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The Richter Site (47DR80): a Millennium of Prehistoric Technological and Cultural Change on Washington Island, Door County, Wisconsin

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THE RICHTER SITE (47DR80): A MILLENNIUM OF PREHISTORIC TECHNOLOGICAL AND CULTURAL CHANGE ON WASHINGTON ISLAND, DOOR COUNTY, WISCONSIN

by

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ABSTRACT

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Under the Supervision of Professor John D. Richards, Ph.D.

The Richter site (47DR80) was excavated by University of Wisconsin-Milwaukee archaeological field schools during the summers of 1968 and 1973 under the direction of Guy Gibbon and G. Richard Peske. This site was identified by excavators as a North Bay Middle Woodland culture occupation based on Ronald Mason's typology created from his work at the Mero and Porte des Morts sites on Wisconsin's Door Peninsula. Although various specialized analyses have focused on aspects of the Richter site material culture, no site report or overall analysis of material culture exists. This study provides the first synthetic account of the UWM excavations and the associated material culture recovered from the site. Examination of ceramic materials from the Richter site document differences in ceramic production methods at the site. Paddle and anvil construction, using a cordmarked paddle, date to Early Woodland occupations at the site. Coil building, resulting in smoothed surfaced Laurel-like vessels, date to the Middle Woodland. The results indicate the need for changes to the existing North Bay taxon to include greater time depth and changes in manufacturing technology. Variations in the decisions of potters are documented and discussed utilizing a performance-based life history approach.

To

Jonathan and Sydney,

Thank you for all your support and understanding

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ACKNOWLEDGMENTS

I would like to thank my advisor Dr. John Richards. He has helped and guided me through the lengthy process of writing this dissertation. Wisconsin archaeology is fortunate to have such a dedicated advocate as well as an educator. I sincerely believe pottery sherds speak to him and I think I have learned to hear them too. It was Dr. Richards that suggested that the analysis of the extensive ceramic materials from the Richter site combined with the preparation of a site report would provide a contribution to Wisconsin archaeology. The documentation of this site, excavated in 1968 and 1973, would also continue the University of Wisconsin-Milwaukee Archaeological Research Laboratory's drive to have students work with curated collections, an initiative that has made numerous contributions to archaeology.

These long curated materials presented challenges including missing photographs, notes, maps and other documentation. They also presented rewards, an extensive collection of material cultural remains from a complex and fascinating site. I would like to thank Gordon Peters and Richard Peske for their work leading the excavations at Richter. I would also like to thank the field students that excavated the site and produced planviews of excavations. The surviving documents are invaluable and well done. Some students I can only identify by last names or initials. Students from the 1968 field season include: A.E. (Anne Early), M.B. (Mark Bruhy), M.K.C, C.H., M.K., S.Mc. (McConnell), D.O. (David Overstreet), N.R. (River), K.T., and M.J.W. They 1973 season students include: Adler, Awald, Judy Brown, Mark Bruhy, C. Coberly, Cooper, Eiff, Terry Enking, Barb Hamann, Harter, Kolmos, J. O'Brien, Mary Riske, Schmid, Struthers. If I missed you I apologize. Your work was most certainly appreciated.

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I large debt of gratitude is also owed to the Richter Family of Washington Island. Arni Richter generously allowed the 1968 field school to survey and excavate areas of his pasture and garden. He also allowed students to return in 1973 to continue work at the site. Sadly Mr. Richter did not see the completion of this report but his daughter, Mary Jo and her husband Richard Purinton, have continued the family support for this project. They graciously facilitated a shovel test survey in 2010. Many people are unaware that Arni Richter also allowed access to the land where Ronald and Carol Mason excavated the Porte des Morts site. This is the area where the Washington Island ferry terminal is located at North Port. The Richter Family has played a significant role in supporting Wisconsin archaeology. Thank you. I would also like to thank the wonderful residents of Washington Island. Their friendliness and support is greatly appreciated.

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Chapter 1
Introduction

Thesis Statement

Ronald Mason defined the North Bay Culture as a Middle Woodland complex in the late 1960s (Mason 1966, 1967) and expanded upon the definition in his classic 1981 text *Great Lakes Archaeology* (Mason 1981(2002)). Since then, friable, grit tempered, thickware ceramics, often described by researchers as “crude”, have been identified as North Bay ceramic types at sites far from the original Door Peninsula locale of Mason’s work (Mason 1966:75). This extended region stretches from Lake Winnebago in the south, to Central Wisconsin in the West, the Upper Peninsula of Michigan to the North and possibly to western Lower Michigan on the east. More recent work at sites in Door County has added another dimension to questions regarding North Bay ceramic distribution by introducing evidence suggesting both a greater time depth as well as more variation in settlement locations associated with North Bay pottery. This has led to an ad hoc broadening of the North Bay taxon with little formal reevaluation of the original conception or discussion of the utility of extending Mason’s concept geographically and temporally. Consequently, it is difficult for researchers to establish a regional culture history, or explore how Middle Woodland foragers within this region lived and interacted locally and regionally.

To address this problem, this study conducted a comparative analysis of North Bay pottery utilizing an attribute-level approach. Morphological and compositional data was collected to: 1) characterize North Bay pottery at the Richter site and 2) conduct a comparative analysis of the resulting dataset using a performance-based life history approach (sensu Skibo

2013) that incorporates analysis of ceramic pastes, use-wear, function, and chronological placement. The present study focuses on the ceramic assemblage from the Richter site. These materials are curated at the University of Wisconsin-Milwaukee Archaeological Research Laboratory (ARL). Analysis of the Richter site collection is supplemented by a review of ceramics from a variety of area sites assigned to the North Bay taxon.

Information relevant to this study gleaned from these examined materials is presented. Results are used to reevaluate the North Bay taxon and review its relationship to mobile forager lifeways during the Middle Woodland period in the western Great Lakes.

The problems that have accompanied the expansion of the current North Bay taxon are grounded in the paradigms of material culture that guided work in the Great Lakes region during the late 1960s and early 1970s. During this period Great Lakes archaeologists were excavating sites in areas where little if any previous archaeological work had been done. Consequently, construction of local and regional cultural histories was an important first step. It was thought that sites that were stratigraphically intact would allow for the creation of a straightforward cultural history utilizing ceramic sherds (Mason 1966:5; 1981(2002):278). According to Mason, the North Bay culture history was created in a traditional manner, using the "binomial nomenclature currently in vogue", to define types and varieties (Mason 1966:7-8). This reflected the prevailing view that ceramics were a tool to define spatial and temporal boundaries because "pottery styles and treatments changed through time and space to a much greater degree than is true of other categories of artifacts" (Mason 1966:5). While developing a culture history framework is critical, it sometimes relegates pottery to a role as a static marker removed from its intrinsic relationship with human actors. The isolation of material culture and human behavior makes acknowledgement of the specific nature and extent of cultural and technological variation problematic. One way to reintegrate pottery into the dynamic and complex framework of use, production, and disposal is by applying a more behavioral approach (Schiffer 1972:158; Schiffer and Miller 1999:22-23; Skibo and Schiffer 2008:6-7).

In many ways, typological frameworks can constrain understanding of cultural processes. Typological analyses of materials like ceramics sometimes turn into a quest to simply fit sherds into existing frameworks. Moving beyond this requires incorporating many types of data related to the production and use of ceramic materials into an analytic framework. Such data must include much more than stylistic and decorative attributes. Traditional typological frameworks often do not allow for the documentation of data in a manner that allows researchers to perceive similarities and differences across a wide breath of information. This is true even of the type-variety approach; perhaps the most widely used classificatory system in archaeological ceramic analysis (Smith 1979). One goal of the present study is to create a more dynamic picture of North Bay ceramic technology and vessel use. To accomplish this, a conventional attribute-based ceramic analysis is coupled with a performance-based life history approach.

In order to provide a foundation for a much more dynamic understanding of material culture, behavior, and people, the present study relies on a theoretical framework drawn from the work of a variety of scholars employing a behavioral approach to the study of material culture including Reid, Schiffer, and Skibo (Reid, et al. 1974; Schiffer 1972, 1976, 1983, 1987, 1999, 2011; Schiffer and Skibo 1987; Schiffer, et al. 2001). Ultimately, we as archaeologists are striving to understand behavior of peoples in the past through the objects left behind. Objects can simply be named, described or categorized. Such objects can also become temporal markers. Yet each object is the product of innumerable decisions. If we examine those decisions that specifically impact performance of the vessel a performance-based life history can be created to explore vessel use. Once a performance performance-based life history is created for an object it allows for the consideration of divergent and convergent links in the chain. At the Richter site, this approach has led to a reconsideration of the *how* and *why* behind the adoption and evolution of ceramic technology among mobile prehistoric hunter/gathers in the northern Lake Michigan area.

Richter Site Summary

The Richter site (47DR80) is located on the western shore of Detroit Harbor, Washington Island, Door County, Wisconsin. Excavations were conducted by University of Wisconsin Field School students during 1968 and 1974. The Richter site is a large prehistoric site with a rich cultural assemblage recovered from 70 features. Feature types include burials, hearths, postmolds, middens, structure basins, and pits. Site distribution of structures indicates changes in site occupational pattern with at least one area of reoccupation with evidence of overlapping structures. The recovered lithic assemblage includes 789 tools including bifaces, cores, flake tools, and ground stone tools. Lithic materials included 28,260 pieces of debitage. Ceramic materials consist of over 33,961 sherds representing 71 vessels. Of these sherds, 45 are shell tempered, five are sand tempered, and the s remainder are grit tempered. While the ceramic assemblage compares favorably to Mason's North Bay ceramic series, some vessels are similar to Early Woodland cordmarked vessels and the Dane non-incised type. These are also associated with Early Woodland radiocarbon dating. Other site vessels are similar to Laurel materials recovered from other upper Great Lakes sites associated with Laurel occupations and are associated with Middle Woodland dates. Recovered faunal materials include white-tailed deer, beaver, bear, canid, yellow perch, walleye, panfishes, frog, and turtle. Fish and other species indicate generally warm weather occupation (spring and summer) though one structure has faunal species indicative of cold weather occupation as well. Three features included human remains. The first feature included the primary burial of four individuals in the flexed position, as well as secondary burials of an older individual represented by four phalanges and a worn molar, and an infant represented by two deciduous teeth. The second burial includes a single flexed primary burial. The final feature with human remains may represent a possible secondary cremation burial. A suite of 11 radio carbon assays place the site's occupation between calibrated 774 B.C. – A.D. 1377.

Dissertation Organization

To create a performance-based life history from the Richter site materials is not in conflict with the goal of producing a long overdue site report. In fact, the two tasks are complementary. In Chapter 2 the theoretical underpinnings and development of Behavioral Archaeology are reviewed. The relationship between behavior and life history is explored and the ways in which technological decisions and performance characteristics can influence portions of this chain will be discussed. Finally, the chapter includes a discussion of how the Richter site data is used to develop vessel life histories.

Chapter 3 provides environmental and cultural contextualization for the Richter site. The site location on an island in northern Lake Michigan presents a set of unique environmental factors. These factors impacted prehistoric occupation as well as site preservation. They also provided the basis for site reoccupation. This chapter also provides a summary of regional cultural history. This history not only provides a background for site occupation; it also reveals the problematic nature of local cultural chronology.

In Chapter 4, methods related to the analysis of ceramic, lithic, copper, faunal, floral, fire cracked rock, charcoal, and other miscellaneous mineral materials at the Richter site are documented. Generally, most material classes simply are identified, described, weighed, and counted. In order to gather information on technological choices made by potters at the Richter site it was necessary to employ a set of conventional analyses as well as a variety of specialized geophysical tools and techniques. Each has specified methods and the methods specific to each kind of analysis used are documented here.

Chapter 5 documents the excavation of the Richter site. Feature types and contents are presented along with site maps. Cultural materials recovered from the site are described and discussed. The radiocarbon record from the site is presented, contextualized, and discussed.

Chapter 6 presents the results of ceramic attribute and metric data collection. It also includes discussion of morphological characteristics of the ceramic collection. A comparison of materials from Richter and existing regional typological frameworks and a discussion of how these materials reflect Early and Middle Woodland ceramic technologies is also presented. Finally, this chapter contains discussion of the results of Petrographic Analysis, X-ray Diffraction Analysis, Ceramic Production Analysis, and Use and Function Analysis.

Chapter 7 concludes the dissertation with discussion of the performance-based life history approach developed to characterize the Richter site vessels. These life histories demonstrate significant differences in ceramic technological choices. They also provide support for the hypothesis that both greater time depth and cultural change are responsible for the large amount of variation found in North Bay materials rather than lax technological standards or poor craftsmanship. The chapter concludes with discussion of how this insight impacts our current understanding of North Bay culture and how this performance-based life history model created for the Richter site provides a new framework for the reexamination of regional ceramic collections.

Included appendices provide supplemental data. This data includes photographs of decorated sherds, rim data, unit planview maps and profiles, feature data, charcoal data, and lot check list.

Chapter 2
A Behavioral Archaeology Approach to North Bay Middle Woodland

Many of the legacies of archaeology's past still influence our work today especially in how we analyze and interpret prehistoric ceramics. Much of the work in the past focused on the use of ceramics to construct cultural historical chronologies. Ceramics created from readily malleable clay and formed into vessels for storage or cooking; or objects imbued with religious or cultural significance, only survived due to the chemical changes produced by exposure to heat during firing. Early on the time sensitive nature of ceramic materials was appreciated. Methods to classify time sensitive ceramic materials have been part of archaeology for over one hundred years (Rice 1987 (2005):275).

The existing North Bay typology situates prehistoric pottery in a static role and underappreciates the technological properties of the ceramic materials and the cultural significance of early vessels. In fact, these early ceramic vessels are often described as "crude and poorly made" (Mason 1966:75). Researchers sometimes referred to such vessels as "crudware" as was noted by Skibo and Schiffer (Skibo and Schiffer 1995). These types of ceramic pots present a typological puzzle; they are often cordmarked or have smoothed surfaces with little or no decoration. This decorative simplicity limits their usefulness in the construction of cultural chronologies. Consequently the humble prehistoric cooking pot has traditionally been considered to have only marginal value to researchers and this has colored views of their cultural and technological significance (Braun 1983; Linton 1944; Longacre and Skibo 1994; Schiffer and Skibo 1987; Skibo 2013; Skibo and Schiffer 1995).

Behavioral archaeology helped re-focus attention on the information that could be gained from ordinary and seemingly mundane objects. This change was grounded in the reorientation of study from objects as chronological place markers, to being central to a dynamic relationship with the people who created, used, and finally disposed of these objects. This importance of exploring the dynamics of the relationship between people and material culture was advocated by behavioral archaeologists in the 1970s (Reid, et al. 1974; Reid, et al. 1975; Schiffer 1972, 1976, 1999). Behavioral archaeologists also encouraged archaeologists to study objects within an expanded framework of use, production and disposal (Schiffer 1972:158; 1976:4; 1983; Schiffer and Miller 1999:22-23; Skibo and Schiffer 2008:6-7). A foundation was also laid to extend the study of these relationships to include objects and people in the past and present in any location (Reid, et al. 1974). Consequently behavioral archaeology embraced the work of ethnoarchaeologists and experimental archaeologists (Schiffer 1976:4-5; Skibo and Schiffer 2008:5-6). Work under behavioral archaeology has taken many forms that truly cover the breadth of human interactions with objects. These range from studies of early use of electric autos and portable radios (Schiffer 1991) to early pottery adoption (Skibo 1999).

A ceramic vessel is the result of a series of steps each with numerous decisions to be made by the potter. As the product of an additive process, the pot preserves evidence of the decisions made during the course of its production (Rice 1987 (2005):25). Other perspectives related to the study of archaeological materials and their production includes *chaîne opératoire*. *Chaîne opératoire* or "operational sequence" was presented by LeRoi-Gourhan in the 1940s as an application of Mauss's view of the importance of how raw materials were transformed physically as well as the social context of their production (Dobres 1999). The use of *chaîne opératoire* does have limitations. As pointed out by Skibo and Schiffer one limitation of *chaîne opératoire* as an analytical framework is that it does not facilitate exploration of the role that compromise fills in production (Skibo and Schiffer 2008). Both primary and secondary performance characteristics contribute to the dynamic process of production. Often the decisions made do not reflect an idealized final product but one that is clearly the result of compromise (Skibo and Schiffer 2008:21-22). It is discernment of compromise and the complex interplay of decisions made by potters that makes a performance-based approach useful.

Performance-based approaches to ceramic analysis led to new analyses of ceramic cooking pot technology. The documentation of changes in physical characteristics and their resultant changes in vessel performance provided a new way of interpreting the actual physical characteristics noted in early ceramic vessels. It also confirmed that the variation found in cooking vessels through time could provide insight into both social and technological change (Sassaman 1993). These changes were indicators that the relationship between pots and people was not static but dynamic and changing (Braun 1983; Eerkens 2008; Hart and Brumbach 2009; Schiffer and Skibo 1987; Skibo 2013, 1999; Skibo and Schiffer 1995).

The study of the dynamic and complex relationship between living people and pottery also was of great interest to those studying prehistoric pottery. Detailed ethnoarchaeological study was combined with evidence of use related to various cooking and storage activities. With this data archaeologists could infer uses for prehistoric vessels (Skibo 1992). Modern techniques of residue analysis were added to expand on the understanding of prehistoric vessel use

(Kooiman 2012, 2016; Malainey 1999; Skibo 2009). This analysis of materials from the Great Lakes suggests varying uses of vessels within the region and the eastern Great Lakes. This variation in use provides support for the idea that pottery adoption was not linked to a single type of use (Skibo 2016).

With increased knowledge gained regarding vessel use and function, behavioral archaeology also explored various aspects related to ceramic performance (Schiffer 1999:167). Research related to performance characteristics of ceramic materials included experimental work (Skibo 1992:147-173). Behavioral archaeology provides a framework for testing factors impacting performance characteristics related to fiber and mineral tempered materials (Schiffer and Skibo 1987).

Behavioral archaeology did not only increase the areas of study that were pertinent to archaeologists interested in behavior; they also provided new ways to model and understand complex interactions. Early on, Schiffer described how flow models and behavioral chains could aid in the understanding of various types of transformations (Schiffer 1976:42-65). Skibo and Schiffer distinguish between *chaîne opératoire*/life history and behavioral chain. Behavioral chain goes beyond the production process (Skibo and Schiffer 2008:10). It includes raw material acquisition, production, use, disposal, and even archaeological recovery. This complex process could be visualized using a flow model (Schiffer 1972:158-160). Schiffer utilized the flow model to discuss the probability that the location of archaeologically recovered artifacts was related to actual place of use, as well as the potential of flow modeling to examine other steps along the life of an object (Schiffer 1972:163). Regardless, the *chaîne opératoire* approach is very similar to the behavioral chain and recent uses have extended the concept to include a wider range of operations including discard practices (Hodder 2011) while incorporating aspects of social theory related to gender and agency (Dobres 2010). Still, Martinon-Torres (Martinón-Torres 2002) has argues that the behavioral chain approach of Schiffer and Skibo may be more flexible and allow for a more dynamic view of the interaction between people and artifacts.

The concept of a behavioral chain allows for the creation of a "biography" (Skibo 2013:8) of the artifact under consideration. Within this biography, data related to vessel performance characteristics, physical and compositional characteristics, use and function, acknowledge the range of behavioral choices made by users during the life of the pot. This behavior chain provides a window into the choices made by potters beyond style and form.

A performance-based behavioral chain allows the intended function of a vessel to be inferred (Kooiman 2012:24). By identifying and studying variation found in vessels using a behavioral chain built on performance characteristics it may be possible to perceive a feedback loop between performance and choices made by prehistoric potters (Schiffer 1997). By studying these decisions a much more nuanced picture of this feedback reveals that potters made compromises in the production of vessels (Skibo 2013:9).

The performance based behavioral chain has demonstrated its usefulness in providing valuable insight into prehistoric ceramic technology. It can also provide the means to explore differences in choices made by potters. With the realization that decisions impact performance, they may represent differing types of desired performance characteristics and differing acceptable compromises in performance. By adding a temporal component to this chain one can identify and explore the differing and similar choices made by potters over time, allowing us to explore patterns of adoption and innovation in prehistoric pottery production.

Chapter 3
Environmental and Cultural Context

Environmental Setting

Geology

The Richter Site is located on Washington Island, Door County, Wisconsin. Washington Island is the largest of an archipelago of islands composed of Silurian dolomite which extends between the Garden Peninsula of Michigan and the Door Peninsula of Wisconsin. This archipelago is a portion of a much larger geologic structure, the Niagara Escarpment. Exposed portions of this escarpment extend from Niagara Falls in northern New York to south of Lake Winnebago in eastern Wisconsin. This dolomite continues south into Illinois and Indiana but is buried under glacial sediments. The dolomite that makes up the Niagara Escarpment was formed along the shoreline of an ancient shallow sea. In Door County, this bedrock slopes from west to east toward Lake Michigan. This slope is readily apparent in the location of Door County's iconic bluffs on the western or Green Bay side and sandy beaches with fewer bedrock outcrops on the eastern side of the peninsula; some of the western bluffs tower over rocky beaches at almost 200 feet in height (Dott 2004:302; Kluessendorf 1989:18; Schneider 1989:38).

Exposed bedrock in Door County is primarily Silurian dolomite though in a few areas Ordovician Maquoketa Shale is exposed south of Sturgeon Bay (Figure 3.1) (Stieglitz 1989:84). Due to the sloping of Paleozoic materials to the east toward Lake Michigan these exposures occur in the southwest portion of the peninsula along Green Bay in Brown County. It may also be present in exposures near Little Sturgeon Bay (Kluessendorf 1989:14-16). Mayville Dolomite is the base of the Silurian deposits. In places, it is possible to see a thin layer of red shale, possibly Maquoketa, below the Mayville. The lower portions of Mayville exposed in the southwestern portion of the peninsula are described as “cherty”. In the more northerly portions of the peninsula the Mayville exposures are hidden beneath the water as the bedrock continues its dip toward the east. Above the Mayville dolomite are the Byron and Hendricks dolomite that compose the Burnt Bluff Group. This formation makes up much of the bedrock exposed in the peninsula’s western bluffs including Boyer’s Bluff on Washington Island’s northwest corner. Above this are the Schoolcraft and Cordell dolomites of the Manistique Group. The final and youngest Silurian dolomite belongs to the Engadine Group. There are few exposures of this group; one of the most significant exposures is located on Washington Island at “The Mountain” and is roughly 40 feet in thickness. The Engadine represents the youngest bedrock found on the peninsula with any younger deposits removed by erosion (Figure3.2)(Kluessendorf 1989:17-23).

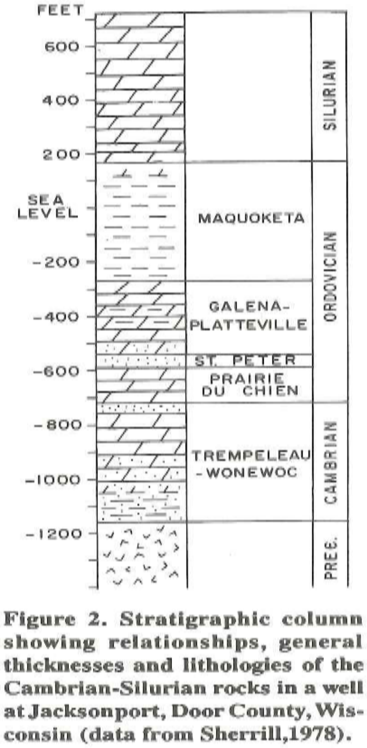


Figure 3.1.Bedrock stratigraphy Door County after (Kluessendorf 1989:14)

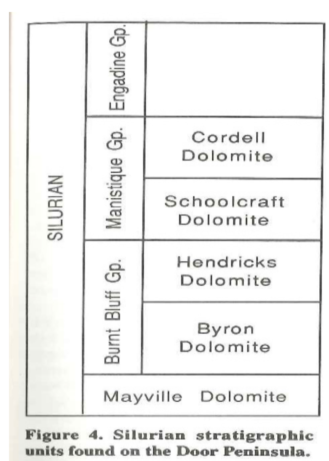


Figure 3.2. Chart of Silurian stratigraphy of the Door Peninsula after (Kluessendorf 1989:17)

Much of the landscape of the Door Peninsula as we know it today is the end product of multiple episodes of Quaternary glaciation. Green Bay-Fox River Valley and Lake Michigan began as rivers cut through easily eroded shale and sandstone later made broader and deeper by glacial scouring and tremendous quantities of glacial melt water. A complex series of glacial retreats and advancements reworked the area. The final phases of glacial retreat coincide with the earliest human occupation in this region of the Great Lakes by peoples termed Paleoindians. Archaeological remains indicate that Paleoindians occupied territories that had been recently deglaciated. Even after the glaciers had finally retreated to the north a complex series of changes in water levels impacted the peninsula and Washington Island. At times of high water Algonquin Lake levels approximately 11,000 B.P., Washington Island was more than likely submerged. By 10,000 B.P. water levels dropped precipitously, after which, Washington Island was no longer an island but a true part of the peninsula. High water levels returned by 5,000 B.P., once again submerging most if not all of Washington Island (Dott 2004:247-250; Lovis, et al. 2012:67). These postglacial changes in water levels spanned periods associated with Early Paleoindian through the Archaic Period. Occupation of Washington Island during the Archaic period was possible but evidence is currently lacking. The earliest evidence of human occupation of the Door Peninsula coincides with the longer consistent exposure of land in the southwestern portion of the peninsula rather than areas in the northern portion that includes Washington Island.

Even with the establishment of modern Lake Michigan at a time shortly before 3,000 B.P. lake levels continued to fluctuate (Larsen 1987:25). Current work indicates that there were possibly as many as four post Algoma transgressions that occurred in Lakes Michigan and Huron at approximately: B.C. 2,500, B.C. 500, 500 A.D., 1,000 A.D., and 1,500 A.D. While current elevation at 179 m above sea level places the Richter site approximately 2 m above current lake levels during transgressions this was more than likely not the case especially considering elevation changes associated with isostatic rebound. Excavation notes do not indicate markers of past site inundation like truncated features with lacustrine deposits or water rolled artifacts as were noted at both the Mero and Port des Morts sites by Mason (Mason 1966:50-52; 1967:301-302). It is more likely that these transgressions placed the waters of Detroit Harbor closer to the site than today.

Climate

While providing stunning scenery for tourists, the geology of Door County is also responsible for creating environmental conditions that differ greatly from surrounding areas and provide amelioration of winter temperatures generally found at higher latitudes. This same geology also has created the potential for a significant temperature differential between the western (Green Bay) and eastern (Lake Michigan) sides of the peninsula. In summer the colder waters of Lake Michigan can cool the air by 15-25° F on the eastern side of the peninsula. In the winter the waters of Lake Michigan warm the eastern side. These same phenomena also occur on Washington Island (Mason 1966:2-3). Residents note that temperatures along Detroit Harbor where the Richter site is situated can be 10° F (or more) cooler than the northern portion of the island. The area has 130-160 frost free days and an average mean air temperature of 41-45° F (Soil Survey Staff).

While Curtis (Curtis 1959), at the time of his work on the vegetation of Wisconsin noted that climatic conditions in the Door County area are similar to those of the past, other researchers have questioned this proposition. Early paleoclimate research suggested that the period before 500 B.C. was characterized as “milder” with the period before A.D. 400 being “more severe” by Baerreis and Bryson (Baerreis and Bryson 1965:213). Later ice core data from Greenland show that temperatures were generally warming during the period of 900 B.C. to A.D. 0. At 700/600 B.C. there was an acceleration of warming followed by a short-term cooling event until 400 B.C. then a return to the general warming trend (Humlum, et al. 2011:155). Reviewing additional climate data based on pollen cores and tree ring data indicates that temperatures generally declined during the period of A.D. 100 to A.D. 800 with some warming around A.D. 400 followed by a return to cooling until A.D. 800. During the period of A.D. 800 to A.D. 1200 temperatures warmed. Temperatures declined during A.D. 1200 to A.D. 1900 (Williams and Wigley 1983:290). Other work indicates that there were smaller scale fluctuations of temperature occurring within these periods (Gajewski 1988).

Prehistoric climatic conditions during the period of site occupation were variable. Early periods of occupation were associated with warming trends. Occupation continued through periods of cooling. Within each of these lengthy periods of warming or cooling there were short-term fluctuations in temperature. Climatic warming trends seem to be associated with fluctuation in lake levels; warmer temperatures correspond with higher water levels in the region.

Flora

Early accounts of flora of Washington Island provided a very simple picture, with only two types of plant communities defined. The interior of Washington Island was forested with primarily beech-maple, with coasts that supported “mixed cedar, hemlock, spruce, and balsam fir forest” in a half mile band at the time of GLO survey in 1836 (Judziewicz 2001:116, 130-136).

However Peters (Peters n.d.-a) noted that Washington Island actually supports a much more diverse set of plant communities. A much more detailed study of the island's flora was completed by Judziewicz and published as part of a survey of the flora of the Grand Traverse Islands in Lake Michigan. The following table (Table 3.1) includes plant communities on Washington Island and identifies floral species (Judziewicz 2001:95-117). As this table indicates, Washington Island is home to a wide range of plant communities as well as plants species at the furthest extent of their range. This is made possible by the ameliorating properties of Green Bay and Lake Michigan as well as the diverse topography of the island. These communities include species associated with: Southern Mesic Forest, Eastern North America Forest, Northern or Boreal Forests, Great Lake Dunes, Great Lakes Alkaline Rockshore, and Alvar, Coastal Dry Cliffs, and Interior Moist Cliffs. Table 3.1 summarizes plant communities and associated vegetation.

Table 3.1. Plant Communities and Associated Plant Species.

Common Name	Taxonomic Name
Southern Mesic Forest	
American Witch Hazel	*Hamamelis virginiana*
Bur-reed Sedge	*Carex sparganioides*
Butternut	*Juglans cinerea*
Eastern Woodland Sedge	*Carex blanda*
Lanceleaf Wild Licorice	*Galium lanceolatum*
Mapleleaf Viburnum	*Viburnum acerifolium*
Purple Giant Hyssop	*Agastache scrophulariaefolia*
White Bear Sedge	*Carex albursina*
Eastern North American Forest	
Broadleaf Sedge	*Carex platyphylla*
Indian Cucumber Root	*Medeola virginiana*
Longspur Violet	*Viola rostrata*

Table 3.1. Plant Communities and Associated Plant Species.

Common Name	Taxonomic Name
Northern/Boreal Forest	
Beautiful Sedge	*Carex concinna*
Fairy Slipper Orchid	*Calypso bulbosa*
Northern Comadra	*Geocaulon lividum*
Rock Whitlow Grass	*Draba arabisans*
Small Flower Grass of Parnassus	*Parnassia parviflora*
Striped Coralroot	*Corallorhiza striata*
Tufted Clubrush	*Scirpus cespitosus*
Great Lakes Dune	
American Searocket	*Cakile edentula*
Dwarf Lake Iris	*Iris lacustris*
Goldenrod	*Solidago simplex subsp. randii var. gillmannii*
Lanceleaf Tickseed	*Coreopsis lanceolata subsp. lanceolata*
Pitcher's Thistle	*Cirsium pitcheri*
Rock Sandwort	*Arenaria stricta*
Small Seaside Spurge	*Chamaescyce polygonifolia*
Western Fescue	*Festuca occidentalis*
Species of Southern Dry Forests and Great Lakes Pine Barrens	
Little Bluestem or Beard Grass	*Schizachyrium scoparium*
Sand Dropseed	*Sporobolus cryptandrus*
Smooth Aster	*Aster laevis*
Great Lakes Alkaline Rockshore and Alvar	
American Vetch	*Vicia americana*
Balsam Ragwort	*Packera paupercula*
Balsam-popular	*Populus balsamifera*
Baltic Rush	*Juncus arcticus subsp. littoralis*
Bastard Toadflax	*Comandra umbellata*
Bird's-eye Primrose	*Primula mistassinica*
Black-eyed Susan	*Rudbeckia hirta*

Table 3.1. Plant Communities and Associated Plant Species.

Common Name	Taxonomic Name
Boneset	*Eupatorium perfoliatum*
Bottlebrush Sedge	*Carex hystericina*
Bristleleaf Sedge	*Carex eburnea*
Brook Lobelia	*Lobelia kalmii*
Buffalo-berry	*Shepherdia canadensis*
Bulblet-bearing Water Hemlock	*Cicuta bulbifera*
Canada Hawkweed	*Hieracium kalmii*
Chestnut Sedge	*Carex castanea*
Club Sedge	*Carex buxbaumii*
Common Juniper	*Juniperus communis var. depressa*
Common Silverweed	*Argentina anserina*
Common Water-horehound	*Lycopus americanus*
Crawe's Sedge	*Carex crawei*
Creeping Juniper	*Juniperus horizontalis*
Dwarf Lake Iris	*Iris lacustris*
Early Goldenrod	*Solidago juncea*
Early Meadow-rue	*Thalictrum dioicum*
Elk Sedge	*Carex garberi*
Elliptic Spikerush	*Eleocharis elliptica*
False Asphodel	*Tofieldia glutinosa*
Fen Star Sedge	*Carex sterilis*
Fernald Eastern Marsh Fern	*Thelypteris palustris var. pubescens*
Few-flowered Spike Rush	*El eocharisquinqueflora*
Field Horsetail	*Equisetum arvense*
Filtaster	*Aster pilosus var. pringlei*
Golden Sedge	*Carex aurea*
Grass-leaved Goldenrod	*Euthamia graminifolia*
Great Northern Rush	*Juncus alpinoarticultus*
Hairlike Beakrush	*Rhynchospora capillacea*
Hairy Rockcress	*Arabis hirsuta*
Harebell	*Campanula rotundifolia*
Heal-all	*Prunella vulgaris*
Hook-spur Violet	*Viola adunca*
Lesser Fringed Gentain	*Gentianopsis procera*
Little Green Sedge	*Carex viridula*
Marsh Bog-arrow Grass	*Triglochin palustre*
Marsh Vetchling	*Lathyrus palustris*
Meadow Sedge	*Carex granularis*

Table 3.1. Plant Communities and Associated Plant Species.

Common Name	Taxonomic Name
Mountain Blue-eyed Grass	*Sisyrinchium montanum*
Narrow-leaved Loosestrife	*Lysimachia quadriflora*
Narrow-Panicled Rush	*Juncus brevicaudatus*
Ninebark	*Physocarpus opulifolius*
Northern Bog Violet	*Viola nephrophylla*
Northern Heart-leaved Aster	*Aster ciliolatus*
Northern Meadow Spikemoss	*Selaginella eclipes*
Northern Reedgrass	*Calamagrostis inexpansa subsp. stricta*
Northern Sedge	*Carex concinna*
Northern White Cedar	*Thuja occidentalis*
Ohio Goldenrod	*Solidago ohioensi*
Prickly Rose	*Rosa acicularis subsp. sayi*
Purple False Foxglove	*Agalinis purpurea*
Red Stem Dogwood	*Cornus stolonifera*
Scarlet Indian Paintbrush	*Castilleja coccinea*
Seneca Snakeroot	*Polygala senega*
Shrubby Cinquefoil	*Pentaphylloides floribunda*
Shrubby St. John's-wort	*Hypericum kalmianum*
Slender Wedge Grass	*Sphenopholis intermedia*
Small-flowered grass-of-parnassus	*Parnassia parviflora*
Snowberry	*Symphoricarpos albus*
Starry False Solomon's-seal	*Smilacina stellata*
Tall Anemone, Thimble-weed or Tumble-weed	*Anemone virginiana*
Tamarack	*Larix laricina*
Tufted Hairgrass	*Deschampsia cespitosa*
Variegated Scouring Rush	*Equisetum variegatum*
Water Sedge	*Carex aquatilis*
Western Panic Grass	*Panicum acuminatum (and varieties)*
White Camass	*Zigadenus elegans subsp. glaucus*
Wild Columbine	*Aquilegia canadensis*
Wild Savory	*Calamintha arkansana*
Wild Strawberry	*Fragaria virginiana*
Wood Lily	*Lilium philadelphicum*
Yellow Avens	*Geum aleppicum*
Yellow Sedge	*Carex flava*

Coastal Dry Cliffs

Table 3.1. Plant Communities and Associated Plant Species.

Common Name	Taxonomic Name
Northern White Cedar	*Thuja occidentalis*
Interior Moist Cliffs	
Bulblet Fern	*Cystopteris bulbifera*
Canada Yew	*Taxus canadensis*
Climbing Fumitory	*Adlumia fungosa*
Common Oak Fern	*Gymnocarpium dryopteris*
Common Polypody	*Polypodium virginianum*
Green Spleenwort	*Aspleniaceae trichomanes-ramosum*
MacKay's Brittle Fern	*Cystopteris tenuis*
Maidenhair Spleenwort	*Aspleniaceae trichomanes*
Marginal Wood Fern	*Dryopteris marginalis*
Slender Cliff Brake	*Cryptogramma stelleri*

Fauna

Mammal species on Washington Island before 1900 were numerous. Some of these species are not currently endemic to the island. An example is the black bear (*Ursus americanus*). While the island does not currently support a population of black bears (*Ursus americanus*) several have made their way to the island in recent years and one was spotted swimming to nearby Plum Island (Long 2008:354). It is also possible for animals to make their way to the island by crossing ice during the winter from the peninsula or other islands. Table 3.2 lists mammals found in the area (on Washington Island and on the Door Peninsula) before 1900 with additional species added by Long (Jackson 1961; Long 2008).

Table 3.2. List of Mammals Found on Washington Island and the Door Peninsula

Common Name	Taxonomic Name
Washington Island	
Eastern Timber Wolf and Northeastern Coyote	*Canis lupis* and *C. latrans*
Beaver	*Castor Canadensis*
Red-backed Vole	Clethrionomys gapperi
Minnesota Varying Hare	*Legus americanus*
Canadian Otter	*Lutra candensis*
Fisher and Marten	*Martes pennant* and *Martes americana*
Striped Skunk	*Mephitis mephitis*
Northern White-Tailed Deer	*Odocoileus virginianus*
Muskrat	*Ondatra zibethicus*
Deer Mouse	Peromyscus maniculatus gracilis
Minnesota Gray Squirrel	*Sciurus carolinensis*
Masked Shrew	Sorex cinereus
Mearns' Cottontail	*Sylvilagus floridanus*
Red Squirrel	*Tamiasciurus hudsonicus*
Black Bear	*Ursus americanus*
Eastern Red Fox	*Vulper fulva*
Mammals found on Peninsula	
American Mink, Bangs' Short-tailed Wessel and New York Long-tailed Weasel	*Nustela vison, M. ermine, M. frenata*
Canadian porcupine	*Erethizon dorsatum*
Gray Chipmunk	*Tamias striatus peninsulae*
Lake Superior Bobcat and Canadian Lynx	*Lynx rufus and L. Canadensis*
Northern Flying Squirrel	*Glaucomys sabrinus*
Raccoon	*Procyon lotor*
Southern Woodchuck	*Marmota monax*
Striped Ground Squirrel	*Citellus tridecemlineatus*
Western Fox Squirrel	*Sciurus niger*
Wisconsin Gray Fox	*Urocyon ciereoargenteus*

Birds

Unlike mammals, birds have a much easier time making their way to Washington Island. The island is home to numerous year-round and migratory species. The Wisconsin Breeding Bird Atlas identified over 76 birds species that breed on or near Washington Island (Wisconsin Society for Ornithology). Table 3.3 lists bird species that currently breed on or near Washington Island.

Table 3.3. Some Bird Species Found on Washington Island

Common Name	Taxonomic Name
American Crow	*Corvus brachyrhynchos*
American Goldfinch	*Spinus tristis*
American Redstart	*Setophaga ruticilla*
American Robin	*Turdus migratorius*
Bald Eagle	*Haliaeetus leucocephalus*
Baltimore Oriole	*Icterus galbula*
Barn Swallow	*Hirundo rustica*
Black-and-white Warbler	*Mniotilta varia*
Blackburnian Warbler	*Setophaga fusca*
Black-capped Chickadee	*Poecile atricapillus*
Black-throated Blue Warbler	*Setophaga caerulescens*
Black-throated Green Warbler	*Setophaga virens*
Blue Jay	*Cyanocitta cristata*
Blue-gray Gnatcatcher	*Polioptila caerulea*
Broad-winged Hawk	*Buteo platypterus*
Brown-headed Cowbird	*Molothrus ater*
Canada Goose	*Branta canadensis*
Cape May Warbler	*Setophaga tigrina*
Cedar Waxwing	*Bombycilla cedrorum*
Chestnut-sided Warbler	*Setophaga pensylvanica*
Chipping Sparrow	*Spizella passerina*
Cliff Swallow	*Petrochelidon pyrrhonota*
Common Goldeneye	*Bucephala clangula*
Common Grackle	*Quiscalus quiscula*
Common Merganser	*Mergus merganser*
Common Raven	*Corvus corax*
Common Tern	*Sterna hirundo*
Common Yellowthroat	*Geothlypis trichas*
Double-crested Cormorant	*Phalacrocorax auritus*
Downy Woodpecker	*Dryobates pubescens*
Eastern Bluebird	*Sialia sialis*

Table 3.3. Some Bird Species Found on Washington Island

Common Name	Taxonomic Name
Eastern Kingbird	*Tyrannus tyrannus*
Eastern Phoebe	*Sayornis phoebe*
Eastern Wood-Pewee	*Contopus virens*
Evening Grosbeak	*Hesperiphona vespertina*
Gray Catbird	*Dumetella carolinensis*
Great Blue Heron	*Ardea herodias*
Great Crested Flycatcher	*Myiarchus crinitus*
Great Horned Owl	*Bubo virginianus*
Hairy Woodpecker	*Picoides villosus*
Herring Gull	*Larus smithsonianus*
Hooded Merganser	*Lophodytes cucullatus*
House Finch	*Haemorhous mexicanus)*
House Wren	*Troglodytes aedon*
Indigo Bunting	*Passerina cyanea*
Killdeer	*Charadrius vociferus*
Least Flycatcher	*Empidonax minimus*
Magnolia Warbler	*Setophaga magnolia*
Mallard	*Anas platyrhynchos*
Mourning Dove	*Zenaida macroura*
Nashville Warble	*Vermivora ruficapilla*
Northern Cardinal	*Cardinalis cardinalis*
Northern Flicker	*Colaptes auratus*
Olive-sided Flycatcher	*Contopus borealis*
Pileated Woodpecker	*Dryacopus pileatus*
Red-bellied Woodpecker	*Melanerpes carolinus*
Red-breasted Merganser	*Mergus serrator*
Red-eyed Vireo	*Vireo olivaceus*
Red-headed Woodpecker	*Melanerpes erythrociphalus*
Ring-billed Gull	*Larus delawarensis*
Ruby-throated Hummingbird	*Archilochus colubris*
Ruffed Grouse	*Bonasa umbellus*
Wood Duck	*Aix sponsa*

Fish

Detroit Harbor on Washington Island is an important spawning area for smallmouth bass. The Richter Bayou, west of the Richter site, and flats of bulrush along the shores of Detroit Harbor, are now protected in an effort to preserve spawning sites (Wisconsin Department of Natural Resources). The waters surrounding Washington Island are home to many species of fish, yet these were widely spread out in waters that even today are considered precarious. Table 3.3 lists the most common native fish species found in Lake Michigan. Prehistoric peoples made use of specialized fishing gear, including harpoons, line fishing and nets, and knowledge of seasonal spawning aggregation to exploit this resource (Cleland 1982:766).

Table 3.3. Most Common Native Fish Species in Lake Michigan

Common Name	Taxonomic Name
Black Crappie	*Pomoxis nigromaculatus*
Black Bullheads	*Ameiurus melas*
Bluegill	*Lepomis macrochirus*
Brook Trout	*Salvelinus fontinalis*
Brown Bullhead	*Ameiurus nebulosus*
Channel Catfish	*Ictalurus punctatus*
Freshwater Drum	*Aplodinotus grunniens*
Green Sunfish	*Lepomis cyanellus*
Lake Trout	*Salvelinus namaycush*
Lake Sturgeon	*Acipenser fulvescens*
Lake Whitefish	*Coregonus clupeiformis*
Largemouth Bass	*Micropterus salmoides*
Muskellunge	*Esox masquinongy*
Northern Pike	*Esox lucius*
Pumpkinseed	*Lepomis gibbosus*
Rock Bass	*Ambloplites rupestris*
Smallmouth Bass	*Micropterus dolomieu*
Walleye	*Sander vitreus*
White bass	*Morone chrysops*
Yellow Perch	*Perca flavescens*

Reptiles and Amphibians

Reptiles and Amphibians are often overlooked when considering local environmental resources. Very few reptiles and amphibians have been found in Door County. Those found are listed in Table 3.4 (Casper 1996:74-86; Long 1987:39).

Table 3.4. Reptiles and Amphibians Found in Door County

Common Name	**Taxonomic Name**
Blanding's Turtle	*Emydoidea blandingii*
Blue-spotted Salamander	*Ambystoma laterale*
Brown Snakes*	*Storeria dekayi ssp*
Central Newt	*Notophthalmus viridescens louisianensis*
Chicago Garter Snake	*Thamnophis sirtalis semifasciatus*
Common Snapping Turtle*	*Chelydra serpentina serpentina*
Cope's Gray Treefrog	*Hyla chrysoselis*
Eastern American Toad*	*Bufo americanus americanus*
Eastern Garter Snake*	*Thamnophis sirtalis sirtalis*
Eastern Milk Snake*	*Lampropeltis triangulum triangulum*
Green Frog*	*Rana clamintans melanota*
Mudpuppy*	*Necturus maculosus maculosus*
Northern Leopard Frog*	*Rana pipiens*
Northern Redbelly Snake*	*Storetia occipitomaculata occipitomaculata*
Northern Ringneck Snake*	*Diadophis punctatus edwardsii*
Northern Spring Peeper*	*Pseudacris crucifer crucifer*
Northern Water Snake*	*Nerodia sipedon sipedon*
Painted Turtle*	*Chrysemys picta ssp.*
Prairie Ringneck Snake	*Diadophis puntatus arnyi*
Redback Salamander*	*Plethodon cinereus*
Smooth Green Snake	*Opheodrys vernalis*
Spotted Salamander	*Ambystoma maculatum*
Western Fox Snake*	*Elaphe vulpina vulpina*
Wood Frog	*Rana sylvatica*

*Identified on Washington Island (Long 1987)

While the Richter Site is located on an island it does not lack in resources. The island supports several different ecological areas each with distinct flora and fauna. The site is situated adjacent to marshes that are well known as a spring fish spawning site and home to exploitable wetland resources including reptiles and amphibians. Detroit Harbor also provides a sheltered place to fish as well as live. The ameliorating effect of Lake Michigan would have made winters warmer and summers cooler with a longer spring. The deep sandy soils, while not considered agriculturally productive made the construction of shelters possible. These same deep soils provided good conditions for the preservation of archaeological materials.

Cultural Context

Early Woodland

Due to inundation from high lake levels, Washington Island and the Richter site were not suitable for habitation most likely until sometime after 1000 B.C. High lake levels that resulted from deglaciation were not the only factor impacting water levels. Washington Island had also entered a lengthy period of isostatic rebound that began with deglaciation. The elevation of the island was lower than it is today. The combination of high lake levels and lower elevation would place the shoreline at the Richter site most likely underwater following deglaciation of the area. The island was most likely habitable at around the time of the Archaic/Early Woodland transition. This transition in Wisconsin is dated to between 1000 B.C. to 500 B.C. Ceramics first appear in Wisconsin during this time (Salzer 1986a). A variety of technological changes are associated with the transition between Late Archaic and Early Woodland. Contracting stem Adena, Kramer, and Waubesa points begin to replace the side-notched and small stemmed types common in the Late Archaic (Justice 1987). In some areas of the Great Lakes burial mounds come into use as well as differing regional mortuary practices (Emerson 1986a:621). There is evidence of use of native cultigens, but they do not make up a large portion of the diet (Emerson

1986a:624). These cultigens are primarily represented by *Curcubita pepo* found at sites in Michigan, New York and the American Bottom (Emerson 1986b:624; Hart, et al. 2007:577). More recent work indicates the early presence of maize (*Zea mays ssp. mays*) at the Vinette site in New York. Wild rice has been identified from residue on Brainerd ware from Minnesota (*Zizania palustris*). Wild rice (*Zizania aquatic*) from the Alonzo Kellogg site on the shores of Lake Poygon, Winnebago County, Wisconsin dated to the Early Woodland period, 2300±40 a 2-sigma range cal. B.C. 427-206 (CAMS-74965)(Hart, et al. 2007:578; Overstreet, et al. 2004; Sayers, et al. 2011). While cultigens and collected seeds were part of the Early Woodland diet, it is thought that they did not make up a large portion of it. Hunting and gathering continued to be the major source of sustenance very much as it was during the preceding Archaic Period. During this time increasing sedentism in some areas is noted. The final hallmark, sometimes considered to be the primary diagnostic marker of the transition, is the introduction of ceramic technology (Mason 1981(2002):202; Stevenson 1997:150). Due to the apparent east to west trend in the introduction of ceramic container technology, western Early Woodland ceramic complexes tend to date later than those in the east (Brown 1986b:602; Emerson 1986a:622). However, The Nebo Hill fiber tempered pottery of Kansas is an interesting early outlier (Reid 1984).

The significance given to the manufacture of ceramics as a cultural marker of the transition from the Late Archaic to Early Woodland has been debated. Changes in social complexity, sedentism, technology, and resource exploitation reflect on-going trends. There is not a major shift or abrupt change in the way people lived during this transitional period. This critique appears to reflect regional difference associated with ceramic adoption. Areas of early adoption in the American Bottom are associated with appreciable cultural change (Brown

1986a:599). It is possible that the addition of ceramic technology did not significantly alter culture in areas such as the Green Bay region; however, currently we know little about this period in this region.

The earliest thickware ceramics found throughout the Great Lakes and Midwest include types such as Marion Thick, Schultz Thick, Leimbach Thick, and Vinette I (Mason 1981(2002):216-217). These early ceramics have some common characteristics including: cordmarked exteriors and interiors, flat bottoms (with the exception of Vinette I pots that typically have conoidal bases), grit temper, thick walls, and a lack of decoration (Mason 1981(2002):217, 229-234). Some types like Leimbach Thick and Schultz Thick also have exterior lug like handles (F. W. Fischer 1972:142-143; Stothers 2008:87-91). Dates associated with these types range from 1000 - 300 B.C. (Brown 1986b:600-601; Garland 1986:52; Spence, et al. 1990:128-129; Stothers 2008:94), though a more recent series of dates associated with Early Woodland Vinette 1 pottery suggests that this type originated earlier at 1495-1313 B.C. (Taché and Hart 2013:367). The first appearance of ceramics in Wisconsin is suggested to date to circa 500 B.C. (Stevenson 1997:150). However, the Hilgen Spring Park Mound Group (47OZ7) in Ozaukee County, Wisconsin (Boszardt, et al. 1986; Kehoe 1975:346-347; Van Langen and Kehoe 1971:18) is radiocarbon dated to calibrated 1110 to 400 B.C. While the association of Marion Thick pottery with the hearths from which the dates were obtained is clear, it should be noted that there is some uncertainty that these Early Woodland dates are associated with mound construction at the site (Benchley 1997:108; Boszardt, et al. 1986:252).

Sometime in the last century B.C. to the first century A.D, thinner walled vessels with sub-conoidal to conoidal bases, cordmarked exteriors, and smooth interiors replace the earlier thick wares. This pottery is commonly decorated with incising applied over the exterior cordmarking. In eastern Wisconsin, the most common incised over cordmarked type is Dane Incised. The type was first defined by Keslin from materials found at the Hahn site in Dodge County, Wisconsin (Keslin 1958). Dane Incised vessels have been found as far north as the central Menominee River Valley in Michigan's Upper Peninsula at the Riverside and Riverside II sites (Buckmaster 1979; McIlraith 2015; Richards 2009).

The Wisconsin Historic Preservation Database (WHPD) lists 20 sites in the tri-county Door Peninsula region that are reported as harboring Early Woodland components (Table 3.5). However, the bulk of these sites have been assigned based on lithic technology, none have produced thick ware pottery. However, Mason recovered thick ware-like pottery at the Mero site that he suggested is reminiscent of Vinette I Early Woodland ceramics, but later classified these sherds as North Bay types (Mason 1966:77). Approximately forty miles (64 km) south of the Door Peninsula, several sites in the Lake Winnebago area have yielded Marion Thick vessels or Marion Thick-like materials. These sites include Alonzo Kellog II (47WN0241) (Overstreet, et al. 2004), Bohn #2 (47WN0167) (Dowiasch, et al. 2008), Lasley's Point (Overstreet 1993), Sauer Resort (47WN0207) (Dirst 1985), and the Robert Grignon Trading Post near Omro, Wisconsin (Mason 1964). Residue scraped from Marion Thick sherds from the Lasley's Point site are radiocarbon dated (UGAM 2719) to 2500 ± 40 B.P. (2-sigma cal 790-490 B.C.) (Richards and Jeske 2015). All but the Grignon and Lasley's Point site inventories also included Dane Incised materials. Dane Incised materials were noted also at the Mero site but were considered time transgressive and assigned to a Middle Woodland time slot (Mason 1967:382-329). Incised over cordmarked pottery typed as Dane Incised has been recovered from several sites in the region including Shanty Bay (Dirst 1998; Dirst 1995), Heins Creek (Wells 1969:20-21), Rock Island (Mason 1986), and Foscoro (Wells 1972).

Table 3.5. Sites With Early Woodland Components in Brown, Kewaunee, and Door Counties

Site#	Burial Site#	Site Name	Site Type	Dating
Br-0116			Campsite/Village, Workshop Site	Archaic, Early Woodland, Late Archaic, Late Paleo-Indian, Middle Archaic, Middle Woodland, Unknown Prehistoric, Woodland
Br-0009			Cache/Pit/Hearth	Middle Archaic, Late Archaic, Early Woodland
Br-0006	Bbr-0134	Little Red River	Campsite/Village, Cemetery/Burial, Mound(S) - Conical	Early Woodland, Historic Indian, Late Archaic, Middle Woodland, Oneota, Woodland
Br-0194		Van Lieshout	Lithic Scatter	Archaic, Early Woodland, Late Woodland
Br-0245		Pamperin Park Site	Campsite/Village	Early Woodland, Historic Euro-American, Historic Indian, Late Woodland
Br-0310			Campsite/Village	Early Woodland
Br-0333		Willard Site	Campsite/Village	Early Woodland, Late Archaic, Late Woodland, Middle Woodland, Oneota
Br-0355		Smith's Garden Site	Campsite/Village	Early Woodland, Late Archaic, Late Woodland, Middle Archaic, Middle Woodland, Oneota
Br-0372		William Horn	Lithic Scatter	Early Woodland, Historic Indian, Late Archaic, Late Woodland, Oneota
Br-0405		Stary Site	Lithic Scatter	Early Woodland, Middle Woodland, Unknown Prehistoric
Br-0437		Red Banks Village	Campsite/Village	Late Paleo-Indian, Early Archaic, Middle Archaic, Late Archaic, Early Woodland, Middle Woodland, Late Woodland, Terminal Woodland, Oneota, Historic Indian
Br-0493		Austin Straubel Site	Lithic Scatter	Early Woodland, Late Archaic
Dr-0107	Bdr-0114	Fabry Farm	Campsite/Village, Cemetery/Burial	Early Woodland, Late Woodland, Oneota, Late Paleo-Indian
Dr-0029	Bdr-0090	Hornstone	Cemetery/Burial, Cache/Pit/Hearth	Red Ocher, Early Woodland

Table 3.5. Sites With Early Woodland Components in Brown, Kewaunee, and Door Counties

Site#	Burial Site#	Site Name	Site Type	Dating
Dr-0011	Bdr-0112	Shanty Bay Campsite	Cemetery/Burial, Campsite/Village	Early Woodland, Late Woodland, Middle Woodland, Oneota
Dr-0083	Bdr-0125	Mero	Campsite/Village	Middle Woodland, Historic Euro-American, Late Woodland, Oneota, Middle Archaic, Late Archaic, Early Woodland
Dr-0419		Sadie's Points	Lithic Scatter	Early Woodland, Late Archaic
Dr-0427		Carmody	Campsite/Village, Cabin/Homestead	Early Woodland, Historic Euro-American, Late Woodland, Middle Woodland
Ke-0009	Bke-0062	Delfosse - Allard	Campsite/Village, Corn Hills/Garden Beds, Mound(S) - Conical	Late Archaic, Oneota, Late Woodland, Late Paleo-Indian, Historic Indian, Historic Euro-American, Early Woodland, Middle Woodland
Ke-0075		Kinstetter Site	Lithic Scatter	Early Woodland, Unknown Prehistoric

The low frequency of well-dated, excavated Early Woodland sites in northeast Wisconsin makes it difficult to reconstruct Early Woodland lifeways in the region. However, Overstreet has offered a model of Early Woodland settlement and subsistence based on the data available. Overstreet suggests large warm season base camps were established adjacent to major wetland areas such as the Sheboygan Marsh with the Henschel site (47SB29) (Richards et al. 1993) an example of this settlement type. The nearby Bachmann site (47SB202) (Rusch 1988) is suggested as a typical winter hunting camp situated near an interior drainage. Small, special purpose camps with extractive or ritual functions include an isolated component at the Old Spring site (47WN350) (Overstreet 1989) and the Brunner-Schmidt site near Lake Poygan (Overstreet 1993). Subsistence data for Early Woodland sites in the region is minimal. A later excavated assemblage from the Henschel site has not yet been reported but the Bachmann site data suggests exploitation of white tail deer and use of cultigens including sunflower and sumpweed with possible use of tobacco (Zalucha 1988).

Middle Woodland

The Middle Woodland period in the Great Lakes, as elsewhere in the Northeastern United States, has been defined by Hopewell and cultural participation in the Hopewellian Interaction Sphere. It is characterized by shared mortuary practices and trade in cultural materials over a wide geographic territory that included the Great Lakes, Midwest, portions of the Southeast to the Gulf and Atlantic coasts, areas of the Mississippi River and to the west. (Caldwell 1964; Carr and Case 2006; Struever 1965; Struever and Houart 1972; Wright and Henry 2013). The two primary centers of Hopewell culture are found in the Ohio River Valley (Scioto) and Havana (Havana), Illinois in the Illinois River Valley (Mason 1981(2002)). The dates of this period generally span 200 B.C. to A.D. 500 (Mason 1981(2002):238-239).

The material culture associated with Hopewell includes well-crafted effigy platform pipes and cut mica images. Exotic raw materials including mica, galena, copper and shell came to the central Hopewell areas through long distance trade networks (Mason 1981(2002):238-239). Understanding of Hopewell has evolved with increasing appreciation of variation in participation levels (Struever and Houart 1972). Work on raw material sourcing, location of artifact production and distribution have presented a picture of a the Hopewellian Interaction Sphere as “not a particularly dynamic or integrated system” (Seeman 1977:247). This view of a much less centralized and regimented Hopewell world continues to be supported by compositional studies

(Emerson, et al. 2005; Ruby and Shriner 2006). Recent work on population movement suggests differing patterns of migration between Illinois (Havana) Hopewell and Ohio (Scioto) Hopewell (Beehr 2011). A distance analysis study of cranial epigenetic traits reports individuals within this region were statistically similar, with the exception of the Havana Hopewell (Pennefather-O'Brien 2006). Direction of migration and trade between regions is still unclear. This most likely reflects a more complex and shifting pattern of relationships and alliances over time.

However, the extent of participation by groups peripheral to the Hopewell centers in Illinois and Ohio varied considerably (Mason 1981(2002):238-240). Regional Middle Woodland cultural manifestation are marked by construction of conical burial mounds, use of cultivated plants, ceramics with dentate stamping, cordwrapped stick (CWS) stamping, cross-hatched stamping on Hopewell related rims, rocker stamping, small roughly circular punctates, and pots with zoned, incised decoration. (Salzer 1986b:267; Stevenson 1997:157). In addition, the material culture of Hopewell related groups often includes a variety of exotic raw materials and finished objects of obsidian, mica, copper, and various pipestones.

Some groups in the northern Great Lakes are viewed as peripheral participants at best. North Bay is viewed by Mason as one of these peripheral groups (Mason 1981(2002):276). North Bay sites do not have burial mounds or evidence of plant cultivation, though some ceramics at North Bay sites like Mero and Porte desMorts have dentate and CWS stamping. A vessel was identified at the Ports desMorts site as a Hopewell (Baehr) Rocker Stamped vessel. The vessel most likely made its way to the site via trade (Mason 1967:299-300). North Bay sites have yet to yield copper pan pipes, ear spools, or other high status Hopewell goods.

To explain these varying levels of participation Mason envisioned the levels of interaction as tiers extending east-west across the Great Lakes, with Hopewellian interaction/participation greatest in the Southern Tier and declining as one moves north. Greater levels of interaction seemed to be present among groups laterally from east to west through the transportation corridor provided by the Great Lakes. The Southern Tier includes the following Hopewellian groups: Squawkie Hill, Saginaw Bay, Goodall, and Waukasha (Mason 1981(2002):240, 244-259). The Middle Tier includes: Saugeen, Point Peninsula, Nokomis, and North Bay (Mason 1981(2002):240, 259-264). The Northern Tier includes only Laurel (Mason 1981(2002):240, 264-292).

Squawkie Hill people in the eastern Great Lakes had participation marked by the presence of high status objects made of copper like pan pipes and earspools found in burial mound contexts. Yet the exact nature of the relationship to Hopewell is still not clearly understood (Mason 1981(2002):259). In fact, subsistence data is extremely limited and cultigens have not been identified. Population size is speculated to be low with band level social structure (Howard 2010:241).

The Saginaw Bay Hopewell occupied the Saginaw Valley region in eastern Michigan. The Schultz site is the best-known site associated with Saginaw Bay Hopewell. Data from the Schultz habitation site shows that the inhabitants exploited local wild life found in a variety of riverine ecological zones including deer, elk, bear, beaver, fish, birds, and clams. Local plants were utilized but there is no evidence for plant cultivation (Mason 1981(2002):256). Middle Woodland occupation at the Schultz site occurred between 100 B.C.- A.D. 500 (Kingsley 1999:151). Pottery found at the Schultz site includes two ware types: Tittabawassee and Green Point. These ware types lend their names to the two phases associated with Saginaw Bay Hopewell. The earliest phase, Tittabawassee, dates to 100 B.C. – A.D 300 (Kingsley 1999:151). Tittabawassee Ware exhibit dentate and CWS stamping generally occurring at the vessel rim. It is noted that Tittabawassee Ware can include bossing on the rim at trait not found at Norton Phase, Norton Mound site in southeastern Michigan (Mason 1981(2002):254). The second later Green Point phase, dates between A.D. 300 –500 (Kingsley 1999:151). Green Point Ware has cross-hatched or rocker stamped rims with a distinctively thickened rim (Mason 1981(2002):254-256). Three burial mounds with palisades are associated with the later Green Point occupation (Mason 1981(2002):256).

The Goodall Focus in southern Michigan is now referred to as the Norton Tradition with Goodall located at the western portion of the Indiana/Michigan border area (Kingsley 1999:148). Resource exploitation by Norton groups is thought to resemble the Intensive Harvest Collecting system in a riverine environment possibly utilized by Illinois Hopewell (Kingsley 1999:156). These Middle Woodland peoples are represented by the large Norton Mound site located in the Grand River valley of southeastern Michigan. At least 17 conical mortuary mounds were constructed with individuals exhibiting secondary and primary burials with an array of grave goods. These goods included Gulf conch shell vessels, mussel shell spoons, and plates of turtle shell. Ceramic vessels included in burials reflected a local variation of Hopewell types. Along with worked bone and lithic tools mica sheets, platform pipes, bear canines, worked copper, and fresh water pearls were among additional grave goods found (Mason 1981(2002):244-252).

The final Southern Tier cultural group is that represented by the Waukasha focus. Little work has been done in eastern Wisconsin regarding the Middle Woodland since Salzer's work on the Waukasha focus (Salzer 1970) and Mason's recognition of North Bay. The number of identified Waukasha focus sites in southeastern Wisconsin remains limited, although more recent work on Waukasha focus sites has provided additional information on site location. There seems to be a preference for proximity to wetlands or forest edge location. Subsistence data is limited but indicates deer, small to medium mammal, fish and limited amounts of turtle and shellfish were utilized. There is floral evidence for use of plant resources including goosefoot, various berries, nuts, and seeds, but no direct evidence of cultivation. Evidence from the Albert site (47JE903, habitation and 47JE887, mound) indicates the use of white clay features associated with ceramic vessels and/or other artifacts that may represent ritual practices. The relationship of the Albert site and other Waukasha focus sites to Illinois Hopewell may represent a core-periphery interaction model (Jeske 2006:293-309). It is obvious that the Middle Woodland was a dynamic period throughout much of the Northeast and the Great Lakes. However, few models exist to aid in understanding regional interaction and within the Door County region and much of eastern Wisconsin there are currently few excavated sites that can provide significant data

Mason placed the North Bay into the Middle Tier along with Point Peninsula, Saugeen, and Nokomis. The cultural expressions in this group generally exhibit a small amount of interaction or influence from the main Hopewellian centers in Illinois and Ohio or through Southern Tier groups. Evidence of this is found in possible trade vessels and diffusion of some stylistic traits. Mason sees more interaction between these groups along the Great Lakes corridor than with more southern groups (Mason 1981(2002):259-260).

Of these Middle Tier groups the Point Peninsula is the furthest to the east and is situated north and east of Lake Ontario. These groups subsisted by hunting and gathering. There is no evidence of plant cultivation. Pottery associated with Point Peninsula is Vinette 2. Vinette 2 is thought to have been preceded by the Early Woodland Vinette 1 thick ware (Mason 1981(2002):272).

The Saugeen sites are found in what is now Ontario, Canada. The area is bounded by the Great Lakes to the south, west and north and Point Peninsula to the east. Generally, Saugeen represent small bands of hunting gathering families possibly utilizing base and resource exploitation camps (Mason 1981(2002):261). There is no evidence of plant cultivation. There is evidence of exploitation of spring spawning species at the Donaldson site as well as antler tine toggle-head harpoons and possible net fishing (Mason 1981(2002):261-262). Pottery was decorated using rocker stamping or stamping with linear or scalloped tools. Mason indicates that the application of decoration is not Hopewellian in style and covered extensive portions of vessels (Mason 1981(2002):266)

At the Saugeen Donaldson site mortuary practices were varied and included primary and secondary burials as well as cremation. The inclusion of grave goods varied as well. Some burials included several items and some none. One burial did include Hopewellian grave goods including a copper panpipe, stone earspool, and cut mica (Mason 1981(2002):269)

Hopewell interaction with Middle Tier groups appears the strongest with peoples of the Nokomis group. North Bay materials have also been found in association with Nokomis materials (Salzer 1974). Salzer speculated that the North Bay sherds may represent a trade vessel. North Bay interaction with Nokomis is plausible since the eastern extent of Nokomis distribution is approximately 50-75 miles from the known western boundary of North Bay settlement. Nokomis sites are found in the Lakes Region of North Central Wisconsin (Mason 1981(2002):276-284). This region presents a very different environment for resource procurement than that typically exploited by North Bay peoples. This region is made up of many small lakes and poorly drained soils. Quality materials for the production of lithic tools and ceramic vessels are notably absent. The Nokomis phase was originally theorized to represent both Early and Middle Woodland. The time frame for Nokomis was approximately the first two centuries A.D. based on North Bay and Havana Hopewell trade vessels or vessels that exhibit stylistic influence. The possibility of an earlier starting point based on the presence of Black Sand-like ceramics was also suggested by Salzer (Mason 1981(2002):276-284; Salzer 1974).

The Laurel culture, situated well north of most Hopewell influence occupied the south shore of Lake Superior and presented a conundrum that prompted Mason to reflect on just what constitutes a Hopewellian culture in (Mason 1970). Mason classified Laurel as the sole example of Northern Tier Middle Woodland based on location and extremely limited evidence of participation in the Hopewellian Interaction Sphere (Mason 1981(2002):284). While evidence of North Bay interaction with Hopewell is lacking, there is significant evidence, at least among sites in and along Green Bay, of possible Laurel interaction with North Bay groups. Significant sites including Summer Island and Rock Island have yielded ceramic materials that may represent hybrid Laurel and North Bay types (Brose 1970; Mason 1991:121).

While North Bay is considered a Middle Tier Middle Woodland group that does not negate the possibility of interactions with southeastern and southwestern Wisconsin groups that exhibit greater participation in Hopewell. These include the Waukesha focus in southeastern Wisconsin, Trempealeau, in southwestern Wisconsin. In fact, a more southern distribution of North Bay materials is reported in the Fox River Valley around Lake Winnebago and northwest up the Wolf River drainage. North Bay materials have also been found in association with Waukesha and Millville-like materials and may support the possibility of interaction along boundary areas (Benchly et al, 1997; Overstreet 2004, 2003; Mason 1990:21-23). Currently, Middle Woodland presence in the boundary areas separating North Bay from the Waukesha Focus to the south and Nokomis to the west is poorly documented. In general, Wisconsin Middle Woodland territorial limits are poorly defined (Mason 1981[2002]; 1990), though it is evident that Middle Woodland sites are indeed found throughout these areas (Stevenson et al. 1997:164-165).

Chapter 4
Methods

Over the course of two field seasons over 33,980 sherds, weighing more than 35.82 kg, were recovered from feature and non-feature contexts at the Richter site. In addition to ceramic sherds, lithic debitage, lithic tools, copper tools and fragments, faunal remains and bone tools, human remains, fire cracked rock (FCR), floral materials, charcoal, small amounts of ochre, and other minerals were collected from the site. Some of these materials were analyzed by researchers utilizing specific analytic methodologies. The methods used by these researchers as well as those used to analyze the ceramic materials recovered from this site, will be briefly documented here.

Ceramics

Making sense of this collection was daunting due to the large volume and variety of materials. On cursory examination, it was clear that sorting them into existing regional ceramic typologies for Laurel and North Bay cultural groups proved problematic. North Bay and Laurel materials seemed to share distinctive physical and decorative characteristics without a picture of the cultural history that resulted in these similarities. On the other hand, much of the Richter site ceramic material can be placed in North Bay categories as established by Mason that clearly can be distinguished from Laurel materials found in the region. Within these non-Laurel materials it is profoundly difficult to differentiate ware types due to the vague nature of some of the critical physical characteristics. Traditional ceramic attribute and metric data was collected for rim sherds without placement into existing typologies. This traditional data collected was enhanced by expanding data collection to include characteristics informative of the processes of raw material selection, vessel production and use. By expanding on the types of data collected a fuller picture of the complex ceramic history of the site can be explored and previously unnoted distinctions in ceramic material may be found.

Additional data was collected on physical characteristics related to raw materials of vessels including: temper type, temper color, size, and amount. Select representative rims were examined using optical petrography to provide a more accurate description and quantification of temper and paste. Mineralogical data was also collected from the Richter site materials as well as other regional sites to explore raw material preferences utilizing various destructive analytic methods.

Finally, vessels and sherds were examined to identify characteristics related to vessel manufacturing process and use. Production characteristics have often been overlooked or ignored due to reliance on existing typologies and definitions. Lack of familiarity with critical manufacturing characteristics may lead researchers to assume that previously recorded manufacturing techniques for a specific ceramic type is correct, when in fact it is not. This is not meant as criticism of past work, but as a reminder that sherds beyond the rim can also provide critical data. Recent work on vessel use and function provides direction on identification of indicators of use and function. Once again these indicators are often overlooked.

All materials were sorted by general temper type and sherd type (rim or body) by assigned field lots. Only two general temper types were identified at the Richter site: grit and shell. Of these two, grit temper was the predominant temper type with only a few shell tempered sherds.

Body sherds were sorted into decorated or one of four surface finish categories (cordmarked, smoothed cordmarked, smoothed, or net/fabric impression). Body sherds were required to have intact exterior and interior surfaces. If a sherd had less than two intact surfaces it was classified as a fragment. It should be noted that Mason and Brose use the term "plain" as a surface finish. (Brose 1970; Mason 1966, 1967), here the term "smoothed" is used instead. Waste clay and coils were also pulled at this time. These sherds were counted, weighed and the attributes for sherd type, surface finish and decoration were recorded in an Access database. Photographs of selected decorated body sherds can be found in Appendix A.

All separated rims were collected and assigned identification numbers. To allow for the collection of as much data as possible, complete and partial rims were both selected. From these rim sherds those that were too small to classify or exhibited severe weathering and/or exfoliation of surfaces were classified as rim fragments.

The following data was collected for each rim sherd: surface finish exterior, surface finish interior, height, length, weight, width (x3), Munsell color exterior, Munsell color interior, paste core, rim completeness, rim stance, rim shape, orifice diameter, rim decorative element, rim decorative element orientation, element width, element depth, element length (all for exterior and interior decorative elements), lip form, lip decoration type, lip decorative element, lip decorative element orientation, lip decorative element width, decorative element depth, decorative element length, temper colors, temper size (x3), temper sort, temper amount, sand type, sand size (x3). A table of all collected rim data is in Appendix B.

Profiles were created for each rim. The exterior, interior and lips (in most cases) were photographed. Profiles and photographs for each rim are included in Chapter 6, Ceramics.

A preliminary sorting had been conducted at some time in the past with the result that rims and decorated body sherds had been segregated. A new sort was conducted in order to be sure that all rims were accounted for. During this process additional rimsherds were found. Rims, decorated sherds, and the remaining sherds (body sherds and fragments) were then sorted based on macroscopic examination of temper. Body sherds and fragments were classified by surface finish if possible. Decorated body sherds were subsequently sorted by decoration types. Rimsherds that were too small (under 2 cm), weathered, broken, or exfoliated were excluded from further analysis.

Metric and descriptive data was collected for all non-fragment rim sherds. These sherds were weighed. Length and width was measured for each rimsherd in mm using digital calipers. Width of each rimsherd was measured in three locations: at the rim, 1cm below the rim and at the base of the sherd. The width of the rim was also collected the center of the rim and at both ends. Profiles were also created for each rim. The rim angle was determined for each rim by observing the position in which the rim was in total contact with a flattened surface. Once the rim was determined to be in contact it was placed against a wall on a piece of graph paper. The angle of the rim was determined. A contour gauge was then used to take an impression of the sherd along a vertical line that is perpendicular to the rim on both the vessel rim exterior and interior. Using the rim angle to orient the contour, the contours were traced onto graph paper. The width of the profile was confirmed with caliper measurements of the sherd. Rims were also photographed. These photographs also include the lip of the rim as well as the exterior and interior.

The minimum number of vessels in the Richter assemblage was estimated using a qualitative method (Voss and Allen 2010:1-2). A quantitative minimum vessel count can sometimes underestimate the number of vessels, especially when dealing with non-mass produced ceramic materials and undecorated vessels like those found at the Richter site. This is due to a focus on rims, handles, and bases. On the other hand, a qualitative method places sherds into groups that constitute a single vessel using not only rim sherds but body sherds as well. This method utilizes characteristics such as paste, temper, and manufacturing characteristics (all traits that proved surprisingly significant at the Richter site) to arrive at an estimate.

The downside to this method is the subjective nature of groups that make reproducibility difficult, if not impossible. To minimize this, an attempt was made to only count vessels that included associated body and rim sherds. Several vessels were included that do not have associated rim sherds but include a significant number of distinctive body sherds. A rigorous attempt was made to match rims to these body sherds using physical and manufacturing characteristics. These vessels are noted and were not included in vessel-based statistics.

Petrography

Following the collection of the above data a sample of rim sherds was selected for petrographic analysis. The selected rim sherds were sent to Hess Petrographic (Madison, Wisconsin) for sample preparation, cutting, and mounting. All samples were fixed in epoxy resin, due to their friable condition, and petrographic thin sections were created. Data was collected utilizing points at 1 mm intervals using Stoltman's methodology (Stoltman 1989;

Stoltman, et al. 2005). It should be noted that this counting interval is smaller than the largest pieces of temper materials. In some instances, grit temper particles exceed 3 mm. The small counting interval was chosen to ensure that an adequate number of points would be counted, though this means that large pieces of grit may be counted more than once. The objective was to have approximately 200 points counted for each slide. Each slide was counted twice. Each slide was point counted a second time to collect paste and body data and calculate a ratio of Matrix:Silt:Sand for each sample. Each Sand or Temper point was measured into one of the following size categories; Gravel (>2.00 mm), Very Course (1.99-1 mm), Coarse (0.999-0.50 mm), Medium (0.499-0.25 mm) and Fine (0.249-0.0625 mm).

For larger pieces of grit temper, it was possible to identify mineral composition. Most, if not all large grit temper pieces, consisted of multiple minerals. Identification of minerals for a sample of grit temper particles from each slide was completed. Identification of minerals allows for general identification of the type of rocks used for tempering in the vessel.

X-Ray Diffraction (XRD)

Several samples were analyzed using XRD. These samples were prepared and analyzed at the University of Wisconsin – Milwaukee under the supervision of Dr. Lindsey McHenry, Department of Geosciences. Random powder samples were prepared using methods developed by Dr. Lindsay McHenry in materials prepared for her course on X-ray Analytical Methods. (McHenry 2008; Moore and Reynolds 1997) Sample data was collected using a Bruker D8 Focus Powder XRD with a Cu target and Sol-X Energy Dispersive Detector and were analyzed for a total of 48 minutes 2˚- 60˚ 2θ, 0.02˚ step size, 1 sec/step. Bruker's EVA software for pattern matching against the ICDD powder diffraction database was used to identify mineral components of the samples.

Ceramic Production

Collecting data on indicators of manufacturing processes is much more subjective than methods used for collecting attributes, metrics, compositional, and elemental data. These indicators can be subtle and easily overlooked. Sources that document and describe the indicators of manufacturing processes are limited. Before getting started it is also important to have a good understanding of the various processes of hand building ceramics. Sources consulted include (Rice 1987 (2005); Rye 1981(2002); Shepard 1985). Understanding the types of building methods aids in identification of manufacture indicators and provides an understanding of how they reflect a specific manufacturing technique. The best sources provide photographic documentation or drawings of samples for reference (Arthur 1986:90-91; Budak 1985; Rye 1981(2002)). Recently it has been recognized that errors have been made in the identification of manufacturing processes associated with prehistoric ceramics by previous researchers. Nolan and Olson presented a poster demonstrating non-coil breaks in Hopewell vessels from collections that had been previously described as being coil built (Nolan and Olson 2015). Another recent article documents the differences found in vessel manufacture in New York State and provides detailed description of the manufacturing indicators as well as photographic documentation (Hart and Brumbach 2009).

While the literature is limited there is sufficient information to provide key characteristics of various methods of hand manufacturing of ceramic vessels. With these characteristics in mind, the collection was reexamined and examples exhibiting key characteristics were identified.

Besides individual sherds, the Richter collection includes a number of fairly complete vessels. These vessels provided not only evidence of key characteristics as identified by other researchers, but provided evidence of construction methods utilized in individual vessels. These vessels also provided additional characteristics not discussed in the literature. How these characteristics are indicative of a specific type of production is presented. Examples of key manufacturing characteristics found in the collection during examination were identified. Photographs were taken to document these characteristics.

Ceramic analysts have come to recognize that how prehistoric vessels were used is a valid and valued avenue of inquiry. Ceramic vessels have served many and various purposes. The three most general types of use include: “storage, processing, and transport” (Rice 1987 (2005):208). Within each type there are more specific functions that reflect the type of contents and special characteristics related to their use. In the categories of vessel forms and function there is overlap for cooking pots and storage jars (Rice 1987 (2005):210). We could simply infer use from form characteristics based on ethnographic evidence or we could examine the vessels for patterns of actual use. There have been many contributions to this line of inquiry. These contributions include insights from both ethnographic and experimental work. Once again evidence of actual vessel use can be derived from key characteristic patterns of sooting, discoloration, wear, and burning. Skibo presents a thorough documentation of use indicators in an ethnographic context that translates well to prehistoric patterns of use (Skibo 2013; Skibo 1992; Skibo 2009). Halley presents indicators of use alteration including soot deposition, oxidation discoloration and pitting (Hally 1983:4).

To explore the function of two fairly complete vessels from the Richter assemblage, indicators of use wear were documented. Exterior areas of sooting and oxidation were documented and photographed. The general patterns were documented and a sketch provided. On the interior of the vessel areas of discoloration including oxidation, sooting, and burning was documented. Also, other changes to the interior such as distribution of pedestalled temper were noted. Patterns and types of documented use are discussed incorporating insights from the work of Skibo and others.

Lithic Materials

The lithic materials recovered from both field seasons at the Richter site include 28,260 pieces of debitage and 789 chipped stone tools conducted by Dustin Blodgett for his Master's Thesis in 2004 (Blodgett 2004:61-62). Blodgett's analysis of this collection utilized descriptive terminology rather than terminology based on function. Traditional functional terminology may be based on incorrect assumptions of prehistoric tool function.

Generally, this method of analysis consists of both a mass analysis and an analysis of individual flakes. Due to the large quantities of lithic debitage at the Richter site the focus of the analysis was on completing a mass analysis. Blodgett used a modified version of that created by Lurie and Joslin-Jeske for Northwestern University (Lurie and Joslin-Jeske n.d.)

Copper

All the copper pieces and culturally associated minerals were collected and identified during site excavations. The exception to this was a single piece of flat copper (CP501) found in a lot of unsorted materials associated with F51 in Unit NS0/E08. All artifacts were weighed, measured, and described. Due to the abundance and variety of copper artifacts they are described and discussed separately from other mineral materials found at the site.

Minerals

Minerals in this context include materials identified by excavators as unworked raw materials. These do not include lithic raw materials such as chert, unutilized cobbles, Fire Cracked Rock (FCR), or other similar materials. Minerals from the Richter site include ocherous materials and mica. These were identified and weighed. All data was collected by lot and was recorded in an Excel spreadsheet.

Fire Cracked Rock

Fire Cracked Rock was not systematically collected or noted during excavation at the Richter site. Most of the materials identified as FCR were found in unprocessed bags of artifacts from the excavation or misidentified as lithic materials. All materials were identified and weighed. All data was collected by lot and entered on an Excel spreadsheet.

Organic Remains

Preservation of many classes of organic materials from the Richter was good. Excavators were able to collect large amounts of faunal materials. Excavators also collected large amounts of charcoal from contexts throughout the site. Floral materials were underrepresented because of the lack of flotation of feature fill from the site.

Faunal Remains

The extensive faunal collection from this site was processed and initial material identifications made by students following the field schools. Feature faunal materials were analyzed by Ralph Koziarski (n.d., 2009). His methods are documented in the faunal section below.

Floral

At some point in the past, the floral materials were recovered were examined and a report was written. This report was missing from the curated documents of the site. Data for this section was produced by reexamining floral remains that could be relocated in the curated collection. These materials were examined by Jennifer Picard of UWM Cultural Resource. They were examined under 10 x magnification. Information including species, amount, and site provenience was recorded for sample. Samples were restricted to those from contexts below the plow zone.

Charcoal

The presence of charcoal was noted for several locations during excavation. It was found in features as well as in non-feature contexts of the site. It was also noted that charcoal was found in the site plow zone. The collection of charcoal during excavation does not appear to have been conducted systematically. Charcoal was weighed for each lot. All data was recorded by lot.

Chapter 5
The Richter Site

Description and Location

The Richter Site is located in the NE ¼ of the NE ¼ of the SE ¼ of Section 11, Township 33 North, Range 29 East in the Town of Washington, Door County, Wisconsin. The site is situated on a stabilized beach at an elevation of 179 m above sea level and 2 m above current lake levels of 177 m above sea level (Figure 5.1 and Figure 5.2).

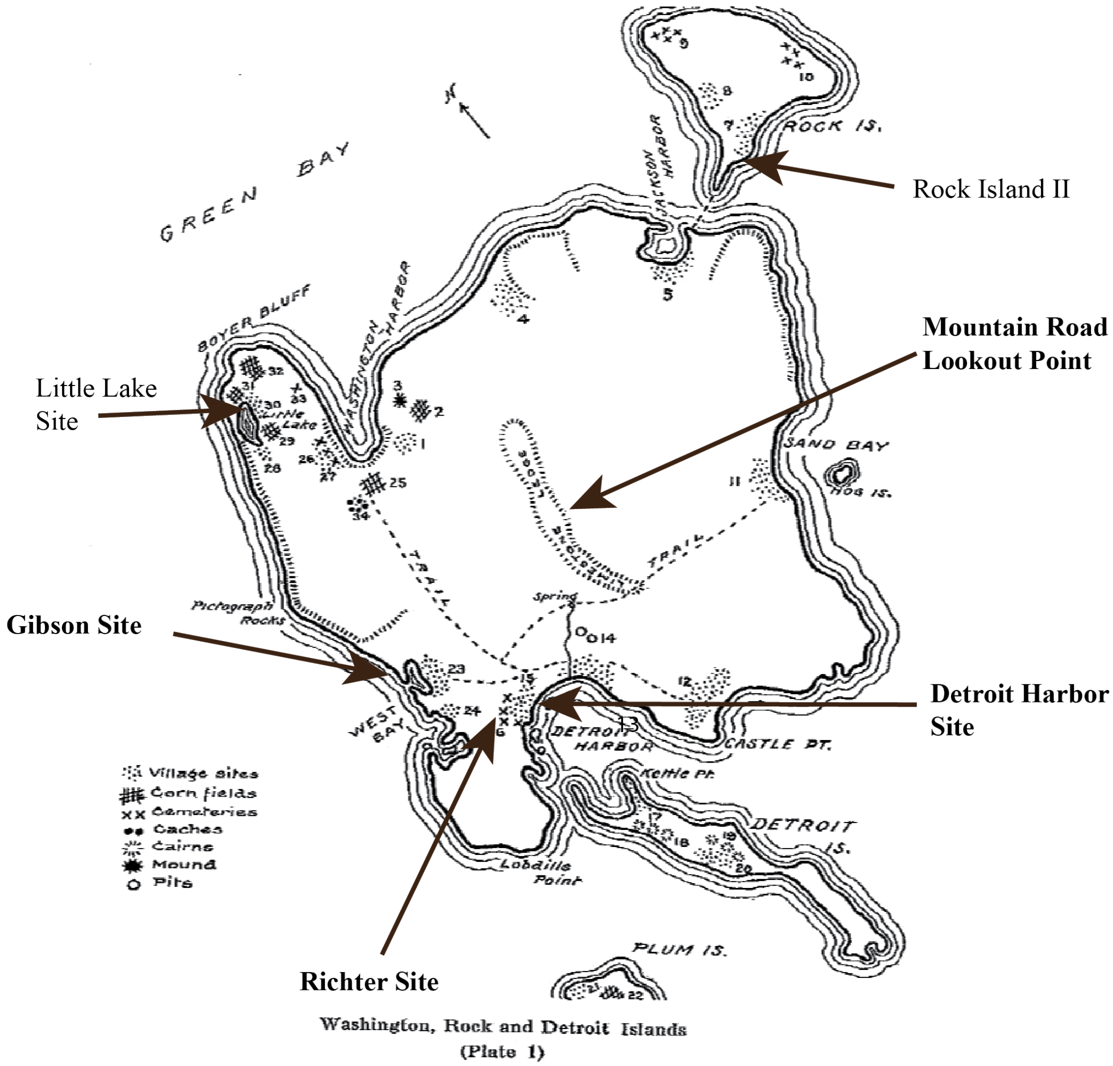
Figure 5.1. Map showing site location.

Figure 5.2. Location of Richter Site on Washington Island, Door County, Wisconsin.

Washington Island Archaeology

The earliest account of the prehistoric occupation of Washington Island is that of George Fox published in the 1915 W*isconsin Archeologist.* Fox conducted a survey during which prehistoric sites were mapped and documented on Washington, Rock, Detroit, and Plum Islands (Figure 5.3). Sites considered to be villages were documented at Washington Harbor, Little Lake, and Jackson Harbor on the northern portion of the island. A site described as a “lithic workshop” is located also on the northern portion of the island at the base of a limestone outcrop. This outcrop differs from the large outcrop of limestone in the central portion of the island known as Lookout Mountain. Villages encircle Washington Harbor. This area also includes mounds and cornfields. The Boyer Bluff area on the west side of Washington Harbor includes villages and cemeteries. Within this same area is Little Lake. Fox’s map indicated two areas of settlement on Little Lake, one on the northeastern side and one at the southern base. Both of these areas also include cornfields (Fox 1915).

On the eastern side of Washington Island a village site is mapped at Sand Bay. Two village sites are mapped at West Bay on the western side of the island, north of Lobdill’s Point. On the southern portion of the island two large areas of settlement are found on the northern shores of Detroit Harbor. Cemeteries are found to the west of the westernmost of these settlement or village areas. To the north of the eastern settlement at Detroit Harbor are two areas described as pits. It is interesting that no cornfields are noted in this portion of the island. East of Detroit Harbor a village is mapped at Castle Point. Fox indicates that the Jesuits describe the Noquet as resident in the area. The area was also home to Pottowatomie, Ottawa, Menominee, and Chippewa, according to Fox (Fox 1915:159). Ceramics with grit temper are documented from Jackson Harbor, Castle Point and Detroit Harbor. Smooth grit tempered sherds with what may be Laurel plain tool stamping were recovered from West Bay. Fox mentions only one location with shell tempered pottery. This is from his location 24 (Fox 1915:174-175).



Modern Sites Corresponding to Fox 1915 Locations

7	Rock Island II
15	Detroit Harbor
15 & 16	Richter
23	Gibson
29-32	Little Lake

Figure 5.3. Fox 1915 Map of Washington Island. This map illustrates the location of modern documented sites and areas surveyed by the 1968 UWM Field School and where possible in regards to Fox 1915 original map.

Of the locations mapped and documented by Fox a number correspond with sites that have been the subject of more recent work or documentation. The presence of corn, though only a single specimen, has recently been documented by Overstreet at the Little Lake site. This site is to the east of Little Lake in an area described as the location of historic Native American corn fields (Overstreet and Harvey 2001). Mero complex, Point Sauble, and Late Woodland ceramic materials were recovered (Overstreet and Harvey 2001). On the western shoreline of Washington Harbor a large number of shell tempered Oneota sherds have been recovered (Personal Observation). It would seem that occupations described in this area by Fox are currently related to Oneota, Late Woodland and Historic occupations.

The location of the Richter site coincides with areas identified by Fox as village locations 15 and 16 on the northern shore of Detroit Harbor. Location 15 would also seem to correspond to the current location of the Holiday Inn and most likely the Detroit Harbor site surveyed in 1986, though this is not documented. Shell tempered pottery was recovered from this location according to the property owner.

History of Richter Site Investigations

In 1968 an University of Wisconsin – Milwaukee (UWM) Field School under the direction of G. Richard Peske located and conducted test excavations at four archaeological sites and made surface collections at an additional eight locations on Washington Island, Door County, Wisconsin (Table 5.1). Survey locations were drawn from sites originally documented by George Fox in 1915 (Figure 5.3)(Peters n.d.-b:1). The location of most of the areas surveyed in 1968 is not documented in the remaining records associated with the 1968 field season.

Of areas surveyed and tested only the Richter site harbored intact subsurface features. The site also had excellent preservation of floral and faunal materials (Peters n.d.-c:1).

Table 5.1. 1968 Survey Locations after Peters n.d.

Site Name	Survey Type	Results
Ayers	Surface Collection, Excavation of 2 Test Pits	Disturbed
Petersen	Surface Collection	No Further Work
Olson	Surface Collection	No Further Work
Cooper	Surface Collection	No Further Work
West Bay (Murphy)	Surface Collection	No Further Work
Ulm	Surface Collection	No Further Work
Mountain Road Lookout Point	Surface Collection	No Further Work
Jacobsen's SW Field	Surface Collection	No Further Work
E. Trueblood	Celt, Collected underwater clay sample	No Further Work
Gibson	Surface Collection, Excavation of 10 Trench Units and 4 Test Pits	Disturbed
Detroit Harbor	Surface Collection, Excavation of 3 Test Pits	Disturbed
Richter (47DR80)	Surface Collection, Excavation of 7 Test Pits	Intact Subsurface Feature, Excavations Expanded

In 1973 an UWM Field School under the direction of Guy Gibbon returned to the Richter site. Peters indicates that the goal of this field work was to help elucidate the relationship of North Bay to other "Northern Tier" cultures. Gibbon considered the Richter site to be a single component North Bay site (Peters n.d.-b:4).

The initial excavations in 1968 began with the excavation of six test pits (TP). An additional TP was excavated northeast of TP6 and was labeled TP1021/997. During my review of maps and documentation housed at the ARL the location of TP3 could not be exactly determined and does not seem to be indicated on the site map created by Peters (Figure 5.4). There is a note in the original notebook that served in part as a photo log that it was located "on gravel ridge NE of TP1" and was a "1 x 1" (Unknown n.d.:25). A number of areas on this map are coded to indicate excavation during the 1968 field season but identity of these areas could not be determined from existing documentation. Of the test pits excavated several were expanded. These expanded pits include TP4 and TP6. TP6 was the largest of the excavated areas at the site. The excavation encountered a large burial feature (F25) and a cremation feature (F9/F11) within a possible structure. This area also included a clay lined pit (F13), among a number of other features. TP4 included a dog burial (F7) and a large North Bay Psuedo-Scallop Stamped vessel (V2) that was subsequently reconstructed.

During the 1973 field season a number of additional test units were excavated. These test units appear to have been numbered but no documents exist that include their location at the site. A trench was excavated south of the 1968 excavations of TP6 to relocate the south boundary of that area. This area is identified in later maps of the site as Area B. Area B also includes the 1973 excavations south of the original TP6.

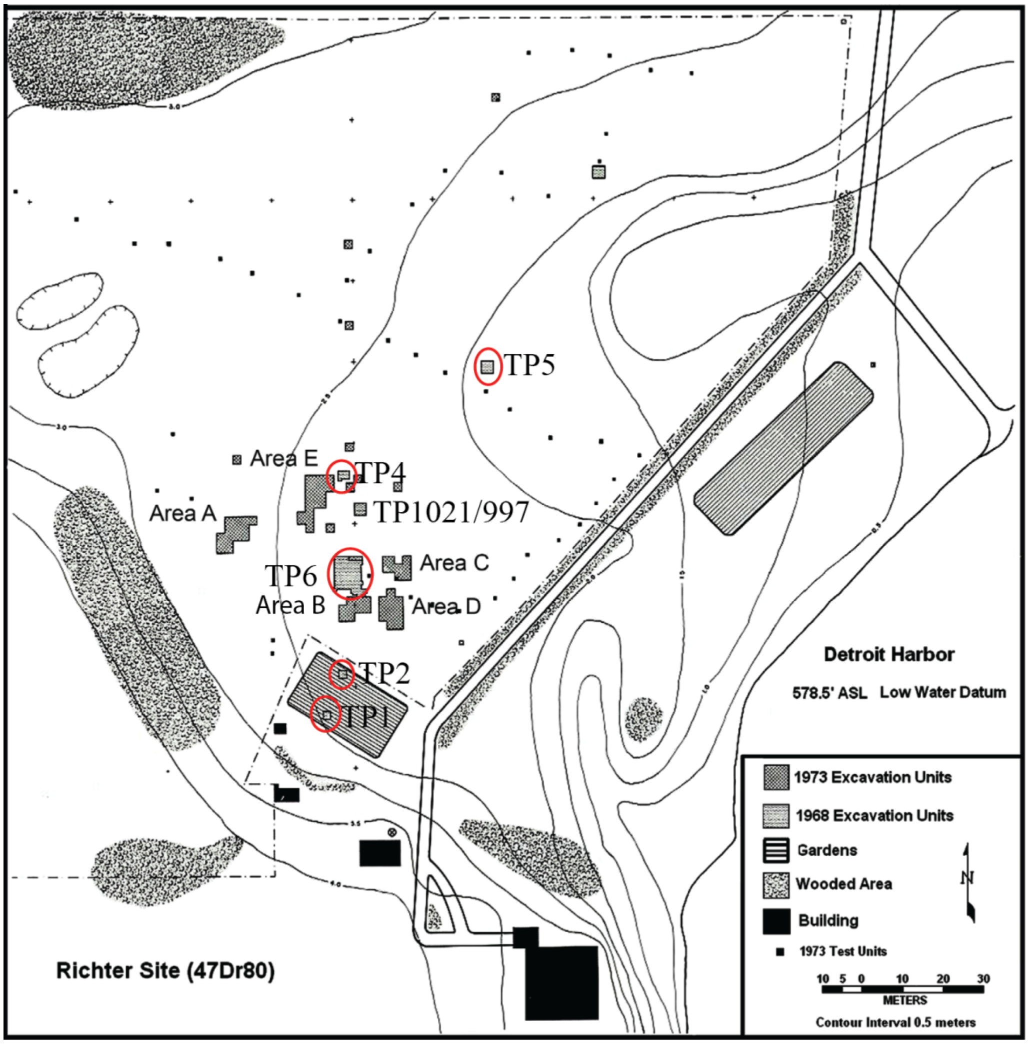


Figure 5.4. Overall site excavation map with 1968 test pits labeled and circled in red (after Peters n.d.).

Following the excavations in 1973 the site excavation areas were identified as Areas A, B, C, D, and E (Figure 5.5). This map includes units excavated during 1968 in the main site area. It should be noted that different sets of coordinates were used during the two seasons creating problems in unit identification. Instead of labeling 1968 units with the 1973 coordinates it was decided that the original coordinates would be kept. These 1968 coordinates have been added to the main site area map for reference purposes. The first number in the 1968 coordinates indicates how far north/south and the second number represents east/west. The original coordinate for TP4 is 1034/1003, north 1034 meters and 1003 west. The location of the site datum is not clear for 1968. The 1973 excavations used the well at the northeast corner of the cabin located to the south of the excavation area as the site datum. The north/south line extends from the datum. Units were placed generally using a standard 2-m-X-2-m size. Units are identified by southwest corner coordinates. For example, unit containing F26 in Area E would be N18/W12.

