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# Becoming Chacoan: The Archaeology of the Aztec North Great House

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# BECOMING CHACOAN:
# THE ARCHAEOLOGY OF THE AZTEC NORTH GREAT HOUSE

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## Abstract

Between 900 and 1140 CE, people at Chaco Canyon and throughout its region built multistory monumental structures with hundreds of rooms, known as great houses. This dissertation reports on recent archaeological testing on one such great house, the Aztec North great house at Aztec Ruins National Monument.

I argue that Aztec North's occupation represents an early, transitional period, as people previously not involved in the Chaco world made choices that increasingly brought them into Chaco's orbit and changed their way of life forever. The structure represents a remarkable architectural experiment in large-scale adobe construction, one that likely was not terribly successful but that might have been an inspiration for generations after.

The two main strands of data I report here, the architecture and the artifact assemblage, each tell a very different story. The artifact assemblage is one entirely typical of a Chacoan great house fully absorbed in the network of trade that characterized the Chacoan world. The architecture, however, suggests a more complicated site biography, with some aspects that seem entirely Chacoan, and a few striking elements that are not at all characteristic of Chacoan construction. Drawing on theories of social complexity, landscape archaeology and materiality, I argue that this great house was a site of rapid transition and of a community drawn into the Chacoan world in very short order, and perhaps with unintended consequences.

## Acknowledgements

> For an assorted gang of thoroughbred good sports, witty conversationalists, and loyal friends, I whole-heartedly recommend American archaeologists.

Ann Axtell Morris, in Digging in the Southwest (1933, 1978: 18-19).

No research project is ever truly the work of just one person, but this is especially true of an archaeological fieldwork project on public land, followed by the analysis of thousands of artifacts. Behind this dissertation stands a crowd of friends and colleagues whose muscles, minds and time helped make this project a reality.

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I also want to thank the many tribal leaders who I met with at the NPS consultation meeting in April 2015. They were very kind to me, and many of them were extremely supportive and excited about our project, and I hope that they will be pleased with the results.

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My thanks to all of these individuals and the many others who have supported me and celebrated this project with me. Any errors are, of course, my own.

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## Chapter 1. Introduction

Nearly a thousand years ago, Ancient Puebloan people built an extraordinary community on the banks of the Animas River in northwest New Mexico, at what is today Aztec Ruins National Monument (the "Park" [1]). This place, about 100 km (60 miles) north of Chaco Canyon, ultimately became the largest Chacoan outlier that archaeologists know of. As at Chaco, people at Aztec built monumental masonry structures with hundreds of rooms, filled with ritual objects and beautiful artifacts brought from around a vast region.

The community at Aztec ultimately included three monumental great houses, as well as the many homes, fields and other structures that surrounded them. The builders arrayed the great houses in a symmetrical pattern from northwest to southeast, from a high place atop the river terrace to a low place in the river valley. The layout, with its reference to cardinal directions, to high and low, to hilltop and riverside, likely had great cultural significance to the people who built it. But that final form took shape over some two centuries, and it was the result of many small choices people made over time.

This dissertation focuses on one of those structures. The Aztec North great house, LA 5603, sits high on the river terrace and appears to be the earliest of the three great houses. It therefore represents some of the earliest choices that eventually led to the Aztec community. It also represents a transitional moment when people who had not previously

[1]As a National Monument, Aztec Ruins is a unit of the National Park Service. Calling it "the monument" is awkward, so I refer to it (as its employees do) as the "Park."

been absorbed in the happenings at Chaco Canyon began to be enfolded into Chacoan ways.

Excavating Aztec North

Every year, thousands of visitors walk through the Park's main attraction, the Aztec West great house, and marvel at the thousand-year-old ceilings still preserved above their heads, the vast scale of the structure, and the perfection of its masonry walls. Archaeologists have written and thought extensively about Aztec, about its key place in the Chacoan world and about what happened there afterwards. But all that work has been done in the absence of critical data about one of the most important portions of the Aztec cultural landscape, Aztec North, which had never been excavated.

In June of 2016, Dr. Ruth Van Dyke and I, with a small crew of volunteer archaeologists, conducted limited subsurface testing at the Aztec North great house at Aztec Ruins National Monument. This project was a direct result of the Park's mission to "[p]reserve, protect, and interpret the ancient Pueblo structures and to encourage and conduct scientific research to enhance the understanding of the prehistory of the site" (National Park Service 2010:10, summarizing legislation collected at 52 U.S.C. §320301). In 2010, the Park published a General Management Plan, which among other things declared its intention to build a trail that would take visitors up to the river terrace (National Park Service 2010). With so little known about Aztec North, the Park's archaeologists recognized that there would be very little information for park staff to work with in developing signage or interpretive materials, and there were questions about where exactly to lay the trail to protect cultural resources.

From the start, Dr. Van Dyke and I and our collaborators at Aztec envisioned the Aztec North archaeology project as a very limited excavation. It ultimately consisted of four study units: two small units in the middens, one eight-meter long trench perpendicular to the back of the great house mound, and a second six-meter trench in an area of the east wing.

Four empirical research questions underlay the fieldwork at Aztec North and the subsequent artifact analysis. First, when was it built? Second, what were the construction methods builders used at this structure? Third, what was their relationship to people in other regions, including but not limited to Chaco Canyon? And fourth, what could we learn about their daily lives and how they used this site?

<u>The Research Problem: Understanding the Chacoan World</u>

This dissertation contributes to the ongoing research project of understanding the Chacoan world and its sociopolitical relations. The Aztec community ultimately became the largest of Chaco Canyon's outliers, but that happened over more than two centuries. Aztec North was the first of the great houses built at Aztec and represents a time period when people here were emulating Chaco, reaching out to Chacoans, and interacting with Chacoans, but were still doing things in a very non-Chacoan way. This dissertation explores a transitional community that combined its own long-term traditions and labor practices with new building methods and a new, more hierarchical system imported from Chaco.

A major question in recent years has been whether outlier great houses were built by Chacoan migrants or builders, or whether local people built them. Underlying this question is an ongoing debate among archaeologists about the Chacoan social system and its expansion. Communities across the region abruptly began adopting Chacoan architecture and material culture in the late $11^{th}$ and early $12^{th}$ century, but the reasons why they did this remain uncertain. Archaeologists have debated whether the Chaco system should be seen as an expansionist or even colonialist system that set out to take over other communities, or if communities around the region willingly imitated Chacoan ways at first and thus became part of what looks, from our modern perspective, like a Chacoan regional system.

The origins of Aztec Ruins, and the significance of Aztec North, have been debated for years. Brown and Paddock (2011) argued that the builders of Aztec North copied a great house but rendered it in their own, traditional local adobe style. For them, Aztec North was an emulation of Chacoan architecture, predating the arrival of Chacoans at Aztec. Van Dyke (2008) also sees Aztec North as an early structure, but she viewed it as an expedient Chacoan great house, built by Chacoans before they could muster the local labor force or the building materials needed for a masonry great house. Plastered in white like other great houses were, Aztec North would have looked the part without requiring as much effort. Stephen Lekson (2015:72) proposed a third theory, which relates to his hypothesis of a shifting power center along the north-south "Chaco Meridian." He suggests that Aztec North was actually a much later structure and an experiment in adobe construction by the people who would later move to the site of Paquimé in Mexico, the next step on the Chaco Meridian.

## Research Questions

The project is organized around four research questions. These questions are directed at understanding the origins of Aztec North and its place within the larger Aztec landscape and illuminating its significance within the Chacoan world, while also being attentive to its individual history and the lives of the people who occupied it.

*Research Question 1: Chronology*

My first research question asks when this structure was built and occupied. Archaeologists have long hypothesized that Aztec North was the first great house built at Aztec. Prior to excavation, the only evidence on this question consisted of surface ceramics collected from the site. Analysis of the ceramics was suggestive but not definitive on the question of chronology (McKenna 1988, 1998; Stein and McKenna 1988; Turner 2015). Establishing the chronology is important not just as a matter of basic culture history but because it has bearing on three different hypotheses for the founding of Aztec and different views of the nature of the Chacoan polity.

The Aztec North fieldwork and the subsequent analysis of samples and artifacts have produced important new data about occupation dates. I submitted 16 samples of organic materials for radiocarbon dating, including corncobs and charcoal from various floors and roofing material. As a second line of evidence, I have analyzed the ceramics and calculated a mean ceramic date range for the occupation of the great house.

*Research Question 2: Construction Methods*

The second research question asks about the construction methods at Aztec North. Archaeologists have argued that they can infer the presence of Chacoan builders at outlier sites— and thus an intentional expansion of the Chaco system—from the presence of what archaeological theorists have called "low-visibility features" that would not be apparent to casual visitors. Such architectural features, such as core and veneer walls or subfloor foundation structures, emerged from Chaco Canyon and would only have been known to people who had seen a great house under construction (Brown and Paddock 2011:211; Carr 1995; Clark 2001; Sackett 1977; Van Dyke 1999; Wobst 1977).

Archaeologists have seen such low-visibility features at Aztec West as a calling card of Chacoan builders, and thus of a Chacoan presence at Aztec West.

Even prior to excavation, it was clear that Aztec North was different than Aztec West. There were no standing walls and very little sign of any sandstone masonry on the surface. Instead, what was visible on the surface was a mound, with some cobble alignments marking the outlines of rooms. Archaeologists had concluded that Aztec North was built of adobe and cobble, which had melted into a mound.

The Aztec North fieldwork has complicated this picture. We found the same kinds of footer trenches that archaeologists studying Aztec West and other outlier great houses have seen as evidence that Chacoan builders with secret knowledge were present. The size of the rooms was also on a par with rooms at Aztec West or Chaco. Aztec North did have sandstone masonry core-and-veneer walls, but in other ways, the construction does not look the same as at Aztec West. In particular Aztec North builders used far more adobe, which archaeologists have viewed as the local construction vernacular in the Aztec region.

*Research Question 3: Relations to Other Regions*

My third research question asks how Aztec North related to other regions. I want to explore its relationship to Chaco Canyon, but also to other regions. The Chacoan period was characterized by widespread movement of ceramics and other goods. Understanding where things came from is the first step to an understanding of social relationships between people in different regions. This question is intimately related to chronology; if Aztec North and Aztec West represent different time periods then the differences in their artifact assemblages might also reveal changing relationships over time.

The pottery is particularly suited to this research question. I analyzed the technological and decorative attributes of the nearly 800 pottery sherds, using technological features such as temper to identify where pieces came from. My analysis revealed a great deal of evidence for interregional movement of pottery. The assemblage looks very much like the assemblages at other Chacoan great houses, with a significant proportion of the pottery coming from the Chuskas and from the Chaco region.

Lithic materials also provide clues, based on the presence of stone that traveled long distances. There were a surprisingly large number of obsidian artifacts, which I submitted to the University of Missouri Archaeometry Laboratory for sourcing analysis.

*Research Question 4: Living at Aztec North*

My third research question concerns subsistence and site use patterns. How did people subsist at this site, what did they eat, and what else can we learn about their activities and daily lives?

Our fieldwork and artifacts offer answers to some of these questions. Analysts have studied hundreds of bones and plant remain samples, in addition to ceramics and lithics. The results offer evidence about subsistence practices at this site, including the use of some twenty plant species, the presence of turkeys, and the exploitation of fish and other resources brought up from the river.

Language Matters: A Note on the Name "Aztec Ruins"

I want to acknowledge, early on, the deeply problematic nature of the name "Aztec Ruins." It is the legal name of this unit of the National Park Service, and for that reason, I cannot avoid using it throughout this dissertation. But the name is flawed in several ways. First, of course, the "Aztec" reference is deeply misleading and an artifact of settler colonialist erasure of Indigenous people. When I discuss my research with nonarchaeologists, I regularly must explain that this site has nothing to do with the Aztecs of Mesoamerica. Rangers at the Park must offer the same explanations to visitors every week. Language matters, and those who give a new name to a place assert power over that place—especially if by doing so they are erasing the names that previous residents gave to the same place.

The name Aztec Ruins was adopted by Anglo settlers in the 19th century. William H. Prescott published his book about the Aztecs, *The Conquest of Mexico*, to great acclaim in 1843. This bestselling book set off a national obsession in the U.S. Prescott suggested that the Aztecs of Mesoamerica had originated in a place called Aztlan, somewhere to the north, and that suggestion led Anglo settlers to give Aztec-related names to a number of places in the American Southwest (Lister and Lister 1990). At Aztec Ruins, it is unclear whether the name came from a genuine belief that Aztec builders had something to do with this site, or from a desire to capitalize on the excitement about the Aztecs at that time. A letter from 1861 described the building remnants on the Animas as "Aztec architecture," and an 1883 account of an exposition in Denver described "Aztec pottery" from near the mouth of the Animas River (Lister and Lister 1990, Chapter 1, citing a letter from Charles Baker of Animas City, Colorado and an account by F.E. Stevens). Scientifically-minded visitors were more cautious, and in a short time the scientific community recognized the continuity between this site and the great houses of Chaco Canyon. Lewis Henry Morgan (1879: 549), writing a report about Aztec in 1879 after a visit, wrote that those familiar with the archaeological sites of the Southwest "will recognize at once the resemblance between this Pueblo, and the Stone Pueblos in ruins on the Rio Chaco in New Mexico." Nonetheless, the name Aztec stuck, for both the site and the town that grew up around it.

The name plays into longstanding narratives of lost civilizations, and the idea that the Indigenous people of New Mexico could not have built something this spectacular. Therefore, it must have been some earlier, greater displaced society that left these relics. The name is also deeply colonialist. By giving the archaeological site the same name as the town, Anglo settlers essentially severed the site from its Puebloan builders and incorporated these Indigenous structures into their own sense of cultural heritage. As with places throughout New Mexico (and throughout the Americas), new settlers abandoned and replaced Indigenous people's place names. Some of the Indigenous names have not been lost, though I have only been able to learn of two. The Navajo call Aztec Ruins *Kinteel*, which means "Wide Ruin" (Linford 2000:173). According to a panel in the museum at Aztec, the people of Zia Pueblo call it *Aachuwa Kiwatsi*, or the "place where cattails grow." Of course, for the National Park Service to pick one of those names today would be one more act of colonialist appropriation, given how many different, sometimes competing, descendant groups exist.

Unlike the two Indigenous names mentioned above, the name Aztec Ruins utterly fails to incorporate any sense of place. It bears no connection to the Animas River or its lush wetlands, to the wide, fertile valley the river has carved here, or to anything else about the geography of this place, any more than it connects to the people who built it.

Equally problematic is the term "ruins." To many members of descendant communities, the great houses of Aztec and other ancient sites are not ruins but the homes of their ancestors and living places that still play a vibrant role for people today. Pueblo people still make pilgrimages to many ancient sites, retracing their ancestors' steps. At many sites, there are shrines that they still use. Moreover, the word "ruin" is a particularly poor fit for Aztec North, which has no standing walls on the surface and is best described as a mound. I have, at least, avoided calling it "North Ruin," as people have done in the past, and I refer to it instead as Aztec North.

Given the large archaeological literature that uses the name "Aztec Ruins," and the Park Service's use of that name, I cannot completely abandon it. However, I use the phrase "Aztec community" where possible to refer to the Ancient Puebloan community that built this place over a thousand years ago, and I use "Aztec Ruins" only when referring to the modern unit of the National Park Service that is located there today.[2]

<u>The Aztec Community: A Sense of Place</u>

For those who have not been there, I hope that my descriptions will provide the sense of place that is lacking in that name. For now, imagine a fast-running, blue mountain river tumbling out of narrow canyon lands and levelling out into a wide valley. This is the Animas River.[3] The river's banks are a strip of green where shady cottonwoods grow and other water-loving plants, insects and animals thrive, but walk away from the river and the landscape quickly starts to look more arid.

In the 1100s, this wide river valley might have been covered in maize fields, with small room unit pueblos and other small buildings dotted around. At the center of this vibrant farming community stood two enormous buildings, the Aztec East and Aztec West great houses.

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[2] I also follow the lead of Reed and Brown, eds. (2018) and the Salmon Pueblo Archaeological Research Collection (SPARC 2018) in abandoning the name "Salmon Ruins" in favor of "Salmon Pueblo."

[3] It was named the Rio de las Animas, the River of Souls, by Spanish explorer Juan Maria Antonio de Rivera in 1765. Contrary to local legend, Rivera did not call it the Rio de las Animas Perditas, River of Lost Souls. That word appears to have been tacked on by American settlers in the late 1800s, for reasons unknown (Thompson 2018: 18).

The valley is nestled between river terraces, higher landforms shaped by the river. To the north is the terrace where Aztec North stands. It is not very high, just 30 meters or so above the valley floor (Stein and McKenna 1988:2), but it is a somewhat steep walk up a hillside covered with slippery smooth river cobbles. As the visitor reaches Aztec North up above, and turns to look back down, the two valley great houses slip out of sight, but a different vista opens. The wide Animas Valley can be seen, bounded by river terraces across the valley to the south. The Animas River below, a green ribbon of cottonwoods, leads west to the even wider San Juan River Valley and, today, the sprawling haze of Farmington. Beyond are the distant Chuska Mountains. Face north, and the snow-capped La Plata Mountains glisten in the distance. Eastwards, the modern visitor might not even notice a funny pair of hills bristling with cellular towers, the Knickerbocker Peaks, but they are important to this story. Looking northeast, the Animas River, under its green canopy, flows down from the mountains of southern Colorado.

Summary of Argument

This dissertation analyzes an Ancient Puebloan site in transition, people on their way to becoming part of the Chaco phenomenon. It also summarizes a wealth of architectural and artifactual evidence from the excavation of Aztec North, one of only a small number of recently excavated great houses. I lay out the argument in eight chapters. Chapter 2 offers a summary of my theoretical stance, including anthropological work on sociopolitical theory, landscape archaeology, and materiality theory. Chapter 3 summarizes the culture history of Chaco Canyon and of the subsequent development of a system of outliers with their eye firmly on the Chacoan center. Chaco looms large in any discussion of the Aztec community, and I begin there. This chapter also considers the debates of archaeologists surrounding social hierarchy at Chaco Canyon, and the part that landscape archaeology can play in understanding the Chacoan world. Chapter 4 describes the Aztec community and its cultural landscape, as well as the research that archaeologists have done there in the past. I discuss how archaeologists have interpreted Aztec North prior to our excavation. Chapter 5 describes the fieldwork and the methods that the excavation crew employed. Chapter 6 does the same for the post-excavation artifact analysis, including AMS and ceramic dating; architectural findings; ceramic, lithic and faunal analysis; obsidian sourcing; and archaeobotanical analysis. Chapters 7 and 8 describe all the archaeological findings from this project. I have divided this into two chapters because there is so much data to report. Chapter 7 discusses the dating of the site and describes in detail the architectural features uncovered. Chapter 8 presents and discusses data from the ceramic, lithic, faunal, and archaeobotanical analyses. Chapter 9 returns to the research questions and presents my interpretations of the data and particularly of the contradictory architectural evidence. I discuss the chronology and argue that Aztec North was a transitional site that incorporated some Chacoan knowledge with local construction methods. Moreover, it is a site that very quickly became part of the Chacoan world. I also address relations with other regions and discuss subsistence and site use practices. Chapter 10 situates this research in the broader projects of Chacoan archaeology and suggests future ways forward.

## Conclusion

This chapter has offered an introduction to this research project on the archaeology of Aztec North. I discussed the fieldwork and how it came about and summarized the four research questions that have guided the project. I also discussed the name Aztec Ruins and the many ways in which it is problematic, and I offered a short "sense of place," a summary of the land and the cultural landscape that are at the heart of this project. The next chapter addresses the theoretical framework that underlies this project, including perspectives on sociopolitical relations as well as relational archaeology theory that offers new views on how humans relate to the places, natural and built, in which they dwell.

## Chapter 2. Theoretical Framework

The previous chapter briefly introduced the Aztec North project and the research questions that guide this dissertation. This chapter discusses the research framework that underlies the project. While some of the questions I address, about sociopolitical complexity and relations, are old ones in Southwestern archaeological theory, I also engage with recent landscape archaeologies and materiality theories that consider the interactions of people with the land and with their built environments. I take an integrative and relational approach that interrogates not just political relations between Chaco and its outliers, and interpersonal relations among individuals, but also people's personal relations to objects, animals, buildings and landscapes.

Anthropologists have long grappled with the nature of political power in non-state societies, and their work informs contemporary understandings of the Chacoan world. Attention to the ways in which people around the world relate to their landscape and buildings and possessions, and how they use these to signal their identity and convey political messages, can help Chaco archaeologists decode the meanings of the places and things they study, or at least develop hypotheses about these meanings.

This chapter will discuss all of these theoretical traditions in archaeology. First, I discuss some of the insights sociopolitical theory offers into the development, negotiation and maintenance of political power in non-state societies. Second, I discuss landscape archaeology and the new insights it has offered into how people relate to their natural and built environments, and how power relations can sometimes be embedded into both.

Third, I present a discussion of materiality theory, the relational study of human-object relations, with a focus on the entanglement of humans with the buildings they make and inhabit. These approaches are all interwoven, of course. Human relations with each other, with the land, and with objects are all interrelated and all part of an integrative archaeology of human sociopolitical and cultural relations.

Understanding Social Hierarchy in Prehistory

Anthropological theorists have long been concerned with understanding social hierarchy in non-state societies, and Southwest archaeology has been an important source of theories and data for such understandings. Chaco Canyon and its outliers are prime examples of hierarchical societies that developed out of pre-Chacoan contexts that seem very egalitarian. Moreover, the Chacoan pattern contrasts with the apparent egalitarianism of the Pueblos. Much of sociopolitical theory in anthropology has focused on explaining these patterns.

*Pueblo Ethnography: Egalitarianism and Hierarchy*

Ethnographic information has played an important role in archaeological understandings of complexity. The work of early ethnographers, including Ruth Benedict (1989[1934]), portrayed the Southwest's pueblos as examples of societies with egalitarian, democratic social structures and lacking in elites or strong leadership. Eggan (1973) reinforced the egalitarian view of the modern pueblos, presenting a model in which egalitarianism among clans was supported through integration by kivas and religious society. His theory was widely read and influenced another generation of archaeologists.

Some archaeologists projected this egalitarianism into prehistory, seeing prehistoric people in the region as similarly lacking in elites and leadership (Lekson

2008:43-56; McGuire 2011). A lack of obvious trappings of individual leadership or wealth made this a plausible view.

Beginning in the 1980s and 1990s, and continuing to today, the egalitarian view of Puebloans came under attack. Brandt (1980, 1994) argued persuasively that secret knowledge and ritual leadership are important sources of power and hierarchy within pueblo culture. Religious leaders routinely use secret knowledge to obtain compliance, without explanation, from other community members who lack such knowledge. Along with Brandt (1980, 1984), Peter Whiteley (1985, 1986, 1998) and others have argued that the ideology of egalitarianism in the Pueblos is just that, and that the reality is a theocratic hierarchy, with religious leaders who exercise great power. Moreover, in some Pueblos land is unequally distributed among clans, with some clans having no land at all, and decision-making power is unequally distributed among people belonging to the same clan in ways that go beyond gender and age. Oral history records the destruction of villages that did not obey their leadership, as well as conflicts that led to entire segments of communities leaving to found their own villages (Brandt 1980, 1984; Levy 1992; Whiteley 1985, 1986, 1998; Upham 1989). As Brandt (1994) and Whiteley (1985, 1986) argue, ethnographers took their informants' statements about egalitarianism at face value, statements which reflected a strongly-held ideology rather than a reality. They were also persuaded by a lack of material wealth among leaders, in keeping with that ideology of egalitarianism However, they discounted the significance of a theocracy that not only regulates and coerces other individuals but can also mobilize their labor in the name of religious belief. Ethnographers also focused on kinship, again in an idealized form that emphasizes clan unity, and were too quick to try to fit Pueblo kinship into an idealized descent theory model derived from African societies.

*Southwestern Debates on Complexity and Egalitarianism*

The New Archaeology of the 1970s, drawing on neoevolutionism, sought to categorize groups in the Southwest as bands, tribes or chiefdoms. Major debate in the 1980s about complexity centered on two late Prehispanic sites in central Arizona, Chavez Pass and Grasshopper Pueblo. The Grasshopper Pueblo camp argued that these communities were egalitarian, based on ethnography from modern pueblos and on an absence of markers of elite leadership (Reid 1989; Reid and Whittlesey 1999, 2005). Although there were inequalities in burials, these scholars viewed those differentiations not as evidence of elitism but as markers of membership in religious sodalities. At Chavez Pass, archaeologists argued for the existence of social hierarchy and an administrative center based on, among other things, differential mortuary treatment, architectural structures indicating leadership, craft specialization, competition for land and a hierarchy of settlement sizes (Upham 1982, 1989; Upham and Plog 1986).

McGuire and Saitta (1996) argued that these debates were misguided. Instead of debating whether these prehistoric communities were or were not complex; it was time to accept that it was not an either-or proposition. Modern pueblos, and in all likelihood past communities as well, were simultaneously egalitarian and hierarchical. McGuire and Saitta advocated a dialectical view that considers how the interplay of these oppositional egalitarian and hierarchical forces shaped social relations. As they noted, Pueblo society is generally egalitarian in many ways; however, within that egalitarianism are the seeds of a hierarchy which emerges in times of drought or other threats. That hierarchy allows the expulsion of some villagers in times of starvation. It may also permit the removal of those who threaten the society. In the modern pueblos, the dialectic process is mediated by religious process; it is in religion that the contradiction between egalitarianism and hierarchy plays out (McGuire and Saitta 1996).

Friedman and Rowlands (1977) have argued that trade in prestige goods is an important way in which political centers expand their regional reputation and attract more allies. Such trade would be accompanied by intensification of manufacture and perhaps craft specialization. A number of theorists have applied the idea of a prestige goods economy to turquoise production at Chaco Canyon (Earle 2001; Judge 1989; Mathien 2001), but the evidence for major export of turquoise remains elusive.

Landscape Archaeology: A Relational Understanding of People and Places

Landscape archaeology recognizes that how people related to the landscape in the past can inform archaeologists about their sociopolitical relations. A relational landscape archaeology begins with a rejection of dualism and a recognition that the longstanding divide between nature and culture is more an artifact of the European Enlightenment than a real division in the world. Humans are part of the natural world and seeing them as separate from the landscapes they inhabit obscures their true relations with it (Ingold 1993:154). Landscape archaeology recognizes human agency and rejects strict environmental determinism (Anschuetz, et al. 2001:158); environmental conditions may shape the parameters for human actions, but historical contingency, cultural context and individual choices mean that no two groups will ever develop the same sets of adaptations to a similar environment.

Landscape archaeology also implies a rejection of the traditional archaeological concept of discrete sites with only empty space between them (Tilley 1994:9; Ingold 1993:154-155). Archaeological theorists increasingly recognize that, for most people, a sense of place does not consist of one or two dots on a map but instead imbues an entire landscape with meaning. People construct vast cultural landscapes, dwelling in places that are alive with significance and re-shaping the natural world to their ends (Basso 1996; Bernardini and Peeples 2015; Colwell-Chanthaphonh and Ferguson 2006; Ortiz 1969; Silko 1986; Swentzell 1990).

Archaeologists, even if they viewed the site as the basic unit of archaeological research, have always paid attention to the broader landscape beyond the site in studying settlement patterns and the specific resources that the surrounding environment affords. What has changed is that post-processual archaeologists interested in landscape now focus not only on what people could take from the land but also on how they experienced their landscape and related to it, with "non-economic perspectives on human-land relations" (Knapp and Ashmore 1999:1).

Some theorists have advocated a phenomenological approach that attempts to use the human body, presumed to be stable over time, to experience landscapes and shed light on how prehistoric people would have experienced them (Tilley 1994; Van Dyke 2007:38-39). Others have tried to find patterned ways of understanding human relations with the landscape, arguing, for example, that prehistoric people were particularly attracted to striking natural features and to places of liminality—locales on the border between different geological or cultural zones (Creese 2011:12; Eliade 1961; Taçon 1999:41). How architecture is sited, as well as the visibility and intervisibility of features on the landscape, are important potential sources of information about social relationships (Bernardini and Peeples 2015; Boivin 2004:240, 245; Llobera 2007:57).

Archaeologists should be wary, however, of assuming that people in different times and places are all interested in the same kinds of landscape features, or that an outsider can predict the relationships people have with their landscape. Ethnoarchaeological research has shown this not to be true. Ethnographic work in a rural Italian village, for example, showed that locals had barely registered the presence of a dramatic natural feature that interested the archaeologists. They instead had relationships with parts of the landscape the archaeologists had not particularly noticed, such as their favorite picnic spots or where the best mushrooms grew (Fitzjohn 2007).

Many prehistoric people lived in a landscape that was already rich with ancient buildings and other signs of those who had come before, and people would have used memory (as well as its counterpart, intentional forgetting) much as people do today, to create group unity and ideological meaning and to legitimize existing structures of authority (Van Dyke 2004:414). People—particularly people entering a new landscape—tend to link their customs and ideology to features of the land and the sky because of the permanence they offer compared to the transience of human institutions (Snead and Preucel 1999).

Natural landscapes and the humans who inhabit them are interwoven in important ways. Landscape is not a mere backdrop to human events and is not politically neutral. On the contrary, landscape structures and reflects political relations (Anschuetz et al. 2001; Ingold 1993; Lefebvre 1991; Moore 1996; Smith 2003; Snead 2008; Snead and Preucel 1999; Soja 1996; Tilley 1994). Thus, archaeologists may find important information about sociopolitical relations embedded in human use of natural and built landscapes. Political elites in particular often manipulate the landscape in ways that reinforce messages of power (Anschuetz et al. 2001; Moore 1996; Smith 2003). Monumental architecture, in particular, conveys important messages of power and authority. The very existence of monumental architecture implies power, at least in terms of the ability to mobilize labor for construction. Monumental constructions often use mass and height, as well as tricks of perspective and contrast with their backgrounds, to emphasize their importance and, by extension, the power of their builders (Moore 1996:98-101). Recent attention has also been focused on notions of surveillance, with some suggesting that a broad viewshed not only implies the ability to observe people and gather information but perhaps even, like a panopticon, to regulate people's behavior by mere virtue of their sense of being observed at all times (Graves and Van Keuren 2011; Yekutieli 2006).

Landscape archaeology also breaks down lines between the natural world and the manmade. Recognizing the artificiality of divisions between nature and culture implies that archaeologists must also include buildings and other aspects of the built environment in the total landscape.

Landscape-oriented perspectives bring archaeologists closer to how Indigenous people in many places view the world. Landscape archaeology is just catching up with Indigenous traditional knowledge. While archaeologists must be on guard against assumptions that Indigenous people today have the same understandings as people in the past, under some circumstances ethnographic analogy provides a valuable source of ideas and interpretations (Currie 2018).

In the Southwest, there are multiple Indigenous communities who are descendants of the Ancient Puebloans. One thing that these Indigenous groups share is an emphasis on the close relationships between people and the land. Ethnography from descendant communities such as the Hopi and Zuni have revealed some of the ways that the intense relationship with landscape plays out in Pueblo life.

Spatial organization at a number of the Pueblos demonstrates the importance of cardinal directions. The actual directions vary by Pueblo—for the Hopi, it is northeast, southeast, northwest and southwest, while for Tewa and Keres groups, it is north, south, east and west (Ortiz 1969:18-21; Snead and Preucel 1999; Van Dyke 2007:49-54; Whiteley 2012). The Zuni, Hopi and others also recognize up and down as two additional cardinal directions (Cushing 1979; Whiteley 2012).

Many Indigenous groups identify four particular sacred landforms, near or far, that represent each of the directions. Each direction is also associated with a color, which again varies by Pueblo. Tewa people associate north with blue-green and the east with white, for example, while for the Hopi blue-green represents southwest, and white is northeast. Black is the color of the zenith for the Hopi, while the Navajo see black as representing the north. Different minerals, trees, plants, and animals may also be associated with each direction (Linford 2000; Van Dyke 2017; Whiteley 2012).

At Tewa villages, shrines on the village outskirts mark the directions (Van Dyke 2007:49, 2017; Ortiz 1969:18-21). In addition to distant sacred mountains, there are many other sacred landforms and smaller sacred places on the land. Navajo landscape conceptions fit into these patterns as well, and the sacred mountains include Hesperus Peak, the northern mountain, which is associated with black, and Mount Taylor to the south, associated with turquoise (Linford 2000).

Pueblo and other groups see the world as layered. The people of this world emerged into it from the previous world through a hole or other feature, and that place of emergence is a known place on the landscape, often to the north. The people of Taos Pueblo emerged from Blue Lake, a place they visit on ceremonial pilgrimages (Fowles 2013:48,209). The Zuni emerged from a place in the Grand Canyon (Ferguson and Hart 1985: 20-23). The sense of a layered world, with the heavens above, the world below, and another world below, remains important in Puebloan traditions and is symbolized by the pueblo, plaza and subterranean kiva.

For each group, many other places in the landscape have meaning as spots where historical and mythical events took place. Pueblo people associate Katsinas, Spider Woman, and the Hero Twins with particular places, where they abide or where they took various actions. Landscape plays a central role in stories, and visiting places reminds people of the stories (Basso 1996; Silko 1986). Many Pueblo communities also have a tradition of pilgrimages, visits to ancestral sites and sacred places of significance to the community (Bernardini 2002, 2008; Colwell-Chanthaphonh and Ferguson 2006; Koyiyumptewa and Colwell-Chanthaphonh 2011; Van Dyke 2017).

Modern environmentalists have extolled the transcendental experience of the rugged individualist in nature, but the reality is that for most people and through most of human history, people have experienced landscapes not as solitary walkers but together, as social groups (Basso 1996:56-57). Song, myth and story recount knowledge of places (Basso 1996:57). People attach stories with ethical content and historical significance to places in the landscape, and they visit those places as a mnemonic device for teaching and remembering the oral history (Basso 1996).

In short, archaeologists are increasingly understanding of the degree to which Indigenous people's lives are shaped and formed by relationships to landscape. An archaeology that considers those relationships is a necessary step towards understanding people's lives in the past.

Materiality Theory: The Entanglement of People and Building Materials

Recent theory in archaeology no longer sees material culture only as the inanimate leftovers of a human past. Instead, archaeologists increasingly view objects in relational terms, as important players in human lives and relationships, and even as agents in their own right. Our homes, our possessions, our clothing, our digital devices are more than just background clutter in our lives, and they are more than just lifeless tools for our use. Clearly, they reflect our relations with others, they shape our bodies and our ways of moving, they set some of the conditions under which we live those lives. Often objects hamper people's lives in important ways— a flat tire keeps us from getting to work on time, or the tool we want to put to use instead injures us. Sometimes things kill people. People in the past also had these kinds of relationships to the objects around them.

Materiality theory has many different forms, some more radical than others. Many archaeologists will not follow Bruno Latour (1993, 2005) down a road of argument that denies any meaningful difference between a human agent and a non-human agent (Van Dyke 2015). However, the insights of materiality theory do push archaeologists to pay closer attention to human-nonhuman relationships, to the things themselves, and to the relationships among things. As with landscape relations, the recognition that things sometimes act like people, or are treated as people, or *should* be treated as people, may also bring archaeologists closer to Indigenous viewpoints. In this section, I discuss some of these views and how they can help archaeologists understand past people and their possessions.

Alfred Gell wrote about art, about paintings in museums and stunning works by Indigenous craftspeople. He argued for an anthropological theory of art that recognizes "social relations in the vicinity of objects mediating social agency" (Gell 1998:7, 9). Objects, he argued, have secondary agency, an agency that emanates from primary human agency but that is no less powerful for it. A soldier with a gun, he argues, is a different kind of agent than a soldier without a gun, and the object in this case is not just a tool for human action but an agent of its own (Gell 1998). Or, as Odysseus told his son three thousand years ago, “Arms themselves can prompt a man to use them” (Homer 2018:379).

Objects act in powerful and complicated ways upon all the different humans who interact with them, and in ways that the maker may not have intended or foreseen. The properties of the marble block tell the artist what to sculpt; the ethnographic object displayed in a museum inspires joy or disgust in the viewer; even the model for a painting sees herself in a new light when her image is revealed. Sometimes art causes not just emotion but action, even violence against the painting (as in a slashed museum canvas) or against people (as in nationalist or propaganda art) (Gell 1998). Gell criticized Western theories of aesthetics, arguing that what we see as beautiful is an effect of “enchantment”: a human relationship to the virtuosity of a master artist or craftsperson, to skilled production which we ourselves would not be able to reproduce (Gell 1998).

Other useful ideas on human relations to objects center on the nondiscursiveness of human and object agency. Daniel Miller, for example, makes the important point that objects usually work upon humans mostly “by being invisible and unremarked upon, a state they usually achieve by being familiar and taken for granted” (Miller 2009:50). Our clothing constrains our ways of walking and sitting and being daily, be it a sari constantly at risk of coming undone unless the wearer walks in a particular way or a pair of dress shoes that consistently steers the wearer to the pavement rather than the grass (Miller 2009). But generally we only notice these constraints at times when our clothes fail us: when we actually need to cross a grassy patch, or when the sari does unravel. And while we may think that human intentionality is on a different level from the kind of secondary agency that non-humans may have, Giddens argues that human intentionality itself is a slippery notion when so much of human activity is unconscious and nondiscursive or has unintentional effects. It is only when things change or go wrong that we become conscious of the consequences of our unintentional acts (Giddens 1984:3-11). Heidegger also writes of how our relations with objects change based on what we are doing with them; the hammer may recede from the carpenter's consciousness as he uses it, until he strikes his thumb with it or it fails him in some other way (Harris and Cipolla 2017: 96-97; Heidegger 1962:95-105; Thomas 2006:46-47; Van Dyke 2015:13).

A particularly productive thread of the new materialism has been in the focus on the interrelationships among things, people, places, and activities (Van Dyke 2015:11-12). Whether it is referred to as an actor network (Latour 2005), a bundle (Keane 2003, 2005), a meshwork (Ingold 2011), an entanglement (Hodder 2011, 2012) or an assemblage (Bennett 2010; DeLanda 2006; Deleuze and Guattari 2007), the recognition of the constantly evolving connections among people and things in the world is an important insight that recognizes interrelationship and rejects efforts to separate nature and culture, human and non-human, sacred and profane.

Despite all this theorizing, few archaeologists have actually applied materiality theory to archaeological assemblages (Van Dyke 2015:6). Theorists have tended to analyze contemporary western industrial materials, focusing on consumer behavior rather than production or discard (Gonzalez-Ruibal 2014:33; Ingold 2007:9). Archaeological studies have often centered on extraordinary and highly charismatic objects. But materiality theory is not just for art or for extraordinary objects such as the magical canoe (Gell 1992), the sacred mask that must be fed (Mills 2004) or the conch shell that calls the spirits (Mills and Ferguson 2008).

An important application of materiality theory to the ordinary stuff of life is Hodder's notion of entanglement, a particularly humanistic version of assemblage theory (Hodder 2011, 2012). Writing about earthen architecture at Çatalhöyük, Hodder shows how people were intimately entangled with clay. This was partly just a reflection of the daily sensual experience at the site: "People at Çatalhöyük lived in a world of clay and clayey soil and depended on it for protection, warmth, food, social identity, personal identity, as well as for the development of senses and probably cognition" (Hodder 2011:156). Describing an unfired clay ball, no doubt used for heating cooking water, with the imprint of a child's teeth left in it, Hodder remarks that the taste of clay must have been an important part of childhood memory, like the Proustian petite madeleine of the Neolithic (Hodder 2011:156). When researchers live in experimental reproductions of mud houses, he notes, "our mouths, skin and hair become laced with clay" (Hodder 2011:156).

Entanglement goes beyond these daily experiences of things, however. Our relationships with things bring about results that we cannot even anticipate, much less prevent. People who build earthen houses find themselves pulled into an inevitable seasonal routine of constant maintenance and replastering of their homes. As any homeowner learns, what seemed to be a sensible choice for putting a roof over one's head turns into a relationship where the house demands things of its occupant. "[H]umans get caught in a double-bind, depending on things that depend on humans" (Hodder 2011:164). Things can sometimes also draw people into relationships of dependence with other people.

Pauketat (2000) has shown us how small choices can bring about unexpected sociopolitical consequences. Seeking to explain why egalitarian communities agreed to participate in building monumental structures that would ultimately lead to their domination by Mississippian elites, he argues that the moundbuilding was a familiar and non-threatening activity because it drew on local traditions of moundbuilding. Commoners saw a benefit in participating, and did not resist, not foreseeing the sociopolitical outcomes until it was too late to resist. While Pauketat draws on practice theory for his example, his greater point of historical contingency and unintended consequences, tied up with the familiar material and processes of moundbuilding, is highly relevant to my project as well.

In this dissertation, I use materiality theory to bring to life the humblest of matter, the mud and stone that people used to build Aztec North, shedding light on how it shaped human lives in the past. In this case, the simple building materials that people used drew them into a new social hierarchy that would alter their lives and those of their children for decades.

Conclusion

This chapter has introduced three theoretical approaches—sociopolitical theory, landscape archaeology and materiality—that inform my research at Aztec North. While each of these approaches has different sources and different concerns, they all mutually inform one another. The human-human relationship, the human-thing relationship, and the human-landscape relationship are different facets of how archaeologists approach the past. In what follows, I apply these integrative relational archaeological theories to the architecture and artifacts of Aztec North to glean evidence about how the people who built and occupied it approached their world.

## Chapter 3. Chaco Canyon and the Chacoan World

In the previous chapter, I laid out the theoretical foundations for this project. In the next chapters, I present an overview of Chaco Canyon (this chapter) and Aztec (Chapter 4). Events at Aztec are deeply interwoven with the history of Chaco Canyon. In this chapter, I briefly discuss what archaeologists know about developments at Chaco Canyon and its implications for sociopolitical understandings of the Chacoan world.

Despite decades of study, Chaco continues to challenge archaeologists. For many, its buildings, artifacts and landscape represent the development of a new kind of social hierarchy that had never previously existed in this region. Yet the evidence of sociopolitical hierarchy at Chaco is frustratingly ambiguous, and some archaeologists continue to see it very differently.

### Setting the Stage at Chaco Canyon: Landscape, Sense of Place and Social History

In Chaco research, the physical landscape of the canyon has been important for studying two major questions. The first is how people in this marginal environment not only survived but flourished and made this remarkable place. The second question is why did it happen here? Is there is something about the physical environment about this place that made it different from every other valley in the Ancient Puebloan world, that determined or set the stage for future events? This remote and arid canyon seems an improbable place for the architectural leaps and sociopolitical events, the “florescence” that happened here. A more recent research project considers the relationships that residents of the canyon might have had with the landscape and considers what archaeologists can learn from the ways people used and modified the land.

Water plays a major role in all of these questions. The average annual rainfall at Chaco today is just 22.4 cm, of which 10.5 cm is summer precipitation. This is below what scholars consider the minimum for dryland maize agriculture today (30 cm per year, of which 15 cm must be summer rain) (Benson 2011, 2012). Periods of the Pueblo II era were wetter than today, but rainfall was likely extremely variable, with many dry years as well as wet ones (Dean 1992; Mills 2002; Sebastian 1992:104-141; Vivian et al. 2006; Vivian and Watson 2015).

Chaco has no major permanent groundwater sources. The canyon and its side canyons have some seeps, small but valuable sources of water that could have been important for domestic water use (Marshall 2003; Vivian 1992). Chaco Wash, which runs through the center of the canyon, is a desert arroyo that runs fast and dangerous after a summer monsoon rainstorm but may have only puddles left a few days later. There is evidence, however, that, during portions of the Pueblo II period, a natural dune blocked part of the wash, causing water to collect in a shallow lake behind the dam and significantly improving agricultural conditions in the canyon (Vivian et al. 2006).

The topography of the canyon means that significant quantities of rainwater also drain into the canyon from the cliffs above. The slickrock of the mesa tops naturally sluices rainwater into the canyon, but in places, people modified the bedrock to improve this drainage. Some studies have concluded that the canyon wall drainages would have been a major source of water to residents of the canyon. There is evidence that people built and maintained gates in these side canyon drainages to slow and capture water. There is also evidence of reservoirs— places where people manipulated the natural flow of rainwater by digging out a storage pond or otherwise blocking the water from flowing away, so that it would collect after major rainfalls. These reservoirs likely required significant maintenance over time, particularly after flooding events. Gates may also have been used to divert groundwater to areas near the great houses for construction purposes (Lagasse et al. 1984; Mills 2002; Vivian 1992; Vivian et al. 2006; Vivian and Watson 2015). However, other scholars have recently questioned some of the previous assumptions about water usage at Chacoan sites. Moreover, the quantities of water flowing in during flood events could have been quite destructive at times, and people may not have been able to efficiently use it for agricultural purposes (Wills and Dorshow 2012; Wills et al. 2016). Scarborough et al. (2018) recently used LIDAR, excavation and soil analyses to confirm the presence of canals at the western end of Chaco Canyon and to explore the nature of these water diversion systems.

In addition to these water management techniques, the people of Chaco no doubt used desert-adapted dry farming techniques. Modern day desert farmers like the Hopi and Navajo use techniques such as grid gardens, dune farming, spacing plants far apart, and planting along small drainages, in side canyons or in wetter microclimate areas to maximize output in dry conditions (Vivian et al. 2006; Vivian and Watson 2015; Wills and Dorshow 2012).

In short, the people of Chaco Canyon likely had many techniques for capturing as much precious water as possible. Nonetheless, archaeologists debate whether Chaco Canyon's great house communities could have grown enough maize to feed their populations. In addition to the marginal rainfall conditions, Benson (2010) has argued that agricultural practices in the particular soils of Chaco Canyon would have led to significant salinization over time, so that the soil would have become useless for planting.

Critics have questioned this interpretation (Tankersley et al. 2016). Isotopic analysis of maize found at Chaco has demonstrated that at least some of the corn there was imported from other places (Benson 2010, 2017; Benson et al. 2009). Other research suggests that the canyon floor might not have been the only, or even the best, locale for fields. Instead, localized sites on the mesa top near Pueblo Alto have both soils and water drainage that would have made maize cultivation possible (Wills and Dorshow 2012). In addition, pollen findings at Pueblo Alto also support the possibility that maize was grown near that canyon-top great house. Pollen is not carried on corn kernels but on the tassels, so the presence of pollen indicates that corn was brought in unprocessed, with the tassels still on. This suggests that corn was locally grown rather than imported, since the long-distance import of corn with tassels still on is very unlikely. A mealing bin at Pueblo Alto had particularly high pollen deposits, suggesting that the pollen was intentionally brought in for production of "prayer meal" which incorporates corn meal and pollen (Geib and Heitman 2015).

<u>Chaco Origins</u>

What did this landscape mean to the people who built the earliest proto-great houses at Chaco? Chaco and the region around it were only sparsely inhabited in the early Pueblo I period (700-900 CE), with larger populations concentrated further north in the Mesa Verde region (Wilshusen and Van Dyke 2006; Wilshusen and Ortman 1999; Wilshusen 2015; Windes 2015). But that does not mean that the people who started building here in the 900s saw this as new ground. To the contrary, this was a deeply ancestral place, and some have suggested that its history as a gathering place goes much further back as well. There is increasing evidence that Basketmaker III (500-700 CE) occupation in Chaco Canyon was substantial and included both small sites and surprisingly large ones (Reed 2000; Lekson 2015:101-102; Wills et al. 2012; Windes 2015). Some of these sites also had something resembling public architecture. The Basketmaker III site of Shabik'eshchee Village was not so large as to suggest sedentary aggregated living, but its very large pitstructure suggests that it was a center place where people periodically gathered (Lekson 2015:101-102; Van Dyke 2007:65-68; Wills and Windes 1989; but see Reed 2000; Wills et al. 2012).

By Pueblo I, however, populations were concentrated in the Northern San Juan region, and people there built a number of very large villages. The Pueblo I villages of the Northern San Juan saw unprecedented aggregation and large populations, and their large pitstructures or kivas are indicative of ritual above a household level. All of these features are important developments in the Pueblo sequence and suggest continuity between Pueblo I and later events at Chaco (Schachner et al. 2012; Van Dyke 2007:73-86; Ware 2014:106-118, 2018; Wilshusen and Van Dyke 2006; Wilshusen and Ortman 1999; Wilshusen 2006; Windes and Ford 1992). Some have argued that the origins of Chaco Canyon can be seen in the aggregated villages of Pueblo I, where some particularly large buildings suggest the beginnings of elites and social inequality (Wilshusen and Ortman 1999; Wilshusen and Van Dyke 2006). However, recent isotopic analysis has suggested that individuals in 9th century elite burials at Pueblo Bonito were born at Chaco Canyon, undermining the idea of a northern origin for Chacoan great houses (Plog and Heitman 2010; Price et al. 2017). Social network analysis using large ceramic datasets also has not supported the theory that Chaco's origins lie in migrations from the north (Mills et al. 2018).

Great houses in Chaco Canyon, Pueblo II (900-1140 CE)

The Pueblo II period, spanning from 900-1140 CE, marks the heyday of great house construction at Chaco, but that two and a half century block masks complex processes of change and development over time. Archaeologists have tried to capture these processes by subdividing the Chacoan era into three phases. The Early Bonito phase (850-1040) represents the beginnings of Chaco. In the early part of that phase, people at Chaco Canyon built three large roomblocks at agriculturally promising drainage confluences in the canyon. These early structures were similar to other roomblocks of their time, but on a slightly larger scale. Builders renovated and expanded these three early great houses over time, and gradually, several additional great houses were built throughout the canyon. During the Classic Bonito phase (1040-1100), Chacoans renovated the three original great houses into the kinds of monumental structures that we now associate with Chaco, and other large great houses were constructed around the canyon. In the Late Bonito Phase, 1100-1140, Chaco Canyon saw marked changes, including the adoption of a distinctly different McElmo architecture style. While construction and renovation continued in this period, some archaeologists argue that drought events in the late 1000s may have shaken people's confidence in Chacoan social systems, beginning processes that later led to Chaco's end (Judge 1989; Lekson 1984; Van Dyke 2004). Despite any social turbulence, however, Chacoan construction peaked between 1075-1115, when builders undertook massive renovation and construction projects across the canyon (Crown and Wills 2018; Lekson 1984:70-73).

A distinctive architectural style characterizes Canyon great houses. They have large rooms, timbered roofs made with huge log beams, site terracing, and distinctive stone masonry. Great house builders used what is called core and veneer construction.

Masons carefully shaped and pecked tabular sandstone (abundantly available in this sandstone-walled canyon) into small stone elements then laid these, with mortar, into a veneer on both sides of the wall. In between, they filled these meter-thick walls with a stone rubble core. The well-built veneer carried the weight of upper stories. This construction requires lots of labor. It is also overbuilt, since the carefully crafted masonry of these walls was ultimately not visible. Both the exterior and interior walls were generally covered over in white plaster, hiding the meticulous stonework. Mortar and stone foundations that provided strong support and prevented settling underneath the walls underlay the walls of Chacoan great houses. Together, these foundations and the core and veneer method made massive, strong walls that could support multiple stories. Some great houses rose three or four stories high, with the walls becoming thinner as they went up (Lekson et al. 2006; Lekson 1984:15-16, 2007).

These buildings were not constructed all at once but were completed in phases of construction and reconstruction. Nonetheless, Chacoan builders planned these structures in advance; rooms were not simply added on by accretion but were carefully designed in advance. Indeed, it has been posited that workers laid complete building foundations before the wall construction began, as a sort of finished blueprint for the future construction. At Pueblo Bonito, there is a huge complex of foundations to the northeast of the building that appears to have been intended as the layout for a future construction phase, even though none of the walls were actually built (Stein et al. 2003).

Adobe and jacal construction rarely occurs, and builders used it primarily for small dividing walls or other expedient structures. There is one notable exception near Chaco Canyon. At the Bis sa'ani community on Escavada Wash about 15 km north of the canyon, on a bluff high above the wash, Chacoans built a great house of puddled adobe, without sandstone veneers. Known as Casa Quemada, this structure was part of a larger complex of buildings that collectively form the East Bis sa'ani great house. Despite its unusual construction, Casa Quemada was contemporary with its masonry neighbors. Excavators described the walls of this structure as "essentially an assemblage of mud balls pressed into place" (Marshall 1982:182). Bis sa'ani dates to 1126-1133 (Doyel et al. 1984).

Explaining Sociopolitical Hierarchy at Chaco Canyon

Questions about sociopolitical hierarchy have long dominated the research on Chaco. The evidence of hierarchy at Chaco is frustratingly circumstantial. However, the Pueblo Bonito burials and the monumentality of the great houses point to the presence of elites who were treated differently than other people and who had the power to mobilize labor from throughout the region.

Many archaeologists agree that only a small population lived permanently in Chaco Canyon throughout this period (Judge 1989; Lekson 2015: 11; Toll 1991; Windes 1984:84, 2003:32; Lekson, Windes and McKenna 2006). The absence of large cemeteries is one reason for this understanding, although Plog and Heitman (2010:19620) contend that this is a result of early pothunting and archaeology rather than because they did not exist. The other major line of evidence for small populations is the small number of hearths that existed in excavated great houses. Windes (1984) estimates that no more than 20 households resided at Pueblo Alto in the late 11$^{th}$ century during its peak. He estimates that 2000 or fewer people lived in the canyon (Windes 1984:84). As discussed above, archaeologists continue to debate Chaco's agricultural potential and how many people the local fields could feed. If the smaller population numbers are accurate, it implies that the local population could not have built the great houses on their own. Instead, they had the ability to mobilize labor from outside the canyon (Bustard 2003; Metcalf 2003; Lekson 1984; Neitzel 2003; Windes 1984).

The circumstantial nature of the evidence of sociopolitical organization in the Chacoan world has led to a longstanding debate about great house use and how it reflects sociopolitical organization. Many archaeologists have sought to explain Chaco in terms of redistribution, prestige economies, or other theories of complexity (e.g. Sebastian 1992; Judge 1989). More recently, many archaeologists have interpreted Chaco as a ceremonial center and a pilgrimage destination (Renfrew 2001; Toll 2001; Van Dyke 2007:99-102; Yoffee 2001). What Chaco offered to people was not an economic or political system cloaked in ritual, but the ritual and the ideology itself (Cameron 2001; Judge 1991; Renfrew 2001; Toll 2001; Van Dyke 2007:99-102). In this view, Chaco's great houses are seen primarily as ritual structures that hosted periodic influxes of pilgrims from around the region (Bernardini 1999; Judge 1989; Kantner and Vaughn 2012; Malville and Malville 2001; Mills 2002; Neitzel 2003; Renfrew 2001; Toll 2001; Van Dyke 2007:106-107). The great houses might have been inhabited year-round by small groups of ritual elites, but populations swelled during periodic pilgrimage events. In this model, the power of Chacoan elites lay in their control of secret knowledge and ceremony. People from around the region gathered and feasted at Chaco; they participated in ritual events, and they contributed their labor, as well as food, pottery and other valuable goods. Van Dyke (2007:105-133) has noted that leaders used and modified the landscape for social and political ends, emphasizing the canyon as the "center place" and using the landscape to impress visitors and legitimate their power. Outlier communities, in exchange for the ritual benefits provided by Chaco's elite, participated in periodic pilgrimages to the ceremonial center at Chaco Canyon, providing labor for great house construction and importing pottery and other valued objects (Judge 1989; Malville and Malville 2001; Renfrew 2001; Toll 2001; Van Dyke 2007:114-115).

A few scholars view Chaco as a state (LeBlanc 1999; Wilcox 1993). Lekson (2015) has argued that Chaco was an expansionist "altepetl" state with a vast peripheral region. In this model, based on some Mesoamerican states, the kingship rotating among the great houses. He does not hesitate to refer to great houses as palaces.

Other archaeologists see the great houses as essentially large pueblos, no doubt with a significant village ceremonial life as in the modern Pueblos. They do not invoke regional pilgrimage to explain the great houses. Some envision larger permanent populations, questioning data from past research and relying instead on recent studies of water management, faunal collections, and soil systems which have suggested an ability to feed a larger population than previously thought (Plog and Watson 2012; Tankersley et al. 2016; Vivian et al. 2006; Vivian and Watson 2015). In this model, Chacoan social hierarchy is a largely local development, and one that predates the later, regional outliers so key to the pilgrimage model (Plog and Watson 2012; Price et al. 2017; Watson et al. 2015). Feasting at great house sites, including outliers, would represent village solidarity activity, not regional pilgrimages, and the stratified midden deposits that have been represented as evidence of pilgrimage events can be interpreted instead as traces of quite ordinary village activities including construction and feasts (Plog and Watson 2012; Wills 2001). Some scholars argue that Chacoan hierarchy, kinship and ceremony can best be understood with careful attention to Pueblo ethnography (Kennett et al. 2017; Ware 2014, 2018; Whiteley 2015). Ware (2014, 2018) analyzes Chacoan architectural and social development in relation to the matrilineal kinship structures and secret societies that exist in the Pueblos today, making a compelling case for deep continuity with modern Pueblos, particularly in light of DNA evidence supporting matrilineal relations at Pueblo Bonito, as discussed below (Kennett et al. 2017).

Mortuary Practice at Chaco Canyon

The great houses of Chaco have very few known cemeteries, and the relative scarcity of burials is part of the ongoing debate about population and great house use at Chaco. Pueblo Bonito, however, has burials, and these are exceptional in every way. In some of the oldest portions of the great house, archaeologists found two clusters of burials in inner rooms. The northern burial cluster occurs in the oldest portion of the great house. In Room 33, one of the smallest rooms in the great house, excavators uncovered the remains of approximately 14 individuals, along with some 30,000 artifacts including some of the most exotic and special artifacts known in the Chacoan world. Two burials under a plank floor in Room 33 contain particularly rich grave goods. The room is also laden with ritual symbolism, including caches of artifacts in each corner, corresponding to the cardinal directions (Akins 1986, 2003; Akins and Schelberg 1984; Heitman 2015; Marden 2015; Mills 2015; Plog and Heitman 2010; Snow and Leblanc 2015).

These rich burials have fueled enormous discussion about the development of elites in the canyon. Scholars have long believed that these remains represent Late Bonito great house residents and that the richness of their burials indicates their political power (Akins 1986, 2003; Akins and Schelberg 1984). However, recent evidence has suggested that the burials were deposited over centuries and that objects may have been added over time (Marden 2015; Plog and Heitman 2010). This opens the possibility that these burials represent three centuries of members of a family, who received special treatment as ancestors, not necessarily as rulers or leaders. The evidence of burials being reopened and added to over time, also implies memory work of a sort, with people revisiting the graves of ancestors and making offerings to those people which, over time, became the rich assemblages found by archaeologists. (Ashmore 2007; Marden 2015; Plog and Heitman 2010). Some scholars have argued that the association between the building and these burial crypts full of ancestors is evidence that Chacoan society followed a "house society" model as proposed by Claude Lévi-Strauss. In house societies, the building is directly associated with venerated ancestors, and the lineage makes repeated, ritualistic investments in the building with deposits and offerings to consecrate the house itself (Heitman 2015; Lévi-Strauss 1982; Mills 2015; Plog and Heitman 2010).

Recent archaeogenomic research on the Room 33 burials demonstrated that individuals in this burial cluster shared mitochondrial DNA, indicating that individuals were matrilineally related. Dating of the remains indicates that related individuals spanning nearly three centuries are in this burial cluster, including a possible mother-daughter pair and a possible grandmother-grandson pair (Kennett et al. 2017). The matrilineal relations are consistent with more recent Pueblo patterns and may be helpful in understanding the social hierarchy of Chaco Canyon (Ware 2018). Isotopic analysis indicates that most individuals in the Pueblo Bonito burial clusters were born in Chaco Canyon (Price et al. 2017). Archaeologists continue to debate whether the special mortuary treatment accorded to these burials means that they were powerful elites, venerated ancestors, or both. (Crown et al. 2016; Heitman 2015; Mills 2015; Plog and Heitman 2010; Snow and Leblanc 2015).

Chacoan Landscape Archaeology

Chaco Canyon is a case study in how ancient people inscribed their social relations on the land. Given the equivocal nature of other evidence of sociopolitical hierarchy, the use and manipulation of the landscape is an important source of information. At Chaco, the great houses are set within a canyon landscape that emphasizes their size, their visibility and their domination of the land. Earthworks, roads, and alignments place the great houses in a larger, cosmologically meaningful landscape. Great houses and other structures are sited in relation to natural features near and far, aligned to cardinal directions and astronomical events, and planned in ways that manipulate intervisibility between sites (Lekson 2015: 201-203; Nials 1983; Roney 1992; Sofaer 2008; Van Dyke 2007:241-246; Van Dyke et al. 2016). All of these uses of the landscape emphasize this canyon as a center of power (Van Dyke 2007:114-115).

*Visibility and Inter-Visibility*

Van Dyke (2007:143-144) describes how, despite being a canyon, certain mesa-top points around the canyon afford views across a vast region. Chacoan great houses are sited in ways that maximize the line of sight towards natural features and other great houses. Moreover, there are shrines dotting the Chacoan landscape which mark special viewsheds. Stone circles along the cliffs of the canyon appear to mark special points for observing alignments among natural and architectural features of the canyon. More broadly, across the San Juan Basin, great houses were sited to create lines of sight between communities and also with natural features on the landscape. Many of the Chaco Canyon great houses seem to intentionally offer their occupants views of particular peaks or other landscape features. There are shrines at high places around the canyon with even wider views. There are also shrines on Huerfano Peak and many of the other high places visible from Chaco, suggesting that builders sought to create intervisibility among these many sites (Lekson 2015:201-203; Van Dyke 2007:91-97, 141-144, 155; Van Dyke et al. 2016). Soundscapes may also have been very important and intentional, with great houses sited to ensure that sounds such as the blowing of a conch shell trumpet would carry widely to an entire community (Primeau and Witt 2018).

Many outlier great houses, including some of the most far-flung communities, are in high places with clear views of Huerfano Peak just outside Chaco Canyon. Both Chimney Rock Pueblo in southern Colorado and Far View Pueblo at Mesa Verde have direct views of Huerfano despite their distance from Chaco (Lekson 2015:201-203). It is clear now that intervisibility was an important aspect of Chacoan great houses, and archaeologists have argued that this represents a way of recognizing shared identity, a method for displaying Chacoan power, or, possibly, a signaling system (Dungan et al. 2018; Fowler and Stein 1992; Kantner and Hobgood 2016; Kincaid et al. 1983; Lekson 2015:201-203; Marshall and Sofaer 1988; Nials et al. 1987; Roney 1992; Sofaer 2008b; Van Dyke 2007:184-190; Van Dyke et al. 2016). The landscape also serves to preserve memory; in some places, for example, builders of a new great house constructed a road to connect it to an older, already abandoned site, creating a "road through time" (Kantner 2006; Stein and Lekson 1992; Van Dyke 2003).

*The Landscape of Chaco Canyon*

Many archaeologists have come to understand Chaco Canyon, at its peak, as a ceremonial center and a destination for pilgrimage (Judge 1984, 1989; Van Dyke 2007:99-102, 114-115; Toll 2001; Renfrew 2001). This view of Chaco Canyon is supported by an increasingly sophisticated understanding of how people there used and reshaped the landscape for social and political ends.

At Chaco, many of the great houses line up to the cardinal directions, and their siting creates north-south axes across the canyon. In its final form, for example, Pueblo Bonito has a north-south alignment, with a north-south wall that was added in the later years of its occupation. The north-south alignments extend across the canyon; Pueblo Alto on top of North Mesa is almost due north of Tsin Kletsin atop South Mesa (Van Dyke 2004). Leading away from Pueblo Alto is the Great North Road, which heads straight north from the canyon. Lekson (2008:127) has argued that Chaco shows signs of a factional dispute about some element of cosmology that governs the orientation of cultural landscapes. He sees a conflict between those who wanted to follow a centuries-long tradition of orienting houses towards the southeast (what he calls solstitial orientation), while others wanted to follow a new, perhaps specifically Chacoan north-south orientation (which he calls cardinal). At Chaco, Pueblo Bonito began as solstitial, and so did Chetro Ketl. Pueblo Alto, however, followed the cardinal orientation, and around 1100, builders at Pueblo Bonito renovated it by installing a north-south wall and reorienting the rest of the structure around it (Lekson 2008:127).

Cardinal directions play a key role in modern Puebloan cosmology, with both physical villagescapes and cultural practices recognizing four directions as well as up and down. The layout of Chaco Canyon suggests to many archaeologists that the Puebloan ancestors who lived there centuries ago had similar ideas. Lekson (2015:163) describes north as "the Heart of the Sky" because it is the center around which the stars revolve. While the Ancient Puebloan people would have carefully watched the sun, moon and stars as they wandered across the sky, North was the only fixed point. North is also, for many Puebloans, the direction from which people migrated after their emergence into this world.

*Watching the Heavens*

While Chaco Canyon has many north-south alignments, building sites also incorporate astronomical phenomena. There are many features at Chaco that appear to be aligned to the summer and winter solstice sunrise. These include rock art features; most famously, the carefully designed solstice marker on Fajada Butte. Anna Sofaer and her colleagues have also argued that certain features at Chaco are aligned to the lunar cycle (Sofaer 2008a, 2008b; Sofaer et al. 2008). While close observation of the sun's annual cycle is an important feature of any agricultural society that relies on a clear understanding of the changing seasons, observation of the moon's complicated 18.6-year cycle has no benefit for farmers. Nonetheless, there is evidence that the lunar cycle, perhaps first recorded from the Chimney Rock great house, was indeed an important part of Chacoan astronomy (Lekson 2015:108-111; Malville 2008: 39-41, 78; Sofaer 2008a; Sofaer et al. 2008; Van Dyke 2007:109-110). There is even some evidence that the Chimney Rock great house was built on a schedule specifically tied to upcoming lunar standstill events (Eddy 1977: 44; Lekson 2015:195-196; Malville 2004b).

The Movement of Resources and Artifacts in the Chaco System

The few great houses that archaeologists have excavated had remarkable assemblages including vast quantities of turquoise, beautifully worked jet items, macaw skeletons, cacao, shell objects made of numerous species from the distant Pacific coast or Gulf of California, and huge caches of ritual objects such as prayer sticks (Crown and Hurst 2009; Crown et al. 2015; Gruner 2015; Mathien 1984; 2003; Neitzel 2003). One characteristic of Chaco Canyon is the import of resources and artifacts from great distances.

These kinds of objects attract the most attention, but perhaps more significant are the tens of thousands of trees that workers felled and imported to build the great houses. Chaco Canyon and its environs lack major timber stands, so the hundreds of thousands of enormous wood beams used to build the roofs of the Canyon great houses and great kivas were all imported from a great distance. Scholars have argued that workers carried some 200,000 trees into Chaco Canyon from some 110 km (70 miles) away (Windes and McKenna 2001, citing Dean and Warren 1983; Windes and Ford 1996). Isotopic analysis has also suggested that trees came from the Chuskas and other distant sources (English et al. 2001), although recent scholarship suggests that the precise sources remain ambiguous with the existing data (Drake et al. 2014). The enormous effort that went into cutting, preparing, and carrying those hundreds of thousands of beams is an important portion of the labor that went into building Chaco's great houses.

Corn also travelled. Archaeologists continue to debate how much corn could have been grown within the canyon and/or its environs, but mounting evidence suggests that the Chacoans imported at least some of their corn. Isotopic studies have demonstrated that some of the corn found in Chaco came from the Aztec region, the Tohatchi Flats and the Chuskas (Grimstead et al. 2015; Benson 2010, 2012, 2017). Some archaeologists have argued that the Chacoan sociopolitical system was based on redistribution of food (e.g. Sebastian 1992; Judge 1989). There are conceptual problems with this model, since a bad year in this region is likely to have equally devastated every community, but more importantly the evidence of redistribution simply has not materialized. The dark and hearthless back rooms of Pueblo Bonito can be imagined as vast storehouses for corn waiting to be redistributed, but the reality is that the no one has found evidence of stored corn. The pollen analysis work by Geib and Heitman (2015) discussed above indicates extensive use of maize in great houses, but it also suggests that maize was sometimes brought in relatively unprocessed, which would be inconsistent with long-distance transport.

Pottery in the Chacoan World

Pottery analysis is one of the most important tools Southwestern archaeologists have at their disposal. Households made pottery everywhere and archaeologists have found little evidence of specialization or standardization. Moreover, while design traditions were widespread across the region, there are significant technological differences in pottery made in regions just 50 or 60 miles apart. Building on years of petrographic analysis and other studies, archaeologists can now usually identify where each pot was made based on its temper, clay and surface treatment (Breternitz et al. 1974; Colton 1955, 1956; Goetze et al. 1993; Goff and Reed 1998; Hays-Gilpin and van Hartesveldt 1998; Hensler et al. 2005; Lucius and Breternitz 1992; Mills et al. 1997; Morris and Shepard 1939; Reed, L. 2006, 2008; Shepard 1954; Toll and McKenna 1997; Windes 1977).

Widespread movement of pottery was a particular hallmark of Chacoan influence. At Chaco Canyon itself, pottery assemblages include very large quantities of imported pottery, with imports often making up as much as 30% of an assemblage. Chacoan potters made some of the finest pottery, but the area lacks wood or other fuel required to fire high-quality pottery. So Chacoans rapidly depleted the available firewood. This may have been one reason why they increasingly turned to imported pottery over time, especially from the Chuska Mountains (King 2003; Shepard 1939, 1954; Toll 1985, 2006; Toll and McKenna 1997). Chuskan utilitarian pottery might also have been particularly desirable cookware due to its especially good thermal properties (Pierce 2005).

Lithics

The movement of lithic materials also characterizes the Chacoan world. People often used local materials, but there was also a significant import of materials from great distances. Many of the materials that were imported are highly distinctive, such as pinkish Narbona Pass chert from the Chuskas and yellow-brown spotted chert from what is now the Zuni region. Glassy obsidian infrequently occurs in Chaco assemblages from the Classic Bonito phase. It has been reported as being largely from Mount Taylor, a volcanic mountain to the south, but this sourcing may not be entirely reliable (Cameron 1984, 2001; Cameron and Sappington 1984). These materials might have been valued both as symbols of the places they came from (Ward 2004) and as part of a system of color symbolism, an important part of Puebloan thought, in which different colors are associated with seasons, cardinal directions, or kinship groups (Whiteley 2012).

Archaeologists have debated the role of turquoise at Chaco for many years. Large quantities of turquoise have been found at Chaco, and not just in the Pueblo Bonito burials, which were awash in turquoise beads and artifacts. Turquoise commonly occurs in ritual contexts, including as offerings in kiva niches and pilasters, at shrines and in other locations. Archaeologists have found evidence of specialized workshops for the manufacture of turquoise beads (Mathien 1997, 2001). Turquoise was also widely used across the San Juan Basin in this period (Windes 1992). The possibility that turquoise was exchanged with Mesoamerican people is discussed in the next section.

Mesoamerican Connections

Chaco scholars have long debated the extent to which Chacoans knew of Mesoamerican people and technologies or were in contact with Mesoamerican people. For many years, the evidence consisted primarily of a relatively small number of Mesoamerican artifacts at Chaco Canyon and its outliers. These included copper bells, macaws, shell objects, a few unusual ceramics and a small number of other objects with Mesoamerican designs (Nelson 2006). Some scholars have also argued for Mesoamerican influences in certain architectural features such as a colonnade at Chetro Ketl (Nelson 2006; Lekson 2015:89-90). Watson et al. (2015), conducting radiocarbon dating on scarlet macaw remains at Chaco, have found that some arrived quite early in Chaco's history, indicating that the connection to distant Mesoamerican polities may have been part of the early development of sociopolitical hierarchy at Chaco. Others have argued that the Mexican artifacts and connections are all quite limited and can be explained by down the line trading and communication with much less distant groups located in western Mexico (McGuire 2002; McGuire and Villalpando 2008). Scarlet macaws are native to tropical Mexico, but there is increasing evidence that people in the southwest bred them in captivity rather than repeatedly travelling long distances for birds (George et al. 2018).

Recent research on cacao has shifted the discussion of Mesoamerican influence. Researchers conducting residue analysis on Southwestern ceramics have demonstrated the presence of cacao in pottery from Chaco Canyon and elsewhere in the region (Crown and Hurst 2009; Crown et al. 2015; Washburn et al. 2011). Crown and Hurst (2009) first identified cacao at Chaco Canyon, in a special class of ritual vessels known as cylinder vessels that are nearly exclusive to a single cache in Pueblo Bonito. This suggests that ritual leaders used cacao in the great houses of Chaco. Subsequent research has found traces of cacao in quite ordinary pottery throughout the Southwest (Washburn et al. 2011), but the research continues (Crown et al. 2015; Crown 2018). Either way, the presence of cacao is certainly suggestive of a broad trade with people to the south that would have touched people throughout the region.

In any case, the Mesoamerican influences are significant enough to suggest that Chacoans knew about, emulated, and perhaps even interacted in limited ways with groups to the south, but there is significant debate about how much interaction there was and how far south it reached (Lekson 2015; Mathien 2003; McGuire 2002, 2012; Nelson 2006; Weigand 1992; Windes 1992). Those who favor models of Mesoamerican influence have often argued that Chacoan turquoise production was the basis for trade to the south (Harbottle and Weigand 1992:80-82; Howard et al. 2008; McEwan et al. 2006:27-28; Thibodeau et al. 2012:66; Washburn et al. 2011), while others question the idea of Chaco as a turquoise center (Hull et al. 2014). Turquoise sourcing is still an imperfect process, but the idea that turquoise found in Mesoamerican came from the Southwest is not currently supported by reproducible research (Thibodeau et al. 2015; Thibodeau et al. 2018).

Outlier Great Houses and Chacoan Roads

The late 11th century, which marks the peak of construction at Chaco, also saw the appearance of as many as 250 outlier great houses. These echoed the architecture and landscape features of Chaco's great houses and required similar investments of labor (Cameron 2009; Fowler et al. 1987; Kantner 2003; Kantner and Kintigh 2006; Lekson 2015; Mahoney and Kantner 2000; Marshall and Sofaer 1988; Marshall et al. 1979; Powers et al. 1983; Van Dyke 1999, 2007:169-180, 2008, 2009). Their significance is poorly understood, however. Some archaeologists have sought to explain them as nodes in a redistribution network (e.g. Sebastian 1992; Judge 1989), but evidence for redistribution activities has been elusive. Scholars continue to debate whether they represent expansion by a Chacoan polity out into a regional system or whether at least some of them instead represent efforts by local elites to emulate a Chacoan ideal (Brown and Paddock 2011; Cameron 2009; Jalbert and Cameron 2000; Kantner 2003; Mahoney and Kantner 2000; Lekson 2015; Marshall et al. 1979; Powers et al. 1983; Reed 2011; Safi and Duff 2016; Todd 2012; Van Dyke 1999, 2000, 2007, 2008, 2009).

Archaeologists are increasingly recognizing the variability among outliers in terms of their function. Only a few outlier great houses have seen significant excavation with modern archaeological methods. Of these, some have looked very much like Chaco's great houses in the sense that they also lacked extensive evidence of domestic use and instead appeared to be primarily ritual structures (Cameron 2009; Todd 2012). Others do not fit the Chacoan model of mostly empty ritual structures quite as well (Reed 2006; Safi and Duff 2016).

The recognition of the Chacoan road system in the 1980s stimulated great interest in how these features connected Chacoan outliers and the "regional system." Roney's 1980s Bureau of Land Management research on the roads concluded that they are not as long, as significant or as functional as was once believed (Roney 1992). Roads may have had mainly processional and ideological importance (Cordell 1996; Doyel and Lekson 1992; Fowler and Stein 1992; Judge 1989; Kantner and Kintigh 2006; Kincaid et al. 1983; Lekson 1991; Nials et al. 1987; Powers 1984; Rohn 2006; Roney 1992; Till 2017; Van Dyke 2007:144-167; Vivian 1997a, 1997b). Indeed, the application of the term "road" may itself be a misleading one for features that appear to have had little to do with the kind of transportation byway or commercial artery that the word implies. However, recent LIDAR work is revealing more extensive road segments than were previously known (Friedman et al. 2017).

<u>The Late Bonito Period and Chaco's Decline</u>

The Late Bonito Phase (1100-1140) followed a period of drought in the 1090s. While the Late Bonito Phase was a period of continued growth and construction, it was also a time of change and reorganization. Builders adopted the distinctly different McElmo architecture style, building new great houses and renovating old ones (Judge

1989; Lekson 1984:70-73; Van Dyke 2004). Some archaeologists see McElmo masonry as an effort by elites to continue building great houses with less labor and more limited resources (Lekson 1984:267-269; Van Dyke 2004) and as a way to connect to a Chacoan past while revitalizing social structures (Van Dyke 2004). Others have seen it as evidence of an influx of new people with a different construction technology (Vivian and Mathews 1964: 109-111; Wills 2009). This was also a period of other changes, including the switch from solstitial to cardinal alignments and a reduced emphasis on ritual (Judge 1989; Van Dyke 2004). At Pueblo Bonito, right around 1100, someone gathered 99 cylinder vessels into Room 28, placed them on a wooden shelf, and set a fire underneath them to destroy the room and, perhaps, deactivate these powerful objects (Crown 2018). Some archaeologists believe that drought events in the late 1090s may have shaken people's confidence in Chacoan social systems, beginning processes that later led to Chaco's end (Judge 1989; Van Dyke 2004). Chacoan ritual and leadership may already have been weakened by previous drought events and disenchantment with hierarchical relations at the canyon. Resource and soil depletion may have also played a role. Chaco likely also faced competition from its outlier at Aztec (Schelberg 1992; Sebastian 1992; Van Dyke 2004).

The latest wood cutting date for Chaco Canyon is an 1132 sample from Pueblo Alto (Judge 1989). Chaco's decline had complicated causes, but a major contributing factor was a period of severe drought that set in around 1130, likely causing crop failure (Vivian et al. 2006). Although the canyon had some limited habitation beyond 1140, archaeologists generally consider that date as the end of the Chacoan period, and much of the population shifted to the Mesa Verde region in the subsequent Pueblo III period (1140-1275). After 1130, some archaeologists believe that the center of Chacoan power shifted to Aztec (Brown et al. 2008; Judge 1989; Lekson 2015:72; Van Dyke 2004, 2007:209-213, 2009) While Pueblo III is beyond the scope of this dissertation, the decline of Chaco and the memory of it would have repercussions for centuries after.

Conclusion

This chapter has provided an overview of Chaco Canyon in the Pueblo II period, focusing particularly on its architecture, the development of social hierarchy and the contributions of landscape archaeology. In the next chapter, I turn to the Aztec community and its place within the Chacoan world, as additional background to the Aztec North research.

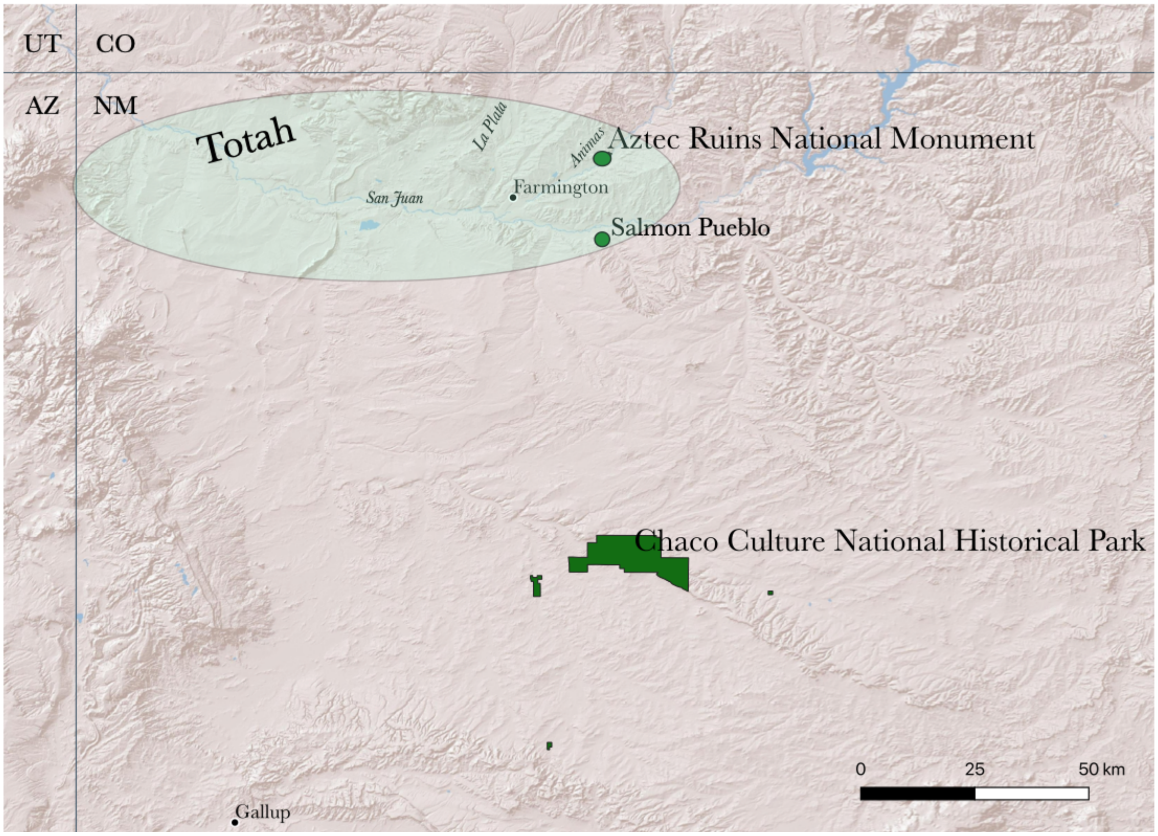
## Chapter 4. Aztec in the Chacoan World

The culture history of Chaco Canyon is crucial for understanding later developments at Aztec. But Aztec has its own story, one that may, for a time, have rivaled and even replaced Chaco's in the imagination of people throughout the Chacoan world. In this chapter, I summarize what we know about the Aztec community. I begin with an overview of the Totah region and the geography and ecology of the area around Aztec. Then I discuss the two other great houses, Aztec West and Aztec East and the Aztec cultural landscape as a whole. Finally, I introduce the Aztec North great house and previous research on it, ending with a summary of the research questions that my Aztec North research addresses.

### The Totah Region

The Aztec community lies some 100 km (60 miles) north of Chaco, in the Totah region. Totah is a Navajo word for the area of northern New Mexico that lies at the confluence of three rivers, the San Juan, the Animas and the La Plata. The name has been translated as "rivers coming together" (McKenna and Toll 1992:133) or "between the waters" (Linford 2000:206). The word captures one of the most important characteristics of the region: it is the place where three major rivers converge (see Figure 4-1). The modern city of Farmington lies at the center of the Totah. Archaeologically, the Totah includes Aztec Ruins on the Animas River to the east, the Salmon Pueblo to the south of Aztec on the San Juan, several sites on the south side of the San Juan River in Farmington, and numerous sites in the La Plata Valley to the west of Farmington.

**Figure 4-1 Map of the Totah. Drafted by the author using ESRI shaded relief map and ESRI shapefiles for NPS boundaries and state boundaries.**




Many archaeologists call this region the "Middle San Juan." That name sets up an immediate contrast with another region, the Northern San Juan (centered around Mesa Verde in southern Colorado). And indeed, archaeologists have tended to lump in the Totah with the Northern San Juan region. Because part of my goal is to tell this region's story on its own terms, rather than in opposition to other regions, I avoid the "Middle San Juan" terminology. Totah has its own issues as a Navajo word, but it is widely known and used among both archaeologists and the public and has a meaning that recognizes the importance of the three rivers to this region and conveys some sense of place.

A summary of Totah archaeology requires one important caveat, which is that a great deal of it has been lost. Ancient Puebloan people probably lived and farmed in the same places that have now become population centers. Modern Farmington in particular is a sprawling city, and its development likely buried or obscured a lot of archaeology. In the late 19th and early 20th centuries, the area around Aztec saw extensive agricultural activity, and even areas directly around the great houses were plowed, graded, and cultivated. Artifact collection and looting were endemic in the early modern history of the region, before people understood the impact of their activities. The situation may have improved on public lands but sites on private land are still subject to destruction, and it remains common to meet local people with large collections of artifacts at home.

Prior to about 1080, the Totah had a relatively small population. In the 900s, Totah people primarily lived in the La Plata valley to the west. Habitations were generally small and lacked public spaces or monumental architecture (McKenna and Toll 1992; Morris 1939). While some sites in the La Plata such as Morris 39 and Morris 41 did eventually have public architecture, archaeologists believe people built those structures in the post-Chacoan period (Toll 2008:323; Brown et al. 2013).

There are sites to the south of the San Juan River in Farmington. These include the Point, Tommy and Sterling sites, which also got their start in the 900s, and some of these sites had small great houses during the Pueblo II period (Wheelbarger 2008).

The Totah as a whole saw a construction boom in the late 11th century, both in small habitation sites and with the appearance of large Chaco-style great houses. Population in this period shifted to the east to the Salmon Pueblo and Aztec (McKenna and Toll 1992). The Salmon Pueblo, near modern Bloomfield, was constructed around 1090 (P. Reed 2008). Archaeologist Cynthia Irwin-Williams led extensive research at Salmon, though she passed away before fully publishing her work (Irwin-Williams and Shelley 1980). The Salmon Research Initiative, led by Paul Reed, re-analyzed and published much of Irwin-Williams' work, filling in many of the gaps concerning the Salmon Pueblo (P. Reed 2008, 2011, 2018; Reed (ed.) 2006; SPARC 2018).

<u>Aztec Ruins: Bottomlands and Terraces</u>

The largest outlier in the Totah is the Aztec community on the Animas River. In southern Colorado, the Animas runs through mountain canyons. From the vicinity of Cedar Hill, about 17 km northeast of Aztec, down to its confluence with the San Juan River, the Animas widens into a valley that has been described as ideal agricultural bottomlands (Richert 1964). At Aztec, cottonwoods and willow line the riverbank, and many animals, birds and fish rely on this riparian ecosystem. The modern irrigation ditch that runs behind Aztec West and Aztec East has the highest diversity of species within the Park (Salas et al. 2008:10), and this may well have been true of irrigation ditches in the past as well. Areas away from the river (and particularly the river terraces) have a more arid ecosystem (Richert 1964; Stein and McKenna 1988).

River terraces bound the valley. The river terrace to the north of the river sits about 30 meters above the valley (Stein and McKenna 1988:2). Some people have referred to it as a mesa, but that is a misnomer. The Animas Valley was the site of a glacier in the late Pleistocene, and as it melted, sediments washed downstream. The river and other forces subsequently reworked these sediments of mixed gravels and cobbles into the river terraces that stand there today (Price 2010).

The geology of Aztec differs from the sandstone canyonland of Chaco Canyon. Indeed, there is no sandstone available in the immediate area of the Aztec community; the nearest identified sandstone source is approximately 1.6 km to the north (Stein and McKenna 1988). By contrast, round, smooth river cobbles are everywhere. They litter the terrace, particularly along its drainages, so this was the material most easily at hand for people living on the terrace. Cobble alignments, mounds and circles are the main markers of human activity and architecture on the surface.

The terrace differs fundamentally from the agricultural lands below. It is drier and supports different plant and animal life from the riverine landscape. Cattle grazed the terrace in historic times, prior to the Park's expansion in the 1980s, so the plant life that exists today may be disturbed. Along the drainages, a pinyon-juniper mix can be seen that may be more representative of how the terrace once looked.

Life on the River

An obvious attraction of the Totah is water. The San Juan, La Plata and Animas Rivers are all perennial waterways that flow southward from the snowy mountains of Colorado. This is a very important difference between this region and Chaco, and the snow-fed Animas River was likely at least part of the reason why people built the Aztec Community here in the late 1000s and early 1100s, and perhaps also part of the reason Aztec persisted into the Pueblo III period while Chaco declined.

To agriculturalists like the Ancient Puebloans, living along a river that has ample water even in the heat of the summer could obviously make a huge difference, but this statement does require some caution. First, rivers like this can be dangerous and unruly, with spring floods, eroding banks and shifting watercourses. At Aztec, the great houses sit well away from the river, mitigating that risk. Secondly, the kinds of major droughts that impacted Chaco Canyon and the rest of the region would have been felt even here. In 2018, for example, a year of significant drought, there was more water at Aztec than at other places, but water levels were extremely low (Figure 4-2).

**Figure 4-2 The Animas at Aztec, in drought (August 2018). Photo by the author.**

Irrigation might have been an important factor at Aztec. Archaeologists have generally accepted that irrigation ditches might have existed (Lekson 2015:143; Lister and Lister 1987:4,87; Stein and McKenna 1988), but we have little understanding of the nature or extent of irrigation systems. An early resident of the modern town of Aztec wrote about seeing a two-mile stretch of prehistoric irrigation canal when he was a boy in the 1880s, running between Aztec West and the terrace (Howe 1947:9). National Park Service personnel and Soil Conservation Service personnel also reported the existence of a canal (Lister and Lister 1990:Ch. 3, n.19). A century and a half of modern agricultural use has obscured prehistoric features, and archaeologists do not know whether there was a system significant enough to make a difference in time of drought. If river levels dropped enough, even a sophisticated irrigation canal system might become useless (Lister and Lister 1987:87). And if irrigation facilities did exist, they also would have required significant maintenance during spring flooding and summer monsoons.

In short, archaeologists should be cautious about purely functionalist assumptions or idealizations about the siting of the Aztec community. There is no doubt that the river played an important role in the life of this community, but it never fully insulated the Aztec community from the environmental problems and related social pressures that affected people in other parts of the Ancient Puebloan world.

I also want to be attentive to all the other ways in which people would have experienced this river every day. Compared to people living in drier places, the easy access to water could have meant entirely different daily routines, eliminating the long walks for water that were a routine chore elsewhere. Water is not needed just for agriculture, of course, but also for drinking and cooking, for mixing mortar and adobe, for making pottery. Elsewhere, people had to carefully schedule construction tasks around the rainy season, but perhaps those restrictions were less necessary for people living on the Animas.

The river also would have had a massive impact on human health; studies have suggested that parasitic load in human coprolites was far smaller at the Salmon Pueblo, with its running river, than at other Ancient Puebloan communities that relied on more stagnant water sources (Reinhard 2006). The same is likely to be true of the Aztec community.

While there is no clear evidence of river transport in Ancient Puebloan communities, archaeologists have argued that logs for construction could be transported by floating them downriver from mountains to the north (Kane 2004). Aztec would have been well-positioned to receive such log transport.

For the residents of the arid Southwest, as for farmers everywhere, water has always been a preoccupation and a major focus of social, religious and political activities.

Snead (2006) has persuasively argued that the Pueblos have a deep symbolic relationship with bodies of water. For Tewa people, the place where their ancestors emerged into this world is a lake in Colorado; and other lakes and bodies of water seem to have a symbolic connection to that original emergence place. At many pueblos, it is common for initiates, secret societies and other individuals to make pilgrimages to springs and bodies of water. Lakes and ponds are also often associated with historical events, and the places serve to remind people of the events and their meaning. Bodies of water, even small stagnant ponds or reservoirs, may be important connections to other places, and just having a small spring or reservoir nearby may be significant to people's ceremonial lives. Watery places are also sometimes the homes of supernatural beings, from the Hopi water serpent to certain katsinas (Snead 2006). So while water is of course important to human life and agriculture, the relationship goes beyond this: "A muddy pool with frogs and cattails would have provided an occasional jar of water but, more important, would have represented an ideological link between that community and the wider world" (Snead 2006: 215).

Moreover, compared to the drier areas around it, the river at Aztec supports an entirely different and diverse ecosystem of bird, plant, amphibian, insect and mammal species. These would have made a difference not just to the food people could eat but also to the tools and materials they had available, the pests they shooed from their homes and fields, the shade they could escape to in the heat of the day, and the soundscape they lived in.

For the people who settled in Aztec, "the place where cattails grow," the relationship with the river and even the irrigation ditches very likely went far beyond the appreciation of an easy source of drinking water. Theresa Pasqual of Acoma Pueblo has recently written evocatively of visiting Aztec for the first time as a child, and stopping at the San Juan River on the way:

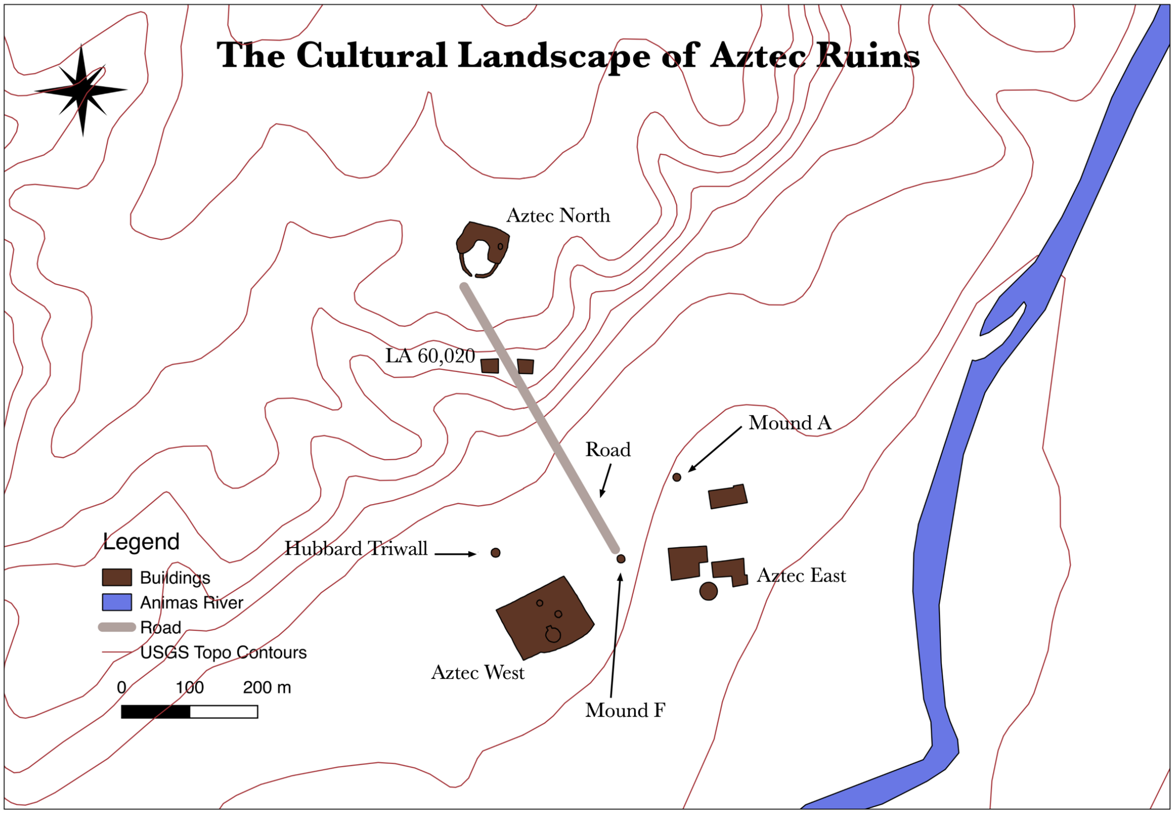
> [O]ne must always offer prayers to the water to ensure its continuation, and so my father made his way to the banks of the San Juan to give thanks. I got to touch the river that day. I remember its coolness, color, and taste, and I wished we could stay longer. On the drive to Aztec my father talked about how ideal the Middle San Juan region was for the ancestors to settle, near the place of the three rivers (San Juan, Animas, and La Plata)—how rich in blessings they must have been! (Pasqual 2018: 99).

<u>The Aztec Cultural Landscape Through Time</u>

Many Chacoan great houses are on or near sites that already had centuries of history. The choice to build in such places likely represented memory-making and a sense of continuity with the people who came before. Aztec is different; there is no evidence that people lived here before the period when the great houses were built (Brown et al. 2013; Lekson 2015:66; McKenna 1998; Stein and McKenna 1988; Turner 2015). So the people who came here in the late 11th century were newcomers, at least to this particular stretch of valley.

Each of the three great houses at Aztec has its own construction history, discussed in turn below. But they are not entirely separate entities; instead they are parts of a single whole, a formalized cultural landscape. The symmetries, possible roads and lines of sight suggest that the people who lived here a thousand years ago saw all of these buildings and elements as part of a greater whole.

**Figure 4-3 The Aztec Cultural Landscape. Drafted by the author based on Google Earth imagery; Lekson 2015: 62, Fig. 3.2; Stein and McKenna 1988: 20, Fig 20; Lister and Lister 1990: Fig. 9.4; and National Park Service 2007: 14.**




Aztec West and Aztec East, though different in layout and construction styles, appear to have been intentionally constructed as mirror images of each other. Halfway between them is a triwall structure known as Mound F. From there, a road segment is believed to run all the way up the terrace to Aztec North. [4] Along the way, the road runs between two roadside buildings on a lower terrace that can be seen as a sort of gatehouse structure (LA 60,020) but which also raises the mirrored symmetry of east and west up to the hillside. The Hubbard Triwall and Mound A, another triwall that is located directly

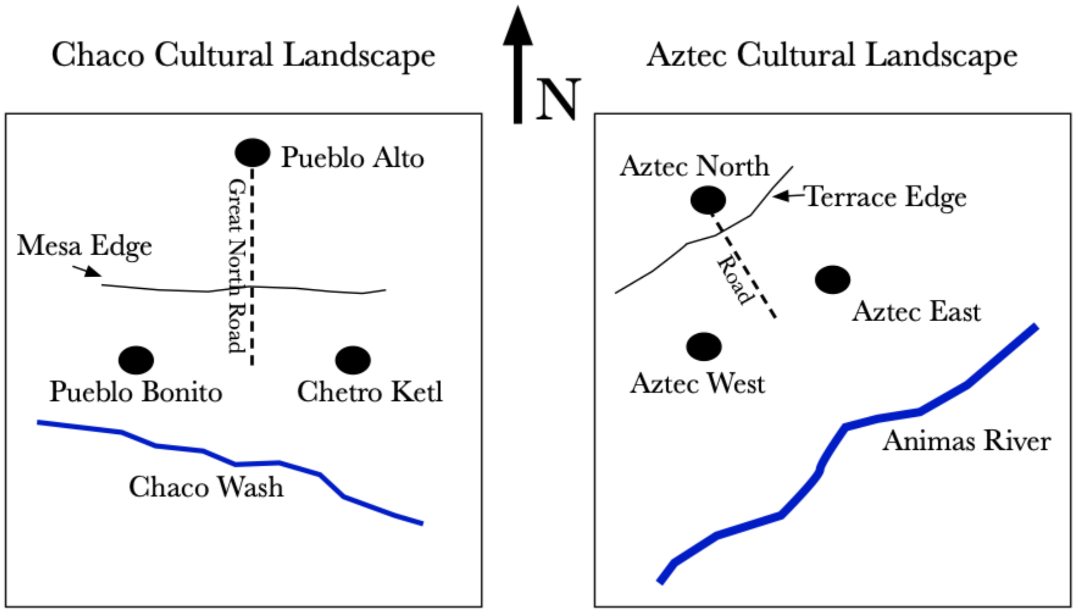
[4] There is another apparent road segment in the valley, which leads from the Animas River, between two large midden mounds, to Aztec East. This road does not seem to connect or align to the road segment that starts at Mound F (Reed et al. 2010: 33; Lori Reed personal communication 2018).

opposite of the Hubbard, are also incorporated into this symmetrical east/west relationship (Stein and McKenna 1988:68-69).

Lines of sight, and the lack thereof, are an important aspect of this planned landscape. A viewer standing at Aztec North cannot see either Aztec West or Aztec East. Walk to the edge of the terrace, however, and the valley great houses loom below. A viewer at LA 60,020, the "gatehouse" site on the terrace just below, can also see the valley great houses but not Aztec North. So this landscape incorporates not just high and low places, but also the visible and the not-visible. The three great houses are all site in relation to each other, but they are not all inter-visible. As Van Dyke (2007: 244-245) has noted at Chaco, a crucial element of the Aztec landscape is that portions of it are sometimes out of sight, invisible places that nonetheless retain a gravitational pull on all the other places.

The cultural landscape of Aztec nests within a broader Chacoan landscape as well. Van Dyke (2008, 2009) has argued that the way the three great houses are sited represents a reconstruction of a portion of the Chaco Canyon landscape, the triumvirate of Pueblo Bonito and Chetro Ketl inside the canyon and Pueblo Alto on the mesa top above. As shown in Figure 4-4, Aztec West represents Pueblo Bonito, Aztec East represents Chetro Ketl, and Aztec North stands in for Pueblo Alto. This "citation" (Van Dyke 2009:230) of the Chacoan landscape goes beyond just the buildings and incorporates the river, the cliffside, the road running straight up the center.

**Figure 4-4 Comparison of the Cultural Landscapes of Chaco Canyon and Aztec. Not to scale. Drafted by the author based on Van Dyke 2009:28, Figure 3.**




As Van Dyke (2004) has noted, there is one obvious difference between the two places: at Chaco, the tip of the triangle points due north. At Aztec, it points to the northwest. Chaco's great houses saw a changeover from the old solstitial (northwest to southeast) orientation to a new cardinal (north to south) orientation. So in Chaco, the new ways mostly won out. Meanwhile, Aztec's location was due north of Chaco, pointing to a cardinal orientation, but Aztec West and the rest of the landscape are clearly solstitial. So at Aztec, people chose to revive the old ways. For Lekson (2008:127), the choice to use the southwest solstitial orientation at Aztec, while the cardinal orientation had taken over at Chaco, is an indication of an ideological rift.

Interestingly, though, the Aztec North great house itself seems to be facing south while everything else in its landscape skews southeast, suggesting that Lekson's (2008:127) factional showdown may have happened after Aztec North was in place but before the other great houses were built.

Whatever the cosmological symbolism or ritual significance of this great house core, it was also surrounded by a sprawling community that archaeologists know very little about. On the portion of the terrace that is within the Park, there are dozens of small habitation sites both to the east and west of the great house. Stein and McKenna (1988) identified a total of 56 buildings. In addition to the many small house sites, the terrace also includes isolated great kivas and perhaps additional structures of great house size (Stein and McKenna 1988; Wharton and Adams 2017). None of these have been excavated. My previous study of ceramics from a few of the household sites has suggested that some of them might slightly predate Aztec North (Turner 2015). Not all of the known sites are within the Park's boundaries, and some are on private property. The owners of the Dein site, which is a part of the terrace community but outside the Park's boundaries, recently donated it to the Archaeological Conservancy (Archaeological Conservancy 2018). In the valley, agricultural activity has obscured much of the surrounding community, but small habitation sites stood all around the great houses. Surely vast areas of surrounding farmland were required to support this community as well.

