert/ Siltstone		Obsidian		Shell		Turquoise		Washington Pass Chert			
		N	%	N	%	N	%	N	%	N	%	N	%
Objects of personal adornment	bead					5	33.33	5	25.00			10	0.30
	pendant					7	46.67	2	10.00			12	0.36
	shell					2	13.33					2	0.06
Chipped stone	core	1	8.33							1	9.09	69	2.08
	debitage	2	16.67	52	80.00					8	72.73	2,727	82.11
	micro-debitage											1	0.03
	modified flake	3	25.00	4	6.15					2	18.18	275	8.28
Formal chipped-stone tools	chipped-stone tool											1	0.03
	biface	2	16.67									50	1.51
	drill			2	3.08							20	0.60
	projectile point	4	33.33	5	7.69							74	2.23
Other lithic items	peckingstone											30	0.90
	gaming piece					1	6.67					1	0.03
	mineral/stone sample							12	60.00			22	0.66
	modified core			1	1.54							14	0.42
	other modified stone/mineral			1	1.54			1	5.00			13	0.39
	TOTAL	12	100.00	65	100.00	15	100.00	20	100.00	11	100.00	3,321	100.00

Table 13.13. Obsidian Artifacts by Context, Artifact Type, and Source, Shields Pueblo.

PD	FS	Item	Artifact Category	Study Unit Description	Study Unit Number	Fill Assemblage Position	Fill Assemblage Type	Obsidian Source*
17	3		debitage	noncultural	105	fill	mixed deposit	Cerro Toledo Rhyolite
48	2		debitage	masonry surface structure	104	fill	mixed deposit	Valle Grande
48	51		debitage	masonry surface structure	104	fill	mixed deposit	Cerro Toledo Rhyolite
70	2		debitage	noncultural	105	surface contact	mixed deposit	Valle Grande
82	15		modified flake	noncultural	105	fill	mixed deposit	Cerro Toledo Rhyolite
151	6		debitage	noncultural	502	fill	mixed deposit	Cerro Toledo Rhyolite
339	2		debitage	midden	210	fill	cultural deposit	Cerro Toledo Rhyolite
534	5		debitage	masonry surface structure	104	fill	mixed deposit	Unknown
668	13		debitage	noncultural	1401	fill	mixed deposit	Valle Grande
706	2		debitage	subterranean kiva	208	fill	collapsed structure	Valle Grande
874	3		debitage	subterranean kiva	208	fill	cultural deposit	Valle Grande
884	3		debitage	noncultural	105	fill	mixed deposit	Valle Grande
919	2	1	debitage	subterranean room	124	fill	mixed deposit	Cerro Toledo Rhyolite
919	2	2	debitage	subterranean room	124	fill	mixed deposit	Cerro Toledo Rhyolite
924	21		drill	midden	1409	fill	cultural deposit	Cerro Toledo Rhyolite
983	11		debitage	extramural surface	130	fill	cultural deposit	Cerro Toledo Rhyolite
983	29	1	debitage	extramural surface	130	fill	cultural deposit	Cerro Toledo Rhyolite
983	29	2	debitage	extramural surface	130	fill	cultural deposit	Cerro Toledo Rhyolite
983	29	3	debitage	extramural surface	130	fill	cultural deposit	Cerro Toledo Rhyolite
983	29	4	debitage	extramural surface	130	fill	cultural deposit	Cerro Toledo Rhyolite
983	29	5	debitage	extramural surface	130	fill	cultural deposit	Cerro Toledo Rhyolite
983	29	7	debitage	extramural surface	130	fill	cultural deposit	Cerro Toledo Rhyolite

PD	FS	Item	Artifact Category	Study Unit Description	Study Unit Number	Fill Assemblage Position	Fill Assemblage Type	Obsidian Source*
983	49	1	debitage	extramural surface	130	fill	cultural deposit	Cerro Toledo Rhyolite
983	49	2	debitage	extramural surface	130	fill	cultural deposit	Cerro Toledo Rhyolite
983	49	3	debitage	extramural surface	130	fill	cultural deposit	Cerro Toledo Rhyolite
1050	6	1	debitage	noncultural	202	fill	mixed deposit	Cerro Toledo Rhyolite
1050	6	2	debitage	noncultural	202	fill	mixed deposit	Valle Grande
1076	12		debitage	subterranean kiva	222	fill	collapsed structure	Cerro Toledo Rhyolite
1077	12		debitage	subterranean kiva	222	fill	collapsed structure	Valle Grande
1099	4		drill	midden	152	fill	cultural deposit	Unknown
1201	13		projectile point	noncultural	1302	fill	mixed deposit	Cerro Toledo Rhyolite
1248	11		debitage	midden	1320	fill	collapsed structure	Valle Grande
1312	6		projectile point	noncultural	1302	fill	mixed deposit	Valle Grande
1317	3		debitage	earth-walled pit structure	1308	fill	collapsed structure	El Rechuelos
1358	29	39	debitage	subterranean room	205	fill	collapsed structure	Cerro Toledo Rhyolite
1366	9		projectile point	earth-walled pit structure	1308	surface contact	collapsed structure	Mount Taylor
1368	3		projectile point	noncultural	1302	fill	mixed deposit	Valle Grande
1375	9		debitage	midden	1312	fill	cultural deposit	Valle Grande
1737	9		projectile point	noncultural	1101	fill	mixed deposit	Cerro Toledo Rhyolite
1743	8		modified flake	midden	153	fill	collapsed structure	Valle Grande
1776	6		debitage	midden	1202	fill	cultural deposit	Valle Grande
1826	7		debitage	midden	245	fill	cultural deposit	Valle Grande
1856	2		debitage	midden	153	fill	collapsed structure	Valle Grande
1862	5		debitage	earth-walled pit structure	138	fill	collapsed structure	Cerro Toledo Rhyolite
1865	27		debitage	earth-walled pit structure	138	fill	collapsed structure	Cerro Toledo Rhyolite

PD	FS	Item	Artifact Category	Study Unit Description	Study Unit Number	Fill Assemblage Position	Fill Assemblage Type	Obsidian Source*
1872	14		debitage	midden	1321	fill	cultural deposit	El Rechuelos
1872	29		debitage	midden	1321	fill	cultural deposit	El Rechuelos
1875	9		debitage	midden	1320	fill	cultural deposit	Cerro Toledo Rhyolite
1875	35		debitage	midden	1320	fill	cultural deposit	Cerro Toledo Rhyolite
1878	11		modified flake	midden	1310	fill	cultural deposit	Cerro Toledo Rhyolite
1879	22		debitage	midden	1309	fill	cultural deposit	Cerro Toledo Rhyolite
1884	74		debitage	midden	1107	fill	cultural deposit	Cerro Toledo Rhyolite
1895	14		debitage	midden	1309	fill	cultural deposit	Cerro Toledo Rhyolite
1895	14	1	debitage	midden	1309	fill	cultural deposit	Valle Grande
1900	33		debitage	midden	1320	fill	cultural deposit	Valle Grande
1900	33	1	debitage	midden	1320	fill	cultural deposit	Cerro Toledo Rhyolite
1903	57		modified core	midden	1310	fill	cultural deposit	El Rechuelos
1926	6		modified flake	midden	245	fill	cultural deposit	Valle Grande
1926	38	1	debitage	midden	245	fill	cultural deposit	Valle Grande
1926	38	2	debitage	midden	245	fill	cultural deposit	Valle Grande
1929	40		debitage	midden	1309	fill	cultural deposit	Cerro Toledo Rhyolite
1959	1		debitage	midden	245	fill	cultural deposit	Valle Grande
1976	32	1	debitage	midden	1320	fill	cultural deposit	Valle Grande
1976	32	2	debitage	midden	1320	fill	cultural deposit	Valle Grande
2027	8		debitage	midden	1321	fill	cultural deposit	Valle Grande
2035	1		debitage	earth-walled pit structure	1308	fill	collapsed structure	Cerro Toledo Rhyolite

[*] Sources provided by Shackley (2002).

Table 13.14. Extralocal Pottery by Form and Type, Shields Pueblo.

Form	Semilocal Pottery Types										Nonlocal Pottery Types								Unknown Red		TOTAL	
	Abajo Red-on-orange		Bluff Black-on-red		Deadmans Black-on-red		Indeterminate Local Red Painted		Indeterminate Local Red Unpainted		Other Gray Nonlocal		Other Red Nonlocal		Other White Nonlocal		Polychrome					
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
bowl	18	90.00	10	83.33	53	82.81	32	80.00	93	69.92	1	11.11	364	86.67	19	38.78	27	100.00	42	76.36	659	79.49
jar	2	10.00	1	8.33	10	15.63	5	12.50	25	18.80	8	88.89	47	11.19	25	51.02			7	12.73	130	15.68
kiva/ seed jar			1	8.33					1	0.75			1	0.24							3	0.36
ladle					1	1.56		0.00													1	0.12
mug													1	0.24	2	4.08					3	0.36
other															3	6.12					3	0.36
unknown							3	7.50	14	10.53			7	1.67					6	10.91	30	3.62
TOTAL	20	100.00	12	100.00	64	100.00	40	100.00	133	100.00	9	100.00	420	100.00	49	100.00	27	100.00	55	100.00	829	100.00

Table 13.15. Total Extralocal Items by Architectural Block, Shields Pueblo.

Architectural Block	Lithic Items*			Pottery Items			TOTAL			Cooking Pottery Wt. (g)
	N	%	R^1	N	%	R^1	N	%	R^1	
100	146	21.86	1.38	233	28.11	2.21	379	25.3	3.59	105,595.9
200	104	15.57	0.88	156	18.82	1.33	260	17.4	2.21	117,515.9
300	1	0.15	1.50	4	0.48	6.01	5	0.3	7.51	665.5
400	16	2.40	0.92	18	2.17	1.03	34	2.3	1.95	17,434.9
500	2	0.30	1.79	1	0.12	0.90	3	0.2	2.69	1,117.3
600	2	0.30	0.64	7	0.84	2.24	9	0.6	2.88	3,125.4
700				1	0.12	1.76	1	0.1	1.76	569.0
800	1	0.15	0.27	2	0.24	0.53	3	0.2	0.80	3,769.0
900				1	0.12	1.80	1	0.1	1.80	555.9
1000	1	0.15	0.96	2	0.24	1.93	3	0.2	2.89	1,036.3
1100	44	6.59	0.87	42	5.07	0.83	86	5.7	1.69	50,749.2
1200	14	2.10	0.54	14	1.69	0.54	28	1.9	1.09	25,778.8
1300	233	34.88	1.85	224	27.02	1.78	457	30.5	3.64	125,616.4
1400	91	13.62	1.04	114	13.75	1.30	205	13.7	2.34	87,746.7
1500	8	1.20	0.86	6	0.72	0.65	14	0.9	1.51	9,291.1
1900	5	0.75	0.99	4	0.48	0.79	9	0.6	1.79	5,035.0
TOTAL	668	100.00		829	100.00		1,497	100.00		555,602.3

R^1 = Number of extralocal items/kg of cooking pottery.
* Includes shell items.

Table 13.16. Nonlocal Red Ware Sherds by Architectural Block, Shields Pueblo.

(a) Table 13.16, by Block and Count

Architectural Block	White Mountain Red Ware			Tsegi Orange Ware			TOTAL			Cooking Pottery Wt. (g)
	N	%	R^1	N	%	R^1	N	%	R^1	
100	29	14.87	0.27	61	30.65	0.58	90	22.84	0.85	105,595.9
200	45	23.08	0.38	43	21.61	0.37	88	22.34	0.75	117,515.6
300	4	2.05	6.01				4	1.02	6.01	665.5
400	7	3.59	0.40	4	2.01	0.23	11	2.79	0.63	17,434.9
600	2	1.03	0.64	2	1.01	0.64	4	1.02	1.28	3,125.4
800				1	0.50	0.27	1	0.25	0.27	3,769.0
1000				1	0.50	0.96	1	0.25	0.96	1,036.3
1100	21	10.77	0.41	5	2.51	0.10	26	6.60	0.51	50,749.2
1200	7	3.59	0.27	4	2.01	0.16	11	2.79	0.43	25,778.8
1300	26	13.33	0.21	67	33.67	0.53	93	23.60	0.74	125,616.4
1400	47	24.10	0.54	11	5.53	0.13	58	14.72	0.66	87,746.7
1500	5	2.56	0.54				5	1.27	0.54	9,291.1
1900	2	1.03	0.40				2	0.51	0.40	5,035.0
TOTAL	195	100.00		199	100.00		394	100.00		

R^1 = Number of extralocal items/kg of cooking pottery.

(b) Table 13.16, by Block and Weight

Architectural Block	White Mountain Red Ware		Tsegi Orange Ware		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
100	93.7	10.25	311.3	33.66	405.0	22.02
200	198.2	21.67	172.9	18.69	371.1	20.17
300	13.5	1.48			13.5	0.73
400	14.6	1.60	10.0	1.08	24.6	1.34
600	3.3	0.36	19.7	2.13	23.0	1.25
800			3.5	0.38	3.5	0.19
1000			0.7	0.08	0.7	0.04
1100	72.4	7.91	11.6	1.25	84.0	4.56
1200	34.6	3.78	12.6	1.36	47.2	2.57
1300	113.0	12.36	363.8	39.33	476.8	25.92
1400	319.0	34.89	18.8	2.03	337.8	18.37
1500	28.9	3.16			28.9	1.57
1900	23.3	2.55			23.3	1.27
TOTAL	914.5	100.00	925.0	100.00	1,839.5	100.00

Table 13.17. Nonlocal Gray and White Ware Pottery by Architectural Block, Shields Pueblo.

Architectural Block	PD	FS	Item	Type	Form	Part	Count	Comments
100	983	13		Other White Nonlocal	jar	body	2	Possible Cibola White Ware, Chaco Black-on-white. Fine-line hatchure design. Nip removed, some sherd temper is present.
	1278	5	15	Other White Nonlocal	bowl	rim	1	Glaze paint.
	1271	34		Other White Nonlocal	bowl	body	1	Cibola White Ware, Gallup Black-on-white.
	1852	1	7	Other White Nonlocal	bowl	rim	1	
	68	1		Other White Nonlocal	jar	body	1	Cibola White Ware, Chaco Black-on-White.
	1856	12		Other White Nonlocal	bowl	body	1	Gallup Black-on-white.
	983	22		Other White Nonlocal	bowl	body	1	Gallup Black-on-white; fits with PD 894, FS 9; sherd container.
	1150	2		Other White Nonlocal	jar	body	1	
	919	1		Other White Nonlocal	jar	body	1	Cibola White Ware; Chaco Black-on-white.
	894	9		Other White Nonlocal	bowl	body	1	Refits with PD 983 FS 22, Cibola-Gallup Black-on-white.
	630	4		Other White Nonlocal	bowl	body	1	Tusayan White Ware; possible Wepo Black-on-white.
	628	14		Other White Nonlocal	bowl	body	1	
	624	3		Other White Nonlocal	bowl	body	1	Cibola White Ware.
	1743	1	7	Other Gray Nonlocal	jar	rim	1	
200	675	1	2	Other White Nonlocal	jar	rim	1	
	703	2		Other White Nonlocal	bowl	body	1	Cibola White Ware with slip-slop; nip removed.
	938	51		Other White Nonlocal	jar	body	1	Possible Cibola White Ware, Chaco Black-on-white. Fine-line hatchure design. Nip removed, some sherd temper.
	1959	22	14	Other White Nonlocal	bowl	rim	1	Cibola White Ware, Chaco Black-on-White.
	997	19		Other White Nonlocal	other	body	2	Gallup Black-on-white; unusual form, pitcher or cylinder jar?
	1258	25		Other White Nonlocal	jar	body	1	Cibola White Ware, Chaco Black-on-white.
	938	5		Other White Nonlocal	jar	body	2	Possible Cibola White Ware, fine-line hatchure design.
1100	1737	1		Other White Nonlocal	jar	body	2	Cibola White Ware.
	2079	15		Other White Nonlocal	bowl	body	1	
	1731	59	2	Other Gray Nonlocal	jar	rim	1	Mineral paint on the inside of the rim.
	1938	6	5	Other Gray Nonlocal	bowl	rim	1	

Architectural Block	PD	FS	Item	Type	Form	Part	Count	Comments
1300	1207	1		Other White Nonlocal	jar	body	1	Gallup Black-on-white.
	1311	1		Other White Nonlocal	bowl	body	1	Rosa Black-on-white, glaze paint.
	1205	8		Other White Nonlocal	jar	body	2	Cibola white ware.
	1316	102	4	Other White Nonlocal	mug	rim	1	Gallup Black-on-white.
	611	27		Other White Nonlocal	jar	body	1	Cibola White Ware.
	1207	1		Other White Nonlocal	jar	body	1	Chaco Black-on-white.
	1903	17		Other White Nonlocal	jar	body	1	Cibola White Ware, Gallup Black-on-white.
	1978	8		Other White Nonlocal	jar	body	1	Gallup Black-on-white.
	2034	1		Other White Nonlocal	jar	body	1	Not painted but polished, mica with igneous rock in temper. Nip taken.
	1904	1		Other White Nonlocal	jar	body	1	Gallup Black-on-white.
	1879	59		Other White Nonlocal	bowl	body	1	
	1877	2	9	Other White Nonlocal	other	rim	1	Gallup Black-on-white, miniature pitcher with shoulder.
	1873	3		Other White Nonlocal	jar	body	1	Gallup Black-on-white.
	2093	8		Other White Nonlocal	mug	body	1	Gallup Black-on-white.
	1813	35		Other White Nonlocal	bowl	body	1	Chuska White Ware, possibly Chaco Black-on-White.
	1370	1		Other White Nonlocal	bowl	body	1	Rosa Black-on-white.
	1366	3	1	Other Gray Nonlocal	jar	rim	1	
	2034	1	3	Other Gray Nonlocal	jar	rim	1	
	1880	1	1	Other Gray Nonlocal	jar	rim	1	
	1875	47	11	Other Gray Nonlocal	jar	rim	1	Very flaring rim; biotite mica in temper; executed in fashion like Mummy Lake Gray.
1400	1060	21		Other White Nonlocal	jar	body	1	Gallup Black-on-white.
	2018	1		Other White Nonlocal	jar	body	1	Gallup Black-on-white?
	930	18		Other White Nonlocal	bowl	body	1	Misfired.
	2017	25		Other White Nonlocal	bowl	body	1	Possibly Chaco Black-on-white, fine-line hatchure design, nip removed, some sand temper.
	1295	5		Other White Nonlocal	jar	body	1	Cibola White Ware, Gallup Black-on-white.
	924	56	8	Other Gray Nonlocal	jar	rim	1	
1900	2177	1		Other White Nonlocal	bowl	body	1	Rosa Black-on-white?

Table 13.18. Total Extralocal Items by Component, Shields Pueblo.

Component	Lithic Items			Pottery Items			TOTAL			Cooking pottery weight (g)
	N	%	R^1	N	%	R^1	N	%	R^1	
Early Pueblo I	5	0.78	1.61	18	2.18	5.80	23	1.56	7.41	3,105.20
Middle Pueblo II	60	9.32	2.02	64	7.74	2.16	124	8.43	4.18	29,671.62
Late Pueblo II	177	27.48	1.76	178	21.52	1.77	355	24.13	3.54	100,285.34
Late Pueblo II through Early Pueblo III	17	2.64	1.67	19	2.30	1.87	36	2.45	3.53	10,186.90
Early Pueblo III	116	18.01	0.78	94	11.37	0.63	210	14.28	1.41	148,604.22
Late Pueblo III	24	3.73	0.34	58	7.01	0.83	82	5.57	1.17	69,972.41
Unassigned	245	38.04	1.27	396	47.88	2.05	641	43.58	3.31	193,483.60
TOTAL	644	100.00		827	100.00		1,471	100.00		

Table 13.19. Nonlocal Red Ware Pottery by Component, Shields Pueblo.

(a) Table 13.19, by Component and Count

Component	White Mountain Red Ware		Tsegi Orange Ware		TOTAL	
	N	%	N	%	N	%
Early Pueblo I (A.D. 725–800)	1	0.51			1	0.25
Middle Pueblo II (A.D. 1020–1060)	2	1.03	16	8.04	18	4.57
Late Pueblo II (A.D. 1060–1140)	23	11.79	65	32.66	88	22.34
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	2	1.03	1	0.50	3	0.76
Early Pueblo III (A.D. 1140–1225)	36	18.46	20	10.05	56	14.21
Late Pueblo III (A.D. 1225–1280)	16	8.21	3	1.51	19	4.82
Unassigned	115	58.97	94	47.24	209	53.05
TOTAL	195	100.00	199	100.00	394	100.00

(b) Table 13.19, by Component and Weight

Component	White Mountain Red Ware		Tsegi Orange Ware		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Early Pueblo I (A.D. 725–800)	4.0	0.44			4.0	0.22
Middle Pueblo II (A.D. 1020–1060)	9.5	1.04	122.9	13.28	132.4	7.20
Late Pueblo II (A.D. 1060–1140)	118.8	12.99	328.4	35.50	447.2	24.31
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	12.9	1.41	3.0	0.32	15.9	0.86
Early Pueblo III (A.D. 1140–1225)	152.8	16.71	81.4	8.80	234.2	12.73
Late Pueblo III (A.D. 1225–1280)	163.3	17.86	18.1	1.96	181.4	9.86
Unassigned	453.2	49.55	371.2	40.14	824.4	44.82
TOTAL	914.5	100.00	925.0	100.00	1,839.5	100.00

Table 13.20. Nonlocal Gray and White Ware Pottery by Component, Shields Pueblo.

Component	PD	FS	Item	Type	Form	Part	Count	Comments
Middle Pueblo II (A.D. 1020–1060)	1813	35		Other White Nonlocal	bowl	body	1	Chuskan White Ware, possibly Chaco Black-on-White.
	1877	2	9	Other White Nonlocal	other	rim	1	Gallup Black-on-white, miniature pitcher with shoulder.
	1880	1	1	Other Gray Nonlocal	jar	rim	1	
	1903	17		Other White Nonlocal	jar	body	1	Cibola White Ware, Gallup Black-on-white.
	1904	1		Other White Nonlocal	jar	body	1	Gallup Black-on-white.
	2034	1		Other White Nonlocal	jar	body	1	Not painted but polished, mica with igneous rock in temper. Nip taken.
	2034	1	3	Other Gray Nonlocal	jar	rim	1	
Late Pueblo II (A.D. 1060–1140)	894	9		Other White Nonlocal	bowl	body	1	Refits with PD 983 FS 22, Cibola-Gallup Black-on-white.
	919	1		Other White Nonlocal	jar	body	1	Cibola White Ware; Chaco Black-on-white.
	983	13		Other White Nonlocal	jar	body	2	Possible Cibola White Ware, Chaco Black-on-white. Fine-line hatchure design. Nip removed, some sherd temper is present.
	983	22		Other White Nonlocal	bowl	body	1	Gallup Black-on-white; fits with PD 894, FS 9; sherd container.
	1258	25		Other White Nonlocal	jar	body	1	Cibola White Ware, Chaco Black-on-white.
	1271	34		Other White Nonlocal	bowl	body	1	Cibola White Ware, Gallup Black-on-white.
	1278	5	15	Other White Nonlocal	bowl	rim	1	Glaze paint.
	1366	3	1	Other Gray Nonlocal	jar	rim	1	
	1743	1	7	Other Gray Nonlocal	jar	rim	1	
	1852	1	7	Other White Nonlocal	bowl	rim	1	
	1856	12		Other White Nonlocal	bowl	body	1	Gallup Black-on-white.
	1873	3		Other White Nonlocal	jar	body	1	Gallup Black-on-white

Component	PD	FS	Item	Type	Form	Part	Count	Comments
Late Pueblo II (A.D. 1060–1140), continued	1875	47	11	Other Gray Nonlocal	jar	rim	1	Very flaring rim; biotite mica in temper; executed in fashion like Mummy Lake Gray.
	1879	59		Other White Nonlocal	bowl	body	1	
	1978	8		Other White Nonlocal	jar	body	1	Gallup Black-on-white.
	2093	8		Other White Nonlocal	mug	body	1	Gallup Black-on-white.
Late Pueblo II through Early Pueblo III (A.D. 1060–1225)	628	14		Other White Nonlocal	bowl	body	1	
	630	4		Other White Nonlocal	bowl	body	1	Tusayan Whiteware; possible Wepo Black-on-white.
	1295	5		Other White Nonlocal	jar	body	1	Cibola White Ware, Gallup Black-on-white.
Early Pueblo III (A.D. 1140–1225)	624	3		Other White Nonlocal	bowl	body	1	Cibola White Ware.
	675	1	2	Other White Nonlocal	jar	rim	1	
	703	2		Other White Nonlocal	bowl	body	1	Cibola White Ware with slip-slop; nip removed.
	924	56	8	Other Gray Nonlocal	jar	rim	1	
	930	18		Other White Nonlocal	bowl	body	1	Misfired.
	1060	21		Other White Nonlocal	jar	body	1	Gallup Black-on-white.
	1150	2		Other White Nonlocal	jar	body	1	
	1731	59	2	Other Gray Nonlocal	jar	rim	1	Mineral paint on the inside of the rim.
	1959	22	14	Other White Nonlocal	bowl	rim	1	Cibola White Ware, Chaco Black-on-White.
	2017	25		Other White Nonlocal	bowl	body	1	Possibly Chaco Black-on-white, fine-line hatchure design, nip removed, some sand temper.
	2018	1		Other White Nonlocal	jar	body	1	Gallup Black-on-white?
	2079	15		Other White Nonlocal	bowl	body	1	

Component	PD	FS	Item	Type	Form	Part	Count	Comments
Unassigned	68	1		Other White Nonlocal	jar	body	1	Cibola White Ware, Chaco Black-on-White.
	611	27		Other White Nonlocal	jar	body	1	Cibola White Ware.
	938	5		Other White Nonlocal	jar	body	2	Possible Cibola White Ware, fine-line hatchure design.
	938	51		Other White Nonlocal	jar	body	1	Possible Cibola White Ware, Chaco Black-on-white. Fine-line hatchure design. Nip removed, some sherd temper.
	997	19		Other White Nonlocal	other	body	2	Gallup Black-on-white; unusual form, pitcher or cylinder jar?
	1205	8		Other White Nonlocal	jar	body	2	Cibola White Ware.
	1207	1		Other White Nonlocal	jar	body	1	Chaco Black-on-white.
	1207	1		Other White Nonlocal	jar	body	1	Gallup Black-on-white.
	1311	1		Other White Nonlocal	bowl	body	1	Rosa Black-on-white, glaze paint.
	1316	102	4	Other White Nonlocal	mug	rim	1	Gallup Black-on-white.
	1370	1		Other White Nonlocal	bowl	body	1	Rosa Black-on-white.
	1737	1		Other White Nonlocal	jar	body	2	Cibola White Ware.
	1938	6	5	Other Gray Nonlocal	bowl	rim	1	
	2177	1		Other White Nonlocal	bowl	body	1	Rosa Black-on-white?