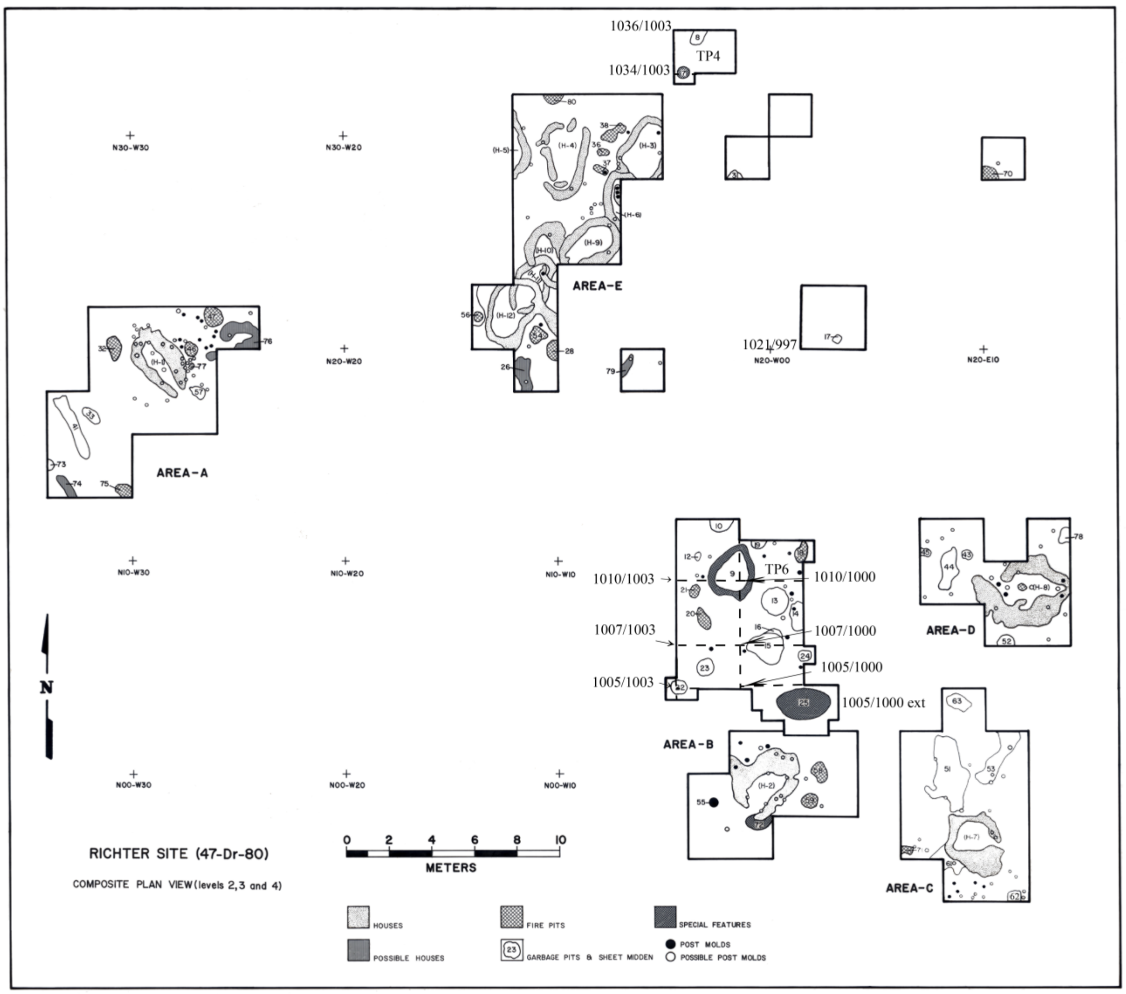


Figure 5.5. Main Richter site map with coordinates added for 1968 units (after Peters n.d.)

During the examination of artifact lots it became apparent that some areas of the site only have lots associated with features. These gaps in data correspond to the location of the 1968 excavations units. Material was not collected from the plow zone or non-feature contexts. This makes comparing artifact distribution between units and features in these areas impossible. Similar gaps exist in the 1973 excavation data as well. There is not data for Units N14/W34 and N14/W32 in Area A. Along with units without data a number of features were mapped but have no associated lot numbers, i.e. no collected artifacts. Mapped features from the 1968 excavations with no data include F12, F14, F16, and F21. Mapped features from the 1973 excavations with no data include F28, F53, and F59. It is not clear from the notes if these features were excavated and just contained no artifacts or if they simply were not excavated. The following features from the 1973 field season do not have log numbers: F71, F73, F74, F75, F76, F77, F78, F79, and F80. It is assumed that these features were identified and documented in planview but never excavated.

Features are discussed in greater detail later in this chapter. Planviews and profiles of features are provided if available. Appendix C contains maps for each unit created from existing planviews. It should be noted that very few planview maps exist from the initial field season in 1968. Existing profiles are located in Appendix D. Numerous planview and profile maps were produced during the 1973 field season, however it is impossible to determine if all the maps are present in the collection. There are no formal field notes for either the 1968 or 1973 field seasons.

In 2010 a field crew returned to Washington Island under the direction of Dr. John D. Richards and Michelle M. Birnbaum. The goal was to determine the extent of the Richter site in the large pasture area. While the original field seasons did some testing of the area that the Richter site is situated in it was not subjected to a systematic grid shovel test survey.

From October, 1st through 4th, 2010, the pasture area was shovel tested utilizing a 10 m grid set up with use of an optical transit. Positive probes revealed that the size of the Richter site was larger than the site boundaries recorded in the Wisconsin Historic Preservation Database (WHPD) (Figure 5.6). A total of 211 probes were excavated, 198 were positive (Figure 5.7).

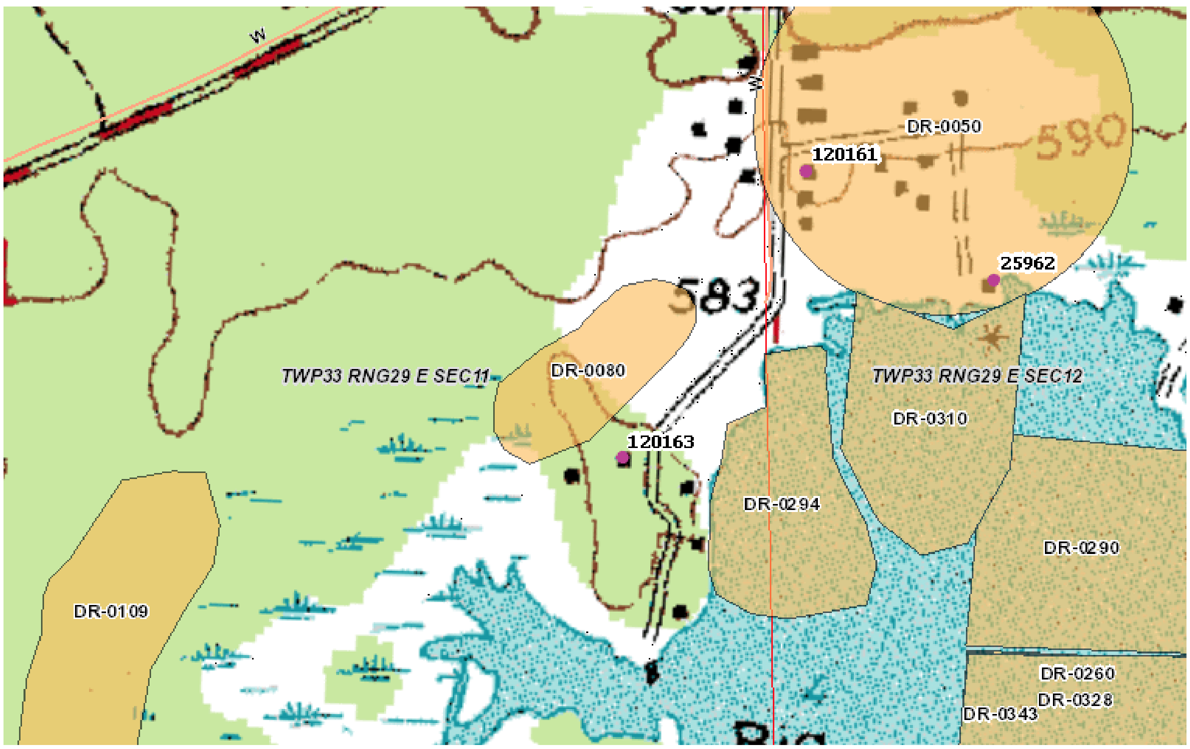


Figure 5.6. WHPD site map for the Richter site (47DR80).

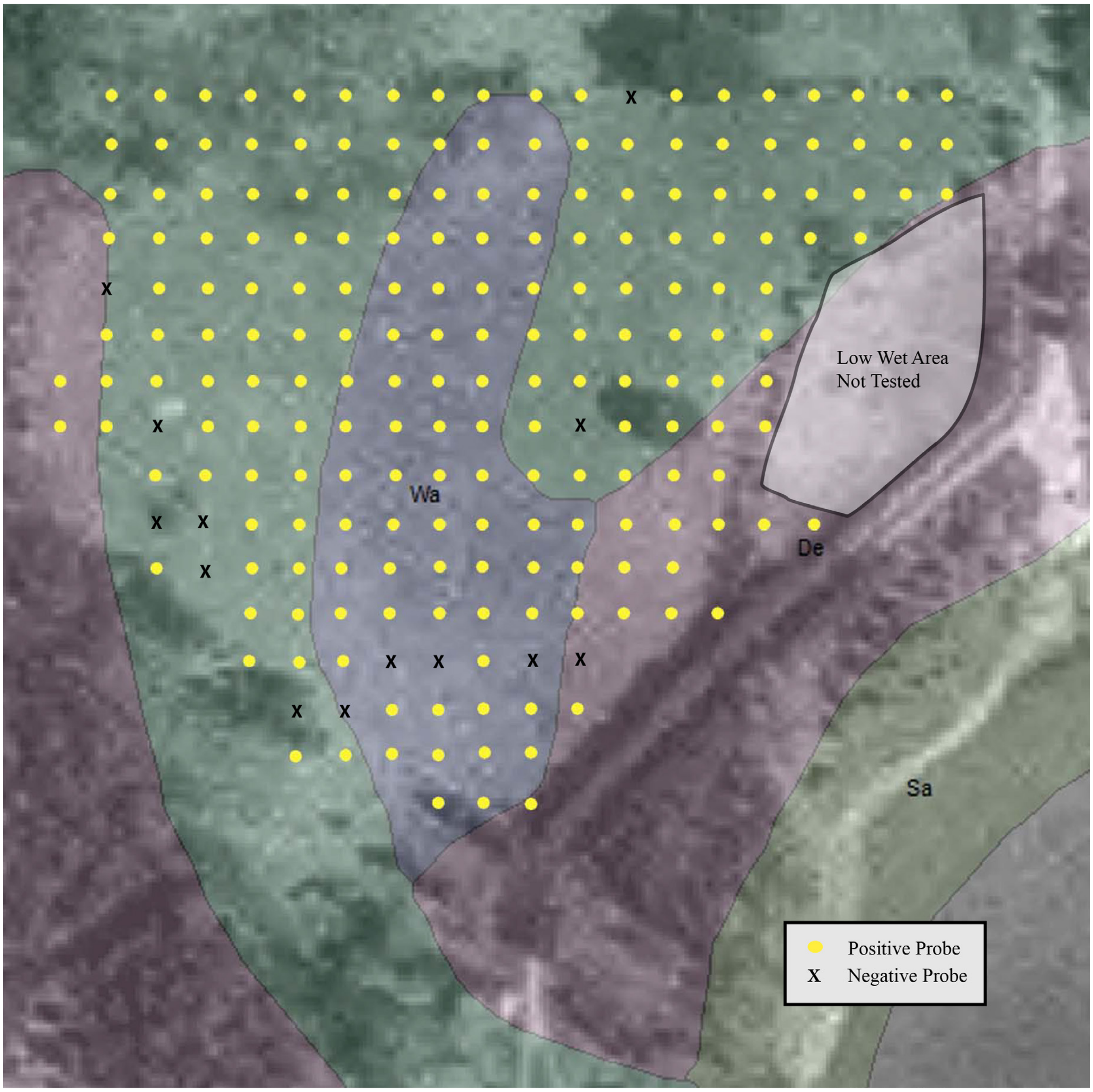


Figure 5.7. Map of positive shovel probes from 2010 shovel test survey of the Richter site.

Survey of the Richter site produced 1,584 artifacts. The category with the highest frequency was debitage with 937 pieces. Grit tempered pottery, especially body sherds, was also found at a high frequency with a total for body sherds and rim sherds of 532 items. No shell tempered pottery was recovered. Smaller amounts of lithic tools, FCR, faunal remains, and historic artifacts were recovered as well.

Table 5.2. Summary of Artifacts Recovered During 2010 Shovel Test Survey

Type	*f*
Debitage	937
Lithic Tools	10
Grit Tempered Pottery	
Rim Sherd	8
Body Sherd	524
FCR	56
Faunal Remains	31
Modern	18
TOTAL	1584

Stratigraphy and Soil

Glaciers not only shaped bedrock and affected lake levels but also scoured the surface of the Door Peninsula and what is now Washington Island. A result of this scouring is that the soil depth in two-fifths of Door County is less than 38 cm (Stieglitz 1989:84). Glacial deposits on Washington Island are limited to Bluff Till (Liberty Grove Till) on the interior of the island with much of the remaining soil identified as lacustrine deposits of sands (Schneider 1989:42-44). This is reflected in the soils found at the site (Table 5.2). All soils are sandy in nature except for those found along the lake shore, these are Saprists, and along the southwestern wetland area, these are Rondeau Muck. Soil depth to bedrock is as much as 80 in (203.2 cm) for Deford loamy fine sand, Rousseau fine sand and Wainola loamy fine sand. This is supported by the fact that bedrock was not found at the base of any excavation units at the Richter site, though Peters notes that 1-m-X-1-m test units along the adjacent road encountered "old pebbly beach" (Peters n.d.-d). The Richter site occupies an area of higher elevation containing Wainola loamy fine sand and Rousseau fine sand. Deford loamy fine sand borders the site (Figure 5.8). Rondeau Muck and

Saprists are found in lower wet areas, along the shore of Detroit Harbor to the east, Richter Bayou and Detroit Harbor State Natural Area to the southwest (Soil Survey Staff)

Figure 5.8. Location of Richter Site (47DR80) on Web Soil Survey map (accessed October 6, 2015). Site limits are based on UWM's 2010 shovel test survey.

Both the Deford and Rousseau series soils are not considered to be optimal for agricultural use. Both are primarily fine sand with a thin surface layer. The Wainola series soils are also sandy in nature but differ in having a slightly thicker surface layer about 13 cm (5 in) in depth. It is noted that most areas of this soil series are "pasture, woodland and wildlife habitat".

In fact, the site area is currently pasture, though evidence of plowing indicates an attempt to cultivate the area in the past (Link 1978:5,15-16,35, 42).

Table 5.3. Richter Site Soils (47DR80)

	Soil Type	Slope	Drainage Class	Land Form
De	Deford loamy fine sand	0 to 2 percent	Poorly drained	Depressions on lake plains, depressions on outwash plains
Rn	Rondeau Muck	0 to 2 percent	Very poorly drained	Depressions on ground moraines
RoB	Rousseau fine sand	2 to 6 percent	Well drained	Lake plains, outwash plains
Sa	Saprists	0 to 1 percent	Very poorly drained	Depressions
Wa	Wainola loamy fine sand	0 to 2 percent	Somewhat poorly drained	Outwash plains, lake plains

Features

During excavations at the Richter site 84 features were identified. Table 5.4 provides a simplified and consolidated listing of feature types identified at the Richter site. The consolidated nomenclature is used in the present study.

Table 5.4. List of Original Feature Associations and Consolidated Associations

Feature Class Designations-New	Excavator Feature Class Designations	*f*	%
Structures	House Fill	16	22.9
Pits	Pit, Undefined Function, Garbage Pit, Trash Pit, Storage Pit/Clay Lined Pit	28	40.0
Hearths	Fire Pit	17	24.3
Middens	Midden, Sheet Midden	5	7.1
Human Burials	Burial, Burial Fill	3	4.3
Dog Burial	Dog Burial	1	1.4
	Total	70	100

There is no single document that records feature contents, size, depth, and description. Feature data comes from a number of existing documents and recent artifact inventories. The depth and size of each feature is taken from recorded feature lot data documented in the original site document Richter Site Lots and Locations. Features without artifacts were not assigned lot numbers and are not included in this document. In these cases, planviews provided approximate size and depth. Some planviews also include notes that supplement documented lot data. All feature soil descriptions come from planviews and use the excavators' terminology. There is no standardization of descriptions for soils or soil colors used during site excavation.

Structures

Perhaps the most significant class of archaeological features documented at the Richter site is a set of 12 relatively small basins that have been interpreted as structures. All are roughly parabolic in plan and typically have an opening in one of the short ends of the parabola. Orientation appears random and if the openings reflect former entryways, these appear to open in random directions as well. Structures are associated with a variety of features including hearths, pits, and burials. Curiously, only Structure 8 has a hearth located within the basin itself, all others are located adjacent to, but outside, the structure basins. The structures are remarkably similar in size and enclose approximately 8-10 m^2 of floor space. Those structures that were excavated consist of deep basins filled with dark, organically stained deposits in-filled with lighter sand. Structure distribution appears to be clustered within the areas excavated but actual distribution over the entire site is unknown. The 1968 and 1973 excavations exposed approximately 391 m^2 suggesting a structure density of approximately one structure per 33 m^2 (this estimate may be higher if several features possibly representing additional structures are included). Although the actual extent of the Richter site is unknown, the site area contained within the maximum limits of excavation is approximately 1900 m^2; thus, the excavated area is about 20.5% of the area investigated. If structure density within the unexcavated portions of the site is similar to that in the excavated areas, this 1900 m^2 locale may harbor an additional 57 structures. While some structures, notably 1, 2, 4, 5, 7, and 8 are not superimposed by later constructions, other structures including 3, 6, 9, 11, and 12 appear to represent multiple, sequent rebuilding episodes. Consequently, it is difficult to use structure data to infer population size.

In the following descriptions, discussion of each structure is preceded by the structure number, an alpha-numeric designation keyed to the original site map (e.g. H01, etc.), the site coordinate location of the structure, and original feature designations if present.

Structure 1, H01 (F27 and F40) (N18/W30, N20/W28, N20/W30)

Structure 1 is located in Area A in the northwestern portion of the site. The structure was initially identified as two separate dark, colored arc-shaped soil stains identified as F27 and F40 (Figure 5.9). Excavation exposed the two features as part of a larger feature that resembles a parabola with the long axis oriented northwest to southeast and an opening in the southeast end. Dark areas represent house fill enclosing light colored sand deposits that in-filled the center of the structure (Figure 5.10). Profile photos and maps are missing from the site documents, but based on comparisons to similar features at the site, Structure 1 represents an in-filled basin. Measuring from the opening in the southeastern portion of the structure, dimensions are approximately 230 cm x 200 cm representing about 4.6 m^2 of floor space. The Structure 1 complex includes four hearths (F32, F46, F47, and F77), a storage or refuse pit (F57), ten postmolds, and an additional 31 possible postmolds. With the exception of the postmolds all features are located outside the structure basin. Excavation of F27 produced smooth and smoothed-over-cordmarked pottery, a single cord-wrapped stick (CWS) smooth sherd, though none constituted an identifiable vessel, as well as lithic debitage. A single copper fishhook was recovered also. Faunal materials were sparse and include a single snail shell and two unidentified pieces of bone. The F40 inventory consists of similar pottery as that found in F27. Lithic materials are limited to debitage. No faunal remains were found in this feature. Floral materials were recovered from both features but were unidentifiable. There are no radiocarbon dates associated with this structure. Based on similarity to more fully documented features at the site, Structure 1 is interpreted as a semi-subterranean, domestic structure. Associated postmolds provide only speculative evidence of the superstructure but may represent the bark or reed mat covered wigwam structure common throughout the Great Lakes region (Birnbaum 2009).

Figure 5.9. Photograph of Structure 1 facing northwest.

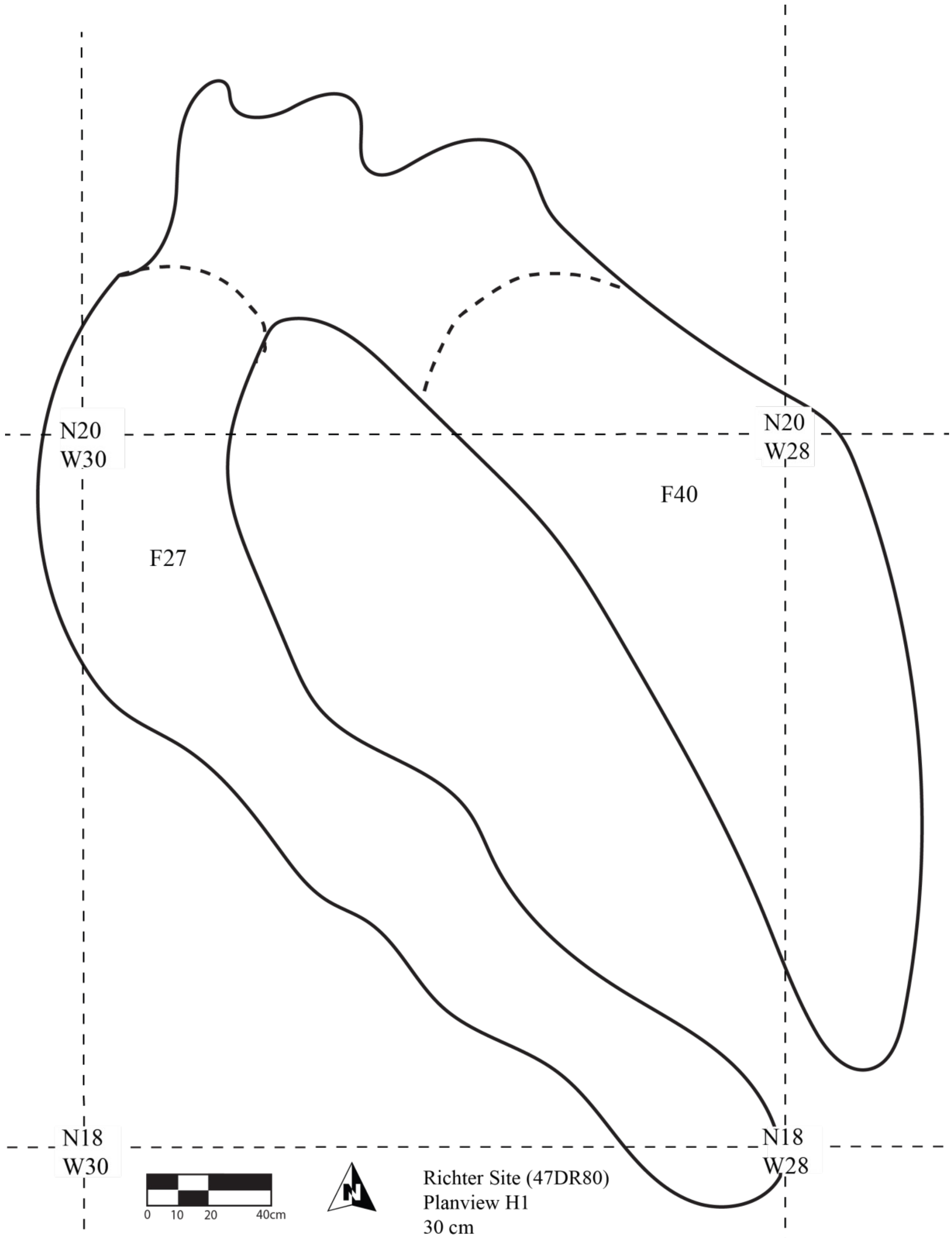


Figure 5.10. Planview of Structure 1 adapted from site map indicating location of F27 and F40 at 30 cm.

Structure 2, H02 (F48) (NS0/EW0, NS0/W02, S02/EW0, S02/W02)

Structure 2 is located in Area B in the southeastern portion of the site. This structure is identified as F48 in the site documentation. Documentation is limited to excavator plan maps and photographs, as profile drawings, and field notes are missing. A photo of Structure 2 taken at approximately 30 cm below surface shows a roughly oval shaped, dark soil stain with the long axis oriented northeast-southwest enclosing a lighter sandy center with an opening oriented to the southwest (Figure F.11). Structure 2 measures 180 cm x 180 cm and contains approximately 3.24 m^2 of floor area (Figure 5.13). Structure 2 is associated with two heaths (F58, F59), a human burial (B5), a pottery concentration (F55), four postmolds, and 14 possible postmolds. With the exception of the postmolds and burial all features are located outside the structure basin. Burial 5 appears to be intrusive into the southern wall of the structure (Figure 5.13). Inspection of Figure 5.12 suggests that Structure 2 deposits consist of an in-filled basin and represent a complex stratigraphic sequence. A thin layer of light sand can be seen above a dark organic base layer. This sand likely represents the filling of the original basin with windblown sand following initial abandonment. There appears to be a subsequent thick deposition of organic material in the eastern portion of the basin. The western portion of the basin contains a smaller basin-shaped area filled with light sand. It is possible that this light sand is the result of settling of organic materials or a later disturbance following the original deposition. Based on the Figure 5.12 photo alone it is difficult to determine the correct sequence of deposition. Planviews are little help in this instance as the feature was not excavated in zones. Structure 2 produced a rich material culture inventory. A great deal of pottery was recovered from this structure including smoothed, smoothed-over-cordmarked, cordmarked, and decorated sherds. Two vessels were recovered from this feature, V1 and V65. Vessel 1 is a large, thick cordmarked vessel with unidentified stamping on the lip. The second vessel, V65, has a smooth surface with pseudo-scallop stamping on the interior rim. The lithic assemblage is restricted to debitage. Faunal remains include frog, green sunfish, unidentified fish, and unidentified bone. Floral remains include a single carbonized acorn shell which is most likely modern in origin. Structure 2 is associated with several radiocarbon dates including: WIS-725 (2470 ± 65 B.P.; 2-sigma cal 774 - 411 B.C.) (Bender, Bryson, and Baerreis 1976) run on charcoal associated with a North Bay Linear Stamped pot; ISGS-A1221 (1985±20 B.P.; 2-sigmsa cal 40 B.C.-A. D. 63 A.D.) (Richards and Jeske 2015; Wellner 2006) run on human bone, and BETA 433764 (1900 ± 30 B.P.; 2 sigma cal A.D. 28-214) run on birch charcoal (on file UWM-ARL). The lengthy date range, spanning late Early Woodland through Middle Woodland times is reflected in the stratigraphic complexity of the Structure 2 deposit. Structure 2 is interpreted as a semi-subterranean, domestic structure built in the wigwam style and likely covered with bark or woven reed matting.

Figure 5.11. Photograph of Structure 2, F48 Level IIIA facing west.

Figure 5.12. Photo of Structure 2 profile facing north.

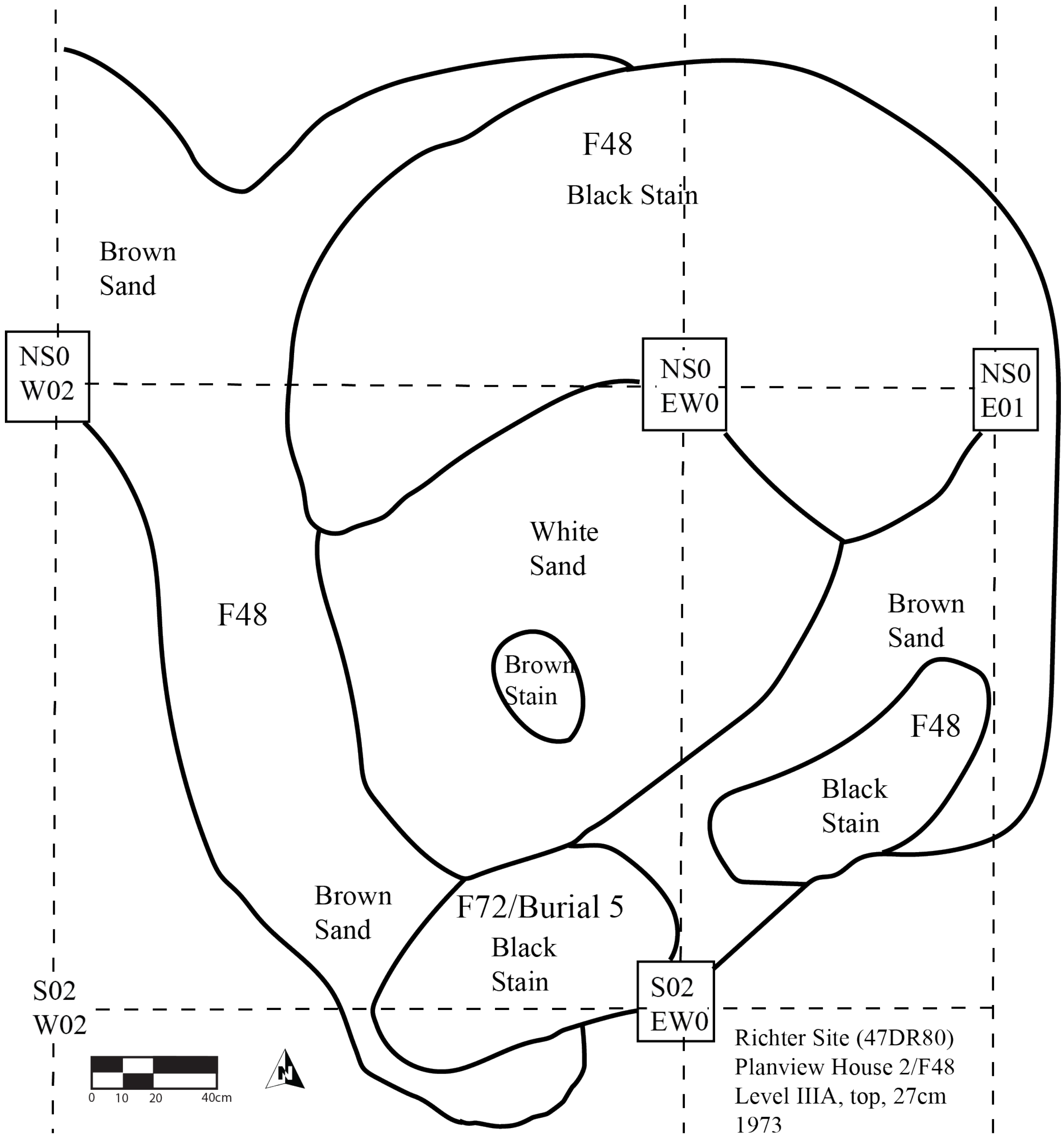


Figure 5.13. Planview of Structure 2, F48 at Level IIIA, 27 cm.

Structure 3, H3 (F29) (N28/W07, N28/W10, N30/W07)

Structure 3 is located in Area E in the northern portion of the site. The structure was identified as two separate stains. One is identified as F29, the other is unidentified. Feature 29 is a dark arc-shaped soil stain. A much smaller dark arc-shaped stain is located to the southeast of F29 and was not assigned a feature number (Figure 5.14). These features form part of a larger feature that resembles a parabola with the long axis orientated northeast to southwest. It is not possible to determine where the opening was located because the structure was not completely excavated. Dark areas represent house fill enclosing light colored sand deposits that in-filled the center of the structure (Figure 5.15). Planview and profile photos are missing from the site documents but a profile of the southern portion of the structure indicates two basin shaped dark stains. Based on comparisons to similar features at the site, Structure 3 represents an in-filled basin. Measuring from the northeastern apex of the parabola, dimensions are approximately 90 x 80 cm and 16 cm in depth suggesting a relatively small floor area of .72 m^2 (Figure 5.15). The Structure 3 complex includes two hearths (F36 and F37), a pit of undefined function (F38), six postmolds, four possible postmolds, and Structure 6 (H6/F42). With the exception of postmolds all features are located outside the structure basin. Excavation of F29 produced smoothed-over-cordmarked pottery, a single decorated sherd (smooth with incised decoration), pottery fragments, and lithic debitage. No faunal materials were found in this feature. There are no radiocarbon dates associated with this structure. Based on similarity to more fully documented features at the site, Structure 3 is interpreted as a semi-subterranean, domestic structure. Associated postmolds provide only speculative evidence of the super structure but may represent the bark-covered wigwam structure common throughout the Great Lakes region (Birnbaum 2009; Nabokov and Easton 1989).

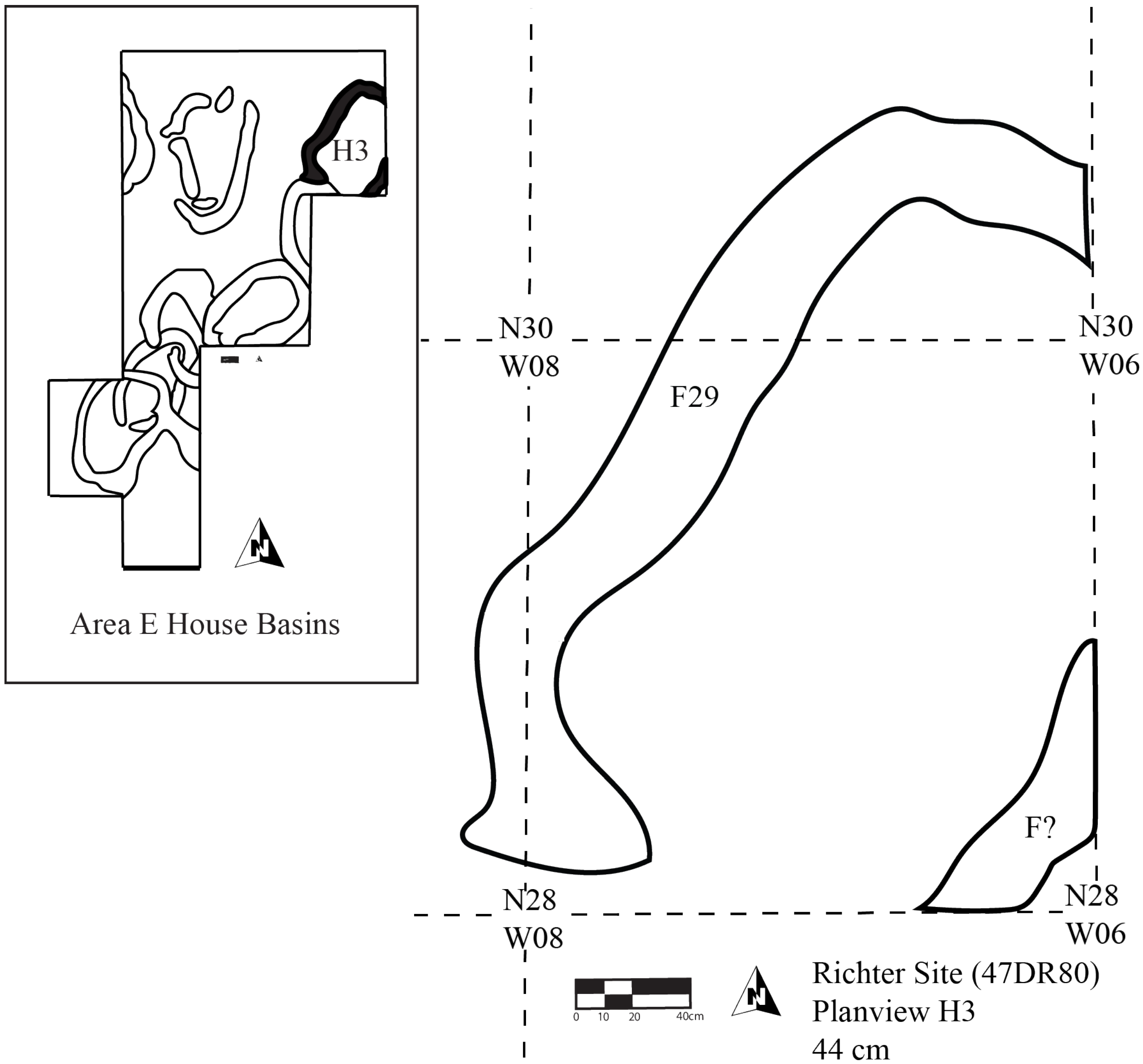


Figure 5.14. Planview of Structure 3, H3 at 44 cm.

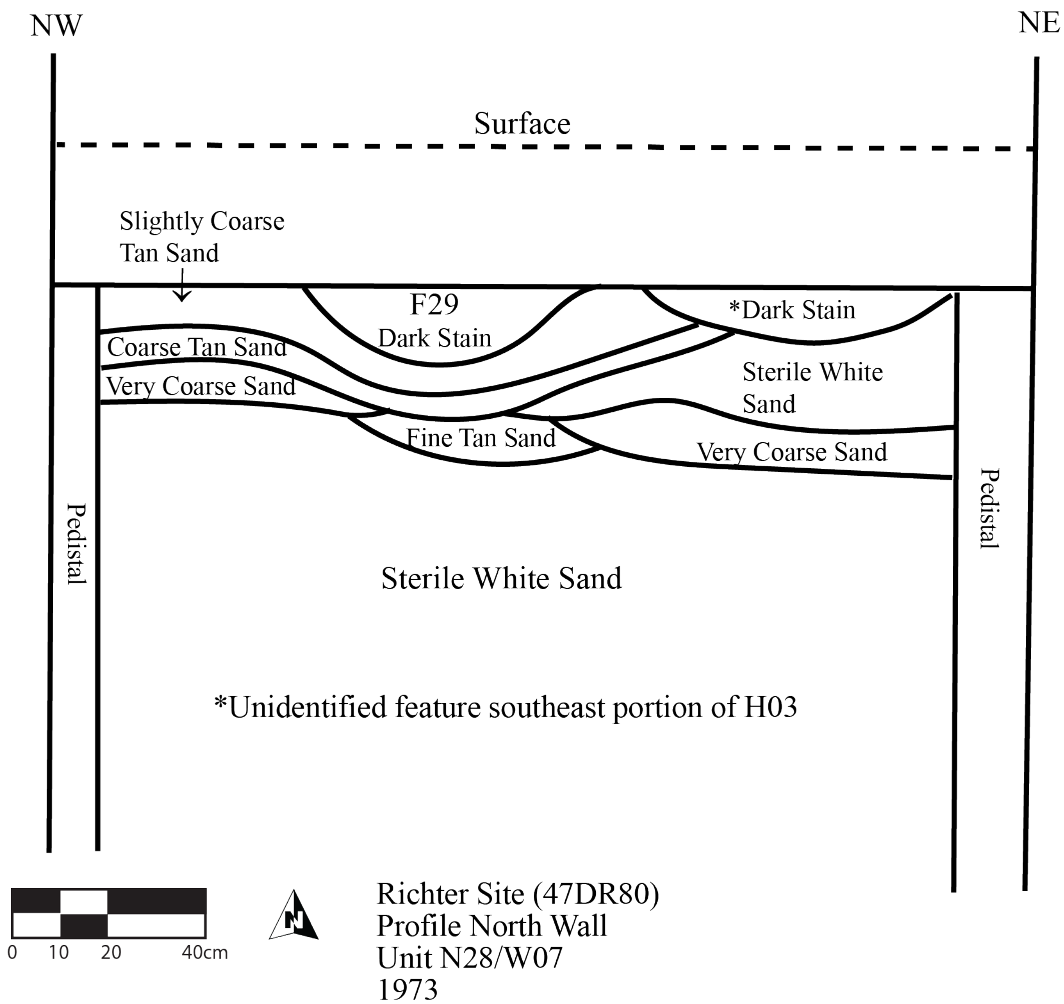


Figure 5.15. Profile of North Wall of Unit N28/W07 showing the profile of the south end of Structure 3, F29/H3 and unidentified southeast portion of Structure 3.

Structure 4, H4 (F34) (N28/W12, N28/W12, N30/W10, N30/W12)

Structure 4 is located in Area E in the northern portion of the site. The structure was identified as five separate dark brown stains of varying lengths. The largest, is identified as F34 and is linear with a curved southern portion giving it a hook-like appearance. Feature 34 and the unidentified areas resemble a parabola with the long axis oriented northeast to southwest. The opening may be at the northeast end but it is unclear. Dark areas represent house fill enclosing light colored sand deposits that in-filled the structure (Figure 5.16). Planview photos, profile photos, and feature profiles are missing from the site documents but based on comparisons to similar features at the site and Area E, Structure 4 represents an in-filled basin. Measuring from the opening in the southeastern portion of the structure, dimensions are approximately 405 x 260 cm representing about 10.53 m^2 of floor space. The Structure 4 complex includes three exterior hearths (F36, F37, and F80), a single undefined pit (F38), three structures (H3, H5, and H6), and five possible postmolds. Two possible postmolds are located within the dark feature fill of Structure 4. The remaining features are located outside of the structure basin. Excavation of F34 produced cordmarked, smoothed-over-cordmarked, smoothed, decorated sherds, pottery fragments as well as lithic debitage. This feature contained V10 and V25. Both have smooth exterior surfaces with CWS stamped decoration and CWS decoration stamped on interior rim, only F10 has CWS stamping on the lip. Faunal remains were sparse and included rodent, snail, unidentified fish, and unidentified mammal. There are no radiocarbon dates associated with this structure. Based on similarity to more fully documented features at the site, Structure 4 is interpreted as a semi-subterranean, domestic structure. Associated postmolds provide only speculative evidence of the superstructure but may represent the bark-covered wigwam structure common throughout the Great Lakes region (Birnbaum 2009; Nabokov and Eastman 1989).

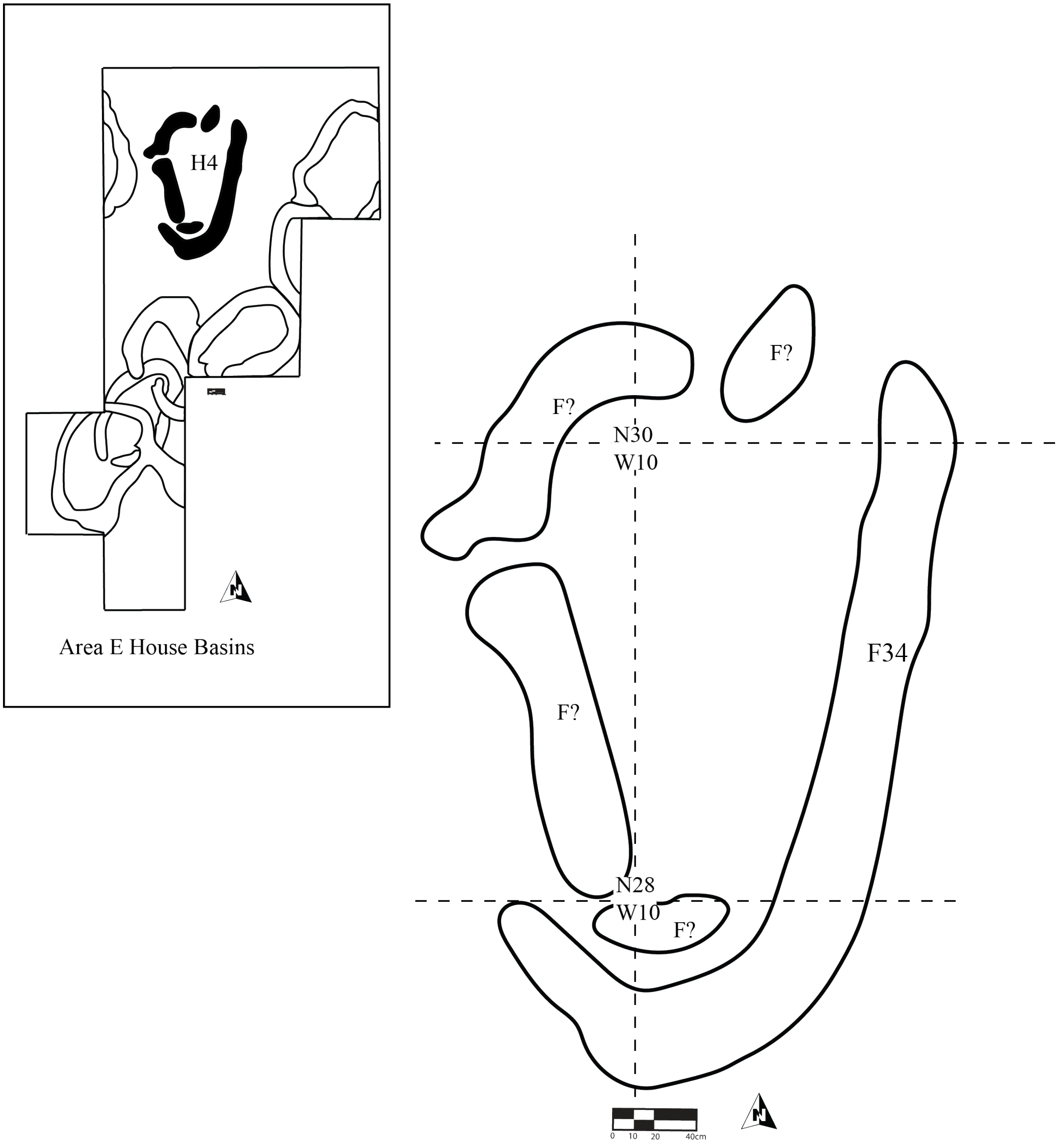


Figure 5.16. Planview of Structue 4, H4, Level III, approximately 36 cm.

Structure 5, H5 (N28/W12 and N30/W12)

Structure 5 is located in Area E in the northern portion of the site. The structure was identified as a single dark colored, arc-shaped soil stain. A feature number was not assigned. Not enough of this structure was exposed to determine orientation or location of opening. The dark areas represent house fill enclosing light colored sand deposits that in-filled the center of the structure (Figure 5.17). Planview photos, profile photos, and profile maps are missing from the site documents but based on comparisons of this feature to similar features at the site, Structure 5 represents a portion of an in-filled basin. Measuring from the northernmost exposed portion to the southernmost exposed portion of the structure, dimensions are approximately 160 cm x 40 cm. Not enough of the structure was excavated to accurately calculate the floor space. The Structure 5 complex includes a single hearth (F80), a single structure (H4), and five possible postmolds. With the exception of two of the possible postmolds all features are located outside the structure basin. There are no artifacts associated with Structure 5. There are no radiocarbon dates associated with this structure. Based on similarity to more fully documented features at the site, Structure 5 is interpreted as a portion of semi-subterranean, domestic structure. Associated postmolds provide only speculative evidence of the super structure but may represent the bark-covered wigwam structure common throughout the Great Lakes region (Birnbaum 2009; Nabokov and Eastman 1989).

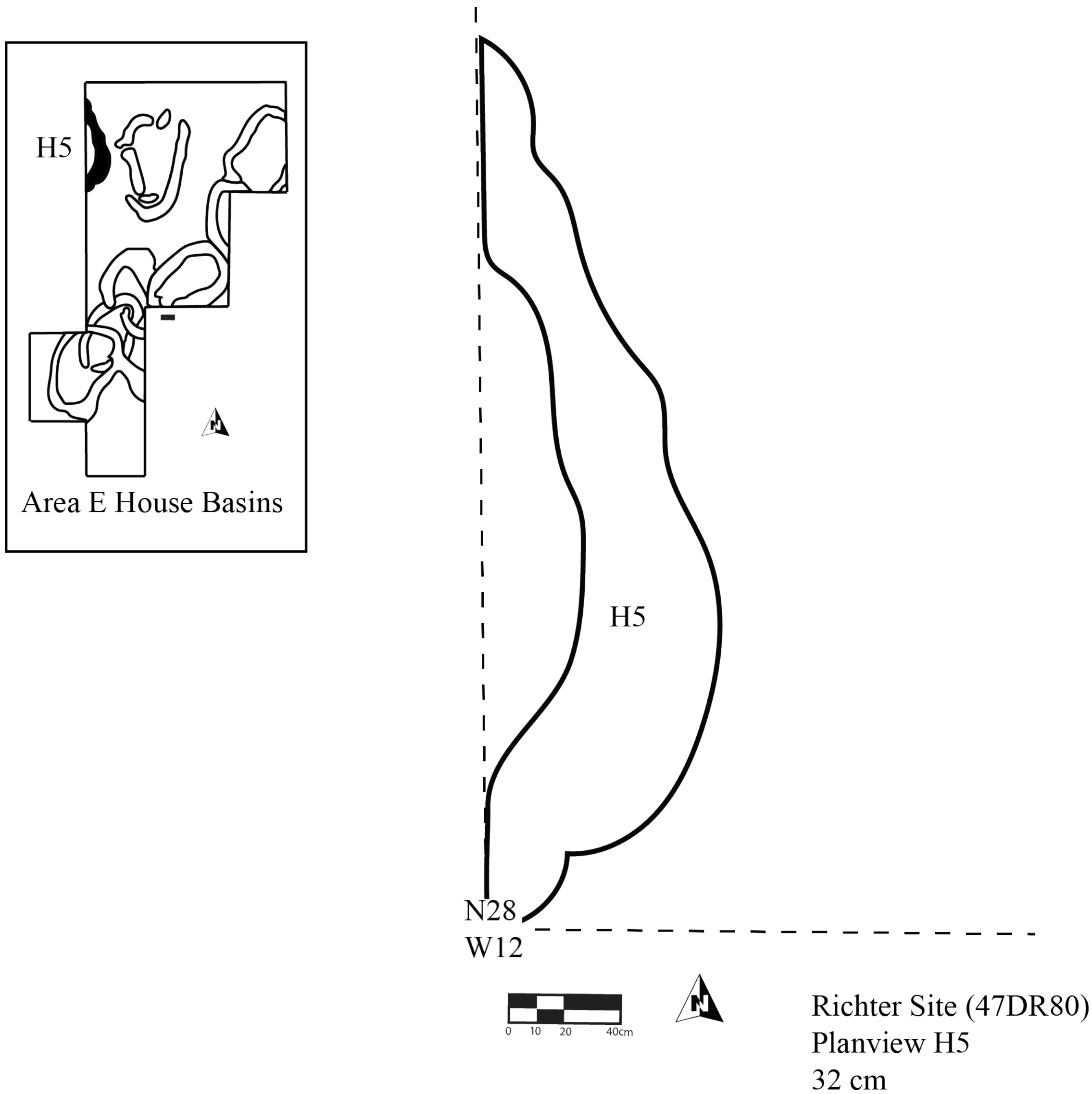


Figure 5.17. Planview of Structure 5, H5, Level II, 32 cm. A feature number was not assigned.

Structure 6, H6 (F42) (N26/W10 and N24/W10)

Structure 6 is located in Area E in the northern portion of the site. The structure was initially identified as a single black or dark, greasy, arc-shaped soil stain recorded as F42 (Figure 5.18). This large feature resembles half of a parabola with the long axis oriented north to south. The location of an opening cannot be determined. Dark areas represent house fill enclosing light colored sand deposits that in-filled the center of the structure. Planview photos, profile photos, and profile maps are missing from the site documents but based on comparisons to similar features at the site, Structure 6 represents an in-filled basin. Measuring from the north end to the south end of the structure, dimensions are approximately 200 cm x 85 cm. Not enough of the structure was excavated to accurately calculate the floor space. The structure complex includes two hearths (F36 and F37), four structures (H3, H4, H9, and H10), six postmolds, and 16 possible postmolds. With the exception of three postmolds, all features are located outside the structure basin. Excavation of F42 produced smoothed sherds, smoothed-over-cordmarked sherds, decorated smooth sherds, and pottery fragments. Smooth decorated sherds include punctate, pseudo-scallop, and unidentified stamp decoration. The lithic assemblage includes debitage, one bipolar core, and one core. Faunal remains include lake sturgeon, yellow perch, white-tailed deer, unidentified fish, unidentified mammal, and unidentified large mammal. Based on similarity to more fully documented features at the site, Structure 6 is interpreted as a semi-subterranean, domestic structure built in the wigwam style. It is not clear if associated interior postmolds are part of this structure or part of an additional unexposed structure. A sample of deer bone was submitted for dating from this structure by the UWM-ARL. The date returned (ISGA-A1222) is 1645 ± 20; 2-sigma cal date range A.D. 342 – 505 (Richards and Jeske 2015).

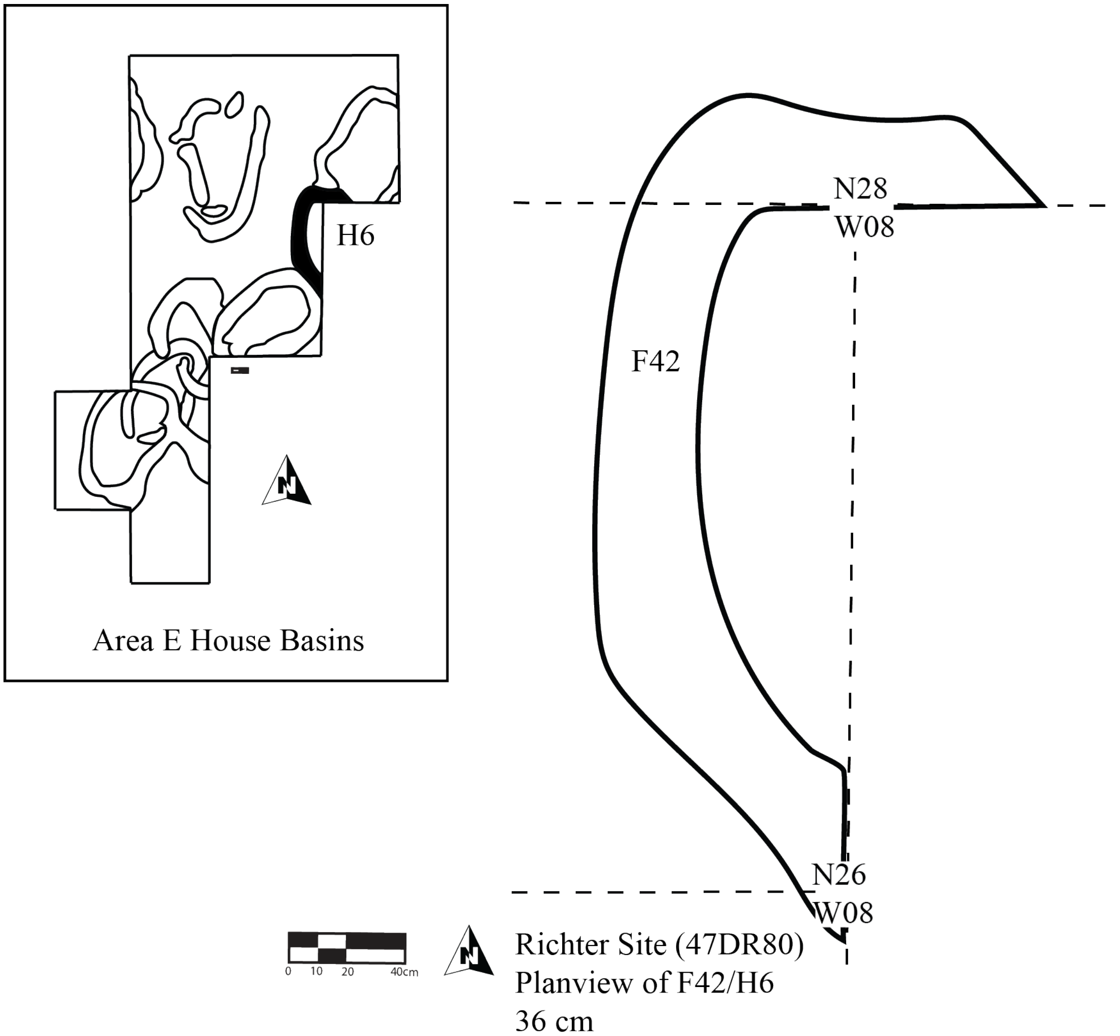


Figure 5.18. Planview of Structure 6, H6, Level III approximately 36 cm.

Structure 7, H7 (F69) (S06/E08, S06/E10, S04/E08, S04/E10, S02/E08, S02/E10)

Structure 7 is located in Area C in the southeastern portion of the site. The structure was initially identified as a large, deep, dark C-shaped soil stain and recorded as F69 (Figure 5.19). The long axis of this C-shaped feature is orientated west to east with an opening in the east. Dark areas represent house fill inclosing light colored sand deposits that in-filled the center of the structure (Figure 5.20). Planview photos, profile map, and excavation notes are missing and make interpretation difficult. This is complicated by planviews for this area that identify an additional structure. This confusion may be the result of complexity of the area and the possible presence of overlapping and intrusive features (Figure 5.16). Measuring from the opening in the east portion of the structure, dimensions are approximately 300 cm x 260 cm representing about 7.8 m^2 of floor space. The Structure 7 complex includes one hearth (F71), three middens (F61, F51, and F67), a single pit (F62), five postmolds, and an additional 21 possible postmolds. With the exception of two possible postmolds, all features are located outside the structure basin. Excavation of F69 produced smoothed sherds, smoothed-over-cordmarked sherds, rim fragments, and pottery fragments. Vessel 11 was identified from excavated sherds. This vessel has a cordmarked surface and a notched lip. Lithic assemblage was limited to debitage and a single bipolar core. Faunal remains include unidentified fish, unidentified mammal, and unidentified bone. A single fragment of bent or rolled copper was found. Based on similarity to documented features at the site, Structure 7 is interpreted as a semi-subterranean, domestic structure that may represent a bark-covered wigwam structure. A sample of deer bone from this structure was submitted for dating by the UWM-ARL. The sample (ISGS-A1220) returned a date of 1745 ± 25; 2-sigma cal date range A.D. 237 – 380 (Richards and Jeske 2015).

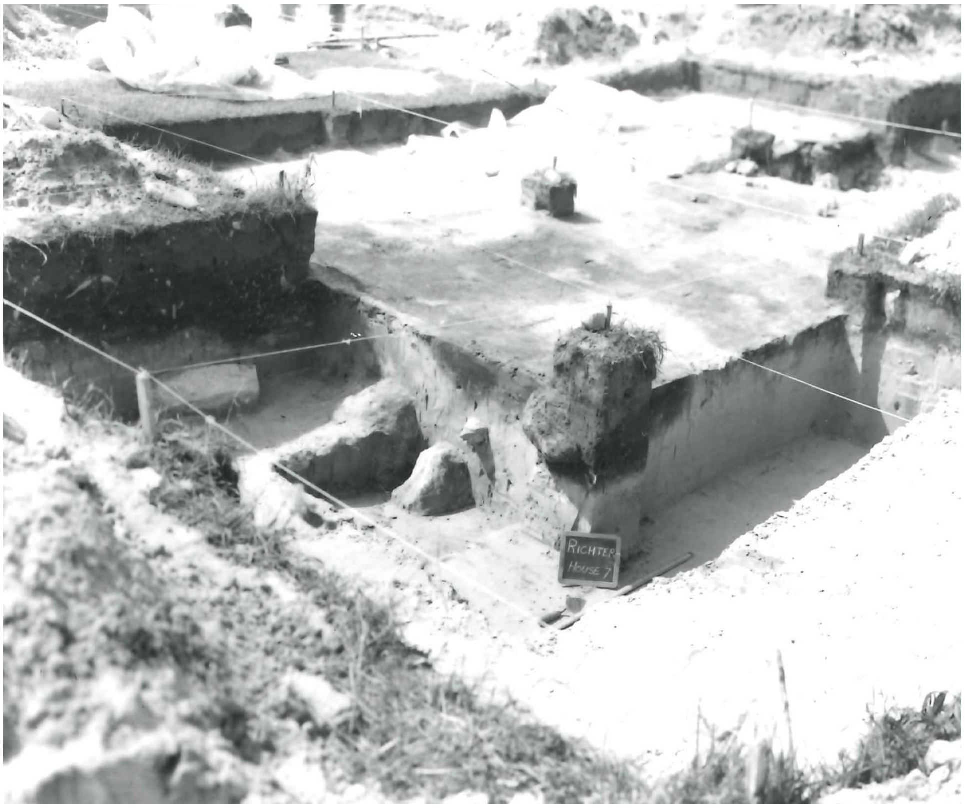


Figure 5.19. Photograph of Structure 7 facing northwest.

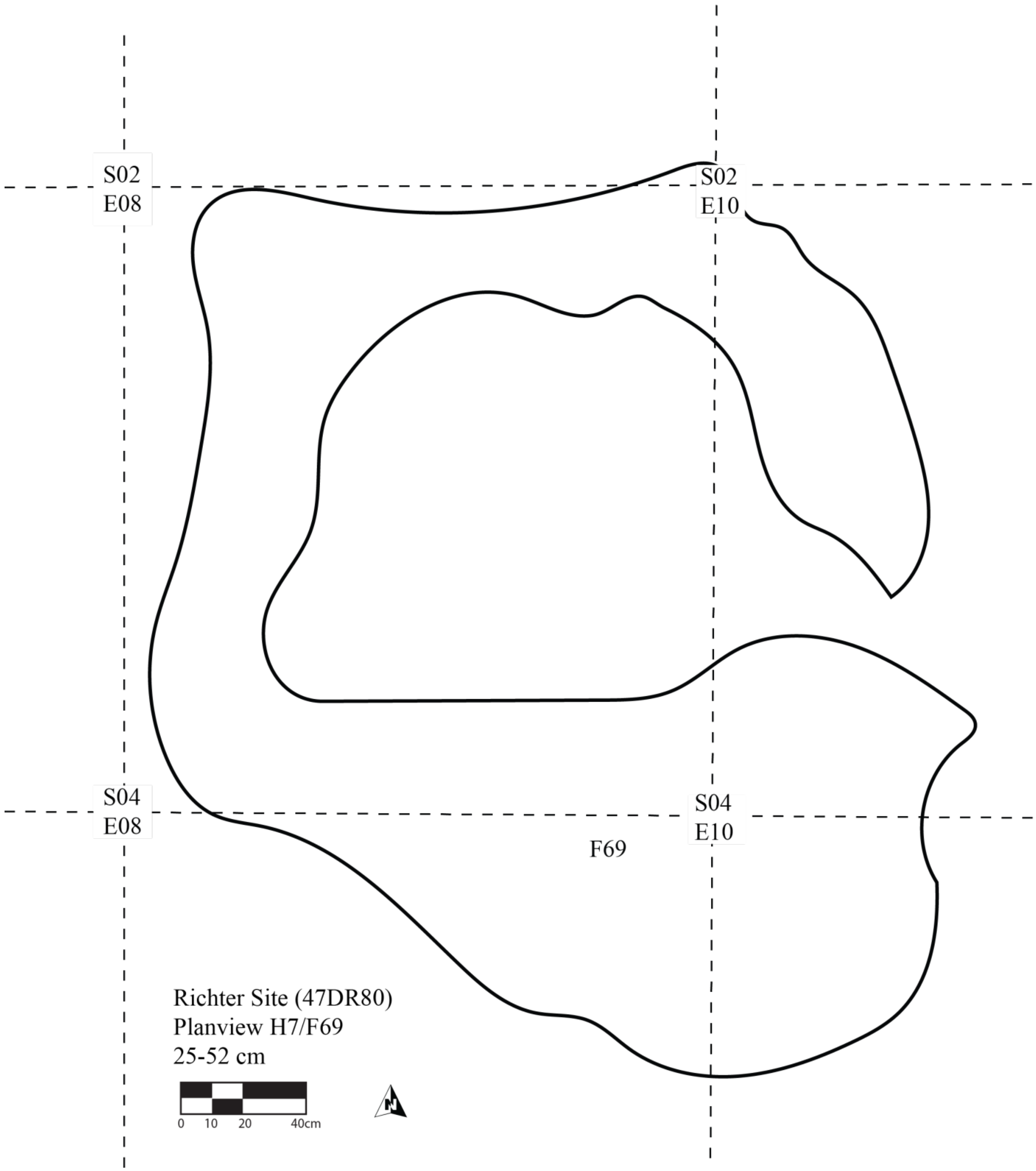


Figure 5.20. Planview of Structure 7, Level III and IV, at between 25-52 cm.

Structure 8, H8 (F49) (N06/E10, N06/E12, N08/E08, N08/E10, N08/E12, N10/E12)

This basin is located in Area D. Structure 8 was initially identified as a series of dark brown or black stains recorded as F49 (Figure 5.21). Excavation exposed a single large feature resembling a parabola with a long axis oriented west to east with an opening in the western end. The dark areas represent house fill enclosing light colored sand deposits that in-filled the center of the structure (Figure 5.21). Planview photos, profile maps, and photos are missing from the site documents but based on comparisons to similar site features, Structure 8 represents an in-filled basin. Measuring from the opening in the western portion of the structure, dimensions are approximately 440 cm x 275 cm representing about 12.1 m^2 of floor space. The structure 8 complex includes two hearths (Not Identified Feature and F44), two middens (F52 and F78), two pits (F43 and F45), four postmolds and an additional 17 possible postmolds. With the exception of the four postmolds, five of the possible postmolds and a hearth all features are located outside of the structure basin. The presence of an interior hearth makes Structure 8 unique at the Richter site. Excavation of F49 produced a rich assemblage of artifacts. Recovered pottery includes smoothed sherds, cordmarked sherds, smoothed-over-cordmarked sherds, decorated sherds, shell tempered sherds, rim fragments, and numerous pottery fragments. Decorated cordmarked sherds included a number from the body of the same vessel with at least three rows of oblique stamps. It is unclear what type of stamp was used. Smooth decorated sherds include CWS, drag-stamp plain tool, drag-stamp fingernail, dentate stamp, linear stamp, punctate, pseudo-scallop stamp, and unidentified decoration. At least six vessels (V15, V33, V34, V38, V40, and V72) are present in the Feature 49 assemblage. This is the largest number from any feature at the site. All of these vessels have a smooth exterior surface. Three vessels, V15, V38, and V72, have linear stamped decoration. Vessel 15 has incising on the lip. Vessel 38 has a CWS notched lip. Vessel

72 has a linear stamp notched lip. Vessels V34 and V40 have dentate stamped decoration only while V40 has dentate lip notching. The final vessel, V33, is decorated with CWS stamping on the exterior rim and CWS was used to notch the vessel lip. The lithic assemblage is the largest found at the site, and includes a large volume of debitage and a number of tools. Lithic tools include an expanding stem hafted biface, a crude biface, three biface fragments, an abrader, six bipolar cores, six unifacial utilized edge tools, a unifacial utilized bipolar edge tool, and six bipolar cores. A number of pieces of worked copper are also associated with this feature including one thick point shaped piece, a possible broken awl, and a piece of flat bent copper. Faunal materials reflect a wide range of species. Identified materials include: bass, beaver, black bear, bullhead or catfish, deer (elk or moose), white-tailed deer, eastern gray squirrel, frog or toad, raptor, pinfishes, perch or walleye, sunfish, and possibly owl. Unidentified faunal remains include a large number of fish, mammal, small mammal, medium mammal, large mammal, reptile, as well as bone that could not be classified. Two pieces of worked bone were also recovered. One is an antler tine with evidence of sharpening. The second is a piece of unidentified bone sharpened to form a point. The volume and types of materials suggest a longer period of occupation. The presence of an interior hearth also differs from all other basins found at the site. This hearth was not excavated as a separate feature. It was noted that there was evidence of burning of frog or toad and raptor talons. It is unclear if this is related to some type of ritual practice. Structure 8 is similar to other features at the site and is interpreted as a semi-subterranean, domestic structure with possible long term and cold season occupation.

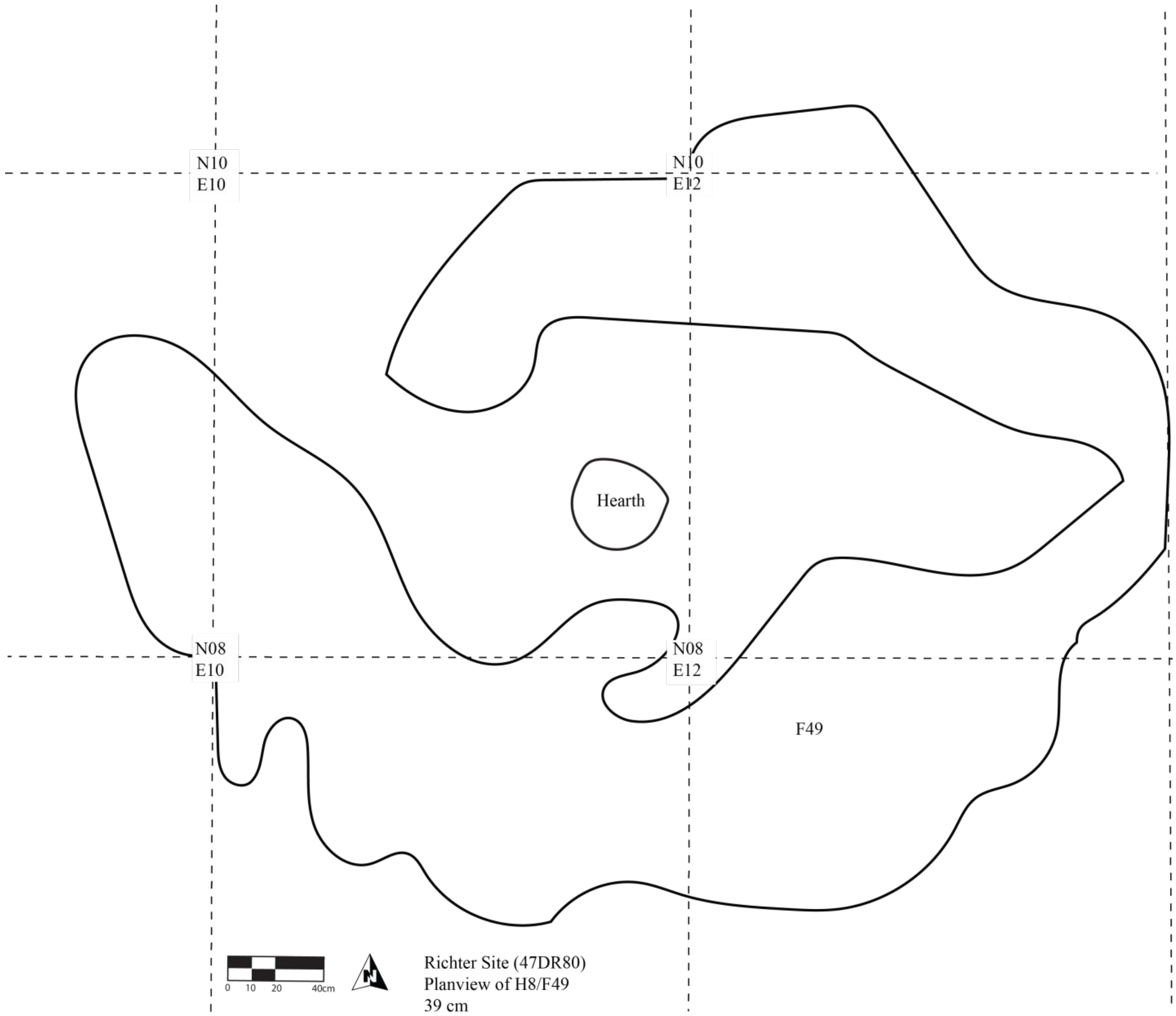


Figure 5.21. Planview of Structure 8, H8, Level III, approximately 39 cm.

Structure 9, H9 (N24/W10)

Structure 9 is located in Area E in the northern portion of the site. The structure was initially identified as dark stains and no feature numbers were assigned. Exposed stain patterns resemble an almost completely exposed parabola with the long axis oriented northeast to southwest with a possible opening at the southwest end. The dark areas represent house fill enclosing light colored sand deposits that in-filled the center of the structure (Figure 5.22). The only documentation of Structure 9 is from the original site map, but based on comparisons to similar features at the site, it represents an in-filled basin. Measuring from the opening in the southeastern portion of the structure, dimensions are approximately 280 cm x 200 cm representing about 5.6 m^2 of floor space. The Structure 9 complex includes five structures (H3, H4, H9, H10, and H11), four postmolds, and an additional eight possible postmolds. With the exception of two possible postmolds all features are located outside of the structure basin. There are no features associated with this structure. There are no radiocarbon dates associated with this structure. Based on similarity to more fully documented features at the site, Structure 9 is interpreted as a semi-subterranean, domestic structure similar to bark or mat covered wigwam structures common throughout the Great Lakes region (Birnbaum 2009).

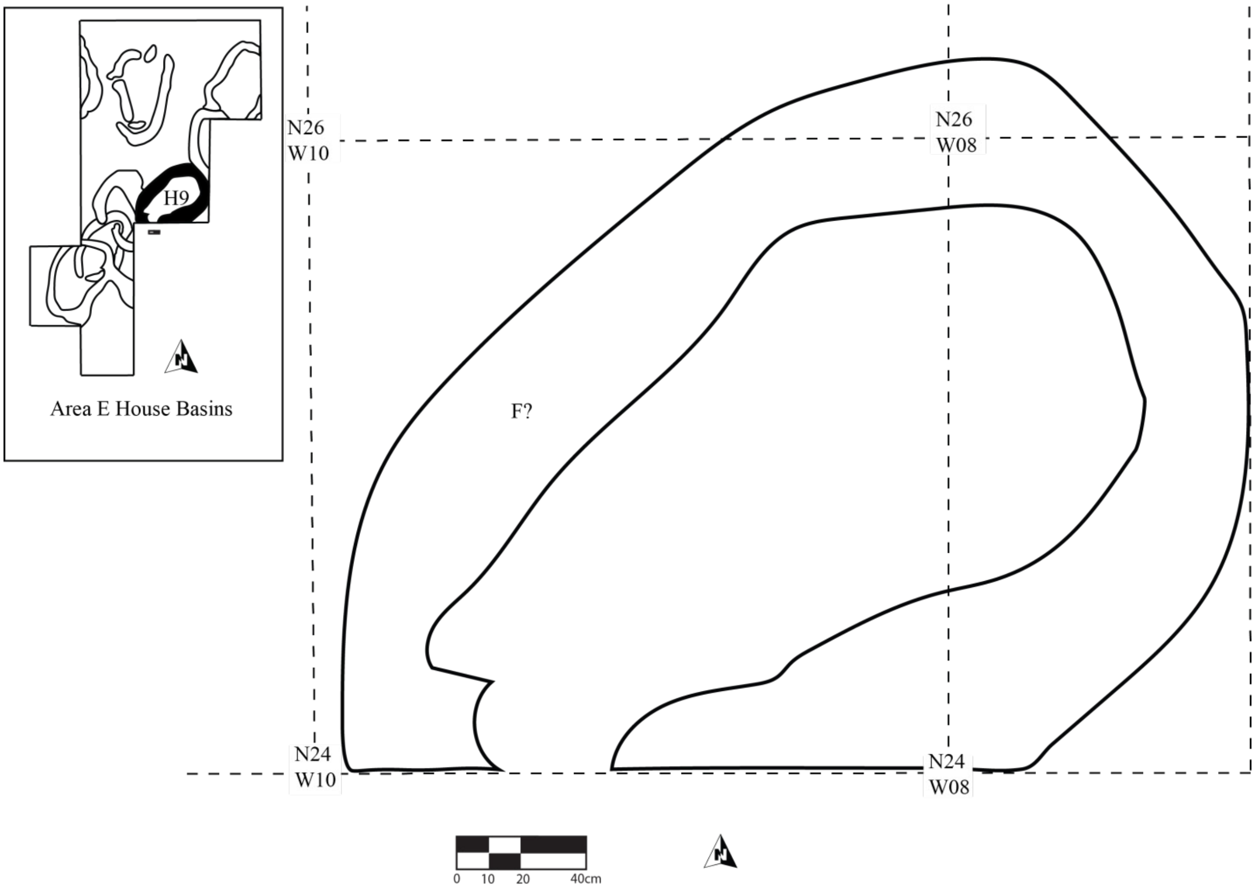


Figure 5.22. Planview of Structure 9, H9.

Structure 10, H10, (N22/W12, N24/W12), Structure 11, H11 (F68) (N24/W12, N22/W14, N22/W12, N20/W12), and Structure 12, H12 (F65) (N22/W14, N22/W12, N20/W14, N20/W12)

Structures 10, 11, and 12 are located in Area E in the northern portion of the site. These structures were identified as black or dark brown arc-like or parabola-like soil stains. Some of these were identified, others were not. Identified stains include F68 associated with Structure 11 and F65 associated with Structure 12, no features were identified associated with Structure 10 (Figure 5.23). Generally, dark areas represent house fill enclosing light colored sand deposits that in-filled the center of structures. Structures overlap each other and planviews do not present clear indications of features associated with separate house basins. Planview maps, planview photos, profile maps, and profile photos are missing from the site documents, but based on comparisons to similar features at the site, Structure 10, 11, and 12 likely represent in-filled basins. Measuring from the northwest to the southeast, Structure 10 dimensions are 220 cm x 200 cm representing about 4.4 m^2 of floor space. Measuring from the opening in the southwestern end, Structure 11 dimensions are approximately 230 cm x 175 cm representing about 4.025 m^2 of floor space. Measuring from the northeastern to the southwestern portion of Structure 12 dimensions are approximately 300 cm x 175 cm representing about 5.25 m^2 of floor space. Excavation of F65 associated with Structure 12 provided smooth sherds, smoothed-over-cordmarked sherds, and pottery fragments. The lithic assemblage includes debitage and a single bipolar core. A single piece of unidentified floral material was recovered. Faunal remains include unidentified fish, unidentified mammal, and unidentified bone. Excavation of F68 associated with Structure 11 consists of cordmarked sherds, a decorated pottery sherd, pottery fragments, and a single rim fragment. The lithic assemblage includes a larger volume of debitage and a bipolar core. A single worked, bent or rolled fragment of copper was found. Only a small amount of unidentified bone was found. There are no radiocarbon dates associated with these structures. Based on similarity to more fully documented features at the site, Structures 10, 11, and 12 are interpreted as semi-subterranean, domestic structures similar to wigwam structures. The overlapping of these structures may be indicative of repeated episodes of occupation and construction.

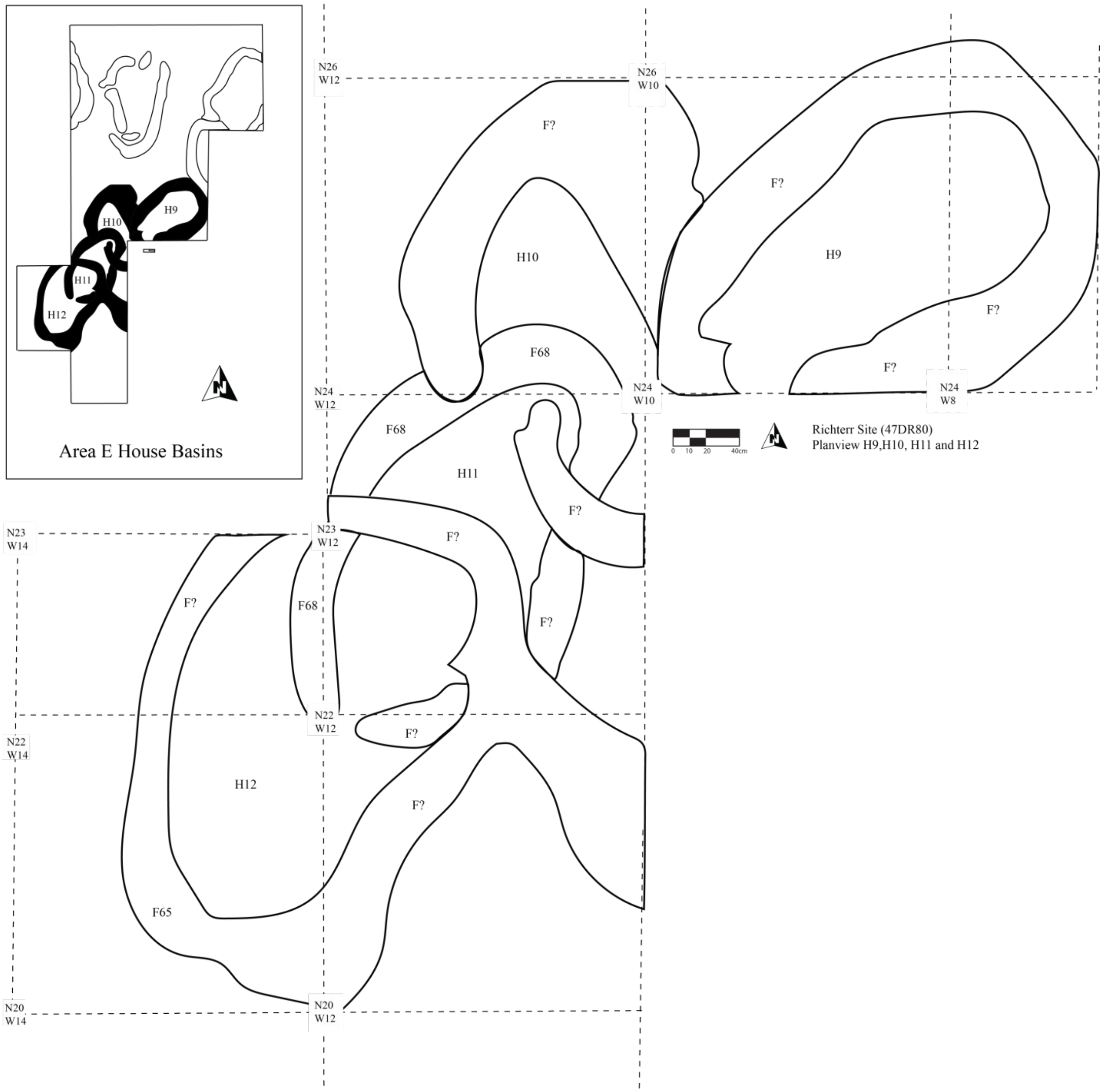


Figure 5.23. Planview of Structures 10, 11, and 12 (H10, H11 and H12). Depth is unknown.

Feature 26 (F26) (N18/W12)

Feature 26 is located in Area E in the northern portion of the site. The feature was identified as a large, dark, arc-shaped soil stain recorded as F26 (Figure 5.24). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 190 cm x 90 cm with a depth of 75 cm and a volume of about 1.28 m^3. Associated features include two hearths (F28 and F54), one structure (H12), and two possible postmolds. All features with the exception of the single possible postmold were located outside of this feature. Excavation of F26 produced a cordmarked sherd, a smoothed sherd, smoothed-over-cordmarked sherds, decorated sherds, and pottery fragments. The lithic assemblage is limited to a small amount of debitage. Based on similarity to more fully documented features at the site, F26 is interpreted as a portion of a semi-subterranean, domestic structure.

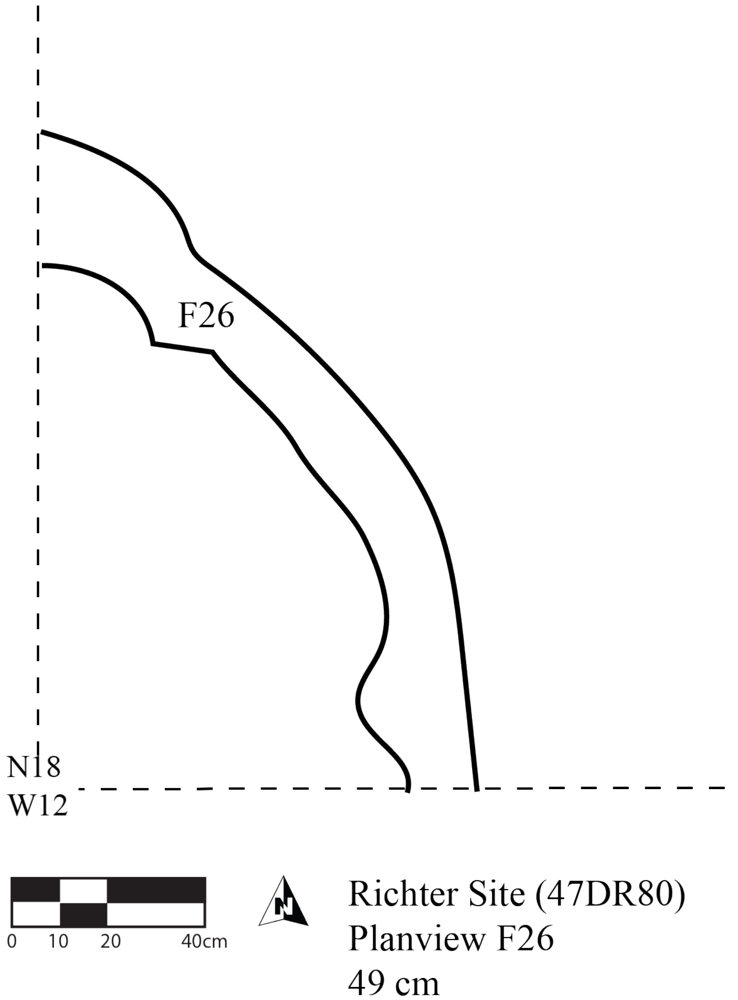


Figure 5.24. Planview of F26 Level IV, 49 cm.

Feature 33 (F33) (N16/W34 and N16/W32)

This feature is located in Area A in the western portion of the site. The feature was identified as a dark oval-shaped soil stain and recorded as F33 (Figure 5.25). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 50 cm x 80 cm x 10 cm in depth. Associated features include one partial structure (F41). Excavation of F58 produced a single smoothed-over-cordmarked sherd and some pottery fragments. The lithic assemblage was limited to a small amount of debitage. Based on similarity to more fully documented features at the site, F41 is interpreted as a portion of a semi-subterranean, domestic structure.

Feature 41 (F41) (N14/W34, N15/W34, N16/W34)

Feature 41 is located in Area A in the western portion of the site. The feature was identified as a large, dark, linear-shaped soil and charcoal stain recorded as F41 (Figure 5.25). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 320 cm x 60 cm x 34 cm deep. Associated features include one partial structure (F33). Excavation of F41 produced pottery fragments, a small amount of debitage, and a single unidentified bone. Several pieces of limestone were found at 31 cm below surface. Based on similarity to more fully documented features at the site, F41 is interpreted as a portion of a semi-subterranean, domestic structure.

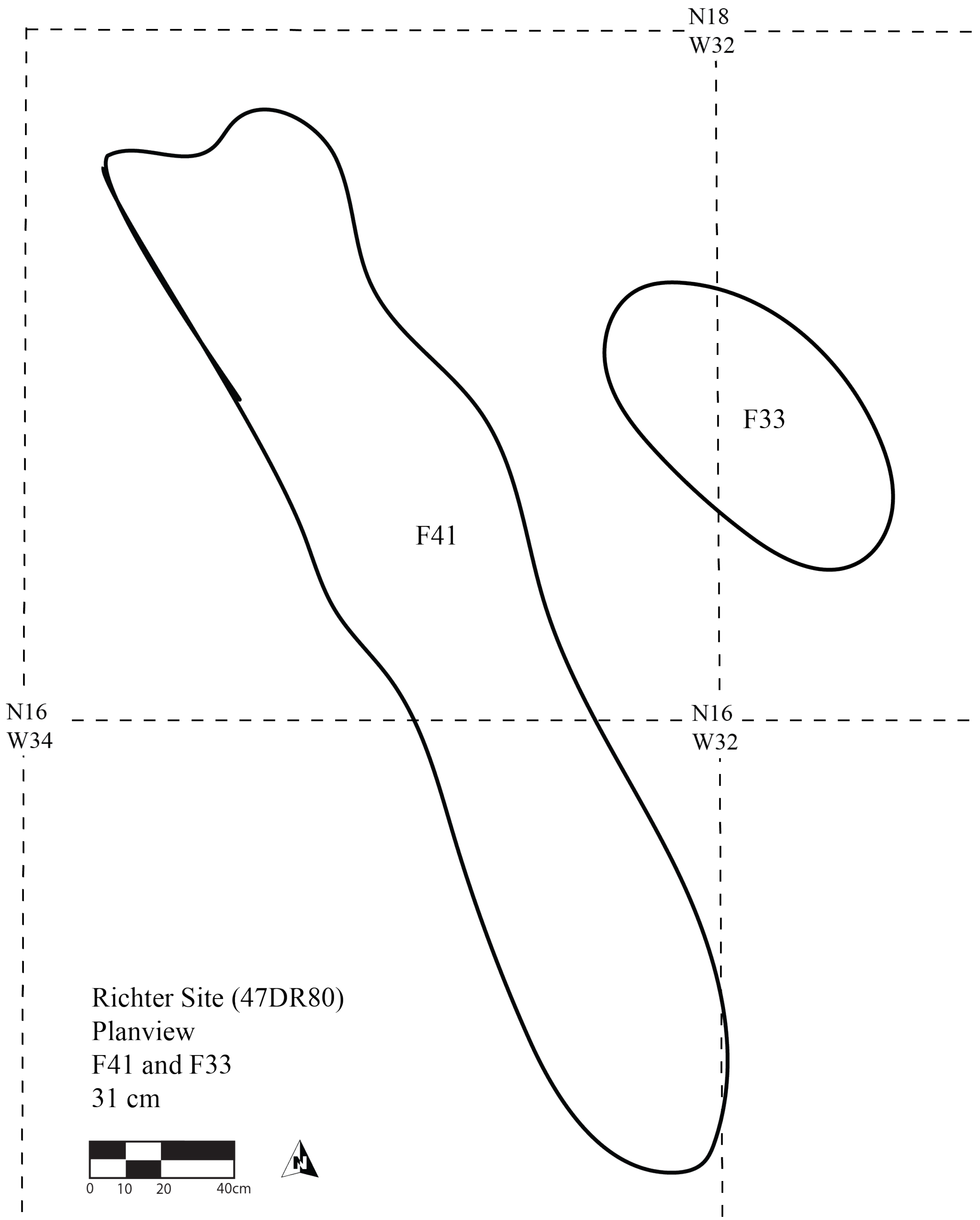


Figure 5.25. Planview of F41 and F33, Level III, approximately 31 cm.

Feature 61 (F61) (S06/E08, S04/E06, S04/E08)

Feature 61 is located in Area C in the southeastern portion of the site. The feature was identified as a large, dark, amorphous-shaped soil stain recorded as F61 (Figure 5.26). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 80 cm x 70 cm with a depth of 35 cm. Associated features include one hearth (F71), and a structure (H7), five postmolds, and five possible postmolds. Excavation of F61 produced a few smooth sherds, a cordmarked sherd, and some pottery fragments. Vessel 31 was recovered from this feature as well. This vessel is smooth surfaced with linear stamped decoration and a lip notched with a linear stamp. The lithic assemblage includes a small amount of debitage and a corner-notched hafted biface. Site documentation suggests that F61 may be a part of Structure 7 (H7) or part of a separate structure. Lack of documentation makes this determination impossible. Notwithstanding, this feature is interpreted as a partial structure.

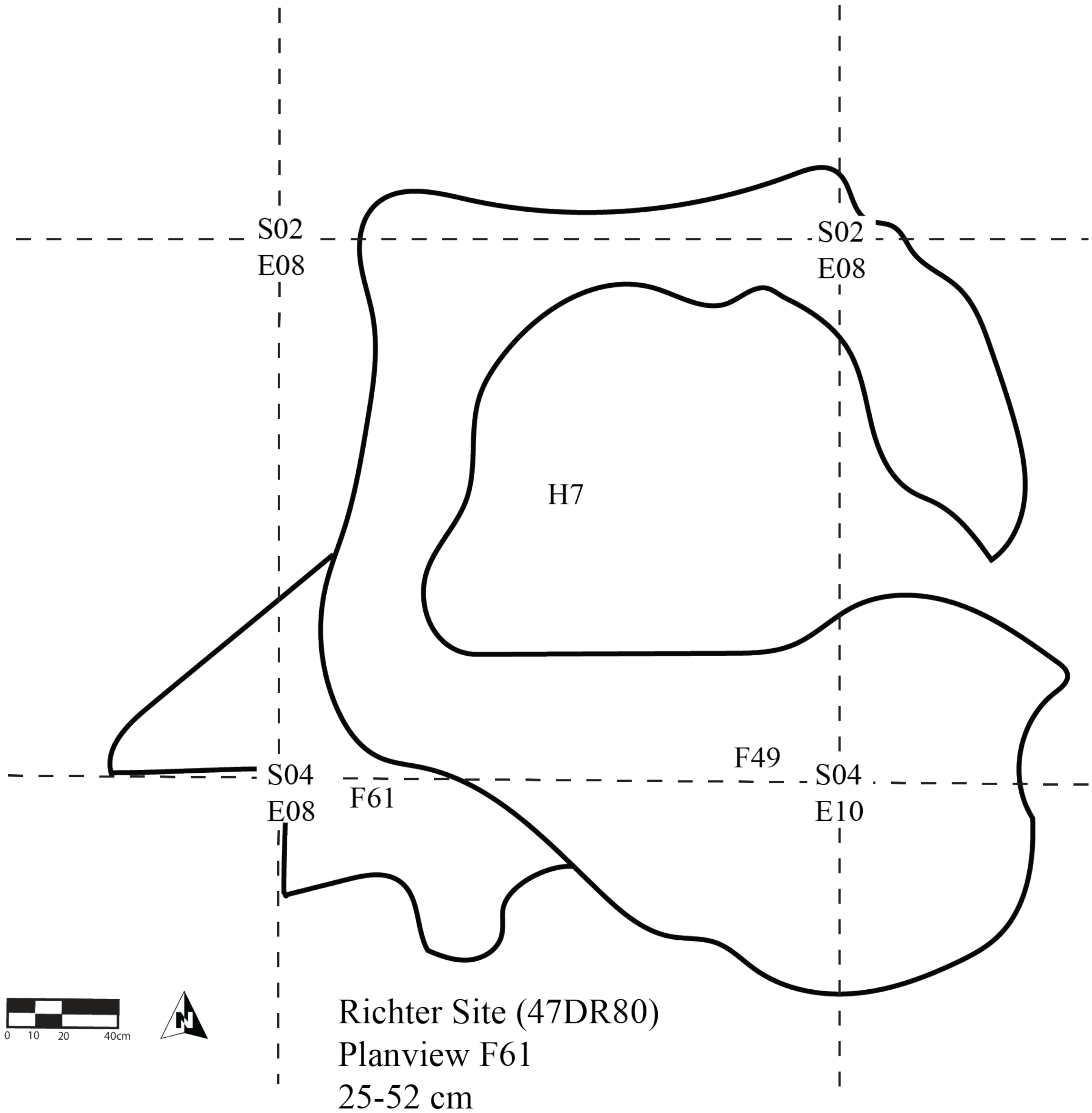


Figure 5.26. Planview of F61 Level III and IV, approximately 25-52 cm.

Feature 76, F76 (N20/W26)

Feature 76 is located in Area A in the western portion of the site. The feature was identified as a brown, C-shaped soil stain recorded as F76 (Figure 5.27). Planview photos, profile maps, and profile photos are missing from the site documentation. This feature was not excavated. Measuring from north to south, the midden dimensions are approximately 158 cm x 122 cm, depth is unknown. Based on similarity to other more fully documented features at the site, F76 is interpreted as a portion of a semi-subterranean, domestic structure.

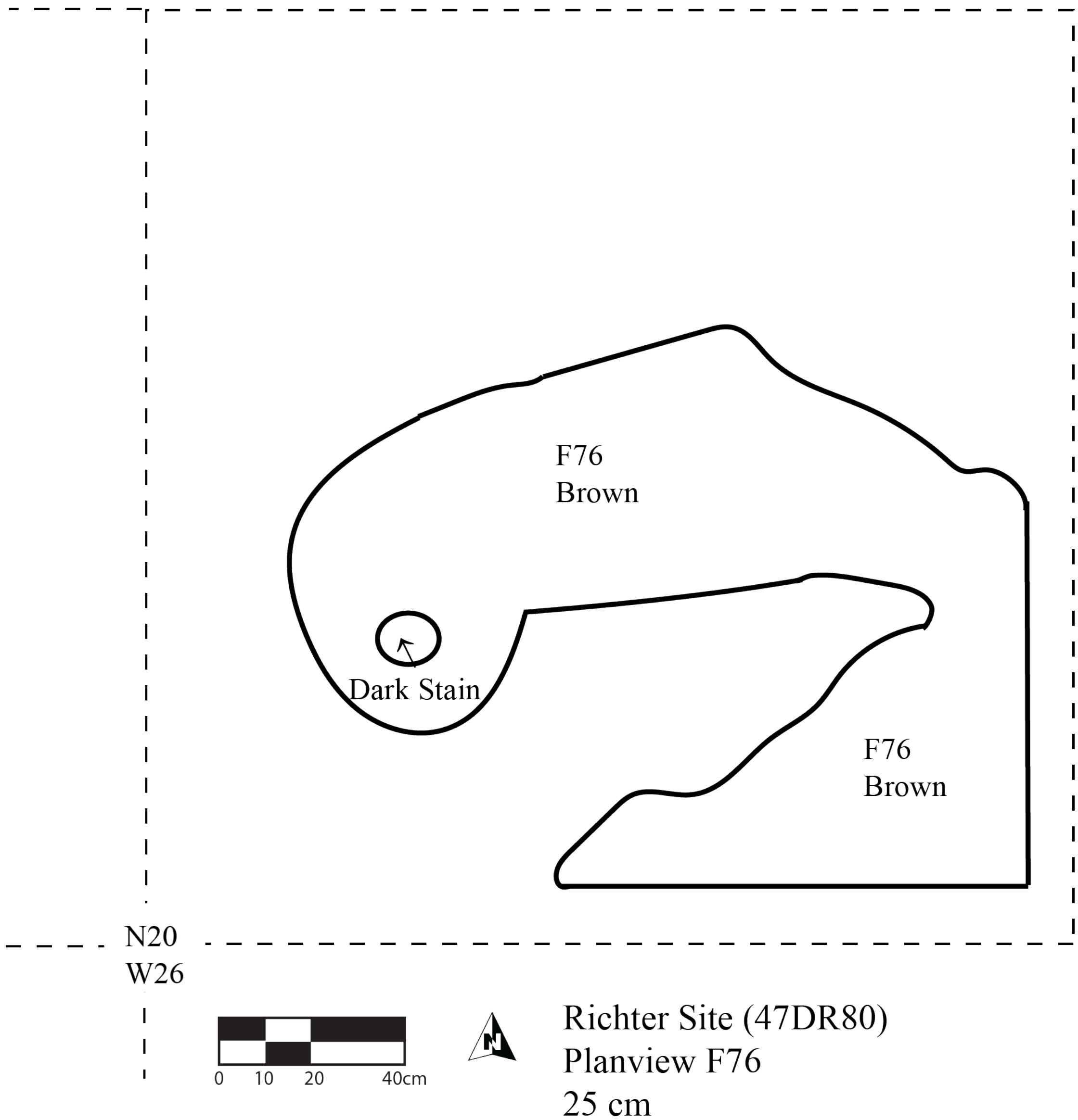


Figure 5.27. Planview of F76, Level II, 25 cm.