In short, the Aztec community sits within a complex and nested series of landscapes both physical and cosmological. There is a local, very concrete symmetry of great houses that is part of a wider community. But this landscape also incorporates a cosmology of cardinal directions, of high places and low, visible and invisible. And then there is Aztec's very intentional reproduction of the remembered landscape of Chaco Canyon.

Aztec West

With over 400 rooms and segments that were three stories high, Aztec West is the largest great house outside of Chaco Canyon (Brown et al. 2008). Like many other great houses in the Chacoan world, Aztec West is bracket-shaped, with an arc of rooms at the south end enclosing its plaza.

Beginning in 1916, archaeologist Earl Morris excavated large portions of the Aztec West great house. The assemblages he uncovered included counterparts of some of the most spectacular ritual and prestige goods of Chaco Canyon (Morris 1928; Webster 2011). The artifacts included items such as turquoise objects, effigy pots, a Mexican copper bell, macaw skeletons, and pottery from around the region. Morris shipped most of the artifacts from his excavations to the American Museum of Natural History, and only in recent years have archaeologists begun to systematically study them.

There are 1543 tree-ring dates from Aztec West and East (Brown et al. 2008: 233). The earliest cutting dates at Aztec West are from Kiva L, a large blocked-in kiva centered in the northern part of the great house. These date to the late 1090s, with one outlying 1070 date that might represent wood reuse. Brown et al. (2008) believe that builders may have let these Kiva L timbers season for several years after cutting, with construction actually beginning around 1100. Workers cut more wood and apparently stockpiled it around 1105, with construction of Aztec West intensifying in 1110. Construction was largely complete by 1120 (Brown et al. 2008; Brown and Paddock 2011).

Archaeologists have argued that the construction of Aztec West involved work by both locals and Chacoans (Brown et al. 2008; Brown and Paddock 2011). The evidence for this includes the use of local vernacular traditions of adobe and jacal construction, contemporaneously with fine Chacoan-style masonry. Archaeologists have also argued that Chacoan builders who understood the low-visibility features of Chaco Canyon great houses must have been involved (Brown et al. 2008). Aztec West has massive footer trenches under its walls, resembling those at Chaco Canyon. In addition, it has core and veneer walls with masonry wall cores, like the ones that were being used at Chaco Canyon by that time. The argument is that casual visitors to Chaco might have observed and reverse-engineered many aspects of great house architecture, but they would not have known about these low-visibility features. Other evidence for the presence of Chacoans at Aztec West comes from artifacts, which are not just similar to artifacts at Chaco but in some cases are so alike in their technological features as to suggest that people with the same training must have made them (Brown et al. 2008; Brown and Paddock 2011; Gruner 2015; Mattson 2015, 2016; Morris 1928; Reed 2011; Washburn and Reed 2011; Webster 2008, 2011; Jolie and Webster 2015).

Earl Morris believed that Aztec West was abandoned at the end of the Chacoan period, and reoccupied after a hiatus, but more recent researchers see a continuous occupation (Adams et al. 2017; Brown et al. 2008; Brown and Paddock 2011). Brown et al. (2008) argue that Morris was deceived by a layer of sterile soils, which he believed to represent the hiatus, but which in fact was clean soil that occupants brought in to stabilize the walls. Hiatus or not, it is clear that people lived at Aztec West well into the 1200s. During the 13th-century occupation, known as the Mesa Verde phase, Aztec West's character changed, with people building smaller structures and subdividing the grand rooms of the great house for domestic use (Brown et al. 2008; Brown and Paddock 2011).

In recent years, valuable research has been done on museum collections and archival records relating to Aztec West. Laurie Webster and her colleagues are doing important work on the vast quantities of perishables from Aztec West (Webster 2008, 2011; Jolie and Webster 2015). Hannah Mattson (2015, 2016) has analyzed all of the ornaments Morris excavated at Aztec West and compared them to ornaments at Pueblo Bonito. Washburn and Reed (2011) apply ceramic analysis and design-symmetry analysis to the question of whether Chacoan potters were working at Totah sites including Aztec West. Reed and Turner (2019) present new data about black ware pottery from the mid-13th century that harkens back to Chacoan traditions. Crown et al. (2015) report the presence of cacao in three mugs from Aztec West. Erin Baxter's (2016) reexamination of Morris's records and photographs has led to valuable new interpretations, including new understandings of the burials of Aztec West. Durand et al. (2010) have analyzed human remains from the Totah, finding that, based on dental traits, individuals from Aztec West and Pueblo Bonito are nearly indistinguishable from each other, and show far fewer similarities to individuals from either Salmon Pueblo or the Tommy site in Farmington.

<u>Aztec East</u>

Aztec East, another massive great house with some 350 rooms, lies right next to Aztec West in the valley. Portions of Aztec East were also three stories high. It has had far less investigation than Aztec West. Morris (1939) conducted only limited excavation there. Roland Richert (1964) excavated more extensive portions later. Reed et al. (2010) have recently conducted survey investigations focused on the landscape surrounding it. The builders of Aztec East used McElmo style, a different kind of masonry, with much blockier sandstone pieces. Construction at Aztec East started around 1119 or 1120, but it proceeded at a much slower pace through the long period of drought between 1140 to 1200. Portions were not finished until the late 1260s (Brown and Paddock 2011; Richert 1964). There is also evidence that builders used Ponderosa pine beams for construction prior to 1140, but after that date they switched to locally-available juniper. Timber may also have been scavenged from Aztec West (Brown and Paddock 2011). Despite this evidence of resource restrictions in this period of region-wide drought, Brown and Paddock (2011:250) see Aztec East as a place where "the struggle continued to make Aztec great and to revive the glory days of the Bonito phase."

Some archaeologists believe that the center of power shifted from Chaco Canyon towards Aztec in the late 12th and early 13th century (Brown et al. 2008; Judge 1989; Leblanc 1999; Lekson 2015:72; Van Dyke 2004, 2007:209-213, 2009). Lekson argues that Aztec lies on the "Chaco Meridian" and became the center for a post-Chacoan polity that directed much of the violence which spread throughout the Northern San Juan in the years after Chaco's demise (Lekson 2002, 2015:164). Van Dyke (2009) sees Aztec as a competitor with Chaco Canyon in the late Chacoan period, but rather than becoming a long-lasting, autocratic power in the post-Chaco period, she argues that it became a largely domestic habitation site.

LA 60,020

One aspect of the cultural landscape that has not been sufficiently studied is the important site of LA 60,020, which lies on the hillside just below Aztec North and consists of two small cobble buildings. Stein and McKenna (1988) described the two buildings as McElmo style structures with 20 and 30 rooms, respectively. The ancient road segment up to the great house runs between the two structures. These small buildings bring the duality of Aztec East and Aztec West up onto the terrace, while also perhaps guiding people to the correct processional approach for the unseen Aztec North great house above. The McElmo construction is consistent with that of Aztec East. My MA thesis reported a mean ceramic date of 1120±55 for these two small buildings (Turner 2015:53), suggesting that they were built in the same time period as Aztec East.

Triwall Structures

Aztec is known for its round multiwall structures, which are similar to kivas but with two or three concentric walls surrounding the central kiva. Such structures occur mostly in the Northern San Juan (where many of them are D-shaped rather than round) and the Totah. Chaco Canyon has only one, at Pueblo Del Arroyo. Aztec has more of them than any other locale—five, to be specific—and is one of only two places that had more than one. Three of these are triwalled (Glowacki 2015; Reed et al. 2010; Stein and McKenna 1988). Vivian (1959), who excavated the Hubbard Triwall assigned a Pueblo III date to it, but Lekson's (1983) reanalysis of the data led him to date its construction to shortly after 1130. Lekson has argued that multiwall structures developed at Chaco Canyon as a way of revitalizing the ceremonial system (Lekson 1983), but the large number of triwalls at Aztec suggests the possibility that they were a local innovation there (Glowacki 2015).

The significance of these structures is poorly understood, but there does seem to be some difference between circular ones, such as those at Aztec, and the D-shaped ones that exist in the Mesa Verde area. "The association of circular multiwalled structures with Aztec and great houses, in general, implies some continuity with Chacoan traditions, even if an innovation, and those villages with circular multiwalled structures likely maintained connections with Aztec and the developing Aztec-Chaco ideology" (Glowacki 2015:80). The limited excavations that have occurred at multi-wall structures have suggested both domestic and ritual activities. Cooking pots and mealing bins found at D-shaped structures at Sand Canyon Pueblo and Goodman Point Pueblo are in contrast with the remains of birds of prey, implying ceremonial activity, at Yellow Jacket Pueblo (Glowacki 2015).

## Aztec North

Aztec North today is best described as a large mound. There are some visible cobble alignments that outline a large D-shaped great house with an enclosing room arc. Other cobble alignments hint at the existence of rooms. Stein and McKenna (1988), who surveyed the site prior to its acquisition by the Park in the 1980s, estimated that it may contain as many as 110 rooms. The site includes a number of features, such as possible kivas and a number of cobble walls and berms that appear to enclose the site, as shown on the site map (Figure 5-1).

There are few visible pieces of sandstone on the surface, and adobe is also not visible on the surface of the site. Prior to our excavation, archaeologists generally believed that the construction consisted of cobble-reinforced adobe, rather than the sandstone of Aztec West and Aztec East. This suggested it was very unusual among Chacoan great houses. The only other known adobe great house from the Chacoan period is Casa Quemada at Bis sa'ani, near Chaco Canyon. Casa Quemada has been dated to 1126-1133 (Breternitz and Marshall 1982), which is potentially several decades later than Aztec North.

## Viewsheds

Archaeologists working in the Chaco region have emphasized the importance of viewsheds and intervisibility within the Chacoan system, with some archaeologists arguing that sites were linked by a signaling network, sometimes with repeater stations. Thus, archaeologists consider views towards Chaco and Huerfano Peak to be particularly significant (Fowler and Stein 1992; Kantner and Hobgood 2016; Kincaid et al. 1983; Lekson 2015:201-203; Malville 2004a: 11; Marshall and Sofaer 1988; Nials et al. 1987; Roney 1992; Sofaer 2008; Van Dyke 2007:97,233; Van Dyke et al. 2016).

The southward views from Aztec North and the terrace in front of it are not particularly wide. There is an excellent local view across the broad Animas River Valley, but the terrace on the opposite side of the valley blocks the view further south. However, to the east, Aztec North has a beautiful view of the Knickerbocker Peaks, a pair of hills that visually dominate the horizon. Archaeologists have previously discovered a shrine site on top of the Knickerbocker Peaks and have established that it has a clear view of Huerfano Peak (Hastings 1960: 72; Van Dyke et al. 2016, supplementary information: 7). So, like other great houses, Aztec North was one "relay station" away from a view of Huerfano Peak.

To the west, the city of Farmington, some ten miles away, is clearly visible. The Shannon Bluffs in Farmington, the site of several Chaco-era communities, are visible. In the distance beyond are the Chuska Mountains. Northwards, the view from Aztec North is sweeping, with the snow-capped La Plata Mountains and San Juan Mountains visible on a clear day.

While the view to the Knickerbocker Peaks supports the possibility that Aztec North was tied into the supposed Chacoan signaling system, the great house's actual viewsheds are far less impressive than those of many other great houses, at least if looking south. The northward view is significant, perhaps suggesting that looking north was a more important role at Aztec North. A northward focus might also be implied from the road that leads up from the valley, and which seems to continue beyond Aztec North, leading northwest towards the Holmes Group or other sites in the La Plata valley (Stein and McKenna 1988:73, 80).

Previous Research on Aztec North

Aztec North was entirely unexcavated before this fieldwork, and archaeologists had done only limited research on the surface remains. Stein and McKenna (1988:viii) report that Aztec North is not mentioned anywhere in Earl Morris's notes, although it is hard to imagine he did not know about it. Although it had been previously recorded, the site entered archaeologists' consciousness in the 1980s when John Stein and Peter McKenna surveyed the site, along with the rest of the terrace (Stein and McKenna 1988). As Stein and McKenna (1988:1) explain, their survey was motivated by the National Park Service's desire to "evaluate the adequacy of the present monument boundaries." On October 28, 1988, Congress authorized the Park Service to purchase land abutting the Park's western, eastern and northern borders, expanding the Park significantly to its current size of about 317 acres (Lister and Lister 1990). This expansion included the terrace where Aztec North and its community stand.

Park staff conducted an additional survey, with GIS mapping and surface artifact collection (Adams and Wharton 2017). Gary Brown and his colleagues conducted architectural studies based on the surface features of the site (Brown et al. 2013; Brown and Paddock 2011). Nondestructive geophysical testing by Steve Lekson and a University of Colorado team in 2004 proved inconclusive, due in part to soil conditions and perhaps in part to the electric pole that stands in the center of the site (Lekson 2004).

Prior to this fieldwork, the only available evidence for dating Aztec North were pottery sherds collected from the surface. Peter McKenna analyzed sherds from across the terrace in the 1980s and concluded, using a ceramic group method, that the community as a whole dated to sometime between 1090 and 1150 (Stein and McKenna 1988). I also analyzed sherds from the surface of Aztec North and, using quantitative ceramic mean dating, I found a mean ceramic date of 1104±39, meaning that Aztec North was likely occupied for some period of time between 1065-1143 (Turner 2015:53-54). That date range makes it very possible that Aztec North was the first great house of the Aztec community, possibly predating the main construction boom at Aztec West (1110-1120) by a decade or more (Turner 2015; Stein and McKenna 1988). However, mean ceramic dating is not precise enough to definitively demonstrate that Aztec North predates Aztec West.

Theorizing Aztec North's Adobe

For archaeologists writing about Aztec North prior to excavation, the big question had been who built it, given its unusual construction. Its chronology is important to this debate. Archaeologists had offered three explanations for Aztec North's unusual architecture. First, Brown and his colleagues, argue that Aztec North was constructed by locals emulating Chacoan ways a generation before Aztec West (Brown and Paddock 2011; Brown et al. 2013). Van Dyke (2008) also sees Aztec North as an early structure, but she views it as an expedient Chacoan structure, a great house built by Chacoans before they could muster the local labor force or the building materials needed for a masonry great house. Plastered in white like other great houses, Aztec North would have looked the part without requiring as much effort. Lekson, by contrast, suggests the possibility that Aztec North was a late construction of "poured adobe" (2015:72). For him, "it is tempting to think of it as late, a transition from Chaco's stone to Paquimé's mud" (Lekson 2015:72). These three hypotheses were all based on surface remains, so our 2016 excavation was designed partly to test them by developing new data about its construction, who built it and when.

## Conclusion

This chapter has been an overview of research at Aztec. Focusing on each element of the natural and built environment that make up its elaborate landscape, I have summarized what is known about this remarkable community, especially in the Pueblo II period. At the Aztec West great house, Earl Morris and other researchers have revealed a structure with low-visibility features that indicate it was built with the assistance of Chacoan builders during the Late Bonito Phase. The Aztec East great house, built at the end of the Late Bonito Phase and into the Pueblo III period, has also seen limited excavation. Other elements of the Aztec landscape include triwall structures, road segments, and a gateway structure on the side of the terrace. All of these are situated within a structured cultural landscape that has its apex at the Aztec North great house. Although archaeologists have researched the surface remains and written about Aztec North based on them, the site was unexcavated prior to our 2016 archaeological testing. Beginning in the next chapter, I report on that testing and what it has revealed about Aztec North.

## Chapter 5. Field Methods

The two previous chapters have provided background on the Chacoan culture history of this region and what was known about Aztec North prior to excavation. In this chapter, I detail the field methods used in the June 2016 test excavation. I begin with some background about how this project came about. I then address our excavation methods and the location of our four study units. Finally, I summarize the documentation we used in the field. I address the methods used subsequently for artifact analysis in the next chapter.

<u>Project Background</u>

This project followed over a year and a half of discussions with the National Park Service. Aztec Ruins National Monument announced a new management plan in 2010 that would include a new visitor trail up to Aztec North. The Park announced this initiative in furtherance of its mission to share cultural heritage features with the public (National Park Service 2010:54-62). However, with no standing walls, there is little to see, and park staff had little information to offer to visitors. In addition, the interpretive trail would bring many new visitors to the terrace and lead to some risk of people leaving the trail and gravitating towards concentrations of artifacts (National Park Service 2010:54).

In this context, Dr. Van Dyke and I proposed limited archaeological testing. Our testing was explicitly tied to the trail, which is planned to run just north of the great house. Our project would explore the northern wall of the great house for interpretive purposes and to determine more precisely the outline of the building. We would also mitigate future damage by exploring the middens to the south and a previously disturbed portion in the east wing of the great house, three areas that would be likely to attract the attention of visitors who might leave the trail.

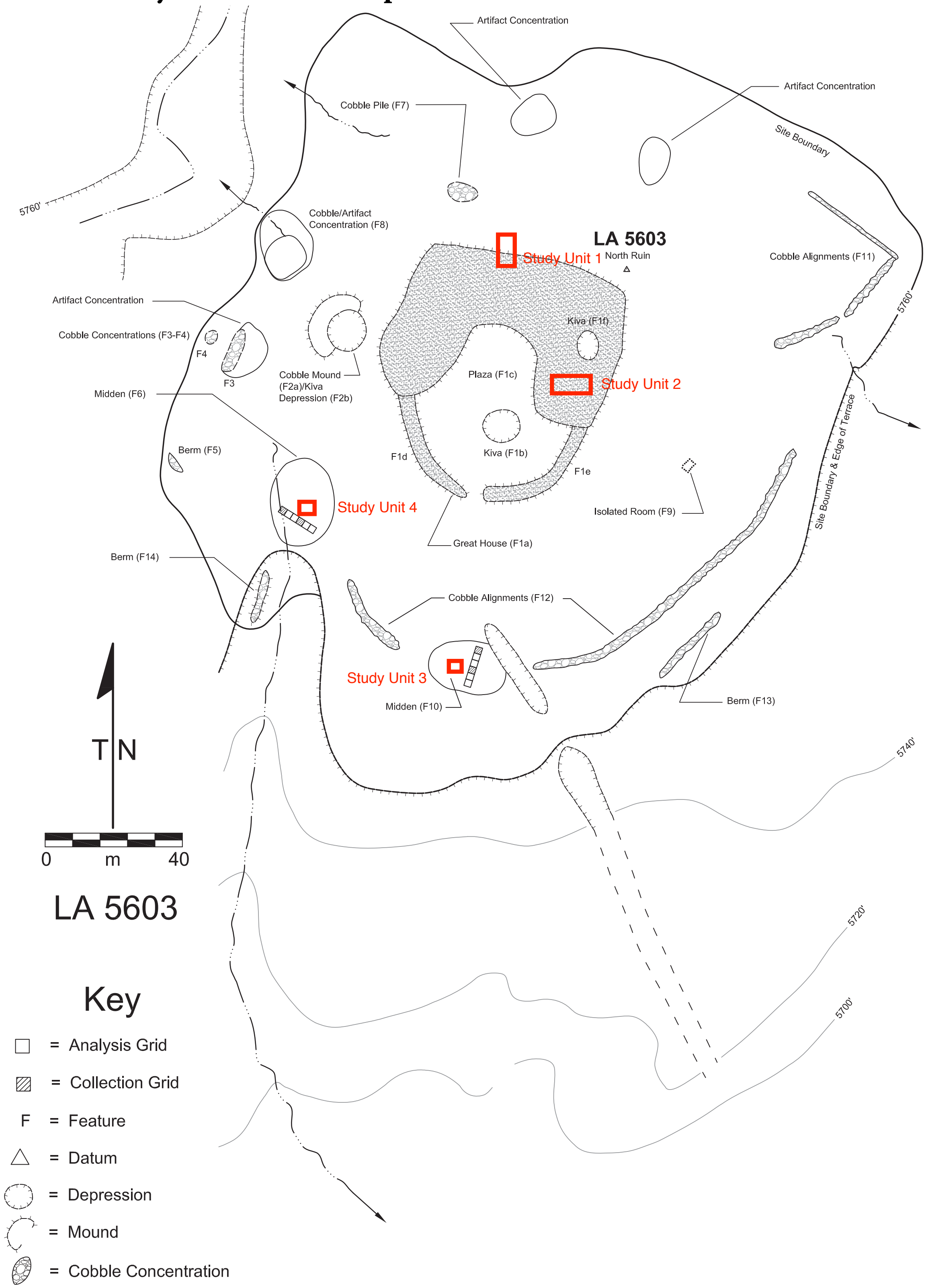
After a review process and tribal consultation, the Park Service issued a permit under the Archaeological Resources Protection Act of 1979. The crew worked closely with the archaeologists and staff of the Park throughout the project. Park personnel monitored the crew's progress and provided much of the equipment used for the excavation. The core crew consisted of eight professional archaeologists, mostly from Binghamton University. Several other visiting archaeologists came to lend a hand at various times.

Fieldwork Overview

The fieldwork took place from May 31, 2016 to June 30, 2016. The Park's archaeologists provided an existing field manual. Dr. Van Dyke and I adjusted it slightly and distributed a copy to each crew member. The following summarizes the most relevant points of our excavation methods.

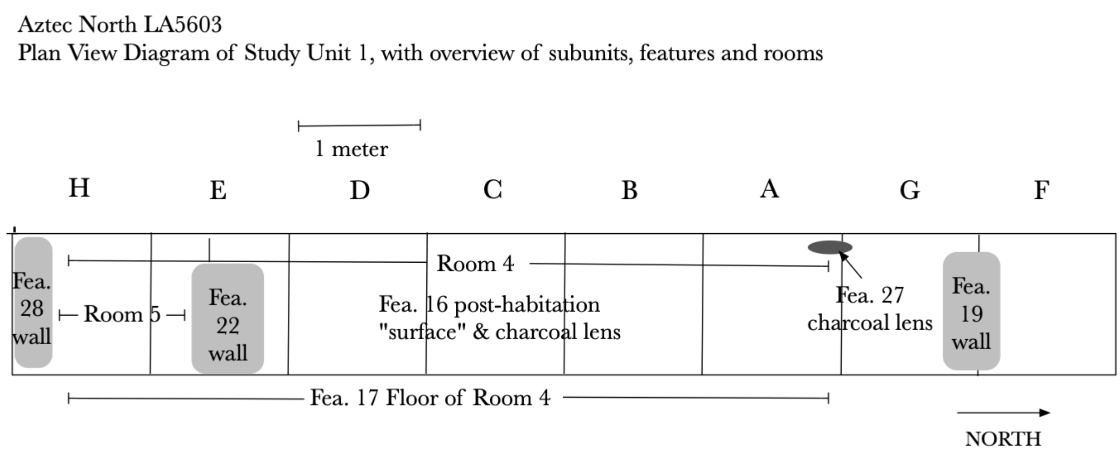
The subsurface testing was limited in scope, as dictated by our permit and our limited research questions. We excavated four study units with a total surface area of 18 square meters. The locations for these units were carefully chosen to address my research questions. Figure 5-1 is the National Park Service's official site map of Aztec North, with the great house in the center, and with boxes marking the approximate locations of the four study units.

**Figure 5-1 Aztec North site map, showing locations of Study Units 1-4. Study Units added by author to site map from National Park Service 2007:14.**



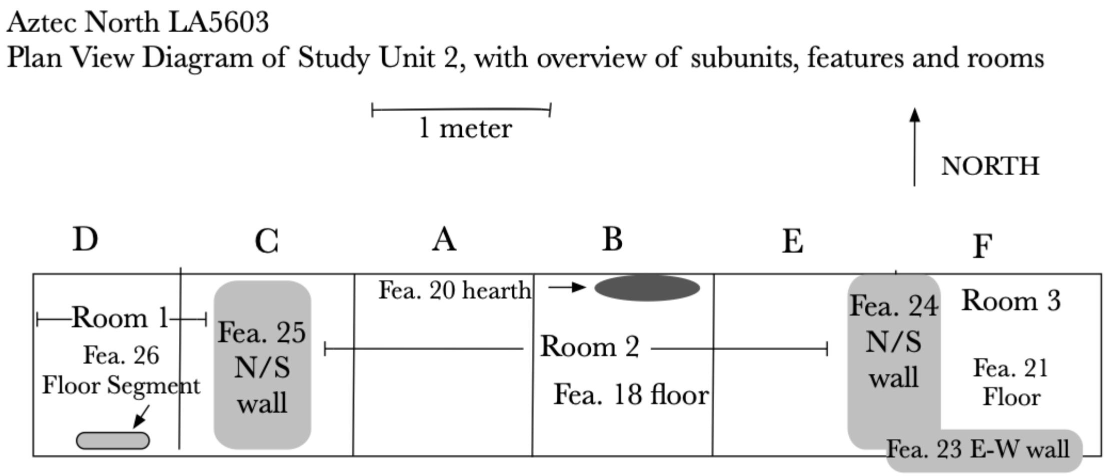
Study Unit 1 consisted of a north-south linear series of 1x1 subunits along the back of the great house mound, creating a 1x8 meter trench perpendicular to the back of the great house. The intent was to locate and study the back wall of the great house, but we were uncertain where we would find that wall. We began partway downslope and then added additional 1x1 units up- and down-slope. We labeled the eight subunits A-H, in order of excavation (Figure 5-2). The deepest portion of the trench, upslope, was 1.64 meters deep.

**Figure 5-2 Plan view diagram of Study Unit 1 with the approximate horizontal locations of subunits, features and rooms.**




Study Unit 2 consisted of an east-west linear series of 1x1 subunits in the eastern wing of the great house, creating a 1x6 meter trench. Dominating this area of the site was a depression suggesting that modern looters had previously disturbed rooms of the great house. We selected this location to understand the damage that looters might have done and, at the same time, to get a view of the architecture in this part of the great house. The complete study Unit 2 was a 1x6 meter east-west trench. Its deepest portion was about 1.5 meters deep. The subunits were labeled A-F in order of excavation (see Figure 5-3).

**Figure 5-3 Plan view diagram of Study Unit 2 with the approximate horizontal locations of subunits, features and rooms.**




Study Units 3 and 4 were both in the middens to the south of the great house (see Figure 5-1 above) and were intended primarily to address our research question about subsistence and daily life at the site. The middens are marked on the Park's official site map as features. Our Study Unit 3, in the eastern midden, is in Feature 10 on the Park's site map. Our Study Unit 4, the western midden, is in the Park's Feature 6.[5] Stein and McKenna (1988:22) noted the lack of significant middens at the site. Nonetheless, there are clear surface artifact concentrations at the middens, including pottery and obsidian, and these surface scatters guided our placement of the two study units.

In Study Unit 3, the midden deposits ended and sterile soil began about 30 cm below the modern ground surface. Because the midden was so deflated, we only excavated a single 1x1 meter unit in Feature 10.

Study Unit 4 was an L-shaped set of three 1x1 meter units in Feature 6, the midden area to the southwest. Similar to Study Unit 3, the midden deposits in Study Unit

[5] The field paperwork from our project erroneously refers to this midden (Study Unit 4) as Feature 8 throughout. I have decided not to try to correct the paperwork and potentially introduce more confusion.

4 were only about 20 centimeters deep. We had reached sterile in two of the 1x1 units (Study Unit 4A and Study Unit 4B) and were close to the same level in Study Unit 4C when excavators uncovered a human tooth. We stopped excavation in the midden at that point and, after documenting our work, replaced the tooth before backfilling the unit. Despite the shallow deposits, the middens produced a wealth of artifacts that will be discussed elsewhere.

Datums

Although it had not previously been excavated, Aztec North did have a master datum from previous survey studies. Unfortunately, the datum's position well beyond the northern edge of the mound meant that it was too low to be useful for measurements on top of the great house mound or to the south of the mound. We therefore began by establishing a new main datum point on top of the mound, back-sighting from this datum to the existing one. We used a Total Station to lay out our excavation units and to take pre-excavation surface elevations.

Crew members did all excavation and backfilling by hand. We primarily used shovels and entrenchers for the post-occupation fill and wall fall, but we switched to trowels when we reached sensitive contexts such as floors and standing wall portions or encountered fragile artifacts.

We excavated in 1x1 meter sub-units, using arbitrary 10-cm levels except where there were natural stratigraphic levels. We excavated all units down to sterile soil, continuing below floors and into the subfloor to ensure that we had reached sterile soil. Study Unit 1 and Study Unit 2 were each about 1.5 meter deep at their deepest points.

We screened all deposits. Most of the deposits we removed were either wall fall or post-occupational fill, and we screened these with ¼ inch mesh. However, for the midden deposits, floor fill, and other significant cultural features, we used ⅛ inch mesh.

Each study unit had its own sub-datum, marked with rebar. We initially placed our Study Unit 1 sub-datum at too low an elevation to be of use once we moved further up the mound, so we established a secondary sub-datum for Study Unit 1 as well.

Documentation

We documented our excavations using forms only slightly modified from those developed by the Park's archaeologists, so as to make our records as consistent as possible with previous excavation there (in particular, a recent room fill reduction project at Aztec West).

The documentation used a Provenience Designation system common in Southwestern archaeology, in which every individual level (or other lowest-level unit of space) is assigned a Provenience Designation (PD) number. Because PD numbers are "checked out" as new levels are opened across the dig site, the PD numbers in any given unit are not necessarily sequential.

On each PD form, we assigned artifact classes a Field Specimen (FS) number. For example, PD 7 might have an FS1 for Lithics, FS2 for Ceramics and FS3 for Bulk Soil Sample. Artifact bags have both the PD and the FS number written on them, so that any particular artifact bag has a unique identifier consisting of its PD and FS. We point located significant artifacts found *in situ*.

We recorded features in a Feature Log. Several features— notably the middens and the "looted room"— had already been given identifiers during previous projects. The feature numbers were included in the Park's site map, Figure 5-1 above. We kept these feature numbers and added new features as identified. Floors, walls, surfaces and possible hearths all received feature numbers in our Feature Log (Table 1).

**Table 1 Feature Log**

**Aztec North (LA5603) Excavated Features**

| Feat | Study Units | Type | Surface/Wall | Description |
|---|---|---|---|---|
| 8* | SU4 | Midden | | |
| 10 | SU3 | Midden | | |
| 15 | SU2 | Looter Hole | | |
| 16 | SU1 | Floor | Surface | northernmost floor- between the "north wall" (fea. 19) and the middle wall (fea. 22) |
| 17 | SU1E, H | Surface/Room | Surface | southernmost floor- between the southernmost wall (fea. 28) and the middle wall (fea. 22) |
| 18 | SU2A, B, C, E | Floor | Surface | long floor through the center, between the two N-S walls (Fea. 24 & 25) |
| 19 | SU1A, B, C, D, E | "North Wall" | Wall | northernmost wall in SU1- the one without a footer |
| 20 | SU2A, B | Possible hearth | surface | in Fea. 18 the central floor |
| 21 | SU2F | Floor | Surface | easternmost floor, between 24 the N/S wall on the east end, also associated with 23 the E/W wall |
| 22 | SU1E | Wall | Wall | the middle wall, between fea. 16 and 17 |
| 23 | SU2F | Wall | E/W wall | E/W wall, the one with the visible adobe core |
| 24 | SU2F | Wall | N/S wall | N/S wall near the east end of the unit, with coping |
| 25 | SU2C | Wall | N/S Wall | N/S- west end of our SU2, intersects fea 18 |
| 26 | SU2D | Surface | surface | fragmentary floor west of Fea 25 (found by Gary Brown) |
| 27 | SU1A | Possible hearth | surface | possible ash dump in Fea. 16 |
| 28 | SU1H | Wall/footer | Wall | southernmost wall at end of unit, edge of the floor (Fea 17) |
| | | | | **The feature we recorded as Feature 8 is actually the Park's previously recorded Feature 6* |

We also kept a Room Log. The precise relationships of our walls and floors were ambiguous until very late in the fieldwork, so we were uncertain about which surfaces represented discrete rooms. Therefore, we did not widely use Room Numbers in our paperwork. However, we assigned Room Numbers near the end of the fieldwork and they appear in the final documentation of the site, and I use them here. There were two rooms in Study Unit 1 and three rooms in Study Unit 2. Table 2 is our Room Log.

**Table 2 Room Log**

**Aztec North (LA5603) Excavated Rooms**

| Room# | Description |
|---|---|
| 1 | Westernmost room in SU2, associated with Fea. 26 (floor) and Fea. 25 (wall) |
| 2 | Middle room in SU2, associated with Fea. 18 (surface), 25 (western wall) and 24 (eastern wall) |
| 3 | Easternmost room in SU2, associated with Feature 21 (surface) and 24 (eastern wall) and 23 (southern wall) |
| 4 | Northernmost room in SU1, associated with Feature 16 (surface), Fea 19 (north wall) and fea 22 (surface) |
| 5 | Interior (southernmost) room in SU1, associated with Fea. 17 (surface), Fea. 22 (north wall) and Fea. 28 (South wall) |

In Study Unit 1, where complex but clear strata could be seen quite early on, excavators made a valiant and mostly successful effort to use consistent strata designators between subunits, so that Stratum 3, for example, represents the same depositional event in Study Unit 1E as in Study Unit 1B.

In Study Unit 2, where the wall fall was extremely complicated and we did not figure out what we were looking at until later on, excavators did assign consistent designations for major strata such as floors, but the strata consisting of construction debris are more mixed as we tried to understand where roof fall ended and which wall collapsed which way. In addition, the excavation forms in Study Unit 2 have many references to "looter back dirt" as a description for the soft and clumped soil that I would now describe instead as adobe from the wall cores.

Our excavation forms required excavators to provide detailed description of each level (Appendix 1). The information on the PD forms includes depth data, excavation method, vertical provenience including stratum (a Roman numeral designation) and level number (within each stratum), associated features if any, and associated maps if any. Crew members were instructed to draw a small plan map on each PD if there was anything to show. There is a place for listing and numbering the Field Specimens associated with the PD. Our field manual had a series of codes for summarizing the nature of the horizontal provenience (for example, did we excavate the whole test unit or a portion of the unit) and vertical provenience (for example, modern ground surface, occupational deposit, or floor contact).

Finally, there was extensive space for a narrative description of the level. Of course, different excavators provided different levels of detail in different levels, but overall we have excellent and detailed descriptions of our study units.

As each PD was excavated, crew members logged its details in the PD Log, which had spaces for top and bottom elevation, feature numbers, horizontal and vertical provenience details, and listing the FS bags. Dr. Van Dyke and I checked the PD Log against the artifact bags daily prior to end of work.

In addition to the diagrams on PD forms, we made extensive maps of the study units, both in plan and in profile. There are a total of 20 such maps, including all four faces of Study Units 1 and 2 after completion of excavation.

Artifacts

Table 3 lists the artifact categories used during the course of this excavation, as described in our Field Manual. A few artifacts were bagged with slightly different artifact categories, but I corrected these during cataloging in order to standardize the catalog entries.

**Table 3 Artifact categories for Aztec North fieldwork**

| Code | Description |
|---|---|
| BOT | macro botanicals |
| BS | bulk soil |
| C14 | samples for radiocarbon dating |
| CER | ceramic |
| DENDRO | wood for tree-ring dating |
| FAU | faunal |
| GS | groundstone |
| HIST | historic |
| LITH | chipped stone lithics |
| MIN | minerals including pigments |
| MS | mortar samples |
| ORN | ornament |
| PER | perishables |
| POL | pollen |
| PP | projectile point |
| SHL | shell |

Excavators bagged artifacts by artifact type and by PD. So for each level, we have separate bags for lithics, ceramics, etc. We wrapped small bones in tissue paper and placed them in film canisters. We wrapped all $^{14}C$ samples in foil, placing the smaller ones in film canisters.

Crew members took bulk soil samples for flotation in every cultural level likely to yield seeds. We double-bagged these samples and taped them shut. Our field manual called for us to collect two liters of soil for every bulk soil sample, but in reality our samples (as measured later during flotation) varied between one and three liters.

We collected pollen samples after excavation was complete and all field documentation was finished. In each study unit, we scraped back a column of the exposed profile and carefully took a sample from each stratum, washing the trowel with distilled water before starting each new stratum. We also took a modern pollen sample from a location near Aztec North but away from the site or any artifact scatters.

Field Photographs

We took 354 photographs with the official field camera, a Nikon D3300 DSLR camera, using a photo board. We recorded all of these in a detailed Photo Log. We photographed each subunit before beginning excavation and after every level of note, and we also took extensive photographs at the close of excavation. I have transcribed the photo log. I also collected a few other photographs from my cell phone, other crew members' phones or cameras and Park archaeologists' cameras, but these are not included in the Photo Log. I have backed up all photographs to two separate external drives, stored in different locations, and a cloud storage service.

Curation of Project Documentation

With help from volunteers at the Park, I have scanned the final project paperwork and backed it up to two separate external drives, stored in separate locations, as well as to a Dropbox account. I have also fully transcribed the logs for electronic searching. Within six months after completion of this dissertation, I will submit copies of all documentation to Aztec Ruins National Monument for curation, including the following:

- All PD forms
- PD log
- Feature log
- Feature forms
- Study unit forms
- Room forms
- Map log
- Maps, plans and profiles
- Datum log
- Point log
- Visitor log
- Room log
- All photographs taken with the official field camera
- Photo log

Samples of our blank forms are also included in Appendix 1.

NAGPRA

As a federal unit, the Park had a NAGPRA policy in place in case of any inadvertent excavation of human remains. According to our field manual and our permit, we were required to immediately notify Park archaeologists if we uncovered human remains. The crew was not seeking burials and we did not find any. There was an osteologist on our crew, to check all bones to ensure they were animal rather than human. As mentioned, we did encounter one human tooth in the midden and immediately stopped work and contacted the Park's archaeologists. The NAGPRA policy did not technically apply to teeth because they are so often lost during life, but Dr. Van Dyke and I made the decision to stop excavation in the unit at that point, and we put the tooth back before backfilling the unit. I did not photograph or study the tooth, or do anything else with it.

Backfilling and Site Preservation

At the end of our fieldwork, after careful documentation of all of our work and taking post-excavation elevations with the Total Station, we laid landscaping fabric on the bottoms of our units to protect the features we had revealed, as requested by the Park. Then we backfilled them by hand. Throughout the month of work, crew members were careful to avoid unnecessarily disturbing the site or the surrounding plants throughout our work, and after backfilling, we spent several hours raking over our trails. I visited the site two months later, and again two years later, and on both occasions I could see little trace of our work apart from datums.

Conclusion

This chapter has provided an overview of the excavation and documentation methods for the fieldwork portion of this project. The scope of our excavation was quite limited, as was the available time, but the small crew of volunteers did a tremendous amount of work in one month. We excavated four study units. Two of these, one along the back wall of the great house and one in the east wing, were intended to explore the architecture and rooms of the great house. Two smaller units were in the middens south of the great house. We carefully documented every aspect of the fieldwork, leaving a detailed record of our work at Aztec North. Moreover, we collected hundreds of artifacts and samples. The next chapter will discuss the labwork that I and others have carried out since the end of fieldwork, to analyze the artifacts and understand the significance of what we uncovered in the field.

## Chapter 6. Laboratory Methods

The previous chapter focused on the methods the crew used in the field in the course of our 2016 season to excavate parts of the Aztec North great house, to document our work, and to collect artifacts. In this chapter, I discuss everything that I and others have done since then to organize the assemblage, research the artifacts and samples, and analyze what was found in the field. This is a methods chapter only; the next chapter will report the results of these analyses.

I begin with a brief discussion of the artifact catalog system. I then proceed by artifact class. I begin with AMS radiocarbon dating and analysis of the ceramic artifacts. Next I discuss the flotation and analysis of archaeobotanical samples, followed by the lithic and faunal assemblages.

Some of the analysts who worked on this project have submitted detailed reports which I attach as Appendices 3 (lithics), 5 (obsidian sourcing) and 7 (faunal). For those artifacts, I have only briefly summarized here the methods the analysts used. However, I have gone into more detail where there is not a report to attach with detailed methodologies (including my ceramics analysis, the archaeobotanical analysis, and the radiocarbon dating).

### Inventory of Artifacts

I designed a database in FileMaker Pro 15, where I cataloged all of the artifacts and samples. This catalog consists of two different parts. The first is a catalog of the 192 assigned provenience designations (PDs). For each PD, I have recorded all of its horizontal and vertical details as well as details such as the excavators, the date of work, and all of the Field Specimens collected. The second part of the catalog is an inventory of artifacts and samples. Each bag of artifacts is included, with descriptions, details, counts, and sometimes photographs. The artifact catalog and the provenience catalog are relationally linked, so that provenience details are pulled in for each artifact.

I assigned each FS a unique catalog number (AZN001-AZN566) for my own reference, and that number appears some places in the documentation and this dissertation. However, the real identifier for each artifact is its PD and FS numbers, and I use these as well throughout. After I return the artifacts to Aztec Ruins, they will receive new permanent catalog numbers within the Park's cataloging system, but they will still be identifiable with the PD and FS numbers.

Lab Photographs

I have taken approximately 700 photographs of artifacts. These are sorted in an Adobe Lightroom database, with filenames Lab1 to Lab706 and with their date and time of capture. For most of these photographs, I have added metadata including the PD and FS number, identification of the artifact, the artifact category, and other pertinent details. Some of the best photographs have also been added to the FileMaker artifact catalog. Like the field photos, I will provide my photographs to the Park for curation.

AMS Radiocarbon Dating

The question of dating the site was foremost throughout the project research design. I hoped that we would encounter ceiling beams or other pieces of wood with enough tree rings to use for dendrochronological (tree-ring) dating. In the San Juan Basin, tree rings have been the basis for an extraordinarily detailed and precise chronology. However, with study units only 1 meter wide, it was always clear we might not be so lucky.

So crew members carefully collected any organic materials they encountered that could be used for radiocarbon dating. In the end, we encountered no large pieces of wood but we collected a total of 33 bags with organic materials for radiocarbon dating. These included many pieces of corn, as well as wood charcoal. Ultimately, I sent seventeen Aztec North $^{14}C$ samples to Beta Analytic, a leading lab for radiocarbon dating (Table 4).

**Table 4 Samples submitted to Beta Analytic for AMS dating**

| Turner ID | Beta# | PD# | FS# | Study Unit | Sample Description | Context Details |
|---|---|---|---|---|---|---|
| AZN241 | 506183 | 244 | 1 | SU2E | Maize cob in daub (see text) | Roofing material near Fea. 24 |
| AZN244-1 | 487983 | 212 | 3 | SU1D | Maize cob | Strat 5 ashy deposit above roof fall |
| AZN253 | 502835 | 279 | 4 | SU2B, SU2E | Charcoal | Fea. 18 floor |
| AZN242 | 502829 | 237 | 1 | SU2B | Uncarbonized bark (single growth layer) in daub | Roof fall |
| AZN249 | 502832 | 120 | 1 | SU2A | Charcoal | Located in situ from architectural fill. |
| AZN244-2 | 502830 | 212 | 3 | SU1D | Maize cob | Strat 5 ashy deposit above roof fall |
| AZN265 | 502841 | 165 | 6 | SU1C | Charred wood | Strat 5 ashy deposit above roof fall |
| AZN254 | 502836 | 171 | 1 | SU1C | Maize cob | Strat 6 roof fall |
| AZN251 | 502833 | 219 | 2 | SU1D | Maize cob | Floor |
| AZN261 | 502840 | 230 | 3 | SU1A,SU1B | Maize cob | Strat 6 roof fall |
| AZN245 | 502831 | 234 | 10 | SU2A | Maize cob | Fea. 18 floor |
| AZN252 | 502834 | 238 | 2 | SU2B | Maize stalk node | Fea. 18 floor |
| AZN257 | 502839 | 242 | 4 | SU1C, SU1D | Twig from architectural material | Strat 6 roof fall |
| AZN255-1 | 502837 | 258 | 5 | SU2B | Maize cob | Fea. 20, charcoal hearth |
| AZN255-2 | 502838 | 258 | 5 | SU2B | Maize cob | Fea. 20, charcoal hearth |
| AZN564-1 | 502842 | 277 | 4 | SU1 | Charcoal (pulled from light fraction) | Fea. 27, charcoal hearth |
| AZN564-2 | 502843 | 277 | 4 | SU1 | Charcoal (pulled from light fraction) | Fea. 27, charcoal hearth |

Radiocarbon dating depends on an isotope called Carbon-14 ($^{14}C$) that is available in the atmosphere, although the atmospheric radiocarbon varies over time due to changes in the earth's magnetic field. $^{14}C$ is absorbed into green plants mainly through photosynthesis, and into animals through the food chain. Living things contain this isotope in equilibrium with the atmosphere during their lives, but when they die, the $^{14}C$ they contained begins to decay at a known half-life rate of about 5730 years (more properly "5730a"), converting to $^{12}C$. By measuring the quantity of $^{14}C$ in organic matter, in comparison to the atmospheric proportion, experts can determine when the organism died (Bronk Ramsey 2008).

Beta's analysis used accelerated Mass Spectrometry ("AMS") dating, a form of radiocarbon dating. AMS dating uses an accelerator to more precisely measure $^{14}C$.

Unlike traditional radiocarbon dating, which measures the decay of $^{14}C$, AMS dating directly counts the $^{14}C$ atoms in the sample, a more efficient method. This means that dates can be obtained from a much smaller sample than is necessary in ordinary radiocarbon dating. The instruments measure the proportion of $^{14}C$ to $^{12}C$ and, using the known half-life, the lab converts that ratio to a "radiocarbon date."

While the radiocarbon date looks deceptively like a calendar year date, it must still be calibrated to account for the significant variations in atmospheric $^{14}C$ over time. Researchers have studied the variation in atmospheric $^{14}C$ over time using dendrochronological samples (i.e. tree rings with known ages), allowing a more nuanced and accurate interpretation of radiocarbon dates. This has resulted in a calibration curve that applies to all samples and that captures how the radiocarbon date must be adjusted based on what is known of atmospheric carbon (Bronk Ramsey 2008).

*The Radiocarbon Calibration Curve*

The changes in atmospheric carbon over time can sometimes make it very difficult to precisely date a particular sample with radiocarbon data. A widespread misunderstanding of radiocarbon dating and sloppy reporting of results has led to a general belief that radiocarbon dates are far more precise than they often are. For certain time periods, the general downward trend of the calibration curve entirely flattens or even reverses itself, and such a wiggle "effectively limits the precision of radiocarbon calibration of single samples to at best a century or so (95.4% confidence) or in many cases much worse" (Bronk Ramsey 2008:251). Unfortunately, the very period at issue with the Aztec North samples (1050-1150 CE) is a particularly troublesome portion of the curve, with a reversal and flattening that make it very difficult to precisely calibrate sample dates.

Moreover, radiocarbon dating can only date the organic materials— any inferences required in associating those materials to archaeological events are an entirely separate issue that must be carefully considered. So questions of context, cultural association, taphonomy and site formation must all be part of the equation.

The problem of "old wood" is another important issue in radiocarbon dating. There are actually two related problems. The first is the biological issue of which part of a tree is being dated. Trees and other long-lived plants lay down cellulose layers (for example, tree rings) which die and cease to take in carbon even as the plant remains alive. If a fragment of charcoal comes from an early tree ring, it will have an earlier radiocarbon range than a tree ring laid later— and with the long lives of some trees, the difference could be centuries (Bronk Ramsey 2008). Because of this, archaeologists much prefer to test plants with shorter lives, particularly annuals that live and die in a single year, such as maize.

A separate, archaeological old wood issue concerns human choices to use, reuse and curate older wood. In places like the Southwest, with excellent wood preservation, dead wood on the ground may already be quite old before a person picks it up. Wooden construction materials like roof beams can also preserve well, and sometimes these are curated and reused by others many decades or even centuries later. The inferences needed to associate the death of a tree with human activity can be badly misleading if the issue of old wood is not taken into account. Because of these problems with radiocarbon dating, archaeologists have noted the importance of basing dating conclusions on multiple lines of evidence (Chapman and Wylie 2016).

I was aware of all of these issues in dating our Aztec North samples, and I took a number of precautions. First, I selected primarily maize samples rather than charcoal.

The few exceptions were in important contexts that had no maize, so that charcoal was the only option. I also sought the assistance of archaeobotanist BrieAnna Langlie, who examined several of my charcoal samples microscopically to try to determine what they were. For each one, she concluded that they were either a twig or a piece of bark, neither of which is likely to be old wood.

In addition, I selected materials from a number of contexts that had a stratigraphic relationship to each other, in the hopes that Bayesian modeling would allow us to develop a more precise chronology (Bayliss et al. 2007; Buck et al. 1996; Hamilton and Krus 2018; Whittle and Bayliss 2007). "The Bayesian approach is a way of combining archaeological knowledge – of context, stratigraphy, and sample character – with explicit, probabilistic, modeling of date estimates, which, other things being equal, can result in much finer chronologies" (Whittle and Bayliss 2007:22). By testing a sufficient number of samples with stratigraphic relationships to each other, and through the use of Bayesian modelling in the OxCal software package, Bayesian modelling methods use contextual data (known as "prior knowledge") to statistically narrow the probable date ranges. These well-established and proven statistical methods have successfully narrowed long radiocarbon date ranges in research around the world, including in the Chacoan world (e.g. Bayliss et al. 2007; Hamilton and Krus 2018; Kennett et al. 2017; Watson et al. 2015; Whittle and Bayliss 2007).

I therefore selected contexts and samples with stratigraphic relationships to each other and that were logically from different phases: early in the occupation (e.g. adobe embedded in the construction materials), from the prehistoric post-occupation period (e.g. trash deposited on top of roof fall), and in between (the floors and charcoal features on those floors). Where possible, I tested multiple samples from the same context, since stratigraphic association between samples can statistically constrain otherwise imprecise radiocarbon date ranges (see Figures 6-1 and 6-2).

**Figure 6-1 Study Unit 1 composite profile showing stratigraphic contexts for AMS samples in Study Unit 1. Not to scale. Drafted by the author, based on profiles of the east and west faces of Study Unit 1, maps 17 and 20.**

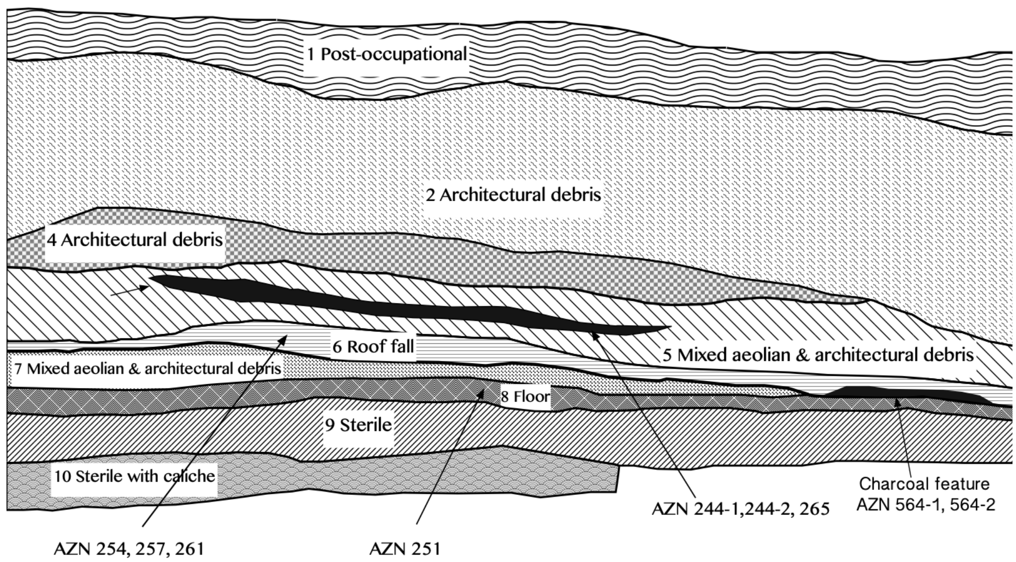
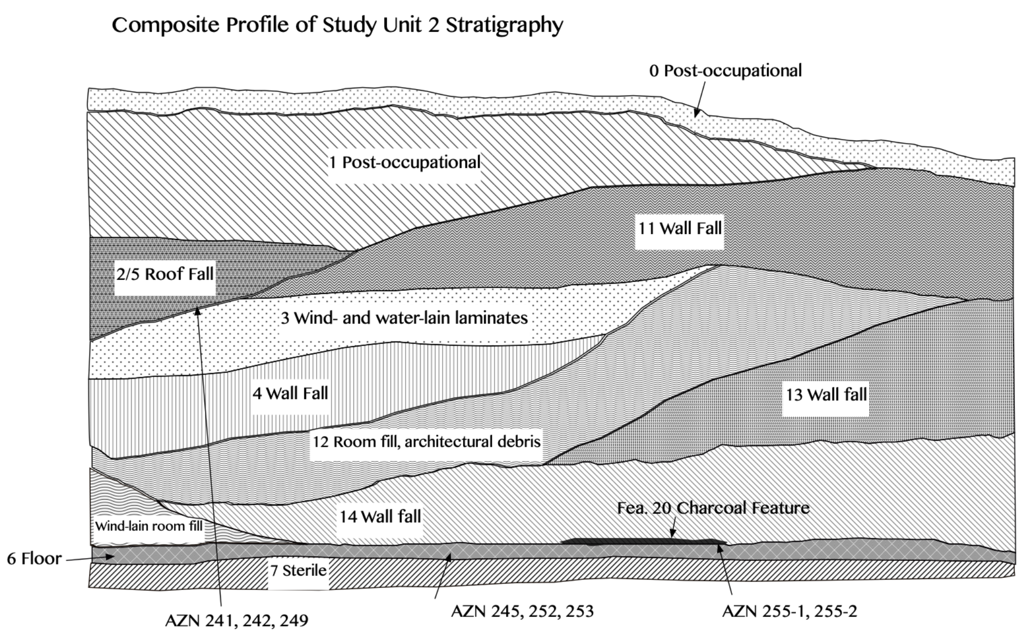



**Figure 6-2 Study Unit 2 composite profile showing stratigraphic contexts for AMS samples in Study Unit 2. Not to scale. Drafted by the author, based on profiles of the north and south faces of Study Unit 2, maps 12 and 13.**



When it came time to run the Bayesian modelling, I worked with Binghamton University professor David Mixter to apply a Bayesian model to these dates that would incorporate known data about the stratigraphy of the site. I did the calibrations and modeling in OxCal version 4.3.2 (https://C14.Arch.Ox.Ac.Uk/) using the IntCal13 curve (Reimer et al. 2013). OxCal software permits the user to incorporate known "phases" and "boundaries" if, for example, a particular stratum is known to be older than another. I created three phases—construction (representing dates from roofing material), occupation (representing dates from the floors and the charcoal features on the floors) and post-occupation (representing samples from cultural deposits that were on top of a collapsed roof, as discussed below).

In addition to Bayesian modelling based on prior knowledge, I have also used the AMS dates in conjunction with a second and separate line of chronological evidence—the ceramics, as discussed in the Mean Ceramic Dating section below.

Ceramic Analysis

In the course of the 2016 archaeological testing, the crew collected a total of 815 ceramic sherds from the four excavation units (184 from Study Unit 1; 147 from Study Unit 2; 233 from Study Unit 3; and 251 from Study Unit 4). Our field manual instructed the crew to discard any sherds under ¼" in diameter, so those counts do not include any tiny fragments. Of the entire assemblage, I analyzed 623; the remainder were either too small or in too poor of condition to analyze. My ceramic data table is attached as Appendix 2.

*Assemblage Limitations*

Given our limited testing and the relatively low density of artifacts, the excavation assemblage is a fairly small collection. The majority of the sherds are from midden contexts. There were no whole vessels, nor was I able to associate many sherds from the same vessels. Just as with the surface sherds reported in my thesis (Turner 2015), the assemblage consists of mostly small body sherds, with only a few rim sherds.

The surface collection came from contexts that had seen some disturbance from cattle grazing, looting and other activities. Stein and McKenna (1988) describe varying levels of disturbance at different parts of the Terrace Community. At Aztec North, they noted one area in the eastern roomblock where a depression seemed to be the result of pothunting; this is the site of our Study Unit 2. However, they also noted a general dearth of trash on the surface of the site, which they attributed to collection by visitors (Stein and McKenna 1988:22).

*Overview of the Analysis*

I analyzed all sherds using a Meiji binocular microscope with a fiber optic ring light and a magnification range of 10x to 40x. For each sherd, I recorded formal attributes of shape and size, technological attributes such as paste and temper, and use wear to the extent it was visible. Using these attributes, I assigned each sherd to categories of ware, tradition, type and style.

*Formal Attributes*

Formal attributes generally represent an attempt to understand the shape and size of the whole vessel. These attributes included vessel form such as bowl, jar, ladle, pitcher, canteen and vessel appendages (for example, if a jar had a handle). For large rim sherds, I also measured rim radius and rim arc. I also recorded rim eversion—the amount of flare in the lip of the pot. In later Ancient Puebloan gray wares, rim eversion increased, so it can be a chronological indicator.

However, the nature of both the excavated sherds and the surface sherds was such that I was rarely able to do much with formal attributes. Most of the sherds were small, and there were few rims of any significant size. In most cases, I could not detect vessel form beyond bowl versus jar.

*Technological Attributes*

I also analyzed a number of technological attributes such as surface treatment, thickness of slip, paint type, paste color and temper type. For each sherd, I examined a fresh break under magnification to observe both paste (the clay) and temper (inclusions added by the potter).

*Temper*

Temper is the key attribute for determining the geographic area where a pot was made. Based on the temper (and sometimes other technological attributes), the analyst can determine the geographical "tradition" of the pot. Pottery made in the Cibola region (including Chaco Canyon but also surrounding regions) is tempered with sand or sandstone (see Figure 6-3), sometimes in combination with crushed sherd. Pottery from the Chuska Mountains in this period is easily recognizable due to its distinctive volcanic trachyte temper (Figure 6-4). Other imported pottery in this region has similarly distinctive tempers; Figure 6-5 for example, shows a Tusayan Black-on-red sherd from the Kayenta region of northeast Arizona.

**Figure 6-3 Magnification of a Cibola Chaco-McElmo Black-on-white sherd with medium quartz sand temper (PD101, FS1, Lot 23). Photo by the author.**

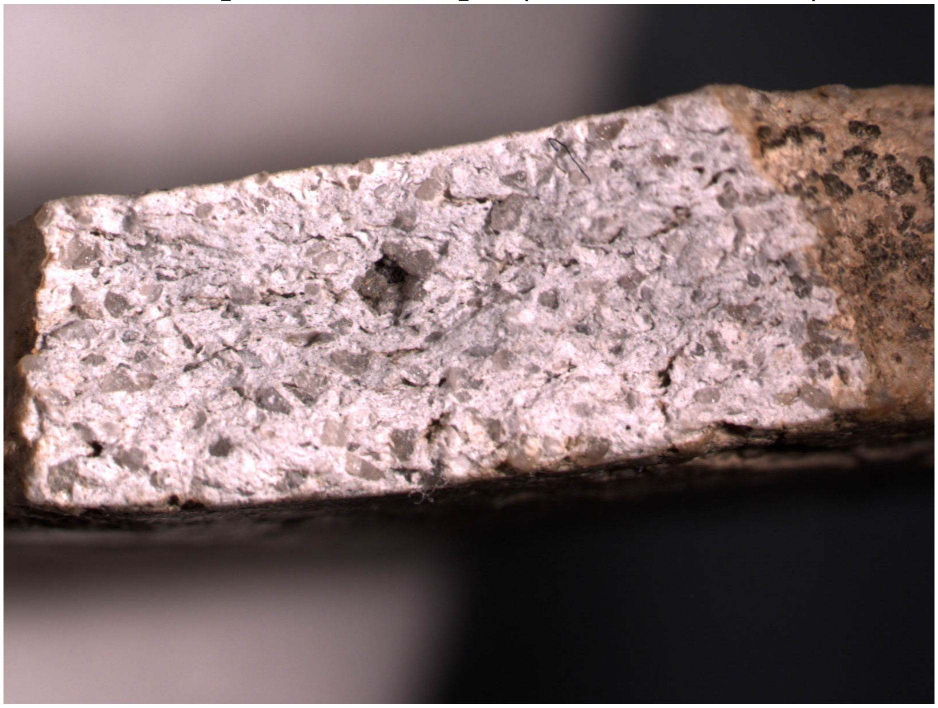
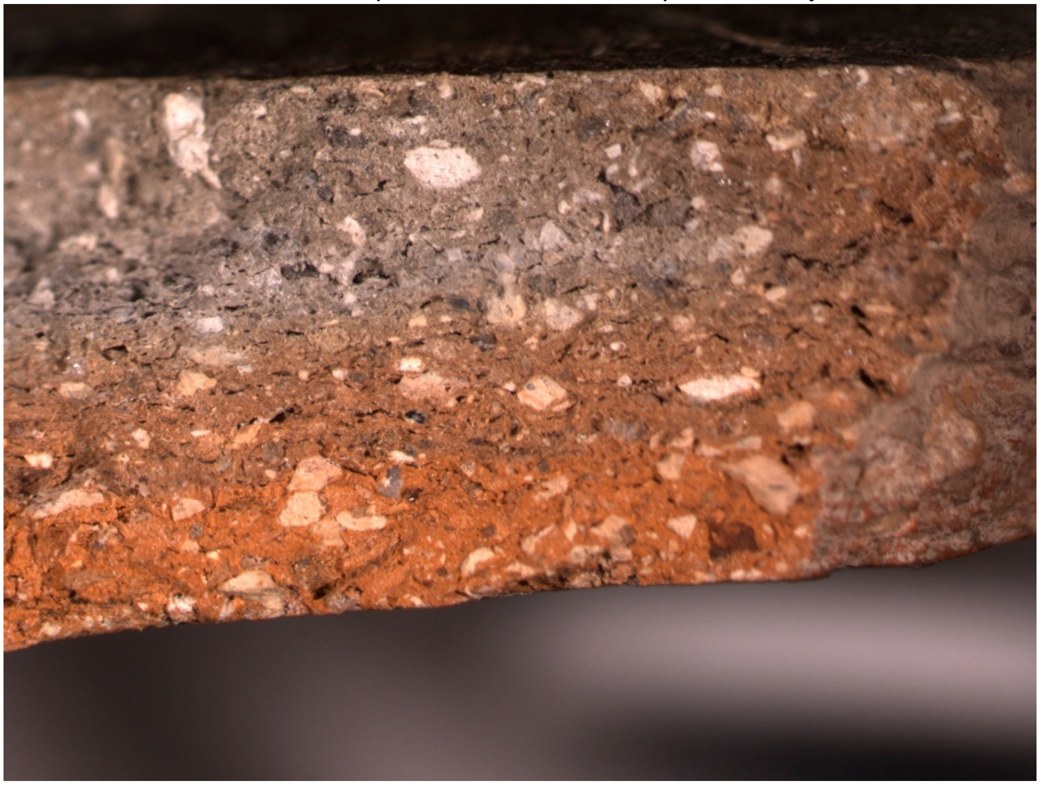


**Figure 6-4 Magnification of a Chuska Corrugated Gray sherd with trachyte temper (PD134, FS1, Lot 6). Photo by the author.**

**Figure 6-5 Magnification of a Tusayan Black-on-red sherd tempered with sand and crushed sherd (PD101, FS1, Lot 30). Photo by the author.**



The local Totah pottery has often been described as part of the "Northern San Juan" tradition, meaning that it is lumped in with pottery from the Mesa Verde region further to the north. However, it is usually possible to distinguish locally-made pottery from pottery brought in from the Mesa Verde area (which I refer to as Northern San Juan trade ware). Petrographic analysis has demonstrated that while Northern San Juan trade ware contains diorite porphyry temper, potters of the Aztec community reliably used either augite diorite or crushed granite, sometimes in combination with crushed sherd. Both of the Totah temper materials lack the distinctive porphyritic crystals of Northern San Juan temper, and Totah temper also tends to be more coarsely crushed than Northern San Juan temper. While the differences can be subtle (see Figures 6-6 and 6-7), an experienced analyst looking at the temper and the paste under magnification can usually distinguish between Northern San Juan tradeware and pots made locally in the Totah. However, some pots have a mix of characteristics and can only be identified as Northern San Juan of indeterminate variety (Reed 2006).

**Figure 6-6 Magnification of a local Animas Variety Plain Gray sherd, with crushed granular igneous rock temper (PD101, FS1, Lot 9). Photo by the author.**

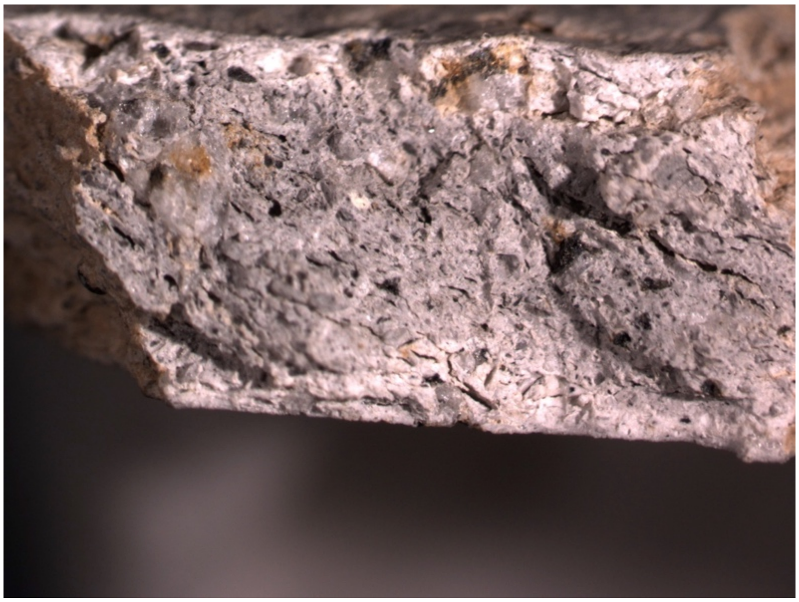
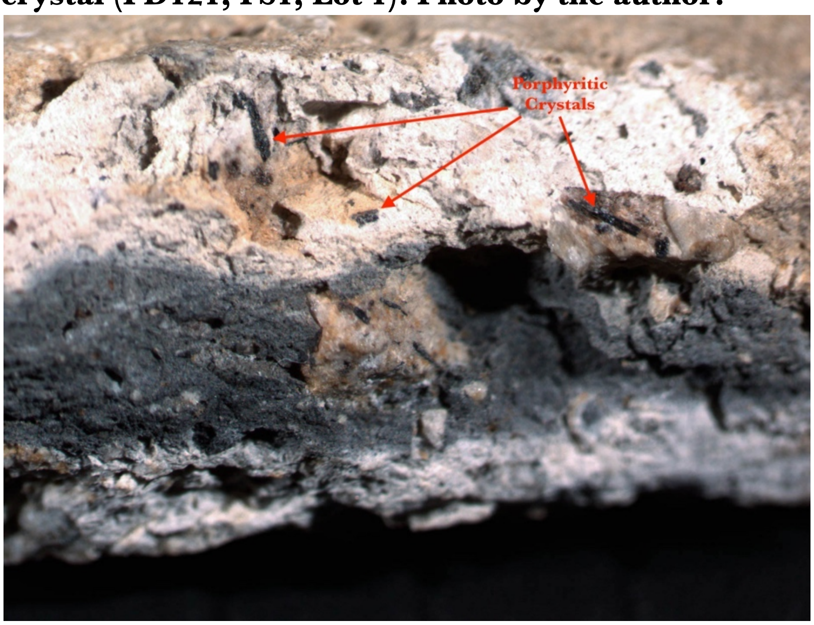


**Figure 6-7 Magnification of a Northern San Juan tradeware Corrugated Gray sherd, with both crushed granular igneous rock and porphyritic crystal (PD121, FS1, Lot 1). Photo by the author.**



*Paste*

The paste can also be a clue to where the pot was made. Cibola pots tend to have a very fine, light-colored paste (see Figure 6-3). Northern San Juan trade wares tend to also have a distinctive, finer, less crumbly paste than Animas pots (L. Reed 2006, 2008). If the pot was an import, I recorded the paste simply as nonlocal.

The local paste at Aztec is very different from that of imported pots. Local clays are silty and crumbly. Lori Stephens Reed's (2006) experiments indicate that, though variable, the local clays are generally high in silt content. The lower quality of the clay may have led potters to fire their pots at low temperatures. Local paste comes in three shades-- gray, buff and brown (Reed 2006). So for the local paste I recorded color information as well.

*Surface Treatment: Gray Ware.*

For each sherd, I recorded surface treatment for both interior and exterior surfaces. The most common surface treatment for gray wares in Ancient Puebloan assemblages is corrugation (Figure 6-8). Archaeologists generally view gray ware as utilitarian pottery for cooking and storage. The indentations of corrugated pottery may have had functional benefits for thermal conduction and for a non-slip surface, but the painstaking work would have added significant time to the manufacture process (Pierce 2005). Moreover, the widespread and long lasting duration of this style of body decoration, even as white ware decoration styles changed drastically over time, may suggest a cultural importance beyond the merely functional. There are some variations in corrugation, including clapboard corrugated, indented corrugated and obliterated corrugated.

**Figure 6-8 Locally-made Corrugated Gray sherd (PD230, FS2, Lot 2). Photo by the author.**

In addition to clearly corrugated surface treatments, Ancient Puebloans also made pots that had neck-banding or fillets similar to corrugated pottery but with smooth bodies. The latter are rarely identifiable from a small body sherd, or even from a neck sherd, since identification requires having parts of both the collar and the body of the pot.

Other gray pots have no surface treatment, and I categorized these as plain gray. Gray ware may also have polished surfaces. If a pot has slip, it is categorized as white ware. On the other hand, it is quite possible that some sherds categorized as plain gray ware might once have been slipped and painted; once the slip comes off it becomes indistinguishable from plain gray ware.

*Surface Treatment: Slip.*

I recorded the presence or absence of slip, as well as its texture (i.e. thin, thick, or washy). White or light-colored slip provides the canvas for the black paint designs of Ancient Puebloan black-on-white pottery. Often, the slip survives even though the paint has partially or fully worn off. Slip is also an important clue in determining vessel form. Jars have plain interiors, while bowls are usually slipped and painted on the interior, and sometimes also the exterior. Cibola pottery often has a distinctive washy slip, while local Totah slips tend to be thick and chalky, as well as muddier in color (Reed 2006; Washburn and Reed 2011).

*Surface Treatment: Painted Wares.*

I analyzed paint types visually, using the microscope when needed. Experimental research suggests that trained analysts can reliably distinguish between organic and mineral paints based on visual criteria. Organic paints soak into the surface, giving them a blurry edge, while mineral paints tend to sit on top and have crisper edges (Stewart and Adams 1999; Hays-Gilpin and van Hartesveldt 1998). The high iron content of mineral paints tends to give them a reddish or brownish hue. At Aztec and other Totah sites, potters sometimes combined both mineral and organic elements on the same pot (Reed 2006, 2008).

**Figure 6-9 Mineral Paint on a Chaco Black-on-white sherd (PD147, FS5, Lot 2). Photo by the author.**

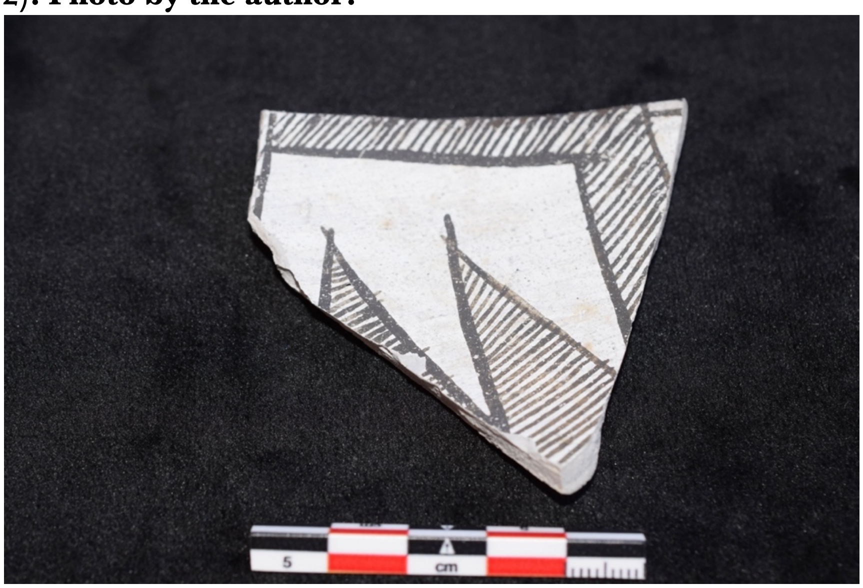
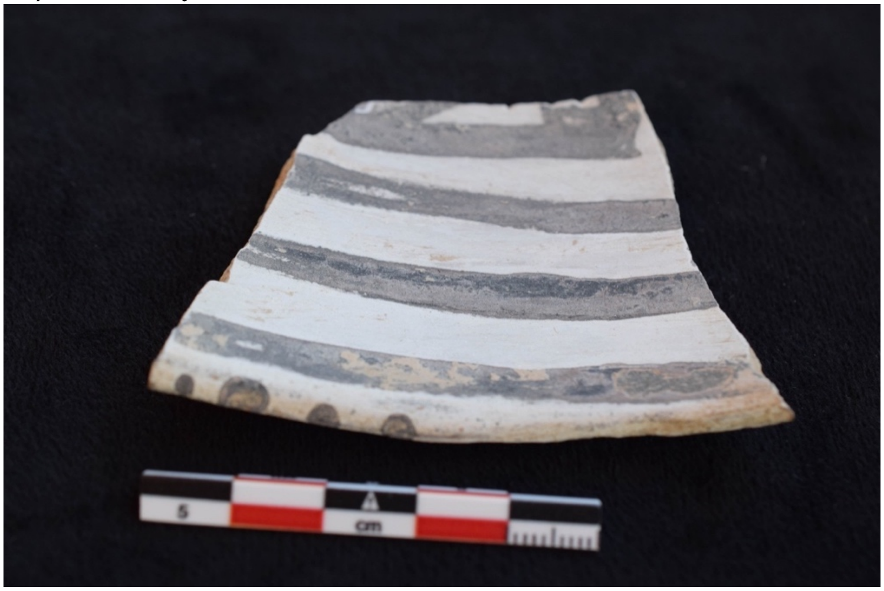


**Figure 6-10 Organic Paint on a Nava Black-on-white sherd (PD144, FS1, Lot 14). Photo by the author.**




*Use Wear*

Given the small size of the sherds, there was rarely anything to record in terms of rim or base abrasion. However, I did record use wear such as sooting, which can be indicative of cooking use, as well as any post-firing modification.

*Classifying Pottery*

Based on the technological attributes, I sorted sherds by ware, tradition, variety, type and style. I describe each of these categories below.

<u>Wares.</u>

I assigned sherds first to ware (gray, white, brown and red). As discussed above, painted black on white pottery is classified as white ware, while pots without paint or slip are gray ware. Red wares have a recognizably reddish-colored paste. The sample also included a few brown ware sherds from the Mogollon.

Traditions

The technological features also allowed me to classify pottery into geographically-based traditions, including Chuska, Northern San Juan, Cibola, and a number of others. Usually this determination is based on the temper or from a combination of temper, paste and surface treatment.

Variety.

Following Lori Reed's conventions, I assigned pottery with local paste and temper to a specific variety called Northern San Juan Animas Variety, to clearly distinguish it from the nonlocal (or tradeware) Northern San Juan pottery. The variety for most other pots was simply "nonlocal."

Ceramic Types and Style.

Based on all of this information, I sorted sherds into their type. Following ceramic analysis convention, I used the Chaco typology system for Cibola pottery (relying largely on Toll and McKenna 1997 and Hays-Gilpin and Hartesveldt 1998) and the Mesa Verde typology system (Breternitz et al. 1974) for nonlocal Northern San Juan pottery. For local pottery, called "Animas Variety," I relied on a typology developed by Lori Reed. Reed's typology is based on the Mesa Verde system but reflects her experience that the latter does not perfectly fit Totah pottery (Reed 2006; L. Reed 2008). There is a separate Chuska series for trachyte pottery (Goff and Reed 2003; Reed 2006; Windes 1977). There are also established typologies for trade wares from more distant regions such as Kayenta and Mogollon (Colton 1955, 1956; Hays-Gilpin and van Hartesveldt 1998; Lucius and Breternitz 1992; Reed 2006).

For some ceramic types, which persisted over a longer period of time, archaeologists have also identified design styles. I recorded design styles when I could determine them (e.g. the Dogoszhi style of McElmo Black-on-white). Such styles are particularly helpful for narrowing the temporal range in which the pot could have been made. For example, in addition to the McElmo Black-on-white and Chaco-McElmo Black-on-white types, I also use a design style called Early McElmo Black-on-white. This is a type developed by Lori Reed in her work at the Salmon Pueblo. She describes it as having a number of Pueblo II attributes including "thin vessel walls, thin to rounded rims, and Sosi, Dogoszhi, Reserve or Puerco style designs in a Pueblo II layout (e.g. not banded or quartered)" and McElmo Black-on-white attributes of ticking on the rim and one or two framing lines below the rim (Reed, L. 2006:602-603). Reed sees this type as transitional in Animas pottery, with a date range of 1050-1125. For dating purposes, this type provides a narrower date range for some sherds.

<u>Mean Ceramic Dating</u>

Ceramic dating is of great utility in the Southwest, where tree-ring dating has been used to establish ceramic type chronologies that are widely seen as both accurate and precise (Breternitz et al. 1974; Colton 1955, 1956; Goetze et al. 1993; Hays-Gilpin and van Hartesveldt 1998; Lucius and Breternitz 1992; Reed, L. 2006; Toll and McKenna 1997).

For this study, I have used mean ceramic dating, a quantitative approach for dating sites. My mean ceramic date calculation relies only on typeable decorated white wares, red wares and brown wares. It excludes gray wares, which show little change over a long span of time.[6]

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[6] Mesa Verde region pots often have increasing rim eversion over time, but I did not attempt to use this in my dating. This is primarily because there were so few rims large enough to type based on such eversion, but I also followed the lead of Reed (2006), who

The method was developed by Stanley South (1972) for use on historic archaeological sites with artifacts whose dates of manufacture were known from documentary evidence. However, it has also been successfully used by prehistoric archaeologists working in regions with well-dated ceramic typologies. Christenson (1994) described the method as applied to prehistoric ceramics and demonstrated its accuracy and usefulness for Ancient Puebloan assemblages by testing it against known radiocarbon dates for a Kayenta assemblage.

The method includes several steps. The first step is to develop a list of date ranges for all ceramics appearing in the assemblage, reflecting the known production dates of each ceramic type or style. A mean is then calculated for each type's date range. The dates I used for mean ceramic dating are based on the extensive ceramic analysis literature of this region, as set forth in the last column of Table 5 (Breternitz et al. 1974; Colton 1955, 1956; Goetze et al. 1993; Goff and Reed 1998; Hays-Gilpin and van Hartesveldt 1998; Lucius and Breternitz 1992; Reed, L. 2006, 2008; Toll and McKenna 1997; Windes 1977).

A straightforward mean ceramic date for a site's assemblage can be obtained by simply multiplying the mean date by the count of sherds of each type, adding up all of the types, and then dividing by the total number of sherds. However, I also used Christenson's (1994) method for weighting types with shorter date ranges. In this method, a weighting factor is calculated for each type, so that types with short date ranges are given more weight than types with longer ranges. This is done by subtracting the length of the type's range from an arbitrary number (I used 300) and dividing by 100. Thus,

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questions whether Totah corrugated pottery rims exhibit exactly the same Mesa Verdean eversion changes over time.

types with a 150-year range would have a weighting factor of 1.5 while types with a 250-year range would have a weighting factor of 0.5.

**Table 5 Ceramic types and styles used for mean ceramic dating.**

| Tradition | Type | Start | End | Count | Reference for Date Range |
|---|---|---|---|---|---|
| | | | | | |
| **NSJ Animas Variety** | | | | | |
| | Mancos B/w | | | | |
| | Dogoszhi | 1025 | 1150 | 4 | Reed 2006; Toll & McKenna 1997; Breternitz et al. 1974 |
| | None or Indeterminate | 1000 | 1200 | 11 | Reed 2006; Breternitz et al. 1974 |
| | Mancos | 1000 | 1100 | 2 | Reed 2006; Toll & McKenna 1997; Breternitz et al. 1974 |
| | Reserve | 1050 | 1200 | 2 | Reed 2006; Hays-Gilpin & van Hartesveldt 1998; Breternitz et al. 1974 |
| | Sosi | 1000 | 1125 | 41 | Reed 2006; Breternitz et al. 1974 |
| | McElmo B/w | 1075 | 1250 | 34 | Reed 2006; Breternitz et al. 1974 |
| | Early McElmo B/w | 1060 | 1100 | 5 | Reed 2006 |
| **NSJ Trade Ware** | | | | | |
| (includes indet) | Mancos B/w | | | | |
| | Dogoszhi | 1025 | 1150 | 3 | Reed 2006; Breternitz et al. 1974 |
| | Mancos | 1000 | 1125 | 1 | Reed 2006; Breternitz et al. 1974 |
| | Sosi | 1000 | 1125 | 1 | Reed 2006; Breternitz et al. 1974 |
| | McElmo B/w | 1075 | 1225 | 3 | Reed 2006; Breternitz et al. 1974 |
| **Cibola Trade Ware** | | | | | |
| | Chaco B/w | 1075 | 1150 | 3 | Reed 2006; Toll & McKenna 1997 |
| | Chaco-McElmo B/w | 1100 | 1150 | 17 | Reed 2006; Toll & McKenna 1997 |
| | Escavada B/w | 1000 | 1100 | 4 | Reed 2006; Toll & McKenna 1997; Hays-Gilpin & van Hartesveldt 199 |
| | Gallup B/w | 1025 | 1150 | 13 | Reed 2006; Toll & McKenna 1997; Windes 1977 |
| | Reserve B/w | 1050 | 1200 | 2 | Reed 2006; Hays-Gilpin & van Hartesveldt 1998 |
| | Puerco B/w | 1030 | 1150 | 2 | Reed 2006; Hays-Gilpin & van Hartesveldt 1998 |
| **Chuska** | | | | | |
| | Chuska B/w | 1000 | 1125 | 5 | Reed 2006; Goff & Reed 2003 |
| | Nava B/w | 1100 | 1250 | 4 | Reed 2006; Goff & Reed 2003 |
| | Newcomb B/w | 975 | 1025 | 2 | Reed 2006; Goff & Reed 2003 |
| | Toadlena B/w | 1000 | 1200 | 12 | Reed 2006; Windes 1977 |
| **Mogollon** | | | | | |
| | Showlow Smudged | 1000 | 1150 | 1 | Reed 2006; Hays-Gilpin & van Hartesveldt 1998 |
| **Tusayan** | | | | | |
| | Tusayan Black-on-red | 1050 | 1150 | 4 | Reed 2006; Colton 1956 |
| | Sosi B/w | 1070 | 1180 | 1 | Reed 2006; Hays-Gilpin & van Hartesveldt 1998; Colton 1955 |
| **White Mountain** | | | | | |
| | Puerco Black-on-red | 1090 | 1175 | 2 | Reed 2006; Carlson 1970 |
| | Wingate Black-on-red | 1090 | 1200 | 2 | Reed 2006; Carlson 1970; Hays-Gilpin & van Hartesveldt 1998 |

I used the weighting factor and the mean date of production to calculate a mean ceramic date for each of the five study sites, along with a standard deviation that provides a date range. While the mean ceramic date is an attractively simple date, it is important to remember that it is just a mean and not a construction date. Moreover, Aztec North was certainly not occupied for just one year. Nonetheless, in the absence of tree ring dates, a mean ceramic date based on a good sample of sherds in a region with well-established chronologies may offer a more precise date range than radiocarbon dating or other dating methods.

Archaeobotanical Analysis

The crew collected bulk soil samples in every level that appeared to be cultural. The quantities collected varied from about 1 liter to about 3 liters per unit. Occasionally crew members took two bags from the same level, when the level was particularly rich in visible organic materials. Excavation crew assigned a priority number between 1 and 5 to each sample based on the context and the organic matter they saw in the soil, to guide our post-excavation analysis. Bulk soil samples were double-bagged and taped shut until they could undergo flotation.

Archaeobotanical analysis was an important part of this project, and the results I report in the next chapter provide a significant new dataset about subsistence at Aztec. The heyday of archaeological excavation here was in the early 20$^{th}$ century, long before the "flotation revolution" of the late 1960s (Struever 1968; Chapman and Watson 1993), when the collection of very small (often microscopic) archaeobotanical samples became a standard practice in American archaeology. While Earl Morris certainly found ears of corn and other macrobotanical samples, he lacked the tools to systematically retrieve food remains. Excavations at Aztec East also took place before flotation came into wide use (Richert 1964). There has been little excavation at the Park since then. Karen Adams has analyzed archaeobotanical remains from several projects at Aztec Ruins in recent years (Adams 2004, 2010, Adams and Rude 2010). However, these have not been widely reported, and there has been little systematic study of plant materials from the prehistoric deposits of the Aztec community. It was therefore important to obtain some archaeobotanical results from this project.

Fortunately, my colleagues Nikki Berkebile and Dr. Karen Adams volunteered to examine six of the best samples for inclusion in this dissertation. These are the data I report in Chapter 8.[7] Because there is not a formal report to attach as an appendix, I report their methodology in detail, based on my conversations with them.

*Flotation of Samples*

In July 2016, I worked with archaeobotanical analyst Nikki Berkebile and NPS archaeologist Stephen Matt to float the majority of the samples. We used a flotation machine borrowed from Charles Riggs of Fort Lewis College. This device was a barrel with a layer of standard window screening material to catch the "heavy fraction" (heavier materials such as rock and pottery that settle out while being cleared of sediment) plus bags made of fine mesh to catch the floating "light fraction" (which consists mainly of charred seeds, modern organic materials, and bone bits) as it came out of the spout. We did this outdoors, with a garden hose bringing water to the barrel and with the overflow going into an irrigation ditch at Aztec's heritage garden. We measured and recorded the volume of each sample prior to floating it. We saved few of the bulk soil samples that seemed particularly high in charcoal for later dry-sieving instead of floating them.

Once the samples had dried fully over several days, we bagged the heavy and light fraction separately. Stephen Matt assisted me with sorting through the heavy fraction for artifacts. Those artifacts included unexpected finds such as a lithic projectile point, 9 tiny stone beads, and 12 pieces of pottery, in addition to the more anticipated bones and botanical materials.

I ran the light fraction through geological sieves of decreasing size— 2 mm, 1 mm, 0.5 mm, and 0.25mm— to assist in analysis. Each of the size fractions was bagged

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[7] More archaeobotanical data from Aztec North will be available in 2019— as I write this, a classful of students at Binghamton University is analyzing all of the remaining 37 light fraction samples under the guidance of archaeobotanist Dr. BrieAnna Langlie.

separately, so that analysts using strong magnification could use a constant focal depth while examining each, rather than having to constantly adjust from, say, a .5 mm diameter seed to a 2 mm long piece of wood.

*Archaeobotanical Analysis*

I selected the six samples to send to archaeobotanists Nikki Berkebile and Dr. Karen Adams based on likelihood to contain a large number of seeds, rather than on any particular contextual basis.[8] The samples consisted of two from a room floor in Study Unit 2, one from a small charcoal feature on the floor of Study Unit 2, one from the Study Unit 4 midden, and two from deposits on top of the roof fall in Study Unit 1.

The analysts sorted the reproductive plants parts (such as seeds, achenes, and pieces of corn cob) and non-reproductive plant parts (such as wood fragments and cactus spines) into separate vials. They also separated charred plant remains from uncharred or partially charred remains.

Generally, charred plant remains in archaeological contexts are more likely than uncharred specimens to be related to human activities (Pearsall 1989:224-226). This is particularly true in an open-air archaeological site (as opposed to a cave or a roofed room, which have special preservation conditions). However, some charred seeds may enter an archaeological context without being a result of human behavior. For example, natural seed rain could have made its way into prehistoric cooking fires. In addition, seeds burned by wildfire can infiltrate into the soil matrix (Pearsall 1989:224-226, Minnis 1981). In rare cases, modern burnt seeds can also enter archaeological contexts (Karen Adams, personal

[8] Dr. Langlie helped me in selecting the best samples to send to Nikki Berkebile and Karen Adams, by prescreening them microscopically to identify which seemed to have the most seeds.

communication 2018). However, these are all relatively rare occurrences, and it is generally safe to assume that charred seeds in a cultural context are artifacts that reflect human activity.

Uncharred specimens are usually assumed to be a post-occupational intrusion into archaeological sites. Post-occupational seeds can enter a buried archaeological context in many ways, from burrowing rodents to the actions of water to accidental introduction during excavation. However, it is possible for deeply buried archaeological materials to preserve even without charring, although a careful analyst must demand extraordinary evidence of such extraordinary preservation.

The analysts examined each size fraction separately under a binocular microscope ranging from 8X-50X in magnification, using published criteria for identifying taxa and parts (Adams and Murray 2004). Ethnographic literature from the American Southwest (Castetter 1935; Yanovsky 1936; Rainey and Adams 2004), and previous summaries of the Southwest's archaeobotanical record (Adams 1988; Adams and Fish 2006; Huckell and Toll 2004) provide substantial evidence for use of these plants through time. Using modern comparative collections and referring to published seed identification guides (Adams and Murray 2004; Bohrer and Adams 1977; Egginton 1921; Martin and Barkley 1961), the analysts identified seeds and other reproductive parts to the most specific taxonomic rank possible. This was usually genus or species but sometimes only family. The analysts recorded materials that were too damaged or too small to be identified as indeterminate specimens.

They handled charred wood samples differently. For each flotation sample, the analysts selected twenty pieces from the >2.0 mm size fraction based on the non-random criterion of appearance, in order to identify as many different wood types as possible within each sample, aiming to understand the diversity of wood types utilized in the past. The analysts snapped the wood fragments to reveal a clear cross-section (transverse) view in the fresh break, and they examined each under 8X to 50X magnification. The analysts identified each piece to the most specific taxonomic category possible via the use of modern comparative collections and published wood identification guides (Adams and Murray 2004; Hoadley 1990; Minnis 1987).

Lithic Analysis

I cataloged the lithics, and I washed them with assistance from volunteers at Aztec Ruins National Monument before taking them back to Binghamton University. Kellam Throgmorton, my fellow PhD student and an experienced lithic analyst, generously analyzed the lithic artifacts, with help from Binghamton undergraduate Crae Wilkins. They analyzed both tools and debitage. Throgmorton's complete, detailed report is attached as Appendix 3, and his data table is attached as Appendix 4. His report sets forth the methodological background for his study, which I only briefly summarize here.

For debitage, Throgmorton began by recording the material and evaluating each flake to determine whether it was complete, broken, or shatter. He did not further analyze broken flakes and shatter. For complete flakes, he recorded a number of attributes. He classified flakes as either biface reduction, percussion core reduction or bipolar percussion. He recorded their length, width and thickness, as well as the percent of cortex on the dorsal surface. And he noted platform style and platform depth, if relevant, as well as edge damage and heat alteration. Finally, he categorized each flake as either debitage or a flake tool (Appendix 3, p. 2).

For tools, Throgmorton recorded the material, and he then categorized them by tool type based on morphological characteristics and visible use wear. He categorized each tool as complete or broken. He also weighed each tool and recorded its maximum length, width and thickness. He identified visible use wear on the primary, secondary and tertiary margins and recorded any inferred uses beyond the normal use for that tool type (Appendix 3, p. 2).

Obsidian Sourcing

Even before excavation, I was aware that Aztec North had an unusually high occurrence of obsidian for a site of its period. Surface surveys had recorded 77 pieces (Lori Stephens Reed, personal communication 2018), and more are now visible on the surface. Our excavation turned up 152 pieces of obsidian, mostly from the midden units. Only a small number (5) were tools.

In addition to ordinary lithic analysis as discussed above, I also sent all 152 pieces of obsidian to the University of Missouri's Archaeometry Laboratory, where Dr. Jeffrey Ferguson conducted X-ray fluorescence (XRF) sourcing analysis on them. As set forth in his report (attached as Appendix 5), Dr. Ferguson used an EDXRF calibrated using obsidian reference sets from past testing (Glascock and Ferguson 2012). The instrumentation measures the presence of trace elements including rubidium (Rb), strontium (Sr), yttrium (Y), zirconium (Zr), and niobium (Nb). The quantities of these trace elements which are present in any sample are sufficient to discriminate among most known sources of obsidian for the Southwest.

Using statistical analysis and visual inspection of elemental bivariate plots, Dr. Ferguson's lab identified distinct groups with the same chemical signatures and matched these to known geological sources (Baxter and Buck 2000; Bieber et al. 1976; Bishop and Neff 1989; Ferguson 2012; Glascock 1992; Harbottle 1976; Neff 2000).

Faunal Analysis

The crew collected over 800 fragments of animal bone during our excavation. Dr. Lubna Omar, a zooarchaeologist at Binghamton University, kindly volunteered to analyze these remains. Dr. Omar was also a member of the field crew, so she was very familiar with the site and the research questions. Her complete report on her analysis is attached as Appendix 7. This is a brief summary of her methodology based on that report.

Dr. Omar used the comparative zooarchaeological collection at Binghamton University to identify 523 bone fragments[9] to the lowest possible taxonomic level. For each, she recorded element, portion, side and age-related information. If she could not assign a fragment to species or other class level, she categorized it according to animal size (i.e. small, medium and large animals).

Dr. Omar also recorded all observed bone modifications. Such modifications included use of bone for tools as well as evidence of taphonomic processes such as gnawing by animals or burning.

Dr. Omar quantified the faunal assemblage based on the Number of Identified Specimens (NISP), the most common measurement standard. While there are issues with this measurement standard (Grayson 1984; Klein and Cruz-Uribe 1984; Marshall and Pilgram 1993; Orchard 2000; Reitz and Wing 1999), it remains the most common standard. Moreover, due to the small size of the collection, the use of other quantification methods was not possible.

She recorded age where possible, based on the epiphyseal fusion stages of individual long bones according to the fusion data generated by Purdue (1983) and Taylor

[9] The remaining fragments were too small or damaged to analyze.

(1959). Determining the age stage of animals is an important element of faunal analysis, because it contributes to understanding of exploitation strategies and seasonality (Reitz and Wing 1999:178-179). However, the small size of the collection made it impossible to detect any age patterns.

*Faunal Indices*

Based on Dr. Omar's identifications, I have also calculated faunal indices in order to make the data comparable to other research in Southwestern sites. There are three indices— the Artiodactyl Index, the Lagomorph Index and the Turkey Index— that are widely used in Southwestern archaeology. These indices allow analysts to compare proportions of cornerstone species within an assemblage, and to compare the composition of assemblages from different sites with very different assemblage sizes archaeology (Badenhorst 2008; Driver 2002; Spielmann and Angstadt-Leto 1996; Szuter and Bayham 1989).

<u>Artiodactyl Index</u>

Southwestern archaeologists use the Artiodactyl Index (AI) to compare the ratio of artiodactyls to lagomorphs in faunal assemblages. It is calculated as follows:

$$Artiodactyl\ Index\ (AI) = \frac{(artiodactyla)}{(artiodactyla + lagomorphs)}$$

An AI index of 1.00 would represent an assemblage with no lagomorphs, while an AI index of 0.00 would represent an assemblage with no artiodactyls (Badenhorst 2008; Durand and Durand 2006; Driver 2002; Szuter and Bayham 1989). Both artiodactyls and lagomorphs are extremely common in Ancient Pueblo assemblages, and often the lagomorphs dominate (Badenhorst 2008:33).

This ratio in itself does not directly correspond to human behavior or daily diet. Apart from issues of differential preservation between large deer or elk bones and small rabbit bones, the NISP count may also include multiple bones from the same individual animals. And of course, a single elk or deer would provide far more food than a single cottontail rabbit. However, the index does make it possible to compare different sites with differently sized assemblages, and also to compare trends over time.

Lagomorph Index

Archaeologists have frequently used the Lagomorph Index (LI) to compare the exploitation of jackrabbits (*Lepus californicus*) and cottontails (*Sylvilagus* sp.) These two species are both common in this region and were extensively exploited by Ancient Puebloans. The formula for the Lagomorph Index is as follows:

$$Lagomorph\ Index\ (LI) = \frac{cottontails}{lagomorphs\ (cottontails + jackrabbits)}$$

A value of 1.00 would mean all specimens were cottontails, while 0.00 would mean all jackrabbits (Badenhorst 2008; Durand and Durand 2006; Szuter and Bayham 1989). For Aztec North, the Lagomorph Index (5 cottontails out of 13 species-identified lagomorphs) is .38.

Ancient peoples used jackrabbits and cottontails in similar ways, but the two species represent very different methods of procurement. Historically, Indigenous people hunted jackrabbits with nets, meaning they could be caught in large numbers at once (Beaglehole 1936; Brown 1993). Cottontails were more likely caught while tending fields and gardens (Badenhorst et al. 2016). Some analysts cautiously see the presence of a high ratio of jackrabbit as suggestive of feasting, particularly if they are found in high proportions in an area where cottontails are more common (Durand and Durand 2008; Potter 2000).

Generally, though, the Lagomorph Index may be more reflective of the surrounding environment than of direct human behavior (Gore and Loven 2015). Cottontails prefer bushy habitat and tend to prevail in the northern Southwest, while jackrabbits tend to be more common in the southern Southwest but also prefer more open terrain such as cleared areas around human habitations. Moreover, changing ratios over time may not just reflect a choice between two different kinds of rabbit but may indicate a decrease in availability of other resources such as artiodactyls, leading to increased reliance on rabbits overall (Durand and Durand 2006:1088).

### Turkey Index

The exploitation of domesticated and wild turkeys is of perennial interest to Southwestern archaeologists. Ancient Puebloans may have raised turkeys primarily for their feathers during some time periods, but there is evidence that they became increasingly important for subsistence purposes in Pueblo II and especially in PIII. This was likely a result of increasing human populations and decreasing availability of deer and other artiodactyls (Akins 1987; Badenhorst 2008; Driver 2002; Durand and Durand 2008; Gore and Loven 2015; Lipe et al. 2016; Muir 1999; Munro 1994). However, keeping turkeys would have also required significant investments of maize (Lipe et al. 2016).

The Turkey Index (TI) measures the ratio of turkeys to lagomorphs. The formula for the turkey index is as follows:

$$Turkey\ Index\ (TI) = \frac{turkeys + large\ birds}{turkeys + large\ birds + lagomorphs}$$

A value of 0.00 indicates no turkey is present (Badenhorst 2008; Driver 2002; Spielmann and Angstadt-Leto 1996).

<u>Other Artifacts</u>

We collected a few artifacts that we categorized as Ornament, Mineral, Perishable or Historic. There are so few of each of these that no systematic analysis was possible, but I have made efforts to identify them and to obtain expert opinions on them.

The Ornaments consist of 11 small shale beads. The Minerals consist primarily of yellow and red minerals or stones with yellow and red deposits on them. Geoarchaeologist Dana Yakabowskas visually examined all items in both of these categories, with aid of a binocular microscope with moderate magnification. I have also spoken with Hannah Mattson, an expert on Chacoan ornaments, about the beads in an effort to identify them.

There is one Perishable, a small piece of twine, which was visually and microscopically examined by perishables expert Laurie Webster while she was visiting Aztec.

For the historic artifacts— especially two pencils— I have conducted basic research to learn more about them as a matter of curiosity and because they are indirectly relevant to questions about disturbance of the site (as reported in the next chapter).

Other samples collected in the field might warrant additional future analysis that I have not yet attempted for lack of funds and time. In particular, I have 43 pollen samples taken at the end of the excavation that I did not have funds to submit for analysis. There are also 31 mortar samples from various parts of the architecture. In addition, there is a small assemblage of 29 groundstone artifacts that have had only cursory visual evaluation in the lab.

Conclusion

In this chapter, I have discussed the laboratory methods that I and my collaborators have used in analyzing artifacts and samples from Aztec North. In addition to describing my management of data from the excavation, I have reviewed the methods that I used for ceramic analysis and the methods used by others for AMS radiocarbon dating (Beta Analytic laboratory), lithic analysis (Kellam Throgmorton), obsidian sourcing (Jeff Ferguson) and faunal analysis (Lubna Omar), as well as the discussions I had with other experts about ornaments (Dana Yakabowskas and Hannah Mattson) and perishables (Laurie Webster). The next two chapters report on the extensive data that was produced as a result of the excavation and these artifact analyses.

## Chapter 7. Archaeological Findings: Dating and Architecture

In Chapters 5 and 6, I discussed the field and laboratory methods for this research. I designed the research to address my four research questions: construction methods, site chronology, relations with other regions, and daily life at Aztec North. In this chapter and the next, I present the results of the research. Because the findings are extensive, this chapter focuses on architectural studies and dating of the site in this chapter, and Chapter 8 discusses the analysis of artifacts and samples including ceramics, lithics, and archaeobotanical and faunal samples. I begin by summarizing the results of our site dating studies, then give an overview of the architecture. This is followed by more detailed findings for each of the four study units.