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Chapter 14

Artifacts Synthesis

by Jonathan D. Till

Introduction

This chapter synthesizes the artifact data from Shields Pueblo from an intrasite perspective as well as in the context of the broader region. The chapter begins with the intrasite analyses, which consist of evaluations of midden and abandonment assemblages cross-referenced with spatial and temporal data. The chapter concludes with a discussion of the artifact assemblage data from Shields Pueblo, and other sites within southwestern Colorado, in light of research issues raised in the Shields Pueblo Research Project research design, *Communities Through Time: Migration, Cooperation, and Conflict* (Duff et al. 1999).

Midden Assemblage Data

The analysis of midden data from Shields Pueblo is based on several assumptions about accumulations from sites of the ancestral Pueblo peoples (Varien and Mills 1997). First, middens derive from accumulations associated with the occupants of a household (often represented by a pithouse or kiva). Second, the accumulated trash results from a particular behavior or set of behaviors. Third, these behaviors resulted in the use of tools and/or the discard of certain remains associated with these behaviors (e.g., the creation of a chipped-stone tool results in the production of flakes, shatter, and cores as well as the occasional discard of flaking tools such as antler billets and hammerstones). Fourth, all things being equal, the discard of both tools and refuse occurs at a relatively constant rate. Finally, the relative amounts of different types of artifacts in a midden are assumed to reflect the relative frequencies with which the activities associated with those artifact types occurred.

In total, 117 proveniences at Shields Pueblo were recorded as deposits of secondary refuse (midden) that were also assigned to a specific subperiod. Table 14.1 combines these proveniences by study unit number and provides their temporal component by subperiod, yielding a total of 27 midden contexts for consideration. Additionally, this table lists possible structural associations for several of the middens, based on spatial proximity and temporal assignments for the structures themselves. In the following analysis, I have grouped assemblages by subperiod, excluding the Late Pueblo II/Early Pueblo III subperiod due to its vague temporal placement and relatively small sample size. Due to the difficulties in associating specific midden deposits with particular unit pueblos, I have mainly chosen to associate these deposits with the coarse spatial unit, "architectural block." Most of the study units in Block 100 that are affiliated with the Late Pueblo II subperiod are spatially associated with the site's great house architecture (see Chapter 3 in this report for a discussion of the great house). Study Unit 131 is not; however, its contents are so minimal as to be negligible (see Table 14.1). The deposits dated to the Late Pueblo II subperiod from Architectural Block 200 probably derive from a cluster of three households represented by Structures 221, 222, and 223 (masonry kivas). One of the middens in this block, Nonstructure 239, is not spatially associated with this cluster of kivas; however, its cooking pottery assemblage is very small, indicating that the Block 200, Late Pueblo II assemblage essentially reflects the activities conducted in the households associated with Structures 221, 222, and 223. Finally, considering the very small sample size represented by Study Unit 142 (see Table 14.1), I have chosen not to characterize the Early Pueblo III midden assemblage from Block 100.

To provide larger sample sizes, I have collapsed several artifact categories into broader groupings, which generally have functional implications. These groupings are essentially comparable to lumped, functional categories developed for Sand Canyon Pueblo, a Late Pueblo III village less than 10 kilometers to the west of Shields Pueblo (Till and Ortman 2007). The groupings are: formal chipped-stone tools, which include bifaces, projectile points, and drills; informal chipped-stone tools, which include modified cores, modified flakes, and other chipped-stone tools; chipped stone-tool production items, which include cores and hammerstones; food-grinding tools, which include manos, metates, mortars, and pestles; axes/mauls, which include axes and mauls; bone tools, which include bone awls, needles, and scrapers; pottery production items, which include polishing stones, other ceramic artifacts, and unfired sherds; and personal-adornment items, which include beads, pendants, shaped sherds, and bone tubes.

It is apparent from Table 14.1 that no midden assemblages were identified for the Late Pueblo III component at the site. This is due primarily to the fact that these materials were deposited on top of earlier assemblages, and were subsequently subjected to modern agricultural disturbances that mixed these materials, resulting in an inability to isolate Late Pueblo III deposits.

Table 14.2, Table 14.3, and Table 14.4 document the frequencies of artifact categories by count, percentage, and Z-score, respectively. Like percentages, the Z-score is a measure of relative abundance. Percentages of artifact categories for each midden context were converted to Z-scores to facilitate comparison since some categories are much more common than others. Z-scores rescale the values of a distribution in such a way that the mean value equals 0 and the standard deviation equals 1. Figure 14.1 and Figure 14.2 depict the Z-score results and call attention to outstanding departures.

Table 14.4 shows that the highest Z-score for formal chipped-stone tools occurs in the Late Pueblo II component of Block 100, which is associated with the great house. This statistic is in contrast to the amounts of stone-tool production items for this midden context, which is the lowest in terms of Z-scores and percentages for the assemblages considered here. This contrast suggests that while formal chipped-stone tools were used and "retired" more frequently in the vicinity of the great house, this location did not emphasize the manufacture of these tools. On the other hand, a comparison of Z-scores indicates that the Early Pueblo III component of the Block 1100 midden produced an inordinate amount of chipped stone-tool production items, suggesting that chipped stone-tool production was emphasized in this location at this time (see Table 14.4; see Figure 14.1)

Figure 14.1 shows that the midden contexts associated with the Late Pueblo II component of Block 200 suffer a relative dearth of food-grinding tools, indicating that few of these items were retired in this location during that time. The paucity of food-grinding tools may indicate that little food processing occurred in this location. However, this interpretation is not corroborated with a concomitant low frequency of cooking pottery (see Tables 14.1, Table 14.2, and Table 14.3). It seems likely that objects of the food-grinding tool category were removed from this location and recycled for use elsewhere.

Figure 14.1 suggests a few differences between two adjacent, largely contemporaneous architectural blocks (Blocks 1100 and 1200). Figure 14.1 shows a relatively high occurrence of indeterminate ground-stone artifacts associated with the Early Pueblo III component of Block 1100. The moderate amounts of food-grinding tools recovered from this context indicate that the large amounts of indeterminate ground-stone items may not be an unreasonable expectation (see Table 14.2 and Table 14.3). In other words, there was probably a fairly high rate of discard of food-grinding tools in this location. This is in striking contrast with the contemporaneous midden contents recovered from Block 1200, which is immediately south of Block 1100.

The Early Pueblo III component of Block 1200 yielded a high frequency of peckingstones (see Figure 14.1). Again, this is in stark contrast with its neighbor to the north, Block 1100. Activities associated with this artifact type include ground-stone refurbishment and masonry-stone production and shaping. Why this artifact type should be relatively outstanding in this context is not entirely clear; however, the relatively small sample size from Block 1200 may condition these results (see Table 14.2). Table 14.2 also shows the highest absolute numbers of peckingstones are found in association with the Late Pueblo II component of Block 1300, which may have been contemporaneous with the construction and maintenance of the possible great house structure in nearby Block 100. Ortman and Bradley (2002:47) point out that this particular tool type is relatively frequent in the artifact assemblage documented for Pueblo Alto, a spectacular great house site in Chaco Canyon, New Mexico.

The highest Z-score and percentage for corrugated jar sherds, or cooking-jar sherds, is also associated with the Early Pueblo III component of Block 1200 (see Figure 14.2, Table 14.3, and Table 14.4). Otherwise, every other context has a frequency ranging from approximately 30 to 40 percent for each assemblage (see Table 14.3), which suggests that cooking jars were made, used, and discarded at relatively consistent rates during the years that span the Pueblo II and III periods.

The differences between Blocks 1100 and 1200 may arise from complementary functions and labor exchange within a cluster of households during the Early Pueblo III period. Perhaps residents of Block 1100 more often engaged in activities associated with food processing, quite literally sharing the fruits of their labor with residents of Block 1200, who may have focused on the cooking of food as well as construction activities in exchange for the processed food. As another possibility, sample size may have also resulted in the patterns presented for Blocks 1100 and 1200. For example, it is possible that the elevated amounts of cooking pottery in the Early Pueblo III midden assemblage from Block 1200 might be due to the relatively small sample size that this particular context represents (see Table 14.2 for a comparison of the total number of artifacts recovered for each study unit group discussed here). This is further indicated by the lack of a corresponding high frequency in food-grinding tools (see Table 14.2 and Table 14.3).

Figure 14.2 demonstrates that the highest relative frequency of red ware pottery occurs in the Late Pueblo II component of the Block 200 midden. Additionally, the highest absolute numbers and percentages of red ware sherds occur in this assemblage, further emphasizing the strong representation of this pottery ware in this location (see Table 14.2 and Table 14.3). Given that local red ware production essentially ceased by the Pueblo III period, it is not too surprising that the occurrence of red ware is best represented in a midden that predates this period. What is remarkable, perhaps, is that Block 200 stands out as much as it does in contrast to other Pueblo II period midden assemblages examined here. The greatest amount of local red ware was recovered from Block 100, the location of the possible great house at Shields Pueblo. However, only four red ware sherds are documented from midden contexts in Block 100 (see Table 14.2).

Figure 14.2 illustrates that white ware bowl sherds are represented by a relatively low Z-score for the Middle Pueblo II component of Block 1300. This relatively low frequency is also indicated by the smaller percentages of this artifact class (see Table 14.3). Other midden contexts range from 16 to 19 percent; in this case, the Middle Pueblo II component of Block 1300 achieves a percentage of only about 11 percent. Because bowls are associated with the presentation and consumption of food, the relatively low amounts of bowl sherds in this early component at Block 1300 suggest that food consumption behaviors are not as strongly indicated for this portion of the site. The subject of white ware bowl sherd distributions, which is important in the discussion of feasting events and community integration, is an important topic and is further considered below.

Figure 14.2 also shows that white ware jar sherds are represented by a low Z-score for the Early Pueblo III component for Block 200. Because white ware jars are associated with storage, the relative abundance of this artifact class in this midden assemblage compared with the other midden assemblages suggests less emphasis on storage in this location than in other locations at Shields Pueblo.

Like local red ware sherds, white ware mugs are time-sensitive. Mug form is associated with the Pueblo III period, and does not appear to have been a part of the “pottery vernacular” of the Pueblo II period. It comes as no surprise that the midden assemblage with the highest Z-score for this artifact type is associated with the Early Pueblo III component. Whereas Figure 14.2 suggests that the Early Pueblo III midden assemblage in Block 1200 might have an inordinately high relative frequency of mug sherds, Table 14.2 shows that the absolute quantities of these artifacts are quite small in all midden contexts. I suggest that sample size greatly affects the Z-score signature in this instance.

Figure 14.2 also shows a dramatically high relative frequency for nonlocal pottery sherds in the Late Pueblo II midden for Block 200. This is further corroborated by the high absolute number and percentage of these objects in Table 14.2 and Table 14.3. The distribution of all nonlocal pottery at Shields Pueblo indicates greater total amounts and frequencies of nonlocal pottery in the architectural blocks associated with the road alignment (Blocks 100, 200, 1300, and 1400). Though the relative amounts of all nonlocal pottery recovered from the site are higher in Blocks 100 and 1300, the midden data described here suggest something about the history or intensity of nonlocal social relationships at Shields Pueblo. It is possible that occupants of Block 200 could have had somewhat longer, or more intense, nonlocal relationships than occupants of other architectural blocks on the site.

Abandonment Assemblage Data

In contrast to midden assemblages, which offer a long-term perspective on the range of activities conducted in a location, abandonment contexts provide “snapshots” of the activities conducted in a particular place during its final days of use. The artifact assemblages from abandonment contexts at Shields Pueblo provide information relevant to several research issues, including the history of occupation at Shields Pueblo, community organization, and perhaps the nature of “cooperation” between Shields Pueblo and more far-flung Puebloan populations (see Chapter 2 in this report for a more lengthy discussion of research issues)

An ideal method to identify and characterize the abandonment assemblages at Shields Pueblo would compare de facto assemblages from individual features. I initially attempted to use materials from proveniences with Fill Assemblage Type (FAT) designations that stipulated “de facto refuse” and “with de facto refuse” (Crow Canyon Archaeological Center [Crow Canyon] 2001). These FAT designations were assigned at the time of excavation. Unfortunately, the sample sizes from these contexts are too small to characterize reasonably. Furthermore, the variability in the surface area exposed in each feature prohibits reasonable comparison between assemblages of individual features.

To establish sample sizes adequate for analysis, I instead relied on Fill Assemblage Position (FAP) designations. Table 14.5 lists the designations that are here considered to indicate abandonment contexts. While not necessarily as fine-grained as the FAT determinations, the assemblages from these more generalized FAP contexts may reasonably document abandonment contexts.

Table 14.6 lists and characterizes the study units that yielded assemblages with the FAP assignments described above. This table illustrates that while several of the individual study units contained substantial quantities of artifacts, most provided only small or modest assemblages. Variable assemblage size might be the result of different responses to the conditions characterizing the time of structure abandonment. Whether or not the abandonment of a structure was planned, and whether or not a structure’s occupants intended to return, probably strongly conditioned the nature of the artifact assemblage within that structure (Lightfoot 1993). However, as noted earlier, the variable assemblage sizes shown in Table 14.6 may also be due to the differing area/volume excavated for each structure.

There is considerable evidence to show that some ancestral Pueblo abandonments in the Mesa Verde region are marked by a ritual burning of structures, a practice that seems to occur at least from the Basketmaker III through Pueblo III periods (e.g., Lightfoot 1993; Lipe and Varien 1999:338; Wilshusen 1986). Such intensive and purposeful destruction probably signals the intent of a structure’s occupants to not return to that location. Could the burning of a feature indicate that the structure’s occupants were planning a long-distance move? In contrast, if there is evidence for the dismantling and recycling of structures, does this imply a short-distance move? Table 14.7 summarizes the expectations of artifact assemblage compositions with regard to the proposed correlation between the type of move made (long-distance vs. short-distance) and whether the structure was burned or unburned.

To address the above questions, the issue of variability in excavation area/volume, and the problem of small sample sizes, I have grouped the assemblage data according to temporal component and "abandonment mode" (Table 14.8). By this latter term, I consider whether the structure in question was burned, dismantled and/or recycled, or simply unburned. Even grouping these assemblages results in only very small quantities of materials associated with the Pueblo I period; therefore, Pueblo I materials are not included in the following analysis. Furthermore, the span of time that straddles the Pueblo II and III periods, the Late Pueblo II/Early Pueblo III component, may be too broad a span of time to describe meaningful temporal patterns in abandonment practices; these materials are also excluded from analysis here.

Table 14.8 and Table 14.9 account for the quantities and percentages of artifact assemblages by component and abandonment mode. Figure 14.3 and Figure 14.4 use box plots to plot Z-score distributions to affect a comparison between grouped abandonment assemblages. Table 14.10 shows the Z-scores themselves.

Comparing the results presented in Table 14.8, Table 14.9, and Table 14.10, and depicted in Figure 14.3 and Figure 14.4, only one very strong pattern is apparent: the association of pottery vessels with burned structures, and their virtual absence in unburned structures. If, as it is proposed, the burning of structures signaled a long-distance move by a population, it seems unlikely that objects as unwieldy as most pottery vessels would be included in the "baggage."

Surprisingly, the expectations for the frequencies of food-grinding tools (i.e., manos and metates) in abandonment assemblages are not met. Table 14.9 illustrates this through a comparison of the percentages of food-grinding tools in the abandonment assemblages. Likewise, the expectations for light, low-input objects, such as informal chipped-stone tools and peckingstones, are not met. Abraders might also be considered in this category; however, the absolute numbers for these items are fairly low (see Table 14.8) and may not allow for a reasonable characterization.

With the assumption that more usable items were removed from structures that had been recycled, higher frequencies of light "trash," such as debitage and pottery sherds, are expected in those structures that are unburned. The results of this comparison are mixed. Generally speaking, the percentages of debitage in unburned features are higher than those within burned features, particularly in the Pueblo II and Early Pueblo III assemblages. The same cannot be said for pottery sherds. This discrepancy may be due to variability in vessel size through time. Additionally, the presence of fragmented vessels on the floors of burned structures may have resulted in an overall increase in the frequency of sherds.

Figure 14.3 and Figure 14.4 identify several outliers in Z-score comparisons. The outliers for axes/mauls and red ware sherds may be due to the small sample sizes for these artifact classes (see Table 14.8). The outlier recognized for indeterminate ground-stone artifacts, which is attributed to the Late Pueblo II, unburned assemblage is not too surprising. Fragmented ground stone, which represents a class of artifacts of little use-value, may be anticipated as a residuum within recycled structures. As exhibited in Table 14.9 and Table 14.10, there is the general tendency for indeterminate ground stone to be associated with the assemblages from unburned features.

Figure 14.3 and Figure 14.4 also indicate that peckingstones and white ware jar sherds occur with greater-than-expected frequency in the Pueblo III, burned abandonment assemblage. This assemblage actually derives from one kiva, Structure 1205. While tree-ring dates indicate that this structure was built in the Early Pueblo III subperiod (in the A.D. 1190s), the time of the kiva's abandonment is unknown. Given the 40-year-average estimate for the use-life of unit pueblos (Duff and Wilshusen 2000:171; Varien 1999:195–196), it seems likely that the structure had been abandoned by the mid-thirteenth century. Only one peckingstone was recorded in association with the structure's floor (Point Location [PL] 132); the other peckingstones were recovered from roof fall. It is possible that these latter objects had been resting on the structure's roof at the time it burned. Given that the structure had likely been abandoned by the mid-1200s, the high frequency of peckingstones here may be a reflection of construction activities within the vicinity. The many white ware jar sherds documented in this structure are probably the remains of a Mancos Black-on-white jar (PL 122), only a portion of which was recovered from the excavation trench that bisected the kiva. Finally, the relatively high frequency of red ware sherds in the Pueblo II, unburned abandonment assemblage (see Figure 14.4) is probably due to the fact that local red ware pottery production ceases in the region by the mid-1100s.

During the span of time that Shields Pueblo was occupied from the Middle Pueblo II through the Late Pueblo III periods, Pueblo society witnessed apparent organizational changes from a Chaco-era landscape to the Great Pueblo villages. Did these changes include abandonment practices? It is interesting to note that none of the Pueblo II period structures were burned. Perhaps the abandonment of architectural features at this time did not involve conflagration. However, the fact that these structures were not burned may indicate that the buildings were considered a practical resource for construction materials, such as timber and masonry, or for heavy but useful items, such as ground stone. The Shields Pueblo companion database (Crow Canyon Archaeological Center 2003) indicates that many of the Pueblo II period kivas had been dismantled and their contents recycled, suggesting that the occupants moved a relatively short distance.

Burning as an abandonment ritual becomes evident at Shields Pueblo during the Pueblo III period. Are there differences, however, in abandonment rituals across the 150 years of the Pueblo III period? Comparing the Early and Late Pueblo III abandonment assemblages, a few similarities and differences are of note. First, whole vessels are left on floors of both Early and Late Pueblo III structures, a similarity noted earlier for the burned structure assemblages. Higher frequencies of preciosities (such as adornment items and nonlocal sherds) seen in the Late Pueblo III assemblages may point to a change in abandonment ritual, accompanied by an interesting architectural expression: shrines.

Even after the structures of Shields Pueblo had been supposedly abandoned, and had partially filled in with sediments, these particular places, and perhaps their inhabitants, were not forgotten. This is indicated by the placement of what are likely "shrines" within kiva depressions at Shields Pueblo (Ryan 2000). Archaeologists have identified shrines of ancestral Pueblo origin throughout the Mesa Verde region (e.g., Hurst and Till 2002, 2008; Rohn 1977:110–121; Thompson et al. 1997), but little or no systematic investigation of this feature type has occurred at the regional level.

Crow Canyon's work at Shields Pueblo has identified eight possible shrines. Independent of the archaeological data, members of Crow Canyon's Native American Advisory Group corroborated the identification of these features as such. Table 14.11 lists the shrines, describes them in terms of plan shape and temporal affiliation, and associates them with the kiva depressions in which they were constructed. Most of the shrines at Shields Pueblo are generally subcircular or round in plan shape. At least one of the shrines (Structure 242) is not round in shape, but instead appears to be rectangular or square.

As noted above, all of the shrines identified at Shields Pueblo were found in kivas that date from the Late Pueblo III subperiod. At least six of these features were found in structures that had been burned. Only one was found in an unburned structure. All of the shrines were constructed on postabandonment or natural sediments that overlie roof-fall sediments. Surfaces documented with these features were ephemeral, and only two of the shrines, Structures 1411 and 1412, had artifacts identified with surfaces (Table 14.12 and Table 14.13). Structure 1411 yielded only several sherds; in contrast, Structure 1412 provided many more kinds of artifacts in addition to a substantial pottery assemblage. Recording archaeologists also observed, however, that the deposits containing these artifacts were the result of postabandonment processes, indicating the likelihood that the locations of most or all of the artifacts are not the result of their being used with the shrine. Nonetheless, the presence of a few particular objects in Structure 1412 is worth discussing.

Among the artifacts found in Structure 1412, one formal chipped-stone tool is of note: a projectile point made from an "unknown chert/siltstone," suggesting that the material could be of nonlocal origin. Cameron (2008a) has noted the association of projectile points with shrines found on the Bluff Great House in southeastern Utah, and Till (2001) has documented unusual bifacial artifacts in association with *herraduras*, structures that are arguably shrines. In addition to the projectile point, two of the sherds in Structure 1412 are recorded as "Other red nonlocal" in Table 14.12. These are White Mountain Red Ware sherds of the St. Johns Polychrome type. This ware derives from the Puerco River region of west-central New Mexico and east-central Arizona; St. Johns Polychrome was produced for most of the years that span the Pueblo III period (A.D. 1175–1300) (Carlson 1970:31–41). These objects suggest the possibility of extra-regional ties, possibly with communities of the Puerco River region. If these objects are associated with the shrine, perhaps they served as a reference to an affiliation with that distant region.

Artifact Assemblage Data and the Shields Pueblo Research Design

The name of the research design guiding investigations at Shields Pueblo, *Communities Through Time: Migration, Cooperation, and Conflict* (Duff et al. 1999), underscores several of the research issues encapsulated by this project. The history of Shields Pueblo—which spanned at least several centuries—is important to understand because that history, in part, structured what happened during the final years of occupation at Shields Pueblo as well as in the larger surrounding landscape. The history of Shields Pueblo gives us the opportunity to understand changing social climates over the course of several centuries. The processes by which people work with each other or against each other, and the material-culture patterns that represent these behaviors, simultaneously shape and are shaped by this history. In this final section of the summative chapter for artifact studies, I address the questions Duff raises in Chapter 2 of this report. As broader subheadings, these questions grapple with: the history of occupation at Shields Pueblo; the assessment of Shields Pueblo as a community center through time; the nature of the social environment at Shields Pueblo as seen through cooperation and conflict; and, finally, how the material culture of Shields Pueblo might inform us about the varying relationships between ancestral Pueblo populations through time and across space, particularly with regard to communities in the Mesa Verde region.

The History of Occupation

With respect to material culture, the broad swath of history cut by the occupants of Shields Pueblo is best reflected in the pottery assemblage. For comparative purposes, I reproduce here a table that illustrates idealized pottery type distributions by time (Table 14.14). Derived from Ortman et al. (2007:Table 3), this table provides a measure of comparison for the pottery type frequencies yielded by middens at Shields Pueblo that apparently span the Middle Pueblo II through Early Pueblo III subperiods (Table 14.15), and by Late Pueblo III abandonment contexts (Table 14.16).

The Initial Occupation(s) of Shields Pueblo

Investigations of great house sites in the Mesa Verde region indicate deep histories for these places, many of which appear to be relatively substantial as evidenced by moderate amounts of earlier pottery types (Till and Hurst 2002). Duff (see Chapter 2 in this report) observes the periods of time over which Shields Pueblo may have been occupied, and indicates the Early Pueblo I period (A.D. 725–800). Indeed, one of the five structures assigned to this time span, Structure 110, yielded a late cutting date of A.D. 779. However, given the high frequencies of Chapin Gray and Chapin Black-on-white, it is possible that an even earlier, and perhaps more substantial occupation of the settlement occurred during the Basketmaker III period (A.D. 600–725). Such an assemblage could be easily masked by Pueblo I assemblages, which also include these formal types. Considering that Basketmaker III pithouses are often considerably more shallow than Pueblo I pithouses (Wilshusen 1999:201), the location of Basketmaker III features may have been obscured by later Pueblo occupation(s) at the site, as well as more recent ground-disturbing agricultural activities.

An Early Pueblo I component is indicated by a very small proportion of Abajo Red-on-orange pottery (Wilson and Blinman 1995:73), and by the aforementioned tree-ring dates. However, as mentioned earlier, the pottery assemblage also suggests a slightly later component that dates from the mid–A.D. 800s, as suggested by a greater frequency of Mancos Gray than Moccasin Gray.

Four of the five early structures mentioned above are located in Block 100 (Structures 110, 136, 141, and 151), whereas the fifth structure (Structure 1318) is in Block 1300. Duff (see Chapter 2) observes that no early features were located in the intervening space between the two architectural blocks. However, significant quantities of Early Pueblo pottery (e.g., Chapin Gray, Chapin Black-on-white, and Piedra Black-on-white) were recovered in this area, which is defined as Block 200. Thus, it seems reasonable to suggest that structures associated with this Early Pueblo period were distributed along the approximately 200-meter length spanned by Blocks 100, 200, and 1300.

While the exact timing, and intensity, of the early occupation(s) at Shields Pueblo may still be a subject of debate, it is apparent that the settlement site was used prior to the construction of the great house feature in Block 100. Further, the possible great house was constructed in the general vicinity of the earlier inhabitation(s).

Continuity of Occupations

Duff (see Chapter 3 in this report) has noted the likelihood of an occupational hiatus spanning the years between A.D. 800 and 1020. The site-wide summary pottery data corroborate this assessment, particularly as indicated by the very low frequencies of Piedra Black-on-white, Bluff Black-on-red, Moccasin Gray, and Mancos Gray, formal pottery types that are diagnostic of assemblages that date from the ninth and tenth centuries. However, as noted above, there is not a complete absence of these pottery types, indicating at least some minimal use of this location during the mid-ninth century.

Slightly higher frequencies of Cortez Black-on-white and Deadmans Black-on-red may represent vessels produced during the Middle Pueblo II subperiod (A.D. 1020–1060), or perhaps vessels that were produced slightly earlier and survived to the middle eleventh century. Regardless, it is apparent that a significant occupation or use of the site location probably resumed by the mid-1000s, perhaps simultaneously with the construction of a great house in Block 100.