Discussion

In an earlier publication (Birnbaum 2009) I reviewed the Richter site structures and compared them to other known Middle Woodland structures in the Great Lakes region. Structures dating to Middle Woodland times are reported from the Reindle site in the Menominee River drainage of Michigan's Upper Peninsula (Buckmaster 1979), the Summer Island site located on Summer Island in Lake Michigan (Brose 1970), the Timid Mink site located in the Ottawa National Forest in Michigan's western Upper Peninsula (Hill 1995), and the Beaudhuin Village site situated in southern Door County, Wisconsin. Reid and Rajnovitch (Reid and Rajnovich 1991) reported three oval-shaped structures from the Ballynacree site in western Ontario. Associated ceramic assemblages are typically Laurel but radiocarbon dates indicate occupation as late as the thirteenth century A.D. Structure remnants at all of these sites appear to represent similarly sized buildings (the Ballynacree structures are the sole exception, being almost twice as large the other sites listed here) constructed on an oval floor plan. It is interesting that the structures from Timid Mink, Summer Island, and Ballynacree contain interior hearths. It is possible that the presence of interior hearths is associated with cold weather or lengthier periods of occupation by inhabitants. Structures without hearths, like the majority of structures at the Richter site, may represent structures utilized at shorter-term warmer weather resource exploitation sites. These structures likely represent the remains of wigwam-type constructions common throughout the Great Lakes region (Nabokov and Easton 1989).

Pits

Feature 1, F1 (TP1)

Feature 1 is located south of the main excavation area in what was a part of the Richter family garden. The pit was identified as one partial circle and one half of an ovoid shaped stain in the soil recorded as F1 (Figure 5.28). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 90 cm x 60 cm and has a depth of 35 cm. This represents a volume of about .19 m^3. Associated features include one hearth (F4), and four pits of unknown function (F2, F3, F5, and F6). Excavation of F1 produced cordmarked sherds, smoothed sherds, decorated sherds, a single rim fragment, and numerous pottery fragments. Feature lithic assemblage includes only a large number of pieces of debitage. Faunal remains include white sucker, unidentified fish, unidentified mammal, and other unidentified bone. Based on similarity to other excavated features at the site, F1 is interpreted as a portion of a trash or refuse pit.

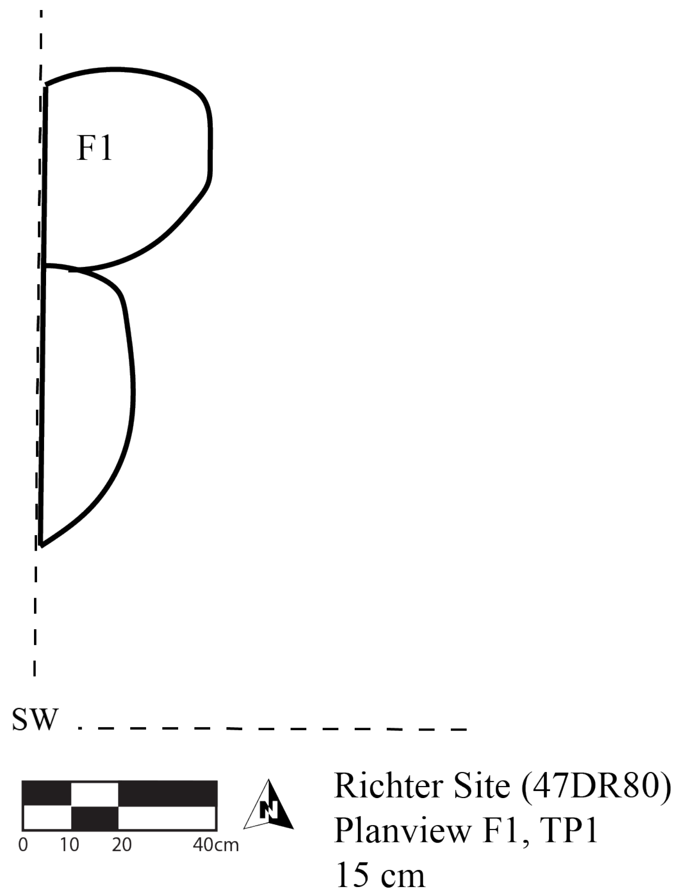


Figure 5.28. Planview of F1, TP1 at 15 cm.

Feature 2, F2 (TP1)

Feature 2 is located south of the main excavation area in what was a part of the Richter family garden. The pit was identified as a black colored, square-shaped stain in the soil recorded as F2. Planview suggests that F2 overlapped F3 (Figure 5.29). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 50 x 50 cm with a depth of 30 cm. This represents a volume of about .075 m^3. Associated features include one hearth (F4), and four pits of unknown function (F1, F3, F5, and F6). Feature 2 produced no ceramic sherds and only a single piece of debitage.

Faunal remains include unidentified fish, reptile, and bone. Feature 2 is interpreted as a trash or refuse pit.

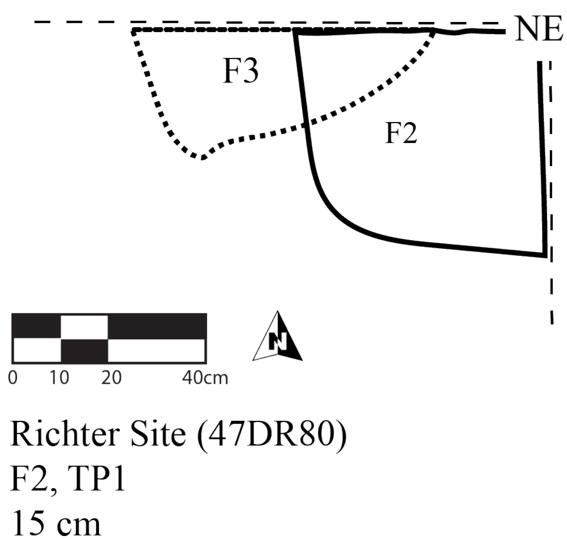


Figure 5.29. Planview of F2, TP1.

Feature 3, F3 (TP1)

Feature 3 is located south of the main excavation area in what was a part of the Richter family garden. The pit was identified as a dark, roughly oval-shaped stain in the soil recorded as F3. In planview on the site map F3 overlaps F2 (Figure 5.30). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 20 x 30 cm with a depth of 30 cm and a volume of about .018 m^3. Associated features include one hearth (F4), and four pits of unknown function (F1, F2, F5, and F6). Feature 3 contained a number of pieces of debitage. Faunal remains include unidentified fish, reptile, and bone. Based on similarity to other excavated features at the site, F3 is interpreted as a trash or refuse pit.

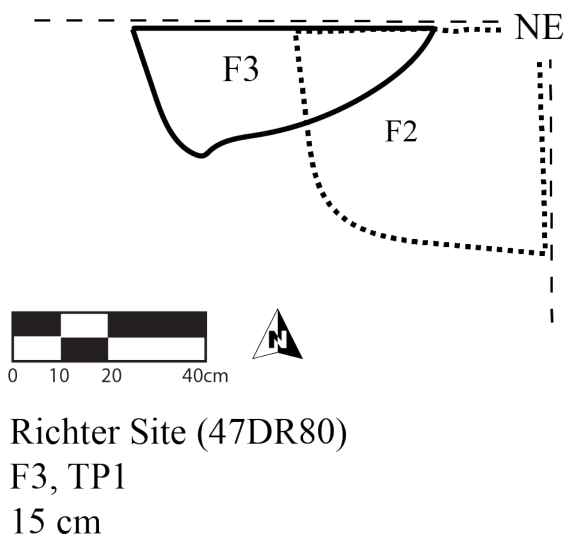


Figure 5.30. Planview of F3, TP1.

Feature 6, F06 (TP1)

Feature 6 is located south of the main excavation area in what was a part of the Richter family garden. The pit was identified as a dark, linear stain in the soil recorded as F6 (Figure 5.31). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 35 cm x 35 cm with an unknown depth. Associated features include one hearth (F4), and five pits of unknown function (F1, F2, F3, and F5). A large limestone slab was recovered from the western portion of this feature but no other artifacts were recovered. The function of this pit is unknown.

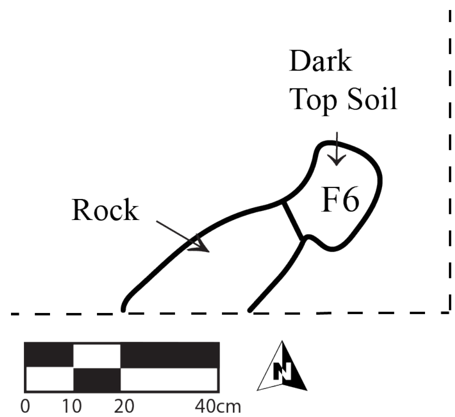


Figure 5.31. Planview of F6, TP1 at a depth of 15 cm.

Feature 12, F12 (1010/1003 TP6)

Feature 12 is located in Area B in the central portion of the site. The feature was identified as a dark circular-shaped soil stain recorded as F12 (Figure 5.32). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 45 cm x 50 cm with a depth of 18 cm and with a volume of about .04 m^3. Associated features include three hearths (F18, F20 and F21), a midden (F10) and three pits of unknown function (F13, F15, and F16) and a cremation burial containing multiple individuals within a possible structure basin (F9/F11). No artifacts are associated with this feature. Notes on the planview present conflicting interpretation of this feature; initially it was identified as a post mold. A later notation indicates that sawed bones were found suggesting to the excavators that the feature was modern in origin.

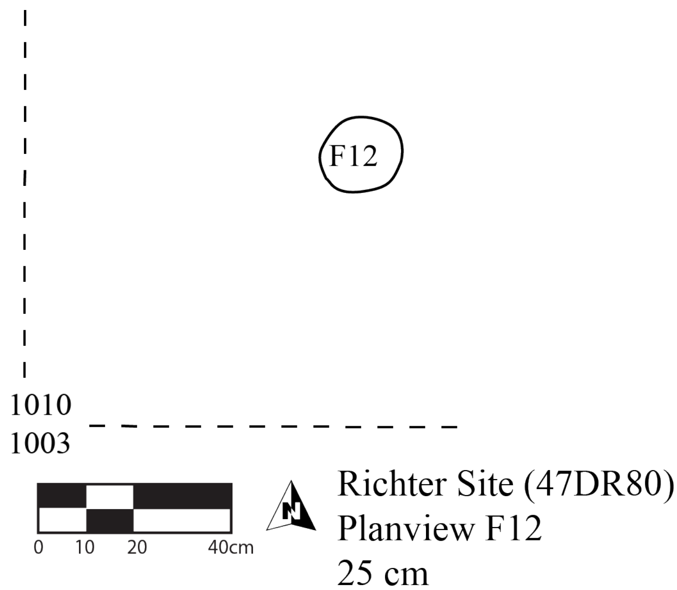


Figure 5.32. Planview of F12 at 25 cm.

Feature 13, F13 (1007/1000)

Feature 13 is located in Area B in the central portion of the site. The feature was identified as a large dark, circular-shaped soil stain recorded as F13 (Figure 5.33). Excavators described the feature as being clay lined. Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 90 cm x 95 cm with a depth of 37 cm with a volume of about .32 m^3. Associated features include three hearths (F18, F20, and F21), a midden (F10), and three pits of unknown function (F12, F15, and F16) and a cremation burial of multiple individuals within a possible structure basin (F9/F11). Excavation of F13 produced cordmarked sherds, smoothed sherds, decorated sherds, and a number pottery fragments. Decorated smooth sherds include CWS, dentate stamp, linear stamp, pseudo-scallop stamp, and unidentified decoration. Pottery includes

V30, a smooth surfaced vessel with CWS stamped decoration, and V37, a smooth surfaced pot with linear stamped decoration on the body. The same stamp was used to notch the pot's lip. The lithic assemblage includes a number of pieces of debitage and one utilized pseudo-bladelet. A single flat worked piece of copper was recovered. Faunal remains include largemouth bass, sunfish, yellow perch, and snail. Unidentified bone included amphibian, fish, mammal, reptile, and bone that could not be identified to species. Originally, this pit was identified as a possible storage pit. Lining the pit with clay would have kept sand from in-filling the pit and covering the contents. Another possibility is that the clay may have been stored in this location for the construction of ceramic vessels. Contents seem to indicate use at some point for refuse. The presence of snails may indicate the deposition of organic remains.

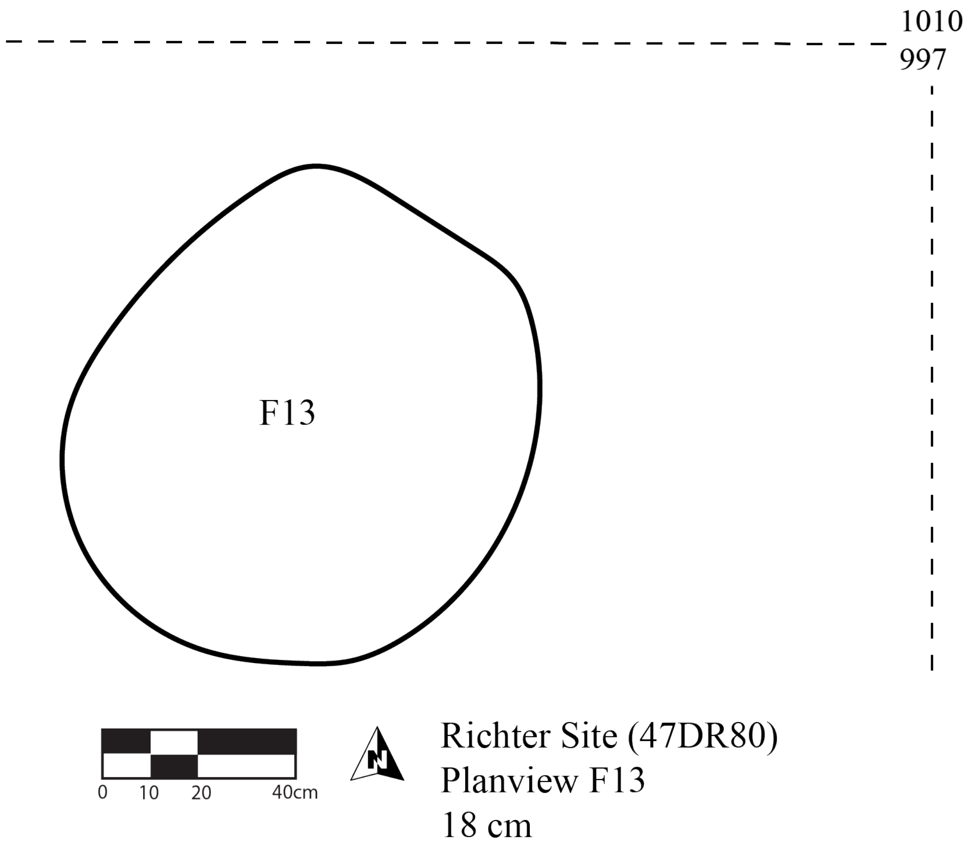


Figure 5.33. Planview of F13 at 18 cm.

Feature 14, F14 (1007/1000)

Feature 14 is located in Area B in the central portion of the site. The feature was identified as a large dark gray amorphous soil stain recorded as F14 (Figure 5.34). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 130 cm x 95 cm with a depth of 11 cm and a volume of about 13.6 m^3. Associated features include three pits of unknown function (F13, F15, and F24). Excavation of F14 produced few artifacts but including a single snail shell and two pieces of unidentified bone. The function of this feature remains undefined.

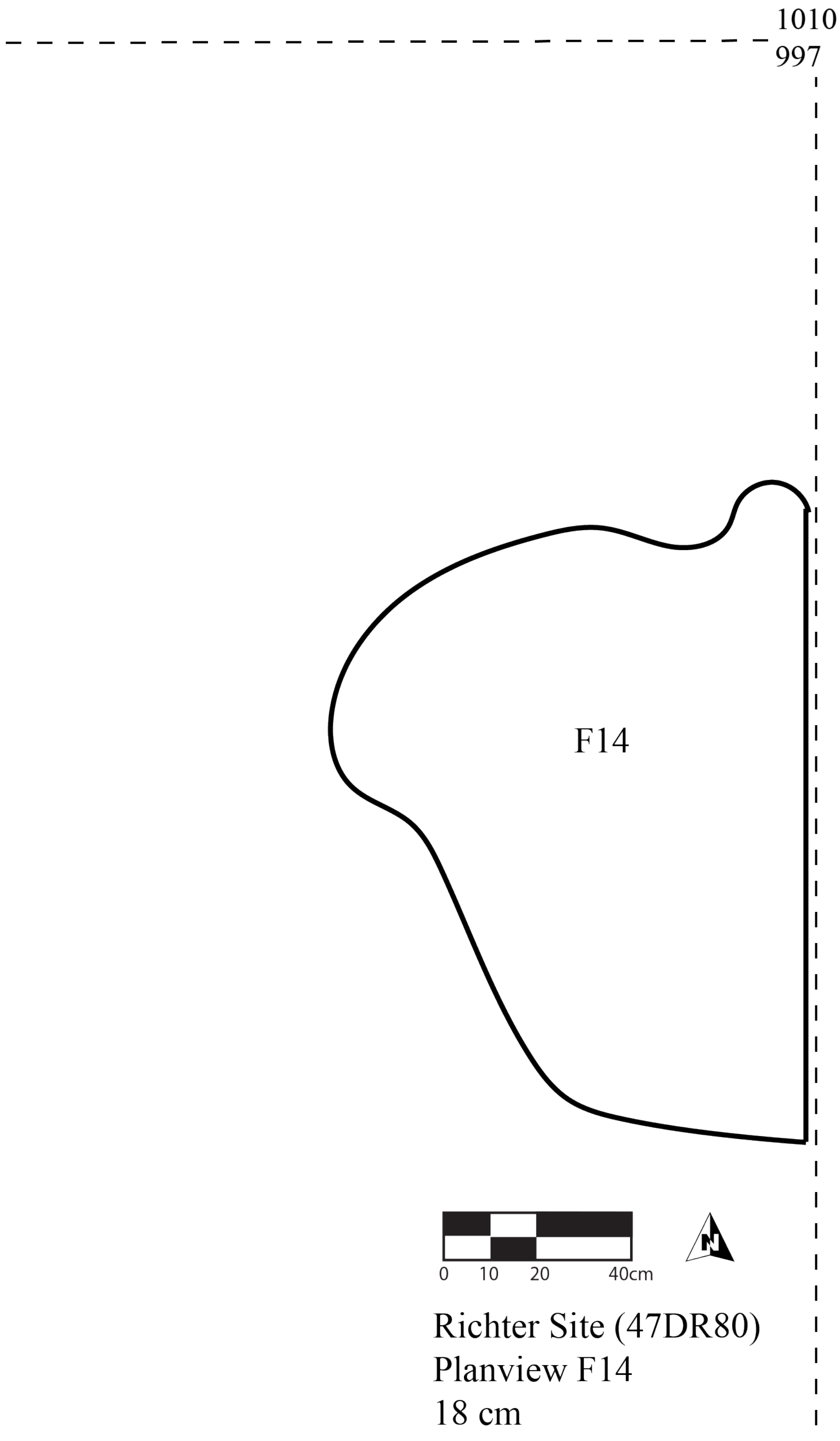


Figure 5.34. Planview of F14 Unit 1007/1000.

Feature 15 and Feature 16, F15 and F16 (1007/1000 and 1005/1000)

Features 15 and 16 are located in Area B in the central portion of the site. The feature was identified as a roughly circular-shaped soil stain recorded as F15 and F16 (Figure 5.35). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 200 cm x 200 cm with a depth of 35 cm and a volume of about 1.4 m^3. Associated features include three pits of unknown function (F13, F15, and F24). Excavation of F15 produced cordmarked sherds, smooth sherds, decorated smooth sherds, and numerous pottery fragments. Decorated smooth sherds include CWS, punctate, and unidentified decoration. The lithic assemblage includes a number of pieces of debitage and a large number of tools. These include an expanding stem hafted biface, a straight stem biface fragment, a straight stem biface fragment, a biface fragment, an unifacial utilized edge tool, and a bipolar core. A copper fishhook was also recovered. Faunal remains include freshwater drum, unidentified bird, unidentified fish, unidentified mammal, and unidentified reptile. The feature also includes a small amount of freshwater mussel shell and 80 snail shells. A small amount of charcoal was collected. This feature is a possible refuse or trash pit. The large number of snail shells may indicate the presence in the past of decomposing organic materials.

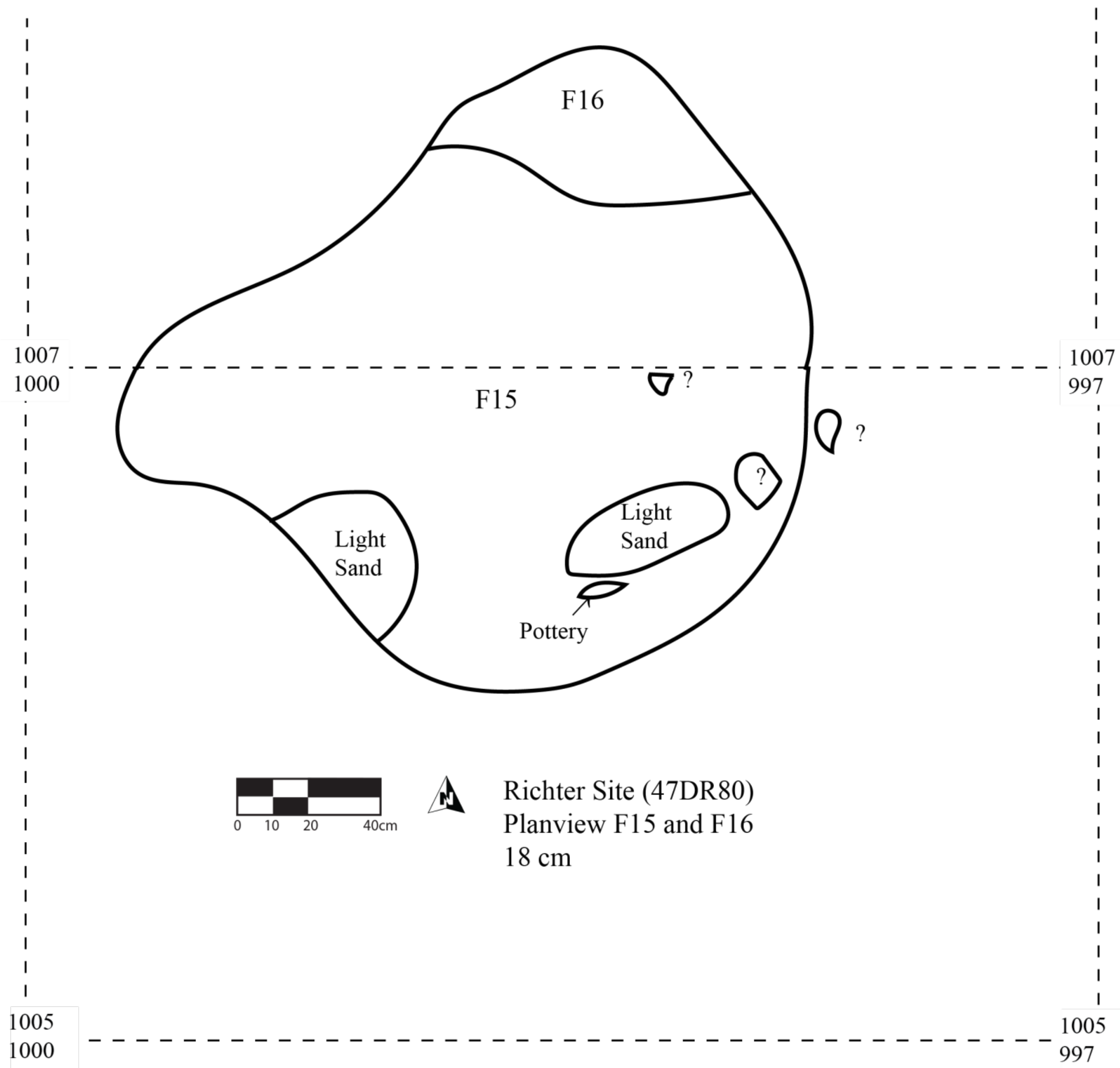


Figure 5.35. Planview of F15/F16 Units 1007/1000 and 1005/1000.

Feature 17, F17 (1021/997)

Feature 17 is located in Area E in the northern portion of the site. The feature was identified as a dark, circular-shaped soil stain recorded as F17 (Figure 5.36). Planview photos, planview maps, profile maps, and profile photos are missing from site documentation. The only existing map of this feature is the original site map. Measuring from north to south, the pit dimensions are approximately 25 cm x 30 cm with a depth of 25 cm and a volume of about 1.4 m^3. Planview photos, planview maps, profile maps, and profile photos are missing from site documentation. There are no other features associated with F17. A hand written note in the Field Log Book indicates that F17 was a concentration of fish bone. A lot number was assigned in the field, but the materials are missing from the collection.

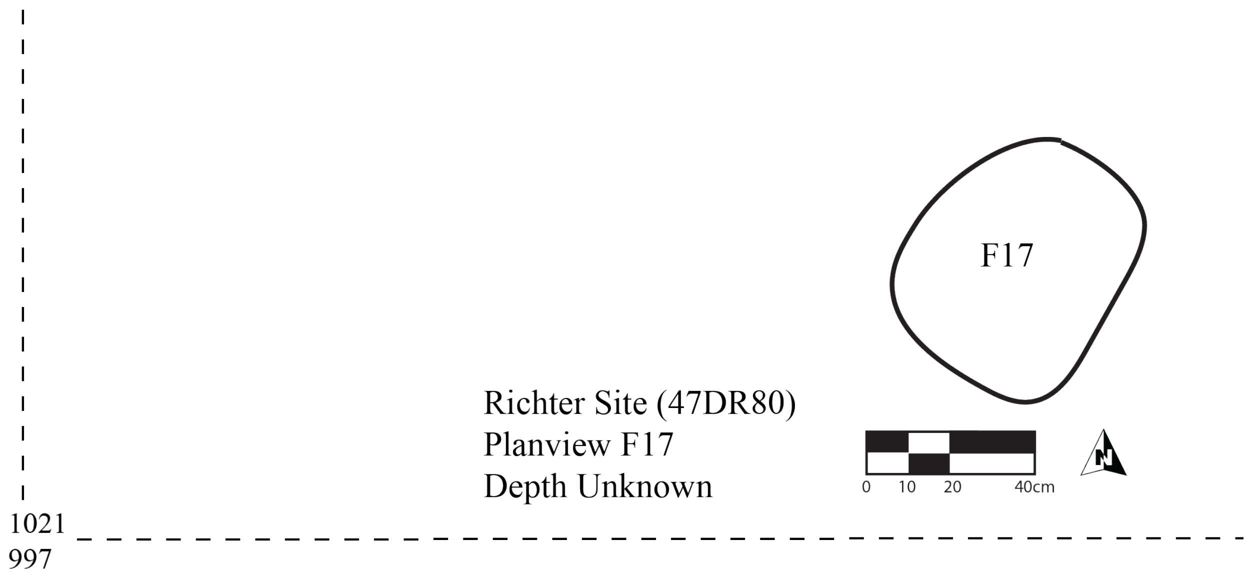


Figure 5.36. Planview of F17 Unit 1021/997, depth unknown.

Feature 19, F19 (1010/1000)

Feature 19 is located in Area B in the central portion of the site. The feature was identified as a dark, semi-circular soil stain recorded as F19 (Figure 5.37). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 20 cm x 30 cm. There is no record of the depth of this feature. Associated features include one hearth (F18), a cremation burial of multiple individuals within a possible structure basin (F9/F11), and three postmolds. No artifacts are associated with this feature. The function of this pit is unknown.

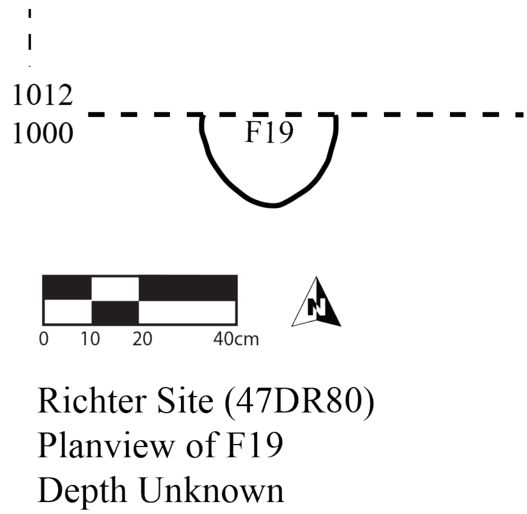


Figure 5.37. Planview of F19. No depth is given on planview.

Feature 22, F22 (1005/1003)

Feature 22 is located in Area B in the central portion of the site. The feature was identified as a dark, circular-shaped soil stain recorded as F22 (Figure 5.38 and Figure 5.39). Planview photos and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 98 cm x 90 cm with a depth of 30 cm and a volume of about .26 m^3. Associated features include one pit of unknown function (F23) and a single postmold. Excavation of F22 produced a single cordmarked sherd, smooth sherds, decorated sherds and pottery fragments. Decorated smooth sherds include dentate stamp, linear stamp, pseudo-scallop stamp and unidentified. The lithic assemblage was limited to debitage.

Faunal remains include white-tailed deer, unidentified fish, unidentified mammal, and unidentified bone.

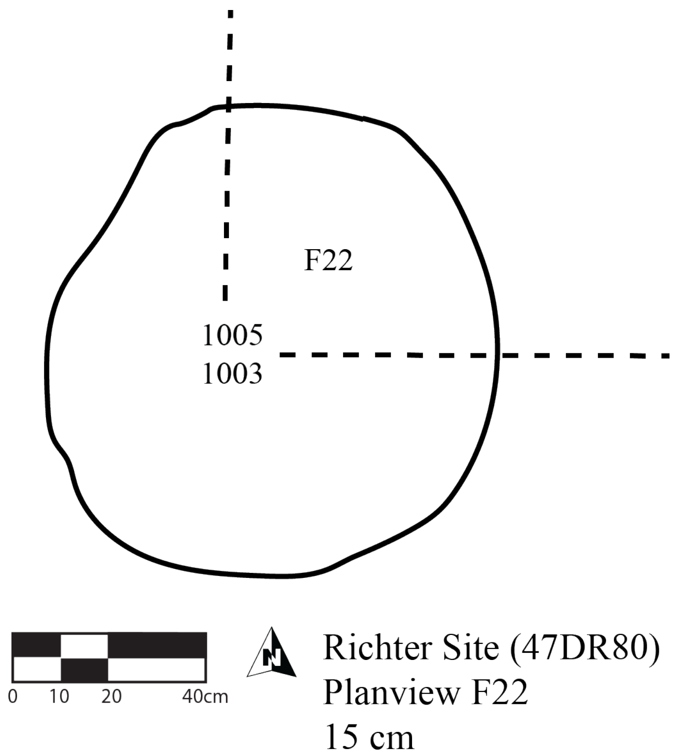


Figure 5.38. Planview of F22 at a depth of 15 cm.

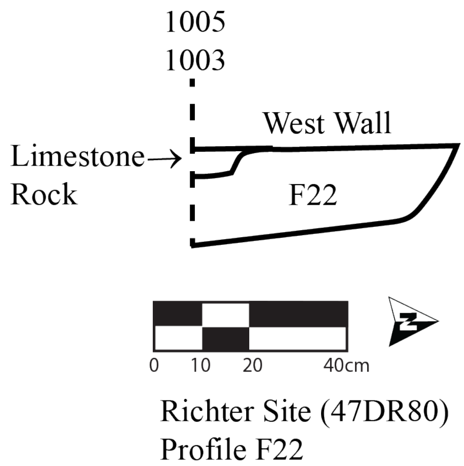


Figure 5.39. Profile of F22 at southwest corner of Unit 1005/1003.

Feature 23, F23 (1005/1003)

Feature 23 is located in Area B in the central portion of the site. The feature was identified as a large, black, circular-shaped soil stain identified as F23 (Figure 5.40 and Figure 5.41). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 80 cm x 90 cm with a depth of 30 cm and a volume of about .21 m^3. Associated features include one hearth (F20), three pits of unknown function (F22, F15, and F16), and two postmolds. Excavation of F23 produced smoothed-over-cordmarked sherds, some decorated sherds, and pottery fragments. Decorated sherds include linear stamp, a pseudo-scallop with possible incising, and unidentified decoration. The lithic assemblage is limited to some debitage. Faunal remains include walleye, perch, unidentified mammal, and unidentified bone. A single snail shell was found.

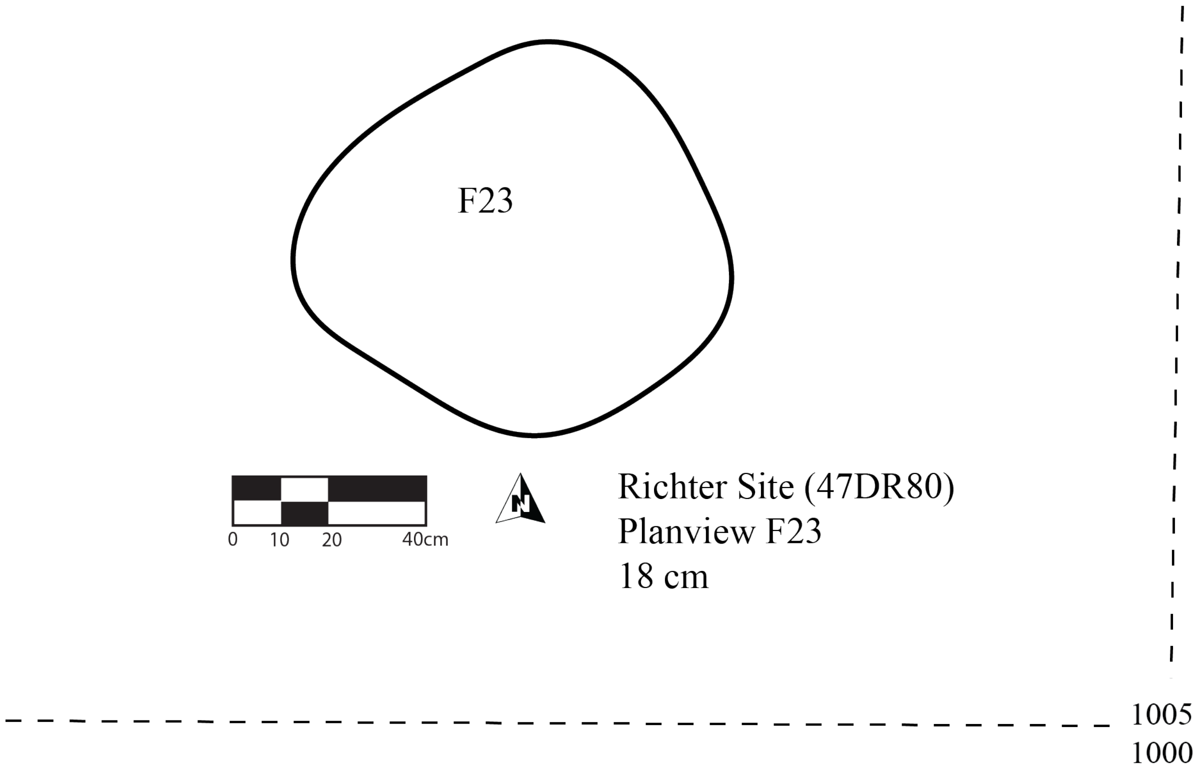


Figure 5.40. Planview of F23 Unit 1005/1003 at 18 cm.

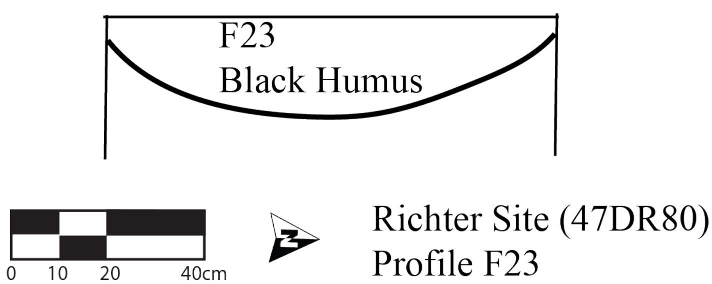


Figure 5.41. Profile of F23 Unit 1005/1003.

Feature 24, F24 (1005/1000)

Feature 24 is located in Area B in the central portion of the site. The feature was identified as a dark, circular-shaped soil stain recorded as F24 (Figure 5.42). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 55 cm x 40 cm with a depth of 27 cm and a volume of about .06 m^2. Associated features include two pits of unknown function (F15 and F16), and two postmolds. Excavation of F24 produced a single pottery fragment, debitage, and a biface fragment. Faunal remains were sparse and include a single unidentified fish bone and two pieces of mammal bone. A small worked copper fragment was also recovered. Originally identified as a pit with unidentified function it is most likely a refuse or trash pit.

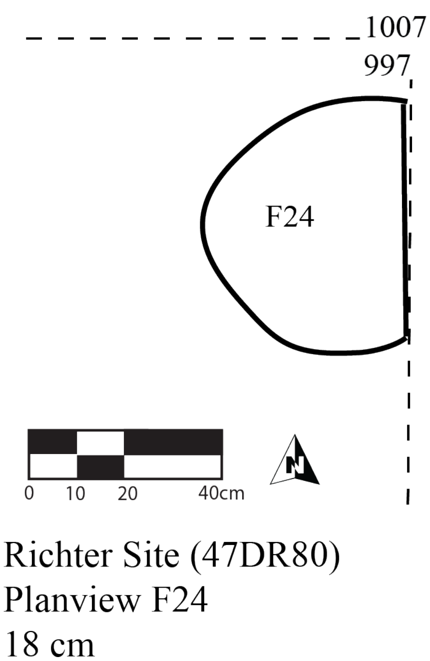


Figure 5.42. Planview of F24 Unit 1005/1000 at a depth of 18 cm.

Feature 30, F30 (N35/W30)

Feature 30 is located just north of the main excavation area. The feature was identified as a charcoal gray or dark, possibly circular-shaped, soil stain recorded as F30 (Figure 5.43, Figure 5.44, and Figure 5.45). Planview photos and profile photos are missing from site documentation. Measuring from north to south, the pit dimensions are approximately 60 cm x 38 cm with a depth of 38 cm and a volume of about .09 m^3. There are no additional features associated with F30. No artifacts are associated with this feature.

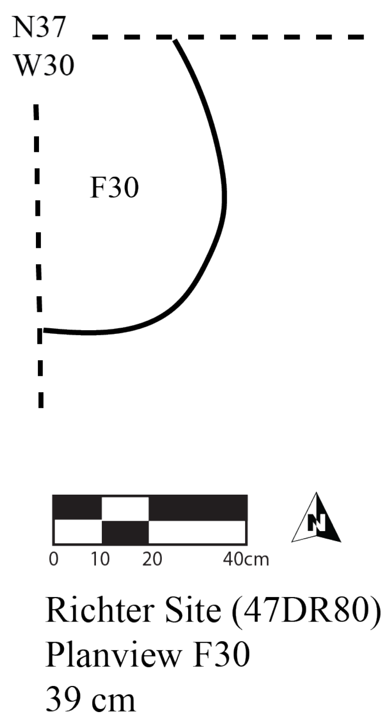


Figure 5.43. Planview of F30 at 39 cm.

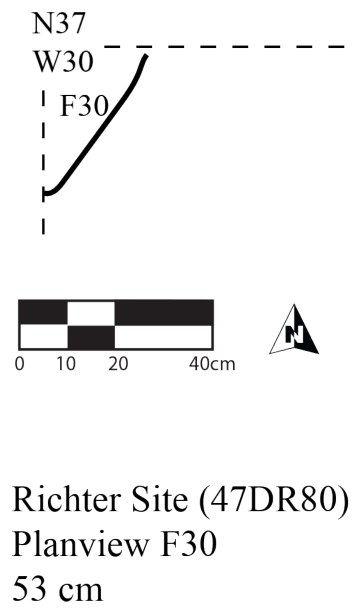


Figure 5.44. Planview of F30 at 53 cm.

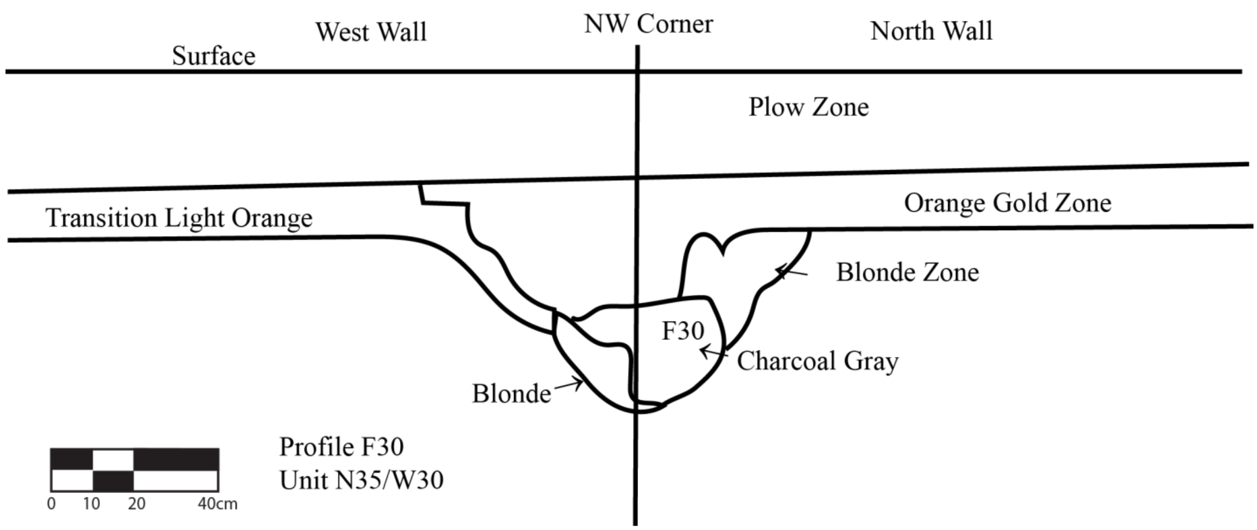


Figure 5.45. Profile of F30 at northwest corner of Unit N35/W30.

Feature 31, F31 (N28/W02)

Feature 31 is located in Area E in the northern portion of the site. The feature was identified as a black, possibly circular-shaped soil stain recorded as F31 (Figure 5.46 and Figure

5.47). Planview photos and profile photos are missing from site documentation. Measuring from north to south, the pit dimensions are approximately 18 cm x 50 cm with a depth of 34 cm with a volume of about .03 m^3. No additional features are associated with F31. Excavation of F31produced pottery fragments and two pieces of debitage. The function of this pit remains unclear.

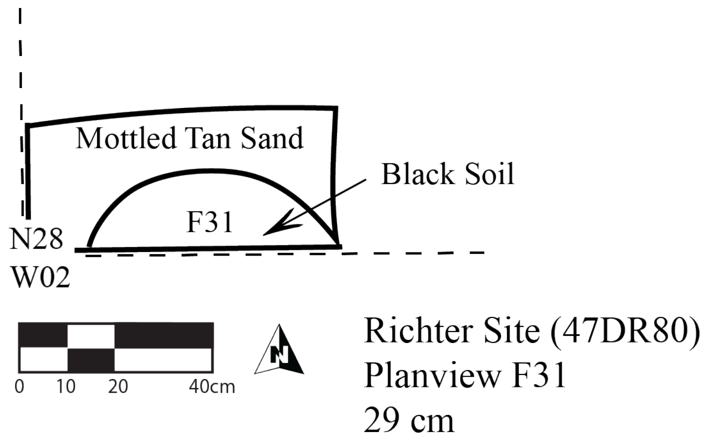


Figure 5.46. Planview of F31 Unit N28/W02, Level II, 29 cm.

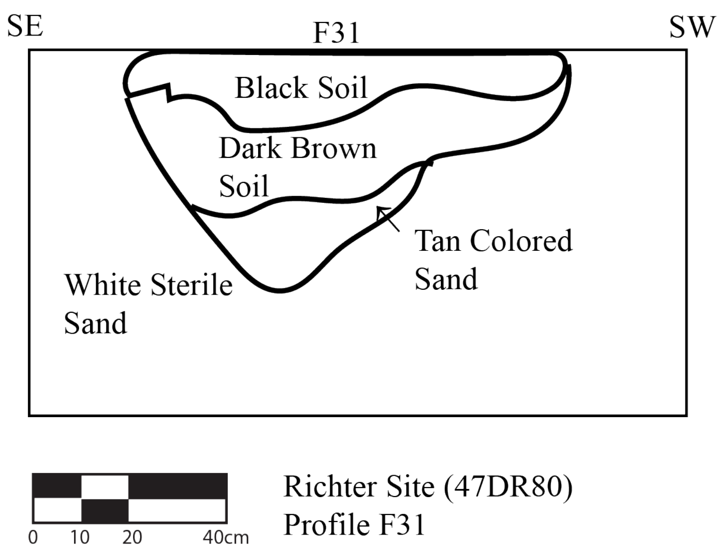


Figure 5.47. Profile of F31 south wall of Unit N28W02.

Feature 38, F38 (N28/W10, N30/W10, N30/W07)

Feature 38 is located in Area E in the northern portion of the site. The feature was identified as a dark, amorphous soil stain recorded as F38 (Figure 5.48 and Figure 5.49). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 130 cm x 130 cm with a depth of 24 cm and a volume of about .40 m^3. Associated features include two hearths (F36 and F37), three structures (H3, H4, and H6), three postmolds, and an additional five possible postmolds. Excavation of F38 produced cordmarked sherds, smooth sherds, smoothed-over-cordmarked sherds, decorated smooth sherds, decorated cordmarked sherds, a number of pottery fragments, and two rim fragments. Two sherds were cordmarked with incised decoration. The decorated smooth sherds included CWS, linear stamp, and pseudo-scallop stamp. Richter site vessels V5 and V45 were recovered from this feature. Vessel 5 has a smooth surface with pseudo-scallop stamping on the exterior and interior rim area. Vessel 45 is has smooth-over-cordmarked surface with incised decoration. The lithic assemblage includes debitage and a bipolar core. Faunal remains were limited to two pieces of unidentified mammal and three pieces of unidentified bone.

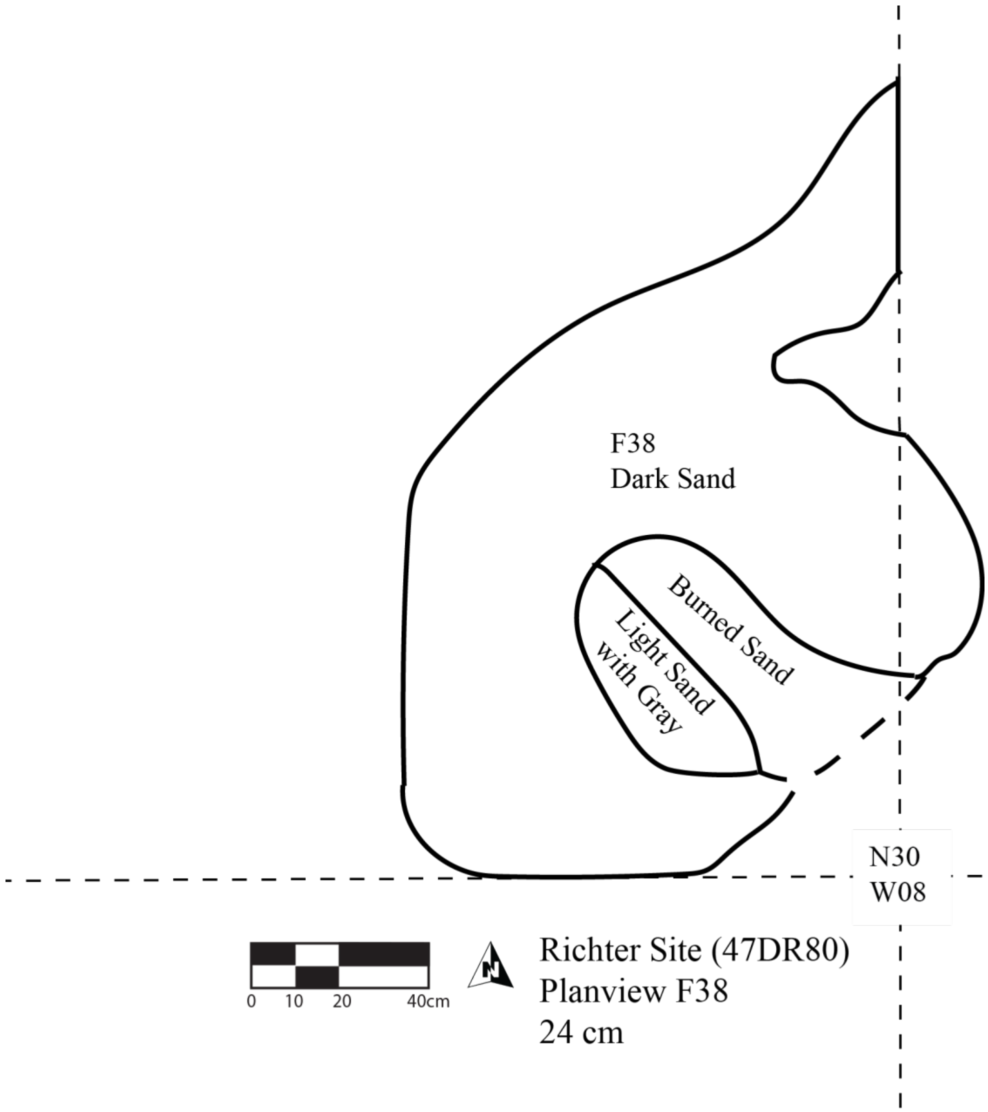


Figure 5.48. Planview of F38, Level II at approximately 24 cm.

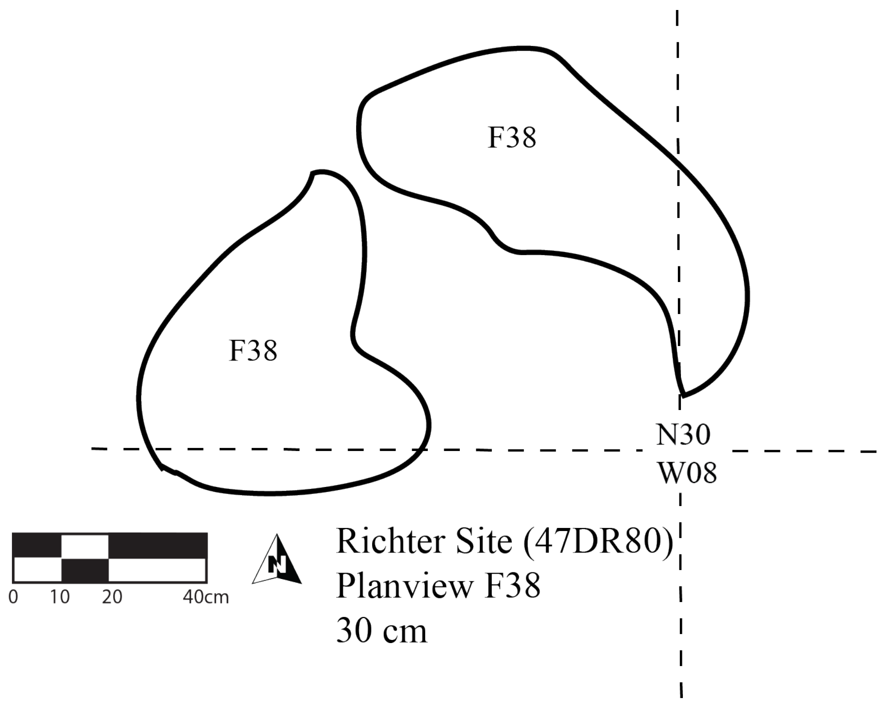


Figure 5.49. Planview of F38 at approximately 30 cm.

Feature 43, F43 (N10/E08)

Feature 43 is located in Area D in the eastern portion of the site. The feature was identified as a black, oily, soil stain with rusty colored soil below recorded as F43 (Figure 5.50 Figure 5.51, and Figure 5.52). Planview photo and profile photos are missing from site documentation. Measuring from north to south, the pit dimensions are approximately 35 cm x 48 cm with a depth of 18 cm and a volume of about .03 m^3. Associated features include a single large hearth (F44), a single structure (H8), and three possible postmolds. Excavation of F43 produced cordmarked sherds and pottery fragments. The lithic assemblage was limited to a small amount of debitage. This feature was identified as a pit with unknown function although F43's proximity to F44, a large hearth, and the associated soil staining suggests that F43 may have also served as a hearth. The rust colored sand may represent burned sand as noted in hearth features elsewhere at the site.

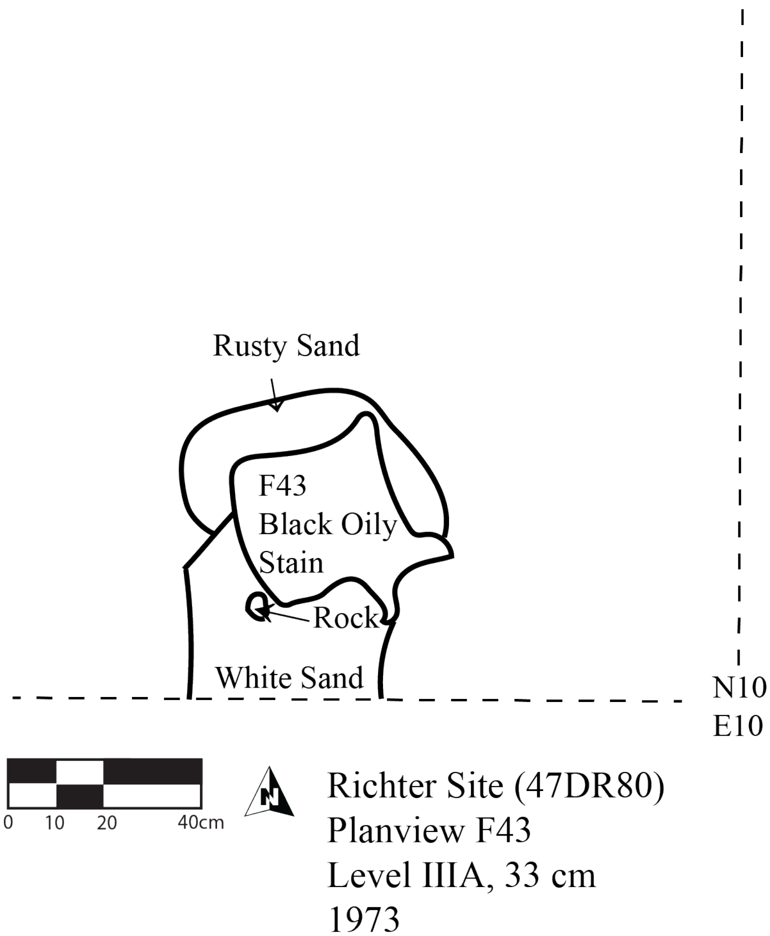


Figure 5.50. Planview of F43, at 33 cm.

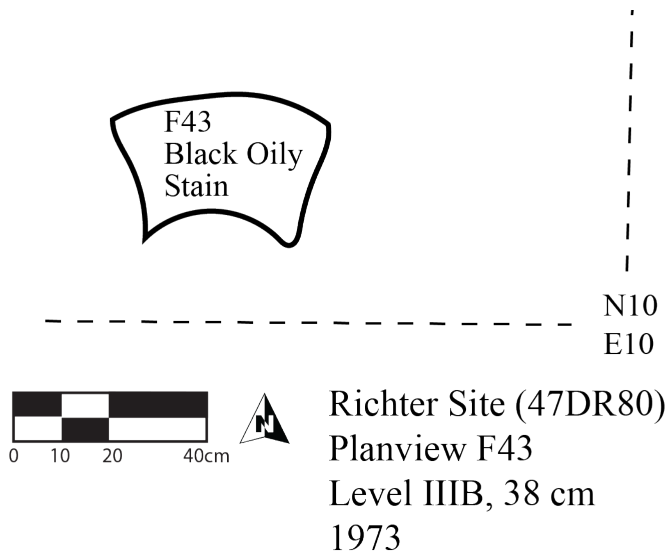


Figure 5.51. Planview of F43, at 38 cm.

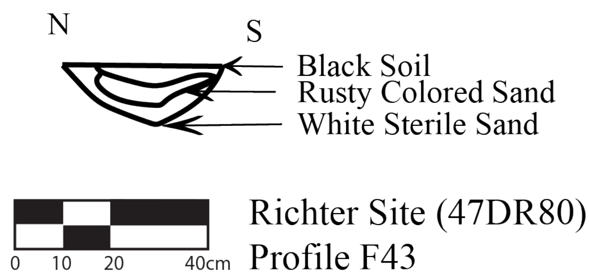


Figure 5.52. Profile of F43.

Feature 45, F45 (N10/E07)

Feature 45 is located in Area D in the eastern portion of the site. The feature was identified as a black or dark brown linear soil stain recorded as F45 (Figure 5.53 – Figure 5.57). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 38 cm x 70 cm with a depth of 33 cm and a volume of about .08 m^3. Associated features include a single hearth (F44) and three possible postmolds. Excavation of F45 produced cordmarked sherds, decorated smooth sherds and pottery fragments. Decorated smooth sherds include one CWS stamp sherd and one sherd with an unidentified decoration. The lithic assemblage was limited to debitage. Faunal remains include dog or coyote (*Canis sp*.), walleye, white-tailed deer, unidentified fish, unidentified mammal, and unidentified bone. A small number of snail shells were also found. These may indicate the deposition of organic materials in the past.

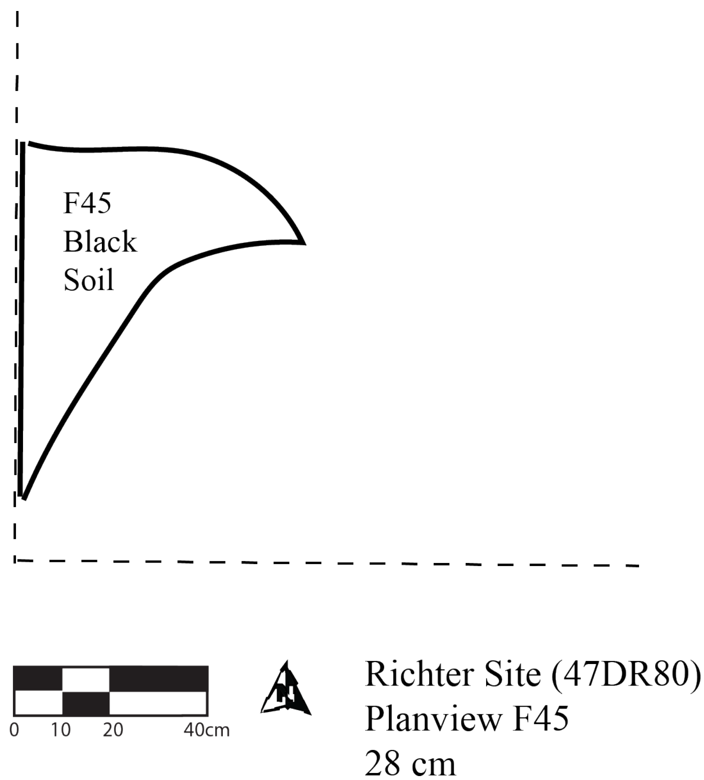


Figure 5.53. Planview of F45, at approximately 28 cm.

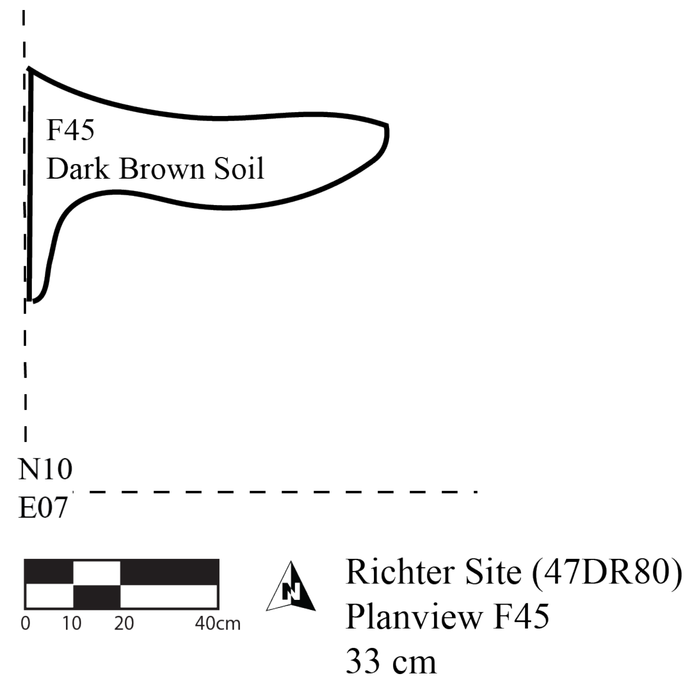


Figure 5.54. Planview of F45 at approximately 33 cm.

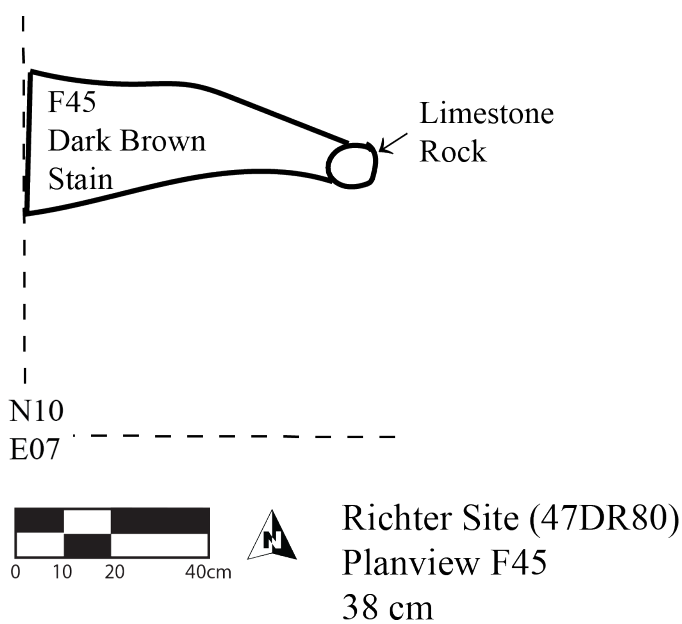


Figure 5.55. Planview of F45 at approximately 38 cm.

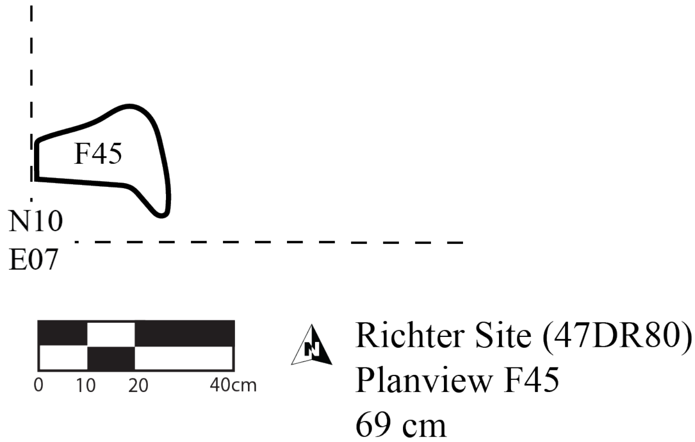


Figure 5.56. Planview of F45 at approximately 69 cm.

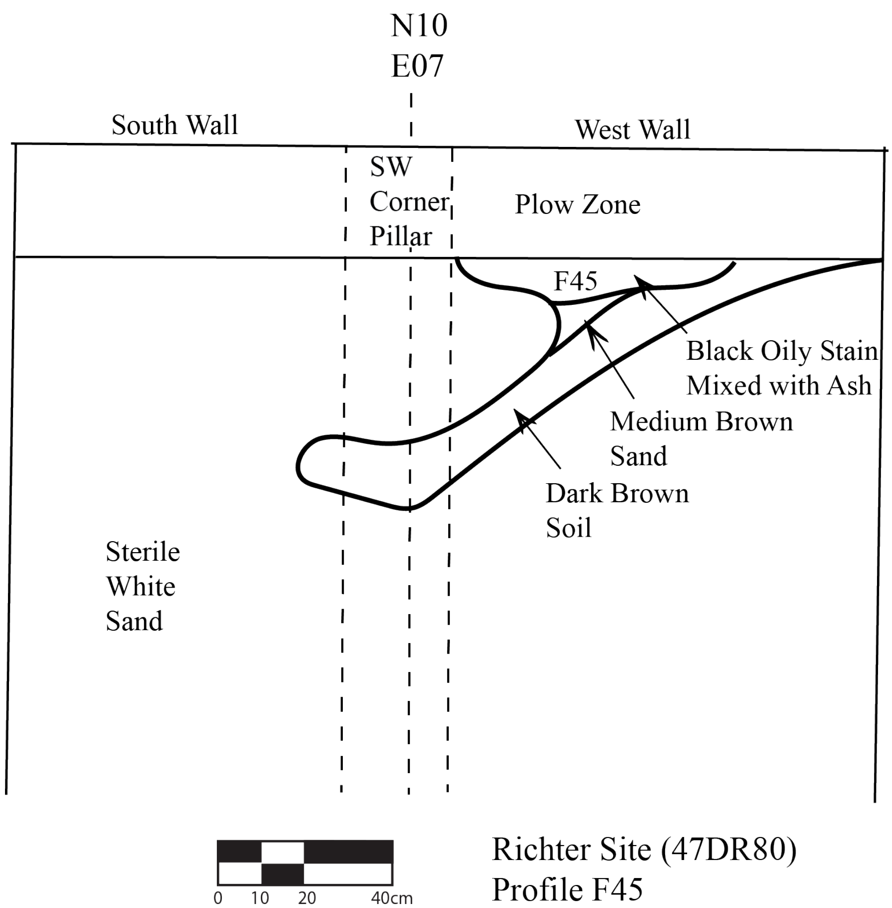


Figure 5.57. Profile of F45 from southwest corner of Unit N10/W07.

Feature 46, F46 (N18/W28 and N20/W28)

Feature 46 is located in Area A in the western portion of the site. The feature was identified as a dark brown, roughly circular-shaped soil stain recorded as F46 (Figure 5.58). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 50 cm x 67 cm with a depth of 55 cm and a volume of about .18 m^3. Associated features include one hearth (F77), one structure (H1), a pit of unknown function (F57), ten postmolds, and an additional 30 possible postmolds. Excavation of F46 produced a limited number of artifacts which include pottery fragments and a small amount of debitage. The function of this pit is unknown.

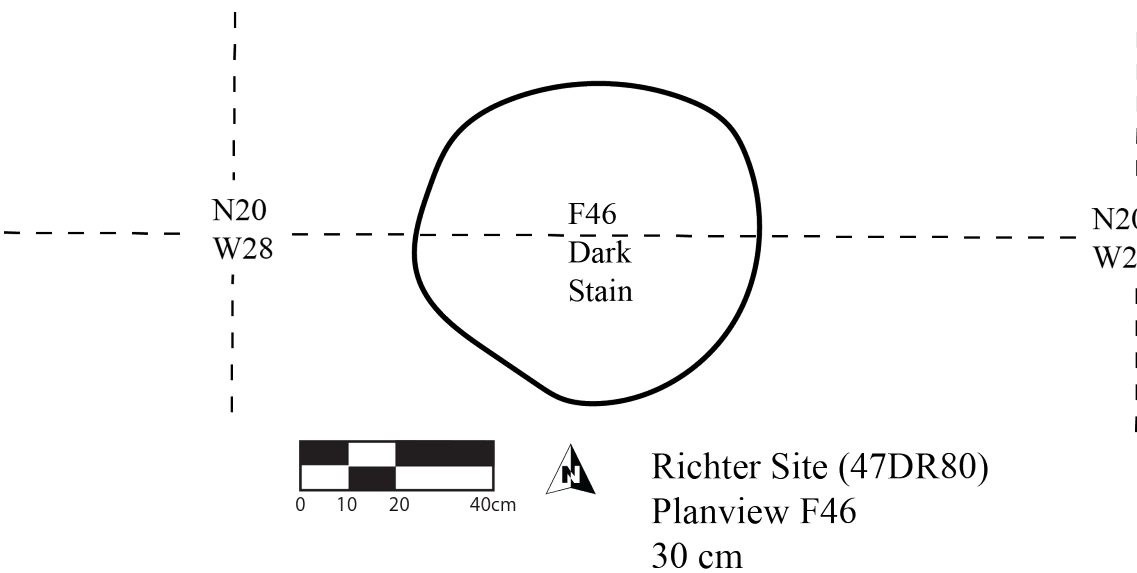


Figure 5.58. Planview of F46 at 30 cm.

Feature 47, F47 (N20/W28 and N20/W26)

Feature 47 is located in Area A in the western portion of the site. The feature was identified as a large dark or greasy black, roughly circular-shaped soil stain recorded as F47 (Figure 5.59 – Figure 5.62). It is indicated that the base of this feature was rock lined. Planview photos and profile photos are missing from site documentation. Measuring from north to south, the pit dimensions are approximately 100 cm x 90 cm with a depth of 65 cm and a volume of about .58 m^3. Associated features include a midden (F76), one pit of unknown function (F46), a structure (H1), ten postmolds, and an additional 19 possible postmolds. Excavation of F47 produced pottery fragments and a few pieces of debitage. Faunal remains were sparse and include a single fish bone and three unidentified pieces of bone. The presence of charcoal was noted in planviews. This pit was identified as a refuse pit but it is possible that it may have been a roasting pit based on the amount of charcoal noted and the presence of a stone lined base.

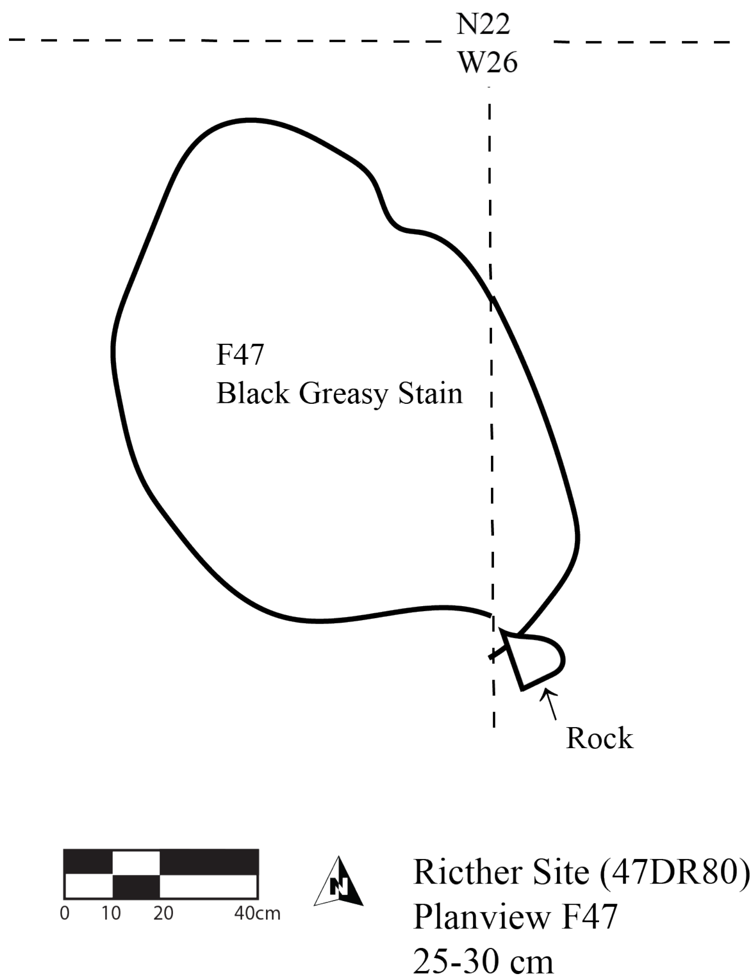


Figure 5.59. Planview of F47 at between 25-30 cm.

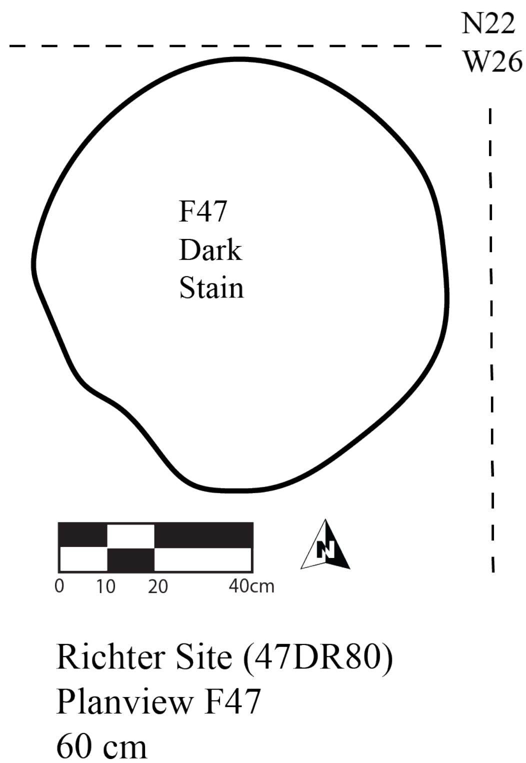


Figure 5.60. Planview of F47 at 60 cm.

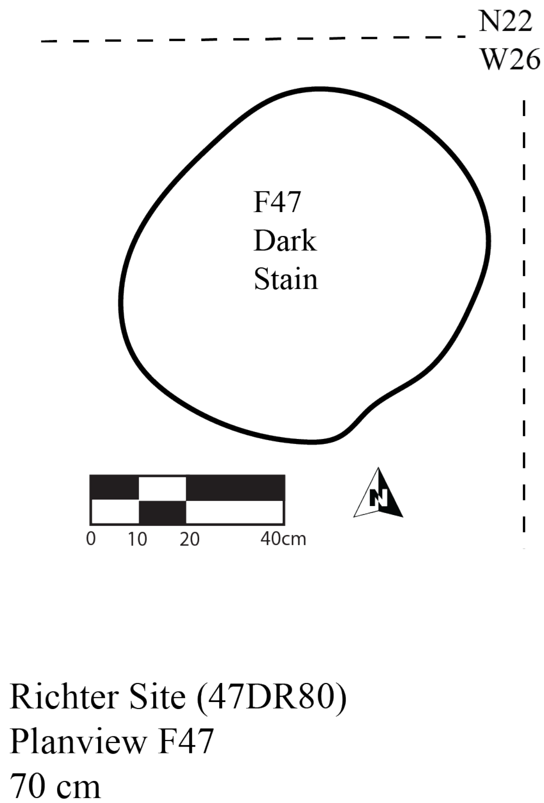


Figure 5.61. Planview of F47 at 70 cm.

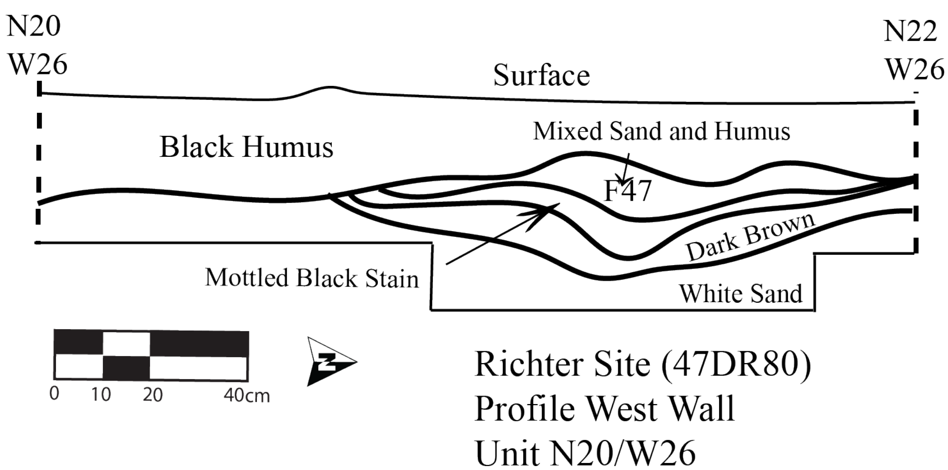


Figure 5.62. Profile of F47 in west wall of Unit N20/W26.

Feature 50, F50 (N88/W02)

Feature 50 is located north of the main portion of the site. The feature was identified as a black amorphous soil stain recorded as F50 (Figure 5.63). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 90 cm x 60 cm with an unknown depth. No additional features are associated with F50. Excavation of F50 produced no artifacts.

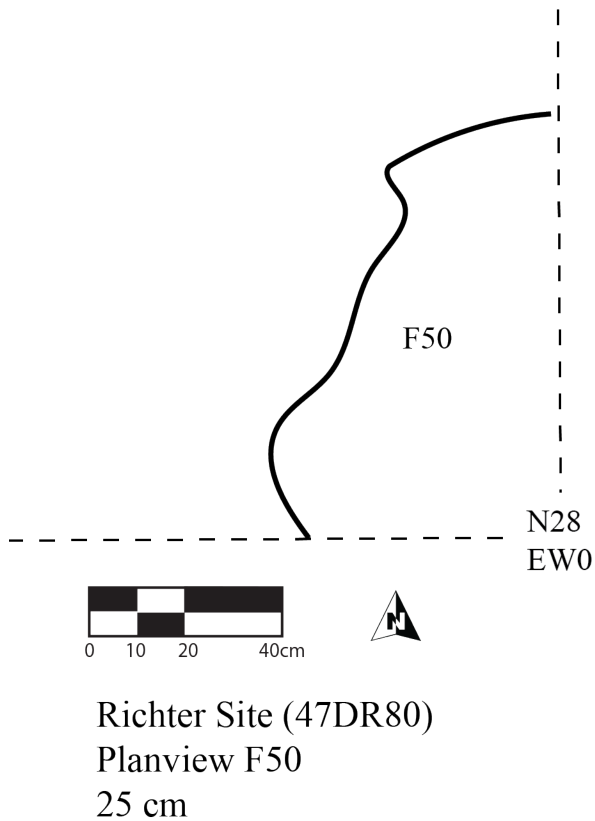


Figure 5.63. Planview of F50 at 25 cm.

Feature 53, F53 (S02/E08, S02/E10) see F66 and F67

Feature 55, F55 (S02/W04)

Feature 55 is located in Area B in the central portion of the site. The feature was identified as a dark, circular-shaped soil stain recorded as F13 (Figure 5.64, Figure 5.65, and Figure 5.66). Planview photos are missing from site documentation. Measuring from north to south, the pit dimensions are approximately 45 cm x 30 cm with a depth of 55 cm and a volume of about .07 m^3. Associated features include a structure (H2), a burial (F72), and four possible postmolds. Excavation of F55 produced pottery fragments and debitage. The function of this pit is undefined. The site map indicates this is a postmold but the dimensions suggest a typical refuse pit.

Figure 5.64. Photograph of F55 profile.

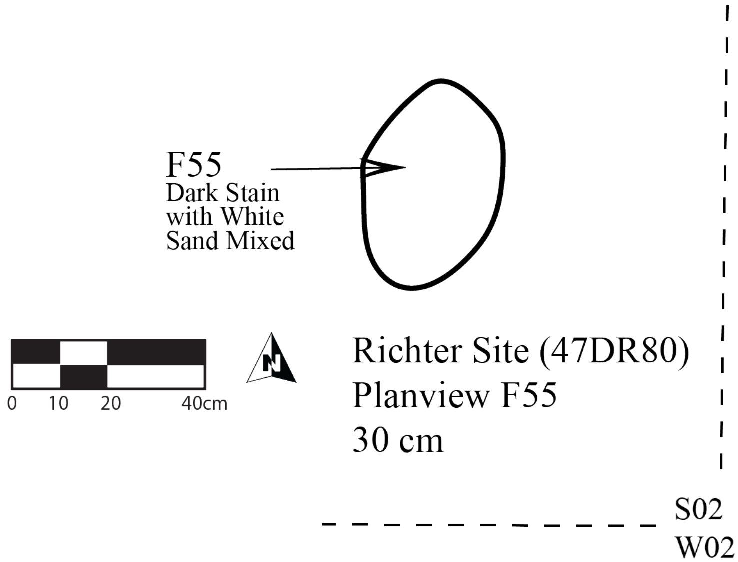


Figure 5.65. Planview of F55 at 30 cm.

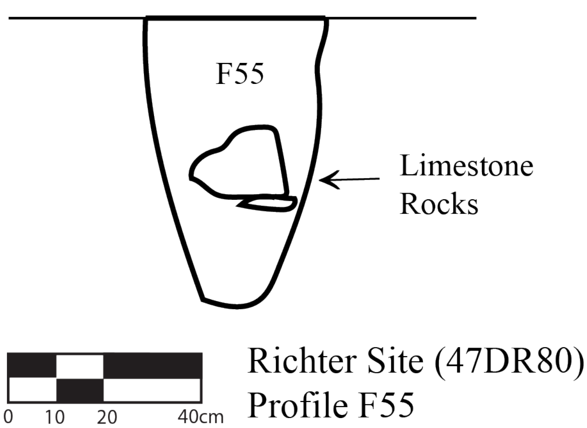


Figure 5.66. Planview of F55.

Feature 57, F57 (N18/W28)

Feature 57 is located in Area A in the western portion of the site. The feature was identified as a dark brown oval-shaped soil stain recorded as F57 (Figure 5.67 and Figure 5.68). The feature 57 profile map documents an intrusive modern pit in the western portion of the feature (Figure 5.68). Planview photos and profile photos are missing from site documentation.

Measuring from north to south, the pit dimensions are approximately 44 cm x 64 cm with a depth of 40 cm and a volume of about .11 m^3. Associated features include one hearth (F77), a structure (H1), and 13 possible postmolds. Excavation of F57 produced only two pottery fragments. The function of this pit is undefined.

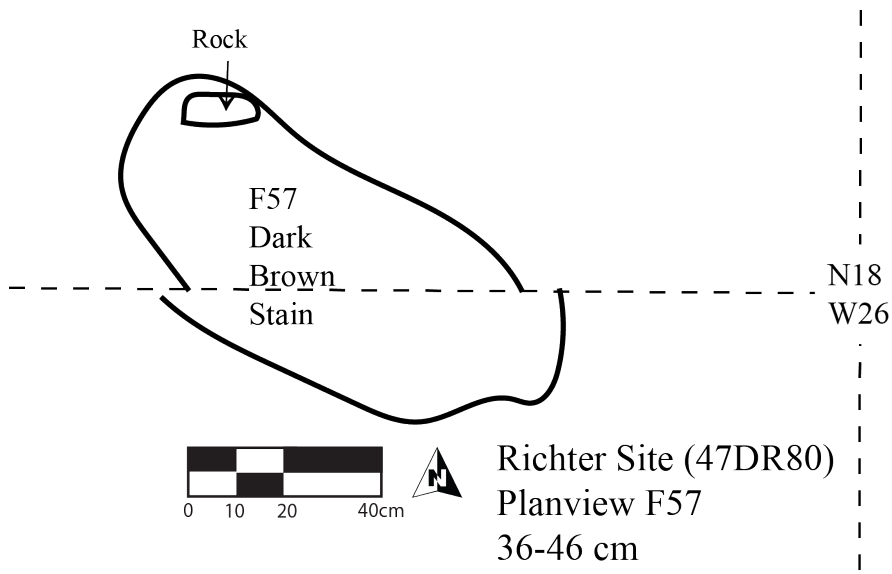


Figure 5.67. Planview of F57 at a depth of 36-46 cm.

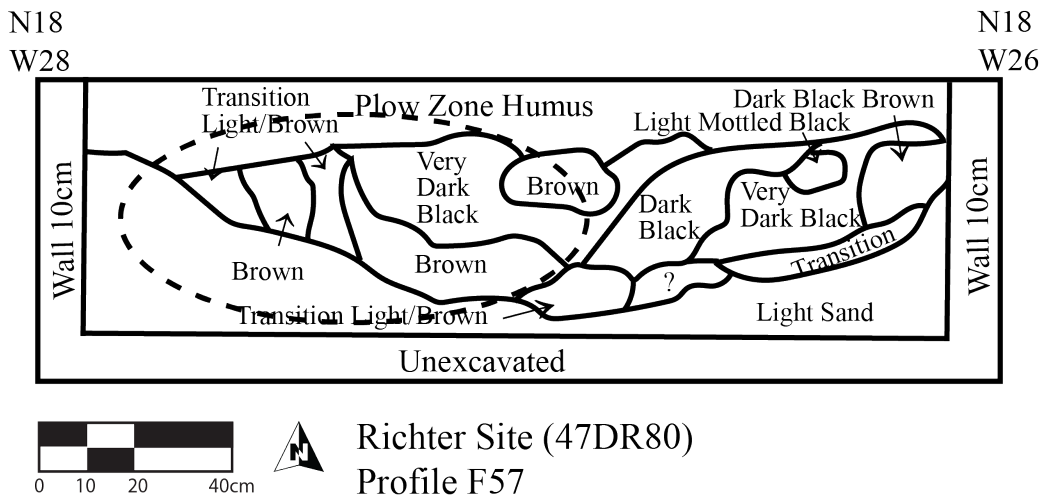


Figure 5.68. Profile of north wall of Unit N16/W28. F57 is most likely the dashed line circled western portion. The eastern portion seems to represent an intrusive historic pit.

Feature 58, F58 (NS0/E01 and S02/E02)

Feature 58 is located in Area B in the central portion of the site. The feature was identified as a large dark or black oily roughly oval-shaped soil stain recorded as F58 (Figure 5.69). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 60 cm x 70 cm with a depth of 16 cm and a volume of about .07 m^3. Associated features include one pit of unknown function (F59), a structure (H2), and five possible postmolds. Excavation of F58 produced a smooth sherd, a decorated sherd, two rim fragments, and pottery fragments. The lithic assemblage includes a small amount of debitage and a core. Faunal remains include a single unidentified mammal bone and a number of unidentified pieces of bone. This is identified as a refuse pit.

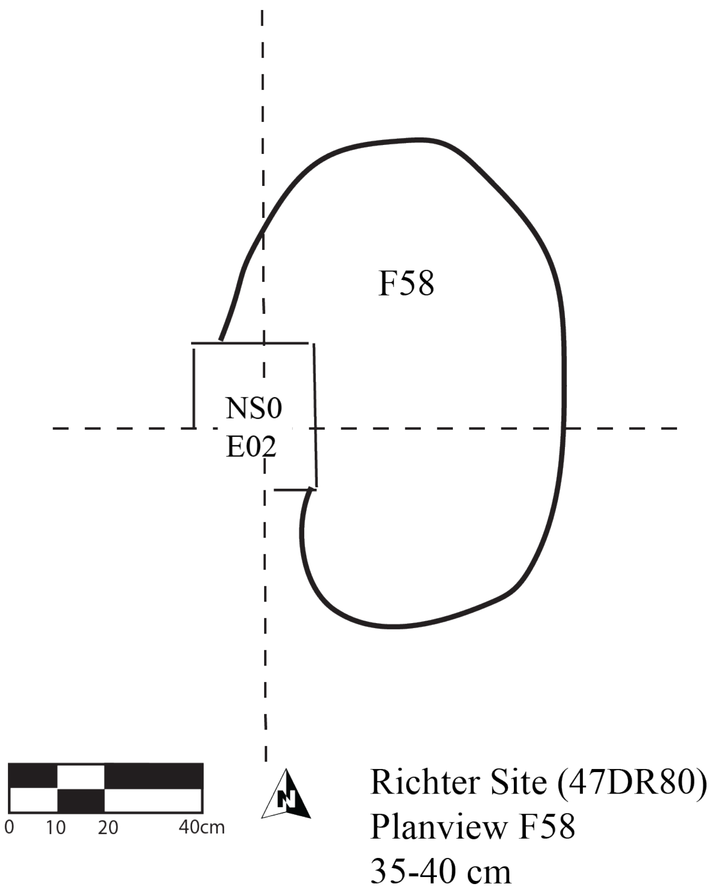


Figure 5.69. Planview of F58 at 35-40 cm.

Feature 59, F59 (S02/E00, S02/E02)

Feature 59 is located in Area B in the central portion of the site. The feature was identified as a dark, circular-shaped soil stain recorded as F59 (Figure 5.70 and Figure 5.71). Excavators of this feature reported it as being clay lined. Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 44 cm x 60 cm and depth is unknown. Associated features include one pit of unknown function (F58), one structure (H2), and eight possible postmolds. Excavation of F59 produced no artifacts.

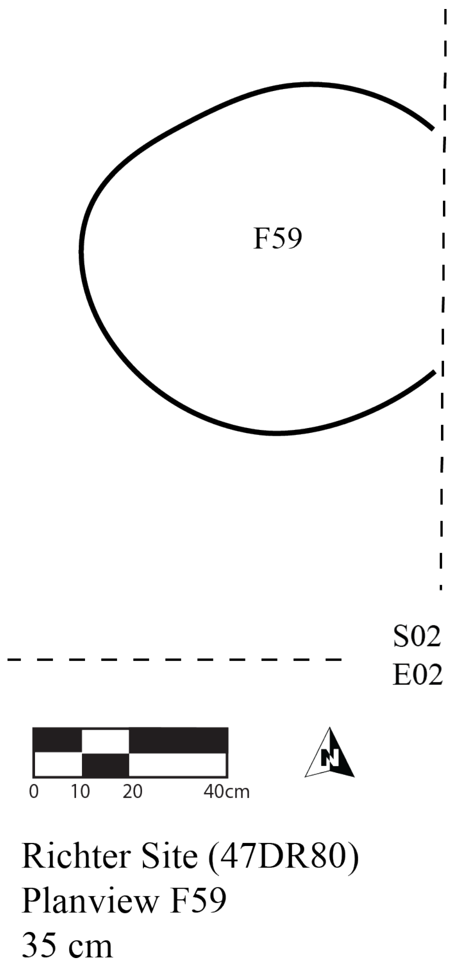


Figure 5.70. Planview of F59 at 35 cm.

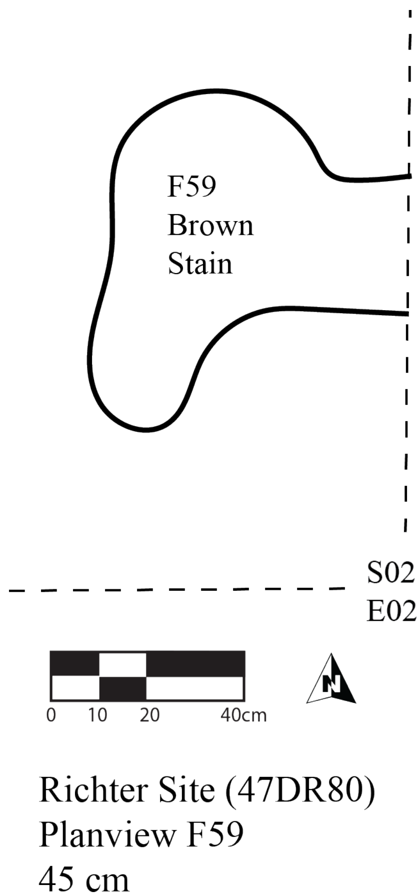


Figure 5.71. Planview of F59 at 45 cm.

Feature 60, F60 (N30/W10)

Feature 60 is located in Area E in the northern portion of the site. The feature was identified as a portion of a dark oval-shaped soil stain recorded as F60 (Figure 5.72 and Figure 5.73). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 75 cm x 62 cm with a depth of 11 cm and a volume of about .05 m^3. Associated features include two structures (H4 and H5). Excavation of F60 produced pottery fragments and a single piece of debitage. Faunal remains included only snail shells. The function of this pit is listed as undefined.

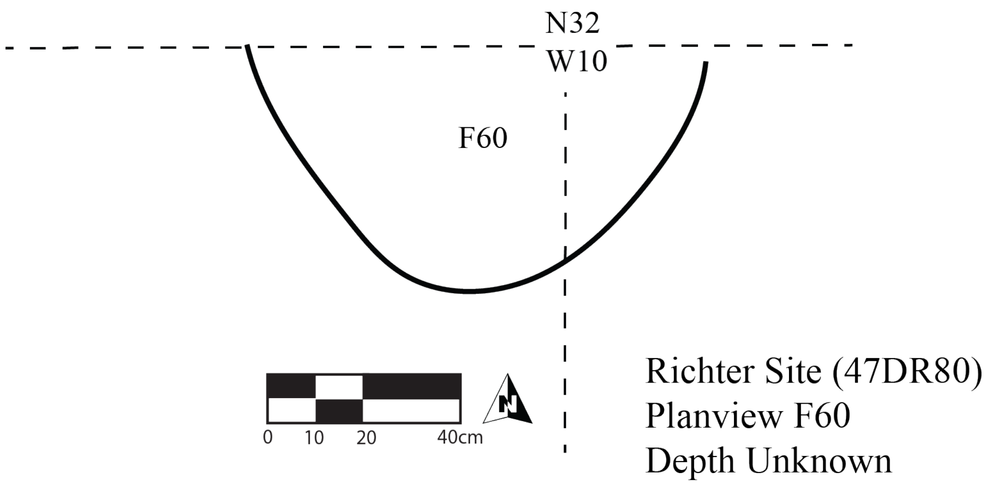


Figure 5.72. Planview of F60 depth unknown from original site map.

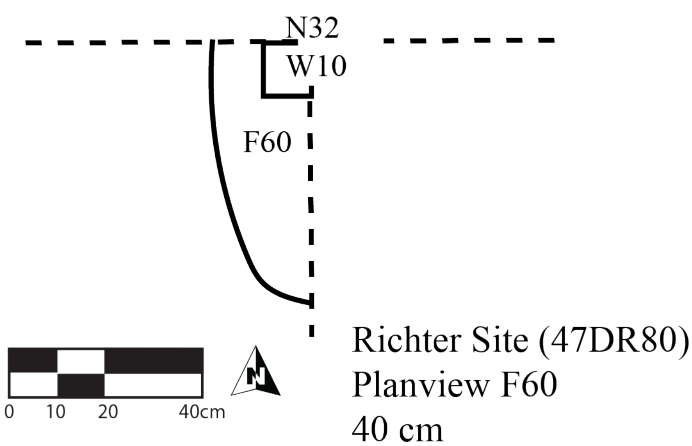


Figure 5.73. Planview for F60 at depth of 40 cm.

Feature 62, F62 (S06/E10)

Feature 62 is located in Area C in the southeast portion of the site. The feature was identified as a dark amorphous to circular-shaped soil stain recorded as F62 (Figure 5.74). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the pit dimensions are approximately 50 cm x 45 cm with a depth of 10 cm with a volume of about .02 m^3. Associated features include a structure (H7), five postmolds, and eight possible postmolds. Excavation of F62 produced pottery fragments and debitage. Faunal remains were limited to unidentified mammal bone. The function of this pit is undefined.

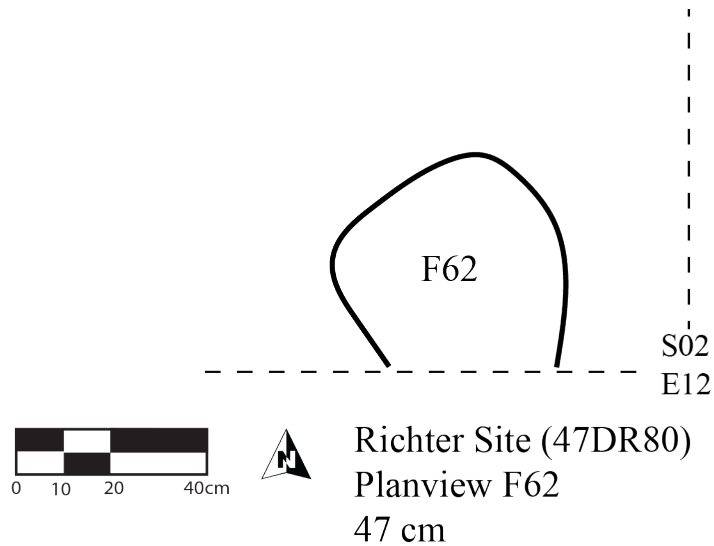


Figure 5.74. Planview of F62 at 47 cm

Feature 64, F64 (N02/E08)

Feature 64 is located in Area C in the southeastern portion of the site. The feature was identified as a dark soil stain heavily mixed with charcoal recorded as F64 and located in the northwestern corner of the excavation unit (Figure 5.75). Planview photos, profile maps, and profile photos are missing from the site documentation. Documents suggest this feature was not fully excavated. Measuring from north to south, the pit dimensions are approximately 45 cm x 50 cm, depth is unknown. Associated features include only a midden (F63). No artifacts are associated with this feature.

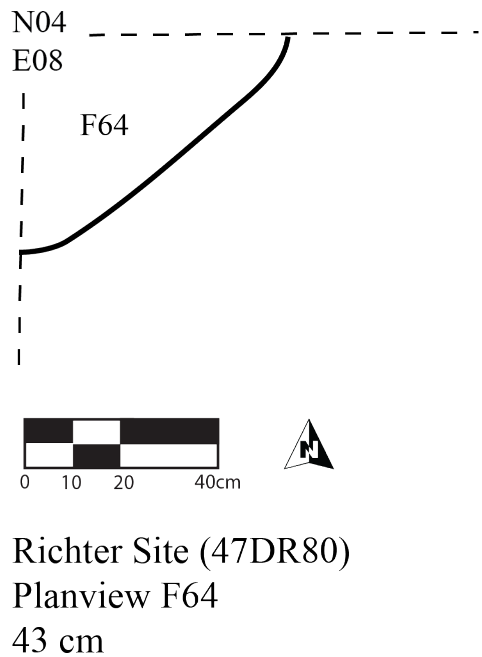


Figure 5.75. Planview of F64 at 43 cm.