### Dating the Site

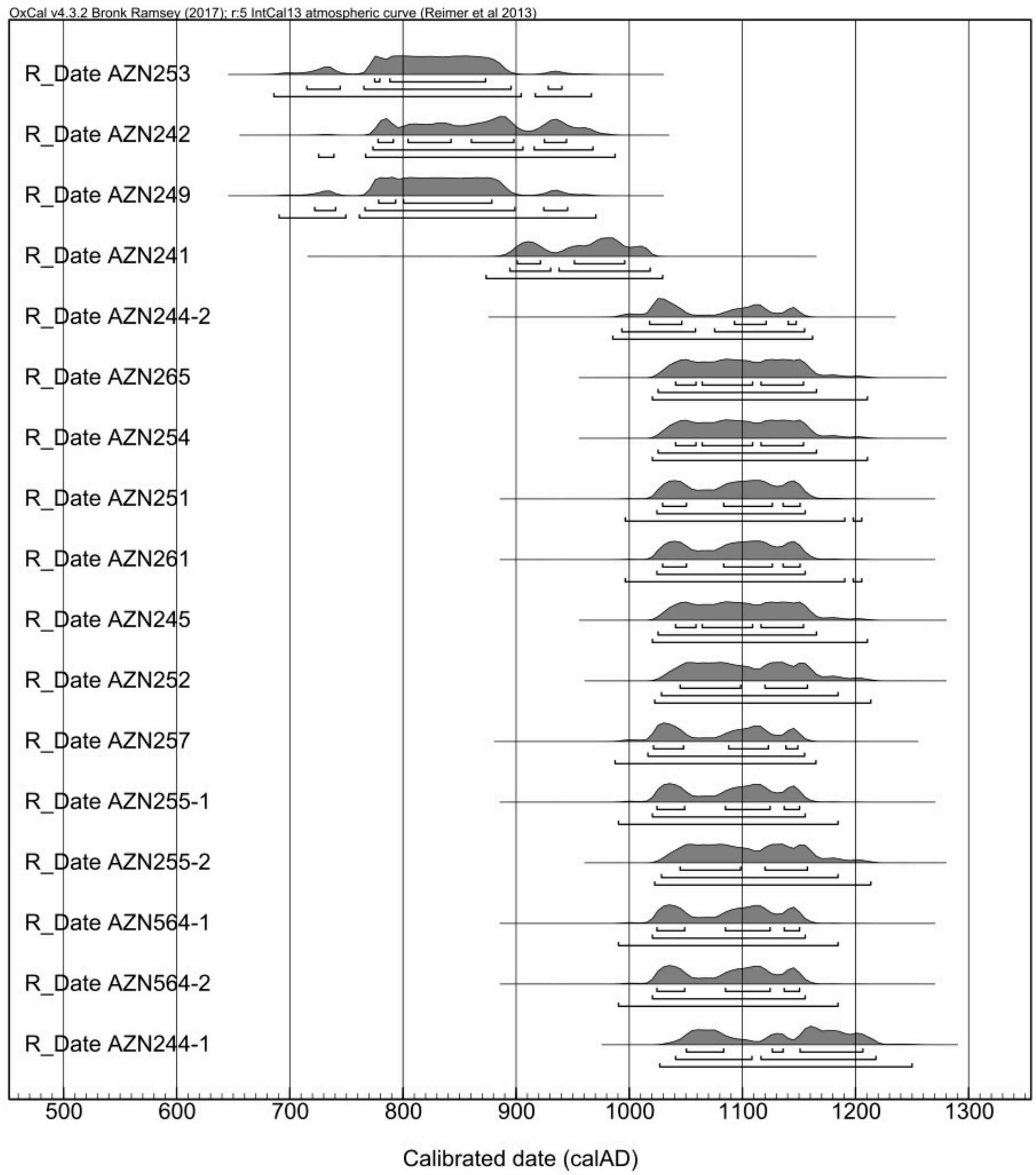
The excavation did not uncover any wooden beams or wood fragments appropriate for dendrochronological analysis. We did, however, collect 28 organic samples for radiocarbon dating. Of these, I submitted 17 samples to Beta Analytic for AMS analysis. Table 6 summarizes these samples and sets forth the results of the AMS dating.

**Table 6 Results of AMS radiocarbon dating**

| Turner ID | Beta# | Study Unit | Sample Description | Context Details | Radiocarbon date BP | cal BP Date Range (probability) |
|---|---|---|---|---|---|---|
| AZN241 | 506183 | SU2E | Maize cob in daub (see text) | Roofing material near Fea. 24 | 1080 +/- 30 | 894-1018 (95.4%) |
| AZN244-1 | 487983 | SU1D | Maize cob | Strat 5 ashy deposit above roof fall | 890+/- 30 | 1040-1218 (95.4%) |
| AZN253 | 502835 | SU2B, SU2E | Charcoal | Fea. 18 floor | 1200+/- 30 | 765-895 (87.8%) |
| AZN242 | 502829 | SU2B | Uncarbonized bark (single growth layer) in daub | Roof fall | 1160+/- 30 | 773-968 (95.4%) |
| AZN249 | 502832 | SU2A | Charcoal | Located in situ from architectural fill. | 1190+/- 30 | 766-898 (89%) |
| AZN244-2 | 502830 | SU1D | Maize cob | Strat 5 ashy deposit above roof fall | 980+/- 30 | 993-1154 (95.4%) |
| AZN265 | 502841 | SU1C | Charred wood | Strat 5 ashy deposit above roof fall | 930+/- 30 | 1025-1155 (95.4%) |
| AZN254 | 502836 | SU1C | Maize cob | Strat 6 roof fall | 930+/- 30 | 1025-1165 (95.4%) |
| AZN251 | 502833 | SU1D | Maize cob | Floor | 950+/- 30 | 1024-1155 (95.4%) |
| AZN261 | 502840 | SU1A,SU1B | Maize cob | Strat 6 roof fall | 950+/- 30 | 1024-1155 (95.4%) |
| AZN245 | 502831 | SU2A | Maize cob | Fea. 18 floor | 930+/- 30 | 1025-1165 (95.4%) |
| AZN252 | 502834 | SU2B | Maize stalk node | Fea. 18 floor | 920+/- 30 | 1028-1184 (95.4%) |
| AZN257 | 502839 | SU1C, SU1D | Twig from architectural material | Strat 6 roof fall | 970+/- 30 | 1016-1154 (95.4%) |
| AZN255-1 | 502837 | SU2B | Maize cob | Fea. 20, charcoal hearth | 960+/- 30 | 1020-1155 (95.4%) |
| AZN255-2 | 502838 | SU2B | Maize cob | Fea. 20, charcoal hearth | 920+/- 30 | 1028-1184 (95.4%) |
| AZN564-1 | 502842 | SU1 | Charcoal (pulled from light fraction) | Fea. 27, charcoal hearth | 960+/- 30 | 1020-1155 (95.4%) |
| AZN564-2 | 502843 | SU1 | Charcoal (pulled from light fraction) | Fea. 27, charcoal hearth | 960+/- 30 | 1020-1155 (95.4%) |

Table 7 is a multiplot showing all of the radiocarbon dates obtained for Aztec North. The majority of the results are highly consistent with each other and show a clear pattern. There was an occupation of the great house that fell between the 1020s and the 1150s.

**Table 7 Multiplot of AMS Results for Aztec North samples. Created by the author based on results from Beta Analytic, using OxCal v4.3.2, IntCal13 curve.**




For our main cluster of dates, the earliest possible date is around 1016, and most have an earliest date of around 1024 or 1025. The occupation clearly ended by 1155.

Unfortunately, however, these date ranges are too long to resolve my research question of whether Aztec North predates Aztec West. As discussed below, I have used Bayesian modelling to narrow the dates. But first, a digression on the four samples that do not fit the overall pattern.

*Old Wood*

As shown in Table 7, four samples had extremely early date ranges from the mid 700s to the mid 900s. Three of these samples (AzN253, AzN242, and AzN249) were wood from Study Unit 2. Two (AzN242 and AzN249) were from architectural materials, and AzN242 was still embedded in adobe. The third sample (AzN253) was from the floor of the great house. In theory, it might be unsurprising for the samples from architectural materials to be the oldest at the site, but these dates are much older than expected, based on the ceramic assemblage.

There are several possible explanations for these early dates. One hypothesis is that the great house (or this part of it) was in fact built in the 700s to 900s. An early 10th century great house would be essentially contemporaneous with the earliest portions of Pueblo Bonito and the earliest Chaco Canyon great houses. I consider this explanation extremely unlikely. First, it is inconsistent with the decorated pottery, which indicates an occupation beginning in the late 1000s or early 1100s. At multicomponent sites around the San Juan Basin, archaeologists find Pueblo II structures built on top of or near older habitations, and in those cases the older pottery will still be abundant even on the surface and certainly in midden deposits. For example, Linda Wheelbarger's (2008) excavations at sites on the B Square Ranch in Farmington have identified ceramic assemblages that clearly span from Pueblo I into Pueblo III. Moreover, pueblo structures with masonry veneers are not consistent with construction in the Pueblo I period (700-900).

Another possibility is that builders at Aztec North in the 11th century used old wood that had already been dead for two centuries or more. Given the arid climate, it is certainly possible that wood that old was lying around or even floated down the river, and good wood is scarce at Aztec. So would anyone choose such old wood for construction? Our samples were from architectural debris, but in this case that does not mean beams of wood in the ceilings. Instead, this was material cut up to mix into the adobe and daub. So perhaps early builders in a place without significant wood resources were willing to mix old wood into the adobe.

The third possibility is that this was old wood from an earlier structure somewhere nearby, which was removed and reused when the great house was later built. Again, the pottery does not point to any occupation here in the Pueblo I or early Pueblo II period, and in fact there is no hint of any such occupation anywhere in the immediate vicinity of the Aztec Community (Brown et al. 2013; Lekson 2015:66; McKenna 1998; Stein and McKenna 1988; Turner 2015). There are earlier structures in the Animas Valley, including extensive Pueblo I sites at Cedar Hill (Wilshusen 1995) some 17 km away. The Animas Valley has been intensively farmed for well over a century, so it is possible that traces of a closer Pueblo I occupation have been obscured or destroyed. There could have just been a small, isolated pithouse somewhere on the terrace, which left little mark on the landscape and has since been obliterated, and which was the source of wood that was reused later.

The last possibility is that we were just unlucky enough to test the oldest part of trees that were cut in the 1100s but that had been growing since much earlier. This seems unlikely for AzN242, which appeared from microscopic analysis to be a single growth layer of bark, which would be the youngest portion of a tree, but the other two samples were indeterminate charcoal and were not examined by an archaeobotanist.

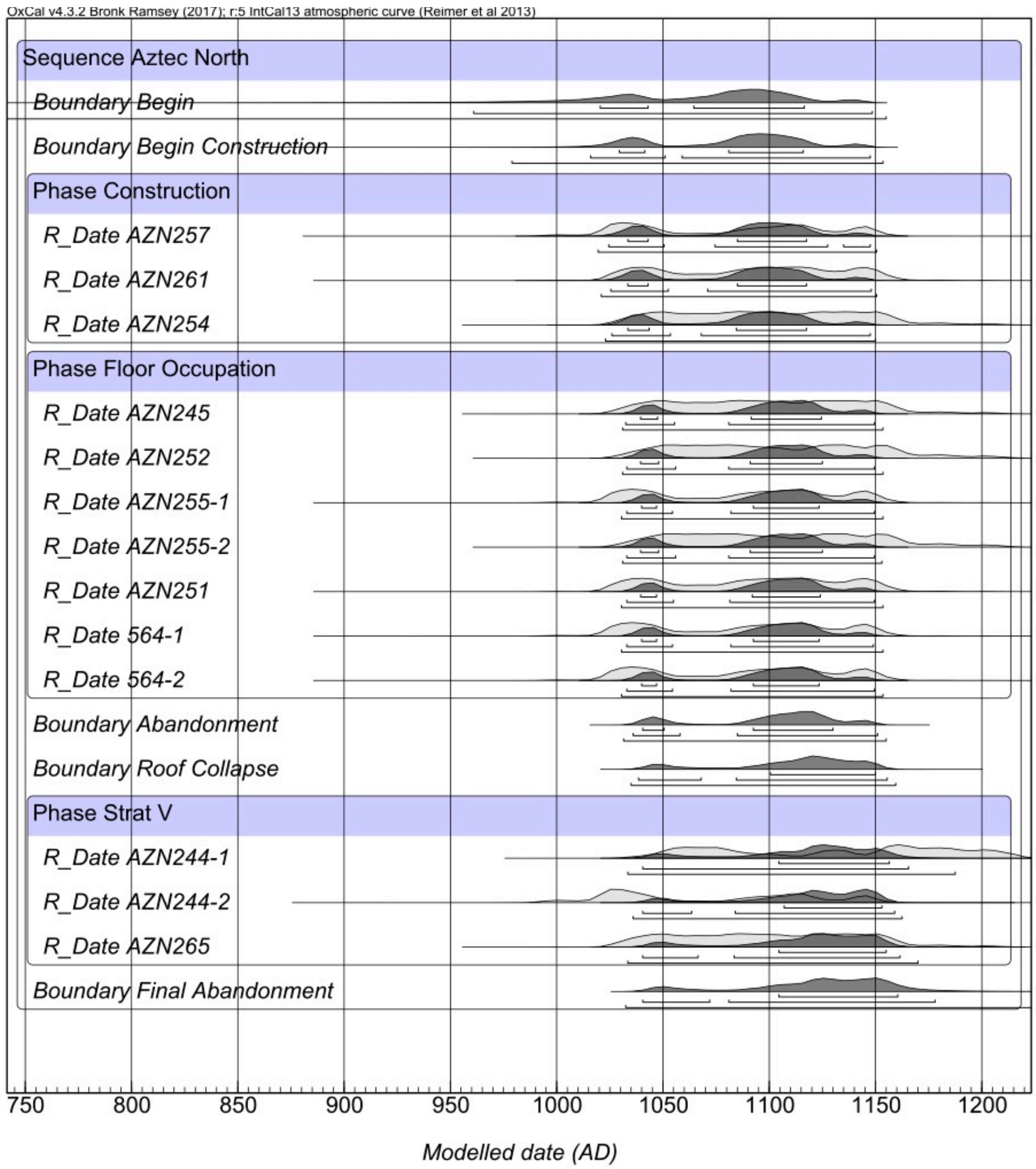
It is impossible to know which hypothesis is right, but I think it is most likely that this was simply old wood picked up off the ground by 11th century builders for mixing into the adobe.

In addition to samples AzN253, AzN242, and AzN249, a fourth sample, AZN241, adds some confusion. I sent the lab an adobe block that contained a clear but very fragmentary impressed corncob, a sample which in theory would have provided a maize date for the construction material itself. The result came back pointing to the late 900s or early 1000s—an exciting result indeed. But it has become apparent that, due to lab error, the material that was tested was not actually the maize (as shown by its C13 value) but a mix of other plants that apparently were also in the adobe. The lab cannot exclude the possibility that this material included old wood. So unfortunately, this sample, though intriguing, cannot be trusted because I do not know what plant material was tested. And again, that date range is difficult to square with the pottery.

<u>Bayesian Analysis</u>

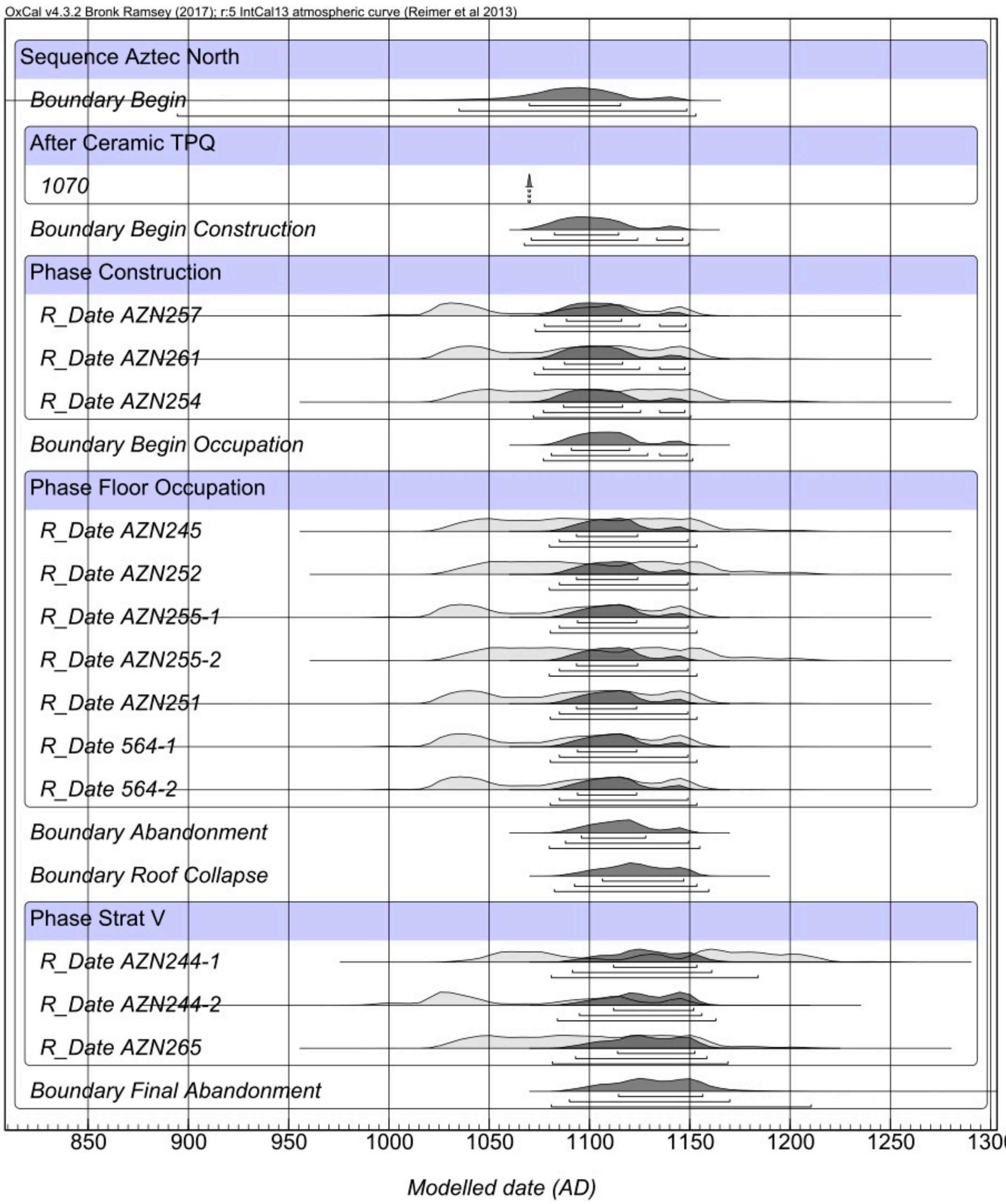
I applied a Bayesian model (Table 7) to incorporate known data about the stratigraphy of the site. First, I made the choice to eliminate AzN241, because I do not know what plant or mix of plants was tested. I treated the three other old wood dates as *terminus post quem* dates—so that construction/occupation must begin on or after those dates. Then I created three phases in OxCal—one for construction, one for occupation and one for after roof collapse (representing samples from Study Unit 1's Stratum 5).

**Table 7 Bayesian model, showing AMS date ranges for construction phase, occupation phase and post-roof collapse deposition of Stratum 5. Created by the author based on results from Beta Analytic, using OxCal v4.3.2, IntCal13 curve.**




I also ran a second model (Table 8), using the ceramic range start (1070) as a *terminus post quem*, so that construction and occupation must be after that date. (That date, again, is based on the absence of San Juan red wares.)

**Table 8 Bayesian model constrained by 1070 ceramic range start. Created by the author based on results from Beta Analytic, using OxCal v4.3.2, IntCal13 curve.**




The Bayesian models are not conclusive, but they are suggestive. The date ranges remain lengthy, and the probability peaks are just probabilities. However, particularly with the ceramic constraint, the model does seem to push the peak probabilities to right around 1100, with the occupation dates peaking later.

Mean Ceramic Dating Analysis

The mean ceramic date for all the sherds recovered during excavation is 1101, with a standard deviation of ±38, for a possible date range of 1063-1139. However, occupation before the 1070s is unlikely based on the ceramic types found. In particular, the site has no San Juan red wares, which we would expect to see if it was occupied in the 1060s (L. Reed 2017; L. Reed personal communication 2017).

This date range is highly consistent with the date range I obtained from the surface sherds (Turner 2015). And when I combine the surface and excavation sherds, the mean ceramic date changes only very slightly, to 1102±38, with a possible date range of 1064-1140. The consistency between the surface sherds and the excavation sherds reflects the very close similarity in the sherds found in the two assemblages.

Table 9 summarizes the mean ceramic dates for each of the four study units.

**Table 9 Mean ceramic dates by study unit**

| Study Unit | Weighted MCD | Standard Deviation | n= |
|---|---|---|---|
| SU1 | 1101 | 1067-1135 | 39 |
| SU2 | 1084 | 1050-1118 | 49 |
| SU3 | 1109 | 1069-1149 | 52 |
| SU4 | 1100 | 1059-1141 | 40 |

The units each have fairly small sample sizes, but Christenson (1994) has argued that samples as small as 10 or 15 sherds are sufficient for mean ceramic dating. It is interesting that the two architectural units, Study Unit 1 and Study Unit 2, both seem to trend a bit earlier than the two midden units, Study Unit 3 and Study Unit 4.

There were only four sherds in the sediments immediately above the floors. These were all indeterminate gray ware sherds. As we removed the floor in Study Unit 2, we encountered a Toadlena Black-on-white sherd (Figure 7-1), though it was recorded as "in rodent burrow" (PD 275). The date range for this type is 1000-1200 (Reed 2006; Windes 1977).

**Figure 7-1 Toadlena Black-on-white sherd (PD 275, FS 3). Photo by the author.**

I also ran a mean ceramic date specifically for Stratum 5 of Study Unit 1, which was an ashy post-occupational deposit on top of roof fall. The result was 1083±35, as opposed to 1101±38 for the whole site, so it actually trends earlier. That may simply reflect the small number of sherds in the sample (n=12). This was the only specific stratum that had enough sherds to analyze in this way.

Architectural Overview

In the next section, I proceed room by room to discuss in detail the various walls, floors and features. But first, to orient the reader, I wish to provide a general overview of the architectural features of this great house and how it differs from other known great houses.

The site's surface had very little sandstone debris. Instead, it had large river cobbles laid out in rows. Based on the surface evidence, archaeologists expected the walls of Aztec North to be cobble and adobe (Brown and Paddock 2011; Brown et al. 2013;

Lekson 2015:72; Van Dyke 2008). That is not, however, what we found during subsurface testing.

Instead, we encountered significant quantities of fragmentary sandstone. It was a very friable green sandstone that would often crumble in our hands. Some pieces that were in better condition did appear to be shaped and pecked. The crumbly nature of this sandstone may explain why so little of it is visible on the surface—it simply eroded away. However, pieces of this crumbly sandstone can also be found at Aztec West, alongside better quality sandstone.

At the very bottom of two of the walls (Feature 23 in Study Unit 1 and Feature 22 in Study Unit 1), where the walls met floor surfaces, we found small stubs of coursed masonry preserved *in situ*. Although these walls and the other walls we uncovered had collapsed, the quantities of sandstone we found, and its position within the wall fall, indicate that there was significant use of sandstone veneer throughout these rooms of the great house. Thus, rather than a fully adobe great structure, we uncovered a building with masonry veneer.

The cores of the walls, however, were the real surprise. Chacoan great houses and other outliers normally have sandstone veneers over cores that consist of stone rubble. At Aztec West, the cores generally consist of semi-coursed masonry (Brown and Paddock, 2011). But Aztec North had something quite different— its cores were made of adobe. In one interior room wall (Feature 23) in Study Unit 2, this core clearly consisted of handful-sized balls of mud pressed into the core of the wall. In another wall (Feature 22) in Study Unit 1, the core was more like a puddled adobe, pressed and smeared into place.

In terms of the Animas vernacular architecture as described by Brown and Paddock (2011), the wall cores we excavated resembled the cobble-reinforced adobe they describe as common in the Animas Valley. However, nowhere did we find wood frameworks set into the adobe as they describe, though it is possible that the wood was too decayed and fragmentary to notice in excavation. Nor did we find anything resembling coursed adobe.

We also found evidence of renovation. The study unit along the back wall of the great house, Study Unit 1, uncovered three parallel walls, one of which was very ephemeral and probably was not the back wall of the great house. The other two walls were within a meter of each other, and one of these (Feature 28) had only the footer trench left, without the wall structure. The wall either collapsed or was taken down and replaced by Feature 22. This indicates that the structure was renovated at some point after the initial construction.

The roof fall consisted of daub, much of it with impressions of organic material that had been used in its construction. Some of the daub still contained fragments of organic material. We did not, however, find any ceiling beams or any larger pieces of wood. While this certainly reflects our very limited excavation, there is also the possibility that wood from a collapsing Aztec North might have later been salvaged for use elsewhere.

Aztec North was a single-story structure, at least in the portions excavated, including along the back wall. Our trenches clearly revealed the floor surfaces and the footer trenches below them, which were cut into otherwise sterile soil. Because the roofs were entirely collapsed and because we found so little wood, I can say little about roof construction.

The floors were well-prepared and made of an adobe tempered with small pieces of sandstone. At least one of the floors (Feature 21) had white plaster coping where it met the wall (Feature 24).

When we cut under the floors, we found large cobble footer trenches that had underlain the walls. These were almost a meter wide and consisted of river cobbles set in a hard mortar. Their solid construction stands in contrast to the ephemeral nature of the walls themselves— in some places, we were not entirely confident of where the wall even stood until we found the footers.

Some of the chunks of adobe we found were plastered in white, sometimes with multiple layers of plaster. This is evidence that the interior rooms of the great house were plastered and replastered. I have no evidence about whether the exterior walls of the great house were plastered.

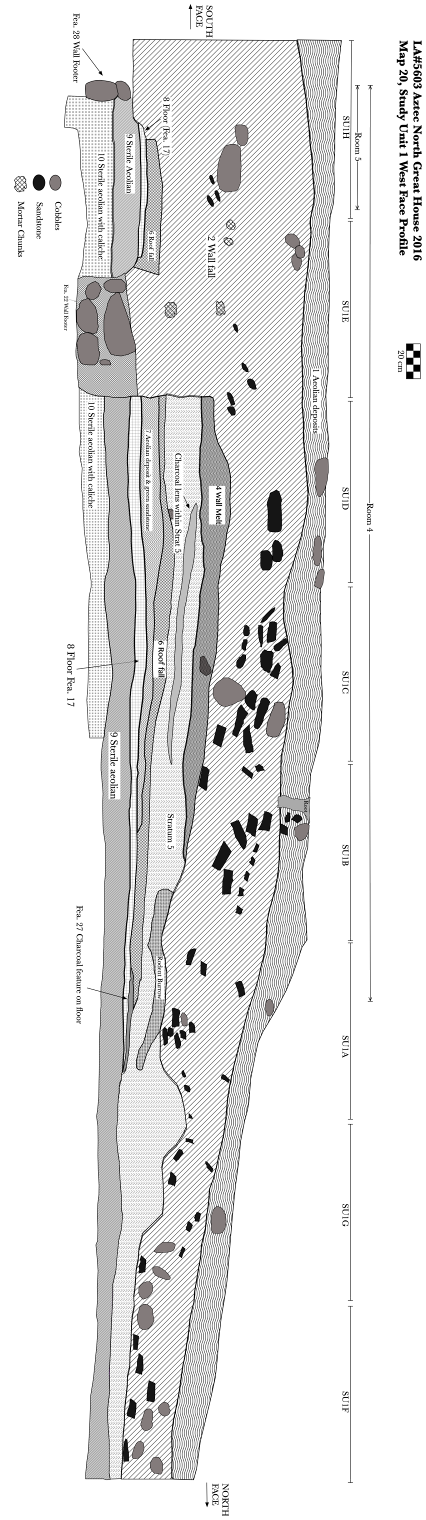
We did not encounter any formal hearths or floor features, although we did uncover and excavate two small charcoal features (Feature 27 in Study Unit 1 and Feature 20 in Study Unit 2). Both were small enough that they could have represented just a single night's fire. Given the small portions of floor surface that we exposed, it is not particularly surprising that we did not locate any formal hearths.

I now turn to detailing the findings from each of the four study units. Two of these (Study Unit 1 and Study Unit 2) were in the architectural portions of the great house. The other two (Study Unit 3 and Study Unit 4) were in the middens to the south of the structure. I describe each study unit and the results of our excavation.

### Study Unit 1

Study Unit 1 was our northernmost unit, situated in an effort to locate and intersect with the rear, or northernmost, wall of the great house. The crew excavated a linear trench of 8 consecutive study units in this area, labeled Study Unit 1A-Study Unit 1H (see Figure 5-2 in the previous chapter and Figure 7-2 below) The deepest portion of the trench, upslope, was 1.64 meters deep. Based on the final unit dimensions, the soil and construction materials we removed in this trench had a total volume of 9.54 $m^3$. The excavation revealed three different walls, and two floor surfaces. Based on the two floor surfaces, we identified two rooms. Room 4, which once extended across most of the unit but was subsequently divided by a wall, creating Room 5, to the south. Figure 7-2 is a full profile of the west face of Study Unit 1.

**Figure 7-2 West Face Profile of Study Unit 1. Drafted by the author.**



*Room 4*

Room 4's footprint is defined by its floor, Feature 17. Room 4 also has three walls (Features 19, 22 and 28) associated with it. I describe each of these below and then interpret the room as a whole. The excavation uncovered the entire north-south length of Room 4 and of its floor, Feature 17. To the east and west, both the room and the floor extends beyond our 1 meter wide trench for an unknown distance.

<u>Feature 17, the floor of Room 4</u>

Feature 17 is the floor/living surface of Room 4 and we uncovered its entire north-south extent, which stretches over 5 meters, from sub-unit 1H to sub-unit 1A. Feature 17 begins at Feature 28, a wall on the southern edge of Study Unit 1 and does not exactly end at a wall but instead tapers out near Feature 19, an ambiguous and expedient wall in the northern end of our Study Unit 1.

Feature 17 is a well-prepared floor about 8 cm thick, which consists of a sandy clay with greenish sand and small pieces of green sandstone pressed into it, presumably as binders. It was flecked with white, which may be bits of white clay. The floor surface had a light but visibly grayish surface on it from use. No artifacts of any note were found on Feature 17 anywhere along its length, indicating that it was cleaned at the time of abandonment.

Feature 17 has a complicated biography. Remodeling of the walls at some point bisected Feature 17 when builders removed Feature 28 (the old north wall) and built Feature 22 (the new north wall). The 1 meter portion of Feature 17 south of the new north wall became part of Room 5, as discussed in that section below.

In Room 4, above the Feature 17 floor, excavators reported an aeolian deposit of soft sandy loam (Stratum 7). This stratum was intermixed with a clear layer of green sand and sandstone, which they thought could be a deliberate closing deposition when the room was abandoned. Green, however, is the normal color for sandstone at this site, and it is a particularly crumbly kind of sandstone, so it is difficult to judge the significance of this layer. Figure 7-3 is a photograph of this possible closing deposit, Stratum 7.

**Figure 7-3 Stratum 7(on surface to the right of the photo board). Photo by the author.**


Feature 19, the Northernmost Wall

Furthest to the north, in Study Unit 1G and Study Unit 1F, Feature 19 was an ephemeral wall, which had no footer trench and which we were only able to identify in profile. While I am confident in our experienced crew members' judgment that there was some kind of wall here, the nature of it appears to be fairly expedient and elusive. The wall fall consisted of cobbles lying on top of sandstone, suggesting that it was a cobble wall with sandstone veneer. I cannot say with certainty that it included adobe like the other walls, although its ephemeral nature suggests it might well have.

Rather than a real structural back wall to the great house, this may represent an addition or lean-to of some sort. A number of Chaco Canyon great houses had a row of rooms that were appended to existing back walls. These include Pueblo Bonito, Chetro Ketl, and Peñasco Blanco. Similar rows of rooms are found on the side walls at Pueblo Alto (Windes 1987:362-368; Lekson 1984). At Pueblo Alto, based largely on the presence of many exterior doors, Windes (1987) argued that these were storage rooms for goods brought in along the North Road.

At a 2017 SAA session where we presented our results, Steve Lekson indicated that he had also encountered "temporary outposts" underneath several great houses, short-term structures that might have served as reconnaissance housing prior for people studying the site prior to construction, and which were dismantled during construction. That is another possibility, and its temporary nature would explain its very expedient nature and the lack of a foundation trench. There are no artifacts that would reveal any temporal differences, however.

<u>Feature 28, the original North Wall</u>

At the very southernmost face of the trench, in Study Unit 1H, we exposed a small portion of Feature 28, a cobble wall foundation that runs northwest to southeast. This was discovered very late in the excavation, and only a small triangular shaped part of this wall was in our unit, about 27 cm wide on the west profile and narrowing to 13 cm wide on the east profile. Unlike all of the other walls we encountered, Feature 28 does not run on a cardinal direction. Excavators noted the possibility that the wall was curved and that it represents the exterior wall of a kiva or other pitstructure, but the portion we exposed is too small to be certain of the curvature.

The Feature 28 foundation consists of two layers of cobbles, ranging from about 17 cm to 23 cm wide. They are not particularly uniform. The builders did not place them flat side down, instead setting them rather haphazardly in a gray, hard adobe that required a pickaxe to dig through. On top of the cobbles was an equally hard but lighter tan adobe surface. This substantial foundation seems likely to have once supported a significant wall.

It appears that builders later remodeled this area, removing the wall sitting on top of Feature 28 and building a new wall, Feature 22 (see below) about a meter to the north. Wall-fall from Feature 22 runs continuously from that wall and was resting on top of the Feature 28 foundation, indicating that the wall originally supported by Feature 28 was gone by the time the later wall, Feature 22, collapsed.

Figure 7-4 shows the renovated area. Feature 28, the old wall foundation, is the cobble feature shown above (south of) the photo board, while Feature 22 is the wall portion shown below (north of) the photo board. They are only about a meter apart. (On the right half in this photo, we have bisected Feature 22 down to sterile soil.)

**Figure 7-4 Renovation of the north wall. Photo by the author.**


There is therefore evidence of remodeling, but there could be different reasons for it. Feature 28 might have collapsed or failed, so that a new wall had to be built to replace it. Or it might have been an effort to make an interior room larger, or to change its layout.

There were few artifacts in this unit, Study Unit 1H, and none associated with this wall. Since the actual wall is missing, we do not know if it was built with adobe like other walls, nor whether it had a sandstone veneer.

Feature 22, the renovated North Wall

Feature 22, which sits between the other two walls in this unit, appears to have been the final "north wall" of the great house after renovation. It too consists primarily of a cobble foundation, with cobbles of a variety of sizes from 10 to 40 cm set in a brown mortar (Figure 7-5). The cobbles do not seem to be coursed or set in any particular order.

**Figure 7-5 Feature 22, seen from the north, showing cobbles set in mortar. Photo by the author.**


On the south face of Feature 22, the construction is visible (Figure 7-6). Several rows of coursed masonry are still in place above the cobble foundation. Above and behind the masonry, on the east side of the trench, a dense mass of adobe is visible, with sandstone and cobbles mixed in. (The round hole in front of the wall in Figure 7-6 is an augur hole, not a feature.)

**Figure 7-6 Feature 22 from the south, showing cobble foundation and wall with coursed mortar and packed adobe. Photo by the author.**

The northern face of Feature 22, which would have been its exterior face, is entirely eroded above the foundation, so I can say little about the exterior of the wall. It does seem from the position and quantity of sandstone in the wall melt that the exterior originally had a veneer, but I cannot be sure of this.

Feature 22 therefore appears to be a core and veneer wall, with a packed adobe core and a veneer of shaped green sandstone masonry. The wall fall (Stratum II) from this feature has melted to both the north and south and constitutes the majority of the fill excavators removed in this sub-unit. There were no artifacts of note associated with this feature.

Feature 27— Charcoal Hearth

Also within Room 4, we uncovered a charcoal feature on the floor (Feature 17) surface in Study Unit 1A. Rather than sifting the contents of the charcoal hearth, the excavator collected the entire contents as a bulk soil sample for flotation. I have no further information yet about the contents of the hearth, but it is one of the archaeobotanical samples that students at Binghamton University are analyzing as of 2018-2019. I did open the light fraction bag when looking for samples for AMS dating and found no visibly identifiable maize fragments.

Stratum 5, a post-habitation trash lens

Also within Room 4, Stratum 5 is a post-habitation lens of midden deposits in Room 4. It was sitting on top of what was designated as Feature 16. Feature 16 is described as a floor or surface in various places in the paperwork, but this is misleading. This was not a living surface like Feature 17. Rather, Feature 16 is a surface in the sense that it is an area on top of wall fall and roof fall, upon which someone deposited a thin ashy layer of trash (Stratum 5) at some point after the abandonment of Room 4. The ashy layer was likely a secondary deposit of trash brought from elsewhere at the site and dumped into this abandoned room.

Feature 16 was formed after the architecture in this area had collapsed or been knocked down, and wind blew soil on top of the architectural debris. The thin charcoal deposit is intermixed with these aeolian deposits, such that the excavators were not even able to clearly identify it as a separate stratum or feature. So the entire Stratum 5 is actually a mix of aeolian soils and charcoal sitting just on top of the Feature 16 "surface." Stratum 5 is a clear charcoal lens in the profile, and it was full of artifacts, including obsidian, faunal remains, corn cobs, an antler tool, a projectile point and most of our beads.

I cannot say precisely how long the room was abandoned before this dumping episode, but it was not centuries or decades. The artifacts in the ashy layer are entirely consistent with artifacts from the rest of the site, including the following sherds: one Escavada Black-on-white, two Gallup Black-on-white, five Mancos Sosi Black-on-white, two Mancos Reserve Black-on-white and a McElmo Black-on-white. The projectile point and the beads are similar to those found elsewhere at this site and at Aztec West.

Feature 16, and the thin charcoal lens it supports, are about two meters long north to south and are located in Study Unit 1C and Study Unit 1D. Feature 16 is characterized by a slightly more compacted matrix that also appeared slightly more yellowish than the rest of the stratum below it. The surface slopes; its southern end is 10 centimeters higher than the northern end, perhaps reflecting that aeolian deposits had banked up against the wall (Feature 22).

### Interpreting Room 4

Room 4 as it originally existed was very large, measuring over 5 meters long north to south. However, the evidence suggests that Room 4 was perhaps not a part of the main great house structure, but rather some kind of room appended to the back of the great house or perhaps a part of Lekson's reconnaissance structure. Dating of artifacts and samples is not, unfortunately, sufficiently fine-grained to evaluate the possibility that this area is older than other parts of the great house.

The renovation changed the layout. When the old north wall (Feature 28) was taken down and the new north wall (Feature 22) was built, Room 4 was bisected. Its floor, Feature 17, appears as a stratum that extends to both the north and south of the new north wall. To the south of the new north wall, Feature 17 continued in use as the floor of a new room, Room 5.

Room 4 appears to have been abandoned before the renovation occurred, however. Builders dug the new north wall (Feature 22) into strata that had already built up on top of the Room 4 floor (Feature 17), and those strata are still visible north of the new north wall. Inside Room 5, the builders apparently dug out those built up strata during the renovation. The northern portion of Room 4 fell into disuse and at some later point saw the deposit of trash (Stratum 5) on top of collapsed roof fall.

*Room 5*

Room 5 is the new room created to the south when the old north wall (Feature 28) was demolished and the new north wall (Feature 22) was built. Our excavation only revealed about 1 $m^2$ of Room 5. It is bounded to the north by Feature 22, but to the south, east and west, it continues for an unknown distance beyond the edges of our study unit. A portion of Feature 17, the Room 4 floor, became the floor for the new Room 5.

Feature 17, the floor of Room 5, and Feature 22, the wall that bounds it to the north, have already been extensively discussed above, as has the renovation that created Room 5.

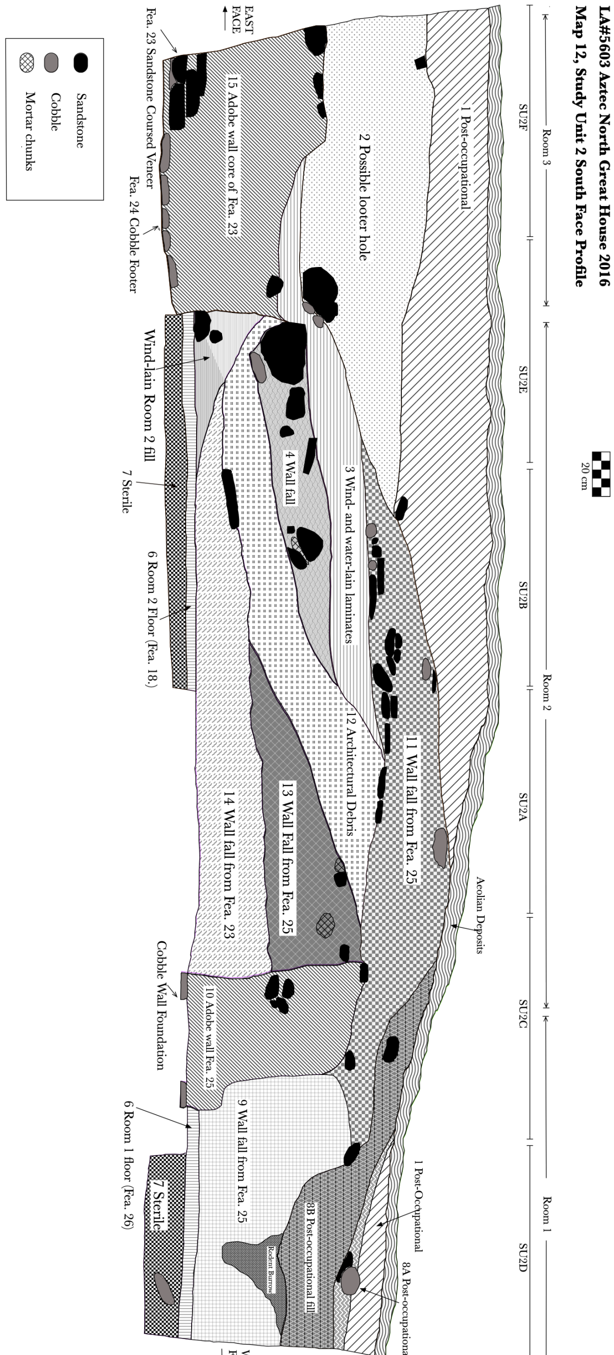
Study Unit 2

We situated Study Unit 2 in the eastern wing of the great house in a depression that appeared to have previously been disturbed by looters. As we began excavation, what we encountered did appear to meet our expectation of a looter's hole— the soil was loose and chunky as if it were back dirt. In fact, our early excavation forms from this area refer to certain soils as "looter backdirt." However, it later became apparent that we had misinterpreted some of what we were seeing. I still believe that there is some looter disturbance at the top of the unit. However, much of what we interpreted as soil loosened by a pothunter's spade was actually the collapsed remains of some very unusual adobe. It is also possible that the depression resulted in part from the prehistoric removal of ceiling beams or other construction materials, which might have been reused in subsequent construction at Aztec West or Aztec East (and which could even explain some of the anomalously early dates at Aztec West).

The surface depression was about 6 m x 8 m. Our 6m x 1m trench cut east-west across the entirety of the depression. Based on the final measurements of the trench, we removed 8.22 $m^3$ of soil and construction materials.

Our excavation uncovered portions of three rooms (Rooms 1, 2 and 3). Those rooms include two north-south walls (Features 24 and 25) and one east-west wall (Feature 23) as well as three floor surfaces (Features 18, 21 and 26). We also identified a small charcoal hearth feature (Feature 20) within Feature 18. I discuss each room in turn, summarizing and describing the features associated with it. Figure 7-7 is a full profile of the south face of Study Unit 2.

**Figure 7-7 Study Unit 2 South Face Profile. Drafted by the author.**



*Room 1*

Room 1 is at the western end of Study Unit 2. It is bounded on the east by Feature 25, a north-south wall, as its eastern wall. We only uncovered about 1 meter of Room 1 in the western portion of our Study Unit, and the room continues an unknown distance beyond to the west, north and south.

The floor for Room 1 is Feature 26, only a small fragment of which remains against the south profile. This piece of floor is about 57cm by 13 cm, though it presumably continues beyond our trench to the south. There is rodent disturbance visible in the profile that might have damaged the remainder of the floor, though our excavation might also have removed some of it before we realized we were at the floor. However, the piece we do have is well preserved, with a compacted, gray surface that is quite different from the whiter floors in Rooms 2 and 3. Feature 26 is also 2-3 centimeters higher up than the floor in the adjoining room (Feature 18).

Feature 26 is about 10 cm deep and made of a hard adobe material with small inclusions of sandstone and plaster. Artifacts found near the floor surface include two Chuska corrugated sherds that could be either Pueblo II or Pueblo III.

Feature 25, the wall at the eastern end of Room 1, is discussed as part of Room 2 below.

*Room 2*

Room 2 lies between two north-south walls—Feature 25 on the west and Feature 24 on the east. Its floor, Feature 18, was largely intact and had many artifacts. Room 2 is the only room in Study Unit 2 whose entire east-west width we excavated (although it continues to the north and south of our trench). It is over 3 meters wide. It lies mainly in Study Unit 2A, B and E, with a bit extending into C.

Feature 24, a north-south wall in the east end of the unit

Feature 24 is a north-south wall, with a subfloor cobble foundation footer, situated between Study Unit 2E and Study Unit 2F, in the eastern portion of SU2. The wall itself was very difficult to discern in the profile, and we struggled to identify the exact location of it as we excavated. It was clear we were excavating through extensive wall fall and architectural debris that included significant quantities of sandstone, as well as cobble and adobe, but it was dispersed and not coherent. We reached the floor, Feature 18, without figuring out exactly where the wall was. Then we cut under the floor and found the substantial cobble and mortar footer trench below, which clearly identifies where the wall stood.

The footer trench to Feature 24 consists of cobbles ranging from about 7 cm wide to about 20 cm wide, set in a hard whitish adobe mortar (Figure 7-8). The footer is 8 cm deep, so not nearly as deep as the footer trenches in Study Unit 1 (35 cm for Feature 28 and 43 cm for Feature 22). Perhaps that is because this is an interior wall. The footer is 70 cm wide, comparable to the 63 cm for Feature 22. It runs north-south, perpendicular to and intersecting with Feature 23, the east-west wall, as described below.

Having found the footprint of Feature 24, we were more easily able to examine the wall fabric in the profiles. The wall consists mainly of adobe, which is hard but also crumbles easily. It has a chunky appearance that suggests it was formed as handfuls of mud. Builders mixed in small pieces of sandstone, 5 cm or less in diameter, mixed in. There were certainly cobbles in the wall fall as well, but it was a mainly adobe wall core with some cobbles mixed in, not a wall of cobbles mortared together.

**Figure 7-8 Feature 24, a footer trench to a north-south wall on the east end of Study Unit 2, seen from above.**


We did not find a clear layer of sandstone veneer for Feature 24, but we noted extensive green sandstone in the construction material as we excavated, which appeared to be a layer of veneer that had peeled off. We also found a single large, well-shaped block of sandstone *in situ* near the base of this wall (Figure 7-9). Figure 7-9 shows the sandstone block in situ where we found it, which later turned out to be the base of Feature 24. While I cannot be certain that this wall had a sandstone veneer, the evidence suggests it did, and that this wall was very similar to Feature 23.

**Figure 7-9 A view down the length of Study Unit 2, from west to east, before subfloor excavation. Photo by the author.**

Feature 25, a north-south wall in the west end of the unit

Feature 25 is the cobble foundation to another north-south wall in Study Unit 2C, near the western end of Study Unit 2. Feature 25 and Feature 24 were the two ends of a Room 2.

As with Feature 24, we knew we were digging through dense wall fall but had difficulty locating the original wall until we reached the floor (Feature 18). It was not until we went into the sub-floor and found a cobble foundation that we knew with certainty where the Feature 25 wall had stood.

Feature 25's foundation consisted of cobbles from about 10 cm to about 25 cm across, inset in a white adobe mortar. It was about 5 cm deep and 50 cm across. The adobe wall fabric is visible in the profile, and consists of the same crumbly ball of mud construction as the other walls in this unit. And as with Feature 24, there is no clear *in situ* masonry veneer, but we uncovered ample sandstone in the wall fall. I believe that this was a sandstone veneer and adobe core wall similar to Feature 23.

**Figure 7-10 Plan view of Feature 25, the north-south wall in the west end of Study Unit 2. We only removed the floor on the northern half of the study unit. Photo by the author.**


Features 24 and 25, the two north-south walls, mark the ends of Feature 18, the floor to Room 2. Feature 18 is hard adobe like the other floors. The floor was fragmentary in places, but much of it was well preserved. It has a whitish surface that may have once been plastered.

Artifacts on this floor (Feature 18) included maize cobs and stalks, several animal bones including fish vertebrae, a piece of yellow ochre and a cobble with red ochre staining, and the piece of knotted yucca fiber. Pottery included a Chuska gray ware jar, a Mancos Black-on-white sherd with a Sosi style design and a Gallup Black-on-white sherd.

Feature 20

Feature 20 is a small charcoal feature on the Feature 18 floor in Room 2. This feature first appeared as a dark round stain between Study Unit 2A and Study Unit 2B while we were removing floor fill from Feature 18. Once we identified the stain, we excavated it separately as Feature 20. It turned out to be smaller than it originally appeared, about 56 cm in diameter, and is actually an irregular circle confined to Study Unit 2B. It is only about 2 cm thick, but it contained many maize cobs that we collected in situ for $^{14}C$, as well as a few animal bones. We collected all the feature fill for flotation (see below for details on the archaeobotanical findings for Sample 3, PD 258). There was a rodent burrow along the eastern edge of the feature. Feature 20 is visible on the left in Figure 7-9 above.

*Room 3*

We exposed only a small portion of Room 3, in Study Unit 2F at the eastern end of our Study Unit. It is bounded by Feature 24 on the west and Feature 23 on the south, but continues an unknown distance beyond our Study Unit on the east and north. We designated its floor as Feature 21.

Feature 21, the floor of Room 3

Feature 21 (the floor) was fragmentary, but it is highly visible in the east profile, and portions of it were in excellent condition. It is about 5 cm thick and made of hard adobe that required a pickaxe to cut through when we probed into the subfloor. The surface of the floor is quite white, and was likely plastered. Where Feature 21 (the floor) meets Feature 24 (the wall), there is a clear coping effect, with the floor curving up against the wall. This may be an effect of plaster being smoothed against both the wall and the floor.

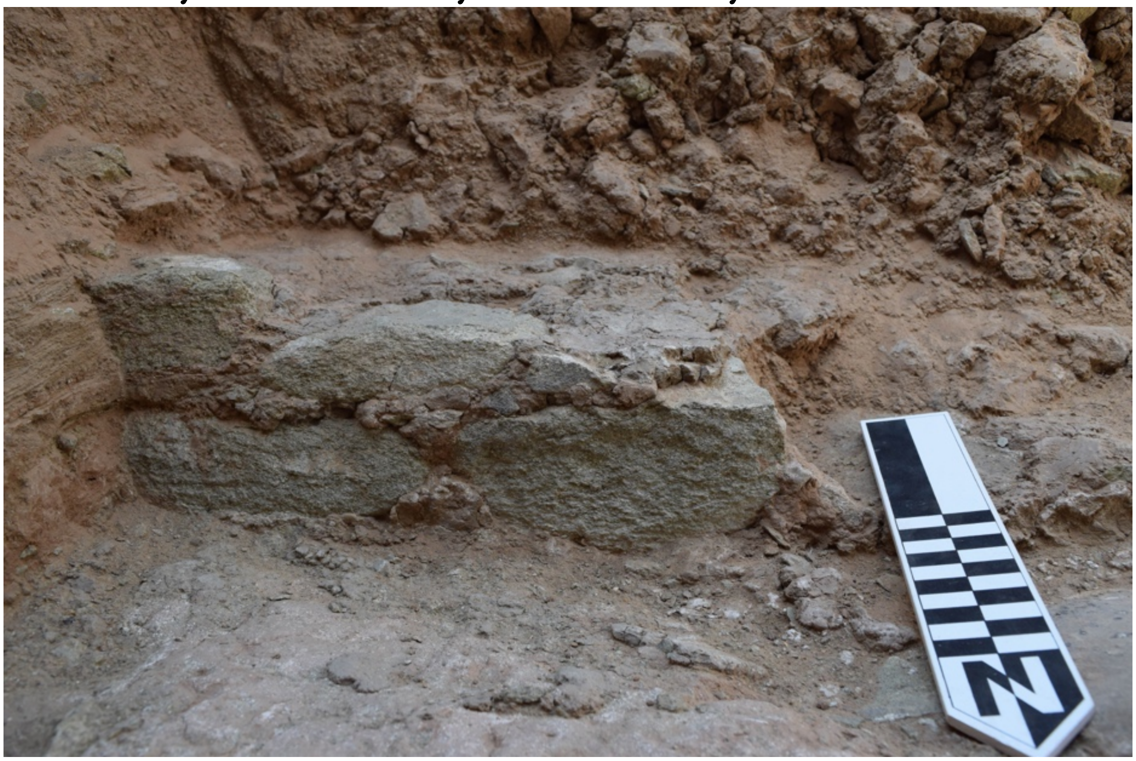
Feature 21 slopes significantly from north to south. It seems to have subsided. I can only speculate, but perhaps the east-west wall (Feature 23) that was built on top of it with no cobble foundation was too heavy for this floor and caused it to sink. Where Feature 21 meets Feature 23 on the south profile, there is a spot where a softer adobe seems to have been used to try to fill in and level off the floor where it subsided. That soft adobe seems to have subsided as well, and a layer of laminate deposits suggests that windblown soils collected there either during or just after occupation. Floor fill artifacts included an indeterminate Chuska Pueblo II Black-on-white handle.

Feature 23, the east-west wall

Feature 23 is an east-west interior wall near the eastern end of our trench, in Study Unit 2E and Study Unit 2F. We did not realize it was there until nearly the end of our excavation, and we were instead focused on the north-south wall that intersects with this east-west wall. So it came as a great surprise when we reached the floor and discovered a fragment of green coursed sandstone veneer nearly up against the face of our excavation units. It took several more days, and quite a bit of profiling, before Dr. Van Dyke suddenly realized that this was a badly deteriorated core and veneer wall with an adobe core, and that we had bisected its core.

The Feature 23 wall portion we uncovered begins at the eastern end of our trench and runs about 120 centimeters in from there, intersecting with Feature 24, the north-south wall, and then tapering away. The in situ masonry veneer, consisting of about 5 pieces of shaped sandstone (Figure 7-11), is up against the eastern end of the trench.

**Figure 7-11 Masonry veneer segment at the base of Feature 23, the east-west wall in Study Unit 2F and Study Unit 2E. Photo by the author.**




Feature 23's masonry work is inelegant, with rough and uneven blocks and thick mortar between. It is also made with the same crumbly green sandstone discussed elsewhere. The core of the wall consists of balls of adobe, as if handfuls of mud were dropped into place. The wall stands on sterile soil, lacking the cobble foundation associated with the two north-south walls in this unit (Features 24, 25). There were no artifacts clearly associated with this wall, and artifacts were scarce in this entire area.

This wall intersects one of the north-south walls, Feature 24, but it is unclear whether they were bonded together or just abutting. One of the cobbles from the foundation of Feature 24 seems to be under Feature 23, so the two walls may have been bonded there, but this is uncertain. Feature 23 also intersects Feature 21, the floor of Room 3, with its coped edges.

The lower portion of the wall is visible in cross-section in the eastern profile of our trench, and it continues on beyond our study unit. In addition, since we have essentially cross-sectioned the core of this wall, the remainder of the core continues to the south of our study unit.

Post-occupationally, the veneer from Feature 23 fell into Study Unit 2F, and the adobe from its upper portion largely melted away. We may also have dug through some of the adobe without realizing its significance.

Midden Study Units 3 and 4

When Stein and McKenna (1988:22) surveyed Aztec North, they noted that there was "no formal refuse mound or trash scatter" and that surface trash was very rare. The Park Service subsequently identified two midden areas and assigned them feature numbers. Midden Feature 10 is described in the official site form (which is incorporated in the feature descriptions in our field manual) as a 14x23 meter sheet midden south of the great house, with no evidence of charcoal-stained soils on the surface. The site form notes that there has possibly been disturbance related to installation of the power line and a pipeline that predated the Park's acquisition of the site, but that Feature 10 was in good condition. The other midden, Feature 6, is an 18x25 meter sheet midden to the southwest of the great house. Portions of this midden were disturbed by a road that leads to a nearby gas well, but the site form describes its overall condition as good. As we laid out our study units, we sought out artifact scatters in apparently undisturbed locations. Both middens are slightly downhill from the great house, on sloping ground leading towards the edge of the terrace, and the slope has clearly affected preservation of the middens as described below.

*Study Unit 3*

Study Unit 3 was placed in the deflated trash midden directly to the south of the great house, which the Park Service had previously designated as Feature 10. Of the two midden areas south of the great house, this one is the easternmost. We selected a portion of the midden with a relatively dense artifact scatter.

Our Study Unit 3 consisted of one 1x1 meter unit. We screened all soil in this midden unit through a ⅛" mesh to collect smaller faunal and botanical remains and small artifacts. We took bulk soil samples for flotation in the central midden fill (in Stratum II, which began 20 cm below the surface) and in the sterile soil, Stratum III.

The overburden layer, a loose windblown soil, was identified as Stratum I. Under that was Stratum II, a dark compacted midden fill layer flecked with charcoal. Midden fill was heavily interspersed with river cobbles, and the midden stratum was about 25 cm deep. Stratum III, a visibly light orange soil which we eventually confirmed was sterile soil, began at just 30 cm below the surface. After reaching sterile soil, we ended excavation at 40 cm below surface. Total soil volume for this study unit was only 0.4 $m^3$. Because this midden layer was so shallow, we chose not to open another 1x1 unit here and instead focused our efforts on Study Unit 4, located in the other midden area, Feature 6, located about 50 or 60 meters to the northwest.

Despite the shallow deposits, Study Unit 3 contained significant artifact volumes. In addition to those found in situ or in the screen, we found many artifacts in the heavy fraction after we floated the bulk soil sample. Artifacts included 232 ceramic sherds. Of these, there were 99 gray ware sherds, 68 white ware sherds, 1 brown ware sherd and 11 red ware sherds. Another 53 sherds could not be analyzed due to small size or condition. Notably, the 11 red ware sherds found in this unit makes up the vast majority of the red ware at the site, which totals 19 sherds (six more came from the other midden, and two sherds came from Study Unit 1). An indeterminate brown ware sherd in this unit was one of only two found in the excavation; the other one came from the other midden, Study Unit 4.

Study Unit 3 produced the only two flakes of Narbona Pass Chert in our assemblage. We also found small numbers of Brushy Basin chert (n=1), chalcedony (n=5) and other chert (n=4).

Only 4% of the faunal samples from the site were found in this midden unit. These consisted primarily of small fragments, but one broken deer metapod was found here. There was also a piece of eggshell.

One $^{14}C$ sample was collected in this unit. Although there was charcoal flecking throughout the midden fill, this was the only piece large enough to collect for $^{14}C$. It has not been tested.

*Study Unit 4*

Study Unit 4 was placed in a midden to the southwest of the great house. It had previously been identified as a midden area. (As previously mentioned, the Park's map and site form refers to it as Feature 6, but our paperwork erroneously refers to it as Feature 8 throughout.) As with Study Unit 3, we placed Study Unit 4 in a portion of this midden feature that appeared to have a relatively dense surface artifact scatter. As with Study Unit 3, it was fairly clear from the surface that the midden deposits were deflated.

We excavated three adjacent 1x1m units in an L shape in this feature. Excavation in this unit ended when, having already reached sterile soil in two of our 1x1s, we uncovered a human tooth in the third unit at a similar depth and ceased further excavation. As discussed in Chapter 5, we finished documenting the unit, then replaced the tooth and backfilled the unit.

Artifacts in this unit included 251 ceramic sherds. Of these, 90 were gray ware, 62 were white ware, 1 was brown ware, and 6 were red ware. At least four of the red ware sherds were from a single Tusayan vessel. A Showlow Smudged sherd from this unit was one of only two brown ware sherds in the excavation assemblage.

An unexpected find in this unit was the remnant of a modern yellow pencil (see discussion regarding the dating of this pencil in Chapter 8). This was found within the Stratum II midden deposits, at a depth of approximately 10 cm. This indicates that the midden deposits were redeposited, or disturbed, or buried by relatively recent slope wash. We were unable to make a positive determination as to which of those three possibilities is correct.

Conclusion

This chapter is the first of two that report on the archaeological findings. I began by discussing the results of my efforts to date the site, using both radiocarbon dating and ceramic data. The dating evidence indicates that the great house was built and occupied sometime between 1070-1139. I also summarized the architecture uncovered in the field, including all of the walls, floor surfaces and rooms. The architecture included both masonry veneers and adobe cores, as well as cobble and mortar footer trenches under several of the walls. We uncovered portions of five rooms, and the walls we uncovered also show some indication of renovation. In the next chapter, I summarize the remaining findings from the analysis of the artifacts and samples collected in the course of excavation.

## Chapter 8. Archaeological Findings: Artifacts and Samples

In the previous chapter, I presented the results of the architectural analysis and the dating of the site. In this chapter, I discuss the findings from the analysis that I and other archaeologists have undertaken on artifacts and samples from the site. I begin with ceramics and lithics, then follow up with archaeobotanical and faunal analysis as well as a brief discussion of a few minerals, perishables, ornaments and historic artifacts.

### Ceramic Analysis

*Excavation Assemblage*

The total ceramic assemblage from the 2016 excavation consisted of 814 sherds. Some of these (n=193) of these are so small or eroded that I could not analyze their attributes, but I was able to analyze 621 sherds. Of these, 375 (60%) are gray ware, 225 (36%) are white ware, 20 (3%) are red ware and 1 (.16%) is brown ware.

*Sourcing of Pottery*

Of the entire excavation assemblage (including all wares), 62.6% belong to the local Animas tradition and 5.2% came from the Northern San Juan. Notably, 15.9% are from the Chuskas and 12.7% are Cibola ware. Another 1.9% is Kayenta and 0.3% is Mogollon.

As for the gray ware specifically, 68.8% is locally made and 19.2% is from the Chuskas. Other imported pottery includes 5.6% from the Cibola region and 6.4% from the Northern San Juan.

My previous research (Turner 2015: Fig. 5.1), reported similar origins for the gray ware in the surface assemblage, with 68.9% being local, 20.5% from the Chuskas, 8% from the Cibola region and 2.1% from the Northern San Juan.

Of the white ware in the excavation assemblage, 58.2% is local, 25.8% is Cibola white ware, 12% is Chuska white ware, and 3.6% is Northern San Juan white ware. The surface sherds had similar proportions: 60.4% local, 26.4% Cibola, 7.5% Chuska and 4.7% Northern San Juan (Turner 2015). Notably absent in the excavation assemblage was any Socorro Black-on-white, which is associated with the adobe component at the other known adobe great house, Bis sa'ani. The surface assemblage did contain one sherd that I tentatively identified as Socorro Black-on-white (Turner 2015).

*Red Ware and Brown Ware Sourcing*

The excavation assemblage has a total of 19 red ware sherds, of which 11 are Tusayan and 8 are White Mountain red ware. The Tusayan red ware was mostly indeterminate types, but there were 4 Tusayan Black-on-red sherds. The White Mountain red ware includes 2 Puerco Black-on-red and 2 Wingate Black-on-red sherds, as well as 4 indeterminate black-on-red sherds.

There are also 2 Mogollon brown ware sherds in the excavation assemblage. One is Showlow Smudged and the other is an indeterminate Mogollon brown ware.

*Vessel Forms*

Of the excavated sherds for which I was able to identify a vessel form, 72.8% are jars and 27% are bowls. There is one fragment of a pitcher. The pitcher sherd is very small and I was not able to type it, but based on its shape it could be the shoulder of a Chaco-style pitcher. There are no identifiable ladles, ollas, mugs or other special forms. Table 10 summarizes the vessel forms by ware and by source.

**Table 10 Vessel form breakdown in each ware category**

| Ware | Bowls | Jars |
|---|---|---|
| Gray Ware | 2.2% | 97.8% |
| White Ware | 54.9% | 44.4% |
| Red Ware | 90.9% | 9.1% |
| Brown Ware | 100.0% | 0.0% |
| Grand Total | 26.4% | 73.3% |

As would be expected, nearly all of the gray ware sherds (97.8%) are from jars, while bowls predominate among white wares. All five of the gray ware sherds that I interpreted as bowls were locally made.

The eight White Mountain red ware sherds are all from bowls. Some are from the same bowl, so that there are actually six White Mountain red ware bowls represented in the assemblage. Of the Tusayan red ware, seven are from bowls (four different bowls) and four are from a single jar. The two Mogollon brown ware sherds are from two separate bowls and were found in different study units.

Interestingly, the assemblage of local Animas white ware contains about half jars and half bowls. But among the imported white ware, jars predominate. Chuskan white ware was 72.2% jars and 27.8% bowls. Cibola white ware comprised 57.4% jars and 40.4% bowls. The Northern San Juan white ware consisted of 75.0% jars and 25.0% bowls, and all of the Tusayan white ware consisted of jars.

Table 11 summarizes the percentage of the total bowls and jars from each source, highlighting the highest percentages of imported wares. Of note, 30.3% of the white ware bowls are Cibola, and 14.6% are Chuskan. Most of the remainder are local. Of the white ware jars, 26.4% are Cibola and 6.9% are Chuskan. Among the gray ware jars, 19.9% are Chuskan.

**Table 11 Sourcing of gray and white ware bowls and jars**

| Sources of Gray Ware Vessels | % of gray ware bowls | % of all gray ware jars |
|---|---|---|
| Chuska | 0.0% | **19.9%** |
| Cibola | 0.0% | 6.3% |
| Northern San Juan, Animas Variety | 100.0% | 66.5% |
| Northern San Juan, Indeterminate | 0.0% | 4.1% |
| Northern San Juan, Nonlocal | 0.0% | 3.2% |
| Tusayan (Kayenta) | 0.0% | 0.0% |
| **Grand Total** | **100.0%** | **100.0%** |
| | | |
| **Sources of White Ware Vessels** | **% of white ware bowls** | **% of white ware jars** |
| Chuska | 14.6% | 6.9% |
| Cibola | **30.3%** | **26.4%** |
| Northern San Juan, Animas Variety | 49.4% | 63.9% |
| Northern San Juan, Indeterminate | 1.1% | 1.4% |
| Northern San Juan, Nonlocal | 3.4% | 1.4% |
| Tusayan (Kayenta) | 1.1% | 0.0% |
| **Grand Total** | **100.0%** | **100.0%** |

*Pigments*

I was able to identify the paint type on 132 sherds. Of those, 61 sherds had mineral paint and 72 had organic paint. Looking more narrowly at just the 67 local white ware sherds for which I could identify paint type, there were 30 with organic paint and 36 mineral. One local sherd had a mix of organic and mineral paint.

*Interpreting the Pottery*

The movement of pottery is an important characteristic of Chacoan great house sites, and analysis of ceramics offers an important source of data for Southwestern archaeologists. Overall, the pottery excavated from Aztec North looks very much like a Chacoan great house assemblage. It includes high proportions of Chuska and Cibola pottery, as well as a few pieces of Mogollon and Tusayan. Perhaps somewhat surprisingly, there is very little pottery from the Northern San Juan region.

All in all, this is a pottery assemblage entirely consistent with a great house that is fully integrated into Chacoan trade networks**.** The proportion of Chuska gray ware at

Aztec North (16% of the overall gray ware assemblage) is particularly telling. At Chaco Canyon sites, Chuska pottery may make up 30% or more of an assemblage (Toll and McKenna 1997). At Pueblo Alto, 31% of pottery was Chuskan (Toll 1985, 1991). Even at small sites in the canyon, Chuskan pottery made up as much as 17% of the total assemblage (Toll 2008). However, in the La Plata Valley, Chuska wares in all periods constitute less than 1.5% of pottery (Toll 2008). So Aztec North clearly shows more signs of participation in Chuskan and Chacoan trade networks than those sites.

On the other hand, Chacoan sites in the Totah are closer to the Aztec North pattern. At the Sterling Site in Farmington, Chuskan pottery made up 12% of the total assemblage; at Box B, 26% of pottery was Chuskan (Toll 2008).

The proportions of imported wares at Aztec North are also higher than at the small sites on the terrace around Aztec North. In my previous research (Turner 2015), I analyzed pottery assemblages at four such small sites. Chuskan pottery made up between 2% and 12% of assemblages from LA 60,010, LA 60,011, LA 60,012 and LA 60,020.

The Aztec North pottery is also very much a late 11$^{th}$ century to 12$^{th}$ century assemblage. There is no pottery predating the Pueblo II period, and only two sherds could have predated 1000 CE (two Newcomb Black-on-white sherds, 975-1025). If there was any habitation in this part of the Animas Valley in the Pueblo I period, it was not at this site.

An interesting element of the pottery here is the very high proportion of jars (73%) to bowls (27%). In my previous analysis of surface collections from household sites on the terrace (Turner 2015), I found that small sites had a far smaller proportion of jars to bowls. The high proportion of jars at Aztec North overall may be indicative of a site where a lot of cooking and/or storage is going on. The white ware jars in particular could be indicative of items being brought to the site in jars.

Also worth noting is how very clearly the pottery excavated in this project resembles the ceramics from the surface that I previously analyzed (Turner 2015). The proportions of pottery from each source, the bowl to vessel ratio, and the mean ceramic dating were all very similar in both assemblages. This too suggests to me a relatively narrow occupation window.

Lithic Analysis

Lithic specialist Kellam Throgmorton analyzed the lithic artifacts from our excavation and prepared a detailed report (Appendix 3). This section briefly summarizes key points from his report.

*Raw Materials*

People at Aztec North relied largely on local lithic materials sourced on the river terrace itself. Due to the glaciation and flooding processes that formed the Animas river terrace, the gravels on the terrace consist of a mix of materials that is far more diverse than the bedrock in this region. Instead, the terraces contain materials from all of the geologic sources through which the Animas River flowed from its headwaters in the San Juan Mountains down to the Aztec area (Price 2010; Throgmorton 2017). The large cobbles on the terrace are largely igneous materials, including porphyry, diorite, basalt and rhyolite. Also mixed in are gravels of chert as well as other materials. These are the main lithic materials in the assemblage. There was, however, some limited use of materials imported from elsewhere, though the obsidian is the only non-local material found in significant quantities. Figures 8-1 to 8-6 are photographs of several of the materials from the assemblage.

**Figure 8-1 Brushy Basin Chert (photo by the author)**

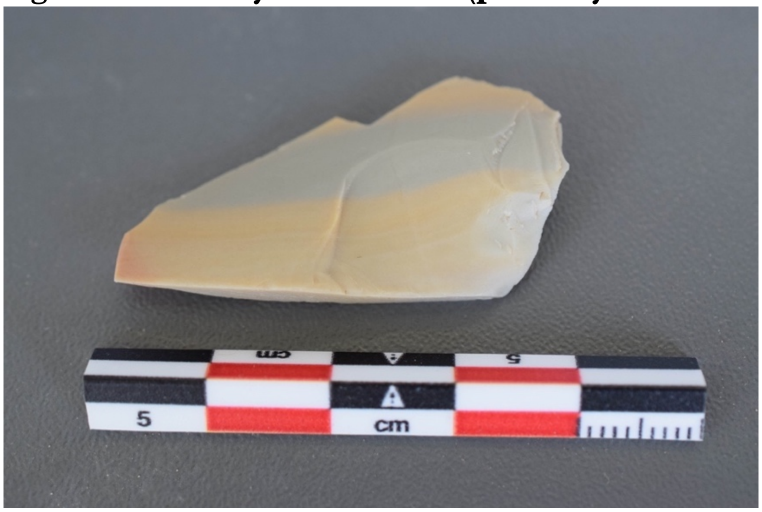


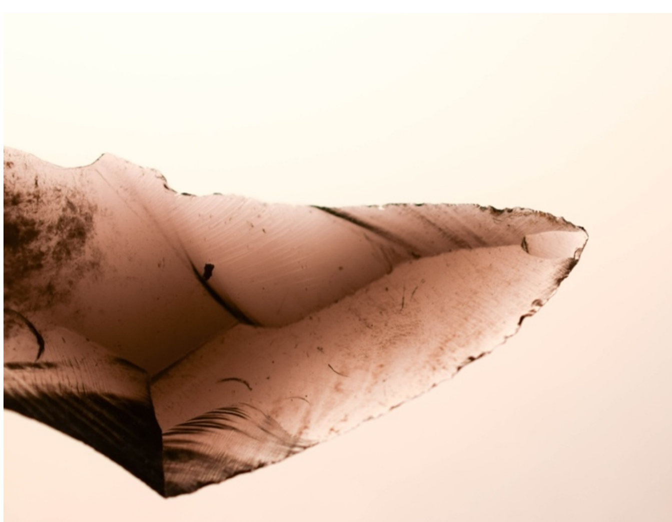

**Figure 8-2 Narbona Pass Chert (photo by the author)**


**Figure 8-3 Agate Chalcedony (photo by the author)**

**Figure 8-4 Pink Chert (photo by the author)**


**Figure 8-5 Chinle Chert (photo by the author)**


**Figure 8-6 Obsidian (photo by the author)**



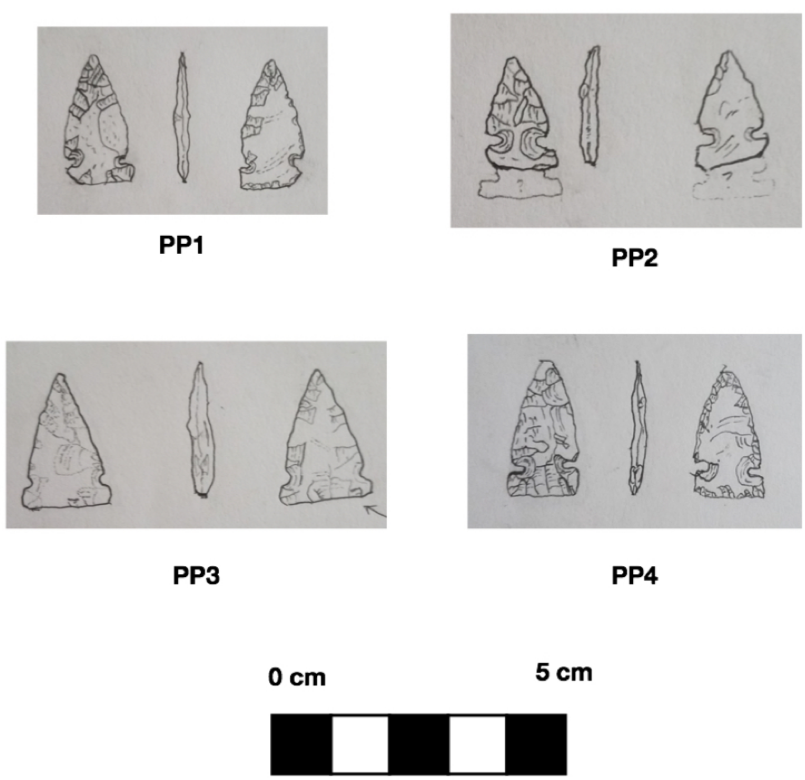
*Flaked Stone Tools*

The lithic assemblage includes 28 flaked stone tools. There are four projectile points, three cores, nine cobble choppers, two flake tools, three hammer stones, two informal scrapers, a polishing stone, and a formal scraper (Throgmorton, Appendix 3, Table 27).

Chert is far more common among the tools than it is in the debitage, suggesting that chert tools were not made on site but were brought in as finished products. The other possibility is that chert debitage was deposited elsewhere at the site.

We found four projectile points at the site (Figure 8-7, Table 12). They are all Pueblo side-notched projectile points, similar to each other and to points common in the period between A.D. 950 to 1250.

**Figure 8-7 Drawings of the projectile points. Drafted by Throgmorton (Appendix 3, Figure 2).**



One, with a broken tip, was found in the midden unit Study Unit 4. Two came from Study Unit 1, and one was in Study Unit 2. One point, PP1, is made of a white speckled chert that probably originated locally. PP2 is made of red chert. The base is snapped, and it might have once had more than two notches. PP3 is made of a green speckled quartzite and was found on the modern ground surface of Study Unit 2. PP4 is made of a yellow-brown chert known as Chaco Yellow Brown, but which originates in terrace gravels near the La Plata River. More details about the manufacture of these points is provided in the report. Despite the diversity of materials, the points are very similar in length, which to Throgmorton suggests some standardization. Table 12 summarizes the material, type and dimensions of each of the four projectile points.

**Table 12 Projectile Points (Table by Throgmorton, Appendix 3, Table 28)**

| Projectile Points | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PD# | SU | Str | Material | Type | L (mm) | W1 (mm) | W2 (mm) | W3 (mm) | Th (mm) | N1 (mm) | N2 (mm) |
| PP1 | 247 | 1 | - | White Speckled Chert | Pueblo Side-Notched | 21.52 | 10.29 | 10.88 | 7.15 | 2.37 | 1.71 | 2.79 |
| PP2 | 175 | 1 | I | Red Chert | Pueblo Side-Notched | 13.6* | 7.64 | 9.03 | 4.34 | 1.77 | 1.94 | 1.69 |
| PP3 | 119 | 2 | 0 | Greenish Quartzite | Pueblo Side-Notched | 22.66 | 13.38 | 15.78 | 12.16 | 3.7 | 1.11 | 1.03 |
| PP4 | 139 | 4 | II | Chaco Yellow Brown | Pueblo Side-Notched | 22.13 | 11.18 | 11.59 | 6.38 | 2.52 | 2.54 | 2 |

Flake tools, cores and formal scrapers were more prevalent in the two midden units, while biface fragments and cobble tools were more prevalent in the room units.

The cobble tools were, for the most part, chopping implements. They were found in both occupational strata and wall fall layers. The cobble tools start as simply split cobbles, but Throgmorton details two different toolmaking methods that he saw in analyzing the cobble tools. The most common use wear he noted on these cobble tools was a rounding of their working edges, which is consistent with use on softer materials like plants, wood or earth.

*Debitage Analysis*

Throgmorton analyzed 419 pieces of lithic debitage[10]. Table 13 summarizes the debitage materials by count and by weight. The majority of debitage in the assemblage was of igneous material that likely came from the terrace cobbles. People used the material that was at hand. By count, the next most common material was obsidian; I discuss its sources and significance in below. Quartzite and Morrison mudstone likely came from the terrace gravels. Other mudstones, as well as cherts and chalcedonies could be from the terrace gravels but could also originate in formations nearby.

**Table 13 Debitage Materials by Count and by Weight (Table by Throgmorton, Appendix 3, Table 2)**

| **Material Usage – all debitage by count and weight.** | | | | |
|---|---|---|---|---|
| **Material** | **Count** | **Percentage** | **Weight (g)** | **Percentage2** |
| Brushy Basin Chert | 8 | 2% | 23.84 | 1% |
| Chalcedony | 16 | 4% | 6.88 | 0% |
| Chert | 17 | 4% | 14.84 | 0% |
| Igneous | 168 | 40% | 1963.61 | 63% |
| Mica | 1 | 0% | 0.22 | 0% |
| Morrison Mudstone | 10 | 2% | 125.66 | 4% |
| Mudstone | 17 | 4% | 237.12 | 8% |
| Narbona Pass Chert | 2 | 0% | 0.52 | 0% |
| Obsidian | 123 | 29% | 81.6 | 3% |
| Quartz | 2 | 0% | 1.16 | 0% |
| Quartzite | 53 | 13% | 560.81 | 18% |
| Sandstone | 1 | 0% | 0 | 0% |
| Silicified Sandstone | 1 | 0% | 117.98 | 4% |
| Total | 419 | 100% | 3134.24 | 100% |

Throgmorton noted an interesting pattern in the debitage in Study Unit 1, where a number of flakes had a cortical platform. This is unusual, and Throgmorton

[10] This number excludes very small pieces of microdebitage that were too small to analyze.

hypothesizes that it is specifically related to the production of the cobble tools (Figure 8-8).

**Figure 8-8 Cortical platform on debitage, related to cobble tool manufacture (photo by the author)**


Many of the flakes in the debitage analysis also had use wear indicating that they were used as informal cutting tools. This was true for quartzite, mudstone and obsidian flakes. Throgmorton found that a total of 75 flakes in the debitage analysis were used as flake tools.

Throgmorton concludes that residents of Aztec North used locally available materials to make informal flake tools and generally reserved non-local materials for formal tools. Obsidian, discussed below, is again the major exception to this pattern.

The lithic analysis reveals a significant disparity in the debitage counts collected in Study Unit 1 versus Study Unit 2. Throgmorton suggests this is because of Stratum 5 in Study Unit 1, which was a thin trash deposit above the occupation surface, and this may be part of the explanation. However, I suspect that excavator experience is a more important element, particularly when it comes to distinguishing debitage from the cobble, which to the untrained eye looks very much like natural split cobbles. The excavators working in Study Unit 1 were more familiar with local lithic technologies and, I believe, simply noticed more than the excavators working in Study Unit 2.

Of note, floor contact and floor fill contexts contained only igneous rock, mudstone and quartzite, the roughest local materials.

*Lithic Reduction Technology*

The assemblage is dominated by core reduction flakes. Biface reduction is mainly in chalcedony and chert. Most of the biface thinning flakes are either chalcedony or obsidian. Most bipolar flakes are igneous rock. Throgmorton (2017:18) notes that this "contradict[s] the conventional wisdom that this reduction technique reflects a desire to conserve material, since igneous stones are the most plentiful raw materials at the site." He speculates that this is a technological response to the problem of breaking into rounded cobbles that lack platforms. Much of the chalcedony and chert was flaked bifacially, which suggests it was used for producing formal tools.

<u>Obsidian</u>

Aztec North has a surprisingly large quantity of obsidian. We collected 152 pieces in our excavation assemblage.[11] This is in addition to 77 pieces that were collected from the surface in previous surveys by Stein and McKenna and by NPS staff (Lori Stephens Reed, personal communication 2018).

[11] Many of these were microdebitage pulled from the heavy fraction. Throgmorton was able to analyze 123 pieces, so the 29 others should be viewed as microdebitage. I was encouraged to send even very small pieces in for XRF analysis, so lab volunteers and I were very thorough in looking for even the smallest obsidian fragments in the heavy fraction.

To learn more about the obsidian, I submitted all 152 pieces[12] from the excavation to Dr. Jeffrey R. Ferguson at the University of Missouri's Archaeometry Laboratory. Dr. Ferguson's sourcing analysis revealed that all of the obsidian in our excavation assemblage came from the Jemez Mountains, about 170 km away from Aztec. Of the 152 pieces collected, 53 came from Cerro del Medio (Valles Rhyolite) and 99 from Obsidian Ridge (Cerro Toledo Rhyolite).

The sourcing is not inconsistent with other sourcing studies from Chaco era sites. The XRF sourcing results originally reported for Chaco Project obsidian have turned out to be unreliable, and re-analyzing the same artifacts has proven impossible due to curation issues (Cameron 1984; Cameron 2001; Duff et al. 2012). Duff et al. (2012) conducted sourcing analysis on some Chaco obsidian, but their research focused primarily on early time periods. Of the 6 samples of late Pueblo II obsidian they sourced, 5 were from Jemez and 1 was from Mt. Taylor. Cameron (2001) similarly reports that obsidian from Chaco's last half century, 1100-1150, is likely to be mostly from Jemez sources.

Throgmorton (2017) reports that obsidian is the second most common lithic material by count in the assemblage (after the local igneous river cobble). Surprisingly, it was not bifacially thinned, as one might expect if it was being used to create formal tools such as projectile points, a seemingly ideal use for obsidian. Instead, it appears that the obsidian was treated very much like the local rocks and quartzite, using core reduction and bipolar reduction.

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[12] I actually submitted 153 samples, but Dr. Ferguson reported that one of these was not obsidian. It appeared to be a black chert instead.

Several pieces of obsidian have significant proportions of cortex, indicating that the raw material was brought to the site in a relatively unprocessed form. Throgmorton notes that this is somewhat unexpected for materials carried long distances, since more thoroughly removing cortex would have reduced the weight of the raw material.

Cameron (2001) reports that just 700 pieces of obsidian were recovered throughout the Chaco Project excavations in the canyon. Collection practices partially account for the low numbers, but the later-excavated sites are more reliable. There were 29 pieces throughout Chaco for deposits dated 1020-1120, and 167 pieces for deposits dating to 1120-1220. Its frequency was highest in deposits dating 1100-1150, in which it represented over 7% of chipped stone (Cameron 2001). Nonetheless, despite an increase in frequency after 1020, all of the Chaco Canyon excavations produced a total of 196 pieces of obsidian for the two centuries of 1020-1220. And the four small test units at Aztec North produced 152 pieces for what was surely just a short occupation period around 1100 (and that does not include another 77 pieces that have been collected in surface surveys).

The Aztec North obsidian pattern differs from Chaco in other respects as well. Notably, of the 700 pieces of obsidian found at Chaco for all time periods, almost 100 were formal tools. In fact, 18% of the formal tools at Chaco were made of obsidian, and nearly 25% of the projectile points at Chaco were obsidian. Meanwhile, only 1.7% of the debitage was obsidian, suggesting that tools were brought to the canyon in a finished state. It appears that projectile points in particular played a part in the ritual life of the canyon. Both Pueblo Bonito and Pueblo Alto had hundreds of obsidian projectile points, many intentionally broken (Cameron 2001).

At Aztec North, most of the obsidian was debitage, and Throgmorton recorded only five pieces as tools. One was a biface fragment, one an informal scraper, and the rest were cores. There were no formal tools or projectile points made of obsidian.

The Aztec North obsidian pattern also contrasts with Salmon Pueblo, where Shelley (2006:Tables 47.5 and 47.6) reports that only 131 pieces of obsidian debitage were among the nearly 20,000 pieces of debitage analyzed for both the Chacoan and post-Chacoan occupations.

The pattern also differs from sites in the central Mesa Verde region. Obsidian was very rare there in all time periods. However, for sites excavated by Crow Canyon Archaeological Center dating to 1060-1280, Ortman (2012:269, Fig. 12.1) reports a total of 167 pieces of obsidian. Of those, 156 were from Jemez. Interestingly, El Rechuelos, the nearest source, accounted for 28% of that obsidian. 39% came from Valles Rhyolite, and Cerro Toledo made up 33% of the total (Ortman 2012:269, Fig. 12.1). Throughout all time periods, the obsidian found at these central Mesa Verde sites consisted mainly of finished projectile points with little if any cortex, and debitage was largely absent. As with Chaco, this points to the import of finished artifacts rather than raw materials. Ortman and his colleagues argue that early migrants from Mesa Verde to the Rio Grande were bringing back finished obsidian projectile points when they came back to visit family members, as gifts that also carried the extra symbolism of being from the new place where people were relocating to (Ortman 2012; Arakawa et al. 2011).

The central Mesa Verde data is not fine-grained enough to readily distinguish between the late Chacoan period versus the peak migration periods of the 1200s, so as to compare Aztec North to its contemporary sites. However, the sheer contrast in quantity of obsidian (167 for all of central Mesa Verde vs. 152 for four study units at Aztec North) is, again, striking, especially given that many of the central Mesa Verde sites have been very thoroughly excavated over years. The contrast between the debitage of Aztec North and the finished tools of the central Mesa Verde sites is also quite interesting. While the central Mesa Verde sites brought in finished tools, Aztec North was apparently a place where raw materials were worked and reduced.

Witt (2015:269) reports that obsidian quantities are extremely low for Totah sites he examined including the Point Site and the Sterling Site. Formal data about obsidian from Aztec West is unfortunately lacking. Earl Morris did not systematically collect all lithic samples. However, a recent fill reduction project in a few rooms at Aztec West exposed a large quantity of obsidian, and nearly all of those which have been sourced were also from Jemez. This research remains preliminary, but it seems that Aztec West might have followed the Aztec North pattern (Reed and Turner 2019).[13]

Overall, it appears that Aztec North had some kind of relationship to the Jemez area that Chaco did not have, and that Aztec West did not have. Throgmorton (2017) suggests that the presence of two Jemez sources indicates materials were acquired from someone else rather than collected directly. If people from Aztec North were travelling to Jemez to collect material themselves, perhaps they would have picked a single source.

Beyond this, I can only speculate as to the exact nature of that relationship. Ward (2004) cautions us that the long-distance travel of lithic materials cannot be attributed solely to economic factors, and that certain stones—especially distinctive colored

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[13]In the southern part of the Chacoan world, obsidian procurement patterns were entirely different. Late Pueblo II samples from the Blue J site were mostly from Mount Taylor (81%) with only 19% from Jemez (out of a total of 21 samples). At Cox Ranch and Cerro Pomo, the vast majority of the 247 obsidian samples were from eastern Arizona or western New Mexico sources (94.3%), with only 4.5% from Jemez and .8% from Mount Taylor.

materials—may have been selected for purposes of memory and connection to place rather than for their toolmaking properties. So, perhaps some people at Aztec North had kinship relationships to Jemez that made its acquisition possible, and perhaps the abundant obsidian is evidence that people at Aztec North were keeping alive the memory of the beautiful, volcanic landscape of the Jemez. On the other hand, Throgmorton found that obsidian was used in very expedient ways, rather than being carefully conserved, suggesting that it was not viewed as inherently more valuable or special than the local materials.

*Other Imported Lithic Materials*

Notably absent from the assemblage is any significant quantity of Narbona Pass chert. The Aztec North excavation assemblage contains two pieces of this material, both debitage. But this distinctive and high-quality pink chert stands out in many assemblages in the Chacoan world, and has been argued to represent a special connection to the Chuskas (Cameron 2001; Ward 2004). It is the most common nonlocal material in Chaco Canyon assemblages, and it was particularly common in assemblages dating to 1020-1120 (Cameron 2001). At the Salmon Pueblo, Narbona Pass chert was also the most common nonlocal lithic material. Nonetheless, it was only 3% of the assemblage in the Chacoan period, with about 400 pieces. It was concentrated in two rooms of the great house, however, suggesting access to this material was controlled by a Chacoan elite (Cameron 2001).

Archaeobotanical Analysis

Archaeobotanical analysts Nikki Berkebile and Karen Adams analyzed six of the flotation samples from Aztec North. The data sheet containing their results is attached as Appendix 6. The following is a summary of their results, based on their data and my discussions with them. Table 14 is a simplified list of all the taxa that were present in the Aztec North samples, with their common names.

**Table 14 The Plants Identified at Aztec North**

| **Botanical Taxa Identified in Aztec North Flotation Samples** | | |
|---|---|---|
| Taxon | Part(s) | Common Name |
| Cactacae | spine base | cactus family |
| Cercocarpus | wood | mountain mahogany |
| Cheno-Am | seed | chenopodium and/or amaranthus |
| *Descurainia* | seed | tansy mustard |
| *Echinocereus* | seed | hedgehog cactus |
| *Eschscholtzia californica* | seed | California poppy |
| *Euphorbia* | seed | spurge |
| *Juniperus* sp. | wood, leaf, seed | juniper |
| *Mentzelia albicaulis* | seed | stick leaf |
| *Opuntia* (prickly pear) | seed | prickly pear cactus |
| *Oryzopsis* (Achnatherum) | caryopsis | Indian rice grass |
| *Phragmites* | stem fragment | reed |
| *Physalis* sp. | seed | groundcherry |
| *Pinus edulis* | wood | pinyon |
| *Populus/Salix* | wood | cottonwood/willow |
| *Portulaca* sp. | seed | purslane |
| Rosaceae | wood | rose family |
| *Scirpus* | achene | bulrush |
| *Yucca baccata* | seed | banana yucca |
| *Zea mays* | cupule | maize/corn |

This section summarizes the archaeobotanical results for each sample that Berkebile and Adams analyzed. Dr. Brie-Anna Langlie helped me select the flotation samples that were likely to include the most seeds and botanical materials; she looked at them briefly under magnification to see which seemed to have the most seeds. They are therefore not a random sample calculated to reveal anything about particular contexts or to compare contexts but instead are intended to essentially provide a list of as many plants as possible that were used at this site. Future analysis of more samples should provide more detailed understandings of the various contexts at the site. That analysis is under way by a group of students at Binghamton University during the 2018-2019 academic year.

*Sample 1: PD 238, FS 1*

This flotation sample came from the floor (Feature 18) in Study Unit 2, which is the floor of Room 2. Excavators encountered it over a meter below the modern ground surface. Since this sample came directly from the floor, I view it as an occupational deposit. However, wall fall and roof fall that collapsed onto the floor could have introduced additional plant material at a later date. There was a small charcoal feature on part of this floor (see the discussion of PD 256 below). That feature was simply a charcoal lens, not a defined hearth or fire ring, and it is quite possible that materials in the present sample actually slipped out of that feature. The presence of a small quantity of rodent feces and termite pellets in the sample raises the possibility of some post-occupational disturbance as well, and the excavators noted evidence of rodents too.

This sample includes a variety of charred plant specimens, though all in small quantities. Table 15 summarizes the botanical materials from this sample only. (The common names can be found in Table 14 above). The reproductive plant parts consist of a hedgehog cactus (*Echinocereus*) seed, prickly pear (*Opuntia*) seeds, purslane (*Portulaca*) seeds, ground-cherry (*Physalis*) seeds and a juniper (*Juniperus*) seed, as well as achenes from bulrush (*Scirpus*), and cupules of maize (*Zea mays*).

**Table 15 Botanical Materials in Sample 1: PD 238, FS 1**

| **PD 238, FS 1: Floor in Study Unit 2B** | | | |
|---|---|---|---|
| **Count** | **Taxon** | **Part** | **Condition** |
| 2 | Cercocarpus | wood | charred |
| 3 | Cheno-Am | seed | charred |
| 11 | Cheno-Am | seed | uncharred/partly charred |
| 1 | *Echinocereus* | seed | charred |
| 1 | *Opuntia* (prickly pear) | seed | uncharred |
| 2 | *Opuntia* (prickly pear) | seed | charred |
| 3 | *Portulaca* sp. | seed | charred |
| 2 | *Portulaca* sp. | seed | uncharred/partly charred |
| 1 | *Juniperus* sp. | seed | uncharred, extremely tiny |
| 11 | *Juniperus* sp. | leaves | charred |
| 1 | *Juniperus* | wood | partially charred |
| 15 | *Juniperus* | wood | charred |
| 5 | *Physalis* sp. | seed | charred |
| 4 | *Pinus edulis* | wood | charred |
| 2 | *Scirpus* | achenes | charred |
| 9 | *Zea mays* | cupule | charred |
| 1 | Unknown | seed | charred |
| 9.22 g. | Wood >2mm | | |
| 2 | Termite pellets | | |
| ~<1% | Rodent Feces | | charred/uncharred |

Of special note are what the analysts call Cheno-Am seeds. This is a common way that archaeobotanists refer to goosefoot (*Chenopodium*) and pigweed (*Amaranthus*) seeds, tiny seeds that often cannot be positively distinguished from each other in archaeological contexts. Both species were important wild food resources. This flotation sample only contained 14 Cheno-am seeds, but overall in our Aztec North units, Cheno-Am is the most common seed. Their tiny size, only 1-2 mm long, means that some seeds are likely to fall into a cooking fire or onto a floor and are unlikely to be swept up when they do.

While only charred seeds are normally considered prehistoric in open air sites such as this, Dr. Adams believes that the uncharred Cheno-Am seeds in the Aztec North samples are prehistoric as well. First, these seeds were deeply buried under a meter of collapsed walls and post-occupational deposits, in dry soils and in climate conditions similar to Aztec West, where preservation of organic materials was extraordinary. But more to the point, the presence of *partially* charred seeds in the same flotation sample as charred and uncharred seeds is evidence that uncharred Cheno-Am seeds are capable of preserving in these conditions. While we cannot be certain that the uncharred and partially charred seeds are prehistoric, the mix of charred and uncharred suggests they likely are. Moreover, Dr. Adams reports that one sample of the uncharred Cheno-Am seeds from Aztec North has varying seed colors of both black and tan, which is unusual for wild varieties but typical for one of the domesticated *Amaranthus* species (Figure 8-9). Dr. Adams is involved in a research project studying the domestication of these grains, and future analysis of the Aztec North samples, including DNA studies, may contribute to this line of research. This sample also includes partly charred and uncharred samples of purslane and opuntia seeds, which may also be prehistoric for the same reasons.

**Figure 8-9 Mixed charred and uncharred Cheno-Am seeds, including black and tan uncharred seeds. Photo by Karen Adams.**

The wood in this sample consists of juniper (*Juniperus*), pinyon pine (*Pinus edulis*) and mountain mahogany (*Cercocarpus*). Figures 8-10 to 8-12 show magnified cross-section photographs of these three woods.

**Figure 8-10 Cross-section of juniper (Juniperus) wood. Photo by Karen Adams.**

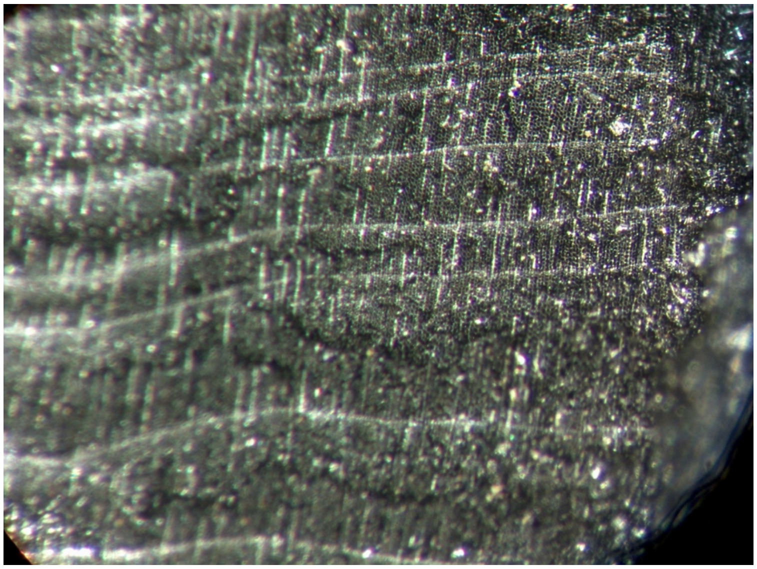


**Figure 8-11 Cross-section of mountain mahogany (Cercocarpus). Photo by Karen Adams.**

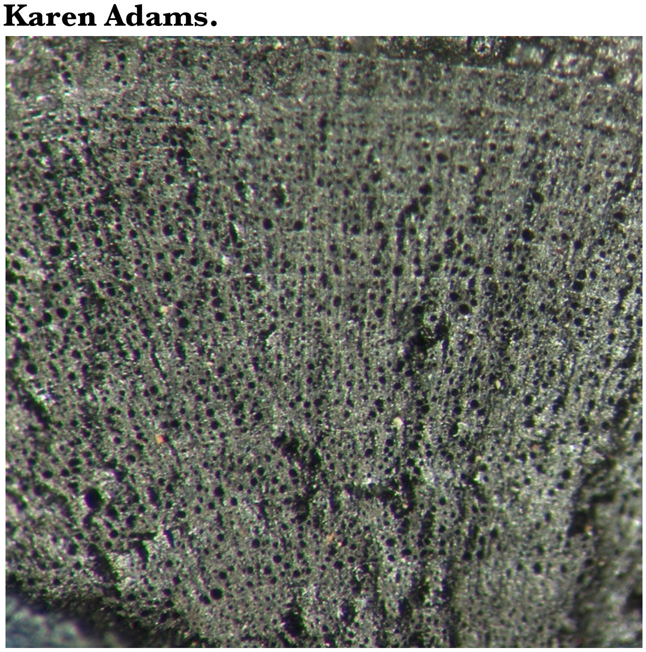
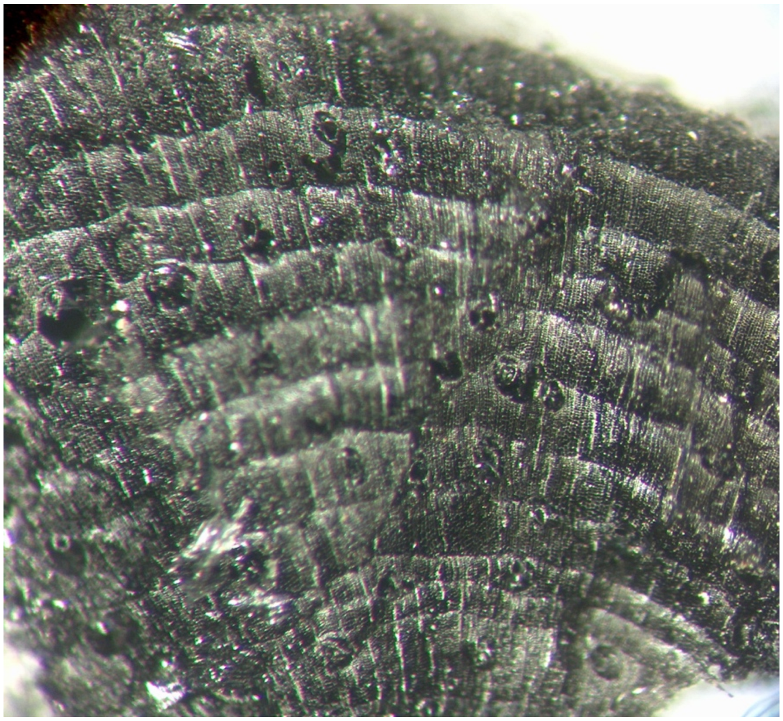


**Figure 8-12 Cross-section of pinyon pine (Pinus edulis) wood. Photo by Karen Adams.**



*Sample 2: PD 234, FS 8*

This sample also came from the floor of Room 2, in Study Unit 2. As with Sample 1, it is possible that materials in this sample actually originated within a small charcoal feature on the floor.

Table 16 lists the botanical materials in this sample. It contains a smaller quantity of charred and uncharred Cheno-Am specimens as well as purslane, prickly pear, groundcherry, bulrush, yucca, maize and hedgehog cactus. Another species in this sample is spurge (*Euphorbia)*, which has a number of medicinal uses. There is one uncharred caryopsis of Indian rice grass (*Oryzopsis*), an important food resource.