Habitation of Shields Pueblo during the A.D. 1000s, 1100s, and 1200s is certainly indicated by architectural, tree-ring, and artifactual data. The degree to which occupation was continuous is not certain; however, Table 14.15 and Table 14.16 give us a sense that occupation at the location of Shields Pueblo could have been fairly continuous throughout the 1100s and into the late 1200s. Table 14.15 shows pottery type distributions, by study unit, from midden contexts associated with the Middle Pueblo II, Late Pueblo II, and Early Pueblo III subperiods.

As noted earlier in this chapter, no middens per se were defined for the Late Pueblo III subperiod. Table 14.16 permits an assessment of occupation during the Late Pueblo III subperiod from the perspective of abandonment contexts for specific study units. The results provided in Table 14.16 for specific study units may be compared with tree-ring data for these same study units (see Chapter 3). The tree-ring dates indicate that construction still took place during the A.D. 1250s. A comparison of the pottery assemblage data given in Table 14.16 with the idealized distributions in Table 14.14 suggests that none of the excavated structures had been occupied solely during the last of the Pueblo III phases, which dates from A.D. 1260 to 1280. Pottery assemblages from this time should have a Mesa Verde Black-on-white/McElmo Black-on-white ratio of about 7 to 1. As Table 14.16 indicates, this ratio is approximately 2:1, which is more in agreement with the preceding phase (A.D. 1225 to 1260). These dates are consistent with the design attribute data. While not conclusive, the pottery data suggest that most or all of the Late Pueblo III occupants of Shields Pueblo could have moved, by A.D. 1260, to Goodman

Point Pueblo (Site 5MT604), a Late Pueblo III village just several hundred meters to the southeast.

One of the more interesting problems of occupation in the Mesa Verde region is the question of occupation during a gap in the dendrochronological record for the area from A.D. 1130 to 1180. This period of time spans a drought that marks the very end of the Pueblo II period, and the very beginning of the Pueblo III period. This is a watershed time for the ancestral Pueblo populations of the Mesa Verde region, and across the broader northern Southwest. It marks the end of the great occupation and use of Chaco Canyon, although manifestations of the Chaco phenomenon (Irwin-Williams 1972) continue in the Mesa Verde region. The middle twelfth century also characterizes a time when certain objects, particularly mugs and kiva jars, become a part of the artifactual vernacular of the region. Finally, this span of time also immediately precedes the architectural developments (e.g., towers, large village complexes, bi- and tri-walled structures) that mark the Great Pueblo period (Kantner 2003).

To address the question of whether or not occupation simply continued at Shields Pueblo across the years spanning A.D. 1130 to 1180, Table 14.17 lists the midden contexts that are associated with the Early Pueblo III subperiod (A.D. 1140–1225) and provides the amounts of diagnostic white ware pottery types for these midden contexts. Ignoring those assemblages that may be too small for adequate sampling (i.e., less than 10 kilograms of pottery), and then cross-referencing the proportions of diagnostic white ware pottery types with those presented in Table 14.14, several middens stand out as probable representations of the time in question. Nonstructures 245, 1107, and 1409 all have McElmo Black-on-white/Mesa Verde Black-on-white ratios of about 2:1, suggesting that these deposits were made during, or by, the earliest phase of the Early Pueblo III subperiod. With the assumption that each midden was deposited by a household, these data indicate that at least several households occupied Shields Pueblo during the latter half of the twelfth century.

The Varying Nature of Occupation(s): Residential vs. Nonresidential Uses of Shields Pueblo

The question regarding the functions of Shields Pueblo is germane to its history, and to the greater history of land use by ancestral Pueblo people in the Mesa Verde region. In Chapter 2 of this report, Duff poses the question, "Were there periods when the site was not a residential location, but it appears that the site was either used or visited?"

The use of Shields Pueblo as a locus of habitation during the twelfth and thirteenth centuries is not in doubt. Its function during the Basketmaker III/Pueblo I periods, however, may have varied. It is quite possible that, during the A.D. 600s and 700s, the site location could have accommodated one or a few households, but likely not many more. Given that Structures 110 and 1318 appear to be pithouses, it appears that Shields Pueblo was used for the purpose of habitation during the Early Pueblo I period.

The A.D. 800s/900s occupation(s), suggested by the small quantities of neckbanded gray ware sherds, Piedra Black-on-white sherds, and by Bluff Black-on-red sherds, would have been ephemeral at best. Given the scant remains from this period of time, it is reasonable to state that

Shields Pueblo was not the focus of inhabitation at this time. Rather, the site may have been the location of agricultural fields, or it may have functioned in another way that did not emphasize the use and discard of artifacts.

The use of the site location during the Middle Pueblo II period, which may be the time during which the great house was constructed, probably included seasonal or year-round habitation. In addition to public architecture, there are hints in the site's material culture that indicate this location's use as something other than workaday inhabitation. These possibilities are discussed further in Chapter 3 in this report.

Finally, as noted above in the discussion of abandonment assemblages, there is strong evidence for use of the site location after the settlement's abandonment in the Late Pueblo III subperiod through the construction of shrines. There is little in the material-culture record to distinguish these features further, except perhaps in the sparse nature of their assemblages.

The Last Occupation(s) of Shields Pueblo

As discussed above, the final inhabitations of the settlement appear to have occurred during the Late Pueblo III period, particularly in the years just prior to A.D. 1260. None of the pottery assemblages analyzed for Shields Pueblo yielded substantive evidence for occupation after this time. Additionally, none of the pottery assemblages examined for Shields Pueblo compares favorably with the pottery frequencies expected for the time period spanning A.D. 1260 to 1280. Furthermore, design-attribute studies of white ware bowl rims indicate occupation of Shields Pueblo in the early and middle A.D. 1200s, but not in the final decades of the Mesa Verde region's ancestral Pueblo occupation. However, it is apparent that shrines or shrine-like structures have been built within the latest dated kivas on the site (see Table 14.11). Possibly the shrines' architects were occupants of the nearby Late Pueblo III village of Goodman Point Pueblo. While preliminary at the time of this writing, the tree-ring data from Goodman Point Pueblo indicate construction and occupation during the A.D. 1260s (Kuckelman and Coffey 2007).

Possible Long-distance Destinations for the Last Occupants of Shields Pueblo

As noted earlier, it is quite possible that the last households to inhabit Shields Pueblo relocated to Goodman Point Pueblo, which is several hundred meters to the south and east. At the time of this writing, the Mesa Verde Black-on-white/McElmo Black-on-white ratio for Goodman Point Pueblo is about 5 to 1, a ratio that is much closer to being in agreement with the idealized relative proportions for the time spanning A.D. 1260 to 1280 (see Table 14.14). Another possible nearby destination is Sand Canyon Pueblo, a large Pueblo III village located several kilometers to the west. As with Goodman Point Pueblo, this village had been built and occupied in the last few decades prior to the region-wide Pueblo society depopulation by about A.D. 1280.

Pottery and chipped-stone materials may offer some evidence for extraregional relationships that the occupants of Shields Pueblo may have established, maintained, and then used during their relocation to other areas. However, for those objects recovered from abandonment contexts associated with the Late Pueblo III component of Shields Pueblo, Table 14.18 lists nonlocal pottery by their ware, and Table 14.19 details the objects made from nonlocal lithic materials.

Two wares are documented in Table 14.18: White Mountain Red Ware, which is associated with the Puerco region of west-central New Mexico/east-central Arizona, and Tsegi Orange Ware, which was produced in the Kayenta region of northeastern Arizona. It is apparent that most of the Late Pueblo III nonlocal sherds at Shields Pueblo consist of White Mountain Red Ware, suggesting that the strongest extraregional ties for the occupants of Shields Pueblo during the Late Pueblo III subperiod may have been with those populations to the south and east, and not with those societies associated with the Kayenta region.

Table 14.19, which documents extralocal lithic materials, details only a few artifacts, underscoring the apparent limited social connections of the time. The two objects made of red jasper may have derived from the Triassic and Paleozoic red bed formations of southern Utah/northern Arizona. The obsidian artifact, a piece of debitage, derives from the Valle Grande source in the Jemez Mountains of northern New Mexico. The remaining two objects are of unknown provenance.

Assessing Shields Pueblo as a Community Center and Changes in Community Organization

This section addresses a suite of research questions that Duff raises in Chapter 2. The concept of "community center," at least as the term might generally apply to important sites across the entirety of the Mesa Verde region for the broad swath of time cut by the ancestral Pueblo people, is vaguely defined in the literature. Varien (1999:4) succinctly describes a community center as "a densely settled area usually associated with public architecture." Glowacki (2006:6), in the context of her work with Pueblo III period architectural sites, operationalizes the term as "large pueblos with 50 or more structures." Community centers demonstrate the general pattern of aggregation through time in the central Mesa Verde region, particularly from the Late Pueblo II through the Pueblo III periods (Lipe and Ortman 2000). Varien (1999:141–143) also calls attention to the attribute of "persistence" that community centers tend to have in the Mesa Verde region: most of these sites demonstrate "time depth" and may have operated as prominent places on the landscape across many years. Going farther afield, Hurst and Till (2008) have observed this attribute of "persistence" among great house sites in southeastern Utah, as have Fowler and Stein (1992) among the community centers associated with the Chaco- and post-Chaco-era communities in the Manuelito drainage of western New Mexico/eastern Arizona, and Kintigh et al. (1996) for the Zuni region.

Similarly, it appears as though the Chaco-era landscape structured the later, thirteenth-century landscape of the Pueblo III period (Till 2004, 2007) (Figure 14.5). The two large villages, Sand Canyon Pueblo and Goodman Point Pueblo, which date from the Late Pueblo III period, are immediately adjacent to earlier community centers: Shields Pueblo, which possesses a great house, is paired with the later Goodman Point Pueblo (Figure 14.6), and Casa Negra, which also harbors a great house (Lipe and Varien 1999:Table 8-1), is proximate to Sand Canyon Pueblo. Considering the sizes of these villages and the presence of integrative architecture at both of them, Sand Canyon and Goodman Point pueblos arguably functioned as community centers during the late A.D. 1200s (Kuckelman and Coffey 2007; Kuckelman et al. 2004; Ortman and Bradley 2002; Varien 1999).

Great houses, and other architectural features associated with the Chaco phenomenon (e.g., great kivas and roads), express the architectural footprints of community centers associated with the Chaco and post-Chaco eras. Material-culture correlates that may be associated with this community center type include relatively higher ratios of preciosities (personal adornment items and nonlocal objects) when compared with other contemporaneous sites (Powers et al. 1983:337; but see Toll 1991:80 for words of caution against this assumption). At the least, this attribute is considered in research designs as a possible proxy for "greatness" in these site types, particularly at those sites found outside of Chaco Canyon proper (e.g., Cameron 2008b; Kuckelman et al. 2004; Varien 2000). Considering the landscape (see Figure 14.5) and architectural footprint of Shields Pueblo, which includes a great house, a road, and perhaps an associated great kiva, we should expect an artifact assemblage that indicates Shields Pueblo was "behaving" like a community center during the Pueblo II, and perhaps the Early Pueblo III, periods.

As noted above, the community center sites from the middle to late 1200s are usually defined as being aggregations of multiple rooms that are often considered "villages." Within the central Mesa Verde region, these sites frequently include public architecture such as great kivas, D-shaped structures, bi-walled and tri-walled structures, and plazas (Cameron and Duff 2008; Glowacki 2006). Till and Ortman (2007) demonstrate that the larger village sites, such as Sand Canyon Pueblo, do not have higher relative frequencies of either nonlocal artifacts or adornments when compared with contemporaneous small sites.

However, other material culture correlates for Late Pueblo III community centers in the Mesa Verde region have been identified by Ortman (2000:53–55, 57), including: a bimodal distribution of white ware bowl sizes; a higher frequency of larger cooking jars than is found in smaller, contemporaneous sites; and a higher frequency of exterior designs on white ware bowls. Ortman explains that the presence of larger bowls and larger cooking jars in community centers from this period facilitated the integration of large groups of people through feasting events. The greater frequency of exterior bowl designs in Late Pueblo III community centers may be due to the very public context in which those bowls were seen (Ortman 2000:59–61; Robinson 2005:68–76). Given that Goodman Point Pueblo is immediately proximate to the Shields Pueblo location in the Late Pueblo III period, I propose that the former superseded (or succeeded) Shields Pueblo as the community center during the latter half of the thirteenth century. If this were the case, Shields Pueblo should not exhibit the material-culture attributes of a community center during the Late Pueblo III period, an idea that is tested below.

Chaco-era and Post-Chaco-era Community Center Material Culture at Shields Pueblo

I summarized the distributions of preciosities (personal adornments and extralocal items) by architectural block and subperiod. I test these data against two hypotheses:

Hypothesis 1: Great house sites appear to have been the focal point of community-oriented events. More preciosities (extralocal items, adornments) will be recovered from Block 100 of Shields Pueblo, which contains a possible great house, than from other places on the site.

Hypothesis 2: More preciosities will be found in those contexts that are contemporaneous with the "great house" component of the site (the Late Pueblo II period, and possibly the Early Pueblo III period) relative to other temporal contexts.

The Shields Pueblo artifact assemblage offers some interesting departures from the above hypotheses. First, it is apparent that Block 100 is not the sole focus of preciosities. Relative to the amounts of cooking pottery, the great house roomblock did yield the most adornments, followed closely by Block 200. Block 100 is a very close second to Block 1300 in the relative amount of extralocal artifacts. Thus, while it does appear that Block 100 does possess the highest relative number of preciosities, Blocks 200, 1300, and 1400 also contain relatively significant quantities of these materials as well, particularly adornments. However, it is interesting to note that five of the seven occurrences of turquoise, a material strongly evocative of the Chaco phenomenon (e.g., Mathien 2001; Plog 2003), are associated with Block 100.

A curious observation is that loci with the highest frequencies of preciosities are along the projected road alignment through the site (Figure 14.7 and Figure 14.8). It is possible that these high preciosity frequencies are associated with Blocks 100, 200, 1300, and 1400 because these blocks are found along the road alignment. Perhaps, instead of focusing on what features are associated with the great house, it is more pertinent to consider the features associated with the road alignment.

It is also quite possible that these distributions are a product of temporal affiliation. As Figure 14.9 indicates, many of the kivas found along the road alignment are associated with, or may be associated with, the Pueblo II period. Our data do indicate that the higher frequencies of extralocal artifacts are strongly associated with the Pueblo II period. With regard to adornments, it is of note that these items are well represented in the Middle Pueblo II period (A.D. 1020–1060) component assemblage, but decline fairly steadily thereafter. Both the Late Pueblo II (A.D. 1060–1140) and Early Pueblo III (A.D. 1140–1225) periods have the same relative amounts of this artifact class, which are nearly half of that found for the Middle Pueblo II period. These, in turn, have twice the frequency of that noted in the Late Pueblo III period. This declining frequency may suggest a shift in function through time, where the settlement changed from operating as a locus for ritual/ceremonial events to a place with more workaday activities.

Late Pueblo III Period Community Center Material Culture at Shields Pueblo

This section considers artifact frequencies and attributes that might be indicative of Shields Pueblo as a community center during the thirteenth century. These attributes include the size distributions of white ware bowls, the size distributions of cooking jars, and the frequency of exterior designs on white ware bowls. The rim-arc data for white ware bowl and cooking jar size distributions are assessed in light of two hypotheses:

Hypothesis 3: Assuming a shift in "centrality" from Shields Pueblo to Goodman Point Pueblo, the assemblage of bowl rims will exhibit a uni-modal distribution of bowl sizes in Late Pueblo III period component of Shields Pueblo.

Hypothesis 4: Similarly, cooking-jar size distributions will track more closely with the same distributions of the small, Late Pueblo III sites, not the contemporaneous large village sites.

Rim-arc data from the Shields Pueblo white ware bowl rim sample appear to negate Hypothesis 3. A bimodal curve describes the size of white ware bowls produced during the middle to late 1200s: white ware bowl assemblages from this time have rim radius modes of 8 or 9 centimeters (cm) and 14 cm. These modes are comparable to those found at other community-center sites that date from the Late Pueblo III period (see Ortman 2000 and Till and Ortman 2007).

However, while the Late Pueblo III bimodal bowl size distribution is apparent at Shields Pueblo, the pattern does not appear to be as strong as at community centers such as Sand Canyon, Castle Rock, and Woods Canyon pueblos. This is indicated by the relatively low frequency represented by the large-bowl mode, which only has a frequency of about 0.1. In contrast, the large-bowl mode reaches a frequency of about 0.2 at Sand Canyon and Castle Rock pueblos (Ortman 2000:Figure 4).

There may be several reasons for the weaker bimodal pattern at Shields Pueblo. First, the diminished frequency of large bowls at Shields Pueblo may simply indicate that they were present in the Late Pueblo III households of Shields Pueblo, but not used as intensively as at the larger villages. Second, the weaker bimodal pattern at Shields Pueblo may be indicative of less-frequent or smaller-scale community events. A third possibility may have something to do with the dating of the sites. Both Sand Canyon and Castle Rock pueblos have primary occupations after A.D. 1260, perhaps soon after the final occupation of Shields Pueblo. It may be that the distinction of two bowl sizes became more pronounced in this later time period.

A bimodal distribution is not apparent for the earlier components at Shields Pueblo. This is consistent with earlier observations made for the Early Pueblo III period (Ortman 2000:54). The Pueblo II bowl rim assemblage from Shields Pueblo represents the first time that Crow Canyon has examined bowl rims from this period. As with the Early Pueblo III assemblage, the Pueblo II bowl rim sample does not exhibit a bimodal distribution. However, the curves for the Pueblo II and Early Pueblo III components do suggest the possibility for a "tighter" bimodal curve, with modes centered upon a 9-cm radius and an 11-cm radius. A slight intermediate peak at the 11-cm radius occurs in the bimodal curve for the Late Pueblo III bowl assemblage as well.

Cooking-jar rim-arc data from Shields Pueblo negate Hypothesis 4. The rim-arc data from Pueblo III period contexts at Shields Pueblo demonstrate an increase in the average cooking-jar rim radius from the Early Pueblo III to the Late Pueblo III components. This suggests that the occupants of Shields Pueblo during the Late Pueblo III period participated in the preparation of large amounts of food, perhaps for large groups of people.

In contrast to the rim-arc data, exterior band designs on a sample of white ware bowls from Shields Pueblo do not occur in the frequencies expected for community centers. Table 14.20

compares the frequencies of exterior band designs (described as "plaited selvage" and "coiled band" designs) from Shields Pueblo with other assemblages by three temporal components in the Pueblo III period. For the period spanning A.D. 1180–1225, the Shields Pueblo sample is compared with several small sites from the nearby Sand Canyon locality. Even compared with these small habitation sites, the frequency of white ware bowl exterior designs from Shields Pueblo is less than the mean frequency of this time period. The two later components include Sand Canyon Pueblo. The mean frequencies for both later components clearly exceed the frequencies yielded by the Shields Pueblo sample.

When considering whether Shields Pueblo functioned as a community center during the Late Pueblo III period, the white ware bowl and cooking-jar rim-arc data contrast with the hypothesis that the settlement did not function as such. The exterior bowl design frequencies, however, are indicative of a settlement that did not function as a community center. I suggest that the occupants of Shields Pueblo in the Late Pueblo III period were actually citizens of the Goodman Point Community, that the two settlements were essentially one and the same. Perhaps the slightly weaker bimodal bowl-size pattern reflects the distance between Shields and Goodman Point pueblos. Given the relatively small number of kivas that date from this span of time at Shields Pueblo, it seems unlikely that the settlement of Shields Pueblo actually sponsored large community events; rather, the large village of Goodman Point Pueblo probably hosted such affairs. Another possibility is that the focus of community events had shifted to the isolated great kiva (Site 5MT16805) during the years that span A.D. 1140 to 1260. As Figure 14.6 indicates, this feature is associated with a belt-loop road and a linear road, perhaps preserving a reference to the older Shields Pueblo great house.

Activities Special to Community Centers

Chapter 2 in this report poses the question of whether or not there are certain activities represented by community centers that are not present in residential sites or site clusters within the larger community. As has been discussed above, architecture, artifactual data, and settlement-pattern information indicate major changes in the types of community centers that were constructed and used from the eleventh through the thirteenth centuries A.D. in the Mesa Verde region. The Goodman Point Archaeological Project (Kuckelman et al. 2004; see also Crow Canyon Archaeological Center 2003), provided multisite data from tested sites spanning the Pueblo II and III periods that will enable researchers to better address this question.

While the precise activities of Chaco-era and post-Chaco-era community centers remain poorly understood, it seems likely that activities in these places included the use of preciosities, items that held special significance based on their color (e.g., Plog 2003), association with place (e.g., Cameron 2001; Ward 2004), and perhaps history (e.g., Cameron and Duff 2008; Lekson 1999). Indeed, for Chaco Canyon itself, Toll (2006) indicates that the decades spanning the late eleventh and early twelfth centuries mark the greatest influx of imports, including "exotica" such as feathers, shell objects, and copper bells. It is important to recall the early report of a copper bell from Shields Pueblo (Hayes and Chappell 1962). These objects, with origins in Mexico, are extremely rare, and are most often associated with great houses in the Mesa Verde region when they are found (Hurst 2000; Till 2007; Vargas 1995).

An artifact type that has been little discussed in this site report that may have bearing on the notion of special use is the *tchamahia*. Observations of use wear on tchamahias recovered from archaeological sites suggest that these items may have initially had a variety of workaday functions such as hoeing and planting; however, ethnographic data from Hopi, Zuni, and Keres communities strongly indicate more esoteric uses of this artifact type (Shelley 2006; Wenker 1999). It is apparent that tchamahias were initially crafted during the Pueblo II period, and had a fairly wide distribution across the Four Corners region during the Pueblo II and III periods. The relative abundance of tchamahias may have some bearing on evaluating Shields Pueblo as a community center. Of the four tchamahias recovered from the site, three are associated with the Late Pueblo II period, and the fourth with the Early Pueblo III period.

While the exact nature of activities at Chaco-and post-Chaco-era community centers in the Mesa Verde region are not readily apparent, there is an increasing body of data that indicates feasting was an important community event at the big villages of the Late Pueblo III period. As discussed above, the evidence for feasting at Shields Pueblo is somewhat ambiguous. Rim-arc data for white ware bowls and cooking jars suggest the size patterns expected for these events, although not as strongly as at other nearby community centers. Further, exterior white ware bowl designs do not occur with the frequency expected for a Late Pueblo III community center.

Individual Status and Social Differentiation

The question of individual status is probably best addressed by burial data. For example, Akins (2003) uses burial data to make an argument for status differentiation in Chaco Canyon during the Pueblo II period. Since it is contrary to Crow Canyon policy to excavate human remains, burial data are not available to address this question. A comparison of household assemblage data might also yield evidence for status differentiation. However, at Shields Pueblo, the degree of modern agricultural disturbance, the earlier excavations by Colorado Mountain College in Block 100, and the sampling methods used by Crow Canyon excavators, hamper such fine-grained comparison.

In spite of these obstacles, the data presented for preciosities suggest the possibility of some differentiation, particularly during the Pueblo II period. By far, the frequencies of preciosities are highest during both the Middle and Late Pueblo II periods, suggesting the possibility that the use and display of such items may have figured importantly in the Chaco- and post-Chaco eras at Shields Pueblo. Block 100, the general location of the Shields Pueblo great house, also yielded the highest amounts of preciosities (particularly adornments), both absolutely and relatively, of all the architectural blocks. Most of the turquoise recovered from the site was recovered from this block as well. This material may have held significant ritual meaning for those societies associated with the Chaco phenomenon (Mathien 2001; Plog 2003). The concentration of this material, and the relatively high frequency of preciosities in this location, may indicate that individuals dwelling in this location were endowed with higher status than others living elsewhere in Shields Pueblo or the surrounding community.

In contrast, the Late Pueblo III assemblages at Shields Pueblo have yielded more modest amounts of preciosities. This is consistent with data from Pueblo III sites in the Sand Canyon locality (Till and Ortman 2007), suggesting that the conspicuous display of ornamentation, particularly nonperishable items that indicate wealth or status, was not important in negotiating social relations. This change in social practice may signify an important shift in how power relations structured Pueblo society. Cameron and Duff (2008) argue that ancestral Pueblo societies in the Mesa Verde region, which had a close historical connection to the Chaco phenomenon, ultimately reject the social organizing principles dominant during the eleventh and twelfth centuries. This hypothesis is worth further testing as Crow Canyon continues its work in the Goodman Point locality.

Differentiation between Residents of the Community Center and the Surrounding Community

The occupation of Shields Pueblo has proven to have considerable time depth, and was a location of prominence for about 200 years from the mid-eleventh through mid-thirteenth centuries. As Crow Canyon continues its investigation of Goodman Point Pueblo, a Late Pueblo III village, and smaller sites spanning the Pueblo II and Pueblo III periods in the immediate vicinity of Shields and Goodman Point pueblos, artifactual data will be collected to better address this important research issue.

Cooperation and Conflict

Crow Canyon's research at Shields Pueblo can illuminate the subject of community integration, a topic for which the investigation is particularly well suited. The apparent great house in this location, and the roads that stretch between it, the Casa Negra great house site, and the great kiva to the south (Harlan great kiva) indicate that Shields Pueblo was the location of a community center during the Pueblo II and Pueblo III periods until Goodman Point Pueblo was constructed (see Figure 14.6). About 200 years later, by the mid-1200s, the location of Shields Pueblo becomes neighbor to the large, walled village of Goodman Point Pueblo, an apparent community center that was contemporaneous with the nearby Sand Canyon Pueblo, a Late Pueblo III village situated adjacent to the earlier Casa Negra. Thus, it seems that these same points on the landscape integrated the populations surrounding them. What were the social dynamics that surrounded these community centers at the times they were operating? One way to address this question is to examine the relative degrees of exchange during these times, both at the intraregional and inter-regional levels.

Patterns in Intraregional Exchange

The following discussion of intraregional exchange uses pottery-temper data and chipped-stone material data. Since most of these data derive from Pueblo III sites, this discussion focuses on this period.

The distributions of temper types for both white ware serving bowls and gray ware cooking jars from Shields Pueblo show relatively small changes in the frequency of igneous-rock temper in white ware bowls through time. What is remarkable is the comparison of the white ware bowl temper frequencies between Shields Pueblo and the nearby, Late Pueblo III large village, Sand Canyon Pueblo: Shields Pueblo has nearly five times the frequency of igneous-rock temper that Sand Canyon Pueblo has. It is possible that our definition of the Late Pueblo III subperiod, which spans A.D. 1225 to 1280, is too broad to capture some important distinctions between the two sites. Sand Canyon Pueblo was probably established (Kuckelman and Coffey 2007) at about the same time that the last structures at Shields Pueblo were being built. Thus, it is possible that the assemblages between the two sites are not contemporaneous, and that most of the Sand Canyon Pueblo sample postdates the Late Pueblo III assemblage documented for Shields Pueblo. If this slight discontinuity is the case, this suggests a dramatic change in the social setting of the ancestral Pueblo landscape from the mid to late thirteenth century. In this scenario, the igneous temper source of Sleeping Ute Mountain was within the relatively easy reach of Shields Pueblo potters in the early to middle 1200s; however, by the late 1200s, that reach was curtailed, perhaps by social conditions that restricted the movement of pottery-making materials. A second possibility is that potters in the two populations developed different preferences for temper materials. Yet a third scenario is that Sand Canyon Pueblo facilitated exchange within a network of potters beyond the Sand Canyon locality, resulting in more pots with different kinds of temper.