Hearths

Feature 4, F4 (TP1)

Feature 4 is located south of the main excavation area in the Richter family garden. The feature was identified as an area of charcoal roughly oval in shape encircling a central area of reddened sand. A large rock is situated on the western portion of the feature (Figure 5.76 and Figure 5.77). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 34 cm x 60 cm with a depth of 45 cm and a volume of about .09 m^3. Associated features include four pits of unknown function (F2, F3, F5, and F6). Excavation of F4 produced pottery fragments and a few pieces of debitage. Faunal remains were limited to a small amount of unidentified fish and unidentified mammal. This feature is identified as a hearth.

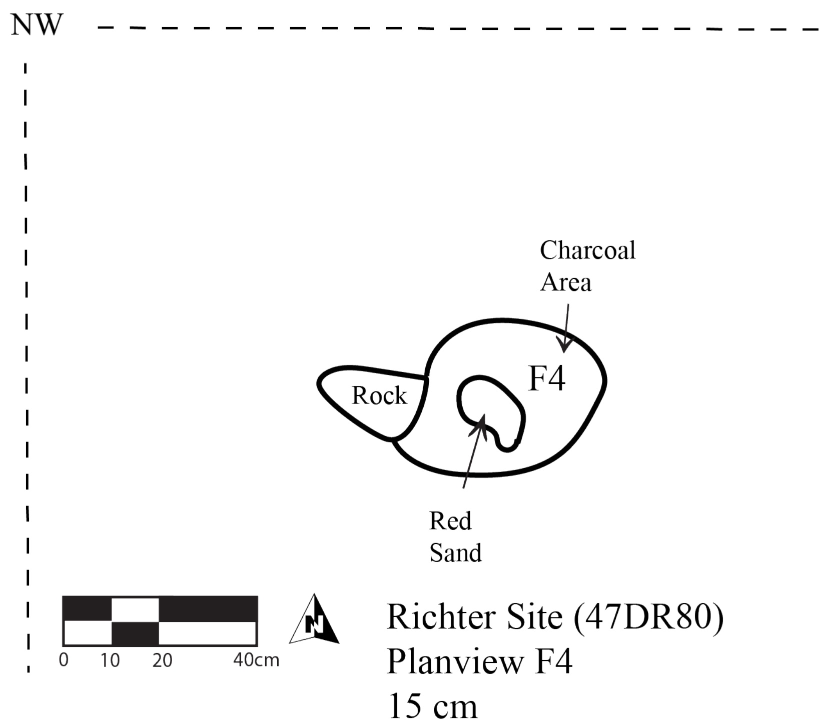


Figure 5.76. Planview of F4 at 15 cm.

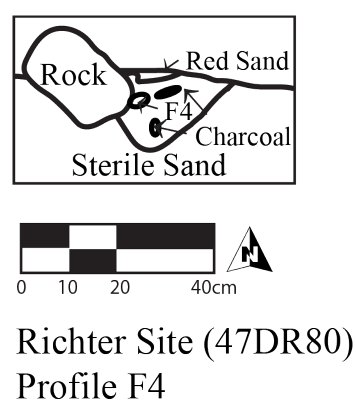


Figure 5.77. Profile of F4.

Feature 18, F18 (1010/1003)

Feature 18 is located in Area B in the central portion of the site. The feature was identified as a large, dark, roughly oval-shaped soil stain with heavy charcoal mottling recorded as F18 (Figure 5.78). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 95 cm x 105 cm with a depth of 32 cm and a volume of about .32 m^3. This feature is associated with two possible postmolds. Excavation of F18 produced a single smooth pseudo-scallop sherd and some pottery fragments. A single piece of burned limestone is noted. This feature was originally identified as a hearth.

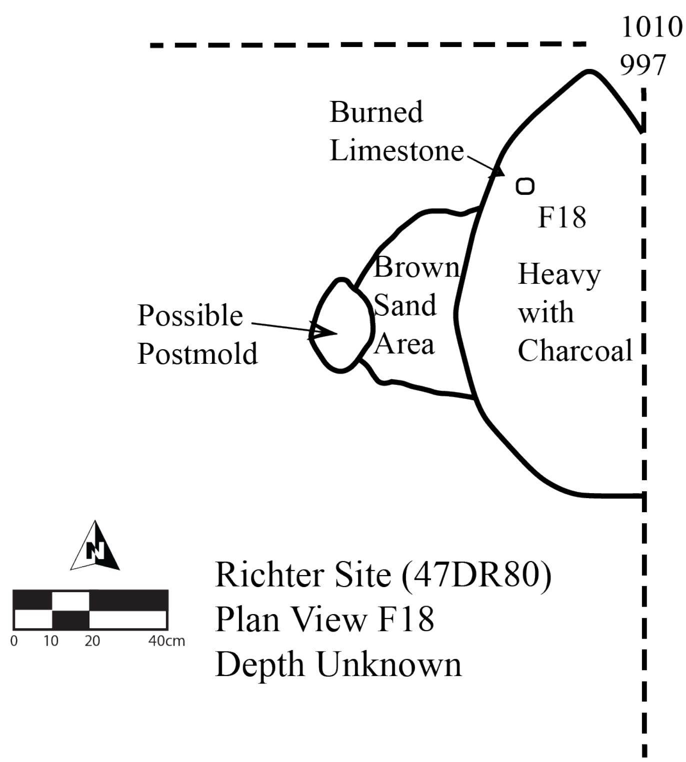


Figure 5.78. Planview of F18.

Feature 20, F20 (1007/1003)

Feature 20 is located in Area B in the central portion of the site. The feature was identified as a large, dark, roughly oval-shaped soil stain recorded as F20 (Figure 5.79). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 120 cm x 75 cm with a depth of 15 cm and a volume of about .14 m^3. Associated features include one hearth (F21), four pits of unknown function (F13, F15, F16, and F23), and a cremation burial of multiple individuals within a possible structure basin (F9/F11). Excavation of F20 produced smooth sherds, decorated sherds, and pottery fragments. Decorated smooth sherds were all pseudo-scallop stamped. Vessel 73, a smooth surfaced vessel with pseudo-scallop stamping on the body and lip is associated with this feature. The lithic assemblage was limited to debitage. Faunal materials included snail shells and unidentified mammal bones. Feature 20 was originally identified as a hearth.

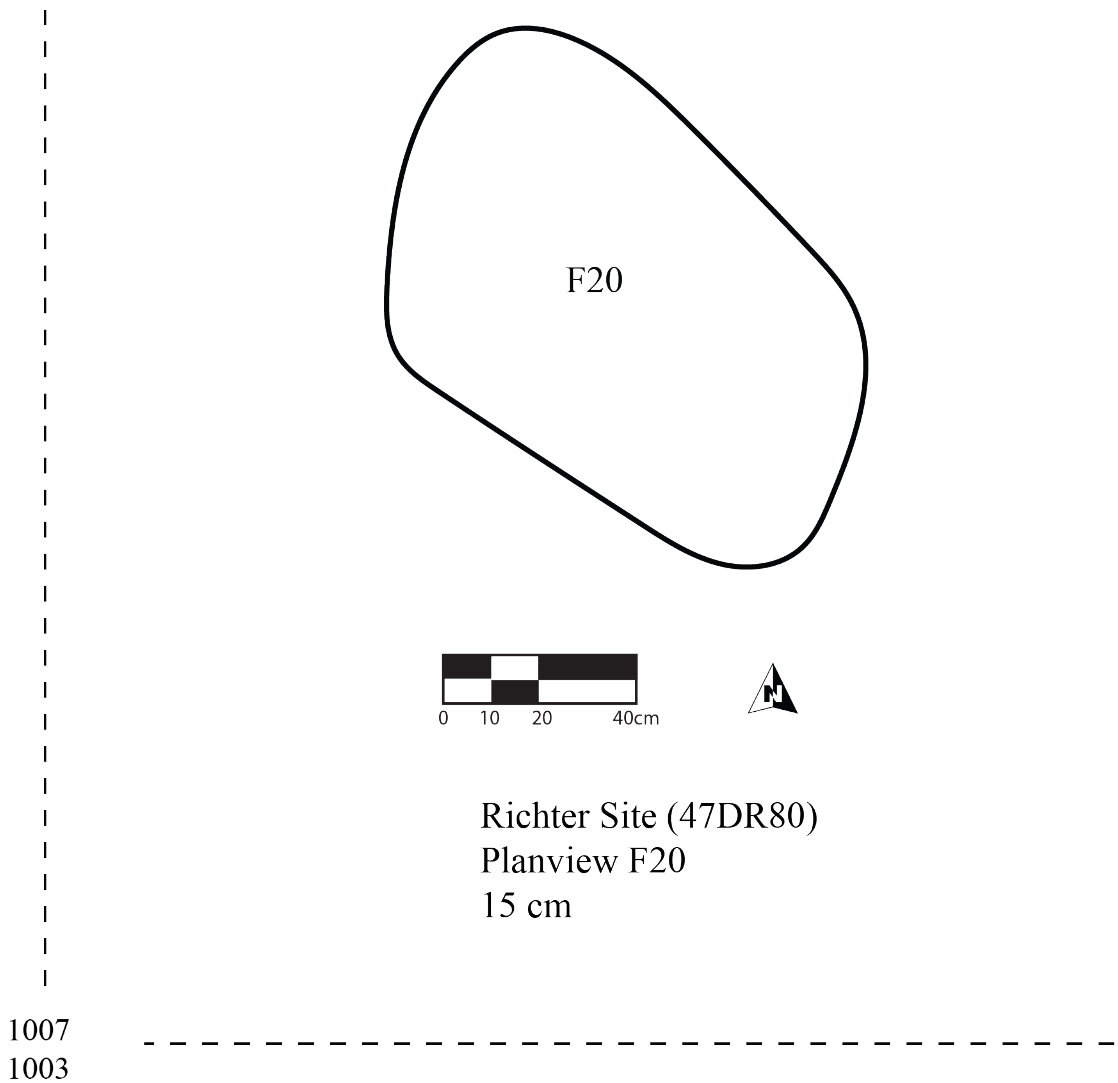


Figure 5.79. Planview of F20 at 15 cm.

Feature 21, F21 (1007/1003)

Feature 21 is located in Area B in the central portion of the site. The feature was identified as a dark oval-shaped soil stain recorded as F21 (Figure 5.80). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 35 cm x 40 cm and no depth was recorded. Associated features include one hearth (F20), one pit of unknown function (F12), one postmold, two possible postmolds, and a cremation burial of multiple individuals within a possible structure basin (F9/F11). Excavation of F58 produced no artifacts. This feature was originally identified as a hearth.

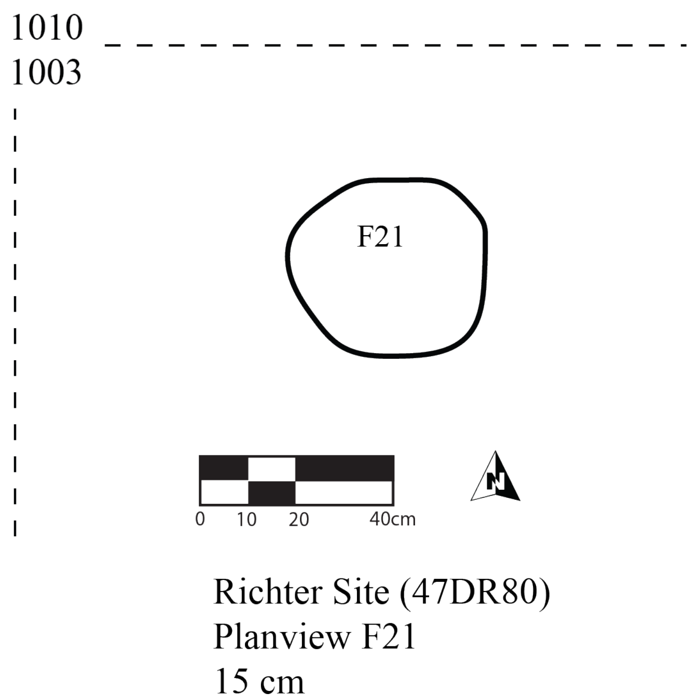


Figure 5.80. Planview of F21 at 15 cm.

Feature 28, F28 (N18/W12)

Feature 28 is located in Area E in the northern portion of the site. The feature was initially identified as a mottled light and dark, roughly circular-shaped soil stain recorded as F28 (Figure 5.81, Figure 5.82 and Figure 5.83). Below the mottled surface the feature is described as being composed of black, greasy soil (Figure 5.84). The dark greasy layer was above a base of limestone slabs. Planview photos are missing from site documentation. Measuring from north to south, the hearth dimensions are approximately 60 cm x 45 cm with a depth of 30 cm and a volume of about .08 m^3. Associated features include a hearth (F54), a midden (F26), a structure

(H12), one postmold, and two possible postmolds. Excavation of F28 produced no artifacts. The feature is interpreted as a hearth.

Figure 5.81. Photograph of F28 located in north wall of Unit N18/W12.

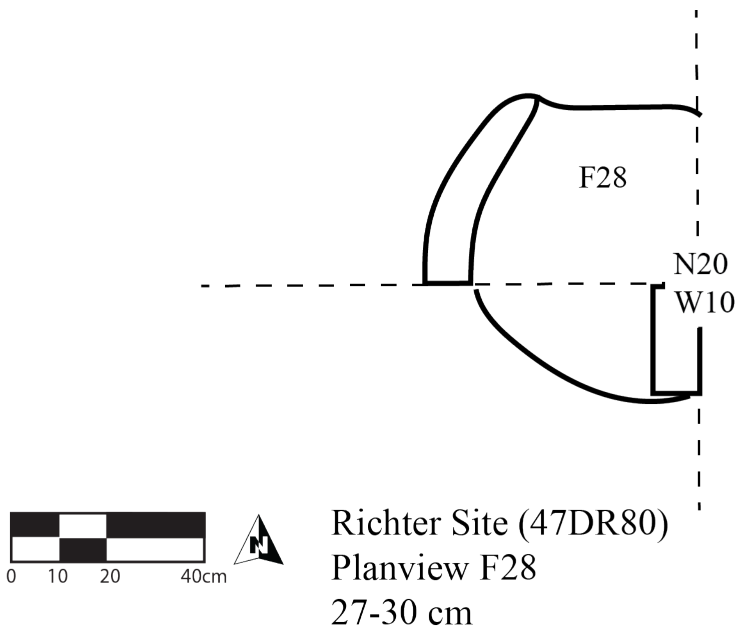


Figure 5.82. Planview of F28 at 27-30 cm.

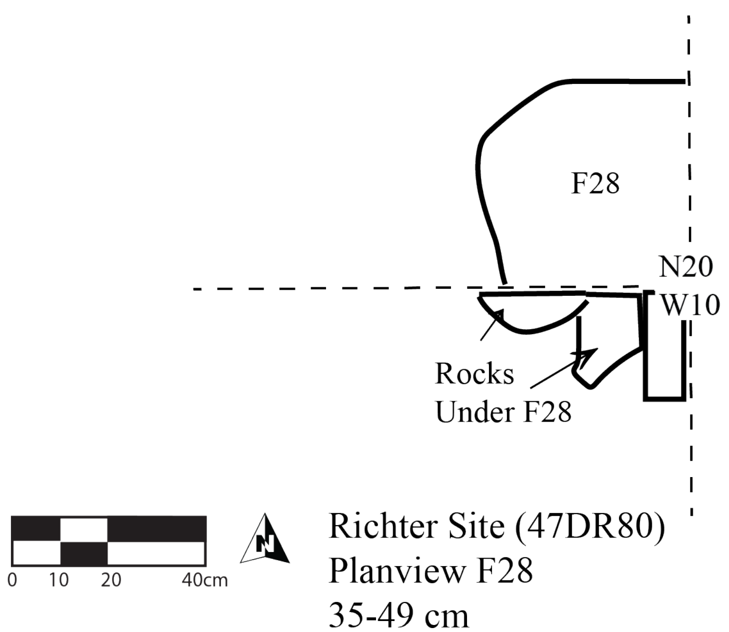


Figure 5.83. Planview of F28 at 35-49 cm. Note that rocks below feature are located at 49 cm.

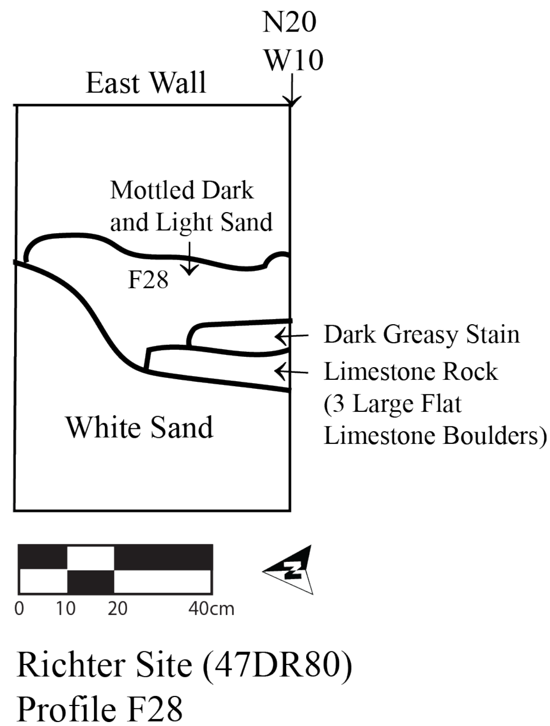


Figure 5.84. Profile of F28 on east wall of Unit N20/W12.

Feature 32, F32 (N18/W32 and N20/W32)

Feature 32 is located in Area A in the western portion of the site. The feature was identified as a large, black, roughly oval-shaped soil stain recorded as F32 (Figure 5.85). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 55 cm x 75 cm with a depth of 20 cm and a volume of about .08 m^3. Associated features include a structure (H1). Excavation of F32 produced cordmarked sherds, pottery fragments, and a small amount of debitage. Faunal remains were limited to unidentified mammal. Two pieces of cf *zea mays* (maize) cob were found but they are too small to determine if they were prehistoric or modern. This feature is interpreted as a hearth.

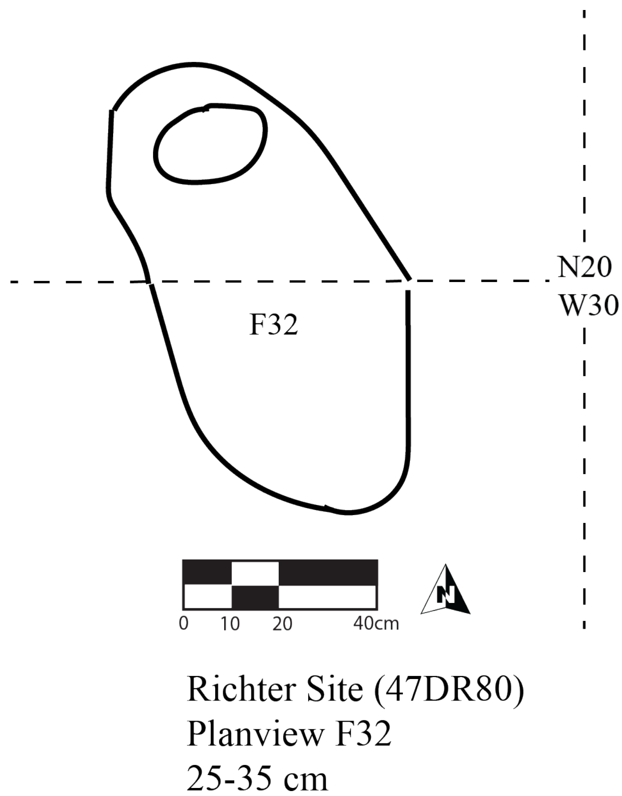


Figure 5.85. Planview of F32 at 25-35 cm.

Feature 36, F36 (N28/W10)

Feature 36 is located in Area E in the northern portion of the site. The feature was identified as an orange colored, roughly oval-shaped soil stain recorded as F58 (Figure 5.86 and Figure 5.87). Profile maps and profile photos are missing from site documentation. Measuring from north to south, the hearth dimensions are approximately 35 cm x 50 cm with a depth of 34 cm and a volume of about .06 m^3. Associated features include one hearth (F37), one pit of unknown function (F38), and three structures (H3, H4, and H6). Excavation of F36 produced numerous pottery fragments and a few pieces of debitage. This feature contained V59, a pot with a weathered exterior and notched lip. Faunal remains include a small amount of unidentified bone. This feature is interpreted as a hearth.

Figure 5.86. Photograph of F36.

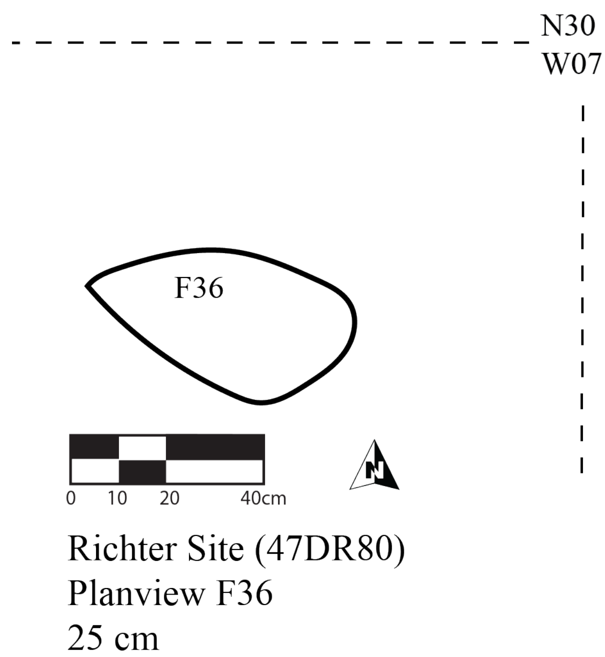


Figure 5.87. Planview of F36 at 25 cm.

Feature 37, F37 (N28/W10)

Feature 37 is located in Area E in the northern portion of the site. The feature was identified as an orange colored, roughly oval-shaped soil stain recorded as F37 (Figure 5.88). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 65 cm x 60 cm with a depth of 15 cm with a volume of about .06 m^3. Associated features include one hearth (F36), one pit of unknown function (F38), three structures (H3, H4, and H6), and a postmold. This postmold is not indicated on existing planview maps and appears only on the original site map. Excavation of F37 produced only two pottery fragments and a single piece of debitage. This feature was interpreted as a hearth.

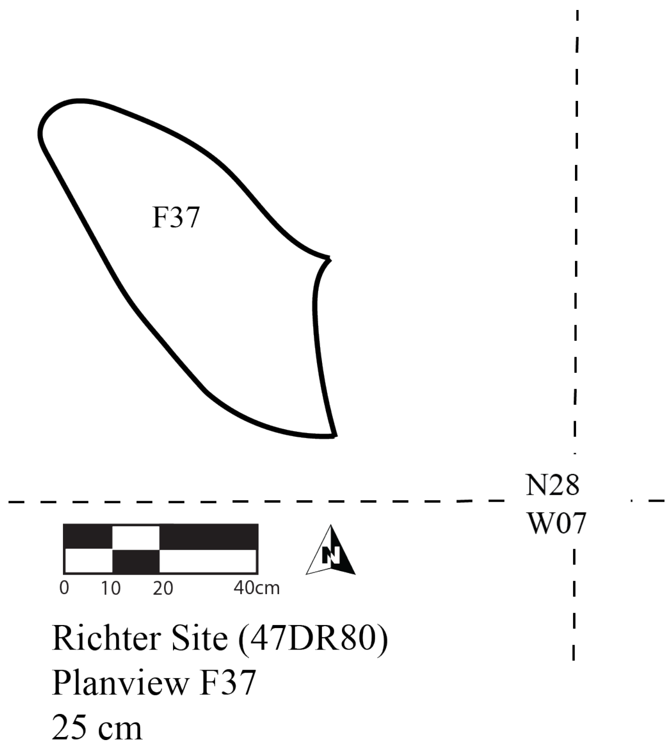


Figure 5.88. Planview of F37 at 25 cm.

Feature 39, F39 (N40/W02)

Feature 39 is located north of the main site excavation area. The feature was identified as an amorphous, black, oily soil stain recorded as F39 (Figure 5.89, Figure 5.90, Figure 5.91, and Figure 5.92). Planview photos are missing from site documentation. Measuring from north to south, the hearth dimensions are approximately 40 cm x 75 cm with a depth of 75 cm and a volume of about .23 m^3. No other features are associated this feature. Excavation of F39 produced two decorated sherds, five snail shells, and two pieces of unidentified bone. Also recovered was V19. This vessel has a smoothed-over-cordmarked exterior surface with linear stamped decoration and a linear stamped notched lip. Decorated smooth sherds include one linear stamped sherd and one sherd with an unidentified decoration. Excavators noted that there were many burned stones in the feature. This feature is interpreted as a hearth.

Figure 5.89. Photograph of F39 profile in north wall of Unit N40/W02.

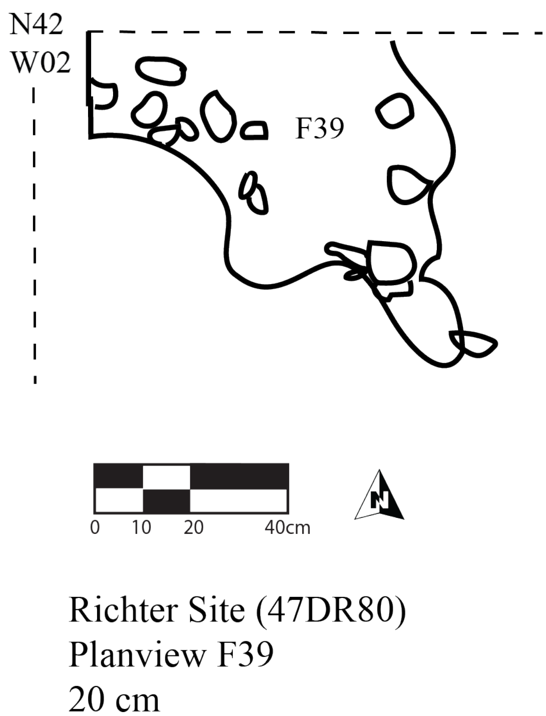


Figure 5.90. Planview of F39 at 20 cm.

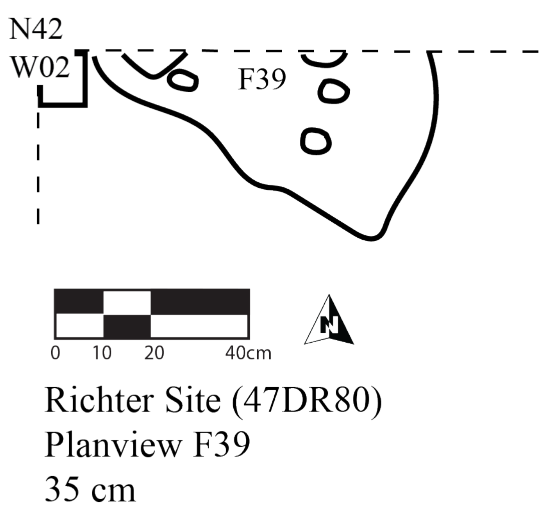


Figure 5.91. Planview of F39 at 35 cm.

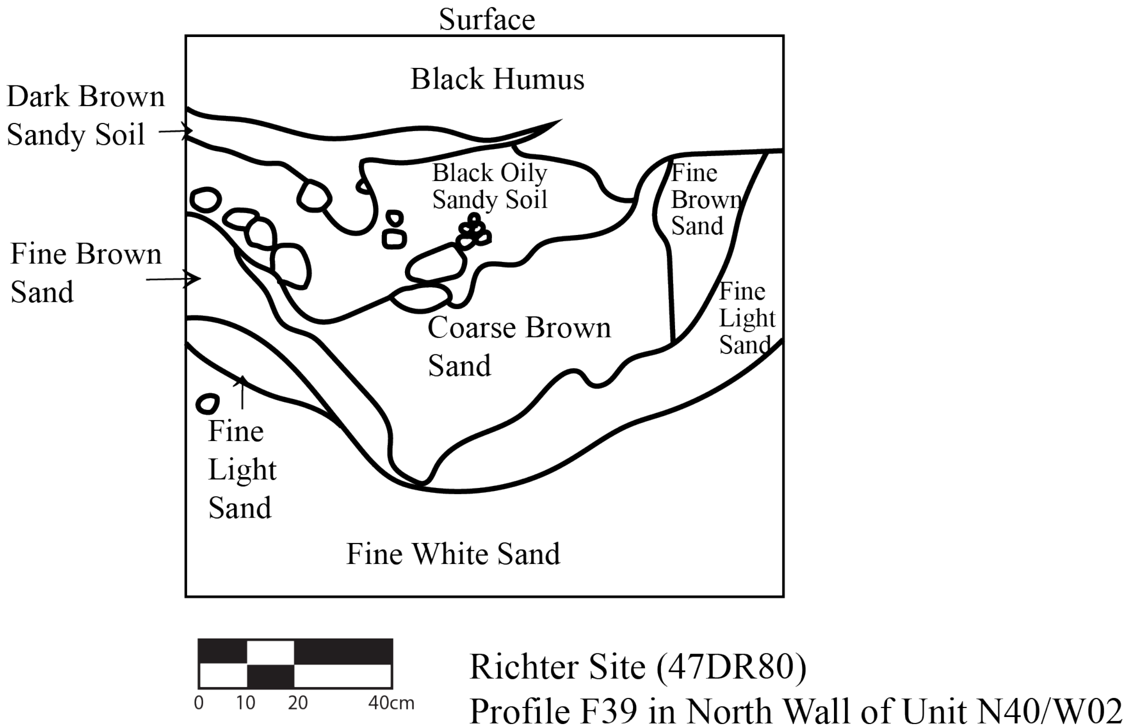


Figure 5.92. Profile of F39 north wall of Unit N40/W02.

Feature 44, F44 (N10/E07)

Feature 44 is located in Area D in the eastern portion of the site. The feature was identified as a large dark brown or black roughly linear shaped soil stain recorded as F44 (Figure 5.93 and Figure 5.94). Planview photos and profile photos are missing from site documentation. Measuring from north to south, the hearth dimensions are approximately 148 cm x 80 cm with a depth of 27 cm and a volume of about .32 m^3. Associated features include two pits of unknown function (F43, F45), a structure (H8), and five possible postmolds. Excavation of F44 produced cordmarked sherds, smooth sherds, smoothed-over-cordmark sherds, a decorated smooth sherd with unidentified stamp, a decorated cordmarked sherd with incised decoration, and pottery fragments. Also recovered was V26. This is a smoothed-over-cordmarked vessel with CWS stamping on exterior and interior rim. The lithic assemblage includes debitage and a single utilized pseudo-bladelet. Faunal remains include a wide variety of animals: catfish, gray fox, panfishes, turtle, white-tailed deer, beaver, unidentified amphibian, unidentified bird, unidentified fish, unidentified mammal, and unidentified bone. This feature was interpreted as a hearth.

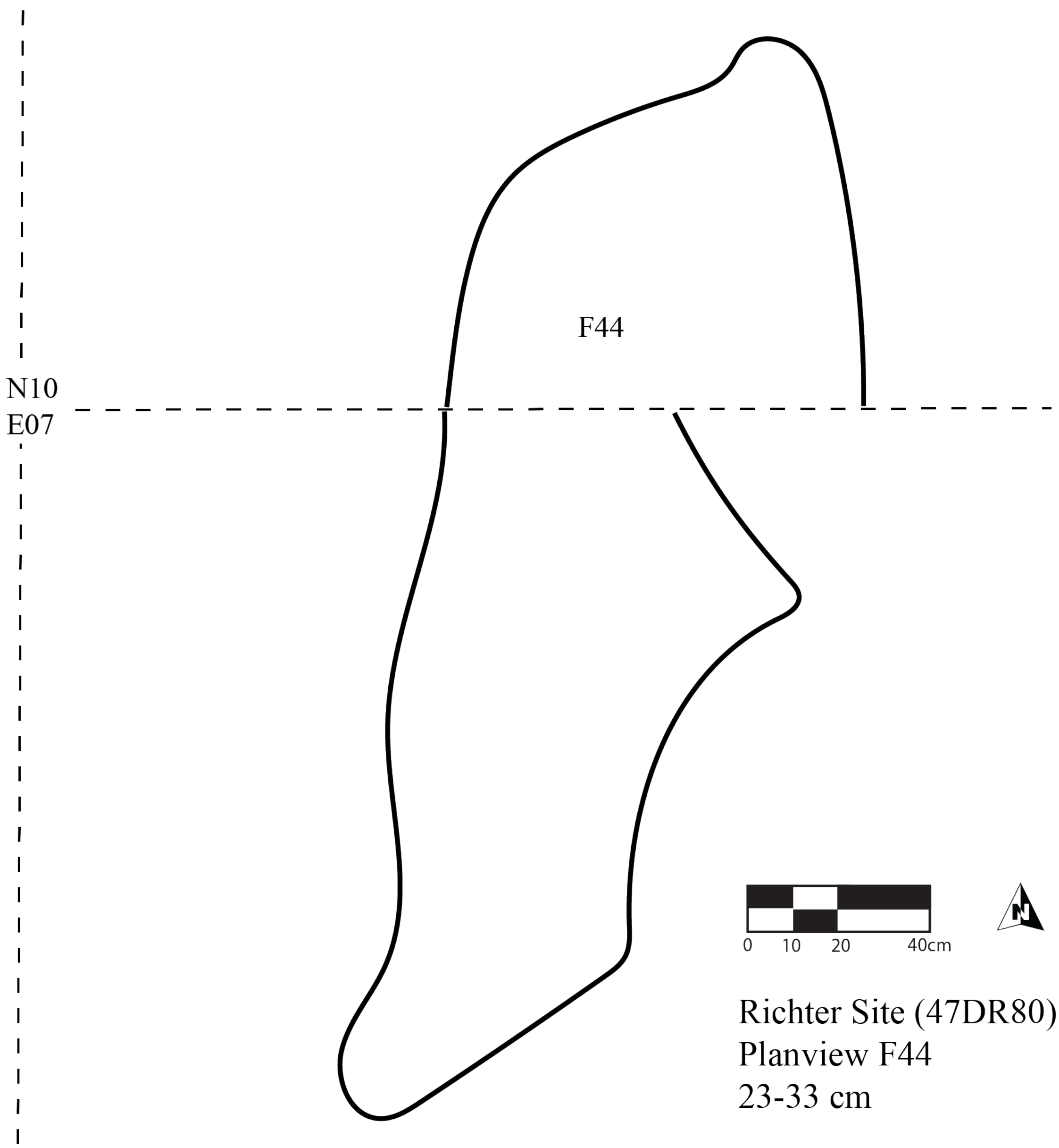


Figure 5.93. Planview of F44 at 23-38 cm.

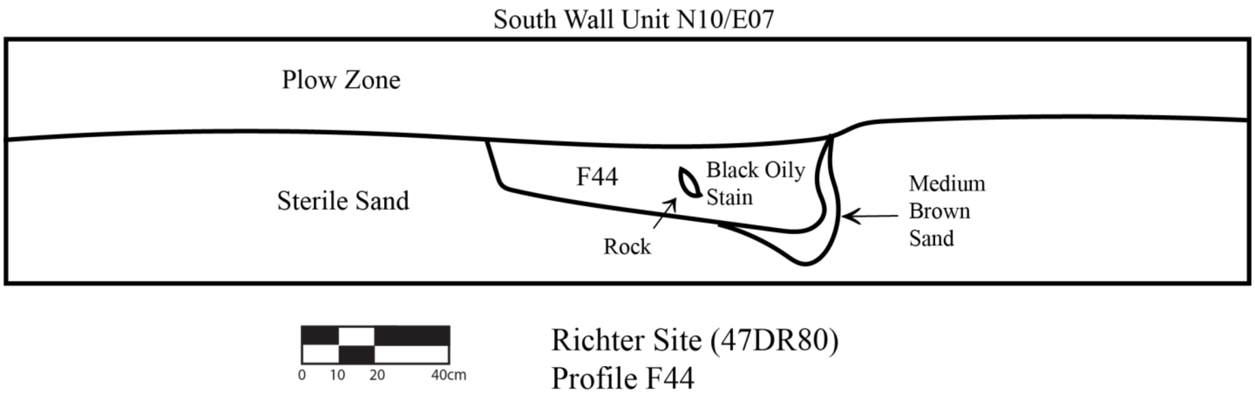


Figure 5.94. Profile of F44 South Wall of Unit N10/E07

Feature 54, F54 (N20/W14)

Feature 54 is located in Area E in the northern portion of the site. The feature was identified as a dark triangle-shaped soil stain recored as F54 (Figure 5.95 and Figure 5.96). Within the dark soil stain is a circular concentration of charcoal. Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 62 cm x 105 cm with a depth of 22 cm and a volume of about .14 m^3. Associated features include one hearth (F28), one pit of unknown function (F26), two structures (H11 and H12), one postmold, and one possible postmold. Excavation of F54 produced 14 snail shells. This feature was interpreted as a hearth.

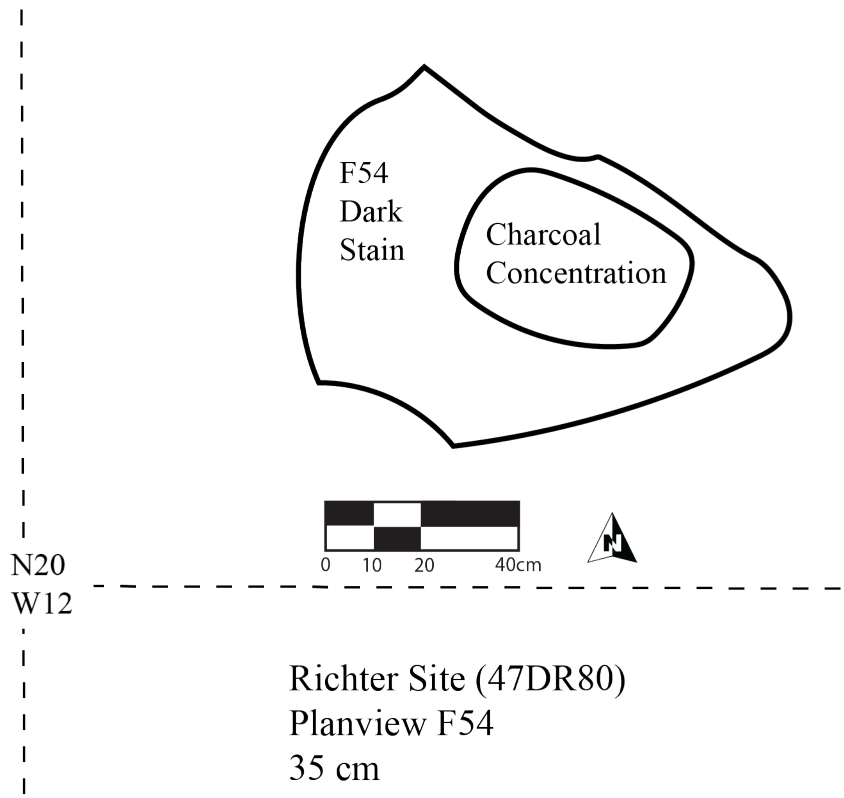


Figure 5.95. Planview of F54 at 35 cm.

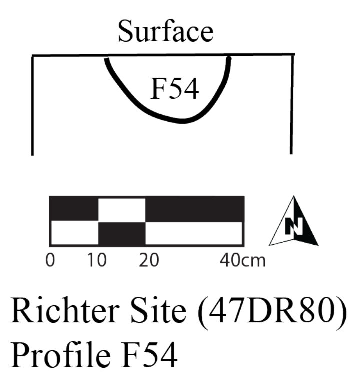


Figure 5.96. Profile of F54.

Feature 56, F56 (N20/W14)

Feature 56 is located in Area E in the central portion of the site. The feature was identified as a dark, circular-shaped soil stain ringed with charcoal recorded as F56 (Figure 5.97). Planview photos and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 35 cm x 45 cm with a depth of 21 cm and a volume of about .01 m^3. Associated features include a structure (H12). Excavation of F56 produced a couple of pottery fragments and a single piece of debitage. This feature was interpreted as a hearth.

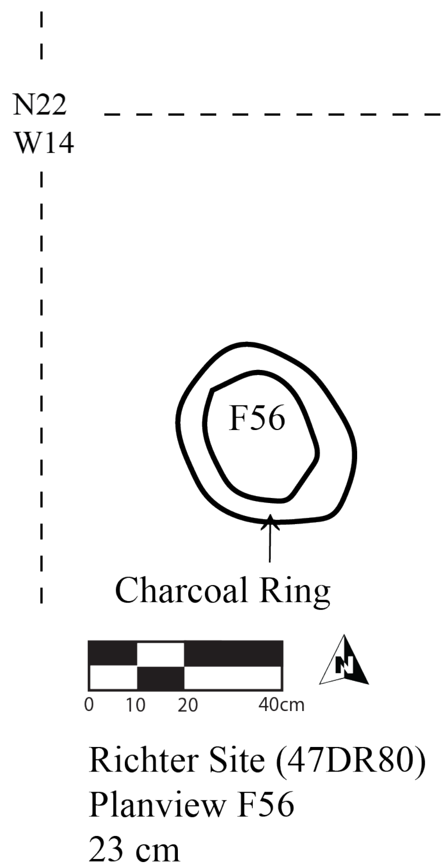


Figure 5.97. Planview of F56 at 23 cm.

Feature 70, F70 (N28/E10)

Feature 70 is located in Area E in the northeastern portion of the site. The feature was identified as a large dark quarter circle-shaped soil stain identified as F70 (Figure 5.98). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 60 cm x 85 cm and depth was not documented. Associated features include one possible postmold. Excavation of F70 produced no artifacts. This feature was interpreted as a hearth.

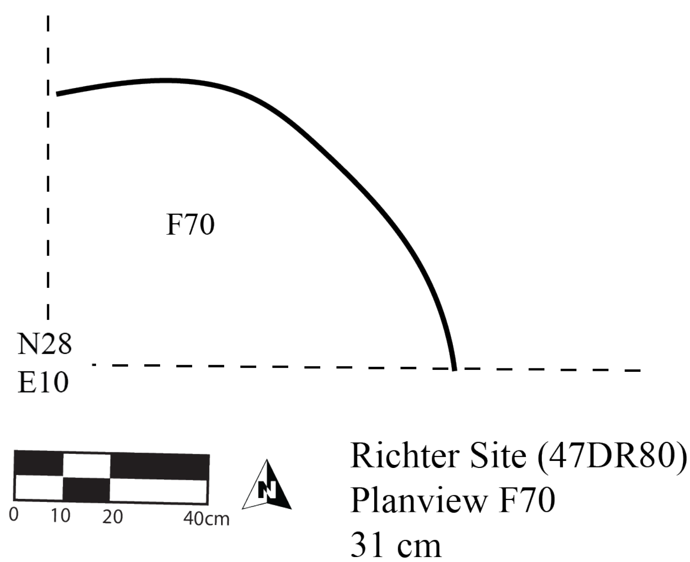


Figure 5.98. Planview of F70 at a depth of 31 cm.

Feature 71, F71 (S04/E06)

Feature 71 is located in Area C in the southeastern portion of the site. The feature was identified as a black, linear-shaped soil stain recorded as F71 (Figure 5.99). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 50 cm x 40 cm. No depth was recorded for this feature. Associated features include one pit of unknown function (F61), a structure (H7), and three possible postmolds. Excavation of F71 produced no artifacts but excavators note deer bones found adjacent to the feature in unit fill. A large rock was mapped within the feature. The feature was interpreted as a hearth.

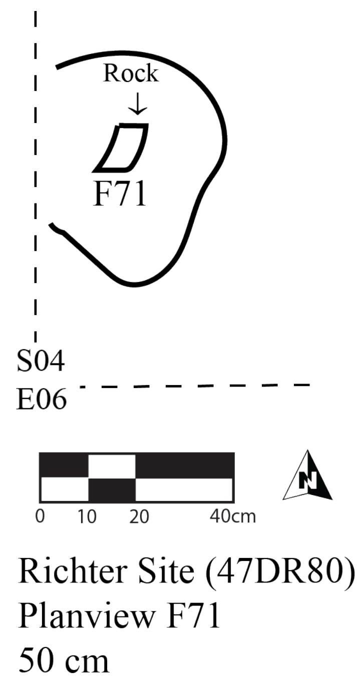


Figure 5.99. Planview of F71 at 50 cm.

Feature 73, F73 (N13/W34)

Feature 73 is located in Area A in the western portion of the site. The feature was identified as a partially circular-shaped soil stain with ash inclusions recorded as F73 (Figure 5.100). Planview photos, profile maps, and profile photos are missing from the site documentation. Feature 73 appears to have not been excavated. Measuring from north to south, the hearth dimensions are approximately 15 cm x 30 cm. No depth was recorded. Associated features include two middens (F41 and F74). No artifacts are associated with this feature. This feature was interpreted as a hearth.

Figure 5.100. Planview F73 at 30 cm.

Feature 75, F75 (N13/W32)

Feature 75 is located in Area A in the western portion of the site. The feature was identified as a large, dark, most likely oval-shaped soil stain recorded as F75 (Figure 5.101). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 50 cm x 75 cm and depth was not recorded. There are no artifacts associated with this feature. It is unclear if it was excavated. This is identified as a hearth.

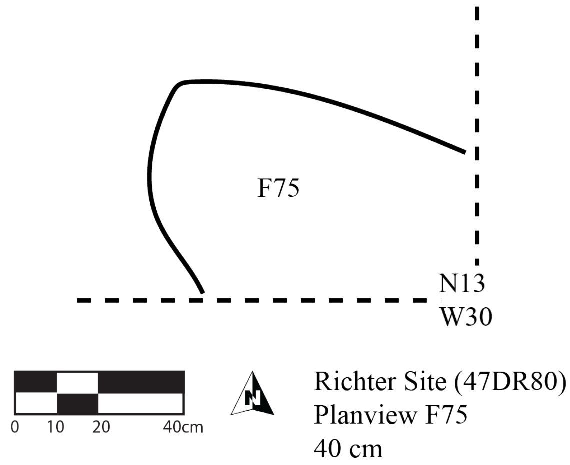


Figure 5.101. Planview of F75 at 40 cm.

Feature 77, F77 (N18/W28)

Feature 77 is located in Area A in the western portion of the site. The feature was identified as a small, dark, oval-shaped soil stain with ash recorded as F77 (Figure 5.102). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the hearth dimensions are approximately 20 cm x 30 cm. No depth was recorded. There are no artifacts associated with this feature. It is unclear if it was excavated. This is identified as a hearth.

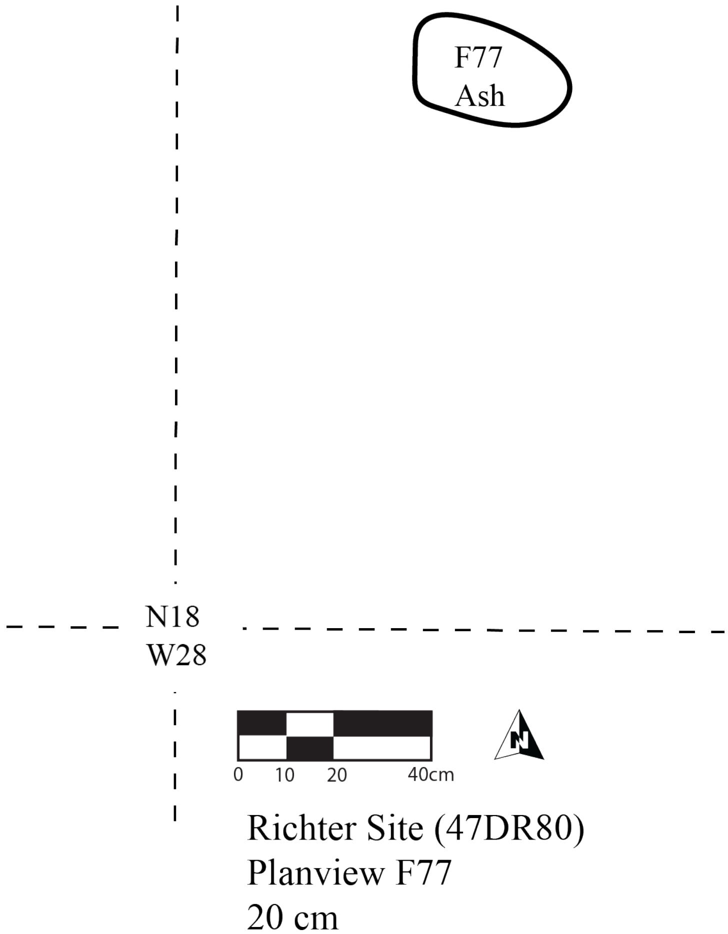


Figure 5.102. Planview of F77 at 20 cm.

Midden Fill

Feature 5 (TP2)

Feature 5 is located in an area south of the main excavation area at the site. This area is in the Richter family garden. The feature was identified as an amorphous mottled yellow soil stain recorded as F5 (Figure 5.103). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 130 cm x 150 cm with a depth of 24 cm and a volume of about .47 m^3. There are no additional associated features. Excavation of F5 produced smoothed sherds, cordmarked sherds, and pottery fragments. The lithic assemblage includes numerous pieces of debitage, a biface fragment, a bipolar core, a straight stemmed hafted biface, a unifacial flaked tool, and a unifacial utilized edge tool. Faunal remains include white-tailed deer and unidentified fish. The feature also includes a bone from a modern turkey. This feature was interpreted as a house midden by excavators. Based on more fully documented features at the site, F5 is interpreted as a midden or sheet midden.

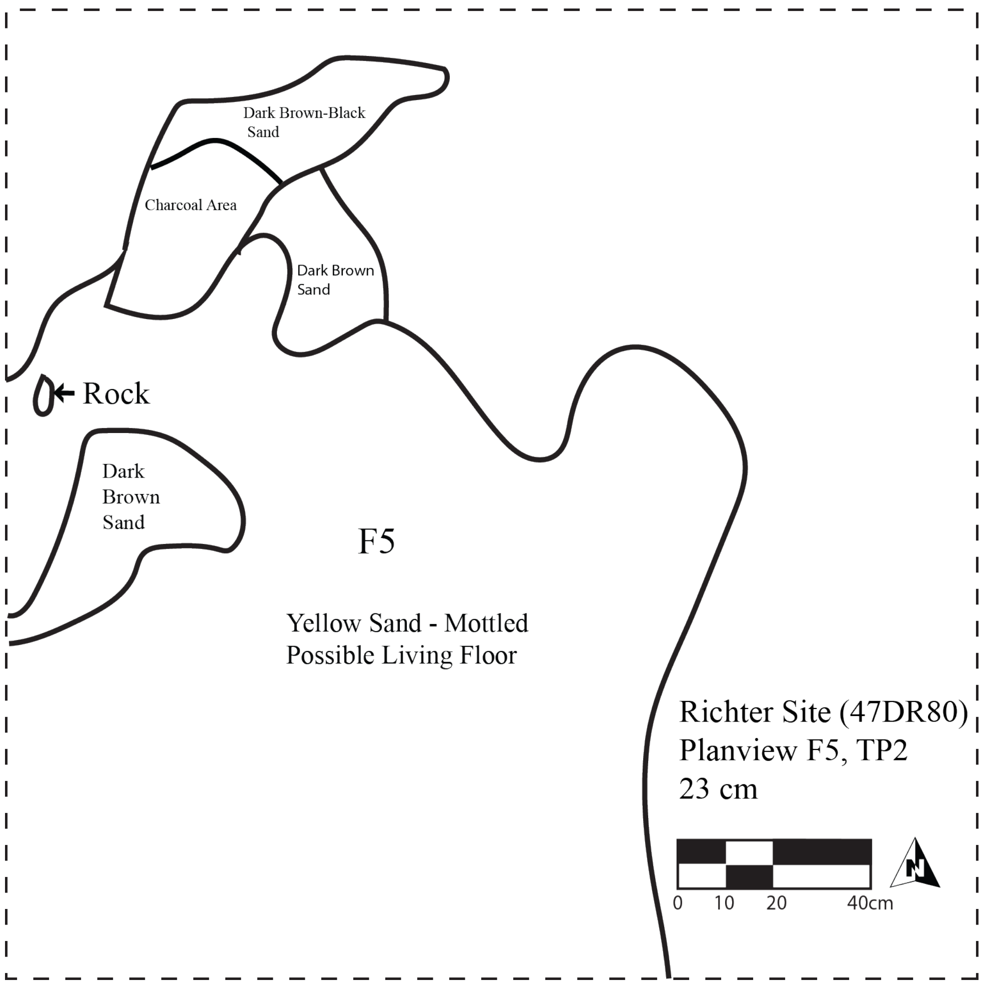


Figure 5.103. Planview of F5 at a depth of 23 cm.

Feature 8, F8 (TP4)

Feature 8 is located in Area E in the northern portion of the site. The feature was identified as a dark, roughly linear-shaped soil stain recorded as F8 (Figure 5.104). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 70 cm x 60 cm with a depth of 23 cm and a volume of about .09 m^3. Associated features include one dog burial (F7). Excavation of F8 produced a cordmarked sherd, a smooth sherd, two decorated sherds, and s pottery fragments. The lithic assemblage includes three pieces of debitage. Faunal remains include three unidentified pieces of mammal bone. This feature was interpreted as a midden.

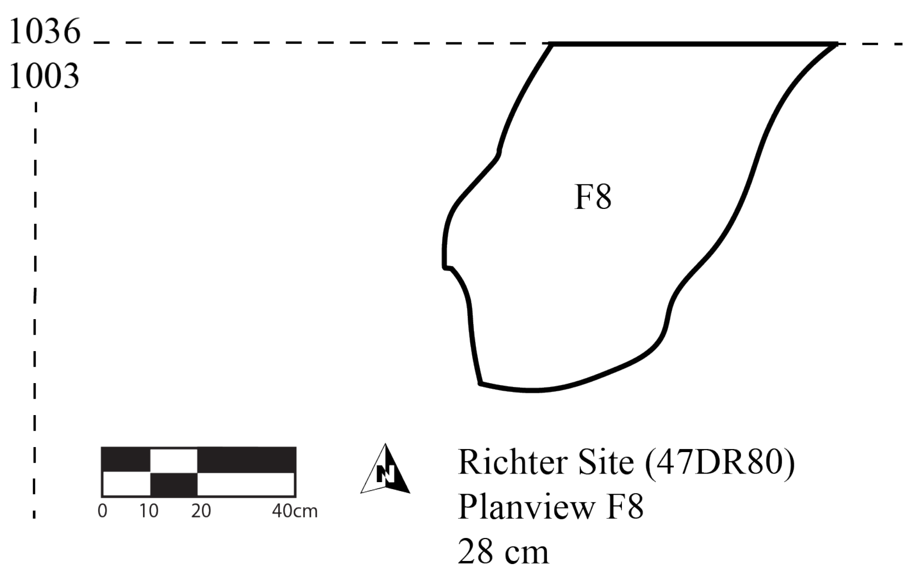


Figure 5.104. Planview of F8 at a depth of 28 cm.

Feature 10, F10 (1010/1003)

Feature 10 is located in Area B in the central portion of the site. The feature was identified as a dark rectangular-shaped soil stain recorded as F10 (Figure 5.105). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 40 cm x 75 cm and a depth of 24 cm with a volume of about .07 m^3. Associated features include one pit of unknown function (F12), and a cremation burial of multiple individuals within a possible structure basin (F9/F11). Excavation of F10 produced only two pottery fragments. This feature was interpreted as a midden.

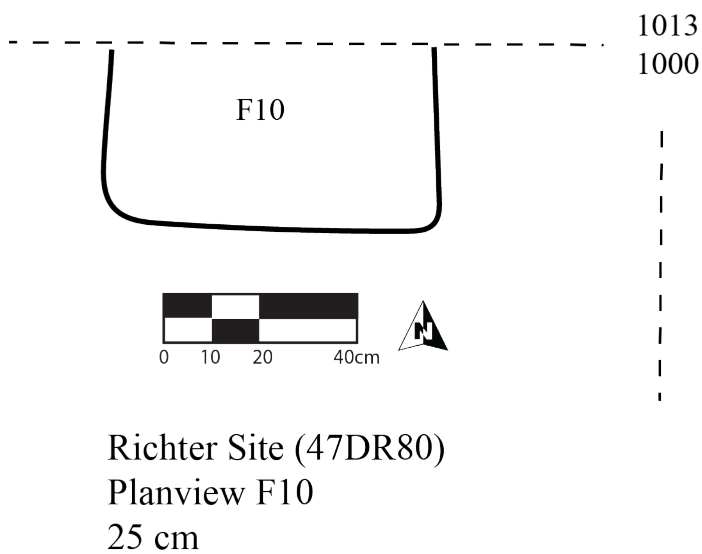


Figure 5.105. Planview of F10 at a depth of 25 cm.

Feature 51, F51 (S02/E06, S02/E08, NS0/E06, NS0/E08)

Feature 51 is located in Area C in the southeastern portion of the site. The feature was identified as a large, dark, amorphous soil stain recorded as F51 (Figure 5.106). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 340 cm x 180 cm with a depth of 16 cm and a volume of about .98 m^3. Associated features include one pit of unknown function (F64), a structure (H7), a midden (F63), and seven possible postmolds. All features except for five possible postmolds are located outside F51. Excavation of F51 provided cordmarked sherds, smooth sherds, smoothed-over-cordmarked sherds, a number of decorated sherds, a decorated cordmarked sherd, a large number of pottery fragments, and rim fragments. Two vessels, V56 and V58, were identified from recovered sherds. Vessel 56 has a smooth surface with CWS decoration. Vessel 58 has a weathered exterior decorated with an identified stamp. The lithic assemblage includes debitage and a single unifacial utilized edge tool. Faunal remains include deer (elk or moose), white-tailed deer, black bear, unidentified large mammal, unidentified mammal, unidentified fish, and unidentified bone. Worked bone includes a single bone bead. A single piece of flat, worked copper was recovered. The feature was designated as a sheet midden. Site documentation does not indicate the distinction between midden and sheet midden.

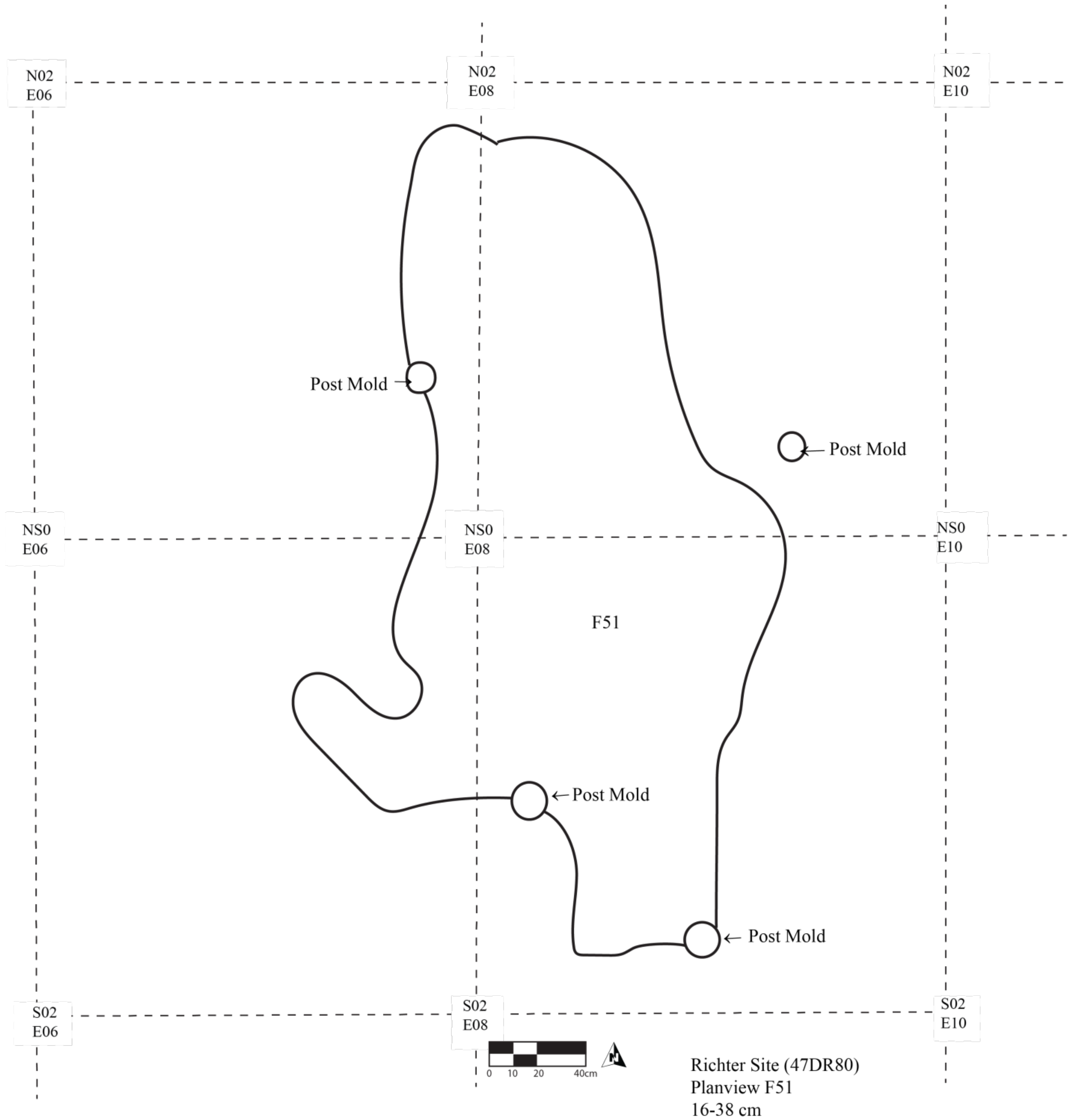


Figure 5.106. Planview of F51 after Peters n.d.

Feature 52, F52 (N06/E10)

Feature 52 is located in Area C in the eastern portion of the site. The feature was identified as a black soil stain recorded as F52 (Figure 5.107 and Figure 5.108). This feature is most likely circular-shaped though it was not completely exposed. Planview photos and profile photos are missing from site documentation. Measuring from north to south, the midden dimensions are approximately 42 cm x 60 cm with a depth of 35 cm and a volume of about .09 m^3. Associated features include one structure (H7). Excavation of F52 produced some pottery fragments, debitage, and a bipolar core. Faunal remains include snail shells, unidentified amphibian, unidentified fish, unidentified mammal, and unidentified bone. This feature was interpreted as a midden.

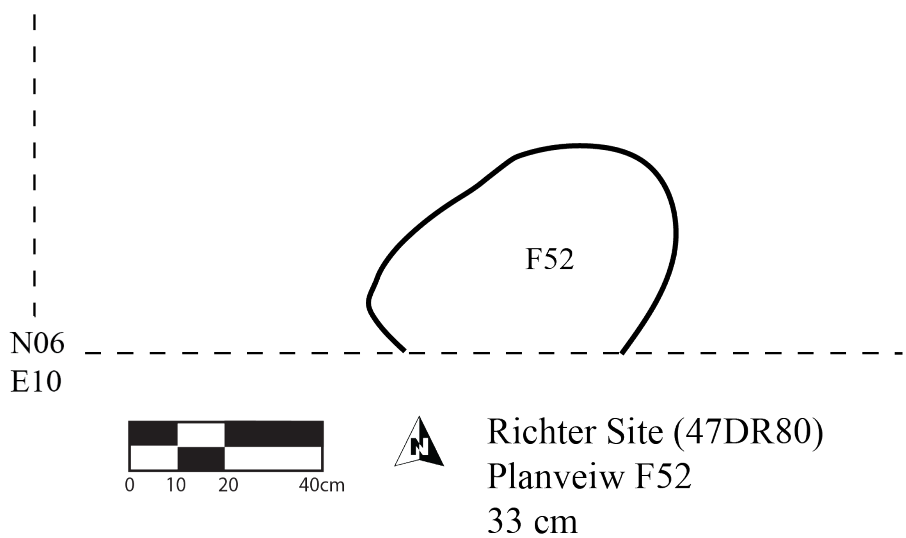


Figure 5.107. Planview of F52 at a depth of 33 cm.

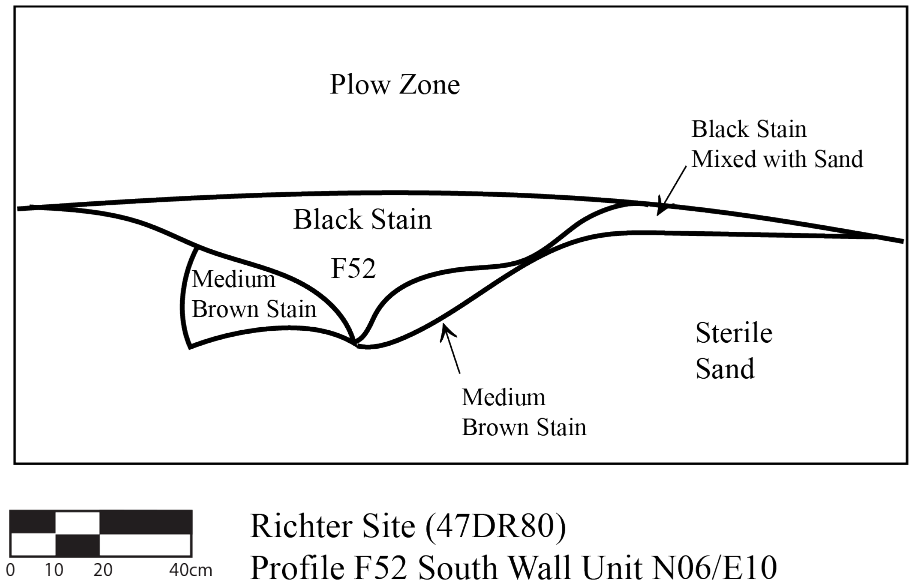
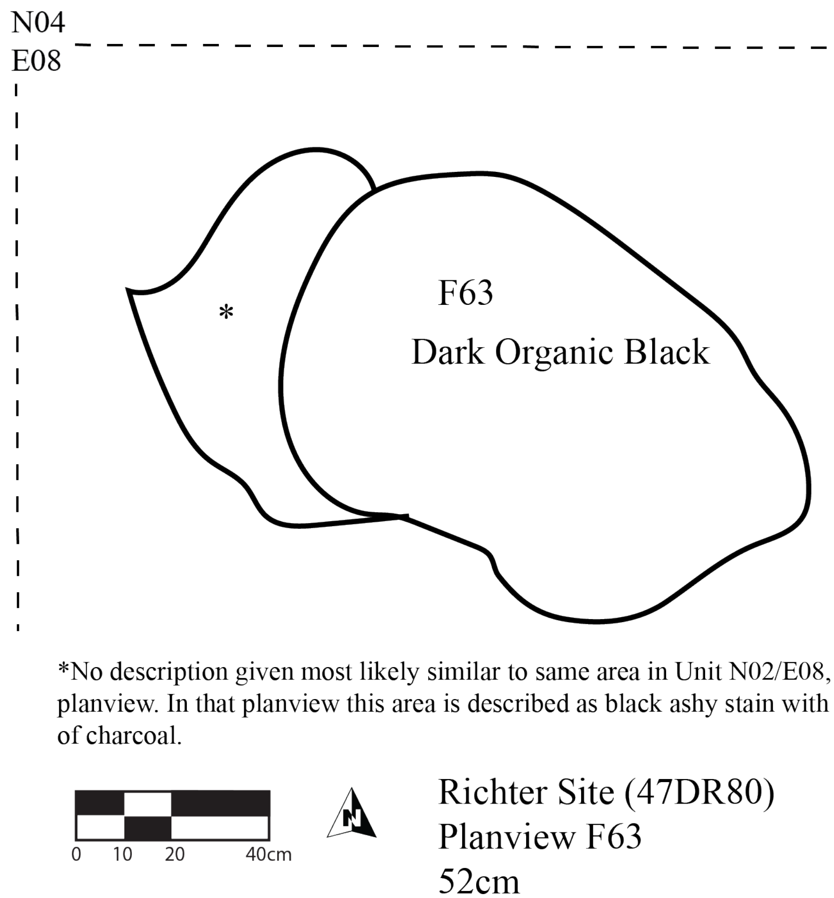


Figure 5.108. Profile of F52.

Feature 63, F63 (N02/E08)

Feature 63 is located in Area B in the central portion of the site. The feature was identified as a large, black, roughly oval-shaped soil stain recorded as F63 (Figure 5.109). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 115 cm x 113 cm with a depth of 21 cm and a volume of about .27 m^3. Associated features include one pit of unknown function (F64) and a midden (F51). Excavation of F63 produced a few cordmarked sherds, a couple smooth sherds, a smoothed-over-cordmarked sherd, a few decorated sherds, numerous pottery fragments, and a couple of rim fragments. All of these sherds are grit tempered. Decorated sherds include a single stamp-and-drag sherd and two with pseudo-scallop stamping. The lithic assemblage includes some debitage, a bipolar core, and a hammer stone. This feature contains a large variety of faunal remains including beaver, brown bullhead, catfish, deer (elk or moose), dog or coyote, medium carnivore, northern pike, yellow perch, walleye, white-tailed deer, a large number of unidentified fish remains, unidentified mammal, unidentified medium mammal, unidentified large mammal, and numerous unidentified bones. Worked bone includes an awl/gorge. Copper materials include a rolled copper fragment and a chisel/punch. This feature was interpreted as a midden. A date (WIS-721) on wood charcoal is reported from this feature as 1185 ± 50; 2-sigma calibrated date range of A.D. 1163 – 1377 (Mason 1992:113). No shell tempered Oneota type sherds were recovered from this feature. Some of the grit tempered sherds could represent Heins Creek or Mero grit tempered vessels, but the fragmentary nature of the recovered sherds make it impossible to make an attribution.



*No description given most likely similar to same area in Unit N02/E08, Level IV, top planview. In that planview this area is described as black ashy stain with heavy concentration of charcoal.

Figure 5.109. Planview of F63 at a depth of 52 cm.

Feature 66 (F66), Feature 67(F67) and Feature 53 (F53) (S02/E08, S02/E10, NS0/E08, NS0/E10)

Feature 53 is located in Area B in the southeastern portion of the site. The feature was identified as a large, dark brown arc-shaped soil stain recorded as F58, though it was renumbered as F66 and F67 at a deeper depth when the feature separated into two sections (Figure 5.110 and Figure111). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 245 cm x 120 cm with a depth of 13 cm with a volume of about .38 m^3. Associated features include one sheet midden (F51) and two possible postmolds. All features with the exception of a single possible postmold are located outside of F53. Excavation of F58 produced no artifacts. Although excavation of F66 did produce a single pottery fragment, a few pieces of debitage, a bipolar core and a hafted biface. Faunal remains include unidentified mammal. Excavation of F67 produced several cordmarked sherds, some pottery fragments, and a single smooth sherd decorated with CWS. The lithic assemblage includes a small amount of debitage, a hafted biface and a bipolar core. Faunal remains include bass, deer (elk or moose), lake sturgeon, small mouth bass, yellow perch, walleye, unidentified fish, large and small unidentified mammal, and unidentified bone. In the third level of F67 two antler tine points were found. This feature was interpreted as a midden though it resembles other features from the site that were identified as structures.

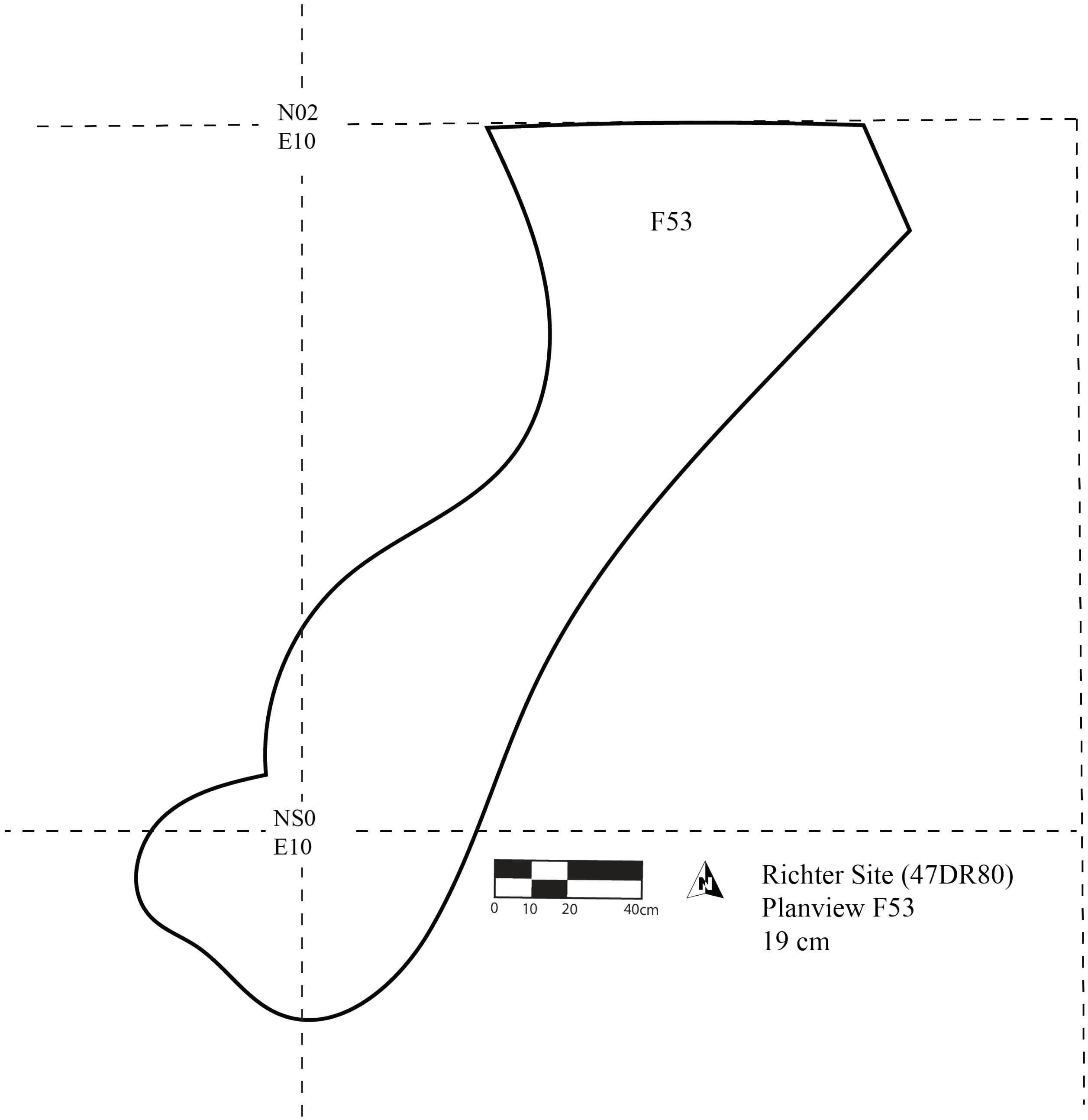


Figure 5.110. Planview of F53 at a depth of 19 cm.

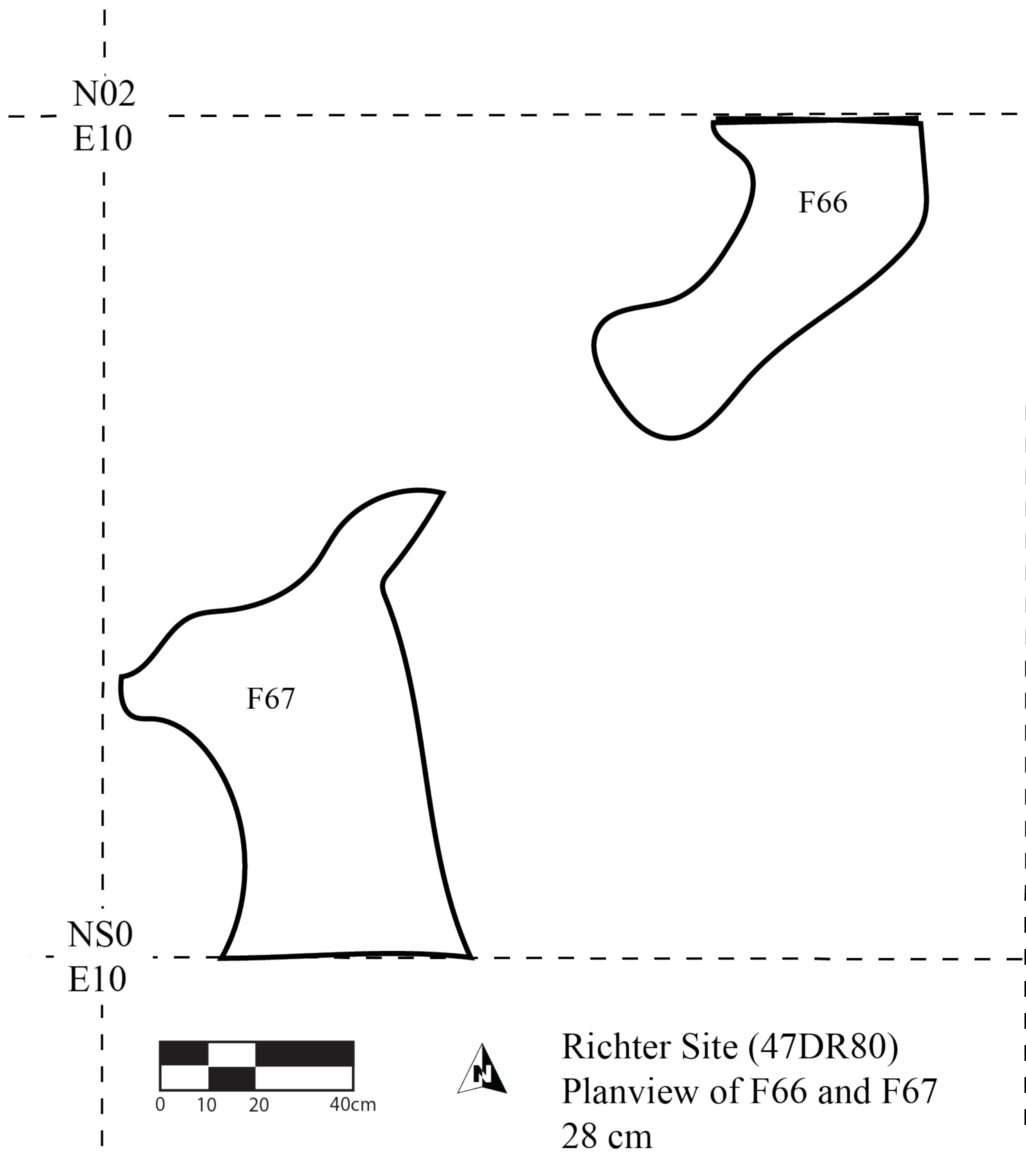


Figure 5.111. Planview of F66 and F67, Level III, 28 cm.

Feature 74, F74 (N13/W34)

Feature 74 is located in Area A in the western portion of the site. The feature was identified as a large, dark, linear-shaped soil stain recorded as F74 (Figure 5.112). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 75 cm x 45 cm. No depth is recorded for this feature. It appears to have not been excavated. Associated features include only one hearth (F73). This feature was interpreted as a midden.

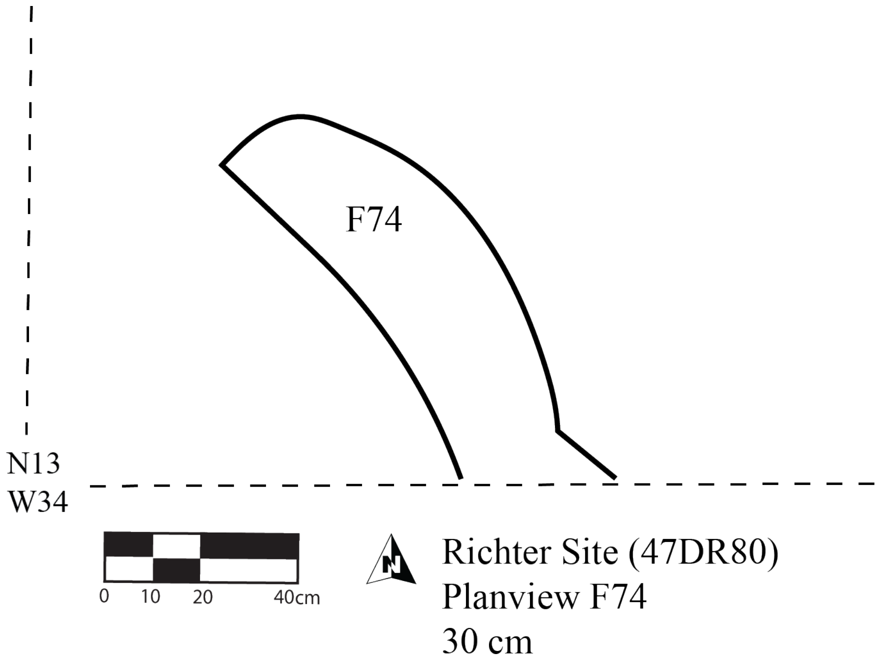


Figure 5.112. Planview of F74, Level III, 30 cm.

Feature 78, F78 (N10/E12)

Feature 78 is located in Area D in the southwestern portion of the site. The feature was identified as a large, dark brown amorphous soil stain recorded as F78 (Figure 5.113). Planview photos, profile maps, and profile photos are missing from the site documentation. Measuring from north to south, the midden dimensions are approximately 78 cm x 38 cm. No depth is recorded for this feature. It was identified as a midden.

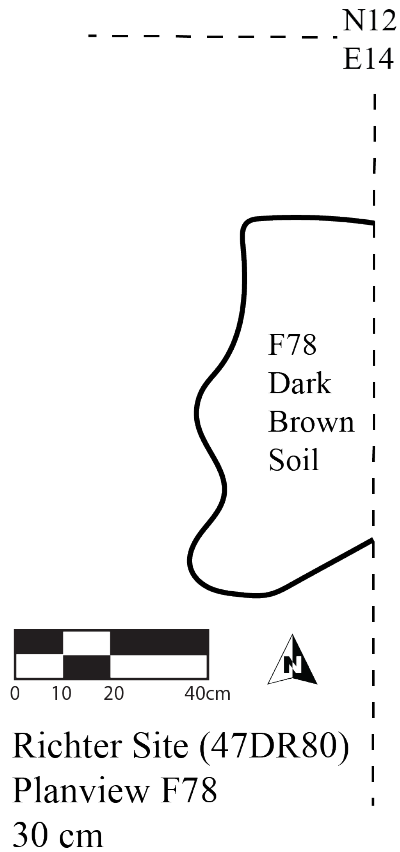


Figure 5.113. Planview of F78 at a depth of 30 cm.

Feature 79, F79 (N18/W07)

Feature 79 is located in Area E in the northern portion of the site. It was identified as a dark, crescent-shaped soil stain and was recorded as F79 (Figure 5.114 and Figure 5.115). Planview photos, profile maps, and profile photos are missing from the site documentation. This feature was never excavated. Measuring from north to south, the dimensions are approximately 120 cm x 45 cm. No depth is recorded for this feature. No artifacts are associated with this feature. This feature was identified as a midden.

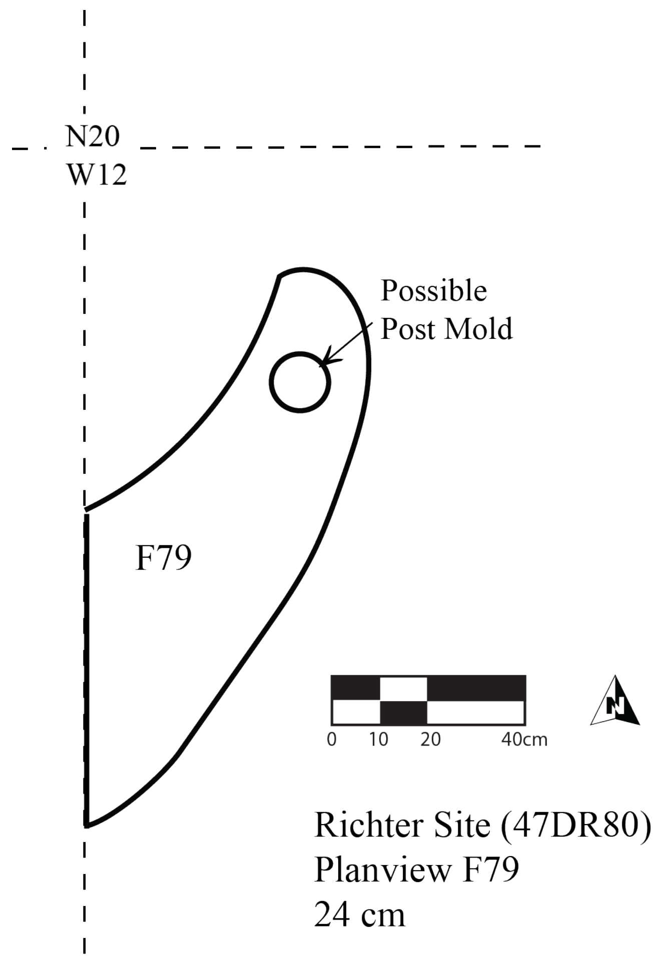


Figure 5.114. Planview of F79 at a depth of 24 cm.

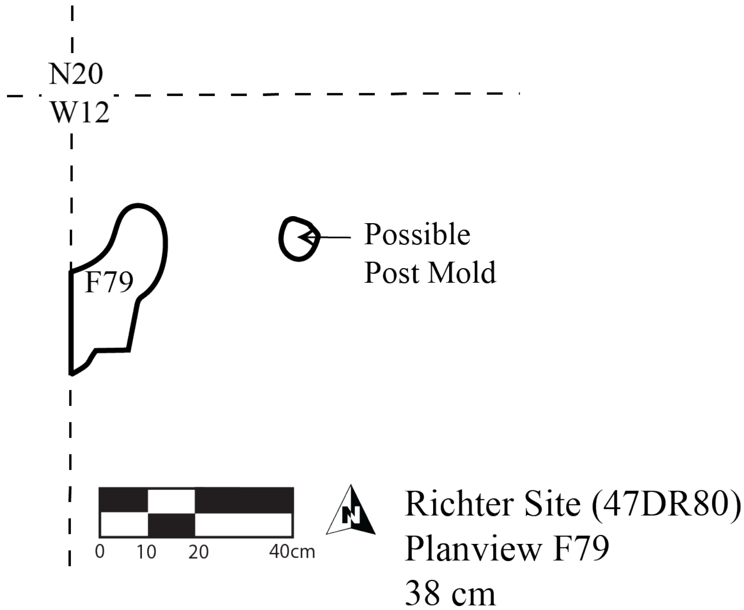


Figure 5.115. Planview of F79 at a depth of 38 cm.

Burials and Human Remains

Four features contained human remains at the Richter site. Two of these features, F25 and F72, contained complete unmodified primary burials. Feature 25 contained the flexed remains of four individuals and several deciduous teeth, a molar, and phalanges from two additional individuals. Feature 72 contained the complete unmodified primary burial of a single individual. Two features, one of which appears to be a cremation burial (F9) intrusive to an existing house basin (F11), contained the secondary burial of at least three individuals (Wellner 2006:32-33).

Burials 1, 2, 3 and 4, Feature 25 (F25)

Feature 25 was first identified as a large dark oval at the base of the plow zone. The feature measured 140 x 220 cm and was 45 cm in depth. Two cranial fragments were found at the base of the plow zone on the surface of F25 as illustrated in Figure 5.116 and Figure 5.117. There are no notes to document the excavation of this feature.

Figure 5.116. Photograph of F25 at a depth of 25 cm.

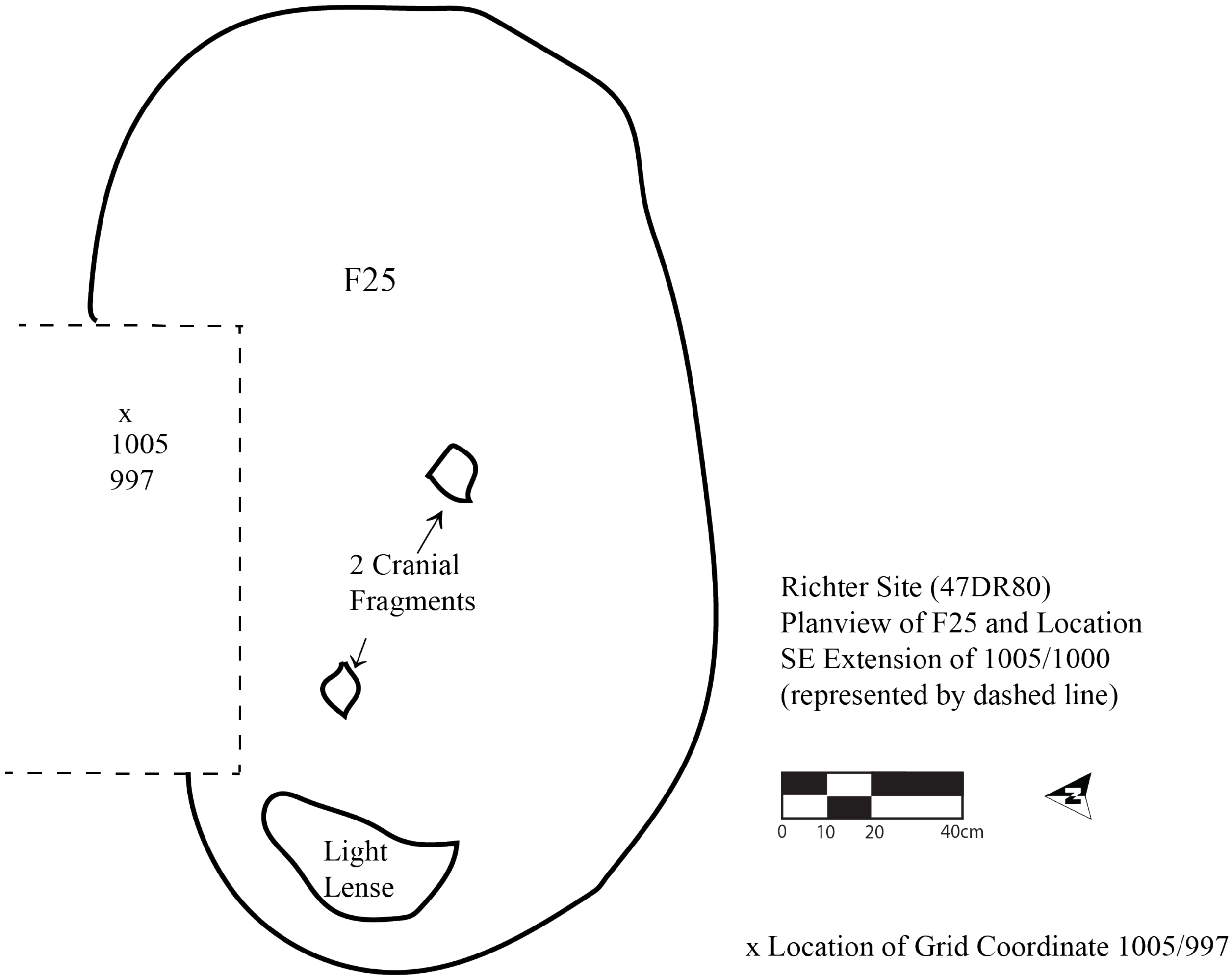


Figure 5.117. Planview of F25 at base of plow zone with a depth of 25 cm.

Burial 1 was found at a depth of 25 cm. This would place the burial at the base of the plow zone. The two cranial fragments may be portions of Burial 1 as the crania may have been damaged by plowing. Burials 2, 3 and 4 were found at a depth of 45 cm. Burial 1 is a flexed burial of a 9-12 year old child orientated with the head to the west and facing north. There was evidence of tooth wear but no pathologies were identified (Wellner 2006:41). Approximately 45 cm below Burial 1 the burial of three additional individuals was found. These flexed burials were oriented with heads to the north. All individuals were buried facing west (Figure 5.118).

Burial 3 is the westernmost of the second set of burials in this feature. This individual is a 33-37 year old female. This individual suffered from periodontal disease and significant tooth wear though no dental caries were found. Evidence of osteomyelitis was found on one tibia and both fibulae. Osteomyelitis is a debilitating condition with symptoms that can include high fever and pain. This individual also had an abnormal articulation of the sacrum and pelvis. A healing, depressed skull fracture was found at the base of this individual's skull (Wellner 2006:56-57).

Burial 2 is the middle burial. This individual is a 30-40 year-old male. He was robust and exhibited traits indicative of muscle development related to heavy work. Teeth showed much wear and tooth loss was evident. There was evidence of two spinal compression fractures as well as kyphosis and anklosis of the lower spine (Wellner 2006:45-49). Kyphosis would have caused rounding of the back, commonly known as "dowager's hump". These conditions would have been painful and disabling. This individual also had a recently fractured sternum that showed evidence of healing. Bone collagen from Burial 4 is dated at 1890±40 B.P., equating to a 2-sigma calibrated range of A.D. 23 – 230 (BETA 215679) (Wellner 2006)

Burial 4 is the eastern most of the burials. This individual is a 45 to 50 year old female. While there were no carious lesions, there was a high amount of tooth loss. This individual suffered from mastoiditis. Abscesses associated with mastoiditis perforated the skull in the mastoid region in a number of places. This individual also suffered from osteoarthritis in the lumbar spine. This individual and Burial 3 had a six segment sacrum, a possibly inherited trait. The two also have pointed chins, another possibly inherited trait. Burial 4 had one less vertebra than normal, most likely due to a congenital condition (Wellner 2006:60-63).

Figure 5.118. Planview of burials from F25 (Peters n.d.).

Among the burial fill associated with Burial 4 were two deciduous incisors from an infant, no more than two months of age. Associated with Burial 2 was a polished bear astragalus, a worn molar, and four phalanges. The phalanges have evidence of arthritic processes (Wellner 2006:49). Two pieces of copper were found, an awl associated with Burial 1 and a fragment of copper found in the fill. There is no evidence of ceramic vessels included as grave goods. Ceramic sherds found in burial fill were most likely inadvertently included. Feature 25 fill includes cordmarked sherds, decorated smooth sherds, and numerous pottery fragments. Decorated smooth sherds include pseudo-scallop stamp, punctate stamp, dentate stamp, linear stamp, and unidentified decoration. Burial 1 feature fill includes smooth sherds, smoothed-over-cordmarked sherds, decorated smooth sherds, and pottery fragments. Decorated sherds include only pseudo-scallop decorated sherds. Burial 3 fill includes some pottery fragments. Vessels in the general F25 fill include V12, a smoothed surface pot with exterior and interior rim dentate stamping, V49 with a smooth surface and exterior dentate stamping, V54 with a smooth surface and CWS stamped decoration, and V67 a smooth surface vessel with pseudo-scallop stamped decoration on the exterior and lip. Burial 3 fill included V13, a pot with exterior cordmarking and a notched lip.

No lithic tools were identified specifically as grave goods, though a number of tools were found in feature fill. These include two biface fragments, three bipolar cores, three unifacial utilized edge tools, and a utilized pseudo-bladelet. Fill also included numerous pieces of debitage. Burial 1 and 3 included a small amount of debitage. The inclusion of lithic materials in the burial fill seems to be inadvertent.

Feature fill also contained a wide variety of faunal remains. These include the remains of frog or toad, largemouth bass, panfishes, rodent, yellow perch, walleye, beaver, white-tailed deer, muskrat, black bear, turtle, tentatively identified beaver, tentatively identified mink, unidentified bird, unidentified medium bird, unidentified fish, unidentified mammal, unidentified medium mammal, unidentified large mammal, and unidentified bone.

Examination of photograph of F25 (Figure 5.119) shows a more complex depositional process than is depicted in profiles drawn. Profiles depict four walls that comprise F25. The profiled walls do not include the south wall of the central burial column (Figure 5.120 and Figure 5.121). The wide range of faunal species found in the fill may represent deposition of ritual feasting remains. It would seem unlikely that the pit would be used for trash following the initial three burials and then be used for the interment of a fourth individual. It is possible that the bear astragalus and four finger bones represent a curated relic and or ancestor.

Figure 5.119. Photograph of F25 facing north.

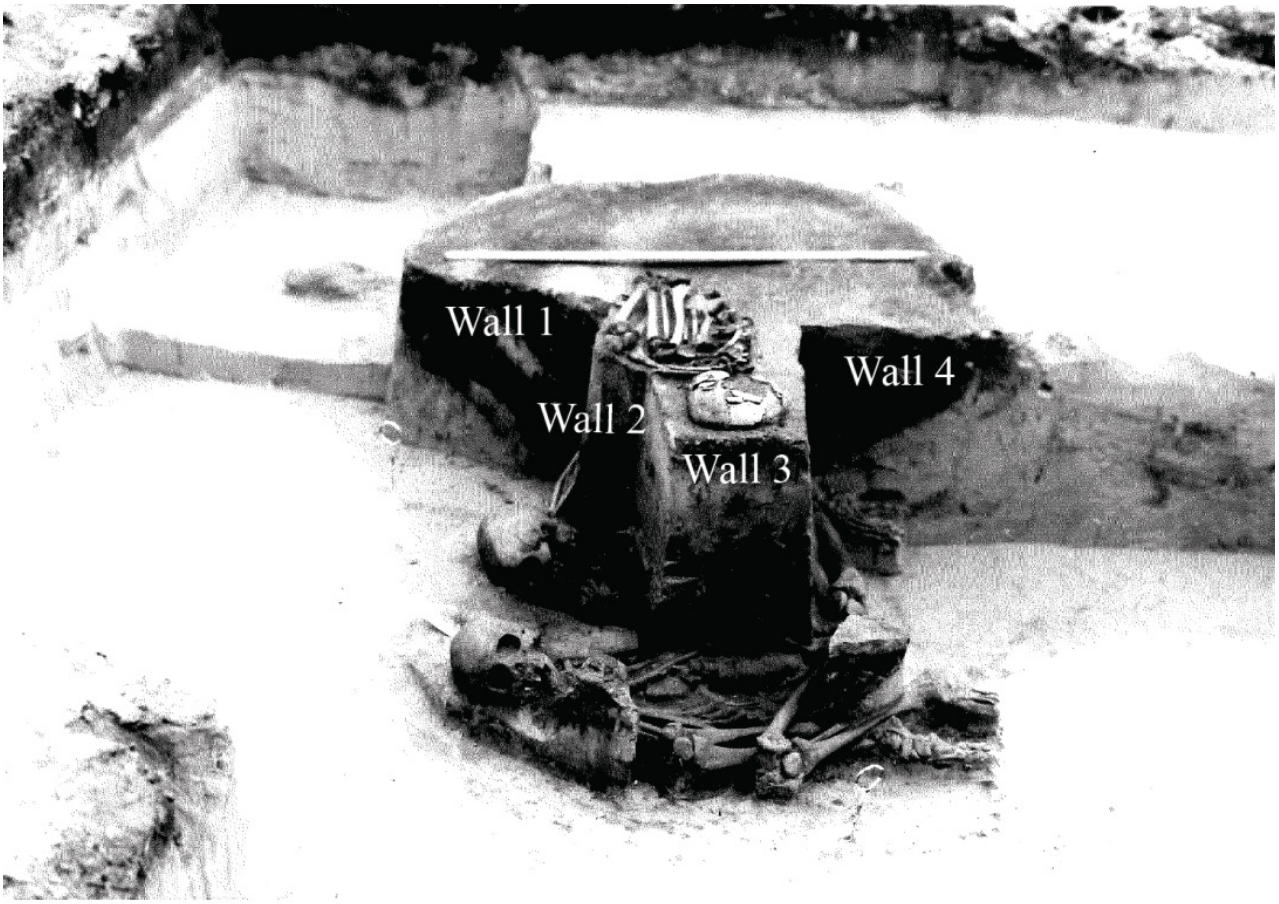


Figure 5.120. Photograph of F25 burials facing east with profiled walls labeled.