**Table 16 Botanical Materials in Sample 2: PD 234, FS 8**

| **PD 234, FS 8: The floor of a great house room in Study Unit 2A** | | | |
|---|---|---|---|
| **Count** | **Taxon** | **Part** | **Condition** |
| 1 | *Oryzopsis* (Achnatherum) | caryopsis | uncharred |
| 13 | Cheno-Am | seed | charred |
| 21 | Cheno-Am | seed | uncharred/partly charred |
| 6 | *Echinocereus* | seed | charred |
| 6 | *Euphorbia* | seed | uncharred |
| 16 | *Juniperus* | wood | charred |
| 1 | *Juniperus* | wood | partially charred |
| 9 | *Juniperus* sp. | leaves | charred |
| 10 | *Portulaca sp.* | seed | charred |
| 10 | *Portulaca sp.* | seed | uncharred/partly charred |
| 4 | *Opuntia* (prickly pear) | seed | charred |
| 1 | *Opuntia* (prickly pear) | seed | uncharred |
| 3 | *Physalis sp.* | seed | charred |
| 9 | *Physalis sp.* | seed | uncharred |
| 1 | *Rosaceae* | wood | charred |
| 1 | *Scirpus* | achene | charred |
| 2 | *Yucca baccata* | seed | uncharred |
| 75 | *Zea mays* | cupule | charred |
| 1 | unknown | seed | charred |
| 1 | Unknown | unknown | uncharred |
| 1 | Unknown | seed fragment | uncharred |
| 1 | Unknown | seed | charred |
| 50+ | Non-wood | indeterminate | charred |
| 1 | Termite Pellet | | uncharred |
| 8.7 g. | Wood >2mm | | |

Wood in this sample consists of juniper and Rosaceae. Figure 8-13 is a magnified photograph of a piece of Rosaceae wood.

**Figure 8-13 Rosaceae wood. Photo by Karen Adams.**

*Sample 3: PD 258, FS 1*

This sample originated in Feature 20, the small ashy feature on the floor of Room 2 in Study Unit 2. This small feature is sitting right on the floor of the room, so it seems to be contemporaneous with the main occupation period of the great house. The analysts found a small quantity of rodent feces and termite pellets in the sample, which again raises the possibility of some post-occupational disturbance. The excavators also reported a rodent burrow on the edge of the feature. The botanical materials in this sample are summarized in Table 17.

**Table 17 Botanical Materials in Sample 3: PD 258 FS 1**

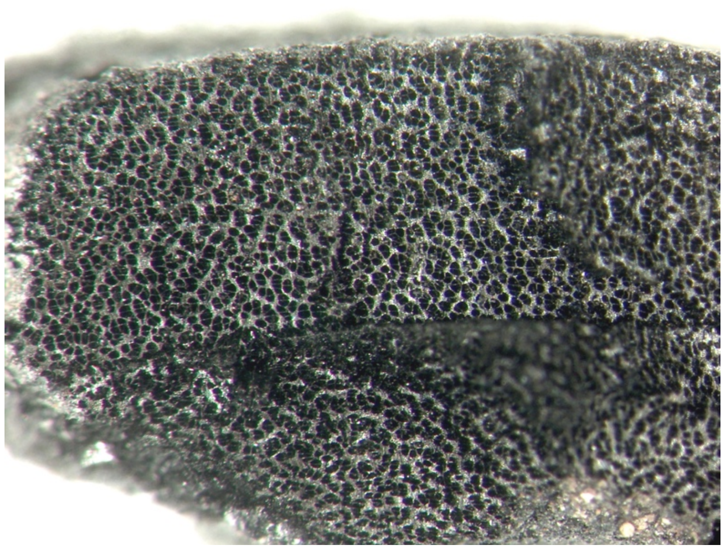
| PD 258, FS 1: A small charcoal feature on the floor of a great house room in SU2B. | | | |
|---|---|---|---|
| **Count** | **Taxon** | **Part** | **Condition** |
| 1 | Cactacae | spine base | charred |
| 10 | Cheno-Am | seed | charred |
| 2 | Cheno-Am | seed | uncharred/partly charred |
| 1 | *Descurainia* | seed | charred |
| 1 | *Eschscholtzia californica* | seed | uncharred |
| 1 | *Euphorbia* | seed | uncharred |
| 101 | *Juniperus* | leaves | charred |
| 49 | *Juniperus* | leaves | uncharred |
| 1 | *Juniperus* | seed | ? |
| 14 | *Juniperus* | wood | charred |
| 1 | *Mentzelia albicaulis* | seed | charred |
| 1 | *Mentzelia albicaulis* | seed | uncharred |
| 4(2) | *Opuntia* (prickly pear) | seeds | charred/uncharred |
| 1 | *Phragmites* | stem fragment | charred |
| 5 | *Physalis sp.* | seed | charred |
| 2 | *Physalis sp.* | seed | uncharred |
| 4 | *Populus/Salix* | wood | charred |
| 16 | *Portulaca sp.* | seed | charred |
| 1 | *Portulaca sp.* | seed | uncharred/partly charred |
| 2 | Rosaceae | wood | charred |
| 1 | *Scirpus* | achene | charred |
| 1 | *Yucca baccata* | seed | uncharred |
| 1 | *Yucca baccata* | seed | charred |
| 5 | *Zea mays* | cupule | charred |
| 1 | Unknown | | uncharred |
| 34 | Unknown seed coat | seed coat | charred/uncharred |
| 1 | Unknown | | uncharred |
| 1 | Unknown | seed | charred |
| 1 | Termite Pellet | | |
| 5.32 g. | Wood >2mm | | |
| 4.18 g. | Non-wood | | charred |
| ~5% | Rodent Feces | | charred/uncharred |
| 4 | Insects | | |

The feature also contained several pieces of charred corncob that were collected as $^{14}C$ samples, and thus are not part of this analysis.

The seeds in this sample included a small number of charred or uncharred Cheno-Am, purslane, juniper, prickly pear, spurge, banana yucca, groundcherry and stickleaf seeds. There was also a reed stem, a bulrush achene, a reed (*Phragmites*) stem fragment and a cactus (*Cactacae)* spine base. Also present was tansy mustard seed (*Descurainia*). The analysis also identified one uncharred California poppy (*Eschscholtzia californica*) seed, which could be a historic introduction.

Wood in this sample included juniper, Rosaceae and 4 pieces that were either cottonwood (*Populus*) or willow (*Salix*). Figure 8-14 shows magnified cross-sections of the *Populus/Salix* wood.

**Figure 8-14 Cross-section of Populus/Salix wood. Photo by Karen Adams.**



*Sample 4: PD 165, FS 7*

This sample is from Stratum 5 in Study Unit 1, which is the thin layer of mixed charcoal and earth deposits above the roof fall of the great house. As discussed elsewhere, this stratum was full of artifacts, including beads, a projectile point, and faunal samples. While it is on top of roof fall, suggesting a post-occupational midden use, it is still deeply buried at about 60 centimeters, and both the nature of the artifacts in it and the AMS dates for it indicate that it is likely contemporaneous with or only slightly postdates the occupation of the rest of the structure.

Table 18 lists the botanical materials in this sample. It was particularly rich in Cheno-Am seeds, with 102 charred and 229 uncharred or partially charred seeds. It also contained an uncharred stickleaf (*Mentzelia albicaulis)* seed and a significant number of charred and uncharred purslane (*Portulaca* sp.) seeds as well as charred banana yucca (*Yucca baccata)* seeds, a bulrush (*Scirpus*) achene, and 33 maize cupules. Wood species in this sample were restricted to juniper and mountain mahogany.

**Table 18 Botanical Materials in Sample 4, PD 165 FS 7**

| **PD 165, FS 7 (Bag 1 of 2): A small charcoal layer above the roof fall in Study Unit 1** | | | |
|---|---|---|---|
| **Count** | **Taxon** | **Part** | **Condition** |
| 4 | Cercocarpus | wood | charred |
| 102 | Cheno-Am | seed | charred |
| 229 | Cheno-Am | seed | uncharred/partly charred |
| 18 | *Juniperus* | wood | charred |
| 1 | *Juniperus* | wood | partially charred |
| 1 | *Mentzelia albicaulis* | seed | uncharred |
| 15 | *Portulaca sp.* | seed | charred |
| 26 | *Portulaca sp.* | seed | uncharred/partly charred |
| 1 | *Scirpus* | achene | uncharred |
| 2 | *Yucca baccata* | seed | charred |
| 33 | *Zea mays* | cupule | charred |
| 1 | Unknown | | charred |
| 11 | Non-wood indeterminate | | |
| 2.93 g. | Wood >2mm | | |

*Sample 5: PD 216, FS 5*

Like the previous sample, this one is from Stratum 5, the ashy layer above roof fall in Study Unit 1.

Like the previous sample, this one contained numerous Cheno-Am seeds— 73 charred and 132 uncharred seeds. It also contained purslane, bulrush and maize. In addition, the analysts found a charred groundcherry (*Physalis*) seed. The wood included juniper, pinyon pine and Rosaceae. Table 19 summarizes the botanical remains from this sample.

**Table 19 Botanical Materials in Sample 5: PD 216, FS 5**

| **PD 216, FS 5: A small charcoal layer above the roof fall in Study Unit 1** | | | |
|---|---|---|---|
| **Count** | **Taxon** | **Part** | **Condition** |
| 73 | Cheno-Am | seed | charred |
| 132 | Cheno-Am | seed | uncharred |
| 10 | *Juniperus* | wood | charred |
| 1 | *Physalis sp.* | seed | charred |
| 3 | *Pinus edulis* | wood | charred |
| 16 | *Portulaca sp.* | seed | charred |
| 4 | *Portulaca sp.* | seed | uncharred/partly charred |
| 7 | Rosaceae | wood | charred |
| 1 | *Scirpus* | achenes | uncharred |
| 4 | *Zea mays* | cupule | charred |
| 12 | Unknown | seed? | uncharred |
| 1.1 g. | Wood >2mm | | |
| .29 g. | Non-wood | indeterminate | charred |

*Sample 6: PD 139, FS 5 (Bag 1 of 2)*

This sample, from Study Unit 4, is the only one of the analyzed archaeobotanical samples that comes from the external middens south of the great house. As discussed elsewhere, the middens are quite deflated and had few faunal samples in them, and the results of analysis of this sample indicate the same is true of archaeobotanical materials.

As reported in Table 20, this sample contains six maize cupules, three spurge seeds, and one purslane seed. These are the only non-wood botanical materials in the sample. The wood consists of mountain mahogany, Rosaceae and juniper.

**Table 20 Botanical Materials in Sample 6: PD 139, FS 5**

| **PD 139, FS 5 (Bag 1 of 2): Midden deposits in Study Unit 4A** | | | |
|---|---|---|---|
| **Count** | **Taxon** | **Part** | **Condition** |
| 1 | Cercocarpus | wood | charred |
| 3 | *Euphorbia* | seed | uncharred |
| 13 | *Juniperus* | wood | charred |
| 1 | *Portulaca sp.* | seed | charred |
| 6 | Rosaceae | wood | charred |
| 6 | *Zea mays* | cupule | charred |
| .91 g. | Wood >2mm | | |
| 4 | Non-wood | | charred |
| 2 | Non-wood | | uncharred |

*Interpreting the Archaeobotanical Results*

The full list of plant taxa found in our samples (Table 14) includes a number of common subsistence resources. Reeds had many non-subsistence uses in prehistory, such as for making mats and in construction, but the other plants are all associated with subsistence in the Southwest (Rainey and Adams 2004). Many of these plants also have medicinal uses. However, the archaeological record alone cannot distinguish between subsistence use of plants and other uses such as for medicinal and ritual purposes or for manufacturing items such as pigment or textiles (Adams, personal communication 2018).

Maize was, of course, the mainstay of life for these farmers. The analysts only identified a few maize (*Zea mays*) cupules in their six flotation samples, but we actually found more corn than this in the units. Because the excavation team was very focused on finding samples for radiocarbon dating, any corncob specimens found in situ were collected as $^{14}C$ rather than as botanical samples, so they are not part of the archaeobotanical study.

In this study, the analysts identified only cupules of maize, small pockets in a corncob that each hold two kernels, rather than stems or other plant portions. The absence of any stem fragments at an archaeological site can be indicative that maize was brought to the site from some distance, so that the choice was made to remove stems and other materials to facilitate transport. However, our $^{14}C$ samples do include a few corn stalks that were pulled from Feature 20. While it seems likely that maize would have been easier to grow in the wetter and possibly irrigated valley below rather than on the terrace top, the terrace top might have also been cultivated. Either way, on at least some occasions, stem parts were brought to Aztec North. They may have come with corn cobs or they might have been intentionally carried in during construction to add to the adobe and daub.

Many of the other plants included in the Aztec North samples are wild food resources that would have grown at the edges of maize fields or elsewhere on the landscape. These include goosefoot (*Chenopodium*) and pigweed (*Amaranthus*). Purslane (*Portulaca*) is another weed that would have grown in fields and on the terrace. Hedgehog cactus (*Echinocereus*) and prickly pear (*Opuntia*) both produce fruits and would have grown on the terrace, as would ground cherry (*Physalis*). Neither the excavators nor the analysts found any squash or beans, but that is unsurprising since these are far rarer than maize in archaeological assemblages in this region. Both are relatively large seeds that are likely to be effectively swept up from floors than tiny seeds like Chenopodium (Karen Adams, personal communication 2018).

Several of the species found in the Aztec North samples are mesic (water-loving) plants that would have grown in a wetter environment, including bulrush (*Scirpus*), cottonwood (*Populus*), willow (*Salix*) and reed (*Phragmites*). The riparian ecosystem along the Animas River is the likely source of these plants, although if there were irrigation ditches they would have provided similar habitat. Their presence is an unsurprising but notable link between Aztec North and the river (Karen Adams, personal communication 2018).

The most surprising specimen in the assemblage is a single uncharred California poppy (*Eschscholtzia californica*) seed. According to the United States Department of Agriculture (2018), the modern range for this plant in Colorado and New Mexico includes only Santa Fe County in New Mexico and El Paso County in west central Colorado and is certainly unusual for a San Juan Basin archaeological assemblage. Given its uncharred condition, it is likely a modern or historic seed rather than a prehistoric one (Karen Adams, personal communication 2018).

Juniper (*Juniperus*) trees were likely the most important woody resource at this site. A single charcoal feature sample included 101 charred juniper leaves, in addition to juniper wood. Willow/cottonwood (*Salix/Populus*) and pinyon pine (*Pinus edulis*) wood were also in the samples and could have been used for both fuel and construction. The shrubs identified in these samples included mountain mahogany (Cercocarpus) and a member of the rose family (Rosaceae) (Karen Adams, personal communication 2018). Notably absent in the samples was sagebrush (*Artemisia*), one of the most common plants on the terrace today.

Other woods absent from Aztec North are ponderosa pine (*Pinus ponderosa*) and Douglas fir (*Pseudotsuga*) wood, two species that do not grow near Aztec but that were imported from at least 20 miles away for construction at Aztec West (Brown et al. 2008; Windes and Bacha 2008:120). The Aztec North excavation did not uncover any wood beams of any sort, so we still do not know whether these trees were imported for construction there or if the local species such as juniper were the main construction material.

Some plant species can also reveal information about seasonality. Certain resources are only available at particular times of the year. The Aztec North samples include Indian rice grass (*Oryzopsis*), which is harvested in late spring and thrives in sandy dune areas. Many of the annual wild species, including *Chenopodium* and *Amaranthus*, germinate during the summer monsoon rains (Karen Adams, personal communication 2018).

One surprise is how very few botanical remnants were found in the midden sample. Middens and thermal features are ordinarily the best contexts for collecting floral remains. At Aztec North, the middens are on sloping ground near the edge of the terrace, so there may be erosional forces at play. Based on the current evidence, it does appear that the disproportionate quantity of botanical materials in the rooms versus the middens is a matter of preservation rather than human behavior (Karen Adams, personal communication 2018). Nonetheless, it remains true that the middens are surprisingly deflated for such a large site, and the low numbers of both archaeobotanical and faunal remains is unexpected.

Overall, the archaeobotanical assemblage consists largely of local, subsistence-related plant resources. There are, however, a few surprises that may warrant further investigation in the future, such as the uncharred Cheno-Am seeds that may represent a domesticated amaranth species. Also of particular note is the use of mesic species that would have been brought up from the river, underlining the importance of the river to the people who lived here.

<u>Faunal Analysis</u>

Dr. Omar analyzed the faunal assemblage in her lab at Binghamton University. Her report is attached as Appendix 7, so I briefly summarize her findings here. She analyzed a total of 523 faunal samples.[14] Table 21 is her count of Number of Identified Specimens.

**Table 21 Faunal Analysis: Number of Identified Specimens (NISP) (Table by Dr. Lubna Omar, Appendix 7)**

| Class | Order | Taxon | Common name | NISP | NISP% |
|---|---|---|---|---|---|
| Mammal | Artiodactyla | Medium Artiodactyla | Even-toed ungulate | 19 | 3.63 |
| | Lagomorpha | Lagomorpha | Rabbit, hare and pike | 8 | 1.53 |
| | | Lepus sp. | Jackrabbit or hare | 8 | 1.53 |
| | | Sylvilagus sp. | Cottontail | 5 | 0.96 |
| | Rodentia | Rodentia | Rodent | 6 | 1.15 |
| | | | Prairie dog | 9 | 1.72 |
| | Miscellaneous | small mammal | | 215 | 41.11 |
| | | Medium mammal | | 87 | 16.63 |
| Aves | Galliformes | Meleagris gallopavo | Turkey | 3 | 0.57 |
| | Miscellaneous | small bird | | 4 | 0.76 |
| Osteichthyes | | | fish | 4 | 0.76 |
| | | Unidentified | | 155 | 29.64 |
| Total | | | | 523 | 100 |

*Taphonomic Forces and Preservation of Bones*

Overall, the faunal samples were highly fragmented, such that Dr. Omar could only identify a relatively small number of bones (n=66) to species or order. Bone condition was good, however, and some very delicate bones were preserved. Based on the condition of the remains, preservation bias was not a major factor in this assemblage, and the current pH of the soil at Aztec Ruins National Monument (7.11) indicates that soil acidity would have only a moderate effect on bone preservation (Korb 2010).

Of the identified fragments, 61% came from Study Unit 1, 31% came from Study Unit 2 and 4% came from each of the two midden units. The very small percentage from the midden units is notable, and is consistent with the archaeobotanical findings discussed

[14] This count includes only fragments larger than 3 mm.

in the previous section. As discussed in more detail there, there is not enough evidence to equate any behavioral explanation with this, so it appears to be a matter of preservation.

For the faunal fragments that came from the room floors in both Study Unit 1 and Study Unit 2, Dr. Omar noted a higher incidence of weathering and gnawing. She sees this as evidence that bones were left on the floors at abandonment and the rooms were exposed, for a significant period of time, to fluctuating temperatures and natural elements.

Due to the small sample size and the fragmentary nature of many of the bones, Dr. Omar was unable to evaluate any patterns in age stage or to use any measure of quantification other than number of identified specimens (NISP).

*Overview of Identification of Faunal Remains*

Among those specimens identified to either order or species, the most common were artiodactyls (i.e. deer, elk or mountain goats) and lagomorphs (i.e. cottontail rabbits and jackrabbits). The quantities of each were about equal, at about 30% each of the total identifiable samples. Also present were 3 specimens of turkey bone and 4 bones from other birds, 9 prairie dog specimens, and 6 other rodent bones.

This is a very small identified faunal assemblage. Dr. Omar was only able to identify 66 bones to species or order. Another 155 bone fragments could not be identified at all, 215 could only be identified to "small mammal," and 87 to "medium mammal."

*Artiodactyls*

Artiodactyls made up 31% of the identified assemblage, and most of these were medium artiodactyls, a group that includes mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), pronghorn antelope (*Antilocapra americana*), bighorn sheep (*Ovis canadensis*) and elk (*Cervus elaphus*). There were only three complete artiodactyl elements—a tarsal and two phalanges. Other long bone fragments included a metapodial, two metatarsal shafts, a femur and a rib. There were also three incisor teeth. Most of the artiodactyl remains came from Study Unit 1 and Study Unit 2, rather than from the middens. One metapodial fragment came from an overburden level in one of the midden units, Study Unit 3A.

*Lagomorphs*

Lagomorphs made up 30% of the assemblage, and they all came from Study Unit 1 and Study Unit 2. Jackrabbits (*Lepus sp.*) were slightly more common than cottontails (*Sylvilagus sp.*) The cottontail elements included a cervical vertebra, a lumbar vertebra, a complete right radius and fragments of scapula and ulna. Jackrabbit elements included a lumbar vertebra fragment, a rib fragment, two mandible fragments with teeth and one pelvis fragment. Some fragments could not be assigned to a specific species; these included loose tooth fragments, a skull fragment, a phalanx fragment and a scapula portion.

*Rodents*

Rodents were 22% of the identifiable assemblage. Dr. Omar was able to identify a number of fragments as prairie dog (*Cynomys sp.*), including a skull fragment, a complete axis, four femur fragments, one tibia, one ulna and a first phalanx. These all came from Study Unit 1 or Study Unit 2. Other rodent remains could not be identified to species. The latter included an incisor fragment, a phalanx fragment, a frontal orbital skull fragment, a femur fragment and two vertebra fragments. The rodent remains came from various contexts, including post-occupations deposits, overburdens and sub-floor levels, and it is impossible to parse which were intrusive and which represent cultural activity.

*Turkey*

There were three turkey (*Meleagris gallopavo*) bones, including a tarsus metatarsus shaft found in Study Unit 1. Remains of smaller birds were also found in Study Unit 1 and Study Unit 2, but these could not be identified to species. Most of these were weathered and gnawed or burned, suggesting that they were eaten.

Fish

In addition, near the floor of Study Unit 2, we recovered several fish vertebrae. Dr. Omar was able to identify these to the Cyprinidae family, a very large family which includes carp-like and minnow-like fish among others, but she could not identify the genus or species. Figure 8-15 is a photograph of these vertebrae.

**Figure 8-15 Cyprinidae fish vertebrae. Photo by the author.**


*Carnivores and Other Species*

The Aztec North assemblage lacked any identifiable bones from carnivores, birds of prey, domesticated dogs, or macaws, such as have been found at other great houses. It is a far less diverse assemblage than others that have been reported. Given the limited nature of our excavations and the fragmentation of the faunal samples, this is all unsurprising and certainly does not exclude the possibility of other species being present elsewhere at the great house.

*Worked Bone Tools*

The assemblage includes two bone tools. An antler tip found in Study Unit 1 had been worked for use as a tool. Also in the assemblage was a rib bone from a medium sized animal found in Study Unit 2 that had been modified into a needle or awl.

*Faunal Indices*

In order to make Dr. Omar's data useable for future researchers comparing different sites, I have also calculated faunal indices based on her data. I also summarize how the index values for Aztec North compare to other sites.

For Aztec North, the Artiodactyl Index (19 artiodactyla/ 41 artiodactyla and lagomorphs) comes to 0.46. Gore and Loven (2015) reported values of 0.15 for the limited samples available from Aztec West, which was the lowest value among all the great houses they considered (and based on very incomplete data). At the Salmon Pueblo, the Chacoan period assemblage had an Artiodactyl Index of 0.47, a number very close to Aztec North's. However, it dropped to 0.07 for the post-Chacoan period (Durand and Durand 2006).

The index for Pueblo Alto was 0.41 for Pueblo Alto, and for the Guadalupe great house it was .45 (Durand 2008; Gore and Loven 2015). The index does not, of course, address the reasons for the differences between sites. One possible explanation is the availability of artiodactyls, including their overhunting over time. However, the variation may equally be explained by cultural choices, such as a differential reliance on turkeys. Whatever the explanation, it appears that Aztec North's assemblage— small as it is— is consistent with Chacoan-period assemblages at other sites but quite different from what has been reported at Aztec West.

For Aztec North, the Lagomorph Index (5 cottontails out of 13 species-identified lagomorphs) is 0.38, meaning that jackrabbits were more common than cottontails. Gore and Loven (2015) report an LI value of 0.71 for assemblages they analyzed at Aztec West. At the Salmon Pueblo, the Lagomorph Index overall was 0.75, with a value of 0.83 in the Chacoan period that dropped to 0.67 in the post-Chacoan period (Durand and Durand 2006:1088). At Pueblo Alto, the index was 0.45, indicating a greater reliance on jackrabbits, possibly related to feasting (Gore and Loven 2015:4). The Aztec North value is much closer to Pueblo Alto's index than to the other Totah great houses, with jackrabbits being much more common at Aztec North than at Aztec West or the Salmon Pueblo.

For the Aztec North assemblage, the Turkey Index is 0.13 (3 turkey/24 turkey + lagomorph). Dr. Omar identified only three turkey bones at Aztec North, so this is a particularly tiny sample. Nonetheless, that number is remarkably similar to the values from the much larger assemblages at Aztec West and the Salmon Pueblo. At Aztec West, Gore and Loven (2015) report a value of 0.15. And at the Salmon Pueblo, assemblages representing the Chacoan occupation had a value of 0.14, while post-Chacoan assemblages had a value of 0.46 (Durand and Durand 2006:1085). So once again, the Turkey Index for Aztec North is consistent with Aztec West and the Salmon Pueblo.

*Interpreting the Faunal Assemblage*

Overall, this assemblage is fairly typical for a site of this period. Artiodactyls and lagomorphs each make up about a third of the assemblage. The ratio of artiodactyls and lagomorphs is almost identical to the Salmon Pueblo and Pueblo Alto, the Chacoan sites for which we have reasonably good data for this time period.

The ratio of cottontails to jackrabbits is interesting. Jackrabbits are more common in the Aztec North assemblage than at Aztec West or the Salmon Pueblo, and the ratio is very similar to that at Pueblo Alto. These two species may seem very similar to modern eyes, but they likely represented very different modes of hunting, and jackrabbits might be indicative of feasting. Of course this is a very small sample of 13 rabbits total.

As for turkeys, there is just enough evidence to prove their presence at this site, though we do not know how they were being used. Absent from our assemblage are carnivores, birds of prey, or other nonlocal species. In general, it is a very typical, local collection of fauna. We also have some evidence of bones used as tools.

Dr. Omar's analysis of the faunal remains indicates that the middens contain far less material than the rooms of the great house. Of the identified fragments, 61% came from Study Unit 1, 31% came from Study Unit 2 and just 4% came from each of the two midden units. As with the archaeobotanical remains, this might be the result of purely taphonomic processes; it is unclear on the available evidence that it has to do with human behavior.

Another notable characteristic of this assemblage is that it was very highly fragmented, so Dr. Omar could only identify a relatively small number of bones (n=66) to species or order. She did not draw any firm conclusions about the significance of this high degree of fragmentation in the overall assemblage. She noted that there was more fragmentation in the bones that came from the rooms of the great house, compared to those from the middens, suggesting that the fragmentation may have been due to cultural activities or reasons, rather than due to purely natural taphonomic forces. I would speculate that there might also have been a great deal of rodent activity in the architectural units after their abandonment.

The fish vertebrae from the floor in Study Unit 2 are a significant find. Although fish bones have occasionally been reported in Ancient Puebloan assemblages, they are rare and there has been a general sense that Ancient Puebloans did not eat fish. This understanding was based in part on taboos among some (but not all) of the historic Pueblos and other Native groups in the region against eating fish (Badenhorst 2008; Matthews 1898; Snow 2002). Early anthropologists explained the Puebloan taboos in terms of the sacredness of water and, correspondingly, of the animals who live in it (Matthews 1898, citing personal communication from Frank Cushing). But there is also archaeological reason to believe that fish were rarely eaten. Archaeologists have found only very limited fish remains at Ancient Puebloan sites. At many sites, including those at Chaco, fish are rare simply because of the distance to major bodies of water (Akins 1985; Badenhorst 2008; Badenhorst et al. 2016; Gehlbach and Miller 1961). Moreover, tiny fish bones were not readily recovered prior to the widespread use of flotation, which can capture such bones and even scales, but even since its widespread adoption there have been few fish finds.

The traditional view of fish is starting to change, however. Small quantities of fish have been recently identified in contexts at Aztec West and Mound E of the Aztec community (Gore and Loven 2015), at the Point Site (Wheelbarger, personal communication 2016), and recently in the Pueblo Bonito mounds (Badenhorst et al. 2016). At the Salmon Pueblo, fish "seem to have had a low, constant presence" (Durand and Durand 2006:1088). Older reports of fish in Chacoan and Northern San Juan assemblages are collected in Akins 1985 and Snow 2002. As Akins (1985:332-334) notes, the small quantities of fish found at Pueblo Alto, Pueblo Bonito, Kin Kletso and other Chacoan great houses must have been transported from some distance. But at sites in the Totah, with its three rivers, fish would have been much easier to come by, and people in the Aztec community might well have developed a different relationship with fish than what was common at Chaco or elsewhere.

Other Artifacts

In addition to the artifacts and samples already discussed, the assemblage included a small number of other artifacts. These included mineral pigments, a few shale beads, one piece of twine, and some historic artifacts. I discuss these artifacts next.

*Minerals*

Our assemblage includes two pieces of yellow ochre. Figure 8-16 shows a piece of yellow ochre found on a room floor in Study Unit 2.

In addition, there are at least two stone artifacts that were likely used with pigments. PD262, FS 1 includes a piece of sandstone that is heavily pigmented with a yellow ochre stain (see Figure 8-17). It is possible that the edge includes a small well with ochre actually tamped into it. Interestingly, the stain varies from light yellow at its center to a darker color at the edges, and the stone shows signs of burning around the edges. Ochre darkens when it is heated (Siddall 2018:4), so it is possible that this is a small palette that was used for heating ochre, with the intent of darkening it.

**Figure 8-16 Yellow ochre. Photo by the author.**


**Figure 8-17 Sandstone with yellow ochre. Photo by the author.**

PD 234, FS 1 is a broken piece of smooth cobble with reddish stains that appear to be red ochre (Figure 8-18). Interestingly, it was found in the same level as the yellow ochre mentioned above, on the floor of Study Unit 2, so we have both red and yellow ochre in the same PD.

**Figure 8-18 Cobble with red ochre. Photo by the author.**

Ochre is common at Ancient Puebloan sites. The sourcing, processing and use of these pigments are understudied in our region, but it is clear from the archaeological record and from ethnographic example that ochre and other mineral pigments have had important uses in cultural groups everywhere and from the Pleistocene to the present day. In many societies, red ochre and the color red were associated with ideas of rebirth and fertility, and it has often been a part of mortuary ritual around the world (Siddall 2018). Ochre has deep roots in ritual and burial contexts in North America-- the earliest known Paleoindian burial, found in Montana, is a 2 year old boy buried with Clovis points covered in red ochre (Becerra-Valdivia et al. 2018).

What archaeologists refer to as ochre is generally an earthy metal-oxide rich deposit, but individual samples vary widely in exact composition and in the processing they have undergone to produce a useable pigment (Eiselt et al. 2011; Siddall 2018). In the Southwest, most ochres consist of earthy hematite (Eiselt et al. 2011). Some ochres are naturally red, but heat-treating yellow ochre will also produce various shades of red (Siddall 2018). Sourcing of ochre is difficult given the varying processing techniques that were used, and also because it was often a prized and highly traded commodity (Siddall 2018).

In Ancient Puebloan contexts, archaeologists have noted baskets, wooden objects and stone objects with traces of red pigment on them. Pottery with fugitive red pigment, a red dusting of ochre applied post-firing, is also relatively common. I found it on the interior of a jar sherd from the surface at Aztec North (Turner 2015: 43), suggesting the jar was used for storing ochre, and I have also recently seen it on a large and dramatically decorated bowl from Aztec West in storage at the American Museum of Natural History. Crown and Wills (2003) noted that at least one cylinder jar fragment from Chaco Canyon had fugitive red on it. They speculated that the addition of post-firing red pigments might have been a part of an annual ritual of renewal for these sacred objects, as is common with katsina masks and other ritual objects in the Pueblos (see also Munson 2011:136-140). Ochre might also have been used for body paint, as is ethnographically common around the world (Eiselt et al. 2011; Siddall 2018).

*Beads*

Our assemblage includes 11 small shale beads, most pulled from the heavy fraction after flotation of bulk soil samples (see Table 22).

**Table 22 Beads from Aztec North**

| Catalog ID # | PD# | FS# | Artifact Code | Count | Study Unit | Stratum | Context |
|---|---|---|---|---|---|---|---|
| AZN172 | 230 | 6 | ORN- Ornament | 1 | SU1A,SU1B | 6 | AD Architectural Debris |
| AZN173 | 212 | 4 | ORN- Ornament | 1 | SU1D | 5 | FF Feature Fill |
| AZN453 | 165 | 12 | ORN/HF- Ornament from heavy | 4 | SU1C | 5 | ICND Interstratified Cultural and Natural Deposits |
| AZN505 | 212 | 21 | ORN/HF- Ornament from heavy | 2 | SU1D | 5 | FF Feature Fill |
| AZN511 | 212 | 27 | ORN/HF- Ornament from heavy | 2 | SU1D | 5 | FF Feature Fill |
| AZN537 | 165 | 15 | ORN/HF- Ornament from heavy | 1 | SU1C | 5 | ICND Interstratified Cultural and Natural Deposits |

These are very tiny disk beads, with a diameter of only about 2.5 mm and a thickness about half of that (see Figure 8-19). All of the beads in Table 22 were from Study Unit 1, along the northern wall of the great house. However, there was at least one additional bead just like these, which we found in a ⅛" screen from one of the middens, Study Unit 4 (PD 170), but which we lost in the field due to its small size.

**Figure 8-19 Shale beads. The scale is one centimeter. Photo by the author.**

Geoarchaeologist Dana Yakabowskas visually examined these small beads and concluded that they are made from a black stone, not shell and not clay, though she could not identify the stone from visual inspection (Yakabowskas, personal communication 2017). However, we agreed that they are not smooth enough to be jet, and they appear to be identical to beads from Aztec West that Hannah Mattson has described as shale (Mattson 2016). One of the beads (a broken one in PD 212, FS 21) appears to be from a different kind of stone, possibly a granite.

Small black shale beads like these are also common in Ancient Puebloan deposits. Morris (1919:99) reported extremely long strings of these at Aztec West, including a 57 foot string with 31,000 individual beads, a 56 foot string with 16,600 beads, and a 6 foot string with 3,100 beads. Hannah Mattson has undertaken a detailed analysis of ornaments at Pueblo Bonito and Aztec West and has found that shale beads were a dominant part of the ornament assemblages at both great houses, where they were found in both ritual and domestic contexts. At Pueblo Bonito, they were particularly associated with burials in both the northern and western rooms of the great house. She views the use of shale beads and other ornaments at Aztec West as efforts to identify with Chaco Canyon during the Chacoan period and as ways to revitalize Chacoan memory in the post-Chacoan period (Mattson 2015, 2016).

Notably absent from our assemblage is any turquoise. We also found no shell or jet ornaments, or indeed any ornaments other than these black beads. Of course, it was a limited excavation, and absence of evidence is not evidence of absence in these circumstances. However, given that we screened all floor fill and midden deposits with a ⅛" screen, the absence of these materials is at least something to note.

*Perishable Artifacts*

The Aztec West great house is well known for the remarkable preservation of perishable artifacts such as reed mats, sandals, textiles and wood artifacts (e.g. Morris 1928; Webster 2011). We found no such artifacts in our excavation of Aztec North. However, we did find one small fragment of twine, which broke into two pieces before I was able to properly house or photograph it (Figure 8-20). It came from the floor of Room 2, in Study Unit 2.

**Figure 8-20 Charred *Yucca baccata* twine. Photo by the author.**

Perishables expert Laurie Webster examined this small artifact while she was visiting Aztec, and she confirmed that it is a piece of charred twine made from *Yucca baccata*, broadleaf yucca. It has visible striations, fibers and epidermis that permit this identification. She did not believe it was part of a sandal, but rather it may be half of a square knot, which was used widely in Ancient Puebloan contexts (Laurie Webster personal communication, 2016). Such knots were used to secure ceiling materials and in many other architectural contexts.

*Historic Artifacts*

The assemblage includes only three historic artifacts. One is a spent .22 caliber cartridge, found on the surface of Study Unit 1. Of more interest are the two pencils we found.

One of the pencils was in Study Unit 4, the southwestern midden, and one was in Study Unit 2, in the east block of the great house. Both were buried within the top 10 cm. The one found in the midden was at least 7 cm deep. When we excavated the first of these, crew members immediately began joking that we had found Earl Morris's pencil. I was intrigued enough to do some historical research on pencils.

**Figure 8-21 Pencil from Study Unit 2. Photo by the author.**


The two pencils both have vertical serration on the ferrule (the metal band around the eraser) (Figure 8-21). The patent application for vertical serration was filed in 1964, and the patent was issued in 1967. The design was implemented only in that time frame. Older pencil ferrules had horizontal banding. The vertical serration was an important breakthrough that strengthened the ferrule so manufacturers could use cheap aluminum instead of the more expensive metals previously required. This design is still in use today (United States Patent and Trademark Office 1967; Joiner 2015; Weaver 2017). So these two pencils post-date 1964, which means they could not have been left by Earl Morris, who passed away in 1956. Perhaps they were dropped by Pete McKenna or John Stein in the course of their 1987 survey, or by more recent visitors to the site.

It is interesting that the pencil in the midden (Study Unit 4), was buried relatively deeply for its age. It is possible that whoever dropped it kicked it into the soil, but it may represent normal site formation processes. The entire site slopes from north to south, towards the edge of the terrace, and from the faunal and archaeobotanical results discussed above, it seems likely that complicated erosional processes are at play in the preservation of the midden. The pencil may have moved downslope from elsewhere at the site, becoming buried in eroding soil.

Conclusion

This chapter has summarized data from the analysis of artifacts. I summarized the results (briefly where a more detailed report is available and in more detail where it is not) for all of the artifact analyses that I and my collaborators have conducted: ceramic analysis, lithic analysis, obsidian sourcing, archaeobotanical and faunal studies, and analysis of the minerals, ornament, perishable, and historic artifacts. The ceramic analysis revealed extensive import of pottery, as well as a large proportion of jars. Throgmorton's lithic analysis, by contrast, showed reliance mostly on local materials and very expedient technologies. The obsidian is the major exception to this pattern of local materials, and its quantities and in the expedient ways in which it was used were surprising, even if its Jemez sourcing was not. The archaeobotanical analysis has given us important new data about the plants that were used at this site, including a number of important domesticated and wild species. Faunal analysis also reveals new information about what people here ate, and has drawn some parallels between this site and other great house sites. And finally, the pigments, ornaments and perishable artifacts provide more information about the lives of people living at Aztec North, including parallels to what we see at Aztec West. In the next chapter I discuss the significance of all these results and set forth my interpretation of the site and its artifacts.

## Chapter 9. Interpreting Aztec North

The previous chapters laid out the empirical results of excavation at Aztec North and of the artifact analysis. In this chapter, I synthesize those results to provide a description and interpretation of the Aztec North great house, its artifacts, its cultural landscape, and its place within the Chacoan world. I argue that Aztec North is an early, transitional site built by people who wished to align themselves with a new Chacoan way of being but whose social structures, like their architecture, merely laid a Chacoan veneer over a core that remained very different. Yet the artifacts suggest a great house fully integrated into the Chacoan world, indicating that the transition occurred very rapidly after construction.

I return to the four original research questions while also drawing in other strands. I begin by addressing the radiocarbon dating and ceramic dating, and what inferences these permit us to make about the site's chronology. I then discuss the architecture, arguing that it reveals a community in transition from an egalitarian and communal labor system towards Chacoan hierarchy. I also draw on materiality theory and the larger landscape to reflect on what this great house might have meant to people at this time and how its construction might have altered the course of their lives in unexpected ways.

My discussion of Aztec North's relations to other regions focuses primarily on lithics and pottery, and how these point towards a community that, within a short period of time, found itself well ensconced within Chacoan trade networks but with some unique relationships of its own. Finally, I address what the artifacts and samples reveal about the everyday life of people living at this site, with discussions of food, tools, pottery, and ritual and belief.

<u>The Chronology of Aztec North</u>

The question of Aztec North's chronology has nagged at archaeologists since Peter McKenna's first analysis of the surface ceramics. He dated the structure to between 1090 and 1150 (Stein and McKenna 1988). Aztec West was built by (or at least with) Chacoan builders starting by 1110 (Brown et al. 2008; Brown and Paddock 2011). If Aztec North was built later than, or concurrently with, Aztec West, then Chacoans would have already been on the scene and almost certainly would have been involved in both construction projects. If Aztec North was much later than Aztec West, as proposed by Lekson (2015), who suggested a late Pueblo III origin for the structure, then it could be a post-Chacoan experiment that relates more closely to the adobe structures of Paquimé. By contrast, if Aztec North was built earlier than Aztec West, it could represent either the earliest Chacoan arrival or a pre-Chacoan development. Either way, archaeologists are deeply interested in Aztec North's origins and how they relate to Chacoan relations with the Totah.

*Overview of Chronological Data*

Overall, the chronology remains imprecise, at least by the standards of Southwest archaeologists who are accustomed to tree-ring dates. The radiocarbon dates confirm a clear occupation between the 1020s to 1150s. This does unambiguously rule out the late Pueblo III origin proposed by Lekson. As expected, however, these dates are not conclusive on the research question of whether Aztec North predates the start of construction of Aztec West in 1110. Radiocarbon dating, even with Bayesian analysis, is simply not a precise enough tool to answer a research question that would require distinctions of 10 or 20 years. The Bayesian analysis seems to push the date range later, closer to 1100.

The mean ceramic date for all the sherds recovered during excavation is 1101, with a standard variation of ±38, for a possible date range of 1063-1139. But a careful attention to the ceramic types founds suggest that occupation before the 1070s is unlikely. As Lori Reed, an experienced ceramic analyst, has noted, the absence of San Juan red wares suggests the site was not occupied in the 1060s (L. Reed 2017; L. Reed personal communication 2017).

In short, the ceramics narrow the range slightly, to an occupation that fell sometime between the 1070s and the 1130s. The relative lack of trash at the site and its deflated middens, moreover, suggest a fairly narrow window of occupation.

As summarized in Table 7 in the previous chapter, the two architectural units, Study Unit 1 and Study Unit 2, both have mean ceramic dates that trend a bit earlier than the two midden units, raising the possibility that the middens were used longer than the rooms, perhaps for continued ritual activities.

To my mind, at least, the project as a whole answers the question of whether Aztec North predates Aztec West. As discussed in the next section, Aztec North was clearly not built in the same way as Aztec West, and the labor regime that underlies it is not Chacoan hierarchy but a communal effort. It must predate Aztec West, though the evidence suggests not by much.

<u>The Architecture of Aztec North: A Community in Transition</u>

Understanding the anomalous architecture of the great house was one of the main motives for this project. Archaeologists had previously offered three theories to explain the nature of this unusual structure. To recap these views: First, Gary Brown and his colleagues (Brown and Paddock 2011) proposed that Aztec North was an emulation built by locals, in a local adobe vernacular. Van Dyke (2008) proposed that Aztec North was built by Chacoans who had just arrived on the scene and did not yet command the labor required to build a masonry great house. Lekson (2015) suggested that Aztec North is a later structure, built in the Pueblo III period with a new kind of adobe architecture that the people of Aztec would later take with them to the next stop on the Chaco Meridian at Paquimé.

*Revealing the Architecture of Aztec North*

The excavation data challenges each of the previous hypotheses. The radiocarbon dating excludes Lekson's hypothesis, as it has substantiated a Pueblo II or very early Pueblo III occupation. The radiocarbon does not help us distinguish between the other two theories, but excavation has invalidated the original assumption that this was an entirely adobe structure. Architecturally, instead of an adobe facsimile of a great house, the excavated portions of Aztec North show a mix of features that look typically Chacoan and features that look local.

On the Chacoan side of the balance, the builders were working with a core and veneer model, with coursed masonry veneers of sandstone. The sandstone was of poor quality, and the workmanship is not on a par with the best Chacoan masonry, but it is similar to work in portions of Aztec West. Moreover, it is the product of the same architectural model that prevailed at Chaco Canyon. Whoever built this veneer was not just putting together a facsimile of a great house which would look good enough with a coat of plaster to conceal its flaws— they were putting in the same kind of effort as Chacoans did to create masonry veneers on the interiors of their rooms. I cannot be certain that the exteriors of the great house had a veneer too, but that seems a reasonable assumption given the casual balls of mud that were used for the core, which would not have had structural strength without a veneer on the other side.

Room size appears to fit the Chacoan model as well. The floor surface of Room 2, which we uncovered from wall to wall in one direction, was about 3 meters between walls. This might be small compared to rooms at Aztec West, which have floor surfaces averaging about 14.7 $m^2$ (Brown and Paddock 2011). At the 11 central great houses of Chaco Canyon, however, the mean room size was 11.97 $m^2$, with great variability over time and between areas of the great house. Front rooms at Chaco varied from 45 $m^2$ in the 900s to about 10 $m^2$ in the early 1100s, while back rooms were consistently about 12 $m^2$ throughout the two centuries of construction (Lekson 1984: 40). Room 2 at Aztec North, with 3 meters on one side, is particularly consistent with the latter two figures. In short, between room size, the use of core and veneer walls, and the sandstone masonry, these builders were not just making a bigger pueblo roomblock. They had a great house in mind.

Finally, perhaps most importantly, Aztec North has foundations that look very much like those that are found at Chacoan great house sites, including Aztec West. These are not found in contemporaneous structures at sites that lack Chacoan influence. At Aztec West, these footer trenches, combined with core and veneer construction, have been cited as evidence that Chacoan builders were present (Brown et al. 2008; Brown and Paddock 2011).

The great house's orientation is another clue to its origins. It does not match the traditional solstitial model, facing southeast as earlier Puebloan sites did. This suggests an intention to break with the past. Instead, it appears its builders intended to orient it north-south, like many Chacoan great houses in the Late Bonito Phase. There is thus a very intentional and very new effort to bring Chacoan ways to the Animas Valley.

On the "not Chacoan" side of the balance, there is the adobe fill of the walls, which is decidedly not what archaeologists expect from Chacoan sites. But while adobe can reasonably be described as an architectural vernacular (Brown and Paddock 2011) in the Animas Valley, there is nothing typically Animas about these walls either. They are, as far as I know, a complete innovation in this region.[15] Brown and Paddock (2011) describe all of the ways that people at Aztec used adobe, such as wattle and daub with a wooden lattice[16] or cobble and adobe walls, but none of those exactly describes the adobe fill of this great house. The "handfuls of mud" construction method used for some of the Aztec North wall cores is quite different than turtleback or wattle and daub construction seen in adobe elements at Aztec West and elsewhere in the Aztec community.

Other structures in the Animas Valley, such as the Pueblo I pit houses of Cedar Hill 17 kilometers northeast from the Aztec community, were built of daub or adobe that looks more like the material we saw at Aztec North, but those were small structures that do not even compare to the scale of Aztec North and of course lacked the sandstone veneer. Earl Morris excavated a site with walls built with that he described as "balls or

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[15] The only other example I have heard of that seems similar is a wall at Site 5AA246 near Chimney Rock, with similar dates to Aztec North, which had masonry facing added to the exterior of a coursed-cobble and adobe wall (Chuipka and Fetterman 2013: 466-467; Chuipka et al. 2010: 178-179). This seems not to be a real veneer, nor a mainly adobe wall, but it is interesting as another example of the same idea of making a structure look more Chacoan by adding coursed sandstone masonry to it.

[16] We did not find any evidence of the kind of wooden lattice that Brown and Paddock (2011) describe as common at Aztec West. However, given the condition of the walls, I am not certain that enough of it would have survived in situ for us to recognize as a lattice.

chunks of clay," but it dated from the Pueblo III period and also had no veneer (Morris 1915). At Bis sa'ani, excavators also described the walls as "essentially an assemblage of mud balls pressed into place" (Marshall 1982:182).[17] Bis sa'ani's walls, however, lacked extensive sandstone veneers.[18]

Worth noting, though, is that even if Aztec North's adobe was related to a local architectural vernacular, at this site it was deployed on a scale far beyond anything that these local populations would have ever built in adobe before. Even if people were building in their own, familiar material, there would have been nothing familiar about building a 100-room great house with sandstone veneers. It was an audacious experiment in monumental architecture, and one that may very well have been an origin point for centuries of Pueblo adobe construction in the post-Chacoan period.

*Chacoan Expansion or Local Emulation?*

The footer trenches are the strongest evidence of the Chacoan knowledge literally underlying this structure. Archaeologists seeking to understand the appearance of great houses across the region have often sought to characterize outlier sites as evidencing either local emulation or Chacoan expansionism. To make their arguments, they have often pointed to low-visibility architectural features— uniquely Chacoan construction innovations not found elsewhere and which, moreover, are hidden so that a casual visitor

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[17] In addition, Earl Morris excavated a small structure near Aztec that was built with what he described as "balls or chunks of clay" pressed together (Morris 1915). Based on the ceramics pictured in Morris's paper, that structure was Mesa Verde phase, later than either Aztec North or Bis sa'ani.

[18] Bis sa'ani dates to 1126-1133, which is probably later than the construction or heyday of Aztec North. Also, the ceramic assemblage at Bis sa'ani is quite different and has an unusually high concentration of Socorro Black-on-white (Breternitz and Marshall 1982), so there is good reason to be cautious in evaluating similarities between the two sites.

to Chaco Canyon would not be able to see them (Brown et al. 2008; Brown and Paddock 2011:211; Carr 1995; Clark 2001; Sackett 1977; Van Dyke 1999; Wobst 1977). Footer trenches have been cited as one example, as has core and veneer wall construction. At Aztec West, these features are seen as evidence of the presence of Chacoan builders.

Aztec North clearly incorporates Chacoan knowledge in the form of footer trenches, even as most other aspects of the great house remain non-Chacoan. How to explain this contradiction? One possibility is that Chacoan builders or planners laid out the foundations, but then left the actual wall construction to locals to complete in their own way. At Chaco Canyon, builders laid complete building foundations before the wall construction began, as a sort of finished blueprint for the future construction. At Pueblo Bonito, there is a huge complex of foundations to the northeast of the building that appears to have been intended as the layout for a future construction phase, which never actually happened (Stein et al. 2003). So the possibility of Chacoans laying out the foundations only as a design blueprint for locals to follow is consistent with that, although I know of no other site with Chacoan foundations and non-Chacoan walls on top of them.

It is also possible that Chacoan builders did not lay out the foundations but that people at Aztec North obtained that Chacoan knowledge in other ways. One possibility is that local people worked on foundations at Chaco (but did not stay around long enough to see how the core and veneer walls were built). Even if Chacoan builders did work on the foundations, that certainly does not equate to a model of Chacoan expansionism. Indeed, it seems quite likely that any Chacoan builders involved in the foundation construction were no longer on site later, as the very unorthodox walls went up.

The presence of the footer trenches might also be evidence that the builders of Aztec North originally intended to build more than one story. The use of these footers at Aztec North seems like overkill. Chacoan footer trenches, combined with core and veneer walls, represent an important architectural advancement that made it possible to build multi-story great houses with massive stone walls (Lekson 1984). So they are meant to support enormously heavy masonry structures, but here they support a one story structure with walls so ephemeral that we did not even know exactly where some of them stood until we found the footers. If a second story was the intent, I suspect that the builders soon realized their loosely packed adobe core walls would not support the additional weight of another story, even with the footer trenches.

As Lekson (1984:15) notes, however, there are also overbuilt footer trenches under many non-load-bearing walls at Chaco Canyon. He argues that Chacoans did not fully understand foundations as structural support and used them as much for a blueprint as for actual wall support. And in fact, overbuilt construction is a hallmark of Chacoan architecture. Moreover, one story might have been the intent if Aztec North was supposed to be a second Pueblo Alto, since that great house also had just one story (Lekson et al. 2006; Windes 1987).

Whatever else they mean, however, the presence of these trenches certainly reinforces the view that these builders had the model of a Chaco great house firmly in mind and had Chacoan knowledge to support that model.

The combination of Chacoan and non-Chacoan features at this site indicates that the models of Chacoan expansionism versus emulation that archaeologist have applied in the Totah and elsewhere are too simple to fully capture the complex process of outlier development. Aztec North was not taken over by Chacoans but was built by local people who wanted to build a Chacoan great house. But nor were they just imitating Chaco. Instead, they built this great house with an understanding of Chacoan low-visibility footer trenches, knowledge that could only have come from Chaco in some way, while lacking a full understanding of other aspects of Chacoan architecture and building core and veneer walls using their own familiar adobe construction.

*A Rapid Transition*

The architecture, described above, tells a story of a place in transition. Apart from the architecture, however, Aztec North's artifacts and the elaboration of the cultural landscape are all consistent with a site that was absorbed into the Chacoan regional system soon after its construction. So the artifacts reflect the site's later occupation rather than revealing anything about the founding of the great house.

*Renovation and Memory*

It also appears that builders renovated the great house at some point, replacing the rear wall with a new adobe core wall. I can only speculate about the reasons for this renovation. It might have been an aesthetic choice to expand the size of a room or to alter the great house layout in some way.

On the other hand, the removal of the wall might also be evidence of wall failure. Adobe is an excellent and long-lasting construction material if properly protected from water and well-maintained, but if water seeps in and especially if it undercuts the adobe, it can cause catastrophic failure (Barnard 2016). Encasing adobe behind a sandstone veneer meant that it could not be accessed regularly to maintain and add material. We also know nothing about the roof of this structure and its ability to protect the core. If water got in behind the veneer, the wall might have failed from the inside out. It is certainly easy to imagine that this construction method might not be terribly stable for the long term.

If the renovation does reflect wall failure, the choice to rebuild it, perhaps after the more solid great house of Aztec West was already in place, might indicate its symbolic importance as the first Aztec great house and the significance of this high place to the cultural landscape. By the time Aztec West and Aztec East were both in place, the clumsy veneers and single story of Aztec North might have looked shabby indeed and the interiors might have been damaged by water. Certainly the paucity of trash suggests it did not see extensive use. Yet it appears that the great house was not just maintained but continued to be at the center of the cultural landscape, with the gateway structures on the hillside beneath it being added around the same time as Aztec East. The memory of the audacious choices people made at Aztec North, and the part those builders played in bringing about a Chacoan Aztec, might have burnt bright for many decades.

The Materiality of Adobe

Archaeologists have tended to adopt an evolutionist view towards Chaco's masonry. As beautiful as it is to modern eyes, there has been a sense that it represents a pinnacle of architectural development. This evolution began with the development of earthen pithouse structures, and the pithouse to pueblo transition represents an important temporal marker as well as an important step towards Chacoan great house construction. But this tautological view also has to do with an archaeological field focused on studying complexity (Fowles 2018). To many, Chaco's masonry represents not just accomplished stonework but sociopolitical hierarchy. It is the architecture of large-scale ritual, politics, astronomy, and powerful individuals with wealthy burials.

By contrast, Southwest archaeologists have tended to view earthen construction as egalitarian, local, expedient, domestic. Although it was present in Ancient Puebloan structures from Basketmaker II through the Chacoan era, it is often viewed as second-rate. And this despite the fact that large-scale adobe pueblos in the Rio Grande became the norm after 1250 (Cameron 1998). And also despite today's booming demand for upscale adobe architecture in southwestern real estate markets from Santa Fe to Marfa, Texas and beyond (Preston 1989; Von Oldershausen 2018).

Earthen structures, inherently erodible and always "in a continual state of unbecoming" (Matero 2015:210), challenge western architectural values of permanence and durability (Apotsos 2012, Matero 2015). For an archaeological profession that values excavated sites as open-air museums and which seeks to conserve original materials (rather than, say, replastering an eroded adobe wall regularly with new mud), earthen structures pose conservation problems as well as metaphysical conundrums (Matero 2015). Like philosophy's ship of Theseus thought experiment—a ship whose beams and planks have been replaced one by one over years of maintenance, until it is arguably no longer the same ship—an adobe wall that is maintained through the centuries may no longer be the same wall.

Materiality theory offers a new way to think about these lowly construction materials, perhaps allowing us to shed some of archaeology's prejudices about both adobe and masonry and see them in a new light. I begin with a discussion of the material itself. Adobe is cheap, versatile, easy to use and, when used appropriately, has excellent thermal insulating properties. It is still the construction material of choice for homes in many places around the world today.[19] Thick adobe walls keep homes and structures cool during the heat of the day and extend the heat of the day into the colder night (Austin 1984). Adobe is also infinitely moldable, taking on different shapes and forms everywhere. It can be shaped into a small dwelling, or an adobe oven, or a monumental structure like the massive Djenne Mosque of Mali or, indeed, Taos Pueblo.

Mud architecture is inherently erodible. Decay is inevitable, at least in a climate with any wet weather. Undercutting erosion, caused by water running on the ground along building foundations, is a particular threat and can cause catastrophic failure (Apotsos 2012; Barnard 2016; Matero 2015). Groundwater can also rise into walls through capillary action (Barnard 2016), sometimes called salt erosion. In arid climates, and with protective measures, the erosion may be quite slow, but any precipitation will gradually weather it. As Apotsos (2012) notes, on exposed adobe walls, the visibly progressive weathering of the structure materializes the passage of time in a way that stone does not. For those who spend years living with a mud structure, its progressive weathering might come to mark the passage of the seasons and of years.

But earthen structures are also easy to maintain and repair even after they have suffered damage or cracks. Those who do live with exposed earthen walls must repair and maintain them often. In communities with large public architecture made of mud, the requirements of the building have often molded communities into annual or seasonal rituals of renewal. To eyes accustomed to concrete, brownstone or vinyl siding, mud houses may look utterly ephemeral, but properly maintained earthen architecture can last

[19] In some places, however, adobe bricks made with stabilizers such as cement have replaced traditional adobe, reducing the required maintenance but also making it much more expensive (Austin 1984).

for centuries. Taos Pueblo, for example, is some 900 years old (Apotsos 2012; Barnard 2016; Matero 2015).

Mud architecture comes in different forms, from the piled earth platform mounds of Cahokia to the mud bricks of Mesopotamia. In the Southwest, large-scale adobe architecture is best known from post-1300 contexts (e.g., Gann 2003; Lekson 2015:72-73; Minnis and Whalen 2015). Within the Chaco world, there are also earthen mounds (Cameron and Geib 2007; Crown 2016). Different forms have different properties; massive adobe bricks have much better thermal properties than more porous wattle and daub structures, but bricks also weigh far more and require more substantial foundations (Barnard 2016).

*Adobe as an Assemblage*

As assemblage theory has shown us, all things come in assemblages, but in the case of adobe, the mixing of materials is very literal. At Aztec North, the inhabitants may have had the perfect kind of clay soil right there on site, but they also had to add organic materials, such as maize husks and other plant materials left over from dinner, twigs and stems left over from construction or basketmaking. Someone had to shred the plant materials up into small pieces. Chopping, digging and slicing tools, like the cobble and obsidian lithics in our assemblage, would have been part of the assemblage of the core.

The next step was to add water. Given the size of this structure, with 100 rooms or more, it would have been an absolutely enormous amount of water. Working in the rainy season would be impossible, because the adobe would melt away if it rained before the roof was in place. Perhaps there was enough snow in those years that they could build in spring before it all melted away. But more than likely, a large portion of the water was brought up from the river.

All of that—the soil, the tools, the water, the human labor, becomes an assemblage of adobe. Then the adobe and the masonry are assembled together, drying in the hot sun. I suspect that the veneers were put in place first, with mud added to the void, though in some places where the adobe was more of the packed variety, the mud wall might have been fully in place before the veneer was added. The masonry and the mud were assembled in the sense of being put together, but they were also put into a relationship of interdependence. If the masonry failed to protect the adobe cores, then the adobe would be damaged; if the adobe crumbled then the wall would lose its integrity from the inside and knock down the veneers, which I suspect is exactly what happened over time.

Adobe must also have been part of a symbolic assemblage that represented home and community. It was surely a familiar material to the builders of Aztec North, even if they had never used it on this scale before. It might very well have been a symbol of home and hearth, of comfort and warmth, and of a village working together smoothly. Even as they clearly understood the benefits and characteristics of masonry veneers, they may have intentionally chosen this material for some of these reasons.

The extravagant use of water is worth dwelling on. One of the most striking things about this site, compared to Chaco Canyon and other outliers, is that it sits on a mountain-fed river that runs year round, and perhaps with irrigation ditches (Howe 1947: 9; Lekson 2015:143; Lister and Lister 1987; Stein and McKenna 1988). The year-round availability of water here, even in the dry season, even in times of drought, made it entirely unlike Chaco Canyon. It would have still been a long uphill walk from either the river or the irrigation canals to the construction site, but nonetheless the construction of an adobe-core great house was far more feasible at Aztec than it would be at Chaco.

People probably built here because of the river, for agricultural purposes. But as Snead (2006) has argued, Pueblo people care about water in ways that go far beyond agriculture. Water connects Pueblo people to their emergence place, to spirits, to animals, and to traditions such as initiation ceremonies. However people of the Aztec community felt about it spiritually and symbolically, the river would have been an enormous presence in their lives and daily experiences. Resting in the shade of the dense cottonwoods, watching fish and water birds, gathering the kinds of plants that grew along the river, these are all experiences that would have marked this place as different from other parts of the Chacoan world. And arguably that landscape difference is materialized within the walls of the adobe-core structure that the people of the Aztec community built. They could have just smashed cobbles to use for rubble wall cores. Instead, they made a choice to bring this water up to the great house.

*Adobe, Gender and Social Hierarchy*

All of the assembled materials also mediate social forces, because the assemblage also involves human labor. The question of who is doing this labor, and why, strikes at the heart of questions archaeologists care about in the Chacoan world. Gender and social hierarchy are two aspects of those social forces.

We cannot really know the gender of the stonemasons of Aztec West or Chaco Canyon, but there has certainly been an assumption that men were the ones doing heavy construction on great houses. One of the earliest anthropologists to visit Aztec West, Lewis Henry Morgan (1879:549) deduced from the stonework he saw there that "the men, and not the women, were the architects and the masons, although the women undoubtedly assisted in doing the work." Whether he was right or not, we probably can safely infer that small children or elderly people, at least, would not be carrying heavy sandstone blocks from a quarry 1.6 km away, or laboring to shape them with stone tools.

By contrast, mixing adobe requires little skill or strength but many hands and feet. It needs to be mixed fast, and laid down in a short period of time, before it dries too much to be laid (Barnard 2016). Construction requires dry conditions, since rainfall on an unprotected wall would melt it. These walls had to be built quickly, before the rains came.

Ethnography from the Pueblos and from around the world suggests that women often participate in adobe construction. At Hopi, men and women both worked on building tasks. "The men perform the heavy tasks of transporting stone, timber, brush and water. The women place and fit the wall stones, make the adobe mud, plaster floor and walls, and tramp down the mud and earth roof" (Beaglehole and Beaglehole 1937:58). Writing about the Hopi village of Oraibi, John C. Connelly (1979) agreed that "[h]ousebuilding is largely women's work. and whitewashing entirely so." Beaglehole and Beaglehole (1937:58) noted that the role of women was diminishing, because some of the younger men had received training in construction at government schools and had developed the idea that women could not do the work as well. At Taos Pueblo, construction was also traditionally women's work, until American colonialism arrived and made it men's business. Female *enjarradoras* or plasterers continue to be involved in the plastering and finish work of building adobe structures, and children also help (Preston 1989). Moreover, the construction of mud brick and earthen structures has traditionally been women's work, in full or in part, in many cultures around the world, such as the Tsonga of South Africa (Junod 1927:107), the Zulu (Reader 1966:43), the Kurds of Iraq (Hansen 1961:21), and the nomadic Sarakatsani people of Greece (Campbell 1964:33). Such work is often communal, with groups of people helping each other build their homes. Children play a part as well, such as carrying water or (as my father tells me about the Romanian village where he grew up) shredding plant materials to go into the adobe. The hands and feet of the elderly could also be put to work on such a project.

Chacoan masonry has inspired debates about what motivated workers to contribute their labor to great house construction. Were they coerced, or was it about food redistribution, or was it in exchange for the services of ritual leaders? But at Aztec North, with its huge size and its adobe, it seems that an entire community of men, women and children might have mobilized to build this structure. The scale of the adobe work—a scale perhaps never previously seen in the Southwest— likely required everyone to help with this structure. If we see the masonry of Chaco Canyon representing social inequality, the adobe may tell a different story of communal effort.

But what is so intriguing is that Aztec North has both these elements. Probably it was the more able-bodied adults carrying and shaping stone. Certainly they did this labor because there was something about the hierarchical Chacoan system that they admired and wanted to be a part of. The materials in this great house are mediating a moment of change, when people with that kind of communal tradition are starting to make the choices that will lead them into Chacoan social hierarchy.

*Materiality and History*

Hodder (2011) has shown us how Neolithic people became entangled with clay, how it shaped the lives and remade their environments. People made choices, but the materials did things too, bringing about unintended consequences. The borrow pits at Çatalhöyük filled with water and became choked with reeds that threatened other food species and had to be cut back constantly. People who build earthen houses must constantly maintain and re-mud their homes. So people might decide to start building with one material or another, but over time it stops being a choice, and sometimes it has unexpected consequences. Small choices and acts of agency can always have unintended consequences (Pauketat 2000), but entanglement with materials may magnify the historical fallout.

The choice to build a great house at Aztec, to set Chaco-style masonry veneers around familiar adobe, set in motion a historical process that we cannot fully understand. Whatever the builders' intent, the end result of the construction of Aztec North seems to have been increasing Chacoan influence at Aztec and the construction of two more great houses on a Chacoan model and an even larger scale.

There must have been perceived benefits to being part of the Chacoan world—power, or reliable rain thanks to the rituals of Chaco, or peace, or cacao and turquoise. There were surely downsides, too. Instead of continuing to work their rich bottomland fields, the farmers of Aztec became a labor force that spent much of the next two centuries hauling stone and logs and working on construction. The Aztec community became a massive outlier, and perhaps one that competed with Chaco for influence and power. Its huge buildings, and a small number of particularly rich burials within them, are indicative that the same social hierarchy that existed at Chaco also became the norm here. In the Pueblo III period, the Aztec community also became a place of violence, with burials that suggest community conflict and accusations of witchcraft (Baxter 2016). It may have been the center of a post-Chacoan Four Corners region, perhaps even responsible for some of the violent attacks in far flung villages in the Northern San Juan. Ultimately, when people left the Four Corners for new lives elsewhere, the communal adobe at the core of Aztec North may have been one of the architectural models that people reached for in building their new adobe pueblos.

Development of the Cultural Landscape

The dates of Aztec North and my conclusions about social relations in the Aztec community have implications for understanding the greater cultural landscape. It appears likely that at some point Aztec North took its place as the new Pueblo Alto for a new Chaco, but it was not necessarily intended that way from the beginning. If Aztec North was indeed the first great house, its site on top of the hill may not have had anything to do with establishing a new Chaco. It may have been intended instead to simply assert control over the valley below.

That landscape is centered on the two valley great houses below and the Aztec North great house above, out of sight from each other but clearly aligned to each other in a generally northwest to southeast orientation. In the valley, three triwall structures are also symmetrically aligned to the great houses. Starting at Mound F, which lies between Aztec West and Aztec East, a road segment leads up to Aztec North. On a bench just below the top of the terrace, two small structures (LA 60,020) stand on either side of the road. They seem to serve as a marker of the processional pathway up to Aztec North, and in theory might have also restricted access to that processional pathway, and they also serve to project the east-west symmetry of the valley structures up to the terrace. The road continues past Aztec North, pointing towards the snowy peaks of the La Plata Mountains of southern Colorado in the distance and, more nearby, the La Plata Valley.

The layout of these great houses to each other, and to the Animas River, appears to intentionally mimic the layout of three central great houses at Chaco Canyon (Van Dyke 2007: 209-213; 2008; 2009). There is one important difference. At Chaco the overall layout is north-south while at Aztec it is northwest to southeast. The north-south cardinal orientation of Pueblo Bonito and other Chaco Canyon great houses represents a new way of doing things, and this new cardinality was the object of a factional dispute at Chaco Canyon (Lekson 2008: 127; Van Dyke 2004). While Chaco was adopting the new ways, with a shift to cardinality around 1100 at Pueblo Bonito, the Aztec community adopted a solstitial orientation, representing a triumph of a different faction at Aztec.

The Aztec cultural landscape as a whole is laid out northwest-southeast— Lekson's solstitial layout— but I propose that this was not necessarily the original plan. As Lekson (2015) has of course noted, Aztec itself is due north (almost) from Chaco, suggesting a focus on cardinal direction. And Aztec North's own layout is close to a north-south alignment, though not precisely there. It clearly does not hew to the northwest-southwest pattern that prevailed in both the pre-Chacoan period and in Aztec's heyday.

Intervisibility, Alignments and Landscape Connections

While attention to site intervisibility and alignments was not a formal part of my project, our experiences of the site permit some observations relevant to landscape use at this site and its possible connection to Chacoan networks of intervisibility. Building in high places and attention to intervisibility, seeking out views of natural features, and incorporating astronomical alignments are all hallmarks of Chacoan architecture as well (Fowler and Stein 1992; Kantner and Hobgood 2016; Kincaid et al. 1983; Lekson 2015; Malville 2004; Marshall and Sofaer 1988; Nials et al. 1987; Roney 1992; Sofaer 2008; Van Dyke 2007:241-246; Van Dyke et al. 2016). Aztec North is, of course, located at a high place in this landscape about 30 meters higher than the valley great houses below.

In some ways, Aztec North has incredibly expansive views. To the north, there are huge views of the La Plata Mountains of southern Colorado, snow-peaked in June when we worked at the site. To the West, the views take in the wide Animas River Valley which leads into the wider San Juan River Valley and the city of Farmington, some 10 miles to the west. In the distance, the Chuska Mountains are also within view.

Notably visible in Farmington (despite the modern pollution haze) are the Shannon Bluffs, high sandstone land forms on the southern side of the San Juan River. The Point Site, a great house that was occupied in the same period is in the vicinity of the Shannon Bluffs, as are a number of other known sites (Wheelbarger 2008).

The view from Aztec North to the South is much more limited. First, despite a wide view of the valley down below (and stretching to the east and west) and the river, the two valley great houses below are entirely out of sight from the great house itself. LA 60,020, the "gateway" site on the lower terrace is also invisible. The valley great houses come into view, however, if one walks south a short way from the great house to the edge of the terrace.

Secondly, while so many outlier great houses have expansive views toward the south, often directly towards Chaco Canyon and Huerfano Peak, Aztec North lacks such a view. Looking toward the south, the view is almost entirely blocked by the southern side of the Animas Valley, and Huerfano Peak is not visible.

However, directly to the east of Aztec North, and highly visible from our excavation units, are the Knickerbocker Peaks, two distinctive knobs on the horizon. These are not high hills, but they are very clearly visible. Archaeological survey has demonstrated that these hills had at least one shrine on top— and they also have a clear and distinct view of Huerfano Peak (Hastings 1960: 72; Van Dyke et al. 2016, supplementary information: 7).

Moreover, to Puebloan eyes, the Knickerbocker Peaks might have had additional significance as "twin" landforms. Several outlier great houses are associated with twin geologic features— the Twin Rocks at Bluff Great House (Till 2017), a pair of spires at Chimney Rock great house (Eddy 1977), and a pair of eye-like alcoves at Casamero. The people of Taos Pueblo consider the pair of rocks at Chimney Rock to be a shrine to the Twin War Gods, important figures in their traditions (as well as in many other Indigenous traditions) (Eddy 1977:1; Fowles 2013:91; Lister 2011:3-5). The proximity of several Ancient Puebloan great houses to such features suggests they held similar ideological significance to those builders as well. The Knickerbocker Peaks are far less dramatic landforms than these other examples, but they might have been significant.

Site Location

Why did people select this spot for the new Aztec Community? It was a well-watered valley in a time of fluctuating rainfall and drought, so the choice seems obvious to modern eyes. However, the fact that this valley was not intensively used prior to this period hints that Ancient Puebloans saw things differently. Certainly Ancient Puebloans often selected places much drier than Aztec. Perhaps there were political reasons why people did not use this valley earlier—maybe someone else had been living nearby and recently vacated their foothold. Perhaps there was something about this landscape that was dangerous or unattractive before. Maybe the droughts and climate volatility of the late 11th century changed perspectives.

It is possible that this spot was chosen in part because of landscape features that made it possible to recreate the Chacoan landscape here, with the river running near the base of the terrace, but with plenty of room to build great houses in between. Perhaps Aztec North was built with no such intentions, and it was only later that people realized they had the perfect locale to recreate downtown Chaco, but I believe that expansion down from the terrace was already planned as it was being built. There might be other spots along the Animas River that could have accommodated a planned landscape, but this spot certainly accommodated it well. Hydrological factors such as river speed, width and depth may also have been at play in the site selection, particularly if there was an intent to irrigate fields from the river and/or a need to frequently cross the river.

How other aspects of the landscape appealed to these new settlers is impossible to know—with one exception. If the Knickerbocker Peaks represented a cosmologically important feature, then aligning the great house to them might have been a very intentional and important part of the plan.

Lekson (2015) has argued that this spot was selected because of its location nearly due north of Chaco. In fact, as he has acknowledged, Aztec is about 4 kilometers west from the actual meridian. Lekson explains the discrepancy as normal human error for people working with only basic technologies (Lekson 2015:124), but perhaps it was also just the only appropriate nearby spot with both room to grow and a good view of the Knickerbocker Peaks.

If I am right that the builders of Aztec North selected this spot partly for its potential to accommodate a reconstruction of the Chacoan landscape, then the idea of multiple structures was already in place as work began on the terrace. But what if the original alignment was intended to be north to south? If we trace a line directly south from the center of Aztec North, it quite neatly aligns with the Hubbard Triwall, before striking the northwest corner of Aztec West. Underneath the Hubbard Triwall, R. Gordon Vivian (1959:6-9) excavated a suite of earlier rooms that he described as an "adobe layer." The excavation revealed just three rooms and a kiva, but other rooms may have been washed out by what Vivian described as an alluvial fan coming off of the terrace. The adobe walls consisted of coursed adobe with an internal rod structure and no sign of a veneer or footer trenches. Lekson's (1983) redating of the Hubbard Triwall puts the actual triwall's construction at sometime after 1130, and Brown and Paddock (2011:208) describe Vivian's earlier adobe layer as an early use of adobe at Aztec, possibly predating Aztec West. The oldest part of Aztec West itself, Kiva L, dates to 1100 and has well-made classic Chacoan-type masonry (Brown and Paddock 2011) far more skillfully made than the coursed masonry we exposed at Aztec North.

I cannot pretend to know what the structure under the Hubbard Triwall was, and its construction is certainly not identical to the adobe-core walls of Aztec North, but it is interesting that we have a north-south alignment of two adobe-walled, apparently pre-Chacoan structures. Perhaps it was just a temporary structure while Aztec West was built, or perhaps a great house was originally planned there before it became apparent that parts of the site were too close to runoff from the terrace. In any case, it raises the possibility of an early cardinal direction alignment at Aztec.

The Aztec community soon abandoned the cardinal directionality of Aztec North. Aztec West as it was ultimately built, with Chacoan input if not control, clearly skewed away from the north-south cardinal orientation of Aztec North towards a northwest-southeast solstitial orientation. And the landscape as a whole also ultimately veered to the southeast. Lekson (2008:127) has argued that this shift is evidence of a factional dispute. If so, that factional showdown may have happened sometime between the construction of Aztec North and the construction of Aztec West—so between about 1070 and about 1110.

The landscape plan as envisioned at the time that Aztec West was built persisted for many years. The Hubbard triwall (in its final form), Mound F and Mound A were built after around 1130 (Lekson 1983) and are clearly oriented to the existing cultural landscape, to the road, and to Aztec North as the peak of the landscape.

<u>Relations to Other Regions</u>

It is clear that the people who built Aztec North related on various levels to Chaco Canyon. The architecture, site layout and great house orientation all evince the builders' desire to associate themselves with Chaco from the beginning, the footer trenches suggest Chacoan knowledge, and the gradually developing cultural landscape suggests that that desire continued over time. The viewshed connection, via the Knickerbocker Peaks, also indicates a relationship to Chaco. But the pottery and lithic assemblages also contribute to our understanding of regional relationships.

<u>Significance of the Ceramic Assemblage</u>

Based on the ceramic assemblage, Aztec North is very much a Chacoan great house. The contrast with the architecture is striking. The architecture suggests it was built by people who were not fully absorbed into the Chacoan world, but the ceramics show that absorption happened in very short order after construction was completed.

The pottery is also clearly an 11$^{th}$ to 12$^{th}$ century assemblage, with no sherds earlier than about 1000 CE. And it includes a very high proportion of jars to bowls, suggesting a focus on cooking or storage of food.

The assemblage shows a significant import of pottery, particularly from the Chuskas and from the Cibola region. The proportions of imported pottery are consistent with Chacoan outlier great houses elsewhere in the Totah. Moreover, there is more imported pottery at Aztec North than at non-great house sites at Aztec. All of this indicates that Aztec North was involved in Chacoan trading networks typical of other outlier sites.

Significance of the Lithic Assemblage

Obsidian was the most common non-local lithic material in the Aztec North excavation assemblage. The obsidian all came from two Jemez sources, Cerro del Medio and Obsidian Ridge. That sourcing result is unsurprising for a late Pueblo II Chacoan site. The complete absence of obsidian from the third Jemez source, El Rechuelos, which is closer than the other two sources, is more surprising. It suggests some kind of relationship to Jemez that is more complicated than just walking to the nearest source.

More surprising than the source is the quantity of obsidian. Aztec North seems to be awash in obsidian in ways that other Chacoan sites are not. Not only is there a lot of it, but it is mostly debitage or was used for expedient cutting tools, rather than appearing as the formal tools found at other sites. In addition, the ways in which users reduced the obsidian suggests they were not trying to conserve a precious resource. All of this suggests that Aztec North residents had some kind of kinship or trade relationship to Jemez that is different from the relationship that other Chacoan sites had.

Caution is warranted in all of these considerations, however. All of the 152 pieces of obsidian in the assemblage would probably fit on a dinner plate. Given how small most of these pieces of obsidian are, it is entirely possible that all of the debitage at Aztec North came from two cores, rather than representing a sustained pattern over time.

Apart from the obsidian, Aztec North's lithic assemblage consists largely of quite expedient tools made of cobbles and other locally available materials. Throgmorton has identified a unique manufacturing technique that used a cortical platform to flake cobble choppers, meaning that the person making these expedient tools did not even remove the cortex before flaking them. These were quickly manufactured tools indeed.

The absence of Narbona Pass Chert at Aztec North is noteworthy as well, because Chacoan sites often have significant quantities of it. We found only two pieces of it, which is surprising since the pottery analysis clearly shows that there was a trade relation of some sort to the Chuskas. Considering the very Chacoan appearance of the pottery assemblage, the lack of Narbona Pass chert is surprising. But at the Salmon Pueblo, the Narbona Pass chert was highly concentrated in certain rooms; perhaps those rooms also exist elsewhere at Aztec North.

## Daily Life at Aztec North

In addition to the big-picture questions about the origins, construction and social significance of the Aztec North great house, this excavation was an opportunity to learn more about daily life in the Aztec community. Morris's early 20th century excavation of Aztec West revealed little about faunal and archaeobotanical remains from the site, and he was also selective in collecting lithics and pottery sherds. More recent small-scale research at Aztec West has increased our knowledge on these matters of daily life, but it remains limited. So this archaeological project, small though it was, offered an important opportunity to use modern methods to add to that data. In this section, I summarize the significance of our archaeological findings and how they compare to other known sites, focusing on plant and animal remains but with some discussion as well of the minerals and beads the crew unearthed.

### *Significance of the Archaeobotanical Data*

The archaeobotanical analysis has identified a list of some 20 plant species that people at Aztec North exploited. Most of these were food sources, although some of the species such as reeds had other uses. In addition to maize, the analysts identified a number of wild food species that often grow on the edges of maize fields and in other parts of the landscape. These include purslane, ground cherry and prickly pear. Indian rice grass is available in late spring, while other species germinate during the summer monsoon rains. One of the most important food sources is Cheno-Am, and it is plentiful in the Aztec North samples. Of note, some of the uncharred Cheno-Am seeds have seed coat coloring that may resemble domesticated amaranth seeds, a question for further future investigation. The archaeobotanical evidence also connects Aztec North to the Animas River through the use of mesic species. The analysts' study of wood samples has shown use of juniper, willow/cottonwood and pinyon pine as well as a number of shrubs. Notable absences in the assemblage are ponderosa pine and Douglas fir, non-local plants which were widely used at Aztec West but for which we currently have no evidence at Aztec North.

*Significance of the Faunal Data*

Faunal analysis has had an important place in Chacoan archaeology for many years. The Aztec North assemblage is small but adds to the data on the exploitation of animal species in the Totah region.

Overall, the assemblage is fairly typical for this time and place. Artiodactyls and lagomorphs were each about a third of the assemblage, with rodents and small birds making up most of the remaining third. The ratio of jackrabbits to cottontails is a little higher than at other Chacoan sites, possibly indicating feasting. Turkeys were present, though we cannot say much about how they were used. We found no birds of prey or nonlocal species.

Among the most exciting finds were five fish vertebrae from the floor in Study Unit 2. Dr. Omar identified these to the Cyprinidae family but was unable to further identify them. It is very difficult, if not impossible, to identify fish to species or genus level with only vertebrae (Durand and Durand 2006:1088). Archaeologists also lack comparative collections for fish species from the San Juan and its tributaries, since many of the native fish are critically endangered and cannot be collected. However, identifying the fish is less important than the fact of their existence. And while I cannot be entirely certain that they represent food, it is a reasonable surmise since we found them near Feature 20, the small charcoal lens on the same floor.

We excavated just four fish bones from Aztec North, and they make up a tiny fraction of the faunal assemblage. The same is true at all of the other sites where they have been found. Perhaps it was not a preferred food, perhaps it was even a starvation resource. Nonetheless, the evidence is mounting for consistent exploitation of fish species in the Totah, and this is good reason for future researchers to be on the lookout for more evidence.

*Ochre and Ritual*

In the excavation collection at Aztec North, we have pieces of both red and yellow ochre. There was a round cobble on a living surface, with red ochre staining. And we have a little palette of sandstone that was apparently used to darken yellow ochre. In short, our few ochre samples are unsurprising but also intriguing, and they are at least consistent with the possibility of ritual activity at this site. The evidence of yellow ochre being heat-treated to darken it offers an unusual glimpse of the choices that people make in relation to pigments.

*Ornaments*

The 11 shale beads in the assemblage are extremely similar to those that Mattson (2016) describes at Aztec West, and very likely came from a beaded necklace similar to those that Morris found there. All of our beads (except the escapee in the midden unit) were from along the north wall, and none were from the eastern room block. While I cannot draw any real conclusions from such a small excavation and small sample, this result is at least consistent with Mattson's (2016) observations about a northern and western association for shale beads. However, most of the beads were in a midden deposit (Stratum 5 in Study Unit 1) that might very slightly post-date the main occupation.

Conclusion

This chapter has synthesized and discussed the large quantity of data reported in the previous chapter. I have organized the discussion around the original four research questions—the chronology of the site, the construction methods, relations to other regions, and elements of daily life. The chronology section synthesized radiocarbon results, Bayesian modelling, mean ceramic dating and the excavation evidence to conclude that Aztec North was built after 1070 and before Aztec West, and that it was occupied for a relatively short period of time. In discussing construction methods and architecture, I have introduced a materiality analysis that I believe shows a changing society as people at Aztec North sought to draw closer to Chacoan ways. While the footer trenches evidence the presence of Chacoan knowledge, I argue that the models presented in the past, of emulation versus Chacoan expansion, are too simplistic to explain Aztec North. Instead, we seem to see a combination of Chacoan design and local construction. In addition, I have offered interpretations of the cultural landscape and how it changed over time. The discussion of relations to other regions focused on the pottery and lithics. The pottery in particular points to a site that was fully absorbed in the Chacoan trade system, with large proportions of Chuska and Cibola pottery. The lithics are mostly local, but the imported materials raise interesting questions about possible relations to places both east and west. Finally, I analyzed the data that we have produced about daily life at

Aztec, focusing especially on food. Despite the small size of the excavation, it has revealed important evidence about how people here lived. In the next chapter, I build on this material by developing a narrative history of Aztec North within its Chacoan landscape, before considering the significance of this work to Southwest archaeology and offering future directions for research.

## Chapter 10. Conclusion and Future Work

In the previous chapter I discussed in detail the empirical results of the research, sticking quite narrowly to the data and its interpretation, and how it answers my research questions. Here, however, I offer a more free-form narrative description of what the research has revealed about Aztec North, and what I think it means about the Aztec Community. I then take a step back to consider the significance of this research in the broader field and the possibilities for future research.

### Becoming Chacoan: A Speculative Narrative

Sometime in the late 11th century, people decided to build a Chacoan-style great house in a new spot in the Animas Valley. We do not know the precise date but it was sometime before 1110 (the start of construction at Aztec West) and likely sometime after 1070. Also elusive is the question of who made this decision. The people who laid out the design for this great house had Chacoan knowledge of low-visibility footer trenches. Perhaps they were Chacoan builders who built the footers and then left the construction to the locals. Or perhaps locals had obtained this secret Chacoan knowledge in some other way. They had been to Chaco Canyon, however, and were familiar with the landscape layout there. As they planned this new building, they had a very clear mental image of the shape, size, layout and orientation of a Chacoan great house.

More certain is that the people who later built the walls of the great house were not Chacoan builders. Nor were they, as Lekson (2015:61) has suggested, the builders of the Salmon Pueblo moving on to try again after flooding damaged that structure. Whoever built the walls of this structure had not built a Chacoan great house before.

The builders also knew about core and veneer construction at Chaco Canyon. However, it seems they did not entirely grasp how to make it. Perhaps they did not fully understand what was in the hidden core of Chacoan walls. Or, alternatively, they understood it but did not realize it mattered, concluding instead that the veneer was the important aspect. Either way, they chose instead to make cores of adobe, a material they knew well. The choice of adobe for the cores is one of the many reasons I do not believe these builders were Chacoans. To Chacoans, I think, the hidden cores of the walls would have mattered as much as the visible veneer did.

If not Chacoan builders, then who were these people? No one lived in this particular spot before that time, so the word "locals" is a vague concept at best. Still, it is likely that they were people who had previously lived elsewhere in the Animas Valley, and who had a tradition of building with adobe. They could have been people from the La Plata Valley, which might explain why the road to Aztec North points off in that direction rather than directly north. Or they may have been entirely new to the region.

Whoever picked this spot selected it because it was approximately north of Chaco. They sought out the river and the wide river bottom, certainly, but also they valued its landscape features that made it possible to build both on the terrace and in the valley below and, perhaps, to recreate the Chaco landscape. The river runs near the base of the terrace, like Chaco Wash does, but there was room between it and the terrace for farming and expansion. And perhaps they also picked this spot because of its clear views of the Knickerbocker Peaks, a landscape feature that might have been a connection to some version of the Hero Twins, as well as to the Chacoan signaling network centered on Huerfano Peak.

We can only guess why people here decided to build a Chaco-style great house, but the shorthand of "emulation" fails to capture the gravity of this moment. Whatever their community had been like before, however this great house came about, this was surely a momentous decision to do something completely different from the lives they had been leading before. This was not mere imitation— it was a bold bid for a future modeled on Chaco Canyon, and one that required significant engineering and logistical effort. But nor were they simply taken over by an expanding Chacoan polity. Instead, Aztec North seems to have been a local initiative supported in some way by Chacoan knowledge.

If I am right that the Aztec North builders set out to build not just a Chacoan great house but an entire Chacoan landscape, that certainly suggests a desire to build a second Chaco. Inaccessible as the builders' original motives are, it is clear that Aztec North shaped this society.

Construction of the great house likely required two different labor regimes. On the one hand, hauling in stone from the quarry 1.6 km away and shaping it into appropriate pieces for the veneer would have required strength and skill. Assuming that wooden beams were used for roof construction, the acquisition of logs from distant forests would potentially have required an enormous investment of time and labor. This labor regime looks very much like Chaco's—somehow, people are persuaded to contribute their labor and skills to build this monumental architecture, perhaps over several seasons. And it is likely that the quarrying and perhaps stonemasonry would be done by the strongest people.

By contrast, the adobe core involves an entirely different kind of labor. For adobe, speed is of the essence, and the work does not require skill or strength. What is needed is the involvement of large numbers of people, young and old, weak and strong, to mix and lay massive quantities of mud quickly. The adobe had to be encased in veneer and protected by ceilings before the rains came. This looks very much like the communal labor of the Pueblos as we know them today.

People made the choice to build this great house, and to build it in this way, but once the process was in motion it surely had unexpected impacts on this society. The demands of the building, and of the two different materials that make it up, reshaped people's sense of time as their labor in the fields, on their own behalf, had to be renegotiated to ensure sufficient construction labor. Working communally, and working with adobe, would have been familiar labor, if on a larger scale, but the backbreaking labor of carrying and preparing and laying hundreds of meters of masonry would have been a very different endeavor.

Disputes must have arisen; some people probably complained as others did not shoulder their share of the work. Different people might have had different views on what time of year the work should be undertaken, or on the logistics of materials and labor. These conflicts had to be resolved to keep people working towards a goal that went far beyond anything in their normal farming lives. Egalitarian social processes might have been tested by these conflicts; perhaps someone had to be put in charge, granted additional power to resolve disputes and enforce labor requirements. Daily routines would have been disrupted. Children whose normal work was tending fields and fetching household water might have found themselves going up and down the slope to the river many more times a day, learning a new work ethic and a new way of thinking about their obligations to their community. Corn husks and other plant materials might have had to be saved over time, to be shredded to mix into the mud they planned to make. Borrow pits would have to be dug, and people would find themselves tripping over those or avoiding the mud for months after. In winter, water in the borrow pits might have frozen over and been another obstacle.

The Chacoan history of the Aztec community begins here. Within a short period, the Chacoan regional system absorbed Aztec North, and it participated in the same kind of trade relations as other Chacoan outliers. There were some differences, especially in the lithics, with an abundance of obsidian and a paucity of Narbona Pass chert. But the pottery certainly seems consistent with other outliers of the period. Once drawn into the Chacoan orbit, the people of the Aztec community were no longer just farmers tending their land; instead they became the labor force for an ambitious construction project that would continue for nearly two centuries. Aztec West, the new Pueblo Bonito, was the next phase. After the completion of Aztec West, around 1120, work began on yet another great house, Aztec East.

From the lack of trash at Aztec North, it seems unlikely that this great house continued in steady use after the construction of Aztec West. But nor did people abandon and forget it. At about the same time that construction began at Aztec East, an important addition was made to the overall landscape, with construction of the "gateway" structures below Aztec North. These small buildings brought the duality of Aztec East and Aztec West up onto the terrace while also guiding people to the correct processional approach for Aztec North.

Aztec North was likely no longer in regular use by the time the gateway structures were built. But the effort to mark this processional pathway up the hill suggests that it still had symbolic significance as the great house on the hill, even if it was crumbling. Our archaeological evidence of reconstruction on the back wall also hints at an effort to keep the great house going even as its unstable walls shifted or collapsed. Perhaps we should see the processional pathway as a "time bridge" (Fowler and Stein 1992:116-117; Van Dyke 2003), a physical link between the new great houses and the Aztec North great house falling into disrepair on the terrace top. The people of the Aztec Community also continued to hew to the landscape plan even as Chaco faded, laboring on into the 13th century.

Ultimately, the strange adobe of Aztec North was an experiment. Whether or not it was within the local vernacular architecture, an adobe and stone structure on this scale was something completely new. While I suspect that it was not a very successful architectural experiment, it may have inspired further adobe experimentation in the post-Chacoan period. Earl Morris excavated a number of small Pueblo III buildings at Aztec where people experimented with adobe. These included a building with walls made of "balls of mud" (Morris 1915) and another that seems to represent an early experiment in making adobe bricks (Morris 1944). Bis sa'ani, likely built a bit later than Aztec North, might have been an experiment in building monumental adobe walls without masonry, allowing access for seasonal maintenance. Later, after Ancient Puebloans left the Four Corners and reestablished themselves in the Rio Grande and elsewhere, Chaco's masonry was in many places replaced by massive adobe structures, communally built and constantly maintained. The monumental-scale adobe construction of Aztec North and Bis sa'ani may be an anomaly in the San Juan Basin, but within a few hundred years, it became very much the norm in many of the Pueblos.

## Directions for Future Research

This was a small excavation that explored only a tiny fraction of Aztec North. We have seen nothing of the southern portion of the great house, of its plaza or kivas, or its berms and earthworks. Further excavation is unlikely, but there is nondestructive work to be done at Aztec North. One productive next step would be the use of remote sensing to explore the site more thoroughly. Efforts by Lekson (2004) were unsuccessful, but technologies have improved since then. New LIDAR studies might also be particularly useful in more thoroughly understanding the landscape features and also perhaps in identifying ancient irrigation canals, borrow pits and roads. GIS analysis could also be valuable in understanding alignments within the Aztec community, possible astronomical features, and intervisibility or signaling possibilities with other sites around the region.

Also useful would be more detailed comparisons between Aztec North's assemblages and Aztec West's. This is complicated by Morris's selective collection of pottery and lithics. However, the AMNH collection includes thousands of pottery sherds that could plausibly form the basis for the kind of detailed ceramic attribute analysis that I have done with the Aztec North assemblage.

## Significance of the Research

The opportunity to excavate a portion of a great house was a remarkable one. It is only because Aztec North is so unusual and enigmatic that this opportunity arose, since the proposed construction of a trail to the terrace meant that the Park would have to provide interpretation about a site that was so poorly understood. The research that I report here gives the Park a significant new body of data to use for interpretation purposes, and it also reworks archaeological understandings of Aztec as a whole and of its place in the Chacoan world.

While Aztec is one of the most studied sites in the American Southwest, its research so far has focused largely on culture history and processualist analysis. The cultural landscape has long been recognized, and yet interpretation of the sites has not fully taken stock of human relations with buildings and landscapes. My project and its theoretical perspectives have at least begun a process of applying new relational archaeological perspectives to the Aztec community.

Perhaps most significantly, studying the Aztec North great house and its assemblage provides a look at a transitional moment in the history of Chacoan expansion. Aztec West, with its clear Chacoan history, represents a particular moment in time, the moment when people at Aztec are fulfilling their desire to become Chacoan, building a great house that is in almost every way a match to the structures of Chaco Canyon. Aztec East shows them continuing with that project even as Chaco itself totters. But Aztec North represents a different, earlier moment— a period when people here, without deep knowledge of Chacoan architecture, apparently cooperated in some way with Chacoans to pursue an ambitious new construction project that would change their lives forever. The choices they made on the terrace— to mobilize their traditional communal structures while also adopting some new, more hierarchical ways— would lead to Aztec becoming the largest of Chacoan outliers, to the expansion of social hierarchy, and perhaps eventually to a more violent and oppressive regime in the Pueblo III period. The glimpse that Aztec North gives us into that moment of transition is invaluable, suggesting that previous models fail to fully encompass the unique history that brought the Aztec Community to the point of becoming Chacoan.

## Appendix 1: Aztec North Field Forms

# Provenience Designation Form

***AZTEC RUINS NATIONAL MONUMENT***

**Site Number: LA5603** **Ruin: ___________** **PD#(s):___________**

**Recorder: ___________** **Date: ___________** **ACC #/Project: 388**

**Study/Test Unit Number**:___________

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| **Study/Test Unit** | |
| **Feature Number** | |
| **Horizontal Unit** | |
| **Size (L x W)** | |
| **Vertical Unit** | |
| **Level** | |
| **Strat** | |
| **Datum** | |
| **Datum Elevation** | |
| **Elevation (mbd)** | Top |
| | Bottom |
| **Excavation Method** | |

**Sketch: Enter approximate scale and key or label PDs, artifacts, and features.**

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Associated Maps___________________

| PD | FS | Content | Comments |
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**Provenience Narrative:** Please describe location, excavation method, fill type, samples, artifacts, and interpretation.

# Continuation Form

***AZTEC RUINS NATIONAL MONUMENT***

**Continuation of ________________________________________**
**PD # ________________ Study/Test Unit___________ Feature # ______**
**Recorder:_____________ Date:_______ Page___ of ____**

# Feature Form

***AZTEC RUINS NATIONAL MONUMENT*** *Feature # ________*

**Site Number: LA5603** **Ruin: North** **ACC#/Project: 388__**
**Initials ___________** **Date _________**

| Feature Information | |
|---|---|
| **PD#s** | |
| **Study/Test Unit** | |
| **Associated Surface or Wall** | |
| **Shape** | |
| **Function** | |
| **Excavation Method** | |
| **List of Maps** | |

| Dimensions (meters) | |
|---|---|
| **Length** | |
| **Width** | |
| **Depth** | |
| **Datum** | |
| **Datum Elevation** | |
| **Elevation** | Top |
| | Bottom |

Feature Description:
(Include location, surface or wall face, dimensions, excavation method, fill type, specimens collected, and function.)