Figure 14.10 illustrates the distributions of three local chipped-stone materials from Pueblo III period sites in the Sand Canyon locality: Dakota quartzite, Morrison quartzite, and Morrison chert/siltstone. Additionally, this set of pie charts lumps all other materials into an “Other” category. In addition to the Late Pueblo III component of Shields Pueblo, two community centers, Sand Canyon Pueblo and Castle Rock Pueblo, the figure summarizes chipped-stone material data from a number of small Late Pueblo III period sites, each representing no more than a few households. The chart for Shields Pueblo closely resembles the two village sites. This may indicate that the Late Pueblo III occupants of Shields Pueblo were integrated into a social network that operated somewhat similar to the larger villages.

Patterns in Interregional Exchange

Earlier discussions in this chapter and others have emphasized the decline in nonlocal material frequencies through time, suggesting a concomitant decline in exchange across regions. This section reviews the data for nonlocal pottery, lithic materials, and shell with an emphasis on change through time.

Analysis made apparent that pottery sherds from northeastern Arizona and northwestern New Mexico were recovered from Shields Pueblo. Most of the nonlocal artifacts, in both absolute and relative terms, are associated with the Pueblo II period. These artifacts include shell items, of which there are only a small number from Shields Pueblo. The shell probably derives from the Gulf of California, and includes specimens of *Olivella* and *Glycymeris*.

Table 14.21 shows the distribution of obsidian items by source and component. Again, this table underscores the fact that most of the nonlocal materials are associated with the Pueblo II period. It is of note here that none of the obsidian items were sourced to the San Francisco Peaks region of northern Arizona. Further, all of the obsidian objects, with one exception, derive from the Jemez Mountains in northern New Mexico. One item was sourced to Mount Taylor of central New Mexico. This dominance may indicate a long-established obsidian procurement network with peoples or sources in northern New Mexico.

Though evidence for inter-regional exchange during the Late Pueblo III period is minimal, Table 14.18 suggests that nonlocal ties are perhaps strongest with pueblo groups in New Mexico. Only several Tsegi Orange Ware sherds were recovered in Late Pueblo III contexts, suggesting that interactions with peoples in northern Arizona were minimal.

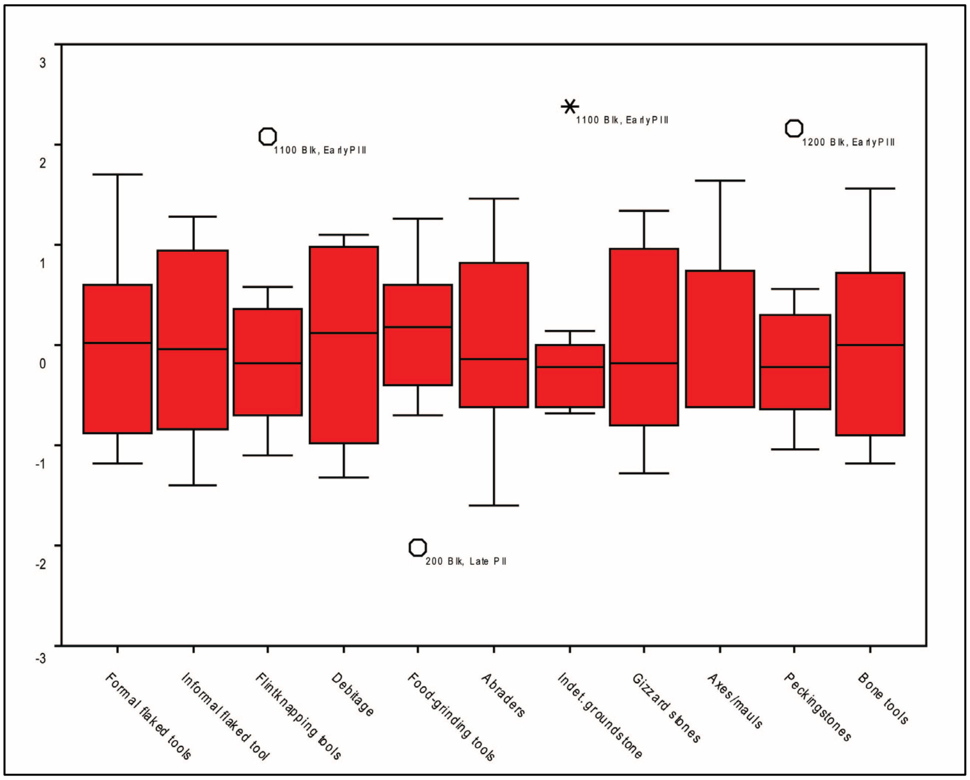

Figure 14.1. Artifact frequencies by Z-score in midden assemblages (Part 1), Shields Pueblo.

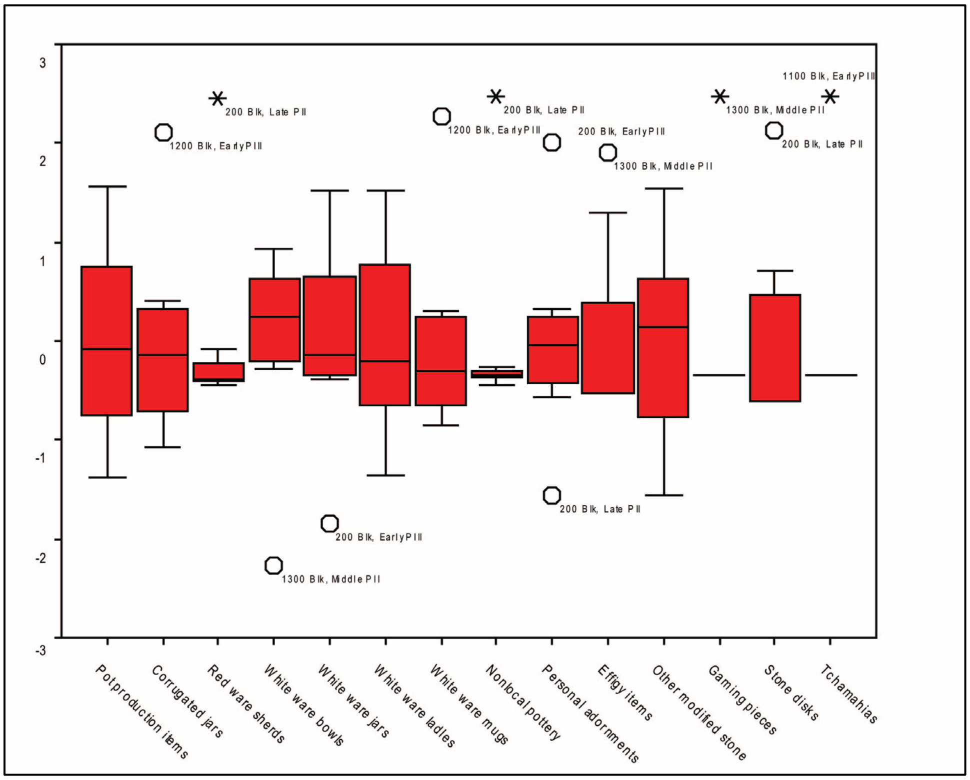

Figure 14.2. Artifact frequencies by Z-score in midden assemblages (Part 2), Shields Pueblo.

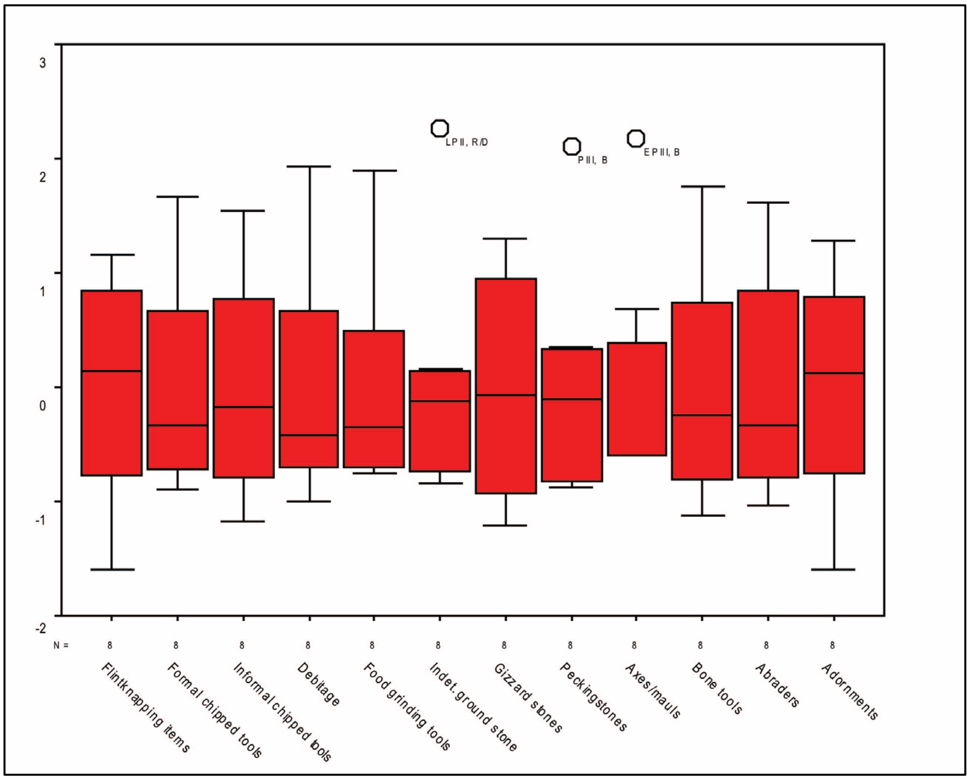

Figure 14.3. Artifact abandonment assemblages (Part 1), Shields Pueblo.

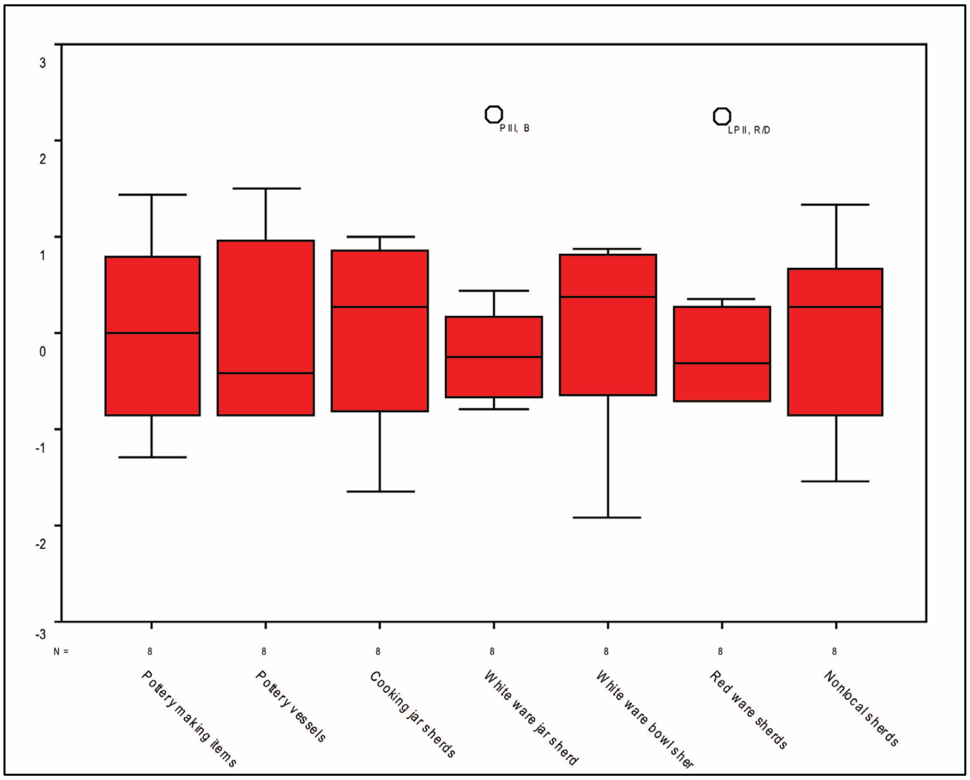

Figure 14.4. Artifact abandonment assemblages (Part 2), Shields Pueblo.

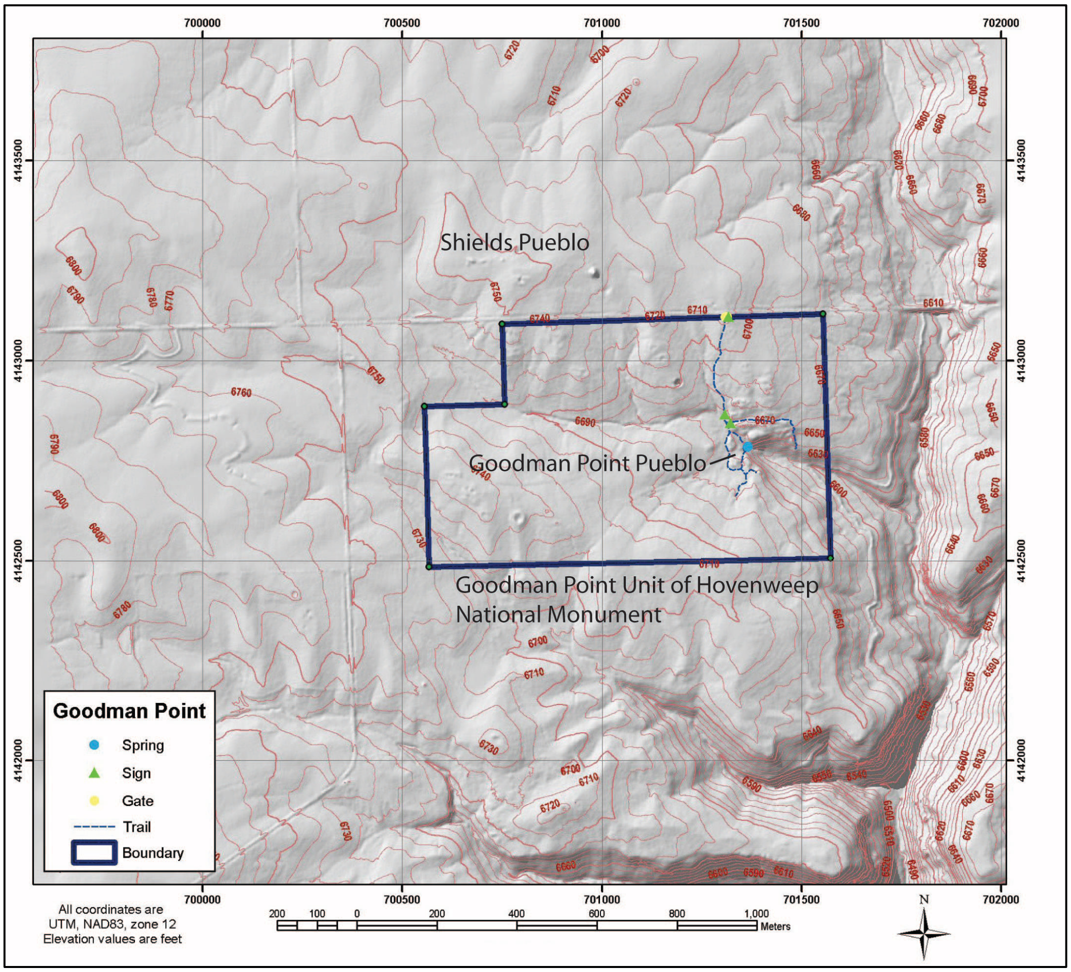

Figure 14.5. Topography of Shields Pueblo and Goodman Point Pueblo in the Goodman Point Unit of Hovenweep National Monument.

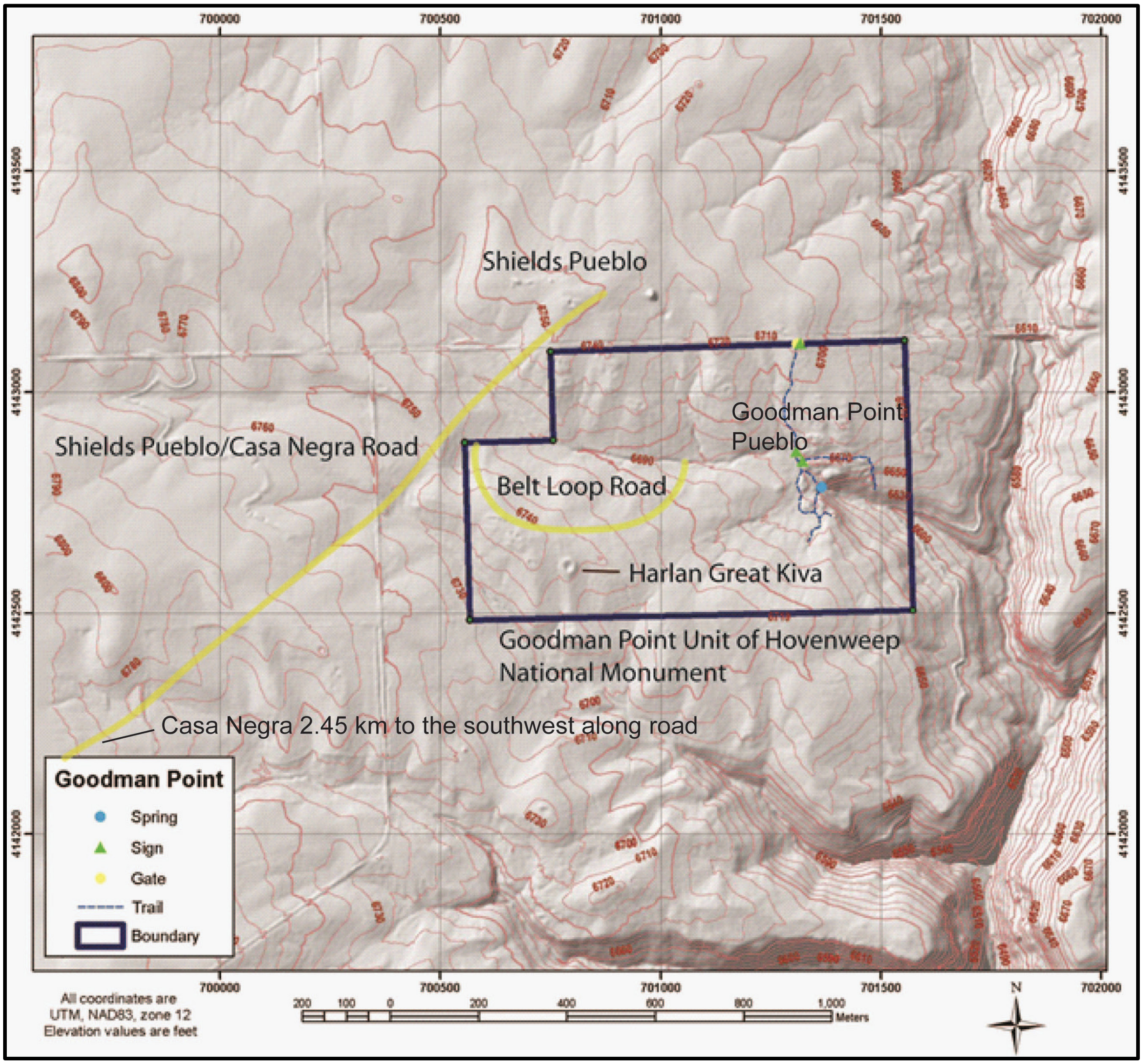

Figure 14.6. Shields Pueblo/Casa Negra road alignment and the belt loop road in relation to Shields Pueblo and the Harlan Great Kiva in the Goodman Point Unit of Hovenweep National Monument.

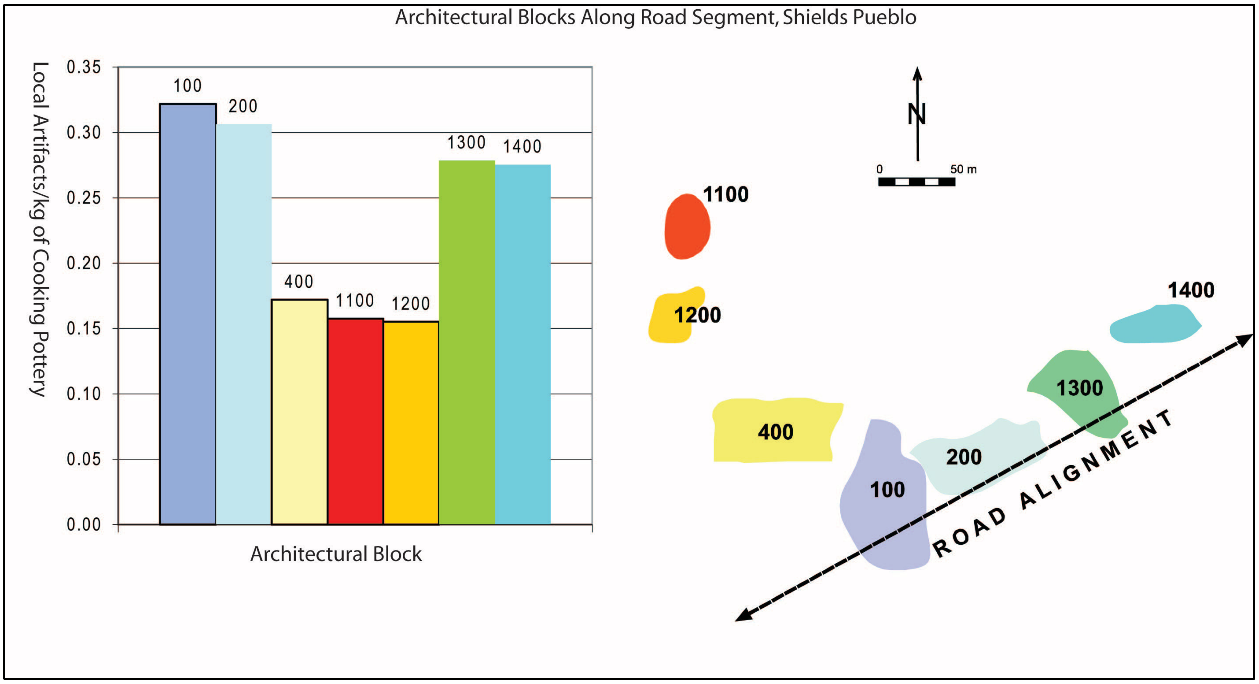

Figure 14.7. Architectural blocks along the road segment, Shields Pueblo.

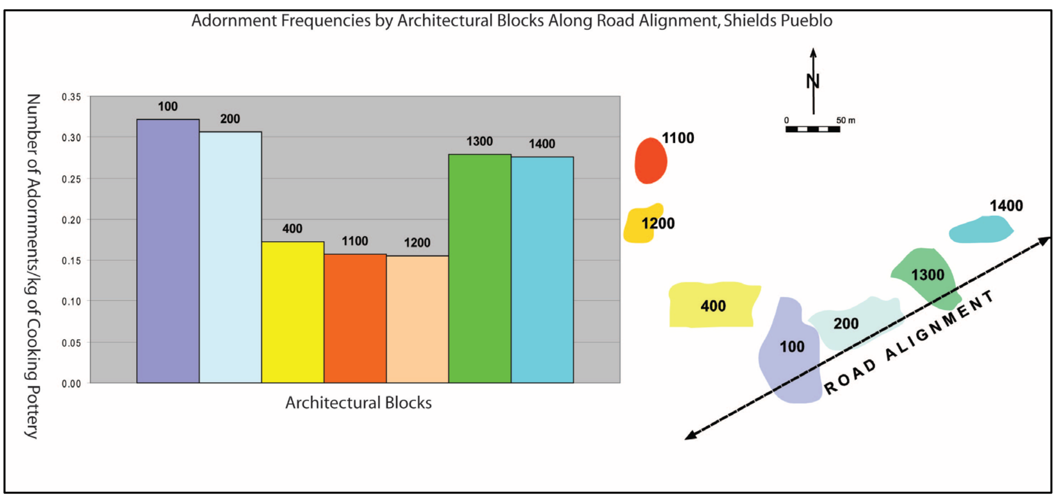

Figure 14.8. Adornment frequencies by architectural block along the road alignment, Shields Pueblo.

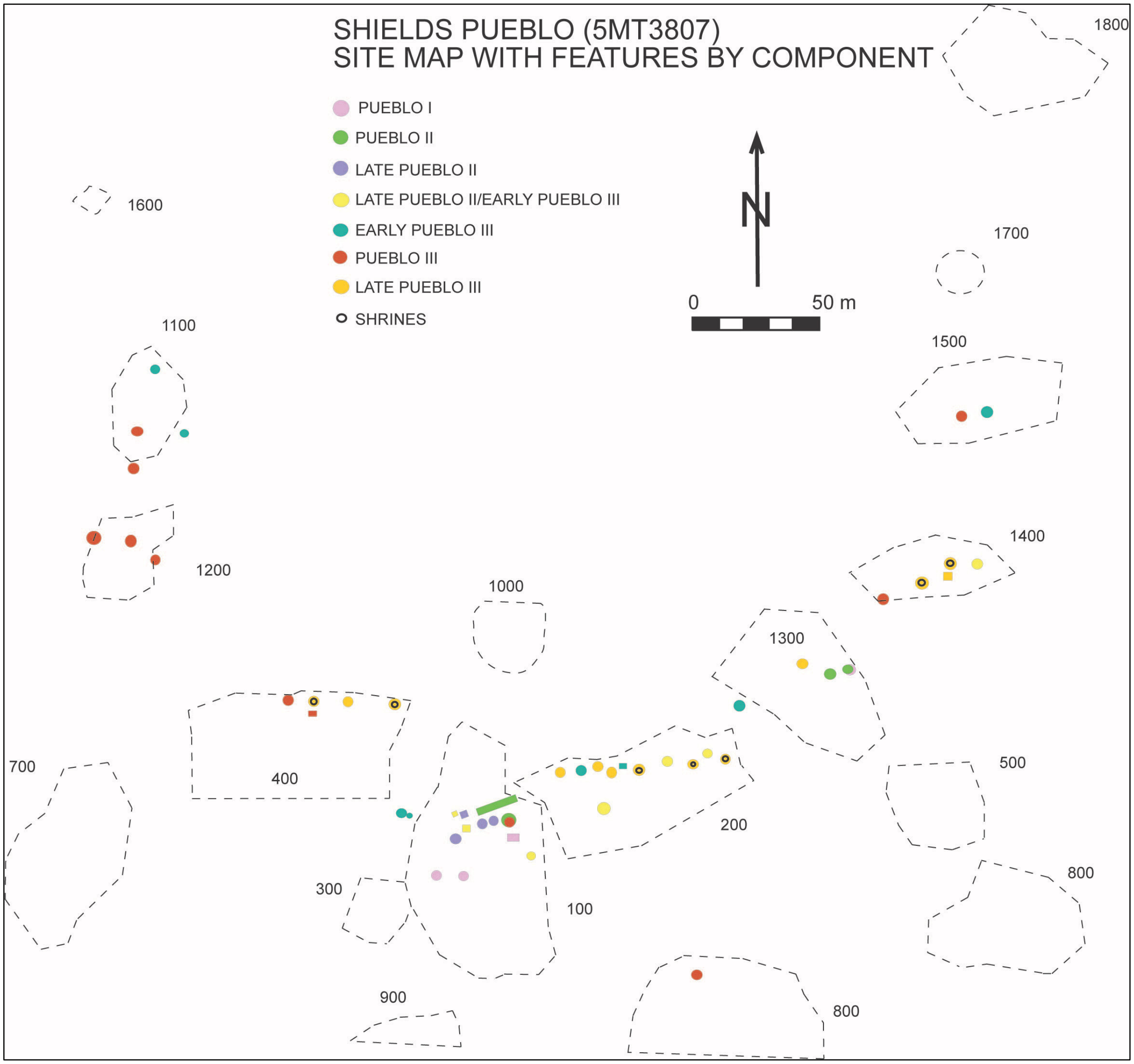

Figure 14.9. Features by time period and architectural block, Shields Pueblo.