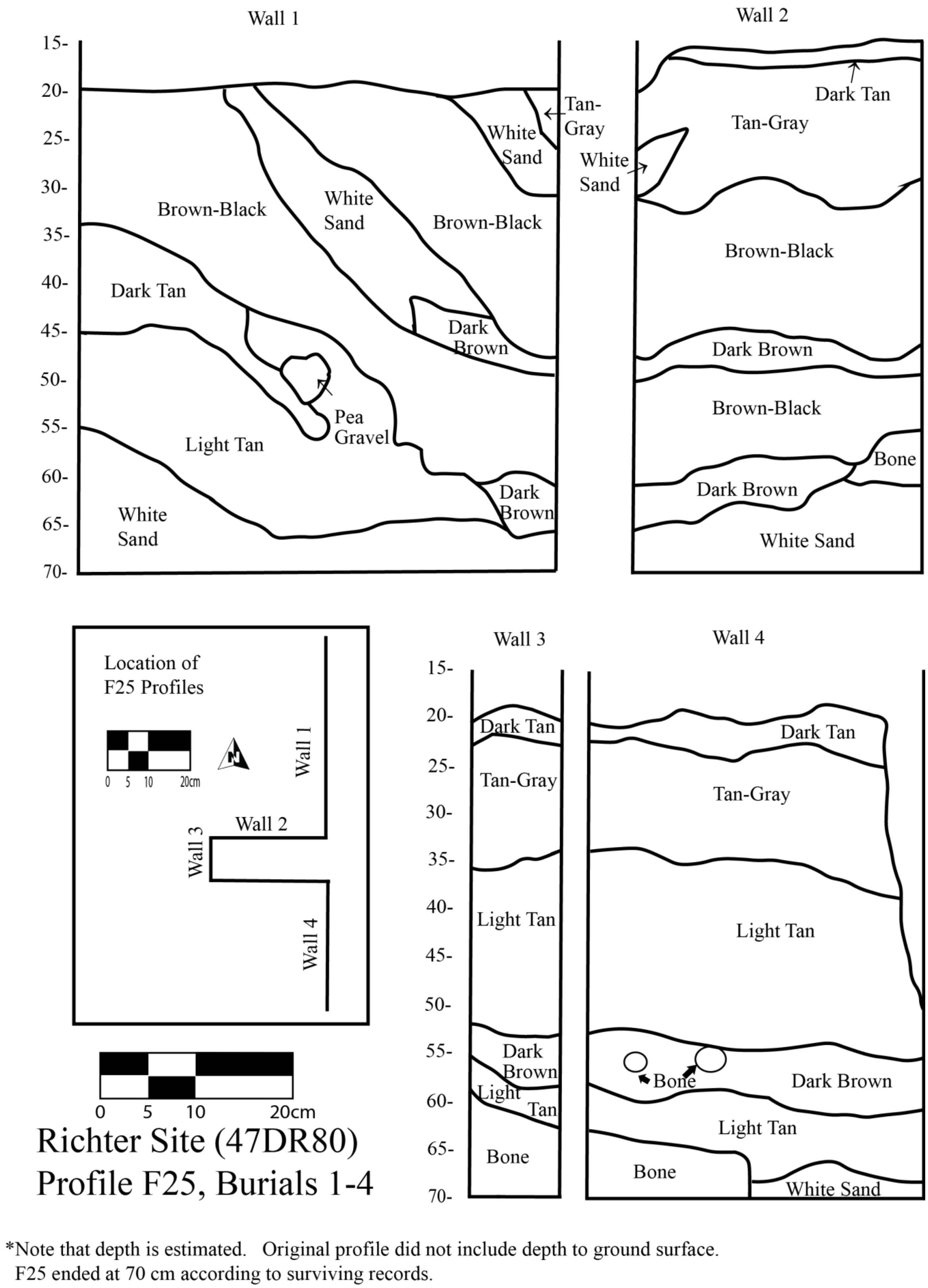


Figure 5.121. Profile of F25.

Burial 5 Feature 72, F72 (S02/EW0 and NS0/EW0)

There is very little documentation of the excavation of Burial 5 during the 1973 field season. It appears that the burial, F72, was not excavated until the very end of the season. A review of photos and the burial drawing indicates that the remains may have been located about 10 cm south of the S02 line at the head and about 50 cm south of the same line at the feet (Figure 5.122). The site map indicates a much larger area that may represent the boundaries of the burial pit itself but there is no corroborating documentation. Burial F72 appears to be intrusive to a portion of Structure 2, H2 (Figure 5.13).

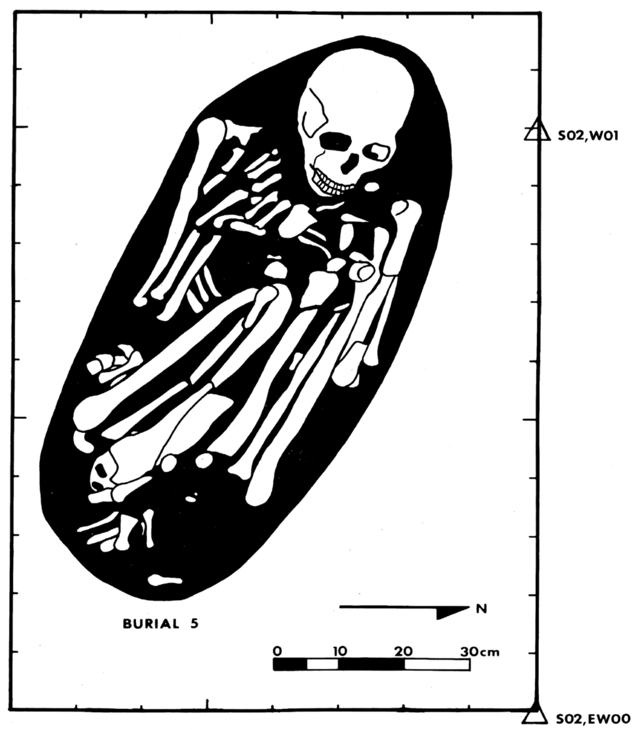


Figure 5.122. Drawing of Burial 5 (Peters n.d.).

Burial 5 is oriented with the head to the west (Figure 5.123). This is a flexed burial of a 39-43 year old female. Like the other individuals buried at the Richter site this individual had significant tooth wear but no carious lesions. This individual suffered from spondylolysis, spondylolisthesis, periostitis, and osteoarthritis. Periostitis related lesions were found on both tibiae and fibulae. This may be the result of disease or injury with subsequent infection (Wellner 2006:69-72). Bone collagen from Burial 5 is dated at 1850±40 B.P., equating to a 2-sigma calibrated range of A.D. 68 – 251 (BETA 215680) (Wellner 2006).

Figure 5.123. Black and white photograph of Burial 5 facing north, located in Unit S02/W02.

Burial 6, F9 and F11 (1010/1000)

This burial was recovered from a 200 x 160 cm basin with a depth of 45 cm (Figure 5.124).

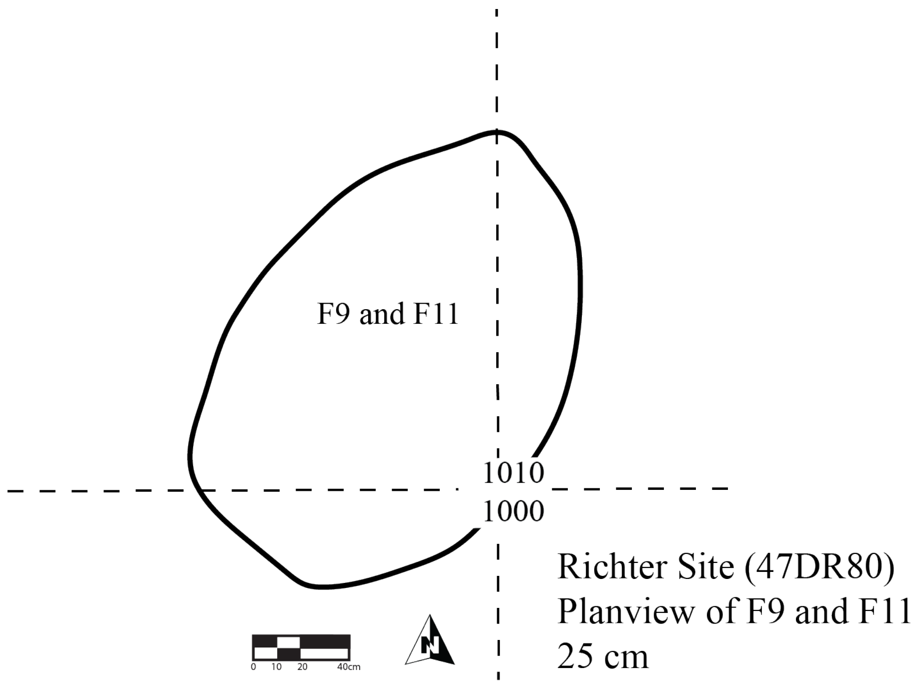


Figure 5.124. Planview of Burial 6, F9 and F11, at a depth of 25 cm.

Feature 9 is a dark area miss-identified as a possible wall trench in a planview of the northwest portion of Burial 6. Feature 11 is also dark in appearance and is separated from F9 by a ring of light colored sand (Figure 5.125).

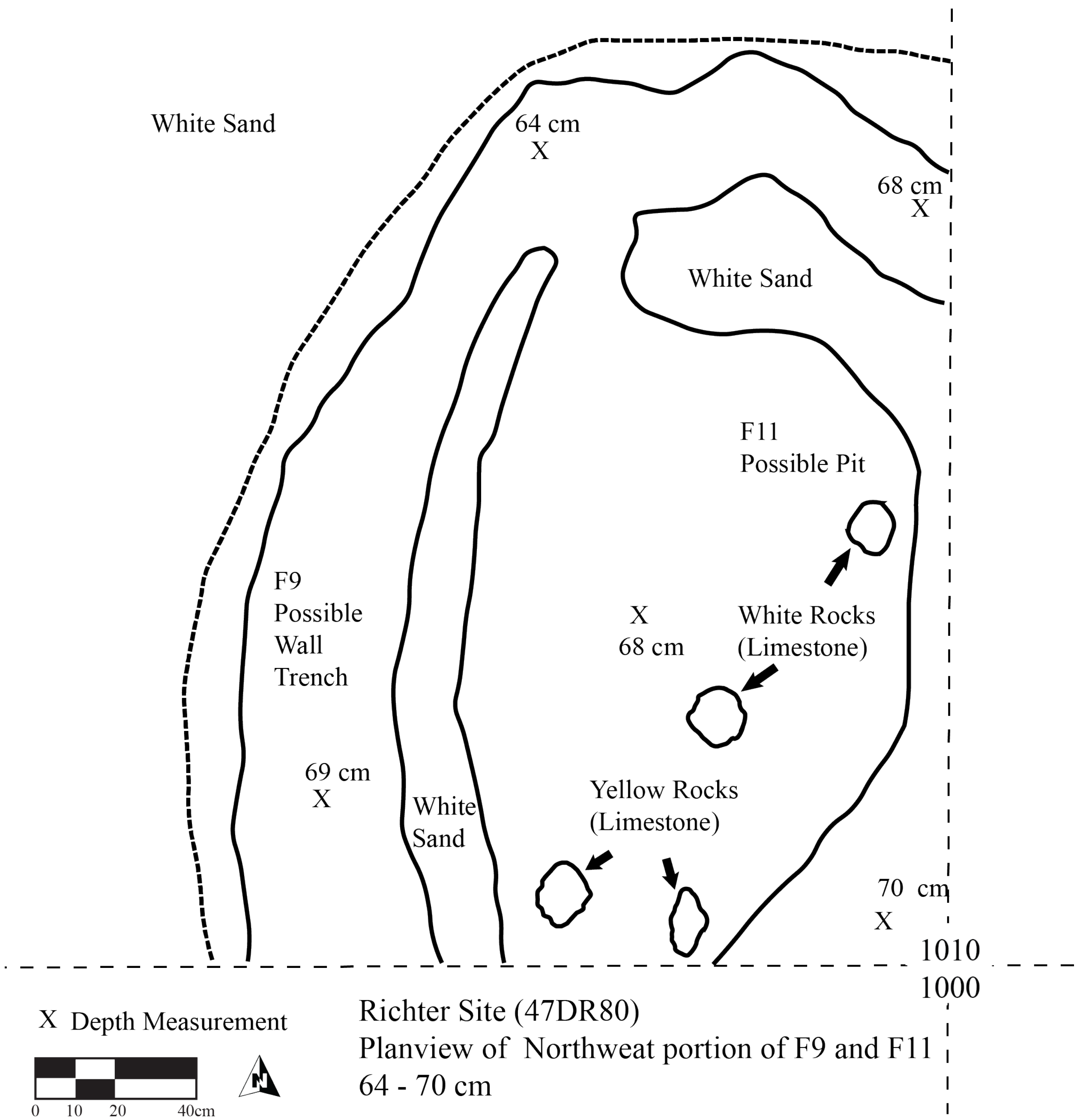


Figure 5.125. Planview of the northwest portion of Burial 6, F9 and F11 at 64-70 cm.

Profiles of F9 and F11 provide more information on feature fill (Figure 5.126 and Figure 5.127). Feature fill associated with F9 is black sand that forms a basin. The basin was filled with windblown tan sand. Later this windblown sand and portions of the original base were disturbed.

A second basin (F11) composed of charcoal and brown sand was formed. Feature 11 also is basin shaped and there is some indication of subsequent filling with windblown tan sand. Feature 11 also contains pieces of limestone. The basin of F9 is 200 x 160 cm. The basin of F11 is 60 x 110 cm. Depths for both features in site documents is 45 cm though profiles indicate that F9 was below F11 making it deeper at least in the areas profiled. Feature 9 conforms to the size and shape of structures identified at the site. It is more than likely a structural feature.

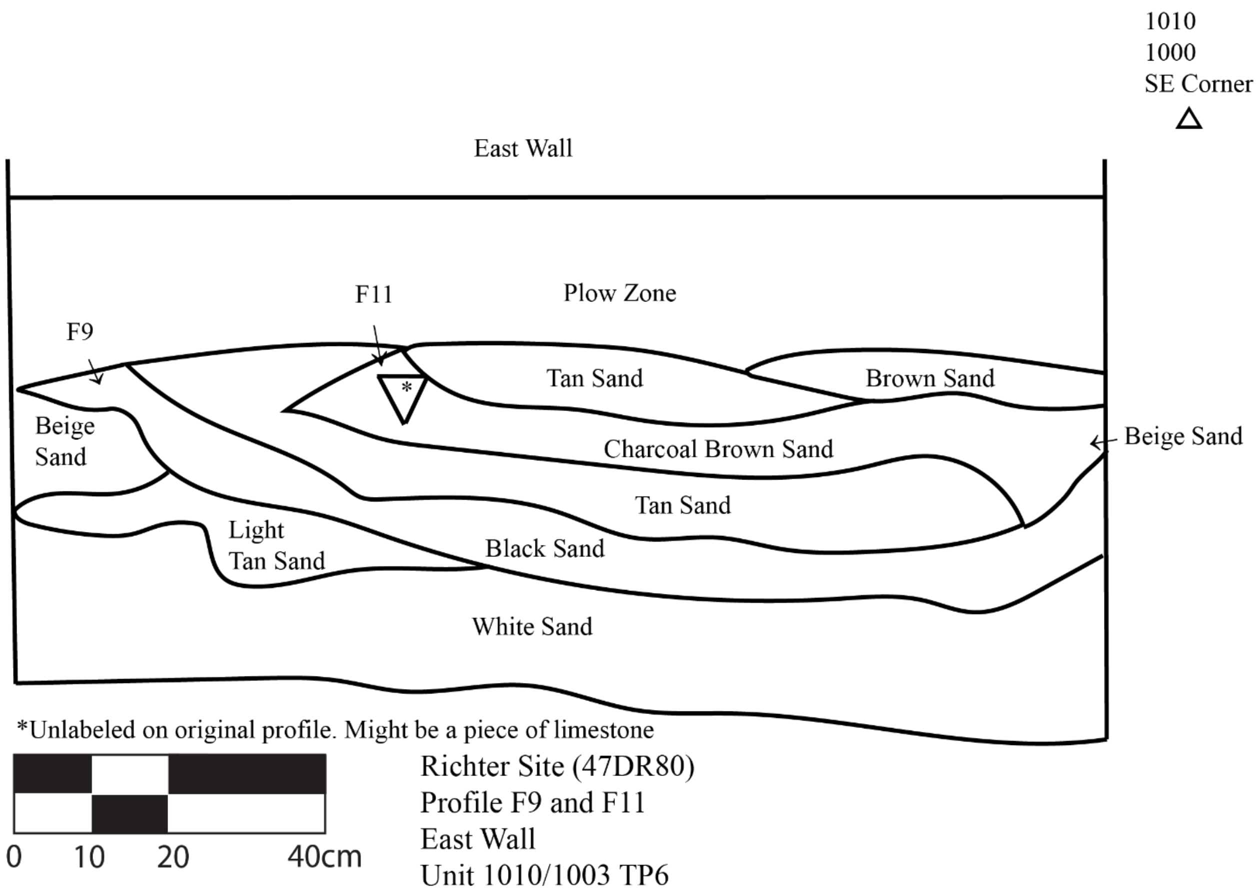


Figure 5.126. Profile of the east wall of Unit 1010/1003 containing F9 and F11.

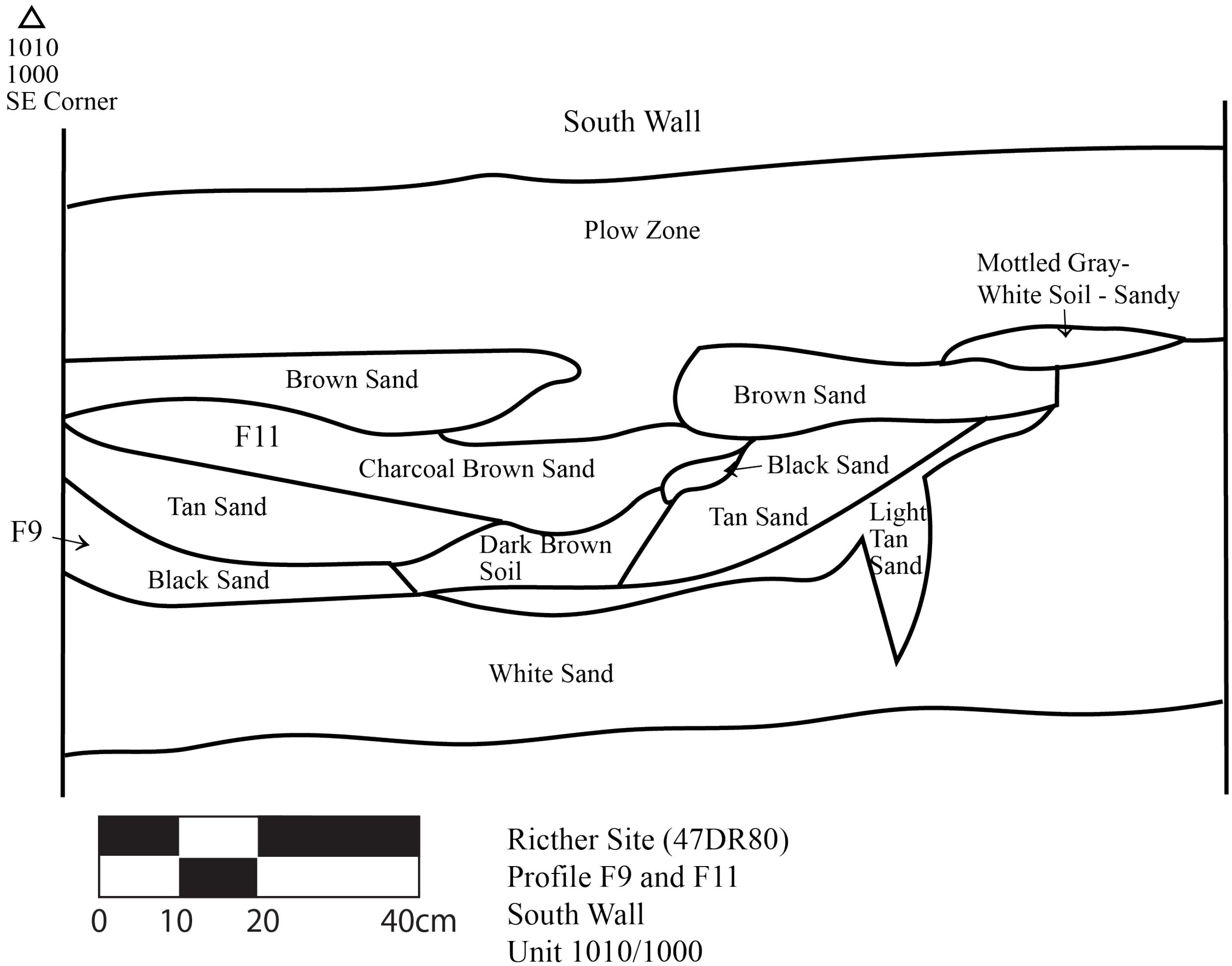


Figure 5.127. Planview of south wall of Unit 1010/1000 containing F9 and F11.

Contents of F9 include cordmarked sherds, smooth sherds, smooth decorated sherds, and numerous pottery fragments. Decorated smooth sherds include two with pseudo-scallop stamping and a single sherd with punctates. Lithic material includes a number of pieces of debitage, a bipolar core, and an unifacial utilize edge tool. Copper artifacts include a single flat worked copper fragment (CP93). Worked bone includes a single polished piece of mammal long bone with incised crisscrossed lines. Faunal remains include black bear, frog or toad, deer (elk or moose), muskrat, turtle, walleye, white-tailed deer, cf. *Canis lupus*, yellow perch, medium carnivore, unidentified fish, unidentified mammal, unidentified small mammal, unidentified medium mammal, unidentified large mammal, unidentified reptile, and unidentified bone.

The contents of F11 include cordmarked sherds, smooth sherds, smoothed-over-cordmarked sherds, decorated sherds and numerous pottery fragments. Decorated smooth sherds include CWS, CWS with annular punctate, dentate stamp, linear stamp, pseudo-scallop, and unidentified stamped types. Lithic material includes numerous piece of debitage, a bipolar core and a preform. Faunal remains include beaver, dog or coyote, largemouth bass, medium carnivore, perch or walleye, white-tailed deer, unidentified bird, unidentified fish, unidentified mammal, unidentified small mammal, unidentified medium mammal, unidentified large mammal, and unidentified bone.

Generally, the contents of both features are similar. Both contain ceramic sherds, debitage, a few lithic tools and a wide variety of faunal remains. Feature 9 contains a small piece of worked copper and a worked piece of bone. The most significant difference is the presence of co-mingled cremated human remains in F11. These materials were tightly clustered in the central portion of F11. Several limestone rocks were also found. There are no photographs of these remains, only a planview map (Figure 5.128). Identification of materials in this map by the excavators may not be consistent with later analysis and identification of these materials.

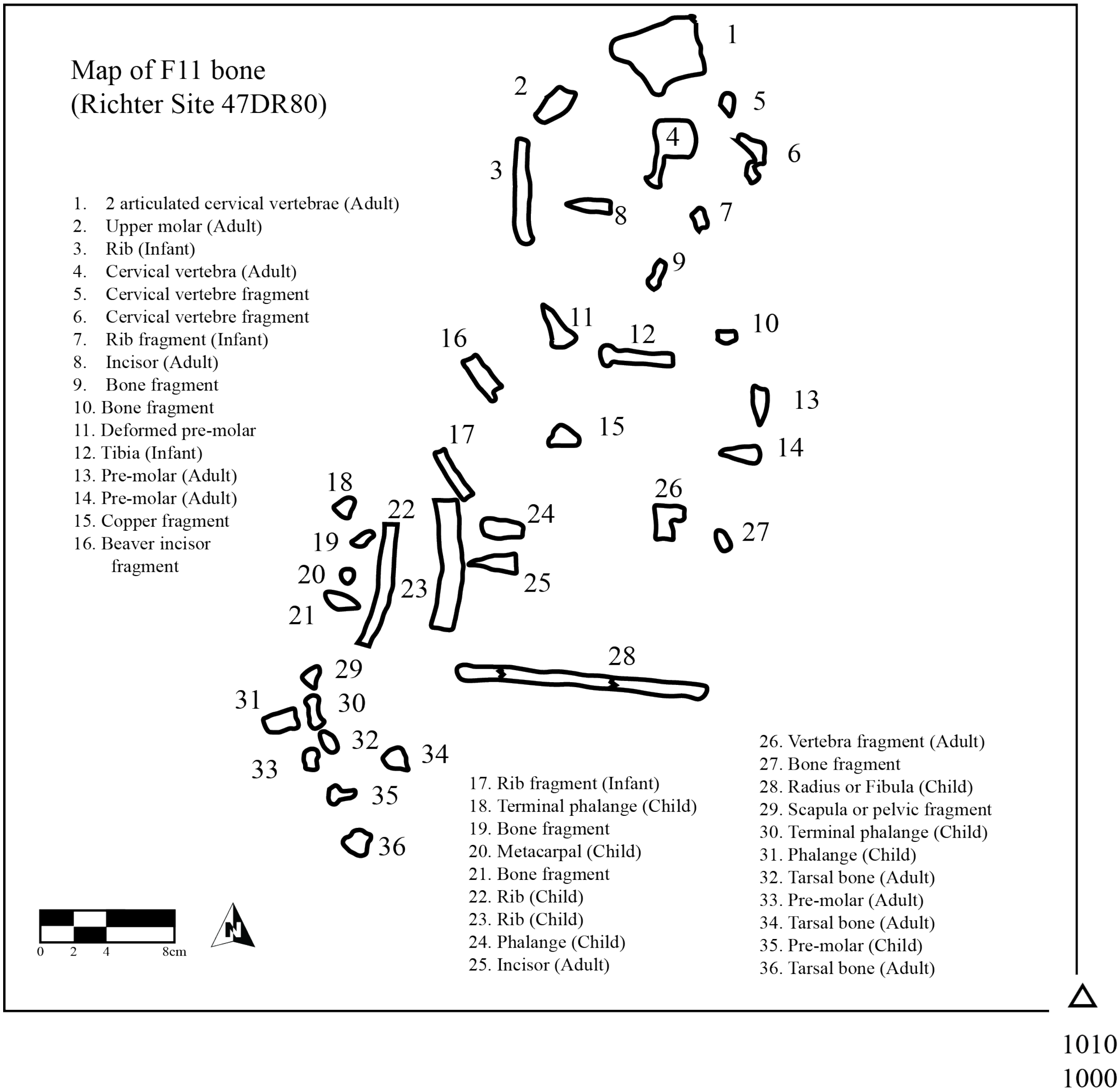


Figure 5.128. Planview of F11 cremation burial at a depth of 25 cm.

Examination by Wellner (2006) indicated the presence of at least three individuals, an infant, a child, and an older adult. The infant was a perinate or close to birth. The child was 7-10 years old. There was evidence of burning on the child’s bones. The teeth of the older adult exhibited much wear. Two phalanges with osteophytes most likely belong to this individual.

The planview of F11 materials also indicates that the worked piece of copper was actually from F11 and not F9 as it was identified after excavation. Also identified in association with the remains is a beaver incisor. Both items are most likely grave goods.

Dog Burial

Feature 7, F7 (TP4)

This roughly oval feature measures 45 x 50 cm with a depth of 27 cm (Figure 5.129). Contents include cordmarked sherds, smoothed-over-cordmarked sherds, smooth sherds, smooth decorated sherds, decorated smoothed-over-cordmarked, cordmarked rim sherds, and a large number of pottery fragments. The decorated smoothed-over-cordmarked sherds are decorated with pseudo-scallop stamping. These sherds are from V2 and were not included in the reconstructed vessel. This vessel is not included in the total for this feature. A date on ceramic residue from V2 returned an AMS date of 2100 ± 40 B.P. equating to a 2-sigma calibrated range of 347 - 2 B.C. (Epstein 2010). Smooth decorated sherds include linear stamped and unidentified decoration. Lithic materials include a small amount of debitage. Faunal remains include a small amount of unidentified mammal and unidentified bone. Faunal remains also included a fairly complete set of *canid* remains. This *canid* appears to have been intentionally interred. The body was tightly flexed. The head was oriented to the west with the face looking to the north (Figure 5.130 and Figure 5.131). The canid was male and approximately nine months old. There is no evidence of cut marks or other indications of perimortem modification of the remains. A bone collagen AMS date (ISGS - A1090) produced an assay of 2145 ± 25 B.P. equating to a 2-sigma calibrated range of 361 - 195 B.C. (ISGS - A1090). A large pottery sherd was recovered to the west of the canid. This is a portion of V3, a cordmarked vessel with perpendicular CWS impression on the lip (Figure 5.130). The original field drawing of F7 indicates that V3 and the canid burial were found in the same feature context (Figure 5.131).

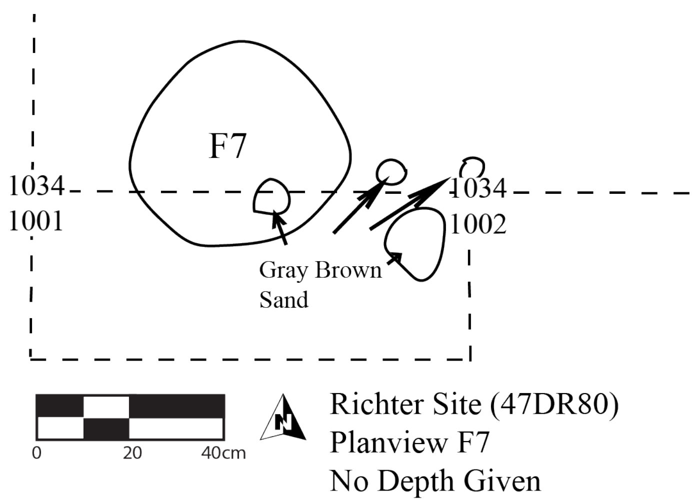


Figure 5.129. Planview of F7 depth is not indicated.

Figure 5.130. Photograph of canid burial and associated large sherd from V3.

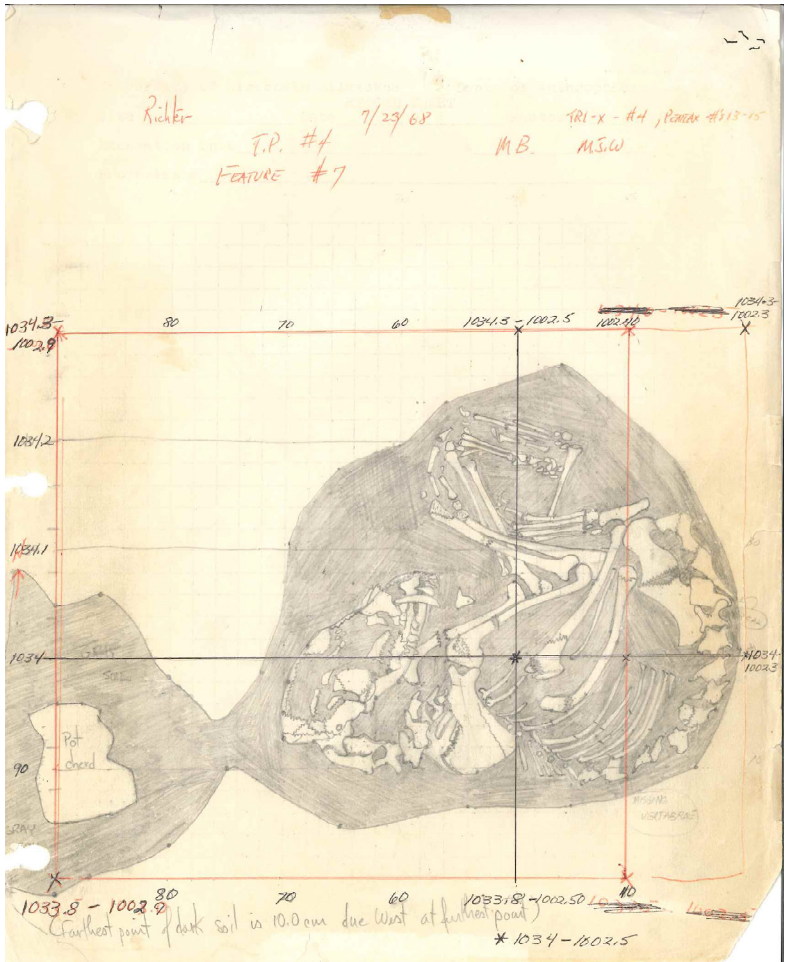


Figure 5.131. Original drawing of canid burial illustrating clearer context between canid remains and pottery sherds (Peters n.d.).

Recently (Edwards, et al. in press), rib fragments from the Richter dog were submitted for carbon isotope analysis (CSA). Based on observed δ ^{13}C values (-19.8), the dog's diet did not include maize. This is not surprising since the radiocarbon age of the dog significantly predates maize usage in the western Great Lakes. However, the dog's $\delta^{15}N$ value of 9.9 is significantly different from that of the two human burials at the site that have been radiocarbon dated (14.6 and 15.1). Edwards et al. note that this may indicate a shift over time to a more fish rich diet. If borne out by additional analyses, this supports the notion of Richter site Middle Woodland groups following a subsistence strategy strongly oriented to fishing.

Lithic Materials

Debitage

Table 5.5 contains percentages of flakes and flakes with cortex for the Richter site as a whole.

Table 5.5. Totals and Percentage of Richter Site Lithic Debitage after Blodgett 2004.

Size Grade	*f*	Weight (g)	n with Cortex	% Cortex	% Total	% Total with Cortex
1 (<8 mm)	1,418	208.8	388	27.4	5.0	3.5
2 (8 – 12.5 mm)	9,625	3,008.1	2,670	27.7	34.1	23.9
3 (12.5-25 mm)	15,256	19,626.6	6,786	44.5	54.0	60.7
4 (>25 mm)	1,961	20,526.9	1,339	68.3	7.0	12.0
Total	28,260	43,370.4	11,183			

Flake to tool ratio at the Richter site is a rather high 35.8:1. The ratio of flakes may have been higher but the use of ¼" hardware cloth for screening and lack of flotation most likely reduced the recovery of Size 1 flakes at the site. This range is similar to that for the Summer Island site 33.1:1 (Blodgett 2004:62). Mason also indicates that the ratio of debitage to tools is high at the Mero site due to the poor quality of available raw material in the form of cobbles from glacial deposits (Mason 1966:54). This also seems to be the most likely reason for the high ratio at the Richter site according to Blodgett (Blodgett 2004:96). Like the Mero site the inhabitants of the Richter site needed to process greater amounts of chert cobbles because quality and flaws could not be assessed by viewing the exteriors of cobbles. Chert suitability could not be determined until reduction and removal of cortex commenced.

Thirty-nine percent of the debitage from the Richter site has cortex. Of flakes with cortex 72.7% fell into the Size 3 and Size 4 ranges. These larger size flakes are generally associated with primary lithic reduction. Additionally Size 3 and 4 flakes with cortex equal 72.7 % of all flakes from the site with cortex. Assessment of chert quality was not included for flakes from the Richter site. Chert quality was assessed for tools by Blodgett and will be included in discussion of site tools.

At the site wide scale the inhabitants of the Richter site appear to have been reducing a significant volume of lithic raw materials to find suitable material for tool production. Viewing the data at the feature level reveals distinctive differences in flake volume at the site. Figure 5.132 shows the distribution of flakes, both with and without cortex. The majority of features for which data were collected indicate the presence of lithic flakes in amounts between 1–350, with the majority of features containing 1–100 flakes. One feature stands out as an exception, F49 in Area D. This feature contained 1001–1050 flakes

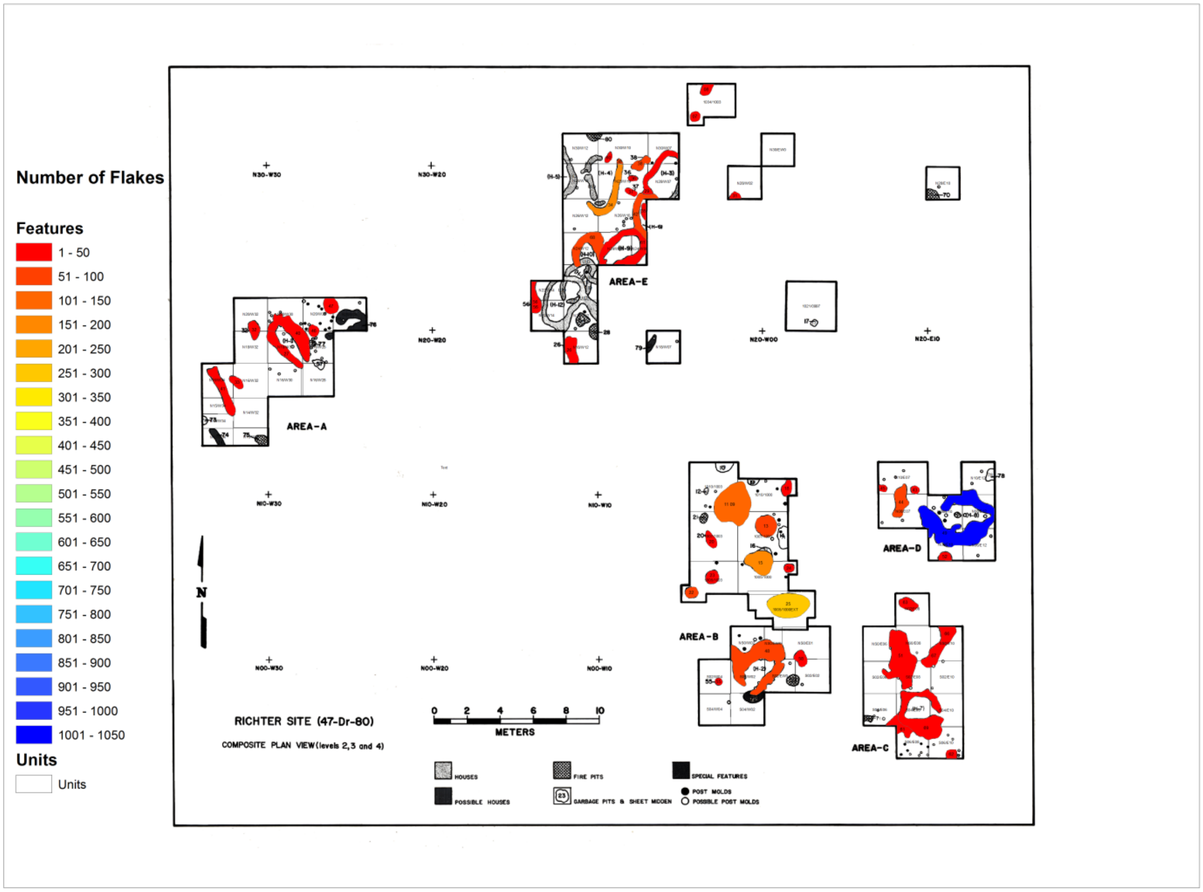


Figure 5.132. GIS map of Richter site indicating number of lithic flakes recovered by feature.

Using GIS mapping to examine site distribution of flakes with cortex produces a similar pattern (Figure 5.133). All other features fall within the lower range of flakes with cortex. The exception is F49 in Area D. This feature contains 321-341 flakes with cortex. After calculating the feature averages for all flake sizes as well as total flakes per feature; several additional features fall outside the average number of flakes by more than a single standard deviation in specific size categories and/or total flake count (Table 5.6). One feature, F1, has a higher number of Size 1 flakes only and F5 has a higher number of only Size 4 flakes. The reason for these differences is not readily apparent, though the higher number of Size 4 flakes in F5 may be the result of increased primary reduction at that location. As discussed above, F49 clearly contains much larger quantities of flakes in all categories. A second feature, F25, is confirmed to have above averages number of flakes in 3 of 4 size categories as well as in total count.

Table 5.6. Feature Flakes by Size

Feature	Size 1 Flakes	Size 2 Flakes	Size 3 Flakes	Size 4 Flakes	Total Count
F1	33	66	61	0	160
F2 &F3	0	1	0	0	1
F3	3	2	41	15	61
F4	0	0	2	0	2
F5	7	12	54	24	97
F7	0	5	2	0	7
F8	0	0	3	0	3
F9	6	39	67	10	122
F11	10	28	55	4	97
F13	10	21	43	3	77
F15	12	59	78	6	155
F18	0	4	21	7	32
F20	7	9	18	2	36
F22	0	16	39	2	57
F23	0	8	19	1	28
F24	2	2	13	0	17
F25	9	103	145	17	274
F26	0	0	4	0	4
F27	0	4	29	0	33
F29	2	9	10	1	22
F31	2	0	1	0	3
F32	2	5	6	2	15
F33	0	0	8	5	13
F34	9	45	88	9	151
F35	0	7	4	0	11
F36	0	4	2	0	6
F37	0	0	1	0	1
F38	0	18	44	1	63
F40	0	13	9	0	22
F41	0	5	1	0	6
F42	0	7	52	10	69
F43	6	2	3	0	11
F44	5	25	35	3	68
F45	0	5	5	1	11

Table 5.6. Feature Flakes by Size

Feature	Size 1 Flakes	Size 2 Flakes	Size 3 Flakes	Size 4 Flakes	Total Count
F46	0	0	9	0	9
F47	0	3	2	0	5
F48	4	6	39	4	53
F49	103	500	397	49	1049
F51	0	6	31	6	43
F52	0	4	2	0	6
F55	0	0	2	0	2
F56	0	0	1	0	1
F58	0	3	5	3	11
F60	0	0	1	0	1
F61	0	0	3	2	5
F62	3	7	16	0	26
F63	0	15	26	3	44
F65	0	1	4	0	5
F66	0	0	4	0	4
F67	0	3	14	5	22
F68	0	28	54	7	89
F69	12	41	75	7	135
F100	0	11	16	0	27
Total	247	1141	1648	209	3245
Average	9.15	42.46	61.33	7.74	120.69
SD	14.96	70.44	59.43	8.03	149.90

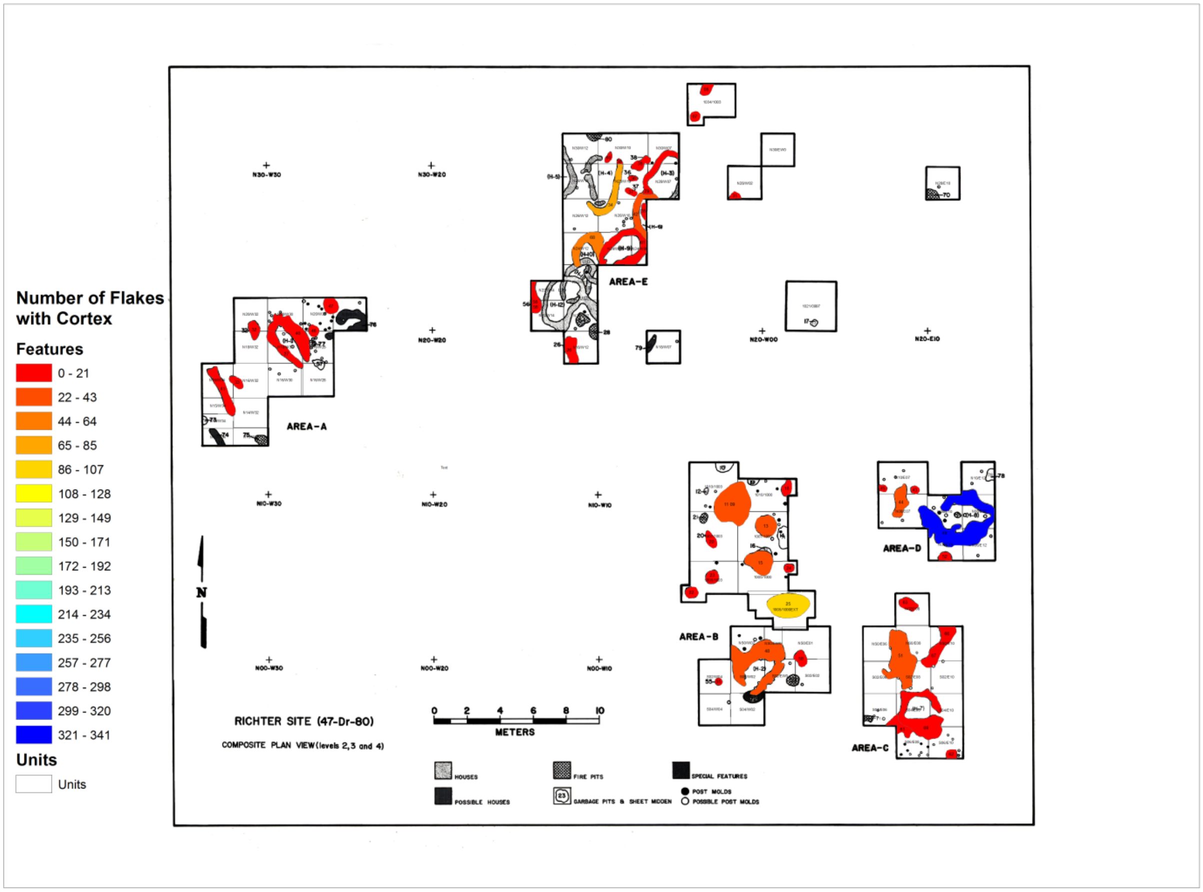


Figure 5.133. GIS map of Richter site indicating number of lithic flakes with cortex recovered by feature.

Looking simply at the volume of flakes with and without cortex at the Richter site draws attention to F49 at being an outlier. By examining the percentage of all four flake sizes F49 looks very much like features in other areas of the site (Figures 5.134, Figure 5.135 and Figure 5.136). In all areas of the site it would appear that similar patterns of lithic production are being utilized.

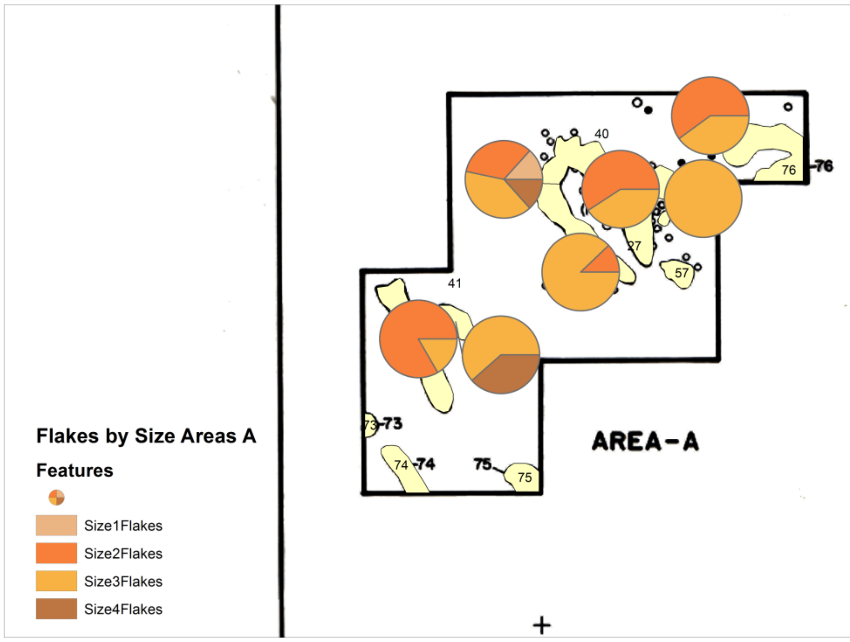


Figure 5.134. Percentage of flake Size 1, Size 2, Size 3 and Size 4 at the Richter Site in Areas A.

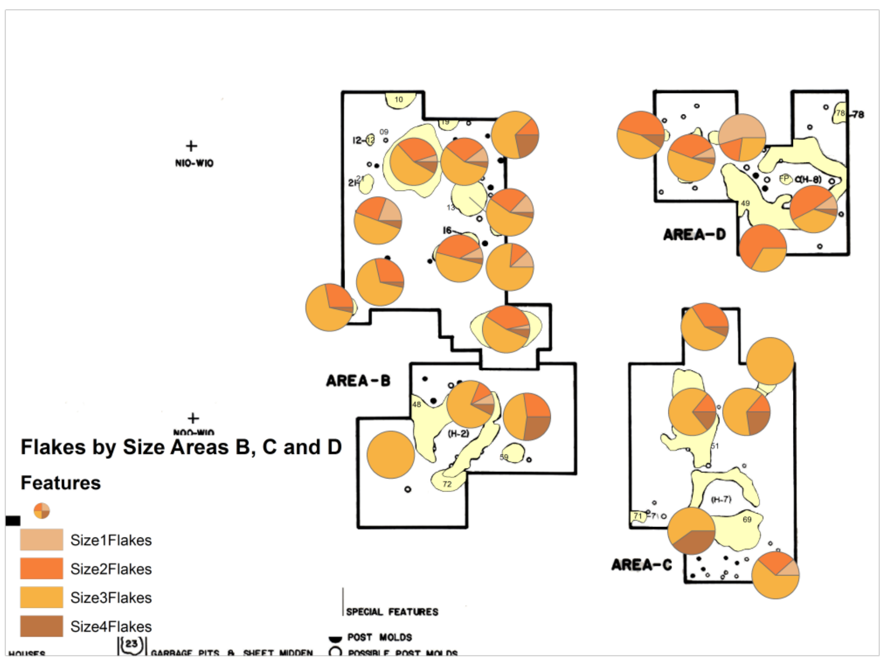


Figure 5.135. Percentage of flake Size 1, Size 2, Size 3 and Size 4 at the Richter Site in Areas B, C and D.

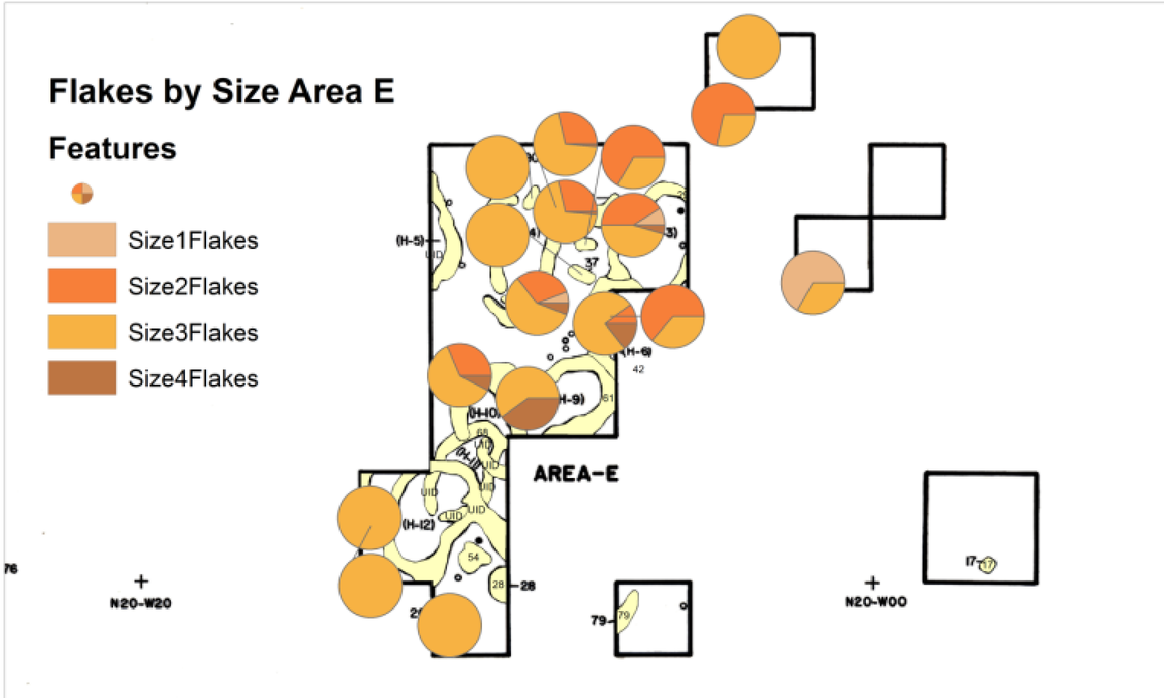


Figure 5.136. Percentage of flake Size 1, Size 2, Size 3 and Size 4 at the Richter Site in Areas E.

Tools

Blodgett identified a total of 789 stone tools in the Richter site assemblage. These were classified into categories created by researchers working in the Northern Lake Michigan/Door Peninsula area (Brose 1970; Cleland and Peske 1968; Dirst 1995; Mason 1966, 1967, 1991). Table 5.7 lists tool categories and associated frequencies of each type.

Table 5.7. Lithic Tool Categories and Frequency

Hafted Bifaces	*f*	%
Contracting Stem	4	0.5
Straight Stem	5	0.6
Expanding Stem	12	1.5
Side-Notched	5	0.6
Corner-Notched	6	0.8
Excurvate	1	0.1

Table 5.7. Lithic Tool Categories and Frequency

Hafted Bifaces	*f*	%
Lanceolate	1	.1
Triangular	1	.1
Biface Fragments	124	15.7
Subtotal	159	
Other		
Cores	299	37.9
Preform	10	1.3
Steep-edged Unifaces	23	2.9
Utilized Pieces	275	34.9
Gound Stone Implements	23	2.9
Subtotal	630	
TOTAL	789	100.0

Of the 789 tools in the Richter site assemblage only 74 (9%) have feature associations. The remaining 715 tools were found in non-feature contexts throughout the site. Lithic raw material for tools from the site, both feature and non-feature, indicate that the site inhabitants generally selected good quality materials for tool manufacture (Table 5.8). The number of tools manufactured are fewer in number when the raw material quality decreases, the only exception being free-hand cores (Blodgett 2004:88). Blodgett reports that the pattern of usage did not show high quality raw material was being conserved and utilized to manufacture bifaces and bladelets over other tool types (Blodgett 2004:89-91).

The relationship between reworked bifaces and material quality at the Richter site was also examined. It was noted that the 77% of the hafted bifaces could be categorized as crude to medium in refinement. Refinement, (length x width)/thickness, in bifaces decreases as they are reworked or honed, producing a shorter and thicker implement. A higher portion of good quality bifaces were refined compared to poor to fair quality bifaces at the site. Poor to fair quality raw material was found to be used more often in the manufacture of crude or medium bifaces (Blodgett 2004:92).

Raw material utilized for the manufacture of lithic tools at the Richter site includes Silurian and Maquoketa cherts, a dark gray, lustrous chert most likely a Silurian II chert, and basalt. All of these materials were locally available and were used to manufacture 86% of the recovered tools. The remaining 14% were made of non-local or unidentifiable materials. The non-local materials are thought to have been obtained from glacial till (Blodgett 2004:97-98).

The residents of the Richter site, while having access to local chert, found it more economical to reuse and rework tools than simply dispose of worn or broken tools. This pattern also reflects the fact that quality of chert cannot be properly accessed until cortex is removed and the raw material is exposed for inspection.

Table 5.8. Tool Type in Relation to Material Quality at the Richter Site after Blodgett 2004

Tool Type	Material Quality									
	Poor			Fair			Good			
	N	Row%	Column%	N	Row%	Column%	N	Row%	Column%	Row Totals
Hafted Bifaces and Biface Fragments	19	12.8	35.8	34	23	29.8	95	64.2	15.2	148
Blade or Pseudo-Bladelet	0	0	0	10	25.6	8.8	29	74.4	4.7	39
Steep-edged Uniface	0	0	0	0	0	0	23	100	3.7	23
Edge-only	5	2.1	9.4	16	6.7	14	217	91.6	34.9	238
Bipolar Core	12	4.2	22.6	41	14.4	36	232	81.4	37.3	285
Free-hand Core	1	7.1	1.9	7	50	6.1	6	42.9	1	14
Other Tools	16	38.1	30.3	6	14.3	5.3	20	47.6	3.2	42
Column Totals	53		100	114		100	622		100	789

The Table 5.9 summarizes tool and point types associated with features at the Richter site. This table includes flaked tools and ground stone tool. Only 23 features contained lithic tools and of these only five features contained points.

Table 5.9. Number of Tools and Point Types by Feature at the Richter Site

Feature	Area	Tool Type	Point Type	n	Feature Tool Total
F5	*	Biface Fragment		1	
		Bipolar Core		1	
		Hafted Biface	Straight Stem	1	
		Unknown Flaked Implement		1	
		Utilized edge-only		1	
					5
F9	B	Bipolar Core		1	
		Utilized edge-only		1	
					2
F11	B	Bipolar Core		1	
		Hafted Biface	Contracting Stem	1	
		Preform		1	
					3
F13	B	Utilized Pseudo-bladelet		1	
					1
F15	B	Biface Fragment		2	
		Biface Fragment	Contracting Stem	1	
		Biface Fragment	Straight Stem	1	
		Bipolar Core		1	
		Hafted Biface	Expanding Stem	1	
		Utilized edge-only		1	
					7
F18	B	Biface Fragment		1	
		Core		1	
					2
F24	B	Biface Fragment		1	
					1
F25	B	Biface Fragment		3	
		Bipolar Core		3	
		Utilized edge-only		3	
		Utilized Pseudo-bladelet		1	
					10
F35	E	Utilized edge-only		1	
					1
F38	E	Bipolar Core		1	
					1
F42	E	Bipolar Core		1	
		Core		1	

Table 5.9. Number of Tools and Point Types by Feature at the Richter Site

Feature	Area	Tool Type	Point Type	n	Feature Tool Total
					2
F44	D	Utilized Pseudo-bladelet		1	
					1
F49	D	Abrader		1	
		Biface		1	
		Biface Fragment		5	
		Bipolar Core		6	
		Hafted Biface	Contracting Stem	1	
		Hafted Biface	Expanding Stem	1	
		Utilized Bipolar Edge-Only		1	
		Utilized edge-only		8	
					24
F51	C	Biface Fragment		1	
		Utilized edge-only		1	
					2
F52	D	Bipolar Core		1	
					1
F58	B	Core		1	
					1
F61	C	Hafted Biface	Corner- Notched	1	
					1
F63	C	Bipolar Core		1	
		Hammer Stone		1	
		Utilized edge-only		1	
					3
F65	E	Bipolar Core		1	
					1
F67	C	Bipolar Core		1	
		Hafted Biface		1	
					2
F68	E	Bipolar Core		1	
					1
F69	C	Bipolar Core		1	
					1
F100	*	Biface Fragment		1	
					1
Total Tools				74	74
Average Number of Tool per Feature				3.22	
Standard Deviation				5.02	
Average Number of Tool Types per Feature				2.09	
Standard Deviation				1.59	

*Outside of Main Area of Excavation

The average number of tools per feature is 3.22 with a standard deviation of 5.02. Two features deviate from the average by more than a single standard deviation: F25 and F49. F25 contained ten tools while F49 contained 24. Examination of the variety of tool types found in each feature indicates that there is an average of 2.09 tool types per feature with a standard deviation of 1.59 tool types. Four features fall beyond one standard deviation. They include F5, F15, F25, and F49. Feature 49 is the only one that differs by more than two standard deviations from the average.

The figure below (Figure 5.137) maps the distribution of tool types found in features at the Richter site. Features with the greatest variety of tool types at the site do not seem to be randomly distributed. The southeastern quarter of the site contains the greatest concentration of features exhibiting multiple tool types. This is in contrast to portions of the site that have few tools and/or little variation in tool types. The most glaring example is Area A located in the western portion of the site. This area contains no features with tools. It is difficult to determine if this represents truly significant variation in site use or skewing of data due to unexcavated features. The same can be said for Area E where a number of features were mapped but remained unexcavated. Unlike Area A, Area E does have features with tools but only a single feature contains more than one tool type.

In the north portion of Area B, five features have >2 types of tools. These features include burial features F25 and F9/F11. Combined F9 and F11 have four types of tools. This is the same number of types found in F25. Feature15 also contains four types of tools and includes the greatest number and variety of points (n=3). Point types in this feature include contracting stem, straight stem, and expanding stem types. The south portion of Area B yielded only a single bipolar core. Burial feature F72 is not documented as containing any tools which makes it very distinct from the other burial features at the site.

In Area C, features increase in tool type diversity from south to north. Features associated with H7 in the south contain single tool types while F63 contains three types. North of Area C is Area D. In this area, F49, which is also identified as H8, has the greatest variety of tool types at the Richter site. This seems to fit well with the large number of flakes found in this feature.

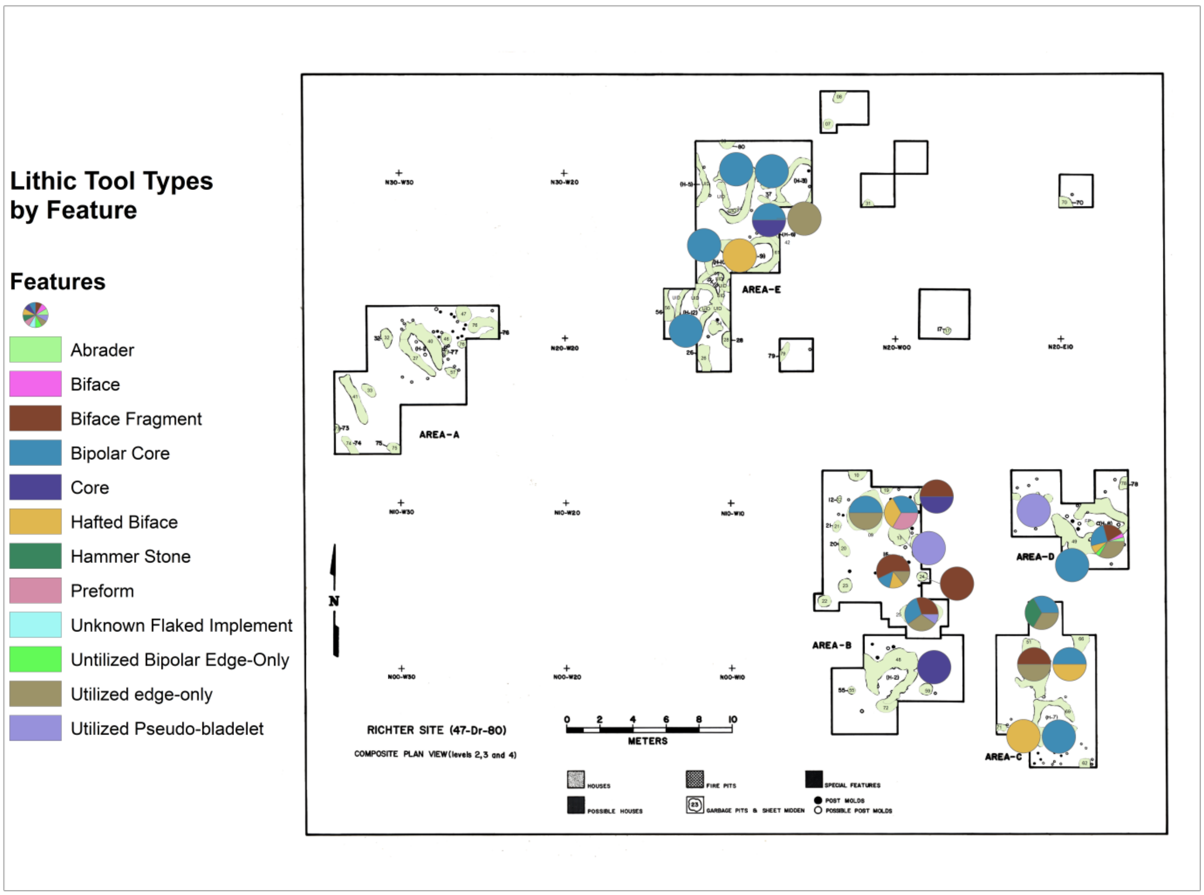


Figure 5.137. GIS map of Richter site plotting distribution of tool types by feature. Note this also includes ground stone tools.

Feature contents include abraders (n=1), bifaces (n=1), biface fragments (n=1), bipolar core (n=21), core (n=3), hafted bifaces (n=7), hammer stone (n=1), preform (n=1), unknown flaked implement (n=1), utilized bipolar edge-only (n=1), utilized edge only (n=17) and utilized pseudo-bladelet (n=3). Figure 5.138 includes photographs of all feature tools excluding ground stone tools and points.

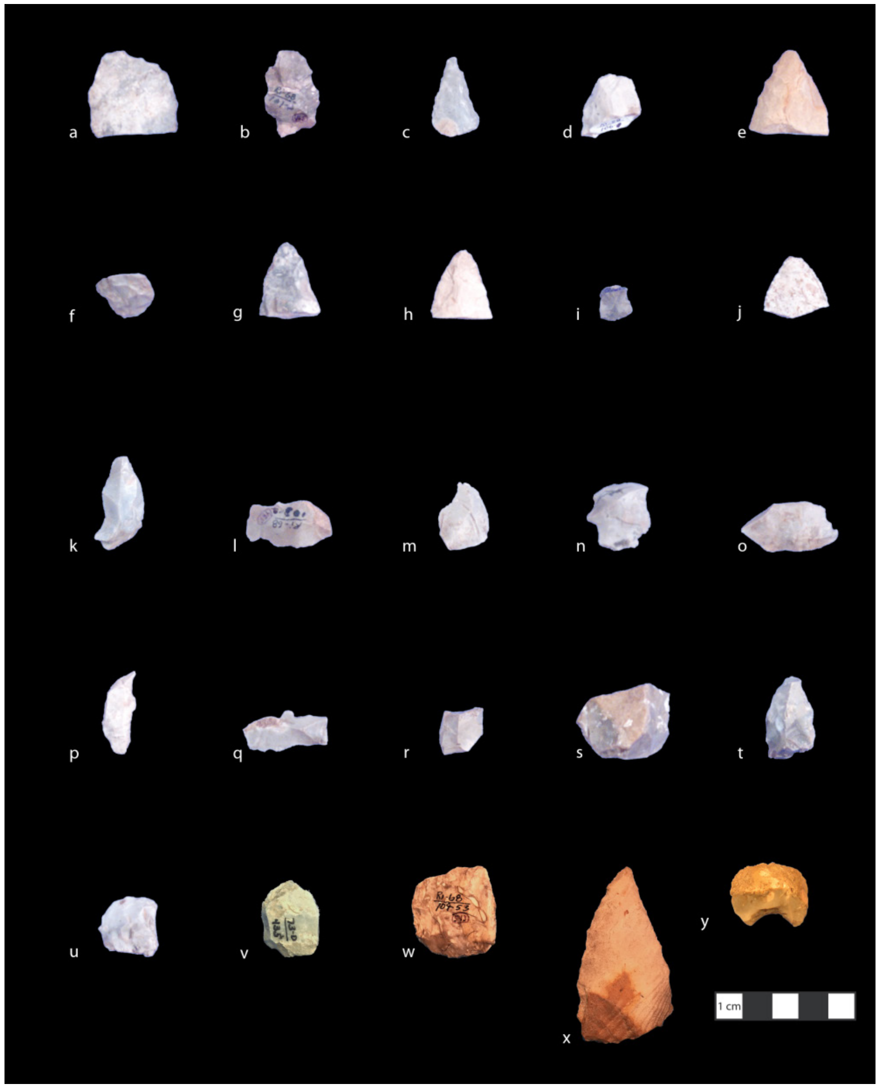


Figure 5.138. Tools types from feature contexts at the Richter site. Biface fragments: (a) Tool Number 451, F100; (b) Tool Number 465, F25; (c) Tool Number 468, F25; (d) Tool Number 474, F24; (e) Tool Number 538, F18; (f) Tool Number 109, F49; (g) Tool Number 233, F49; (h) Tool Number 234, F49; (i) Tool Number 246, F49;(j) Tool Number 648, F49. Utilized Pseudo-Bladelets: (k) Tool Number 470, F25; (l) Tool Number 485, F13; (m) Tool Number 97, F44. Utilized Edge Only: (n) Tool Number 462, F25; (o) Tool Number 464, F25; (p) Tool Number 466, F25; (q) Tool Number 5, F51; (r) Tool Number 88, F49. Bipolar Cores: (s) Tool Number 463, F25; (t) Tool Number 461, F25; (u) Tool Number 737, F11; (v) Tool Number 52, F67; (w) Tool Number 543, F15. Preform: (x) Tool Number 491, F11. Edge or Functional Edge Only (y) Tool Number 272, F49.

Of 35 hafted bifaces in the Richter site assemblage only eight are associated with features and these are indicated in Figure 5.139. Point types recovered from feature contexts are limited to only four types: straight stem (n=2), contracting stem (n=3), expanding stem (n=2) and corner-notched (n=1).

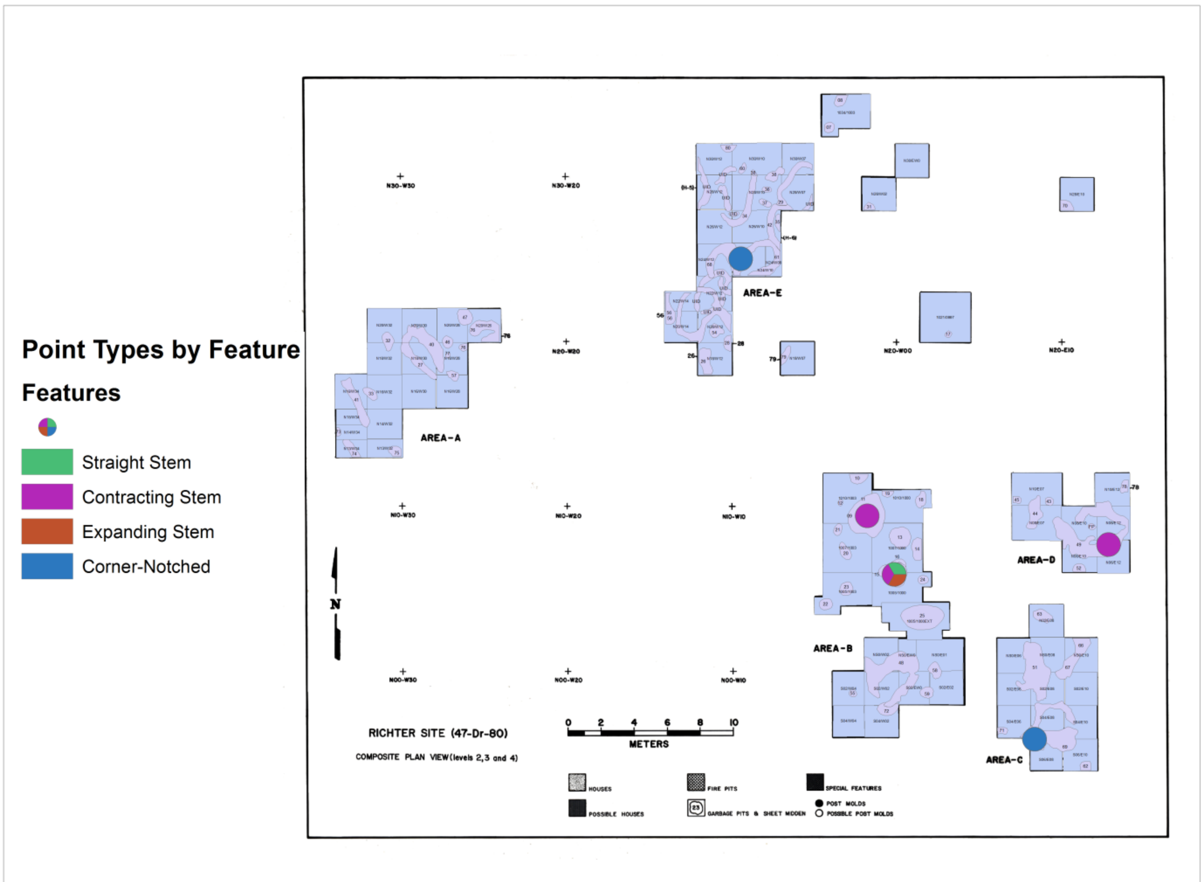


Figure 5.139. GIS map of Point Types at the Richter site by feature.

Focusing only on point types from feature contexts does not provide a complete picture of the variety of point types found at the Richter site. In addition to straight stem, contracting stem, expanding stem and corner-notched; excurvate, lanceolate, side-notched and triangular points were recovered. Looking at the distribution of points outside of feature contexts shows the greatest number of points is in the southeastern portion of the site (Figure 5.140). Area E in the north portion of the site has fewest followed by Area A in the western portion. It is difficult to determine if this disparity is actual or simply due to a large number of features in Area A and E that were not excavated.

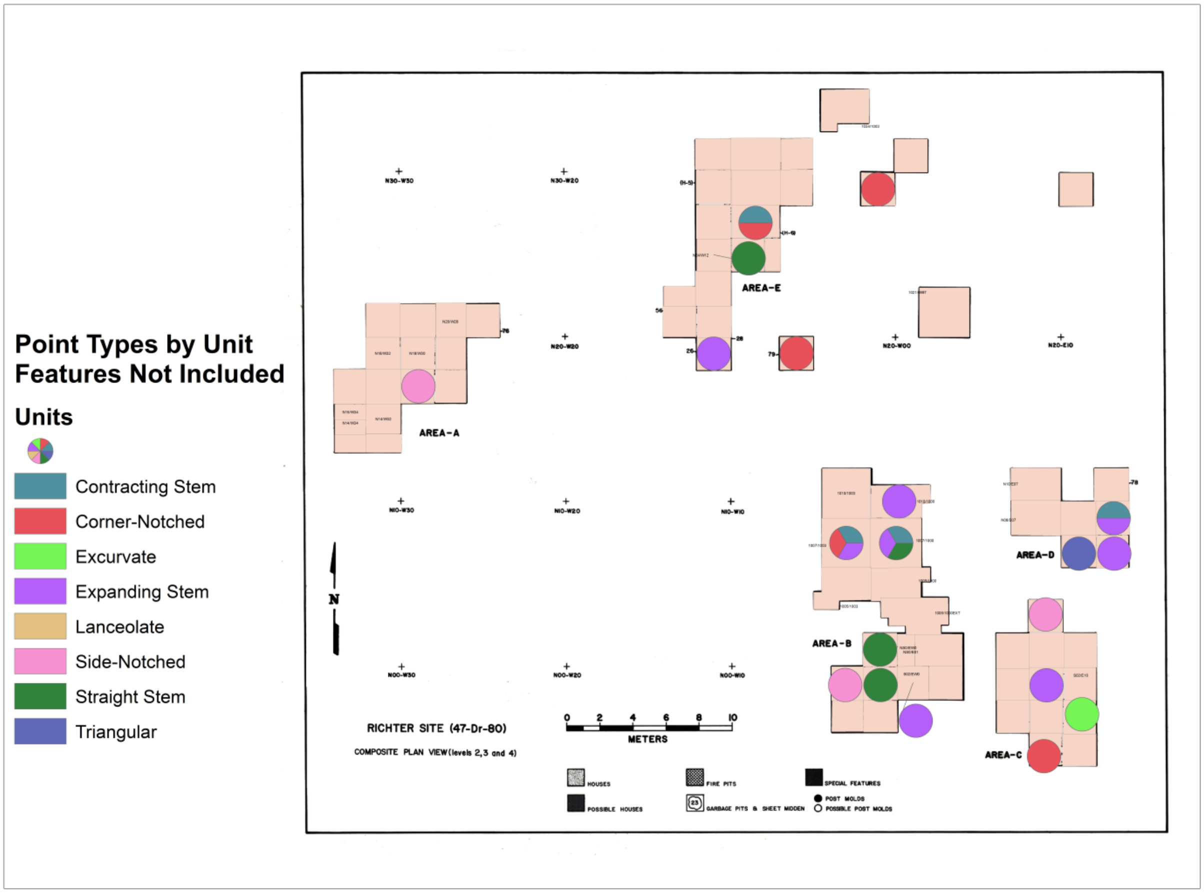


Figure 5.140. Point Types by Unit only (features points are not included).

Point types found in all site contexts include: straight stemmed bifaces (n=5) (Figure 5.141); contracting stem bifaces (n=4), excurvate bifaces (n=1), lanceolate bifaces (n=1), triangular bifaces (n=1) (Figure 5.142), corner-notched bifaces (n=6) (Figure 5.143), side notched bifaces (n=5) (Figure 5.144) and expanding stem bifaces (n=12) (Figure 5.145). This variety in hafted biface morphology parallels the documented variety in North Bay assemblages from the Mero and Portes des Morts sites (Mason 1966, 1967).

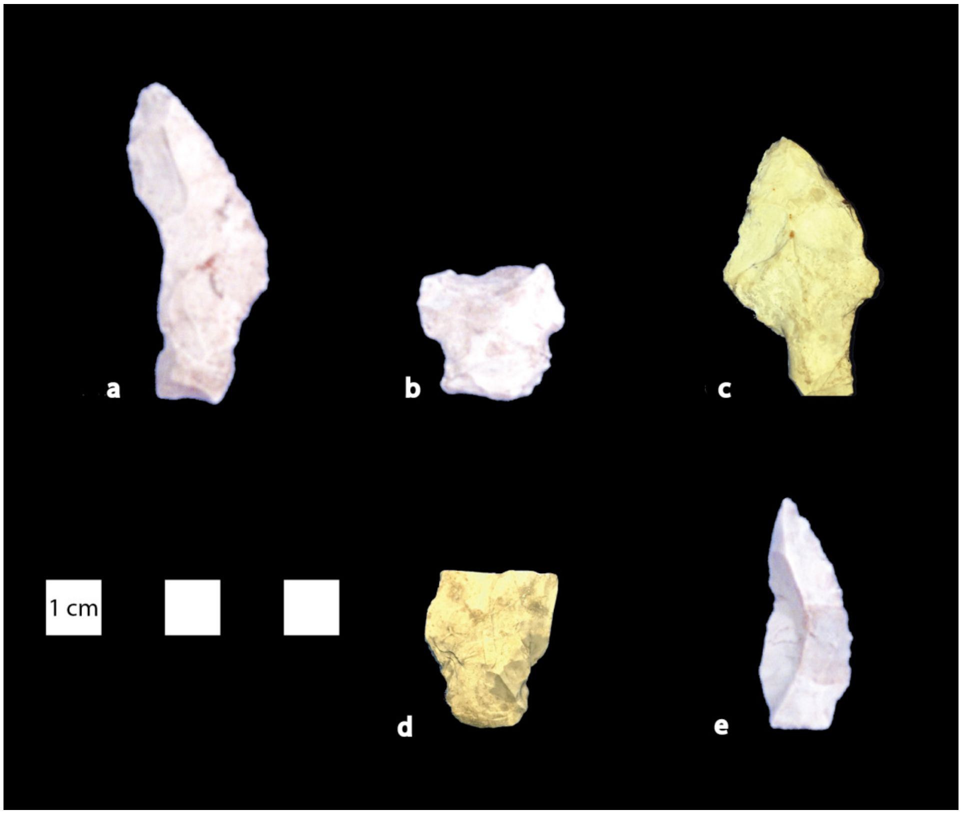


Figure 5.141. Straight stem bifaces from the Richter site: (a) Tool Number 193; (b) Tool Number 580; (c) Tool Number 722; (d) Tool Number 483; (e) Tool Number 322.

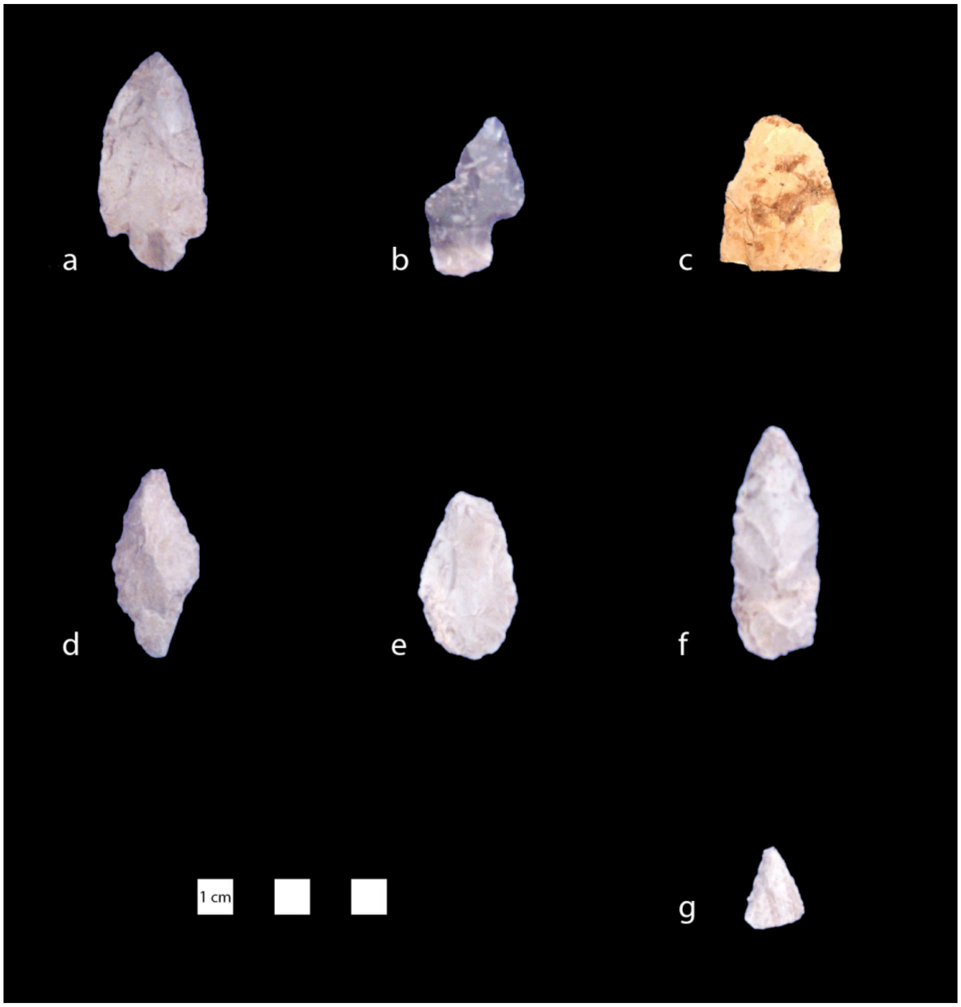


Figure 5.142. Contracting stem bifaces from the Richter site: (a) Tool Number 247; (b) Tool Number 341; (c) Tool Number 480; (d) Tool Number 490. Excurvate biface: (e) Tool Number 655. Lanceolate biface: (f) Tool Number 744. Triangular biface: (f) Tool Number 229.

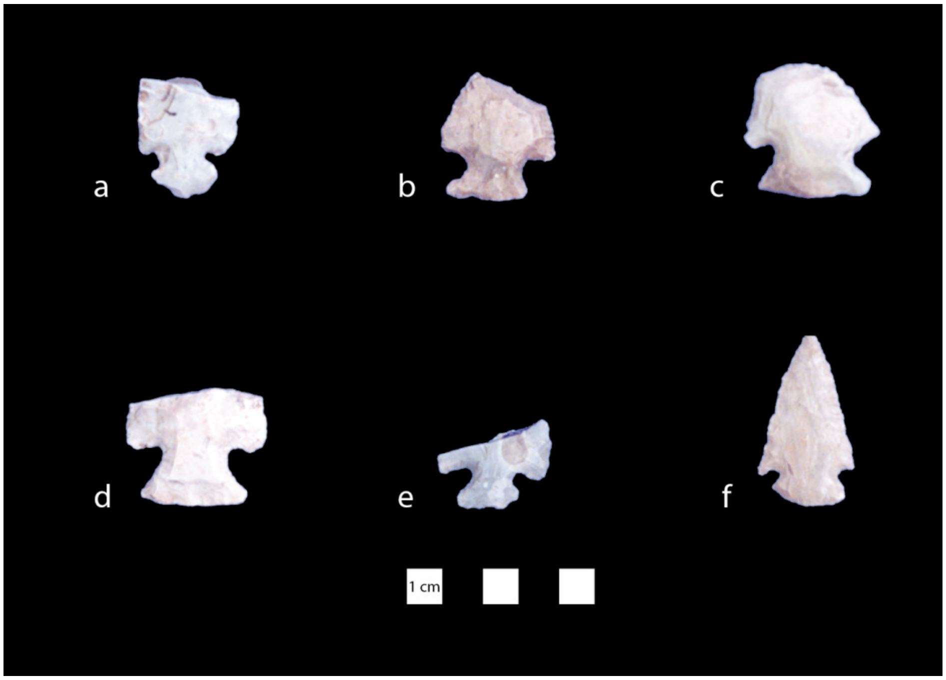


Figure 5.143. Corner-notched bifaces from the Richter site: (a) Tool Number 278; (b) Tool Number 282; (c) Tool Number 339; (d) Tool Number 352; (e) Tool Number 500; (f) Tool Number 679.

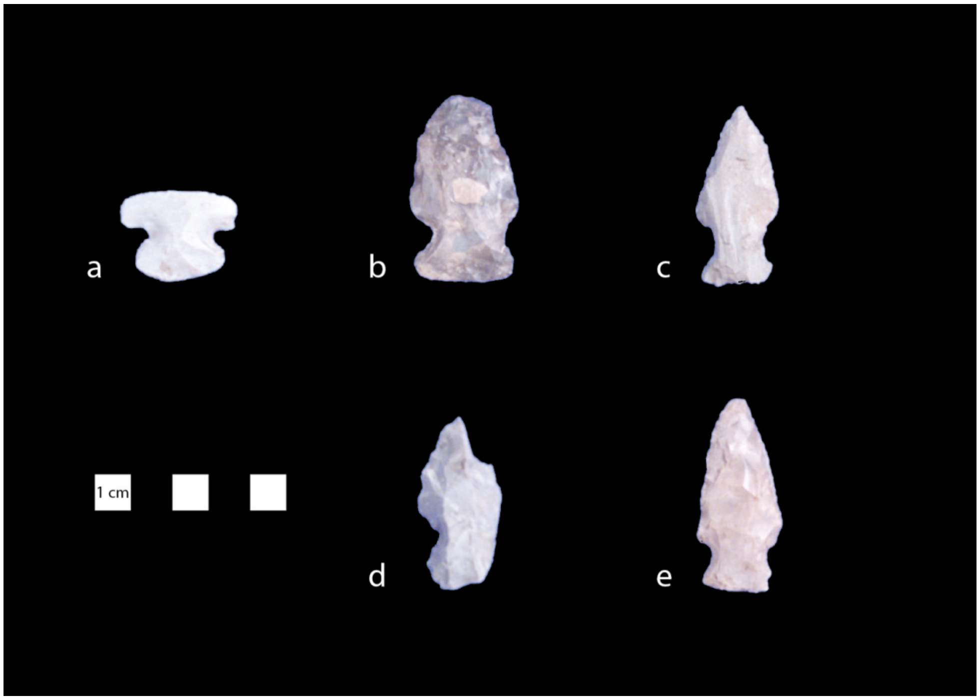


Figure 5.144. Side Notched Points from Richter site: (a) Tool Number 225; (b) Tool Number 277; (c) Tool Number 596; (d) Tool Number 665; (e) Tool Number 746

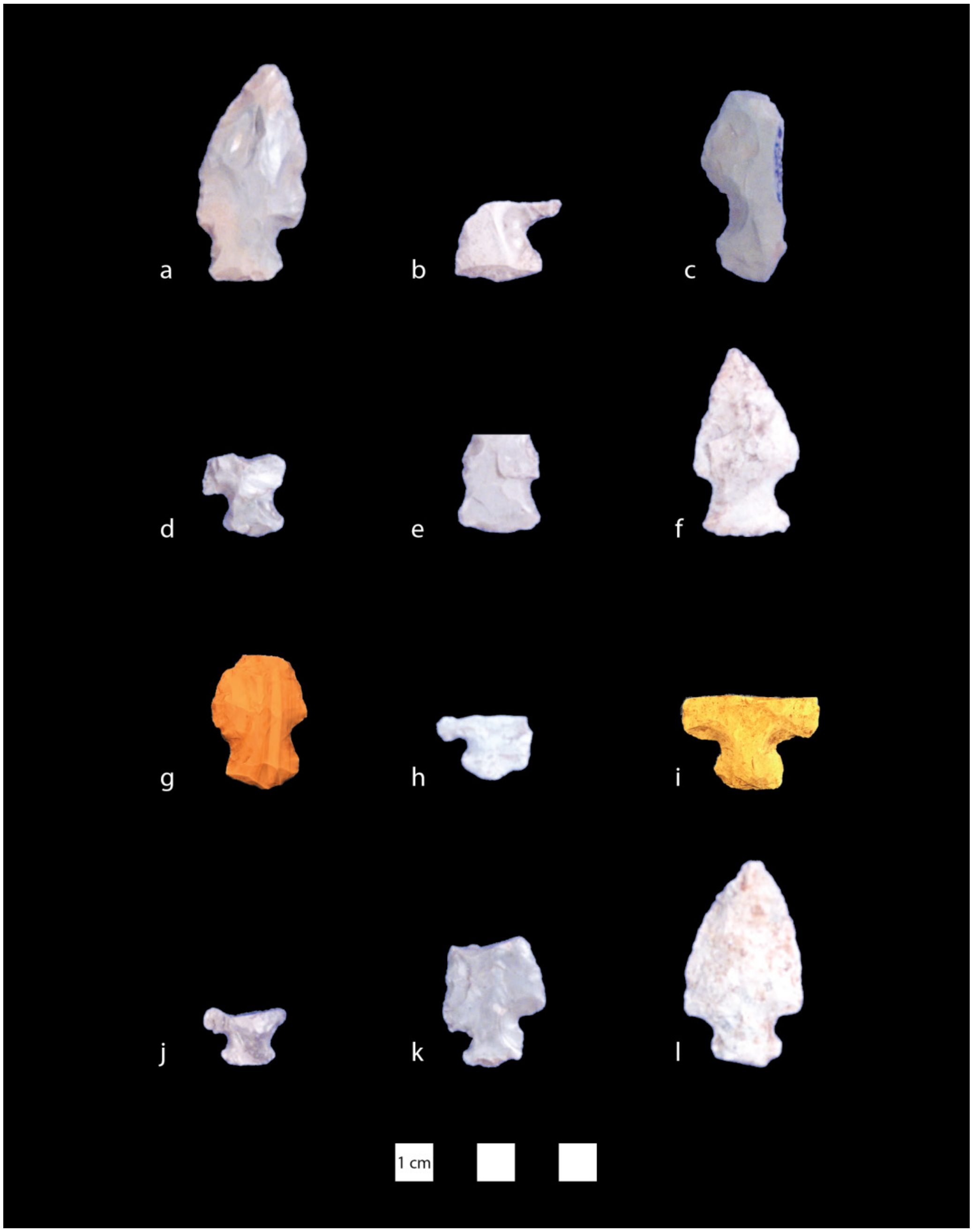


Figure 5.145. Expanding stem bifaces from the Richter site: (a) Tool Number 235; (b) Tool Number 262; (c) Tool Number 265; (d) Tool Number 266; (e) Tool Number 285; (f) Tool Number 452; (g) Tool Number 479; (h) Tool Number 505; (i) Tool Number 528; (j) Tool Number 573; (k) Tool Number 575; (l) Tool Number 607.

Ground Stone Tools

Ground Stone Tools represent only a small portion of the lithic materials recovered at the Richter site. Recovered groundstone artifacts were classified by Blodgett as Rough Stone Implements and are briefly discussed in his thesis. The distinction was made because not all of the implements were produced by grinding, though ground stone is generally applied in the literature and will be used here. A total of 22 ground stone tools were recovered at the Richter site. Of these, only two were associated with features. An abrader was recovered from F49 and a hammerstone was recovered from F63. The remaining tools were found in unit areas outside of features or recovered in the general surface collection of the site. Of those found in Test Unit contexts, nine were from the Plow Zone. A total of 14 Ground Stone Tools are from surface or Plow Zone contexts (Table 5.10 and Table 5.11).

Table 5.10. Ground Stone Tools by Tool Number Non-Feature Contexts

Tool Number	Unit and Level	Raw Material	Tool Type	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)
44	NS0/E10, L2	Basalt	Hammer Stone	65	42	26	81.5
85	S02/E08, Plow Zone	Limestone	Abrader	68	43	18	51.2
142	N10/E12, Plow Zone	Unknown Quartzite	Hammer Stone	37	30	21	31.1
189	NS0/EW0, Plowzone	Basalt	Hammer Stone	57	48	26	99.6
207	NS0/E08, Plow Zone	Basalt	Bipolar/Standard Hammer Stone	59	56	36	154.1
220	NS0/E08, L3	Basalt	Anvil	155	137	91	1237
274	N10/E12, Plow Zone	Basalt	Bipolar/Standard Hammer Stone	66	45	31	126.8
478	1005/1003, L2	Basalt	Hammer Stone	74	41	36	209.9
527	1010/1000, L2	Basalt	Hammer Stone/Pestle	113	42	38	240.3

Table 5.10. Ground Stone Tools by Tool Number Non-Feature Contexts

Tool Number	Unit and Level	Raw Material	Tool Type	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)
569	1105/0940, L3	Basalt	Pestle/Nutter	242	83	71	488.0
616	S02/E10, Plow Zone	Basalt	Anvil	135	88	58	1,250.0
628	S04/W04, Plow Zone	Basalt	Hammer Stone	45	44	32	106.4
699	S06/E10, Plow Zone	Basalt	Hammer Stone	68	46	34	159.6
718	TP2, L2	Basalt	Bipolar Hammer Stone	94	85	37	390.3
729	1034/1003, L2	Basalt	Hammer Stone	51	45	33	95.6
745	TP30, Plow Zone	Basalt	Hammer Stone	66	61	34	144.9
763	Surface Collection	Basalt	Anvil	120	95	53	788.6
787	Surface Collection	Basalt	Bipolar/Standard Hammer Stone	85	68	39	355.0
788	Surface Collection	Basalt	Hammer Stone	61	40	21	75.9
789	Surface Collection	Basalt	Hammer Stone	74	51	26	183.4

Table 5.11. Ground Stone Tools by Tool Number Feature Contexts

Tool Number	Unit and Level	Feature	Raw Material	Tool Type	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)
141	N10/E12, L2	F49	Limestone	Abrader	56	49	9	34.6
221	N02/E08, L4	F63	Basalt	Hammer Stone	74	62	57	387.2

Ground Stone Tools fall into six categories at the Richter site. The greatest number represent bipolar/standard hammer stones (n=4) and hammer stones (n=16). Three anvils were identified. Two abraders were also identified and a single pestle. Blodgett identified the source material for a majority (n=19) of the ground stone tools as basalt cobbles most likely obtained from the glacial till. A single tool was composed of quartzite. Two tools originally described as unidentified material have been reclassified as being composed of limestone, possibly exposed to heat.

When the Ground Stone Tools are plotted using GIS (Figure 5.146), except those listed as recovered from General Ground Surface, distribution is heavily weighted toward the southeastern portion of the site. In fact, only one tool is located outside of this area: a hammer stone found in Unit 1034/1003. The distribution also reveals that none of the burial related features, F9/F11 and F25, contained any Ground Stone Tools. The area with the most tools is Unit N10/E12 which contains a portion of F49. In addition to the abrader in F49 mentioned previously, the unit contained a bipolar/standard hammer stone and a hammer stone for a total of three Ground Stone Tools. These are the only Ground Stone Tools found in Area D.

South of Area D in Area C a large number of Ground Stone Tools were recovered. All of these, except a hammer stone found in F63, were found outside feature contexts in the plow zone (n=7). Two of the tools were found in Test Units associated with a large sheet midden (F51). It is possible that this midden represents an activity area associated with House 7 located in the south half of Area C. Figure 5.147 and Figure 5.148 are photographs of all recovered ground stone tools at the Richter site.