# Feature Form

***AZTEC RUINS NATIONAL MONUMENT*** *Feature # ________*

**Site Number: LA5603** **Ruin: North** **ACC#/Project: 388__**
**Initials ________** **Date _________**

# Study/Test Unit Summary Form

***AZTEC RUINS NATIONAL MONUMENT***

Study/Test Unit # ________ Story ____

**Site Number: LA5603** **Ruin: North** **ACC #/Project: 388**

**Initials __________** **Date _______**

**Specific Code Comments or Sketch Map**

| **Room Information** | |
|---|---|
| **PDs** | |
| **Features** | |
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| **Length (m)** | |
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| **Height (m)** | |
| **%Excavated** | |

List of Associated Maps

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Study/Test Unit Description:

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**5603 North Ruin** **ACC #/Project: 388** **Page _______ of _______**

# PD LOG

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# Map Log

Page ___ of ___

AZRU Site Number **LA5603**    Ruin **_North__**    ACC#/Project **_388__**

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**Aztec North, LA 5603** **Field Photo Log - 2016** **Page _______of_______**

**Aztec Ruins National Monument, ACC #388** **Digital: Start # _________End # _________** **Date ________________**

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## Appendix 2: Ceramic Data

| PD# | FS# | Study Unit | Sub-Unit | Lot # | Sherds in Lot | Ceramic Type | Style | Vessel Form | Ware |
|---|---|---|---|---|---|---|---|---|---|
| 105 | 1 | 1- SU1 North Wall | SU1A | 1 | 1 | Plain gray | None | Jar | Gray |
| 105 | 1 | 1- SU1 North Wall | SU1A | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 107 | 1 | 1- SU1 North Wall | SU1A | 1 | 1 | McElmo Black-on-white | None | Bowl | White |
| 110 | 1 | 1- SU1 North Wall | SU1A | 1 | 1 | Mancos Black-on-white | Indeterminate | Bowl | White |
| 132 | 1 | 1- SU1 North Wall | SU1C | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 212 | 19 | 1- SU1 North Wall | SU1D | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 212 | 16 | 1- SU1 North Wall | SU1D | 1 | 2 | Corrugated gray | None | Jar | Gray |
| 212 | 16 | 1- SU1 North Wall | SU1D | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 212 | 16 | 1- SU1 North Wall | SU1D | 4 | 1 | Corrugated gray | None | Jar | Gray |
| 158 | 1 | 1- SU1 North Wall | SU1B | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 242 | 2 | 1- SU1 North Wall | SU1C, SU1D | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 188 | 1 | 1- SU1 North Wall | SU1E | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 187 | 2 | 1- SU1 North Wall | SU1E | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 141 | 2 | 1- SU1 North Wall | SU1C | 1 | 8 | Toadlena Black-on-white | None | Bowl | White |
| 152 | 1 | 1- SU1 North Wall | SU1B | 1 | 2 | Wingate Black-on-red | None | Bowl | Red |
| 152 | 1 | 1- SU1 North Wall | SU1B | 2 | 1 | Chaco-McElmo Black-on-white | None | Jar | White |
| 261 | 1 | 1- SU1 North Wall | SU1H | 1 | 1 | Mancos Black-on-white | Mancos | Jar | White |
| 219 | 1 | 1- SU1 North Wall | SU1D | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 260 | 1 | 1- SU1 North Wall | SU1H | 4 | 2 | Corrugated gray | None | Jar | Gray |
| 222 | 1 | 1- SU1 North Wall | SU1A | 5 | 1 | Corrugated gray | None | Jar | Gray |
| 222 | 1 | 1- SU1 North Wall | SU1A | 4 | 3 | Corrugated gray | None | Jar | Gray |
| 212 | 1 | 1- SU1 North Wall | SU1D | 2 | 3 | Corrugated gray | None | Jar | Gray |
| 219 | 1 | 1- SU1 North Wall | SU1D | 1 | 3 | Mancos Black-on-white | Dogoszhi | Bowl | White |
| 212 | 1 | 1- SU1 North Wall | SU1D | 3 | 2 | Neck Corrugated | None | Jar | Gray |
| 212 | 1 | 1- SU1 North Wall | SU1D | 4 | 1 | Corrugated gray | None | Jar | Gray |
| 212 | 1 | 1- SU1 North Wall | SU1D | 5 | 1 | Corrugated gray | None | Jar | Gray |
| 212 | 1 | 1- SU1 North Wall | SU1D | 6 | 5 | Corrugated gray | None | Jar | Gray |
| 212 | 1 | 1- SU1 North Wall | SU1D | 8 | 2 | Corrugated gray | None | Jar | Gray |
| 212 | 1 | 1- SU1 North Wall | SU1D | 9 | 1 | Corrugated gray | None | Jar | Gray |
| 250 | 2 | 1- SU1 North Wall | SU1F | 1 | 1 | Chuska Black-on-white | None | Jar | White |
| 212 | 1 | 1- SU1 North Wall | SU1D | 10 | 2 | Corrugated gray | None | Jar | Gray |
| 230 | 2 | 1- SU1 North Wall | SU1A,SU1B | 2 | 6 | Pueblo II-III corrugated | None | Jar | Gray |
| 207 | 1 | 1- SU1 North Wall | SU1G | 1 | 1 | Plain gray | None | Jar | Gray |
| 162 | 3 | 1- SU1 North Wall | SU1C | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 162 | 3 | 1- SU1 North Wall | SU1C | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 222 | 1 | 1- SU1 North Wall | SU1A | 6 | 1 | McElmo Black-on-white | None | Bowl | White |
| 222 | 1 | 1- SU1 North Wall | SU1A | 7 | 2 | Gallup Black-on-white | None | Bowl | White |
| 222 | 1 | 1- SU1 North Wall | SU1A | 8 | 1 | Painted black-on-white | None | Bowl | White |
| 222 | 1 | 1- SU1 North Wall | SU1A | 9 | 1 | Slipped white | None | Jar | White |
| 222 | 1 | 1- SU1 North Wall | SU1A | 10 | 3 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 171 | 3 | 1- SU1 North Wall | SU1C | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 268 | 1 | 1- SU1 North Wall | SU1F,SU1G | 1 | 3 | Corrugated gray | None | Jar | Gray |
| 165 | 2 | 1- SU1 North Wall | SU1C | 1 | 2 | Plain gray | None | Jar | Gray |

| PD# | FS# | Study Unit | Sub-Unit | Lot # | Sherds in Lot | Ceramic Type | Style | Vessel Form | Ware |
|---|---|---|---|---|---|---|---|---|---|
| 165 | 2 | 1- SU1 North Wall | SU1C | 4 | 2 | Corrugated gray | None | Jar | Gray |
| 165 | 2 | 1- SU1 North Wall | SU1C | 5 | 1 | Corrugated gray | None | Jar | Gray |
| 165 | 2 | 1- SU1 North Wall | SU1C | 6 | 2 | Corrugated gray | None | Jar | Gray |
| 165 | 2 | 1- SU1 North Wall | SU1C | 7 | 2 | Corrugated gray | None | Jar | Gray |
| 165 | 2 | 1- SU1 North Wall | SU1C | 8 | 1 | Corrugated gray | None | Jar | Gray |
| 165 | 2 | 1- SU1 North Wall | SU1C | 10 | 1 | Corrugated gray | None | Jar | Gray |
| 212 | 1 | 1- SU1 North Wall | SU1D | 11 | 1 | Slipped white | None | Jar | White |
| 165 | 2 | 1- SU1 North Wall | SU1C | 11 | 1 | Corrugated gray | None | Jar | gray |
| 212 | 1 | 1- SU1 North Wall | SU1D | 13 | 2 | Mancos Black-on-white | Reserve | Jar | White |
| 212 | 1 | 1- SU1 North Wall | SU1D | 7 | 2 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 165 | 2 | 1- SU1 North Wall | SU1C | 12 | 1 | Plain gray | None | Jar | Gray |
| 216 | 3 | 1- SU1 North Wall | SU1B | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 230 | 2 | 1- SU1 North Wall | SU1A,SU1B | 4 | 1 | Chaco-McElmo Black-on-white | None | Bowl | White |
| 230 | 2 | 1- SU1 North Wall | SU1A,SU1B | 3 | 5 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 216 | 3 | 1- SU1 North Wall | SU1B | 3 | 1 | Indeterminate gray | None | Jar | Gray |
| 154 | 1 | 1- SU1 North Wall | SU1B | 1 | 1 | Toadlena Black-on-white | None | Bowl | White |
| 157 | 1 | 1- SU1 North Wall | SU1B | 1 | 2 | Mancos Black-on-white | Sosi | Bowl | White |
| 216 | 3 | 1- SU1 North Wall | SU1B | 4 | 1 | Corrugated gray | None | Jar | Gray |
| 216 | 3 | 1- SU1 North Wall | SU1B | 5 | 13 | Corrugated gray | None | Jar | Gray |
| 171 | 3 | 1- SU1 North Wall | SU1C | 1 | 4 | McElmo Black-on-white | None | Bowl | White |
| 216 | 3 | 1- SU1 North Wall | SU1B | 6 | 1 | Corrugated gray | None | Jar | Gray |
| 206 | 1 | 1- SU1 North Wall | SU1E | 1 | 1 | Chaco-McElmo Black-on-white | None | Jar | White |
| 216 | 3 | 1- SU1 North Wall | SU1B | 7 | 2 | Corrugated gray | None | Jar | Gray |
| 268 | 1 | 1- SU1 North Wall | SU1F,SU1G | 2 | 4 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 216 | 3 | 1- SU1 North Wall | SU1B | 9 | 1 | Corrugated gray | None | Jar | Gray |
| 216 | 3 | 1- SU1 North Wall | SU1B | 10 | 1 | Corrugated gray | None | Jar | Gray |
| 165 | 2 | 1- SU1 North Wall | SU1C | 13 | 1 | Mancos Black-on-white | Indeterminate | Bowl | White |
| 165 | 2 | 1- SU1 North Wall | SU1C | 14 | 3 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 216 | 3 | 1- SU1 North Wall | SU1B | 11 | 1 | Painted black-on-white | None | Bowl | White |
| 216 | 3 | 1- SU1 North Wall | SU1B | 12 | 5 | Mancos Black-on-white | Sosi | Bowl | White |
| 216 | 3 | 1- SU1 North Wall | SU1B | 13 | 1 | Escavada Black-on-white | None | Bowl | White |
| 216 | 3 | 1- SU1 North Wall | SU1B | 8 | 5 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 212 | 16 | 1- SU1 North Wall | SU1D | 3 | 1 | Corrugated gray | None | Jar | Gray |
| 260 | 1 | 1- SU1 North Wall | SU1H | 5 | 1 | Plain gray | None | Jar | Gray |
| 222 | 1 | 1- SU1 North Wall | SU1A | 1 | 5 | Corrugated gray | None | Jar | Gray |
| 222 | 1 | 1- SU1 North Wall | SU1A | 3 | 2 | Corrugated gray | None | Jar | Gray |
| 121 | 1 | 1- SU1 North Wall | SU1B | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 165 | 2 | 1- SU1 North Wall | SU1C | 9 | 2 | Corrugated gray | None | Jar | Gray |
| 260 | 1 | 1- SU1 North Wall | SU1H | 1 | 1 | Pueblo II-III corrugated | None | Jar | Gray |
| 260 | 1 | 1- SU1 North Wall | SU1H | 3 | 1 | Corrugated gray | None | Jar | Gray |
| 138 | 1 | 1- SU1 North Wall | SU1C | 1 | 3 | Corrugated gray | None | Jar | Gray |
| 212 | 19 | 1- SU1 North Wall | SU1D | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 236 | 1 | 1- SU1 North Wall | SU1G | 1 | 1 | Corrugated gray | None | Jar | Gray |

| PD# | FS# | Study Unit | Sub-Unit | Lot # | Sherds in Lot | Ceramic Type | Style | Vessel Form | Ware |
|---|---|---|---|---|---|---|---|---|---|
| 260 | 1 | 1- SU1 North Wall | SU1H | 2 | 2 | Corrugated gray | None | Jar | Gray |
| 222 | 1 | 1- SU1 North Wall | SU1A | 2 | 5 | Corrugated gray | None | Jar | Gray |
| 212 | 1 | 1- SU1 North Wall | SU1D | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 230 | 2 | 1- SU1 North Wall | SU1A,SU1B | 1 | 2 | Corrugated gray | None | Jar | Gray |
| 165 | 2 | 1- SU1 North Wall | SU1C | 2 | 2 | Corrugated gray | None | Jar | Gray |
| 165 | 2 | 1- SU1 North Wall | SU1C | 3 | 1 | Corrugated gray | None | Jar | Gray |
| 216 | 3 | 1- SU1 North Wall | SU1B | 1 | 3 | Corrugated gray | None | Jar | Gray |
| 212 | 1 | 1- SU1 North Wall | SU1D | 12 | 1 | Plain gray | None | Jar | Gray |
| 106 | 1 | 2- SU2 East Wing | SU2A | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 106 | 1 | 2- SU2 East Wing | SU2A | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 109 | 1 | 2- SU2 East Wing | SU2A | 2 | 2 | Corrugated gray | None | Jar | Gray |
| 140 | 1 | 2- SU2 East Wing | SU2C | 1 | 2 | Corrugated gray | None | Jar | Gray |
| 140 | 1 | 2- SU2 East Wing | SU2C | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 140 | 1 | 2- SU2 East Wing | SU2C | 3 | 4 | Corrugated gray | None | Jar | Gray |
| 140 | 1 | 2- SU2 East Wing | SU2C | 4 | 1 | Corrugated gray | None | Jar | Gray |
| 140 | 1 | 2- SU2 East Wing | SU2C | 5 | 1 | Plain gray | None | Jar | Gray |
| 217 | 1 | 2- SU2 East Wing | SU2A, SU2B | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 1 | 3 | Corrugated gray | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 6 | 2 | Corrugated gray | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 7 | 2 | Corrugated gray | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 8 | 3 | Corrugated gray | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 9 | 2 | Corrugated gray | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 10 | 1 | Corrugated gray | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 11 | 2 | Corrugated gray | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 12 | 3 | Corrugated gray | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 13 | 2 | Corrugated gray | None | Jar | Gray |
| 193 | 2 | 2- SU2 East Wing | SU2D | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 178 | 5 | 2- SU2 East Wing | SU2B | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 146 | 1 | 2- SU2 East Wing | SU2C | 1 | 5 | Corrugated gray | None | Jar | Gray |
| 146 | 1 | 2- SU2 East Wing | SU2C | 2 | 6 | Corrugated gray | None | Jar | Gray |
| 111 | 1 | 2- SU2 East Wing | SU2A | 1 | 2 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 129 | 1 | 2- SU2 East Wing | SU2A | 1 | 2 | Mancos Black-on-white | Sosi | Bowl | White |
| 259 | 2 | 2- SU2 East Wing | SU2F | 1 | 1 | Pueblo II black-on-white | Indeterminate | Jar | White |
| 146 | 1 | 2- SU2 East Wing | SU2C | 4 | 2 | Corrugated gray | None | Jar | Gray |
| 140 | 1 | 2- SU2 East Wing | SU2C | 6 | 1 | Mancos Black-on-white | Indeterminate | Jar | White |
| 140 | 1 | 2- SU2 East Wing | SU2C | 7 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 231 | 1 | 2- SU2 East Wing | SU2C,SU2D | 2 | 1 | Mancos Black-on-white | Sosi | Bowl | White |
| 231 | 1 | 2- SU2 East Wing | SU2C,SU2D | 3 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 234 | 15 | 2- SU2 East Wing | SU2A | 1 | 1 | Mancos Black-on-white | Sosi | Jar | White |
| 143 | 2 | 2- SU2 East Wing | SU2C | 14 | 3 | Slipped white | None | Bowl | White |
| 143 | 2 | 2- SU2 East Wing | SU2C | 15 | 1 | Slipped white | None | Bowl | White |
| 143 | 2 | 2- SU2 East Wing | SU2C | 17 | 2 | Gallup Black-on-white | None | Bowl | White |

| PD# | FS# | Study Unit | Sub-Unit | Lot # | Sherds in Lot | Ceramic Type | Style | Vessel Form | Ware |
|---|---|---|---|---|---|---|---|---|---|
| 143 | 2 | 2- SU2 East Wing | SU2C | 18 | 2 | Chuska Black-on-white | None | Bowl | White |
| 143 | 2 | 2- SU2 East Wing | SU2C | 19 | 3 | Gallup Black-on-white | None | Bowl | White |
| 143 | 2 | 2- SU2 East Wing | SU2C | 20 | 2 | Mancos Black-on-white | Sosi | Bowl | White |
| 143 | 2 | 2- SU2 East Wing | SU2C | 21 | 1 | Chaco Black-on-white | None | Bowl | White |
| 143 | 2 | 2- SU2 East Wing | SU2C | 22 | 1 | Puerco Black-on-white | None | Bowl | White |
| 143 | 2 | 2- SU2 East Wing | SU2C | 23 | 13 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 238 | 4 | 2- SU2 East Wing | SU2B | 1 | 1 | Gallup Black-on-white | None | Jar | White |
| 275 | 3 | 2- SU2 East Wing | SU2E | 1 | 1 | Toadlena Black-on-white | None | Bowl | White |
| 220 | 1 | 2- SU2 East Wing | SU2A, SU2B | 2 | 2 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 147 | 5 | 2- SU2 East Wing | SU2A | 2 | 1 | Chaco Black-on-white | None | Bowl | White |
| 147 | 5 | 2- SU2 East Wing | SU2A | 3 | 16 | Mancos Black-on-white | Sosi | Bowl | White |
| 147 | 5 | 2- SU2 East Wing | SU2A | 4 | 6 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 146 | 1 | 2- SU2 East Wing | SU2C | 6 | 2 | McElmo Black-on-white | None | Bowl | White |
| 146 | 1 | 2- SU2 East Wing | SU2C | 7 | 2 | Gallup Black-on-white | None | Bowl | White |
| 146 | 1 | 2- SU2 East Wing | SU2C | 8 | 2 | Chaco-McElmo Black-on-white | None | Bowl | White |
| 146 | 1 | 2- SU2 East Wing | SU2C | 9 | 1 | Mancos Black-on-white | Indeterminate | Jar | White |
| 146 | 1 | 2- SU2 East Wing | SU2C | 10 | 1 | McElmo Black-on-white | None | Jar | White |
| 146 | 1 | 2- SU2 East Wing | SU2C | 3 | 1 | McElmo Black-on-white | None | Bowl | White |
| 227 | 1 | 2- SU2 East Wing | SU2C,SU2D | 1 | 2 | McElmo Black-on-white | None | Jar | White |
| 167 | 3 | 2- SU2 East Wing | SU2B | 1 | 2 | Reserve Black-on-white | None | Jar | White |
| 167 | 3 | 2- SU2 East Wing | SU2B | 2 | 1 | Newcomb Black-on-white | None | Bowl | White |
| 143 | 2 | 2- SU2 East Wing | SU2C | 16 | 1 | Polished gray | None | Jar | Gray |
| 109 | 1 | 2- SU2 East Wing | SU2A | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 259 | 2 | 2- SU2 East Wing | SU2F | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 5 | 1 | Corrugated gray | None | Jar | Gray |
| 215 | 1 | 2- SU2 East Wing | SU2F | 1 | 2 | Corrugated gray | None | Jar | Gray |
| 217 | 1 | 2- SU2 East Wing | SU2A, SU2B | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 234 | 5 | 2- SU2 East Wing | SU2A | 1 | 1 | Indeterminate gray | None | Jar | Gray |
| 231 | 1 | 2- SU2 East Wing | SU2C,SU2D | 1 | 1 | Pueblo II-III corrugated | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 3 | 3 | Pueblo II-III corrugated | None | Jar | Gray |
| 143 | 2 | 2- SU2 East Wing | SU2C | 4 | 1 | Corrugated gray | None | Jar | Gray |
| 232 | 4 | 2- SU2 East Wing | SU2D | 1 | 1 | Pueblo II-III corrugated | None | Jar | Gray |
| 273 | 1 | 2- SU2 East Wing | SU2A | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 220 | 1 | 2- SU2 East Wing | SU2A, SU2B | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 147 | 5 | 2- SU2 East Wing | SU2A | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 146 | 1 | 2- SU2 East Wing | SU2C | 5 | 1 | Corrugated gray | None | Jar | Gray |
| 100 | 1 | 3- SU3 East Midden | SU3A | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 100 | 1 | 3- SU3 East Midden | SU3A | 2 | 1 | Plain gray | None | Jar | Gray |
| 100 | 1 | 3- SU3 East Midden | SU3A | 3 | 1 | Polished gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 3 | 2 | Corrugated gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 4 | 1 | Corrugated gray | None | Jar | Gray |

| PD# | FS# | Study Unit | Sub-Unit | Lot # | Sherds in Lot | Ceramic Type | Style | Vessel Form | Ware |
|---|---|---|---|---|---|---|---|---|---|
| 101 | 1 | 3- SU3 East Midden | SU3A | 5 | 1 | Corrugated gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 11 | 1 | Corrugated gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 13 | 2 | Polished gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 9 | 1 | Plain gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 14 | 2 | Plain gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 10 | 1 | Plain gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 17 | 2 | Polished gray | None | Jar | Gray |
| 113 | 1 | 3- SU3 East Midden | SU3A | 4 | 1 | Corrugated gray | None | Jar | Gray |
| 113 | 1 | 3- SU3 East Midden | SU3A | 5 | 1 | Corrugated gray | None | Jar | Gray |
| 113 | 1 | 3- SU3 East Midden | SU3A | 7 | 2 | Corrugated gray | None | Jar | Gray |
| 113 | 1 | 3- SU3 East Midden | SU3A | 9 | 1 | Polished gray | None | Bowl | Gray |
| 113 | 1 | 3- SU3 East Midden | SU3A | 10 | 2 | Plain gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 3 | 2 | Corrugated gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 4 | 8 | Pueblo II-III corrugated | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 7 | 1 | Corrugated gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 8 | 1 | Pueblo II-III corrugated | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 9 | 4 | Corrugated gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 10 | 2 | Corrugated gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 11 | 1 | Corrugated gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 12 | 1 | McElmo Black-on-white | Indeterminate | Bowl | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 15 | 1 | Plain gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 16 | 3 | Plain gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 19 | 1 | Polished gray | None | Jar | Gray |
| 124 | 1 | 3- SU3 East Midden | SU3A | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 124 | 1 | 3- SU3 East Midden | SU3A | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 124 | 1 | 3- SU3 East Midden | SU3A | 3 | 1 | Corrugated gray | None | Bowl | Gray |
| 124 | 1 | 3- SU3 East Midden | SU3A | 6 | 1 | Corrugated gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 124 | 1 | 3- SU3 East Midden | SU3A | 8 | 1 | Corrugated gray | None | Jar | Gray |
| 124 | 1 | 3- SU3 East Midden | SU3A | 9 | 1 | Polished gray | None | Jar | Gray |
| 100 | 1 | 3- SU3 East Midden | SU3A | 4 | 1 | Tusayan Black-on-red | None | Bowl | Red |
| 100 | 1 | 3- SU3 East Midden | SU3A | 5 | 1 | Sosi Black-on-white | None | Bowl | White |
| 100 | 1 | 3- SU3 East Midden | SU3A | 6 | 1 | McElmo Black-on-white | None | Jar | White |
| 100 | 1 | 3- SU3 East Midden | SU3A | 7 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 124 | 1 | 3- SU3 East Midden | SU3A | 10 | 2 | Corrugated gray | None | Jar | Gray |
| 116 | 1 | 3- SU3 East Midden | SU3A | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 116 | 1 | 3- SU3 East Midden | SU3A | 5 | 2 | Corrugated gray | None | Jar | Gray |
| 116 | 1 | 3- SU3 East Midden | SU3A | 6 | 2 | Plain gray | None | Jar | Gray |
| 116 | 1 | 3- SU3 East Midden | SU3A | 7 | 3 | Pueblo II corrugated | None | Jar | Gray |
| 101 | 11 | 3- SU3 East Midden | SU3A | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 15 | 1 | Slipped white | None | Bowl | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 16 | 1 | Slipped white | None | Jar | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 18 | 2 | Slipped white | None | Bowl | White |

| PD# | FS# | Study Unit | Sub-Unit | Lot # | Sherds in Lot | Ceramic Type | Style | Vessel Form | Ware |
|---|---|---|---|---|---|---|---|---|---|
| 101 | 1 | 3- SU3 East Midden | SU3A | 19 | 1 | Slipped white | None | Jar | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 20 | 1 | Slipped white | None | Bowl | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 21 | 1 | Gallup Black-on-white | None | Bowl | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 22 | 3 | Chaco-McElmo Black-on-white | None | Bowl | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 23 | 1 | Chaco-McElmo Black-on-white | None | Jar | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 24 | 1 | McElmo Black-on-white | None | Jar | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 25 | 1 | Mancos Black-on-white | Mancos | Bowl | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 26 | 1 | McElmo Black-on-white | None | Bowl | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 27 | 1 | Mancos Black-on-white | Sosi | Bowl | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 28 | 1 | Mancos Black-on-white | Indeterminate | Bowl | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 29 | 1 | McElmo Black-on-white | Early McElmo | Bowl | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 30 | 3 | Tusayan Black-on-red | None | Bowl | Red |
| 101 | 1 | 3- SU3 East Midden | SU3A | 31 | 1 | Indeterminate brown | None | Bowl | Brown |
| 101 | 1 | 3- SU3 East Midden | SU3A | 32 | 15 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 101 | 1 | 3- SU3 East Midden | SU3A | 33 | 1 | Gallup Black-on-white | None | Jar | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 11 | 1 | Chaco-McElmo Black-on-white | None | Jar | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 12 | 1 | Slipped white | None | Jar | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 14 | 1 | Slipped white | None | Bowl | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 15 | 1 | Slipped white | None | Bowl | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 16 | 1 | Slipped white | None | bowl | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 17 | 1 | Slipped white | None | bowl | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 18 | 1 | Mancos Black-on-white | Sosi | Jar | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 19 | 1 | Pueblo II black-on-white | None | Bowl | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 20 | 1 | McElmo Black-on-white | None | Jar | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 21 | 1 | Mancos Black-on-white | Indeterminate | Jar | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 22 | 2 | McElmo Black-on-white | None | Bowl | White |
| 113 | 1 | 3- SU3 East Midden | SU3A | 23 | 1 | Puerco Black-on-red | None | Bowl | Red |
| 113 | 1 | 3- SU3 East Midden | SU3A | 24 | 10 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 114 | 1 | 3- SU3 East Midden | SU3A | 13 | 2 | Mancos Black-on-white | Sosi | Jar | White |
| 114 | 1 | 3- SU3 East Midden | SU3A | 17 | 1 | Mancos Black-on-white | Sosi | Bowl | White |
| 114 | 1 | 3- SU3 East Midden | SU3A | 18 | 1 | Slipped white | None | Jar | White |
| 114 | 1 | 3- SU3 East Midden | SU3A | 20 | 1 | Indeterminate black-on-red | None | Bowl | Red |
| 114 | 1 | 3- SU3 East Midden | SU3A | 21 | 1 | Indeterminate White Mountain black-on-red | None | Bowl | Red |
| 114 | 1 | 3- SU3 East Midden | SU3A | 22 | 1 | Puerco Black-on-red | None | Bowl | Red |
| 114 | 1 | 3- SU3 East Midden | SU3A | 23 | 1 | Pueblo II black-on-white | None | Jar | White |
| 114 | 1 | 3- SU3 East Midden | SU3A | 24 | 2 | Mancos Black-on-white | Sosi | Jar | White |
| 114 | 1 | 3- SU3 East Midden | SU3A | 25 | 1 | Mancos Black-on-white | None | Jar | White |
| 114 | 1 | 3- SU3 East Midden | SU3A | 26 | 1 | Slipped white | None | Bowl | White |
| 114 | 1 | 3- SU3 East Midden | SU3A | 27 | 1 | Slipped white | None | Jar | White |
| 114 | 1 | 3- SU3 East Midden | SU3A | 28 | 1 | McElmo Black-on-white | Indeterminate | Jar | White |
| 114 | 1 | 3- SU3 East Midden | SU3A | 29 | 1 | Slipped white | None | Jar | White |
| 114 | 1 | 3- SU3 East Midden | SU3A | 30 | 1 | Mancos Black-on-white | Indeterminate | Jar | White |
| 114 | 1 | 3- SU3 East Midden | SU3A | 31 | 1 | Slipped white | None | Jar | White |

| PD# | FS# | Study Unit | Sub-Unit | Lot # | Sherds in Lot | Ceramic Type | Style | Vessel Form | Ware |
|---|---|---|---|---|---|---|---|---|---|
| 114 | 1 | 3- SU3 East Midden | SU3A | 32 | 11 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 114 | 1 | 3- SU3 East Midden | SU3A | 33 | 1 | McElmo Black-on-white | Indeterminate | Bowl | White |
| 124 | 1 | 3- SU3 East Midden | SU3A | 7 | 2 | Indeterminate White Mountain black-on-red | None | Bowl | Red |
| 113 | 1 | 3- SU3 East Midden | SU3A | 3 | 1 | Corrugated gray | None | Jar | Gray |
| 124 | 1 | 3- SU3 East Midden | SU3A | 11 | 1 | McElmo Black-on-white | Indeterminate | Jar | White |
| 124 | 1 | 3- SU3 East Midden | SU3A | 13 | 2 | Mancos Black-on-white | Sosi | Bowl | White |
| 124 | 1 | 3- SU3 East Midden | SU3A | 14 | 1 | Nava Black-on-white | None | Bowl | White |
| 124 | 1 | 3- SU3 East Midden | SU3A | 15 | 1 | Chaco-McElmo Black-on-white | None | Bowl | White |
| 124 | 1 | 3- SU3 East Midden | SU3A | 16 | 9 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 113 | 1 | 3- SU3 East Midden | SU3A | 13 | 1 | Plain gray | None | Jar | Gray |
| 116 | 1 | 3- SU3 East Midden | SU3A | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 116 | 1 | 3- SU3 East Midden | SU3A | 8 | 1 | Plain gray | None | Jar | Gray |
| 116 | 1 | 3- SU3 East Midden | SU3A | 10 | 1 | Slipped white | None | Jar | White |
| 116 | 1 | 3- SU3 East Midden | SU3A | 11 | 1 | Slipped white | None | Jar | White |
| 116 | 1 | 3- SU3 East Midden | SU3A | 12 | 1 | Slipped white | None | Jar | White |
| 116 | 1 | 3- SU3 East Midden | SU3A | 13 | 1 | Indeterminate White Mountain black-on-red | None | Bowl | Red |
| 116 | 1 | 3- SU3 East Midden | SU3A | 14 | 1 | Toadlena Black-on-white | None | Bowl | White |
| 116 | 1 | 3- SU3 East Midden | SU3A | 15 | 6 | McElmo Black-on-white | Indeterminate | Bowl | White |
| 116 | 1 | 3- SU3 East Midden | SU3A | 16 | 1 | Mancos Black-on-white | Mancos | Jar | White |
| 116 | 1 | 3- SU3 East Midden | SU3A | 17 | 1 | Mancos Black-on-white | Sosi | Jar | White |
| 116 | 1 | 3- SU3 East Midden | SU3A | 18 | 1 | McElmo Black-on-white | None | Bowl | White |
| 116 | 1 | 3- SU3 East Midden | SU3A | 19 | 1 | McElmo Black-on-white | None | Jar | White |
| 116 | 1 | 3- SU3 East Midden | SU3A | 20 | 1 | McElmo Black-on-white | None | Bowl | White |
| 116 | 1 | 3- SU3 East Midden | SU3A | 9 | 7 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 101 | 11 | 3- SU3 East Midden | SU3A | 1 | 1 | Slipped white | None | Jar | White |
| 101 | 1 | 3- SU3 East Midden | SU3A | 8 | 1 | Corrugated gray | None | Jar | Gray |
| 113 | 1 | 3- SU3 East Midden | SU3A | 6 | 1 | Corrugated gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 1 | 4 | Corrugated gray | None | Jar | Gray |
| 124 | 1 | 3- SU3 East Midden | SU3A | 5 | 2 | Corrugated gray | None | Jar | Gray |
| 124 | 1 | 3- SU3 East Midden | SU3A | 12 | 1 | Polished gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 6 | 1 | Corrugated gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 7 | 1 | Corrugated gray | None | Jar | Gray |
| 101 | 1 | 3- SU3 East Midden | SU3A | 12 | 1 | Corrugated gray | None | Jar | Gray |
| 113 | 1 | 3- SU3 East Midden | SU3A | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 113 | 1 | 3- SU3 East Midden | SU3A | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 113 | 1 | 3- SU3 East Midden | SU3A | 8 | 1 | Indeterminate gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 5 | 3 | Corrugated gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 6 | 1 | Corrugated gray | None | Jar | Gray |
| 114 | 1 | 3- SU3 East Midden | SU3A | 14 | 1 | Indeterminate gray | None | Jar | Gray |
| 124 | 1 | 3- SU3 East Midden | SU3A | 4 | 2 | Corrugated gray | None | Jar | Gray |
| 116 | 1 | 3- SU3 East Midden | SU3A | 3 | 2 | Corrugated gray | None | Jar | Gray |
| 116 | 1 | 3- SU3 East Midden | SU3A | 4 | 3 | Corrugated gray | None | Jar | Gray |
| 101 | 11 | 3- SU3 East Midden | SU3A | 3 | 1 | Corrugated gray | None | Jar | Gray |

| PD# | FS# | Study Unit | Sub-Unit | Lot # | Sherds in Lot | Ceramic Type | Style | Vessel Form | Ware |
|---|---|---|---|---|---|---|---|---|---|
| 133 | 1 | 4- SU4 West Midden | SU4A | 3 | 1 | Plain gray | None | Bowl | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 1 | 2 | Corrugated gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 3 | 1 | Corrugated gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 4 | 1 | Corrugated gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 11 | 1 | Plain gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 12 | 1 | Plain gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 13 | 1 | Plain gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 14 | 2 | Plain gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 16 | 1 | Plain gray | None | Bowl | Gray |
| 144 | 1 | 4- SU4 West Midden | SU4B | 1 | 2 | Corrugated gray | None | Jar | Gray |
| 144 | 1 | 4- SU4 West Midden | SU4B | 2 | 2 | Indeterminate gray | None | Jar | Gray |
| 144 | 1 | 4- SU4 West Midden | SU4B | 3 | 2 | Corrugated gray | None | Jar | Gray |
| 144 | 1 | 4- SU4 West Midden | SU4B | 4 | 1 | Corrugated gray | None | Jar | Gray |
| 144 | 1 | 4- SU4 West Midden | SU4B | 7 | 5 | Corrugated gray | None | Jar | Gray |
| 144 | 1 | 4- SU4 West Midden | SU4B | 8 | 1 | Plain gray | None | Jar | Gray |
| 139 | 3 | 4- SU4 West Midden | SU4A | 2 | 3 | Corrugated gray | None | Jar | Gray |
| 139 | 3 | 4- SU4 West Midden | SU4A | 3 | 1 | Corrugated gray | None | Jar | Gray |
| 139 | 3 | 4- SU4 West Midden | SU4A | 5 | 2 | Corrugated gray | None | Jar | Gray |
| 139 | 3 | 4- SU4 West Midden | SU4A | 7 | 2 | Corrugated gray | None | Jar | Gray |
| 139 | 3 | 4- SU4 West Midden | SU4A | 9 | 1 | Plain gray | None | Jar | Gray |
| 139 | 3 | 4- SU4 West Midden | SU4A | 10 | 1 | Plain gray | None | Jar | Gray |
| 149 | 2 | 4- SU4 West Midden | SU4C | 2 | 3 | Corrugated gray | None | Jar | Gray |
| 149 | 2 | 4- SU4 West Midden | SU4C | 3 | 2 | Corrugated gray | None | Jar | Gray |
| 149 | 2 | 4- SU4 West Midden | SU4C | 4 | 4 | Corrugated gray | None | Jar | Gray |
| 149 | 2 | 4- SU4 West Midden | SU4C | 7 | 1 | Indeterminate gray | None | Jar | Gray |
| 149 | 2 | 4- SU4 West Midden | SU4C | 12 | 1 | Plain gray | None | Jar | Gray |
| 149 | 2 | 4- SU4 West Midden | SU4C | 13 | 1 | Plain gray | None | Jar | Gray |
| 149 | 2 | 4- SU4 West Midden | SU4C | 19 | 1 | Corrugated gray | None | Jar | Gray |
| 179 | 2 | 4- SU4 West Midden | SU4C | 1 | 1 | Plain gray | None | Jar | Gray |
| 179 | 2 | 4- SU4 West Midden | SU4C | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 179 | 2 | 4- SU4 West Midden | SU4C | 3 | 1 | Corrugated gray | None | Jar | Gray |
| 179 | 2 | 4- SU4 West Midden | SU4C | 5 | 2 | Corrugated gray | None | Jar | Gray |
| 145 | 1 | 4- SU4 West Midden | SU4B | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 145 | 1 | 4- SU4 West Midden | SU4B | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 145 | 1 | 4- SU4 West Midden | SU4B | 3 | 1 | Plain gray | None | Jar | Gray |
| 145 | 1 | 4- SU4 West Midden | SU4B | 4 | 1 | Plain gray | None | Jar | Gray |
| 170 | 1 | 4- SU4 West Midden | SU4B | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 144 | 1 | 4- SU4 West Midden | SU4B | 6 | 1 | Corrugated gray | None | Jar | Gray |
| 139 | 3 | 4- SU4 West Midden | SU4A | 4 | 1 | Corrugated gray | None | Jar | Gray |
| 179 | 2 | 4- SU4 West Midden | SU4C | 4 | 1 | Corrugated gray | None | Jar | Gray |
| 133 | 1 | 4- SU4 West Midden | SU4A | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 144 | 1 | 4- SU4 West Midden | SU4B | 9 | 3 | Corrugated gray | None | Jar | Gray |

| PD# | FS# | Study Unit | Sub-Unit | Lot # | Sherds in Lot | Ceramic Type | Style | Vessel Form | Ware |
|---|---|---|---|---|---|---|---|---|---|
| 179 | 7 | 4- SU4 West Midden | SU4C | 1 | 1 | McElmo Black-on-white | None | Jar | White |
| 133 | 1 | 4- SU4 West Midden | SU4A | 2 | 1 | Corrugated gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 8 | 1 | Corrugated gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 9 | 1 | Slipped white | None | Jar | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 8 | 3 | Corrugated gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 15 | 1 | Slipped white | None | Jar | White |
| 134 | 1 | 4- SU4 West Midden | SU4A | 17 | 1 | McElmo Black-on-white | Indeterminate | Bowl | White |
| 134 | 1 | 4- SU4 West Midden | SU4A | 18 | 1 | Pueblo II style black-on-white | None | Jar | White |
| 134 | 1 | 4- SU4 West Midden | SU4A | 19 | 2 | McElmo Black-on-white | Early McElmo | Bowl | White |
| 134 | 1 | 4- SU4 West Midden | SU4A | 20 | 1 | Toadlena Black-on-white | None | Bowl | White |
| 134 | 1 | 4- SU4 West Midden | SU4A | 21 | 1 | Mancos Black-on-white | Indeterminate | Jar | White |
| 134 | 1 | 4- SU4 West Midden | SU4A | 22 | 1 | Showlow Smudged | None | Bowl | Brown |
| 134 | 1 | 4- SU4 West Midden | SU4A | 23 | 1 | Chuska Black-on-white | None | Bowl | White |
| 134 | 1 | 4- SU4 West Midden | SU4A | 24 | 19 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 144 | 1 | 4- SU4 West Midden | SU4B | 10 | 1 | Slipped white | None | Bowl | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 11 | 1 | Slipped white | None | Jar | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 12 | 1 | Slipped white | None | Jar | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 13 | 1 | McElmo Black-on-white | Indeterminate | Jar | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 14 | 1 | Nava Black-on-white | None | Bowl | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 15 | 1 | Mancos Black-on-white | Indeterminate | Jar | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 16 | 1 | Painted black-on-white | None | Bowl | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 17 | 1 | Chaco-McElmo Black-on-white | None | Bowl | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 18 | 1 | Escavada Black-on-white | None | Jar | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 19 | 1 | McElmo Black-on-white | Early McElmo | Bowl | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 20 | 1 | Chaco Black-on-white | None | Jar | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 21 | 1 | Chaco-McElmo Black-on-white | None | Bowl | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 22 | 1 | Chaco-McElmo Black-on-white | None | Bowl | White |
| 144 | 1 | 4- SU4 West Midden | SU4B | 23 | 24 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 139 | 3 | 4- SU4 West Midden | SU4A | 8 | 1 | McElmo Black-on-white | Early McElmo | Bowl | White |
| 139 | 3 | 4- SU4 West Midden | SU4A | 11 | 2 | Slipped white | None | Jar | White |
| 139 | 3 | 4- SU4 West Midden | SU4A | 12 | 1 | Mancos Black-on-white | Dogoszhi | Bowl | White |
| 139 | 3 | 4- SU4 West Midden | SU4A | 13 | 2 | Mancos Black-on-white | Dogoszhi | Bowl | White |
| 139 | 3 | 4- SU4 West Midden | SU4A | 14 | 1 | Escavada Black-on-white | None | Bowl | White |
| 139 | 3 | 4- SU4 West Midden | SU4A | 15 | 1 | Painted black-on-white | None | Bowl | White |
| 139 | 3 | 4- SU4 West Midden | SU4A | 16 | 1 | McElmo Black-on-white | None | Jar | White |
| 139 | 3 | 4- SU4 West Midden | SU4A | 17 | 1 | Slipped white | None | Bowl | White |
| 139 | 3 | 4- SU4 West Midden | SU4A | 18 | 11 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 149 | 2 | 4- SU4 West Midden | SU4C | 9 | 4 | Indeterminate red | None | Jar | Red |
| 149 | 2 | 4- SU4 West Midden | SU4C | 11 | 2 | Indeterminate red | None | Bowl | Red |
| 149 | 2 | 4- SU4 West Midden | SU4C | 14 | 1 | Slipped white | None | Jar | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 15 | 1 | Slipped white | None | Bowl | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 16 | 1 | Slipped white | None | Jar | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 17 | 1 | Slipped white | None | Jar | White |

| PD# | FS# | Study Unit | Sub-Unit | Lot # | Sherds in Lot | Ceramic Type | Style | Vessel Form | Ware |
|---|---|---|---|---|---|---|---|---|---|
| 149 | 2 | 4- SU4 West Midden | SU4C | 18 | 1 | Slipped white | None | Jar | White |
| 134 | 1 | 4- SU4 West Midden | SU4A | 5 | 2 | Corrugated gray | None | Jar | Gray |
| 149 | 2 | 4- SU4 West Midden | SU4C | 20 | 1 | Slipped white | None | Jar | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 21 | 1 | Painted black-on-white | None | Pitcher | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 22 | 1 | Mancos Black-on-white | Sosi | Bowl | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 23 | 1 | Gallup Black-on-white | None | Bowl | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 24 | 1 | Escavada Black-on-white | None | Bowl | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 25 | 1 | Painted black-on-white | None | Jar | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 26 | 1 | McElmo Black-on-white | None | Jar | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 27 | 1 | Chuska Black-on-white | None | Jar | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 28 | 1 | Newcomb Black-on-white | None | Bowl | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 29 | 1 | Chaco-McElmo Black-on-white | None | Bowl | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 30 | 1 | Painted black-on-white | None | Jar | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 31 | 1 | Chaco-McElmo Black-on-white | None | Bowl | White |
| 149 | 2 | 4- SU4 West Midden | SU4C | 10 | 28 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 134 | 1 | 4- SU4 West Midden | SU4A | 6 | 1 | Corrugated gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 7 | 2 | Corrugated gray | None | Jar | Gray |
| 134 | 1 | 4- SU4 West Midden | SU4A | 10 | 1 | Indeterminate gray | None | Jar | Gray |
| 144 | 1 | 4- SU4 West Midden | SU4B | 5 | 2 | Corrugated gray | None | Jar | Gray |
| 139 | 3 | 4- SU4 West Midden | SU4A | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 179 | 2 | 4- SU4 West Midden | SU4C | 6 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 139 | 3 | 4- SU4 West Midden | SU4A | 6 | 1 | Corrugated gray | None | Jar | Gray |
| 149 | 2 | 4- SU4 West Midden | SU4C | 1 | 1 | Corrugated gray | None | Jar | Gray |
| 149 | 2 | 4- SU4 West Midden | SU4C | 5 | 3 | Corrugated gray | None | Jar | Gray |
| 149 | 2 | 4- SU4 West Midden | SU4C | 6 | 4 | Corrugated gray | None | Jar | Gray |
| 145 | 1 | 4- SU4 West Midden | SU4B | 5 | 1 | Slipped white | None | Jar | White |
| 145 | 1 | 4- SU4 West Midden | SU4B | 6 | 1 | McElmo Black-on-white | None | Bowl | White |
| 145 | 1 | 4- SU4 West Midden | SU4B | 7 | 1 | Mancos Black-on-white | None | Jar | White |
| 145 | 1 | 4- SU4 West Midden | SU4B | 8 | 1 | Mancos Black-on-white | Sosi | Bowl | White |
| 145 | 1 | 4- SU4 West Midden | SU4B | 9 | 3 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 170 | 1 | 4- SU4 West Midden | SU4B | 1 | 2 | Corrugated gray | None | Jar | Gray |
| 170 | 1 | 4- SU4 West Midden | SU4B | 3 | 1 | Slipped white | None | Jar | White |
| 170 | 1 | 4- SU4 West Midden | SU4B | 4 | 2 | Nava Black-on-white | None | Bowl | White |
| 170 | 1 | 4- SU4 West Midden | SU4B | 5 | 1 | McElmo Black-on-white | None | Jar | White |
| 170 | 1 | 4- SU4 West Midden | SU4B | 6 | 1 | Mancos Black-on-white | Dogoszhi | Bowl | White |
| 170 | 1 | 4- SU4 West Midden | SU4B | 7 | 1 | Mancos Black-on-white | Sosi | Bowl | White |
| 170 | 1 | 4- SU4 West Midden | SU4B | 8 | 1 | Puerco Black-on-white | None | Jar | White |
| 170 | 1 | 4- SU4 West Midden | SU4B | 9 | 1 | Chaco-McElmo Black-on-white | Indeterminate | Jar | White |
| 170 | 1 | 4- SU4 West Midden | SU4B | 10 | 6 | Not analyzed | Not analyzed | Not analyzed | Not analyzed |

| PD# | FS# | Tradition | Variety | Exterior Surface Treatment | Interior Surface Treatment | Exterior Pigment | Interior Pigment |
|---|---|---|---|---|---|---|---|
| 105 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 105 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 107 | 1 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Organic |
| 110 | 1 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Mineral |
| 132 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 212 | 19 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 212 | 16 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 212 | 16 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 212 | 16 | Northern San Juan | Animas | Indeterminate band or fillet | Plain | None | None |
| 158 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 242 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 188 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 187 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 141 | 2 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 152 | 1 | White Mountain | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 152 | 1 | Cibola | Nonlocal | Slipped and painted | Plain | Organic | None |
| 261 | 1 | Northern San Juan | Animas | Polished and painted | Plain | Mineral | None |
| 219 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 260 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 222 | 1 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 222 | 1 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 212 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 219 | 1 | Northern San Juan | Nonlocal | Slipped | Slipped and painted | None | Mineral |
| 212 | 1 | Northern San Juan | Animas | Indented corrugated and plain gray | Plain | None | None |
| 212 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 212 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 212 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 212 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 212 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 250 | 2 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 212 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 230 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 207 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 162 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 162 | 3 | Northern San Juan | Animas | Obliterated corrugated | Plain | None | None |
| 222 | 1 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Organic |
| 222 | 1 | Cibola | Nonlocal | Slipped and painted | Slipped and painted | Mineral | Mineral |
| 222 | 1 | Cibola | Nonlocal | Plain | Slipped and painted | None | Mineral |
| 222 | 1 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 222 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 171 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 268 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 165 | 2 | Northern San Juan | Animas | Plain | Plain | None | None |

| PD# | FS# | Tradition | Variety | Exterior Surface Treatment | Interior Surface Treatment | Exterior Pigment | Interior Pigment |
|---|---|---|---|---|---|---|---|
| 165 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 165 | 2 | Northern San Juan | Animas | Plain | Plain | None | None |
| 165 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 165 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 165 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 165 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 212 | 1 | Cibola | Nonlocal | Slipped | Plain | None | None |
| 165 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 212 | 1 | Northern San Juan | Animas | Polished and painted | Plain | Mineral | None |
| 212 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 165 | 2 | Northern San Juan | Animas | Plain | Plain | None | None |
| 216 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 230 | 2 | Cibola | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 230 | 2 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 216 | 3 | Northern San Juan | Animas | Indeterminate | Plain | None | None |
| 154 | 1 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 157 | 1 | Northern San Juan | Animas | Slipped and painted | Slipped and painted | Mineral | Mineral |
| 216 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 216 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 171 | 3 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Organic |
| 216 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 206 | 1 | Cibola | Nonlocal | Slipped and painted | Plain | Organic | None |
| 216 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 268 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 216 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 216 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 165 | 2 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Mineral |
| 165 | 2 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 216 | 3 | Northern San Juan | Animas | Plain | Slipped and painted | None | Mineral |
| 216 | 3 | Northern San Juan | Animas | Slipped | Slipped and painted | Mineral | Mineral |
| 216 | 3 | Cibola | Nonlocal | Slipped | Slipped and painted | None | Mineral |
| 216 | 3 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 212 | 16 | Northern San Juan | Indeterminate | Indented corrugated | Plain | None | None |
| 260 | 1 | Northern San Juan | Indeterminate | Plain | Plain | None | None |
| 222 | 1 | Northern San Juan | Indeterminate | Indented corrugated | Plain | None | None |
| 222 | 1 | Northern San Juan | Indeterminate | Indented corrugated | Plain | None | None |
| 121 | 1 | Northern San Juan | Nonlocal | Clapboard corrugated | Plain | None | None |
| 165 | 2 | Northern San Juan | Nonlocal | Indented corrugated | Plain | None | None |
| 260 | 1 | Cibola | Nonlocal | Clapboard corrugated | Plain | None | None |
| 260 | 1 | Cibola | Nonlocal | Incised indented corrugation | Plain | None | None |
| 138 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 212 | 19 | Chuska | Nonlocal | Clapboard corrugated | Plain | None | None |
| 236 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |

| PD# | FS# | Tradition | Variety | Exterior Surface Treatment | Interior Surface Treatment | Exterior Pigment | Interior Pigment |
|---|---|---|---|---|---|---|---|
| 260 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 222 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 212 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 230 | 2 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 165 | 2 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 165 | 2 | Chuska | Nonlocal | Clapboard corrugated | Plain | None | None |
| 216 | 3 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 212 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 106 | 1 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 106 | 1 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 109 | 1 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 140 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 140 | 1 | Northern San Juan | Animas | Corrugated w/ finger drags | Plain | None | None |
| 140 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 140 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 140 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 217 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 143 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 143 | 2 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 143 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 143 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 143 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 143 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 143 | 2 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 143 | 2 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 143 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 143 | 2 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 193 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 178 | 5 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 146 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 146 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 111 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 129 | 1 | Northern San Juan | Animas | Polished and painted | Slipped and painted | Mineral | Mineral |
| 259 | 2 | Chuska | Nonlocal | Slipped and painted | Plain | Organic | None |
| 146 | 1 | Northern San Juan | Animas | Obliterated corrugated | Plain | None | None |
| 140 | 1 | Northern San Juan | Animas | Plain and painted | Plain | Mineral | None |
| 140 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 231 | 1 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Mineral |
| 231 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 234 | 15 | Northern San Juan | Nonlocal | Slipped and painted | Plain | Mineral | None |
| 143 | 2 | Cibola | Nonlocal | Slipped | Slipped | None | None |
| 143 | 2 | Northern San Juan | Animas | Polished | Slipped | None | None |
| 143 | 2 | Cibola | Nonlocal | Slipped | Slipped and painted | None | Mineral |

| PD# | FS# | Tradition | Variety | Exterior Surface Treatment | Interior Surface Treatment | Exterior Pigment | Interior Pigment |
|---|---|---|---|---|---|---|---|
| 143 | 2 | Chuska | Nonlocal | Plain | Slipped and painted | None | Organic |
| 143 | 2 | Cibola | Nonlocal | Slipped | Slipped and painted | None | Mineral |
| 143 | 2 | Northern San Juan | Animas | Plain | Slipped and painted | None | Mineral |
| 143 | 2 | Cibola | Nonlocal | Polished | Slipped and painted | None | Mineral |
| 143 | 2 | Cibola | Nonlocal | Plain | Slipped and painted | None | Mineral |
| 143 | 2 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 238 | 4 | Cibola | Nonlocal | Slipped and painted | Plain | Mineral | None |
| 275 | 3 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 220 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 147 | 5 | Cibola | Nonlocal | Slipped | Slipped and painted | None | Mineral |
| 147 | 5 | Northern San Juan | Animas | Polished | Slipped and painted | None | Mineral |
| 147 | 5 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 146 | 1 | Northern San Juan | Animas | Plain | Slipped and painted | None | Organic |
| 146 | 1 | Cibola | Nonlocal | Plain | Plain and painted | None | Mineral |
| 146 | 1 | Cibola | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 146 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Mineral | None |
| 146 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Organic | None |
| 146 | 1 | Northern San Juan | Nonlocal | Obliterated corrugated | Slipped and painted | None | Organic |
| 227 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Organic | None |
| 167 | 3 | Cibola | Nonlocal | Slipped and painted | Plain | Mineral | None |
| 167 | 3 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 143 | 2 | Northern San Juan | Indeterminate | Polished | Plain | None | None |
| 109 | 1 | Cibola | Nonlocal | Indented corrugated | Plain | None | None |
| 259 | 2 | Cibola | Nonlocal | Clapboard corrugated | Plain | None | None |
| 143 | 2 | Cibola | Nonlocal | Indented corrugated | Plain | None | None |
| 215 | 1 | Cibola | Nonlocal | Indented corrugated | Plain | None | None |
| 217 | 1 | Chuska | Nonlocal | Zoned corrugated | Plain | None | None |
| 234 | 5 | Chuska | Nonlocal | Indeterminate band or fillet | Plain | None | None |
| 231 | 1 | Chuska | Nonlocal | Fillet w/ indented corrugation | Plain | None | None |
| 143 | 2 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 143 | 2 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 232 | 4 | Chuska | Nonlocal | Clapboard corrugated | Plain | None | None |
| 273 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 220 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 147 | 5 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 146 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 100 | 1 | Northern San Juan | Animas | Obliterated corrugated | Plain | None | None |
| 100 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 100 | 1 | Northern San Juan | Animas | Polished | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |

| PD# | FS# | Tradition | Variety | Exterior Surface Treatment | Interior Surface Treatment | Exterior Pigment | Interior Pigment |
|---|---|---|---|---|---|---|---|
| 101 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Polished | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Polished | Plain | None | None |
| 113 | 1 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 113 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 113 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 113 | 1 | Northern San Juan | Animas | Plain | Polished | None | None |
| 113 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Clapboard corrugated | Slipped and painted | None | Organic |
| 114 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Polished | Plain | None | None |
| 124 | 1 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 124 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 124 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 124 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 124 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 124 | 1 | Northern San Juan | Animas | Polished | Plain | None | None |
| 100 | 1 | Tusayan (Kayenta) | Nonlocal | Polished | Slipped and painted | None | Mineral |
| 100 | 1 | Tusayan (Kayenta) | Nonlocal | Plain | Polished and painted | None | Organic |
| 100 | 1 | Northern San Juan | Animas | Polished and painted | Plain | Organic | None |
| 100 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 124 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 116 | 1 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 116 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 116 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 116 | 1 | Northern San Juan | Animas | Fillet w/ obliterated corrugated | Plain | None | None |
| 101 | 11 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Plain | Slipped | None | None |
| 101 | 1 | Cibola | Nonlocal | Slipped | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Plain | Slipped | None | None |

| PD# | FS# | Tradition | Variety | Exterior Surface Treatment | Interior Surface Treatment | Exterior Pigment | Interior Pigment |
|---|---|---|---|---|---|---|---|
| 101 | 1 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 101 | 1 | Northern San Juan | Animas | Plain | Slipped | None | None |
| 101 | 1 | Cibola | Nonlocal | Plain | Slipped and painted | None | Mineral |
| 101 | 1 | Cibola | Nonlocal | Plain | Slipped and painted | None | Organic |
| 101 | 1 | Cibola | Nonlocal | Slipped and painted | Plain | Organic | None |
| 101 | 1 | Northern San Juan | Indeterminate | Slipped and painted | Plain | Organic | None |
| 101 | 1 | Northern San Juan | Indeterminate | Plain | Polished and painted | None | Mineral |
| 101 | 1 | Northern San Juan | Animas | Plain | Slipped and painted | None | Organic |
| 101 | 1 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Mineral |
| 101 | 1 | Northern San Juan | Animas | Polished | Slipped and painted | None | Mineral |
| 101 | 1 | Northern San Juan | Animas | Plain | Slipped and painted | None | Organic |
| 101 | 1 | Tusayan (Kayenta) | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 101 | 1 | Mogollon | Nonlocal | Indeterminate | Smudged | None | None |
| 101 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 101 | 1 | Cibola | Nonlocal | Slipped and painted | Indeterminate | Mineral | None |
| 113 | 1 | Cibola | Nonlocal | Slipped and painted | Plain | Organic | None |
| 113 | 1 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 113 | 1 | Northern San Juan | Animas | Slipped | Slipped | None | None |
| 113 | 1 | Northern San Juan | Animas | Plain | Slipped | None | None |
| 113 | 1 | Northern San Juan | Animas | Slipped | Slipped | None | None |
| 113 | 1 | Cibola | Nonlocal | Slipped | Plain | None | None |
| 113 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Mineral | None |
| 113 | 1 | Cibola | Nonlocal | Plain | Slipped and painted | None | Mineral |
| 113 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Organic | None |
| 113 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Mineral | None |
| 113 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Organic | None |
| 113 | 1 | White Mountain | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 113 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 114 | 1 | Northern San Juan | Animas | Polished and painted | Plain | Mineral | None |
| 114 | 1 | Northern San Juan | Animas | Polished | Slipped and painted | None | Mineral |
| 114 | 1 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 114 | 1 | Tusayan (Kayenta) | Nonlocal | Indeterminate | Slipped and painted | None | Organic |
| 114 | 1 | White Mountain | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 114 | 1 | White Mountain | Nonlocal | Slipped and painted | Slipped and painted | Organic | Organic |
| 114 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Mineral | None |
| 114 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Mineral | None |
| 114 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Mineral | None |
| 114 | 1 | Northern San Juan | Animas | Plain | Slipped | None | None |
| 114 | 1 | Northern San Juan | Animas | Slipped and painted | Polished | Indeterminate | None |
| 114 | 1 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Organic |
| 114 | 1 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 114 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Mineral | None |
| 114 | 1 | Northern San Juan | Animas | Slipped | Plain | None | None |

| PD# | FS# | Tradition | Variety | Exterior Surface Treatment | Interior Surface Treatment | Exterior Pigment | Interior Pigment |
|---|---|---|---|---|---|---|---|
| 114 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 114 | 1 | Northern San Juan | Animas | Smudged | Slipped and painted | None | Organic |
| 124 | 1 | White Mountain | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 113 | 1 | Northern San Juan | Indeterminate | Indented corrugated | Plain | None | None |
| 124 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Organic | None |
| 124 | 1 | Northern San Juan | Animas | Polished | Slipped and painted | None | Mineral |
| 124 | 1 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 124 | 1 | Cibola | Nonlocal | Plain | Slipped and painted | None | Organic |
| 124 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 113 | 1 | Northern San Juan | Nonlocal | Plain | Plain | None | None |
| 116 | 1 | Northern San Juan | Nonlocal | Indented corrugated | Plain | None | None |
| 116 | 1 | Northern San Juan | Nonlocal | Plain | Plain | None | None |
| 116 | 1 | Chuska | Nonlocal | Slipped | Plain | None | None |
| 116 | 1 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 116 | 1 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 116 | 1 | White Mountain | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 116 | 1 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 116 | 1 | Northern San Juan | Animas | Polished | Slipped and painted | None | Organic |
| 116 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Organic/Mineral | None |
| 116 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Mineral | None |
| 116 | 1 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Organic |
| 116 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Organic | None |
| 116 | 1 | Northern San Juan | Nonlocal | Plain | Slipped and painted | None | Organic |
| 116 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 101 | 11 | Cibola | Nonlocal | Slipped | Plain | None | None |
| 101 | 1 | Cibola | Nonlocal | Indented corrugated | Plain | None | None |
| 113 | 1 | Cibola | Nonlocal | Indented corrugated | Plain | None | None |
| 114 | 1 | Cibola | Nonlocal | Indented corrugated | Plain | None | None |
| 124 | 1 | Cibola | Nonlocal | Indented corrugated | Plain | None | None |
| 124 | 1 | Cibola | Nonlocal | Polished | Plain | None | None |
| 101 | 1 | Chuska | Nonlocal | Clapboard corrugated | Plain | None | None |
| 101 | 1 | Chuska | Nonlocal | Clapboard corrugated | Plain | None | None |
| 101 | 1 | Chuska | Nonlocal | Clapboard corrugated | Plain | None | None |
| 113 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 113 | 1 | Chuska | Nonlocal | Fillet w/ indented corrugation | Plain | None | None |
| 113 | 1 | Chuska | Nonlocal | Fillet | Plain | None | None |
| 114 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 114 | 1 | Chuska | Nonlocal | Clapboard corrugated | Plain | None | None |
| 114 | 1 | Chuska | Nonlocal | Indeterminate band or fillet | Plain | None | None |
| 124 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 116 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 116 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 101 | 11 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |

| PD# | FS# | Tradition | Variety | Exterior Surface Treatment | Interior Surface Treatment | Exterior Pigment | Interior Pigment |
|---|---|---|---|---|---|---|---|
| 133 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 134 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 134 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 134 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 134 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 134 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 134 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 134 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 134 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 134 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 144 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 144 | 1 | Northern San Juan | Animas | Indeterminate band or fillet | Plain | None | None |
| 144 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 144 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 144 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 144 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 139 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 139 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 139 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 139 | 3 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 139 | 3 | Northern San Juan | Animas | Plain | Plain | None | None |
| 139 | 3 | Northern San Juan | Animas | Plain | Plain | None | None |
| 149 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 149 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 149 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 149 | 2 | Northern San Juan | Animas | Indeterminate band or fillet | Plain | None | None |
| 149 | 2 | Northern San Juan | Animas | Plain | Plain | None | None |
| 149 | 2 | Northern San Juan | Animas | Plain | Plain | None | None |
| 149 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 179 | 2 | Northern San Juan | Animas | Plain | Plain | None | None |
| 179 | 2 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 179 | 2 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 179 | 2 | Northern San Juan | Animas | Clapboard corrugated | Plain | None | None |
| 145 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 145 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 145 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 145 | 1 | Northern San Juan | Animas | Plain | Plain | None | None |
| 170 | 1 | Northern San Juan | Animas | Indented corrugated | Plain | None | None |
| 144 | 1 | Northern San Juan | Indeterminate | Indented corrugated | Plain | None | None |
| 139 | 3 | Northern San Juan | Indeterminate | Indented corrugated | Plain | None | None |
| 179 | 2 | Northern San Juan | Indeterminate | Obliterated corrugated | Plain | None | None |
| 133 | 1 | Northern San Juan | Nonlocal | Clapboard corrugated | Plain | None | None |
| 144 | 1 | Northern San Juan | Nonlocal | Indented corrugated | Plain | None | None |

| PD# | FS# | Tradition | Variety | Exterior Surface Treatment | Interior Surface Treatment | Exterior Pigment | Interior Pigment |
|---|---|---|---|---|---|---|---|
| 179 | 7 | Northern San Juan | Animas | Slipped and painted | Plain | Organic | None |
| 133 | 1 | Cibola | Nonlocal | Clapboard corrugated | Plain | None | None |
| 134 | 1 | Cibola | Nonlocal | Indented corrugated | Plain | None | None |
| 134 | 1 | Chuska | Nonlocal | Slipped | Plain | None | None |
| 149 | 2 | Cibola | Nonlocal | Indented corrugated | Plain | None | None |
| 134 | 1 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 134 | 1 | Northern San Juan | Animas | Plain | Slipped and painted | None | Organic |
| 134 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Mineral | None |
| 134 | 1 | Northern San Juan | Animas | Polished | Slipped and painted | None | Organic |
| 134 | 1 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 134 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Mineral | None |
| 134 | 1 | Mogollon | Nonlocal | Slipped | Smudged | None | None |
| 134 | 1 | Chuska | Nonlocal | Plain | Slipped and painted | None | Organic |
| 134 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 144 | 1 | Cibola | Nonlocal | Polished | Slipped | None | None |
| 144 | 1 | Cibola | Nonlocal | Slipped | Plain | None | None |
| 144 | 1 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 144 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Organic | None |
| 144 | 1 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 144 | 1 | Northern San Juan | Animas | Plain and painted | Plain | Mineral | None |
| 144 | 1 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 144 | 1 | Cibola | Nonlocal | Plain | Slipped and painted | None | Organic |
| 144 | 1 | Cibola | Nonlocal | Slipped and painted | Plain | Mineral | None |
| 144 | 1 | Northern San Juan | Animas | Plain | Plain and painted | None | Organic |
| 144 | 1 | Cibola | Nonlocal | Slipped and painted | Plain | Mineral | None |
| 144 | 1 | Cibola | Nonlocal | Plain | Slipped and painted | None | Organic |
| 144 | 1 | Cibola | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 144 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 139 | 3 | Northern San Juan | Animas | Plain | Plain and painted | None | Organic |
| 139 | 3 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 139 | 3 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Mineral |
| 139 | 3 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Mineral |
| 139 | 3 | Cibola | Nonlocal | Plain | Plain and painted | None | Mineral |
| 139 | 3 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Organic |
| 139 | 3 | Northern San Juan | Animas | Slipped and painted | Plain | Organic | None |
| 139 | 3 | Cibola | Nonlocal | Plain | Slipped | None | None |
| 139 | 3 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 149 | 2 | Tusayan (Kayenta) | Nonlocal | Slipped | Slipped | None | None |
| 149 | 2 | Tusayan (Kayenta) | Nonlocal | Slipped | Slipped | None | None |
| 149 | 2 | Cibola | Nonlocal | Slipped | Plain | None | None |
| 149 | 2 | Northern San Juan | Animas | Plain | Slipped | None | None |
| 149 | 2 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 149 | 2 | Northern San Juan | Animas | Slipped | Plain | None | None |

| PD# | FS# | Tradition | Variety | Exterior Surface Treatment | Interior Surface Treatment | Exterior Pigment | Interior Pigment |
|---|---|---|---|---|---|---|---|
| 149 | 2 | Cibola | Nonlocal | Slipped | Plain | None | None |
| 134 | 1 | Chuska | Nonlocal | Clapboard corrugated | Plain | None | None |
| 149 | 2 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 149 | 2 | Cibola | Nonlocal | Slipped and painted | Plain | Mineral | None |
| 149 | 2 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Mineral |
| 149 | 2 | Cibola | Nonlocal | Plain | Slipped and painted | None | Mineral |
| 149 | 2 | Cibola | Nonlocal | Plain | Slipped and painted | None | Mineral |
| 149 | 2 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Mineral |
| 149 | 2 | Northern San Juan | Animas | Slipped and painted | Plain | Organic | None |
| 149 | 2 | Chuska | Nonlocal | Slipped and painted | Plain | Organic | None |
| 149 | 2 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 149 | 2 | Cibola | Nonlocal | Plain | Slipped and painted | None | Organic |
| 149 | 2 | Cibola | Nonlocal | Slipped and painted | Plain | Mineral | None |
| 149 | 2 | Cibola | Nonlocal | Plain | Slipped and painted | None | Organic |
| 149 | 2 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 134 | 1 | Chuska | Nonlocal | Clapboard corrugated | Plain | None | None |
| 134 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 134 | 1 | Chuska | Nonlocal | Plain | Plain | None | None |
| 144 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 139 | 3 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 179 | 2 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 139 | 3 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 149 | 2 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 149 | 2 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 149 | 2 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 145 | 1 | Cibola | Nonlocal | Slipped | Plain | None | None |
| 145 | 1 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Organic |
| 145 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Mineral | None |
| 145 | 1 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Mineral |
| 145 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |
| 170 | 1 | Chuska | Nonlocal | Indented corrugated | Plain | None | None |
| 170 | 1 | Northern San Juan | Animas | Slipped | Plain | None | None |
| 170 | 1 | Chuska | Nonlocal | Slipped | Slipped and painted | None | Organic |
| 170 | 1 | Northern San Juan | Animas | Slipped and painted | Plain | Organic | None |
| 170 | 1 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Organic |
| 170 | 1 | Northern San Juan | Animas | Slipped | Slipped and painted | None | Mineral |
| 170 | 1 | Cibola | Nonlocal | Slipped and painted | Plain | Mineral | None |
| 170 | 1 | Cibola | Nonlocal | Slipped and painted | Slipped | Organic | None |
| 170 | 1 | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed | Not analyzed |

| PD# | FS# | Temper | Paste | Slip | Vessel # | Running total | Use Wear |
|---|---|---|---|---|---|---|---|
| 105 | 1 | Granular igneous rock | Animas Gray | None | | 63 | None |
| 105 | 1 | Granular igneous rock | Animas Gray | None | | 64 | None |
| 107 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thick- chalky | | 71 | None |
| 110 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 72 | None |
| 132 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 78 | None |
| 212 | 19 | Granular igneous rock | Animas Brown | None | | 256 | Sooting (both surfaces) |
| 212 | 16 | Sherd, granular igneous rock | Animas Brown | None | | 259 | Sooting (exterior) |
| 212 | 16 | Granular igneous rock | Animas Brown | None | | 260 | Sooting (exterior) |
| 212 | 16 | Granular igneous rock | Animas Light (buff/white) | None | | 262 | None |
| 158 | 1 | Granular igneous rock | Animas Brown | None | | 488 | Sooting (interior) |
| 242 | 2 | Sherd, granular igneous rock | Animas Gray | None | | 492 | None |
| 188 | 1 | Granular igneous rock | Animas Brown | None | 3 | 500 | None |
| 187 | 2 | Granular igneous rock | Animas Brown | None | 3 | 501 | None |
| 141 | 2 | Trachyte, sand | Nonlocal | Thick- chalky | | 427 | None |
| 152 | 1 | Sand and sherd | Nonlocal | Thick- well polished | | 484 | None |
| 152 | 1 | Sand and sherd | Nonlocal | Washy | | 485 | None |
| 261 | 1 | Granular igneous rock | Animas Gray | None | | 487 | None |
| 219 | 1 | Granular and porphyritic igneous rocks | Animas Brown | None | | 580 | Sooting (interior) |
| 260 | 1 | Granular igneous rock | Animas Gray | None | | 611 | Sooting (exterior) |
| 222 | 1 | Granular igneous rock | Animas Brown | None | | 621 | Sooting (exterior) |
| 222 | 1 | Granular igneous rock | Animas Brown | None | | 636 | Sooting (exterior) |
| 212 | 1 | Granular igneous rock | Animas Brown | None | 2 | 671 | Sooting (exterior) |
| 219 | 1 | Sherd, other crushed rock | Nonlocal | thin | | 579 | None |
| 212 | 1 | Granular igneous rock | Animas Gray | None | | 673 | Sooting (exterior) |
| 212 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 674 | None |
| 212 | 1 | Granular and porphyritic igneous rocks | Animas Brown | None | | 675 | Sooting (both surfaces) |
| 212 | 1 | Granular igneous rock | Animas Brown | None | | 680 | None |
| 212 | 1 | Granular igneous rock, sand | Animas Brown | None | | 682 | None |
| 212 | 1 | Granular igneous rock | Animas Brown | None | | 683 | Sooting (exterior) |
| 250 | 2 | Trachyte | Nonlocal | Thick- chalky | | 620 | None |
| 212 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 685 | None |
| 230 | 2 | Granular and porphyritic igneous rocks | Animas Gray | None | 2 | 699 | None |
| 207 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 708 | None |
| 162 | 3 | Granular igneous rock | Animas Light (buff/white) | None | | 712 | None |
| 162 | 3 | Granular igneous rock, sand | Animas Gray | None | | 713 | None |
| 222 | 1 | Sherd | Animas Brown | Thick- chalky | | 637 | None |
| 222 | 1 | Sandstone and sherd | Nonlocal | thin | | 639 | None |
| 222 | 1 | Medium quartz sand | Nonlocal | Thin | | 640 | None |
| 222 | 1 | Granular igneous rock | Animas Light (buff/white) | Thick- chalky | | 641 | None |
| 222 | 1 | Not analyzed | Not analyzed | Not analyzed | | 644 | Not analyzed |
| 171 | 3 | Granular igneous rock | Animas Brown | None | | 718 | Sooting (exterior) |
| 268 | 1 | Sherd, granular igneous rock | Animas Brown | None | | 733 | None |
| 165 | 2 | Granular igneous rock | Animas Light (buff/white) | None | | 742 | None |

| PD# | FS# | Temper | Paste | Slip | Vessel # | Running total | Use Wear |
|---|---|---|---|---|---|---|---|
| 165 | 2 | Granular igneous rock | Animas Gray | None | | 747 | Sooting (both surfaces) |
| 165 | 2 | Granular and porphyritic igneous rocks | Animas Light (buff/white) | None | | 748 | None |
| 165 | 2 | Granular igneous rock | Animas Brown | None | | 750 | Sooting (exterior) |
| 165 | 2 | Granular igneous rock | Animas Brown | None | | 752 | Sooting (exterior) |
| 165 | 2 | Granular igneous rock | Animas Brown | None | | 753 | Sooting (both surfaces) |
| 165 | 2 | Granular igneous rock | Animas Gray | None | | 756 | sooting (Sooting (both surfaces) |
| 212 | 1 | Sand and sherd | Nonlocal | Washy | | 686 | None |
| 165 | 2 | Granular igneous rock | Animas Light (buff/white) | None | | 757 | Sooting (exterior) |
| 212 | 1 | Sherd, granular igneous rock | Animas Brown | None | | 689 | None |
| 212 | 1 | Not analyzed | Not analyzed | Not analyzed | | 691 | Not analyzed |
| 165 | 2 | Granular igneous rock | Animas Light (buff/white) | None | | 758 | Sooting (exterior) |
| 216 | 3 | Granular igneous rock | Animas Gray | None | | 783 | None |
| 230 | 2 | Sand and sherd | Nonlocal | Thin | | 700 | None |
| 230 | 2 | Not analyzed | Not analyzed | Not analyzed | | 705 | Not analyzed |
| 216 | 3 | Granular igneous rock | Animas Gray | None | | 784 | Sooting (both surfaces) |
| 154 | 1 | Trachyte | Nonlocal | Thin | | 709 | Sooting (exterior) |
| 157 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thick- chalky | 5 | 711 | None |
| 216 | 3 | Granular igneous rock | Animas Light (buff/white) | None | | 785 | Sooting (interior) |
| 216 | 3 | Granular igneous rock | Animas Light (buff/white) | None | 4 | 798 | Sooting (exterior) |
| 171 | 3 | Granular and porphyritic igneous rocks | Animas Brown | thin | | 717 | Sooting (exterior) |
| 216 | 3 | Granular igneous rock | Animas Gray | None | | 799 | None |
| 206 | 1 | Sand and sherd | Nonlocal | Thin | | 730 | None |
| 216 | 3 | Granular igneous rock | Animas Brown | None | 4 | 801 | Sooting (both surfaces) |
| 268 | 1 | Not analyzed | Not analyzed | Not analyzed | | 737 | Not analyzed |
| 216 | 3 | Granular igneous rock, sand | Animas Brown | None | | 802 | None |
| 216 | 3 | Granular igneous rock | Animas Brown | None | | 803 | Sooting (exterior) |
| 165 | 2 | Granular igneous rock | Animas Brown | Thin | | 759 | None |
| 165 | 2 | Not analyzed | Not analyzed | Not analyzed | | 762 | Not analyzed |
| 216 | 3 | Granular igneous rock | Animas Gray | Indeterminate | | 804 | None |
| 216 | 3 | Sherd, granular igneous rock | Animas Gray | Thick- chalky | 5 | 809 | None |
| 216 | 3 | Sand and sherd | Nonlocal | Washy | | 810 | None |
| 216 | 3 | Not analyzed | Not analyzed | Not analyzed | | 815 | Not analyzed |
| 212 | 16 | Granular and porphyritic igneous rocks | Indeterminate | None | | 261 | Sooting (exterior) |
| 260 | 1 | Granular and porphyritic igneous rocks | Indeterminate | None | | 612 | None |
| 222 | 1 | Granular and porphyritic igneous rocks | Indeterminate | None | | 626 | None |
| 222 | 1 | Granular and porphyritic igneous rocks | Indeterminate | None | | 633 | None |
| 121 | 1 | Porphyritic igneous rock | Nonlocal | None | | 75 | None |
| 165 | 2 | Granular and porphyritic igneous rocks | Nonlocal | None | | 755 | None |
| 260 | 1 | Medium quartz sand | Nonlocal | None | | 606 | None |
| 260 | 1 | Sand and sherd | Nonlocal | None | | 609 | Sooting (exterior) |
| 138 | 1 | Trachyte | Nonlocal | None | | 84 | None |
| 212 | 19 | Trachyte | Nonlocal | None | | 255 | Sooting (exterior) |
| 236 | 1 | Trachyte | Nonlocal | None | | 493 | None |

| PD# | FS# | Temper | Paste | Slip | Vessel # | Running total | Use Wear |
|---|---|---|---|---|---|---|---|
| 260 | 1 | Trachyte | Nonlocal | None | | 608 | None |
| 222 | 1 | Trachyte | Nonlocal | None | | 631 | None |
| 212 | 1 | Trachyte | Nonlocal | None | | 668 | Sooting (exterior) |
| 230 | 2 | Trachyte | Nonlocal | None | | 693 | Sooting (exterior) |
| 165 | 2 | Trachyte | Nonlocal | None | | 744 | None |
| 165 | 2 | Trachyte | Nonlocal | None | | 745 | Sooting (exterior) |
| 216 | 3 | Trachyte | Nonlocal | None | | 782 | Sooting (exterior) |
| 212 | 1 | Granular igneous rock, sand | Animas Light (buff/white) | None | | 687 | None |
| 106 | 1 | Sherd, granular igneous rock | Animas Gray | None | | 65 | None |
| 106 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 66 | None |
| 109 | 1 | Granular igneous rock | Animas Gray | None | | 69 | None |
| 140 | 1 | Granular igneous rock | Animas Brown | None | | 403 | None |
| 140 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 404 | None |
| 140 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 408 | None |
| 140 | 1 | Granular igneous rock | Animas Gray | None | | 409 | None |
| 140 | 1 | Granular igneous rock | Animas Gray | None | | 410 | None |
| 217 | 1 | Granular igneous rock | Animas Brown | None | | 414 | Sooting (both surfaces) |
| 143 | 2 | Granular igneous rock | Animas Light (buff/white) | None | | 430 | None |
| 143 | 2 | Granular and porphyritic igneous rocks | Animas Brown | None | | 431 | None |
| 143 | 2 | Granular igneous rock | Animas Brown | None | | 438 | None |
| 143 | 2 | Granular igneous rock | Animas Brown | None | | 440 | None |
| 143 | 2 | Granular igneous rock | Animas Brown | None | | 443 | Sooting (exterior) |
| 143 | 2 | Granular igneous rock | Animas Gray | None | | 445 | None |
| 143 | 2 | Granular igneous rock | Animas Gray | None | | 446 | Sooting (exterior) |
| 143 | 2 | Granular igneous rock | Animas Brown | None | | 448 | Sooting (exterior) |
| 143 | 2 | Granular igneous rock | Animas Brown | None | | 451 | None |
| 143 | 2 | Granular igneous rock | Animas Brown | None | | 453 | None |
| 193 | 2 | Granular igneous rock | Animas Brown | None | | 499 | Sooting (exterior) |
| 178 | 5 | Granular igneous rock | Animas Gray | None | | 581 | Sooting (both surfaces) |
| 146 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 649 | None |
| 146 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 655 | Sooting (both surfaces) |
| 111 | 1 | Not analyzed | Not analyzed | Not analyzed | | 74 | |
| 129 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 77 | None |
| 259 | 2 | Trachyte | Nonlocal | Thin | | 366 | None |
| 146 | 1 | Granular igneous rock | Animas Gray | None | | 657 | None |
| 140 | 1 | Sherd, granular igneous rock | Animas Gray | None | | 411 | None |
| 140 | 1 | Not analyzed | Not analyzed | Not analyzed | | 412 | Not analyzed |
| 231 | 1 | Granular igneous rock | Animas Brown | thin | | 417 | Sooting (exterior) |
| 231 | 1 | Not analyzed | Not analyzed | Not analyzed | | 418 | Not analyzed |
| 234 | 15 | Sherd, other crushed rock | Nonlocal | thin | | 419 | None |
| 143 | 2 | Sand and sherd | Nonlocal | Thin | | 456 | None |
| 143 | 2 | Sherd, granular igneous rock, sandstone | Animas Brown | Washy | | 457 | Ext. base polish, pitting, or abrasion |
| 143 | 2 | Sand and sherd | Nonlocal | Thick- chalky | | 460 | None |

| PD# | FS# | Temper | Paste | Slip | Vessel # | Running total | Use Wear |
|---|---|---|---|---|---|---|---|
| 143 | 2 | Trachyte | Nonlocal | Thin | | 462 | None |
| 143 | 2 | Sand and sherd | Nonlocal | thin | | 465 | Sooting (exterior) |
| 143 | 2 | Sherd, granular igneous rock | Animas Brown | Thin | | 467 | None |
| 143 | 2 | Sand and sherd | Nonlocal | Washy | | 468 | None |
| 143 | 2 | Sand and sherd | Nonlocal | Thin | | 469 | Sooting (exterior) |
| 143 | 2 | Not analyzed | Not analyzed | Not analyzed | | 482 | Not analyzed |
| 238 | 4 | Sand and sherd | Nonlocal | Washy | | 486 | None |
| 275 | 3 | Trachyte | Nonlocal | Thin | | 490 | None |
| 220 | 1 | Not analyzed | Not analyzed | Not analyzed | | 496 | Not analyzed |
| 147 | 5 | Sandstone and sherd | Nonlocal | Washy | | 583 | Sooting (exterior) |
| 147 | 5 | Sherd, granular igneous rock | Animas Brown | Thin | | 599 | None |
| 147 | 5 | Not analyzed | Not analyzed | Not analyzed | | 605 | Not analyzed |
| 146 | 1 | Granular igneous rock | Animas Gray | Thin | | 660 | None |
| 146 | 1 | Sand and sherd | Nonlocal | None | n | 662 | Sooting (exterior) |
| 146 | 1 | Sand and sherd | Nonlocal | Thin | | 664 | None |
| 146 | 1 | Sherd, granular igneous rock | Animas Gray | Thin | | 665 | None |
| 146 | 1 | Sherd, granular igneous rock | Animas Gray | Thin | | 666 | None |
| 146 | 1 | Sherd, other crushed rock | Nonlocal | Thin | | 667 | None |
| 227 | 1 | Granular igneous rock | Animas Gray | Thin | | 707 | None |
| 167 | 3 | Sand and sherd | Nonlocal | thin | | 739 | None |
| 167 | 3 | Sherd, trachyte | Nonlocal | Thin | | 740 | None |
| 143 | 2 | Sherd | Indeterminate | None | | 458 | None |
| 109 | 1 | Medium quartz sand | Nonlocal | None | | 67 | |
| 259 | 2 | Sand, sandstone | Nonlocal | None | | 367 | Sooting (exterior) |
| 143 | 2 | Medium quartz sand | Nonlocal | None | | 436 | Sooting (exterior) |
| 215 | 1 | Sand, sandstone | Nonlocal | None | | 498 | Sooting (exterior) |
| 217 | 1 | Trachyte | Nonlocal | None | | 413 | Sooting (exterior) |
| 234 | 5 | Trachyte | Nonlocal | None | | 415 | Sooting (interior) |
| 231 | 1 | Trachyte | Nonlocal | None | | 416 | Sooting (exterior) |
| 143 | 2 | Trachyte | Nonlocal | None | | 434 | None |
| 143 | 2 | Trachyte | Nonlocal | None | | 435 | None |
| 232 | 4 | Trachyte | Nonlocal | None | | 489 | Sooting (exterior) |
| 273 | 1 | Trachyte | Nonlocal | None | | 491 | Sooting (exterior) |
| 220 | 1 | Trachyte | Nonlocal | None | | 494 | Sooting (exterior) |
| 147 | 5 | Trachyte | Nonlocal | None | | 582 | Sooting (interior) |
| 146 | 1 | Trachyte | Nonlocal | None | | 658 | Sooting (interior) |
| 100 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 1 | none |
| 100 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 2 | none |
| 100 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | None | | 3 | none |
| 101 | 1 | Granular igneous rock | Animas Gray | None | | 8 | None |
| 101 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 9 | None |
| 101 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 11 | None |
| 101 | 1 | Granular igneous rock | Animas Gray | None | | 12 | None |

| PD# | FS# | Temper | Paste | Slip | Vessel # | Running total | Use Wear |
|---|---|---|---|---|---|---|---|
| 101 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 13 | |
| 101 | 1 | Granular igneous rock | Animas Gray | None | | 17 | None |
| 101 | 1 | Granular igneous rock, sandstone | Animas Brown | None | | 20 | None |
| 101 | 1 | Granular igneous rock | Animas Gray | None | | 23 | None |
| 101 | 1 | Granular igneous rock | Animas Brown | None | | 25 | None |
| 101 | 1 | Granular igneous rock | Animas Gray | None | | 26 | None |
| 101 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | None | | 28 | None |
| 113 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | None | | 88 | None |
| 113 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 89 | |
| 113 | 1 | Sherd, granular igneous rock | Animas Brown | None | | 92 | None |
| 113 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | None | | 94 | None |
| 113 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | None | | 96 | None |
| 114 | 1 | Granular igneous rock | Animas Brown | None | | 126 | None |
| 114 | 1 | Granular igneous rock | Animas Gray | None | | 134 | None |
| 114 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | None | | 139 | None |
| 114 | 1 | Granular igneous rock, sandstone | Animas Light (buff/white) | None | | 140 | None |
| 114 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 144 | None |
| 114 | 1 | Sherd, granular igneous rock | Animas Brown | None | | 146 | None |
| 114 | 1 | Granular igneous rock | Animas Gray | None | | 147 | None |
| 114 | 1 | Sherd, granular igneous rock | Animas Gray | Thin | | 148 | None |
| 114 | 1 | Granular igneous rock | Animas Gray | None | | 152 | |
| 114 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 155 | Sooting (exterior) |
| 114 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | None | | 158 | None |
| 124 | 1 | Granular igneous rock | Animas Gray | None | | 184 | Sooting (both surfaces) |
| 124 | 1 | Granular igneous rock | Animas Gray | None | | 185 | None |
| 124 | 1 | Sherd, granular igneous rock | Animas Brown | None | | 186 | None |
| 124 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | None | | 191 | None |
| 114 | 1 | Granular igneous rock | Animas Brown | None | | 194 | None |
| 124 | 1 | Granular igneous rock | Animas Brown | None | | 195 | None |
| 124 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | None | | 196 | None |
| 100 | 1 | Sand and sherd | Nonlocal | Thin | | 4 | none |
| 100 | 1 | Medium quartz sand | Nonlocal | None | | 5 | none |
| 100 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | None | | 6 | none |
| 100 | 1 | Not analyzed | Not analyzed | Not analyzed | | 7 | Not analyzed |
| 124 | 1 | Granular igneous rock | Animas Gray | None | | 198 | None |
| 116 | 1 | Granular igneous rock, sand | Animas Brown | None | | 215 | None |
| 116 | 1 | Granular igneous rock | Animas Brown | None | | 222 | None |
| 116 | 1 | Granular igneous rock | Animas Gray | None | | 224 | None |
| 116 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 227 | None |
| 101 | 11 | Sherd, granular igneous rock | Animas Gray | None | | 253 | None |
| 101 | 1 | Granular igneous rock | Animas Gray | Thick- well polished | | 21 | None |
| 101 | 1 | Sand and sherd | Nonlocal | Thin | | 22 | |
| 101 | 1 | Granular igneous rock, sand | Animas Light (buff/white) | Thick- well polished | | 30 | None |

| PD# | FS# | Temper | Paste | Slip | Vessel # | Running total | Use Wear |
|---|---|---|---|---|---|---|---|
| 101 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thick- chalky | | 31 | None |
| 101 | 1 | Granular igneous rock | Animas Light (buff/white) | Thick- chalky | | 32 | None |
| 101 | 1 | Sand and sherd | Nonlocal | Washy | | 33 | None |
| 101 | 1 | Medium quartz sand | Nonlocal | Thin | | 36 | None |
| 101 | 1 | Medium quartz sand | Nonlocal | Thin | | 37 | None |
| 101 | 1 | Sherd, other crushed rock | Indeterminate | Thin | | 38 | None |
| 101 | 1 | Sherd, other crushed rock | Indeterminate | None | | 39 | None |
| 101 | 1 | Granular igneous rock | Animas Light (buff/white) | Thick- chalky | | 40 | None |
| 101 | 1 | Granular igneous rock | Animas Light (buff/white) | Thick- chalky | | 41 | None |
| 101 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 42 | None |
| 101 | 1 | Granular igneous rock | Animas Light (buff/white) | Thin | | 43 | None |
| 101 | 1 | Sand and sherd | Nonlocal | Thin | | 46 | None |
| 101 | 1 | Sand and sherd | Nonlocal | None | | 47 | Ext/int base polish, pitting, or abrasion |
| 101 | 1 | Not analyzed | Not analyzed | Not analyzed | | 62 | Not analyzed |
| 101 | 1 | Sand and sherd | Nonlocal | Thin | | 70 | None |
| 113 | 1 | Sand and sherd | Nonlocal | Thin | | 97 | None |
| 113 | 1 | Granular igneous rock | Animas Light (buff/white) | Thin | | 98 | None |
| 113 | 1 | Sherd, granular igneous rock | Animas Gray | Thin | | 100 | |
| 113 | 1 | Granular igneous rock, sand | Animas Light (buff/white) | Thick- well polished | | 101 | None |
| 113 | 1 | Sherd, granular igneous rock | Animas Gray | Washy | | 102 | None |
| 113 | 1 | Sand and sherd | Nonlocal | Thin | | 103 | None |
| 113 | 1 | Granular igneous rock | Animas Light (buff/white) | Thin | | 104 | None |
| 113 | 1 | Medium quartz sand | Nonlocal | Thin | | 105 | None |
| 113 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thick- well polished | | 106 | |
| 113 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 107 | None |
| 113 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 109 | None |
| 113 | 1 | Sand and sherd | Nonlocal | Thick- chalky | | 110 | None |
| 113 | 1 | Not analyzed | Not analyzed | Not analyzed | | 120 | Not analyzed |
| 114 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 150 | None |
| 114 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | None | | 156 | None |
| 114 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 157 | None |
| 114 | 1 | Sand and sherd | Nonlocal | Thick- well polished | | 159 | Ext. base polish, pitting, or abrasion |
| 114 | 1 | Sand and sherd | Nonlocal | Thick- well polished | | 160 | None |
| 114 | 1 | Sherd | Nonlocal | Thick- well polished | | 161 | None |
| 114 | 1 | Granular igneous rock | Animas Light (buff/white) | Washy | | 162 | None |
| 114 | 1 | Granular igneous rock | Animas Gray | Washy | | 164 | None |
| 114 | 1 | Granular igneous rock | Animas Light (buff/white) | Thin | | 165 | None |
| 114 | 1 | Granular igneous rock, sand | Animas Brown | None | | 166 | |
| 114 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thick- well polished | | 167 | None |
| 114 | 1 | Sherd, granular igneous rock | Animas Brown | Thick- well polished | | 168 | None |
| 114 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thick- well polished | | 169 | None |
| 114 | 1 | Sherd, granular igneous rock | Animas Gray | Thin | | 170 | None |
| 114 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 171 | None |

| PD# | FS# | Temper | Paste | Slip | Vessel # | Running total | Use Wear |
|---|---|---|---|---|---|---|---|
| 114 | 1 | Not analyzed | Not analyzed | Not analyzed | | 182 | Not analyzed |
| 114 | 1 | Granular igneous rock | Animas Brown | Thin | | 183 | Fugitive red (interior) |
| 124 | 1 | Sand and sherd | Nonlocal | Thick- well polished | | 193 | None |
| 113 | 1 | Granular and porphyritic igneous rocks | Indeterminate | None | | 87 | None |
| 124 | 1 | Granular igneous rock | Animas Gray | Thin | | 199 | None |
| 124 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 202 | None |
| 124 | 1 | Trachyte | Nonlocal | Thick- well polished | | 203 | Ext. base polish, pitting, or abrasion |
| 124 | 1 | Medium quartz sand | Nonlocal | Thin | | 204 | None |
| 124 | 1 | Not analyzed | Not analyzed | Not analyzed | | 213 | Not analyzed |
| 113 | 1 | Granular igneous rock | Animas Brown | None | | 99 | Sooting (interior) |
| 116 | 1 | Sherd, other crushed rock | Nonlocal | None | | 214 | None |
| 116 | 1 | Sherd, other crushed rock | Nonlocal | None | | 228 | None |
| 116 | 1 | Trachyte | Nonlocal | Thin | | 229 | None |
| 116 | 1 | Granular igneous rock | Animas Brown | Thin | | 230 | None |
| 116 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | thin | | 231 | None |
| 116 | 1 | Sand and sherd | Nonlocal | Thick- well polished | | 232 | None |
| 116 | 1 | Trachyte | Nonlocal | Thick- well polished | | 233 | None |
| 116 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | thin | | 239 | Sooting (exterior) |
| 116 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 240 | None |
| 116 | 1 | Sherd, granular igneous rock | Animas Gray | Thin | | 241 | None |
| 116 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 242 | None |
| 116 | 1 | Sherd, granular igneous rock | Animas Gray | Thin | | 243 | None |
| 116 | 1 | Sherd, other crushed rock | Nonlocal | Thin | | 244 | None |
| 116 | 1 | Not analyzed | Not analyzed | Not analyzed | | 251 | Not analyzed |
| 101 | 11 | Sand and sherd | Nonlocal | Indeterminate | | 252 | None |
| 101 | 1 | Sand and sherd | Nonlocal | None | | 16 | None |
| 113 | 1 | Sand and sherd | Indeterminate | None | | 90 | None |
| 114 | 1 | Sand and sherd | Nonlocal | None | | 124 | None |
| 124 | 1 | Sand and sherd | Nonlocal | None | | 190 | None |
| 124 | 1 | Sherd | Nonlocal | None | | 200 | None |
| 101 | 1 | Trachyte | Nonlocal | None | | 14 | None |
| 101 | 1 | Trachyte | Nonlocal | None | | 15 | None |
| 101 | 1 | Trachyte | Nonlocal | None | | 18 | None |
| 113 | 1 | Trachyte | Nonlocal | None | | 85 | None |
| 113 | 1 | Trachyte | Nonlocal | None | | 86 | None |
| 113 | 1 | Trachyte | Nonlocal | None | | 93 | None |
| 114 | 1 | Trachyte | Nonlocal | None | | 137 | None |
| 114 | 1 | Trachyte | Nonlocal | None | | 138 | None |
| 114 | 1 | Trachyte | Nonlocal | None | | 151 | None |
| 124 | 1 | Trachyte | Nonlocal | None | | 188 | None |
| 116 | 1 | Trachyte | Nonlocal | None | | 217 | None |
| 116 | 1 | Granular igneous rock | Animas Brown | None | | 220 | None |
| 101 | 11 | Trachyte, sand | Nonlocal | None | | 254 | None |

| PD# | FS# | Temper | Paste | Slip | Vessel # | Running total | Use Wear |
|---|---|---|---|---|---|---|---|
| 133 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 81 | None |
| 134 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 264 | None |
| 134 | 1 | Granular igneous rock | Animas Gray | None | | 265 | None |
| 134 | 1 | Granular and porphyritic igneous rocks | Animas Brown | None | | 266 | None |
| 134 | 1 | Granular igneous rock | Animas Brown | None | | 267 | None |
| 134 | 1 | Granular igneous rock, sand | Animas Gray | None | | 276 | None |
| 134 | 1 | Granular igneous rock | Animas Gray | None | | 277 | None |
| 134 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 278 | |
| 134 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 280 | None |
| 134 | 1 | Granular igneous rock | Animas Gray | None | | 282 | None |
| 144 | 1 | Granular igneous rock | Animas Gray | None | | 311 | None |
| 144 | 1 | Granular igneous rock | Animas Gray | None | | 313 | None |
| 144 | 1 | Granular igneous rock | Animas Brown | None | | 315 | None |
| 144 | 1 | Granular igneous rock, sand | Animas Brown | None | | 316 | None |
| 144 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 324 | None |
| 144 | 1 | Granular igneous rock | Animas Gray | None | | 325 | None |
| 139 | 3 | Granular igneous rock | Animas Gray | None | | 371 | None |
| 139 | 3 | Granular igneous rock | Animas Light (buff/white) | None | | 372 | None |
| 139 | 3 | Granular igneous rock | Animas Brown | None | | 375 | None |
| 139 | 3 | Granular igneous rock | Animas Brown | None | | 378 | None |
| 139 | 3 | Sherd, granular igneous rock | Animas Gray | None | | 380 | |
| 139 | 3 | Granular igneous rock | Animas Brown | None | | 381 | Fugitive red (exterior) |
| 149 | 2 | Granular igneous rock | Animas Light (buff/white) | None | | 505 | None |
| 149 | 2 | Granular igneous rock | Animas Gray | None | | 507 | None |
| 149 | 2 | Granular igneous rock | Animas Brown | None | | 511 | None |
| 149 | 2 | Sherd, granular igneous rock | Animas Gray | None | | 519 | None |
| 149 | 2 | Sherd, granular igneous rock | Animas Gray | None | | 529 | None |
| 149 | 2 | Granular igneous rock | Animas Gray | None | | 530 | None |
| 149 | 2 | Granular igneous rock | Animas Light (buff/white) | None | | 536 | None |
| 179 | 2 | Granular igneous rock | Animas Light (buff/white) | None | | 613 | None |
| 179 | 2 | Granular igneous rock | Animas Gray | None | | 614 | None |
| 179 | 2 | Granular and porphyritic igneous rocks | Animas Brown | None | | 615 | None |
| 179 | 2 | Granular igneous rock | Animas Brown | None | | 618 | None |
| 145 | 1 | Granular igneous rock | Animas Brown | None | | 719 | Sooting (exterior) |
| 145 | 1 | Granular igneous rock | Animas Gray | None | | 720 | None |
| 145 | 1 | Granular igneous rock | Animas Brown | None | | 721 | None |
| 145 | 1 | Granular igneous rock | Animas Brown | None | | 722 | None |
| 170 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 765 | None |
| 144 | 1 | Sherd, other crushed rock | Indeterminate | None | | 319 | None |
| 139 | 3 | Granular and porphyritic igneous rocks | Indeterminate | None | | 373 | None |
| 179 | 2 | Granular and porphyritic igneous rocks | Indeterminate | None | | 616 | None |
| 133 | 1 | Granular igneous rock | Animas Gray | None | | 79 | None |
| 144 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 328 | None |

| PD# | FS# | Temper | Paste | Slip | Vessel # | Running total | Use Wear |
|---|---|---|---|---|---|---|---|
| 179 | 7 | Sherd, granular igneous rock | Animas Gray | Thick- chalky | | 257 | None |
| 133 | 1 | Medium quartz sand | Nonlocal | None | | 80 | |
| 134 | 1 | Medium quartz sand | Nonlocal | None | | 273 | None |
| 134 | 1 | Trachyte | Nonlocal | Thick- chalky | | 274 | None |
| 149 | 2 | Medium quartz sand | Nonlocal | None | | 522 | None |
| 134 | 1 | Sherd, granular igneous rock | Animas Gray | Thin | | 281 | None |
| 134 | 1 | Granular igneous rock | Animas Brown | Thin | | 283 | None |
| 134 | 1 | Sherd, granular igneous rock | Animas Gray | Thick- well polished | | 284 | None |
| 134 | 1 | Granular igneous rock | Animas Gray | Thin | 1 | 286 | None |
| 134 | 1 | Trachyte | Nonlocal | Thick- well polished | | 287 | None |
| 134 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 288 | None |
| 134 | 1 | Sand and sherd | Nonlocal | thin | | 289 | None |
| 134 | 1 | Trachyte, sand | Animas Light (buff/white) | Thin | | 290 | None |
| 134 | 1 | Not analyzed | Not analyzed | Not analyzed | | 309 | Not analyzed |
| 144 | 1 | Sand and sherd | Nonlocal | Washy | | 329 | None |
| 144 | 1 | Sand and sherd | Nonlocal | Thin | | 330 | None |
| 144 | 1 | Sherd, granular igneous rock | Animas Brown | Thin | | 331 | None |
| 144 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 332 | None |
| 144 | 1 | Trachyte | Nonlocal | Thick- chalky | | 333 | None |
| 144 | 1 | Granular igneous rock | Animas Light (buff/white) | None | | 334 | None |
| 144 | 1 | Trachyte | Nonlocal | Thin | | 335 | None |
| 144 | 1 | Medium quartz sand | Nonlocal | Thin | | 336 | None |
| 144 | 1 | Sand and sherd | Nonlocal | Washy | | 337 | None |
| 144 | 1 | Sherd, granular igneous rock | Animas Gray | thin | | 338 | None |
| 144 | 1 | Sherd | Nonlocal | Washy | | 339 | None |
| 144 | 1 | Medium quartz sand | Nonlocal | Thin | | 340 | None |
| 144 | 1 | Sand and sherd | Nonlocal | Thick- well polished | | 341 | None |
| 144 | 1 | Not analyzed | Not analyzed | Not analyzed | | 365 | Not analyzed |
| 139 | 3 | Granular igneous rock | Animas Gray | None | 1 | 379 | None |
| 139 | 3 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 383 | None |
| 139 | 3 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 384 | None |
| 139 | 3 | Sherd, granular igneous rock | Animas Light (buff/white) | Thick- chalky | | 386 | None |
| 139 | 3 | Medium quartz sand | Nonlocal | None | | 387 | None |
| 139 | 3 | Sherd | Animas Brown | Thick- chalky | | 388 | None |
| 139 | 3 | Sherd, granular igneous rock | Animas Gray | Thick- chalky | | 389 | None |
| 139 | 3 | Sand and sherd | Nonlocal | Washy | | 390 | None |
| 139 | 3 | Not analyzed | Not analyzed | Not analyzed | | 401 | Not analyzed |
| 149 | 2 | Sand and sherd | Nonlocal | Washy | | 526 | Exterior and interior spalling |
| 149 | 2 | Sand and sherd | Nonlocal | Thin | | 528 | Exterior and interior spalling |
| 149 | 2 | Sand and sherd | Nonlocal | Thin | | 531 | None |
| 149 | 2 | Sherd, granular igneous rock | Animas Gray | Thick- chalky | | 532 | None |
| 149 | 2 | Sherd, granular igneous rock | Animas Light (buff/white) | thin | | 533 | None |
| 149 | 2 | Sherd, granular igneous rock | Animas Light (buff/white) | Thick- chalky | | 534 | None |

| PD# | FS# | Temper | Paste | Slip | Vessel # | Running total | Use Wear |
|---|---|---|---|---|---|---|---|
| 149 | 2 | Medium quartz sand | Nonlocal | Thin | | 535 | None |
| 134 | 1 | Trachyte | Nonlocal | None | | 269 | None |
| 149 | 2 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 537 | None |
| 149 | 2 | Sand and sherd | Nonlocal | Thin | | 538 | None |
| 149 | 2 | Sherd, granular igneous rock | Animas Gray | Washy | | 539 | None |
| 149 | 2 | Medium quartz sand | Nonlocal | thin | | 540 | None |
| 149 | 2 | Medium quartz sand | Nonlocal | Thin | | 541 | None |
| 149 | 2 | Sherd, granular igneous rock | Animas Brown | Thick- chalky | | 542 | None |
| 149 | 2 | Sherd, granular igneous rock | Animas Light (buff/white) | Washy | | 543 | None |
| 149 | 2 | Trachyte | Nonlocal | Thin | | 544 | None |
| 149 | 2 | Trachyte | Nonlocal | Thin | | 545 | None |
| 149 | 2 | Sand and sherd | Nonlocal | Thin | | 546 | None |
| 149 | 2 | Sand and sherd | Nonlocal | thin | | 547 | None |
| 149 | 2 | Sand and sherd | Nonlocal | Thin | | 548 | None |
| 149 | 2 | Not analyzed | Not analyzed | Not analyzed | | 576 | Not analyzed |
| 134 | 1 | Trachyte | Nonlocal | None | | 270 | None |
| 134 | 1 | Trachyte | Nonlocal | None | | 272 | None |
| 134 | 1 | Trachyte | Nonlocal | None | | 275 | None |
| 144 | 1 | Trachyte | Nonlocal | None | | 318 | None |
| 139 | 3 | Trachyte | Nonlocal | None | | 368 | None |
| 179 | 2 | Not analyzed | Not analyzed | Not analyzed | | 619 | Not analyzed |
| 139 | 3 | Trachyte | Nonlocal | None | | 376 | None |
| 149 | 2 | Trachyte | Nonlocal | None | | 502 | None |
| 149 | 2 | Trachyte | Nonlocal | None | | 514 | None |
| 149 | 2 | Trachyte | Nonlocal | None | | 518 | None |
| 145 | 1 | Sand and sherd | Nonlocal | Indeterminate | | 723 | None |
| 145 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | Thin | | 724 | |
| 145 | 1 | Sherd, granular igneous rock | Animas Light (buff/white) | thin | | 725 | None |
| 145 | 1 | Granular igneous rock, sand | Animas Brown | Thin | | 726 | None |
| 145 | 1 | Not analyzed | Not analyzed | Not analyzed | | 729 | Not analyzed |
| 170 | 1 | Trachyte | Nonlocal | None | | 764 | None |
| 170 | 1 | Granular igneous rock | Animas Gray | Thin | | 766 | None |
| 170 | 1 | Trachyte | Nonlocal | Thick- chalky | | 768 | None |
| 170 | 1 | Sherd, granular igneous rock | Animas Gray | Thin | | 769 | None |
| 170 | 1 | Sherd, granular igneous rock | Animas Brown | Thick- chalky | | 770 | Sooting (both surfaces) |
| 170 | 1 | Sherd, granular igneous rock | Animas Gray | Thin | | 771 | None |
| 170 | 1 | Sherd | Nonlocal | Thin | | 772 | None |
| 170 | 1 | Sand and sherd | Nonlocal | Washy | | 773 | None |
| 170 | 1 | Not analyzed | Not analyzed | Not analyzed | | 779 | Not analyzed |

# Appendix 3: Lithic Report

## Flaked Stone Artifacts from the North Ruin (LA5603), Aztec Ruins National Monument, San Juan County, New Mexico

By Kellam Throgmorton
With contributions by Dr. Jeffrey R. Ferguson

*This document presents the results of an analysis of flaked stone debitage and tools recovered during excavation at a late-eleventh-century Chacoan great house on the Animas River—Aztec North.*

### *Methods of Recovery and Analysis*

*Laboratory Methods*
Following washing and bagging during the fieldwork in June of 2016, project personnel brought all flaked stone artifacts to Binghamton University for additional laboratory analysis. At this time, all the obsidian artifacts (n= 152) were sent to Dr. Jeff Ferguson at the Archaeometry Laboratory at the University of Missouri, Columbia; Dr. Ferguson conducted X-Ray fluorescence (XRF) analysis of these artifacts. The results of the XRF analysis are included in this report as Appendix A.