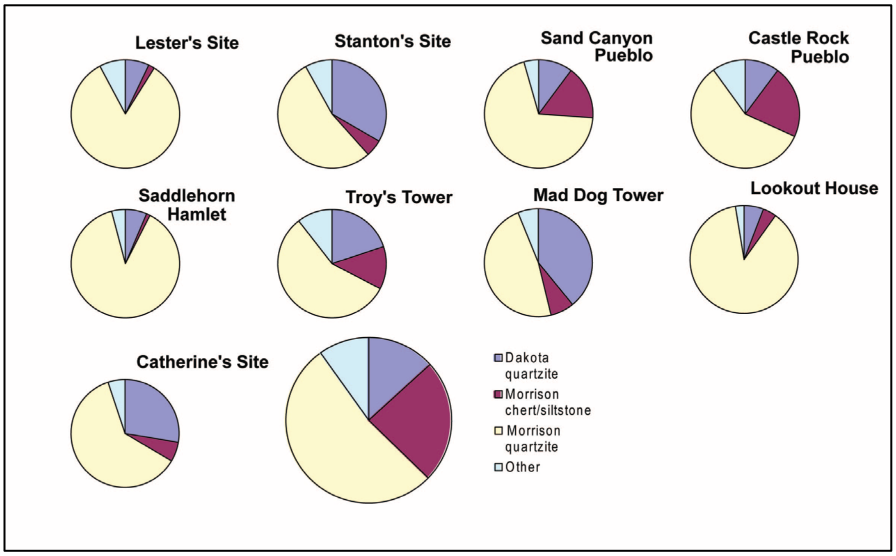

Figure 14.10. Late Pueblo III period lithic types from sites in the Sand Canyon community and Shields Pueblo, represented by the largest pie chart in the bottom-center.

Table 14.1. Counts of Midden Deposit Provenience Designations by Component and Study Unit, Shields Pueblo.

Component	Study Unit Number	Count of PDs	Possible Associated Structural Units*	Cooking Pottery Wt. (g)	Excluded from Further Analysis
Middle Pueblo II Period (A.D. 1020–1060)	1310	11	Unknown	20,730.3	
	1321	7	Unknown	12,332.1	
Late Pueblo II Period (A.D. 1060–1140)	130	1	Great house	2,941.9	
	131	2	Unknown	0.0	X
	152	4	Great house	9,195.4	
	153	3	Great house	3,675.6	
	154	5	Great house	2,086.2	
	157	3	Great house	1,021.3	
	238	5	Structures 221, 222, and 223	6,562.8	
	239	1	Unknown	490.2	
	248	2	Structures 221, 222, and 223	87.9	
	1309	8	Unknown	19,580.1	
	1320	8	Unknown	20,885.6	
Early Pueblo III Period (A.D. 1140–1225)	142	1	Unknown	302.2	X
	210	6	Unknown	1,278.5	
	245	4	Unknown	8,403.3	
	247	4	Unknown	461.6	
	1103	1	Structure 1113	707.9	
	1107	5	Unknown	14,728.9	
	1109	4	Unknown	2,493.7	
	1202	6	Unknown	10,086.8	
	1409	7	Unknown	19,746.6	
	1418	6	Unknown	14,870.4	
Late Pueblo II through Early Pueblo III Period (A.D. 1060–1225)	101	8	Unknown	6,248.4	X
	226	2	Unknown	110.7	X
	1303	2	Unknown	774.1	X
	1312	1	Unknown	302.7	X
TOTAL PDs		117			

* These associations are only tentative suggestions. Structural units that may be associated with a larger great house include Structures 102, 103, 104, and 121.
PD = Provenience Designation.

Table 14.2. Midden Assemblages by Context and Count, Shields Pueblo.

(a) Table 14.2

Context	Formal Chipped-Stone Tools	Informal Chipped-Stone Tools	Chipped-Stone Tool Production Items	Debitage	Food-Grinding Tools	Abraders	Indeterminate Ground Stone	Gizzard Stones	Axes/Mauls	Peckingstones	Bone Tools
1300 Block, Middle Pueblo II Component	15	87	29	3,367	25	5	41	74	3	37	8
Great House, Late Pueblo II Component	24	36	11	1,686	15		30	70		33	11
200 Block, Late Pueblo II Component	6	8	6	388	2	3	15	49		10	7
1300 Block, Late Pueblo II Component	36	130	46	4,260	26	4	43	71	1	53	24
200 Block, Early Pueblo III Component	4	35	16	1,290	7	3	12	76		20	4
1100 Block, Early Pueblo III Component	7	41	44	1,793	15	2	60	133		29	4
1200 Block, Early Pueblo III Component	6	9	7	324	4	2	11	10		21	2
1400 Block, Early Pueblo III Component	22	66	31	1,745	18	4	33	113	3	36	16

(b) Table 14.2

Context	Pottery Production Items	Corrugated Jar Sherds	Red Ware Sherds	White Ware Bowl Sherds	White Ware Jar Sherds	White Ware Ladle Sherds	White Ware Mug Sherds	Nonlocal Sherds	Personal Adornment Items	Effigy	Other Modified Stone/Mineral	Gaming Piece	Stone Disk	Tchamahia	TOTAL
1300 Block, Middle Pueblo II Component	23	3,469	32	1,140	1,520	42	6	18	19	1	8	3			9,972
Great House, Late Pueblo II Component	23	2,798	4	1,319	1,201	51	2	10	13		9				7,346
200 Block, Late Pueblo II Component	4	1,300	84	646	577	24	4	112	1		1		1		3,248
1300 Block, Late Pueblo II Component	69	4,027	8	2,273	2,007	117	20	33	21	1	13				13,283
200 Block, Early Pueblo III Component	13	1,258	3	647	431	37	3	6	13		2				3,880
1100 Block, Early Pueblo III Component	39	2,243	1	1,235	989	90	16	8	11		11		1	1	6,773
1200 Block, Early Pueblo III Component	6	1,481		546	428	18	19	1	4						2,899
1400 Block, Early Pueblo III Component	40	4,063	5	2,015	1,992	145	27	19	12		11		1		10,417

Table 14.3. Midden Assemblages by Context and Percentages, Shields Pueblo.

(a) Table 14.3

Context	Formal Chipped-Stone Tools	Informal Chipped-Stone Tools	Chipped-Stone Tool Production Items	Debitage	Food-Grinding Tools	Abraders	Indeterminate Ground Stone	Gizzard Stones	Axes/Mauls	Peckingstones	Bone Tools
1300 Block, Middle Pueblo II Component	0.15	0.87	0.29	33.76	0.25	0.05	0.41	0.74	0.03	0.37	0.08
Great House, Late Pueblo II Component	0.33	0.49	0.15	22.95	0.20	0.00	0.41	0.95	0.00	0.45	0.15
200 Block, Late Pueblo II Component	0.18	0.25	0.18	11.95	0.06	0.09	0.46	1.51	0.00	0.31	0.22
1300 Block, Late Pueblo II Component	0.27	0.98	0.35	32.07	0.20	0.03	0.32	0.53	0.01	0.40	0.18
200 Block, Early Pueblo III Component	0.10	0.90	0.41	33.25	0.18	0.08	0.31	1.96	0.00	0.52	0.10
1100 Block, Early Pueblo III Component	0.10	0.61	0.65	26.47	0.22	0.03	0.89	1.96	0.00	0.43	0.06
1200 Block, Early Pueblo III Component	0.21	0.31	0.24	11.18	0.14	0.07	0.38	0.34	0.00	0.72	0.07
1400 Block, Early Pueblo III Component	0.21	0.63	0.30	16.75	0.17	0.04	0.32	1.08	0.03	0.35	0.15

(b) Table 14.3

Context	Pottery Production Items	Corrugated Jar Sherds	Red Ware Sherds	White Ware Bowl Sherds	White Ware Jar Sherds	White Ware Ladle Sherds	White Ware Mug Sherds	Nonlocal Sherds	Personal Adornment Items	Effigy	Other Modified Stone/Mineral	Gaming Piece	Stone Disk	Tchamahia	TOTAL
1300 Block, Middle Pueblo II Component	0.23	34.79	0.32	11.43	15.24	0.42	0.06	0.18	0.19	0.01	0.08	0.03	0.00	0.00	100.00
Great House, Late Pueblo II Component	0.31	38.09	0.05	17.96	16.35	0.69	0.03	0.14	0.18	0.00	0.12	0.00	0.00	0.00	100.00
200 Block, Late Pueblo II Component	0.12	40.02	2.59	19.89	17.76	0.74	0.12	3.45	0.03	0.00	0.03	0.00	0.03	0.00	100.00
1300 Block, Late Pueblo II Component	0.52	30.32	0.06	17.11	15.11	0.88	0.15	0.25	0.16	0.01	0.10	0.00	0.00	0.00	100.00
200 Block, Early Pueblo III Component	0.34	32.42	0.08	16.68	11.11	0.95	0.08	0.15	0.34	0.00	0.05	0.00	0.00	0.00	100.00
1100 Block, Early Pueblo III Component	0.58	33.12	0.01	18.23	14.60	1.33	0.24	0.12	0.16	0.00	0.16	0.00	0.01	0.01	100.00
1200 Block, Early Pueblo III Component	0.21	51.09	0.00	18.83	14.76	0.62	0.66	0.03	0.14	0.00	0.00	0.00	0.00	0.00	100.00
1400 Block, Early Pueblo III Component	0.38	39.00	0.05	19.34	19.12	1.39	0.26	0.18	0.12	0.00	0.11	0.00	0.01	0.00	100.00

Table 14.4. Midden Assemblages by Context and Z-score, Shields Pueblo.

(a) Table 14.4

Context	Formal Chipped-Stone Tools	Informal Chipped-Stone Tools	Chipped-Stone Tool Production Items	Debitage	Food-Grinding Tools	Abraders	Indeterminate Ground Stone	Gizzard Stones	Axes/Mauls	Peckingstones	Bone Tools
1300 Block, Middle Pueblo II Component	−0.5683	0.8867	−0.1959	1.0910	1.2565	0.0593	−0.1370	−0.6371	1.6368	−0.5476	−0.8106
Great House, Late Pueblo II Component	1.6949	−0.5110	−1.0941	−0.0637	0.4515	−1.6082	−0.1516	−0.2964	−0.6238	0.0507	0.4107
200 Block, Late Pueblo II Component	−0.1278	−1.4020	−0.8713	−1.2389	−2.0170	1.4635	0.1309	0.6018	−0.6238	−1.0308	1.5663
1300 Block, Late Pueblo II Component	0.9800	1.2751	0.1574	0.9102	0.3052	−0.6067	−0.5991	−0.9726	−0.0581	−0.3336	0.9543
200 Block, Early Pueblo III Component	−1.1759	0.9949	0.5781	1.0358	0.0399	0.9632	−0.6755	1.3293	−0.6238	0.5576	−0.4088
1100 Block, Early Pueblo III Component	−1.1726	−0.0896	2.0887	0.3124	0.7505	−0.6262	2.3725	1.3373	−0.6238	−0.1104	−1.1824
1200 Block, Early Pueblo III Component	0.1577	−1.1675	−0.5101	−1.3211	−0.6946	0.6862	−0.3046	−1.2790	−0.6238	2.1563	−1.0080
1400 Block, Early Pueblo III Component	0.2119	0.0136	−0.1528	−0.7257	−0.0920	−0.3312	−0.6358	−0.0833	1.5402	−0.7423	0.4784

(b) Table 14.4

Context	Pottery Production Items	Corrugated Jar Sherds	Red Ware Sherds	White Ware Bowl Sherds	White Ware Jar Sherds	White Ware Ladle Sherds	White Ware Mug Sherds
1300 Block, Middle Pueblo II Component	−0.6821	−0.3941	−0.0834	−2.2630	−0.1112	−1.3529	−0.6864
Great House, Late Pueblo II Component	−0.1484	0.1124	−0.3825	0.1964	0.3527	−0.5456	−0.8496
200 Block, Late Pueblo II Component	−1.3780	0.4095	2.4591	0.9255	0.9462	−0.4136	−0.3742
1300 Block, Late Pueblo II Component	1.1875	−1.0800	−0.3760	−0.1215	−0.1670	0.0060	−0.2383
200 Block, Early Pueblo III Component	−0.0063	−0.7569	−0.3568	−0.2862	−1.8445	0.2211	−0.6014
1100 Block, Early Pueblo III Component	1.5523	−0.6504	−0.4270	0.3015	−0.3797	1.3303	0.1862
1200 Block, Early Pueblo III Component	−0.8354	2.1067	−0.4436	0.5277	−0.3120	−0.7624	2.2636
1400 Block, Early Pueblo III Component	0.3105	0.2528	−0.3897	0.7197	1.5154	1.5170	0.3000

(c) Table 14.4

Context	Nonlocal Sherds	Personal Adornment Items	Effigy	Other Modified Stone/Mineral	Gaming Piece	Stone Disk	Tchamahia
1300 Block, Middle Pueblo II Component	−0.3275	0.3182	1.9022	−0.0219	2.4749	−0.6156	−0.3536
Great House, Late Pueblo II Component	−0.3655	0.1593	−0.5329	0.7859	−0.3536	−0.6156	−0.3536
200 Block, Late Pueblo II Component	2.4715	−1.5538	−0.5329	−0.9660	−0.3536	2.1337	−0.3536
1300 Block, Late Pueblo II Component	−0.2693	−0.0619	1.2952	0.3152	−0.3536	−0.6156	−0.3536
200 Block, Early Pueblo III Component	−0.3497	2.0119	−0.5329	−0.5696	−0.3536	−0.6156	−0.3536
1100 Block, Early Pueblo III Component	−0.3810	−0.0114	−0.5329	1.5478	−0.3536	0.7028	2.4749
1200 Block, Early Pueblo III Component	−0.4526	−0.2977	−0.5329	−1.5541	−0.3536	−0.6156	−0.3536
1400 Block, Early Pueblo III Component	−0.3259	−0.5646	−0.5329	0.4627	−0.3536	0.2416	−0.3536

Table 14.5. Fill Assemblage Position Designations Used to Identify Abandonment Contexts, Shields Pueblo.

FAP, General	FAP, Specific
Surface contact	prepared floor surface
	ash or other accumulation on a floor
	capped surface
	and fill above
	bench surface
	other feature surface
	ephemeral or reuse surface in fill
Fill	roof fall
	below roof fall

Table 14.6. Study Unit Abandonment Assemblage Data, by Component and Abandonment Mode, Used in Comparative Analysis, Shields Pueblo.

Component	Study Unit Number	Study Unit Description	Abandonment Mode	Total Artifacts	Used In Analysis
Early Pueblo I	110	earth-walled pit structure	unburned	138	
	141	subterranean room	unburned	136	
Pueblo I	1318	earth-walled pit structure	recycled/dismantled	117	
Middle to Late Pueblo II	1307	earth-walled pit structure	recycled/dismantled	70	X
	1308	earth-walled pit structure	recycled/dismantled	1,520	X
Late Pueblo II	122	subterranean kiva	burned	98	
	137	earth-walled pit structure	recycled/dismantled	1,197	X
	138	earth-walled pit structure	recycled/dismantled	567	X
	237	earth-walled pit structure	recycled/dismantled	106	X
Late Pueblo II–Early Pueblo III	124	subterranean room	unburned	180	
	139	earth-walled pit structure	recycled/dismantled	638	
	140	nonmasonry surface room	unburned	6	
	1114	subterranean kiva	burned	85	
	1414	subterranean kiva	recycled/dismantled	313	
Early Pueblo III	123	subterranean kiva	unknown	8	
	145	subterranean kiva	recycled/dismantled	355	X
	146	subterranean room	recycled/dismantled	191	X
	205	subterranean room	burned	4	X
	222	subterranean kiva	recycled/dismantled	1,809	X
	234	subterranean kiva	recycled/dismantled	1,175	X
	1108	subterranean kiva	recycled/dismantled	40	X
	1113	subterranean kiva	recycled/dismantled	307	X
	1316	subterranean kiva	burned	2,629	X
	1505	subterranean kiva	burned	315	X
Late Pueblo III	208	subterranean kiva	burned	716	X
	221	subterranean kiva	burned	1,478	X
	223	subterranean kiva	burned	367	X
	224	subterranean kiva	burned	734	X

Component	Study Unit Number	Study Unit Description	Abandonment Mode	Total Artifacts	Used In Analysis
	225	subterranean kiva	unburned	1,154	X
	229	other masonry structure	unburned	373	X
	241	subterranean kiva	burned	1,109	X
	405	subterranean kiva	burned	954	X
	406	subterranean kiva	burned	665	X
	1315	subterranean kiva	burned	633	X
	1402	subterranean kiva	burned	1,755	X
	1408	subterranean kiva	burned	491	X
	1411	other masonry structure	unburned	5	X
	1412	other masonry structure	unburned	312	X
	1413	subterranean room	unburned	64	X
Pueblo III	803	subterranean kiva	recycled/dismantled	302	X
	1106	subterranean kiva	recycled/dismantled	532	X
	1205	subterranean kiva	burned	682	X
	1206	subterranean kiva	recycled/dismantled	309	X
	1209	subterranean structure, type unknown	recycled/dismantled	261	X
	1416	subterranean kiva	recycled/dismantled	88	X
	1504	subterranean kiva	recycled/dismantled	111	X

Table 14.7. Expectations for Abandonment Assemblages by Abandonment Mode, Shields Pueblo.

Unburned (and Recycled/Dismantled) Structures[1]	Burned Structures[2]
Fewer heavy, high-input items (e.g., food-grinding tools)	More heavy, high-input items
Few or no pottery vessels	Pottery vessels present
Fewer light, low-input items (e.g., informal chipped stone tools)	More light, low-input items
Higher percentages of light "trash" (e.g., debitage, pottery sherds)	Lower percentages of light "trash"

[1]Short-distance move anticipated.
[2]Long-distance move anticipated.

Table 14.8. Abandonment Assemblage Counts by Component and Abandonment Mode, Shields Pueblo.

(a) Table 14.8

Component	Abandonment Mode	Sample Size	Chipped-Stone Tool Production Items	Formal Chipped-Stone Tools	Informal Chipped-Stone Tools	Debitage	Food-Grinding Tools	Indeterminate Ground Stone	Gizzard Stones	Peckingstones	Axes/Mauls	Bone Tools
Middle to Late Pueblo II	recycled/ dismantled	n=2	4	3	3	320	5	10	7	6	1	1
Late Pueblo II	recycled/ dismantled	n=3	2	2	12	505	7	27	3	10		6
Early Pueblo III	recycled/ dismantled	n=6	11	3	9	691	16	11	11	10		6
Early Pueblo III	burned	n=3	7	5	8	352	12	17	5	8	4	1
Late Pueblo III	burned	n=10	16	12	26	1,089	27	22	19	24	3	10
Late Pueblo III	unburned	n=5	3	9	8	161	6	9	7	11		
Pueblo III	recycled/ dismantled	n=6	1	1	7	172	14	10	7	9		4
Pueblo III	burned	n=1	2	3	4	68	5	2	2	7		3

(b) Table 14.8

Component	Abandonment Mode	Sample Size	Abraders	Adornment Items	Pottery Production Items	Whole Vessels	Cooking Jar Sherds	White Ware Jar Sherds	White Ware Bowl Sherds	Red Ware Sherds	Nonlocal Sherds	TOTAL
Middle to Late Pueblo II	recycled/ dismantled	n=2		4	10		712	220	278	1	5	1,590
Late Pueblo II	recycled/ dismantled	n=3	3	2	7	1	801	245	230	4	3	1,870
Early Pueblo III	recycled/ dismantled	n=6	4	9	10		1,891	613	577	3	12	3,877
Early Pueblo III	burned	n=3	1	4	13	3	1,629	549	329	1	1	2,948
Late Pueblo III	burned	n=10	4	19	38	11	4,847	1,214	1,487	2	36	8,902
Late Pueblo III	unburned	n=5	1		5		1,043	309	336		5	1,908
Pueblo III	recycled/ dismantled	n=6	3	1	8		836	245	285		4	1,603
Pueblo III	burned	n=1		2	4	1	351	182	46			682

Table 14.9. Abandonment Assemblage Percentages by Component and Abandonment Mode, Shields Pueblo.

(a) Table 14.9

Component	Abandonment Mode	Sample Size	Chipped-Stone Tool Production Items	Formal Chipped-Stone Tools	Informal Chipped-Stone Tools	Debitage	Food-Grinding Tools	Indeterminate Ground Stone	Gizzard Stones	Peckingstones	Axes/Mauls	Bone Tools
Middle to Late Pueblo II	recycled/ dismantled	n=2	0.25	0.19	0.19	20.13	0.31	0.63	0.44	0.38	0.06	0.06
Late Pueblo II	recycled/ dismantled	n=3	0.11	0.11	0.64	27.01	0.37	1.44	0.16	0.53		0.32
Early Pueblo III	recycled/ dismantled	n=6	0.28	0.08	0.23	17.82	0.41	0.28	0.28	0.26		0.15
Early Pueblo III	burned	n=3	0.24	0.17	0.27	11.94	0.41	0.58	0.17	0.27	0.14	0.03
Late Pueblo III	burned	n=10	0.18	0.13	0.29	12.23	0.30	0.25	0.21	0.27	0.03	0.11
Late Pueblo III	unburned	n=5	0.16	0.47	0.42	8.44	0.31	0.47	0.37	0.58		
Pueblo III	recycled/ dismantled	n=6	0.06	0.06	0.44	10.73	0.87	0.62	0.44	0.56		0.25
Pueblo III	burned	n=1	0.29	0.44	0.59	9.97	0.73	0.29	0.29	1.03		0.44

(b) Table 14.9

Component	Abandonment Mode	Sample Size	Abraders	Adornment Items	Pottery Production Items	Whole Vessels	Cooking Jar Sherds	White Ware Jar Sherds	White Ware Bowl Sherds	Red Ware Sherds	Nonlocal Sherds	TOTAL
Middle to Late Pueblo II	recycled/ dismantled	n=2		0.25	0.63		44.78	13.84	17.48	0.06	0.31	100.00
Late Pueblo II	recycled/ dismantled	n=3	0.16	0.11	0.37	0.05	42.83	13.10	12.30	0.21	0.16	100.00
Early Pueblo III	recycled/ dismantled	n=6	0.10	0.23	0.26		48.77	15.81	14.88	0.08	0.31	100.00
Early Pueblo III	burned	n=3	0.03	0.14	0.44	0.10	55.26	18.62	11.16	0.03	0.03	100.00
Late Pueblo III	burned	n=10	0.04	0.21	0.43	0.12	54.45	13.64	16.70	0.02	0.40	100.00
Late Pueblo III	unburned	n=5	0.05		0.26		54.66	16.19	17.61		0.26	100.00
Pueblo III	recycled/ dismantled	n=6	0.19	0.06	0.50		52.15	15.28	17.78		0.25	100.00
Pueblo III	burned	n=1		0.29	0.59	0.15	51.47	26.69	6.74			100.00

Table 14.10. Abandonment Assemblage Z-scores by Component and Abandonment Mode, Shields Pueblo.

(a) Table 14.10

Component	Abandonment Mode	Sample Size	Chipped-Stone Tool Production Items	Formal Chipped-Stone Tools	Informal Chipped-Stone Tools	Debitage	Food-Grinding Tools	Indeterminate Ground Stone	Gizzard Stones	Peckingstones	Axes/Mauls	Bone Tools
Middle to Late Pueblo II	recycled/ dismantled	n=2	0.6544	−0.1110	−1.1712	0.8423	−0.7067	0.1498	1.2985	−0.4154	0.6920	−0.7106
Late Pueblo II	recycled/ dismantled	n=3	−1.0652	−0.6221	1.5515	1.9270	−0.4286	2.2615	−1.2122	0.1953	−0.5934	0.9730
Early Pueblo III	recycled/ dismantled	n=6	1.0367	−0.8070	−0.9100	0.4793	−0.2504	−0.7448	−0.1059	−0.8788	−0.5934	−0.1110
Early Pueblo III	burned	n=3	0.4865	−0.2303	−0.6742	−0.4482	−0.2766	0.0143	−1.1299	−0.8266	2.1798	−0.8997
Late Pueblo III	burned	n=10	−0.1998	−0.4479	−0.5498	−0.4021	−0.7585	−0.8396	−0.7366	−0.8335	0.0954	−0.3879
Late Pueblo III	unburned	n=5	−0.4674	1.6590	0.2148	−1.0004	−0.7067	−0.2577	0.6401	0.3573	−0.5934	−1.1211
Pueblo III	recycled/ dismantled	n=6	−1.5952	−0.9008	0.3193	−0.6391	1.8895	0.1366	1.2665	0.2989	−0.5934	0.5075
Pueblo III	burned	n=1	1.1500	1.4601	1.2198	−0.7588	1.2381	−0.7201	−0.0204	2.1028	−0.5934	1.7498

(b) Table 14.10

Component	Abandonment Mode	Sample Size	Abraders	Adornment Items	Pottery Production Items	Whole Vessels	Cooking-Jar Sherds	White Ware Jar Sherds	White Ware Bowl Sherds	Red Ware Sherds	Nonlocal Sherds
Middle to Late Pueblo II	recycled/ dismantled	n=2	−1.0292	0.8796	1.4277	−0.8506	−1.2309	−0.6353	0.7940	0.1607	0.6905
Late Pueblo II	recycled/ dismantled	n=3	1.2403	−0.5394	−0.4426	0.0047	−1.6462	−0.8014	−0.5124	2.2583	−0.3984
Early Pueblo III	recycled/ dismantled	n=6	0.4303	0.6889	−1.2977	−0.8506	−0.3783	−0.1889	0.1385	0.3620	0.6555
Early Pueblo III	burned	n=3	−0.5493	−0.2575	0.0470	0.7771	1.0053	0.4467	−0.7995	−0.2417	−1.2927
Late Pueblo III	burned	n=10	−0.3935	0.5054	−0.0567	1.1259	0.8326	−0.6803	0.5974	−0.4008	1.3263
Late Pueblo III	unburned	n=5	−0.2878	−1.5889	−1.2674	−0.8506	0.8787	−0.1021	0.8257	−0.7128	0.3200
Pueblo III	recycled/ dismantled	n=6	1.6183	−0.9767	0.4737	−0.8506	0.3425	−0.3081	0.8683	−0.7128	0.2315
Pueblo III	burned	n=1	−1.0292	1.2886	1.1161	1.4947	0.1961	2.2695	−1.9120	−0.7128	−1.5325

Table 14.11. Shrine Descriptive Summary, Shields Pueblo.