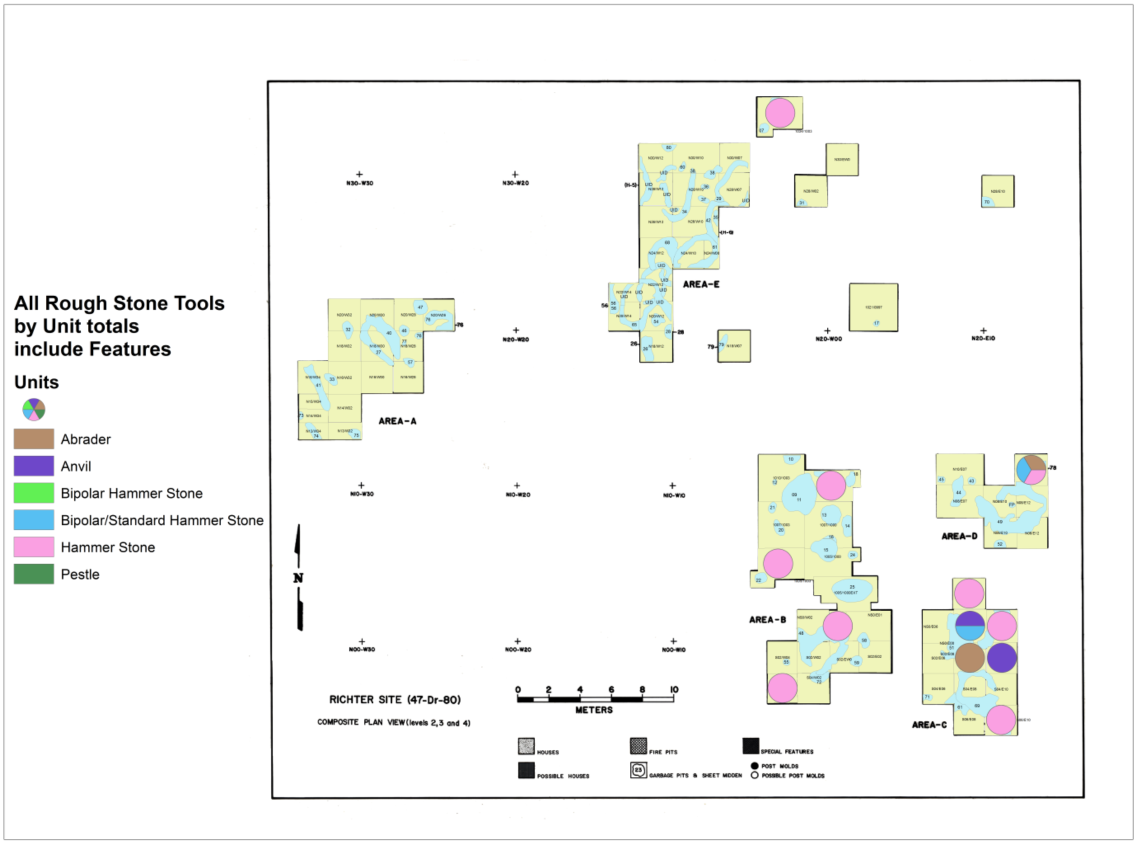


Figure 5.146. Distribution of Ground Stone Tools at Richter site for all units, features totals included in unit totals.

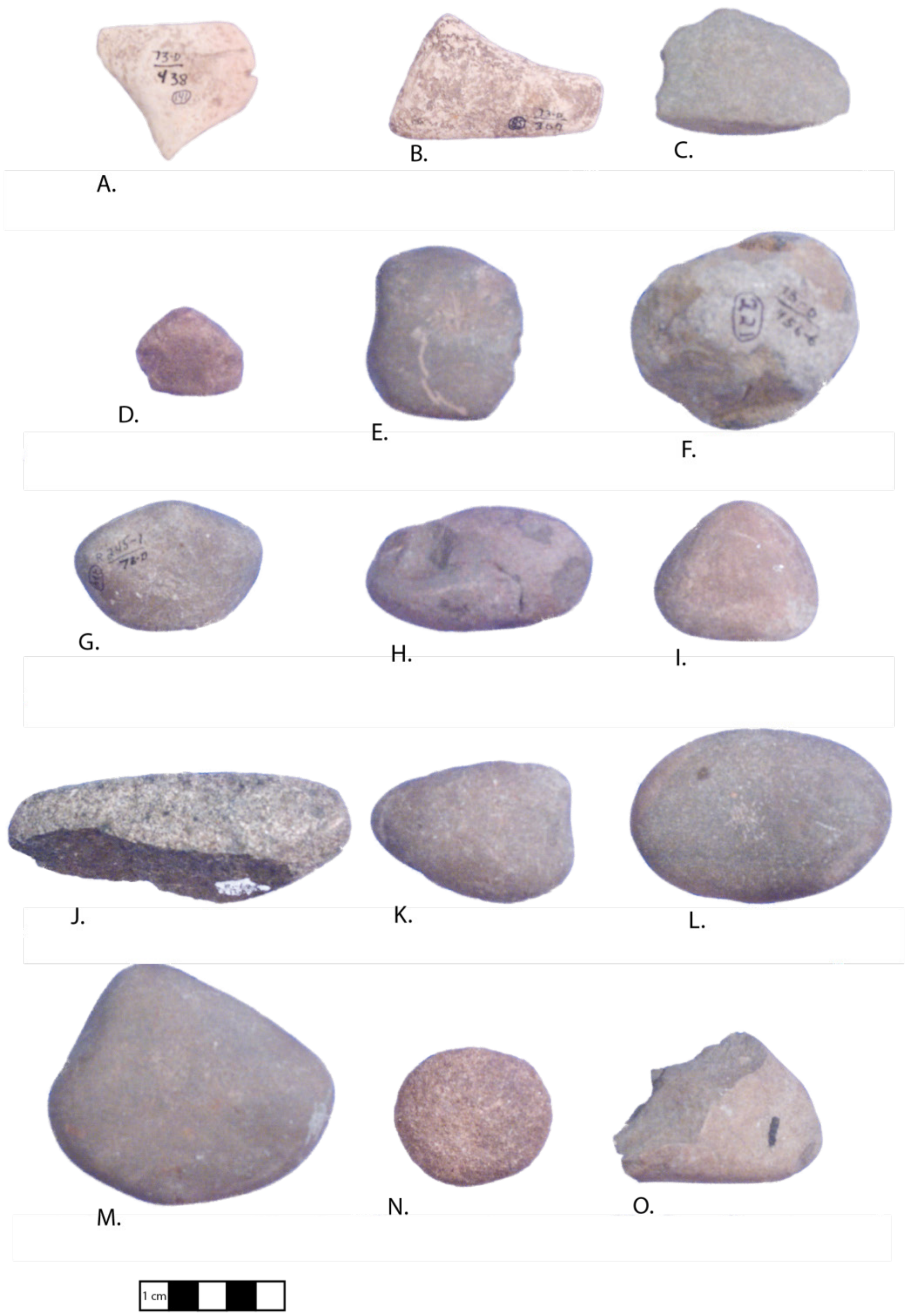


Figure 5.147. Ground stone and pecked stone tools. A) Tool Number 141 B) Tool Number 85 C) Tool Number 44 D) Tool Number 142 E) Tool Number 207 F) Tool Number 221 G) Tool Number 274 H) Tool Number 478 I) Tool Number 189 J) Tool Number 527K) Tool Number 699 L) Tool Number 229 M) Tool Number 718 N) Tool Number 729 O) Tool Number 745.

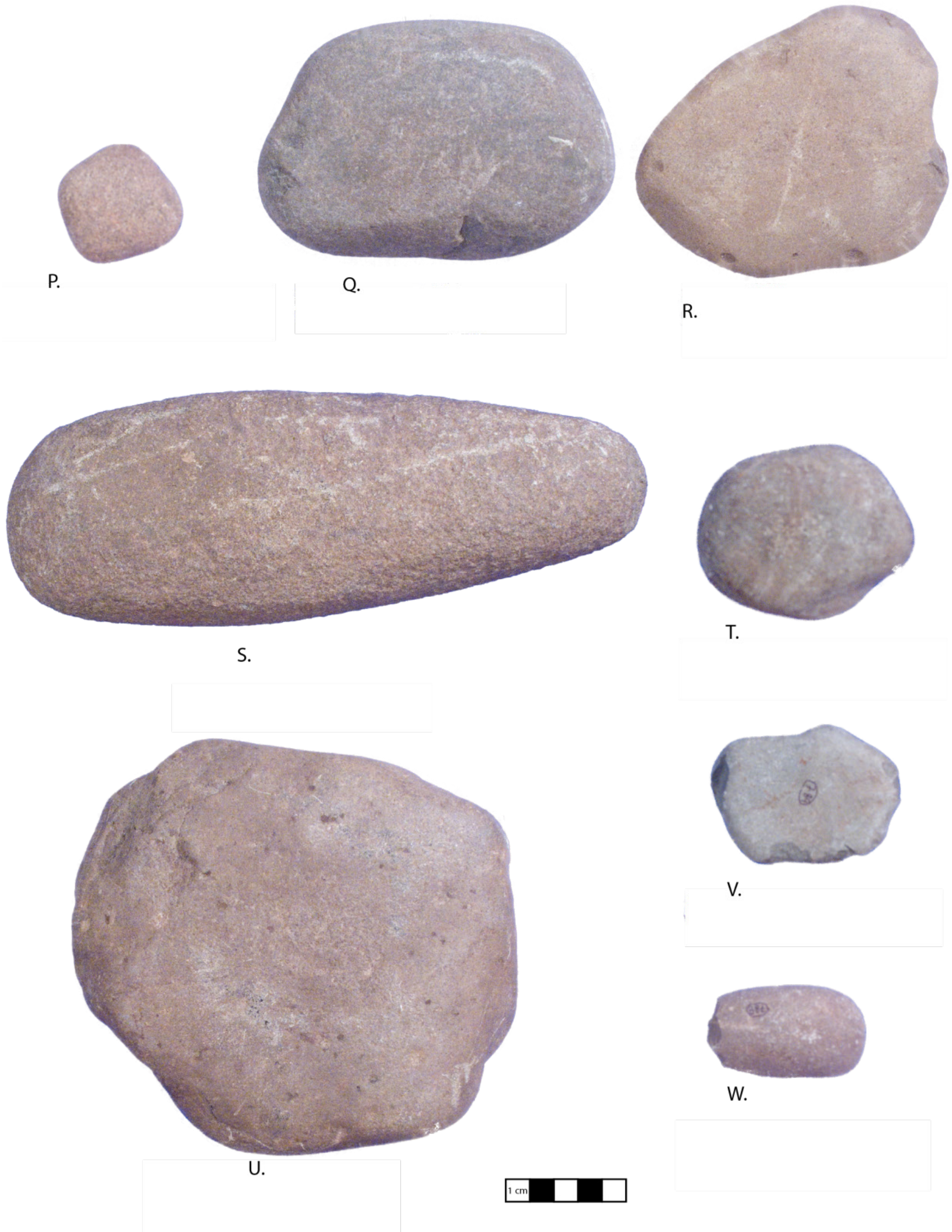


Figure 5.148. Ground stone and pecked stone tools. P) Tool Number 628 Q) Tool Number 616 R) Tool Number 763 S) Tool Number 569 T) Tool Number 787 U) Tool Number 220 V) Tool Number 789 W) Tool Number 788.

Discussion

Mason placed pecked and ground stone implements from the Mero site into three categories. The first, hammerstones, included four cobbles identified as basalt. These cobbles exhibited signs of use, battering, consistent with use as hammerstones. It is noted that other cobbles were found at the Mero Site that had some edges that were battered but this damage was not considered by Mason to be cultural. The recovered hammerstones were not found in stratified portions of the site. Netsinkers constitute the next category. The bulk of the 12 netsinkers of native limestone were found closely associated with each other in the upper portion of the midden in Stratified Area L. Mason indicates that the netsinkers were utilized during the late period of site occupation. He notes that like the Heins Creek Site, there is evidence of the use of harpoons for fishing (Mason 1966:67-68).

The final category of groundstone identified is celts. Only three were recovered and all are from unstratified portions of the site. Only one of these is complete. It is made from chlorite schist. Mason indicates that due to the use of this soft raw material the celt would only be useful as a weapon. The remaining portion of the second tool is made from quartz pyroxene gneiss. The third was created from slaty schist and is broken and battered and may have been used as a hammer stone (Mason 1966:67-68).

The number of groundstone or pecked tools recovered from the Middle Woodland portion of the Summer Island Site is much greater than what was recovered from both the Mero and Richter Sites. A total of 56 tools were recovered. Eleven of these are classified as hammerstones. Raw material for these hammerstones is dark igneous cobbles most likely collected from the nearby beach. They are distinguished by evidence of battering. Brose also has identified cobbles utilized as anvils. These differ from hammerstones by having “one or more concave areas of crushing or pecking” on at least one surface. Raw materials include gabbro or diabase, basalt, felsite and diorite from collected glacial cobbles.

Significantly, fourteen netsinkers were recovered from Middle Woodland contexts within the site. These netsinkers were made from granite gneiss, sandstone and dolomite. The raw cobbles are described as being “waterworn flat cobbles rather irregularly oval in shape”. It is interesting to note that the netsinkers from both the Mero and Summer Island Sites were manufactured from relatively soft stone, ones that were easier to shape but did not lend themselves to surviving heavy blows as would be necessary for use as hammerstones, celts and anvils. Brose engages in a detailed analysis of the netsinkers to support his identification of these artifacts as intentionally manufactured netsinkers. Netsinkers would have been used for gill net fishing (Brose 1970:122-126).

Also found at Summer Island were two manos, flat slabs with evidence of grinding on at least one side. One was made of sandstone and the other of “very sandy shale” (Brose 1970:126). Brose suggests that these may be abraders but microscopic examination was inconclusive. Two mortars were recovered. One was of diorite with a utilized surface greater in size than that found on site anvils, though small in size at 4.3 cm and 1.1 cm in depth. A depression contained possible red ochre remains. The second mortar was bowl shaped and was formed from a diorite cobble. Evidence of dark brown stains and black flecks of possible pigment was identified in surface striations. A pestle was found in association with the second mortar. This pestle was identified as a diorite “pebble” with brown and black possible pigment staining (Brose 1970:127). The remaining materials include ocherous limonite, specular hematite, and silicaceous hematite. A number of these stones had indications of grinding. Finally two sheets of muscovite were found (Brose 1970:27-28)

Fire Cracked Rock

During the Richter site excavations fire cracked rock (FCR) was not systematically collected. Occasionally, excavators noted the presence of FCR, rarely recording a rough count and even more rarely a mention of the material type. Review of site planviews and profiles indicate that the most common type of stone noted at the site is limestone. This of course makes sense because the bedrock is Silurian Dolomite with nearby outcrops.

The materials from several lots do contain some FCR. Some of these lots were never processed and the small pieces of FCR were not discarded. In other cases FCR was misidentified as other material classes. Table 5.12 contains total counts and weights for the FCR in the curated collections. Only a single feature, which had never been inventoried, contained FCR. Feature 51, described as a sheet midden, produced 340 pieces of FCR weighing 431.85 g. Much of this material, 313 pieces, weighing 360.06 g, was red in color and is most likely high in orthoclase feldspar. This or a very similar material is a common constituent in ceramic temper recipes used by Richter site potters.

Table 5.12. Total Count and Weight of FCR by Unit

Unit	Total (g)	Count
1005/1003	1.21	3
1007/1003	1.19	3
1010/1000	2.83	5
1021/0997	8.26	8
N08/EW0	2.33	1
NS0/E08	431.85	340

Discussion

Blodgett's analysis of lithic materials from the Richter site documented the use and preparation of local chert resources for the production of lithic tools. Reuse and reworking of good quality tools indicate that while raw material was plentiful there was an economic cost to primary reduction of chert that made recycling material more cost efficient. When Blodgett's data is examined at the feature scale significant differences become apparent. These differences may be related to differences in occupational type and duration, and feature type.

One feature at the Richter site, F49/H8, differs in number and types of tools and in the large volume of flakes in all size categories. One possible explanation for these differences relates to the presence of what is described as a hearth within this structure. None of the other features described by excavators as house features contain hearths. A hearth may indicate a lengthier term of occupation and additional time to accumulate lithic debitage and associated materials. With the large number of tools found associated with this location it may be of benefit at some future date to explore the data related to Laurel scrapers using methods suggested by Lovis (Lovis 2009).

Features associated with human remains, cremation or internment also differ from other types of features and areas of the site. For example, F25, a human burial, has a flake count second only to F49/H8. This multiple burial with two possible burial events also contains ten tools including three biface fragments, three bipolar cores, three utilized edge-only tools, and one utilized pseudo-bladelet. Due to limited excavation notes it is impossible to determine location of these materials within the feature, though it is possible that they are associated with burial or post-burial practices.

Ground stone and pecked stone tools include abraders, hammer stones, a pestle, an anvil and a celt. Noticeably absent are “net sinkers”, whether this is the result of actual differing fishing practices by the residents of the Richter site or misidentification of sinkers as naturally occurring cobbles cannot be determined.

Miscellaneous Artifact Categories

Copper

Thirty pieces of copper were recovered from the Richter Site. The majority are worked copper. Table 5.13 provides a summary of the recovered copper artifacts. A single piece of minimally worked raw copper was found in the Plow Zone of Unit N06/E12. Of the worked copper pieces, 12 are small relatively flat fragments (Figure 5.149). Four additional copper fragments appear to be bent or rolled (Figure 5.150). A single curved fragment of copper resembles a flattened hook (Figure 5.150e). A piece of copper exhibiting minimal working was also found (Figure 5.150f). Twelve objects appear to be tools or portions of broken tools.

Table 5.13 Copper Artifacts from the Richter Site.

Copper Piece Number	Unit and Level	Feature	Description	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)
CP134.1	1005/1000	F25	Awl	34.56	6.02	3.46	2.88
CP101	1005/1000	F25	Flat Worked Fragment	16	7.47	8.6	.28
CP106	1007/0997, L2	F24	Rolled Worked Fragment	12.78	6.41	2.63	.44
CP103	1007/1000 ,L2	F13	Flat Worked Fragment	10.78	8.06	3.1	.69
CP104		F15	Fishhook	37.69	3.72	8.28	1.57

Table 5.13 Copper Artifacts from the Richter Site.

Copper Piece Number	Unit and Level	Feature	Description	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)
	1007/1000, L2						
CP107	1007/1003, L2		Chisel/Punch	50.2	5.7	3.18	5.41
CP102	1007/1003, L2		Flat Worked Fragment	14.68	0.87	2.8	.28
CP93	1010/1000, L3	F9	Flat Worked Fragment	15.08	10.62	0.62	.35
CP437.2	N02/E08, L3	F63	Rolled Fragment	14.85	2.5	3.18	.35
CP437.1	N02/E08, L3	F63	Chisel/Punch	13	6.86	3.4	1.25
CP261	N02/E08, L2		Rolled Thin Copper Bead	7.84	2.17	NA	.49
CP366	N06/E12, Plow Zone		Minimally Worked Raw Copper	22.74	15.03	6.24	6.44
CP405.1	N08/E12, L3	F49	Point? Solid Copper	34.34	8.35	8.28	9.43
CP405.2	N08/E12, L3	F49	Flat Worked Fragment	13.6	8.78	1.18	.23
CP405.3	N08/E12, L3	F49	Broken Awl?	17.39	3.52	3.49	.77
CP405.4	N08/E12,L3	F49	Flat Bent	6.57	9.92	NA	.29
CP205	N10/E07, L2		Flat Worked Fragment	10.38	6.01	0.82	.14
CP204	N10/E07. Plow Zone		Odd Worked Hook Like Fragment	15.23	9.39	2.49	.06
CP245.1	N10/E12, Plow Zone		Awl	72.85	5.83	3.64	5.8
CP245.2	N10/E12, Plow Zone		Flat Worked Fragment	18.52	10.94	2.08	1.33
CP383	N18/W30, L2	F27	Fishhook	28.55	11.73	1.96	.47
CP142	N30/EW0, Plow Zone		Flat Worked Fragment	18.66	11.27	1.69	1.07
CP436	N30/W07, Plow Zone		Flat Worked Fragment	18.36	10.21	0.8	NA
CP501	NS0/E08, L2	F51	Flat Worked Fragment	8.45	6.91	0.64	NA

Table 5.13 Copper Artifacts from the Richter Site.

Copper Piece Number	Unit and Level	Feature	Description	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)
CP238	NS0/E08, Plow Zone		Flat Worked Fragment	7.57	7.98	1.69	.12
CP214	S02/E06, Plow Zone		Flat Worked Fragment	5.39	13.26	4.8	.24
CP328	S04/E08, Plow Zone		Awl	27.95	4.57	2.93	1.54
CP490	S06/E08, L3	F69	Worked Bent/Rolled Fragment	6.56	5.61	5.08	.16
CP489	S06/E08, L2		Chisel/Punch	26.65	7.46	6.44	4.13
CP429	S06/E08, Plow Zone		Broken Chisel/Punch	23.26	5.36	5.33	2.56

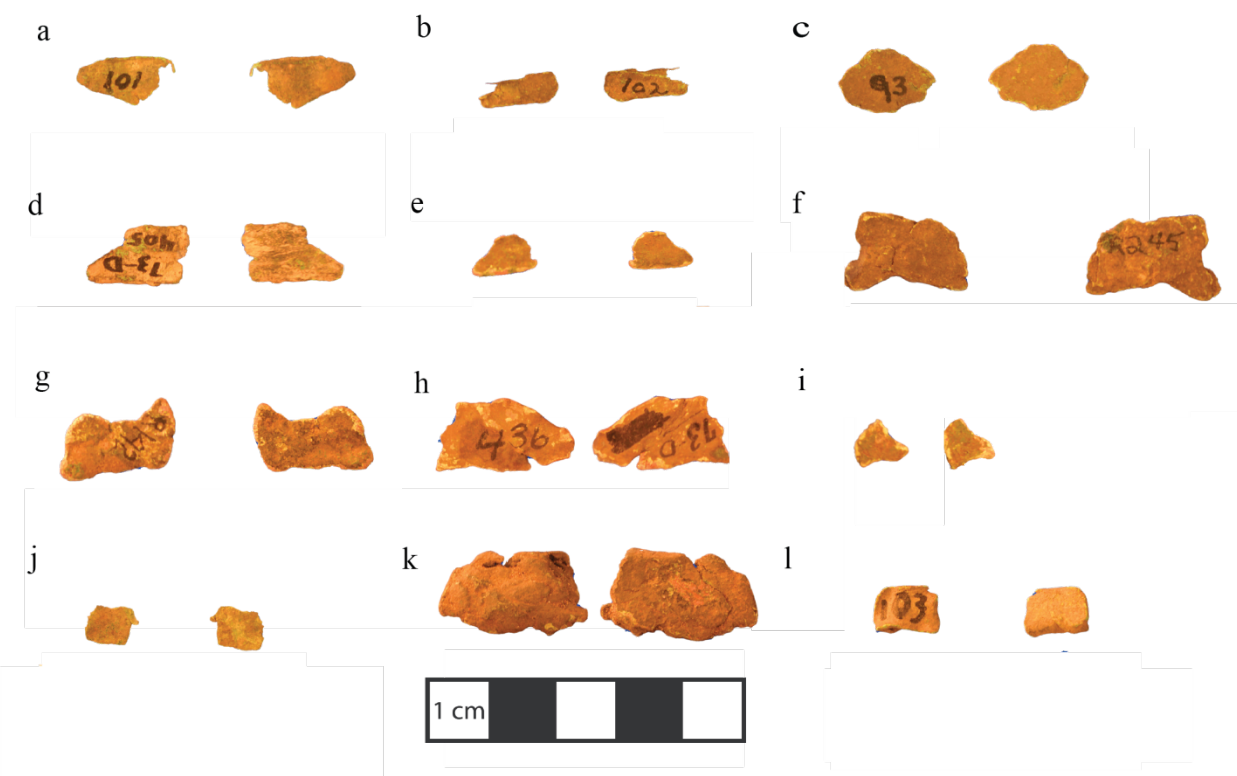


Figure 5.149. Flattened worked fragments: (a) CP101.1; (b) CP102; (c) CP93; (d) CP405.2; (e) CP205; (f) CP245.2; (g) CP142; (h) CP436; (i) CP501; (j) CP238; (k) CP214; and (l) CP103.

Figure 5.150. Bent or rolled fragments: (a) CP405.4; (b) CP437.2; (c) CP106; (d) CP490. Odd hook like fragment (e) CP204. A minimally worked piece of raw copper (f) CP366.

Three general copper tool types are represented at the Richter site; awls, chisel/punches, and fishhooks. Awls at the site are long hammered pieces of copper with tapering pointed ends (Figure 5.151). It seems that flattened copper was rolled and hammered to create the desired shape. Evidence of this manufacturing process can be seen most clearly in Figure 5.151b. Here, layering of the rolled and pounded copper can be seen. The middle section of the complete awl is somewhat square in cross section while the ends are rounded. Awls include three complete and one partial example.

Awls in the Richter collection vary greatly in length ranging from almost 30 mm (CP328) to almost 73 mm in length (CP245.1). In contrast, both awls are similar in width and thickness. This may have been necessary for awls made of copper, a very malleable material, to retain their strength during use. This may explain the partial tool CP405.3 which appears to be a broken awl tip. The width of this object is about 3.5 mm, thinner than the thickest portion of awls CP245.1 and CP328. If the break was the result of too much stress on a thinner section of the tool or weakness caused by defects within the worked copper is unclear. It is also possible that this may be a portion of a more pin-like object. All of the Richter awls were recovered from the southeastern portion of the site.

Figure 5.151. Richter Site awls: (a) CP134.1; (b) CP245.1; (c) CP328; and (d) CP405.3.

Three complete and one partial chisel/punch were recovered at the Richter Site (Figure 5.152). All are roughly square or rectangular in cross section. While ends taper in width they continue to retain a square to rectangular profile. The ends are flattened and in some cases extend much in the manner of the head of a modern nail. This distinguishes them from awls and similar tools that taper to a rounded more pointed end. In fact CP107 (Figure 5.152a) so resembles its modern counterpart that it was labeled as a “rivet” by excavators. The characteristic flattening on these tools may be the result of use. In the examples from the Richter Site flattening seems to be more pronounced on one end. This suggests that one end may have been sunk into a handle of sorts made from wood or bone. The protruding end would then be used for striking or punching. The use of these copper tools without a handle would be difficult if not impossible.

Figure 5.152. Chisels or Punches from the Richter site: (a) CP107; (b) CP437.1; (c) CP489 and (d) CP429.

Two fishhooks were recovered (Figure 5.153). They are roughly similar in size but differ in form. Fishhook CP104 (Figure 5.153a) appears square or rectangular in cross section with tapering ends, much like awls from the site. This awl-like shaped piece of copper was bent to produce the hook. The second fishhook, CP383 (Figure 5.153b) has a more rounded cross section. It is wire-like in appearance with tapering ends and is less sturdy. This most likely resulted in the break at the non-hook end that is noted by the circle in Figure 5.153b.

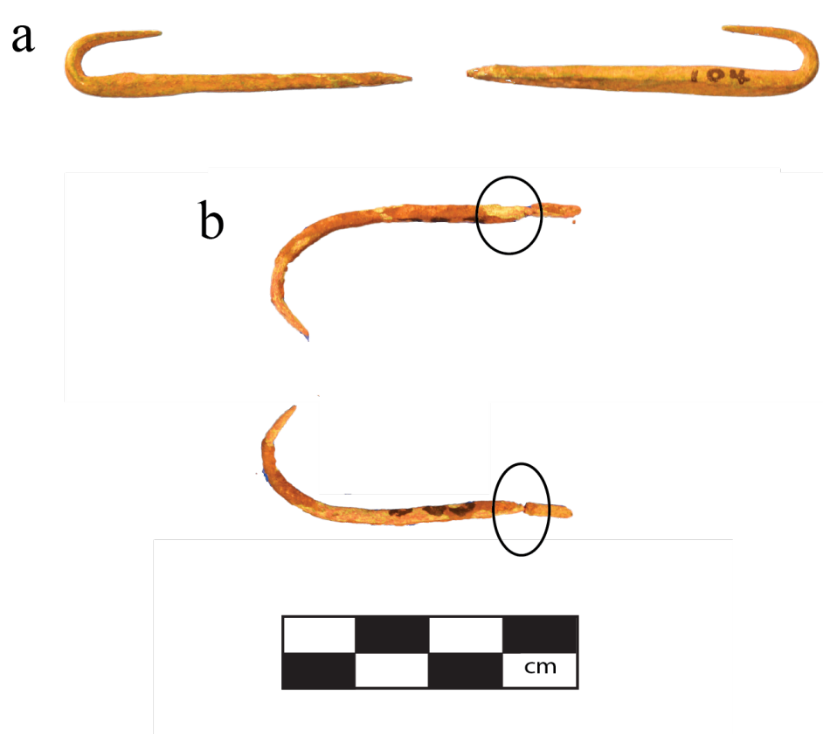


Figure 5.153. Copper Fishhooks from the Richter Site: (a) CP104 and (b) CP383. Black circle indicates area of breakage.

Along with copper fragments and tools a single copper bead was recovered. The bead (Figure 5.154) was created by coiling a thin strip of copper around an object, possibly a stick.

The copper is also wire-like. The thin copper overlaps to form the circular bead. It is possible that the bead may have been flattened by hammering after coiling.

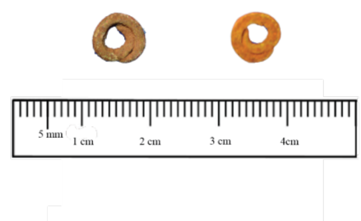


Figure 5.154. Thin copper bead, CP261 from the Richter Site.

The final copper object (Figure 5.155) is unusual. It is a solid piece of copper that is similar in shape to bone points recovered from the site. There does not appear to be a hollow space at the end or socket to allow for attachment of a shaft. It is possible that this may also be a chisel or punch that was imbedded in a handle. Another possibility is that it may have served another purpose. It was recovered from F49, H8, L3. Included in this same location were several worked antler tines. Burned raptor talons and frog/toad bones were found in the same context (see Faunal Section this chapter). This artifact weights 9.43 g, making it by far the heaviest copper object at the site. With its significant weight and association it maybe an item of ritual association, this area was also associated with large amounts of lithic debitage.

Figure 5.155 Front and Back of solid copper point (CP405.1) from the Richter Site.

The recovery of worked pieces of copper and tools is not unusual in the region surrounding the Richter Site. Worked copper pieces and tools have been recovered at other North Bay and Middle Woodland sites in the region including Mero, Porte des Morts and Summer Island (Brose 1970:129-137; Mason 1966:69-69; 1967:320-323). They also have been recovered from Laurel associated sites like Naomikong Point on the south shore of Lake Superior on the Upper Peninsula of Michigan (Janzen 1968:69).

At the Mero Site on the eastern side of the Door Peninsula only two copper pieces were recovered: an awl and a “blade of a tanged spatulate knife” (Mason 1966:68). All the Mero copper materials were recovered from unstratified portions of the site.

Porte des Morts, in contrast, yielded a significantly larger number of worked copper pieces. Of the 17 recovered pieces, 14 were directly related to North Bay cultural contexts by Mason with an additional piece found in a heavily North Bay mixed context. The remaining two artifacts were found in association with later occupations. These two artifacts include “a flat triangular pendant and a crescentic-bladed tanged knife” (Mason 1967:320-321).

Mason divided the North Bay associated copper into seven categories: punches (n=2), awls (n=1), pin (n=1), projectile point (n=1), fishhooks (n=3), implement fragments/broken awls (n=2), hammered nugget (n=1) and sheet copper fragments (n=4). The items categorized as punches appear to resemble the chisel/punches found at the Richter Site. Both have square to rectangular cross sections and taper towards the end. There is flattening or “battering” of one end of the implement reflecting use of “force” (Mason 1967:311, 321) found on punches from both sites. The awl/bodkin also resembles awls from Richter. It is square in cross section and tapers toward the ends. It is difficult to determine method of construction from the photographs of the item. The pin on the other hand is thinner than the previous tool though it also has a squared cross section and tapers toward rounded ends. It is speculated that the fineness of this object would preclude its use for more strenuous work (Mason 1967:321-322).

The Porte des Morts site contained a single copper projectile point. This differs greatly from the point like artifact (CP405.1, Figure 5.155) found at Richter. The Porte des Morts point is flattened with notching on both sides of the base to allow for hafting. The blade is described as “being between triangular and ovoid” and asymmetrical (Mason 1967:322). The Richter point does not exhibit any flattening to create a blade or base for hafting. While the points exhibit great differences the fishhooks recovered from Porte des Morts closely resemble those from Richter. Both sets of hooks are barbless and appear to have been constructed in a similar manner with tapered ends (Mason 1967:322).

There are some similarities and differences between Porte des Morts and Richter copper assemblages. Richter yielded a greater number of copper artifacts, 30 for Richter and 17 for Porte des Ports. Both sites contained fishhooks, awls/bodkins, and chisel/punches. Porte des Morts contained a copper point. Richter contained the only copper bead. Both sites have copper fragments or scrap indicating that there was some manufacture of copper objects at both sites, but Richter contained greater amounts of copper fragments. Mero differs from both of these sites by including only two finished pieces in the site assemblage.

Within the region, the Summer Island site yielded more copper objects than the three Door County sites previously discussed combined. Seventy copper objects were recovered from Summer Island. Forty-one of the pieces were described as unworked copper or scrap. The remaining 29 include the following: rolled copper beads (n=13), unfinished bead (n=1), fish hooks (n=2), fish gorges (n=3), awls (n=4), knives (n=2), chisels (n=2), punch (n=1) and effigy claw (n=1).

The copper assemblage from Summer Island is similar to that of the Richter site. Both assemblages include fishhooks, chisels/punches, awls, and fragments of copper. Summer Island has several types of copper objects not found at Richter: fish gorges, knives, and an effigy claw. The Summer Island gorges range from 4.55 cm to 7.77 cm in length (Brose 1970:129-144) most likely they were meant for larger fish. Summer Island faunal remains include larger species like sturgeon (Brose 1970:145). The lack of fish gorges at Richter may reflect differing seasons of occupation and fishing methods necessary to take advantage of locally available fish species. Gorges were probably not useful for harvesting the spring spawning species found at Richter. Missing also from Richter are items similar to the knives found at Summer Island. The actual use of these is uncertain. They are described as being hammered from a single piece of copper without evidence of folding as is often seen in awls and punches (Brose 1970:133). These may be similar to the tanged spatulate knife recovered from the Mero site (Mason 1966:69)

Summer Island also included two types of items of a more personal nature: an effigy claw and copper beads. The claw was associated with Middle Woodland contexts and was crafted from a single piece of copper. It is shaped like a raptor talon with a sharp tip. It exhibits no evidence of use (Brose 1970:134). None of the Door County sites have produced any item similar to the claw found at Summer Island. The only possible similar item is the heavy copper point CP405.1 from Richter; though it does not have any resemblance to any animal it is weighty and also crafted from a single piece of raw copper. It is a point without any obvious practical way to haft it. Could it be a copper representation of bone and antler points found within the same context (see Faunal section of this chapter)? Future analysis may provide additional insight.

Copper beads make up a significant portion of the copper assemblage at Summer Island, n=13. While this is significantly more than the single bead found at Richter the true significance is that the bead was fashioned in the same manner as some of those found at Summer Island. At Summer Island some beads were created by wrapping thin copper strips around a stick with overlapping of the thin copper, very much like the process used to create the bead found at Richter (Brose 1970:129-132).

The similarity of the Summer Island collection to other Laurel sites like Naomikong Point on the south shore of Lake Superior and Heron Bay on the north shore is noted by Brose. The copper usage at Summer Island and other Laurel sites is viewed as a continuation of earlier Archaic copper industry and culture found throughout the region (Brose 1970:136-137). Summer

Island also documents a possible change in the pattern of copper usage during later periods of occupation. There is a decrease in the use of copper in Upper Mississippian contexts at Summer Island (Brose 1970:188).

Richter fits into an interesting pattern relating to the distribution of copper artifacts. Sites that are geographically closer to the sources of copper in the Keweenaw Peninsula the Upper Peninsula appear to have the greatest number of copper artifacts with a decrease as the distance from the source increases (Brose 1970:136-137). With Summer Island located just off the Upper Peninsula it should, and does, have the greatest amount of copper. Richter is approximately 29 air miles southwest of Summer Island at an increased distance to the source which is reflected in fewer copper items. This trend holds with Porte des Morts having fewer copper items and Mero with the fewest.

Generally speaking, the Richter copper assemblage seems to fall between the Porte des Morts and Summer Island collections. Common tool types include awls/bodkins, fishhooks, and chisel/punches. Similarities in the copper toolkit may reflect similar exploitation of both lacustrine and terrestrial resources, necessitating similar tools. Differences may relate to the specific manner used to catch fish, gorges versus toggle headed harpoons versus fishhooks versus nets. Residents of Summer Island may also have used gill nets for fishing using stone net sinkers like those found at the site (Brose 1970:122-126). Stone net sinkers were not found at Richter. It would seem that the inhabitants of Richter may have utilized seine or dip nets for spring spawning species. Seasonality of resource exploitation may explain the differences.

Of the similarities between Summer Island and Richter the presence of beads manufactured in an almost identical manner is interesting. While a bead may have arrived through trade it may also have been made at Richter or traveled with individuals from Summer Island to Richter. The area in which the bead and almost all of the other copper items was found is also the location of ceramic materials similar to those found at Summer Island. This location is interpreted as a structure, H7, with an internal hearth and evidence of lengthy occupation.

While the copper assemblage at Richter is similar to other area sites it also differs. It is impossible to say it is definitively more like one than the other. There are acceptable reasons that each assemblage varies in size and types; whether it is because of distance from the copper sources or season and length of occupation. The best way to determine similarity may lay in a more detailed study of the production methods utilized at each site but that is beyond the scope of this work.

Minerals

Very little in the way of minerals with cultural associations were recovered from the Richter site besides the above discussed copper assemblage. Table 5.14 contains the weight, size and location of these materials. The most abundant mineral is red ochre, (n=4). Red ochre was only found in small isolated pieces at the site. Ocher distribution includes site Area A, B and D. Only Area D contained more than a single piece of red ochre. One piece of ochre was found in feature F49, H08, the other was found in the Plow Zone above this same feature in Area D. A single small piece of red ochre was recovered from Area B, Unit S02/EW0, in a Plow Zone context. The largest piece of red ochre was found in the second level in the southeast portion of Area A, Unit N13/W32. The only other mineral found was mica. A single delicate piece of mica was recovered from Area E. This unit is the location of H9. This sample was too fragile to measure and weigh.

Table 5.14. Richter Site Raw Minerals by Unit and Feature

Unit	Feature	Area	Type	Frequency	Weight
N08/E10		D	Red Ochre	1	0.34
S02/EW0		B	Red Ochre	1	0.34
N13/W32		A	Red Ochre	1	7.09
N24/W10		E	Mica	*	*
N06/E10	F49, H8	D	Red Ochre	1	0.94

*too fragile to weigh

Raw materials associated with pigments seem to have been infrequently recovered at regional sites. Ochrous limonite, specular hematite, and silicaceous hematite were recovered at Summer Island. Two sheets of muscovite were also recovered (Brose 1970:127-128) from the site. These sheets were fairly large in size, 6 cm by 3.5 cm, and much thicker than the pieces found at Richter at 1.5 – 2 mm in thickness. Processing was noted but no function was discerned. The mica found at Richter was found in Unit N24/W10 in Area E. Several vessels with Laurel-like coiled construction were found in this same area. It is possible that the use of mica or muscovite may relate to shared cultural practices between the inhabitants of the two sites in addition to common ceramic construction methods.

Organic Remains

Faunal

Ralph Koziarski (2006, 2009, n.d.) analyzed a sample of faunal remains from the Richter site. Koziarski divided the site into four quadrants; NW, NE, SW, SE (see figure 5.156). Roughly 1/3, or 18 of the 51 features were selected for further analysis. Additionally, at least one house basin from each quadrant was added along with burial features 9, 11, and 25. It should be noted that additional house basin features were included in the sample due to random selection. Faunal materials from the NW quadrant are underrepresented because F73, F74, F75, F76, and F77 were not excavated.

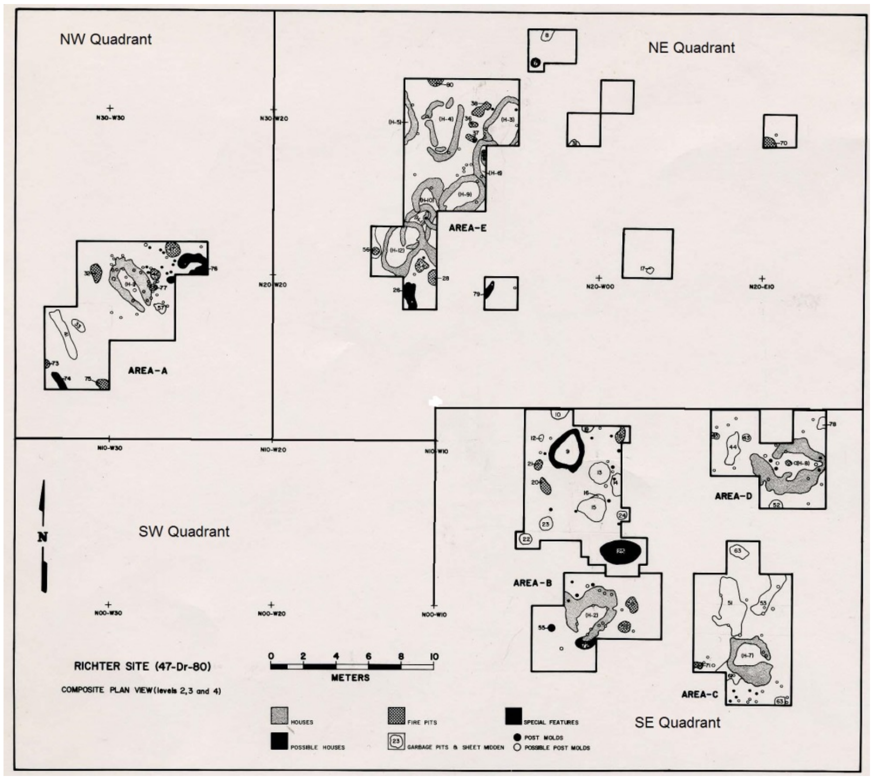


Figure 5.156. Map of quadrants defined by Koziarski (Koziarski 2009).

Koziarski used the number of individual specimens or NISP method to quantify the remains. The sub-sampled materials were identified to specific taxonomic level, if possible. Elements were identified by type, side, and portion. Koziarski also noted if materials had been modified by burning, cutting, gnawing or working" (Koziarski n.d.). Table 5.15 lists NISP values for all faunal material producing features including those not part of the Koziarski sample.

Table 5.15. Faunal Remains by Feature

Feature	Feature Type	Common Name	Taxon	Sum Of NISP	Sum Of Weight
F1	Trash Pit				
		White Sucker	*Catostomus commersoni*	1	0.8
		Unidentified fish		13	0.88
		Unidentified mammal		8	4.39
		Unidentified		10	1.89
F2	Trash Pit				
		Unidentified fish		18	1.97
		Unidentified reptile		3	2.09
		Unidentified		7	4.28
F4	Fire Pit				
		Unidentified fish		2	0.06
		Unidentified mammal		1	0.32
F5					
		Turkey*	*Meleagris gallopavo*	2	1.26
		White-tailed deer	*Odocoileus virginianus*	1	17.6
		Unidentified fish		1	0.06
F7	Dog Burial**				
		Unidentified mammal		1	0.33
		Unidentified		4	0.18
F8	Trash Pit				
		Unidentified mammal		3	6.86
F9	Possible House Basin				
		Black bear	*Ursus americanus*	1	0.62
		Frog or toad	*Anura*	5	0.7
		Deer, elk or moose	*Artiodactyla*	1	1.35
		Muskrat	*Ondatra zybethicus*	1	0.33
		Turtle	*Testudines*	6	2.51
		Walleye	*Stizostedion vitreum*	2	0.32
		White-tailed deer	*Odocoileus virginianus*	1	1.88
		Tentative ID Wolf	*cf. Canis lupus*	1	6.84
		Yellow Perch	*Perca flavescens*	5	0.6
		Medium carnivore	*Carnivora spp.*	1	0.43
		Unidentified fish		63	4.66
		Unidentified mammal		39	19.83
		Unidentified small mammal		1	0.32
		Unidentified medium mammal		4	4.04
		Unidentified large mammal		12	14.86
		Unidentified reptile		1	0.06
		Unidentified		52	8.22
F11	Cremation Burial				
		Beaver	*Castor canadensis*	1	0.61
		Dog or coyote	*Canis sp.*	3	0.84
		Largemouth bass	*Micropterus salmoides*	1	0.1

Table 5.15. Faunal Remains by Feature

Feature	Feature Type	Common Name	Taxon	Sum Of NISP	Sum Of Weight
		Medium carnivore	*Carnivora spp.*	1	0.79
		Perch or Walleye	*Percidae spp.*	1	0.07
		White-tailed deer	*Odocoileus virginianus*	3	5.97
		Unidentified bird		2	0.39
		Unidentified fish		15	0.91
		Unidentified mammal		41	22.87
		Unidentified small mammal		1	0.18
		Unidentified medium mammal		5	2.08
		Unidentified large mammal		8	11.88
		Unidentified		60	7.66
F13	Clay Lined Pit				
		Largemouth bass	*Micropterus salmoides*	1	0.19
		Snail	*Gastropod*	4	0.12
		Sunfish	*Lepomis sp.*	2	0.06
		Yellow Perch	*Perca flavescens*	2	0.14
		Unidentified	*Amphibian*	9	3.68
		Unidentified fish		51	7.92
		Unidentified mammal		54	36.7
		Unidentified reptile		4	1.52
		Unidentified		89	16.78
F14	Trash Pit				
		Snail	*Gastropod*	1	0.08
		Unidentified		2	0.38
F15	Trash Pit				
		Freshwater drum	*Aplodinotus grunniens*	1	0.17
		Freshwater mussel		5	0.65
		Snail	*Gastropod*	80	10.73
		Unidentified bird		3	0.32
		Unidentified fish		187	39.65
		Unidentified mammal		97	112.71
		Unidentified reptile		4	2.08
		Unidentified		309	52.99
F18	Fire Pit				
		Unidentified fish		1	0.13
		Unidentified		1	0.16
F20	Fire Pit				
		Snail	*Gastropod*	3	0.3
		Unidentified mammal		6	2.89
F22	Trash Pit				
		White-tailed deer	*Odocoileus virginianus*	1	0.59
		Unidentified fish		77	6.62
		Unidentified mammal		15	12.63
		Unidentified		19	5.82
F23	Trash Pit				
		Snail	*Gastropod*	1	0.06

Table 5.15. Faunal Remains by Feature

Feature	Feature Type	Common Name	Taxon	Sum Of NISP	Sum Of Weight
		Walleye	*Stizosterlian vitreum*	1	0.38
		Yellow Perch	*Perca flavescens*	1	0.01
		Unidentified mammal		10	12.03
		Unidentified		4	0.74
F24	Trash Pit				
		Unidentified fish		1	0.06
		Unidentified mammal		2	0.29
F25	Burial				
		Beaver	*Castor canadensis*	5	4.23
		Black bear	*Ursus americanus*	1	13.18
		Frog or toad	*Anura spp.*	1	0.39
		Largemouth bass	*Micropterus salmoides*	1	0.23
		Muskrat	*Ondatra zybethicus*	1	1.39
		Panfishes	*Centrarchidae spp.*	4	0.19
		Perch or Walleye	*Percidae spp.*	5	0.92
		Rodents	*Rodentia spp.*	2	0.02
		Snail	*Gastropod*	39	1.43
		Turtle	*Testudines*	3	3.55
		Yellow Perch	*Perca flavescens*	6	1.02
		Walleye	*Stizostedion vitreum*	2	0.7
		White-tailed deer	*Odocoileus virginianus*	8	14.9
		Tentatively Identified beaver	*cf. Castor canadensis*	1	1.28
		Tentatively Identified mink	*cf. Mustela vison*	1	0.86
		Unidentified bird		12	4.03
		Unidentified medium bird		1	0.29
		Unidentified fish		154	16.61
		Unidentified mammal		118	74.28
		Unidentified medium mammal		11	7.85
		Unidentified large mammal		21	40.36
		Unidentified		62	8.91
F26	Possible House Basin				
		Unidentified mammal		2	1.1
F27	Possible House Basin				
		Snail	*Gastropod*	1	0.71
		Unidentified		2	0.28
F32	Fire Pit				
		Unidentified mammal		2	0.82
F34	Possible House Basin				
		Rodents	*Rodentia spp.*	1	0.03
		Snail	*Gastropod*	2	0.66
		Unidentified fish		1	0.18

Table 5.15. Faunal Remains by Feature

Feature	Feature Type	Common Name	Taxon	Sum Of NISP	Sum Of Weight
		Unidentified mammal		4	0.93
F35	Fire Pit				
		White-tailed deer	*Odocoileus virginianus*	15	8.32
		Unidentified bird		3	0.64
		Unidentified mammal		16	4.95
		Unidentified large mammal		1	2.89
F36	Fire Pit				
		Unidentified		10	0.61
F38	Trash Pit				
		Unidentified mammal		2	3.01
		Unidentified		3	0.82
F39	Fire Pit				
		Snail	*Gastropod*	5	0.75
		Unidentified		2	0.13
F41					
		Unidentified		1	0.49
F42	Possible House Basin				
		Lake sturgeon	*Acipenser fulvescens*	2	0.97
		Yellow Perch	*Perca flavescens*	1	0.38
		White-tailed deer	*Odocoileus virginianus*	3	16.77
		Unidentified fish		39	2.14
		Unidentified mammal		35	13.1
		Unidentified large mammal		2	2.82
F44	Trash Pit				
		Catfish	*Ictaluridae spp.*	1	0.06
		Gray fox	*Urocyon cinereoargentus*	1	0.76
		Panfishes	*Centrarchidae spp.*	1	0.01
		Turtle	*Testudines*	3	1.09
		White-tailed deer	*Odocoileus virginianus*	3	5.92
		Tentatively Identified beaver	*cf. Castor canadensis*	1	0.38
		Unidentified amphibian		1	0.05
		Unidentified bird		1	0.09
		Unidentified fish		20	2.08
		Unidentified mammal	*Mammal*	34	12.69
		Unidentified		40	5.98
F45	Trash Pit				
		Dog or coyote	*Canis sp.*	1	0.69
		Snail	*Gastropod*	13	1.29
		Walleye	*Stizostedion vitreum*	3	0.14
		White-tailed deer	*Odocoileus virginianus*	1	1.69
		Unidentified fish		2	0.18
		Unidentified mammal		1	0.96
		Unidentified		14	1.01

Table 5.15. Faunal Remains by Feature

Feature	Feature Type	Common Name	Taxon	Sum Of NISP	Sum Of Weight
F47	Trash Pit				
		Unidentified fish		1	0.06
		Unidentified		3	0.42
F48	Possible House Basin				
		Frogs	*Rana spp.*	1	0.11
		Green sunfish	*Lepomis cyanellus*	1	0.13
		Snail	*Gastropod*	2	0.02
		Unidentified fish		70	3.19
		Unidentified		23	2.58
F49	Possible House Basin				
		Bass	*Micropterus sp.*	1	0.26
		Beaver	*Castor canadensis*	1	0.78
		Black bear	*Ursus americanus*	4	2.01
		Bullhead	*Ameiurus sp,*	1	0.32
		Catfish	*Ictaluridae spp.*	1	0.39
		Deer, elk or moose	*Artiodactyla*	1	14.64
		Eastern gray squirrel	*Sciurus caroliniensus*	4	0.59
		Frog or toad	*Anura*	2	0.77
		Hawk, eagle or relative	*Acipitridae spp.*	3	2.77
		Panfishes	*Centrarchidae spp.*	2	0.09
		Perch or Walleye	*Percidae spp.*	1	0.04
		Sunfish	*Lepomis sp.*	1	0.09
		Turtle	*Testudines*	4	3.52
		Yellow Perch	*Perca flavescens*	10	0.68
		Walleye	*Stizostedion vitreum*	2	0.24
		White-tailed deer	*Odocoileus virginianus*	37	42.4
		Tentative ID Owl	*cf. Strigiformes*	1	0.41
		Tentative ID white-tailed deer	*cf. Odocoileus virginianus*	1	6.01
		Unidentified bird		9	6.34
		Unidentified fish		212	12.05
		Unidentified mammal		352	130.82
		Unidentified small mammal		11	1.42
		Unidentified medium mammal		25	9.37
		Unidentified large mammal		19	33.78
		Unidentified reptile		1	0.12
		Unidentified		462	71.88
F51	Sheet Midden				
		Unidentified fish		8	1
		Deer, elk or moose	*Artiodactyla*	1	0.14
		Unidentified large mammal		1	1.13
		Unidentified mammal		18	4.24
		White-tailed deer	*Odocoileus virginianus*	34	237.53

Table 5.15. Faunal Remains by Feature

Feature	Feature Type	Common Name	Taxon	Sum Of NISP	Sum Of Weight
		Black bear	*Ursus americanus*	1	0.74
		Unidentified	*Unid*	23	3.02
F52	Trash Pit				
		Snail	*Gastropod*	2	0.53
		Unidentified amphibian		1	0.06
		Unidentified fish		26	1.59
		Unidentified mammal		6	6.63
		Unidentified		24	1.97
F54	Fire Pit				
		Snail	*Gastropod*	14	0.4
F58	Fire Pit				
		Unidentified mammal		1	0.05
		Unidentified		12	5.99
F60	Trash Pit				
		Snail	*Gastropod*	9	2.15
F62	Trash Pit				
		Unidentified mammal		3	2.23
F63	Trash Pit				
		Beaver	*Castor canadensis*	2	0.89
		Brown bullhead	*Ameiurus nebulosis*	1	0.17
		Catfish	*Ictaluridae spp.*	1	0.14
		Deer, elk or moose	*Artiodactyla*	13	90.85
		Dog or coyote	*Canis sp.*	1	1.78
		Medium carnivore	*Carnivora spp.*	2	0.21
		Northern pike	*Esox lucius*	2	1.46
		Yellow Perch	*Perca flavescens*	16	1.54
		Walleye	*Stizostedion vitreum*	24	8.97
		White-tailed deer	*Odocoileus virginianus*	3	5.14
		Unidentified fish		1052	92.35
		Unidentified mammal		54	22.63
		Unidentified medium mammal		12	11.28
		Unidentified large mammal		20	27.29
		Unidentified			216.02
		Unidentified		312	24.6
F65	Possible House Basin				
		Unidentified fish		2	0.36
		Unidentified mammal		2	1.76
		Unidentified		12	2.07
F66					
		Unidentified mammal		2	1.01
F67					
		Bass	*Micropterus sp.*	2	0.33
		Deer, elk or moose	*Artiodactyla*	1	0.63
		Lake sturgeon	*Acipenser fulvescens*	2	0.35

Table 5.15. Faunal Remains by Feature

Feature	Feature Type	Common Name	Taxon	Sum Of NISP	Sum Of Weight
		Unidentified fish		21	1.16
		Smallmouth bass	*Micropterus dolomeiau*	1	0.23
		Yellow Perch	*Perca flavescens*	4	0.46
		Walleye	*Stizostedion vitreum*	1	0.16
		Unidentified mammal		29	16.4
		Unidentified small mammal		2	0.19
		Unidentified large mammal		8	18.81
		Unidentified		12	1.18
F68	Possible House Basin				
		Unidentified		3	1.26
F69	Possible House Basin				
		Unidentified fish		69	7.98
		Unidentified mammal		42	31.41
		Unidentified		44	5.64
F84					
		Unidentified fish		84	10.09
F100					
		Unidentified mammal		1	0.19

Koziarski's analysis was designed to use identified species to examine seasonality of site occupation. A sample of 18 features was used for the analysis. Koziarski indicates that the faunal materials found at the Richter site are consistent with those from other North Bay sites in the region. Fish species make up 66% of the assemblage and mammals make up 28%. He notes that considering the large percentage of aquatic resources exploited that fresh water mussel shell was rare (Koziarski n.d.). It is not surprising that fish played a significant role in the diets of residents of the Richter site considering the site is situated less than eighty meters from the current shore of Detroit Harbor. Thirty-one features contained fish bone. Currently Detroit Harbor is home to a large number of fish species. The deeper waters beyond the shelter of Plum Island are home to additional deep water species.

It is interesting to note the presence of gastropods in a number of the features at the site. It has been observed that gastropods are found in various types of features at the site including a clay lined pit, trash pits, possible house basins, fire pits, and a burial. Inclusion of gastropod shells in archaeological sites have been attributed to exploitation by humans, as food or raw material, or considered naturally occurring and non-cultural. At the Schultz site gastropods were more likely to be associated with middens but were not considered to be a source of food even though they numbered over 16,000 (Brose 1972). Aquatic species were more than likely deposited in temporary pools following tributary flooding while terrestrial species represented omnivorous types and were drawn to site areas with increased organic decomposition (Brose 1972:117-130) The association of gastropods with decomposing organic materials may explain their presence in trash and fire pits in small numbers at the Richter site. Possible house pits may also have contained decomposing organic materials related to structural construction and later repurposing. Feature 25 a large burial containing four primary flexed individuals contained 39 gastropods. A second feature with more than a few gastropods is F45 identified as a trash pit containing 13 gastropods along with small amounts of dog or coyote, walleye, white-tailed deer, unidentified fish and mammal bone. Only a portion of this feature was excavated.

A single feature contained mussel shell. Feature 13, a clay-lined pit, held only five pieces of shell weighting a scant 0.65g. This limited amount of mussel shell is reflected also in the limited number of ceramic sherds tempered with shell.

Several features contain a greater variety of species than is typical of most fauna bearing features at the site. These features include F9, F11, F25, F49, and F63. Of these features F9, F11, and F25 are burials or are associated with human remains. Feature 11 was designated by excavators as a separate feature within F9. Feature 9 was noted as a possible house basin containing the cremated remains of several individuals. The area containing the cremated remains was designated as F11. Feature 25 contained the interred remains of four complete individuals as well as several bones from at least two other individuals. Feature 49 is a house basin (H8) and F63 is a pit feature. All are located in the SW quadrant of the site.

Burial Features

Feature 25 contains burials 1, 2, 3, 4, and isolated remains of at least two individuals as stated above. As noted by Koziarski this burial feature contained the remains of frog or toad, largemouth bass, yellow perch, walleye, beaver, white-tailed deer, muskrat, black bear, turtle, unidentified panfishes, and unidentified mammals (Koziarski n.d.:11-12). Reviewing notes on the plan view map for F25 it is noted that human remains (Burial 1) were first encountered at a depth of 24.5 cm. All faunal remains were found at a depth of 25-45 cm and 25-70 cm. Photographs of F25 (Figure 5.157) indicate there is stratification apparent between the initial interment of three individuals and the single burial. This is confirmed in the feature profile. A dark brown layer is identified (Figure 5.121) just above the initial burials. There is a notation in the profile that bone was found in this layer in two mapped locations.

Figure 5.157. Photograph of F25 facing northeast. Burials 3 and 2 are visible at the base of the feature. Burial 4 has yet to be excavated. Burial 1 is visible in the uppermost level. Note variation in fill color between upper and lower burials.

Among the faunal materials recovered is a right astragalus from a black bear with markings consistent with gnawing by carnivores. This astragalus also exhibits a somewhat polished surface (Figure 5.158). Recovered near the astragalus were four human phalanges and a worn molar (Wellner 2006:49). These materials are noted as being from an area “15cm above rt. Ulna Burial 2”. This may make these materials those indicated on the F25 Profile.

The significance of this is unclear, but the bear astragalus may represent a grave good or a portion of a medicine bag. The polished surface suggests repeated handling and may indicate its use as a gaming piece. Along with the phalanges and molar, the astragalus may represent additional interments following the initial deposition of burials 2, 3, and 4.

Figure 5.158. F25 *Ursus americanus* talus. Note polished areas.

The partial human remains may have been curated with the intention of inclusion in a communal interment or included as part of the burial ritual. It is impossible to determine what, if any additional faunal remains were associated with this layer. Additional faunal remains may have indicated if this dark layer was the result of a post interment meal and/or a possible ritual feast. The same can be said for the mixed layer above the dark layer (Figure 5.157). While not indicated on the feature profile (Figure 5.121) the photo seems to indicate possible multiple fill episodes following the deposition of the dark layer that could be the result of additional ritual meals or trash dumps. There is no documentation of dump zones or contents of zones or this area between burials or the area that includes Burial 1.

The repeat use of F25 seems indicative of reoccupation of the site by the same group of people with a cultural memory of the presence of the original interments. While the subsequent depositional events, after the initial interments as seen in the photography, may represent continued ritual activity associated with burials, they may represent non-ritual events as well.

If the faunal materials were recovered from the fill between the first and second burial events these materials may be waste with the mottled soils representing various episodes of fill deposits. These events, subsequent to the initial burials, do not negate the possibility that the dark brown deposits above the initial burials represent a post-burial meal. There are no indications as to which faunal materials were found with the later, and much less deeply buried, single interment. Among the faunal remain are 39 gastropods. There is no clear indication that they were intentionally included or if they were simply drawn by decomposing organic material.

A second area associated with human remains and an unusually high amount of species representation is F9 and F11. As noted this is a cremation burial (F9) possibly within a house basin (F11). As in F25 numerous animal species are represented. Fauna represented in F9 include frog or toad, yellow perch, walleye, white-tailed deer, muskrat, black bear, turtle and unidentified canid, fish, mammal and reptile. In F11, beaver, dog or coyote, largemouth bass, perch or walleye, white-tailed deer, unidentified bird, unidentified fish, and unidentified mammal remains were found.

In the case of F11 there is documentation of a beaver incisor associated with the comingled remains of an infant, child, and one or more adults (Figure 5.128). There is evidence that the remains of the child may have been cremated. Also associated with these burials was a piece of copper (Wellner 2006:72-73). The beaver incisor and copper may have been grave goods, though the beaver incisor does not appear to have been worked. The relationship of the other faunal remains to this comingled burial is not known. However, the types of faunal remains found in this feature are very similar to those recovered from F25 which included the remains of at least seven individuals. Missing are toad or frog, muskrat, turtle, bear, and panfishes, but if the faunal remains from F9 are included the only difference is the lack of identified panfishes. A case can be made that F9 is not a house basin but may be a refuse pit or a house pit reused as a refuse pit then utilized for internment of the comingled remains.

Non-burial Features

The remaining two features with a high diversity of species are F49 and F63. Feature 63 is located in Area C, Unit N02/E08 and is described by excavators as a trash pit. Species identified include beaver, brown bullhead, catfish, deer (elk or moose), dog or coyote, northern pike, yellow perch, walleye, and white-tailed deer. Burning was noted on some of the bone. This feature contained the largest number of spring spawning fish (n=87).

Feature 49, located in Area D, is identified by excavators as a house basin. It is the only house basin with an interior hearth at the Richter site. Species identified include bass, beaver, black bear, bullhead, catfish, deer (elk or moose), eastern gray squirrel, frog or toad, hawk (eagle or relative), panfishes, perch or walleye, sunfish, turtle, yellow perch, walleye, white-tailed deer, and possibly owl. A number of faunal elements are burned or calcined including those from raptors, frog, and turtles. The raptors remains are represented by talons. These may be part of a medicine bundle or ritual objects (Koziarski n.d.:16). It is should be noted that the only other features with a similar range of species are burial associated features.

Seasonality

Koziarski also documented seasonal markers among the faunal remains he analyzed. Four types of markers were noted. The first is whether antler was shed or unshed. The second was if a fish species had seasonally associated periods of availability or unavailability. The third marker used fish scale growth rings to assess seasonality of capture. The final indicator included identification of species exploited during the summer (Table 5.16).

Table 5.16. Seasonality of Faunal Materials from Features Analyzed by Koziarski (Koziarski 2006)

Feature	Area	Spring Spawners	Summer Spawners	Other spring	Other summer
F9	B	x (2)			turtle (6)
F11	B	x (10)	x (1)		
F20	B				
F25	B	x (14)	x (3)		turtle (3)
F34	E				
F35	E				
F42	E	x (1)			
F44	D	x (2)	x (1)		turtle (3)
F45	D	x (1)			
F49	D	x (5)	x (5)	unshed antler (1)	turtle (4)
F51	C		x (2)		
F63	C	x (87)	x (9)		
F67	C	x (6)	x (2)		

Koziarski found only one fragment of white-tailed deer cranium that exhibited antler growth. The growth was small and most likely represented relatively new growth in spring following the annual January shedding of antler by a buck. This was recovered from F49 (Koziarski 2006).

Among the numerous fish species found at the Richter site are several species that have distinctive seasonal availability that relates to spring spawning behaviors. They are walleye, northern pike and yellow perch. While all three species can be caught at any time of the year in local waters the large numbers represented suggest that the large aggregations of spawning fish in the shallows of Detroit Harbor and the Richter Bayou in spring and early summer months were taken advantage of by the residents of the Richter site. Other fish species represent incidental catches and are much lower in number (Koziarski 2006).

UWM students analyzed 17 fish scales from the site. Koziarski reports that 15 came from fish caught during the spring or summer with the final two scales being indeterminate (Table

5.17). This data set is not representative of the entire site as the scales were drawn from features located only in the southeastern quadrant of the site with ten scales from F63 alone (Koziarski 2006).

Table 5.17. Seasonality of fish scales from Richter site (Koziarski 2006).

Feature	Area	Scale NISP	Season
9	B	1	Indeterminate
44	D	2	Spring/summer
49	D	3	Spring/summer
63	C	10	Spring/summer
63	C	1	Indeterminate

Faunal indicators of seasonal occupation are found in all areas of the site with the exception of Area A. Area A contained a number of features that were never excavated and those excavated did not contain much in the way of faunal remains. The remaining areas do contain features with indicators for spring and summer occupations. It is possible that site occupants returned regularly to take advantage of spring spawning runs and because of the timing of these runs may have stayed at the site into the summer. Fish spawning is triggered by water temperature. Walleye begin spawning in mid-April followed by perch. Both runs last about three weeks and are not concurrent. The spawning season can extend into Ju if the perch spawning season starts later due to delayed warming of lake waters (Becker 1983). Turtles also are temperature sensitive. Turtles generally leave hibernation or a state of reduced activity when air temperatures reach 50°F. Temperatures on Washington Island generally do not reach 50°F until late May or early June.

There are also species identified at Richter that are available in greater numbers from summer to early fall. These include northern pike, largemouth bass, green sunfish, freshwater drum, bullhead cat fish, black crappie, muskrat, gray fox, eastern gray squirrel, and *canid*. Beaver and black bear may be indicative of cold season occupation (Koziarski 2009:143-144). Yet because the few identifiable remains from black bear are all dental elements, with the exception of a single astragalus, it is possible that they may have been curated objects brought to the island (Table 5.18). Beaver is also represented primarily by dental elements, notably incisors, at the Richter site (Table 5.19). The exception is the F25 burial. In this feature, spinal and limb elements of beaver were found. This suggests that the beaver in this feature may have been acquired on the island and consumed. Curiously, F49 initially identified as a house basin (H8) also includes both bear and beaver dental elements. A single black bear tooth was recovered from F51 which is identified as a sheet midden in Area C. The incisors, like the black bear elements, may have been curated and transported to the island. There is no indication that they were modified for use as tools.

The presence of dental elements may simply result from differential preservation. Both black bear and beaver elements may be among the unidentified mammal materials that were too small and fragmented for identification beyond class. In terms of seasonality of occupation all features that contained black bear and beaver elements also contained other faunal materials associated with warm weather occupations.

Table 5.18. Location of Black Bear (*Ursus americanus*) Faunal Materials at the Richter Site.

Feature	Element	Part	Side	NISP	Weight (g)
25	Astragalus	Complete	R	1	13.18
49	M2 (lower)	crown	R	2	1.06
49	M3 (lower)	crown	R	1	0.38
49	M3 (lower)	crown	R	1	0.57

Table 5.18. Location of Black Bear (*Ursus americanus*) Faunal Materials at the Richter Site.

Feature	Element	Part	Side	NISP	Weight (g)
51	M2 (lower)	enamel	L	1	0.74
9	M2 (upper)	Buccal 1/2	L	1	0.62

Table 5.19. Location of Beaver (*Castor canadensis*) Faunal Materials at the Richter Site.

Feature	Element	Part	NISP	Weight (g)
11	Incisor	enamel	1	0.61
25	Proximal Phalanx	distal epiphysis	1	1.35
25	Metapodial	distal	1	1.28
25	Atlas	complete	4	2.88
44	Incisor	Enamel	1	0.38
49	Incisor	enamel	1	0.78
63	Incisor	enamel	1	0.46
63	Incisor	enamel	1	0.43

Tools

While bone preservation at the Richter Site was very good only a limited number of bone tools or worked pieces of bone were recovered (Table 5.20). Of the 12 pieces of worked bone only seven were recovered from feature contexts. Two of the described pieces were found in the plowzone.

Table 5.20. Bone Tools and Description.

Tool Type	Net/matting Needle
Provenience	Unit 1007/1003, L2
Material	Unidentified Large Mammal
Size mm (L x W x H)	120 x 13.54 x 2
Weight (g)	2.97
Description	Refitted Polished bone needle, tapers toward end and is curved as well as slightly bowed. 1 partial (5.15mm) and 1 complete (4.29 mm) drilled hole at end. Broken at second hole. May have drilled new hole later.
Figure	5.159
Tool Type	Worked Bone

Table 5.20. Bone Tools and Description.

Provenience	Unit 1007/1000, L2
Material	Cf. Antler
Size mm (L x W x H)	45.54 x 24.44 x 13.08
Weight (g)	5.73
Description	Piece of antler that has cut marks encircling the horn were a tine was then broken off.
Figure	5.160
Tool Type	Worked Bone
Provenience	Unit 1010/1000, F9, L2
Material	Large Mammal Long Bone Shaft
Size mm (L x W x H)	34.84 x 12.27 x4.2
Weight (g)	2.22
Description	Polished piece of bone with crisscrossed fine incised line. Root etching is also visible. Bone edges broken not cut
Figure	5.161
Tool Type	Awl/Gorge
Provenience	Unit N02/E08, F63, L3
Material	Unidentified Large Mammal
Size mm (L x W x H)	26.78 x 3
Weight (g)	0.22
Description	Tapers at both ends. Only one end shows sharpening and polishing
Figure	5.162a
Tool Type	Mat/Net Needle
Provenience	Unit N02/E08, F63, Level 3
Material	Unidentified Large Mammal
Size mm (L x W x H)	27.87 x 11.69 x 11.80
Weight (g)	1.08
Description	Tip is broken off. 1 partial very large hole is present. Tool broke at the hole most likely because hole extends to edges of tool. Lower surface is much weathered possible trabecular bone. Upper side is polished.
Figure	5.162b
Tool Type	Antler Tine
Provenience	Unit N06/E12, F49, Level 3
Material	Cf. Antler
Size mm (L x W x H)	16.26 x 8.34 x 4.62
Weight (g)	0.24
Description	Evidence of sharpening and polish. End is broken and most of bottom missing.
Figure	5.163b

Table 5.20. Bone Tools and Description.

Tool Type	Bone Point
Provenience	Unit N06/E12, F49, Level 3
Material	Unidentified
Size mm (L x W x H)	19.66 x 6.69 x1.48
Weight (g)	0.19
Description	Split bone with sharpened and polished top side. Bottom is hollow.
Figure	5.163a
Tool Type	Antler Tine
Provenience	Unit N08/E12, Plow Zone
Material	Cf. Antler
Size mm (L x W x H)	38.33 x 6.87
Weight (g)	0.96
Description	Tip is broken off. End is broken off as well. Surface shows evidence of exfoliation and damage. Evidence of polishing near tip.
Figure	5.164a
Tool Type	Antler Tine
Provenience	Unit N08/E12, Plow Zone
Material	Cf. Antler
Size mm (L x W x H)	19.93 x 7.58 x 6.01
Weight (g)	0.67
Description	Tip is broken off. End is broken off. A large flake of bone is also broken off at the end. Evidence of polishing and sharpening at tip.
Figure	5.164b
Tool Type	Bone Bead
Provenience	Unit NS0/E08, F51, Level 3
Material	Unidentified
Size mm (L x W x H)	12.15 x 6.86
Weight (g)	0.37
Description	Cut marks on both ends. Rodent gnaw marks present.
Figure	5.165
Tool Type	Antler Tine
Provenience	Unit NS0/E10, F67, L3,
Material	Cf. Antler
Size mm (L x W x H)	17.96 x 7.95
Weight (g)	0.63

Table 5.20. Bone Tools and Description.

Description	Point is polished and sharpened. Post recovery damage to tip. End is broken
Figure	5.166

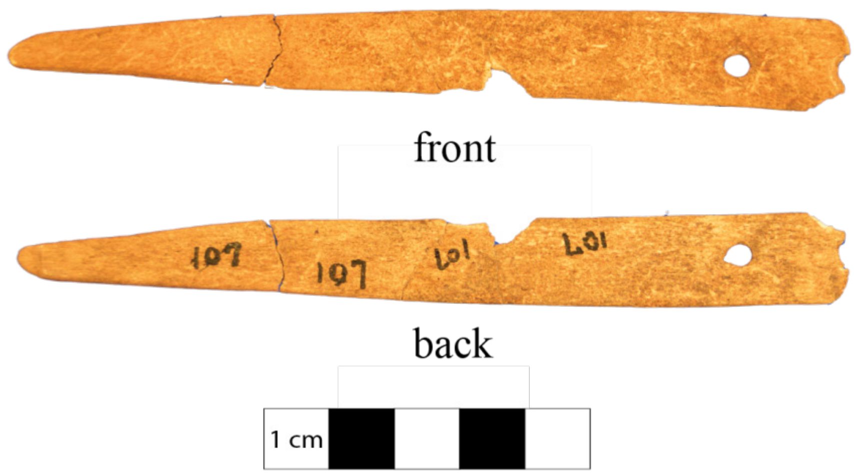


Figure 5.159. Front and Back of reconstructed mat or net needle from Unit 1007/1003, L2.

Figure 5.160. Front and back of antler section where tine was removed. Artifact was recovered from non-feature context in Unit 1007/1000.

Figure 5.161. Front and back of polished and possibly incised bone from F9. Incising and root etching are visible in the front view.

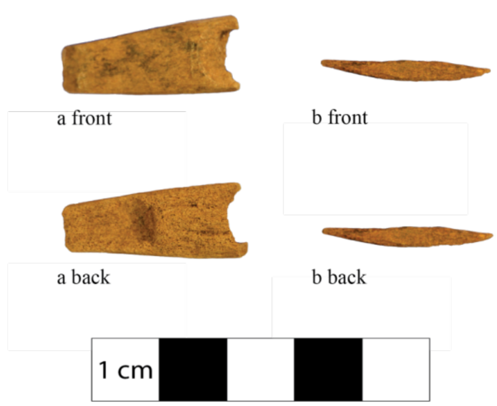


Figure 5.162. Bone tools F63. (a) Front and back of broken mat or net needle. (b) Front and back of awl or gorge.

Figure 5.163. Front and back of F49 worked bone points

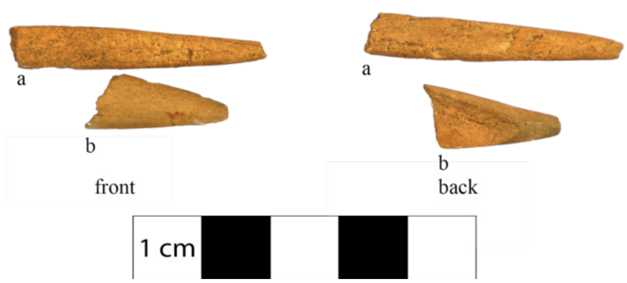


Figure 5.164. Front and back of antler tine points recovered from the plow zone of Unit N08/E12.

Figure 5.165. Front and back views of bone bead from F51. Note rodent marks in image of the back of the bead.

Figure 5.166. Front and back of broken antler tine point from F67.

All bone tools and worked bone were recovered from three Areas of the site. In Area B one tool and two pieces of worked bone were recovered. Recovered from non-feature contexts were a mat/net needle and the worked piece of antler from which a tine was intentionally removed. A polished piece of mammal long bone with incised crisscrossed lines was recovered from burial feature F9.

In Area C, four bone tools were recovered from feature contexts. A bone point/awl and a bone mat/net needle were recovered from F63, L3. In F67, L3 an antler tine point was recovered. A single bone bead was recovered from F51, L3. In Area D, three points were recovered from F49, L3. Two of these were made from antler tines while the third was created from a bone fragment. It should be noted that F49 is also Structure 8 (H8). Finally, two antler tine points were recovered from the plow zone above Structure 8 (H8).

Floral

Although preservation of bone was good, very few floral materials, besides wood charcoal, was collected from the site. The paucity of floral materials is likely the result of a lack of feature fill flotation. Flotation techniques were not widely used at the time of the Richter site excavations. Curated floral materials were examined by Jennifer Picard of UWM Cultural

Resource Management. Table 5.21 documents sample provenience, identification, number and weight in grams.

Table 5.21. Floral Materials from the Richter Site

Unit	Feature	Depth (cmbs)	Floral material	*f*	Weight (g)
1010/1000, L2		15-30	*cf Phaseolus* (bean)	1	0.056
1010/1000, L2		15-30	Wood charcoal	7	0.486
N30 W12, Plow Zone		0-22	*Zea mays* cob	1	0.13
N18 W30, L2	F27	28-80	Unidentified flora	1	0.054
N18 W30, L2	F27	28-80	Bark charcoal	1	0.06
NS0/EW0, L2	F48	22-58	*Quercus* (acorn) shell, uncarbonized	1	0.078
TP 30, Plow Zone		Unknown	Unidentified seeds	2	0.004
N22 W12, Plow Zone		0-27	Zea mays (maize) kernel	1	0.05
N24 W12 E Wall, Plow Zone		0-41	*Zea mays* (maize) kernel	30	1.34
N26 W12, Plow Zone		0-36	*Zea mays* (maize) kernel	1	0.07
N20 W32, L2	F32	25-45	*cf Zea mays* (maize) cob	2	0.23
N22 W12, Plow Zone		0-19	*Zea mays* (maize) kernel	2	0.12
N18 W28, L2	F40	20-72	Unidentified flora	1	0.1
N30 W12, L3		27-34	*cf Prunus* pit	1	0.12
N30 W12, L4		34-44	*Juglans nigra* (black walnut) shell	2	0.086
N22 W12, L2	F68	27-40	Unidentified flora	5	0.093
S06 E10, L2		29-37	*Zea mays* cob	14	0.591

Zea mays (maize) was identified in a number of the samples. Five of these samples were recovered from Plow Zone contexts. The remaining two came from Level 2 in F32, and the other from Level 2 in Unit S06/E10. It is possible that the Level 2 samples actually represent the upper portions of the level and should have been considered part of the plow zone. It is possible that all *Zea mays* (maize) is from historic farming at the site. Because of the fragmentary nature of the *Zea mays* (maize) recovered Picard was unable to determine if these were modern or prehistoric varieties.

Of the remaining identifiable floral remains only one was recovered from a feature context. This is a single uncarbonized *Quercus* spp. (acorn) shell recovered from F48/H2. Due to the uncarbonized nature of this sample prehistoric origin seems unlikely. From nonfeature context in Unit N30/W12 Levels 3 and 4 a single sample of cf *Prunus* pit and *Juglans nigra* (black walnut) shell were recovered. Due to their noncarbonized state they most likely are modern in origin.

Charcoal

Appendix F provides a total weight of charcoal for each unit by level. Much of the charcoal collected at the Richter site was collected from Plow Zone contexts making it of negligible value. Charcoal has not been identified by species. This might be a useful direction for future work. Table 5.22 provides a total weight of charcoal by feature. It is interesting to note that F51 contained to greatest amount of charcoal recovered at 45.3 g. This feature was classified by excavators as a sheet midden.

Table 5.22. Total Charcoal Weight by Feature

Feature	Total Weight (g)
F13	0.05
F15	0.33
F20	0.99
F25	0.23
F26	0.05
F27	3.31
F29	0.05
F31	6.45
F32	0.96
F33	12.01
F34	0.58
F35	20.55
F36	0.02
F38	0.06
F40	0.75
F41	4.14
F42	8.29
F44	0.08
F45	0.22

Table 5.22. Total Charcoal Weight by Feature

Feature	Total Weight (g)
F46	2.61
F47	37.63
F48	33.97
F49	34.07
F51	45.30
F52	0.58
F54	19.91
F55	0.12
F56	2.66
F58	0.35
F61	0.68
F63	8.06
F65	1.32
F67	0.37
F68	9.22
F69	0.33

Discussion

The preservation of organic materials is highly variable due to site conditions. At Richter preservation of some organic material classes were very good. In the case of floral remains there is little data to work with due to the small sample size and lack of flotation. The lack of flotation also impacted faunal remains as small elements are lost during screening.

The Richter site faunal remains indicate generally a warm season occupation. This occupation was most likely timed to take advantage of spring spawning runs of walleye and yellow perch with incidental inclusion of other fish species. Residents of the site also utilized locally available resources including white-tailed deer, turtles, beaver, and possibly black bear. Habitation at the Richter site may have spanned from six to nine weeks annually depending on the timing of spawning runs. Due to the timing of spawning runs in the early spring, when winter supplies would be running low, it would be necessary to procure other sources of food until the spawning runs began (Birnbaum 2009:96). This could prove to be disastrous if spawning runs were late due to harsh winter conditions causing a delay in spawning, though evidence of repeat occupations associated with spring spawning seems indicative of the continued value of this resource.

The Richter site, like other sites associated with North Bay, suggests a reliance on fish as well as generalized hunting and gathering in a coastal environment in the northern Great Lakes. This site seems to be part of a seasonal resource exploitation pattern exercised by North Bay peoples. With the availability of resources at a set annual time the Richter site may have hosted larger longer term population aggregations during the spring. Resource availability may have played a role in the choice to inter remains at the site with possible community rituals associated with the burial events.

The view that North Bay peoples exploited shoreline areas for fishing and generalized hunting and gathering was documented by Mason (Mason 1981(2002):276). Faunal remains from the Mero site examined by Cleland and species representative of spring and summer site exploitation was identified (Cleland 1966; Koziarski 2009). This model was limited by the number of North Bay sites examined and represented a limited dataset. At the time all reported North Bay sites were located in shoreline environments. It was thought that this represented a year-round pattern of short term repeat occupation of shoreline sites.

Koziarski (2009) reviewed a larger dataset of North Bay sites including inland sites such as Beaudhuin Village in the southern Door Peninsula (Clauter and Richards 2005) and several sites in the Menominee River drainage in Michigan’s central Upper Peninsula (Buckmaster

1979). His results suggested that these sites may represent winter occupations. Table 5.23 summarizes Koziarski's findings.

Table 5.23. Summary of North Bay Site Seasonality

Site	Location	Site Type	Primary Season of Occupation
Mero	Door County, Lake Michigan Shore	Short Term Camp	Warm
Grand Rapids, Grand Rapids Dam, and Reindle	Menominee River drainage	Short Term Camp	No distinct signature
Winter	Garden Peninsula, Michigan		Fall
Beaudhuin	Southern Door County, inland from Green Bay	Seasonal Aggregation	Winter
Richter	Washington Island, Door County, Wisconsin	Seasonal Aggregation	Spring/Summer

This expanded view of North Bay exploitation patterns suggests a much more complex pattern. Sites may have been exploited to make best use of increased seasonal abundance of specific fish species with regular seasonal site reoccupation. Shoreline sites appear to have been occupied during spring through fall. During winter, North Bay peoples seem to have moved inland away from exposed shoreline areas. All sites indicate the exploitation of non-lacustrine resources as well.

The Richter Site Radiocarbon Record

Eleven radiocarbon dates are available for the Richter site (Table 5.24 and Figure 6.167). These dates suggest that occupation at the Richter site spanned the entire Woodland portion of the general Great Lakes archaeological sequence. The implications of this suite of dates are discussed in greater detail in Chapter 7.

Table 5.24. Richter Site Radiocarbon Dates

Sample Number	Association	B.P. Date	±	2-sigma date range	Reference
ISGS - A1090	Bone Collagen Area E, Dog	2195	25	361 - 195 B.C.	Epstein 2010:125
WIS-721	Wood Charcoal, Area C, F63	1185	50	A.D. 1163 - 1377	Bender, Bryson and Baerreis 1976
WIS-725	Wood Charcoal, Area B, H2	2470	65	774 - 411 B.C.	Bender, Bryson and Baerreis 1976
ISGA-A1219	Bone Collagen Area D, H8	1640	20	A.D. 346 - 528	Richards and Jeske 2015
ISGA-A1220	Bone Collagen Area C, H7	1745	25	A.D. 237 - 380	Richards and Jeske 2015
ISGA-A1221	Bone Collagen Area B, H2	1985	20	40 B.C. - 63 A.D.	Richards and Jeske 2015
ISGA-A1222	Bone Collagen Area E, H6	1645	20	A.D. 342 - 505	Richards and Jeske 2015
BETA 215680	Bone Collagen, Area B, F72, Burial 5	1850	40	A.D. 68 - 251	Wellner 2006
BETA 215679	Bone Collagen, Area B, F25, Burial 2	1890	40	A.D. 23 - 230	Wellner 2006
BETA 215681	Residue from NB Scallop Vessel, Area E, Feature 7	2100	40	347 - 2 B.C.	Hart et al 2012:322
BETA 433764	Charcoal, Birch, F48, H2	1900	30	A.D. 28-214	On file, ARL

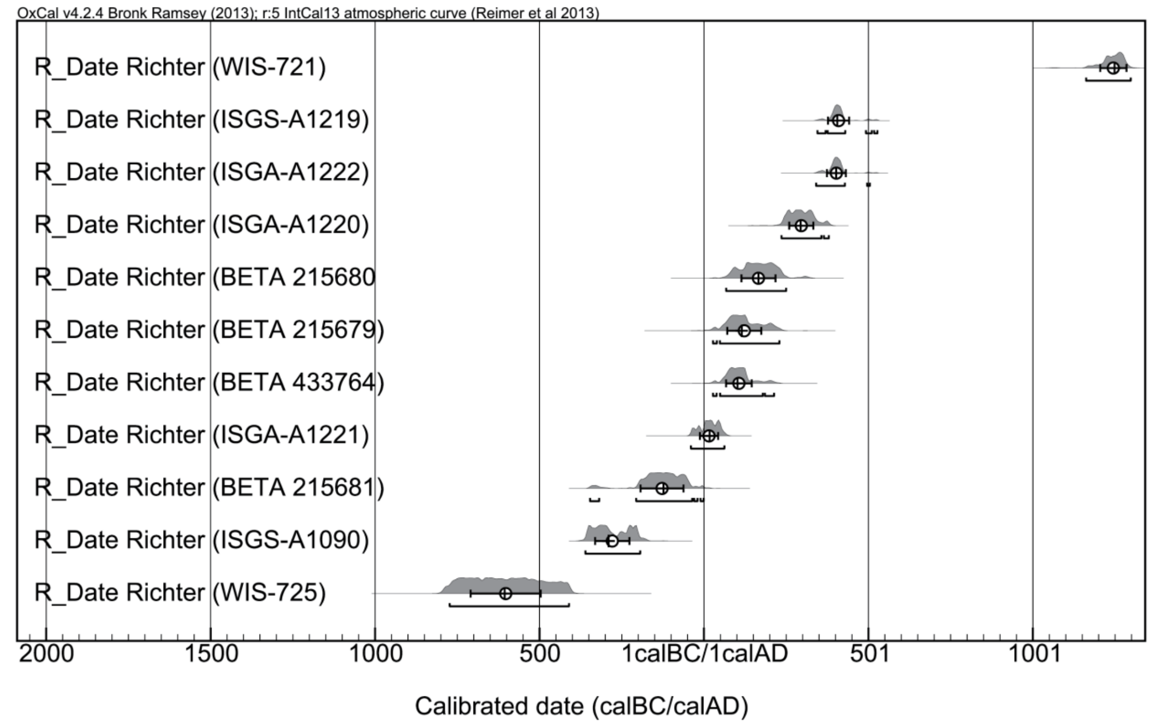


Figure 5.167. Plot of Richter site 2-sigma date ranges.

Chapter 6
Ceramics

The Assemblage

The Richter ceramic assemblage includes more than 33,961 sherds weighing 35.82 kg. The collection also includes a reconstructed vessel (V2). Some sherds from this vessel were not included in the reconstruction but were included in the assemblage totals. All of these materials are currently curated at the University of Wisconsin – Milwaukee Archaeological Research Laboratory (ARL) along with other material culture assemblages and existing site documentation. Table 6.1 summarizes the number and type of sherds by temper and surface finish. The table also includes the number of decorated sherds by surface finish.

Table 6.1. Number of Sherds by Temper and Type.

Temper Type	Sherd Type	Decorated or Not	Surface Finish	n
Grit Tempered				
	Rim Sherds			
		Undecorated		
			Cordmarked/ Smoothed-over-Cordmarked	30
			Smoothed	48
			Indeterminate	48
			Fragments	56
		Decorated		
			Cordmarked/ Smoothed-over-Cordmarked	53
			Smoothed	131
			Indeterminate	22

Table 6.1. Number of Sherds by Temper and Type.

Temper Type	Sherd Type	Decorated or Not	Surface Finish	n
	Body Sherds			
		Undecorated		
			Cordmarked/ Smoothed-over- Cordmarked	2,211
			Smoothed	461
			Net/Fabric Impressed	5
		Decorated		
			Cordmarked/ Smoothed-over- Cordmarked	56
			Smoothed	59
			Indeterminate	509
	Fragments			30,221
Shell	Fragments			45
Sand	Fragments			5
Total Sherds				33,960

Table 6.2 summarizes the number of decorated sherds by type.

Table 6.2. Decoration Type and Frequency of Body Sherds

Decoration Type	*f*	%
Cord Wrapped Stick	89	14.26
Cord Wrapped Stick with Circular Punctates	2	0.32
Stamp-and-Drag	13	2.08
Stamp-and-Drag Plain Tool	52	8.33
Stamp-and-Drag Plain Tool with Fingernail or Crescent Stamp	2	0.32
Dentate	32	5.13
Incised	7	1.12
Linear Stamp	70	11.22
Linear Stamp Fingernail or Crescent Stamp	12	1.92
Psuedo-scallop Stamp	138	22.12
Punctate	33	5.29
Punctate Annular	11	1.76
Unidentified Decoration	163	26.12
Total	624	100.00

Morphological Data

Vessel Morphology

All of the Richter vessels appear to be subconoidal shaped jars. Vessels fall into two very general types. The first, Form 1, has vertical sides with little or no constriction and rounded to subrounded bases. The second, Form 2, also has vertical sides but does have some constriction at the neck creating a gentle shoulder with a more pointed base. The rim is slightly everted. These two general types are based on two partially reconstructed vessels from the site. Form 1 is represented by V1 and Form 2 is represented by V2 (Figure 6.1).

These two vessel forms conform to the shapes of vessels in Mason's descriptions of North Bay wares (Mason 1966:205-207). North Bay I and II Plain are both described as "very large [with] conoidal or subconoidal base … vertical walls and little or no shouldering" (Mason 1966:206). North Bay I and II Cordmarked have basically the same form as the Plain types but base shape is not known. North Bay II Dentate – stamped appears to include both vessels with vertical walls or with slightly constricted necks and slightly everted rims (Mason 1966:206-207).

Summer Island vessel forms are more restricted. Richter Form 2 seems to conform more closely to the vessels described from Summer Island. The vessel was "conoidal in shape with a moderately constricted neck and slightly everted rim" (Brose 1970:54). A number of recovered bases were "conical" or pointed in shape.

In sum, vessels at Richter are limited in form but most compare favorably to vessel forms from other Middle Woodland sites in the region. This is supported by two complete vessels from the Richter site as well as the examination of rim and body sherds from the site.. Site vessels fall between the two forms described with the exception of a single pinch pot (V47). They can be described as jars with vertical walls and rounded bases or jars with slight neck constriction and rim eversion with pointed bases. Other vessel forms like bowls appear to be absent.

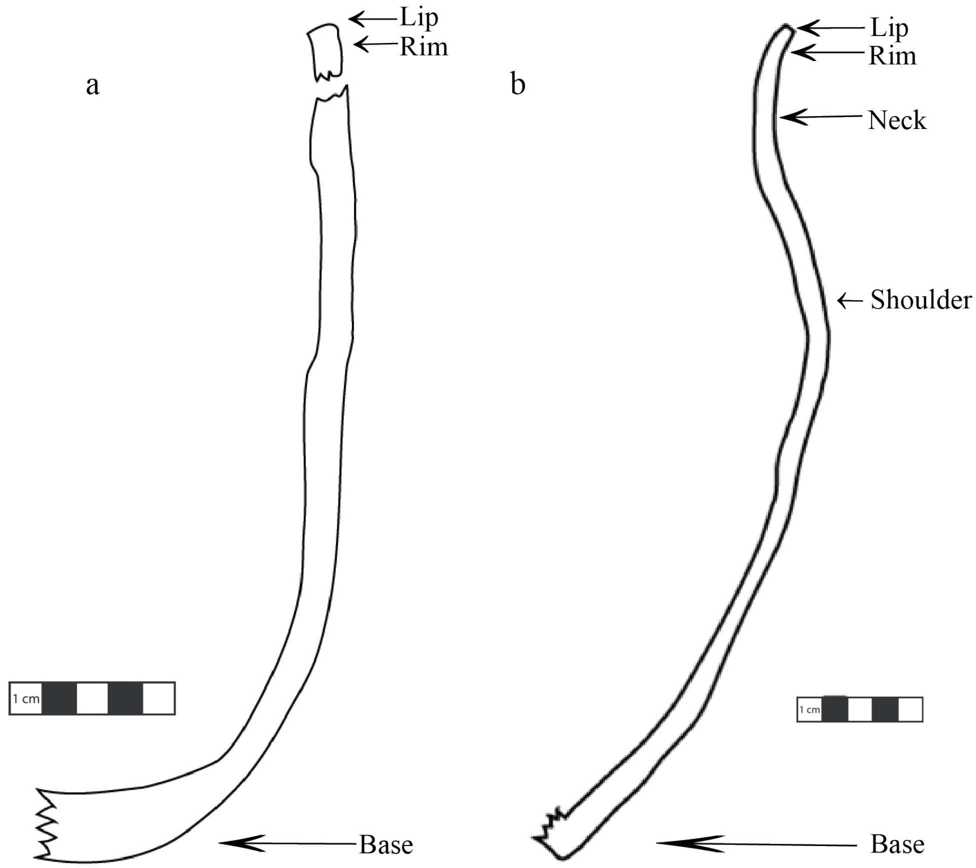


Figure 6.1. Vessel types taken from reconstructed site vessels: (a) Type 1, site V1; and (b) Type 2, site V2.

Rims

The rim of the vessel is defined as the area between the lip and neck of a vessel. This area is easy to determine in vessels where there is curvature to the neck or vessel wall (Rice 1987 (2005):214). In the case of a number of vessels at the Richter site there is no change in orientation between the lip and vessel wall resulting in direct rims. The stance and shape were recorded for each rim. Stance refers to the orientation of the rim to a horizontal plane reflecting the opening of the vessel. A direct stance rim meets this plane at approximately a 90° angle. In everted stance rims this angle is greater than 135° to the horizontal plane. Slightly everted rims fall between 90º- 135° while inverted stance rims exhibit an angle less than 45º A slightly inverted stance falls between 45-90°. In the Richter site assemblage direct rims are dominant followed by slightly everted and finally everted. No rims exhibited a true inverted stance though a few were slightly inverted.

Rim shapes are classified as one of the following: inward bevel, outward bevel, tapered, thickened, and unmodified (Figure 6.2). All of these shapes are relatively equally found in the assemblage with the exception of the outward bevel with, of which there is only one example. Rim shape often varied on the same vessel.

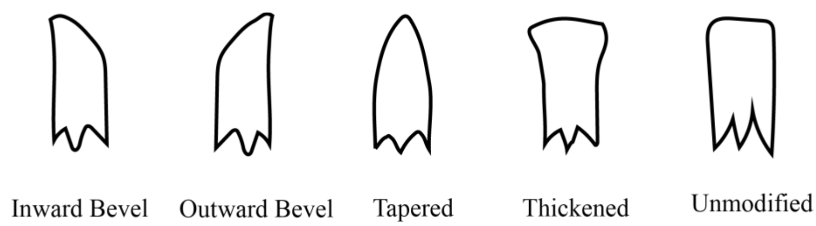


Figure 6.2. Rim shapes used for classification of Richter ceramic assemblage.

Lips

A lip, in the very simplest terms, is the edge of the vessel rim (Rice 1987 (2005):214). The lip can also be viewed as the area of transition from the vessel exterior to the interior. Vessels lips are classified as rounded, flattened or beveled (Figure 6.3). The majority of lips are either rounded or flattened. Some vessel had lips that were in places rounded and others that were flattened. The beveled type was very limited in number (n=7). A beveled lip differs from a bevel rim in that the lip surface itself directly articulates with the exterior surface of the vessel. A beveled rim has a lip or transitional zone between the vessel exterior and interior.

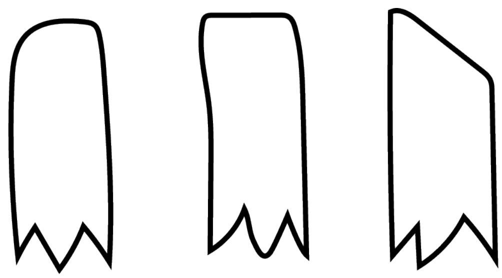


Figure 6.3. The three lip types used in description of Richter ceramics.

Neck

The Richter site assemblage provides little information regarding vessel necks. One reconstructed vessel indicates that some pots had vertical sides with little if any neck constriction. The other reconstructed vessel does show some constriction at the neck of the vessel. There are few body sherds from the site with distinct identifiable necks; however sherds exhibiting curvature that would be consistent with neck morphology were identified. Generally vessel necks are relatively straight

Shoulder

As indicated above there seem to be two basic vessel forms at Richter, one with vertical wall with little or no shoulder and those with some neck constriction and gentle shouldering as found in Vessel Type 2.

Body/Base

The body of these vessels is long with some curvature at a gentle shoulder. The body and base are not globular in shape. Examples from the site includes both rounded/subrounded and pointed.

Paste

Vessel paste in the Richter assemblage is highly variable. The range includes well compacted, laminated, and friable examples. Some pastes are more silty or gritty to the touch. The section on petrography will present more quantified data on paste recipe variation.

Paste colors are also highly varied. Exterior color ranges from 2.5 YR 6/4 Light Yellowish Brown to 5 YR 2.5/1 Very Dark Gray. The majority of paste cores are uniformly light in color.