I examined all the flaked stone artifacts during the late Fall of 2016 and late Spring of 2016. I accidentally overlooked the obsidian artifacts that had been sent to the University of Missouri (and subsequently returned to Binghamton University). These were mailed to Aztec Ruins National Monument during the Summer of 2017 and I completed the analysis of these artifacts in September of 2017 at the Monument cultural resources office.

Based on conversations with Michelle Turner, I focused the artifact analysis on variables that would:

1) highlight patterns in material usage by the inhabitants of the North Ruin;
2) characterize the flaked stone technology or technologies in use;
3) help characterize the range of subsistence activities at or near North Ruin;
4) identify contrasts between architectural and midden contexts at North Ruin; and
5) facilitate comparison with other Chaco-era great houses and small houses.

First, I decided whether an object was, in fact, a cultural modified artifact. The North Ruin sits atop a Pleistocene terrace that includes some small gravels of chert and quartzite, and a few of these were collected during excavation. If they showed no signs of modification, they were recorded as "terrace gravel" and replaced in the bag without further analysis.

Several objects that were collected as debitage were actually fire-cracked rock. These were recorded as "FCR" and no further analysis was conducted on them (there was no point in weighing them since FCR was not otherwise collected in a systematic fashion). Finally, a few pieces of flaked sandstone were collected during excavation. These are almost certainly the result of shaping the light greenish sandstone that formed the veneer of the walls at North Ruin. Once again, these items were recorded as "architectural debris" and no further analysis was conducted since collection was not systematic.

The remaining artifacts were either debitage or flaked stone tools. Several tools were obvious at the time of excavation and bagged separately. These tended to be formal tools, such as projectile points or biface fragments. In many cases, however, it was not clear that an item had been used as a tool until examined in the lab. Many pieces of debitage exhibited macroscopically visible use wear.

The laboratory analysis sought to strike a balance between recording a number of variables that might be useful for addressing specific research questions (such as subsistence activities, or differences between contexts), and a more general characterization of the assemblage. Debitage and tools were dealt with as follows:

Debitage

First, the *material* was recorded. Then, each flake was classified as *complete, broken, or shatter.* I then *weighed* each piece of debitage. For broken flakes or shatter, no further analysis was undertaken. However, complete flakes were subject to a broader range of analyses. I classified each complete flake as resulting from *biface reduction*, *percussion core reduction*, or *bipolar percussion*. The *length, width*, and *thickness* of each flake was measured. The *percent of cortex* on the dorsal surface was recorded, as was the *platform style,* and *platform depth* (if a platform as present). *Edge damage* was recorded as present or absent, as was the presence of *heat alteration*. Finally, I made a subjective interpretation of whether a flake appeared to be a purpose-made flake tool, or whether it appeared to be debitage resulting from preparing platforms or removing cortex.

Tools

I analyzed the flaked stone tools using a slightly smaller number of attributes. The *material* was noted. I then classified tools by *tool type*, inferring tool function by morphological characteristics of the object and macroscopically identifiable use-wear (e.g. crushing and battering on both sides of a tool edge indicate a different pattern of use, such as hammering or mashing vegetal material, than small micro-flakes removed in a single direction from a tool edge, which might indicate scraping). I then noted whether the tool was *complete* or *broken*. The tool was *weighed*, and the maximum *length, width, and thickness* was recorded.

I then subjectively determined whether a tool appeared to have been used for multiple activities. The *primary margin* referred to the longest utilized or modified edge, and I identified any visible use wear. *Secondary* and *tertiary margins* were recorded similarly, if they existed. I then recorded any inferred *secondary uses* beyond that implied by the *tool type*. Finally, I wrote a short, narrative description of my interpretation of the trajectory of tool manufacture and use.

## *Tertiary Geology of the Aztec/Animas Region*

The North Ruin at Aztec is located in the northern portion of the San Juan Basin, a structural feature that occupies much of northwestern New Mexico and adjacent areas in southwestern Colorado. The San Juan Basin contains a range of strata dating from Cambrian to Tertiary periods; the structural feature was created through the gradual subsidence and infilling of the basin (Fassett 2010: 185) during the uplift of the La Plata and San Juan Mountains during the Laramide Orogeny. Aztec North is located in the northwestern portion of the San Juan Basin near its deepest inflection where the bedrock geology reflects uppermost Cretaceous and Tertiary strata (See KellerLynn 2016:Figure 5).

During this period, the La Plata and San Juan Mountains were uplifted, resulting in the tilting and subsidence of what was to become the San Juan Basin. As a consequence, stream flows shifted direction from north to south, and many geologic strata were eroded off the uplifting mountain ranges and redeposited as shales and sandstones within the structural depression created to the south. In this section, I describe the origin and character of these deposits from oldest to youngest, beginning with the late Creteaceous and the early Tertiary.

Note: there is some discrepancy between different geologists as to the order in which particular strata were laid down. Fassett (1974; 2010) argues that the Ojo Alamo formation is the first Paleocene strata, deposited before the San Juan Basin began to form. However, Ward (1990), Manley et al. (1987), and Gonzales (2010) have mapped the Ojo Alamo higher in the sequence, above the Animas and McDermott Formations. Furthermore, Fassett (2010) suggests that the Animas formation grades into the Nacimiento formation. There are certainly differences between the northern and southern San Juan Basin in stratigraphy and unconformities exist as a result of differential filling of the basin and concurrent erosion in other areas. I am not qualified to comment on this issue, and in any event it does not change the nature of lithic raw material availability much. I follow Ward (1990) and Manley et al. (1987) in my relative positioning of geologic strata.

*Animas and McDermott Formations*

The Animas (and the underlying McDermott Formation) had their origin as outwash deposits on an alluvial apron that formed on the southern margin of the San Juan uplift near present-day Durango (Gonzales 2010:159). The Animas and McDermott formations consist of conglomeritic sandstones with rounded to subangular granules and pebbles (Gonzales 2010:159). One of the major differences between the Animas and the McDermott Formations is that the McDermott contains a higher proportion of igneous material. Some geologists lump the McDermott with the Animas (Fassett 2010; 1977) but they still note the volcanic inclusions within the formation. These two formations are most prominent northwest of Aztec near Durango, Colorado, along the La Plata River, and near the confluence of the San Juan, La Plata, and Animas rivers near Farmington, New Mexico.

The Animas Formation has a distinct lithology, with sandstones and conglomerates characterized by "rounded to subangular granules and pebbles of quartz, quartzite, chalcedony, chert, jasper, reddish brown to brown sandstone and siltstone, and grayish white sandstone" (Gonzales 2010:159). The lower portion of the Animas is sometimes referred to as the McDermott Formation—its origins are somewhat similar but it also includes a "high proportion of rounded to sub-angular boulder- to pebble-sized fragments porphyritic monzonite and diorite along with lesser amounts of quartz, sandstone, petrified wood, and siltstone" (Gonzales 2010:159)

*Ojo Alamo Sandstone*

Ward (1990) has mapped the Animas Formation *below* the subsequent Ojo Alamo Sandstone (Ward 1990), as can be seen in the vicinity of Pinyon Mesa and along the La Plata River. The Ojo Alamo Sandstone has a similar origin to the Animas Formation. It formed as braided fluvial deposits with occasional river channels and overbank deposits from southeast or southwest flowing streams coming off the uplifting La Plata and San Juan Mountains (Fassett 2010:185). The stratum consists of spherical-pebble conglomerate with quartzite and chert clasts near its base (Manley et al. 1987). It is most visible west of Aztec at the confluence of the San Juan, La Plata, and Animas rivers near Farmington, and atop Pinyon Mesa. In these areas the rivers have cut into the mesas that are capped by the Nacimiento formation, exposing earlier strata. The Ojo Alamo sandstone is also exposed near the heads of several south-flowing tributaries of Chaco Canyon to the SE of Aztec.

*Nacimiento Formation*

This formation originated as a result of continued uplift during the Laramide Orogeny as stream flow to the south (Williamson and Lucas 1992). Fassett (2010) suggests that the Animas and Nacimiento were deposited at roughly the same time. Steven et al. (1974) had trouble separating the Animas, McDermott, San Jose, and Nacimiento formation in the area south of Durango to the New Mexico border, and they do not include the Ojo Alamo Sandstone anywhere.

The Nacimiento formation is characterized by interbedded mudstone, claystone, and sandstone beds, with the sandstone becoming less abundant to the south (Fassett 2010:185). Williamson and Lucas (1992) describe grey, olive, and yellow bentonitic mudstones, lignite, and crossbedded sandstone; they also describe red, green and black bentonitic mudstones and sandstones. Ward (1990) describes the sandstone layers as "conglomeritic" and KellerLynn (2016:9) provides the following descriptions:

> It consists of sedimentary rocks such as claystone, shale, siltstone, and sandstone of primarily continental origins such as floodplains, river channels, swaps, and lakes. The sediments that make up these rocks were shed from the rising San Juan and Brazos-Sangre de Cristo uplifts to the north and east of the monument during the Laramide Orogeny."

The Nacimiento formation is the principle bedrock north and south of Aztec. To the east and southeast it dominates the landscape for many miles, though it is capped by Quaternary Aeolian sands, Quaternary alluvium in stream bottoms, and the Eocene San Jose Formation (Manley et al. 1987; Fassett 2010; 185-6). It forms the top of the broad mesas that lie between the San Juan, Animas, and La Plata rivers. Despite preserving a trove of Eocene fossils, the Nacimiento formation is not described by anyone as a source of silicified wood, or chert, quartzite, or jasper pebbles.

*San Jose Formation*
This formation originated as fluvial deposits flowing south, for the most part, but includes some sediments from erosion atop the Nacimiento uplift at the east edge of the San Juan Basin. The San Jose formation is characterized by sandstone, siltstone, mudstone, and claystone beds (Fassett 2010:185). The Cuba member of the San Jose Formation, found southeast of Aztec is described as conglomeritic by Manley et al. (1987), while Ward (1990) also mapped some of the sandstone beds as conglomeritic. Fassett (1974:229) notes silicified wood logs in the San Jose Formation. The San Jose Formation is mostly found north and east of the Aztec area.

### *Quaternary Geology of the Aztec/Animas Region*

The previous section describes the bedrock geology of the Animas, San Juan, La Plata area. However, erosion during the Quaternary, particularly in the Pleistocene Epoch, resulted in the movement and redeposition of deposits originating in the older Cretaceous and Tertiary strata.

Gillam (1998) described the Late Cenozoic (Pleistocene) geology of the lower Animas River, and KellerLynn (2016) summarizes her work in the context of Aztec Ruins National Monument. The Animas River formed between 18 million and 3 million years ago, flowing south from the uplifted San Juan Mountains (KellerLynn 2016:25). Glaciation of the western San Juan Mountains during the Pleistocene resulted in the periodic formation of moraines near present-day Durango, as well as periods of glacial "outwash" which deposited significant quantities of sediments and gravels along the banks of the ancestral Animas River, creating prominent terraces.

Three of these terraces occur within Aztec Ruins National Monument (KellerLynn 2016). The highest (and therefore earliest—the Animas has been creating terraces that are lower and lower as it erodes into the underlying Nacimiento formation) is Qt5a (Gillam 1998) which sits atop North Mesa. This correlates with unit Q4d on Ward's (1990) geologic map. Terrace Qt5a may be 340,000 to 250,000 years old (KellerLynn 2016:27; Gillam 1998). The Aztec North great house actually sits on a shallow mantle of Aeolian sediment atop this Pleistocen gravel terrace.

Terrace Qt6a forms the lower bench of North Mesa, immediately upslope of the historic irrigation ditch. Below Qt6a is Qt7a, a terrace that sits only a few meters above the current floodplain of the Animas River. Terrace 6a is approximately 160,000 to 140,000 years old, while 7a is only 25,000 to 19,000 years old (KellerLynn 2016:Table 2).

Each of these terraces contain alluvium that could reflect *all* of the geologic strata through which the Animas River has flowed, from its headwaters in the San Juan Mountains, through the exposed Cretaceous strata in the San Juan uplift at Durango, and the Tertiary gravels and sandstones at the Colorado/New Mexico border.

KellerLynn (2016:14) summarizes Gillam's characterization of the stone types present in the Middle and Late Pleistocene gravels along the Animas River:

> "Quartzite (metamorphosed sandstone) is common in the terraces at the monument. This rock, which is 1.7 billion years old, originated as part of the Uncompahgre Formation that crops out in the San Juan Mountains of Colorado. Also, rocks from the San Juan volcanic field in Colorado are common. This field was active about 35 million to 22 million years ago. These rocks are chiefly porphyry (an igneous rock with conspicuous crystals called "phenocrysts," in a fine-grained matrix) and volcanic tuff (consolidated volcanic ash) and lesser amounts of basalt. Varied sandstones are common near Durango but rarer downstream because soft rocks disintegrate readily when tumbled in a river with harder rocks. The alluvial mix also contains lesser amounts of the mineral quartz; sedimentary rocks such as limestone, mudstone, shale, chert, and jasper; metamorphic rocks such as hornblende gneiss, biotite schist, and some fine-grained varieties; and several different granitoid rocks that originated as igneous plutons below the Earth's surface."

The Pleistocene terraces therefore have brought cobbles and pebbles representing a much wider array of geologic formations than are present in the bedrock surrounding Aztec North.

Table 1. Lithic raw materials, with descriptions (when available) and source formations.

| ***Material*** | ***Description*** | ***Source Formations*** |
|---|---|---|
| *Chert* | [La Plata Terraces] "white to tan, with dark inclusions"<br>[Ojo Alamo Sandstone] "opaque white with small, dark fossiliferous inclusions"<br>[Animas Formation] "light to dark brown, black, cream to reddish brown and red and gray fossiliferous cherts" | **Quaternary Terraces**<br>Nacimiento?<br>**Ojo Alamo Sandstone**<br>**Animas/McDermott Formation** |
| *"Chaco Yellow-Brown Chert" (#1070)* | Mottled, swirled, opaque, mustard yellow-brown siliceous material. Probably silicified wood. | **Animas Formation**<br>Ojo Alamo Sandstone? |
| *Pedernal Chert (#1090)* | White to pearly gray, occasionally pink, red, and yellow. Opaque to translucent. | **Abiquiu Formation**<br>[Cerro Pedernal] |
| *Silicified Wood* | | *Quaternary Terraces*<br>San Jose Formation<br>*Nacimiento*<br>**Ojo Alamo Sandstone**<br>*McDermott Formation* |
| *Chalcedony* | | Quaternary Terraces<br>Animas Formation |
| *Narbona Pass "Chert" (#1080)* | A salmon/peach-colored, white, and clear volcanic chalcedony. | [Chuska Mountains] |
| *Quartzite* | [La Plata Terraces] "purple, light brown, and tan" | **Quaternary Terraces**<br>Ojo Alamo Sandstone<br>Animas/McDermott Formation |
| *Silt/Mudstones* | [La Plata Terraces] "grey, purple, black, and green"<br>[Animas Formation] "reddish brown to brown" | **Quaternary Terraces**<br>San Jose?<br>Nacimiento?<br>Animas/McDermott Formation |
| *"Brushy Basin Chert"* | A light brown/tan to pale green extremely smooth silicified volcanic ash.<br>[La Plata Terraces] "pale greenish" | *Quaternary Terraces (La Plata River)*<br>Morrison Formation |
| *Igneous Materials* | Porphyry, diorite, basalt, volcanic tuff. | **Quaternary Terraces**<br>McDermott Formation |
| *Obsidian* | | [Jemez Mtns, No Agua Peak, Mt. Taylor Volcanic Field, Red Hill, Cow Canyon, Mule Creek, San Francisco Peaks Volcanic field] |

Based on geologic characterizations and the observations of archaeologists, I characterized source formations in the following way. **Bold** font indicates the formation seems to be a major source of a particular material; Standard font indicates the material is present in the formation; *italic* indicates the material is only a minor component of the formation; a "?" indicates that it is unclear whether the formation produces a useable version of the material.

## *Raw Materials in the Aztec/Animas Region*

Raw materials can be surmised from the characterizations of geologic strata as well as the observations of archaeologists working in the region. Geologists have an interest in the presence of materials like cherts, jaspers, and quartzite cobbles because they provide clues to the origins of particular geologic formations. In addition, silicified woods are of interest to field geologists and they regularly report the presence of such materials (Spencer Lucas personal communication 2016). Archaeologists also investigate the presence and frequency of raw materials, both through examination of geologic settings and by characterizing the materials that were actually used by the prehistoric inhabitants of a site. I rely on both these sources of information in this section to describe the potential raw materials used by the inhabitants of Aztec North. Since I have not seen the type collections for Helene Warren's code system, only in specific, easily identifiable cases do I identify materials by code.

*Cherts*

Chert is a fine-grained sedimentary siliceous rock that can form anywhere that silica can precipitate, though it most commonly forms under conditions of low concentrations of silica with abundant impurities, such as within oceans or in areas of geothermal activity (Luedtke 1992: 17, 24, 26). In the Aztec area there are few or no locations where chert would occur in its primary location of formation (e.g. limestone beds). The majority of the chert available for use is found as pebbles and gravels within sandstone formations that have conglomerate layers or within Quaternary terraces.

Aside from Quaternary terraces that line the banks of the Animas, La Plata, and San Juan Rivers, the most prominent sources for chert pebbles appear to be the Ojo Alamo Sandstone and the Animas and McDermott formations. While the Nacimiento formation apparently harbors some conglomerate beds, it appears to produce relatively few chert pebbles.

Most of the cherts that occur as conglomerate gravels or in the terraces are relatively non-descript and hard to differentiate. The most common colors seem to be white, cream, grey, tan, butterscotch, and beige, often mottled or swirled, often speckled with dark inclusions. The cortex is often brown or red. Several archaeologists report the presence of red jasper, but they also note that it may be silicified wood. It might be possible to identify slightly different origins for the variations found in the miscellaneous cherts, but whether that would actually have any archaeological meaning or value is questionable.

*Specific Cherts*

There are a few distinctive cherts that appear repeatedly in archaeological contexts. These include Narbona Pass Chert, Chaco Yellow-Brown Chert, Brushy Basin Chert, and Pedernal Chert. Pedernal Chert is the only one of these that is actually a "chert" in the technical sense, so I will deal with the others in turn. Pedernal chert is a white to pearly gray, occasionally pink, red, and yellow. It ranges from opaque to translucent. Pedernal chert originates at Cerro Pedernal on the Chama River within the Abiquiu Formation. The chert occurs as a massive formation of chert that forms cliffs and boulders—it was used extensively throughout prehistory (Warren 1974). KellerLynn (2016:10) suggests that Pedernal Chert should be the primary chert source in the Aztec region, though she seems to have overlooked the presence of chert pebbles within the terrace gravels and Tertiary formations of the region.

*Silicified Wood*
Silicified wood results from the replacement of organic structures by a silicate like quartz. The coloration of the resulting stone reflects the combination of elemental contaminants within the silicate. There are numerous formations on the Colorado Plateau that formed through conditions, ranging from the Triassic through the Tertiary.

Fassett (1974:229) reports silicified wood within the San Jose Formation, and Williamson and Lucas (1992:271) note its presence in the Ojo Encino member of the Nacimiento Formation. Silicified wood is a small component of the McDermott formation conglomerates (Gonzales 2010). However, the Ojo Alamo Sandstone is probably the most productive source of silicified wood in the Aztec area based on the observations of geologists and archaeologists. The wood can be opaque or chalcedonic and range in hue from dark greys, blacks, browns and tans, to reds, yellows, and oranges. Because of the origin of the Quaternary terrace gravels, they can also contain silicified wood.

Archaeologists have defined a chert-like material called "Chaco Yellow Brown" (Warren Code #1070). It is usually a butterscotch or mustard brown colored material with dark brown, swirly inclusions.  This is quite likely a silicified wood that occurs in the Ojo Alamo Sandstone. It is found in several locations in the San Juan Basin.

*Chalcedony*
Chalcedony is a kind of chert that is fibrous rather than granular and forms under a particular set of conditions (Luedtke 1992). It is difficulty to detect the difference between translucent, clear chert and chalcedony, or between chalcedony and clear silicified wood. True chalcedonies frequently form in contexts where warm, silica-rich fluids percolate through cracks and crevices within existing formations. Therefore, igneous formations are a common place for true chalcedonies to form.

There are few locations within the Aztec/Animas area where true chalcedonies would commonly form. Gonzales (2010) suggests that the Animas Formation contains chalcedony pebbles. The Animas Formation resulted from the outwash of eroded material during the uplift of the San Juan and La Plata Mountains, where volcanic activity created conditions where chalcedony might have formed. The Quaternary terraces also contain chalcedonies, probably from the same sources as the Animas Formation (or from the Animas Formation itself).

Within the San Juan Basin, Narbona Pass chert is a notable chalcedony that was widely traded during the Chacoan Era. It originates in the volcanic deposits of the Chuska Mountains and is readily recognizable as a translucent peach- or salmon-colored chalcedony that grades to white and clear transparent.

*Quartzite*

Quartzite most commonly forms when silica in solution percolates through existing sandstone layers. The silica in solution fills in the spaces between the existing silica grains, bonding them together. In some cases the process of cementation can create quite large extents of quartzite-like strata (such as portions of the Dakota Formation near the Colorado/Utah border).

Within the Aztec/Animas area, there are no primary deposits of quartzite like the Dakota Formation. However, quartzite gravels are a very common component of the conglomerates found within the Ojo Alamo Sandstone and the Animas/McDermott Formation (Manley et al. 1987; Ward 1990; Fassett 1974) and within the Quaternary terrace gravels (KellerLynn 2016). Moore (1988) describes the quartzites of the Animas Formation as fine-grained and purple, light brown, or tan. Other colors are certainly possible, including red, grey, and pink.

One distinctive variety of quartzite is referred to as “Burro Canyon Quartzite.” It originates in the Burro Canyon Formation, a lower Cretaceous deposit that most prominently outcrops northwest of the Aztec/Animas region near the Four Corners. It is a sugary, pale-to-dark grey quartzite with small speck-sized inclusions that are black, pink, white, and red.

*Siltstones and Mudstones*

Given the fluvial or tidewater geologic origin for many of the Cretaceous and Tertiary formations on the Colorado Plateau, mudstones and siltstones are common. The difference between the two is largely a matter of grain size, with silts being finer and mudstones more coarse. Mixing with sand can also affect the nature of siltstones and mudstones. Most geologic mudstone and siltstone is not very suitable for flake-stone tools as they are too soft and lack concoidal fracture. However, under certain conditions (i.e. if enough silica bonds the grains together), siltstones and mudstones can be knapped.

The most notable siltstone/mudstone in the Four Corners is actually a silicified volcanic ash known as Brushy Basin Chert. It occurs in the upper Jurassic Morrison Formation, and is the result of an ancient lakebed filling with ash from a volcanic eruption (Gerhardt n.d.). Brushy Basin Chert is opaque ranges from tan, to butterscotch, to light green, and is very smooth. The material is most commonly found near the Utah/Colorado border. However, Shelley (2006:1015) suggests that Brushy Basin chert can be found in the La Plata River terrace gravels. Other Morrison Formation mudstones also tend to be visually distinctive shades of green and maroon.

Other siltstones and mudstones cannot be as easily identified to a source formation. The San Jose and Nacimiento Formations are likely candidates, but so are the Animas and McDermott formations and several underlying Cretaceous strata. However, nearly all observers report siltstone and mudstone pebbles and cobbles within the Quaternary terrace gravels, and this is a likely source of this material.

*Igneous Materials*

Igneous rocks form either above or below the earth's surface through the cooling of molten magma. The nearest igneous formations are located just north of the San Juan Basin within the San Juan and La Plata Mountains. Eroded igneous material made its way south through stream flow out of the mountains during the early Tertiary. The McDermott Formation includes porphyry and diorite related to this period of erosion and re-deposition (Gonzales 2010). However, the Quaternary terraces are a much more prominent source of igneous materials, including schist, hornblende gneiss, porphyry, diorite, basalt, rhyolite, and volcanic tuff.

*Obsidians*

Obsidian is an extrusive volcanic glass that forms when felsic lava rapidly cools upon reaching the earth's surface. There are several well-known sources of obsidian in the Southwest (Shackley 2005), including the Jemez Mountains (Cerro del Medio, Obsidian Ridge, Polvadera Peak, and others), the Mt. Taylor Volcanic field, and the San Francisco Peaks volcanic field. While some obsidian sources can be visually distinctive, geochemical sourcing is the most secure way to identify the origin of a piece of archaeology obsidian. There are no sources of obsidian in the Aztec/Animas region, and none are documented within the Quaternary terrace gravels.

## *Analysis of Lithic Debitage*

### *Materials Considered Generally*

Table 2. Material Usage – all debitage by count and weight.

| Material | Count | Percentage | Weight (g) | Percentage |
|---|---|---|---|---|
| Brushy Basin Chert | 8 | 2% | 23.84 | 1% |
| Chalcedony | 16 | 4% | 6.88 | 0% |
| Chert | 17 | 4% | 14.84 | 0% |
| Igneous | 168 | 40% | 1963.61 | 63% |
| Mica | 1 | 0% | 0.22 | 0% |
| Morrison Mudstone | 10 | 2% | 125.66 | 4% |
| Mudstone | 17 | 4% | 237.12 | 8% |
| Narbona Pass Chert | 2 | 0% | 0.52 | 0% |
| Obsidian | 123 | 29% | 81.6 | 3% |
| Quartz | 2 | 0% | 1.16 | 0% |
| Quartzite | 53 | 13% | 560.81 | 18% |

| | | | | |
|---|---|---|---|---|
| Sandstone | 1 | 0% | 0 | 0% |
| Silicified Sandstone | 1 | 0% | 117.98 | 4% |
| Total | 419 | 100% | 3134.24 | 100% |

Table 2 shows material proportions among the debitage, regardless of context of recovery. After excluding unmodified terrace gravels, architectural debris, and fire-cracked rock, a total of 419 pieces of debitage was analyzed.

The most commonly represented lithic material (by both count and weight) among the debitage is miscellaneous igneous rocks. After an initial attempt to separate the igneous material into more specific categories, I reverted to simply "igneous" rather than misclassify materials. In any event, the overwhelming majority of the igneous materials must have come from the same secondary source, the Quaternary terrace gravels, which include a mixture of igneous cobbles from the Animas headwaters. Porphyry, diorite, basalt, and rhyolite are all included within the igneous category.

Surprisingly, the next most common material by count is obsidian. Ferguson (Appendix A) reports that all of the obsidian artifacts came from Cerro del Medio and Obsidian Ridge, two of the major sources within the Jemez Mountains. However, obsidian ranks sixth by weight, most likely because flake size is small.

Quartzite is the third most common material by count and forms the second most prominent category by weight. The quartzite is almost certainly originating in the quaternary Terrace gravels, though the Ojo Alamo Sandstone is another candidate. If Morrison Mudstone and the generic mudstones are lumped together, they are fourth by count and third by weight. Morrison Mudstone is almost certainly out of the Quaternary gravel terraces since there are no Morrison Formation outcrops nearby, while the generic mudstones could originate in several surrounding formations, in addition to the terrace gravels. Both the quartzite and mudstone are over-represented by weight as opposed to count, indicating that the flakes are more massive than other materials.

The fine-grained crypto-crystalline silicates (cherts and chalcedonies) together represent about 10% of the debitage by count, but a very small percentage by weight. They could originate within the terrace gravels, but equally could originate in several geologic exposures in the Aztec/Animas region, such as the Ojo Alamo Sandstone (cherts) or the Animas Formation (chalcedonies).

*Materials by Context*

Table 3 shows how the nine most common materials are distributed among the four Study Units, regardless of vertical proveniences. The percentages show what proportion of the *total amount* of a particular material was found in each unit. For example, 35% of all the chert on the site came from SU1. Table 4 shows the same nine materials, except in this case, the percentages given indicate the proportion of a given material *within* a particular unit. For example, 11% of the material recovered from SU2, a trench through an architectural area, was chalcedony.

One thing that is immediately apparent from Table 3 is that there are stark differences in the proportion and counts of some lithic materials recovered from the architectural areas and the midden areas. Thirty-nine percent and 52% of the obsidian on the site came from SU3 and SU4, respectively. Only 9% was recovered from architectural areas. This contrasts markedly from the igneous materials, 64% of which came from the architectural areas, SU1 and SU2. The only Narbona Pass Chert recovered was from the midden.

Table 3. Material counts and proportions for each study unit. Some vertical proveniences were excluded from analysis because they were ambiguous, and materials with very low counts were dropped (such as mica).

| | *By Count* | | | | | *By Percentage* | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Material** | **SU1** | **SU2** | **SU3** | **SU4** | **Total** | **SU1** | **SU2** | **SU3** | **SU4** |
| Brushy Basin Chert | 4 | 0 | 1 | 3 | 8 | 50% | 0% | 13% | 38% |
| Chalcedony | 1 | 6 | 5 | 4 | 16 | 6% | 38% | 31% | 25% |
| Chert | 6 | 3 | 4 | 4 | 17 | 35% | 18% | 24% | 24% |
| Igneous | 66 | 30 | 10 | 44 | 150 | 44% | 20% | 7% | 29% |
| Morrison Mudstone | 4 | 1 | 0 | 4 | 9 | 44% | 11% | 0% | 44% |
| Mudstone | 8 | 3 | 0 | 3 | 14 | 57% | 21% | 0% | 21% |
| Narbona Pass Chert | 0 | 0 | 2 | 0 | 2 | 0% | 0% | 100% | 0% |
| Obsidian | 9 | 2 | 48 | 64 | 123 | 7% | 2% | 39% | 52% |
| Quartzite | 24 | 10 | 1 | 13 | 48 | 50% | 21% | 2% | 27% |
| Total | 123 | 55 | 72 | 139 | 389 | 32% | 14% | 19% | 36% |

Table 4. Same as Table 3, except the percentages shown indicate the proportion of debitage of a given material *within* a particular unit.

| **Material** | **SU1** | **SU2** | **SU3** | **SU4** | **Total** | **SU1** | **SU2** | **SU3** | **SU4** |
|---|---|---|---|---|---|---|---|---|---|
| Brushy Basin Chert | 4 | 0 | 1 | 3 | 8 | 3% | 0% | 1% | 2% |
| Chalcedony | 1 | 6 | 5 | 4 | 16 | 1% | 11% | 7% | 3% |
| Chert | 6 | 3 | 4 | 4 | 17 | 5% | 5% | 6% | 3% |
| Igneous | 66 | 30 | 10 | 44 | 150 | 54% | 55% | 14% | 32% |
| Morrison Mudstone | 4 | 1 | 0 | 4 | 9 | 3% | 2% | 0% | 3% |
| Mudstone | 8 | 3 | 0 | 3 | 14 | 7% | 5% | 0% | 2% |
| Narbona Pass Chert | 0 | 0 | 2 | 0 | 2 | 0% | 0% | 3% | 0% |
| Obsidian | 9 | 2 | 48 | 64 | 123 | 7% | 4% | 67% | 46% |
| Quartzite | 24 | 10 | 1 | 13 | 48 | 20% | 18% | 1% | 9% |
| Total | 123 | 55 | 72 | 139 | 389 | 100% | 100% | 100% | 100% |

SU1 produced about twice as many pieces of debitage as SU2, despite the excavation areas being relatively similar in size and volume (if anything, I suspect SU2 was larger by volume). This may be because a thin midden or trash deposit was encountered atop a surface within SU1, while no such deposit was identified in SU2.

Table 4 highlights a different set of similarities and contrasts. The two architectural areas, SU1 and SU2, are relatively similar in terms of material proportions. Aside from chalcedony, which is much better represented in SU2 than in SU1, most other materials occur in roughly similar proportions despite the differences in sample size between the two Study Units. The midden units, SU3 and SU4, do not demonstrate a similar congruence of material proportions. While they both have high proportions of obsidian (also evident in Table 3), SU3 produced more fine-grained crypto-crystalline silicates like chert and chalcedony than did SU4. SU4 had a wider range of materials than SU3, in particular mudstones. The two midden units represent different patterns of acquisition, use, and discard of lithic materials.

Table 5. Material counts displayed by vertical context. This table shows the counts of various materials *within* each vertical context.

| Material | MGS | OB | OB/ AD | AD | ADR | PO/ AD | OB/ ADR | POD | ICND | OD | MD | FF | FLF | FC | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brushy Basin Chert | 1 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 8 |
| Chalcedony | 1 | 5 | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 16 |
| Chert | 2 | 6 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 17 |
| Igneous | 13 | 40 | 5 | 14 | 3 | 15 | 4 | 21 | 9 | 8 | 15 | 2 | 17 | 1 | 167 |
| Morrison Mudstone | 1 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 9 |
| Mudstone | 0 | 3 | 1 | 5 | 0 | 1 | 0 | 2 | 0 | 1 | 2 | 1 | 0 | 1 | 17 |
| Narbona Pass Chert | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Obsidian | 14 | 37 | 1 | 1 | 0 | 0 | 0 | 3 | 2 | 1 | 61 | 3 | 0 | 0 | 123 |
| Quartzite | 6 | 10 | 1 | 3 | 1 | 3 | 1 | 12 | 2 | 3 | 4 | 2 | 4 | 1 | 53 |
| Total | 38 | 108 | 12 | 29 | 4 | 23 | 7 | 39 | 13 | 16 | 87 | 10 | 23 | 3 | 412 |

Table 6. Material proportions displayed by vertical context. This table shows the proportions of various materials *within* each vertical context.

| Material | MG S | OB | OB/ AD | AD | ADR | PO/ AD | OB/ ADR | POD | ICND | OD | MD | FF | FLF | FC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brushy Basin Chert | 3% | 2% | 0% | 7% | 0% | 9% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 0% |
| Chalcedony | 3% | 5% | 17% | 7% | 0% | 0% | 29% | 0% | 0% | 0% | 3% | 10% | 0% | 0% |
| Chert | 5% | 6% | 17% | 7% | 0% | 4% | 0% | 0% | 0% | 19% | 0% | 10% | 0% | 0% |
| Igneous | 34% | 37% | 42% | 48% | 75% | 65% | 57% | 54% | 69% | 50% | 17% | 20% | 74% | 33% |
| Morrison Mudstone | 3% | 3% | 0% | 0% | 0% | 4% | 0% | 3% | 0% | 0% | 1% | 0% | 9% | 0% |
| Mudstone | 0% | 3% | 8% | 17% | 0% | 4% | 0% | 5% | 0% | 6% | 2% | 10% | 0% | 33% |
| Narbona Pass Chert | 0% | 2% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Obsidian | 37% | 34% | 8% | 3% | 0% | 0% | 0% | 8% | 15% | 6% | 70% | 30% | 0% | 0% |
| Quartzite | 16% | 9% | 8% | 10% | 25% | 13% | 14% | 31% | 15% | 19% | 5% | 20% | 17% | 33% |

Table 7. This table displays how the materials are spread *across* the various vertical contexts.

| | Brushy Basin Chert | Chalcedony | Chert | Igneous | Morrison Mudstone | Mudstone | Narbona Pass Chert | Obsidian | Quartzite | Total | Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MGS** | 1 | 1 | 2 | 13 | 1 | 0 | 0 | 14 | 6 | 38 | 9% |
| **OB** | 2 | 5 | 6 | 40 | 3 | 3 | 2 | 37 | 10 | 109 | 26% |
| **OB/AD** | 0 | 2 | 2 | 5 | 0 | 1 | 0 | 1 | 1 | 12 | 3% |
| **AD** | 2 | 2 | 2 | 14 | 0 | 5 | 0 | 1 | 3 | 29 | 7% |
| **ADR** | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 4 | 1% |
| **PO/AD** | 2 | 0 | 1 | 15 | 1 | 1 | 0 | 0 | 3 | 23 | 6% |
| **OB/ADR** | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 7 | 2% |
| **POD** | 0 | 0 | 0 | 21 | 1 | 2 | 0 | 3 | 12 | 39 | 9% |
| **ICND** | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 2 | 2 | 13 | 3% |
| **OD** | 0 | 0 | 3 | 8 | 0 | 1 | 0 | 1 | 3 | 17 | 4% |
| **Midden** | 1 | 3 | 0 | 15 | 1 | 2 | 0 | 61 | 4 | 87 | 21% |
| **Feat Fill** | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 3 | 2 | 10 | 2% |
| **FLF** | 0 | 0 | 0 | 17 | 2 | 0 | 0 | 0 | 4 | 24 | 6% |
| **FC** | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 3 | 1% |
| **Total** | 8 | 16 | 17 | 167 | 9 | 17 | 2 | 123 | 53 | 415 | 100% |

Table 8. This table shows how the proportion of materials is distributed *across* the various vertical contexts.

| | Brushy Basin Chert | Chalcedony | Chert | Igneous | Morrison Mudstone | Mudstone | Narbona Pass Chert | Obsidian | Quartzite |
|---|---|---|---|---|---|---|---|---|---|
| **MGS** | 13% | 6% | 12% | 8% | 11% | 0% | 0% | 11% | 11% |
| **OB** | 25% | 31% | 35% | 24% | 33% | 18% | 100% | 30% | 19% |
| **OB/AD** | 0% | 13% | 12% | 3% | 0% | 6% | 0% | 1% | 2% |
| **AD** | 25% | 13% | 12% | 8% | 0% | 29% | 0% | 1% | 6% |
| **ADR** | 0% | 0% | 0% | 2% | 0% | 0% | 0% | 0% | 2% |
| **PO/AD** | 25% | 0% | 6% | 9% | 11% | 6% | 0% | 0% | 6% |
| **OB/ADR** | 0% | 13% | 0% | 2% | 0% | 0% | 0% | 0% | 2% |
| **POD** | 0% | 0% | 0% | 13% | 11% | 12% | 0% | 2% | 23% |
| **ICND** | 0% | 0% | 0% | 5% | 0% | 0% | 0% | 2% | 4% |
| **OD** | 0% | 0% | 18% | 5% | 0% | 6% | 0% | 1% | 6% |
| **Midden** | 13% | 19% | 0% | 9% | 11% | 12% | 0% | 50% | 8% |
| **Feat Fill** | 0% | 6% | 6% | 1% | 0% | 6% | 0% | 2% | 4% |
| **FLF** | 0% | 0% | 0% | 10% | 22% | 0% | 0% | 0% | 8% |
| **FC** | 0% | 0% | 0% | 1% | 0% | 6% | 0% | 0% | 2% |
| **Total** | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

Table 5 and Table 6 show the counts and proportion, respectively, of various materials *within* each context type. For example, on the modern ground surface, 34% of the materials recovered were igneous rock and 37% were obsidian. One thing that these two tables show is that the only kinds of materials recovered within floor contact and floor fill contexts were igneous rocks, mudstones, and quartzites (n=26). These are, generally, the coarse materials that are available within the Quaternary terrace gravels.

Table 7 and Table 8 show the same dataset, just reoriented to show how the counts and proportions of a particular material are distributed *across* the vertical contexts. For example, 11% of the obsidian was recovered on the modern ground surface, 30% from overburden, and 50% from intact midden deposits. Table 7 and Table 8 also show the proportion of flaked stone debitage that came from particular vertical contexts. For example, 26% of all flakes were recovered within overburden, while 21% were recovered within midden contexts. The generally high proportion of all materials recovered in overburden suggests several things, to me: 1) either we mischaracterized trash fill as overburden, 2) post-occupational windblown sediments and erosional debris from collapsing structure walls mixed with underlying cultural deposits from the period of occupation, and 3) overburden was probably the largest excavated context, by volume, comprising much of the upper fill of the architectural areas explored by SU1 and SU2.

*Lithic Reduction Technology in General*

Flakes were categorizes as resulting from core reduction, biface reduction, or bipolar reduction, based on flake morphology. Only complete flakes were included in these tabulations, since broken flakes could not always be accurately classified and shatter by definition lacks flake characteristics. Archaeologists have related reduction technologies to things like subsistence activities, residential mobility, social identity, and the production of stone ritual paraphernalia.

Table 9. Counts of complete flakes by reduction technology and material.

| | Brushy Basin | Chalcedony | Chert | Igneous | Morrison Mud | Mudstone | Narbona Pass | Obsidian | Quartzite | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| **core reduction** | 2 | 3 | 3 | 80 | 8 | 8 | 2 | 49 | 22 | 177 |
| **biface reduction** | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 7 |
| **bipolar** | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 5 |
| **Total** | 2 | 5 | 4 | 85 | 8 | 8 | 2 | 52 | 23 | 189 |

Table 10. Proportions of complete flakes by reduction technology and material, showing how each material is distributed by reduction technology.

| | Brushy Basin | Chalcedony | Chert | Igneous | Morrison Mud | Mudstone | Narbona Pass | Obsidian | Quartzite | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| **core reduction** | 100% | 60% | 75% | 94% | 100% | 100% | 100% | 94% | 96% | 94% |
| **biface reduction** | 0% | 40% | 25% | 1% | 0% | 0% | 0% | 4% | 4% | 4% |
| **bipolar** | 0% | 0% | 0% | 5% | 0% | 0% | 0% | 2% | 0% | 3% |
| **Total** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Table 11. Proportions of complete flakes by reduction technology and material, showing how technology is distributed among the materials.

| | Brushy Basin | Chalcedony | Chert | Igneous | Morrison Mud | Mudstone | Narbona Pass | Obsidian | Quartzite | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| **core reduction** | 1% | 2% | 2% | 45% | 5% | 5% | 1% | 28% | 12% | 100% |
| **biface reduction** | 0% | 29% | 14% | 14% | 0% | 0% | 0% | 29% | 14% | 100% |
| **bipolar** | 0% | 0% | 0% | 80% | 0% | 0% | 0% | 20% | 0% | 100% |

Puebloan lithic technology is typically dominated by core reduction, a category that refers to working nodules of raw material with a hammerstone. Flake removal can be patterned (e.g. unidirectional cores) or unpatterned (e.g. amorphous cores), but are almost always struck with a hammerstone. In most cases, the goal was not to remove material until a final product was produced (such as a formal tool like a bifacial knife), but rather to remove flakes with the right qualities to be useful cutting tools.

Biface reduction flakes usually result from the use of a soft hammer (like an antler billet) to remove flakes from two faces of a relatively flat core (biface). Frequently, the goal is to remove material until a finished product is achieved, like a projectile point. Biface reduction flakes can also result from resharpening projectile points. By the Basketmaker III period (ca. AD 500-700) arrow points had begun to replace dart points as the bow replaced the atlatl (Railey 2010; Reed and Geib 2013); consequently, biface thinning flakes usually represent very small proportions of Pueblo lithic assemblages.

Bipolar flakes are the result of a core being placed on a stone anvil and struck from above with a hammerstone. This can help remove flakes from stone nodules or nearly exhausted cores that are too small to hold. As such, it is often associated with conserving high-value raw material that is difficult to acquire—that is, it suggests people are using every last bit of a particular kind of material. Bipolar flakes can also be associated with very unpatterned or haphazard lithic technological systems.

Table 9, Table 10, and Table 23 show the counts and proportions of complete flakes by reduction technology and material. As expected, core reduction flakes dominate the assemblage. Biface reduction is primarily associated with chalcedony and chert, though it is found in small quantities among the obsidian and the quartzite. Table 11 shows that most of the biface thinning flakes are chalcedony or obsidian, though one piece each of chert, igneous stone, and quartzite were recovered, too.

Nearly all the bipolar flakes were igneous stone, contradicting the conventional wisdom that this reduction technique reflects a desire to conserve material, since igneous stones are the most plentiful raw material at the site. In this case, I suspect the presence of a few bipolar flakes among the igneous debitage is because this is one way to get into a relatively round nodule of stone without any obvious platforms (like a river cobble).

Table 10 shows what proportion of each material is a particular kind of reduction technology. Mudstones were never flaked bifacially, quartzites and igneous rocks only rarely. However, significant proportions of the chalcedony and chert were flaked bifacially, suggesting that these materials were primarily used in the production of formal tools (such as projectile points). This is not surprising as the fine, crypto-crystalline nature of chert and chalcedony lends itself more readily to biface thinning and pressure flaking than most of the other materials.

The obsidian, however, is a bit of a surprise, as it is *the best* material for creating projectile points (in terms of flaking qualities and sharpness), yet it was hardly ever knapped using a bifacial technique. In addition, small, round nodules of obsidian are often initially knapped using the bipolar technique since they are hard to hold onto and afford few good platforms. Yet in this case, the obsidian was mostly knapped using the same technique as the igneous rocks and quartzite. Indeed, the proportions of each of these materials by reduction technology are nearly identical (Table 11). To me, this suggests that obsidian was used primarily as an informal cutting implement, that it was not considered a particularly rare material, and that it was avoided for making projectile points.

*Lithic Reduction Technology by Study Unit*

Table 12, Table 13, and Table 14 show the counts and proportions of different reduction technologies as they are distributed among the different Study Units. As Table 13 shows, SU1 and SU2 are very similar despite the difference in assemblage size. SU4 is also fairly similar to SU1 and SU2. However, SU3 has a higher proportion of bifacial thinning flakes (two obsidian flakes and a chert flake that *may* be Honaker Trail chert from Utah—one of the only recognizable cherts in the entire assemblage) than the other three Study Units. Table 14 reinforces this pattern, demonstrating that 43% of the biface thinning flakes on the site are found within SU3. Nonetheless, we are talking about very few flakes in comparison to the total lithic assemblage size.

Table 12. Counts of reduction technology by Study Unit.

| | Core | Biface | Bipolar | Total |
|---|---|---|---|---|
| **SU1** | 73 | 2 | 2 | 77 |
| **SU2** | 28 | 1 | 1 | 30 |
| **SU3** | 31 | 3 | 1 | 35 |
| **SU4** | 47 | 1 | 1 | 49 |
| **Total** | 179 | 7 | 5 | 191 |

Table 13. Proportion of debitage in each Study Unit that is a particular kind of reduction technology.

| | Core | Biface | Bipolar |
|---|---|---|---|
| **SU1** | 95% | 3% | 3% |
| **SU2** | 93% | 3% | 3% |
| **SU3** | 89% | 9% | 3% |
| **SU4** | 96% | 2% | 2% |

Table 14. How reduction technology is distributed across the Study Units.

| | Core | Biface | Bipolar |
|---|---|---|---|
| **SU1** | 41% | 29% | 40% |
| **SU2** | 16% | 14% | 20% |
| **SU3** | 17% | 43% | 20% |
| **SU4** | 26% | 14% | 20% |

*Platform Style*

The platform of a flake provides an indication of how the core was prepared for the flake removal, or whether it was prepared at all. Only complete flakes were used in this analysis. I characterized platform style four ways. The platform could be cortex, meaning it was essentially unmodified; it could be a flake scar, indicating that a flake had previously be removed from the core and this surface was selected to be the platform; it could be trimmed, meaning that the platform had been modified by the knapper to make it more suitable for their intended product (indicated by small flake scars either across the platform or originating at the platform and extending down the dorsal surface of the flake); or it could be crushed, often an indication that more force was applied to the flake than the material could handle, or the force was applied at the wrong angle—at any rate, it means that the flake cannot be classified to one of the other platform categories.

Table 15 and Table 16 present the counts and proportions of debitage that have the four platform preparation styles. There is a good deal of variation between the study units, and small sample sizes for particular materials hampers interpretation.

Obsidian more frequently has a crushed, trimmed, or a flake scar platform in the midden units (SU3 and SU4) than in the architectural units (SU1 and SU2), though this may be a sampling issues since few pieces of obsidian were recovered during the excavation of architectural areas.

Table 15. Counts of debitage with different kinds of platform preparation style categorized by material and study unit.

| Material | Cortex | Crushed | Flake Scar | Trimmed | Subtotal | Cortex | Crushed | Flake Scar | Trimmed | Subtotal | Cortex | Crushed | Flake Scar | Trimmed | subtotal | Cortex | Crushed | Flake Scar | Trimmed | subtotal | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Study Unit 1 | | | | | Study Unit 2 | | | | | Study Unit 3 | | | | | Study Unit 4 | | | | | |
| Brushy Basin Chert | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| Chalcedony | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| Chert | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 3 |
| Igneous | 29 | 9 | 7 | 1 | 46 | 14 | 1 | 4 | 0 | 19 | 1 | 1 | 2 | 0 | 4 | 4 | 2 | 2 | 1 | 9 | 78 |
| Morrison Mudstone | 1 | 0 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 7 |
| Mudstone | 1 | 3 | 0 | 0 | 4 | 0 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 3 | 10 |
| Narbona Pass Chert | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| Obsidian | 2 | 0 | 0 | 1 | 3 | 2 | 0 | 0 | 0 | 2 | 10 | 3 | 4 | 4 | 21 | 9 | 6 | 6 | 2 | 23 | 49 |
| Quartzite | 6 | 2 | 5 | 0 | 13 | 2 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 5 | 21 |
| Total | 40 | 15 | 13 | 2 | 70 | 18 | 3 | 5 | 2 | 28 | 13 | 4 | 7 | 7 | 31 | 19 | 8 | 11 | 7 | 45 | 174 |

Table 16. Proportions of debitage with different kinds of platform preparation style, categorized by material and study unit.

| Material | Cortex | Crushed | Flake Scar | Trimmed | Cortex | Crushed | Flake Scar | Trimmed | Cortex | Crushed | Flake Scar | Trimmed | Cortex | Crushed | Flake Scar | Trimmed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Study Unit 1 | | | | Study Unit 2 | | | | Study Unit 3 | | | | Study Unit 4 | | | |
| Brushy Basin Chert | 100% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 100% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Chalcedony | 0% | 100% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 100% | 0% | 0% | 0% | 0% |
| Chert | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 50% | 0% | 50% | 0% |
| Igneous | 63% | 20% | 15% | 2% | 74% | 5% | 21% | 0% | 25% | 25% | 50% | 0% | 44% | 22% | 22% | 11% |
| Morrison Mudstone | 50% | 0% | 50% | 0% | 0% | 50% | 0% | 50% | 0% | 0% | 0% | 0% | 0% | 0% | 33% | 67% |
| Mudstone | 25% | 75% | 0% | 0% | 0% | 50% | 50% | 0% | 100% | 0% | 0% | 0% | 67% | 0% | 0% | 33% |
| Narbona Pass Chert | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 100% | 0% | 0% | 0% | 0% |
| Obsidian | 67% | 0% | 0% | 33% | 100% | 0% | 0% | 0% | 48% | 14% | 19% | 19% | 39% | 26% | 26% | 9% |
| Quartzite | 46% | 15% | 38% | 0% | 67% | 0% | 0% | 33% | 0% | 0% | 0% | 0% | 60% | 0% | 20% | 20% |

Material proportions may also be affecting platform preparation. Different materials have distinct behavior when subjected to similar knapping techniques. For example, the crushing that is evident among the mudstones in SU2 and SU3 may be a result of the relatively brittle and friable mudstone platforms breaking, whereas the harder igneous rocks are less prone to this. In order to look more broadly at platform preparation regardless of lithic material, I took the average proportion of each platform type for the four study units (Table 17). Crushed platforms are much *less* common in SU3 and SU4 than in SU1 and SU2. Trimmed platforms are *more* common in SU3 and SU4 than in SU1 and SU2. To me, this suggests that the debitage in the midden units reflects more controlled knapping of better quality materials, and more careful preparation. This is partially driven by the high frequency of obsidian, but even more so by the existence of trimmed platforms among the mudstones and quartzites, particularly in SU4 (see Table 16).

Table 17. Average proportions of each platform preparation style by Study Unit.

| | Cortex | Crushed | Flake Scar | Trimmed |
|---|---|---|---|---|
| **SU1** | 39% | 23% | 12% | 4% |
| **SU2** | 27% | 12% | 8% | 9% |
| **SU3** | 30% | 4% | 8% | 24% |
| **SU4** | 33% | 5% | 19% | 16% |

In summary, then, platform preparation suggests that the debitage discarded in the midden units was more carefully knapped than that discarded or left as primary refuse within the architectural areas.

*Cortex*

Cortex often indicates how people acquired and transported stone. Easily available and local materials may be brought to a site and the cortex removed on site, resulting in a high proportion of cortical flakes. More distant materials are often initially reduced near the source to reduce weight during transport, and as a result debitage from these materials has limited cortex. Cortex percent was recorded on complete and broken flakes, and shatter.

Table 18. Percentage of cortex remaining, displayed as counts and proportions for each material.

| | **Counts** | | | | **Proportion** | | |
|---|---|---|---|---|---|---|---|
| **Material** | **0-25%** | **25-75%** | **75-100%** | **Total** | **0-25%** | **25-75%** | **75-100%** |
| Brushy Basin | 3 | 5 | 0 | 8 | 38% | 63% | 0% |
| Chalcedony | 13 | 2 | 1 | 16 | 81% | 13% | 6% |
| Chert | 12 | 2 | 2 | 16 | 75% | 13% | 13% |
| Igneous | 76 | 41 | 51 | 168 | 45% | 24% | 30% |
| Morrison Mudstone | 1 | 7 | 2 | 10 | 10% | 70% | 20% |
| Mudstone | 6 | 4 | 7 | 17 | 35% | 24% | 41% |
| Narbona Pass Chert | 1 | 1 | 0 | 2 | 50% | 50% | 0% |
| Obsidian | 93 | 19 | 11 | 123 | 76% | 15% | 9% |
| Quartzite | 21 | 16 | 16 | 53 | 40% | 30% | 30% |

Table 18 shows cortex percentages for the most common materials. The finer-grained materials, chert, chalcedony, and obsidian, have the highest frequency of flakes with 0-25% cortex on the dorsal surface, while the mudstones, quartzites, and igneous materials have the highest proportion with 75-100% cortex. This probably reflects that fact that most of the mudstones, quartzites, and igneous materials could be acquired in the Quaternary terrace gravels that North Ruin sits on, while the finer materials were acquired at a distance, either directly or through trade. Nonetheless, there are several pieces of obsidian debitage with 25-75% and 75-100% cortex, indicating that obsidian nodules may have come to the site in relatively raw form.

Table 19. Counts and proportions of debtiage with particular cortex percentages, organized by Study Unit.

| Unit | 0-25% | 25-75% | 75-100% | Total | 0-25% | 25-75% | 75-100% |
|---|---|---|---|---|---|---|---|
| SU1 | 55 | 40 | 49 | 144 | 38% | 28% | 34% |
| SU2 | 32 | 18 | 12 | 62 | 52% | 29% | 19% |
| SU3 | 54 | 11 | 7 | 72 | 75% | 15% | 10% |
| SU4 | 86 | 29 | 24 | 139 | 62% | 21% | 17% |
| Total | 227 | 98 | 92 | 417 | | | |

When examined by Study Unit, a few patterns stand out (Table 19). Study Unit 3 had the highest proportion of debitage with 0-25% cortex and the lowest with 75-100%. This is partially driven by the higher presence of obsidian, though obsidian is also common in SU4, where this pattern is less strongly present. Study Unit 1 has a high proportion of flakes with 75-100% cortex, indicating the use of relative easy-to-hand cores and minimal concern for decortification.

Finally, I chose to see if cortex percentages changed based on stratigraphic layer, which might be a rough way of gauging how cortex changed over time. Table 20 and Figure 1 display this data. There is a slight trend towards debitage with *more* cortex being more common in lower stratigraphic designations (feature fill, floor contexts, occupational deposits) and debitage with *less* cortex being more common in the upper stratigraphic layers (modern ground surface, overburden, and architectural debris).

Table 20. Counts and proportions of debitage of a particular cortex percentage, by stratigraphic layer.

| | Counts | | | | Proportions | | |
|---|---|---|---|---|---|---|---|
| Stratum | 0-25% | 25-75% | 75-100% | Total | 0-25% | 25-75% | 75-100% |
| 0 | 27 | 7 | 4 | 38 | 71% | 18% | 11% |
| I | 47 | 18 | 21 | 86 | 55% | 21% | 24% |
| I/II | 6 | 3 | 3 | 12 | 50% | 25% | 25% |
| II | 51 | 20 | 16 | 87 | 59% | 23% | 18% |
| II/III | 8 | 4 | 4 | 16 | 50% | 25% | 25% |
| III | 40 | 13 | 16 | 69 | 58% | 19% | 23% |
| IV | 4 | 2 | 3 | 9 | 44% | 22% | 33% |
| V | 19 | 13 | 11 | 43 | 44% | 30% | 26% |
| VI | 8 | 8 | 3 | 19 | 42% | 42% | 16% |
| VII | 15 | 10 | 10 | 35 | 43% | 29% | 29% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| VIII | 1 | 0 | 1 | 2 | 50% | 0% | 50% |
| Total | 226 | 98 | 92 | 416 | | | |

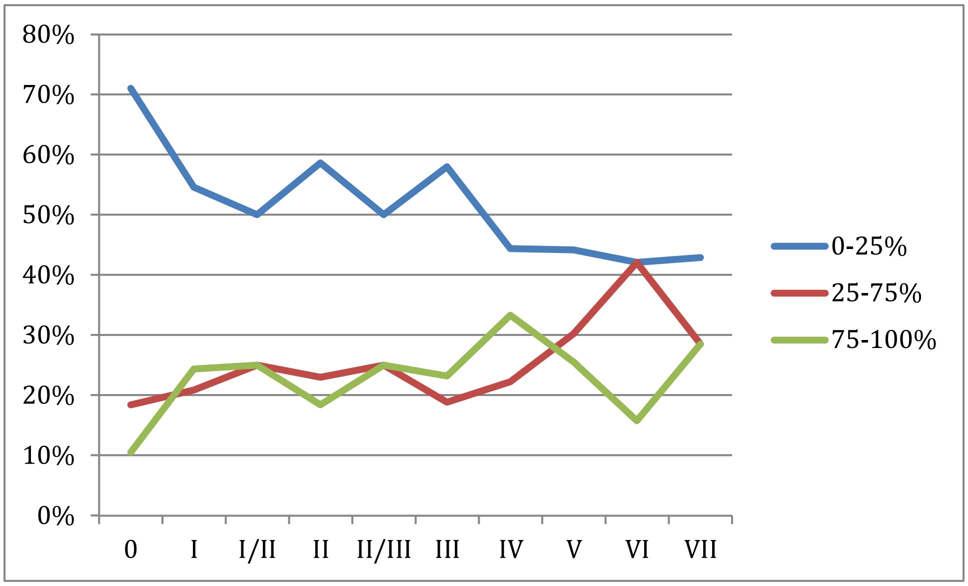

Figure 1. Line graph showing debitage percentages by stratigraphic layer.

One possible explanation for this is that the flakes with greater cortex proportion may be those that were utilized as cutting, scraping, or other kinds of expedient implements, while the flakes with less cortex were primarily debitage from creating formal tools or shaping platforms. The expedient implements may have been recovered in primary contexts, while the debitage might have been discarded as secondary refuse.

*Flake Length*

I explored several different ways of looking at flake length. The following analyses and tables only examine complete flakes. Table 21 shows that the longest core reduction flakes, on average, were mudstones, quartzites, and igneous materials, while the shortest were the cherts, chalcedonies, and obsidians. Chert and chalcedony biface thinning flakes are almost as long as those resulting from core reduction. The bipolar flakes are the longest of all, and only found among the igneous materials, reinforcing earlier interpretations that the bipolar method was used to initially break into river cobbles.

Table 21. Average flake length (mm) of core, biface, and bipolar flakes by material.

| Material | Core | Biface | Bipolar | (count) |
|---|---|---|---|---|
| **Brushy Basin** | 19.65 | 0.00 | 0.00 | 2 |
| **Chalcedony** | 15.70 | 13.80 | 0.00 | 4 |
| **Chert** | 13.37 | 12.44 | 0.00 | 4 |
| **Igneous** | 27.18 | 9.42 | 37.04 | 79 |
| **Morrison Mudstone** | 28.70 | 0.00 | 0.00 | 8 |

| | | | | |
|---|---|---|---|---|
| **Mudstone** | 28.10 | 0.00 | 0.00 | 7 |
| **Narbona Pass Chert** | 10.51 | 0.00 | 0.00 | 2 |
| **Obsidian** | 15.49 | 6.54 | 0.00 | 48 |
| **Quartzite** | 28.23 | 8.00 | 0.00 | 21 |
| **Average** | 20.77 | 10.04 | 37.04 | |

Coefficients of variation are a useful way of characterizing how much variation exists around a particular mean. It can be a way of looking for the strength of particularly patterns, such as standardization in the production of flakes. Table 22 shows the coefficients of variation for flake length for each material. Mudstones display the greatest degree of variation, while the cherts have the least. However, I think this discrepancy may be driven by sample size more than anything. To me, the table indicates that there is relatively little standardization in any of the materials, including the obsidian.

Table 22. Coefficient of variation for flake length by material.

| Material | Stdev/mean | C.V. | Count |
|---|---|---|---|
| Brushy Basin | 0.0263 | 2.6 | 2 |
| Chalcedony | 0.2460 | 24.6 | 2 |
| Chert | 0.2710 | 27.1 | 3 |
| Igneous | 0.5850 | 58.5 | 74 |
| Morrison Mudstone | 0.7333 | 73.3 | 8 |
| Mudstone | 0.8122 | 81.2 | 7 |
| Narbona Pass Chert | 0.0424 | 4.2 | 2 |
| Obsidian | 0.4923 | 49.2 | 46 |
| Quartzite | 0.5747 | 57.5 | 20 |

*Vertical Distribution of Debitage*

Mapping out where debitage occurs stratigraphically can be a useful way to understand depositional and post depositional processes that may have affected a given context. The midden units were shallow enough that I did not see much to be gained from this kind of analysis, but the architectural areas (SU1 and SU2) were suitable. Table 23 and Table 24 show these schematic diagrams. Within SU1, debitage was concentrated around strata V, VI, and VII, which I believe was the layered trash deposit overlaying a possible floor surface. No corresponding layer seems to exist to the north beyond the room wall, and debitage is concentrated in the upper layers, perhaps indicating a shallower floor in a remodeled room, or that the real floor deposits are much further down.

Table 23. Debitage counts by stratigraphic level and excavation unit, Study Unit 1

| Strat | SU1F | SU1F/ SU1G | SU1G | SU1A | SU1A /SU1B | SU1B | SU1C | SU1C/ SU1D | SU1D | SU1E | SU1H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | 1 | | | | |
| I | | | | 6 | | | | | 1 | 3 | 9 |
| I/II | 9 | | | | | | | | | | |
| II | | | | | | | | | 6 | 1 | |
| II/III | | | 3 | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| III | 10 | | | | 3 | | | | | 1 |
| IV | | | | | | 3 | | 1 | | |
| V | | | 4 | | 9 | 15 | 4 | 14 | | |
| VI | | | | | 8 | 4 | 4 | | | |
| VII | | | | 3 | | 2 | 31 | | | |
| VIII | | | | | | | 1 | | 1 | |
| IX | | | | | | 1 | | | | |

South ------------------------------------------------------------------------------- North

The patterning of debitage suggests that there has been minimal mixing of deposits, as much of the upper room fill seems to lack debitage moving upward from the floor/trash deposits.

Table 24 is the same kind of schematic produced for SU2. In this case, debitage seems to be relatively evenly distributed. This may indicate that trash deposition into the room was sparse but steady over time. Alternately, it could reinforce the interpretation that the room was looted—that is, deposits that were clustered near the floor have gotten mixed into higher, post-occupational strata as backdirt slumped into the open room.

Table 24. Debitage counts by stratigraphic level and excavation unit for Study Unit 2.

| Strat | 2A | 2A/B | 2B | 2C | 2C/D | 2D | 2E | 2F |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | |
| I | 7 | | 2 | | | | 1 | 1 |
| I/II | | | | 3 | | | | |
| II | 2 | | | | | 4 | 1 | 6 |
| II/III | 2 | | | 9 | | | 5 | 2 |
| III | 5 | | 1 | | 1 | | | |
| IV | | 2 | | | | | | 2 |
| V | | | | 2 | | 1 | | |
| VI | 2 | | | | | | 1 | |
| VII | | | | | | | | 1 |
| VIII | | | | | | | | |
| IX | | | | | | | | |

West ---------------------------------------------------- East

## *Analysis of Flaked Stone Tools*

In total, twenty-eight flaked stone tools were recovered during the excavations at the North Ruin. These included four projectile points, three biface fragments, three cores, nine cobble choppers, two flake tools, three hammerstones, two informal scrapers, a polishing stone, and a formal scraper (Table 27; Table 28).

Table 25. Tools recovered from Study Units 1 - 4.

| | SU1 | SU2 | SU3 | SU4 | Total |
|---|---|---|---|---|---|
| **Biface Fragment** | 1 | 1 | 1 | 0 | 3 |
| **Core** | 1 | 0 | 0 | 2 | 3 |
| **Hammerstone** | 1 | 2 | 0 | 0 | 3 |
| **Cobble Tool** | 8 | 0 | 0 | 1 | 9 |
| **Informal Scraper** | 1 | 0 | 0 | 1 | 2 |
| **Formal Scraper** | 0 | 0 | 1 | 0 | 1 |
| **Flake Tool** | 0 | 0 | 2 | 0 | 2 |
| **Projectile Point** | 2 | 1 | 0 | 1 | 4 |
| **Polishing Stone** | 1 | 0 | 0 | 0 | 1 |
| **Total** | 14 | 4 | 4 | 5 | 28 |

Table 25 shows a few patterns. Flake tools, cores, and formal scrapers tended to be discarded into the midden units (SU3 and SU4), while biface fragments, projectile points, and particularly cobble tools were more likely to be recovered from architectural areas (SU1 and SU2). The large number of cobble tools from SU1 is striking—there may be a discrepancy between collection strategies among the different excavators, that is, maybe I (Kellam) was the only one picking up split cobbles and really looking at them. Most of the cobble tools were interpreted as chopping implements, and they came from strata II, III, V, VI, and VIII—indicating several were mixed with wall fall while others were mixed with occupational strata. Cobble tools will be discussed in greater detail further on.

The fact that the majority of the projectile points originated in the architectural areas does not strike me as unusual. Sedig (2014:Table 6), using data from Aztec West Ruin, Salmon, and other Chaco-era sites demonstrated that points are recovered frequently from architectural contexts. More generally, he notes that projectile points are often mobilized for curing practices, hunting magic, dedicatory offerings, and other non-hunting/warfare related activities.

*Material Proportions*

Table 26 compares the proportion of materials between the debitage that was recovered and the tools. Chert is proportionally a much more common in the tool assemblage that the debitage assemblage. This suggests that either the location for the deposition of chert debitage was not identified during excavation, or that numerous chert implements were imported to the site in nearly complete form. Three of the chert implements were projectile points, and it is possible that these were traded into the site. Obsidian is under-represented among the tools, though it is possible that obsidian was used largely as informal cutting implements rather than as formal tools.

Table 26. Comparison of materials counts and proportions between debitage and tools.

| | Debitage | Tools | Debitage | Tools |
|---|---|---|---|---|
| **Brushy Basin Chert** | 8 | 1 | 2% | 4% |
| **Chalcedony** | 16 | 0 | 4% | 0% |
| **Chert** | 17 | 7 | 4% | 25% |
| **Igneous** | 150 | 9 | 39% | 32% |
| **Morrison Mudstone** | 9 | 0 | 2% | 0% |
| **Mudstone** | 14 | 1 | 4% | 4% |
| **Narbona Pass Chert** | 2 | 0 | 1% | 0% |
| **Obsidian** | 123 | 5 | 32% | 18% |
| **Quartzite** | 48 | 5 | 12% | 18% |
| **Total** | 389 | 28 | | |

Chalcedony, mudstone, and Narbona Pass chert were poorly represented among the tools, but this may be the result of sampling.

Table 27. Tools recovered from excavations at Aztec North.

| PD# | SU | Str | Material | Tool Type | Comp. ? | L (mm) | W (mm) | Th (mm) | Wt. (g) | Description |
|---|---|---|---|---|---|---|---|---|---|---|
| 216 | 1 | V | Chert (red) | Biface fragment | N | - | - | - | 0.19 | A very small fragment of a biface |
| 251 | 2 | II/III | Chert (white) | Biface fragment | N | 11.1 | 6.91 | 4.11 | 0.21 | The margin of a white chert biface, showing a few bifacial thinning flake removal scars. |
| 114 | 3 | II | Obsidian | Biface fragment | N | 10.76 | 9.63 | 3.35 | 0.4 | A flake that was retouched to make a projectile point or biface. Pressure flakes extend across the surface. |
| 134 | 4 | I | Igneous | Cobble Chopper | Y | 140.87 | 106.83 | 54.45 | 200+ | An informal chopper manufactured on a split river cobble. |
| 158 | 1 | III | Obsidian | Core | Y | 31.58 | 22.82 | 15.38 | 5.7 | A small angular core of obsidian. It was reused as an informal scraper, with retouch on two margins. |
| 170 | 4 | III | Obsidian | Core | Y | 30.57 | 21.06 | 9.2 | 4.5 | A small core. |
| 145 | 4 | II | Obsidian | Flake Core | N | 39.96 | 21.17 | 7.9 | 5.9 | A large percussion flake that was used as a core with several flake removals. Following this, it was used as a cutting implement. |
| 113 | 3 | II | Chert (white) | Flake Tool | N | 28.98 | 29.53 | 10.27 | 6.01 | A chert gravel nodule, with two heavily utilized margins. |
| 116 | 3 | II | Mudstone (brown/grey) | Flake Tool | Y | 107.86 | 77.87 | 28.88 | 170.5 | A hoe or informal axe manufactured on a large percussion flake. |
| 184 | 1 | IV | Quartzite (grey and purple) | Hammerstone | N | - | - | - | - | A fragment from a hammerstone, including one battered margin. |
| 147 | 2 | II/III | Chert (grey) | Hammerstone | Y | 85.52 | 56.18 | 52.6 | 200+ | A gravel or river cobble hammerstone, lightly used. |
| 167 | 2 | II | Silicified Sandstone (reddish) | Hammerstone | Y | 90.76 | 79.04 | 31.92 | 200+ | A "one-hand mano"-shaped cobble with battering around all margins and battering and microflaking on a couple. |
| 228 | 1 | VI | Igneous | Informal scraper | Y | 28.45 | 35.69 | 11.48 | 16.55 | A flake tool used as a scraper with possible evidence of hafting. |
| 139 | 4 | II | Obsidian | Informal scraper | Y | 20.59 | 15.91 | 6.42 | 1.7 | An informal scraper manufactured on a core reduction flake. |
| 212 | 1 | V | Igneous | Polishing Stone | Y | 64.34 | 28.74 | 16.26 | 39.74 | A slightly polished tip on a manuport. |
| 113 | 3 | II | Brushy Basin Chert | Scraper | N | 37.61 | 22.07 | 9.69 | 6.62 | An end scraper manufactured on a medium sized core flake. Only one lateral margin intact. |
| 180 | 1 | II | Igneous | Type 1 Cobble | Y | 104.9 | 94.23 | 45.8 | 200+ | Four projections have battering damage, with the same facet angle. |
| 212 | 1 | V | Igneous | Type 1 Cobble | Y | 141.48 | 126.07 | 51.62 | 200+ | Typical Type 1 Cobble tool (chopper) |
| 222 | 1 | V | Basalt | Type 1 Cobble | Y | 83.62 | 87.48 | 46.92 | 200+ | Typical Type 1 Cobble tool (chopper) |
| 256 | 1 | VIII | Igneous | Type 1 Cobble | Y | 112.15 | 118.63 | 49.12 | 200+ | Typical Type 1 Cobble tool (chopper) |
| 261 | 1 | II | Quartzite (white) | Type 1 Cobble | Y | 92.92 | 79.02 | 57.09 | 200+ | Typical Type 1 Cobble tool (chopper) |
| 141 | 1 | III | Igneous | Type 1 Cobble | Y | 104.92 | 110.04 | 43.82 | 200+ | Similar to Type 1 cobble tools (chopper) |
| 159 | 1 | II | Quartzite (grey) | Type 1 Cobble | Y | 197 | 136.02 | 70.36 | 200+ | Similar to Type 1 cobble tools (chopper) |
| 242 | 1 | VI | Basalt | Type 2 Cobble | Y | 128.4 | 79.44 | 39.14 | 200+ | A Type 2 Chopper |

Table 28. Projectile points recovered during excavations.

| | PD# | SU | Str | Material | Type | L (mm) | W1 (mm) | W2 (mm) | W3 (mm) | Th (mm) | N1 (mm) | N2 (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PP1 | 247 | 1 | - | White Speckled Chert | Pueblo Side-Notched | 21.52 | 10.29 | 10.88 | 7.15 | 2.37 | 1.71 | 2.79 |
| PP2 | 175 | 1 | I | Red Chert | Pueblo Side-Notched | 13.6* | 7.64 | 9.03 | 4.34 | 1.77 | 1.94 | 1.69 |
| PP3 | 119 | 2 | 0 | Greenish Quartzite | Pueblo Side-Notched | 22.66 | 13.38 | 15.78 | 12.16 | 3.7 | 1.11 | 1.03 |
| PP4 | 139 | 4 | II | Chaco Yellow Brown | Pueblo Side-Notched | 22.13 | 11.18 | 11.59 | 6.38 | 2.52 | 2.54 | 2 |

* incomplete

*Cobble Tools*

During the analysis I noted a relationship between some of the debitage and the cobble tools that were recovered in SU1. Numerous flakes exhibited cortical platforms and little or no cortex on the dorsal surface. This is somewhat unusual in my experience. However, it makes sense in light of my proposed production sequence for the cobble tools:

Method 1

1. Cobble
2. Split the cobble! The split will almost always result in one platform angle of greater than 90 degrees, and one of slightly less than 90 degrees.
3. Remove flakes from approximately 50% of newly split, less-than-90-degree margin/platform. The cortex side serves as the platform (rather than the freshly exposed interior material). If the cobble is held with the non-cortical portion of the split cobble facing upward, the removed flakes in this step are usually to the right hand side. This results in a moderate to marked projection in the middle of the "chopping" margin, and an angle of about 55-60 degrees on the chopping face. The chopping margin is relatively "straight" on either side of the central projection.
4. Edge wear is most prevalent on the "flaked" half of the chopping margin, but the other half is not entirely devoid of use. The projection is surprisingly little modified, especially on the tools that have a sharp projection.
5. [this method could result in the flakes that have cortical platforms and no cortex on their dorsal surfaces—which are themselves used as tools].

Method 2

1. Cobble
2. Remove flake from narrow end of cobble.
3. Flip cobble over. Use flake scar as platform for several flake removals. Flaking results in a hemispherical or arcing margin and a relatively shallow edge angle.
4. [this method results in flakes that have flake scars for platforms and cortex on their dorsal surface—which are themselves used as tools]

The flakes with cortical platforms but cortex-less dorsal surfaces are the result of creating cobble tools using Method 1 described above. Seven of the nine cobble tools were manufactured using Method 1. The sequence is distinct as is the debitage that results from it. This method of making a rather mundane chopping tool is one of the stronger patterns identified within the assemblage.

As for the *use* of the cobble tools, the most commonly noted use wear was rounding of the margin and microflaking. These could result from use of the implements as choppers on vegetal material, wood, or earth—a more detailed study would be necessary to narrow down the options.

*Flake Tools*

Many of the flakes identified during the debitage analysis exhibited use wear. These informal cutting tools are an important facet of the Pueblo flaked stone technological tradition. The vast majority of the debitage was likely related to the production of these flake tools. Table 29 and Table 30 present counts and proportions for flake tools by material type. Approximately 30% of the debitage exhibited some kind of use wear, while I subjectively felt that 38% of the flakes were produced to be used as flake tools (based on their morphology and size). The tables show that relatively high proportions of the quartzite, mudstone, and obsidian flakes were utilized.

Table 29. Counts of debitage exhibiting edge damage or which were judged to be possible flake tools, by material.

| | Edge Damage Present | | Flake Tool? | |
|---|---|---|---|---|
| **Material** | **N** | **Y** | **N** | **Y** |
| **Brushy Basin** | 2 | 0 | 2 | 0 |
| **Chalcedony** | 6 | 0 | 5 | 1 |
| **Chert** | 4 | 0 | 4 | 0 |
| **Igneous** | 67 | 22 | 54 | 36 |
| **Morrison Mudstone** | 5 | 3 | 5 | 3 |
| **Mudstone** | 5 | 3 | 6 | 2 |
| **Narbona Pass Chert** | 2 | 0 | 2 | 0 |
| **Obsidian** | 34 | 18 | 34 | 19 |
| **Quartzite** | 15 | 12 | 13 | 14 |
| **Total** | 140 | 58 | 125 | 75 |

Table 30. Proportions of debitage exhibiting edge damage or which were judged to be possibly flake tools, by material.

| | Edge Damage Present | | Flake Tool? | |
|---|---|---|---|---|
| **Material** | **N** | **Y** | **N** | **Y** |
| **Brushy Basin** | 100% | 0% | 100% | 0% |
| **Chalcedony** | 100% | 0% | 83% | 17% |
| **Chert** | 100% | 0% | 100% | 0% |
| **Igneous** | 75% | 25% | 60% | 40% |
| **Morrison Mudstone** | 63% | 38% | 63% | 38% |
| **Mudstone** | 63% | 38% | 75% | 25% |
| **Narbona Pass Chert** | 100% | 0% | 100% | 0% |
| **Obsidian** | 65% | 35% | 64% | 36% |
| **Quartzite** | 56% | 44% | 48% | 52% |
| **Total** | 71% | 29% | 63% | 38% |

Table 31. Edge damage counts and proportions by Study Unit.

| | **SU1** | **SU2** | **SU3** | **SU4** | **Total** | **SU1** | **SU2** | **SU3** | **SU4** |
|---|---|---|---|---|---|---|---|---|---|
| **Y** | 25 | 10 | 10 | 17 | 62 | 31% | 29% | 26% | 33% |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **N** | 55 | 24 | 29 | 34 | 142 | | 69% | 71% | 74% | 67% |
| **Total** | 80 | 34 | 39 | 51 | 204 | | | | | |

The proportion of flakes exhibiting edge damage is surprisingly consistent across the different contexts. Table 31 demonstrates this—the proportion of flakes with visible edge damange only ranges from 26%-33% and there are no differences between the architectural units (SU1 and SU2) and the midden units (SU3 and SU4).

*Projectile Points*
Four projectile points were recovered during excavations. Three came out of architectural areas and one from a midden area. Table 28 provides metric data on these points and Figure 2 provides a drawing of each of the points. The points are morphologically similar Pueblo side-notched projectile points, common between about A.D. 950 and 1250.

PP1 is made of white speckled chert that probably comes from either the Ojo Alamo Formation or the Quaternary terrace gravels. The point was manufactured on a flake blank, possibly a biface thinning flake though not enough morphology remains of the original flake to determine this. PP1 was minimally retouched—on neither face was the original flake morphology completed removed, and one face pressure flakes were mainly used to make the point the proper shape, not to thin it. The notches are relatively shallow.

PP2 is probably incomplete. It is made of red chert and was manufactured using a similar process to PP1. However, it is possible that PP2 once exhibited more than two notches on the blade, and that the notches currently visible are the upper-most two notches. The base is snapped. This would explain why the point is so short in comparison to the other three points.

PP3 is made of a greenish speckled quartzite. It resembles Burro Canyon Quartzite from the Dakota formation aside from the greenish hue, which would be uncharacteristic. The point may have been made on a biface blank rather than a flake blank as it is somewhat thick and a few larger flake scars are visible beneath the final pass of pressure flakes. Nonetheless, like PP1 and PP2, the morphology of the blank is only minimally removed by the pressure flaking to thin and shape the point. The notches are particularly shallow and barely present. The thickness of the piece and the graininess of the material may have hampered notching.

PP4 is the "nicest" of the four projectile points. It is made of a distinctive yellow-brown chert (probably a petrified wood) known locally as Chaco Yellow Brown. Chaco Yellow Brown seems to originate in terrace gravels containing material from the Animas Formation, which are prominent near the La Plata River. The point was manufactured on a flake blank. On one face the original blank morphology was almost completely removed by pressure flaking, while on the other face pressure flaking only contributed to shaping the point, not thinning it. The notches are parallel to the base, narrow, and finely made.

Aside from PP3, which is probably broken, the points are remarkably similar in length, ranging from 21.52mm to 22.66mm. This suggests a certain degree of standardization, though the wide range of materials and quality of knapping in the point assemblage argues against a single maker for these points.

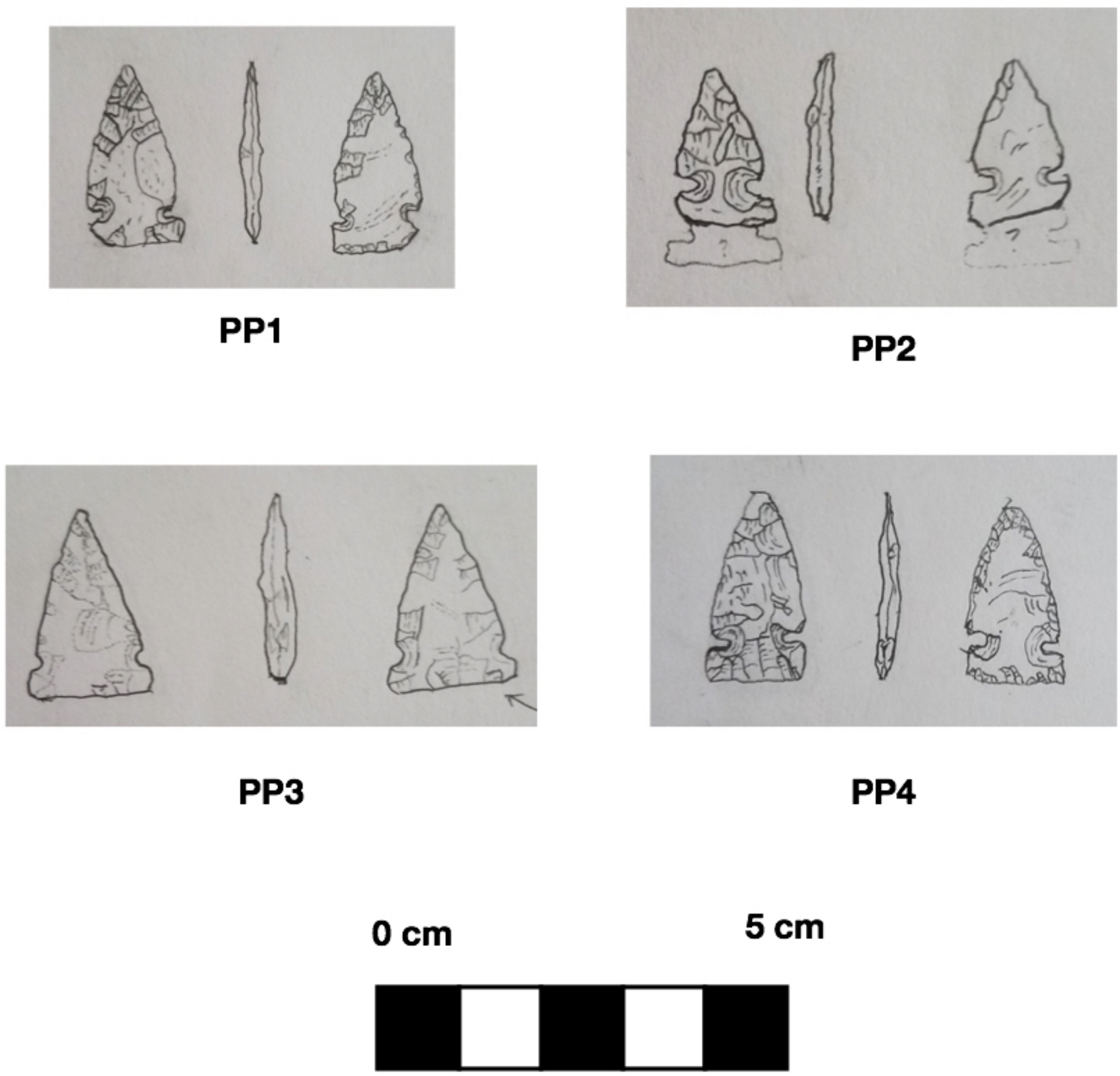


Figure 2. Projectile Points from Aztec North.

### *Summary of Results*

*Research Domain 1*: *Patterns in material usage by the inhabitants of the North Ruin*

Locally available stone sourced within the gravel terraces on which the site sits dominates the materials present at Aztec North, with one notable exception—the obsidian. I can think of no comparable *site* in the Northern or Middle San Juan region with such a high proportion of obsidian, let alone a great house.

Inhabitants of Aztec North had specific uses for particular materials (though this would be more conclusively demonstrated through use-wear analyses). Morphologically, it appears that people relied on locally available igneous stones, mudstones, and quartzites for flake tool cutting implements, and used non-local materials for formal tools. Once again, the obsidian is the exception, as a high proportion of it was used as expedient cutting implements (Tables 29 and 30). Aside from a cluster of chalcedony from SU2, the architectural units exhibit very similar proportions of materials (suggesting the inhabitants drew on similar social networks or had similar “traditional use” locales). The biggest differences in material usage seem to be found between the middens and the architectural units (discussed below).

The obsidian is an anomaly. Out of the four-hundred-odd flakes recovered during excavation, over 120 of them were obsidian. By comparison, about 700 pieces of obsidian were recovered from ALL of the Chaco Project excavations in Chaco Canyon (Cameron 2001:87); about 131 pieces of obsidian were recovered from Salmon Ruin excavations (Shelley 2006:Tables 47.5 and 47.6), out of nearly 20,000 pieces of debitage examined.

The best scenario I can come up with is that early in the occupation of Aztec North a quantity of obsidian nodules were acquired from the Jemez Mountain sources and brought to the great house all at the same time. The material may have been acquired from an intermediary because of the mixing of Cerro del Medio and Obsidian Ridge sources (that is, if Aztec residents journeyed to the source themselves they may have only acquired material from one of them). Much of this material was used up and discarded, with a few pieces lingering in use (or up-cycled from middens) and ultimately getting deposited within room fill. In some ways, the pooling of obsidian at Aztec North is similar to the pooling of obsidian from Yellowstone at the Mound City and Hopewell cluster of sites in Ohio, where a single large expedition may have acquired large quantities of material that were then circulated for several generations within the Hopewell core (see DeBoer 2004).

However, the Aztec North obsidian differs from the Hopewell case because the materials do not seem to have been accorded any special status, nor were they used for rare or esoteric items. The obsidian was used for quotidian activities much like any other material at the site. In this sense, the Aztec obsidian is more analogous to Cathy Cameron’s (2001) characterization of Narbona Pass chert within Chaco Canyon contexts. Narbona Pass Chert was not utilized differently than other materials (Cameron 2001:90). Instead, Cameron (2000:94) suggests that the primary value of the material was to demonstrate and materialize connections to particularly important places, such as the Chuska Mountains. The unusual and highly recognizable color of the chert probably made it useful in display. The obsidian from Aztec North may have similarly materialized a relationship for some members of the community to the Jemez Mountains—perhaps demonstrating their importance in directional rituals associated with cardinal directions.

*Research Domain 2: flaked stone technology or technologies in use*
Flaked stone technology was almost exclusively confined to the reduction of raw nodules of material using hammerstones. Biface reduction debitage was primarily localized to SU3, though as I noted above we are talking about a very few flakes. Very few cores were recovered to help understand the development of patterns in flake removal. In fact, only obsidian cores were recovered.

One reason for the paucity of cores is because of the relationship I identified between cobble tool chopping implements and usable flakes. The flakes are produced during the creation of the relatively simple chopping implement, which is then used and discarded. As a consequence, there are no "cores" as such among much of the igneous materials.

The cobble tool chopping implements may be one point of comparison with other Middle San Juan Chacoan sites. Theoretically, any habitation along the river terrace could deploy the *chaine-operatoire* that I identified here, consisting of splitting cobbles using a bipolar technique and removing flakes to sharpen the tool using cortical platforms (creating recognizable debitage). This is a "low visibility trait" or an example of "technological style" (cf. Lechtmann 1977, Stark, ed. 1998) that could provide clues to social differences within the various Chacoan pueblos in the region.

*Research Domain 3: characterize the range of subsistence activities at or near North Ruin*
In most respects, the proportion of tool types and the heavy reliance on simple flake production technology is much like most Puebloan sites. For the most part, flaked lithics were related to domestic activities like food processing and craft activities like woodworking (use wear analysis could segregating these activities in the debitage). The small proportion of finer-grained cryptocrystalline materials and debitage related to formal tool production is similar to many other habitation sites, as well.

The high number of cobble tools could signify a particular suite of activities. Use wear and experimental analysis could further hone the particular uses to which people put these tools. However, rough woodworking (such as chopping or splitting wood, particularly the split juniper shakes that form the roof/subfloor in some West Ruin rooms?) would be one option. If the implements were hafted, they would have been useful as grubbing hoes for clearing land. Once again, use-wear analysis would be the way to determine these different uses.

*Research Domain 4: contrasts between architectural and midden contexts at North Ruin*

One of the broad patterns evident from the lithics assemblage is the difference between the architectural units and the midden units. Fine-grained siliceous material is clustered there (Tables 3 and 4), particularly the obisidian. Debitage within the midden units is indicative of more careful knapping strategies (Table 17) and more bifacial reduction (Table 14) that is associated with formal tool manufacture. Debitage from SU3 was more thoroughly reduced than debitage in other units, indicating more formal tool manufacture or more refined production of tools.

I see two potential reasons for this pattern. Perhaps the middens represent trash deposition from earlier in the occupation of the site [recalling that there IS evidence for remodeling] and the trash found in room contexts is later in the occupation. This would seem to show that there was a shift in lithic tool production from refined formal tools using exotic materials like obsidian and Narbona Pass Chert to local quatzites and igneous stones found within the Quaternary terrace gravels. In some ways, this parallels the trend seen at other middle San Juan Chacoan sites—an earlier Chacoan component that is largely overshadowed by the more "relaxed" adherence to patterns by 150 years of local middle San Juan populations.

Another possibility is that there are difference social groups engaged in lithic production, and these groups tended to dispose of their implements in different parts of the site. People manufacturing finer tools, which called for finer cryptocrystalline materials, deposited the debris in midden contexts. Meanwhile, people manufacturing flakes and chopping implements for use in household activities tended to leave these implements within decommissioned residential spaces, or even as de facto refuse on the floors of rooms (recall that igneous and quartzite materials dominated floor assemblages—Tables 5 and 6).

Fumi Arakawa (2013) has argued that there is gendered split in lithic technologies in the Mesa Verde region, with women producing tools related to domestic activities like food preparation and men producing projectile points. Furthermore, they tend to acquire materials in different ways—women using locally available materials and men acquiring materials further from the habitation. It is possible that a similar split in material use and deposition is evident at Aztec North.

However, Arakawa notes that most projectile points seem to have been manufactured away from the residential areas closer to quarries or hunting camps (2013:296); this would suggest that it is unlikely that debitage related to arrow production (i.e. the finer cryptocrystalline materials with less cortex) would necessarily cluster in midden contexts. In addition, much of the fine-grained material in the Aztec North middens is obsidian that actually appears to have been used as generic flake tools rather than for the production of formal tools. Therefore, I am more inclined to believe that the differences in the middens may be a result of changes in material acquisition and use over time, even if it is only a generational difference between people "acting Chacoan" and people "acting local."