Shrine Study Unit Number	"Parent" Study Unit Number	Shrine Plan Shape	Abandonment Mode of Parent Feature	Component Association of Parent Feature	Total Number of Artifacts Recovered from Shrine
213	208	round	burned	Late Pueblo III	716
229	225	round	unburned	Late Pueblo III	1,154
242	241	rectangular	burned	Late Pueblo III	1,109
401	405	subcircular	burned	Late Pueblo III	954
407	405	unknown	burned	Late Pueblo III	954
409	408	round	unknown	Unknown	unknown
1411	1408	round	burned	Late Pueblo III	491
1412	1402	round	burned	Late Pueblo III	1,755

Table 14.12. Pottery from Surface Contact Contexts in Shrines Structures 1411 and 1412 by Type and Form, Shields Pueblo.

Pottery Type	Vessel Form	Structure 1411 Wt. (g)	Structure 1412 Wt. (g)
Indeterminate Local Gray	jar		45.6
Indeterminate Local Corrugated Gray	jar	9.2	1,123.6
Mancos Corrugated Gray	jar		7.5
Mesa Verde Corrugated Gray	jar		42.7
Late White Unpainted	bowl	1.3	182.9
	jar		305.6
	ladle		30.4
	unknown		3.7
Late White Painted	bowl	4.4	87.8
	jar		82.3
	ladle		58.1
Pueblo III White Painted	bowl		165.6
	jar		30.8
	mug		25.6
McElmo Black-on-white	bowl		116.2
	jar		19.0
	ladle		13.6
Mesa Verde Black-on-white	bowl		232.2
	jar		52.3
Other Red Nonlocal	bowl		29.7
Unknown Red	jar		2.7
TOTAL		14.9	2,657.9

Table 14.13. Artifacts Recovered from Shrine Structure 1412 Surface Contact, Shields Pueblo.

Artifact Category	Material	Count
Core	Morrison quartzite	1
Indeterminate ground stone	conglomerate	1
	sandstone	1
Modified flake	Burro Canyon chert	1
	Morrison chert/siltstone	1
	Morrison quartzite	1
	unknown quartzite	1
Peckingstone	Morrison quartzite	2
Projectile point	unknown chert/siltstone	1
Two-hand mano	conglomerate	1
	sandstone	3

Table 14.14. Extralocal Pottery by Type and Architectural Block, Shields Pueblo.

Block	Abajo Red-on-Orange		Bluff Black-on-Red		Deadmans Black-on-Red		Indeterminate Local Red Painted		Indeterminate Local Red Unpainted		Other Gray Nonlocal		Other Red Nonlocal		Other White Nonlocal		Polychrome		Unknown Red		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
100	12	60.0	1	8.3	23	35.9	7	17.5	54	40.6	2	22.2	97	23.1	14	28.6	1	3.7	22	40.0	233	28.1
200	3	15.0	3	25.0	4	6.3	8	20.0	26	19.5	1	11.1	96	22.9	9	18.4		0.0	6	10.9	156	18.8
300													4	1.0							4	0.5
400			1	8.3			3	7.5	3	2.3			11	2.6							18	2.2
500									1	0.8											1	0.1
600					2	3.1			1	0.8			4	1.0							7	0.8
700			1	8.3																	1	0.1
800							1	2.5					1	0.2							2	0.2
900									1	0.8											1	0.1
1000									1	0.8			1	0.2							2	0.2
1100			1	8.3	3	4.7	2	5.0	1	0.8	1	11.1	27	6.4	3	6.1			4	7.3	42	5.1
1200									1	0.8			11	2.6					2	3.6	14	1.7
1300	4	20.0	4	33.3	26	40.6	17	42.5	41	30.8	5	55.6	97	23.1	17	34.7	1	3.7	12	21.8	224	27.0
1400	1	5.0	1	8.3	6	9.4	1	2.5	2	1.5			64	15.2	5	10.2	25	92.6	9	16.4	114	13.8
1500							1	2.5					5	1.2							6	0.7
1900									1	0.8			2	0.5	1	2.0					4	0.5
TOTAL	20	100.0	12	100.0	64	100.0	40	100.0	133	100.0	9	100.0	420	100.0	49	100.0	27	100.0	55	100.0	829	100.0

Table 14.15. Pottery Sherd Weights from Midden Assemblages by Study Unit and Type, Shields Pueblo.

(a) Table 14.15, Study Units 101, 130, 142, 152, and 153

Pottery Type and Ware	101		130		142		152		153	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUDWARE										
Basketmaker Mudware										
PLAIN GRAY WARE										
Chapin Gray	8.2	0.07					5.0	0.02	2.9	0.04
Moccasin Gray										
Mancos Gray	11.2	0.10								
Indeterminate Local Gray	1,002.2	8.91	156.7	3.23	20.4	2.74	1,154.0	5.51	638.5	9.56
Mancos Corrugated Gray	62.5	0.56	82.3	1.69	10.8	1.45	124.1	0.59	132.9	1.99
Mesa Verde Corrugated Gray	208.0	1.85	101.9	2.10		0.00	544.2	2.60	128.6	1.93
Mummy Lake Gray		0.00		0.00		0.00		0.00		0.00
Indeterminate Local Corrugated Gray	4,956.3	44.08	2,601.0	53.54	271.0	36.34	7,368.1	35.19	2,772.7	41.52
WHITE WARE										
Chapin Black-on-white	2.1	0.02							8.9	0.13
Piedra Black-on-white										
Cortez Black-on-white	6.8	0.06					19.6	0.09	7.0	0.10
Mancos Black-on-white	643.7	5.72	466.1	9.59			1,959.6	9.36	934.3	13.99
McElmo Black-on-white	868.3	7.72	187.5	3.86	114.4	15.34	1,694.8	8.10	264.6	3.96
Mesa Verde Black-on-white	42.3	0.38	11.4	0.23	17.4	2.33	42.7	0.20	13.9	0.21
Early White Painted							8.7	0.04		
Early White Unpainted	4.3	0.04	1.9	0.04			12.9	0.06	32.2	0.48
Pueblo II White Painted	10.3	0.09					1.0	0.00	2.8	0.04
Pueblo III White Painted	661.3	5.88	33.7	0.69	57.8	7.75	1,057.4	5.05	76.5	1.15
Late White Painted	482.3	4.29	345.5	7.11	73.3	9.83	2,349.4	11.22	414.9	6.21
Late White Unpainted	2,244.2	19.96	754.6	15.53	180.7	24.23	4,565.4	21.81	1,206.5	18.06
Indeterminate Local White									34.1	0.51

Pottery Type and Ware	101		130		142		152		153	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Painted										
Indeterminate Local White Unpainted										
RED WARE										
Abajo Red-on-orange			2.6	0.05						
Bluff Black-on-red										
Deadmans Black-on-red	1.3	0.01					3.2	0.02		
Indeterminate Local Red Painted	2.5	0.02								
Indeterminate Local Red Unpainted	19.4	0.17					0.3	0.00		
NONLOCAL										
Other Gray Nonlocal										
Other Red Nonlocal			2.4	0.05			23.6	0.11	3.4	0.05
Other White Nonlocal	3.0	0.03	110.8	2.28					4.0	0.06
Polychrome										
UNKNOWN										
Unknown Gray										
Unknown Red	2.7	0.02								
Unknown White							1.8	0.01		
Unknown Pottery	1.0	0.01								
TOTAL	11,243.9	100.00	4,858.4	100.00	745.8	100.00	20,935.8	100.00	6,678.7	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 14.15, Study Units 154, 157, 210, 226, and 238

Pottery Type and Ware	154		157		210		226		238	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUDWARE										
Basketmaker Mudware										
PLAIN GRAY WARE										
Chapin Gray					9.2	0.40	3.2	2.21		
Moccasin Gray										
Mancos Gray										
Indeterminate Local Gray	462.9	14.23	118.2	7.41	215.5	9.36	21.0	14.48	1,305.7	9.47
Mancos Corrugated Gray	36.1	1.11	19.9	1.25	25.5	1.11			103.9	0.75
Mesa Verde Corrugated Gray	72.3	2.22	6.8	0.43	183.8	7.99			168.9	1.22
Mummy Lake Gray		0.00			8.7	0.38				
Indeterminate Local Corrugated Gray	1,514.9	46.58	876.4	54.93	835.8	36.32	86.5	59.66	4,984.3	36.13
WHITE WARE										
Chapin Black-on-white									23.0	0.17
Piedra Black-on-white									35.9	0.26
Cortez Black-on-white										0.00
Mancos Black-on-white	246.1	7.57	96.7	6.06	186.3	8.09			1,548.8	11.23
McElmo Black-on-white	74.8	2.30	36.0	2.26	323.8	14.07	6.4	4.41	631.3	4.58
Mesa Verde Black-on-white	7.3	0.22		0.00	0.8	0.03			43.7	0.32
Early White Painted						0.00	2.5	1.72	19.8	0.14
Early White Unpainted						0.00	3.0	2.07	64.3	0.47
Pueblo II White Painted					32.0	1.39			2.6	0.02
Pueblo III White Painted	30.8	0.95	11.9	0.75	74.8	3.25	1.0	0.69	228.4	1.66
Late White Painted	409.7	12.60	134.1	8.41	144.8	6.29	6.2	4.28	1,711.1	12.40
Late White Unpainted	393.3	12.09	294.7	18.47	255.5	11.10	13.0	8.97	2,837.9	20.57
Indeterminate Local White Painted									11.2	0.08
Indeterminate Local White Unpainted	1.4	0.04							4.5	0.03

Pottery Type and Ware	154		157		210		226		238	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
RED WARE										
Abajo Red-on-orange									3.4	0.02
Bluff Black-on-red									5.0	0.04
Deadmans Black-on-red									6.9	0.05
Indeterminate Local Red Painted									1.2	0.01
Indeterminate Local Red Unpainted					3.1	0.13			21.7	0.16
NONLOCAL										
Other Gray Nonlocal										
Other Red Nonlocal	3.0	0.09			1.9	0.08	2.2	1.52	15.5	0.11
Other White Nonlocal									11.5	0.08
Polychrome										
UNKNOWN										
Unknown Gray									2.5	0.02
Unknown Red									0.6	0.00
Unknown White										
Unknown Pottery			0.7	0.04					0.8	0.01
TOTAL	3,252.6	100.00	1,595.4	100.00	2,301.5	100.00	145.0	100.00	13,794.4	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(c) Table 14.15, Study Units 239, 245, 247, 248, and 1103

Pottery Type and Ware	239		245		247		248		1103	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUDWARE										
Basketmaker Mudware			5.6	0.03						
PLAIN GRAY WARE										
Chapin Gray										
Moccasin Gray	5.8	0.68								
Mancos Gray			9.9	0.05						
Indeterminate Local Gray	82.7	9.73	536.3	2.92	95.2	11.28	2.5	1.35	71.1	5.84
Mancos Corrugated Gray			135.7	0.74						
Mesa Verde Corrugated Gray			364.6	1.99	27.5	3.26			47.2	3.88
Mummy Lake Gray				0.00		0.00				
Indeterminate Local Corrugated Gray	401.7	47.27	7,356.8	40.12	338.9	40.17	85.4	46.04	589.6	48.45
WHITE WARE										
Chapin Black-on-white										
Piedra Black-on-white										
Cortez Black-on-white			8.8	0.05						
Mancos Black-on-white	65.2	7.67	1,067.8	5.82	32.9	3.90	35.0	18.87	38.6	3.17
McElmo Black-on-white	20.4	2.40	2,159.0	11.77	60.8	7.21	9.3	5.01	102.3	8.41
Mesa Verde Black-on-white			578.4	3.15	5.1	0.60			17.2	1.41
Early White Painted										
Early White Unpainted	17.3	2.04	14.8	0.08						
Pueblo II White Painted	1.8	0.21	85.3	0.47						
Pueblo III White Painted	43.2	5.08	937.4	5.11	26.6	3.15			52.2	4.29
Late White Painted	76.4	8.99	1,915.2	10.45	90.6	10.74			3.5	0.29
Late White Unpainted	117.8	13.86	3,128.5	17.06	166.0	19.68	53.3	28.73	295.1	24.25
Indeterminate Local White Painted										
Indeterminate Local White Unpainted										

Pottery Type and Ware	239		245		247		248		1103	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
RED WARE										
Abajo Red-on-orange										
Bluff Black-on-red			1.5	0.01						
Deadmans Black-on-red	2.9	0.34								
Indeterminate Local Red Painted										
Indeterminate Local Red Unpainted										
NONLOCAL										
Other Gray Nonlocal										
Other Red Nonlocal	10.3	1.21	14.3	0.08						
Other White Nonlocal			12.6	0.07						
Polychrome										
UNKNOWN										
Unknown Gray										
Unknown Red										
Unknown White			3.3	0.02						
Unknown Pottery	4.3	0.51								
TOTAL	849.8	100.00	18,335.8	100.00	843.6	100.00	185.5	100.00	1,216.8	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(d) Table 14.15, Study Units 1107, 1109, 1202, 1303, and 1309

Pottery Type and Ware	1107		1109		1202		1303		1309	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUDWARE										
Basketmaker Mudware										
PLAIN GRAY WARE										
Chapin Gray							22.0	1.05	70.6	0.18
Moccasin Gray									10.7	0.03
Mancos Gray					2.3	0.01			36.8	0.09
Indeterminate Local Gray	687.2	2.01	278.4	4.78	226.1	1.23	91.8	4.38	4,456.2	11.43
Mancos Corrugated Gray	221.2	0.65	14.0	0.24	241.7	1.32	5.0	0.24	583.8	1.50
Mesa Verde Corrugated Gray	536.0	1.57	248.0	4.26	619.3	3.37	35.2	1.68	879.6	2.26
Mummy Lake Gray									61.5	0.16
Indeterminate Local Corrugated Gray	13,284.5	38.94	1,953.3	33.56	8,997.3	49.00	620.1	29.58	13,480.9	34.58
WHITE WARE										
Chapin Black-on-white	2.3	0.01					1.6	0.08	54.5	0.14
Piedra Black-on-white							18.9	0.90	17.7	0.05
Cortez Black-on-white	20.3	0.06	6.7	0.12					66.0	0.17
Mancos Black-on-white	1,252.0	3.67	276.7	4.75	83.2	0.45	168.4	8.03	4,712.5	12.09
McElmo Black-on-white	3,076.0	9.02	384.9	6.61	1,266.9	6.90	142.6	6.80	1,524.5	3.91
Mesa Verde Black-on-white	1,690.2	4.95	118.2	2.03	840.5	4.58	29.7	1.42	236.4	0.61
Early White Painted									35.3	0.09
Early White Unpainted	25.7	0.08	3.0	0.05			12.8	0.61	549.5	1.41
Pueblo II White Painted	83.9	0.25	7.1	0.12			3.0	0.14	169.8	0.44
Pueblo III White Painted	2,837.7	8.32	628.2	10.79	1,645.2	8.96	29.0	1.38	652.8	1.67
Late White Painted	2,772.6	8.13	456.1	7.84	809.7	4.41	334.2	15.94	3,692.4	9.47
Late White Unpainted	7,523.8	22.06	1,435.2	24.66	3,606.5	19.64	580.0	27.66	7,619.8	19.54
Indeterminate Local White Painted	14.8	0.04			4.6	0.03	2.4	0.11	3.1	0.01
Indeterminate Local White Unpainted		0.00	9.7	0.17	5.7	0.03				

Pottery Type and Ware	1107		1109		1202		1303		1309	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
RED WARE										
Abajo Red-on-orange										
Bluff Black-on-red	3.6	0.01								
Deadmans Black-on-red	2.4	0.01							4.4	0.01
Indeterminate Local Red Painted										
Indeterminate Local Red Unpainted									26.4	0.07
NONLOCAL										
Other Gray Nonlocal	39.6	0.12								
Other Red Nonlocal	37.8	0.11			0.8	0.00			18.3	0.05
Other White Nonlocal									9.0	0.02
Polychrome										
UNKNOWN										
Unknown Gray									2.5	0.01
Unknown Red					3.9	0.02			13.8	0.04
Unknown White										
Unknown Pottery					8.5	0.05				
TOTAL	34,111.6	100.00	5,819.5	100.00	18,362.2	100.00	2,096.7	100.00	38,988.9	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(e) Table 14.15, Study Units 1310, 1312, 1320, 1321, 1409, and 1418

Pottery Type and Ware	1310		1312		1320		1321		1409		1418	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
MUDWARE												
Basketmaker Mudware											2.0	0.01
PLAIN GRAY WARE												
Chapin Gray	59.7	0.17			43.9	0.10	831.4	4.10				
Moccasin Gray												
Mancos Gray												
Indeterminate Local Gray	1,768.2	4.96	25.7	4.72	5,223.7	12.26	3,641.5	17.96	1,025.4	2.40	698.1	1.80
Mancos Corrugated Gray	11,55.1	3.24	18.2	3.34	533.3	1.25	535.5	2.64	247.1	0.58	330.4	0.85
Mesa Verde Corrugated Gray	409.7	1.15			1,351.0	3.17	118.0	0.58	1,358.2	3.18	470.0	1.21
Mummy Lake Gray												
Indeterminate Local Corrugated Gray	17,337.6	48.61	258.8	47.50	13,733.7	32.23	7,205.6	35.54	17,115.9	40.08	13,371.9	34.52
WHITE WARE												
Chapin Black-on-white	21.7	0.06			28.6	0.07	754.3	3.72				
Piedra Black-on-white	49.3	0.14			159.1	0.37	93.2	0.46				
Cortez Black-on-white	252.1	0.71			129.6	0.30	113.0	0.56				
Mancos Black-on-white	5,456.2	15.30	35.4	6.50	6,798.7	15.96	1,303.4	6.43	1,497.4	3.51	2,070.2	5.34
McElmo Black-on-white	373.6	1.05	3.1	0.57	2,694.4	6.32	21.9	0.11	3,592.1	8.41	3,456.6	8.92
Mesa Verde Black-on-white	65.7	0.18			2.2	0.01	14.1	0.07	1,347.9	3.16	3,246.3	8.38
Early White Painted	23.7	0.07			26.1	0.06	221.0	1.09	0.9	0.00		
Early White Unpainted	173.1	0.49	28.1	5.16	159.2	0.37	2,033.0	10.03	14.1	0.03	10.2	0.03
Pueblo II White Painted	636.5	1.78		0.00	173.6	0.41	38.8	0.19	7.7	0.02	91.1	0.24
Pueblo III White Painted	428.8	1.20	14.3	2.62	608.1	1.43	52.1	0.26	3,039.2	7.12	2,960.3	7.64
Late White Painted	2,293.4	6.43	85.6	15.71	3,937.7	9.24	564.0	2.78	4,140.6	9.70	3,115.4	8.04
Late White Unpainted	4,757.3	13.34	61.9	11.36	6,725.0	15.78	2,628.8	12.97	9,212.7	21.57	8,874.5	22.91
Indeterminate Local White Painted	7.2	0.02			46.4	0.11	53.3	0.26		0.00		

Pottery Type and Ware	1310		1312		1320		1321		1409		1418	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Indeterminate Local White Unpainted	121.0	0.34				0.00	10.9	0.05	24.7	0.06	2.3	0.01
RED WARE												
Abajo Red-on-orange									5.7	0.01		
Bluff Black-on-red	9.7	0.03					15.6	0.08				
Deadmans Black-on-red	16.7	0.05			3.3	0.01	3.1	0.02	4.4	0.01	2.2	0.01
Indeterminate Local Red Painted	16.6	0.05			9.7	0.02						
Indeterminate Local Red Unpainted	76.0	0.21			6.0	0.01	4.7	0.02			1.9	0.00
NONLOCAL												
Other Gray Nonlocal					46.8	0.11			14.1	0.03		
Other Red Nonlocal	119.9	0.34			158.2	0.37	9.2	0.05	22.3	0.05	23.3	0.06
Other White Nonlocal	32.3	0.09			5.6	0.01			4.1	0.01	11.0	0.03
Polychrome					2.4	0.01						
UNKNOWN												
Unknown Gray					5.0	0.01						
Unknown Red	0.7	0.00					6.2	0.03			3.6	0.01
Unknown White	1.5	0.00										
Unknown Pottery	0.8	0.00	13.7	2.51					29.7	0.07		
TOTAL	35,664.0	100.00	544.8	100.00	42,611.3	100.00	20,272.7	100.00	42,704.2	100.00	38,741.3	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

Table 14.16. Pottery Type Frequencies from Late Pueblo III Period Abandonment Assemblages by Study Unit and Weight, Shields Pueblo.

(a) Table 14.16, Study Units 208, 221, 223, 224, and 225

Pottery Types	208		221		223		224		225		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
GRAY WARE												
Chapin Gray												0.00
Moccasin Gray												0.00
Indeterminate Neckbanded Gray			6.1	0.1							6.1	0.01
Indeterminate Local Gray	137.0	4.7	408.3	3.7	50.3	1.6	207.1	4.2	313.2	4.0	1,811.7	1.95
Mancos Corrugated Gray	65.3	2.3	39.0	0.4			6.5	0.1	46.1	0.6	796.5	0.86
Mesa Verde Corrugated Gray	15.7	0.5	317.5	2.9	66.7	2.2	192.3	3.9	263.2	3.4	3293.4	3.54
Indeterminate Local Corrugated Gray	1,644.0	56.8	3,677.7	33.6	1,435.8	46.5	1,762.6	35.4	4,400.3	56.4	48,661.3	52.27
WHITE WARE												
Chapin Black-on-white			3.7	0.0							10.7	0.01
Piedra Black-on-white							16.2	0.3			20.9	0.02
Cortez Black-on-white									3.3	0.0	7.8	0.01
Mancos Black-on-white	193.6	6.7	1,008.3	9.2			76.5	1.5	176.4	2.3	2,333.1	2.51
McElmo Black-on-white	48.4	1.7	1,546.0	14.1	235.0	7.6	819.1	16.5	441.8	5.7	6,191.2	6.65
Mesa Verde Black-on-white	15.4	0.5	180.7	1.7	373.2	12.1	412.9	8.3	93.1	1.2	4,763.6	5.12
Early White Painted												0.00
Early White Unpainted			3.4	0.0			6.0	0.1	12.9	0.2	187.7	0.20

Pottery Types	208		221		223		224		225		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Pueblo II White Painted			26.7	0.2			2.1	0.0			54.3	0.06
Pueblo III White Painted	203.6	7.0	433.8	4.0	258.8	8.4	432.1	8.7	246.1	3.2	4,945.4	5.31
Late White Painted	148.1	5.1	1,004.1	9.2	49.3	1.6	228.4	4.6	624.2	8.0	4,807.7	5.16
Late White Unpainted	416.8	14.4	2,271.4	20.8	620.0	20.1	789.8	15.9	1,181.7	15.1	14,916.2	16.02
Indeterminate Local White Painted											2.9	0.00
Indeterminate Local White Unpainted	1.6	0.1					22.4	0.5			40.8	0.04
RED WARE												
Abajo Red-on-orange												0.00
Deadmans Black-on-red												0.00
Indeterminate Local Red Painted											1.4	0.00
Indeterminate Local Red Unpainted	2.1	0.1									2.1	0.00
NONLOCAL												
Other Gray Nonlocal												0.00
Other Red Nonlocal			10.8	0.1					1.0	0.0	190.0	0.20
Other White Nonlocal											0.9	0.00
Polychrome											34.2	0.04
UNKNOWN												
Unknown Gray	0.5	0.0	2.4	0.0							2.9	0.00
Unknown Red			0.3	0.0							4.3	0.00
Unknown White												0.00
Unknown Pottery			3.9	0.0							3.9	0.00

Pottery Types	208		221		223		224		225		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Unrecorded	4.1	0.1									4.1	0.00
TOTAL	2,896.2	100.0	10,944.1	100.0	3,089.1	100.0	4,974.0	100.0	7,803.3	100.0	93,095.1	100.00

Note: Percentages shown as totals may not add up to exactly 100% due to rounding.