Temper

Temper was identified using low powered magnification (10x). Three types of temper were noted: grit, shell, and sand. Grit temper was the predominate material used in the ceramics at Richter (Table 6.3) but size and type of inclusions is highly variable. Temper sizes range from 0.25 – 6.5 mm, from what would be considered medium sand to the size of gravel. Many vessels appear to be tempered almost exclusively with dark, coarse grit temper while others exhibit lighter, finer grit temper. Other vessels exhibit temper that was composed of grit from multiple mineral rocks with distinct light and dark grit inclusions. Temper raw materials appear to range from gabbros to diorite to granites. Some vessels also exhibit a red temper most likely derived from red granite. Pieces of spalled red granite were found in Unit 1010/1000 and elsewhere at the site. The following section on Petrography presents additional data regarding temper.

Table 6.3. Total Ceramic Sherd Numbers and Weight by Temper Type for Complete Assemblage

Sherd Type	Number	% by Number	Weight (kg)	% by Weight
Grit Tempered*	33,911	100%	35.762	100.00%
Shell Tempered	45	0.13%	0.05	0.13%
Other Tempered (Sand)	5	0.01%	0.01	0.01%
TOTAL ALL SHERDS	33,961	100%	35.82	100.00%

*Does not include reconstructed vessel V2

Surface Finish

Surface finish was only assigned to sherds that have intact exterior and interior surfaces. Both interior and exterior surface finishes were recorded. Sherds from Richter exhibit three common types of surface finish cordmarked (CM), smoothed-over-cordmarked (SMCM), and smoothed (SM). Net or fabric impressed body sherds are present also.

Cordmarked and smoothed cordmarked surfaces represent two states of cordmarked surface finish. In the first the cordmarked surface has no areas impacted by intentional or unintentional smoothing of the cordmarked surface. Cordmarked surfaces, as will be discussed in greater detail in the following section on Ceramic Production Analysis, are the result of the use of a cord wrapped paddle and smooth anvil to flatten and join pottery slabs. Unintentional smoothing of cordmarks can be found on areas such as vessel shoulders or body that come in contact with a surface during rotation of the vessel during construction. Intentional smoothing can be found on vessel necks and rims. Cordmarking left by paddling during construction is smoothed before the application of decoration, although there are cases where smoothing does not occur before decoration.

Cordmarking on vessel exteriors does demonstrate variation. On some vessels cord wrapped paddling leaves overlapping impressions at differing angles. On other vessels the cordmarking is more uniformly applied, and consistently perpendicular to the rim of the vessel. There is also variation in the cording thickness and tightness of twists and in the spacing between cords on the paddles. Cordage twist was primarily Z-twist where it could be determined. Often cordmarking was smoothed on portions of the vessels during the manufacturing process.

Smoothed surface finish is a result of the manufacturing process which differs from that found in vessels with cordmarked exteriors. Smooth surfaces reflect the smoothing of clay coils together to form a vessel. Instead of using the weight and pressure of a cord wrapped paddle and anvil to join clay, clay coils are joined to each other by pressure applied by hand smoothing or smoothing with a tool. Evidence of coil and smoothing production will be presented in greater detail in the following section on Ceramic Production Analysis. While some may prefer the term “plain”, the surface is not “plain” but has retained a smooth finish from production.

Decoration

Almost all decoration observed on the Richter vessels was produced by the application of stamps. There are a variety of stamping tools pressed into the still pliable clay of the vessels, including dentate, pseudo-scallop, cord wrapped stick (CWS), linear stamp, plain tool, punctate, finger nail, and cordage. Vessels with incised decorations are rare at this site.

Placement of decoration generally begins at the shoulder and continues to or near the lip. Decorative elements are found in various motifs. Dentate and pseudo-scallop stamps are typically arranged in rows of composed of individual oblique or vertical stamps that encircle the vessel (Figure 6.4a and b). Several vessels have multiple rows of oblique pseudo-scallop stamps.

Dentate and pseudo-scallop stamps are placed end to end to create a continuous line that encircles the vessels in some cases (Figure 6.4c and d). In some vessels rows of horizontal pseudo-scallops were placed below vertical stamps extending downward from the lip/rim juncture (Figure 6.4e). In other vessels dentate stamping are placed along the rim at an oblique with horizontal rows of dentate stamps (Figure 6.4f).

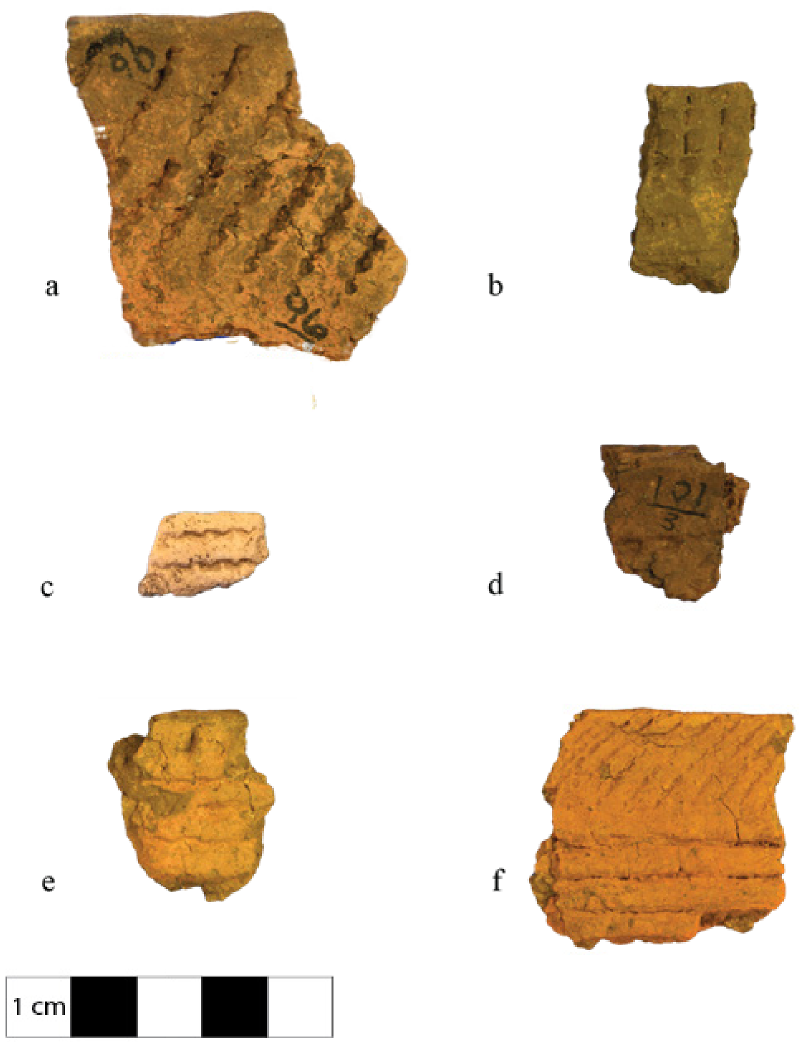


Figure 6.4. Examples of pseudo-scallop and dentate decorative motifs: (a) V17; (b) V42; (c) V55; (d) V12; (e) V61 and (f) V40.

Linear stamping on Richter site vessels is generally found in horizontal rows of oblique or, less frequently, vertical stamping that encircles the vessel. A number of body sherds are decorated with plain small, tool impressions stamped at an oblique angle to create a line that also appears to encircle the vessel.

Lip decoration was applied in two ways. Lips are incised with a stick, bone, or other tool either perpendicular or at an oblique angle to the vessel rim. Lips are also notched with one of a number of stamps. These include dentate, pseudo-scallop, cord wrapped stick, linear stamp, and cordage. These are also oblique or perpendicular to the rim.

This is not to say that all vessels were decorated. There are examples of smoothed, cordmarked, and smoothed-over-cordmarked vessels that are without decoration (Table 6.1).

Metric Data

All rim sherds were weighed and recorded in grams. Thickness was recorded for each rim sherd in three locations, just below the lip, 1 cm below the lip, and at the base of the sherd. Rim thickness was recorded at the ends of each rim and in the center for a total of three measurements.

Description of Richter Vessels

Describing the Richter assemblage in terms of existing ceramic regional typological frameworks is problematic. First, there is substantial overlap between typologies creating conflicting cultural assignments. Second, the original regional typologies were created under the assumption that ceramic technology was introduced at a much later date in the Door County area than surrounding regions. Ceramic production in Door County was thought to have begun during the Middle Woodland period so Early Woodland ceramic types and technological characteristics were not considered. Since it is possible that the Richter site harbors an Early Woodland component, a temporally extended typology must be considered.

The following discussion provides a description of each vessel in the assemblage. Vessels are divided into groups reflecting variation in surface finish. Groups include vessels with cordmarked and/or smoothed cordmarked surfaces, vessels with smoothed surfaces, and vessels with indeterminate surface finishes due to weathering. Vessels are further grouped according to presence or absence of decoration and type of decorative device utilized. Each vessel rim is illustrated with photos of the rim exterior and interior as well as a scaled profile. Vessel interiors are shown to the right and orientation relative to the orifice plane is indicated by a solid line or dashed line if orientation is. Table 6.4.summarizes Richter vessels by surface finish and decoration.

Table 6.4. Summary of Richter Vessels by Surface Finish and Decoration

Cordmarked/Smoothed Cordmarked (SMCM)	**Number**	**% of Assemblage**
Undecorated Exterior		
Plain Lip	3	4
Notched or Impressed Lip	7	10
Decorated Exterior		
Cord Wrapped Stick (CWS)	2	3
Incised	1	1
Linear Stamp	4	6
Pseudo-Scallop	1	1
Punctate	1	1
TOTAL CORDMARKED	19	26
Smooth		
Undecorated Exterior	3	4
Decorated Interior Rim	1	1
Decorated Exterior		
Cord Wrapped Stick (CWS)	6	8
Dentate	8	11

Table 6.4. Summary of Richter Vessels by Surface Finish and Decoration

Linear Stamp	13	18
Punctate	2	3
Pseudo-Scallop	10	14
Stamp and Drag	1	1
Unidentified	3	4
TOTAL SMOOTH	47	66
Weathered Exterior		
Undecorated Exterior	1	1
Notched or Impressed Lip	1	1
Decorated Exterior		
Unidentified	2	3
TOTAL WEATHERED	4	6
Pinch Pot	1	1
TOTAL VESSELS	71	100

Cordmarked/Smoothed Cordmarked Vessels

Cordmarked vessels constitute 26% of the assemblage (n=19). Almost equal numbers of vessels have decorated exteriors (n=9) as those that do not (n=10). Among vessels without exterior decoration almost all (n=8) have some type of lip/rim interior decoration. The remaining two cordmarked vessels without exterior decoration have lips without notching or impressed decoration (Figure 6.5). Both of these vessels have direct rims, one has a flattened lip (V71; Figure 6.5a) and the other has a rounded lip (V28; Figure 6.5b).

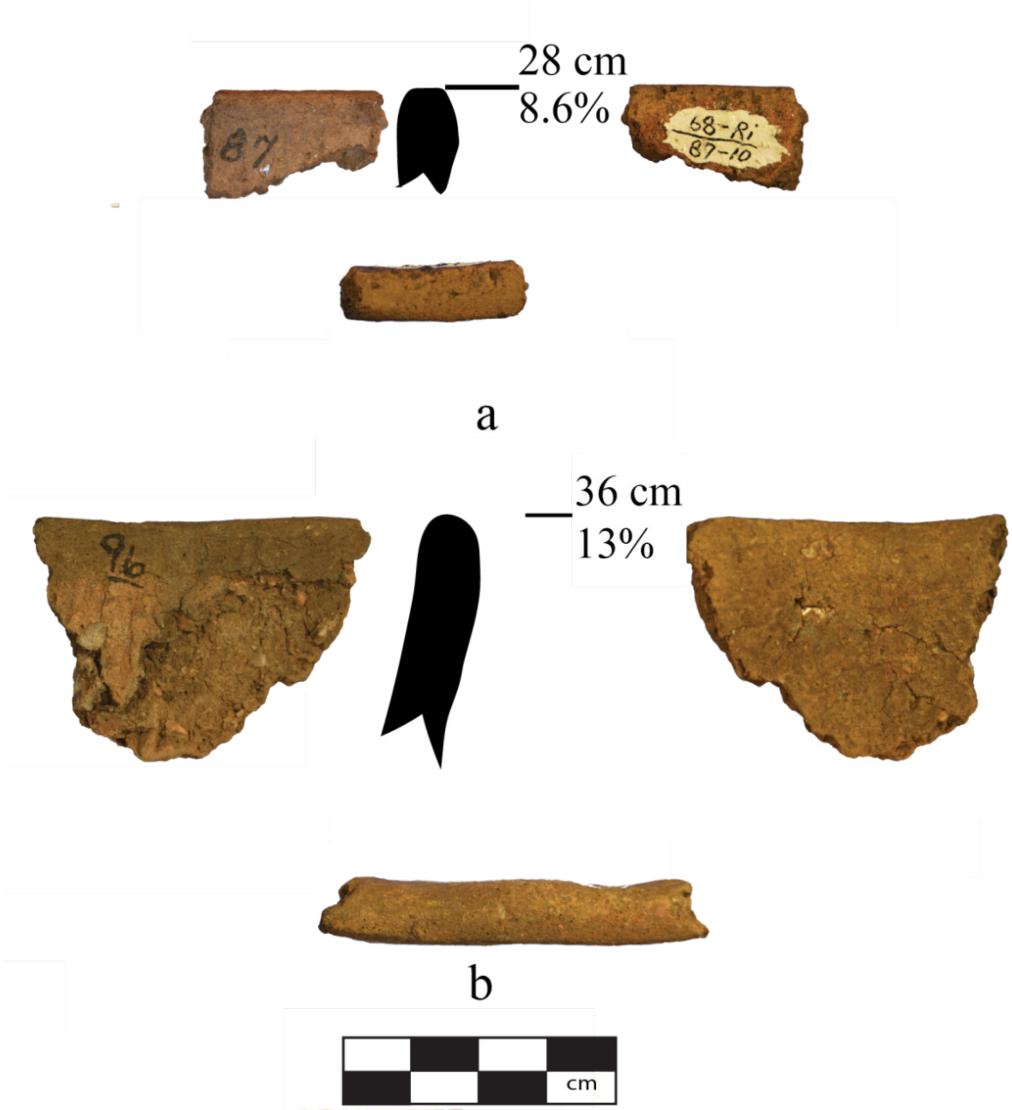


Figure 6.5. (a and b) Cordmarked vessels with undecorated rim exteriors and interiors and undecorated lips.

Eight vessels lacking exterior decoration exhibit notching or impressed lip decoration. Of these, the lip was decorated using a CWS on four of the vessels (V1, V3, V27, and V24; Figure 6.6a, b, and d, and Figure 6.7a). The remaining four vessels are decorated with an unidentified decorative element, probably a stamp (V13, V52, V11, and V22; Figure 6.6c and Figure 6.7b, c, and d). Vessels with CWS decorated lips include; everted with rounded lip (V24; Figure 6.7a), slightly everted with flattened lip (V1; Figure 6.6a), direct with flattened lip (V 27; Figure 6.6d), and an indeterminate rim with flattened lip (V3; Figure 6.6b). Unidentified stamped vessels include the following rims and lips, direct with flattened lip (V13; Figure 6.6c), slightly everted with flattened lip (V52; Figure 6.7b), slightly everted with a rounded lip (V11; Figure 6.7c), and direct with a flattened lip (V22; Figure 6.7d). On a number of these rims the decorative element presents a notched appearance when viewed from the vessel exterior. These include V3, V13, V27, V24, V52, and V11; (Figure 6.6b, c, and d, Figure 6.7a, b, and c).

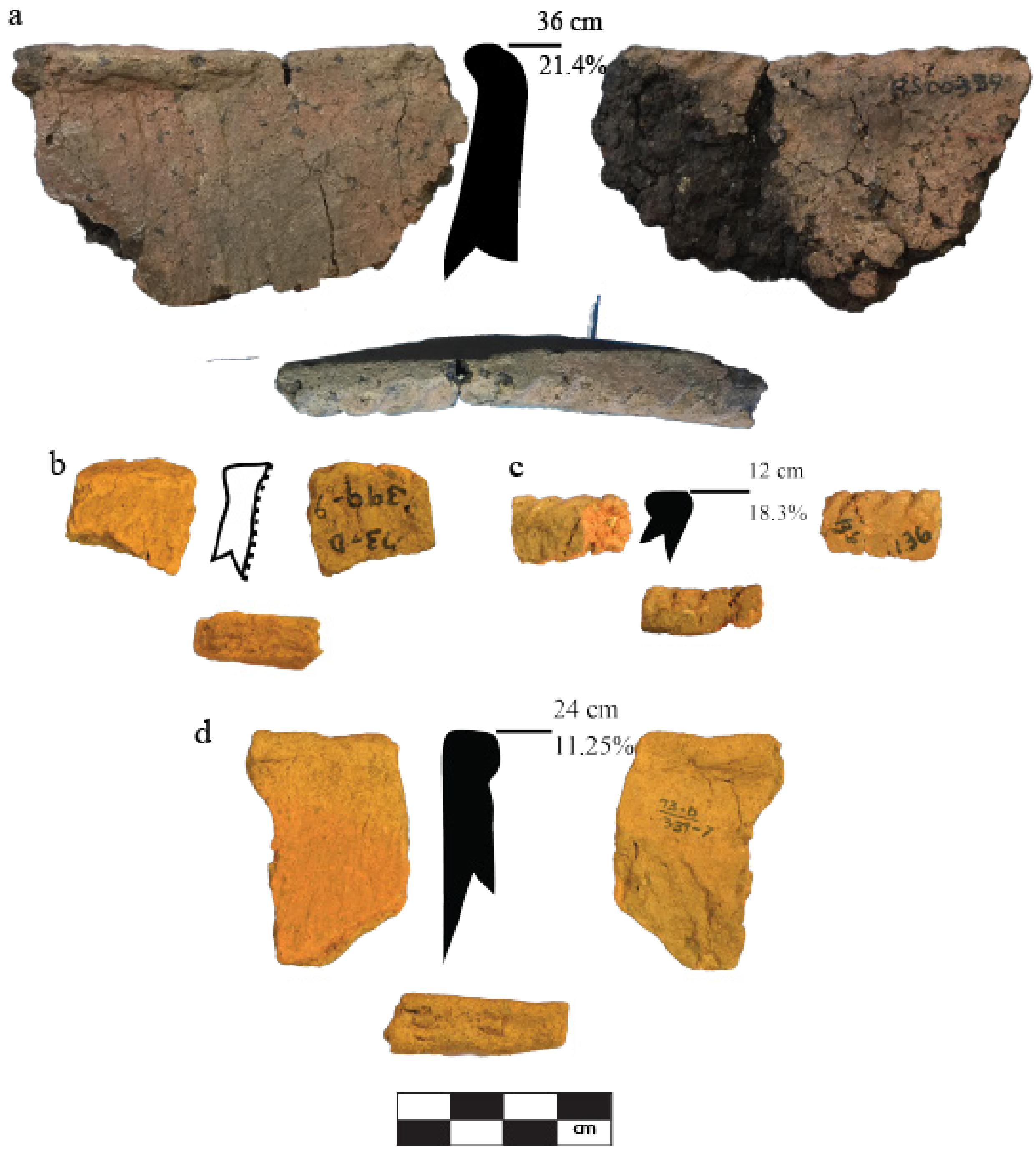


Figure 6.6 . Vessels with exterior cordmarked surfaces with notching or impressed lip decoration: (a) V1; (b) V3; (c) V13 and (d) V27.

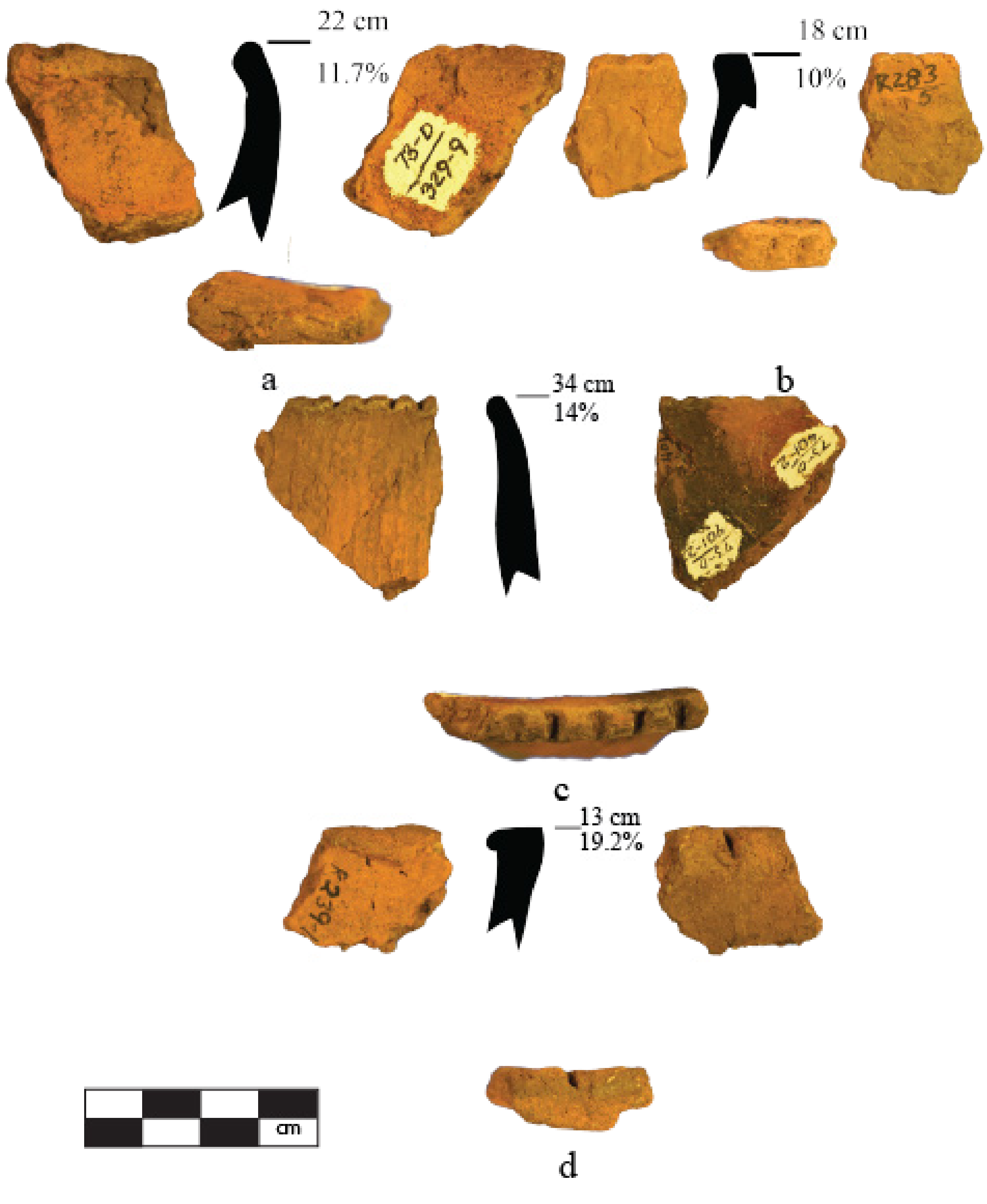


Figure 6.7. Additional vessels with exterior cordmarked surfaces with notching or impressed lip decoration: (a) V24; (b) V52; (c) V11 and (d) V22.

Cordmarked vessels were decorated with a variety of stamps including CWS, linear, pseudo-scallop, or punctates. Linear stamps are found most frequently (n=4). Two of the linear stamped vessels have direct stances (Figure 6.8a and c) and two are everted (Figure 6.8b and d). All of these vessels have impressed or notched decorated lips. One decoration is identified as a linear stamp (Figure 6.8d). The other three are unidentified. Only one of the four linear stamped vessels, including those with decorated lips, has a rounded lip (Figure 6.8b). The remaining three vessels have flattened lips.

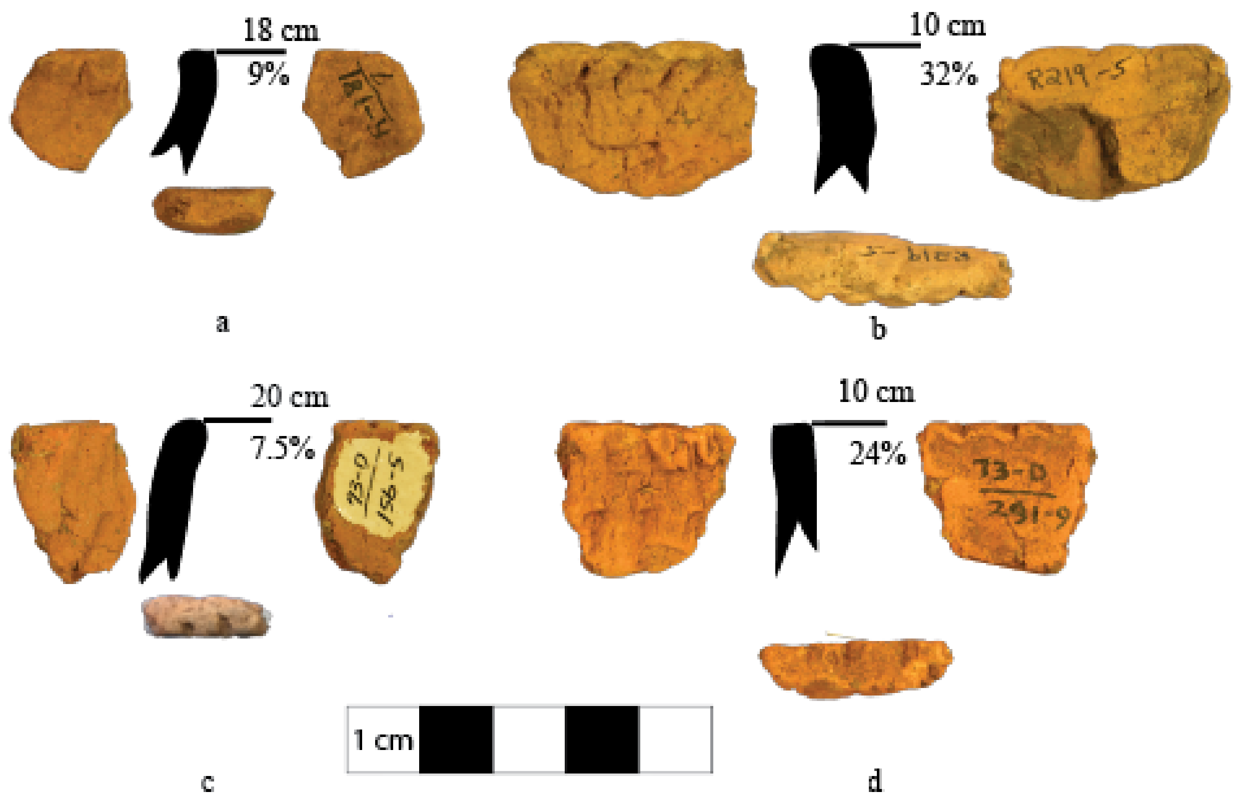


Figure 6.8. Cordmarked linear stamped vessels: (a) V62; (b) V68; (c) V69 and (d) V8.

Vessel 62 (Figure 6.8a) exhibits linear stamping at the lip. Stamping occurs below the lip on V68, V69, and V8 (Figure 6.8b-d). Oblique or vertical linear stamps were applied in a horizontal row that appears to have encircled the vessel. It is not possible to determine how far down the vessel the decoration extended or if there was more than a single row of linear stamping on any particular vessel.

Only two vessels with a cordmarked surface finish were decorated with CWS stamps on the exterior (Figure 6.9). Both of these vessels also have CWS decorated lips. One of these vessels has an everted rim with a rounded lip (V26; Figure 6.9a). The other has a direct rim and a flattened lip (V14; Figure 6.9b).

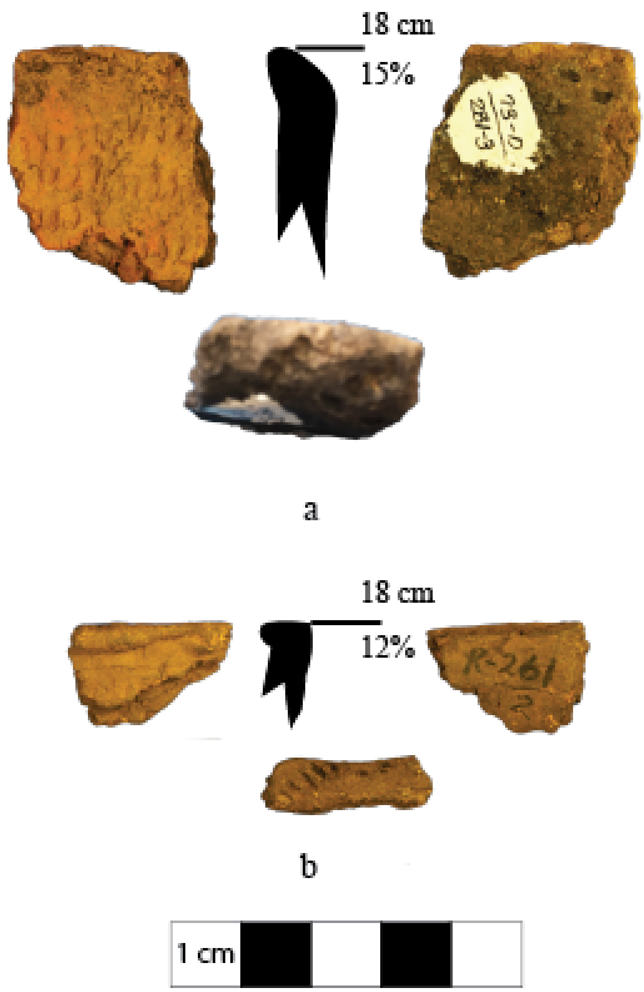


Figure 6.9. Cordmarked CWS decorated vessels: (a) V26 and (b) V14.

On V26, the CWS stamping is applied horizontally on the vessel exterior possibly in horizontal rows though it is difficult to be sure if these are stamps were applied end to end to form complete horizontal rows or if they were applied in vertical columns At least four rows of stamps appear on the vessel beginning below the lip and may encircle the vessel. V14 only has a small portion of a horizontally applied stamp. Both vessels have oblique CWS on lip and interior rim, most likely applied using the same stamp as was used to apply the exterior decoration.

Three vessels represent single examples of specific combinations of surface finish and decorative techniques. The first of these is a single vessel with a cordmarked exterior decorated with incised lines. This vessel has a direct rim and an undecorated flattened to rounded lip (Figure 6.10). The incised decoration seems to be a crisscross pattern.

Figure 6.10. V45 with cordmarked finished surface and incised decoration.

The second vessel has a smoothed cordmarked surface with decorative punctuates. The punctates were between a square or rectangular and may be a linear stamp. The vessel rim is direct with a flattened obliquely incised lip (Figure 6.11). The punctates are right-leaning and arranged in at least three widely spaced horizontal rows beginning just below the lip. In this vessel the decoration may extend to the shoulder.

Figure 6.11. V21 is cordmarked with rectangular punctates.

The final vessel has pseudo-scallop decoration on a cordmarked surface. This vessel has an everted rim and a rounded undecorated lip (Figure 6.12). Because much of this vessel was recovered and reconstructed we know that it has a total of five rows of right-leaning, pseudo-scallop stamps that begin below the lip and extend to the vessel shoulder. Some of the surface cordmarking was either intentionally or unintentionally smoothed in the areas to which decoration was applied (Figure 6.13).

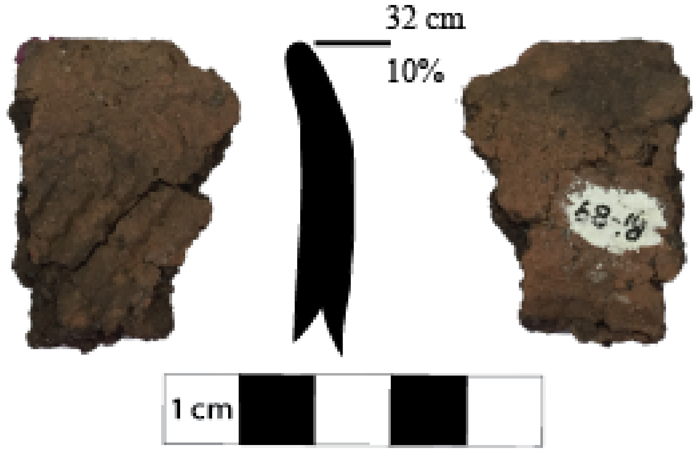


Figure 6.12. V2 is a cordmarked pseudo-scalloped stamped vessel.

Figure 6.12. Rows of oblique pseudo-scallop decoration are visible above the shoulder on V2. On the lower portion of the vessel smoothed and overlapping cordmarking is visible.

Smooth Vessels

Vessels with a smoothed surface finish account for 66% (n=47) of the assemblage. Four vessels have an undecorated smooth exterior surface. Three of these also have direct rims, and rounded, undecorated lips (V63, V60, and V48; Figure 6.13a-c). One vessel has pseudo-scallop vertical stamping on the interior of a slightly everted rim with a flattened lip (V65; Figure 6.13d).

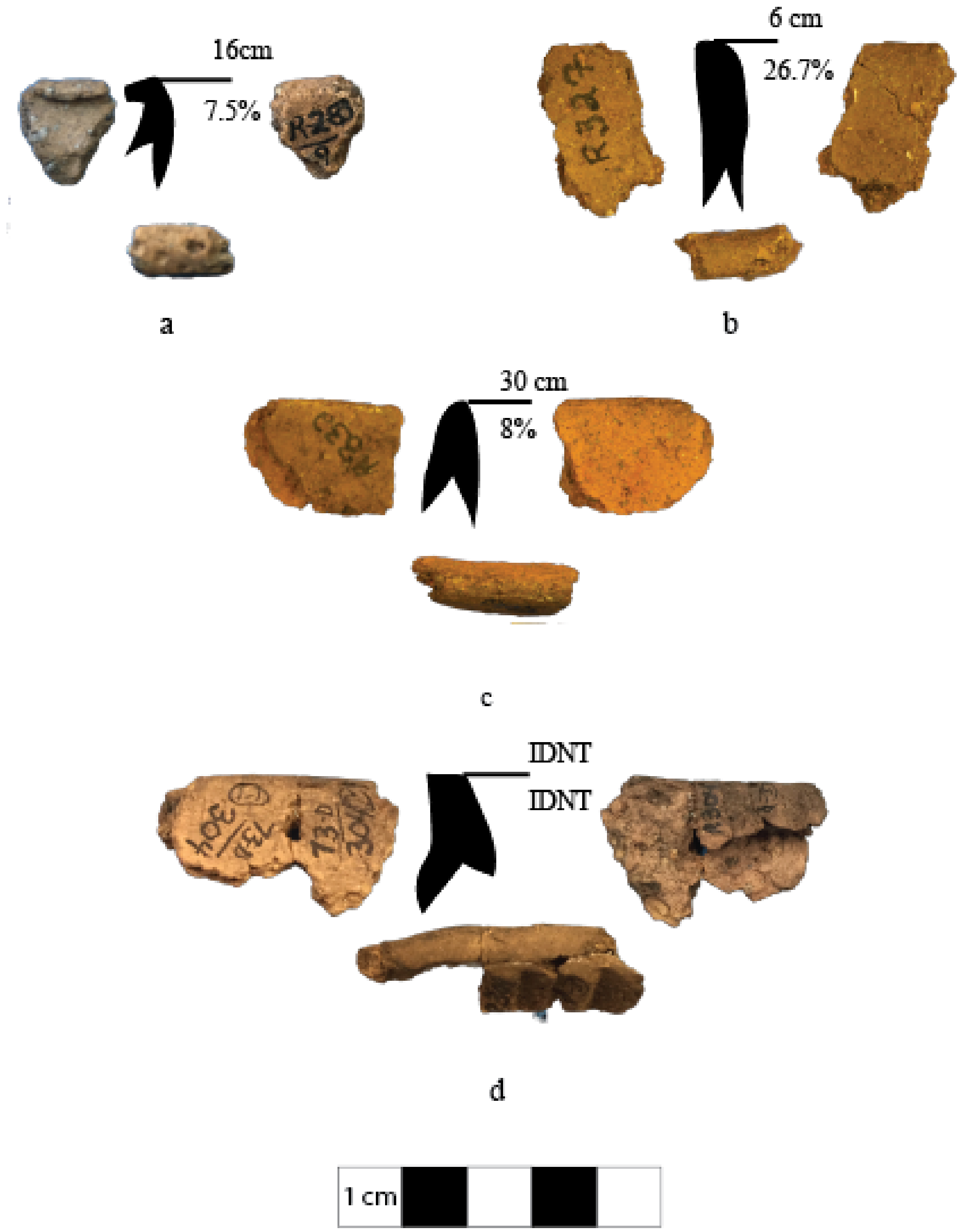


Figure 6.13. Smooth surfaced vessels without exterior decoration and undecorated lips: (a) V63; (b) V60 and (c) V48. Smooth surface vessel with undecorated exterior and lip but having vertical pseudo-scallop stamping on rim interior: (d)V65.

A total of 44 smooth surface vessels are decorated with exterior stamping. The variety of stamps is almost the same as those used on cordmarked vessels (CWS, linear, pseudo-scallop and punctates). Additionally, a number of vessels include dentate stamping (n=8). Dentate stamp decoration does not occur on any of the cordmarked surfaced vessels. Several vessels have stamping that could not be clearly classified (n=3).

Seven smooth surfaced vessels are decorated with CWS stamps. Two of these have undecorated lips or interior rims. Those vessels without lip or interior rim decoration include one direct rim with a flattened lip (Figure 6.14a) and a slightly everted rim with a rounded lip (Figure 6.14b).

Figure 6.14 Smooth surfaced vessels with undecorated lips and interior rims: (a) V54 CWS exterior decoration and (b) V56 CWS decorated exterior.

V54 (Figure 6.14a) has a single row of right-leaning CWS stamps that begin at the vessel lip. Only a single row is preserved. V56 (Figure 6.14b) has CWS stamping that represents a more complex pattern with alternating groupings of horizontal and vertical CWS stamps.

Five vessels with exterior CWS decoration also have decorated lips or interior rims (V30, V25, V10, V70, and V33; Figure 6.15a-e). Lip/rim interior stamping was applied obliquely to the vessel orifice in all five vessels. This interior stamping was placed in such a manner that it notched the lip on one vessel with a slightly everted rim and a flattened lip (V33; Figure 6.15e). Three of the vessels have direct rims, two of these have rounded lips (V30 and V70; 6.15a, and d) and one is flattened (V10; Figure 6.15c). One vessel (V25; Figure 6.15b) has an everted rim with a rounded lip.

CWS stamps were applied obliquely in four of the five vessels (V30, V25, V10, and V33; Figure 6.15a-c, and e). In V70 (Figure 6.15d) the stamps are applied in a single row encircling the vessel on the lip proper. The vessel rim seems to constrict below this area of decoration. It may represent zoned decoration. In all of the CWS vessels only a single row of decoration was preserved so it is impossible to determine the extent of vessel decoration. The CWS found on V30 (Figure 6.15a) differs a bit in form from the other stamps utilized on other vessels. This stamp includes an imprint of the implement that the cordage was wrapped around. This paddle or stick was narrow with fine cordage. This vessel also differs in that the oblique CWS stamps begin lower on the vessel rim than the other CWS decorated vessels.

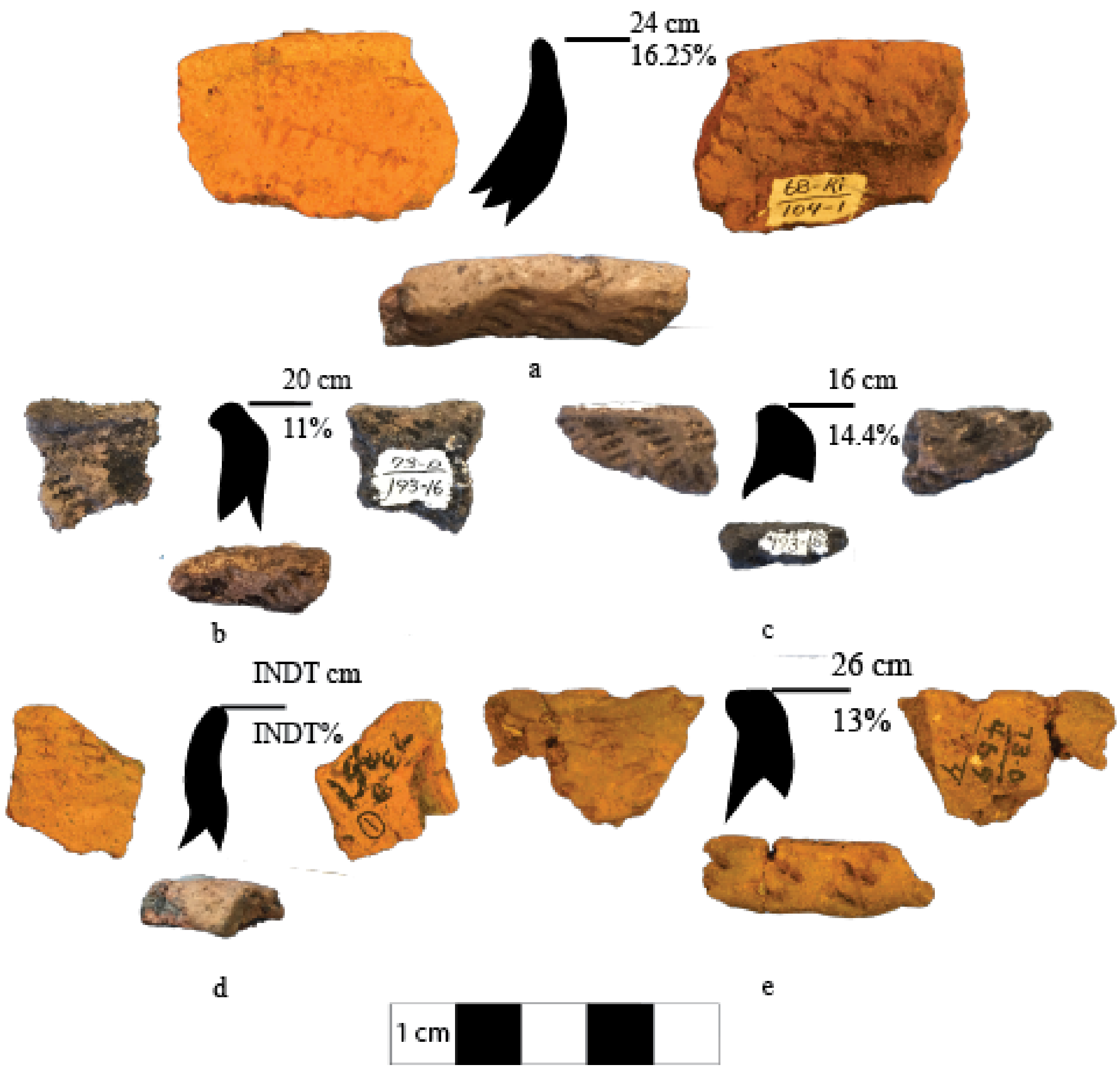


Figure 6.15. Smooth surface vessels with CWS stamped exterior decoration and decorated lips or decorated interior rims: (a) V30; (b) V25; (c) V10; (d) V70 and (e) V33.

Eight vessels are decorated with dentate stamped exteriors. Of these, four have undecorated lips and interior rim margins. One of these vessels has a direct rim with a flattened lip (V34; Figure 6.16a). The remaining three are slightly everted (V49, V41, and V40; Figure 6.16b-d). Those with slightly everted rims have either flattened (n=2) (V41 and V40; Figure 6.16c and d) or beveled lips (V49; Figure 6.16b).

Dentate stamps were applied obliquely beginning at or near the lip of two vessels (V34 and V49). The lower portion of this single row of stamps is missing in both vessels. Dentate stamps on V41 and V40 (Figure 6.16c and d) include additional rows and more complex decorative motifs. V41 has a horizontal row of dentate stamps beginning at the lip with a partial row of oblique dentate stamps. V40 has a large, obliquely stamped, horizontal row of dentate stamps above three rows of end to end horizontal stamps, giving the appearance of a dashed line.

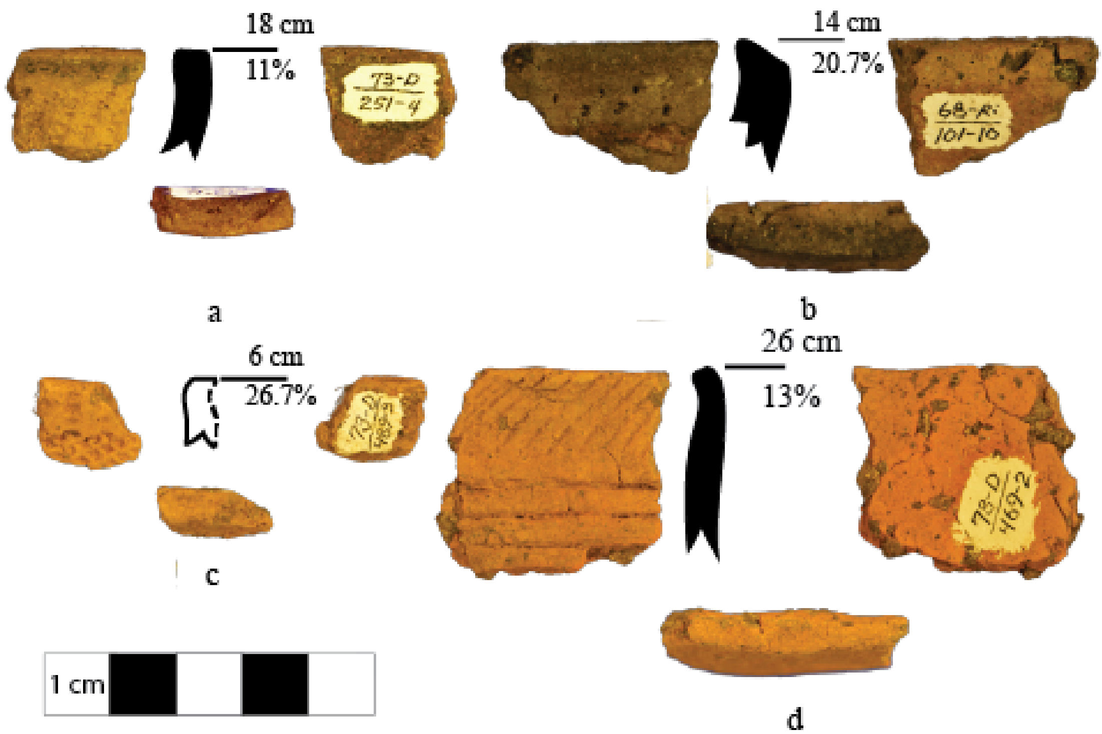


Figure 6.16. Smooth surfaced vessel with dentate exterior stamping and undecorated lips: (a) V34; (b) V49; (c) V41 and (d) V40.

Four smooth surfaced vessels with dentate stamped exteriors also have lips or interior rim margins that are notched or stamped with a dentate tool. All of these vessels have direct rims with a flattened (V35 and V7; Figure 6.17a and b) or rounded lip (V42 and V12; Figure 6.17c and d).

Exterior dentate stamping was applied vertically in a horizontal row on three of the vessels (V35, V7, and V42; Figure 6.17a-c). The vertical stamping is closely spaced on V35 and V7 while the dentate stamps on V42 are further apart. All of these vessels have stamping on the lip/rim interior with spacing that reflects the exterior stamp spacing. Only partial or a partial single row of stamps is preserved on these vessels. A single vessel (V12; Figure 6.17d) has end to end dentate stamping that forms a single horizontal row. This vessel also exhibits faint traces of dentate lip notching.

Figure 6.17. Smooth vessels decorated with dentate stamping and decorated lips or interior rim; (a) V35; (b) V7; (c) V42 and (d) V58.

Linear stamping was used most frequently on smooth vessels (n=11). The majority of vessels (n=7) with linear stamping on the exterior also have either incised or stamped lips. Of the two vessels with incised lip decoration, one has a direct rim and rounded lip (V16; Figure 6.18a) the other was slightly inverted with a flattened lip (V15; Figure 6.18b).

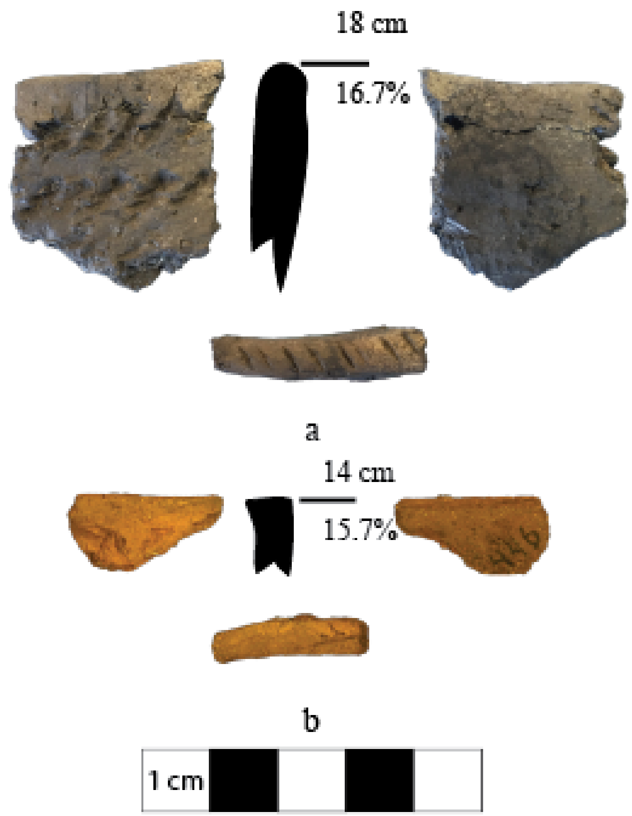


Figure 6.18. Smooth linear stamped decorated vessels with incised lips: (a) V16 and (b) V15.

Linear stamps are present on the lip of four vessels (V37, V39, V72, and V31; Figure 7.19a-d), the fifth was stamped with an unidentified type of stamp (V32; Figure 7.19e). Two vessels with linear stamped lips have direct rims (one was rounded (V39; Figure 7.19b) and the other flattened (V37; Figure 7.19a). The other two vessels have slightly everted rims with rounded lips (V72 and V31; Figure 7.19c and d). The vessel with the unidentified stamped lip has a direct rim and rounded lip (V32; Figure 7.19e).

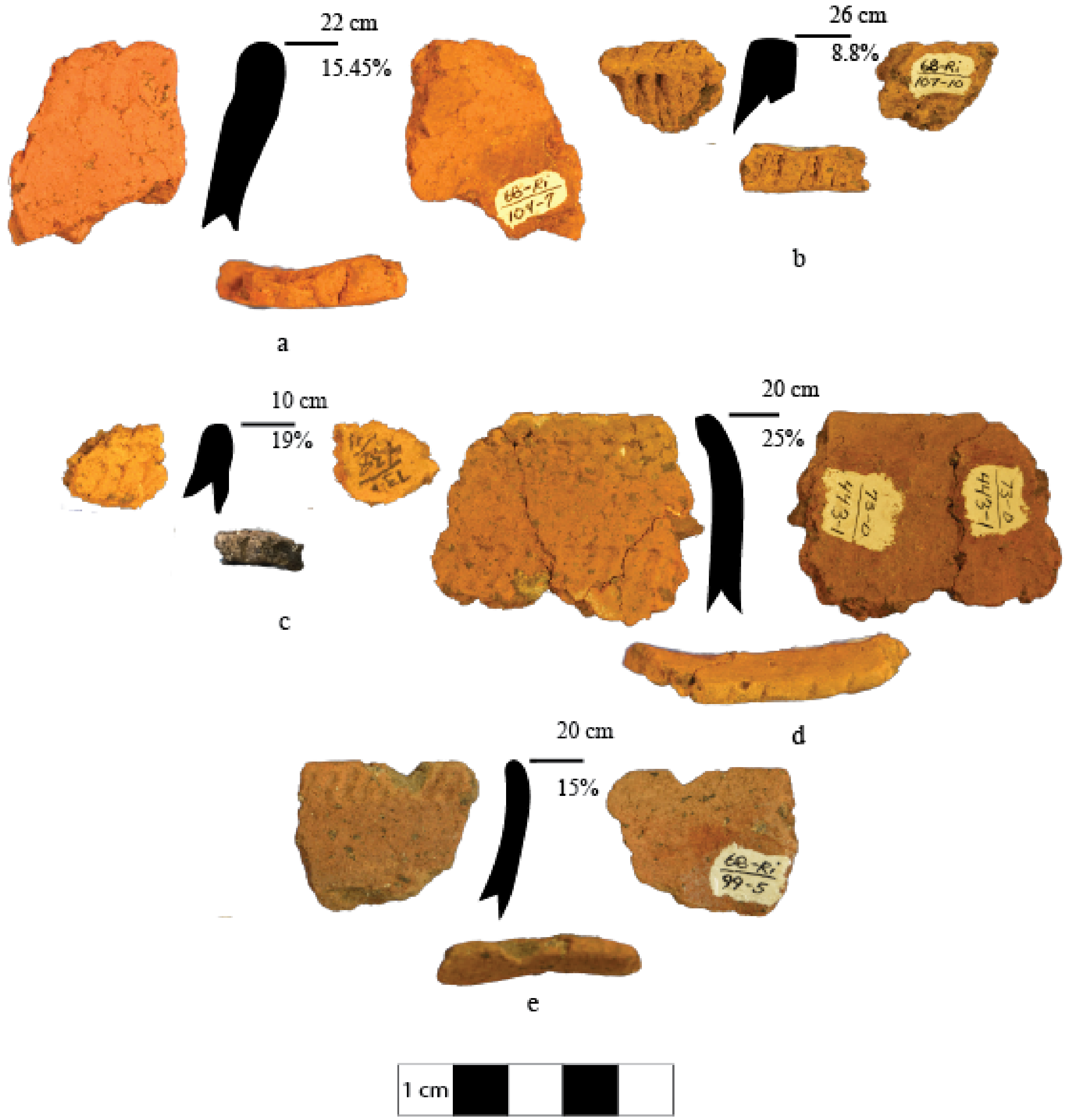


Figure 6.19 Smooth vessels with linear stamped exteriors and decorated lips: (a) V37; (b) V39; (c) V72; (d) V31, and (e) V32.

The linear stamps on these vessels were applied obliquely or at an almost vertical angle. Two vessels (V39 and V72; Figure 6.19b and c) have only a partial row of linear stamps, as the lower portion of the row is missing. V37 and V32 (Figure 6.19a and e) have a single complete horizontal row of oblique stamps with empty space beneath. The rest of the vessel may be undecorated beneath the row of stamps; or like V31 (Figure 6.19d) have a wide space between the first row at the lip and a second row lower on the vessel rim.

Four smooth vessels with exterior linear stamping do not have decoration on the lip or interior rim (V46, V38, V57, and V36; Figure 6.20a-d). Three of these have direct rims and flattened (V38 and V57; Figure 6.20b and c) or rounded (V46; Figure 6.20a) lips. The fourth vessel is slightly everted with a rounded lip (V36; Figure 6.20d).

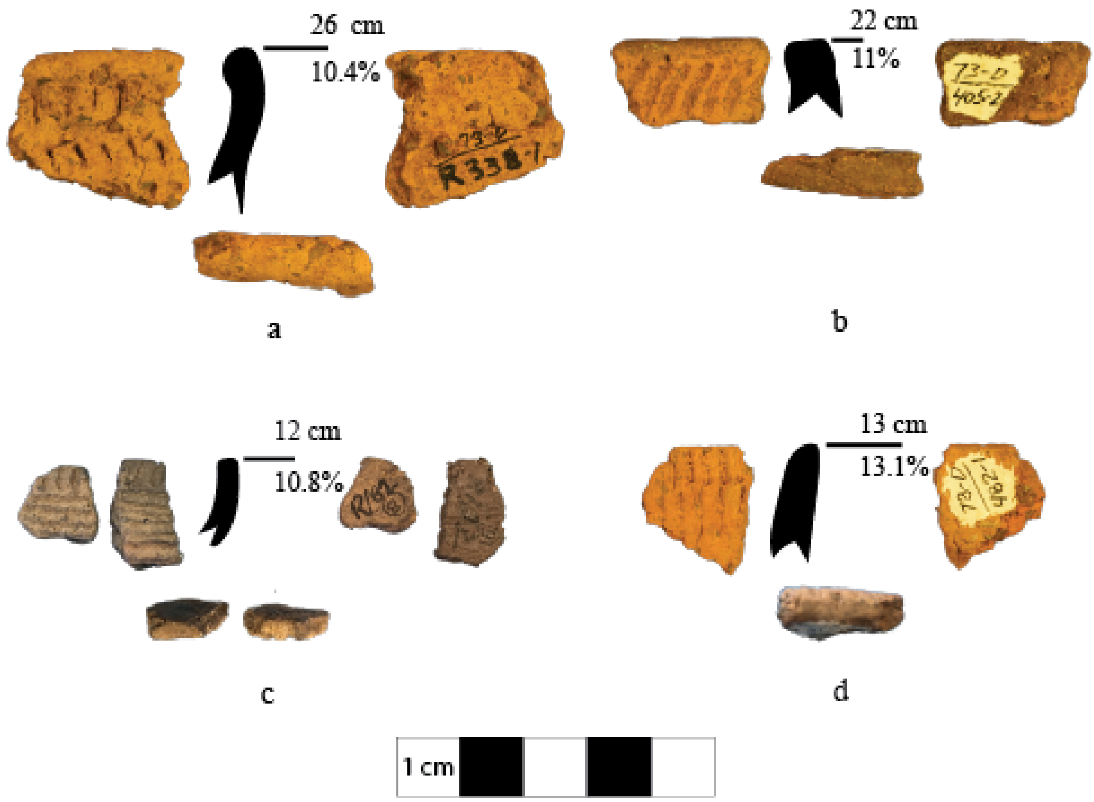


Figure 6.20. (a-d) Smooth vessels with linear stamped exteriors and undecorated lips or interior rims.

These vessels show much variability. V46 (Figure 6.20a) has two complete and one partial row of oblique, somewhat crescent shaped linear stamps (possibly finger nail stamping). The stamps and rows of stamps are spaced about 3 mm apart. In contrast, oblique, closely spaced, slightly curved linear stamps form a partial row of stamps on V 38. V36 differs from the other vessels by having very closely spaced vertical linear stamps. There is very little if any vertical space between the stamped rows. Finally, V57 (6.20c) presents a more complex motif. The first row is composed of slightly curved oblique linear stamps circling the vessel at the lip.

Below this first row of oblique stamping are at least six horizontal rows of end to end linear stamps. Because of the slight curve in the stamp these lines appear sinuous.

The second most common exterior decorative type among smooth vessels is pseudo-scallop stamping (n=10). Generally these vessels have direct rims (n=7). The remainder are slightly everted (n=3). Five vessels have undecorated lips (V55, V61, V43, V9, and V64; Figure 6.21a-e). Direct rims and flattened lips are found on three of the five vessels with undecorated lips (V55, V43 and V64; Figure 6.21a, c and e). The remaining two vessels have direct rims and undecorated rounded lips (V61 and V9; Figure 6.21b and 6.21d).

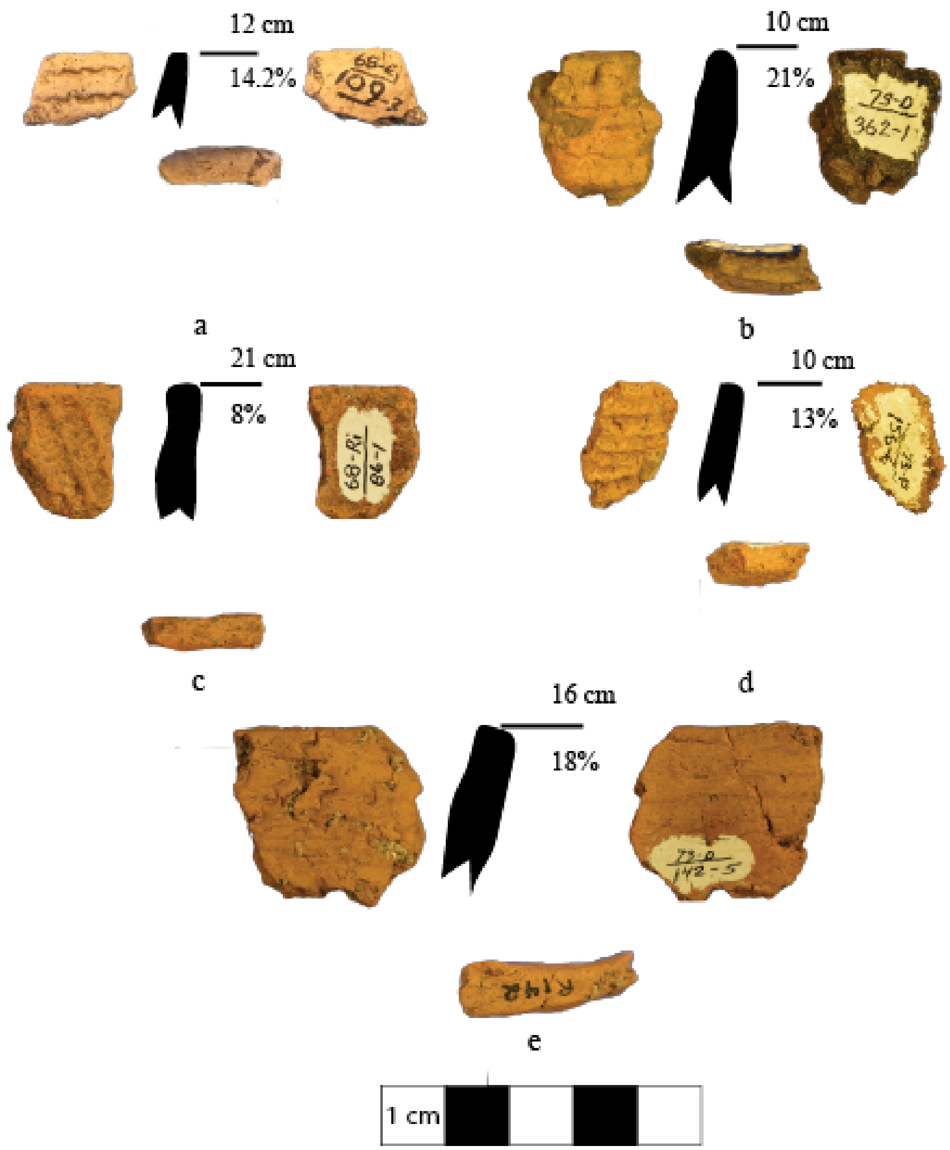


Figure 6.21 Smooth surfaced vessels with pseudo-scallop stamping and undecorated lips: (a) V55; (b) V61; (c) V43; (d) V9 and (e) V64.

These vessels also exhibit differing decorative motifs. Two vessels (V55 and V9; Figure 6.21a and d) have multiple horizontal rows of end to end pseudo-scallop stamps. Vessel 61 and V64 (Figure 6.21b and e) have a single oblique row of pseudo-scallop stamps at the lip with several rows of end to end pseudo-scallop stamped dashed lines. The separation between the oblique and horizontal stamped rows is not clearly defined as seen in overlapped areas on V64. V43 is decorated with a single oblique row of odd pseudo-scallop stamps with a more distinct narrow triangular shaped profile than a sinuous wave.

Some of the pseudo-scallop smooth vessels have decorated lips or interior rims (n=5). Two vessels have decorated rim interiors. The first has a direct rim with a flattened lip and pseudo-scallop stamping (V17; Figure 6.22a). The second has an unidentified stamp on the interior of a slightly everted rim with a flattened lip (V5; Figure 6.22b). The remaining three have lips notched with pseudo-scallop stamping. Two of these vessels are slightly everted, one has a beveled lip (V66; Figure 6.22c) and the other has a rounded lip (V67; Figure 6.22d). V73 (Figure 6.22e) has a direct rim with notching on a rounded lip.

Figure 6.22. Pseudo-scallop decorated smooth vessels with decorated lips or interior rims: (a) V17; (b) V5; (c) V66; (d) V7and (e) V73.

V17 (Figure 6.22a) has two rows of oblique pseudo-scallop stamps starting at the lip on the vessel exterior. Oblique pseudo-scallop stamps extend from the interior rim margin down the interior rim. V5 (Figure 6.22b) has two horizontal rows of overlapping pseudo-scallop stamps.

The first row is oblique in orientation and the second is vertical. The interior rim margin is decorated with very weathered oblique stamps. These are probably also pseudo-scallop stamps but it is impossible to classify them because of the weathering. V66 (Figure 6.22c) is more complexly decorated than the rest of the vessels in this group. The exterior exhibits several partial vertical pseudo-scallop stamps as well as an oblique line of circular punctates. There is an undecorated area between the punctated line and the vertical pseudo-scallop stamps. It is possible that this is part of a chevron-like motif. The lip treatment on this vessel is also unusual. The exterior lip and rim margin is stamped with vertical pseudo-scallop stamps. The interior is similar with stamping at the lip and rim margin. V67 (Figure 6.22d) has vertical pseudo-scallop stamping that begins below the lip on the exterior rim margin. Oblique pseudo-scallop stamping is present on the lip proper and extends onto the interior rim. Exterior rim margin, lip, and interior rim margin stamping was carefully applied by the potter so as to line up the three series of stamps to produce a continuous, unbroken decoration. A similar motif is present on V73 (Figure 6.22e), although the stamping seems to have been less carefully applied.

Decoration type could not be determined on three vessels due to the presence of weathered surfaces All of these vessels have direct rims and decoration on lips or interior rim margins. Two vessels have rounded lips (V50 and V20; Figure 6.23a and b). The lip of V20; (Figure 6.23b) appears to be impressed with cordage but it is difficult to be positive due to weathering. The other vessel V23; (Figure 6.23c) has a rounded lip that is notched with pseudo-scallop stamps. It is likely that the unidentified exterior decoration on this vessel is pseudo-scallop stamping also.

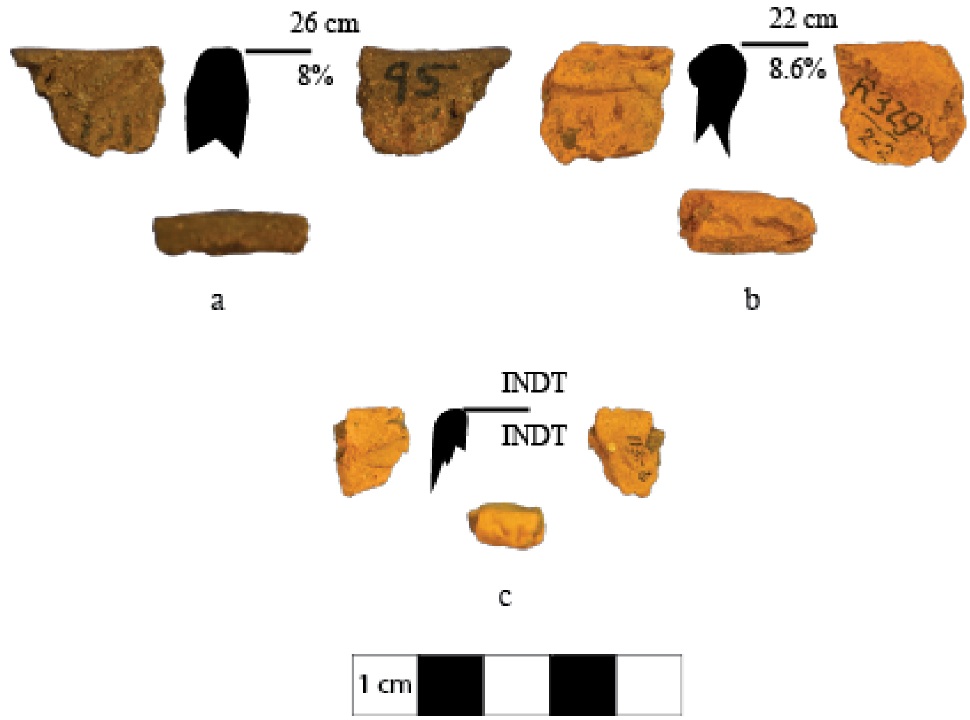


Figure 6.23. Smooth surface vessels decorated with unidentified types of decoration: (a) V50; (b) V20 and (c) V23.

Three vessels have smooth surface finish and punctate decoration (V6, V18 and V44; Figure 6.24a-c). None of these have decorated lips or rim interior margins. One vessel has a flattened lip (V6; Figure 6.24a). The remaining two have rounded lips (V18 and V44; Figure 6.24b and c). The punctates on these vessels are roughly circular. The punctates on V44 appear to have been produced by the broken end of a small bone or hollow reed.

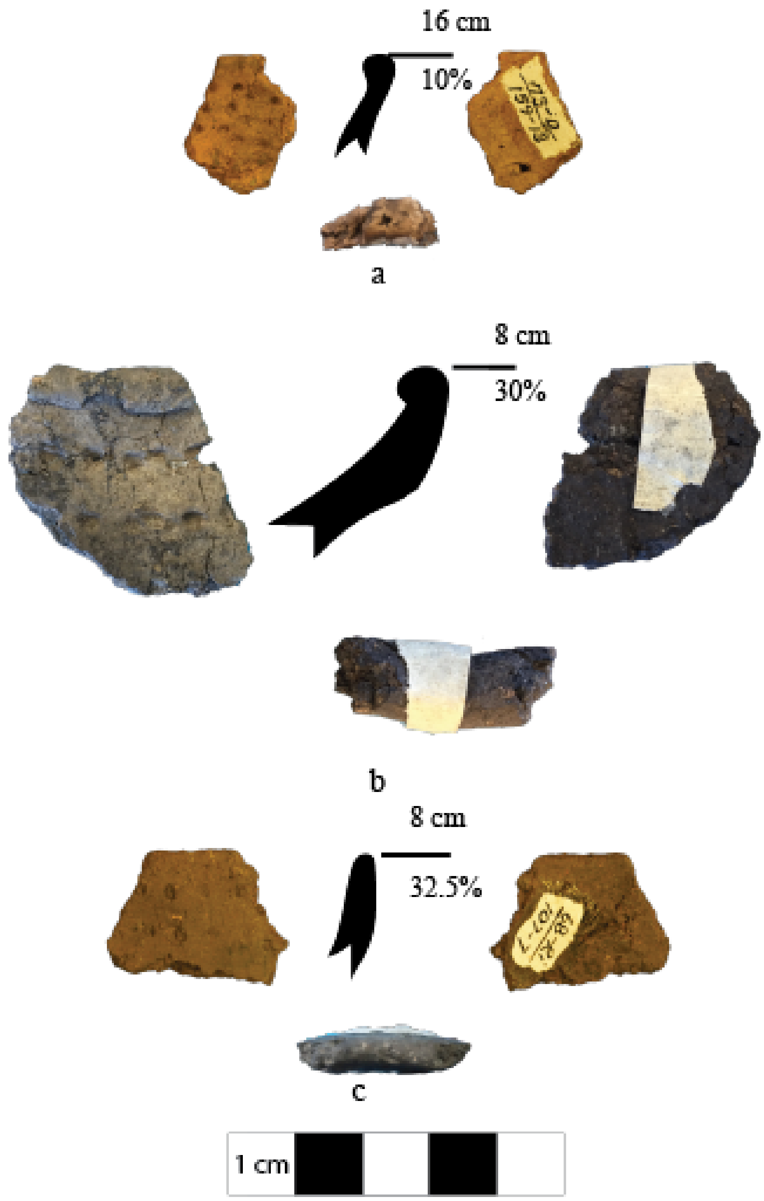


Figure 6.24. Smooth surfaced vessels with punctate exterior decoration: (a) V6; (b) V18 and (c) V44.

Several of the vessels already discussed have linear or dentate stamping that may have been dragged across the vessel surface during application, but due to surface weathering it is difficult to definitively identify dragging. A single vessel (V53; Figure 6.25) provides a good example of this method of decorative application. An irregular stamp was impressed then dragged slightly to the next location and impressed again. These dragged stamps form a horizontal line. Two lines of stamping are visible on the vessel exterior. A line on the lower interior rim margin may be decoration or simply the location of a coil break.

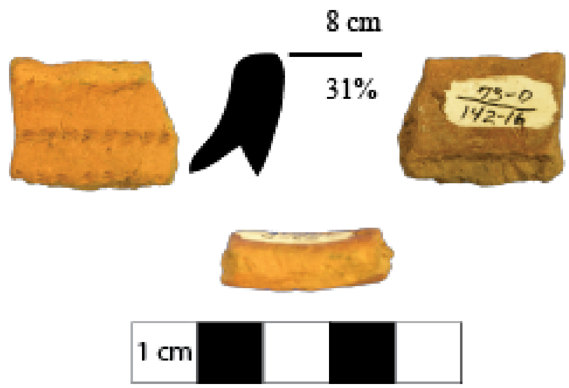


Figure 6.25. Smooth surface vessel with stab and drag decoration.

A single smooth surface pinch pot was identified (Figure 6.26)

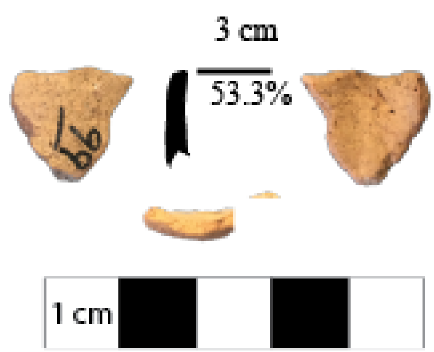


Figure 6.26. Small smooth surfaced pinch pot.

Middle Woodland Pottery in the Upper Great Lakes

Several sites in the upper Great Lakes have produced large Middle Woodland ceramic assemblages. These include the Mero and Porte des Morts sites in Door County (Mason 1966, 1967), Summer Island I located approximately 2.5 miles off Michigan's Garden Peninsula

(Brose 1970), and Naomikong Point situated on the south shore of Lake Superior in the eastern portion of Michigan's Upper Peninsula (Janzen 1968). Ceramics from these sites appear to include a series of locally distinct types that exhibit region wide similarities in manufacturing techniques and decorative vogues. In addition, all suggest some degree of contact with Middle Woodland Laurel groups.

The exterior surfaces of vessels in these assemblages are typically either smooth or cordmarked and these two distinct kinds of surface finish cross-cut the various classificatory frameworks developed from these assemblages. While the documentation of surface finish is considered perfunctory in the classification of prehistoric ceramics, the relationship of surface finish to production methods is little acknowledged. A smooth surface finish is a characteristic linked to coiled ceramic production while cordmarked surfaces are characteristic of paddle and anvil construction, as discussed in greater detail in the following section on Ceramic Production Analysis. For example, vessels classified as Laurel from the Rainy River region of Minnesota through the Upper Great Lakes utilized a distinctive coiled method of manufacture (Budak 1985). This method involves the joining of clay coils by use of exterior and interior smoothing that thus produces a smooth exterior surface upon which decoration is placed.

Stoltman presented a thorough study of Laurel ceramic materials associated with six sites in the Rainy River area of Minnesota. Laurel materials were described as having "[a]lmost exclusively smoothed surfaces". Yet in his examination of these sherds Stoltman was unable to find "characteristics of coil breaks MacNeish (1958:144) describes in the Laurel Plain ware" (Stoltman 1973:52). Later, the finding of coiled sherds at the Smith site confirmed this method of construction. Drawing on this and other materials Budak described the process for building a coiled Laurel vessel (Budak 1985). This process joined rolled coils with interior and exterior smoothing of clay. Later work with prehistoric ceramic materials from this region by the National Park Service at Voyageurs National Park documented coil construction from the McKinstry site (Thomas and Mather 1996). In fact, it was viewing materials in collections from Voyageurs National Park that allowed the author to recognize similar materials in the Richter site collection. Closer to Washington Island and the Richter site is the Rock Island site excavated by Mason. This site was excavated in the late 1960s and early 1970s. Mason indicated the presence of both Laurel and North Bay vessels, but does not detail how to distinguish the two other than to refer to his previous work. There is no mention of coil breaks related to the Laurel materials found at Rock Island (Mason 1991).

There is evidence for the use of this type of coiled construction associated with Laurel ceramic materials at both Summer Island and Naomikong Point. At Summer Island, all Middle Woodland vessels were constructed using the coil method and cast off coils were also found at the site (Brose 1970:54). The relationship between coiled construction and smooth/plain vessel surface finish was not made by Brose, but Brose does note that none of the Middle Woodland vessels exhibited cordmarked surfaces (Brose 1970:85-86).

The distinctive nature of surface finish was pointed out by Janzen in regards to identifying Laurel ceramic materials at Naomikong Point. Janzen noted that cordmarked materials were exclusively associated with the Late Woodland occupation of the site and not the Middle Woodland Laurel occupation (Janzen 1968:35). Sherds with evident coil breaks were identified at Naomikong as well (Janzen 1968:47).

If surface finish is viewed as a byproduct of construction rather than solely as a decorative element, it becomes clear that North Bay sites like Porte des Morts and Mero include vessels produced at least two distinctively different manners. One (smooth surfaces) is clearly associated with widely dispersed Laurel ceramic production and decorative vogues while the other (cordmarked surfaces) is reflective of more regionally specific local traditions. To confirm that two differing construction methods were used at the Mero and Porte des Morts sites the author examined sherds from both sites curated at the Neville Museum in Green Bay (A more detailed discussion of this examination follows in the Ceramic Production Analysis section.) Sherds exhibiting distinctive characteristics of both coil and cordmarked paddle and anvil construction were found in both collections. Sherds related to coil construction had smooth exterior surfaces and included decorative types like stab-and-drag. The cordmarked sherds exhibited evidence of paddle and anvil construction that mirrors the variation found at the Richter site.

Ceramic Production Techniques and the North Bay Taxon

Dates on North Bay ceramics straddle Early and Middle Woodland time frames in the region. Middle Woodland Laurel materials exhibit decorative and technological similarities to materials from not only the Richter site but to materials from the Mero and Porte des Morts sites. The Early Woodland relationship is discussed in the following section. The relationship of North Bay pottery to Laurel as the predominant Middle Woodland ceramic and cultural manifestation in the region, suggests a significantly different perspective on Middle Woodland cultures in the upper Great Lakes.

Like the Mero and Portes des Morts sites, the Richter site ceramic assemblage includes both cordmarked and smooth surface vessels. Mason has assigned the North Bay assemblages from the Mero and Portes des Morts sites to a Middle Woodland time period extending over the first three centuries A.D. (Mason 1991). In contrast, the Richter site has produced cordmarked vessels radiocarbon dated to Early Woodland times along with other materials that date into the Middle Woodland period. Mason based his estimate of North Bay chronology largely on direct dated radiocarbon assays from the Portes des Morts site. The sherds used in these assays are curated at the Neville Public Museum in Green Bay. An examination of these sherds suggests that the samples (I-888 and GX-14652-AMS) from which the Porte des Morts dates were derived were bulk samples that included *both* cordmarked and smooth coiled sherds. Thus, any temporal difference between these two production methods would have been undetectable. This calls into question the reliability of these dates as markers of regional ceramic technological and cultural chronology.

Sites identified as Laurel extend from the Rainy River region of Minnesota and Saskatchewan eastward through the northern Great Lakes to Ontario and west Central Quebec. The Laurel culture is viewed as the sole member of Northern Tier Middle Woodland (Mason 1981(2002):284). Identification of Laurel sites relies on the distinctive characteristics of Laurel pottery. Pots are smooth surfaced undecorated or decorated jars. When present, decoration often consists of horizontal rows of stamps that include dentate, pseudo-scallop, linear or stab and drag types (Mason 1981(2002):287). Incising, bosses/nodes and punctates are found as well. Within the area associated with Laurel ceramics and culture there has been debate regarding the time sensitive nature of decorative elements and motifs (see Rajnovitch 2003 for a discussion of this debate).

Using data from sites in the Laurel "heartland" of Minnesota, Stoltman demonstrated the time sensitive nature of various decorative elements and motifs. Sites exhibiting a greater proportion of Laurel Oblique and associated types fall into early Laurel. Summer Island's Laurel assemblage would thus fall into this time period. The middle period of Laurel is associated with higher percentages (ca. 30%) of pseudo-scallop vessels. Late Laurel is exemplified by percentages of <10% dentate stamped vessels. The Naomikong Point Laurel pottery thus falls between early and middle Laurel (Stoltman 1973:92-93). Stoltman identified three phases or complexes associated with the Laurel occupation in Minnesota: Pike Bay (100 B.C. – 300 A.D.), McKinstry (A.D. 300 – 600), and Smith (beginning at A.D. 600). Since Stoltman's work others have focused on determining the point of Laurel origin. This origin has been variously attributed to Asia, southern Hopewell, multiple other points, and *in situ* development (see discussion in Rajnovich 2003:8-11).

More recently Rajnovich used selected sherds from the Richter site to produce a broad seriation of Laurel pottery. During the present research an attempt was made to identify the Richter vessels Rajnovich selected for her seriation. Unfortunately, Rajnovitch does not discuss her selection criteria and vessels included in her analysis are not identified by lot numbers.

Rajnovich included Naomikong Point in this analysis but not Summer Island. Decoration and decorative motifs were utilized along with the style zone concept to explore regional relationships between wide spread Laurel groups (Rajnovich 2003:116-120). The analysis suggested dynamic changes over time between the eastern and western portions of the Laurel distribution. Rajnovich also suggested that the Laurel ceramic tradition was influenced by interactions with groups in the eastern Great Lakes and minor interactions with North Bay and Saugeen groups. The eastern Laurel is seen as grading into Point Peninsula. As eastern Laurel groups transition to Late Woodland ceramic types, western Laurel persisted with material culture continuity (Rajnovich 2003:119). Rajnovich's seriation of ceramics from Naomikong Point supports Janzen's recognition of two separate Laurel occupations areas at the site. The more eastern area was found to be chronologically earliest with more pseudo-scallop vessels and more extensive vessel decoration (Rajnovich 2003:161-163). Rajnovich, like Mason, did not differentiate between cordmarked and smooth surface vessels during data collection.

Stoltman speculated that the notable absence of cordmarked exteriors in Laurel assemblages may reflect a Laurel ceramic mode. Cordmarking was thus deemed to *not be* part of the Laurel mode and was excluded from analysis (Stoltman 1973:55-60). Rajnovich considered Richter site materials as a whole and there was no separation of materials based on possible temporal or technological differences. At the time of Rajnovich's work only two dates were known from Richter and the prevailing thought was that North Bay materials reflected Middle Woodland cultures and technology, not Early Woodland. Viewed through this lens; Rajnovitch assigned the Richter site to the "later portion of the series" (Rajnovich 2003:264). This series includes the sites of Shanty Bay, Porte des Morts, Rock Island, Mero 1, and Mero 2 as well as Richter. The Shanty Bay site was identified as the earliest site in the series, though it is unclear what attributes, other than the presence of a direct dated Early Woodland vessel, support this assignment.

The place of the North Bay sites within the region vis-a-vis typology and chronology was viewed by Mason in terms of a frontier or interaction zone (Mason 1969, 1970, 1990, 1991). North Bay materials were viewed as a result of outside stylistic and decorative influences deriving from Hopewell to the south and/or Laurel to the north. However, the evidence of a technological and temporal separation within North Bay suggests a more dynamic view of the Woodland occupation of the Richter site. Initial occupation at the Richter site began with short term resource extraction camps most likely for exploitation of spring spawning fish species during the Early Woodland and continuing through the Early Middle Woodland. During the Middle Woodland there was a change in occupation. There is evidence of repeat occupation associated with Laurel ceramic materials. This repeat occupation appears to be related to exploitation of spring spawning species and may represent the annual return of a single family or extended family to the site, rebuilding structures in the same area of the site. The latest occupation also is Laurel but is represented by evidence of a much longer period. This occupation seems to not be limited to the spring and summer seasons.

The analysis presented here places the Richter site within a reconfigured sphere of Middle Woodland interactions, with Laurel cultures significantly more important in the site's cultural history. Table 6.5 summarizes how smooth surfaced vessels from Richter might be classified by decorative element type and motif relative to typologies derived from the Summer Island and Naomikong Point sites. The table also is an indicator of the wide variety of Laurel and Laurel-related decorative traits found at Richter.

Table 6.5. Typological Comparison of Smooth Surface Vessels from the Richter Site.

Vessel	Rim Number	North Bay Types: (Mason 1967 and 1966)	Summer Island Types: (Brose 1970)	Naomikong Types: (Janzen 1968)
5	RS00308	NB Scallop		Laurel Pseudo-Scallop
7	RS00034	NB Dentate	Upper Peninsula Linear Stamp; Dentate Tool Variety	Laurel Dentate
9	RS00135	NB Scallop		Laurel Pseudo-Scallop

Table 6.5. Typological Comparison of Smooth Surface Vessels from the Richter Site.

Vessel	Rim Number	North Bay Types: (Mason 1967 and 1966)	Summer Island Types: (Brose 1970)	Naomikong Types: (Janzen 1968)
12	RS00058	NB Dentate	Upper Peninsula Linear Stamp; Dentate Tool Variety	Laurel Dentate
16	RS00027	NB Linear Stamp	Summer Island Banked Stamp; Plain Tool Variety [oblique]	Laurel Linear Stamp
17	RS00040	NB Scallop		Laurel Pseudo Scallop - Naomikong
31	RS00299	NB Linear Stamp	Summer Island Banked Stamp; Plain Tool Variety [oblique]	Laurel Linear Stamp
32	RS00042	NB Linear Stamp	Summer Island Banked Stamp; Plain Tool Variety [oblique]	Laurel Linear Stamp
34	RS00226	NB Dentate	Summer Island Banked Stamp; Dentate Tool Variety	Laurel Dentate
35	RS00136	NB Dentate	Summer Island Banked Stamp; Dentate Tool Variety	Laurel Dentate
36	RS00310	NB Linear Stamp	Summer Island Banked Stamp; Dentate Tool Variety	Laurel Linear Stamp
37	RS00072	NB Linear Stamp	Summer Island Banked Stamp; Dentate Tool Variety	Laurel Linear Stamp
38	RS00285	NB Linear Stamp	Summer Island Banked Stamp; Dentate Tool Variety	Laurel Linear Stamp
39	RS00079	NB Linear Stamp	Summer Island Banked Stamp; Dentate Tool Variety	Laurel Linear Stamp
40	RS00306	NB Dentate	Upper Peninsula Linear Stamp; Dentate Tool Variety	Laurel Dentate
41	RS00314	NB Dentate	Summer Island Banked Stamp; Dentate Tool Variety	Laurel Dentate
42	RS00150	NB Dentate	Summer Island Banked Stamp; Dentate Tool Variety	Laurel Dentate
43	RS00016	NB Scallop		Laurel Pseudo Scallop Naomikong Variety

Table 6.5. Typological Comparison of Smooth Surface Vessels from the Richter Site.

Vessel	Rim Number	North Bay Types: (Mason 1967 and 1966)	Summer Island Types: (Brose 1970)	Naomikong Types: (Janzen 1968)
46	RS00273	NB Linear Stamp	Upper Peninsula Banked Punctate; Finger Nail Variety	
48	RS00272	NB Plain		Laurel Plain
49	RS00053	NB Dentate	Summer Island Banked Stamp; Dentate Tool Variety	Laurel Dentate
53	RS00123	Stab and Drag		
55	RS00096	NB Scallop		Laurel Pseudo-Scallop
57	RS00161	NB Scallop		Laurel Pseudo-Scallop
60	RS00267	NB Plain		Laurel Plain
61	RS00276	NB Scallop		Laurel Pseudo-Scallop
64	RS00121	NB Scallop		Laurel Pseudo-Scallop
66	RS00282	NB Scallop		Laurel Pseudo-Scallop
67	RS00054	NB Scallop		Laurel Pseudo-Scallop
72	RS00296	NB Plain		Laurel Plain
73	RS00110	NB Scallop		Laurel Pseudo-Scallop

Beyond placement within frameworks, the decorative attributes associated with Laurel have been used to define phases in Minnesota. In that vein Rajnovich noted the lack of dentate and pseudo-scallop sherds in association with older dates at Shanty Bay. This would make Shanty Bay an unlikely source of decorative influence (Rajnovich 2003:81). Richter on the other hand, contrary to Rajnovich's assertions (Rajnovich 2003:78), does pre-date Laurel sites regionally and in the Laurel Minnesota "heartland". A cordmarked Richter vessel bearing pseudo-scallop decoration produced a date of 2100±40 2-sigma range cal 347-2 B.C. (BETA 215681). This suggests the presence at the Richter site of an Early Woodland pottery tradition that pre-dates the early Laurel Pike Bay phase. Common decorative traits like pseudo-scallop stamping may be indicative of some influence of Early Woodland peoples from the Green Bay region. With the presence of a number of Middle Woodland Laurel sites in the region it would make sense that interactions between pre-Laurel Early Woodland groups would have occurred. Pseudo-scallop stamp decoration appears during the earliest Laurel phase, Pike Bay phase, and continues in varying popularity during all phases (Stoltman 1973:114-118). Dates from the Richter site thus indicate occupations that pre-dated Minnesota Laurel and continued through about 2 sigma cal A.D. 346 - 528. This would place a Richter Laurel occupation during the Pike Bay and McKinstry phases. The Pike Bay phase in Minnesota is represented by a higher proportion of Laurel Oblique and lower numbers of pseudo-scallop vessels. The McKinstry phase on the other hand is represented as having the highest proportion of pseudo-scallop vessels of all Laurel phases and lowest levels of Laurel Oblique (Stoltman 1973:112-118). As is noted by Stoltman, Laurel phases were defined by the proportion of all Laurel decorative types in the key assemblages.

All Laurel types found in Minnesota have been found at Richter with one notable exception, bossed or noded types. Bossed or noded types are found at Naomikong Point but are absent from Summer Island. The conspicuous absence of this decoration south of Naomikong Point is puzzling. Low levels of bossed vessels were found in the Pike Bay phase assemblages (Stoltman 1973:113). With such a distinct lack of bossing, Laurel sites in the Grand Traverse Bay region of Michigan's northern Lower Peninsula may represent a Pike Bay phase initial introduction of Laurel ceramic production methods and decorative styles, with bosses or nodes not being included in the initial transmitted technological suite.

Pseudo-scalloped vessels are notably absent from Summer Island and Rock Island. Pseudo-scalloped stamping is found at Porte des Morts and Naomikong Point but only on smooth surfaced vessels. Pseudo-scallop decoration is present at Richter on smooth as well as cordmarked vessels.

As mentioned above, Laurel and North Bay/Laurel materials were recovered from excavations at Rock Island. Similarities of these materials to Summer Island ceramics prompted Mason to suggest that Rock Island and Summer Island are temporally related to the Pike Bay phase of Minnesota and that Rock Island is situated on a boundary between Laurel groups in the north and North Bay groups further south (Mason 1991:138-139). The Richter site data suggests that Mason's boundary should be redrawn to include Washington Island and the Richter site. Richter seems to have been regularly occupied by people exposed to Laurel ceramic production methods and decorative styles. Laurel ceramics at the Richter site include almost all the types found in the Laurel areas of Minnesota, with the exception of bossing. Lack of bosses seems to be a regional trait perhaps reflecting initial introduction of Laurel ceramics during the Pike Bay phase when bosses/nodes were not as prevalent. Washington Island and the Richter site became a location for repeated resource exploitation during early and middle Laurel times.

During Early Woodland times Richter potters participated in the exchange and adaptation of ceramic technology common to surrounding areas. At some point Early Woodland cordmarked paddle and anvil pots were replaced with smooth surfaced coil-built vessels that link Richter potters to Laurel potters. It is unclear if the distinctive coil production associated with Laurel began here in the region south of the Upper Peninsula of Michigan and found its way to the Rainy River region of Minnesota or if this construction method originated in the Laurel "heartland". The source of Laurel pottery continues to challenge researchers.

Early Woodland

Following the initial wave of ceramic types there are a number of Early Woodland types represented by thick, large, grit tempered, semiconiodal vessels with rounded rather than flat bases. Variations in characteristics continue to be found within types. Some vessels identified as Mushroom Cordmarked (Mangold 1981) from Michigan have plain (smooth) or cordmarked exteriors. Some of these exhibit interior cordmarking as well. Wall thickness of this type is thinner than is typical of Marion Thick pots (Garland 1986). Shiawassee wares found in the Saginaw Michigan area appear to represent a post Schultz Thick Early Woodland type and include both plain (smooth) and cordmarked vessels. These same vessels exhibit what are described as prominent coil breaks (F. Fischer 1972:147-149). Shiawassee ware does include an incised decorated type. Incised decoration becomes more prevalent as seen in a number of types associated with later Early Woodland materials from a large area of the Midwest. Other decorative attributes found on vessels of these types include incised trailed lines, fingernail stamping, and pinching.

In eastern Wisconsin the incised type most often identified with this later portion of the Early Woodland is Dane Incised. Unlike Marion Thick type wares, Dane Incised sherds have been identified and directly dated in Door County. A vessel identified as Dane Incised from Shanty Bay returned a 2-sigma date range of calibrated 359-51 B.C. (GX-20770-AMS) (Dirst 1998:115). Before direct dating of vessels from the Richter site, Dane Incised was the only Early Woodland pottery type directly associated with occupations in Door County. Cordmarked vessels with incised exterior decoration and in some cases fingernail stamping, have been found at Heins Creek, Shanty Bay, Mero, Rock Island II, and Whitefish Bay View also in Door County

(Boszardt, et al. 1986:253; Dirst 1998:115; Mason 2004:102-104). C. Mason points out that the type Dane Incised, much like North Bay types, covers an overly large area of distribution and the conformity of these materials to the original type collection is uncertain. Yet the presence of these types of materials in the older levels at Shanty Bay (mixed with North Bay materials) and Mero (where it was found mixed with North Bay materials above a single water washed North Bay component) does provide support in these instances for early dates.

In Keslin's original description of the type Dane Incised the pottery is described as constructed by use of paddle and anvil. Dane Incised pastes are "coarse, porous and granular". They are tempered with coarse grit, and temper pieces are often exposed on surfaces. The exterior is cordmarked to the lip, the rim is 13 mm thick, and the lip is rounded including some decorated with CWS impressions. Rims are straight to slightly flaring. Vessel bodies are thought to be globular in form. Incised decoration is found at the rim and neck and consists of " incised lines forming angular patterns" (Keslin 1958:203-204). Dane incised vessel have also been identified that have interior bossing.

Richter Vessel 45 is the rim of a smoothed over cordmarked vessel with crisscross incised lines. This vessel has a lip that is approximately 4.48 mm in thickness and a slightly everted rim. The lip of this vessel is undecorated. This vessel does have characteristics consistent with Keslin's type description and with other vessels that have been assigned to this type in Door County and in south and southeastern Wisconsin. This vessel comes from a feature context that is just to the southwest of F7 where Richter Vessel 2 and the dog burial were located. Dates from the dog and Richter Vessel 2 overlap at about 195 B.C. (dog 2195 ± 25cal date range 361 - 195 B.C. and V2 residue 2100 ± 40 cal date range 347 - 2 B.C.)

Richter also produced several vessels that are in many ways similar to Dane Incised in form and physical characteristics. They differ only in that they lack incised decoration. All have CWS decorated lips and cordmarked exteriors. These vessels seem to reflect a possible variant of Dane Incised, one that is cordmarked without incised decoration. Similar vessels have been typed as Dane Cordmarked by Salzer as part of his work on the Waukesha focus (Salzer n.d.). Salzer describes Dane Cordmarked as having physical characteristics matching Dane Incised and having a "[l]ip covered with fabric or cord-wrapped paddle marks in all cases" (Salzer 1970:29-30). Some of these Dane Cordmarked vessels also had decorative nodes. Richter site vessels that compare favorably to this type include V3, V24, and V27. All have exterior cordmarking and lips decorated with CWS impressions. The Richter Vessel 3 sherds were recovered from F7 dated to approximately 195 B.C. The other two vessels, Richter V24 and V27 were recovered from units located just to the southwest of F7. Richter V24 had an average rim thickness of 9.17 mm and Richter V27 had an average rim thickness of 8.57 mm. These fall within Keslin's physical description of the incised type. The exfoliated condition of Richter Vessel 3 precluded a rim thickness measurement.

At this time, the small samples size makes it impossible to do more than suggest that Richter V1 represents an Early Woodland type that is a local variant of thick types. Richter V3 also is similar to descriptions of later Early Woodland Vessels but with a more defined form decorated with pseudo-scallop stamping. The source of the decorative motif on this vessel is uncertain though, the eastern Great Lakes have long been considered the source of pseudo-scallop decoration. Oblique rows of pseudo-scallop stamps have been found on grit tempered Saugeen vessels like those from the Donaldson site in Ontario. Dates associated with these types of materials encompass a date range of 700 B.C. to A.D. 100 for early Saugeen (Mason

1981(2002):265-271). Richter Vessel 3 may represent technological and decorative influences deriving from the eastern Great Lakes. The presence of this decorative device on this vessel would place pseudo-scallop stamping much earlier in the northern Lake Michigan/Grand Traverse region.

A single vessel, Richter Vessel 45, compares favorably with Dane Incised. Even though the use of this type beyond southern Wisconsin has been criticized, it seems to truly reflect the presence of an Early Woodland incised over cordmarked vessel in Door County. Until this type is subjected to additional scrutiny, it might be best to indicate that these materials are a local variant of widely distributed Early Woodland incised over cordmarked types. Continuing with Dane types, three vessels at Richter, Richter Vessels 3, 24 and 27, closely resemble the description of Dane Cordmarked. This is a little-used type associated with Dane Incised, making it an Early Woodland cordmarked type. Again while the Richter materials compare favorably to the type; the type is very broad and there has been quantifiably examined.

Placing the distinctive paddle and anvil construction found at Richter into the Early Woodland period would require a reevaluation of North Bay cordmarked materials from other North Bay sites. This has the potential to extend the number and distribution of Early Woodland sites in Door County, filling in a noticeable unexplained gap in cultural history. This reevaluation may also move decorative dentate and linear stamping into an earlier temporal position. Directions of stylistic influence during the Early and Middle Woodland would also need to be reconsidered.