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## Appendix 4: Lithic Data

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 100 | 2 | MIT127 | 3A | 0 | 0 | SU3A | SU3 East Midden | 10-Midden | Modern Ground Surface |
| 101 | | - | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | | - | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | | - | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT021 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT018 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT025 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT014 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT011 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | | - | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | | - | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | | - | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | | - | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT019 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT024 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT022 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT013 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT017 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT020 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT023 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT026 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT016 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT015 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT012 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT028 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 8 | MIT144 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 8 | MIT143 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 7 | MIT027 | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | | - | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 101 | 9 | | 3A | 1 | I | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 104 | | - | 1A | 1 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 104 | 4 | | 1A | 1 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 104 | | - | 1A | 1 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 104 | | - | 1A | 1 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 104 | 4 | | 1A | 1 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 104 | 4 | | 1A | 1 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 104 | 4 | | 1A | 1 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 104 | 4 | | 1A | 1 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 105 | 6 | | 1A | 2 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 105 | 6 | | 1A | 2 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 105 | 6 | | 1A | 2 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 105 | 6 | | 1A | 2 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 105 | 6 | | 1A | 2 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 105 | 6 | | 1A | 2 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 105 | 6 | | 1A | 2 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 105 | 6 | | 1A | 2 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 105 | 6 | | 1A | 2 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 106 | | 15 | 2A | 1 | I | SU2A | SU2 Looted Room | 15-Looter Hole | Overburden |
| 106 | | 15 | 2A | 1 | I | SU2A | SU2 Looted Room | 15-Looter Hole | Overburden |
| 107 | 4 | | 1A | 3 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 107 | 4 | | 1A | 3 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 107 | 4 | | 1A | 3 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 107 | 4 | | 1A | 3 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 107 | 4 | | 1A | 3 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 107 | 4 | | 1A | 3 | I | SU1A | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 109 | | 15 | 2A | 2 | I | SU2A | SU2 Looted Room | | Overburden |
| 111 | | 15 | 2A | 3 | I | SU2A | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 111 | | 15 | 2A | 3 | I | SU2A | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 111 | | 15 | 2A | 3 | I | SU2A | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 111 | | 15 | 2A | 3 | I | SU2A | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 111 | 5 | | 2A | 3 | I | SU2A | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 111 | 5 | | 2A | 3 | I | SU2A | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 111 | 5 | | 2A | 3 | I | SU2A | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 111 | 5 | | 2A | 3 | I | SU2A | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 113 | | 10 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | 4 | MIT077 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | 4 | MIT076 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | | 10 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | 4 | MIT081 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | | 10 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | 4 | MIT078 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | 4 | MIT079 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | 4 | MIT080 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | 4 | MIT082 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | 4 | MIT075 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | | 10 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | | 10 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 113 | | 10 | 3A | 1 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 114 | | 10 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 114 | 5 | MIT033 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT035 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT039 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT037 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT031 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT043 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT041 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT044 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT042 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT032 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT034 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 114 | 5 | MIT038 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT040 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 114 | 5 | MIT036 | 3A | 2 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 115 | | 15 | 2A | 4 | II | SU2A | SU2 Looted Room | 15-Looter Hole | OB/ADR Overburden/architectural debris with roof fall |
| 116 | | 10 | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 116 | 6 | MIT004 | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 116 | 6 | MIT001 | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 116 | 6 | MIT003 | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 116 | | 10 | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 116 | | 10 | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 116 | | 10 | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 116 | 6 | MIT006 | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 116 | 6 | MIT002 | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 116 | 6 | MIT005 | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 116 | 7 | | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 116 | | 10 | 3A | 3 | II | SU3A | SU3 East Midden | 10-Midden | Midden Deposit |
| 120 | | 15 | 2A | 5 | II | SU2A | SU2 Looted Room | 15-Looter Hole | OB/ADR Overburden/architectural debris with roof fall |
| 122 | | 15 | 2A | 6 | III | SU2A | SU2 Looted Room | 15-Looter Hole | OB/ADR Overburden/architectural debris with roof fall |
| 122 | | 15 | 2A | 6 | III | SU2A | SU2 Looted Room | 15-Looter Hole | OB/ADR Overburden/architectural debris with roof fall |
| 122 | | 15 | 2A | 6 | III | SU2A | SU2 Looted Room | 15-Looter Hole | OB/ADR Overburden/architectural debris with roof fall |
| 122 | | 15 | 2A | 6 | III | SU2A | SU2 Looted Room | 15-Looter Hole | OB/ADR Overburden/architectural debris with roof fall |
| 124 | 8 | | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | 7 | MIT091 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | 7 | MIT088 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | 7 | MIT087 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | 7 | MIT083 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | 7 | MIT092 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | 7 | MIT086 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | 7 | MIT090 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | 7 | MIT089 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | 7 | MIT085 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | 7 | MIT084 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | | 10 | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 124 | 8 | | 3A | 4 | III | SU3A | SU3 East Midden | 10-Midden | Overburden |
| 125 | 4 | MIT142 | 1B | 4 | I | SU1B | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 125 | 12 | | 1B | 4 | I | SU1B | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 125 | 12 | | 1B | 4 | I | SU1B | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 125 | 12 | | 1B | 4 | I | SU1B | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 125 | 12 | | 1B | 4 | I | SU1B | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 125 | 12 | | 1B | 4 | I | SU1B | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 125 | 12 | | 1B | 4 | I | SU1B | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 126 | | 15 | 2A | 7 | III | SU2A | SU2 Looted Room | | OB/ADR Overburden/architectural debris with roof fall |
| 129 | | 15 | 2A | 8 | III | SU2A | SU2 Looted Room | | OB/ADR Overburden/architectural debris with roof fall |
| 131 | | - | 1C | 1 | I | SU1C | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 133 | 2 | MIT094 | 4A | 0 | 0 | SU4A | SU4 West Midden | 8-Midden | MGS Modern Ground Surface |
| 133 | 2 | MIT093 | 4A | 0 | 0 | SU4A | SU4 West Midden | | MGS Modern Ground Surface |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | 6 | MIT124 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | 6 | MIT125 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | 6 | MIT123 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | 6 | MIT126 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | 9 | MIT152 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | 9 | MIT153 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | 6 | MIT122 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 134 | | 8 | 4A | 1 | I | SU4A | SU4 West Midden | 8-Midden | Overburden |
| 139 | | 8 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT049 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 139 | | 8 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT050 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT047 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT048 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | | 8 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | | 8 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | | 8 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | | 8 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | | 8 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | | 8 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 11 | MIT141 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT052 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT057 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT054 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT056 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT055 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT058 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT053 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT046 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | | 8 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | | 8 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | | 8 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 9 | | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 9 | | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 9 | | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 9 | | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 139 | 8 | MIT051 | 4A | 2 | II | SU4A | SU4 West Midden | 8-Midden | Midden Deposit |
| 140 | | 15 | 2C | 2 | I/II | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 140 | | 15 | 2C | 2 | I/II | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 140 | | 15 | 2C | 2 | I/II | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 140 | | 15 | 2C | 2 | I/II | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 141 | 5 | | 1C | 5 | II/III | SU1C | SU1 North Wall | | ADR Architectural Debris with Roof Fall |
| 141 | 5 | | 1C | 5 | II/III | SU1C | SU1 North Wall | | ADR Architectural Debris with Roof Fall |
| 141 | 5 | | 1C | 5 | II/III | SU1C | SU1 North Wall | | ADR Architectural Debris with Roof Fall |
| 141 | 5 | | 1C | 5 | II/III | SU1C | SU1 North Wall | | ADR Architectural Debris with Roof Fall |
| 141 | | - | 1C | 5 | III | SU1C | SU1 North Wall | | ADR Architectural Debris with Roof Fall |
| 143 | | 15 | 2C | 3 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 143 | | 15 | 2C | 3 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 143 | | 15 | 2C | 3 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 143 | | 15 | 2C | 3 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 143 | | 15 | 2C | 3 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 144 | | 8 | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | | 8 | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | | 8 | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | | 8 | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 144 | | 8 | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | | 8 | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | | 8 | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | 5 | MIT138 | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | 5 | MIT138 | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | | 8 | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | | 8 | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | 7 | | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | 7 | | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | 7 | | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | 7 | | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | 7 | | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | 7 | | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 144 | 7 | | 4B | 1 | I | SU4B | SU4 West Midden | 8-Midden | Overburden |
| 145 | | 8 | 4B | 1 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | | 8 | 4B | 1 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | 6 | MIT134 | 4B | 2 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | 6 | MIT131 | 4B | 2 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | | 8 | 4B | 1 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | 6 | MIT129 | 4B | 2 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | 6 | MIT128 | 4B | 2 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | 6 | MIT130 | 4B | 2 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | 6 | MIT132 | 4B | 2 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | | 8 | 4B | 1 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | 7 | | 4B | 2 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | 7 | | 4B | 2 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | 7 | | 4B | 2 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 145 | 6 | MIT133 | 4B | 2 | II | SU4B | SU4 West Midden | 8-Midden | Midden |
| 146 | | 15 | 2C | 4 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 146 | | 15 | 2C | 4 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 146 | | 15 | 2C | 4 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 146 | | 15 | 2C | 4 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 146 | | 15 | 2C | 4 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 146 | | 15 | 2C | 4 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 146 | | 15 | 2C | 4 | II/III | SU2C | SU2 Looted Room | 15-Looter Hole | Overburden |
| 147 | | 15 | 2A | 9 | II/III | SU2A | SU2 Looted Room | 15-Looter Hole | Overburden |
| 147 | | 15 | 2A | 9 | II/III | SU2A | SU2 Looted Room | 15-Looter Hole | Overburden |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | 2 | MIT068 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | 2 | MIT067 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | 2 | MIT069 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | 2 | MIT061 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | 2 | MIT060 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | 2 | MIT064 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | 2 | MIT059 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | 2 | MIT066 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | 2 | MIT062 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | 2 | MIT063 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | 2 | MIT065 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 148 | | 8 | 4C | 0 | 0 | SU4C | SU4 West Midden | 8-Midden | Modern Ground Surface |
| 149 | | 8 | 4C | 1 | I | SU4C | SU4 West Midden | 8-Midden | Midden |
| 149 | | 8 | 4C | 1 | I | SU4C | SU4 West Midden | 8-Midden | Midden |
| 149 | 6 | MIT149 | 4C | 1 | I | SU4C | SU4 West Midden | 8-Midden | Midden |
| 149 | 7 | | 4C | 1 | I | SU4C | SU4 West Midden | 8-Midden | Midden |
| 149 | 7 | | 4C | 1 | I | SU4C | SU4 West Midden | 8-Midden | Midden |
| 158 | | - | 1B | 7 | III | SU1B | SU1 North Wall | | POD Post-Occupational Deposit |
| 158 | | - | 1B | 7 | III | SU1B | SU1 North Wall | | POD Post-Occupational Deposit |
| 158 | | - | 1B | 7 | III | SU1B | SU1 North Wall | | POD Post-Occupational Deposit |
| 158 | | - | 1B | 7 | III | SU1B | SU1 North Wall | | POD Post-Occupational Deposit |
| 158 | 5 | MIT008 | 1B | 7 | III | SU1B | SU1 North Wall | | POD Post-Occupational Deposit |
| 159 | | - | 1C | 6 | II | SU1C | SU1 North Wall | | AD Architectural Debris |
| 162 | | - | 1C | 7 | IV | SU1C | SU1 North Wall | | POD Post-Occupational Deposit |
| 162 | 5 | MIT045 | 1C | 7 | IV | SU1C | SU1 North Wall | | POD Post-Occupational Deposit |
| 162 | | - | 1C | 7 | IV | SU1C | SU1 North Wall | | POD Post-Occupational Deposit |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | 8 | MIT009 | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | 8 | MIT010 | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | | - | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | 14 | | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | 14 | | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | 14 | | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | 13 | MIT150 | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | 13 | MIT151 | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | 14 | | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | 11 | | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | 11 | | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 165 | 11 | | 1C | 8 | V | SU1C | SU1 North Wall | | ICND Interstratified Cultural and Natural Deposits |
| 167 | | 15 | 2B | 2 | II | SU2B | SU2 Looted Room | | OB/AD Overburden/architectural debris |
| 167 | | 15 | 2B | 2 | II | SU2B | SU2 Looted Room | | OB/AD Overburden/architectural debris |
| 170 | | 8 | 4B | 2 | III | SU4B | SU4 West Midden | | Midden |
| 170 | | 8 | 4B | 2 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT111 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT107 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT104 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT102 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | | 8 | 4B | 2 | III | SU4B | SU4 West Midden | | Midden |
| 170 | | 8 | 4B | 2 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT116 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT100 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT096 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | | 8 | 4B | 2 | III | SU4B | SU4 West Midden | | Midden |
| 170 | | 8 | 4B | 2 | III | SU4B | SU4 West Midden | | Midden |
| 170 | | 8 | 4B | 2 | III | SU4B | SU4 West Midden | | Midden |
| 170 | | 8 | 4B | 2 | III | SU4B | SU4 West Midden | | Midden |
| 170 | | 8 | 4B | 2 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT106 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT112 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT110 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT097 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT098 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 170 | 7 | MIT095 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT109 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT108 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT103 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT105 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT099 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT101 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT117 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT114 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 8 | MIT140 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT113 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 11 | | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 170 | 7 | MIT115 | 4B | 3 | III | SU4B | SU4 West Midden | | Midden |
| 171 | | - | 1C | 8 | VI | SU1C | SU1 North Wall | | POD Post-Occupational Deposit |
| 174 | | - | 1D | 1 | I | SU1D | SU1 North Wall | | POD Post-Occupational Deposit |
| 176 | | - | 1D | 3 | II | SU1D | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 176 | | - | 1D | 3 | II | SU1D | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 176 | | - | 1D | 3 | II | SU1D | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 178 | 7 | MIT030 | 2B | 3 | III | SU2B | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 178 | | 15 | 2B | 3 | II | SU2B | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 179 | 6 | MIT070 | 4C | 2 | II | SU4C | SU4 West Midden | 8-Midden | Midden |
| 179 | 6 | MIT072 | 4C | 2 | II | SU4C | SU4 West Midden | 8-Midden | Midden |
| 179 | 9 | | 4C | 2 | II | SU4C | SU4 West Midden | 8-Midden | Midden |
| 179 | | 8 | 4C | 2 | II | SU4C | SU4 West Midden | 8-Midden | Midden |
| 179 | 6 | MIT071 | 4C | 2 | II | SU4C | SU4 West Midden | 8-Midden | Midden |
| 179 | 6 | MIT073 | 4C | 2 | II | SU4C | SU4 West Midden | 8-Midden | Midden |
| 179 | 6 | MIT074 | 4C | 2 | II | SU4C | SU4 West Midden | 8-Midden | Midden |
| 179 | 9 | | 4C | 2 | II | SU4C | SU4 West Midden | 8-Midden | Midden |
| 180 | | - | 1D | 5 | II | SU1D | SU1 North Wall | | AD Architectural Debris |
| 180 | | - | 1D | 5 | II | SU1D | SU1 North Wall | | AD Architectural Debris |
| 181 | | - | 1D | 6 | II | SU1D | SU1 North Wall | | POD Post-Occupational Deposit |
| 181 | | - | 1D | 6 | II | SU1D | SU1 North Wall | | POD Post-Occupational Deposit |
| 184 | | - | 1D | 7 | IV | SU1D | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 184 | 3 | | 1D | 7 | IV | SU1D | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 184 | 3 | | 1D | 7 | IV | SU1D | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 184 | 3 | | 1D | 7 | IV | SU1D | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 184 | 3 | | 1D | 7 | IV | SU1D | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 184 | | - | 1D | 7 | IV | SU1D | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 185 | | 15 | 2D | 3 | II | SU2D | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 185 | | 15 | 2D | 3 | II | SU2D | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 185 | | 15 | 2D | 3 | II | SU2D | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 185 | | 15 | 2D | 3 | II | SU2D | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 187 | | - | 1E | 1 | I | SU1E | SU1 North Wall | | POD Post-Occupational Deposit |
| 187 | | - | 1E | 1 | I | SU1E | SU1 North Wall | | POD Post-Occupational Deposit |
| 187 | | - | 1E | 1 | I | SU1E | SU1 North Wall | | POD Post-Occupational Deposit |
| 190 | | - | 1E | 3 | II | SU1E | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 196 | 4 | | 1G | 3 | I | SU1G | SU1 North Wall | | OB Overburden |
| 196 | 4 | | 1G | 3 | I | SU1G | SU1 North Wall | | OB Overburden |
| 202 | | 15 | 2E | 1 | I | SU2E | SU2 Looted Room | | OB Overburden |
| 203 | | 15 | 2E | 2 | II | SU2E | SU2 Looted Room | | OB/AD Overburden/architectural debris |
| 206 | | 16 | 1E | 1 | I | SU1E | SU1 North Wall | 16- Floor south of northernmost wall | ADR Architectural Debris with Roof Fall |
| 206 | | 16 | 1E | 1 | I | SU1E | SU1 North Wall | 16- Floor south of northernmost wall | ADR Architectural Debris with Roof Fall |
| 208 | | 15 | 2E | 3 | II/III | SU2E | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 13 | MIT120 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | 17 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | 17 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | 17 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | 17 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 13 | MIT121 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 13 | MIT119 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | 17 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | 17 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | 17 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | 17 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | 17 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | 17 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 14 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 14 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 14 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 14 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 14 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 14 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 14 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 17 | MIT146 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 17 | MIT145 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 28 | MIT147 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 28 | MIT148 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 20 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | 24 | | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | - | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 212 | | 17 | 1D | 8 | V | SU1D | SU1 North Wall | 17-Floor of southernmost room | FF Feature Fill |
| 214 | | - | 2F | 1 | I | SU2F | SU2 Looted Room | 15-Looter Hole | OB Overburden |
| 215 | | 15 | 2F | 2 | II | SU2F | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 215 | | 15 | 2F | 2 | II | SU2F | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 215 | | 15 | 2F | 2 | II | SU2F | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 216 | 8 | MIT118 | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | | - | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | | - | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | | - | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | | - | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | | - | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | | - | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | | - | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | | - | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | 13 | | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | 13 | | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | 13 | | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | 13 | | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |
| 216 | | - | 1B | 9 | V | SU1B | SU1 North Wall | | OD Occupational Deposit |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 218 | | - | 2F | 3 | II | SU2F | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 218 | | - | 2F | 3 | II | SU2F | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 220 | 6 | MIT135 | 2A/B | 11 | IV | SU2A,SU2B | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 220 | | - | 2A/B | 11 | IV | SU2A,SU2B | SU2 Looted Room | 15-Looter Hole | OB/AD Overburden/architectural debris |
| 221 | | - | 2F | 4 | II | SU2F | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 222 | | - | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | 9 | | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | | - | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | | - | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | 9 | | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | 77 | MIT136 | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | 9 | | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | 9 | | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | 9 | | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | 9 | | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | 9 | | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | 9 | | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 222 | | - | 1A | 8 | V | SU1A | SU1 North Wall | | OD Occupational Deposit |
| 223 | | - | 1C | 10 | VII | SU1C | SU1 North Wall | | POD Post-Occupational Deposit |
| 223 | | - | 1C | 10 | VII | SU1C | SU1 North Wall | | POD Post-Occupational Deposit |
| 223 | | - | 1C | 10 | VII | SU1C | SU1 North Wall | | POD Post-Occupational Deposit |
| 223 | | - | 1C | 10 | VII | SU1C | SU1 North Wall | | POD Post-Occupational Deposit |
| 225 | | - | 1C | 11 | IX | SU1C | SU1 North Wall | | POD Post-Occupational Deposit |
| 225 | 3 | | 1C | 11 | IX | SU1C | SU1 North Wall | | POD Post-Occupational Deposit |
| 228 | | - | 1C | 9 | VI | SU1C | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 228 | | - | 1C | 9 | VI | SU1C | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 228 | | - | 1C | 9 | VI | SU1C | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 228 | | - | 1C | 9 | VI | SU1C | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 230 | | - | 1B | 10 | VI | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | AD Architectural Debris |
| 230 | | - | 1B | 10 | VI | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | AD Architectural Debris |
| 230 | | - | 1B | 10 | VI | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | AD Architectural Debris |
| 230 | | - | 1B | 10 | VI | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | AD Architectural Debris |
| 230 | | - | 1B | 10 | VI | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | AD Architectural Debris |
| 230 | | - | 1B | 10 | VI | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | AD Architectural Debris |
| 230 | | - | 1B | 10 | VI | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | AD Architectural Debris |
| 230 | | - | 1B | 10 | VI | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | AD Architectural Debris |
| 230 | | - | 1B | 10 | VI | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | AD Architectural Debris |
| 230 | | - | 1B | 10 | VI | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | AD Architectural Debris |
| 231 | | - | 2C/D | 6 | IV | SU2C, SU2D | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 232 | | - | 2D | 7 | V | SU2D | SU2 Looted Room | 18-Floor | FC Floor Contact |
| 233 | | 18 | 2C | 7 | V | SU2C | SU2 Looted Room | 18-Floor | FC Floor Contact |
| 233 | | 18 | 2C | 7 | V | SU2C | SU2 Looted Room | 18-Floor | FC Floor Contact |
| 234 | | - | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | | - | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | | - | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 234 | | - | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | | - | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 234 | 13 | | 2A | 12 | VI | SU2A | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 235 | | - | 1A/B | 11 | VII | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | POD Post-Occupational Deposit |
| 235 | | - | 1A/B | 11 | VII | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | POD Post-Occupational Deposit |
| 235 | | - | 1A/B | 11 | VII | SU1A, SU1B | SU1 North Wall | 19- northernmost wall (one w/o footer) | POD Post-Occupational Deposit |
| 236 | | - | 1G | 8 | II/III | SU1G | SU1 North Wall | | AD Architectural Debris |
| 236 | | - | 1G | 8 | II/III | SU1G | SU1 North Wall | | AD Architectural Debris |
| 236 | | - | 1G | 8 | II/III | SU1G | SU1 North Wall | | AD Architectural Debris |
| 236 | | - | 1G | 8 | II/III | SU1G | SU1 North Wall | | AD Architectural Debris |
| 236 | | - | 1G | 8 | II/III | SU1G | SU1 North Wall | | AD Architectural Debris |
| 238 | | 18 | 2B | 13 | VI | SU2B | SU2 Looted Room | 15-Looter Hole | FC Floor Contact |
| 238 | | 18 | 2B | 13 | VI | SU2B | SU2 Looted Room | 15-Looter Hole | FC Floor Contact |
| 239 | | 17 | 1C/D | 9 | V | SU1C, SU1D | SU2 Looted Room | 17- Floor of southernmost room | OD Occupational Deposit |
| 239 | | 17 | 1C/D | 9 | V | SU1C, SU1D | SU2 Looted Room | 17- Floor of southernmost room | OD Occupational Deposit |
| 239 | | 17 | 1C/D | 9 | V | SU1C, SU1D | SU2 Looted Room | 17- Floor of southernmost room | OD Occupational Deposit |
| 239 | | 17 | 1C/D | 9 | V | SU1C, SU1D | SU2 Looted Room | 17- Floor of southernmost room | OD Occupational Deposit |
| 241 | | 18 | 2E | 7 | VI | SU2E | SU2 Looted Room | 18-Floor | FLF Floor Fill |
| 242 | | 17 | 1C/D | 10 | VI | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | ADR Architectural Debris with Roof Fall |
| 242 | | 17 | 1C/D | 10 | VI | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | ADR Architectural Debris with Roof Fall |
| 242 | | 17 | 1C/D | 10 | VI | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | ADR Architectural Debris with Roof Fall |
| 242 | | 17 | 1C/D | 10 | VI | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | ADR Architectural Debris with Roof Fall |
| 242 | | 17 | 1C/D | 10 | VI | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | ADR Architectural Debris with Roof Fall |
| 242 | | 17 | 1C/D | 10 | VI | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | ADR Architectural Debris with Roof Fall |
| 242 | | 17 | 1C/D | 10 | VI | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | ADR Architectural Debris with Roof Fall |
| 244 | | 15 | 2F | N/A | II/III | SU2E | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 244 | | 15 | 2F | N/A | II/III | SU2E | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 244 | | 15 | 2F | N/A | II/III | SU2E | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 244 | | 15 | 2F | N/A | II/III | SU2E | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 247 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |
| 247 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 247 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |
| 247 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |
| 247 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |
| 247 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |
| 247 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |
| 247 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |
| 247 | 7 | MIT139 | 1C/D | 11 | VIII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |
| 247 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |
| 247 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |
| 247 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | POD Post-Occupational Deposit |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 250 | | - | 1F | 1 | I/II | SU1F | SU1 North Wall | | POD/AD Post-Occupational Deposit with Architectural Debris |
| 251 | | - | 2F | 5 | II/III | SU2F | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 251 | | - | 2F | 5 | II/III | SU2F | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 251 | | - | 2F | 5 | II/III | SU2F | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 252 | | 15 | 2F | 6 | IV | SU2F | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 253 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 15 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 12 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 13 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 16 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 14 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 17 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 19 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 20 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 21 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 18 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 253 | | 17 | 1C/D | 22 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | 5 | | 1C/D | 11 | III | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 253 | | 17 | 1C/D | 11 | VII | SU1C, SU1D | SU1 North Wall | 17- Floor of southernmost room | FLF Floor Fill |
| 254 | | 15 | 2F | 7 | IV | SU2F | SU2 Looted Room | 15-Looter Hole | AD Architectural Debris |
| 256 | | - | 1E | 11 | VIII | SU1E | SU1 North Wall | | FLF Floor Fill |
| 256 | | - | 1E | 11 | VIII | SU1E | SU1 North Wall | | FLF Floor Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 258 | 7 | | 2B | 1 | I | SU2B | SU2 Looted Room | 20- Possible Hearth | FF Feature Fill |
| 260 | | 17 | 1H | 1 to 3 | I | SU1H | SU1 North Wall | 17- Floor of southernmost room | OB Overburden |
| 260 | | 17 | 1H | 1 to 3 | I | SU1H | SU1 North Wall | 17- Floor of southernmost room | OB Overburden |
| 260 | | 17 | 1H | 1 to 3 | I | SU1H | SU1 North Wall | 17- Floor of southernmost room | OB Overburden |
| 260 | | 17 | 1H | 1 to 3 | I | SU1H | SU1 North Wall | 17- Floor of southernmost room | OB Overburden |
| 260 | | 17 | 1H | 1 to 3 | I | SU1H | SU1 North Wall | 17- Floor of southernmost room | OB Overburden |
| 260 | | 17 | 1H | 1 to 3 | I | SU1H | SU1 North Wall | 17- Floor of southernmost room | OB Overburden |
| 260 | | 17 | 1H | 1 to 3 | I | SU1H | SU1 North Wall | 17- Floor of southernmost room | OB Overburden |
| 260 | | 17 | 1H | 1 to 3 | I | SU1H | SU1 North Wall | 17- Floor of southernmost room | OB Overburden |
| 261 | | 17 | 1H | 4 to 8 | II | SU1H | SU1 North Wall | 17- Floor of southernmost room | AD Architectural Debris |
| 261 | | 17 | 1H | 4 to 8 | II | SU1H | SU1 North Wall | 17- Floor of southernmost room | AD Architectural Debris |
| 261 | | 17 | 1H | 4 to 8 | II | SU1H | SU1 North Wall | 17- Floor of southernmost room | AD Architectural Debris |
| 262 | | 17 | 1H | 9 to 10 | III | SU1H | SU1 North Wall | 17- Floor of southernmost room | POD/AD Post-Occupational Deposit with Architectural Debris |
| 262 | | 17 | 1H | 9 to 10 | III | SU1H | SU1 North Wall | 17- Floor of southernmost room | POD/AD Post-Occupational Deposit with Architectural Debris |
| 264 | 5 | | 2A | 1 | I | SU2A | SU2 Looted Room | 20- Possible Hearth | FLF Floor Fill |
| 264 | 5 | | 2A | 1 | I | SU2A | SU2 Looted Room | 20- Possible Hearth | FLF Floor Fill |
| 268 | | - | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |
| 268 | | - | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |
| 268 | | - | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |
| 268 | | - | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |
| 268 | | - | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |
| 268 | | - | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |
| 268 | | - | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |
| 268 | | - | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |

| PD# | FS | Feature | Unit | Level | Strat | | Study Unit | Feature | Vertical Unit |
|---|---|---|---|---|---|---|---|---|---|
| 268 | 3 | MIT029 | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |
| 268 | | - | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |
| 268 | | - | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |
| 268 | | - | 1F/G | 2 | III | SU1F, SU1G | SU1 North Wall | | POD Post-Occupational Deposit |
| 271 | 2 | | 1B | 12 | VIII | SU1B | SU1 North Wall | 17- Floor of southernmost room | SF Sub Floor |
| 271 | 2 | | 1B | 12 | VIII | SU1B | SU1 North Wall | 17- Floor of southernmost room | SF Sub Floor |
| 271 | 2 | | 1B | 12 | VIII | SU1B | SU1 North Wall | 17- Floor of southernmost room | SF Sub Floor |
| 271 | 2 | | 1B | 12 | VIII | SU1B | SU1 North Wall | 17- Floor of southernmost room | SF Sub Floor |
| 271 | 2 | | 1B | 12 | VIII | SU1B | SU1 North Wall | 17- Floor of southernmost room | SF Sub Floor |
| 276 | | - | 2F | 20 | VII | SU2F | SU2 Looted Room | 24- N/S wall in SU2F, 21- Floor | SF Sub Floor |
| 276 | 5 | | 2F | 20 | VII | SU2F | SU2 Looted Room | 24- N/S wall in SU2F, 21- Floor | SF Sub Floor |
| 276 | 5 | | 2F | 20 | VII | SU2F | SU2 Looted Room | 24- N/S wall in SU2F, 21- Floor | SF Sub Floor |
| 276 | 5 | | 2F | 20 | VII | SU2F | SU2 Looted Room | 24- N/S wall in SU2F, 21- Floor | SF Sub Floor |
| 276 | 5 | | 2F | 20 | VII | SU2F | SU2 Looted Room | 24- N/S wall in SU2F, 21- Floor | SF Sub Floor |
| 276 | 5 | | 2F | 20 | VII | SU2F | SU2 Looted Room | 24- N/S wall in SU2F, 21- Floor | SF Sub Floor |
| 276 | 5 | | 2F | 20 | VII | SU2F | SU2 Looted Room | 24- N/S wall in SU2F, 21- Floor | SF Sub Floor |
| 276 | 5 | | 2F | 20 | VII | SU2F | SU2 Looted Room | 24- N/S wall in SU2F, 21- Floor | SF Sub Floor |
| 276 | 5 | | 2F | 20 | VII | SU2F | SU2 Looted Room | 24- N/S wall in SU2F, 21- Floor | SF Sub Floor |
| 276 | 5 | | 2F | 20 | VII | SU2F | SU2 Looted Room | 24- N/S wall in SU2F, 21- Floor | SF Sub Floor |
| 277 | 3 | | 1A | 1 | I | SU1A | SU1 North Wall | 27- Possible Hearth | FLF Floor Fill |
| 277 | 3 | | 1A | 1 | I | SU1A | SU1 North Wall | 27- Possible Hearth | FLF Floor Fill |
| 277 | 3 | | 1A | 1 | I | SU1A | SU1 North Wall | 27- Possible Hearth | FLF Floor Fill |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100 | 2 | Debitage | Obsidian | complete flake | 0-25% | unknown | 0.1 | 10.8 | 8.24 | 2.04 | "core" reduction | crushed |
| 101 | | Debitage | Brushy Basin Chert | complete flake | 0-25% | sedimentary | 3.38 | 20.01 | 37.52 | 4.32 | "core" reduction | Cortex |
| 101 | | Debitage | Chalcedony | complete flake | 0-25% | unknown | 0.08 | 12.91 | 5.8 | 1.15 | unknown | Crushed |
| 101 | | Debitage | Chert (Honaker trail?) | complete flake | 0-25% | unknown | 0.15 | 12.44 | 6.8 | 1.4 | biface thinning | Trimmed |
| 101 | 7 | Debitage | Obsidian | complete flake | 0-25% | unknown | 0.1 | 16.2 | 7.13 | 3.48 | "core" reduction | Cortex |
| 101 | 7 | Debitage | Obsidian | complete flake | 0-25% | sedimentary | 0.3 | 9.41 | 7.21 | 1.61 | "core" reduction | Cortex |
| 101 | 7 | Debitage | Obsidian | complete flake | 0-25% | sedimentary | 0.1 | 8.22 | 9.56 | 0.92 | Biface thinning | crushed |
| 101 | 7 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.6 | 15.61 | - | 5.51 | "core" reduction | Flake scar |
| 101 | 7 | Debitage | Obsidian | complete flake | 25-75% | sedimentary | 5.1 | 24.37 | 23.69 | 8.5 | "core" reduction | Cortex |
| 101 | | Debitage | Chalcedony | broken flake | 0-25% | unknown | 0.1 | | | | | |
| 101 | | Debitage | chert (brown, gravels) | broken flake | 25-75% | gravel | 0.17 | | | | | |
| 101 | | Debitage | chert (grey, gravels) | broken flake | 25-75% | gravel | 0.11 | | | | | |
| 101 | | Debitage | Mica | broken flake | 0-25% | | 0.22 | | | | | |
| 101 | 7 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0 | | | | | |
| 101 | 7 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0 | | | | | |
| 101 | 7 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.1 | | | | | |
| 101 | 7 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.1 | | | | | |
| 101 | 7 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.1 | | | | | |
| 101 | 7 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0.1 | | | | | |
| 101 | 7 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.1 | | | | | |
| 101 | 7 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0.2 | | | | | |
| 101 | 7 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0.2 | | | | | |
| 101 | 7 | Debitage | Obsidian | complete flake | 0-25% | unknown | 0.2 | | | | | |
| 101 | 7 | Debitage | Obsidian | shatter/debris | 0-25% | sedimentary | 0.6 | | | | | |
| 101 | 7 | Microdebitage | Obsidian | | | | | | | | | |
| 101 | 8 | Microdebitage | Obsidian | | | | | | | | | |
| 101 | 8 | Microdebitage | Obsidian | | | | | | | | | |
| 101 | 7 | Microdebitage | | | | | | | | | | |
| 101 | | Terrace gravel | Igneous | | | | | | | | | |
| 101 | 9 | Terrace gravel | | | | | | | | | | |
| 104 | | Debitage | mudstone (brown/grey) | complete flake | 75-100% | river cobble | 5.55 | 12.3 | 40 | 13.7 | "core" reduction | Cortex |
| 104 | 4 | Debitage | Igneous | complete flake | 0-25% | unknown | 9.9 | 44.52 | 29.09 | 7.43 | "core" reduction | Cortex |
| 104 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 10.18 | 47.21 | 29.17 | 9.56 | "core" reduction | Cortex |
| 104 | | Debitage | Igneous | shatter/debris | 25-75% | river cobble | 20.75 | | | | | |
| 104 | 4 | Terrace gravel | | | | | | | | | | |
| 104 | 4 | Terrace gravel | | | | | | | | | | |
| 104 | 4 | Terrace gravel | | | | | | | | | | |
| 104 | 4 | Terrace gravel | | | | | | | | | | |
| 105 | 6 | Microdebitage | chert (brown, gravels) | | | | | | | | | |
| 105 | 6 | Microdebitage | chert (grey, gravels) | | | | | | | | | |
| 105 | 6 | Microdebitage | chert (tan) | | | | | | | | | |
| 105 | 6 | Microdebitage | chert (tan) | | | | | | | | | |
| 105 | 6 | Terrace gravel | | | | | | | | | | |
| 105 | 6 | Terrace gravel | | | | | | | | | | |
| 105 | 6 | Terrace gravel | | | | | | | | | | |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 105 | 6 | Terrace gravel | | | | | | | | | | |
| 105 | 6 | Terrace gravel | | | | | | | | | | |
| 106 | | Debitage | Quartzite (purple) | broken flake | 25-75% | river cobble | 0.36 | | | | | |
| 106 | | Debitage | Quartzite (purple) | broken flake | 0-25% | river cobble | 2.2 | | | | | |
| 107 | 4 | Debitage | Igneous | complete flake | 75-100% | river cobble | 0.5 | 24.05 | 6.18 | 3.58 | bipolar | crushed |
| 107 | 4 | Debitage | Igneous | broken flake | 25-75% | river cobble | 0.7 | | | | | |
| 107 | 4 | Microdebitage | Igneous | | | | | | | | | |
| 107 | 4 | Microdebitage | Igneous | | | | | | | | | |
| 107 | 4 | Microdebitage | Igneous | | | | | | | | | |
| 107 | 4 | Terrace gravel | | | | | | | | | | |
| 109 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 9.9 | 38.33 | 45.01 | 10.5 | "core" reduction | Cortex |
| 111 | | Debitage | Chalcedony | broken flake | 0-25% | unknown | 0.16 | | | | | |
| 111 | | Debitage | Chert (white) | broken flake | 0-25% | unknown | 0.61 | | | | | |
| 111 | | Debitage | Igneous | broken flake | 25-75% | river cobble | 14.45 | - | - | - | - | |
| 111 | | Debitage | Igneous | broken flake | 25-75% | river cobble | 2.13 | | | | | |
| 111 | 5 | Microdebitage | Igneous | | | | | | | | | |
| 111 | 5 | Terrace gravel | | | | | | | | | | |
| 111 | 5 | Terrace gravel | | | | | | | | | | |
| 111 | 5 | Terrace gravel | | | | | | | | | | |
| 113 | | Debitage | Narbona Pass Chert | complete flake | 0-25% | unknown | 0.29 | 10.82 | 11.43 | 2.16 | "core" reduction | Trimmed |
| 113 | 4 | Debitage | Obsidian | complete flake | 0-25% | sedimentary | 0 | 4.17 | 12.92 | 1.33 | "core" reduction | Cortex |
| 113 | 4 | Debitage | Obsidian | complete flake | 0-25% | sedimentary | 0.1 | 4.86 | 10.02 | 2.14 | Biface thinning | trimmed |
| 113 | | Debitage | Igneous | complete flake | 25-75% | gravel | 29.47 | 52.01 | 42.59 | 17.02 | bipolar | Cortex |
| 113 | 4 | Debitage | Obsidian | complete flake | 25-75% | sedimentary | 0.7 | 20.75 | 11.55 | 2.97 | "core" reduction | Trimmed |
| 113 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.22 | | | | | |
| 113 | 4 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0 | | | | | |
| 113 | 4 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0.1 | | | | | |
| 113 | 4 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0.2 | | | | | |
| 113 | 4 | Debitage | Obsidian | shatter/debris | 25-75% | sedimentary | 0.5 | | | | | |
| 113 | 4 | Microdebitage | Obsidian | | | | | | | | | |
| 113 | | Terrace gravel | | | | | | | | | | |
| 113 | | Tool | Brushy Basin Chert | broken flake | 25-75% | sedimentary | | | | | | |
| 113 | | Tool | Chert (grey) | | 25-75% | gravel | 6.01 | 28.98 | 29.53 | 10.27 | | |
| 114 | | Debitage | Chert (grey) | complete flake | 0-25% | unknown | 1.37 | 16.65 | 25.29 | 3.66 | "core" reduction | Flake scar |
| 114 | 5 | Debitage | Obsidian | complete flake | 0-25% | | 0.1 | 12.06 | 6.98 | 1.56 | "core" reduction | crushed |
| 114 | 5 | Debitage | Obsidian | complete flake | 0-25% | | 0.2 | 14.39 | 9.32 | 1.78 | "core" reduction | trimmed |
| 114 | 5 | Debitage | Obsidian | complete flake | 0-25% | | 0.2 | 9.75 | 10.28 | 2.28 | "core" reduction | cortex |
| 114 | 5 | Debitage | Obsidian | complete flake | 75-100% | | 0.2 | 9.45 | 11.64 | 2.2 | "core" reduction | cortex |
| 114 | 5 | Debitage | Obsidian | complete flake | 0-25% | | 0.2 | 10.74 | 5.9 | 1.9 | "core" reduction | cortex |
| 114 | 5 | Debitage | Obsidian | complete flake | 0-25% | | 0.3 | 13.78 | 10.13 | 2.75 | "core" reduction | cortex |
| 114 | 5 | Debitage | Obsidian | complete flake | 0-25% | | 0.3 | 12.77 | 14.89 | 1.62 | "core" reduction | trimmed |
| 114 | 5 | Debitage | Obsidian | complete flake | 25-75% | | 1.2 | 35.43 | 13.28 | 3.87 | "core" reduction | crushed |
| 114 | 5 | Debitage | Obsidian | complete flake | 0-25% | | 1.7 | 20.91 | 21.23 | 7.06 | "core" reduction | cortex |
| 114 | 5 | Debitage | Obsidian | broken flake | 0-25% | | 0.1 | | | | | |
| 114 | 5 | Debitage | Obsidian | broken flake | 75-100% | | 0.2 | | | | | |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 114 | 5 | Debitage | Obsidian | shatter/debris | 25-75% | | 0.6 | | | | | |
| 114 | 5 | Debitage | Obsidian | broken flake | 0-25% | | 0.7 | | | | | |
| 114 | 5 | Tool | Obsidian | | | | | | | | | |
| 115 | | Debitage | Quartzite (purple) | broken flake | 25-75% | sedimentary | 5.98 | | | | | |
| 116 | | Debitage | Chalcedony | complete flake | 75-100% | sedimentary | 0.32 | 8.97 | 14.31 | 3.09 | "core" reduction | Trimmed |
| 116 | 6 | Debitage | Obsidian | complete flake | 0-25% | | 0 | 8.17 | 8.54 | 0.97 | "core" reduction | trimmed |
| 116 | 6 | Debitage | Obsidian | shatter/debris | 25-75% | | | | | | | |
| 116 | 6 | Debitage | Obsidian | broken flake | 0-25% | | 0.2 | | | | | |
| 116 | | Debitage | Quartzite (grey) | broken flake | 75-100% | sedimentary | 0.31 | | | | | |
| 116 | | FCR | Igneous | | | | | | | | | |
| 116 | | FCR | Igneous | | | | | | | | | |
| 116 | 6 | Microdebitage | Obsidian | | | | | | | | | |
| 116 | 6 | Microdebitage | Obsidian | | | | | | | | | |
| 116 | 6 | Microdebitage | Obsidian | | | | | | | | | |
| 116 | 7 | Terrace gravel | | | | | | | | | | |
| 116 | | Tool | mudstone (brown/grey) | complete flake | 25-75% | sedimentary | 170.5 | 107.86 | 77.87 | 28.88 | "core" reduction | Cortex |
| 120 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 1.16 | | | | | |
| 122 | | Debitage | Chalcedony | broken flake | 0-25% | unknown | 0.17 | | | | | |
| 122 | | Debitage | Chalcedony | broken flake | 0-25% | sedimentary | 0.26 | | | | | |
| 122 | | Debitage | Igneous | broken flake | 0-25% | unknown | 4.42 | | | | | |
| 122 | | Terrace gravel | | | | | | | | | | |
| 124 | 8 | Debitage | Chalcedony | complete flake | 0-25% | sedimentary | 0 | 3.51 | 5.66 | 1.29 | Core reduction | Cortex |
| 124 | | Debitage | Igneous | complete flake | 0-25% | unknown | 0.05 | 4.83 | 6.97 | 0.95 | "core" reduction | crushed |
| 124 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 0.53 | 8.88 | 19.7 | 2.77 | "core" reduction | Cortex |
| 124 | | Debitage | Narbona Pass Chert | complete flake | 25-75% | sedimentary | 0.23 | 10.19 | 9.57 | 2.23 | "core" reduction | Trimmed |
| 124 | 7 | Debitage | Obsidian | complete flake | 0-25% | | 0.1 | 13.59 | 7.92 | 1.71 | "core" reduction | cortex |
| 124 | 7 | Debitage | Obsidian | complete flake | 75-100% | | 0.2 | 11.82 | 13.81 | 2.78 | "core" reduction | flake scar |
| 124 | 7 | Debitage | Obsidian | complete flake | 0-25% | | 0.3 | 12.3 | 14.71 | 3.35 | "core" reduction | flake scar |
| 124 | 7 | Debitage | Obsidian | complete flake | 0-25% | | 0.7 | 18.84 | 11.59 | 3.59 | "core" reduction | flake scar |
| 124 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 15.02 | 28.77 | 56.58 | 8.54 | "core" reduction | Flake scar |
| 124 | | Debitage | Igneous | complete flake | 0-25% | unknown | 15.09 | 44.58 | 33.81 | 9.39 | "core" reduction | Flake scar |
| 124 | | Debitage | Chalcedony | broken flake | 25-75% | gravel | 0.14 | | | | | |
| 124 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.19 | | | | | |
| 124 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 0.27 | | | | | |
| 124 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 1.91 | | | | | |
| 124 | | Debitage | Igneous (basalt) | broken flake | 0-25% | unknown | 0.12 | | | | | |
| 124 | 7 | Debitage | Obsidian | broken flake | 0-25% | | 0.1 | | | | | |
| 124 | 7 | Debitage | Obsidian | broken flake | 0-25% | | 0.1 | | | | | |
| 124 | 7 | Debitage | Obsidian | broken flake | 0-25% | | 0.1 | | | | | |
| 124 | 7 | Debitage | Obsidian | broken flake | 0-25% | | 0.1 | | | | | |
| 124 | 7 | Microdebitage | | | | | | | | | | |
| 124 | 7 | Microdebitage | | | | | | | | | | |
| 124 | | Terrace gravel | Sandstone | | | | | | | | | |
| 124 | | Terrace gravel | Sandstone | | | | | | | | | |
| 124 | | Terrace gravel | | | | | | | | | | |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 124 | | Terrace gravel | | | | | | | | | | |
| 124 | | Terrace gravel | | | | | | | | | | |
| 124 | | Terrace gravel | | | | | | | | | | |
| 124 | 8 | Terrace gravel | | | | | | | | | | |
| 125 | 4 | Microdebitage | Obsidian | | | | | | | | | |
| 125 | 12 | Terrace gravel | | | | | | | | | | |
| 125 | 12 | Terrace gravel | | | | | | | | | | |
| 125 | 12 | Terrace gravel | | | | | | | | | | |
| 125 | 12 | Terrace gravel | | | | | | | | | | |
| 125 | 12 | Terrace gravel | | | | | | | | | | |
| 125 | 12 | Terrace gravel | | | | | | | | | | |
| 126 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 0.59 | 14.22 | 12.36 | 3.7 | "core" reduction | Cortex |
| 129 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 1.37 | 18.56 | 19.94 | 3.06 | "core" reduction | Cortex |
| 131 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 10.93 | 35.37 | 27.26 | 11.14 | "core" reduction | Cortex |
| 133 | 2 | Debitage | Obsidian | complete flake | 0-25% | gravel | 3 | 20.78 | 25.75 | 6.9 | "core" reduction | Trimmed |
| 133 | 2 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.5 | | | | | |
| 134 | | Debitage | chert (grey, gravels) | complete flake | 75-100% | gravel | 0.25 | 9.48 | 10.17 | 1.89 | "core" reduction | Flake scar |
| 134 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 0.08 | 6.15 | 5.7 | 1.8 | "core" reduction | Flake scar |
| 134 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 0.17 | 11.74 | 8.39 | 1.4 | "core" reduction | crushed |
| 134 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 0.74 | 19.33 | 8.75 | 3.81 | "core" reduction | Crushed |
| 134 | | Debitage | Morrison Mudstone | complete flake | 25-75% | sedimentary | 0.4 | 8.2 | 12.47 | 3.31 | "core" reduction | Trimmed |
| 134 | | Debitage | mudstone (brown/grey) | complete flake | 75-100% | unknown | 2.2 | 13.5 | 25.17 | 5.45 | "core" reduction | Trimmed |
| 134 | 6 | Debitage | Obsidian | complete flake | 0-25% | | 0 | 8.32 | 12.2 | 0.68 | "core" reduction | trimmed |
| 134 | 6 | Debitage | Obsidian | complete flake | 0-25% | | 2.2 | 14.05 | 21.23 | 6.05 | "core" reduction | cortex |
| 134 | | Debitage | Chalcedony | broken flake | 0-25% | unknown | 0.16 | | | | | |
| 134 | | Debitage | Igneous | shatter/debris | 0-25% | river cobble | 0.03 | | | | | |
| 134 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.07 | | | | | |
| 134 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.07 | | | | | |
| 134 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 0.14 | | | | | |
| 134 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 0.26 | | | | | |
| 134 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 0.27 | | | | | |
| 134 | | Debitage | Igneous | shatter/debris | 25-75% | river cobble | 0.27 | | | | | |
| 134 | | Debitage | Igneous | shatter/debris | 75-100% | river cobble | 7.54 | | | | | |
| 134 | | Debitage | Morrison Mudstone | broken flake | 25-75% | sedimentary | 0.6 | | | | | |
| 134 | 6 | Debitage | Obsidian | broken flake | 0-25% | | 0.2 | | | | | |
| 134 | 6 | Debitage | Obsidian | broken flake | 0-25% | | 1.3 | | | | | |
| 134 | | Debitage | Quartzite (grey and purple) | broken flake | 0-25% | unknown | 0.12 | | | | | |
| 134 | | Debitage | Quartzite (purple) | broken flake | 0-25% | river cobble | 1.29 | | | | | |
| 134 | 9 | Microdebitage | Obsidian | | | | | | | | | |
| 134 | 9 | Microdebitage | Obsidian | | | | | | | | | |
| 134 | 6 | Microdebitage | Obsidian | | | | | | | | | |
| 134 | | Terrace gravel | | | | | | | | | | |
| 134 | | Tool | | | | | | | | | | |
| 139 | | Debitage | mudstone (brown/grey) | complete flake | 25-75% | sedimentary | 1.81 | 15.13 | 24.83 | 4.84 | "core" reduction | Cortex |
| 139 | 8 | Debitage | Obsidian | complete flake | 0-25% | unknown | 0.4 | 12.07 | 11.3 | 3.26 | "Core" reduction | Flake scar |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 139 | | Debitage | Quartzite (grey) | complete flake | 25-75% | river cobble | 2.44 | 19.62 | 23.88 | 6.59 | "core" reduction | Cortex |
| 139 | 8 | Debitage | Obsidian | complete flake | 0-25% | unknown | 1.4 | 13.94 | 20.44 | 4.28 | "Core" reduction | Cortex |
| 139 | 8 | Debitage | Obsidian | complete flake | 25-75% | sedimentary | 4.2 | 24.64 | 19.6 | 8.53 | "Core" reduction | Flake scar |
| 139 | 8 | Debitage | Obsidian | broken flake | 0-25% | unknown | 1.2 | 24.45 | 13.57 | 4.1 | bipolar | crushed |
| 139 | | Debitage | Brushy Basin Chert | broken flake | 25-75% | sedimentary | 1.5 | | | | | |
| 139 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.05 | | | | | |
| 139 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.23 | | | | | |
| 139 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.24 | | | | | |
| 139 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.32 | | | | | |
| 139 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 0.97 | | | | | |
| 139 | 11 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0 | | | | | |
| 139 | 8 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0.1 | | | | | |
| 139 | 8 | Debitage | Obsidian | shatter/debris | 0-25% | sedimentary | 0.1 | | | | | |
| 139 | 8 | Debitage | Obsidian | shatter/debris | 0-25% | sedimentary | 0.2 | | | | | |
| 139 | 8 | Debitage | Obsidian | shatter/debris | 25-75% | sedimentary | 0.3 | | | | | |
| 139 | 8 | Debitage | Obsidian | shatter/debris | 0-25% | sedimentary | 0.3 | | | | | |
| 139 | 8 | Debitage | Obsidian | shatter/debris | 0-25% | sedimentary | 0.3 | | | | | |
| 139 | 8 | Debitage | Obsidian | shatter/debris | 0-25% | sedimentary | 0.4 | | | | | |
| 139 | 8 | Debitage | Obsidian | broken flake | 0-25% | unknown | 2.1 | | | | | |
| 139 | | FCR | Igneous | | | | | | | | | |
| 139 | | FCR | | | | | | | | | | |
| 139 | | FCR | | | | | | | | | | |
| 139 | 9 | Terrace gravel | | | | | | | | | | |
| 139 | 9 | Terrace gravel | | | | | | | | | | |
| 139 | 9 | Terrace gravel | | | | | | | | | | |
| 139 | 9 | Terrace gravel | | | | | | | | | | |
| 139 | 8 | Tool | Obsidian | | | | | | | | | |
| 140 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 1.12 | 19.14 | 16 | 3.61 | "core" reduction | Flake scar |
| 140 | | Debitage | Quartzite (grey) | broken flake | 0-25% | unknown | 1.23 | | | | | |
| 140 | | Debitage | Quartzite (grey) | shatter/debris | 0-25% | unknown | 1.75 | | | | | |
| 140 | | Terrace gravel | petrified wood? | | | | | | | | | |
| 141 | 5 | Microdebitage | Chalcedony | | | | | | | | | |
| 141 | 5 | Microdebitage | Chalcedony | | | | | | | | | |
| 141 | 5 | Microdebitage | Chalcedony | | | | | | | | | |
| 141 | 5 | Microdebitage | Chalcedony | | | | | | | | | |
| 141 | | Tool | Igneous | | | | | | | | | |
| 143 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 1.99 | 17.55 | 24.5 | 4.81 | "core" reduction | Cortex |
| 143 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 8.16 | 43.93 | 22.17 | 8.94 | "core" reduction | Cortex |
| 143 | | Debitage | Morrison Mudstone | broken flake | 0-25% | unknown | 0.91 | | | | | |
| 143 | | FCR | Igneous | | | | | | | | | |
| 143 | | FCR | Igneous | | | | | | | | | |
| 144 | | Debitage | Chert (dark yellow brown [Chinle?]) | complete flake | 0-25% | sedimentary | 0.55 | 13.98 | 17.06 | 3.89 | "core" reduction | Cortex |
| 144 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 1.81 | 16.94 | 15.27 | 5.39 | "core" reduction | Cortex |
| 144 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 37.13 | 45.75 | 33.01 | 27.14 | "core" reduction | Flake scar |
| 144 | | Debitage | Brushy Basin Chert | broken flake | 25-75% | sedimentary | 1.53 | | | | | |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 144 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.08 | | | | | |
| 144 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.22 | | | | | |
| 144 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 1.88 | | | | | |
| 144 | 5 | Debitage | Obsidian | shatter/debris | 0-25% | unknown | 0.1 | | | | | |
| 144 | 5 | Debitage | Obsidian | shatter/debris | 25-75% | sedimentary | 0.3 | | | | | |
| 144 | | Debitage | Quartzite (grey and purple) | shatter/debris | 75-100% | gravel | 0.59 | | | | | |
| 144 | | Debitage | Quartzite (purple) | broken flake | 25-75% | river cobble | 3.8 | | | | | |
| 144 | 7 | Terrace gravel | | | | | | | | | | |
| 144 | 7 | Terrace gravel | | | | | | | | | | |
| 144 | 7 | Terrace gravel | | | | | | | | | | |
| 144 | 7 | Terrace gravel | | | | | | | | | | |
| 144 | 7 | Terrace gravel | | | | | | | | | | |
| 144 | 7 | Terrace gravel | | | | | | | | | | |
| 144 | 7 | Terrace gravel | | | | | | | | | | |
| 145 | | Debitage | Chalcedony | complete flake | 25-75% | sedimentary | 0.13 | 10.49 | 13.56 | 1.22 | biface thinning | Trimmed |
| 145 | | Debitage | mudstone (brown/grey) | complete flake | 25-75% | sedimentary | 30.75 | 59.86 | 50.3 | 8.87 | "core" reduction | Cortex |
| 145 | 6 | Debitage | Obsidian | complete flake | 75-100% | sedimentary | 1.2 | 17.12 | 24.31 | 3.46 | "core" reduction | Cortex |
| 145 | 6 | Debitage | Obsidian | complete flake | 25-75% | sedimentary | 4.7 | 28.37 | 19.42 | 9.94 | "core" reduction | Flake scar |
| 145 | | Debitage | Chalcedony | broken flake | 0-25% | sedimentary | 0.92 | | | | | |
| 145 | 6 | Debitage | Obsidian | broken flake | 75-100% | unknown | 0.1 | | | | | |
| 145 | 6 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.1 | | | | | |
| 145 | 6 | Debitage | Obsidian | broken flake | 25-75% | sedimentary | 0.2 | | | | | |
| 145 | 6 | Debitage | Obsidian | broken flake | 75-100% | sedimentary | 1.3 | | | | | |
| 145 | | FCR | Igneous | | | | | | | | | |
| 145 | 7 | Microdebitage | chert (tan) | | | | | | | | | |
| 145 | 7 | Microdebitage | Igneous | | | | | | | | | |
| 145 | 7 | Terrace gravel | | | | | | | | | | |
| 145 | 6 | Tool | Obsidian | | | | | | | | | |
| 146 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 1.2 | 15.24 | 22.91 | 4.55 | "core" reduction | Cortex |
| 146 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 2.53 | 17.36 | 21.07 | 8.19 | "core" reduction | Cortex |
| 146 | | Debitage | Igneous | broken flake | 25-75% | river cobble | 0.32 | | | | | |
| 146 | | Debitage | mudstone (brown/grey) | broken flake | 75-100% | gravel | 2.44 | | | | | |
| 146 | | Debitage | Quartzite (grey) | broken flake | 0-25% | unknown | 1.34 | | | | | |
| 146 | | Debitage | Sandstone | architectural debris | | | | | | | | |
| 146 | | Terrace gravel | | | | | | | | | | |
| 147 | | Debitage | Sandstone | architectural debris | 0-25% | sedimentary | | | | | | |
| 147 | | Debitage | Sandstone | architectural debris | 0-25% | sedimentary | | | | | | |
| 148 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 0.59 | 8.66 | 16.49 | 3.16 | "core" reduction | Trimmed |
| 148 | | Debitage | Igneous | complete flake | 0-25% | unknown | 0.9 | 12.87 | 16.02 | 4.4 | "core" reduction | Cortex |
| 148 | | Debitage | Morrison Mudstone | complete flake | 25-75% | sedimentary | 3.1 | 22.26 | 17.8 | 8.76 | "core" reduction | Flake scar |
| 148 | 2 | Debitage | Obsidian | complete flake | 0-25% | unknown | 0 | 5.16 | 6.42 | 0.78 | "Core" reduction | Flake scar |
| 148 | 2 | Debitage | Obsidian | complete flake | 0-25% | unknown | 0.1 | 6.61 | 10.15 | 1.62 | "Core" reduction | crushed |
| 148 | 2 | Debitage | Obsidian | complete flake | 0-25% | unknown | 0.2 | 11.72 | 11.37 | 2.5 | "Core" reduction | Cortex |
| 148 | 2 | Debitage | Obsidian | complete flake | 0-25% | sedimentary | 0.3 | 10.58 | 12.56 | 1.58 | "Core" reduction | Cortex |
| 148 | 2 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0.4 | 17.7 | - | 2.59 | "Core" reduction | crushed |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 148 | | Debitage | Quartzite (purple) | complete flake | 75-100% | river cobble | 0.95 | 12.14 | 16.73 | 4.92 | "core" reduction | Cortex |
| 148 | 2 | Debitage | Obsidian | complete flake | 25-75% | sedimentary | 0.9 | 24.16 | 12.13 | 3.58 | "Core" reduction | crushed |
| 148 | | Debitage | Quartzite (grey) | complete flake | 0-25% | unknown | 6.72 | 33.68 | 22.03 | 10.39 | "core" reduction | Cortex |
| 148 | | Debitage | Quartzite (red/brown) | broken flake | 0-25% | river cobble | 3.03 | 28.97 | 27.2 | 3.89 | unknown | unknown |
| 148 | | Debitage | Brushy Basin Chert | broken flake | 0-25% | unknown | 1.96 | | | | | |
| 148 | | Debitage | Chalcedony | broken flake | 0-25% | unknown | 0.12 | | | | | |
| 148 | | Debitage | chert (grey, gravels) | broken flake | 25-75% | sedimentary | 0.3 | | | | | |
| 148 | | Debitage | chert (grey, gravels) | shatter/debris | 0-25% | sedimentary | 0.64 | | | | | |
| 148 | | Debitage | Igneous | broken flake | 25-75% | river cobble | 0.14 | | | | | |
| 148 | | Debitage | Igneous | complete flake | 0-25% | unknown | 0.14 | | | | | |
| 148 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 0.21 | | | | | |
| 148 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.38 | | | | | |
| 148 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 0.52 | | | | | |
| 148 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 0.67 | | | | | |
| 148 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.73 | | | | | |
| 148 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 1.19 | | | | | |
| 148 | | Debitage | Igneous | broken flake | 25-75% | unknown | 1.27 | | | | | |
| 148 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 2.37 | | | | | |
| 148 | | Debitage | Igneous | shatter/debris | 75-100% | river cobble | 8.92 | | | | | |
| 148 | 2 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0.1 | | | | | |
| 148 | 2 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.1 | | | | | |
| 148 | 2 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.2 | | | | | |
| 148 | 2 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.3 | | | | | |
| 148 | 2 | Debitage | Obsidian | shatter/debris | 0-25% | unknown | 0.3 | | | | | |
| 148 | | Debitage | Quartzite (grey and purple) | broken flake | 75-100% | river cobble | 3.74 | | | | | |
| 148 | | Debitage | Quartzite (grey) | shatter/debris | 25-75% | sedimentary | 4 | | | | | |
| 148 | | Debitage | Quartzite (tan) | broken flake | 75-100% | sedimentary | 2.33 | | | | | |
| 148 | | FCR | Igneous | | | | | | | | | |
| 149 | | Debitage | Quartzite (purple) | complete flake | 0-25% | unknown | 0.31 | 13.16 | 12.5 | 1.68 | "core" reduction | Flake scar |
| 149 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 135.72 | 81.25 | 95.26 | 20.11 | "core" reduction | unknown |
| 149 | 6 | Microdebitage | Obsidian | | | | | | | | | |
| 149 | 7 | Terrace gravel | | | | | | | | | | |
| 149 | 7 | Terrace gravel | | | | | | | | | | |
| 158 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 5.99 | 24.63 | 31.68 | 6.73 | "core" reduction | Flake scar |
| 158 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 6.96 | 36.98 | 19.22 | 7.13 | bipolar | crushed |
| 158 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 0.93 | | | | | |
| 158 | | Terrace gravel | | | | | | | | | | |
| 158 | 5 | Tool | Obsidian | | | | | | | | | |
| 159 | | Tool | Quartzite (grey) | | | | | | | | | |
| 162 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 48.26 | 52.72 | 70.18 | 17.58 | "core" reduction | Cortex |
| 162 | 5 | Debitage | Obsidian | broken flake | 25-75% | sedimentary | 1.6 | | | | | |
| 162 | | Debitage | Quartzite (grey and tan) | broken flake | 25-75% | river cobble | 44.86 | | | | | |
| 165 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 0.71 | 11.61 | 18.37 | 3.55 | "core" reduction | Cortex |
| 165 | | Debitage | Igneous | complete flake | 0-25% | unknown | 1.37 | 14.96 | 17.85 | 4.63 | "core" reduction | Cortex |
| 165 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 14.68 | 33.87 | 35.19 | 16.77 | "core" reduction | Flake scar |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 165 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 25.35 | 38.81 | 43.55 | 16.82 | "core" reduction | Cortex |
| 165 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 41.39 | 51.37 | 41.93 | 18.53 | "core" reduction | Cortex |
| 165 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 63.23 | 66.55 | 51.4 | 17.31 | "core" reduction | crushed |
| 165 | 8 | Debitage | Obsidian | complete flake | 75-100% | sedimentary | 1.1 | 13.32 | 26.2 | 4.26 | "core" reduction | Cortex |
| 165 | | Debitage | Quartzite (tan) | complete flake | 75-100% | river cobble | 12.27 | 32.41 | 36.96 | 11.94 | "core" reduction | Flake scar |
| 165 | | Debitage | Igneous | broken flake | 0-25% | unknown | 2.12 | | | | | |
| 165 | | Debitage | Igneous | shatter/debris | 25-75% | river cobble | 4.63 | | | | | |
| 165 | | Debitage | Igneous | shatter/debris | 25-75% | river cobble | 9.81 | | | | | |
| 165 | 8 | Debitage | Obsidian | shatter/debris | 25-75% | sedimentary | 1.2 | | | | | |
| 165 | | Debitage | Quartzite (grey) | broken flake | 0-25% | river cobble | 1.24 | | | | | |
| 165 | | Debitage | Sandstone | architectural debris | | | | | | | | |
| 165 | | Debitage | Sandstone | architectural debris | | | | | | | | |
| 165 | | FCR | Igneous | | | | | | | | | |
| 165 | 14 | Microdebitage | Igneous | | | | | | | | | |
| 165 | 14 | Microdebitage | Igneous | | | | | | | | | |
| 165 | 14 | Microdebitage | Igneous | | | | | | | | | |
| 165 | 13 | Microdebitage | Obsidian | | | | | | | | | |
| 165 | 13 | Microdebitage | Obsidian | | | | | | | | | |
| 165 | 14 | Microdebitage | Purple Quartzite | | | | | | | | | |
| 165 | 11 | Terrace gravel | | | | | | | | | | |
| 165 | 11 | Terrace gravel | | | | | | | | | | |
| 165 | 11 | Terrace gravel | | | | | | | | | | |
| 167 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 4.84 | 35.13 | 18.08 | 9.86 | bipolar | Crushed |
| 167 | | Tool | Quartzite (red/brown) | | | | | | | | | |
| 170 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 0.65 | 18.32 | 11.54 | 3.7 | "core" reduction | Cortex |
| 170 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 0.7 | 14.17 | 19.3 | 2.57 | unknown | crushed |
| 170 | 7 | Debitage | Obsidian | complete flake | 25-75% | | 0.1 | 15.19 | 6.31 | 1.42 | "core" reduction | crushed |
| 170 | 7 | Debitage | Obsidian | complete flake | 25-75% | | 0.3 | 12.95 | 14.16 | 2.35 | "core" reduction | cortex |
| 170 | 7 | Debitage | Obsidian | complete flake | 0-25% | | 0.3 | 9.52 | 11.35 | 1.97 | "core" reduction | flake scar |
| 170 | 7 | Debitage | Obsidian | complete flake | 75-100% | | 0.8 | 16.9 | 21.77 | 5.95 | "core" reduction | cortex |
| 170 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 9.92 | 38.67 | 28.99 | 11.81 | "core" reduction | Cortex |
| 170 | | Debitage | Morrison Mudstone | complete flake | 25-75% | river cobble | 34.55 | 66.19 | 42.83 | 12.6 | "core" reduction | Trimmed |
| 170 | 7 | Debitage | Obsidian | complete flake | 75-100% | sedimentary | 2.5 | 22.45 | 24.1 | 5.87 | "core" reduction | Flake scar |
| 170 | 7 | Debitage | Obsidian | complete flake | 75-100% | | 6.1 | 23.92 | 35.22 | 9.45 | "core" reduction | crushed |
| 170 | 7 | Debitage | Obsidian | complete flake | 0-25% | | 7.3 | 41.95 | 28.68 | 9.03 | "core" reduction | cortex |
| 170 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.82 | | | | | |
| 170 | | Debitage | Igneous | broken flake | 25-75% | river cobble | 1 | | | | | |
| 170 | | Debitage | Igneous | broken flake | 0-25% | unknown | 1.01 | | | | | |
| 170 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 3.3 | | | | | |
| 170 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 17.35 | | | | | |
| 170 | 7 | Debitage | Obsidian | broken flake | 0-25% | | 0 | | | | | |
| 170 | 7 | Debitage | Obsidian | broken flake | 0-25% | | 0 | | | | | |
| 170 | 7 | Debitage | Obsidian | shatter/debris | 0-25% | | 0 | | | | | |
| 170 | 7 | Debitage | Obsidian | shatter/debris | 0-25% | | 0 | | | | | |
| 170 | 7 | Debitage | Obsidian | broken flake | 0-25% | | 0.1 | | | | | |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 170 | 7 | Debitage | Obsidian | broken flake | 0-25% | | 0.1 | | | | | |
| 170 | 7 | Debitage | Obsidian | shatter/debris | 0-25% | | 0.1 | | | | | |
| 170 | 7 | Debitage | Obsidian | broken flake | 0-25% | | 0.2 | | | | | |
| 170 | 7 | Debitage | Obsidian | broken flake | 0-25% | | 0.2 | | | | | |
| 170 | 7 | Debitage | Obsidian | shatter/debris | 25-75% | | 0.3 | | | | | |
| 170 | 7 | Debitage | Obsidian | broken flake | 25-75% | | 0.4 | | | | | |
| 170 | 7 | Debitage | Obsidian | broken flake | 0-25% | | 0.4 | | | | | |
| 170 | 7 | Debitage | Obsidian | shatter/debris | 25-75% | | 0.4 | | | | | |
| 170 | 7 | Debitage | Obsidian | broken flake | 75-100% | sedimentary | 2.1 | | | | | |
| 170 | 11 | Microdebitage | chert (tan) | | | | | | | | | |
| 170 | 11 | Microdebitage | Igneous | | | | | | | | | |
| 170 | 11 | Microdebitage | Igneous | | | | | | | | | |
| 170 | 11 | Microdebitage | Igneous | | | | | | | | | |
| 170 | 8 | Microdebitage | Obsidian | | | | | | | | | |
| 170 | 7 | Microdebitage | Obsidian | | | | | | | | | |
| 170 | 11 | Terrace gravel | | | | | | | | | | |
| 170 | 11 | Terrace gravel | | | | | | | | | | |
| 170 | 11 | Terrace gravel | | | | | | | | | | |
| 170 | 11 | Terrace gravel | | | | | | | | | | |
| 170 | 11 | Terrace gravel | | | | | | | | | | |
| 170 | 11 | Terrace gravel | | | | | | | | | | |
| 170 | 11 | Terrace gravel | | | | | | | | | | |
| 170 | 11 | Terrace gravel | | | | | | | | | | |
| 170 | 7 | Tool | Obsidian | | | | | | | | | |
| 171 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 22.07 | 34.55 | 36.79 | 18.11 | "core" reduction | Cortex |
| 174 | | Debitage | Quartzite (grey and purple) | shatter/debris | 75-100% | river cobble | 0.27 | | | | | |
| 176 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 17.72 | 34.35 | 52.19 | 9.06 | "core" reduction | Cortex |
| 176 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 18.75 | 37.43 | 43.03 | 12.37 | "core" reduction | Cortex |
| 176 | | Debitage | Sandstone | architectural debris | | | | | | | | |
| 178 | 7 | Debitage | Obsidian | complete flake | 0-25% | sedimentary | 4.8 | 21.21 | 35.24 | 7.87 | "core" reduction | Cortex |
| 178 | | Debitage | Igneous | shatter/debris | 0-25% | unknown | 43.72 | | | | | |
| 179 | 6 | Debitage | Obsidian | complete flake | 0-25% | unknown | 0.5 | 15.09 | 18.31 | 2.19 | "core" reduction | Cortex |
| 179 | 6 | Debitage | Obsidian | complete flake | 0-25% | unknown | 0.6 | 15.83 | 12.85 | 3.5 | "core" reduction | crushed |
| 179 | 9 | Debitage | Quartzite (tan) | complete flake | 75-100% | river cobble | | 8.98 | 10.87 | 2.38 | "Core" reduction | Trimmed |
| 179 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 45.01 | 32.34 | 83.54 | 14.16 | "core" reduction | unknown |
| 179 | 6 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0.3 | | | | | |
| 179 | 6 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.4 | | | | | |
| 179 | 6 | Debitage | Obsidian | broken flake | 0-25% | sedimentary | 0.8 | | | | | |
| 179 | 9 | Microdebitage | Igneous | | | | | | | | | |
| 180 | | Debitage | Mudstone (purple) | broken flake | 0-25% | unknown | 1.94 | | | | "core" reduction | Crushed |
| 180 | | Tool | Igneous | | | | | | | | | |
| 181 | | Debitage | Quartzite (white) | complete flake | 0-25% | river cobble | 5.71 | 28.34 | 27.83 | 6.79 | "core" reduction | Cortex |
| 181 | | Debitage | Igneous | shatter/debris | 75-100% | river cobble | 0.25 | | | | | |
| 184 | | Debitage | Igneous | complete flake | 0-25% | unknown | 3.14 | 22.26 | 27.76 | 4.34 | "core" reduction | Trimmed |
| 184 | 3 | Terrace gravel | | | | | | | | | | |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 184 | 3 | Terrace gravel | | | | | | | | | | |
| 184 | 3 | Terrace gravel | | | | | | | | | | |
| 184 | 3 | Terrace gravel | | | | | | | | | | |
| 184 | | Tool | Quartzite (grey and purple) | | | | | | | | | |
| 185 | | Debitage | Chalcedony | complete flake | 0-25% | unknown | 0.28 | 17.1 | 10.09 | 2.24 | biface thinning | Trimmed |
| 185 | | Debitage | Chalcedony | broken flake | 0-25% | unknown | 0.17 | | | | | |
| 185 | | Debitage | Chert (grey) | broken flake | 0-25% | sedimentary | 4.63 | | | | | |
| 185 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 42.19 | | | | | |
| 187 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 1.76 | 25.35 | 21.82 | 4.2 | "core" reduction | Cortex |
| 187 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 7.39 | 44.45 | 19.43 | 9.08 | "core" reduction | Flake scar |
| 187 | | Debitage | Igneous | broken flake | 0-25% | unknown | 1.11 | | | | | |
| 190 | | Debitage | Silicified Sandstone | Complete flake | 25-75% | river cobble | 117.98 | 62.86 | 79.65 | 35.69 | "core" reduction | Flake scar |
| 196 | 4 | FCR | Igneous | | | | | | | | | |
| 196 | 4 | FCR | | | | | | | | | | |
| 202 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 38.32 | 51.22 | 57.29 | 18.74 | "core" reduction | Flake scar |
| 203 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 8 | 23.72 | 37.29 | 8.29 | "core" reduction | Cortex |
| 206 | | FCR | Igneous | | | | | | | | | |
| 206 | | FCR | Igneous | | | | | | | | | |
| 208 | | Debitage | Chalcedony | broken flake | 0-25% | unknown | 0.25 | | | | | |
| 212 | 20 | Debitage | Igneous | complete flake | 0-25% | unknown | 0 | 7.51 | 4.81 | 0.97 | "core" reduction | crushed |
| 212 | 13 | Debitage | Obsidian | complete flake | 0-25% | unknown | 0.1 | 8.02 | 10.22 | 0.8 | "core" reduction | Trimmed |
| 212 | 20 | Debitage | Quartzite (grey and tan) | complete flake | 25-75% | river cobble | 1.3 | 17.38 | 17.48 | 4 | "core" reduction | Flake scar |
| 212 | | Debitage | Chalcedony (agate) | complete flake | 0-25% | unknown | 3.62 | 34.61 | 21.18 | 6.84 | "core" reduction | Crushed |
| 212 | | Debitage | Quartzite (grey and purple) | complete flake | 75-100% | river cobble | 16.4 | 38.99 | 35.6 | 10.82 | "core" reduction | Cortex |
| 212 | | Debitage | Chert (pink) | broken flake | 0-25% | unknown | 2.87 | | | | | |
| 212 | 20 | Debitage | Igneous | broken flake | 0-25% | unknown | 0 | | | | | |
| 212 | | Debitage | Mudstone (purple) | shatter/debris | 25-75% | unknown | 0.52 | | | | | |
| 212 | 13 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.1 | | | | | |
| 212 | 13 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.2 | | | | | |
| 212 | | Debitage | Sandstone | complete flake | 75-100% | sedimentary | 2.49 | | | | | |
| 212 | | Debitage | Sandstone | architectural debris | 75-100% | sedimentary | 3.93 | | | | | |
| 212 | | Debitage | Sandstone | architectural debris | | | 8.41 | | | | | |
| 212 | | Debitage | Sandstone | architectural debris | 25-75% | sedimentary | 25.4 | | | | | |
| 212 | | FCR | Igneous | shatter/debris | 75-100% | river cobble | | | | | | |
| 212 | | FCR | Sandstone | | | | | | | | | |
| 212 | 14 | FCR | | | | | | | | | | |
| 212 | 14 | FCR | | | | | | | | | | |
| 212 | 14 | FCR | | | | | | | | | | |
| 212 | 14 | FCR | | | | | | | | | | |
| 212 | 20 | Microdebitage | chert (tan) | | | | | | | | | |
| 212 | 14 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 14 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 14 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 20 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 20 | Microdebitage | Igneous | | | | | | | | | |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 212 | 20 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 20 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 20 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 24 | Microdebitage | Igneous | | | | | | | | | |
| 212 | 17 | Microdebitage | Obsidian | | | | | | | | | |
| 212 | 17 | Microdebitage | Obsidian | | | | | | | | | |
| 212 | 28 | Microdebitage | Obsidian | | | | | | | | | |
| 212 | 28 | Microdebitage | Obsidian | | | | | | | | | |
| 212 | 20 | Terrace gravel | | | | | | | | | | |
| 212 | 20 | Terrace gravel | | | | | | | | | | |
| 212 | 20 | Terrace gravel | | | | | | | | | | |
| 212 | 20 | Terrace gravel | | | | | | | | | | |
| 212 | 24 | Terrace gravel | | | | | | | | | | |
| 212 | 24 | Terrace gravel | | | | | | | | | | |
| 212 | | Tool | Igneous | | | | | | | | | |
| 212 | | Tool | Igneous | | | | | | | | | |
| 214 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 108.45 | 68.06 | 74.75 | 21.26 | "core" reduction | Cortex |
| 215 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 53.42 | 38.29 | 67.75 | 15.86 | "core" reduction | Cortex |
| 215 | | Debitage | Mudstone (grey) | complete flake | 75-100% | river cobble | 35.53 | 55.09 | 60.06 | 8.63 | "core" reduction | Crushed |
| 215 | | Debitage | Chert (fossiliferous) | shatter/debris | 0-25% | unknown | 0.84 | | | | | |
| 216 | 8 | Debitage | Obsidian | complete flake | 0-25% | gravel | 0.1 | 9.04 | 12.13 | 2.12 | "core" reduction | Cortex |
| 216 | | Debitage | Chert (grey) | shatter/debris | 0-25% | unknown | 0.26 | | | | | |
| 216 | | Debitage | Chert (white and red) | broken flake | 0-25% | unknown | 0.06 | | | | | |
| 216 | | Debitage | Igneous | broken flake | 25-75% | river cobble | 3.52 | | | | | |
| 216 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 8.28 | | | | | |
| 216 | | Debitage | Igneous | shatter/debris | 25-75% | river cobble | 16.4 | | | | | |
| 216 | | Debitage | Mudstone (purple) | shatter/debris | 25-75% | unknown | 3.88 | | | | | |
| 216 | | Debitage | Quartz | shatter/debris | 75-100% | river cobble | 0.52 | | | | | |
| 216 | | Debitage | Quartzite (grey and purple) | shatter/debris | 0-25% | unknown | 0.09 | | | | | |
| 216 | 13 | Microdebitage | Chalcedony | | | | | | | | | |
| 216 | 13 | Microdebitage | Igneous | | | | | | | | | |
| 216 | 13 | Terrace gravel | | | | | | | | | | |
| 216 | 13 | Terrace gravel | | | | | | | | | | |
| 216 | | Tool | Chert (red) | | | | | | | | | |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 218 | | Debitage | Quartzite (grey) | complete flake | 25-75% | river cobble | 2.39 | 23.74 | 19.18 | 4.32 | "core" reduction | Cortex |
| 218 | | Debitage | Quartzite (grey) | complete flake | 75-100% | river cobble | 8.36 | 30.45 | 32.89 | 9.45 | "core" reduction | Cortex |
| 220 | 6 | Debitage | Obsidian | broken flake | 0-25% | gravel | 0.9 | 21.45 | - | 3.48 | "core" reduction | Cortex |
| 220 | | Debitage | Quartzite (grey) | shatter/debris | 75-100% | river cobble | | | | | | |
| 221 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 2.03 | | | | "core" reduction | crushed |
| 222 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 4.25 | 31.07 | 17.5 | 5.95 | "core" reduction | Cortex |
| 222 | 9 | Debitage | Igneous | complete flake | 75-100% | river cobble | | 9.38 | 8.46 | 2.62 | "Core" reduction | Cortex |
| 222 | | Debitage | Chert (grey, gravels) | broken flake | 0-25% | gravel | 0.69 | | | | | |
| 222 | | Debitage | Quartzite (grey and purple) | shatter/debris | 25-75% | unknown | 0.53 | | | | | |
| 222 | 9 | Microdebitage | Chalcedony | | | | | | | | | |
| 222 | 77 | Microdebitage | Obsidian | | | | | | | | | |
| 222 | 9 | Terrace gravel | | | | | | | | | | |
| 222 | 9 | Terrace gravel | | | | | | | | | | |
| 222 | 9 | Terrace gravel | | | | | | | | | | |
| 222 | 9 | Terrace gravel | | | | | | | | | | |
| 222 | 9 | Terrace gravel | | | | | | | | | | |
| 222 | 9 | Terrace gravel | | | | | | | | | | |
| 222 | | Tool | Basalt | | | | | | | | | |
| 223 | | Debitage | Igneous | broken flake | 75-100% | unknown | 4.06 | | | | "core" reduction | Flake scar |
| 223 | | Debitage | Quartzite (brown) | shatter/debris | 25-75% | river cobble | 11.56 | | | | | |
| 223 | | FCR | Igneous | | | | | | | | | |
| 223 | | FCR | Igneous | | | | | | | | | |
| 225 | | Debitage | Quartzite (white) | broken flake | 0-25% | unknown | 0.83 | | | | | |
| 225 | 3 | Terrace gravel | | | | | | | | | | |
| 228 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 8.85 | 38.4 | 32.63 | 6.33 | "core" reduction | Flake scar |
| 228 | | Debitage | Brushy Basin Chert | broken flake | 25-75% | sedimentary | 2.77 | | | | | |
| 228 | | Debitage | Igneous | shatter/debris | 25-75% | river cobble | 1.17 | | | | | |
| 228 | | Tool | Igneous | | | | | | | | | |
| 230 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 0.73 | 13.78 | 17.76 | 3.43 | "core" reduction | Cortex |
| 230 | | Debitage | mudstone (brown/grey) | complete flake | 0-25% | unknown | 0.69 | 12.72 | 16.65 | 4.43 | "core" reduction | Crushed |
| 230 | | Debitage | Quartzite (grey) | complete flake | 0-25% | unknown | 6.16 | 39.7 | 23.44 | 6.55 | "core" reduction | Flake scar |
| 230 | | Debitage | Brushy Basin Chert | broken flake | 0-25% | unknown | 0.78 | | | | | |
| 230 | | Debitage | Chert (grey) | broken flake | 75-100% | gravel | 0.56 | | | | | |
| 230 | | Debitage | Igneous | shatter/debris | 25-75% | river cobble | 28.23 | | | | | |
| 230 | | Debitage | mudstone (brown/grey) | shatter/debris | 0-25% | unknown | 19.85 | | | | | |
| 230 | | Debitage | mudstone (brown/grey) | shatter/debris | 0-25% | river cobble | 27.8 | | | | | |
| 230 | | FCR | Sandstone | | | | | | | | | |
| 230 | | Terrace gravel | | | | | | | | | | |
| 231 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 2.58 | 16.34 | 20.72 | 7.67 | "core" reduction | Cortex |
| 232 | | Debitage | Igneous | broken flake | 25-75% | river cobble | 10.22 | | | | | |
| 233 | | Debitage | Quartzite (dark grey) | complete flake | 25-75% | unknown | 1.5 | 21.82 | 21.31 | 4.06 | "core" reduction | Trimmed |
| 233 | | Debitage | mudstone (brown/grey) | shatter/debris | 0-25% | unknown | 0.85 | | | | | |
| 234 | | Debitage | Morrison Mudstone | complete flake | 75-100% | sedimentary | 0.53 | 11.48 | 15.93 | 2.47 | "core" reduction | Crushed |
| 234 | | Debitage | Morrison Mudstone | complete flake | 25-75% | sedimentary | 5.85 | 12.05 | 36.53 | 9.17 | "core" reduction | Flake scar |
| 234 | | FCR | | | | | | | | | | |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 234 | | FCR | | | | | | | | | | |
| 234 | | FCR | | | | | | | | | | |
| 234 | 13 | FCR | | | | | | | | | | |
| 234 | 13 | FCR | | | | | | | | | | |
| 234 | 13 | FCR | | | | | | | | | | |
| 234 | 13 | FCR | | | | | | | | | | |
| 234 | 13 | Microdebitage | Chalcedony | | | | | | | | | |
| 234 | 13 | Microdebitage | Chalcedony | | | | | | | | | |
| 234 | 13 | Microdebitage | Igneous | | | | | | | | | |
| 234 | 13 | Microdebitage | Igneous | | | | | | | | | |
| 234 | 13 | Terrace gravel | | | | | | | | | | |
| 234 | 13 | Terrace gravel | | | | | | | | | | |
| 234 | 13 | Terrace gravel | | | | | | | | | | |
| 234 | 13 | Terrace gravel | | | | | | | | | | |
| 234 | 13 | Terrace gravel | | | | | | | | | | |
| 234 | 13 | Terrace gravel | | | | | | | | | | |
| 234 | 13 | Terrace gravel | | | | | | | | | | |
| 235 | | Debitage | Quartzite (grey) | broken flake | 25-75% | river cobble | 95.23 | 60.06 | 58.91 | 23.8 | "core" reduction | |
| 235 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.67 | | | | | |
| 235 | | Debitage | Quartzite (brown) | broken flake | 25-75% | river cobble | 7.45 | | | | | |
| 236 | | Debitage | Brushy Basin Chert | complete flake | 25-75% | sedimentary | 10.13 | 19.28 | 25.9 | 16.97 | "core" reduction | Cortex |
| 236 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 0.38 | 13.7 | 12.01 | 2.99 | "core" reduction | Cortex |
| 236 | | Debitage | Igneous | broken flake | 25-75% | river cobble | 11.58 | 28.94 | 33.44 | 8.26 | "core" reduction | Cortex |
| 236 | | FCR | Igneous | | | | | | | | | |
| 236 | | Terrace gravel | | | | | | | | | | |
| 238 | | FCR | | | | | | | | | | |
| 238 | | FCR | | | | | | | | | | |
| 239 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 5.27 | | | | | |
| 239 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 87.61 | 62.07 | 58.25 | 25.4 | "core" reduction | Flake scar |
| 239 | | Debitage | Igneous | shatter/debris | 25-75% | river cobble | 106.22 | 88.92 | 47.25 | 28.63 | | |
| 239 | | Debitage | Quartzite (grey) | shatter/debris | 0-25% | unknown | 0.41 | | | | | |
| 241 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 10.03 | 29.33 | 22.92 | 9.32 | "core" reduction | Cortex |
| 242 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 2.17 | 19.06 | 24.64 | 5.35 | "core" reduction | Crushed |
| 242 | | Debitage | Igneous | Complete flake | 75-100% | river cobble | 4.72 | 37.19 | 23.1 | 5.11 | "core" reduction | Flake scar |
| 242 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 6.43 | 23.41 | 29.46 | 7.79 | "core" reduction | Cortex |
| 242 | | Debitage | Quartzite (brown) | complete flake | 25-75% | river cobble | 34.33 | 65.76 | 37.6 | 12.62 | "core" reduction | Cortex |
| 242 | | FCR | | | | | | | | | | |
| 242 | | FCR | | | | | | | | | | |
| 242 | | Tool | Igneous | | | | | | | | | |
| 244 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.83 | | | | | |
| 244 | | Debitage | mudstone (brown/grey) | broken flake | 0-25% | unknown | 0.62 | | | | | |
| 244 | | Debitage | Sandstone | architectural debris | | | | | | | | |
| 244 | | Debitage | Sandstone | architectural debris | | | | | | | | |
| 247 | | Debitage | Igneous | complete flake | 0-25% | unknown | 0.16 | 7.28 | 8.89 | 2.41 | "core" reduction | Crushed |
| 247 | | Debitage | Igneous | complete flake | 0-25% | unknown | 0.3 | 8.13 | 14.92 | 3.02 | "core" reduction | Crushed |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 247 | | Debitage | Quartzite (brown) | complete flake | 0-25% | unknown | 0.08 | 7.15 | 8.41 | 1.45 | "core" reduction | Crushed |
| 247 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.15 | | | | | |
| 247 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.29 | | | | | |
| 247 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.38 | | | | | |
| 247 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.55 | | | | | |
| 247 | | Debitage | Igneous | broken flake | 25-75% | river cobble | 65.13 | | | | | |
| 247 | 7 | Debitage | Obsidian | broken flake | 0-25% | unknown | 0.3 | | | | | |
| 247 | | Debitage | Quartzite (brown) | broken flake | 0-25% | unknown | 0.12 | | | | | |
| 247 | | Debitage | Silicified Sandstone | architectural debris | 75-100% | | | | | | | |
| 247 | | Debitage | Silicified Sandstone | architectural debris | 75-100% | | | | | | | |
| 250 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 27.89 | 33.15 | 49.24 | 16.49 | "core" reduction | Flake scar |
| 250 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 31.04 | 36.88 | 44.26 | 18.22 | "core" reduction | Cortex |
| 250 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 31.23 | 54.95 | 53.43 | 10.72 | "core" reduction | Cortex |
| 250 | | Debitage | Morrison Mudstone | complete flake | 25-75% | sedimentary | 43.31 | 52.94 | 44.23 | 15.83 | "core" reduction | Flake scar |
| 250 | | Debitage | Quartzite (grey) | complete flake | 75-100% | river cobble | 18.5 | 36.62 | 33.45 | 16.29 | "core" reduction | Flake scar |
| 250 | | Debitage | Brushy Basin Chert | shatter/debris | 25-75% | sedimentary | 1.79 | | | | | |
| 250 | | Debitage | Chert (grey) | broken flake | 0-25% | unknown | 0.78 | | | | | |
| 250 | | Debitage | Igneous | broken flake | 0-25% | unknown | 0.75 | | | | | |
| 250 | | Debitage | Quartzite (grey and purple) | shatter/debris | 75-100% | river cobble | 42.64 | | | | | |
| 250 | | FCR | | | | | | | | | | |
| 250 | | Terrace gravel | | | | | | | | | | |
| 250 | | Terrace gravel | | | | | | | | | | |
| 251 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 9.25 | 35.3 | 46.43 | 8 | "core" reduction | Cortex |
| 251 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 65.95 | 51.22 | 56.03 | 18.7 | "core" reduction | Flake scar |
| 251 | | Tool | | | | | | | | | | |
| 252 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 118.16 | 37.07 | 79.3 | 26.35 | "core" reduction | Cortex |
| 253 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 0.08 | 7.2 | 9.67 | 1.26 | "core" reduction | crushed |
| 253 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 0.09 | 4.05 | 10.42 | 2.11 | "core" reduction | Cortex |
| 253 | | Debitage | Igneous | complete flake | 0-25% | unknown | 0.12 | 8.66 | 8.13 | 1.39 | "core" reduction | crushed |
| 253 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 0.22 | 11.78 | 11.74 | 1.63 | "core" reduction | crushed |
| 253 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 1 | 18.16 | 23.24 | 2.96 | "core" reduction | Cortex |
| 253 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 1.15 | 12.91 | 22.87 | 3.88 | "core" reduction | Cortex |
| 253 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 1.49 | 16.62 | 17.21 | 6.48 | "core" reduction | Cortex |
| 253 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 1.9 | 19.23 | 14.97 | 5.6 | "core" reduction | Cortex |
| 253 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 3.12 | 26.23 | 31.45 | 3.81 | "core" reduction | Cortex |
| 253 | | Debitage | Igneous | complete flake | 25-75% | river cobble | 0.17 | 9.42 | 13.75 | 1.56 | biface thinning | Flake scar |
| 253 | | Debitage | Quartzite (grey and purple) | complete flake | 75-100% | river cobble | 0.25 | 6.8 | 12.17 | 3.1 | "core" reduction | Cortex |
| 253 | | Debitage | Quartzite (grey) | complete flake | 25-75% | river cobble | 0.11 | 8 | 9.78 | 1.18 | biface thinning | Trimmed |
| 253 | | Debitage | Quartzite (dark grey) | complete flake | 0-25% | river cobble | 12.36 | 31.71 | 46.41 | 7.91 | "core" reduction | Cortex |
| 253 | | Debitage | Igneous | broken flake | 75-100% | unknown | 0.23 | | | | | |
| 253 | | Debitage | Igneous | broken flake | 25-75% | unknown | 0.35 | | | | | |
| 253 | | Debitage | Igneous | shatter/debris | 0-25% | unknown | 0.77 | | | | | |
| 253 | | Debitage | Igneous | broken flake | 0-25% | unknown | 1.89 | | | | | |
| 253 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 2.06 | | | | | |
| 253 | | Debitage | Igneous | broken flake | 25-75% | river cobble | 2.37 | | | | | |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 253 | | Debitage | Quartzite (grey and purple) | shatter/debris | 0-25% | unknown | 0.06 | | | | | |
| 253 | 5 | Microdebitage | Chalcedony | | | | | | | | | |
| 253 | | Terrace gravel | | | | | | | | | | |
| 253 | | Terrace gravel | | | | | | | | | | |
| 254 | | Debitage | Igneous | broken flake | 0-25% | river cobble | 0.81 | | | | | |
| 256 | | Debitage | Quartz (pink) | complete flake | 75-100% | river cobble | 0.64 | 11.03 | 16.16 | 3.43 | "core" reduction | Flake scar |
| 256 | | Tool | Igneous | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 258 | 7 | FCR | | | | | | | | | | |
| 260 | | Debitage | Igneous | complete flake | 75-100% | river cobble | 1.73 | 18.22 | 13.88 | 5.39 | "core" reduction | Cortex |
| 260 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 6.61 | 32.67 | 43.89 | 5.59 | "core" reduction | Cortex |
| 260 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 50.75 | 50.84 | 51.91 | 19.03 | unknown | unknown |
| 260 | | Debitage | Igneous | shatter/debris | 75-100% | river cobble | 122.67 | 81.19 | 58.7 | 24.63 | | |
| 260 | | Debitage | mudstone (brown/grey) | broken flake | 75-100% | river cobble | 91.1 | 105.92 | 44.47 | 17.98 | "core" reduction | Crushed |
| 260 | | Debitage | Quartzite (white) | shatter/debris | 75-100% | river cobble | 150.3 | 72.64 | 83.06 | 29.32 | | |
| 260 | | Debitage | Igneous | shatter/debris | 25-75% | river cobble | 5.75 | | | | | |
| 260 | | Debitage | Igneous (basalt) | broken flake | 75-100% | river cobble | 1.81 | | | | | |
| 261 | | Debitage | Igneous | broken flake | 25-75% | river cobble | 23.67 | 44.16 | 57.38 | 9.27 | "core" reduction | Crushed |
| 261 | | FCR | Igneous | | | | | | | | | |
| 261 | | Tool | | | | | | | | | | |
| 262 | | Debitage | Quartzite (purple) | complete flake | 25-75% | river cobble | 28.08 | 41.97 | 39.76 | 17.41 | "core" reduction | Flake scar |
| 262 | | FCR | Igneous | | | | | | | | | |
| 264 | 5 | FCR | | | | | | | | | | |
| 264 | 5 | FCR | | | | | | | | | | |
| 268 | | Debitage | Igneous | complete flake | 0-25% | river cobble | 1.89 | 19.51 | 22.55 | 5.59 | "core" reduction | Cortex |
| 268 | | Debitage | Quartzite (grey and purple) | complete flake | 0-25% | river cobble | 3.2 | 19.63 | 25.31 | 6.2 | "core" reduction | Cortex |
| 268 | | Debitage | Quartzite (grey) | broken flake | 75-100% | river cobble | 10.9 | 52.08 | 21.83 | 9.69 | "core" reduction | Crushed |
| 268 | | Debitage | Morrison Mudstone | complete flake | 75-100% | sedimentary | 33.68 | 34.16 | 56.19 | 18.04 | "core" reduction | Cortex |
| 268 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 1.42 | | | | | |
| 268 | | Debitage | Igneous | broken flake | 75-100% | river cobble | 4.22 | | | | | |
| 268 | | Debitage | mudstone (brown/grey) | broken flake | 75-100% | sedimentary | 4.25 | | | | | |
| 268 | | Debitage | mudstone (brown/grey) | broken flake | 75-100% | river cobble | 7.34 | | | | | |

| PD# | FS | Artifact Class | Material Type | Debitage Category | Cortex % | Cortex Form | Weight (g) | L | W | TH | Reduction Technology | Platform Style |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 268 | 3 | Debitage | Obsidian | shatter/debris | 0-25% | unknown | 0.3 | | | | | |
| 268 | | Debitage | Quartzite (brown) | broken flake | 0-25% | unknown | 0.83 | | | | | |
| 268 | | FCR | Igneous | | | | | | | | | |
| 268 | | FCR | Igneous | | | | | | | | | |
| 271 | 2 | Microdebitage | Quartzite (grey and tan) | | | | | | | | | |
| 271 | 2 | Terrace gravel | | | | | | | | | | |
| 271 | 2 | Terrace gravel | | | | | | | | | | |
| 271 | 2 | Terrace gravel | | | | | | | | | | |
| 271 | 2 | Terrace gravel | | | | | | | | | | |
| 276 | | Debitage | Morrison Mudstone | complete flake | 25-75% | sedimentary | 2.73 | 22.29 | 33.33 | 4.56 | "core" reduction | Trimmed |
| 276 | 5 | Microdebitage | Chalcedony | | | | | | | | | |
| 276 | 5 | Microdebitage | Chalcedony | | | | | | | | | |
| 276 | 5 | Microdebitage | Chalcedony | | | | | | | | | |
| 276 | 5 | Microdebitage | Chalcedony | | | | | | | | | |
| 276 | 5 | Microdebitage | Chalcedony | | | | | | | | | |
| 276 | 5 | Terrace gravel | | | | | | | | | | |
| 276 | 5 | Terrace gravel | | | | | | | | | | |
| 276 | 5 | Terrace gravel | | | | | | | | | | |
| 276 | 5 | Terrace gravel | | | | | | | | | | |
| 277 | 3 | Terrace gravel | | | | | | | | | | |
| 277 | 3 | Terrace gravel | | | | | | | | | | |
| 277 | 3 | Terrace gravel | | | | | | | | | | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 100 | 2 | - | N | N | N | |
| 101 | | 2.75 | N | N | N | |
| 101 | | - | N | N | N | |
| 101 | | 0.5 | N | N | N | |
| 101 | 7 | - | N | N | N | |
| 101 | 7 | 1.18 | N | N | N | |
| 101 | 7 | - | N | N | N | |
| 101 | 7 | 4.11 | N | N | Y | |
| 101 | 7 | 6.92 | Y | N | Y | |
| 101 | | | | | | |
| 101 | | | | | | |
| 101 | | | | | | |
| 101 | | | | | | possibly from pendant manufacture |
| 101 | 7 | | | | | |
| 101 | 7 | | | | | |
| 101 | 7 | | | | | |
| 101 | 7 | | | | | |
| 101 | 7 | | | | | |
| 101 | 7 | | | | | |
| 101 | 7 | | | | | |
| 101 | 7 | | | | | |
| 101 | 7 | | | | | |
| 101 | 7 | | | | | |
| 101 | 7 | | | | | |
| 101 | 7 | | | | | |
| 101 | 8 | | | | | |
| 101 | 8 | | | | | |
| 101 | 7 | | | | | |
| 101 | | | | | | |
| 101 | 9 | | | | | |
| 104 | | 13.7 | N | N | N | |
| 104 | 4 | 4.51 | N | N | Y | |
| 104 | | 7.1 | Y | N | Y | |
| 104 | | | | | | |
| 104 | 4 | | | | | |
| 104 | 4 | | | | | |
| 104 | 4 | | | | | |
| 104 | 4 | | | | | |
| 105 | 6 | | | | | |
| 105 | 6 | | | | | |
| 105 | 6 | | | | | |
| 105 | 6 | | | | | |
| 105 | 6 | | | | | |
| 105 | 6 | | | | | |
| 105 | 6 | | | | | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 105 | 6 | | | | | |
| 105 | 6 | | | | | |
| 106 | | | | | | |
| 106 | | | | | | |
| 107 | 4 | - | N | N | N | |
| 107 | 4 | | | | | |
| 107 | 4 | | | | | |
| 107 | 4 | | | | | |
| 107 | 4 | | | | | |
| 107 | 4 | | | | | |
| 109 | | 10.5 | N | N | N | Type 1 Cobble flake? |
| 111 | | | | | | |
| 111 | | | | | | |
| 111 | | | | | | Damaged during excavation |
| 111 | | | | | | |
| 111 | 5 | | | | | |
| 111 | 5 | | | | | |
| 111 | 5 | | | | | |
| 111 | 5 | | | | | |
| 113 | | 1.16 | N | N | N | |
| 113 | 4 | 1.26 | N | N | N | platform prep flake? |
| 113 | 4 | 2.21 | N | N | N | trimming flake on biface? |
| 113 | | - | Y | N | Y | |
| 113 | 4 | 2.03 | Y | N | Y | |
| 113 | | | | | | |
| 113 | 4 | | | | | |
| 113 | 4 | | | | | |
| 113 | 4 | | | | | |
| 113 | 4 | | | | | |
| 113 | 4 | | | | | |
| 113 | | | | | | |
| 113 | | | Y | N | Y | An end scraper manufactured on a percussion flake |
| 113 | | | Y | N | Y | |
| 114 | | 3.09 | N | N | N | |
| 114 | 5 | - | N | N | N | |
| 114 | 5 | 0.5 | N | N | N | trimming |
| 114 | 5 | 2.66 | N | N | N | |
| 114 | 5 | 1.67 | N | N | N | |
| 114 | 5 | 1.87 | N | N | N | |
| 114 | 5 | 2.67 | N | N | N | |
| 114 | 5 | 1.39 | N | N | N | trimming |
| 114 | 5 | - | Y | N | Y | |
| 114 | 5 | 7.06 | Y | N | Y | |
| 114 | 5 | | | | | |
| 114 | 5 | | | | | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 114 | 5 | | | | | |
| 114 | 5 | | | | | |
| 114 | 5 | | | | | |
| 115 | | | Y | N | Y | |
| 116 | | 2.25 | N | N | N | |
| 116 | 6 | 0.5 | N | N | N | trimming flake |
| 116 | 6 | | | | | |
| 116 | 6 | | | | | |
| 116 | | | | | | |
| 116 | | | | | | |
| 116 | | | | | | |
| 116 | 6 | | | | | |
| 116 | 6 | | | | | |
| 116 | 6 | | | | | |
| 116 | 7 | | | | | |
| 116 | | 13.32 | Y | N | Y | An informal axe or hoe on a large percussion flake |
| 120 | | | | | | Type 1 Cobble flake? |
| 122 | | | | | | |
| 122 | | | | | | |
| 122 | | | | | | |
| 122 | | | | | | |
| 124 | 8 | 1.91 | n | n | n | |
| 124 | | - | N | N | N | |
| 124 | | 2.07 | N | N | N | |
| 124 | | 1.06 | N | N | N | |
| 124 | 7 | 0.67 | N | N | N | |
| 124 | 7 | 4.17 | N | N | N | |
| 124 | 7 | 2.88 | N | N | N | |
| 124 | 7 | 3.47 | Y | N | N | |
| 124 | | 4.15 | N | N | Y | |
| 124 | | 8.6 | Y | N | Y | |
| 124 | | | | | | |
| 124 | | | | | | |
| 124 | | | | | | |
| 124 | | | | | | |
| 124 | | | | | | |
| 124 | 7 | | | | | |
| 124 | 7 | | | | | |
| 124 | 7 | | | | | |
| 124 | 7 | | | | | |
| 124 | 7 | | | | | |
| 124 | 7 | | | | | |
| 124 | | | | | | |
| 124 | | | | | | |
| 124 | | | | | | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 124 | | | | | | |
| 124 | | | | | | |
| 124 | | | | | | |
| 124 | 8 | | | | | |
| 125 | 4 | | | | | |
| 125 | 12 | | | | | |
| 125 | 12 | | | | | |
| 125 | 12 | | | | | |
| 125 | 12 | | | | | |
| 125 | 12 | | | | | |
| 125 | 12 | | | | | |
| 126 | | 2.73 | N | N | N | |
| 129 | | 2.36 | N | N | N | |
| 131 | | 4.75 | N | N | Y | |
| 133 | 2 | 2.38 | Y | N | Y | |
| 133 | 2 | | | | | |
| 134 | | 0.22 | N | N | N | |
| 134 | | 2.3 | N | N | N | |
| 134 | | - | N | N | N | |
| 134 | | - | N | N | N | |
| 134 | | 1.09 | N | N | N | |
| 134 | | 5.48 | N | N | N | |
| 134 | 6 | 0.1 | N | N | N | trimming |
| 134 | 6 | 5.01 | Y | N | Y | |
| 134 | | | | | | |
| 134 | | | | | | |
| 134 | | | | | | |
| 134 | | | | | | |
| 134 | | | | | | |
| 134 | | | | | | |
| 134 | | | | | | |
| 134 | | | | | | |
| 134 | | | | | | |
| 134 | | | | | | |
| 134 | 6 | | | | | |
| 134 | 6 | | | | | |
| 134 | | | | | | |
| 134 | | | | | | |
| 134 | 9 | | | | | |
| 134 | 9 | | | | | |
| 134 | 6 | | | | | |
| 134 | | | | | | |
| 134 | | | | | | |
| 139 | | 2.87 | N | N | N | |
| 139 | 8 | 2.3 | N | N | N | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 139 | | 7.12 | N | N | N | |
| 139 | 8 | 4.35 | N | N | Y | |
| 139 | 8 | 7.54 | Y | N | Y | |
| 139 | 8 | - | Y | N | Y | |
| 139 | | | | | | |
| 139 | | | | | | |
| 139 | | | | | | |
| 139 | | | | | | |
| 139 | | | | | | |
| 139 | | | | | | |
| 139 | 11 | | | | | |
| 139 | 8 | | | | | |
| 139 | 8 | | | | | |
| 139 | 8 | | | | | |
| 139 | 8 | | | | | |
| 139 | 8 | | | | | |
| 139 | 8 | | | | | |
| 139 | 8 | | | | | |
| 139 | 8 | | | | | |
| 139 | | | | | | |
| 139 | | | | | | |
| 139 | | | | | | |
| 139 | 9 | | | | | |
| 139 | 9 | | | | | |
| 139 | 9 | | | | | |
| 139 | 9 | | | | | |
| 139 | 8 | | | | | |
| 140 | | 2.2 | N | N | N | |
| 140 | | | Y | N | N | Distal fragment of utilized flake |
| 140 | | | | | | |
| 140 | | | | | | |
| 141 | 5 | | | | | |
| 141 | 5 | | | | | |
| 141 | 5 | | | | | |
| 141 | 5 | | | | | |
| 141 | | | | | | Type I Cobble |
| 143 | | 4.01 | N | N | N | |
| 143 | | 4.87 | N | N | Y | |
| 143 | | | | | | |
| 143 | | | | | | |
| 143 | | | | | | |
| 144 | | 4.14 | N | N | N | |
| 144 | | 2.82 | N | N | N | |
| 144 | | 26.27 | N | N | Y | |
| 144 | | | | | | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 144 | | | | | | |
| 144 | | | | | | |
| 144 | | | | | | |
| 144 | 5 | | | | | |
| 144 | 5 | | | | | |
| 144 | | | | | | |
| 144 | | | | | | |
| 144 | 7 | | | | | |
| 144 | 7 | | | | | |
| 144 | 7 | | | | | |
| 144 | 7 | | | | | |
| 144 | 7 | | | | | |
| 144 | 7 | | | | | |
| 144 | 7 | | | | | |
| 145 | | 0.69 | N | N | N | |
| 145 | | 7.35 | Y | N | N | |
| 145 | 6 | 2.92 | N | N | Y | |
| 145 | 6 | 2.67 | Y | N | Y | |
| 145 | | | | | | |
| 145 | 6 | | | | | |
| 145 | 6 | | | | | |
| 145 | 6 | | | | | |
| 145 | 6 | | | | | |
| 145 | | | | | | |
| 145 | 7 | | | | | |
| 145 | 7 | | | | | |
| 145 | 7 | | | | | |
| 145 | 6 | | | | | |
| 146 | | 2.65 | N | N | N | |
| 146 | | 8.52 | N | N | N | |
| 146 | | | | | | |
| 146 | | | | | | |
| 146 | | | | | | |
| 146 | | | | | | |
| 146 | | | | | | |
| 147 | | | | | | |
| 147 | | | | | | |
| 148 | | 2.93 | N | N | N | |
| 148 | | 3.97 | N | Y | N | |
| 148 | | 6 | N | N | N | |
| 148 | 2 | 0.73 | N | N | N | platform prep flake? |
| 148 | 2 | - | N | N | N | platform prep flake? |
| 148 | 2 | 1.78 | Y | N | N | |
| 148 | 2 | 1.56 | N | N | N | soft hammer percussion |
| 148 | 2 | - | N | N | N | soft hammer percussion? |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 148 | | 3.99 | N | Y | N | |
| 148 | 2 | - | Y | N | Y | |
| 148 | | 5.64 | Y | N | Y | |
| 148 | | - | Y | N | Y | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | Y | | |
| 148 | | | | Y | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | 2 | | | | | |
| 148 | 2 | | | | | |
| 148 | 2 | | | | | |
| 148 | 2 | | | | | |
| 148 | 2 | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 148 | | | | | | |
| 149 | | 1.7 | N | N | N | |
| 149 | | | Y | N | Y | Flake tool |
| 149 | 6 | | | | | |
| 149 | 7 | | | | | |
| 149 | 7 | | | | | |
| 158 | | 3.79 | N | N | Y | |
| 158 | | - | Y | N | Y | |
| 158 | | | | | | |
| 158 | | | | | | |
| 158 | 5 | | | | | |
| 159 | | | | | | Type I Cobble? |
| 162 | | 14.61 | N | N | Y | |
| 162 | 5 | | | | | |
| 162 | | | | | | |
| 165 | | 3.3 | N | N | N | |
| 165 | | 2.95 | N | N | N | |
| 165 | | 17.93 | N | N | Y | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 165 | | 14.91 | N | N | Y | |
| 165 | | 12.03 | Y | N | Y | |
| 165 | | - | Y | Y | Y | |
| 165 | 8 | 3.51 | Y | N | Y | |
| 165 | | 11.86 | Y | N | Y | |
| 165 | | | | | | |
| 165 | | | | | | |
| 165 | | | | | | |
| 165 | 8 | | | | | |
| 165 | | | | | | |
| 165 | | | | | | |
| 165 | | | | | | |
| 165 | | | | | | |
| 165 | 14 | | | | | |
| 165 | 14 | | | | | |
| 165 | 14 | | | | | |
| 165 | 13 | | | | | |
| 165 | 13 | | | | | |
| 165 | 14 | | | | | |
| 165 | 11 | | | | | |
| 165 | 11 | | | | | |
| 165 | 11 | | | | | |
| 167 | | - | N | N | N | |
| 167 | | | | | | |
| 170 | | 5.09 | N | N | N | |
| 170 | | - | N | N | N | |
| 170 | 7 | - | N | N | N | trimming flake |
| 170 | 7 | 2.38 | Y | N | N | |
| 170 | 7 | 2.43 | N | N | N | |
| 170 | 7 | 6.02 | N | N | N | looks like a mistake - too deep a platform |
| 170 | | 11.81 | N | N | Y | |
| 170 | | 10.28 | Y | N | Y | |
| 170 | 7 | 4.31 | Y | N | Y | |
| 170 | 7 | - | Y | N | Y | |
| 170 | 7 | 3.56 | Y | N | Y | A large, well used flake |
| 170 | | | | | | |
| 170 | | | | | | |
| 170 | | | | | | |
| 170 | | | | | | |
| 170 | | | | | | |
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |
| 170 | 7 | | | | | |
| 170 | 11 | | | | | |
| 170 | 11 | | | | | |
| 170 | 11 | | | | | |
| 170 | 11 | | | | | |
| 170 | 8 | | | | | |
| 170 | 7 | | | | | |
| 170 | 11 | | | | | |
| 170 | 11 | | | | | |
| 170 | 11 | | | | | |
| 170 | 11 | | | | | |
| 170 | 11 | | | | | |
| 170 | 11 | | | | | |
| 170 | 11 | | | | | |
| 170 | 11 | | | | | |
| 170 | 7 | | | | | |
| 171 | | 18.11 | N | N | N | |
| 174 | | | | | | |
| 176 | | 8.24 | N | N | N | |
| 176 | | 10.95 | Y | N | Y | |
| 176 | | | | | | |
| 178 | 7 | 8.39 | Y | N | Y | |
| 178 | | | | | | |
| 179 | 6 | 2.73 | N | N | N | |
| 179 | 6 | - | N | N | N | |
| 179 | 9 | 1.84 | N | N | N | somewhat rounded - gizzard stone? |
| 179 | | - | Y | N | Y | |
| 179 | 6 | | | | | |
| 179 | 6 | | | | | |
| 179 | 6 | | | | | |
| 179 | 9 | | | | | |
| 180 | | 5.06 | N | N | N | two pieces |
| 180 | | | | | | Type 1 Cobble |
| 181 | | 4.21 | Y | N | Y | Type 1 Cobble? |
| 181 | | | | | | |
| 184 | | 1.45 | N | N | N | |
| 184 | 3 | | | | | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 184 | 3 | | | | | |
| 184 | 3 | | | | | |
| 184 | 3 | | | | | |
| 184 | | | | | | Hammerstone fragment |
| 185 | | 1.1 | N | N | N | |
| 185 | | | | | | |
| 185 | | | | | | |
| 185 | | | | | | |
| 187 | | 1.25 | N | N | N | |
| 187 | | 8.63 | Y | N | Y | |
| 187 | | | | | | |
| 190 | | 23.4 | Y | N | Y | |
| 196 | 4 | | | | | |
| 196 | 4 | | | | | |
| 202 | | 20.16 | N | N | N | |
| 203 | | 6.02 | N | N | N | Type 1 Cobble? |
| 206 | | | | | | |
| 206 | | | | | | |
| 208 | | | | | | |
| 212 | 20 | - | N | N | N | |
| 212 | 13 | 0.2 | N | N | N | |
| 212 | 20 | 3.88 | N | N | N | |
| 212 | | - | N | N | Y | |
| 212 | | 1.76 | N | N | Y | |
| 212 | | | | | | |
| 212 | 20 | | | | | |
| 212 | | | | | | |
| 212 | 13 | | | | | |
| 212 | 13 | | | | | |
| 212 | | | | Y | | Tiny Groundstone fragment |
| 212 | | | | | | |
| 212 | | | | | | six pieces |
| 212 | | | | | | |
| 212 | | | | | | |
| 212 | | | | | | |
| 212 | 14 | | | | | |
| 212 | 14 | | | | | |
| 212 | 14 | | | | | |
| 212 | 14 | | | | | |
| 212 | 20 | | | | | |
| 212 | 14 | | | | | |
| 212 | 14 | | | | | |
| 212 | 14 | | | | | |
| 212 | 20 | | | | | |
| 212 | 20 | | | | | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 212 | 20 | | | | | |
| 212 | 20 | | | | | |
| 212 | 20 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | 17 | | | | | |
| 212 | 17 | | | | | |
| 212 | 28 | | | | | |
| 212 | 28 | | | | | |
| 212 | 20 | | | | | |
| 212 | 20 | | | | | |
| 212 | 20 | | | | | |
| 212 | 20 | | | | | |
| 212 | 24 | | | | | |
| 212 | 24 | | | | | |
| 212 | | | | | | polishing stone |
| 212 | | | | | | Type 1 Cobble |
| 214 | | 6.98 | N | N | Y | Type 1 cobble? Has the small flake off the platform on dorsal |
| 215 | | 11.37 | Y | N | Y | |
| 215 | | - | Y | N | Y | |
| 215 | | | | | | |
| 216 | 8 | 2.44 | N | N | N | |
| 216 | | | | Y | | |
| 216 | | | | | | |
| 216 | | | | | | |
| 216 | | | | | | |
| 216 | | | | | | |
| 216 | | | | | | |
| 216 | | | | | | |
| 216 | | | | | | |
| 216 | 13 | | | | | |
| 216 | 13 | | | | | |
| 216 | 13 | | | | | |
| 216 | 13 | | | | | |
| 216 | | | | | | Biface Fragment |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 218 | | 4.25 | N | N | N | |
| 218 | | 9.01 | Y | N | Y | |
| 220 | 6 | 4.3 | N | N | Y | |
| 220 | | | | | | |
| 221 | | | N | N | N | |
| 222 | | 5.87 | N | N | N | possibly flake off hammerstone or chopper |
| 222 | 9 | 2.67 | N | N | N | |
| 222 | | | | | | |
| 222 | | | | | | |
| 222 | 9 | | | | | |
| 222 | 77 | | | | | |
| 222 | 9 | | | | | |
| 222 | 9 | | | | | |
| 222 | 9 | | | | | |
| 222 | 9 | | | | | |
| 222 | 9 | | | | | |
| 222 | 9 | | | | | |
| 222 | | | | | | Type 1 Cobble |
| 223 | | 5.95 | N | N | Y | |
| 223 | | | | | | |
| 223 | | | | | | |
| 223 | | | | | | |
| 225 | | | | | | |
| 225 | 3 | | | | | |
| 228 | | 2.16 | Y | N | Y | |
| 228 | | | | | | |
| 228 | | | | | | |
| 228 | | | | | | used as a scraper? Haft wear? |
| 230 | | 3.37 | N | N | N | Type 1 Cobble? |
| 230 | | - | N | N | N | |
| 230 | | 6.2 | N | N | Y | |
| 230 | | | | | | |
| 230 | | | | | | |
| 230 | | | | | | |
| 230 | | | | | | |
| 230 | | | | | | |
| 230 | | | | | | |
| 230 | | | | | | |
| 231 | | 8 | N | N | N | |
| 232 | | | | | | |
| 233 | | 1.94 | N | N | N | |
| 233 | | | | | | |
| 234 | | - | N | N | N | |
| 234 | | 8.86 | N | N | N | |
| 234 | | | | | | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 234 | | | | | | |
| 234 | | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 234 | 13 | | | | | |
| 235 | | | Y | N | Y | large flake tool |
| 235 | | | | | | |
| 235 | | | | | | |
| 236 | | 2.36 | N | N | N | |
| 236 | | 3.07 | N | N | N | |
| 236 | | 8.36 | Y | N | Y | |
| 236 | | | | | | |
| 236 | | | | | | |
| 238 | | | | | | |
| 238 | | | | | | |
| 239 | | | N | N | N | |
| 239 | | 14.08 | Y | N | Y | Large flake tool |
| 239 | | | Y | N | Y | large "burin" like flake tool on a split cobble |
| 239 | | | | | | |
| 241 | | 8.56 | N | N | N | |
| 242 | | - | N | N | N | |
| 242 | | 2.56 | N | N | N | |
| 242 | | 9.52 | N | N | N | |
| 242 | | 5.13 | Y | N | Y | Type 1 Cobble flake? |
| 242 | | | | | | |
| 242 | | | | | | |
| 242 | | | | | | |
| 244 | | | | | | |
| 244 | | | | | | |
| 244 | | | | | | |
| 244 | | | | | | |
| 247 | | - | N | N | N | |
| 247 | | - | N | N | N | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 247 | | - | N | N | N | |
| 247 | | | | | | |
| 247 | | | | | | |
| 247 | | | | | | |
| 247 | | | | | | |
| 247 | | | | | | |
| 247 | 7 | | | | | |
| 247 | | | | | | |
| 247 | | | | | | |
| 247 | | | | | | |
| 250 | | 16.49 | Y | N | Y | |
| 250 | | 18.22 | Y | N | Y | Type 1 Cobble flake? |
| 250 | | 10 | N | N | Y | Type 1 Cobble flake? |
| 250 | | 14.97 | Y | N | Y | |
| 250 | | 16.29 | Y | N | Y | |
| 250 | | | | | | |
| 250 | | | | | | |
| 250 | | | | | | |
| 250 | | | | | | |
| 250 | | | | | | |
| 250 | | | | | | |
| 250 | | | | | | |
| 251 | | 7.81 | N | N | Y | Type 1 Cobble flake? |
| 251 | | 18.7 | Y | N | Y | |
| 251 | | | | | | |
| 252 | | 6.3 | Y | N | Y | |
| 253 | | | N | N | N | |
| 253 | | 2.15 | N | N | N | |
| 253 | | | N | N | N | |
| 253 | | | N | N | N | |
| 253 | | 1.38 | N | N | N | |
| 253 | | 1.3 | N | N | N | |
| 253 | | 6.48 | N | N | N | |
| 253 | | 6.56 | N | N | N | |
| 253 | | 3.21 | N | N | N | |
| 253 | | 2.42 | N | N | N | |
| 253 | | 3.1 | N | N | N | |
| 253 | | 0.74 | N | N | N | |
| 253 | | 5.55 | N | N | Y | Type 1 Cobble flake? |
| 253 | | | | | | |
| 253 | | | | | | |
| 253 | | | | | | seven fragments |
| 253 | | | | | | sixteen flake fragments |
| 253 | | | | | | |
| 253 | | | | | | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 253 | | | | | | |
| 253 | 5 | | | | | |
| 253 | | | | | | |
| 253 | | | | | | |
| 254 | | | | | | |
| 256 | | 3.47 | N | N | N | |
| 256 | | | | | | Type 1 Cobble |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 258 | 7 | | | | | |
| 260 | | 1.87 | N | N | N | |
| 260 | | 3.39 | N | N | N | Type 1 Cobble flake? |
| 260 | | | Y | N | Y | A well-worn flake tool |
| 260 | | | Y | N | Y | large shattered cobble with edge use |
| 260 | | - | Y | N | Y | Flake tool with edge rounding |
| 260 | | | Y | N | Y | A well-worn flake tool |
| 260 | | | | | | |
| 260 | | | | | | |
| 261 | | - | Y | N | Y | flake tool on a broken flake. |
| 261 | | | | | | |
| 261 | | | | | | Type 1 cobble |
| 262 | | 7.81 | Y | N | Y | |
| 262 | | | | | | |
| 264 | 5 | | | | | |
| 264 | 5 | | | | | |
| 268 | | 5.59 | N | N | N | Type 1 Cobble flake? |
| 268 | | 6.2 | N | N | N | Type 1 Cobble flake? |
| 268 | | - | N | N | N | |
| 268 | | 18.04 | Y | N | Y | |
| 268 | | | | | | |
| 268 | | | | | | |
| 268 | | | | | | |
| 268 | | | | | | |