(b) Table 14.16, Study Units 229, 241, 405, 406, and 1315

Pottery Types	229		241		405		406		1315		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
GRAY WARE												
Chapin Gray												0.00
Moccasin Gray												0.00
Indeterminate Neckbanded Gray											6.1	0.01
Indeterminate Local Gray	99.0	4.2	34.1	0.2	51.9	0.5	80.8	1.6	130.8	2.3	1,811.7	1.95
Mancos Corrugated Gray	38.5	1.6	286.3	1.8	105.2	1.0	71.6	1.4	41.8	0.7	796.5	0.86
Mesa Verde Corrugated Gray	8.5	0.4	1,131.8	7.2	427.2	4.2	170.8	3.3	111.8	2.0	3,293.4	3.54
Indeterminate Local Corrugated Gray	1,363.5	57.4	9,453.1	60.3	5,773.7	57.1	3,151.8	61.7	2,973.0	53.0	48,661.3	52.27
WHITE WARE												
Chapin Black-on-white									7.0	0.1	10.7	0.01
Piedra Black-on-white											20.9	0.02
Cortez Black-on-white			4.5	0.0							7.8	0.01
Mancos Black-on-white	65.4	2.8	42.8	0.3	58.1	0.6	37.2	0.7	222.3	4.0	2,333.1	2.51
McElmo Black-on-white	142.1	6.0	574.1	3.7	574.8	5.7	187.3	3.7	417.1	7.4	6,191.2	6.65
Mesa Verde Black-on-white	80.9	3.4	1,368.5	8.7	319.3	3.2	236.4	4.6	258.7	4.6	4,763.6	5.12
Early White Painted												0.00
Early White Unpainted			3.8	0.0	79.8	0.8	2.5	0.0	77.7	1.4	187.7	0.20
Pueblo II White Painted			7.9	0.1	6.6	0.1					54.3	0.06
Pueblo III White Painted	127.8	5.4	1,242.9	7.9	502.1	5.0	331.0	6.5	216.3	3.9	4,945.4	5.31

Pottery Types	229		241		405		406		1315		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Late White Painted	132.9	5.6	183.5	1.2	464.5	4.6	261.2	5.1	126.6	2.3	4,807.7	5.16
Late White Unpainted	311.6	13.1	1,328.5	8.5	1,740.7	17.2	573.0	11.2	1,021.2	18.2	14,916.2	16.02
Indeterminate Local White Painted			2.9	0.0							2.9	0.00
Indeterminate Local White Unpainted			10.5	0.1			1.4	0.0	4.9	0.1	40.8	0.04
RED WARE												
Abajo Red-on-orange												0.00
Deadmans Black-on-red												0.00
Indeterminate Local Red Painted											1.4	0.00
Indeterminate Local Red Unpainted											2.1	0.00
NONLOCAL												
Other Gray Nonlocal												0.00
Other Red Nonlocal	6.9	0.3			5.6	0.1	1.1	0.0			190.0	0.20
Other White Nonlocal											0.9	0.00
Polychrome											34.2	0.04
UNKNOWN												
Unknown Gray											2.9	0.00
Unknown Red											4.3	0.00
Unknown White												0.00
Unknown Pottery											3.9	0.00
Unrecorded											4.1	0.00
TOTAL	2,377.1	100.0	15,675.2	100.0	10,109.5	100.0	5,106.1	100.0	5,609.2	100.0	93,095.2	100.00

(c) Table 14.16, Study Units 1402, 1408, 1411, 1412, and 1413

Pottery Types	1402		1408		1411		1412		1413		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
GRAY WARE												
Chapin Gray												0.00
Moccasin Gray												0.00
Indeterminate Neckbanded Gray											6.1	0.01
Indeterminate Local Gray	213.6	1.3	36.2	0.7			45.6	1.7	3.8	0.8	1,811.7	1.95
Mancos Corrugated Gray	68.5	0.4	20.2	0.4			7.5	0.3			796.5	0.86
Mesa Verde Corrugated Gray	463.7	2.9	75.8	1.4			42.7	1.6	5.7	1.3	3,293.4	3.54
Indeterminate Local Corrugated Gray	8,464.9	52.7	3,306.9	62.0	9.2	61.7	1,123.6	42.3	121.2	27.0	48,661.3	52.27
WHITE WARE												
Chapin Black-on-white											10.7	0.01
Piedra Black-on-white			4.7	0.1							20.9	0.02
Cortez Black-on-white											7.8	0.01
Mancos Black-on-white	268.2	1.7	133.8	2.5					50.5	11.3	2,333.1	2.51
McElmo Black-on-white	526.5	3.3	449.8	8.4			148.8	5.6	80.4	17.9	6,191.2	6.65
Mesa Verde Black-on-white	1,042.6	6.5	97.5	1.8			284.5	10.7			4,763.6	5.12
Early White Painted												0.00
Early White Unpainted	1.6	0.0									187.7	0.20
Pueblo II White Painted	11.0	0.1									54.3	0.06
Pueblo III White Painted	524.9	3.3	204.0	3.8			222.0	8.4			4,945.4	5.31

Pottery Types	1402		1408		1411		1412		1413		TOTAL	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
Late White Painted	1,220.8	7.6	118.8	2.2	4.4	29.5	228.2	8.6	12.8	2.9	4,807.7	5.16
Late White Unpainted	3,078.4	19.2	885.5	16.6	1.3	8.7	522.6	19.7	173.7	38.8	14,916.2	16.02
Indeterminate Local White Painted											2.9	0.00
Indeterminate Local White Unpainted											40.8	0.04
RED WARE												
Abajo Red-on-orange												0.00
Deadmans Black-on-red												0.00
Indeterminate Local Red Painted	1.4										1.4	0.00
Indeterminate Local Red Unpainted											2.1	0.00
NONLOCAL												
Other Gray Nonlocal												0.00
Other Red Nonlocal	134.9	0.8					29.7	1.1			190.0	0.20
Other White Nonlocal	0.9	0.0									0.9	0.00
Polychrome	34.2	0.2									34.2	0.04
UNKNOWN												
Unknown Gray											2.9	0.00
Unknown Red			1.3	0.0			2.7	0.1			4.3	0.00
Unknown White												0.00
Unknown Pottery											3.9	0.00
Unrecorded											4.1	0.00
TOTAL	16,056.1	100.0	5,334.5	100.0	14.9	100.0	2,657.9	100.0	448.1	100.0	93,095.1	100.00

Table 14.17. Select Diagnostic White Ware Pottery Types, Early Pueblo III Subperiod Midden by Study Unit, Shields Pueblo.

Study Unit	Mancos Black-on-white		McElmo Black-on-white		Mesa Verde Black-on-white		Pueblo III White Painted		Total Pottery	
	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%	Wt. (g)	%
142		0.00	114.4	15.34	17.4	2.33	57.8	7.75	745.8	100.00
210	186.3	8.09	323.8	14.07	0.8	0.03	74.8	3.25	2,301.5	100.00
245	1,067.8	5.82	2,159.0	11.77	578.4	3.15	937.4	5.11	18,335.8	100.00
247	32.9	3.90	60.8	7.21	5.1	0.60	26.6	3.15	843.6	100.00
1103	38.6	3.17	102.3	8.41	17.2	1.41	52.2	4.29	1,216.8	100.00
1107	1,252.0	3.67	3,076.0	9.02	1,690.2	4.95	2,837.7	8.32	34,111.6	100.00
1109	276.7	4.75	384.9	6.61	118.2	2.03	628.2	10.79	5,819.5	100.00
1202	83.2	0.45	1,266.9	6.90	840.5	4.58	1,645.2	8.96	18,362.2	100.00
1409	1,497.4	3.51	3,592.1	8.41	1,347.9	3.16	3,039.2	7.12	42,704.2	100.00
1418	2,070.2	5.34	3,456.6	8.92	3,246.3	8.38	2,960.3	7.64	38,741.3	100.00

Table 14.18. Nonlocal Pottery in Abandonment Contexts for Late Pueblo III Period Structures by Ware and Count, Shields Pueblo.

Study Unit	Pottery Ware	Count
221	Tsegi Orange Ware	1
221	White Mountain Red Ware	1
225	Tsegi Orange Ware	1
229	Tsegi Orange Ware	1
405	White Mountain Red Ware	1
406	White Mountain Red Ware	1
1402	White Mountain Red Ware	2
1402	White Mountain Red Ware	1
1402	White Mountain Red Ware	1
1402	White Mountain Red Ware	1
1402	White Mountain Red Ware	1
1412	White Mountain Red Ware	1
1412	White Mountain Red Ware	2

Table 14.19. Lithic Artifacts Made from Nonlocal Material, Shields Pueblo.

Study Unit	Artifact Type	Count	Material Type
208	debitage	1	obsidian
221	debitage	1	red jasper
229	modified flake	1	nonlocal chert/siltstone
406	projectile point	1	red jasper
1402	projectile point	1	nonlocal chert/siltstone

Table 14.20. Exterior Design Frequencies for Select Pueblo III Period Sites in the Sand Canyon and Goodman Point Localities, Colorado.

Dates	Site	Number of "Vessels"	No Exterior Paint		Coiled Basket Texture		Isolated Design		Plaited Selvage Design		Coiled Band Design	
			N	%	N	%	N	%	N	%	N	%
A.D. 1180–1225	Shields Pueblo (5MT3807)	604	545	90.2	5	0.8	8	1.3	10	1.7	7	1.2
	Roy's Ruin (5MT3930)	107	87	81.3	0	0.0	0	0.0	5	4.7	1	0.9
	Lillian's Site (5MT3936)	79	67	84.8	1	1.3	2	2.5	4	5.1	2	2.5
	Kenzie Dawn Hamlet (5MT5152)	29	27	93.1	1	3.4	0	0.0	0	0.0	1	3.4
MEAN PERCENTAGE				86.4		1.6		0.8		3.2		2.3
A.D. 1225–1260	Shields Pueblo (5MT3807)	137	121	88.3	0	0.0	0	0.0	8	5.8	2	1.5
	Troy's Tower (5MT3951)	58	50	86.2	2	3.4	0	0.0	2	3.4	0	0.0
	Lookout House (5MT10459)	122	76	62.3	2	1.6	5	4.1	12	9.8	6	4.9
	Sand Canyon Pueblo (5MT765)	102	72	70.6	0	0.0	6	5.9	8	7.8	8	7.8
MEAN PERCENTAGE				76.9		1.3		2.5		6.7		3.6
A.D. 1260–1280	Lester's Site (5MT10246)	111	74	66.7	1	0.9	4	3.6	5	4.5	8	7.2
	Sand Canyon Pueblo (5MT765)	707	453	64.1	0	0.0	15	2.1	46	6.5	91	12.9
MEAN PERCENTAGE				65.4		0.5		2.9		5.5		10.0

Table 14.21. Obsidian Artifact Sources by Component, Shields Pueblo.

Source	Middle Pueblo II (A.D. 1020–1060)	Late Pueblo II (A.D. 1060–1140)	Early Pueblo III (A.D. 1140–1225)	Late Pueblo II–Early Pueblo III (A.D. 1060–1225)	Late Pueblo III (A.D. 1225–1280)	Unassigned	TOTAL
Cerro Toledo Rhyolite (Jemez Mountains)	1	22	5			6	34
El Rechuelos (Jemez Mountains)	3	1					4
Valle Grande (Jemez Mountains)	1	8	7	1	2	6	25
Mount Taylor		1					1
Unknown		2					2
TOTAL	5	34	12	1	2	12	66
Cooking pottery wt. (g)	29,671.6	100,285.3	148,604.2	10,186.9	69,972.4	193,483.6	552,204.1
Number of obsidian artifacts/kg of cooking pottery	0.17	0.34	0.08	0.10	0.03	0.06	0.12

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Chapter 15

Synthesis: The Community Through Time

by Andrew I. Duff

Introduction

The Crow Canyon Archaeological Center's (Crow Canyon's) research project at Shields Pueblo was designed to collect data to help us better understand the changing role of community centers in the Late Pueblo III and Early Pueblo III periods (A.D. 1050–1225) in the Mesa Verde region. Previous research had suggested that Shields Pueblo served as the center for the Goodman Point community during this period (Adler 1990; Adler and Varien 1994). Guided by the *Communities Through Time: Migration, Cooperation, and Conflict* research design (Duff et al. 1999; see Chapter 2 in this report), data were gathered from the site during excavations conducted over four years (1997–2000) and subsequently analyzed by the Crow Canyon laboratory staff and other specialists.

The work at Shields Pueblo revealed an unanticipated span of occupation, with occupations evident during the Early Pueblo I period (A.D. 725–800) and what appears to have been persistent occupation from the Middle Pueblo II period (A.D. 1020–1060) until regional depopulation sometime around A.D. 1280. The post–A.D. 1225 occupation of the settlement was unanticipated, and provides the opportunity to compare data gathered from Shields Pueblo to data from the many other Late Pueblo III period (A.D. 1225–1280) sites investigated by Crow Canyon.

This chapter reviews the major findings of the Shields Pueblo project, synthesizes information from the individual chapters, and highlights key research themes and data that bear upon research questions at two primary scales, those of the site and of the community.

Research Questions

The following sections attempt to provide answers to the central research questions outlined in the research design (see Chapter 2), synthesizing data from the various contributions.

The History of Occupation at Shields Pueblo

When was Shields Pueblo first occupied? Structural evidence indicates that Shields Pueblo was first occupied during the Early Pueblo I period (A.D. 725–800) (see Chapter 3 in this report). Four different pit structures were constructed during this period (see Chapter 3 Table 3.2). Only one of these structures (Structure 110) was absolutely dated via dendrochronology to the A.D. 770s, but the remaining structures also suggest use during the Early Pueblo I period.

Was the occupation of Shields Pueblo continuous, or were there fluctuations in the residential occupation of the site? The occupation of Shields Pueblo does not appear to have been continuous. Based on the work we conducted, there were approximately two centuries after the structures used in the Pueblo I period were abandoned where Shields Pueblo did not serve as a residential location. Several structures and midden deposits (see Chapter 3 Table 3.2)—that appear to date from the Middle Pueblo II period (A.D. 1020–1060)—relate to the reoccupation and use of Shields Pueblo after this occupational hiatus. The data from Shields Pueblo mirror the regional trend, where there appears to have been a depopulation of the Mesa Verde region in the A.D. 900s, followed by reoccupation, population growth, and persistent occupation (at a regional level) through the late A.D. 1200s (Duff and Wilshusen 2000; Lipe and Varien 1999; Varien 1999; Wilshusen 2002).

Were there periods when the site was not a residential location, but it appears that the site was either used or visited? We have little data to address this question directly. For the A.D. 800s and 900s, when Shields Pueblo appears not to have been occupied, it may have been periodically visited by people who either passed through or continued to reside elsewhere on the McElmo Dome. We did recover some pottery that dates from this span at Shields Pueblo (see Chapter 9 and Chapter 10 in this report), but the very limited quantities suggest that it is unlikely that Shields Pueblo was utilized during the hiatus for occupation during the Late Pueblo I and Early Pueblo II periods (A.D. 800–1020).

How does the occupational pattern evident at Shields Pueblo relate to regional occupational trends? Does it mirror region-wide patterns or deviate from them? The data gathered from the work at Shields Pueblo are consistent with regional population reconstructions that indicate emigration from the region in the late A.D. 800s or early 900s, with limited remnant population through the A.D. 900s and early 1000s (Duff and Wilshusen 2000; Varien 1999; Wilshusen 2002; Wilshusen and Ortman 1999). People reoccupied Shields Pueblo in the A.D. 1000s, constructing pit structures and generating midden deposits (see Chapter 3 Table 3.2). During the Late Pueblo II period (A.D. 1060–1140), additional structures were built and several midden deposits and extramural surfaces were created, a trend that continued without interruption until the mid–A.D. 1200s.

In what is somewhat of a departure from regional trends, occupation at Shields Pueblo persists into the Late Pueblo III period (A.D. 1225–1280). The community center succession model (Adler and Varien 1994; Lipe and Ortman 2000; Varien 1999; Varien et al. 1996) suggests that mesa-top community centers characterized the A.D. 1050–1225 periods (Late Pueblo II and Early Pueblo III) after which there was a shift off the mesa tops to the heads of canyons (or to cliff dwellings on Mesa Verde proper), frequently in association with springs.

While this does appear to have occurred within the Goodman Point community, of which Shields Pueblo was clearly a part, with the construction and occupation of Goodman Point Pueblo (Adler 1990; Adler and Varien 1994; Coffey and Kuckelman 2006), the model also anticipated that mesa-top settlements should diminish at this point. The data from Shields Pueblo clearly indicate that this is not always the case. In fact, it appears that Shields Pueblo achieved its greatest size and population after A.D. 1225 (see Chapter 3 in this report).

Although the overall community-center trends noted in the model remain accurate (Adler and Varien 1994; Varien 1999), the Shields Pueblo data suggest that we should expect greater variability in community settlement patterning than the initial formulations of the community-center succession model suggested.

When were the last occupations at the site? Where did the last occupants of Shields Pueblo move to? Did they join other regional communities or did they leave the region altogether? In the late A.D. 1100s, and continuing to at least A.D. 1250, the period during which it appears Goodman Point Pueblo was on the rise (Adler 1990; Adler and Varien 1994; Coffey and Kuckleman 2006), several unit pueblos and kivas were constructed, used, and ultimately abandoned at Shields Pueblo (see Chapter 3 Table 3.2). This was among the most exciting and unexpected results to originate from the Shields Pueblo project.

While we do not know if Shields Pueblo continued to serve as a residential location during the last few decades prior to regional depopulation, we do know that several kivas were constructed between A.D. 1245 and 1258, increasing the likelihood that at least a few households continued to reside at the settlement until about A.D. 1280. These late structures (those apparently built in the A.D. 1240s and 1250s) were burned at structure abandonment, and almost all of them did not have their roof timbers salvaged. Most of these structures had floor assemblages that included useful artifacts, such as complete or reconstructible vessels, manos and metates, tools, and even unfired pottery vessels. After these structures had burned and collapsed, enigmatic, circular dry-laid masonry constructions that we believe to have been shrines were constructed within the depressions created by kiva collapse (Ryan 2000). Similar artifactual patterning and structure treatment (Schlanger and Wilshusen 1993; Wilshusen 1986) suggests long-distance moves without the intent of returning. We believe all of the actions associated with the latest dated kivas at Shields Pueblo suggest a thoroughly considered and planned departure from the location, and that these residents were planning to and probably did leave the Mesa Verde region altogether.

Assessing Shields Pueblo as a Community Center

Does Shields Pueblo contain any evidence for public architecture? Is there a great kiva at Shields Pueblo? Is the preserved roomblock at Shields Pueblo a great house? The two potential public architectural features at Shields Pueblo, a possible great kiva and the preserved roomblock in Architectural Block 100, do not appear to represent public features typically associated with community centers. The potential great kiva indicated at Shields Pueblo (Adler 1988, 1990; Adler and Varien 1994), upon archaeological testing with a backhoe trench (Backhoe Trench 1002) proved to be a subterranean pit, possibly even a previously excavated prehistoric pit structure, but was not a great kiva.

The great kiva located in the Goodman Point Unit of Hovenweep National Monument appears to have been accessed by a well-developed footpath that leads to the Architectural Block 100 portion of Shields Pueblo. This path is preserved within the Goodman Point Unit, providing indirect evidence of the use or connection of Shields Pueblo to activities that occurred in the great kiva there. The clear presence of a great kiva within the Goodman Point Unit, located within 1 kilometer of Shields Pueblo, indicates that the community probably had access to such a public architectural facility, but that it was not controlled by or physically associated with the residents and architecture of Shields Pueblo.

The preserved roomblock in Architectural Block 100 has some elements that suggest it may have been a great house, but the case is not strong. The structure has some banded masonry walls (see Chapter 4, Figure 4.2) that are consistent with Chaco-style wall construction and they also differ from typical wall construction associated with Pueblo II period rooms in the Mesa Verde region. Additionally, one of the preserved rooms, Structure 104, is much larger than typical rooms, measuring approximately 4.2 x 2.5 meters. Larger-than-average room size is one of the architectural correlates of great houses (Lekson 1991), but this is the only preserved room that appears to have been larger than average in size.

The location of the Block 100 roomblock is consistent with the positioning of great houses, sited on a local topographic highpoint, a position from which it would be relatively easy for the structure to have been seen. It appears to have been connected to Casa Negra, the Chaco period great house in the neighboring Sand Canyon community (Adler and Varien 1994), by a road or path (see below) which also suggests the importance of the structure. Damage to the structure over the years and the lack of definitively Chacoan architectural hallmarks suggest that it would be best not to consider this structure to have been a great house, though it does appear to have been central within the Shields Pueblo settlement, and perhaps even the larger community. Adler (1990) and Varien (Adler and Varien 1994:Figure 2) note that a massively constructed portion of Goodman Point Pueblo adjacent to the spring there could be a great house. If true, this may have been the focal community structure, indicating an early centrality to the location that later grew to become the massive Goodman Point Pueblo.

Are there any indications of the prehistoric road preserved at the site? We were unable to detect any remaining archaeological indications of the road connecting Shields Pueblo and Casa Negra. We did excavate a long trench (Backhoe Trench 127) across the area we anticipated to find traces of the road or path if it were preserved, but no indications remained.

However, we have indirect evidence of the road or path's presence in the form of the alignment of pit structures and kivas revealed through remote sensing. The road or path is visible in aerial photographs as a faint linear alignment (see Figure 15.1 for a representation on a topographic map). The visibility of the feature was probably reduced over time with agricultural activities at the site. However, the alignment of pit structures parallels that expected from the visible segments of the road between Shields Pueblo and Casa Negra (Figure 15.2), providing strong evidence that the feature was present and that it structured where people elected to place their residences and associated pit structures or kivas.

This is especially interesting because many of these kivas were constructed when we believe Casa Negra was no longer occupied. It could be the case, however, that the community-center succession model that was applied to both the Casa Negra/Sand Canyon and Shields Pueblo/Goodman Point communities may have also incorrectly assumed that Casa Negra ceased to be occupied at the end of the Early Pueblo III period. It remains possible that the road/path between these two settlements persisted as a feature and symbol of the connection between these two adjacent communities well into the Late Pueblo III period.

Are there activities represented at community centers that are not represented at other residential sites or site clusters within a community? What were the relations between the residents of the community center and those living in surrounding settlements? Lacking sound, comparative data from the Shields Pueblo/Goodman Point community, we cannot answer these questions at present. If Shields Pueblo was indeed the community center, we need architectural and artifactual evidence from other settlement sites located outside the center for comparison. The only other site from within the locality that has been investigated is the Mustoe site (Gould 1982), which does not indicate substantive differences within the community.

With the discovery of a substantial Late Pueblo III period component at Shields Pueblo, however, it is possible to address this question given more recent work at Goodman Point Pueblo and its surrounding unit pueblos. Work at Goodman Point Pueblo, clearly the center of the community during its occupation, can be compared to the materials excavated from Shields Pueblo to assess this question.

Goodman Point Pueblo clearly has several features associated with it that were not present at Shields Pueblo during the late occupation of the site, including several of the hallmarks of canyon-head-oriented Late Pueblo III period sites such as an unroofed great kiva, perimeter barriers or enclosing walls, towers, an enclosed spring, and plaza or plaza-like areas. To the extent that some of these features were uniquely associated with certain activities, it is reasonably clear that community centers monopolized these activities to the exclusion of outlying residential settlements, such as what Shields Pueblo would have been in the mid– or late–A.D.1200s.

Is there any indication of individuals of "high status" at Shields Pueblo? Were the residents of community centers differentiated from the other residents of the community? At present, the only data that we have that bears on these questions comes from the burial excavated at Shields Pueblo in 1960 that had a copper bell (Hayes and Chappell 1962). The individual associated with this burial appears to have been interred within a slab-lined pit in the southeastern portion of Shields Pueblo sometime during the Pueblo III period. This appears to correlate with the area of Architectural Block 600. Architectural Block 600 was not intensively excavated during Crow Canyon's work at Shields Pueblo, but all recovered materials indicate that its occupation dates from the Pueblo III period.

The individual was an adult male, accompanied by three vessels, all typed as Mesa Verde Black-on-white, a small shell pendant, and the copper bell (Hayes and Chappell 1962:54, Figures 1–3). The shell pendant appeared to be *Glycymeris* and had a mineral inlay, tentatively identified as mica (Hayes and Chappell 1962:55, Figure 3). Though shell appears to have been relatively common throughout the occupation of Shields Pueblo, no inlay was noted, making the piece associated with this individual locally unique. Additionally, relatively few copper bells have been recovered from the region, and most of those were associated with Chaco-era contexts (Palmer and Fosberg 1999). Thus, the individual buried with these materials may have been a "high-status" individual, but he does not appear to have otherwise been associated with additional trappings of power, and his role within the Shields Pueblo/Goodman Point community cannot be fully evaluated.

Changes in Settlement Configuration and Community Organization

Did the internal configuration of residential occupation at Shields Pueblo change from the Chaco to the post-Chaco periods? Is this span associated with evidence for an increase in the average size of residential habitations? Our ability to provide substantive answers to these questions is again hindered by the lack of preserved surface structures at Shields Pueblo. We do have evidence regarding the changing locations of structures within Shields Pueblo over its occupation, thus we can provide some answers to the first question. However, the near-complete absence of aboveground architectural information from Shields Pueblo means that we have no new data to answer the second.

The Pueblo I period occupation at Shields Pueblo was clearly confined to two investigated areas, Architectural Block 100 and Architectural Block 1300. The total number of what appear to have been residences was small, but a few structures and/or features occurred in each, and these were spatially separated by about 100 meters. We do not have the temporal resolution fine enough to know whether any of these features were absolutely contemporaneous within the Pueblo I period.

Structures confidently assigned to the Pueblo II period occur in only three areas of the site—Architectural Blocks 100, 200, and 1300, and primarily in the first two of these. Midden deposits assigned to the Pueblo II period mirror this pattern. Structures or deposits that span the Pueblo II–Early Pueblo III periods continue to be dominated by the same areas, Blocks 100 and 200, but a few are associated with Blocks 1300 and 1400. Thus, during the early reoccupation of the settlement after the A.D. 900s occupational hiatus, it appears that the same areas were again utilized: areas that extend along, and were likely structured by, the projected alignment thought to be a road that connected Shields Pueblo to Casa Negra (see Figure 15.2).

It appears that the major alteration to the settlement plan within Shields Pueblo occurred during the Early Pueblo III period, when structures associated with several additional areas were used. Structures in Architectural Blocks 1100 and 1500 and deposits within Architectural Blocks 500, 1200, 1500, and 1800 are all associated with the Early Pueblo III period (A.D. 1140–1225). Several additional structures and deposits are dated to the broader Pueblo III period, and this includes the Architectural Block 400 and 800 areas.

Thus, it appears that all, or almost all, of the individually designated areas within Shields Pueblo (Architectural Block areas 100–1800) were being utilized by the early A.D. 1200s, marking a major reformatting of settlement structure within the site. During the Pueblo III period, settlement configuration that had been structured by the road/path alignment gave way to an aggregated settlement plan that included pit structures or kivas, and we infer each to have included substantial surface constructions, extending along the low ridges on the north edge of Shields Pueblo and clustered in the lower areas of the site. Depending on when construction and occupation of Goodman Point Pueblo began and/or expanded, it is likely that there was a continuous distribution of settlements between the two areas.

Environmental Uncertainty and Occupational Continuity

Was Shields Pueblo occupied during the A.D. 1130–1180 drought? It appears likely that some households remained at Shields during the mid–A.D. 1100s drought, though construction activity was severely curtailed, and that this occupation persisted until the region was depopulated in the late A.D. 1200s, at or around A.D. 1280. While we do not know if Shields Pueblo continued to serve as a residential location during the last few decades prior to regional depopulation when another period of environmental uncertainty prevailed (the "great drought" [Douglass 1929]), we do know that several kivas were constructed between A.D. 1245 and 1258, increasing the likelihood that at least a few households continued to reside at Shields Pueblo until about A.D. 1280.

Evidence for Cooperation and/or Conflict from Shields Pueblo

Is there evidence for occupation during periods of resource unpredictability at Shields Pueblo? Is there evidence for increased aggregation into Shields Pueblo that corresponds to regional indications of increased stresses or hostilities? Evidence from Shields Pueblo provides tentative answers to the two questions posed above. There is evidence for the continued occupation of Shields Pueblo during the A.D. 1130–1180 drought period, but evidence for occupation during the "great drought" of 1276–1299 (Douglass 1929) is ambiguous. It is also clear that population aggregation at Shields Pueblo increased over time, but it is not clear that this correlates with regional indications of increased hostilities or social stresses.