| PD# | FS | Platform Depth | Edge Damage | Heat Alteration | Flake Tool? | Comments |
|---|---|---|---|---|---|---|
| 268 | 3 | | | | | |
| 268 | | | | | | |
| 268 | | | | | | |
| 268 | | | | | | |
| 271 | 2 | | | | | |
| 271 | 2 | | | | | |
| 271 | 2 | | | | | |
| 271 | 2 | | | | | |
| 271 | 2 | | | | | |
| 276 | | 2.75 | N | N | N | |
| 276 | 5 | | | | | |
| 276 | 5 | | | | | |
| 276 | 5 | | | | | |
| 276 | 5 | | | | | |
| 276 | 5 | | | | | |
| 276 | 5 | | | | | |
| 276 | 5 | | | | | |
| 276 | 5 | | | | | |
| 276 | 5 | | | | | |
| 277 | 3 | | | | | |
| 277 | 3 | | | | | |
| 277 | 3 | | | | | |

| PD# | FS | Feature | Unit | Study Uni | Level | Strat | Material | Tool Type | Complete? | Length | Width | Thickness | Weight | Margin 1 | Margin 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 113 | | 10 | 3A | 3 | 1 | II | Chert (white) | Flake Tool | N | 28.98 | 29.53 | 10.27 | 6.01 | rounding and microflaking | rounding and microflaking |
| 113 | | 10 | 3A | 3 | 1 | II | Brushy Basin Chert | Scraper | N | 37.61 | 22.07 | 9.69 | 6.62 | steep angled retouch, microflaking | |
| 114 | 5 | | | 3 | 2 | II | Obsidian | Biface fragment | N | 10.76 | 9.63 | 3.35 | 0.4 | crushing | |
| 116 | | 10 | 3A | 3 | 3 | II | Mudstone (brown/grey) | Flake Tool | Y | 107.86 | 77.87 | 28.88 | 170.5 | microflaking and rounding | |
| 134 | | 8 | 4A | 4 | 1 | I | Igneous | Cobble Chopper | Y | 140.87 | 106.83 | 54.45 | 200+ | rounding and microflaking | |
| 139 | 8 | | | 4 | 2 | II | Obsidian | Informal scraper | Y | 20.59 | 15.91 | 6.42 | 1.7 | microflaking and rounding | |
| 141 | | - | 1C | 1 | 5 | III | Igneous | Type 1 Cobble | Y | 104.92 | 110.04 | 43.82 | 200+ | rounding and microflaking | |
| 145 | 6 | | | 4 | 2 | II | Obsidian | Flake Core | N | 39.96 | 21.17 | 7.9 | 5.9 | rounding | margin is crushed |
| 147 | | 15 | 2A | 2 | 9 | II/III | Chert (grey) | Hammerstone | Y | 85.52 | 56.18 | 52.6 | 200+ | battering | |
| 158 | 5 | | | 1 | 7 | III | Obsidian | Core | Y | 31.58 | 22.82 | 15.38 | 5.7 | retouch and microflaking | retouch and microflaking |
| 159 | | - | 1C | 1 | 6 | II | Quartzite (grey) | Type 1 Cobble | Y | 197 | 136.02 | 70.36 | 200+ | microflaking | |
| 167 | | 15 | 2B | 2 | 2 | II | Silicified Sandstone (reddish) | Hammerstone | Y | 90.76 | 79.04 | 31.92 | 200+ | battering | battering and microflaking |
| 170 | 7 | | | 4 | 3 | III | Obsidian | Core | Y | 30.57 | 21.06 | 9.2 | 4.5 | | |
| 180 | | - | 1D | 1 | 5 | II | Igneous | Type 1 Cobble | Y | 104.9 | 94.23 | 45.8 | 200+ | rounding and microflaking | rounding and microflaking |
| 184 | | - | 1D | 1 | 7 | IV | Quartzite (grey and purple) | Hammerstone | N | - | - | - | - | Battering and rounding | |
| 212 | | - | 1D | 1 | 8 | V | Igneous | Polishing Stone | Y | 64.34 | 28.74 | 16.26 | 39.74 | polished and rounded tip | |
| 212 | | - | 1D | 1 | 8 | V | Igneous | Type 1 Cobble | Y | 141.48 | 126.07 | 51.62 | 200+ | rounded, battered | |
| 216 | | - | 1B | 1 | 9 | V | Chert (red) | Biface fragment | N | - | - | - | 0.19 | lateral grinding? | |
| 222 | | - | 1A | 1 | 8 | V | Basalt | Type 1 Cobble | Y | 83.62 | 87.48 | 46.92 | 200+ | microflaking | rounding |
| 228 | | - | 1C | 1 | 9 | VI | Igneous | Informal scraper | Y | 28.45 | 35.69 | 11.48 | 16.55 | microflaking | abrasion and rounding |
| 242 | | 17 | 1C/D | 1 | 10 | VI | Basalt | Type 2 Cobble | Y | 128.4 | 79.44 | 39.14 | 200+ | | |
| 251 | | - | 2F | 2 | 5 | II/III | Chert (white) | Biface fragment | N | 11.1 | 6.91 | 4.11 | 0.21 | | |
| 256 | | - | 1E | 1 | 11 | VIII | Igneous | Type 1 Cobble | Y | 112.15 | 118.63 | 49.12 | 200+ | rounding and microflaking | |
| 261 | | 17 | 1H | 1 | 4 to 8 | II | Quartzite (white) | Type 1 Cobble | Y | 92.92 | 79.02 | 57.09 | 200+ | rounding and microflaking | |

| PD# | FS | Margin 3 | Projection/Point | Multi-Use | Use 2 | Comments |
|---|---|---|---|---|---|---|
| 113 | | | microflaking | No | | A chert gravel nodule, with two heavily utilized margins |
| 113 | | | | No | | An end scraper manufactured on a medium sized core flake. Only one lateral margin intact. |
| 114 | 5 | | | No | | A flake that was retouched to make a projectile point or biface. Pressure flakes extend across the surface. |
| 116 | | | | No | | A hoe or informal axe manufactured on a large percussion flake. |
| 134 | | | | No | | An informal chopper manfactured on a split river cobble. Does not follow the patterning of Type I or Type II cobble tools. |
| 139 | 8 | | | No | | An informal scraper manufactured on a core reduction flake. The margin used is the dorsal margin of the platform. |
| 141 | | | | No | | Not the best example, but similar to Type 1 cobble tools |
| 145 | 6 | | | Yes | informal cutting tool | A large percussion flake that was used as a core with several flake removals. Following this, it was used as a cutting implement. |
| 147 | | | | No | | A gravel or river cobble hammerstone, lightly used. |
| 158 | 5 | | | Yes | informal scraper | A small angular core of obsidian. It was reused as an informal scraper, with retouch on two margins. |
| 159 | | | | No | | Cobble was already split by river action/etc., but flakes to sharpen are primarily taken using the cortex as a platform. |
| 167 | | Battering | | No | | A "one-hand mano"-shaped cobble with battering around all margins and battering and microflaking on a couple |
| 170 | 7 | | | No | | A small core |
| 180 | | | rounded | Yes | Hammerstone | Four projections have battering damage, with the same facet angle |
| 184 | | | | No | | A fragment from a hammerstone, including one battered margin |
| 212 | | | | No | | A slightly polished tip on this manuport |
| 212 | | | | No | | Typical Type 1 Cobble tool (chopper) |
| 216 | | | | No | | A very small fragment of a biface |
| 222 | | | | No | | Typical Type 1 Cobble tool (chopper) |
| 228 | | | none | No | | A flake tool used as a scraper. Distal marign exhibits microflaking, proximal margin along platform is smoothed, abraded, and beveled. Possible evidence of hafting? |
| 242 | | | | No | | A Type 2 Chopper |
| 251 | | | | No | | The margin of a white chert biface, showing a few bifacial thinning flake removal scars |
| 256 | | | microflaking | No | | Typical Type 1 Cobble tool (chopper) |
| 261 | | | rounded | No | | Typical Type 1 Cobble tool (chopper) |

| Debitage Category | Cortex % | Reduction Technology | Platform Style | Dorsal Morphology | Macro Edge Damage | Heat Alteration | Artifact Class |
|---|---|---|---|---|---|---|---|
| complete flake | 0-25% | biface thinning | Cortex | Vertical | Present | present | Debitage |
| broken flake | 25-75% | "core" reduction | Flake scar | Horizontal | Absent | absent | FCR |
| flake fragment | 75-100% | bipolar reduction | Trimmed | Oblique | | | Tool |
| shatter/debris | | | Crushed | Multi-directional | | | Terrace gravel |
| architectural debris | | | | Cortex | | | |
| | | | | Unknown | | | |

| PD | Unit | Feat | Strat | Level | FS | Length | Width shoulder | Width base | Width waist* | Thickness (max) | Notch1 depth | Notch2 depth |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 247 | | - | - | - | 4 | 21.52 | 10.29 | 10.88 | 7.15 | 2.37 | 1.71 | 2.79 |
| 175 | 1, D | | I | 2 | 1 | 13.6 | 7.64 | 9.03 | 4.34 | 1.77 | 1.94 | 1.69 |
| 119 | 2B | 15 | 0 | 0 | 1 | 22.66 | 13.38 | 15.78 | 12.16 | 3.7 | 1.11 | 1.03 |
| 139 | 4A | 8 | II | 2 | 7 | 22.13 | 11.18 | 11.59 | 6.38 | 2.52 | 2.54 | 2 |

*just above notch

| Study Uni | Material | Tool Type |
|---|---|---|
| 1 | Chert (red) | Biface fragment |
| 1 | Obsidian | Core |
| 1 | Quartzite (gr | Hammerstone |
| 1 | Igneous | Informal scraper |
| 1 | Igneous | Polishing Stone |
| 1 | Igneous | Type 1 Cobble |
| 1 | Igneous | Type 1 Cobble |
| 1 | Basalt | Type 1 Cobble |
| 1 | Igneous | Type 1 Cobble |
| 1 | Quartzite (w | Type 1 Cobble |
| 1 | Igneous | Type 1 Cobble |
| 1 | Quartzite (gr | Type 1 Cobble |
| 1 | Basalt | Type 2 Cobble |
| 2 | Chert (white | Biface fragment |
| 2 | Chert (grey) | Hammerstone |
| 2 | Silicified San | Hammerstone |
| 3 | Obsidian | Biface fragment |
| 3 | Chert (white | Flake Tool |
| 3 | Mudstone (b | Flake Tool |
| 3 | Brushy Basin | Scraper |
| 4 | Igneous | Cobble Chopper |
| 4 | Obsidian | Core |
| 4 | Obsidian | Flake Core |
| 4 | Obsidian | Informal scraper |

| | SU1 | SU2 | SU3 | SU4 | Total |
|---|---|---|---|---|---|
| Biface Fragment | 1 | 1 | 1 | 0 | 3 |
| Core | 1 | 0 | 0 | 2 | 3 |
| Hammerstone | 1 | 2 | 0 | 0 | 3 |
| Cobble Tool | 8 | 0 | 0 | 1 | 9 |
| Informal Scraper | 1 | 0 | 0 | 1 | 2 |
| Formal Scraper | 0 | 0 | 1 | 0 | 1 |
| Flake Tool | 0 | 0 | 2 | 0 | 2 |
| Projectile Point | 2 | 1 | 0 | 1 | 4 |
| Polishing Stone | 1 | 0 | 0 | 0 | 1 |
| Total | 14 | 4 | 4 | 5 | 28 |

## Appendix 5: Obsidian Sourcing Report

Archaeometry Laboratory

# X-Ray Fluorescence Analysis of Obsidian Artifacts from Aztec North (LA5603)

**MURR IDs: MIT001-MIT153**


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August 22, 2016

## Introduction

This project involves the analysis of 152 obsidian artifacts (MIT001 – MIT153, plus on non-obsidian piece – MIT007) from Aztec North (LA5603). All of the obsidian artifacts were assigned to two sources in the Jemez Mountains. Fourteen of the artifacts are assigned to the sources but, due mainly to small specimen size, they have a slightly lower confidence in the source assignment. Almost all of these smaller specimens are from the heavy fraction samples. A total of 53 artifacts are assigned to the Cerro del Medio source (referred to as Valles Rhyolite [Shackley 2005]) and 99 are assigned to the Obsidian Ridge source (also called Cerro Toledo Rhyolite). Notably absent from the assemblage are any artifacts from the Polvadera Peak source on the northeast side of the Jemez Mountains and any material from the two sources at Mount Taylor. The source assignments and compositional data are listed in Appendix 1.

## X-Ray Fluorescence Analysis

The ThermoScientific ARL Quant'X EDXRF was used for the analysis of these artifacts. The instrument has a rhodium-based X-ray tube operated at 35 kV and a thermoelectrically-cooled silicon-drift detector. The obsidian calibration uses a set of 37 very well-characterized obsidian sources with data from previous ICP, XRF, and NAA measurements (Glascock and Ferguson 2012). The samples were counted for two minutes to measure the minor and trace elements present. The elements quantified include Rb, Sr, Y, Zr, and Nb. These five elements are excellent for discriminating most sources in the Southwest.

## Source Assignment Methodology

Statistical analysis was carried out on base-10 logarithms of concentrations. Use of log concentrations rather than raw data compensates for differences in magnitude between the major elements such as iron and trace elements such as niobium. Transformation to base-10 logarithms also yields a more normal distribution for many trace elements.

The interpretation of compositional data obtained from the analysis of archaeological materials is discussed in detail elsewhere (e.g., Baxter and Buck 2000; Bieber et al. 1976; Bishop and Neff 1989; Glascock 1992; Harbottle 1976; Neff 2000) and will only be summarized here. The main goal of data analysis is to identify distinct homogeneous groups within the analytical database and match these groups to the chemical signatures of known geologic sources. In most cases, source assignments for obsidian artifacts are based on visual inspection of elemental bivariate plots. XRF data tend to skew along correlation lines (largely as a function of variable sample mass), and visual inspection provides more reliable source assignments than some multi-variate techniques such as principal component analysis (Ferguson 2012). The analysis of smaller and thinner artifacts can often cause inaccurate quantification due to limits of the calibrations to handle the smaller sample mass, but the current instrument calibration and use of the 3.5mm collimator has provided reasonable data for very small artifacts.

Compositional groups can be viewed as "centers of mass" in the compositional hyperspace described by the measured elemental data. Groups are characterized by the locations of their centroids and the unique relationships (i.e., correlations) between the elements. Decisions about whether to assign a specimen to a particular compositional group are based on the overall probability that the measured concentrations for the specimen could have been obtained from that group.

**Results**

The MURR Archaeometry Laboratory has an extensive reference collection of more than 30 obsidian sources from the American Southwest. All of the 152 obsidian artifacts in the assemblage can be assigned to one of two sources. Figure 1 is a plot of the artifacts against the ellipses of the sources present in the assemblage. I have included source data from Polvadera Peak and Mount Taylor for comparison.

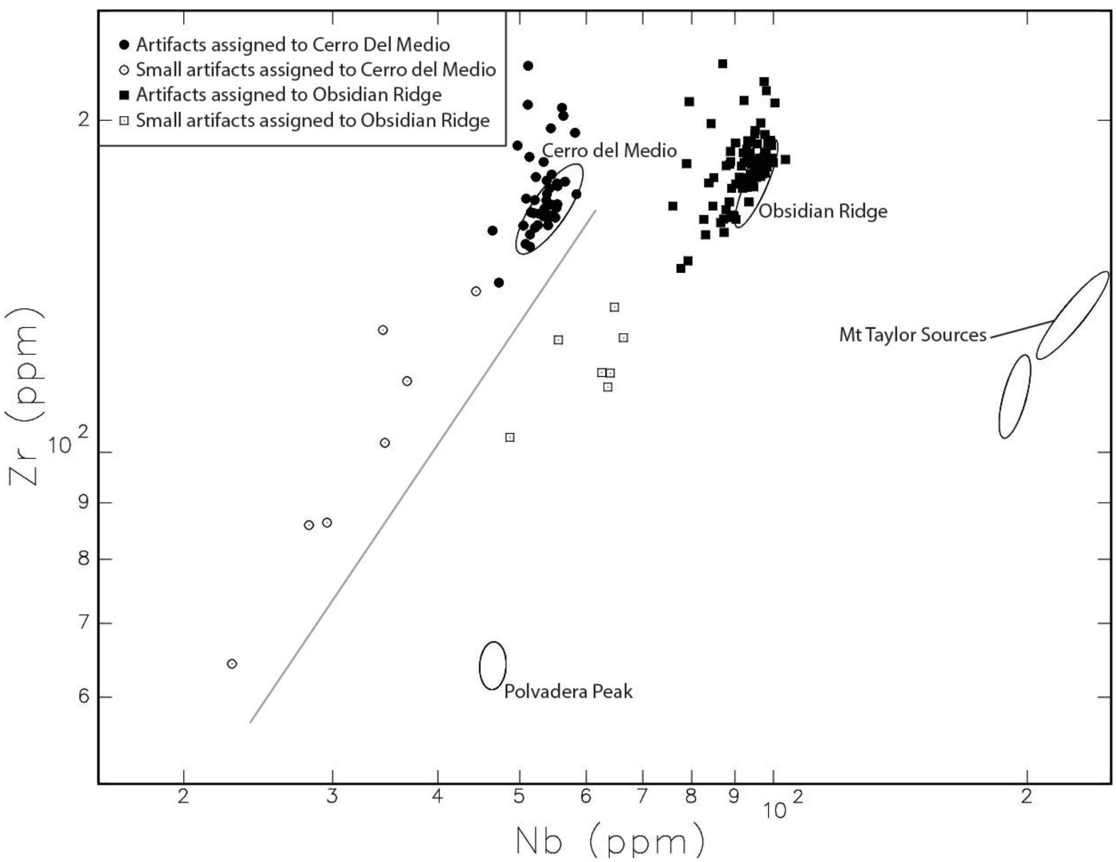


*Figure 1: Bivariate plot of niobium and zirconium concentrations (ppm) showing sources (ellipses only) and artifacts (plotted individually). Ellipses represent 90% confidence intervals for membership in the source groups.*

All of the artifacts plotted in Figure 1 are very good matches for their assigned sources (see Appendix 1). The extremely small artifacts did present some analytical and interpretive challenges. Small artifacts, particularly when very thin, present so little sample mass in the X-ray beam that it presents significant problems to the calibration software. Calculated elemental compositions for small artifacts tend to decrease in proportion to sample mass, and thus they tend to drift to the lower left of the respective source ellipses in bivariate plots. While the spread appears large, this correlation line remains constant in each bivariate plot, allowing confidence in the source assignments.

**Conclusions**

All 152 of the obsidian artifacts in this assemblage match one of the two major sources in the Jemez Mountains – Cerro del Medio and Obsidian Ridge. Notably absent in this assemblage are the other Jemez sources (particularly Polvadera Peak) and the Mount Taylor sources. The obsidian from Cerro del Medio is rarely found in secondary gravels outside the Valles Caldera, but Obsidian Ridge and Polvadera occur in the Rio Grande gravels all the way down to El Paso and beyond (Shackley 2005). The presence of Cerro del Medio and Obsidian Ridge at Aztec North suggests procurement directly from the source area rather than from secondary deposits.

**Acknowledgements**

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*Appendix 1: Compositional data for TMC artifacts.*

| ANID | source | PD Number | FS# | Rb | Sr | Y | Zr | Nb |
|---|---|---|---|---|---|---|---|---|
| MIT001 | Jemez - Cerro del Medio | 116 | 6 | 168 | 7 | 41 | 167 | 54 |
| MIT002 | Jemez - Obsidian Ridge | 116 | 6 | 223 | 11 | 55 | 167 | 76 |
| MIT003 | Jemez - Obsidian Ridge | 116 | 6 | 237 | 2 | 67 | 207 | 100 |
| MIT004 | Jemez - Cerro del Medio | 116 | 6 | 185 | 12 | 40 | 185 | 51 |
| MIT005 | Jemez - Obsidian Ridge | 116 | 6 | 251 | 5 | 63 | 175 | 84 |
| MIT006 | Jemez - Cerro del Medio | 116 | 6 | 180 | 7 | 41 | 159 | 46 |
| MIT007 | not obsidian | 116 | 6 | -4 | 33 | 0 | 11 | 1 |
| MIT008 | Jemez - Cerro del Medio | 158 | 5 | 174 | 4 | 44 | 171 | 58 |
| MIT009 | Jemez - Cerro del Medio | 165 | 8 | 163 | 4 | 41 | 167 | 55 |
| MIT010 | Jemez - Cerro del Medio | 165 | 8 | 169 | 4 | 42 | 179 | 55 |
| MIT011 | Jemez - Obsidian Ridge | 101 | 7 | 196 | 1 | 59 | 169 | 93 |
| MIT012 | Jemez - Obsidian Ridge | 101 | 7 | 216 | 3 | 63 | 181 | 98 |
| MIT013 | Jemez - Obsidian Ridge | 101 | 7 | 234 | 3 | 66 | 184 | 96 |
| MIT014 | Jemez - Cerro del Medio | 101 | 7 | 171 | 4 | 42 | 174 | 55 |
| MIT015 | Jemez - Cerro del Medio | 101 | 7 | 178 | 4 | 40 | 158 | 51 |
| MIT016 | Jemez - Cerro del Medio | 101 | 7 | 164 | 4 | 40 | 161 | 54 |
| MIT017 | Jemez - Obsidian Ridge | 101 | 7 | 247 | 2 | 65 | 185 | 93 |
| MIT018 | Jemez - Obsidian Ridge | 101 | 7 | 239 | 1 | 66 | 185 | 98 |
| MIT019 | Jemez - Cerro del Medio | 101 | 7 | 178 | 5 | 41 | 197 | 54 |
| MIT020 | Jemez - Cerro del Medio | 101 | 7 | 172 | 4 | 41 | 164 | 54 |
| MIT021 | Jemez - Obsidian Ridge | 101 | 7 | 231 | 8 | 63 | 184 | 93 |
| MIT022 | Jemez - Obsidian Ridge | 101 | 7 | 239 | 1 | 67 | 190 | 99 |
| MIT023 | Jemez - Obsidian Ridge | 101 | 7 | 194 | 0 | 58 | 163 | 90 |
| MIT024 | Jemez - Obsidian Ridge | 101 | 7 | 236 | 1 | 63 | 183 | 95 |
| MIT025 | Jemez - Obsidian Ridge | 101 | 7 | 236 | 1 | 67 | 213 | 98 |
| MIT026 | Jemez - Cerro del Medio | 101 | 7 | 174 | 4 | 41 | 154 | 51 |
| MIT027 | Jemez - Cerro del Medio | 101 | 7 | 186 | 5 | 42 | 165 | 52 |
| MIT028 | Jemez - Cerro del Medio | 101 | 7 | 197 | 6 | 46 | 176 | 54 |
| MIT029 | Jemez - Cerro del Medio | 268 | 3 | 161 | 5 | 41 | 165 | 53 |
| MIT030 | Jemez - Cerro del Medio | 178 | 7 | 167 | 4 | 42 | 166 | 53 |
| MIT031 | Jemez - Obsidian Ridge | 114 | 5 | 241 | 18 | 67 | 191 | 98 |
| MIT032 | Jemez - Cerro del Medio | 114 | 5 | 188 | 7 | 42 | 168 | 55 |
| MIT033 | Jemez - Obsidian Ridge | 114 | 5 | 190 | 2 | 57 | 164 | 90 |
| MIT034 | Jemez - Cerro del Medio | 114 | 5 | 179 | 7 | 45 | 176 | 57 |
| MIT035 | Jemez - Obsidian Ridge | 114 | 5 | 231 | 6 | 64 | 185 | 97 |
| MIT036 | Jemez - Cerro del Medio | 114 | 5 | 166 | 5 | 41 | 168 | 55 |
| MIT037 | Jemez - Cerro del Medio | 114 | 5 | 180 | 5 | 45 | 202 | 56 |
| MIT038 | Jemez - Cerro del Medio | 114 | 5 | 161 | 11 | 41 | 174 | 54 |
| MIT039 | Jemez - Obsidian Ridge | 114 | 5 | 235 | 4 | 65 | 185 | 100 |
| MIT040 | Jemez - Obsidian Ridge | 114 | 5 | 178 | 1 | 55 | 163 | 87 |
| MIT041 | Jemez - Obsidian Ridge | 114 | 5 | 214 | 5 | 63 | 178 | 95 |
| MIT042 | Jemez - Cerro del Medio | 114 | 5 | 150 | 12 | 39 | 160 | 52 |
| MIT043 | Jemez - Cerro del Medio | 114 | 5 | 154 | 26 | 39 | 190 | 50 |
| MIT044 | Jemez - Obsidian Ridge | 114 | 5 | 219 | 4 | 61 | 176 | 92 |
| MIT045 | Jemez - Cerro del Medio | 162 | 5 | 174 | 5 | 42 | 169 | 54 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| MIT046 | Jemez - Obsidian Ridge | 139 | 8 | 189 | 20 | 56 | 175 | 90 |
| MIT047 | Jemez - Cerro del Medio | 139 | 8 | 160 | 12 | 41 | 163 | 54 |
| MIT048 | Jemez - Cerro del Medio | 139 | 8 | 152 | 37 | 38 | 207 | 51 |
| MIT049 | Jemez - Cerro del Medio | 139 | 8 | 155 | 58 | 41 | 224 | 51 |
| MIT050 | Jemez - Cerro del Medio | 139 | 8 | 157 | 9 | 41 | 163 | 55 |
| MIT051 | Jemez - Obsidian Ridge | 139 | 8 | 205 | 6 | 62 | 179 | 96 |
| MIT052 | Jemez - Obsidian Ridge | 139 | 8 | 228 | 7 | 62 | 183 | 93 |
| MIT053 | Jemez - Obsidian Ridge | 139 | 8 | 205 | 5 | 60 | 174 | 93 |
| MIT054 | Jemez - Obsidian Ridge | 139 | 8 | 210 | 1 | 62 | 175 | 94 |
| MIT055 | Jemez - Obsidian Ridge | 139 | 8 | 206 | 7 | 59 | 177 | 91 |
| MIT056 | Jemez - Obsidian Ridge | 139 | 8 | 214 | 5 | 60 | 178 | 95 |
| MIT057 | Jemez - Obsidian Ridge | 139 | 8 | 188 | 2 | 55 | 167 | 85 |
| MIT058 | Jemez - Obsidian Ridge | 139 | 8 | 211 | 0 | 59 | 173 | 92 |
| MIT059 | Jemez - Obsidian Ridge | 148 | 2 | 232 | 2 | 66 | 217 | 97 |
| MIT060 | Jemez - Obsidian Ridge | 148 | 2 | 225 | 9 | 61 | 182 | 88 |
| MIT061 | Jemez - Obsidian Ridge | 148 | 2 | 204 | 2 | 61 | 177 | 93 |
| MIT062 | Jemez - Obsidian Ridge | 148 | 2 | 155 | 0 | 48 | 147 | 78 |
| MIT063 | Jemez - Obsidian Ridge | 148 | 2 | 226 | 0 | 66 | 187 | 98 |
| MIT064 | Jemez - Obsidian Ridge | 148 | 2 | 217 | 1 | 62 | 181 | 96 |
| MIT065 | Jemez - Obsidian Ridge | 148 | 2 | 206 | 0 | 58 | 187 | 94 |
| MIT066 | Jemez - Obsidian Ridge | 148 | 2 | 211 | 17 | 60 | 225 | 87 |
| MIT067 | Jemez - Cerro del Medio | 148 | 2 | 177 | 9 | 41 | 160 | 51 |
| MIT068 | Jemez - Obsidian Ridge* | 148 | 2 | 175 | 13 | 45 | 135 | 65 |
| MIT069 | Jemez - Obsidian Ridge | 148 | 2 | 215 | 2 | 65 | 187 | 98 |
| MIT070 | Jemez - Obsidian Ridge | 179 | 6 | 207 | 3 | 61 | 186 | 93 |
| MIT071 | Jemez - Cerro del Medio | 179 | 6 | 166 | 10 | 39 | 169 | 52 |
| MIT072 | Jemez - Obsidian Ridge | 179 | 6 | 217 | 6 | 61 | 187 | 92 |
| MIT073 | Jemez - Cerro del Medio | 179 | 6 | 167 | 10 | 41 | 178 | 52 |
| MIT074 | Jemez - Cerro del Medio | 179 | 6 | 188 | 16 | 45 | 205 | 56 |
| MIT075 | Jemez - Cerro del Medio | 113 | 4 | 181 | 10 | 38 | 142 | 47 |
| MIT076 | Jemez - Obsidian Ridge | 113 | 4 | 229 | 7 | 63 | 191 | 94 |
| MIT077 | Jemez - Cerro del Medio | 113 | 4 | 175 | 20 | 42 | 170 | 51 |
| MIT078 | Jemez - Obsidian Ridge | 113 | 4 | 225 | 44 | 57 | 208 | 79 |
| MIT079 | Jemez - Cerro del Medio | 113 | 4 | 158 | 4 | 40 | 165 | 52 |
| MIT080 | Jemez - Obsidian Ridge | 113 | 4 | 204 | 0 | 59 | 174 | 95 |
| MIT081 | Jemez - Obsidian Ridge | 113 | 4 | 209 | 6 | 58 | 179 | 94 |
| MIT082 | Jemez - Obsidian Ridge | 113 | 4 | 209 | 3 | 60 | 183 | 97 |
| MIT083 | Jemez - Cerro del Medio | 124 | 7 | 162 | 5 | 41 | 164 | 53 |
| MIT084 | Jemez - Obsidian Ridge | 124 | 7 | 246 | 2 | 65 | 190 | 96 |
| MIT085 | Jemez - Obsidian Ridge | 124 | 7 | 215 | 7 | 59 | 169 | 89 |
| MIT086 | Jemez - Cerro del Medio | 124 | 7 | 172 | 10 | 41 | 166 | 54 |
| MIT087 | Jemez - Obsidian Ridge | 124 | 7 | 205 | 3 | 61 | 177 | 93 |
| MIT088 | Jemez - Cerro del Medio | 124 | 7 | 185 | 13 | 42 | 168 | 55 |
| MIT089 | Jemez - Obsidian Ridge | 124 | 7 | 241 | 4 | 63 | 183 | 92 |
| MIT090 | Jemez - Obsidian Ridge | 124 | 7 | 232 | 13 | 61 | 191 | 90 |
| MIT091 | Jemez - Obsidian Ridge | 124 | 7 | 223 | 3 | 64 | 190 | 100 |
| MIT092 | Jemez - Obsidian Ridge | 124 | 7 | 218 | 6 | 62 | 188 | 93 |
| MIT093 | Jemez - Obsidian Ridge | 133 | 2 | 224 | 1 | 65 | 183 | 100 |
| MIT094 | Jemez - Obsidian Ridge | 133 | 2 | 213 | 1 | 62 | 180 | 95 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| MIT095 | Jemez - Obsidian Ridge | 170 | 7 | 220 | 1 | 61 | 181 | 98 |
| MIT096 | Jemez - Obsidian Ridge | 170 | 7 | 182 | 18 | 55 | 163 | 89 |
| MIT097 | Jemez - Obsidian Ridge | 170 | 7 | 209 | 5 | 55 | 177 | 85 |
| MIT098 | Jemez - Obsidian Ridge | 170 | 7 | 228 | 6 | 65 | 194 | 98 |
| MIT099 | Jemez - Obsidian Ridge | 170 | 7 | 209 | 1 | 61 | 178 | 97 |
| MIT100 | Jemez - Obsidian Ridge | 170 | 7 | 199 | 3 | 58 | 174 | 93 |
| MIT101 | Jemez - Obsidian Ridge | 170 | 7 | 223 | 1 | 62 | 179 | 97 |
| MIT102 | Jemez - Obsidian Ridge | 170 | 7 | 210 | 3 | 55 | 182 | 89 |
| MIT103 | Jemez - Obsidian Ridge | 170 | 7 | 180 | 13 | 52 | 183 | 79 |
| MIT104 | Jemez - Obsidian Ridge | 170 | 7 | 220 | 1 | 63 | 179 | 98 |
| MIT105 | Jemez - Obsidian Ridge | 170 | 7 | 187 | 0 | 56 | 164 | 90 |
| MIT106 | Jemez - Obsidian Ridge | 170 | 7 | 236 | 3 | 61 | 183 | 95 |
| MIT107 | Jemez - Obsidian Ridge | 170 | 7 | 215 | 21 | 62 | 208 | 92 |
| MIT108 | Jemez - Obsidian Ridge | 170 | 7 | 221 | 2 | 64 | 179 | 96 |
| MIT109 | Jemez - Obsidian Ridge | 170 | 7 | 203 | 0 | 57 | 162 | 87 |
| MIT110 | Jemez - Obsidian Ridge | 170 | 7 | 196 | 2 | 54 | 163 | 83 |
| MIT111 | Jemez - Obsidian Ridge | 170 | 7 | 215 | 22 | 57 | 199 | 84 |
| MIT112 | Jemez - Obsidian Ridge | 170 | 7 | 195 | 1 | 52 | 149 | 79 |
| MIT113 | Jemez - Obsidian Ridge | 170 | 7 | 189 | 1 | 54 | 158 | 87 |
| MIT114 | Jemez - Cerro del Medio | 170 | 7 | 168 | 20 | 40 | 183 | 53 |
| MIT115 | Jemez - Obsidian Ridge | 170 | 7 | 219 | 0 | 64 | 184 | 103 |
| MIT116 | Jemez - Cerro del Medio | 170 | 7 | 167 | 9 | 40 | 163 | 54 |
| MIT117 | Jemez - Obsidian Ridge | 170 | 7 | 215 | 2 | 62 | 183 | 94 |
| MIT118 | Jemez - Cerro del Medio | 216 | 8 | 177 | 6 | 43 | 164 | 55 |
| MIT119 | Jemez - Obsidian Ridge | 212 | 13 | 205 | 1 | 55 | 157 | 83 |
| MIT120 | Jemez - Obsidian Ridge | 212 | 13 | 237 | 1 | 65 | 192 | 99 |
| MIT121 | Jemez - Obsidian Ridge | 212 | 13 | 240 | 0 | 66 | 199 | 97 |
| MIT122 | Jemez - Obsidian Ridge | 134 | 6 | 238 | 1 | 63 | 183 | 89 |
| MIT123 | Jemez - Obsidian Ridge | 134 | 6 | 183 | 23 | 55 | 187 | 89 |
| MIT124 | Jemez - Cerro del Medio | 134 | 6 | 206 | 3 | 46 | 195 | 58 |
| MIT125 | Jemez - Cerro del Medio | 134 | 6 | 166 | 9 | 41 | 175 | 55 |
| MIT126 | Jemez - Obsidian Ridge | 134 | 6 | 216 | 2 | 61 | 180 | 95 |
| MIT127 | Jemez - Cerro del Medio | 100 | 2 | 183 | 5 | 45 | 171 | 54 |
| MIT128 | Jemez - Obsidian Ridge | 145 | 6 | 237 | 6 | 63 | 194 | 95 |
| MIT129 | Jemez - Obsidian Ridge | 145 | 6 | 232 | 11 | 65 | 196 | 95 |
| MIT130 | Jemez - Obsidian Ridge | 145 | 6 | 205 | 5 | 60 | 175 | 94 |
| MIT131 | Jemez - Obsidian Ridge | 145 | 6 | 187 | 1 | 56 | 173 | 89 |
| MIT132 | Jemez - Obsidian Ridge | 145 | 6 | 205 | 2 | 60 | 191 | 94 |
| MIT133 | Jemez - Cerro del Medio | 145 | 6 | 164 | 4 | 40 | 161 | 53 |
| MIT134 | Jemez - Obsidian Ridge | 145 | 6 | 206 | 5 | 60 | 183 | 93 |
| MIT135 | Jemez - Cerro del Medio | 220 | 6 | 152 | 3 | 39 | 154 | 51 |
| MIT136 | Jemez - Cerro del Medio* | 222 | 7 | 141 | 5 | 28 | 116 | 37 |
| MIT137 | Jemez - Obsidian Ridge | 144 | 5 | 243 | 6 | 62 | 178 | 91 |
| MIT138 | Jemez - Obsidian Ridge | 144 | 5 | 194 | 1 | 58 | 175 | 91 |
| MIT139 | Jemez - Obsidian Ridge | 247 | 7 | 228 | 1 | 65 | 185 | 96 |
| MIT140 | Jemez - Obsidian Ridge* | 170 | 8 | 181 | 3 | 38 | 126 | 56 |
| MIT141 | Jemez - Obsidian Ridge | 139 | 11 | 243 | 6 | 62 | 182 | 92 |
| MIT142 | Jemez - Obsidian Ridge* | 125 | 4 | 143 | 3 | 34 | 103 | 49 |
| MIT143 | Jemez - Cerro del Medio* | 101 | 8 | 177 | 4 | 38 | 140 | 44 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| MIT144 | Jemez - Obsidian Ridge* | 101 | 8 | 192 | 2 | 45 | 127 | 66 |
| MIT145 | Jemez - Cerro del Medio* | 212 | 17 | 127 | 5 | 25 | 86 | 30 |
| MIT146 | Jemez - Obsidian Ridge | 212 | 17 | 233 | 2 | 59 | 166 | 88 |
| MIT147 | Jemez - Obsidian Ridge* | 212 | 28 | 162 | 0 | 41 | 118 | 64 |
| MIT148 | Jemez - Cerro del Medio* | 212 | 28 | 95 | 2 | 21 | 86 | 28 |
| MIT149 | Jemez - Cerro del Medio* | 149 | 6 | 148 | 8 | 29 | 129 | 34 |
| MIT150 | Jemez - Cerro del Medio* | 165 | 13 | 148 | 5 | 27 | 102 | 35 |
| MIT151 | Jemez - Cerro del Medio* | 165 | 13 | 88 | 2 | 17 | 64 | 23 |
| MIT152 | Jemez - Obsidian Ridge* | 134 | 9 | 157 | 1 | 39 | 115 | 64 |
| MIT153 | Jemez - Obsidian Ridge | 134 | 9 | 221 | 1 | 63 | 192 | 93 |

** source assignments with less confidence.*

# Appendix 6: Archaeobotanical Data

**Aztec North (LA 5603) Flotation Samples Analyzed by Nikki Berkebile and Karen R. Adams. September 24, 2018.**

**PD 238, FS 1: Floor in Study Unit 2B**

| Count | Taxon | Part | Condition | Notes | Common Name |
|---|---|---|---|---|---|
| 2 | Cercocarpus | wood | charred | | mountain mahogany |
| 3 | Cheno-Am | seed | charred | | chenopodium and/or amaranthus |
| 11 | Cheno-Am | seed | uncharred/partly charred | | chenopodium and/or amaranthus |
| 1 | *Echinocereus* | seed | charred | | hedgehog cactus |
| 1 | *Opuntia* (prickly pear) | seed | uncharred | | prickly pear |
| 2 | *Opuntia* (prickly pear) | seed | charred | | prickly pear |
| 3 | *Portulaca* sp. | seed | charred | | purslane (charred) |
| 2 | *Portulaca* sp. | seed | uncharred/partly charred | | purslane (uncharred) |
| 1 | *Juniperus* sp. | seed | uncharred, extremely tiny | | juniper seed (uncharred) |
| 11 | *Juniperus* sp. | leaves | charred | | juniper leaves (charred) |
| 1 | *Juniperus* | wood | partially charred | | juniper wood (partially charred) |
| 15 | *Juniperus* | wood | charred | | juniper wood (charred) |
| 5 | *Physalis* sp. | seed | charred | | groundcherry |
| 4 | *Pinus edulis* | wood | charred | | pinyon wood |
| 2 | *Scirpus* | achenes | charred | with a style base on top | bulrush |
| 9 | *Zea mays* | cupule | charred | | Maize, corn |
| 1 | Unknown | seed | charred | | |
| 9.22 g. | Wood >2mm | | | | |
| 2 | Termite pellets | | | | |
| ~<1% | Rodent Feces | | charred/uncharred | | |
| 1 | *Faunal, shell-- sent to faunal analyst* | | | | |

**) 165, FS 7 (Bag 1 of 2): A small charcoal layer above the roof fall in Study Uni**

| Count | Taxon | Part | Condition | Notes | Common Name |
|---|---|---|---|---|---|
| 4 | Cercocarpus | wood | charred | | mountain mahogany |
| 102 | Cheno-Am | seed | charred | | chenopodium and/or amaranthus |
| 229 | Cheno-Am | seed | uncharred/partly charred | some black, some tan; one of the domesticates? | chenopodium and/or amaranthus |
| 18 | *Juniperus* | wood | charred | | juniper wood |
| 1 | *Juniperus* | wood | partially charred | | juniper wood |
| 1 | *Mentzelia albicaulis* | seed | uncharred | | blazing star |
| 15 | *Portulaca sp.* | seed | charred | | purslane (charred) |
| 26 | *Portulaca sp.* | seed | uncharred/partly charred | | purslane (uncharred) |
| 1 | *Scirpus* | achene | uncharred | | bulrush |
| 2 | *Yucca baccata* | seed | charred | | banana yucca |
| 33 | *Zea mays* | cupule | charred | | maize |
| 1 | Unknown | | charred | | |
| 11 | Non-wood indeterminate | | | | |
| 2.93 g. | Wood >2mm | | | | |
| 3 | *Faunal, shell-- sent to faunal analyst* | | | | |

**PD 216, FS 5: A small charcoal layer above the roof fall in Study Unit 1**

| Count | Taxon | Part | Condition | Notes | Common Name |
|---|---|---|---|---|---|
| 73 | Cheno-Am | seed | charred | | chenopodium and/or amaranthus |
| 132 | Cheno-Am | seed | uncharred | some black, some tan; one of the domesticates? | chenopodium and/or amaranthus |
| 10 | *Juniperus* | wood | charred | | juniper wood |
| 1 | *Physalis sp.* | seed | charred | | groundcherry |
| 3 | *Pinus edulis* | wood | charred | | pinyon |
| 16 | *Portulaca sp.* | seed | charred | | purslane (charred) |
| 4 | *Portulaca sp.* | seed | uncharred/partly charred | | purslane (uncharred) |
| 7 | Rosaceae | wood | charred | | rose family |
| 1 | *Scirpus* | achenes | uncharred | | bulrush |
| 4 | *Zea mays* | cupule | charred | | maize |
| 12 | Unknown | seed? | uncharred | not a type of Mentzelia; possibly cheno-ams? | |
| 1.1 g. | Wood >2mm | | | | |
| .29 g. | Non-wood | indeterminate | charred | | |
| 1 | *Faunal, shell-- sent to faunal analyst* | | | | |

**PD 234, FS 8: The floor of a great house room in Study Unit 2A**

| Count | Taxon | Part | Condition | Notes | Common Name |
|---|---|---|---|---|---|
| 1 | *Oryzopsis* (Achnatherum) | caryopsis | uncharred | | Indian rice grass |
| 13 | Cheno-Am | seed | charred | | chenopodium and/or amaranthus |
| 21 | Cheno-Am | seed | uncharred/partly charred | | chenopodium and/or amaranthus |
| 6 | *Echinocereus* | seed | charred | | hedgehog cactus |
| 6 | *Euphorbia* | seed | uncharred | | spurge |
| 16 | *Juniperus* | wood | charred | | juniper wood |
| 1 | *Juniperus* | wood | partially charred | | juniper wood |
| 9 | *Juniperus* sp. | leaves | charred | | juniper leaves |
| 10 | *Portulaca sp.* | seed | charred | | purslane (charred) |
| 10 | *Portulaca sp.* | seed | uncharred/partly charred | | purslane (uncharred) |
| 4 | *Opuntia* (prickly pear) | seed | charred | | prickly pear |
| 1 | *Opuntia* (prickly pear) | seed | uncharred | | prickly pear |
| 3 | *Physalis sp.* | seed | charred | | groundcherry |
| 9 | *Physalis sp.* | seed | uncharred | | groundcherry |
| 1 | *Rosaceae* | wood | charred | | rose family |
| 1 | *Scirpus* | achene | charred | | bulrush |
| 2 | *Yucca baccata* | seed | uncharred | | banana yucca |
| 75 | *Zea mays* | cupule | charred | | maize/corn |
| 1 | unknown | seed | charred | possibly a rodent pellet | |
| 1 | Unknown | unknown | uncharred | not a Poaceae; lacks an embryo depression | |
| 1 | Unknown | seed fragment | uncharred | too thick for pinyon | |
| 1 | Unknown | seed | charred | | |
| 50+ | Non-wood | indeterminate | charred | some may be Zea cupules or kernel frags; some wood; some unknown | |
| 1 | Termite Pellet | | uncharred | | |
| 8.7 g. | Wood >2mm | | | | |
| 30 | *Faunal, shell-- sent to faunal analyst* | | | | |

**PD 258, FS 1: A small charcoal feature on the floor of a great house room in S**

| Count | Taxon | Part | Condition | Notes | Common Name |
|---|---|---|---|---|---|
| 1 | Cactacae | spine base | charred | | |
| 10 | Cheno-Am | seed | charred | | chenopodium and/or amaranthus |
| 2 | Cheno-Am | seed | uncharred/partly charred | | chenopodium and/or amaranthus |

| | | | | | |
|---|---|---|---|---|---|
| 1 | *Descurainia* | seed | charred | | tansy mustard |
| 1 | *Eschscholtzia californica* | seed | uncharred | Possibly a historic introduction to the region | California poppy |
| 1 | *Euphorbia* | seed | uncharred | | spurge |
| 101 | *Juniperus* | leaves | charred | | juniper leaves |
| 49 | *Juniperus* | leaves | uncharred | | juniper leaves |
| 1 | *Juniperus* | seed | ? | | juniper seed |
| 14 | *Juniperus* | wood | charred | | juniper wood |
| 1 | *Mentzelia albicaulis* | seed | charred | | blazing star |
| 1 | *Mentzelia albicaulis* | seed | uncharred | | blazing star |
| 4(2) | *Opuntia* (prickly pear) | seeds | charred/uncharred | | prickly pear |
| 1 | *Phragmites* | stem fragment | charred | | reed |
| 5 | *Physalis sp.* | seed | charred | | groundcherry |
| 2 | *Physalis sp.* | seed | uncharred | | groundcherry |
| 4 | *Populus/Salix* | wood | charred | | Populus= cottonwood, Silex= willow |
| 16 | *Portulaca sp.* | seed | charred | | purslane (charred) |
| 1 | *Portulaca sp.* | seed | uncharred/partly charred | | purslane (uncharred/partly charred) |
| 2 | Rosaceae | wood | charred | | rose family |
| 1 | *Scirpus* | achene | charred | has a style base on top | bulrush |
| 1 | *Yucca baccata* | seed | uncharred | | banana yucca |
| 1 | *Yucca baccata* | seed | charred | | banana yucca |
| 5 | *Zea mays* | cupule | charred | | mountain mahogany |
| 1 | Unknown | | uncharred | not opunita or sphaeralacea | |
| 34 | Unknown seed coat | seed coat | charred/uncharred | thick | |
| 1 | Unknown | | uncharred | possibly a rodent pellet | |
| 1 | Unknown | seed | charred | | |
| 1 | Termite Pellet | | | | |
| 5.32 g. | Wood >2mm | | | | |
| 4.18 g. | Non-wood indeterminate | | charred | | |
| ~5% | Rodent Feces | | charred/uncharred | | |
| 4 | Insects | | | | |
| 8 | *Faunal, shell-- sent to faunal analyst* | | | | |

**PD 139, FS 5 (Bag 1 of 2): Midden deposits in Study Unit 4A**

| Count | Taxon | Part | Condition | Notes | Common Name |
|---|---|---|---|---|---|
| 1 | Cercocarpus | wood | charred | | mountain mahogany |
| 3 | *Euphorbia* | seed | uncharred | | spurge |
| 13 | *Juniperus* | wood | charred | | juniper |
| 1 | *Portulaca sp.* | seed | charred | | purslane |
| 6 | Rosaceae | wood | charred | | rose family |
| 6 | *Zea mays* | cupule | charred | | maize/corn |
| .91 g. | Wood >2mm | | | | |
| 4 | Non-wood indeterminate | | charred | | |
| 2 | Non-wood indeterminate | | uncharred | | |

## Appendix 7: Faunal Report

A Report on the Analysis of Faunal Remains from Aztec North

This report presents the analysis and interpretation of the faunal remains recovered from Aztec North site in Farmington, New Mexico during the archaeological testing conducted in 2016. The collection includes all nonhuman bones and teeth, antler recovered from the test units. Both modified and unmodified materials were recorded and were analyzed.

The faunal assemblage was compiled from four study units, which were excavated in different areas of the site. This assemblage provides an opportunity to examine the contexts of each study unit through the associated faunal remains. Additionally, it supplies important data on diet and socio-economic relationships within the site.

**Methods**

The comparative zooarchaeological collection at Binghamton University was used in the identification process. Fragments were identified to the lowest possible taxonomic level; The following attributes were recorded for all bones: Element, portion, side and age-related information. Fragments that couldn't be assigned to species or class level were regrouped according to animal's size (Large-sized, medium-sized and small-sized animals).

In addition, all observed bone modifications were recoded to evaluate the effects of Taphonomic processes on the faunal collection. This included animals gnawing, burning, and traces of bone tools.

The quantification of the faunal assemblage was based on Number of Identified Specimens (NISP). It's the most common measuring standard in Zooarchaeological research. However, the validity of the number of identified specimens, is affected by various factors, including fragmentation, recovery and laboratory methods (Reitz and Wing 1999). The problems in NISP counts has been extensively discussed in the past decades (e.g. Grayson 1984; Klein and Cruz-Uribe 1984; Marshall and Pilgram 1993; Orchard 2000), but it's still widely relied on in faunal studies to record the relative abundance of species. The relatively small-size of Aztec North faunal collection restricted the use of other measures of quantification; therefore, the representation of the relative abundance on species relied on NISP counts, while taking into consideration the bias in the actual number of species, which were present on site, in comparison to the number of identified specimens.

Determining the age stage of specimens in a faunal collection is an important tool to evaluate animals' exploitation strategies and seasonality (Reitz and Wing 1999:178-179). In general, estimating the age for mammal species relies on the examination of teeth eruption/wear sequences, and epiphyseal fusion. During the identification process of North Aztec assemblage, epiphyseal fusion stages of individual long bones were recorded whenever possible according to the fusion data generated by Purdue (1983) and Taylor (1959). However, the sample of age-related fragments was too small to provide results regarding the age patterns.

**Taphonomy**

Taphonomy and methods of recovery impact the preservation of bone remains at the site must be addressed. Taphonomic processes can significantly bias the data and affect what research questions that can be asked and how to address them best. In general, bone preservation for Aztec North assemblage appears to be relatively good. The presence of small and delicate fish, bird, and mammal bones indicates that burial conditions were at least somewhat favorable for the preservation of bone. Based upon the condition of the faunal remains, preservation bias does not appear to be a major factor affecting this assemblage. The current pH of national park's soil (7.11) (Korb 2010) supports the moderate effect of acidity on bone preservation.

The Natural and cultural taphonomic variables are evaluated to examine overall level of preservation at the site. The variables examined include weathering, carnivore and rodent gnawing, modification for artifacts, cut marks, and burning. Each of these variables was recorded to determine how they could potentially affect the taxonomic and skeletal representation of the fauna at North Aztec site.

The results of the Taphonomic analysis are summarized in (Table 2). Taphonomic processes affected approximately 50.9% of the faunal assemblages.

The recorded natural and cultural processes include heavy fragmentation, weathering, burning, animal gnawing and tool modifications.

The distribution of Taphonomic variables within the test units reflects the distinctive contexts present in each test unit. It's quite difficult to interpret the fragmentation pattern observed in the collection to a specific cultural or natural factor. However, most of the small fragments with a diameter smaller than 1 cm were clustered in unit SU1 and SU2. The high proportion of fragmented bones within these units implies that the effect of cultural variables on the animal remains is more predominant than natural ones. While, the midden units SU3 and SU4 not only had a lower representation of animals remains, but also fragmentation was not quite evident as in the other units. Few bones indicated tool modification (Table 2), these remains were also located in SU1 and SU2 units; This emphasizes that both study units exposed areas used by the community to engage in numerous activities, and some of these activities modified animal bones' shape and distribution.

Weathering and gnawing marks observed on the faunal fragments from floor level in SU1 and SU2 units, suggests that faunal remains and the area were abandoned for a considerable amount of time. The marks left of the bones suggest that fluctuation in temperatures and exposure to various natural elements including water modified the organic component of the bones.

## Recovery and sampling

Bone recovery strategy is tremendously essential in determining the outcome of any faunal analysis, particularly in terms of the richness of the assemblage and the number of identifiable fragments. All the soils from the testing units from North Aztec site were dry-screened through ¼" mesh. While ¼" dry-screening does not capture the smallest bone fragments, such as small fish, bird, and mammal bones, it does serve to recover most of the larger species. As such, the recovery methods used during the testing should allow for a relatively unbiased representation of larger animal species such as mule deer, or Turkey. However, smaller species, which tend to be composed primarily of fish and birds, will likely be underrepresented in this assemblage. Despite this, the North Aztec assemblage does contain some specimens from smaller species such as (Prairie dog) and few fish vertebrates. Without doubt, quarter-inch screening is preferable to no screening at all and will generally better represent the richness of a faunal assemblage than hand-picking artifacts.

All fragments (modified and unmodified) from excavation and screening were collected and stored in double bags or plastic vials with tags providing information on strata, level corresponding to context of the faunal remains.

**Overall results**

The testing units excavated in North Aztec site were situated in four different areas of the site. The results of the mentioned testing indicated exposing multiple cultural contexts. The distribution of the faunal remains and fragmentation patterns correspond to the type of context in each unit.

The faunal assemblage from North Aztec consisted of 523 fragments, of the total assemblage (61%) were recovered from Unit SU1, (31%) were recovered from SU2, the remaining (8%) were collected from SU3 and SU4 units. (Figure1)

The analysis of the faunal remains from all contexts on the site revealed that the top five most abundant species, based upon NISP, were *cottontail, jackrabbit, deer and prairie dog.* As displayed in the below graph, mammalian remains were the most represented based on NISP counts. Other species were present in smaller proportions such as *Turkey*. The high percentage of small fragmented remains affected the ability to identify the faunal remains to a lower taxonomic, especially birds and smaller mammals.

**Artiodactyls**

Artiodactyl remains are the most common, representing 31% percent of the faunal collection (Figure 2). Most of the recovered artiodactyl fragments were identified as "medium artiodactyl". The remains in this group could belong to one of the following species: mule deer (*Odocoileus hemionus*) or white-tailed deer (*Odocoileus virginianus*). Pronghorn antelope *(Antilocapra americana)*, bighorn sheep *(Ovis canadensis*), elk (*Cervus elaphus*). The only complete artiodactyl elements in the collection are one tarsal, two phalanges. The remaining long bones' fragments belong to three metapodial, two metatarsals shafts, one femur, one tibia and one rib. Teeth remains were represented by three incisors. One antler tip was found on the site, and it seems it was modified to be used as a tool. Most of the artiodactyl remains were found in SU1 and SU2 units. In SU1, the long bones and antler fragments were scattered in various post-occupation depositions layers. While, the remaining of the bones and teeth were discarded on a floor level in SU2 unit. One metapodial fragment was collected from SU3A unit. It was found in an overburden level close to the surface.

**Lagomorphs**

The lagomorphs identified fragments account for 30% of the collection (Figure 2).  Jackrabbits (*Lepus* sp.) were slightly more represented in the assemblage, while Cottontails (*Sylvilagus* sp.) were smaller in numbers within the lagomorph group. Two species of cottontail may be represented: *Sylvilagus audubonii* and *Sylvilagus nutallii*. Lagomorphs fragments, which didn't demonstrate sufficient morphological traits to be assigned to a specific species, were grouped as *Lepus* category.

Cottontail species was represented by fragmented of one cervical vertebrate, one lumbar vertebrate. One complete right radius was recovered, in addition to fragments of scapula and ulna.

All the Jackrabbits' skeletal remains were part of the axial skeleton: One lumbar vertebrate fragment, one rib fragment, two mandible fragments with teeth and one pelvis fragment. The remining faunal fragments, which couldn't be assigned with confidence to a specific species consisted of loose teeth fragments, skull fragment, phalanx fragment and part of a scapula.

All the lagomorph fragments were retrieved from units SU1 and SU2. Cottontail's fragments were found in SU2 unit. The contexts of these remains could be described as floor fill and architectural debris. In addition, Jackrabbits bones were also found in SU2 unit in the same floor fill layer.  In SU1 unit, few jackrabbit's bones and lagomorph fragments were found in floor fill and post-occupational deposits context. Only few skeletal elements seemed to be modified by Taphonomic processes.

The Frequencies of Jack Rabbit are slightly higher than cottontails (Table1). Both species are prevalent in the southwest, however, they preferred different habitats and they were captured using different techniques. The cottontails usually inhabit the isolated bushes, while Jackrabbit tend to be more susceptible to open terrains and it can coexist with human (Szuter and Bayham 1989). The bigger size of Jackrabbits in comparison to cottontails facilitates trapping more than one rabbit at the time with nets. Therefore, the higher representation of Jackrabbits could be an identification of a settlement with a long occupation period. (Szuter and Bayham 1989) However, we must keep in mind the faunal results represent specific testing areas and don't provide a comprehensive view of the socio-economic activities on site.

**Rodents**

Rodents remains were formed approximately 22% of the assemblage (figure 2). The remains of prairie dog were in a relatively good condition to be identified to a species level. Similar to lagomorphs, Prairie dogs' skeletal remains were found in SU1 and SU2 units. While the representation of the skeletal elements included: skull fragment, a complete axis, four femur fragments, One Tibia, one ulna and a complete first phalanx. The following remains were not preserved enough to acquire species level identification: Incisor fragment, phalanx fragment, frontal orbital skull fragment, femur fragment and two vertebrate fragments.

In both units the remains were scattered among different contexts varied been post-occupational deposits, overburden, and sub floor level. It seems that rodent remains were imbedded in the cultural layers of the site, however, it's extremely difficult to assess if these rodents were intrusive or part of the cultural representation at North Aztec.

**Birds**

Turkey *Meleagris gallopavo* is the only large avian present in the faunal collection. One tarsus metatarsus shaft was in a feature fill in unit SU1. Other smaller bird remains were found in units SU1 and SU2. Most of these fragments were either weathered, gnawed and burned. This indicate the possibility of exploiting birds on site for socio-economic gain. The contexts of these remains also support this hypothesis. In unit SU2, bird remains were found within floor level context, while in SU1 unit they were incorporated in post-occupational levels. Due to the nature of bird bones remains, and the high fragmentation of bones on the site, we were not able to obtain more information on the role of bird in the life of the settlers.

**Bony Fish**

Fish vertebrates were also found in a proximity to floor level in unit SU2. The retrieved fish remains consisted of vertebrates, which can't be identified to species or genus level. However, the closet level of taxonomic identification of these remains is *Cyprinidae* family. It's likely that fish played a more important role than their frequencies.

**Conclusion:**

The faunal assemblage from Aztec North provided important data on animal representation on site and human activities within the excavated test units. The distribution of skeletal elements within the four study units, supported the interpretation of the various layers recorded during excavation; The presence of naturally modified bones in post-occupational areas, indicated the possibility of abandoning the area and leaving the faunal remains to whether and decay. Culturally modified remains were recovered in contexts in proximity to floor levels emphasizing the use of the space by North-Aztec community to process animal products. This was attested by the identification of species, known to be exploited in the area during North Aztec occupation period, such as Turkey. While burning and bone modification traces suggest the role of humans in hunting or capturing animals and possibility of processing these animals on site.

The faunal representation of animals found in Aztec north is similar in comparison to other sites in the region with contexts from the pueblo period. The high frequency of artiodactyl and lagomorph remains is reported in other sites in the region, such as Salmon ruins (Harris 2006) and Pueblo Bonito

(Badenhorst, et al. 2016). Despite the smaller number of fragments recovered from North Aztec, the collection implies to the dependency of Aztec's community on both animal groups.

The faunal remains from North Aztec can help us better understand life in the settlement, but still we are limited with the range of the faunal interpretations. This is especially true in terms of spatial limitation of testing. The size of faunal assemblage is quite small and that corresponds to the archaeological study conducted on site. Therefore, the results of the faunal analysis can only highlight the distribution of recovered animal species' remains in each unit. While, it was not possible to perform intrasite or intresite comparison of the faunal remains.

Despite the limited excavated areas and the small size of the faunal sample, the collection from Aztec North offered a significant insight into the life of ancient communities of Aztec, particularly during 1120s.

Incorporating the results of the faunal analysis with the interpretations of the architectural remains and material culture, would prove valuable in depicting a comprehensive picture of the events that took place in North Aztec and adjoining structural complex in Aztec site.

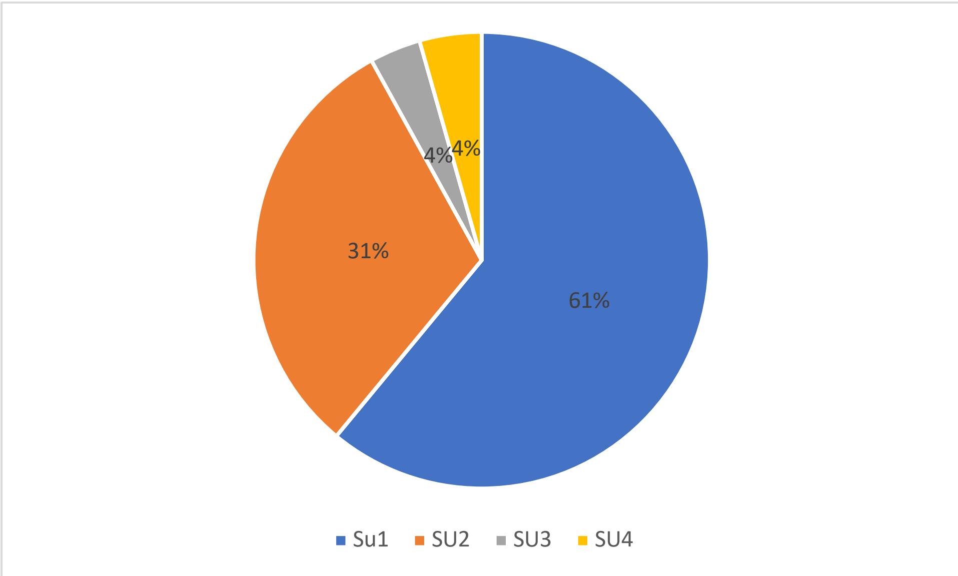


Figure.1. Frequencies of faunal remains in Aztec North Study units

| Class | order | Taxon | Common name | NISP | NISP% |
|---|---|---|---|---|---|
| **Mammal** | Artiodactyla | Medium Artiodactyla | Even-toed ungulate | 19 | 3.63 |
| | Lagomorpha | Lagomorpha | Rabbit, hare and pike | 8 | 1.53 |
| | | *Lepus* sp. | Jackrabbit or hare | 8 | 1.53 |
| | | *Sylvilagus* sp. | Cottontail | 5 | 0.96 |
| | Rodentia | Rodentia | Rodent | 6 | 1.15 |
| | | | Prairie dog | 9 | 1.72 |
| | Miscellaneous | small mammal | | 215 | 41.11 |
| | | Medium mammal | | 87 | 16.63 |
| **Aves** | Galliformes | *Meleagris gallopavo* | Turkey | 3 | 0.57 |
| | Miscellaneous | small bird | | 4 | 0.76 |
| **Osteichthyes** | | | fish | 4 | 0.76 |
| | | Unidentified | | 155 | 29.64 |
| **Total** | | | | 523 | 100 |

Table.1. Frequency of Identified Faunal Remains by Class based on (NISP), North Aztec.

| Unit | Tool Modification | | Weathering | | Burning | | Gnawing | | Fragmentation | |
|---|---|---|---|---|---|---|---|---|---|---|
| | NISP | % | NISP | % | NISP | % | NISP | % | NISP | % |
| SU1 | 1.00 | 0.54 | 3.00 | 1.62 | 9.00 | 4.86 | 0.00 | 0.00 | 93.00 | 50.27 |
| SU2 | 1.00 | 0.54 | 2.00 | 1.08 | 5.00 | 2.70 | 3.00 | 1.62 | 47.00 | 25.41 |
| SU3 | 0.00 | 0.00 | 0.00 | 0.00 | 7.00 | 3.78 | 0.00 | 0.00 | 2.00 | 1.08 |
| SU4 | 0.00 | 0.00 | 1.00 | 1.00 | 2.00 | 1.08 | 0.00 | 0.00 | 9.00 | 4.86 |

Table 2. Frequency of Taphonomic traits Among Faunal Remains.

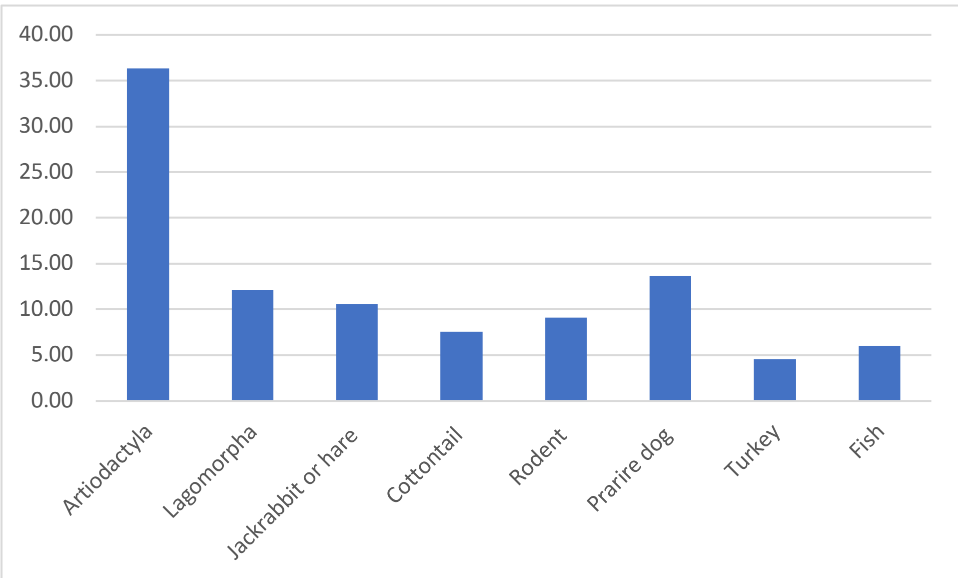


Figure2. Relative abundance of identified taxa, North Aztec.

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## Appendix 8: Faunal Data

| Feature | Unit | Hori Loc | Start | Level | PD | FS | date | No | element | part | species |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | SU3A | | I | 1 | 101 | 10 | 2/8/16 | 63 | fragments | | unidentified |
| 10 | SU3A | WTU | I | 1 | 101 | 4 | 2/6/16 | 103 | metapod | dis frg | cervid |
| 2 | SU1A | | I | 1 | 104 | N/A | 6/2/16 | 59 | fragments | un | unidentified |
| 10 | SU3A | WTU | II | 1 | 113 | 3 | 2/6/16 | 109 | metapod | dis frg | cervid |
| 10 | SU3A | WTU | II | 2 | 114 | | 3/6/16 | 102 | loose teeth | incisor | rodent |
| 10 | SU3A | WTU | III | 4 | 124 | 3 | 3/6/16 | 104 | long bone | fr | mid mammals |
| | SU3A | WTU | III | 4 | 124 | 3 | 3/6/16 | 105 | long bone | frg | small mammal |
| | SU3A | WTU | III | 4 | 124 | 3 | 3/6/16 | 106 | long bone | fr | small mammal |
| 8 | Su4A | WTU | I | 1 | 134 | 4 | 6/6/16 | 112 | long bone | frg | small mammal |
| 8 | Su4A | WTU | II | 2 | 139 | 2 | 6/6/16 | 116 | femur | shaft | mid mammals |
| 8 | Su4A | WTU | II | 2 | 139 | 2 | 6/6/16 | 117 | long bone | frg | small mammal |
| 15 | SU2C | WTU | II/III | 3 | 143 | 4 | 7/6/16 | 110 | ph1 | complete | cervid |
| 15 | SU2C | WTU | II/III | 3 | 143 | 4 | 7/6/16 | 111 | fragments | | mid mammals |
| | SU2C | WTU | II/III | 3 | 143 | 4 | 7/6/16 | 121 | tibia | prox and more than 1/4 | cervid |
| 8 | SU4B | | I | 1 | 144 | 6 | 7/29/16 | 62 | fragments | un | unidentified |
| 8 | su4b | WTU | I | 1 | 144 | 3 | 7/6/16 | 113 | long bone | | mid mammals |
| 8 | su4a | WTU | II | 1 | 145 | 4 | 7/6/16 | 118 | long bone | | mid mammals |
| 15 | SU2A | WTU | II/III | 9 | 147 | 6 | 7/6/16 | 95 | fragments | frg | shell |
| 8 | Su4C | WTU | I | 1 | 149 | 3 | 7/6/16 | 114 | long bone | frg | bird (Turkey) |
| 8 | Su4C | WTU | I | 1 | 149 | 3 | 7/6/16 | 115 | long bone | fr | small mammal |
| | SU1 B | WTU | III | 7 | 158 | 3 | 7/6/16 | 86 | fragments | un | unidentified |
| | SU1B | WTU | III | 7 | 158 | 4 | 7/6/16 | 96 | mt | longtitude frg | cervid |
| | SU1B | WTU | III | 7 | 158 | 4 | 7/6/16 | 97 | inde ver | process | mid mammals |
| | SU1B | WTU | III | 7 | 158 | 4 | 7/6/16 | 98 | fragments | | mid mammals |
| | SU1C | N/A | V | 8 | 165 | 10 | 7/6/16 | 67 | rib | body | small mammal |
| | SU1C | N/A | V | 8 | 165 | 10 | 7/6/16 | 68 | fragments | un | small mammal |
| | SU1 C | WTU | II | 8 | 165 | 4 | 7/6/16 | 71 | skull frg | temporal | lepus |
| | SU1 C | WTU | II | 8 | 165 | 4 | 7/6/16 | 72 | femur | prox and more than 1/4 | Prairie Dog |
| | SU1 C | WTU | II | 8 | 165 | 4 | 7/6/16 | 73 | inde ver | process | mid mammals |
| | SU1 C | WTU | II | 8 | 165 | 4 | 7/6/16 | 74 | fragments | un | mid mammals |
| | SU1 C | WTU | II | 8 | 165 | 4 | 7/6/16 | 75 | long bone | shaft | mid mammals |
| 8 | SU4B | WTU | III | 2 | 170 | 3 | 7/6/16 | 76 | long bone | shaft | mid mammals |
| 15 | SU2B | WTU | II | 3 | 178 | 1 | 9/6/16 | 82 | ulna | almost complete | cottontail |
| 15 | SU2B | WTU | II | 3 | 178 | 1 | 9/6/16 | 83 | femur | fragment | mid mammals |
| 15 | SU2B | WTU | II | 3 | 178 | 1 | 9/6/16 | 84 | pelvis | fragment | mid mammals |

| Feature | Unit | Hori Loc | Start | Level | PD | FS | date | No | element | part | species |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | SU2B | WTU | II | 3 | 178 | 1 | 9/6/16 | 85 | skull frg | un | mid mammals |
| 18 | SU2B+E | PTU | VII | 20 | 179 | | 6/23/16 | 27 | flat fragment | un | mid mammals |
| 15 | SU2D | WTU | III | 4 | 193 | 1 | 10/6/16 | 107 | femur | prox and more than 1/4 | Prairie Dog |
| 15 | SU2D | WTU | III | 4 | 193 | 1 | 10/6/16 | 108 | loose teeth | frg | cervid |
| 15 | SU1D | | V | 8 | 212 | 17 | 6/13/16 | 60 | fragments | un | unidentified |
| 17 | SU1D | | V | 8 | 212 | 15 | 7/29/16 | 64 | axis | complete | Prairie Dog |
| 17 | SU1D | | V | 8 | 212 | 15 | 7/29/16 | 65 | rib | body | small mammal |
| 17 | SU1D | | V | 8 | 212 | 15 | 7/29/16 | 66 | fragments | un | small mammal |
| 22 | SU1D | | V | 8 | 212 | 17 | 6/13/16 | 69 | ph1 | complete | Prairie Dog |
| 22 | SU1D | | V | 8 | 212 | 17 | 6/13/16 | 70 | fragments | un | small mammal |
| 17 | SU1D | WTU | v | 8 | 212 | 5 | 6/13/16 | 88 | scapula | dis frg | lepus |
| 17 | SU1D | WTU | v | 8 | 212 | 5 | 6/13/16 | 89 | fragments | frg | small mammal |
| 17 | SU1D | WTU | v | 8 | 212 | 5 | 6/13/16 | 90 | long bone | shaft | turkey |
| 17 | SU1D | WTU | v | 8 | 212 | 5 | 6/13/16 | 91 | rib | head and body | small mammal |
| 17 | SU1D | WTU | v | 8 | 212 | 5 | 6/13/16 | 92 | fragments | | mid mammals |
| 17 | SU1D | WTU | v | 8 | 212 | 5 | 6/13/16 | 93 | fragments | un | mid mammals |
| 17 | SU1D | WTU | v | 8 | 212 | 5 | 6/13/16 | 94 | fragments | un | small mammal |
| 17 | SU1 D | WTU | v | 8 | 212 | 5 | 6/13/16 | 125 | skull frg | frontal orbital maxilla | small rodent |
| 17 | SU1 D | WTU | v | 8 | 212 | 5 | 6/13/16 | 126 | vertebrate | frg | rodent |
| 17 | SU1 D | WTU | v | 8 | 212 | 5 | 6/13/16 | 127 | vertebrate | complete | reptile |
| 17 | SU1 D | WTU | v | 8 | 212 | 5 | 6/13/16 | 128 | vertebrate | complete | reptile |
| N/A | SU1B | | V | 9 | 216 | 11 | 6/13/16 | 61 | fragments | un | unidentified |
| | SU1B | WTU | II | 9 | 216 | 4 | 6/13/16 | 77 | humerus | shaft | bird |
| | SU1B | WTU | II | 9 | 216 | 4 | 6/13/16 | 78 | ph1 | dis frg | lepus |
| | SU1B | WTU | II | 9 | 216 | 4 | 6/13/16 | 79 | fragments | un | small mammal |
| | SU1B | WTU | II | 9 | 216 | 4 | 6/13/16 | 80 | fragments | un | mid mammals |
| | SU1B | WTU | II | 9 | 216 | 4 | 6/13/16 | 81 | loose teeth | incior | lepus |
| 15 | SU2A/B | WTU | III | 10 | 217 | 2 | 6/14/16 | 100 | ulna | almost complete | Prairie Dog |
| | SU2A/B | WTU | III | 10 | 217 | 2 | 6/14/16 | 101 | tibia | almost complete | Prairie Dog |
| 15 | SU2A/B | WTU | III | 10 | 217 | 2 | 6/14/16 | 119 | skull frg | frontal | Prairie Dog |
| 15 | SU2A/B | WTU | IV | | 220 | 5 | 6/17/16 | 99 | Egg shell | frg | unidentified |
| 8 | SU1A | | V | 8 | 222 | N/A | 6/14/16 | 12 | fragments | | small mammal |
| 8 | SU1A | | V | 8 | 222 | N/A | 6/14/16 | 13 | fragments | un | unidentified |
| | SU1A | WTU | II | 8 | 222 | 3 | 6/14/16 | 87 | long bone | fragment | mid mammals |
| | SU1C | WTU | VI | 9 | 228 | N/A | 6/14/16 | 29 | fragments | un | small mammal |

| Feature | Unit | Hori Loc | Start | Level | PD | FS | date | No | element | part | species |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | SU1B | WTU | VI | 10 | 230 | 4 | 6/14/16 | 51 | mt | shaft | cervid |
| | SU1B | WTU | VI | 10 | 230 | 4 | 6/14/16 | 52 | long bone | shaft | mid mammals |
| | SU1B | WTU | VI | 10 | 230 | 4 | 6/14/16 | 53 | fragments | un | mid mammals |
| | SU1B | WTU | VI | 10 | 230 | 4 | 6/14/16 | 131 | humerus | prox and more than 1/4 | small bird |
| 15 | SU2 C/D | WTU | IV | 6 | 231 | 2 | 6/14/16 | 39 | lumbar ver | spinosous ver | cottontail |
| 15 | SU2 C/D | WTU | IV | 6 | 231 | 2 | 6/14/16 | 40 | radius | complete | cottontail |
| 15 | SU2D | WTU | V | 7 | 232 | | 6/15/16 | 32 | pelvis | fragment | mid mammals |
| 15 | SU2D | WTU | V | 7 | 232 | 2 | 6/15/16 | 57 | femur | dis frg | mid mammals |
| 15 | SU2D | WTU | V | 7 | 232 | 2 | 6/15/16 | 58 | long bone | shaft | bird |
| 15 | SU2 D | WTU | VI | 7 | 232 | 1 | 6/15/16 | 127 | ulna | almost | bird |
| 4 | SU2C | | V | 7 | 233 | 18 | 6/15/16 | 14 | caudal ver | almost complete | rodent |
| 4 | SU2C | | V | 7 | 233 | 18 | 6/15/16 | 15 | fragments | un | unidentified |
| 18 | SU2A | WTU | IV | 12 | 234 | 2 | 6/15/16 | 1 | rib | body | mid mammals |
| 18 | SU2A | WTU | IV | 12 | 234 | 2 | 6/15/16 | 2 | long bone | fragment | mid mammals |
| 18 | SU2A | WTU | IV | 12 | 234 | 2 | 6/15/16 | 3 | femur | almost complete distal missing | Prairie Dog |
| 18 | SU2A | WTU | IV | 12 | 234 | 2 | 6/15/16 | 4 | cervical ver | almost complete | cottontail |
| 18 | SU2A | WTU | IV | 12 | 234 | 2 | 6/15/16 | 5 | lumbar ver | spinosous ver | jack |
| 18 | SU2A | WTU | IV | 12 | 234 | 2 | 6/15/16 | 6 | mandibule fragment | incisor and body frg | jack |
| 18 | SU2A | WTU | IV | 12 | 234 | 2 | 6/15/16 | 7 | loose maxilliary teeth | incisor | jack |
| 18 | SU2A | WTU | IV | 12 | 234 | 2 | 6/15/16 | 8 | fragments | vertebraes | small mammal |
| 18 | SU2A | WTU | IV | 12 | 234 | 2 | 6/15/16 | 9 | caudal vert | f | fish |
| 14 | SU2A | | VI | 12 | 234 | 18 | 10/8/16 | 16 | fragments | | small mammal |
| 14 | SU2A | | VI | 12 | 234 | 18 | 10/8/16 | 17 | fragments | un | unidentified |
| 18 | SU2A | WTU | VI | 12 | 234 | | 6/15/16 | 28 | metapod | shaft | cervid |
| 18 | SU2A | WTU | IV | 12 | 234 | 14 | 10/8/16 | 132 | incisor | complete | cervid |
| 18 | SU2A | WTU | IV | 12 | 234 | 14 | 10/8/16 | 133 | incisor | complete | cervid |
| 18 | SU2A | WTU | IV | 12 | 234 | 14 | 10/8/16 | 134 | ph3 | complete | cervid |
| 18 | SU2A | WTU | IV | 12 | 234 | 14 | 10/8/16 | 135 | frg | frg | mammal |
| 3 | SU1A, SU1B | | VII | 11 | 235 | 19 | 9/8/16 | 18 | loose maxilliary teeth | incisor | lepus |
| 3 | SU1A, SU1B | | VII | 11 | 235 | 19 | 9/8/16 | 19 | fragments | un | unidentified |
| 15 | SU2B | | VI | 13 | 238 | 9 | 6/16/16 | 11 | fragments | un | unidentified |
| 18 | SU2B | WTU | VI | 13 | 238 | 6 | 6/16/16 | 54 | fragments | un | small mammal |
| 15 | SU2B | WTU | VI | 13 | 238 | 8 | 6/17/16 | 56 | fragments | body | cervid |
| 5 | SU1C, SU1D | | V | 9 | 239 | 17 | 9/8/16 | 24 | fragments | un | unidentified |
| 17 | SU1C, SU1D | WTU | V | 9 | 239 | 2 | 6/16/16 | 41 | mandibule fragment | ramus+body+teeth | jack |

| Feature | Unit | Hori Loc | Start | Level | PD | FS | date | No | element | part | species |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | SU1 C/D | WTU | V | 9 | 239 | 2 | 6/16/16 | 129 | vertebrate | complete | reptile |
| 17 | SU1 C/D | WTU | V | 9 | 239 | 2 | 6/16/16 | 130 | femur | dis epi | reptile |
| 6 | SU2E | | VI | 7 | 241 | 18 | 6/16/16 | 21 | fragments | un | unidentified |
| 18 | SU2E | WTU | VI | 7 | 241 | 2 | 6/16/16 | 47 | scapula | artic dis | cottontail |
| 18 | SU2E | WTU | VI | 7 | 241 | 2 | 6/16/16 | 48 | rib | head and body | cervid |
| 18 | SU2E | WTU | VI | 7 | 241 | 2 | 6/16/16 | 49 | tarsal | complete | cervid |
| 18 | SU2E | WTU | VI | 7 | 241 | 2 | 6/16/16 | 50 | fragments | un | mid mammals |
| 18 | SU2E | WTU | VI | 7 | 241 | 2 | 6/16/16 | 123 | vertebrate | dorsal frg | small mammal |
| 18 | SU2E | WTU | VI | 7 | 241 | 2 | 6/16/16 | 124 | long bone | shaft | small mammal |
| 17 | SU1 C/D | WTU | VI | 10 | 242 | 3 | 6/16/16 | 37 | skull frg | un | unidentified |
| 17 | SU1 C/D | WTU | VI | 10 | 242 | 3 | 6/16/16 | 38 | rib | body | small mammal |
| 15 | SU2E | PTU | II/III | N/A | 244 | | 6/16/16 | 30 | long bone | shaft | small mammal |
| 15 | SU2E | PTU | II/III | N/A | 244 | | 6/16/16 | 31 | loose maxilliary teeth | incisor frag | lepus |
| 5 | SU1D, SU1C | | VII | 11 | 247 | 17 | 6/16/16 | 20 | fragments | un | unidentified |
| 2 | SU1D/C | WTU | VII | 11 | 247 | 2 | 6/16/16 | 122 | antler frg | tip? | cervid |
| 17 | SU1 C/D | WTU | VIII | 11 | 253 | 3 | 6/17/16 | 46 | mandibule fragment | frg | lepus |
| 8 | SU2B | | I | 1 | 258 | 20 | 10/8/16 | 25 | ph1 | almost complete | rodent |
| 8 | SU2B | | I | 1 | 258 | 20 | 10/8/16 | 26 | fragments | un | small mammal |
| 20 | SU2B | PTU | I | 1 | 258 | 2 | 6/20/16 | 34 | rib | head and body | jack |
| 20 | SU2B | PTU | I | 1 | 258 | 2 | 6/20/16 | 35 | loose maxilliary teeth | incisor frag | lepus |
| 20 | SU2B | PTU | I | 1 | 258 | 2 | 6/20/16 | 36 | long bone | fragment | small mammal |
| 6 | SU2A | | I | 1 | 264 | 20 | 10/8/16 | 22 | fragments | un | mid mammals |
| 6 | SU2A | | I | 1 | 264 | 20 | 10/8/16 | 23 | fragments | un | unidentified |
| 20 | SU2A | PTU | I | 1 | 264 | 3 | 6/20/16 | 55 | loose mandibular teeth | incisor | cervid |
| 18 | SU1A | WTU | II | 1 | 270 | 1 | 6/20/16 | 42 | pelvis | acetabulum+ Ischum | jack |
| 18 | SU1A | WTU | II | 1 | 270 | 1 | 6/20/16 | 43 | cervical ver | complete | bird (Turkey) |
| 18 | SU1A | WTU | II | 1 | 270 | 1 | 6/20/16 | 44 | long bone | shaft | mid mammals |
| 18 | SU1A | WTU | II | 1 | 270 | 1 | 6/20/16 | 45 | fragments | un | mid mammals |
| | SU2B | PTU | Vii | 20 | 274 | | 6/21/16 | 33 | femur | shaft | Prairie Dog |
| 3 | SU2F | PTU | VII | 20 | 276 | 3 | 6/21/16 | 120 | femur | dis epi | cervid |
| 2 | SU1A | | I | 1 | 277 | 27 | 6/21/16 | 11 | fragments | un | unidentified |

| PD | FS | fragment # | side | individual | fusing | nature | modifications |
|---|---|---|---|---|---|---|---|
| 101 | 10 | 9 | | | | | two burned |
| 101 | 4 | 1 | 2 | | | | |
| 104 | N/A | 6 | | | | | >2 |
| 113 | 3 | 1 | 2 | | | | |
| 114 | | 1 | | | | | |
| 124 | 3 | 2 | | | | | > 4cm burned |
| 124 | 3 | 3 | | | | | calcined |
| 124 | 3 | 2 | | | | | |
| 134 | 4 | 1 | | | | | charred |
| 139 | 2 | 1 | | | | | roots |
| 139 | 2 | 3 | | | | | one burned |
| 143 | 4 | 1 | | | fused | | heavily weathered multiple cracks |
| 143 | 4 | 3 | | | | | one calcined |
| 143 | 4 | 1 | | | | | burrned |
| 144 | 6 | 9 | | | | | >1 |
| 144 | 3 | 1 | | | | | weathered |
| 145 | 4 | 1 | | | | | |
| 147 | 6 | 1 | | | | | >2 |
| 149 | 3 | 1 | | | | | roots |
| 149 | 3 | 5 | | | | | |
| 158 | 3 | 1 | | | | | >1 |
| 158 | 4 | 1 | | | | | deformed in shape weathering possible water |
| 158 | 4 | 1 | | | | | |
| 158 | 4 | 3 | | | | | |
| 165 | 10 | 1 | | | | | |
| 165 | 10 | 5 | | | | | |
| 165 | 4 | 1 | | | | | |
| 165 | 4 | 1 | r | | fused | | |
| 165 | 4 | 1 | | | | | |
| 165 | 4 | 4 | | | | | |
| 165 | 4 | 1 | | | | | |
| 170 | 3 | 1 | | | | | roots |
| 178 | 1 | 1 | r | | | | |
| 178 | 1 | 1 | | | | | |
| 178 | 1 | 1 | | | | | |

| PD | FS | fragment # | side | individual | fusing | nature | modifications |
|---|---|---|---|---|---|---|---|
| 178 | 1 | 1 | | | | | |
| 179 | | 1 | | | | | |
| 193 | 1 | 1 | | | unfused | | |
| 193 | 1 | 2 | | | | | |
| 212 | 17 | 8 | | | | | >3 |
| 212 | 15 | 1 | | | | | |
| 212 | 15 | 1 | | | | | |
| 212 | 15 | 9 | | | | | >1 |
| 212 | 17 | 1 | | | prox not fused | | |
| 212 | 17 | 59 | | | | | 3 burned |
| 212 | 5 | 1 | | | | | calcined |
| 212 | 5 | 5 | | | | | calcined |
| 212 | 5 | 1 | | | | | |
| 212 | 5 | 1 | | | | | |
| 212 | 5 | 3 | | | | | burned |
| 212 | 5 | 8 | | | | | |
| 212 | 5 | 3 | | | | | |
| 212 | 5 | 1 | | | | | |
| 212 | 5 | 1 | | | | | |
| 212 | 5 | 1 | | | | | |
| 212 | 5 | 1 | | | | | |
| 216 | 11 | 8 | | | | | >3 |
| 216 | 4 | 1 | | | | | |
| 216 | 4 | 1 | | | | | |
| 216 | 4 | 55 | | | | | one calcined |
| 216 | 4 | 7 | | | | | |
| 216 | 4 | 1 | | | | | |
| 217 | 2 | 1 | l | | | | |
| 217 | 2 | 1 | | | unfused p d | | |
| 217 | 2 | 1 | | | | | |
| 220 | 5 | 1 | | | | | |
| 222 | N/A | 1 | | | | | burnt |
| 222 | N/A | 6 | | | | | >3mm |
| 222 | 3 | 25 | | | | | dry >1cm |
| 228 | N/A | 1 | | | | | >3 |

| PD | FS | fragment # | side | individual | fusing | nature | modifications |
|---|---|---|---|---|---|---|---|
| 230 | 4 | 1 | | | | dry- split | |
| 230 | 4 | 1 | | | | | burned |
| 230 | 4 | 2 | | | | | |
| 230 | 4 | 1 | | | | | dry wethered |
| 231 | 2 | 1 | | | | | |
| 231 | 2 | 1 | r | | | | |
| 232 | | 1 | | | | | >3cm |
| 232 | 2 | 1 | | | | | |
| 232 | 2 | 1 | | | | | burned |
| 232 | 1 | 1 | | | | | gnawing and stained |
| 233 | 18 | 1 | | | | | |
| 233 | 18 | 6 | | | | | >3mm |
| 234 | 2 | 1 | | | | | worked needle shape. |
| 234 | 2 | 1 | | | | | |
| 234 | 2 | 1 | l | | proximal fused | | distal gnawed |
| 234 | 2 | 1 | | | caudal not fused | | |
| 234 | 2 | 2 | | | | | |
| 234 | 2 | 1 | | 1 | | | |
| 234 | 2 | 1 | l | 1 | | | |
| 234 | 2 | 40 | | | | | |
| 234 | 2 | | | | | | |
| 234 | 18 | 1 | | | | | burnt |
| 234 | 18 | 13 | | | | | >3 |
| 234 | | 2 | | | | | |
| 234 | 14 | 1 | | | | | |
| 234 | 14 | 1 | | | | | |
| 234 | 14 | 1 | | | | | infant? |
| 234 | 14 | 2 | | | | | |
| 235 | 19 | 1 | | | | | |
| 235 | 19 | 6 | | | | | >3 |
| 238 | 9 | 5 | | | | | >3mm |
| 238 | 6 | 1 | | | | | >3 |
| 238 | 8 | 1 | | | | | |
| 239 | 17 | 12 | | | | | >01 |
| 239 | 2 | 1 | | | | | |

| PD | FS | fragment # | side | individual | fusing | nature | modifications |
|---|---|---|---|---|---|---|---|
| 239 | 2 | 1 | | | | | |
| 239 | 2 | 1 | | | | | |
| 241 | 18 | 12 | | | | | >1 |
| 241 | 2 | 1 | | | fused | | |
| 241 | 2 | 1 | | | fused | | |
| 241 | 2 | 1 | r | | | | |
| 241 | 2 | 4 | | | | | |
| 241 | 2 | 1 | | | | | |
| 241 | 2 | 1 | | | | | |
| 242 | 3 | 5 | | | | | >3 |
| 242 | 3 | 2 | | | | | |
| 244 | | 1 | | | | | |
| 244 | | 1 | | | | | |
| 247 | 17 | 25 | | | | | >3 |
| 247 | 2 | 1 | | | | | worked |
| 253 | 3 | 9 | | | | | |
| 258 | 20 | 1 | | | | | |
| 258 | 20 | 5 | | | | | >03 |
| 258 | 2 | 1 | | | | | |
| 258 | 2 | 1 | | | | | |
| 258 | 2 | 8 | | | | | >3 |
| 264 | 20 | 2 | | | | | partly burned |
| 264 | 20 | 11 | | | | | >3 |
| 264 | 3 | 1 | | | | | |
| 270 | 1 | 1 | r | | | | |
| 270 | 1 | 1 | | | | dry | |
| 270 | 1 | 1 | | | | | |
| 270 | 1 | 5 | | | | | |
| 274 | | 1 | | | | | |
| 276 | 3 | 1 | | | unfused | | weathered |
| 277 | 27 | 5 | | | | | >3mm |

| Mes No | No | element | side | species | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | femur | l | prairie dog | Bp | 11.6 | DC | 5.5 | | | | | | |
| 2 | 40 | radius | r | cottontail | GL | 55.9 | bp | 4.8 | bd | 4.7 | dd | 3.9 | | |
| 3 | 42 | aceta | r | | LA | 7.5 | | | | | | | | |
| 4 | 47 | scapula | r | | GLP | 8.5 | gb | 5.5 | | | | | | |
| 5 | 82 | ulna | r | | DPA | 6.2 | sdo | 5.4 | | | | | | |
| 6 | 110 | ph1 | | cervid | gl | 52.1 | bp | 16.3 | bd | 15 | dp | 20.6 | dd | 13.7 |

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