Occupation at Shields Pueblo appears to have persisted across the A.D. 1130–1180 span, though it remains possible, even likely, that some of the residents elected to relocate during this extended period of difficult environmental conditions. This is a period when subsistence and resource stresses may have exacerbated tensions within and between communities, potentially leading to conflicts. The Chaco regional system was something several have argued worked to suppress local and regional hostilities (Lekson's "Pax Chaco" [1992]; LeBlanc 1999). It appears that the collapse of this system was associated with this extended environmental downturn.

The decline in the circulation of regional goods (see discussion below) may be an indirect indication of increased tensions associated with this interval, as the prevalence of nonlocal goods plummeted at the end of the Pueblo II period. This may signal increasingly restricted community territories (Varien 1999, 2002; Varien et al. 2000), and mobility and access to regional resources, such as tool stone, may have declined. However, we lack any direct indication of hostilities dating from this period at Shields Pueblo.

It does appear that population increased substantially from the Pueblo II to Pueblo III periods, but this process does not appear to coincide with periods of increased evidence for violence within the region, though many link population increase and hostilities (Kuckelman 2002; LeBlanc 1998, 1999; Lekson 2002). There is increased evidence for hostilities and concerns for defense, and these appear to have been especially acute in the thirteenth century (Kuckelman 2002), but the greatest evidence for population increase at Shields Pueblo is associated with the Pueblo II–Pueblo III period transition, or the period surrounding the middle to late A.D. 1100s.

Population increases at this time may have increased tensions, something that may have contributed to the rise in violence in the thirteenth century.

Shields Pueblo was not occupied during the “great drought” (Dean and Van West 2002; Douglass 1929; Van West and Dean 2000). Again, we have no direct evidence for hostilities at this time based on the Shields Pueblo data. However, if occupation at Shields Pueblo persisted to this point, it is extremely likely that it did not outlast this period of environmental stress, a period when other sites in the immediate region—Sand Canyon and Castle Rock pueblos—do have direct evidence for violence leading to individual deaths (Kuckelman 2002; Kuckelman et al. 2000, 2002).

Were utilitarian pottery vessels exchanged between residents of Shields Pueblo and any other communities? Our ability to answer this question is hampered by the geological uniformity of the McElmo Dome, making differentiation of local and nonlocal vessels difficult even when using chemical analysis methods (Glowacki et al. 1998). The uniformity of plain-ware production within the region also stymies attempts to isolate subtle differences that can be linked to specific communities. There is limited evidence for the regional circulation of undecorated vessels, potentially indicative of interregional intermarriage, but at present we have no evidence that allows us to evaluate the local circulation of undecorated pottery.

Are there materials manufactured in other Mesa Verde region communities or localities that were traded or exchanged to residents of Shields Pueblo? If so, what were these materials and their sources? Are there materials manufactured outside of the Mesa Verde region that were traded or exchanged to residents of Shields Pueblo? If so, what were these materials and their sources? Is there evidence for the acquisition of materials likely to have been directly procured from surrounding areas within the region? Does this change over time? Is there any temporal patterning in either the pattern of local or long-distance acquisition of materials? Artifacts recovered from Shields Pueblo provide answers to all four groups of questions posed above. There was a clear decline in the semilocal and regional acquisition of materials over time at Shields Pueblo (see Chapter 9 in this report). When standardized to kilograms of cooking pottery, numbers of nonlocal items from different periods can be compared (Table 15.1). Extralocal artifacts were most prevalent at the site in deposits associated with the occupation during the Pueblo I period. There was a significant decline in the numbers of extralocal items during the Pueblo II period, a trend that continued throughout the Pueblo III period (see Table 15.1).

This decline could be the result of any number of factors. The relatively sizable numbers of nonlocal items during the Pueblo I period reflect two trends that characterize the region as a whole. Nonlocal pottery is dominated by imported San Juan Red Ware (see Chapter 9 report), most likely to have been produced in southeast Utah (Hegmon et al. 1997), though some red ware was also produced within the region (Oppelt 2006). Lithic materials procured from Brushy Basin and Burro Canyon sources, located within the region but some distance from Shields Pueblo (Arakawa and Gerhart 2006), may have been more commonly procured by populations during the Pueblo I period, when mobility probably remained higher than in later periods. Lower population densities and the procurement of large game may have also brought Shields Pueblo residents to these more distant sources more regularly.

Though less frequent than in the earlier occupation, nonlocal items were still common during the Pueblo II period occupation of Shields Pueblo. Tsegi Orange Ware, manufactured in northeastern Arizona, becomes a prevalent pottery import during the Pueblo II period. Items of personal adornment acquired from nonlocal sources declined over time, but were most abundant during the Late Pueblo II period. This includes items made of shell and turquoise, materials that were both probably prized possessions and that clearly came from relatively distant sources. Obsidian appears also to have been most common during the Pueblo II period (see Chapter 9).

The Pueblo II period was the height of the Chaco regional system, an influential regional development that was associated with the widespread circulation of many items of material culture (Toll 1991). It appears that the regional circulation of goods, especially those that originated outside of the northern San Juan region, was more prevalent during this period of general integration across the Colorado Plateau.

The collapse of the Chacoan pattern in the mid A.D. 1100s, coinciding with a 50-year environmental downturn (Dean and Van West 2002; Ryan 2010; VanWest and Dean 2000), was regionally associated with more localized social developments (Duff 1998; Duff and Lekson 2006). The data from Shields Pueblo confirm what was suspected by Varien et al. (1996): that there was a decrease in the nonlocal items with the coming of the Pueblo III period in the region.

Is there any evidence for connections between Shields Pueblo and other communities in the region? Is there any evidence for public architecture at Shields Pueblo? If so, what does the size of it suggest about the scale of the groups that used it? Is it likely to be larger than the residential population at Shields Pueblo? This question can be answered indirectly, and largely through data that were not recovered from Shields Pueblo. The only indication of public architecture within Shields Pueblo is the road/path that connected it to Casa Negra, and here, the evidence is largely inferential based on the alignment of pit structures within the site (see Figure 15.2). It is not clear how much labor was devoted to the construction of this feature, but it is quite likely that it consumed the time and energy of several members of both the Shields Pueblo and Sand Canyon communities, most likely during the Pueblo II period.

The absence of a great kiva at Shields Pueblo provides indirect evidence about the scale of the group using public architecture in the community vicinity. There is a great kiva (Harlan great kiva) in the Goodman Point Unit about 1 kilometer south of Shields Pueblo and another, probably unroofed, structure at Goodman Point Pueblo. Both of these features clearly served audiences beyond those actually residing at Shields Pueblo, as evidenced by their locations outside the bounds of the settlement. The Harlan great kiva probably had been roofed and may not have been able to accommodate all of the larger community's residents, but it could probably have housed a substantial fraction of them, especially during the Pueblo II period. If this feature continued to be used into the Early Pueblo III period, it may have become less able to accommodate community members. However, it is also possible that residents of several community settlements occupied during the Pueblo II period relocated closer to Shields or Goodman Point pueblos during the Pueblo III period, something indicated on settlement maps based on survey of the locality (Adler 1990, 1992; Adler and Varien 1994:Figures 3 and 4).

During the Late Pueblo III period, it is likely that the residents of Shields Pueblo were part of use groups associated with the great kiva at Goodman Point Pueblo, though they would have been a minority population coming from outside the confines of that settlement itself. Perhaps, the large size of the structure at Goodman Point Pueblo, and its apparent lack of a roof, were a response to the larger audience associated with the late occupation of the locality, since these traits appear to have been throughout the Colorado Plateau at this time.

Does the location and placement of structures within Shields Pueblo provide any indication of concerns for defense? This question is somewhat difficult to answer because of the severe impact that historical land use has had on the surface architecture at Shields Pueblo. Only portions of one roomblock remain intact at Shields Pueblo (Architectural Block 100, specifically Structures 102, 103, 104, and 121), though there could be portions of preserved architecture mixed with bulldozer-consolidated rubble in the Architectural Block 400 area. Thus, any structures or other characteristics associated with defensive architecture, such as towers or palisades (Kuckelman 2002; Wilcox and Haas 1994) are not preserved.

However, a defensive settlement posture is one expectation for occupation during periods when hostilities are expected (Kuckelman 2002; LeBlanc 1999; Wilcox and Haas 1994). The presence of several kivas, and the inferred presence of several associated aboveground residential structures, perched atop a local topographic high point on the mesa top runs counter to what would be expected if residents of Shields Pueblo had been concerned with threat of attack. It seems as if the residents of Shields Pueblo continued to live in this topographically exposed location despite the fact that there is evidence for hostilities within the locality at Sand Canyon and Castle Rock pueblos.

One architectural feature potentially indicative of a concern for attack was documented during our work at Shields Pueblo: a tunnel connecting a kiva to a subterranean room (Structures 1408 and 1413). Structure 1408 dates from the A.D. 1250s, and concern for defense or vulnerability to attack may have been heightened during the last decades of the region's occupation. A second similar structure was exposed by Colorado Mountain College during their work at the site (Bagwell 1975, 1976, 1977). Structure 411 is a subterranean room connected to a kiva (Structure 408), both of which also appear to date from late within the Late Pueblo III period. Thus, though exposed atop the mesa, residents of Shields Pueblo may still have constructed structures with the concerns of safety and defense from attack in mind.

Aggregation is an expected response to a hostile landscape, and it could be that the population of the locality that included Shields Pueblo provided enough of a potential force to deter would-be enemies, allowing for the continued occupation of the mesa top during a period when much of the region's population had shifted to much larger settlements in somewhat more sheltered and protected settings, such as the neighboring Goodman Point Pueblo. It may also have been possible that the proximity of Goodman Point Pueblo made it a possible local refuge, or could have served as a deterrent to potential enemies. This proximity may have facilitated continued occupation in what would have otherwise been an unwise settlement location.

Is there any skeletal evidence of violence at Shields Pueblo? We have no skeletal evidence that suggests violence at Shields Pueblo. However, in accordance with the research design and Crow

Canyon's human remains policy (Crow Canyon Archaeological Center 2001), human remains were not sought as a source of data during the Shields Pueblo project. Although we did find eight instances of human remains and several isolated human skeletal elements, none exhibited evidence that could be attributed to violence. The absence of surface architecture at Shields Pueblo may contribute to the lack of evidence for violence, as many of the human remains with direct evidence for violence have been recovered from surface structures (Bradley 2000; Kuckelman 2002).

Is there evidence that Shields Pueblo was occupied when other sites in the immediate vicinity have direct evidence for violence (after A.D. 1275)? Our evidence is insufficient to answer this question definitively. We believe it likely that the settlement continued to be occupied by a few households until regional depopulation. If so, then some people continued to reside at Shields Pueblo during the period when we have strong evidence for violence at other sites in the immediate area—at Sand Canyon and Castle Rock pueblos (Kuckelman et al. 2000, 2002).

The evidence used to support an interpretation for the late use and occupation at Shields Pueblo comes primarily from the construction of several circular masonry structures within the depressions created by the collapse, after having been burned, of several late-occupied kivas (Ryan 2000). All of these structures appear to have been burned intentionally, with the artifact assemblages indicative of a planned "decommissioning" of the structures rather than their burning as a result of hostile acts. The kivas associated with these later structures appear to have been built in the A.D. 1240s and 1250s, and if occupied for a generation (Varien 1999, 2002), could have been used into the A.D. 1270s.

However, it is also possible that persons who may have resided at Shields Pueblo joined the Goodman Point Pueblo settlement, residing there, though continuing to use structures at Shields Pueblo during the last years of regional occupation. These residents may have burned their kivas and then constructed these stone features while no longer living at Shields Pueblo.

Human Impacts to the Local Environment

Did the occupants of Shields Pueblo have a significant impact on the local environment? What resources were impacted by the occupation? Which resources, if any, were suppressed or diminished? Were there any resources that appear to have thrived as a result of the occupation? Was the local availability of timber resources affected by timber harvesting for fuel and construction? Did hunting by residents of Shields Pueblo impact local faunal populations? Did the composition of the nearby plant communities change during the occupation of Shields Pueblo? If so, were the occupants of Shields Pueblo likely responsible for this, or did this result from larger climactic processes? What role did impacts to the local environment play in the decision to leave Shields Pueblo? These questions related to human impacts to the environment by the residents of Shields Pueblo are addressed together in this section. There were significant changes to the environment that surrounded Shields Pueblo during the approximately 500 years from the time it was first settled until it and the Mesa Verde region were depopulated late in the A.D. 1200s. Many of these changes appear to have been a direct result of human actions. These impacts included changes to the natural composition of the surrounding environment, and alteration of the types and frequencies of hunted and domesticated animals. How these changes affected the choices and actions of the residents of Shields Pueblo over time, including their ultimate decision to leave the region, are examined.

The residents of Shields Pueblo experienced a variety of environmental conditions during different periods of occupation at the settlement, many of which structured the opportunities for resource acquisition. When the site was first settled in the Early Pueblo I period (A.D. 725–800), Shields Pueblo's population consisted of a few households, and although there were other occupants on the McElmo Dome at the same point in time, population appears to have been relatively low overall within the region. These early Shields Pueblo residents experienced perhaps the most abundant natural resources during the site's long history of occupation. During the Early Pueblo I period, large game appears to have been present, but not overly abundant, and the preferred meat resource was lagomorphs (see Chapter 8 in this report). Juniper and pine appear to have been abundant, and used both for fuel and construction.

After the region and the settlement were depopulated following the Early Pueblo I period, Shields Pueblo was not again a residential site until occupations were reestablished early in the A.D. 1000s. When residents returned to Shields Pueblo, it appears that the two-century human absence from the area had permitted large game to increase in numbers, and several other resources appear to have been widely available. Artiodactyl populations, in particular, appear to have become more abundant, probably a result of both favorable environmental conditions and a lack of human predation. The artiodactyl index rises to its highest relative percentage during the initial period of reoccupation (Table 15.2). Additionally, Rawlings and Driver (see Chapter 8 in this report) note that the lagomorph index, a measure of the relative number of jackrabbits to cottontails, dips to its lowest value. They argue that this may result from the opportunity for Shields Pueblo residents to exercise an optimal hunting strategy because of resource abundance, electing to hunt more of the larger-bodied jackrabbits during this period. They also note that the anomalously high turkey index for this period is influenced by the presence of several turkey burials recovered from contexts dating from this period, and is not an accurate barometer of the relative abundance of turkey in the diet at this time.

Pine wood used for fuels, however, begins to mark a decrease in availability that appears to remain stable for the next few hundred years (see Table 15.2). The diversity of wild species collected spikes during the Late Pueblo II period (see Table 15.2). Adams (see Chapter 6 in this report) suggests that this likely relates to the increased clearing of lands for agriculture, and it may also relate to food stresses associated with the prolonged drought of A.D. 1130–1180.

By the onset of the Pueblo III period, it appears that persistent occupation at Shields Pueblo, and perhaps by others in the immediate vicinity, had begun to take its toll on the locally available resources. The relative proportion of artiodactyls in the diet of Shields Pueblo residents declined to about half the levels seen for the Early Pueblo I and Late Pueblo II periods (see Table 15.2). Consistent harvesting of large game appears to have suppressed the local availability of these large-game resources. Late Pueblo III faunal patterning, however, indicates that large game becomes increasingly associated with specialized structures at sites like Sand Canyon Pueblo (Muir and Driver 2002), and it is possible that the decline we see at Shields Pueblo is offset by the presence of artiodactyl in surface structural contexts that have since been destroyed or in contemporaneous structural contexts at Goodman Point Pueblo. In either case, it appears that large-bodied game was impacted, based on the data from Shields Pueblo.

Although the prevalence of large-bodied game diminished, it appears that the residents of Shields Pueblo compensated for this by increasing their production of turkey, a species whose relative proportion of the faunal remains increased steadily over the course of the site's occupation. Munro and Driver (1992) has argued that turkey became a domesticated meat resource during the Pueblo III period, primarily having served as a feather and ritual-offering resource in earlier periods. Rawlings (2006) has shown that, cross-culturally, it is highly probable that captive domestic birds raised by households were likely under the purview of women. Rawlings and Driver (see Chapter 8 in this report) also show that these birds had been fed maize, strengthening the case for their controlled production under the auspices of households. The data from Shields Pueblo show that households increased their turkey production just as large game declined, and it appears likely that the increased production of turkey was in response to continued need for meat protein in the face of declining regional availability. It may also be the case that tensions between communities made it increasingly risky for hunting parties to venture long distances from the settlement to acquire large game (Rawlings 2006), something that could also have contributed to the social response of increasing domestic production of turkey in Pueblo communities.

By the Pueblo III period, pine had declined as a component of the local pollen spectrum, while Cheno-am increases significantly. Adams (see Chapter 7 in this report) suggests that this is the result of continued clearing of lands for agricultural over time, and reduction in the fallow period between uses. A consistent decline in sage pollen is consistent with this trend. During the Pueblo III period there is also a notable decline in the use of maize as a fuel, as evidenced by its declining presence in thermal features (see Table 15.2). The relative percentage of thermal samples with pine also decreases significantly during the Late Pueblo III period (see Table 15.2). It appears that the residents of Shields Pueblo had taxed their locally available fuel and construction timber resources by the Pueblo III period, and certainly by the Late Pueblo III period. Timbers were not completely unavailable, as some timbers were available for the last constructions we have evidence for in the A.D. 1250s; but, residents had to increasingly consider alternatives for pine, apparently electing to increasingly substitute oak and other less-efficient species over time. There is evidence for the importation of some wood that would have come from some distance from the site. Over all, the species used for fuels were of lower quality later in the use of Shields Pueblo.

The declining use of maize as a fuel may indicate problems in the availability or production of maize during the last occupation of Shields Pueblo (see Table 15.2). Although present throughout the sequence, several lines of evidence suggest reduced access to maize late in the occupation of Shields Pueblo (see Chapter 6 in this report). It is possible that this trend relates to changes in the preparation of meals or some other mechanism, but it is also possible that the residents of Shields Pueblo experienced increasing production hardships late in the sequence.

Conclusions

Shields Pueblo has provided information on the early use of the locality and robust settlement evidence for the Pueblo II through Pueblo III periods. The project was successful in gathering data relevant to answering several of our key research questions, though the condition of the site and the nature of our data recovery effort were such that data were not always available to answer research questions.

Decreasing availability of desirable and efficient species for fuels, potentially increased effort for procurement of remaining fuel and timber resources, declining productivity, a lack of easily accessible large game, and the drought at the end of the thirteenth century appear to have coincided, leading the residents of Shields Pueblo to elect to emigrate from the region. These conditions probably both exacerbated, and were exacerbated by, tensions between communities all vying for resources and experiencing similar productive difficulties. This may have led to violent conflicts among residents within the region. Although not driven to do so by environmental stress caused by human population impacts on resources or by natural environmental shifts, we do know that the residents of Shields Pueblo left in an orderly and planned fashion, constructing shrines when they chose to depart, never to return to the region as full-time occupants. Instead, they joined populations that thrived elsewhere in the Southwest, incorporating and including populations from the Four Corners area, groups that enriched local traditions, brought new ideas and rituals, and contributed to the richness of Pueblo culture and lifeways.

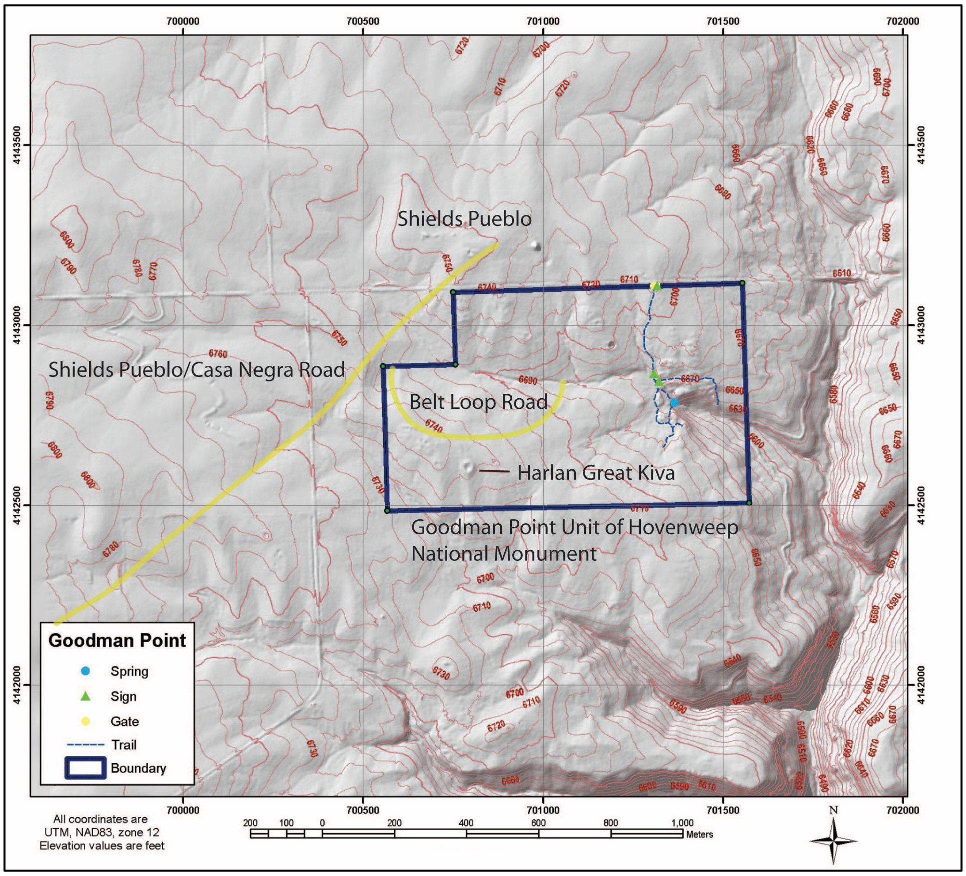

Figure 15.1. Location of the Shields Pueblo/Casa Negra road alignment as well as the Harlan Great Kiva in the Goodman Point Unit of Hovenweep National Monument.

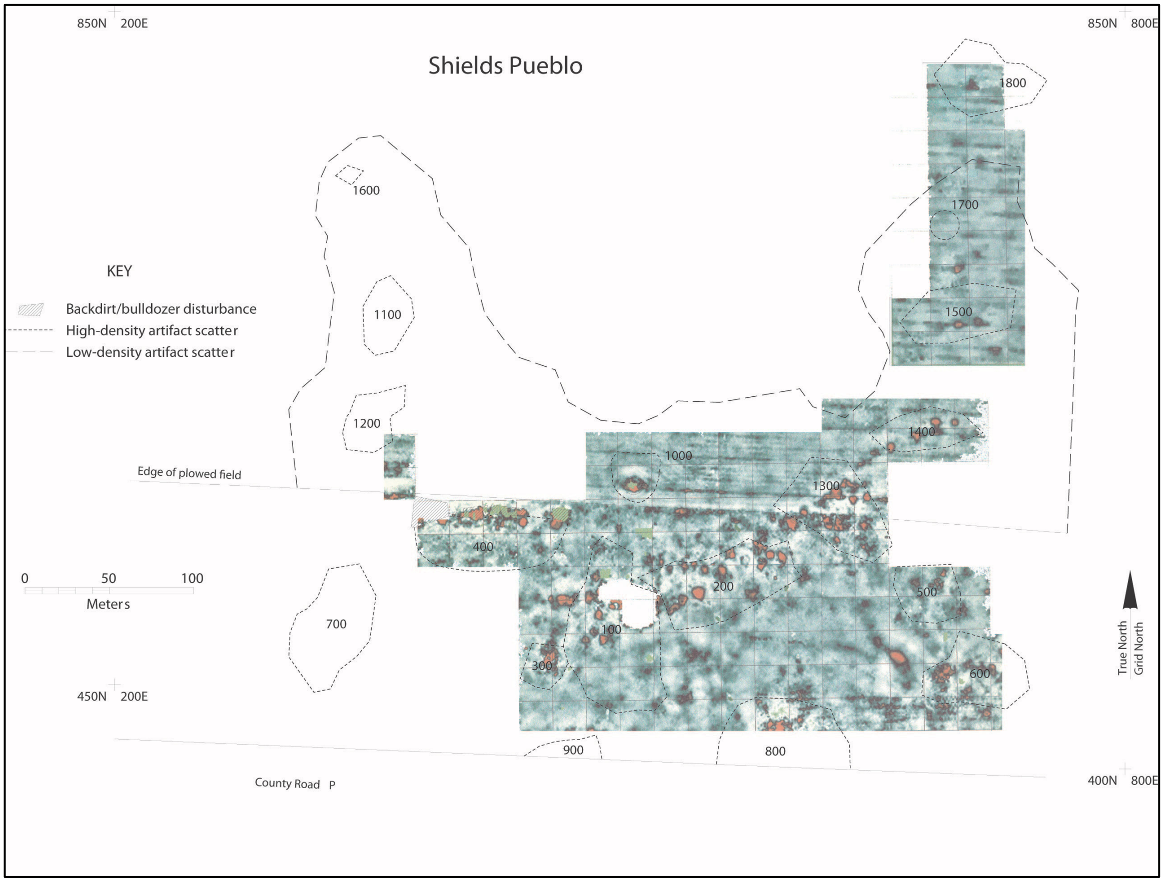

Figure 15.2. Electrical resistivity survey map indicating anomalies in orange, Shields Pueblo.

Table 15.1. Nonlocal Items Recovered from Shields Pueblo by Component, All Standardized to Kilograms of Cooking Pottery.

Time Period	All Extralocal Items	Nonlocal Lithic Items	Extralocal Pottery
Early Pueblo I	7.41	1.61	5.80
Middle Pueblo II	3.30	1.10	2.20
Late Pueblo II	3.49	1.09	2.40
Early Pueblo III	1.03	0.48	0.56
Late Pueblo III	1.06	0.32	0.85

Table 15.2. Natural Resources at Shields Pueblo by Component.

Resource	Early Pueblo I	Middle Pueblo II	Late Pueblo II	Early Pueblo III	Late Pueblo III
FAUNAL INDICES					
Artiodactyl	0.06	0.20	0.07	0.03	0.03
Lagomorph	0.90	0.76	0.82	0.85	0.89
Turkey	0.19	0.61	0.13	0.42	0.33
FUEL (relative abundance in thermal features)					
Juniper	100%	100%	72%	71.4%	71.4%
Pine	87.5%	66.7%	60.0%	62.9%	42.9%
Maize	100%	100%	76.0%	28.6%	28.6%
WILD PLANT SPECIES DIVERSITY	8	7	18	13	10

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