If cordmarked vessels in North Bay assemblages that are currently attributed to Middle Woodland times actually date to the Early Woodland period, the appearance of dentate and linear stamping precedes Middle Woodland in the region. Similarly, Richter V2, a large reconstructed vessel with rough exterior cordmarking and prominently decorated with multiple rows of oblique pseudo-scallop stamps has been dated to approximately 195 B.C. Consequently, pseudo-scallop stamping would also appear to pre-date Middle Woodland times in the region.

Petrography

A sample of rim sherds selected as representative of four vessels found at the Richter site were thin-sectioned and subjected to petrographic analysis. The sample includes three cordmarked vessels and a single smoothed surface vessel. The body composition for the four sampled vessels include: Matrix, Temper and Sand (Figure 6.27).

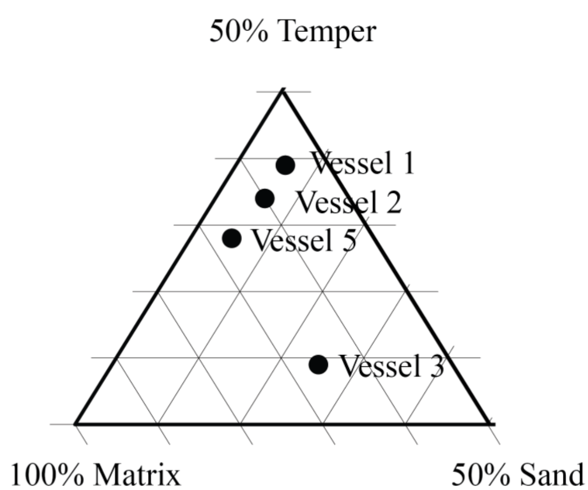


Figure 6.27. Ternary plot of body for Richter ceramic thin sections.

V3 is clearly separated from the other three samples. It is lower in temper and higher in sand than the other samples. The amount of temper (9%) in this vessel falls well below the average value of 27.50% ± 1.77 for all four vessels (Table 6.6). The proportion of sand in this sample (25%) is also significantly higher than the average for all four vessels (10.50% ± 8.38).

V1, V2, and V5 have higher values for temper (39%, 34%, and 28%) and similar amounts of sand (6%, 6%, and 5%). V1 does have temper amounts that are higher than the average of 27.50% ± 1.77. Because this vessel has higher amounts of temper and a similar amount of sand it has less matrix to hold it together. V2 also has quite high amounts of temper (34%).

Based on the amount of sand in the vessels sampled it may be the case that V1, V2, and V5 were produced from a similar clay source with a similar volume of naturally occurring sand. V3 may represent a vessel produced elsewhere or utilized a clay source that differs significantly in sand. Another explanation may be that sand was added to the clay to increase the volume.

Table 6.6. Summary of Body Values for Richter Samples

Sample	% Matrix	% Sand	% Temper
Vessel 1	55	6	39
Vessel 2	60	6	34
Vessel 3	66	25	9
Vessel 5	67	5	28
Average	62.00	10.50	27.50
Standard Deviation	±4.85	±8.38	±1.77

Thin section petrography also provided some information on the type of temper materials used in the various vessels. All vessels were tempered with crushed rock. The size of temper particles varied among the vessels (Table 6.7). The vessels also had differing types of rock material used as temper.

Table 6.7. Percentage Grit Temper by Size for Vessel Samples.

Sample	Gravel (>2.00mm)	Very Coarse (1.99-1mm)	Coarse (0.99-0.50mm)	Medium (0.499-0.25)	Fine (0.249-0.625)
Vessel 1	30%	42%	9%	9%	10%
Vessel 2	21%	42%	9%	10%	18%
Vessel 3	0%	35%	45%	15%	5%
Vessel 5	0%	12%	39%	13%	36%

V1 had the greatest amount of grit temper falling into the Gravel size range (n=30%). Very Coarse temper was actually higher in this vessel at 42%. More than 50% of this vessel's temper was Gravel or Very Coarse in size. In V2 there is a decrease in Gravel size temper (n=21%) from V1. Very Coarse temper is the same as V1. The difference between the two is in the Very Fine range. Vessel 2 has 18% which is 8% greater than V1. Vessel 3 and V5 had no temper in the gravel size range. Vessel 3 has significantly more Very Coarse temper (n=35%) than V5. Coarse temper makes up 45% of the temper of V3. Vessel 5 has 39% of its temper in the Coarse range, and interestingly 36% falls into the Fine range.

Temper from V1 was primarily composed of gabbro. Minerals in the temper particles include plagioclase, olivine, and hornblende. Grit temper also included opaque minerals. This could be hematite or magnetite. Sericite is also present on a number of temper pieces. Macroscopic examination of this vessel reveals that the temper is very dark in color.

Vessel 2 is tempered with an Intermediate type rock. Minerals include: plagioclase, olivine, quartz and k-feldspar. Opaque minerals are also found in this sample. Temper visible to the eye is gray, black, and white in color.

Vessel 3 appears to also be tempered with gabbro. Minerals identified in temper include: plagioclase and olivine. Opaque minerals are also found. Visual inspection showed black, brown, grey, and pink colored temper.

Vessel 5 is most likely tempered with an Intermediate rock like a diorite. Minerals identified include plagioclase, hornblende, and biotite. Some plagioclase has been altered to sericite. The temper in this vessel is light in color when examined macroscopically. Temper appears pink, white, gray, and black.

Petrographic examination of the vessel paste indicates that V1 and V2 are composed of very similar raw clay material with almost identical amounts of Matrix, Sand and Silt (Figure 6.28 and Table 6.8). Vessel 5 is fairly close in paste composition with slightly higher levels of silt. Vessel 3 includes a higher percentage of both sand and silt.

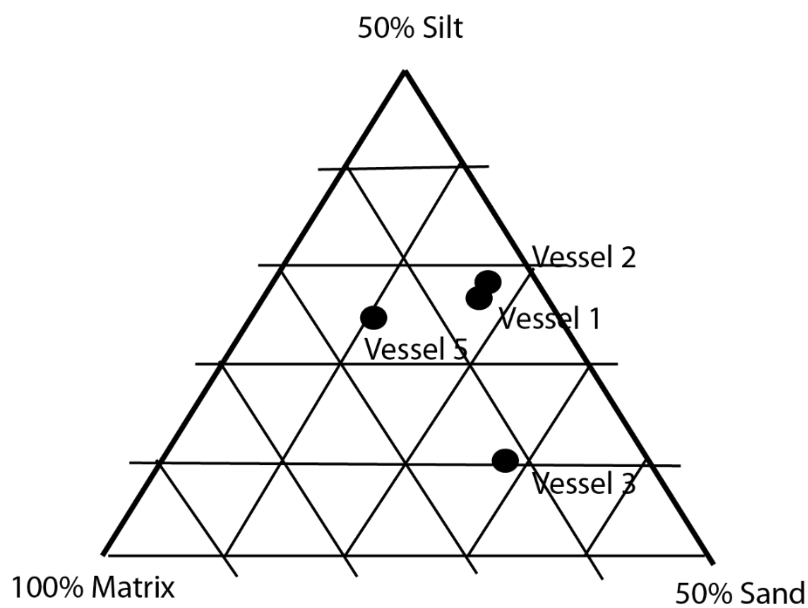


Figure 6.28. Terinary diagram of body values for Richter site vessel sample.

Table 6.8. Body Values for Richter Vessel Sample

	% Matrix	% Sand	% Silt
V1	73	21	6
V2	74	21	5
V3	52	34	14
V5	70	12	18
Average	67.25	22	10.75
Standard Deviation	±10.31	±9.06	±6.29

X-ray Diffraction Analysis (XRD)

Several ceramic samples from the Richter and Beaudhuin Village (47DR432) sites in Door County were powdered for X-Ray Diffraction (XRD). Beaudhuin Village is located in the southern portion of the Door Peninsula and is approximately one mile inland from the shores of Green Bay.

The XRD patterns for the three samples are presented in Figure 6.29, Figure 6.30 and Figure 6.31. Differences in the patterns are noticeable. The differences reflect the presence of differing minerals and their volume in the samples. Table 6.9 provides a list of minerals identified in each sample using Bruker’s EVA pattern matching software.

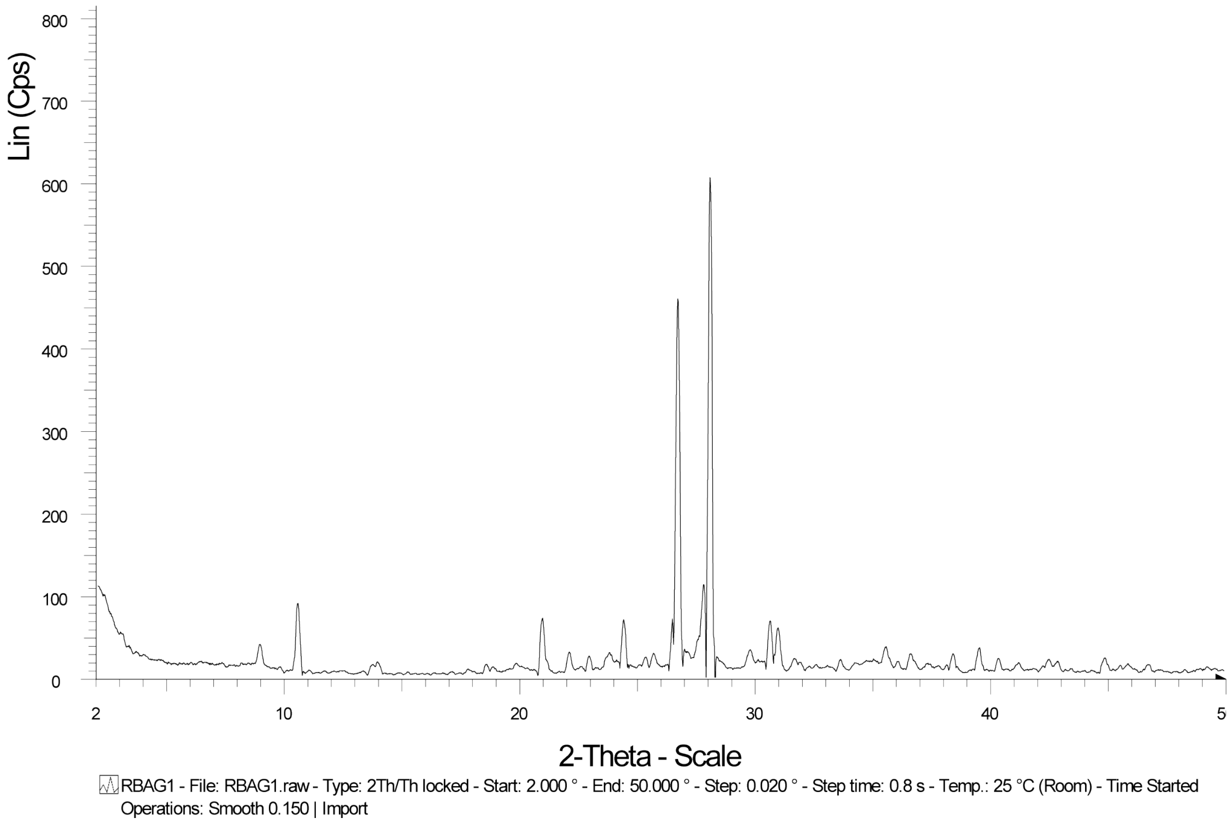


Figure 6.29. XRD diffraction pattern for sample from Richter V1.

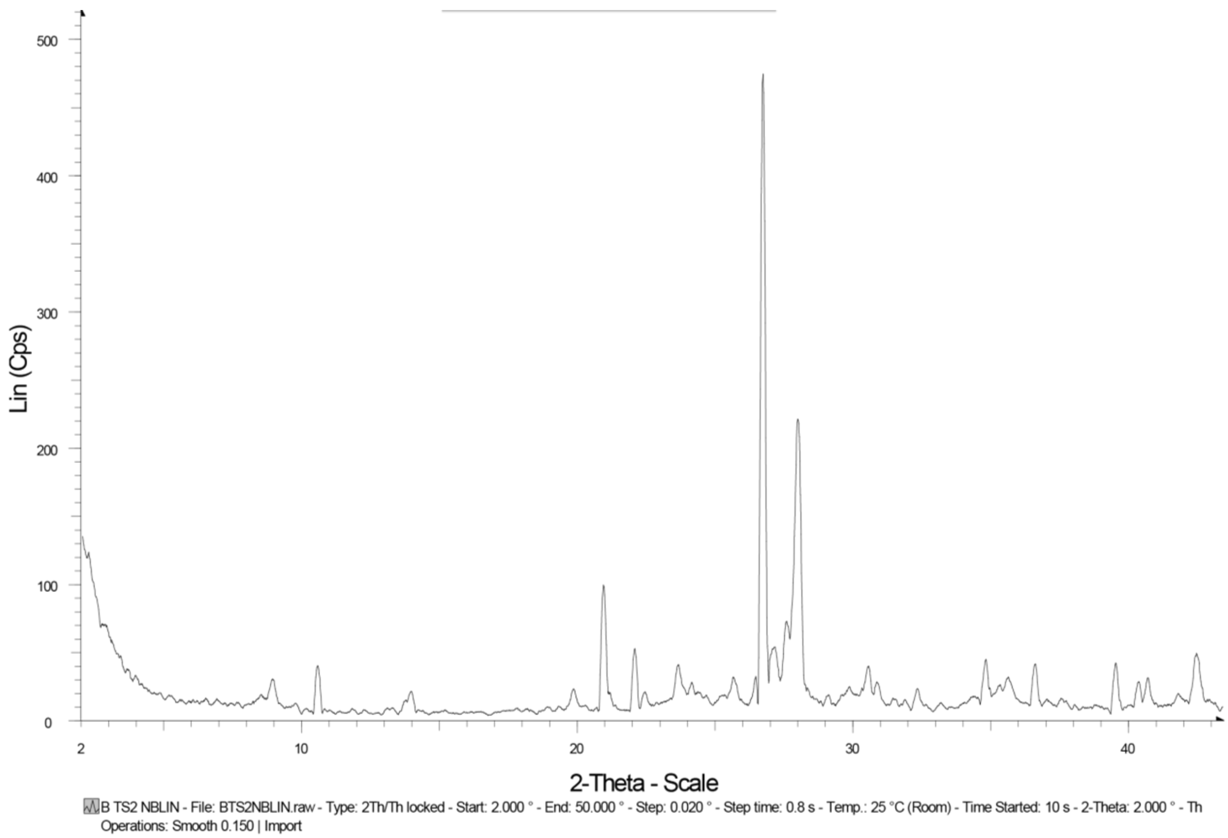


Figure 6.30. XRD diffraction pattern for a sample from a North Bay Linear Stamp vessel from Beaudhuin Village site in Door County.

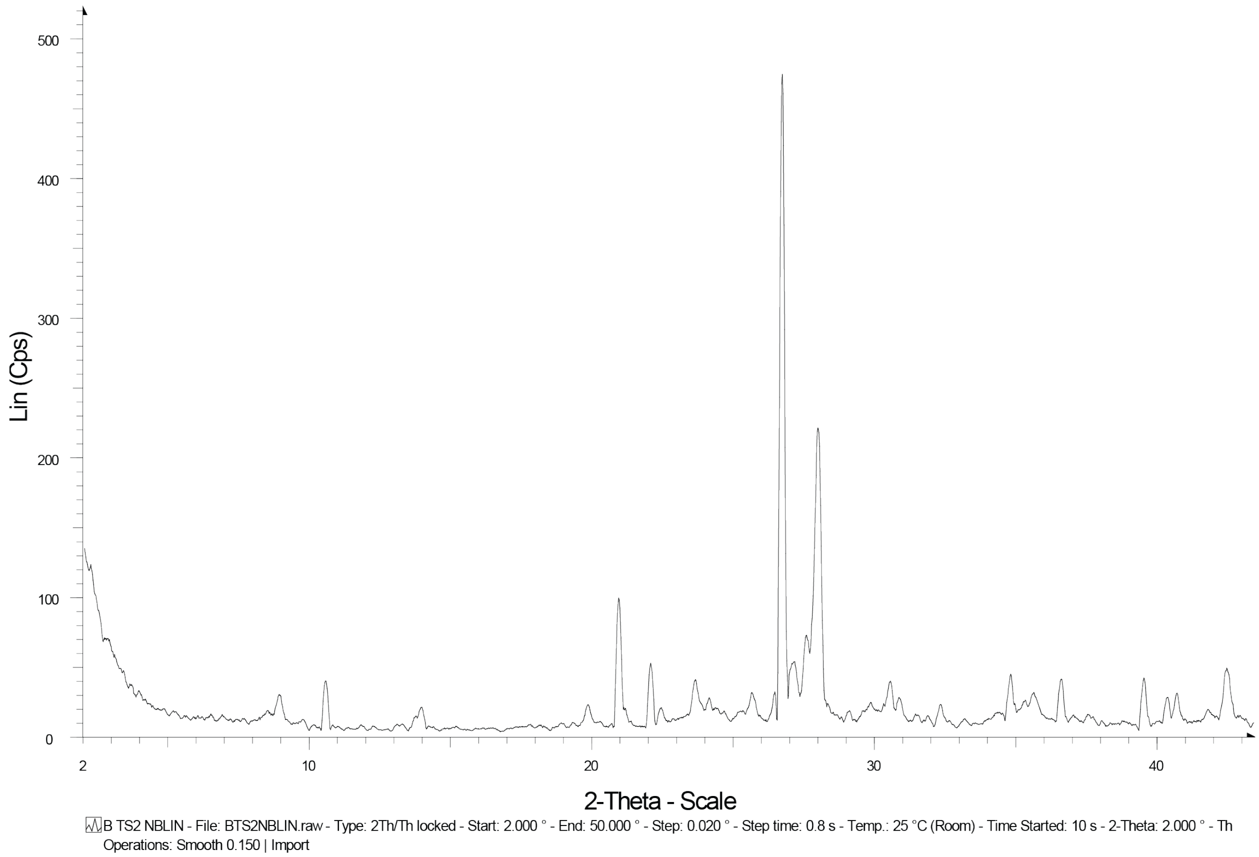


Figure 6.31. XRD diffraction pattern for a sample from a Heins Creek Cordmarked vessel from the Beaudhuin Village site.

Table 6.9. Minerals Identified by Powdered X-Ray Diffraction

Sample Vessel Type	Richter Site V1 North Bay Cordmarked	Beaudhuin Village North Bay Linear Stamp	Beaudhuin Village Heins Creek Cordmarked
	Quartz (SiO2)	Quartz (SiO2)	Quartz (SiO2)
	Plagioclase ($NaAlSi_3O_8$-$CaAl_2Si_2O_8$)	Plagioclase ($NaAlSi_3O_8$-$CaAl_2Si_2O_8$)	Plagioclase ($NaAlSi_3O_8$-$CaAl_2Si_2O_8$)
	Diopside, ferrian	`	`
	Grunerite Fe7Si8O22(OH)2	Grunerite Fe7Si8O22(OH)2	`
	Hornblende (K.3Na.6)(Ca1.7Mg.3)(Mg3FeFe.5Al.3Ti…)	`	`
	Calcite (CaCO3)	`	`

Table 6.9. Minerals Identified by Powdered X-Ray Diffraction

Dolomite (CaMg(CO3)2)	Dolomite (CaMg(CO3)2)	Dolomite (CaMg(CO3)2)
`	K-Feldspar	K-Feldspar
Illite (KAI2Si3AlO10(OH)2)	Illite (KAI2Si3AlO10(OH)2)	Illite (KAI2Si3AlO10(OH)2)

Quartz is represented by the tallest peak in all the diffraction patterns (Figure 6.29, Figure 6.30, and Figure 6.31). Quartz is typically found as a naturally occurring inclusive material in clays. Quartz may also be included as a result of the addition of quartz sand by potters as a tempering agent. In the case of the Door County materials, potters typically added grit temper. It is likely that the quartz represents a naturally occurring constituent of local clays.

Another mineral common to all samples is dolomite. The presence of dolomite is not surprising because the bedrock in the region is dolomite. This dolomite is the remnants of a large Silurian reef system. Dolomite may have found its way into the vessel either as a natural inclusion in the glacial clays or inadvertantly during production. Both dolomite and quartz are commonly found in Wisconsin clays. Other minerals commonly found in Wisconsin clays are calcite, feldspar, gypsum, pyrite, iron ores, hornblende, and rutile (Ries 1906:7).

Plagioclase is another mineral found in all samples. Plagioclase is commonly found in many rock types including but not limited to granites, grandiorite, and rhyolite (Nesse 2004).

The final common constituent in these samples is illite clay. While the specific manner of sample preparation used for these samples is not preferred for the identification of clay, illite was found in all three samples. It was noted that "[v]irtually all shale and many "clay" occurrences reported in wisconsin are likely partly or entirely illite." (Wisconsin Geological & Natural History Survey 2016).

Grunerite was identified in both North Bay Cordmarked vessels. Grunerite has been found in rocks associated with Banded Iron Formations in the Upper Peninsula of Michigan (Mindat.org 2016). Labradorite was identified in the first sample from Richter. This mineral is often found in gabbro or basaltic rocks (Nesse 2004:138). This same sample included hornblende and diopside. Diopside is found in metamorphic rocks. Horneblende is found in igneous and metamorphic rocks (Minerals.net 2016).

The North Bay Cordmarked vessel from Beaudhuin Village also included plagioclase and k-feldspar. K-feldspar is found in both samples from Beaudhuin Village. It can be found in many rock types including igneous, sedimentary and metamorphic (Nesse 2004:150).

This mineral data most likely indicates that the vessel from Richter was tempered with a gabbro or similar type of rock. The North Bay Cordmarked vessel from Beaudhuin may have been tempered with more than one type of rock, though a metamorphic rock seems possible. Finally the Heins Creek vessel from Beaudhuin appears to have been tempered with a granite, pegmatite, or metamorphic rock.

Potters working with clays composed primarily of illite would find them less plastic than montmorillonite clays. Illites are less plastic due to a crystalline structure similar to mica and have larger size particles than montmorillonite. Greater surface allows for less water to increase plasticity. Illite may be less plastic to work with but it does not suffer from the high rate of shrinkage during drying that montmorillonite does (Grimm 1939:480-481).

Because of the low plasticity of clays high in illite it may have been necessary to utilize it in a different manner for construction of ceramic vessels. It may not have been as easy to create coils for coil building of vessels.

Ceramic Production Analysis

Ceramic Production Analysis is a way of looking at ceramic sherds for clues about how vessels were produced. A review of extant literature suggests that discussion of prehistoric pottery construction techniques is somewhat limited, with few illustrations of what to look for in sherds of hand built pots. Photos and documentation of production characteristics are almost nonexistent. Notable exceptions include Rye who presents useful photos and illustrations of some production characteristics and Arthur who also provides clear illustrations of production characteristics (Arthur 1986).

Several vessels from the assemblage provide clear evidence of manufacturing processes used at the Richter site. They demonstrate that potters at Richter used differing methods of construction. The two primary construction methods found at Richter are paddle and anvil with a cord wrapped paddle and smoothed coil construction. Some vessels also included portions that were constructed by pinching or drawing, with portions of the body added using paddle and anvil.

Vessel 1 is a large, fairly complete vessel. The paste is extremely friable. This vessel shows clear evidence of paddle and anvil construction with a paddle covered with rough cordage. Evidence for paddle and anvil construction, in addition to a cordmarked exterior, includes star shaped cracks around temper, undulating interior (variation in wall thickness), and laminar edge fractures (Arthur 1986:90-92; Rye 1981:84-85).

The interior of the vessel walls exhibit undulation (Figure 6.32d). Undulation on the interior is the result of the force used on the vessel exterior to compact the clay and join slabs of clay. The vessel interior also has star shaped cracks around temper visible in Figures 6.32b and Figure 6.32d. The separation of the vessel at the lamination point between two slabs is seen in Figure 6.32f. This separation is the result of the failure of the join between the two slabs.

This same vessel also provides evidence of a different type of construction on the base. The base of the vessel is smooth on the exterior and varies in thickness. The interior is smooth and much exfoliated (see lower portion of Figure 6.32d). Temper was not redistributed in any particular pattern; there is a noticeable increase in the volume of temper in the vessel base compared to the vessel walls. This difference may indicate that the paste used for vessel construction was mixed in two separate batches. This difference in temper volume may also have caused the interior spalling that is seen in the base of the vessel. The form of the base is rounded. Based on these observations it appears that this portion of the vessel was constructed by pinching as described by Rye (Rye 1981(2002)).

Pinching produces a smooth exterior and interior surface with variation in wall thickness. Pinched vessels can take on any shape, though it is noted that they are often used to create rounded vessel bases (Rye 1981:70). Also pinch pots are familiar to anyone who learned to make pots as a child. They are simple and straight forward to make. More than likely they were some of the first vessel types prehistoric potters also learned to construct.

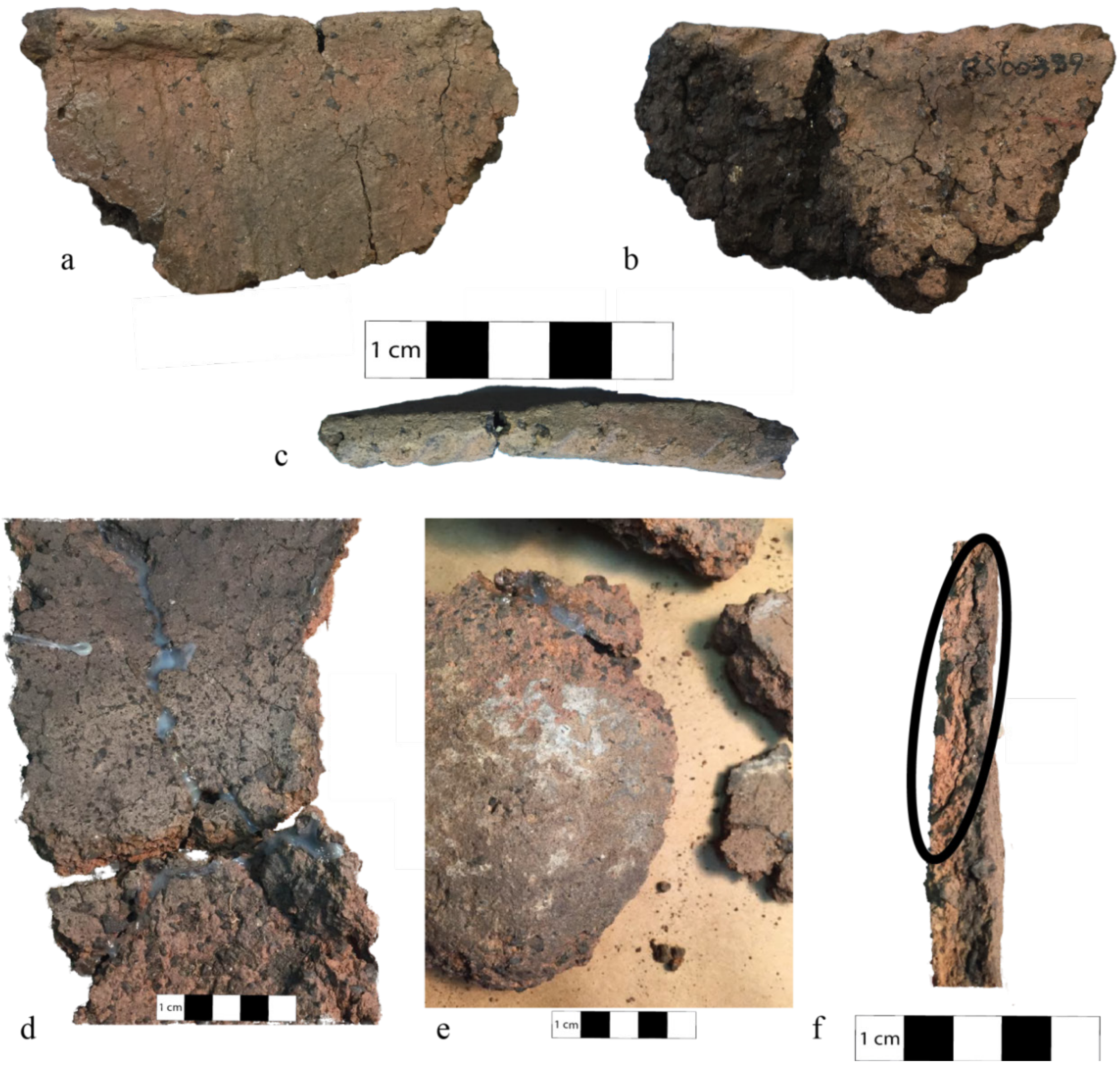


Figure 6.32. Sherds from Vessel 1: (a) cordmarked exterior at and below rim; (b) interior of vessel rim; (c) vessel lip; (d) undulating vessel interior; (e) exterior vessel vase and (f) profile of body sherd with area of overlapping slabs circled.

Vessel 1 demonstrates two different construction methods. Each type of process is related to a specific area of the vessel. In fact, the boundaries of these areas are clearly visible in the vessel profile, Figure 6.33. The walls of this vessel have unusually thick areas in two bands encircling the vessel. These thickened areas are flush on the cordmarked exterior while on the interior the change in thickness is clearly visible. The bands represented the location where sections of the vessel are joined together. This suggests that the vessel was most likely constructed in three sections: 1) base 2) wall, and 3) rim. Each section was joined by overlapping and paddling on the exterior to cement them together. The joins are indicated by circles in the figure below.

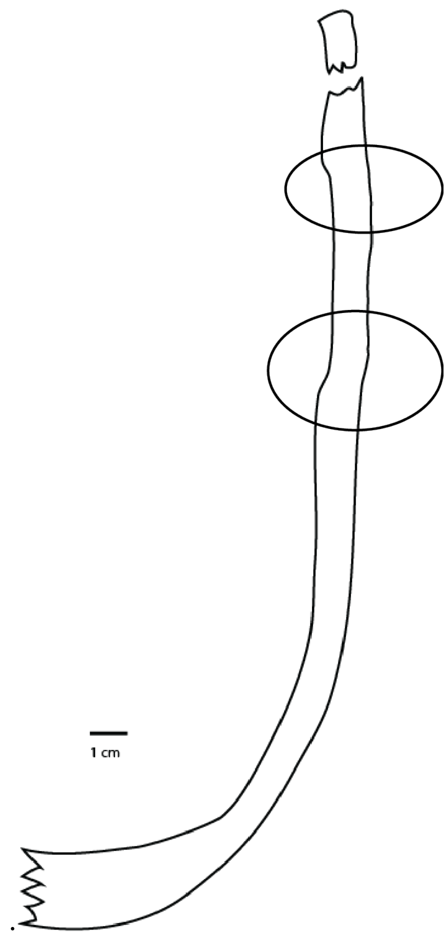


Figure 6.33. Profile of V1. Thickened areas indicating location joints between base/wall and wall/rim.

It is possible that areas of increased thickness on vessel profiles is lost due to the smoothing of lumps and bumps in the final figure. The presence of thickening related to joining of vessel sections does not seem to have been noted by previous researchers. This thickening of vessel walls may be an unrecognized marker of vessel construction methods.

It would seem that vessel construction started with a large rounded pinch pot. Large flattened clay slabs were added to overlap the sides of the base and were paddled with a cord wrapped paddle to join the base and sides. The cordmarking only extends down the vessel exterior far enough for the overlapping slab to be joined. This would leave the rest of the base smooth and would also account for undulation on the vessel walls. Following the joining of the base and side/body a thinner slab was added to form the rim portion of the vessel. Cordmarking extends to the lip; the lip was then formed from the edge of the slab by rounding/flattening. The final step was the use of a simple, unidentified stamp along the lip/rim junction on the vessel interior.

Vessel 2 is another almost complete cordmarked vessel recovered from the northern portion of the Richter site. Figure 6.34a is a photo of sherds of this vessel as found during excavation in 1968. The vessel is roughly cordmarked. The cordmarking extends from the vessel lip to the pointed base. Beginning at approximately two cm below the rim are three bands of oblique right scallop stamps that encircle the pot. The third band extends onto the shoulder of the vessel. Areas near the stamps are roughly smoothed. The vessel is slightly constricted at the neck with an everted-tapered 5.14 mm thick rim. The lip is rounded and smooth. The interior rim is undecorated but does bear evidence of scraping. The orifice diameter is 32 cm.

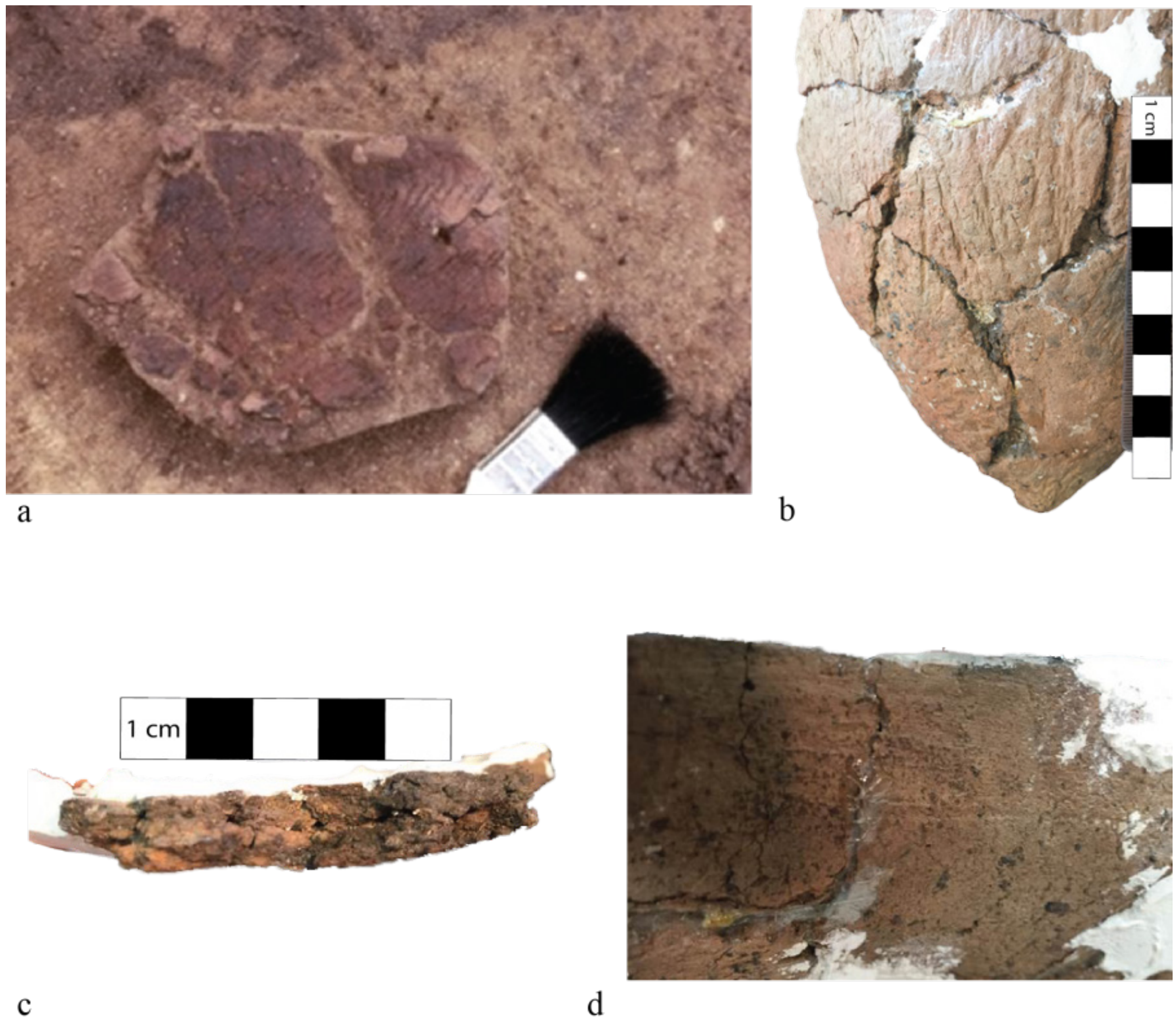


Figure 6.34. (a) Color photo from 1968 excavation of rim from V2. (b) Photo showing body and base of V 2. (c) Side view of lamination fracture from V2. (d) Photo of interior rim and neck striations from V2.

A profiled V2 (Figure 6.35) displays joins that are not quite as pronounced as in V1 but are still present. Vessel 2 was also constructed in three parts. However the base of V2 differs greatly from that in V1. It is pointed and exhibits exterior cordmarking to the tip as seen in Figure 6.34b. The interior is very difficult to see due to repairs made during reconstruction of the vessel following excavation. It is possible that this portion was hand built as a type of pinch pot to start and was paddled into shape.

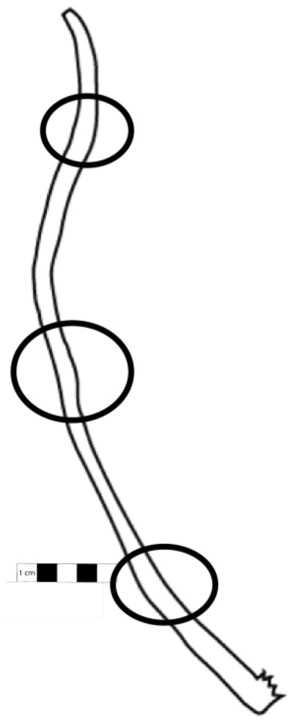


Figure 6.35. Profile of V2 with location of joins indicated by circles.

Like V1, V2 exhibits evidence of thickened slab joins. Vessel 2 also is cordmarked on the exterior. The vessel exhibits interior undulation, though not as pronounced as that of V1. A side view of the reconstructed vessel shows laminate breakage (Figure 6.34c). The interior of the rim of this vessel shows evidence of scraping, possibly with the same stamp used to decorate the exterior (Figure 6.34d). Scraping of the interior rim may be necessary in paddle and anvil vessels due to the difficulty of controlling thickness at the rim edge (Shepard 1965, 1980:185). Star shaped cracks are visible around temper particles in Figure 6.34d.

The construction process for this vessel is similar to that of V1. The process may have begun with a pinch pot base. A large slab was attached to the base and joined using paddle and anvil. A smaller slab was added above this and joined using paddle and anvil to form the neck. During this process the neck area was slightly constricted, possibly by attaching a smaller slab. Following this the rim was everted and possibly scraped at the same time. The lip was rounded and at some point after the attachment of the second slab the exterior was decorated with pseudo-scallop stamping.

Vessel 3 is represented by a number of sherds with a finely cordmarked exteriors. Unlike the previous two vessels, this vessel is far from complete. Recovered sherds include rim and body portions. The cordmarking is oblique right (Figure 6.36b). The rim is 8.40 mm thick. The vessel is undecorated except for oblique right CWS impressions on the lip. The diameter of this vessel is 28 cm. Compared to the previous vessels, the paste is much less friable.

The recovered sherds do present evidence of how parts of this vessel were produced. Body sherds from the vessel exhibit breakage at joins. Cordmarking is clearly visible on the lower join (Figure 6.36c). When viewed in profile this same sherd has several laminated layers. It appears that smaller slabs or possibly small amounts of clay were paddled together to form the vessel walls. The interior of the vessel exhibit some undulation but less than that found in V1 and V2.

a

b

c

Figure 6.36. (a) Original photo of the large body sherd from V3 (b) in situ next to F7 Dog Burial; (b) On the left is the large body sherd from above photo and on the right are rim sherds from V3; (c) Close up of body sherds from V3. On the left t is a cord wrapped paddle break with refitted sherd. On the right is a profile of the same sherd showing lamination of applied clay slabs.

Without the base of the vessel it is impossible to tell it if it was pinched or sherds with evidence of slab joins and paddling are present. The lip was flattened and then decorated with a CWS stamp.

Vessel 4 is represented by a series of distinctively shaped body sherds. These sherds illustrate fracture characteristics commonly associated with coil built vessels including step fracture (Arthur 1986:90-92; Rye 1981:67-69) as well as “S” shaped separated coils. The interior and exterior of the vessel are smooth. When a finger is run perpendicular to the coils a slight corrugation can be felt (Figure 6.37a - b). On some of the body sherds, like the one shown on the left in Figure 6.35c, scoring of the coil edge is visible. Scoring is a traditional method to improve join bonding (Sinapoli 1991:17).

Since only body sherds were recovered an accurate estimation of size cannot be determined. The vessel is tempered with light colored grit. Some fine star shaped fractures extend outward from temper particles on the vessel interior. This may be the result of thermal expansion. There are also angular voids on the exterior and interior. These may represent temper pieces that have popped out or could be temper such as limestone that has leached out overtime.

Figure 6.37. Body sherds from V4. (a) Smoothed exterior sherds with step fractures and coil joins. (b) Interior of sherds. (c) Two sherds with scoring on edges.

Vessel 5 exemplifies an example of coil construction. Vessel 5 is represented by a number of body sherds as well as a portion of the rim. Much like V4, sherds from this vessel also seem a bit weathered, indicating exposure to the elements in a similar manner. This smoothed vessel has a diameter of 18 cm. The rim was 5.18 mm in width. The rim is slightly everted with a flat smoothed lip. The rim exterior is decorated with pseudo-scallop oblique right stamping. On the rim interior there is perpendicular stamping with an unidentified type of stamp, though it could also be pseudo-scallop stamping. The body of the vessel is stamped with perpendicular pseudo- scallop stamped bands. The first band of perpendicular stamps overlaps the oblique stamping on the rim (Figure 6.38a).

The indicators of coils and coil breaks are more subtle on this vessel. The smoothed joins that had such a distinct appearance in V4 are smaller and less obvious (Figure 6.38b-c). The weathering on the sherds also makes identification more challenging. The sherds are tempered once again with light colored grit. Small cracks extend from temper on the vessel interior although no pedestaling of temper particles was observed. Finding cracks emanating from temper once again in a coil built vessel calls into question the use of this characteristic as a determinant of paddle and anvil construction. It appears that it is more likely caused by differences in the thermal expansion of the hotter exterior and interior. The cracks help forestall total vessel failure.

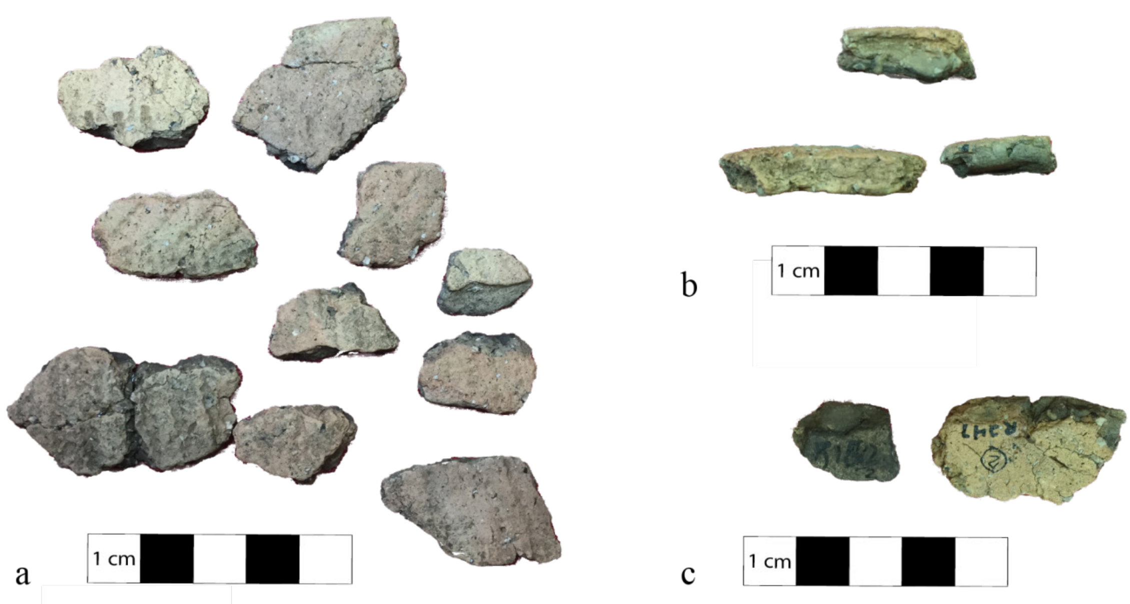


Figure 6.38. (a) Body and rim sherds from V5. Coil breaks from same vessel (b and c).

The coil built vessels found at Richter did not include any base sherds. Other vessels in the region with similar coiled construction have been identified as Laurel types. These include vessels from Summer Island and Naomikong Point. It is possible that the Richter site vessels were similar in form to the reconstructed vessel from Summer Island (Brose 1970:Plate III c). That pot is a conoidal vessel with a pointed base that is slightly constricted at the neck with a slightly everted rim (Brose 1970:54). Other evidence of coil construction at the Summer Island site includes the recovery of several unused coils.

To determine if the Richter site material was anomalous, the author reviewed the ceramic materials excavated from the Mero and Porte des Morts sites curated at the Neville Public Museum, Green Bay, Wisconsin. A total reanalysis of the site materials was not possible so it was decided to look for vessel sherds that could provide information on vessel production. The two types critical used were sherds with 1) paddle and anvil breaks or lamination. and 2) coil breaks. Both types of sherds are present in these collections.

Sherds that exhibited evidence of paddle and anvil construction are present among the materials from both Mero and Porte des Morts sites. Examples of paddle and anvil breaks are illustrated in Figure 6.37a and b. Note that cordmarking is visible not only on the vessel's exterior surface, but on the surface of the break. This indicates that the area was paddled first then clay, possibly in slab form, was added and paddled. The join created by overlapping the clay onto an already paddled area would improve bonding. This is similar to scoring coils to improve bonding.

Vessel 1, V2, and V3 from the Richter site were constructed using the same methods. Thick vessel base sherds from the Mero site show other characteristics also seen in V1 from Richter. The exteriors of both pots have light patches on the exterior surface that may be indicators of external heat during use (Figure 6.39e-f). Both vessels are heavily tempered with dark, large angular grit temper. And both vessels show extreme exfoliation of the vessel base interior (Figure 6.39h-j). It is very possible that they may have been constructed by the same individual or an individual that was taught to construct vessels in a similar manner (compare with Figure 6.32d and e).

Figure 6.39. (a and b) Paddle and Anvil breaks from the Porte des Morts site; (c) Example of lamination in cordmarked sherd also from the Porte des Morts site; (e-f) Exterior of thick vessel base, Mero site; (h-j) Interior of thick vessel base, Mero site.

Evidence of coiled construction is also present among the sherds from the Mero and Porte des Morts sites. Below are examples of coil breaks from both the Mero and Porte des Morts site (Figure 6.40a-f). Figure 6.40g-h is a sherd from a Stab-Drag vessel. This vessel is one of the vessels used to provide the I-888 bulk radiocarbon sample (Mason 1966:125; 1992:113). Note the sizable coil break on the interior of this sherd (Figure 6.40h). These vessels are similar in construction to V4 and V5 from the Richter site.

Figure 6.40. (a-f) Coil breaks Porte des Morts, 5D EXT 2 D; (f) Coil break Mero, 5J 8-12"; (g) Exterior Stamp-and-Drag Vessel Porte des Morts, 5B Midden; (h) Interior of (g) showing coil break.

It is clear that the relationship between surface finish and construction methods was not recognized or at least not considered an important attribute during the sorting and classification of ceramic materials from the Mero and Porte des Morts sites. As the vessels from the Richter site demonstrate, vessels with cordmarked exteriors, undulating interiors, laminated paste, and paddle and anvil breaks were primarily constructed using paddle and anvil construction with a cordwrapped paddle. Vessels with a smooth finish, distinguished from smoothed-over-cordmarked, exhibit coil breaks and possibly wavy exteriors/interiors. The smooth surfaces resulted from smoothing of coil joins. These smooth exterior and interior surfaces are thus a byproduct of coil construction.

Use, Function and Performance Characteristic Analysis

The Richter assemblage contained thousands of ceramic sherds. Among this assemblage are two fairly complete vessels. These vessels retain the sometimes subtle indicators of how they were used by the people that resided long ago at Richter. What follows is by no means an exhaustive study of use, function, and performance characteristics. However, the exercise does serve as an example of the information that can be gleaned through simple visual inspection. Adding this type of information to traditional ceramic analysis is neither cost nor time prohibitive and should become a standard component of traditional ceramic studies.

Analysis of Richter V1 was not an easy task. The vessel is represented by numerous thick, friable sherds that continue to crumble when handled. At some point prior to the current analysis, reconstruction was attempted but the newly glued joints were stronger than the surrounding porous friable sherd body, and the weight of the joined sherds created new breaks in other places. Some of the repaired breaks were skewed during drying creating uneven surfaces.

Large drips and pools of dried glue appear on vessel interior and exterior surfaces. The repair of the vessel appears to have been abandoned probably due to extreme friability. To attempt a non-permanent reconstruction of this friable vessel, a large container was filled with sand. The sand was covered with felt to provide a soft supportive base. Sherds were arranged to temporarily reconstruct vessel exteriors and interiors for examination. A sketch was made to note color differences on both interior and exterior surfaces. Other conditions like temper cracks and pedestalling were noted. Areas of sooting and burned residue were also recorded.

Vessel 1 exhibits a complex pattern of exterior color variation (Figure 6.41).

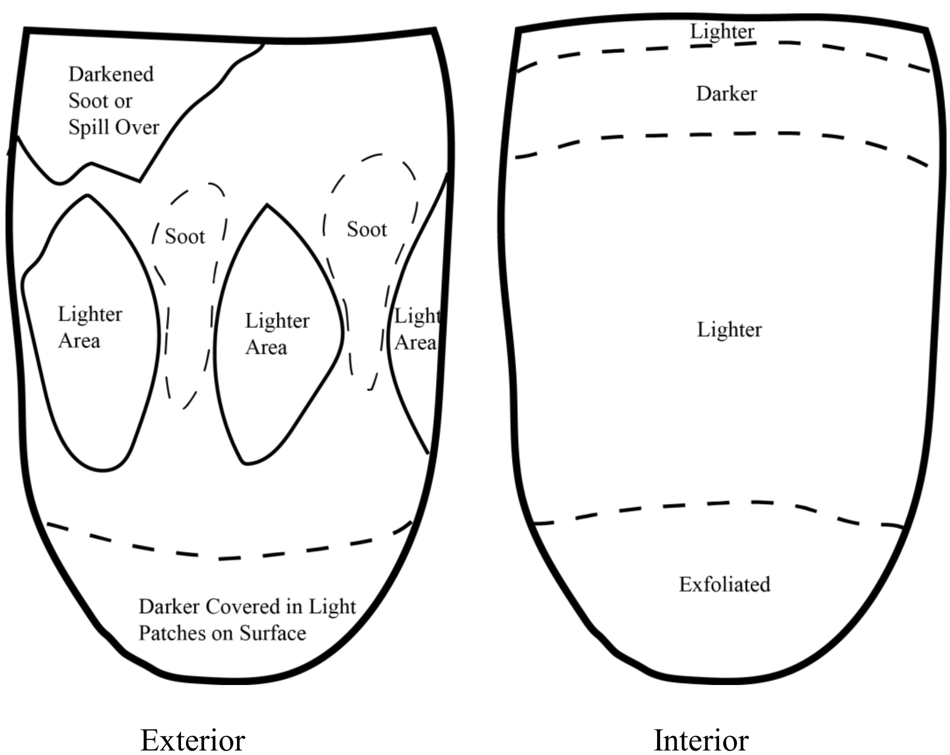


Figure 6.41. Sketch of Richter V1 color and physical characteristics related to vessel use.

The base of this vessel is rounded and exhibits evidence of patches of powdery, extremely thin, light colored clay or fine sand. These patches are associated with exfoliated light colored oxidized areas of the vessel interspersed with dark sooted areas (Figure 6.42). The oxidized areas are found beneath exterior sooting. Oxidation is the result of the reaction of clay to heat. Naturally occurring organic impurities in the clay begin to oxidize or burn off starting at 200°C. Oxidation will occur at about 500° C and is reflected in a transition to a reddish color. If the temperature during firing does not reach high enough carbon is not completely burned and can remain on the vessel surface (Hally 1983:11; Rice 1987 (2005):88, 103). It is possible that the light areas and sooting on the base are the result of close contact orplacement of the vessel base within a cooking fire or, alternatively contact with ash and heated sandy soil during use. The layer of soot found on the base of this vessel may also be the result of the incomplete oxidation of organic materials in the thick base during initial firing. Another explanation of the light patches is that they are the remnants of a slip. This is unlikely as it is not typical of most Woodland pottery. Moreover, the patches of lighter colored areas are only found on the base of the vessel and are exceedingly thin and uneven in distribution.

Figure 6.42. Base of Richter V1 showing light sandy patches, sooting and exfoliation.

The vessel exterior walls exhibit a complex pattern of sooting and light areas. It appears that contact with the cooking fire either burned deposited soot away or prevented the deposition of soot, leaving oxidized light red areas (Skibo 1992:159). Skibo notes that soot burned off of experimental samples at about 400° C (Skibo 1992:160). This would indicate that temperatures of at least 400° C were reached by cooking fires. This complex pattern of light areas of oxidation and sooting on the vessel exterior may reflect uneven heating. Uneven heating of the vessel surface could be the result of supporting stone placement, variable cooking fire temperature, or movement of the vessel during cooking.

The interior of the vessel reveals an extensive network of cracks radiating between temper particles. The upper portion of the interior is gray with the lower portion appearing lighter in color. The interior of the base is highly exfoliated. Differential pedestalling of temper is visible. There is no evidence of the application of an interior sealant. Some ceramic traditions have sealed porous ceramic vessel interiors with resin or other materials. These are highly varied but serve the same purpose of sealing the porous vessel interior to limit seepage (Rice 1987 (2005):231-232; Skibo 1992:112). Without sealing it is impossible to bring the contents of a vessel to the point of boiling (Skibo 1992:165). The light area on the lower interior portion of this vessel may indicate where the liquid contents of the vessel penetrated the porous vessel wall. With liquid penetration the wall remained cooler. This assumes that the dark patches do not represent areas of incomplete oxidation of carbon during vessel firing, a distinct possibility.

The interior vessel walls also show cracks beginning and ending at large visible pieces of grit temper. This type of cracking is not seen on the cordmarked vessel exterior. Temper used in this manner stops failure of the entire vessel by limiting the length of cracks to the distance between temper particles (Lawerence 1982:225). Interior vessel cracking is a reflection of the inherent properties of fired ceramic materials. Ceramics have a high elastic modulus. This means that as heat is applied to the vessel exterior a temperature differential is created between the hot exterior and cooler interior surfaces. Because the fired ceramic material is rigid and brittle, cracks will form on the interior cool surface in response to stress (Lawerence 1982:218-221). Using temper to keep cracks short is one way to prevent failure of a vessel used over heat.

One trait that has been used to identify North Bay ceramics is the pedestalling of temper on the vessel interior surface. Temper lower on the interior wall of this vessel seems to be exhibit more pronounced pedestalling than that found higher near the rim. It has been suggested, based on ethnographic data, that pedestalling of temper is the result of fermentation processes (Arthur 2002:347-350). In this case evidence of exterior application of heat indicates use for cooking (Hally 1983:9-10). Another explanation for pedestalling is surface attrition due to abrasion caused by stirring of vessel contents during cooking or scrubbing during cleaning (Skibo 1992:124-125,132-133). The paste of V1 is porous and friable and susceptible to abrasion. The same porosity makes this vessel not particularly suited for fermentation. High water loss through porous unsealed walls would make maintenance of moisture levels necessary for fermentation extremely difficult.

The second pot examined is Richter V2, a remarkably complete reconstructed vessel. The vessel is also porous and friable but to a lesser extent than V1. Although V2 is mostly complete, the reconstruction with large amounts of plaster and the use of wax to recover sherds during excavation has badly obscured and damaged large portions of the vessel interior.

Much like Richter V1, this vessel exhibits oxidized areas on the lower portion of the vessel (Figure 6.43). Unlike the previous vessel base, the exterior base of this vessel appears to be completely oxidized. The vessel base also lacks the light patches found on V1. The base of V2 has a distinct pointed form while V1 has a rounded base. It is not clear if the difference in sooting patterns on the vessel bases is associated with the difference in shape. It is possible that how a vessel was supported during use would differ based on shape. Because V2 has a pointed base and would be less stable than V1 it would most likely require a different manner of support. Differing support may explain differences in base sooting and oxidation.

Examination of the vessel exterior identified large oxidized areas that extend in a roughly linear manner up the side of the vessel and alternate with areas of sooting and carbonized material. This pattern of sooting and oxidation may indicate that the vessel was supported between several rocks. Soot would form above the points at which the rocks came in contact with the vessel base. The area directly above the rock support would be cooler allowing for the deposition of soot. The oxidized area is where the heat of the fire would not be obstructed allowing the heat to flow upward along the exterior wall. The shoulder of the vessel seems to have deflected the heat from the neck and rim. This would account for the accumulation of soot above the shoulder on the rim and neck of the vessel. Oxidation is not present above the shoulder. The carbonized material on the vessel shoulder may represent spilled or boiled over contents. Areas of carbonized materials are also found in on the vessel exterior rim. Once again this may represent spilled or boiled over contents.

Examination of the vessel interior was a challenge. It is clear that exterior appearance took priority during reconstruction of the vessel, leaving the interior heavily covered in plaster of Paris. The areas that remain exposed on the vessel interior are red and oxidized, although a sherd not included in the reconstruction is heavily covered in residue. One way around this limitation involved examination of the reconstructed vessel along exposed edges not

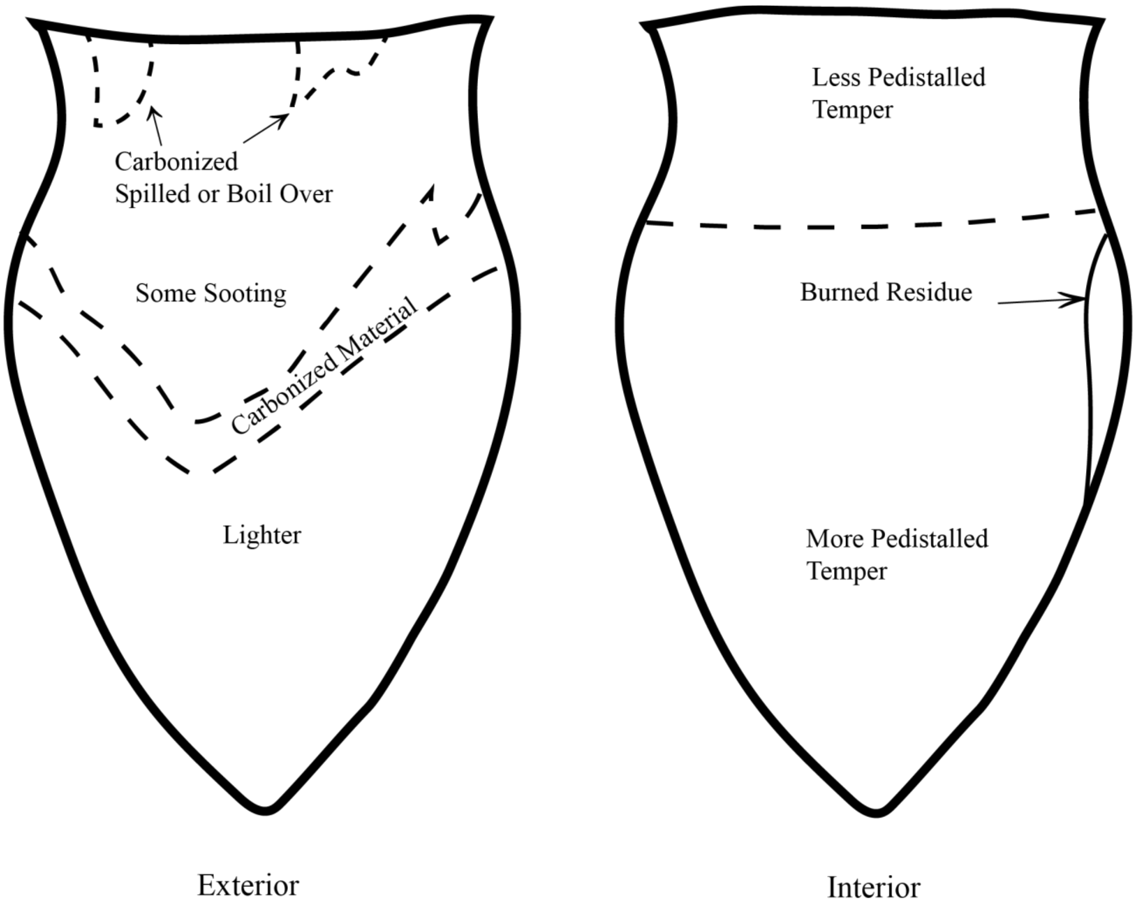


Figure 6.43. Drawing of location of discoloration and other characteristics related to use of this vessel.

covered in plaster. In these areas evidence of carbonization of interior surfaces was visible (Figure 6.44). These areas correspond with the lower shoulder of the vessel. Burning of vessel contents in this location may be related to external heat flowing up the vessel side.

The location of the interior burned area with corresponding exterior oxidation on V2 presents a major difference from V1. Vessel 1 does not have indicators of interior carbonization. Perhaps the presence of a shoulder and thinner vessel walls in V2 led to the carbonization of vessel contents. The shoulder constituted the widest portion of the vessel and would be exposed to heat rising from the fire. Oxidation on the shoulder and below shows that heat traveled up the side of the vessel and dissipated above the shoulder. The thinner V2 walls allowed for a more efficient transfer of heat that led to the carbonization of materials on the interior of this vessel. There are several factors that may have prevented the burning of contents in V1. With thicker walls heat transfer was less efficient. The contents of the vessel simmered and did not burn. V1 has straight walls without any shoulders to protrude out over the fire.

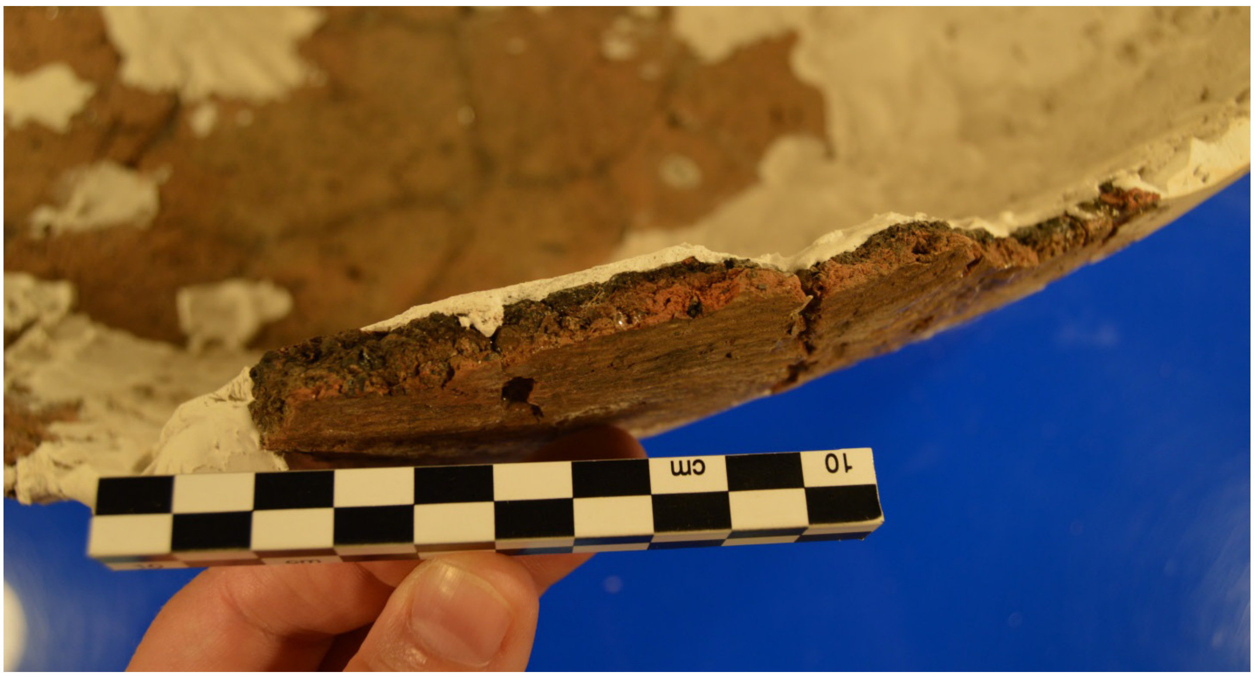


Figure 6.44. Richter V2 view of edge of vessel. Note reduced interior layer covered with plaster of Paris.

The interior of V2 displays pedestalled temper. The extent of pedestalled temper cannot be determined because of interior plaster but it extends at least to the base of the rim. Compared to V1 the pedestalling is not as pronounced but incomplete exposure of the vessel interior precludes estimation of the extent. One very noticeable difference is a reduction in the amount of cracking between temper particles in V2 (Figure 6.45).

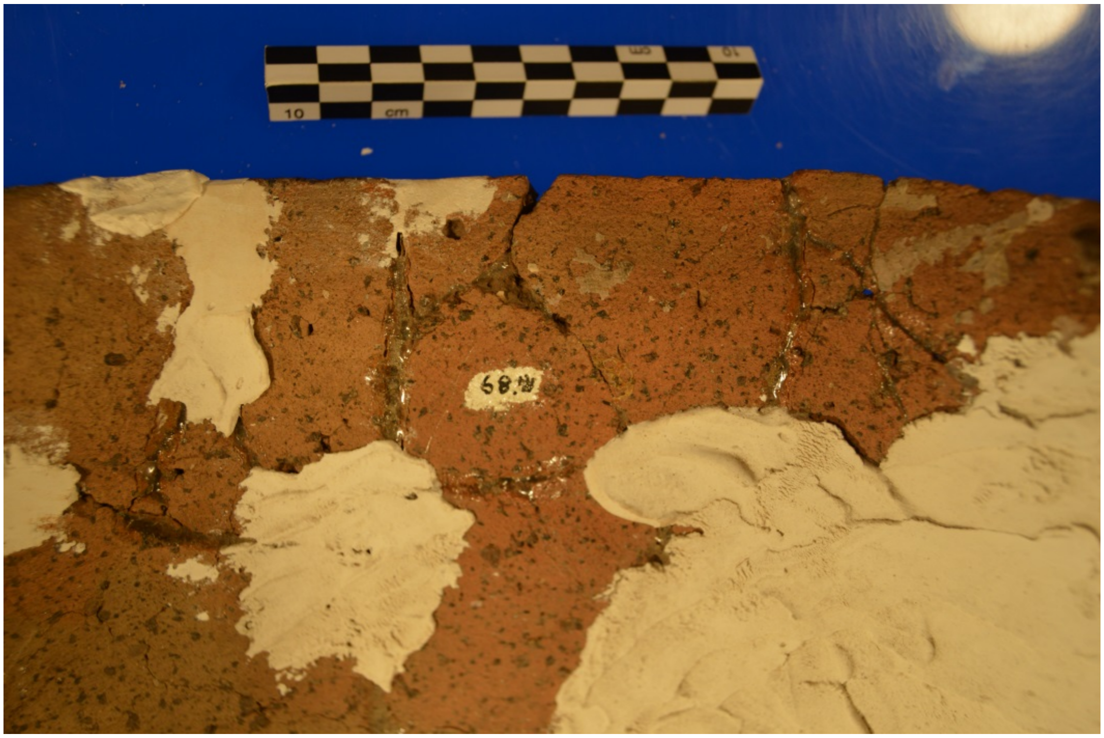


Figure 6.45. Interior rim area of Richter V2.

It is possible to infer functions for these vessels based on these basic physical indicators of use. Both vessels were used to contain liquid materials over a fire most likely in the process of food preparation. Both vessels have exterior patterns of sooting and oxidation that indicate placement of the vessels in or over a fire with exterior support of cobbles or stones. Both vessels are highly porous and would not have been useful for the storage of liquids. Potters may have utilized porosity and heavy temper to counter vessel failure due to thermal shock (Rice 1987 (2005):231, 238). The vessels do differ in a number of significant ways including base form, body form, and wall thickness.

These differences are indicative of conscious decisions made by the potters. During the Early Woodland period there is a transition in vessel forms from flat bases to more rounded ones. It is possible that the transition was prompted by the higher failure of sharp angled vessel areas during heating (Rice 1987 (2005):226). Flat bottom vessels may have been useful for stone boiling but with the application of external heat the limitations of this form would become apparent. At the Richter site the vessels both have rounded bases but are different in form. V1 has a rounded very thick bowl-like base. There is a noticeable difference in thickness between the base and vessel walls. V2 has much less difference between the thickness of the basal portion of the vessel and the walls suggesting that Vessel 2 may have been less prone to failure.

The base of V1 exhibits extremely heavy exfoliation. Another possible reason for failure of this vessel may be disparities in the volume of temper used in separate paste batches used to build the base and walls of the vessel. It is not clear what benefit differing amounts of temper may provide. It may have been a way to compensate for the differing thicknesses of the base and walls. It also may simply have been unintentional.

In form, V1 is very simple consisting of a rounded shallow base supporting straight, almost vertical, walls. V2 is a more complex form. The vessel base is pointed with walls that angle outward reaching maximum vessel width at a gently rounded shoulder. Above the shoulder the vessel constricts at the neck. The rim is everted. This difference may be related to construction of a vessel with thinner walls.

As mentioned above, there are differences in sooting and oxidation patterns on the bases. These patterns are thought to reflect differing support and placement of vessels over heat. The form of the bases also confers differences in terms of stability. V1 would be less likely to fall when set onto the sandy soils found at Richter. The light patches on the vessel base may indicate the vessel required minimal exterior support with the fire built around the base with smaller supporting rocks. Oxidation is found higher on the walls and sooting on the base. V2 has a pointed base that would require greater support to keep it from falling over. The oxidation of the entire base would indicate that the vessel was supported above the fire. The alternating pattern of oxidation and sooting seems to indicate the use of larger stones to hold the vessel though it is possible that the vessel could be suspended above the fire. The weight and size of this vessel might preclude suspension.

Wall thickness plays a role in thermal stress. Thinner walls allow for the conduction of heat from the exterior to the interior wall more efficiently and evenly. This decreases the stress caused by exterior and interior vessel wall temperature differentiation. Thinner walls are one way to lessen failure from thermal shock (Rice 1987 (2005):369). This may be the reason that interior cracks between temper particles are less extensive in V2. Vessel 1 having thicker walls (10.16 mm at the rim), and greater temperature differences between the exterior and interior portions of the wall, exhibits significantly more cracking between temper particles. With thinner walls V2 (5.14 mm at the rim) could be less heavily tempered. Petrographic analysis presented above supports this supposition. These vessels present differing ways to deal with the problem of thermal shock. Temper also serves to support vessel walls during construction with larger vessels requiring more temper (Rice 1987 (2005):227). In this case V1 is larger, with an orifice diameter of 36 cm and V2 at 32 cm.

These two vessels from the Richter Site present an interesting suite of common and differing characteristics. Both vessels were used for cooking wet foods, soups, or stews. There may have been differences in the performances of these vessels that favored slightly different cooking styles. Thicker walled V1 would have allowed for long lower temperature cooking and could have been left on the fire with little care except to add additional water or ingredients. It was most likely a prehistoric crock pot, low and slow. This type of cooking would also be useful for extracting fats and oils from bones thus maximizing resources.

V2 also was probably used for the preparation of wet foods. With thinner walls heat from the cooking fire would be transferred more efficiently to the vessel contents; shortening cooking time. With increased heat transfer it would have been necessary to watch the pot more closely during cooking. Too much exterior heat could burn the vessel contents as is seen in this vessel.

In the end both vessels produced meals for the residents at the Richter site. Changes in vessel physical characteristics do impact vessel performance. In general, as noted by Braun, there seems to have been a trend in vessel construction toward increased efficiency of heat transfer over time. It would seem that these two vessels reflect this trend. The reason for this trend is not readily apparent at Richter. It is speculated that it was cooking of grains are responsible for this trend, , but at this time we do not have residue data for these vessels (Braun 1983). It is possible that completion of residue analysis may help answer this question. Work by Kooiman identified residues associated with Middle and Late Woodland vessels from Naomikong and Sand Point. Her work suggests that the types of foods cooked at both were similar and included meats with a lower fat content and low fat plant material. Meat and plant materials (roots, greens and berries) were cooked together. Surprisingly, there was no evidence of the cooking of fish in a similar manner. Ethnographically documented preference for roasting or smoking of fish as a possible alternative method of preparation and preservation provides a possible explanation for the lack of fatty acid residue in vessels tested (Kooiman 2012:182-185; 2016:224-225).

The trends toward pots with more efficient transfer of heat being linked to the preparation of grains noted elsewhere is not clearly supported by the findings at the earliest of these sites as there was no evidence for high fat plant materials in the Middle Woodland Naomikong Point site (Kooiman 2012:161-163; 2016:219-221). Testing of additional vessels in the region, like those from Richter could help clarify this issue. Inferring from the evidence provided at Richter, vessel shape may have contributed to the differences in the pattern of interior carbonization found by Kooiman. The Middle Woodland Naomikong Point vessels were shaped much like V2 from Richter with pointed bases while the Late Woodland vessels from Sand Point had rounded bases (Kooiman 2012:68-69; 2016:211).

Chapter 7
Summary and Conclusions

The excavations at the Richter site provided a large collection of material cultural remains. Analysis of these provided evidence of changing types and patterns of site occupation over time. Review of recent dates associated with the Richter site and other regional sites indicates greater time depth for ceramics currently included in the existing North Bay taxon. These dates indicate two periods of occupation at the site during the Early Woodland, as well as occupation during the Middle Woodland.

To explore the dynamic relationship between potters and the ceramics they created it was necessary to collect more than simple morphological and metric data from the ceramic materials recovered at the Richter site. Compositional data as well as detailed data on ceramic production and use and function was collected for sample vessels. Petrographic data was collected for the same samples. Data collected indicated that some of the site vessels fall within the range of variation found within Early Woodland thickware and cordmarked types. The Middle Woodland coiled ceramic materials demonstrate construction and attribute data that is different from the Early Woodland cordmarked vessel at the site and more like regional Laurel expressions.

Ceramic Behavioral Chain at the Richter Site

The remnants of vessels found at the Richter site each embody choices made in the past, whether it was how much and what kind of temper to use or if a broken pot would be disposed of in the fire or discarded in a pit. Each activity is a link in the behavioral chain associated with that specific vessel. Some choices made by a potter may be unknowable but those related to performance characteristics can usually be determined from careful analysis. The Richter site data provides information on raw material types, procurement, vessel form, production methods, use wear, and discard practices based on recovery contexts.

Schiffer and Skibo explored the performance characteristics associated with Late Archaic fiber tempered pottery and Woodland grit tempered pottery through a series of experiments or tests. These experiments contributed data in five categories of performance characteristic: 1) ease of manufacture; 2) heating effectiveness; 3) portability; 4) impact resistance; thermal shock resistance and 5) abrasion resistance (Schiffer and Skibo 1987; Skibo 2013).

Ease of Manufacture

Procurement

Clay Source

Clay used in construction of the Richter site vessels was most likely obtained locally. While ethnographically documented potters in some instances were willing to travel 10 - >50 km for clay, most of the potters documented traveled less than 10 km with the majority traveling <1 – 2 km (Arnold 1985:32-35). Washington Island soils contain clay deposits (Chapter 3) and a sizeable amount of clay was found in F15, described as a clay lined pit. Three of the vessels have a similar volume of sand in the paste (5-6%). Petrographic analysis indicates that the clay used for V3 has more sand in the paste than the other vessels (Table 7.1). It is possible that this vessel was constructed using a different clay source. This clay source may or may not have been local. This difference may also reflect intentional or unintentional addition of sand to the paste (Chapter 6). At this time a local clay source near the Richter site has not been identified.

Temper

The type of material selected for temper could have been procured locally in the form of glacial cobbles. Deposits of spalled rock at the site may represent cobbles heated and subsequently broken apart for use as temper. The types of cobble selected include gabbro, diorite or granite/granodiorite. There is also the possibility that the low number of ground stone or rough stone tools may reflect recycling of spent or broken tools for use as grit temper. Vessel 1 and V3 appear to be tempered with gabbro. Vessel 2 is tempered with granitic rock and V5 is tempered with a diorite that has some evidence of alteration.

Data suggests specific types of rock may have been selected for temper. Currently we do not know the volume of specific types of cobbles available in the local glacial deposits to determine if some cobble types were more readily available than others.

The size and volume of temper differs between vessels (Table 7.1 and Table 7.2). The V1 and V2 pots are more heavily tempered than the others and the temper size is larger. V3 is slightly less tempered with temper that is smaller in size. V5 is distinctive; it has the least temper and most sand. Overall the temper is smaller in size for V5.

If temper is produced by heating cobbles and then breaking them into the desired size then more time would be required to produce consistently smaller temper pieces. The time necessary to produce larger, more variably sized temper like that used in V1 and V2 would be less than that for Vessel 5, which has smaller sized pieces of temper. Vessel 3 is interesting because of the lower volume of grit temper. The time necessary to prepare temper would be reduced due to the need for less temper.

Table 7.1. Vessel Temper Percentage Body:Sand: Grit

Sample	Body	Sand	Temper
Vessel 1	55	6	39
Vessel 2	60	6	34
Vessel 3	66	25	9
Vessel 5	67	5	28

Table 7.2. Vessel Percentage of Temper by Size

Sample	Gravel (>2.00 mm)	Very Coarse (1.99-1 mm)	Coarse (0.99-0.50 mm)	Medium (0.499-0.25 mm)	Fine (0.249-0.625 mm)
Vessel 1	30	42	9	9	10
Vessel 2	21	42	9	10	18
Vessel 3	0	35	45	15	5
Vessel 5	0	12	39	13	36

Construction

Analysis indicated that different techniques were used to construct vessels at the Richter site (Table 7.3). There was also evidence of differing construction methods for different portions of the vessel. Vessel 1 and V2 were constructed in three major sections 1) base, 2) body, and 3) rim. The base seems to have been hand built in a manner similar to drawn or pinched vessel construction method. Body and rims were constructed from slabs joined by paddling to the base. Vessel 2 exhibits evidence of slab and paddle construction of body and rim sections, but lacking basal sherds it is not possible to determine if the base was constructed in a manner similar to V1 and V2. Vessel 5 construction utilized a coil building technique. Lacking basal sherds it is not possible to determine how V5 was constructed, although manufacturing techniques related to Laurel materials indicate that the base was a conical plug of clay joined to coils (Budak 1985).

The final slab used in the construction of the rim portions of V1, V2, and V3 is shorter than the slab that makes up the body of these vessels. The rims on these vessels were formed following joining by use of the paddle. Vessel 2 includes a step not found on V1 and V3. The interior rim of the vessel is thinned through scraping. Rim thinning was not observed on V5. Coil construction would allow for greater control of vessel thickness and the additional step of scraping would not be needed.

XRD of a ceramic sample from V1 at the Richter site identified the use of illite type clay. Illite clays are less plastic and less prone to shrinkage during drying. Less plasticity may have made rolling coils more difficult. This may have made construction with slabs more expedient. Choice of construction method may also have determined temper amount. Paddled slab vessels would have benefited from the addition of temper to add strength during construction. Coil construction does not require as much temper for support.

Generally, slab construction is more expedient. Coil construction is more time consuming, as pointed out by Schiffer and Skibo (Schiffer 1987:604). The same can be said for the formation of a base from a single lump of clay using hand building methods. The use of smaller, more uniform grit temper would increase the time of construction, but in the case of V5 this may have been balanced by the use of slightly less temper.

Table 7.3. Vessel Construction Methods

		V1	V2	V3	V5
Base					
	Hand built/Large Pinch Pot	+	+	UNK	-
	Conical Plug	-	-	UNK	+
Body					
	Slab/Paddle	+	+	+	-
	Coil	-	-	-	+
Rim					
	Scraped Interior	-	+	-	-

Heating Effectiveness

Generally, thinner walls allow for the more efficient transfer of heat. Liquids heated in the thick walled vessels would most likely not reach the boiling point. The thick walls would provide insulation. Vessel contents could be simmered without danger of burning. Thinner walls could account for the lessening of temper volume and slight reduction in size. Vessel 1 has the thickest walls; this translates to low heating efficiency (Table 7.4). The walls are thinner in the remaining vessels. Vessel 5 has the thinnest walls and would be the most efficient in heat transfer.

Table 7.4. Summary of Vessel Thickness.

Thickness (mm)	V1	V2	V3	V5
Rim Thickness	10.16	5.14	8.40	5.18
Body Thickness	8.25-14.30	7.00-8.00	8.15-10.74	6.03-7.48
Base Thickness	16.50-26.08	11.00-15.00	NA	NA

Portability

The size of V1, with an orifice of 36 cm, would make transportation difficult and it is likely that this pot and others like it were made on site and left behind when the band moved to another resource extraction area (Table 7.5). If V1 lasted during a single spring fishing occupation it likely served its purpose. Pots like V1 are often considered crude, but their manufacture and use represents a sophisticated grasp of ceramic container technology (Skibo 2013:52). Vessel 2 is lighter and has thinner, stronger walls but it is not certain how travel worthy such pots would be. This vessel is still quite large with an orifice of 32 cm, and simply moving the reconstructed vessel is not an easy task. Of the early vessels at the Richter site, V3 may be the sturdiest. The walls are less friable than V1 and V2. The vessel has a smaller orifice at 28 cm, though without more of the vessel it is difficult to judge the complete size. Vessel 5 has the thinnest walls and with a smaller size would most likely be better suited to transport. However, there is actually no evidence that this vessel was transported to the site.

Table 7.5. Vessel Orifice Diameter (cm)

Vessel 1	Vessel 2	Vessel 3	Vessel 5
36	32	28	18

Impact Resistance

Impact resistance of a vessel is linked to vessel weight, wall thickness, and vessel form. A vessel that weighs more will hit the ground with more force when dropped although a vessel with thick walls would be less likely to break when impacted on the side when in place. A thick walled vessel like V1 would most likely have less resistance when dropped; but would be more resistant to breakage when struck while it rested on or near the hearth. The vessel that would be most resistant to impact would be the lightest vessel; this would have most likely been V5 as it had the thinnest walls. Potters at Richter may have been fortunate because the sandy nature of the site would provide a much softer and forgiving surface for dropped vessels.

Thermal Shock Resistance

Susceptibility failure due to thermal shock increases with wall thickness due to differential heating of the interior and outer walls of a vessel. At the Richter site, V1 would be most susceptible to thermal shock failure. The use of heavy amounts of temper in this vessel may have been an attempt by potters to mitigate thermal shock. Vessel 5 with the thinnest walls would have the best shock resistance (Table 7.4).

Another way to improve thermal shock resistance is to have vessel walls that are of an even thickness. Uneven wall thickness creates inconsistent patterns of thermal heating, increasing potential for thermal failure. Vessel 1 has the most variation in wall thickness. Vessel 2 also exhibits inconsistency in wall thickness. Vessel 5 has the most consistency in wall thickness and the thinnest walls increasing thermal shock resistance.

Abrasion Resistance

None of the vessels seem to have been modified to reduce abrasion either on the exterior or interior. There is no evidence of slipping or sealing of vessels. There is evidence on the bases of the surviving base sherds from V1 and V2 of some abrasion. This is most likely the result of movement of the vessel during use. Abrasion may have been produced by interaction of the vessel base with support stones during cooking. Support would be critical with V2 as the base of this vessel is pointed and would be unstable without support.

Vessel 1 exhibits evidence of heavy abrasion on the interior of the vessel. Pedestalling of temper is more pronounced lower on the interior vessel walls. The interior of the base is heavily exfoliated. This is possibly the result of thermal shock on the base which is the thickest part of the vessel. The volume of temper in the base also seems to be much greater than the vessel walls. It not certain if this difference was intentional or unintentional. The interior of V2, in areas not covered in plaster, also has abrasion exposing temper; though not to the same extent as in V1. The interior of V3 shows little or no abrasion. The interior of V5 also seems to suffer little from abrasion through the sherds are a bit weathered.

It would seem that vessels with thinner walls had less interior abrasion. Increased abrasion could result from the weakening of interior vessel paste due to the creation of fractures between temper pieces, resulting from stress from uneven heating during use. Stirring of vessel contents would remove loosened paste.

Summary

The sampled vessels from the Richter site present a complex picture of performance characteristics. These characteristics are charted in Table 7.6 following a format suggested by James Skibo (Skibo 2013:43). These vessels also represent different occupational periods at the site. As discussed in Chapter 5; the vessels date from two periods: Early Woodland and Middle Woodland. Generally the vessels demonstrate a trend toward thinner walls that are less heavily tempered. Thinner walls increase heating efficiency and increase impact resistance. Thinner walls reduce failure from thermal shock and the vessels are lighter and easier to transport. Thinner walled vessels also have less interior abrasion.

While it would seem that thinner walled vessels confer an overwhelming number of positive performance characteristics, they are not as easy to produce. The production of coiled vessels would require the investment of more time than the production of paddled vessels. The potters that initially made the transition to coiling would need to decide if the investment of additional time was worth the value of the end result. Other factors that may have affected potters' ability to produce vessels include length and timing of seasonal occupation. If the visit was short there may not have been enough time to manufacture vessels. Occupation during cold and/or wet weather would have made the production of vessels difficult, if not impossible.

There may have been other factors that contributed to the adoption of a more labor intensive construction method. Longer terms or repeat occupation of a site may have encouraged potters to invest the time. Longer occupation would mean the vessel would be utilized for a longer period of time and if the site was reoccupied annually, it might be possible to cache the vessel for future use. At the Richter site there is evidence of both types of occupation associated with coiled vessels during the Middle Woodland. It is also possible that coiled vessels could better withstand the rigors of transport, though we do not have evidence for the transport of coiled vessels from the Richter site. Portability would also increase the value of the end product.

The production of coiled vessels may have improved performance but the Early Woodland vessels did serve the needs of the potters. The earliest vessels may have been less heat efficient, less portable, and more prone to failure due to thermal shock or certain types of impact and abrasion but they could be produced fairly quickly and allowed for long, slow cooking without worry of burning. This would be a vessel well-suited to occupation at short term resource extraction locations. These vessels would not be expected to survive transport. Caching these types of items might not be feasible if occupation of this location was infrequent. Vessel 1 is the single example of this type of vessel suggesting infrequent occupation of this location by its makers.

It should also be noted that the earliest potters at the Richter site produced a vessel that included evidence of decisions that positively impacted vessel performance. The addition of temper would lighten the vessel, provide strength during construction, and lessen failure due to thermal shock of thick insulating walls.

The next generation of vessels during the Early Woodland at the site was still produced using the cord wrapped paddle and anvil method. We know that the form of V2 differed from V1 in being more conical and having uniformly thinner walls. V3 also has more uniformly thinner walls. Once again occupation at the site during this period seems to be somewhat irregular though there is evidence of several vessels similar to V3 at the site. This may indicate a change in resource extraction patterns with more visits to this location, possibly a more regulated pattern of movement or establishment of territories.

Table 7.6. Performance Matrix for Sample of Richter Site Vessels and Temporal Association

Performance Characteristic	V1 EW	V2 EW	V3 EW	V4 MW
Ease of Manufacture	+	+	+	-
Heating Effectiveness	-	+	+	+
Portability	-	-	-	+
Impact Resistance	-	-	+	+
Thermal Shock Resistance	-	-	-	+
Abrasion Resistance	-	-	+	+

The foregoing analysis indicates that ceramic materials found at the Richter site represent variation in the decisions made by potters that occupied the site over the course of millennia. There is variation in the raw materials selected, how these materials were prepared, and how they were used to construct vessels. There is variation is the shape, size, and thickness of these vessels. There is variation in the types of features they were associated with and how the site was used during differing occupations. There is variation in how and where these vessels most likely failed. And finally there is variation in final disposition. Was the vessel was used and abandoned or stored for future use or possibly transported to the next camp?

The performance matrix allows for a way to examine how variation in decisions results in changes in performance. Instead of all vessels having optimal performance, they present a range. This range represents compromise. Compromise reflects conscious decisions of the potter. Creating a thick, expediently produced pot that could be left to simmer without much attention would be well-suited to relatively short site occupations. The earliest site occupants during the Early Woodland may have set up camp and left the pot simmering while they fished and hunted. They would move on to another camp leaving the thick vessel behind. These types of camps are few in number and do not show a distinct pattern of heavy reoccupation. It is possible that resource exploitation was not formalized and populations were smaller. Most likely later in the Early Woodland potters altered vessel shape and thickness. Vessels, while still expediently made, have improved heat transference. Occupations associated with these other Early Woodland types most likely continued to be short-term, like the earlier occupations. Interestingly these groups traveled with dogs as indicated by presence of a dog burial at the Richter site.

A change is seen at Richter during Middle Woodland times. It is during this time that human burials at the site. These burials may be associated with ritual feasting or corporate membership rituals. The first clear evidence of structures is also found during this time. The presence of spring spawning fish remains suggest gatherings associated with exploitation of this annually reoccurring resource. The types of ceramic vessels associated with occupations during this time are unclear. This is the period of time associated with North Bay occupations on the Door Peninsula.

During the later portion of the Middle Woodland and into the Late Woodland transitional period we see a change in the occupational pattern at the Richter site. One area shows evidence of repeat occupation associated with Laurel-like materials. Another area has evidence of a large structure with an interior hearth and faunal remains, indicating long-term occupation. The coil built vessels associated with this time period present many differences in performance characteristics. Vessel walls are thinner making heat transfer more efficient. More time is invested in vessel construction. It is possible that in the area of repeated occupation, vessels were cached for later use. The vessels associated with the structure indicating lengthier occupation would have been used longer and not abandoned after a short period of time, making investment of time worthwhile. Repeat occupation may indicate a more formalized resource extraction pattern.

The vessels at Richter reflect a complex picture of technological compromises. Performance characteristics changed with decisions made by potters to meet changing needs. While it might be expected that the goal of a potter is to create vessels that performed optimally, this is a simplistic understanding of the knowledge and skill of the potter. Instead of assuming that a large "crude" vessel represents a lack of knowledge or skill on the part of the potter, a study of performance characteristics paired with contextual data suggests that these vessels are the deliberate product of a complex process.

Implications for North Bay Studies

The Richter Site and the North Bay Radiocarbon Record

The Richter site was originally identified by excavators as a North Bay site. The pottery compared favorably with the North Bay taxon as defined by Mason (Mason 1966, 1967). While the materials compare favorably there is evidence that some materials from Richter also compare favorably with some Early Woodland thickware, Dane Incised-like types as well as Middle Woodland Laurel types. The site also has occupations that date from the Early Woodland through Late Woodland Heins Creek times. In between these are occupations that date to what is conventionally considered as the Middle Woodland North Bay time frame, which in turn is followed by a transition to a Laurel occupation.

This is a much more complex culture history than was expected but with more than a millennium of occupation, it is to be expected. As noted, Washington Island's location and resources would have made it attractive to travelers as well as long term residents. Occupation of the Richter site during the Early Woodland does not make it a regional outlier. A number of sites in the region also have occupations that date to Early Woodland times including Shanty Bay, Winter, and Beaudhuin Village (Table 7.7 and Figure 7.1). Other sites that date to this period are dated by samples with very large error margins thus greatly reducing their usefulness. These sites include Naomikong Point, Rock Island II, and Summer Island.

The Richter site was occupied during the Middle Woodland North Bay time frame established by Mason as roughly B.C./A.D. 0 – 400 A.D., (Mason 1992). While there are dates from the site for this period on birch charcoal, human remains, and deer bone, it is unclear which types of ceramic materials are associated with these dates. The associated features contain small amounts of cordmarked, smoothed-over-cordmarked, and smooth materials. With little or no information on depth of objects recovered from feature contexts, stratigraphic seriation is impossible. All that can be said is that materials associated with this time period at Richter represent all three surface finish types. It is possible that this may represent a transitional period in ceramic technology, possibly a shift from cordmarked to smooth. Structure 7/H7 dates from toward the end of the traditional North Bay date range, 1745 ± 25, A.D. 237 – 380. This feature, much like the others that date to the North Bay time frame, contained examples of all surface treatments.

A number of sites fall within the traditional date range for North Bay in the region. These sites include Christoff, Beaudhuin Village, Porte des Morts, Rock Island II, and Summer Island. Dating of the last three sites listed is problematic due to large standard deviations in reported assays.

Several features at Richter, including Structure 8/H8 (1640 ± 20, A.D. 346 – 528) and Structure 6/H6 (1645 ± 20,A.D. 342 – 505), date to late in the North Bay time frame and extend into the period considered to be transitional North Bay/Heins Creek at about A.D. 600 (Mason 1992). Smooth surfaced Laurel-like materials are associated with both of these structures. It would seem that at Richter, this timeframe is related to Laurel occupation rather than Heins Creek. Beaudhuin Village has returned a date within this range, though Laurel type materials are limited and Hein Creek materials are present also (Clauter and Richards 2005).

Table 7.7. Dates for Regional Sites

Site Name	Site Number	Sample Number	Association	Date	±	2-sigma date range	Reference
Beaudhuin	47DR432	BETA-178429				A.D. 426 - 688	
Beaudhuin	47DR432	BETA-215685		1540	40	A.D. 433 - 651	
Beaudhuin	47DR432	BETA-215687		1730	40	A.D. 220 - 405	
Beaudhuin	47DR432	BETA-178430	Wood Charcoal, F40	2480	40	775 - 430 B.C.	Clauter and Richards 2005
Christoff	47DR251	BETA-215674	Nutshell, F9	1840	40	A.D. 74 - 317	
Christoff	47DR251	BETA-215676	Nutshell, F6	1850	40	A.D. 68 - 251	
Naomikong Point	20CH2	M-2055	Residue from Laurel pseudo-scallop	1520	400	412 B.C. - A.D. 1278	Janzen 1968
Port des Morts	47DR81	I-888	Residue from North Bay Dentate, North Bay Linear Stamped, North Bay Plain, and North Bay Cordmarked	1790	100	A.D. 2 - 529	Mason 1967:326-327, Mason 1992:113
Port des Morts	47DR81	GX-14652-AMS	Only identified as residue from "North Bay Complex" sherds.	1830	80	A.D. 24 -385	Mason 1990, Mason 1992:113
Richter	47DR80	ISGS - A1090	Bone Collagen Area E, Dog	2195	25	361 - 195 B.C.	Epstein 2010:125

Table 7.7. Dates for Regional Sites

Site Name	Site Number	Sample Number	Association	Date	±	2-sigma date range	Reference
Richter	47DR80	WIS-721	Wood Charcoal, Area C, F63	1185	50	A.D. 1163 - 1377	Mason 1992:113
Richter	47DR80	WIS-725	Wood Charcoal, Area B, H2	2470	65	774 - 411 B.C.	Mason 1992:114
Richter	47DR80	ISGA-A1219	Deer Bone Collagen Area D, H8	1640	20	A.D. 346 - 528	Richards and Jeske 2015
Richter	47DR80	ISGA-A1220	Deer Bone Collagen Area C, H7	1745	25	A.D. 237 - 380	Richards and Jeske 2015
Richter	47DR80	ISGA-A1221	Deer Bone Collagen Area B, H2	1985	20	40 B.C. - 63 A.D.	Richards and Jeske 2015
Richter	47DR80	ISGA-A1222	Deer Bone Collagen Area E, H6	1645	20	A.D. 342 - 505	Richards and Jeske 2015
Richter	47DR80	BETA 215680	Bone Collagen, Area B, F72, Burial 5	1850	40	A.D. 68 - 251	Wellner 2006
Richter	47DR80	BETA 215679	Bone Collagen, Area B, F25, Burial 2	1890	40	A.D. 23 - 230	Wellner 2006
Richter	47DR80	BETA 215681	Residue from NB Scallop Vessel, Area E, Feature 7	2100	40	347 - 2 B.C.	Hart et al 2012:322
Richter	47DR80	BETA 433764	Charcoal, Birch, F48, H2	1900	30	A.D. 28-214	On file, UWM-ARL
Rock Island II	47DR128	GX-15411-AMS	Residue from NB/Heins Creek CWS Vessel C35	1607	71	A.D. 257 - 601	Mason 1992:115;1991:127-128; 1990
Rock Island II	47DR128	GX-15260-AMS	Residue from NB Linear Stamp Vessel C33	1730	110	A.D.86-526	Mason 1992:115;1991:124-125
Rock Island II	47DR128	GX-15261-AMS	Residue from Laurel Linear Stamp Vessel D25	1769	94	A.D. 29-531	Mason 1992:115;1991:124-125

Table 7.7. Dates for Regional Sites

Site Name	Site Number	Sample Number	Association	Date	±	2-sigma date range	Reference
Rock Island II	47DR128	I-6754	Residue from NB Plain Vessel F1	2015	120	360 B.C. - A.D.237	Mason 1992: 1991:124-125
Rock Island II	47DR128	I-6334	Residue from NB Linear Stamp Vessel C53	2540	270	1389 - 42 B.C.	Mason 1992:1991:124;1986:170
Rock Island II	47DR128	GX-15262-AMS	Residue from NB Linear Stamp Vessel F4	1730	110	A.D. 61-551	Mason 1992;124-125
Shanty Bay	47DR11	GX-20770-AMS	Residue from Dane Incised	2145	50	359-51 B.C.	Dirst 1998:114-115;1995a, 1995b
Summer Island	20DE4	M-1995	Wood Charcoal with Laurel dentate sherds	1700	140	A.D. 28 -630	Crane and Griffin:171
Summer Island	20DE4	M-2073	Wood Charcoal Cedar Twigs Laurel like pottery	1880	280	740 B.C. - A.D. 670	Brose 1970:151
Summer Island	20DE4	M-2074	Wood Charcoal (twigs) Becker Punctate Laurel association	1790	130	52 B.C. - A.D. 545	Brose 1970:151
Winter	20DE17	BETA-237019	Residue NB Vertical Corded Vessel	2090	40	333 B.C. - A.D. 2	Lovis et al 2012:87
Winter	20DE17	BETA-237017	Residue NB Punctated Vessel	1920	40	19 B.C. - A.D. 214	Lovis et al 2012:87
Winter	20DE17	BETA-237018	Residue NB Plain Vessel	1860	40	A.D. 64 - 243	Lovis et al 2012:87
Winter	20DE17	UIC-2133	OSL Sand	2180	215		Lovis et al 2012:87

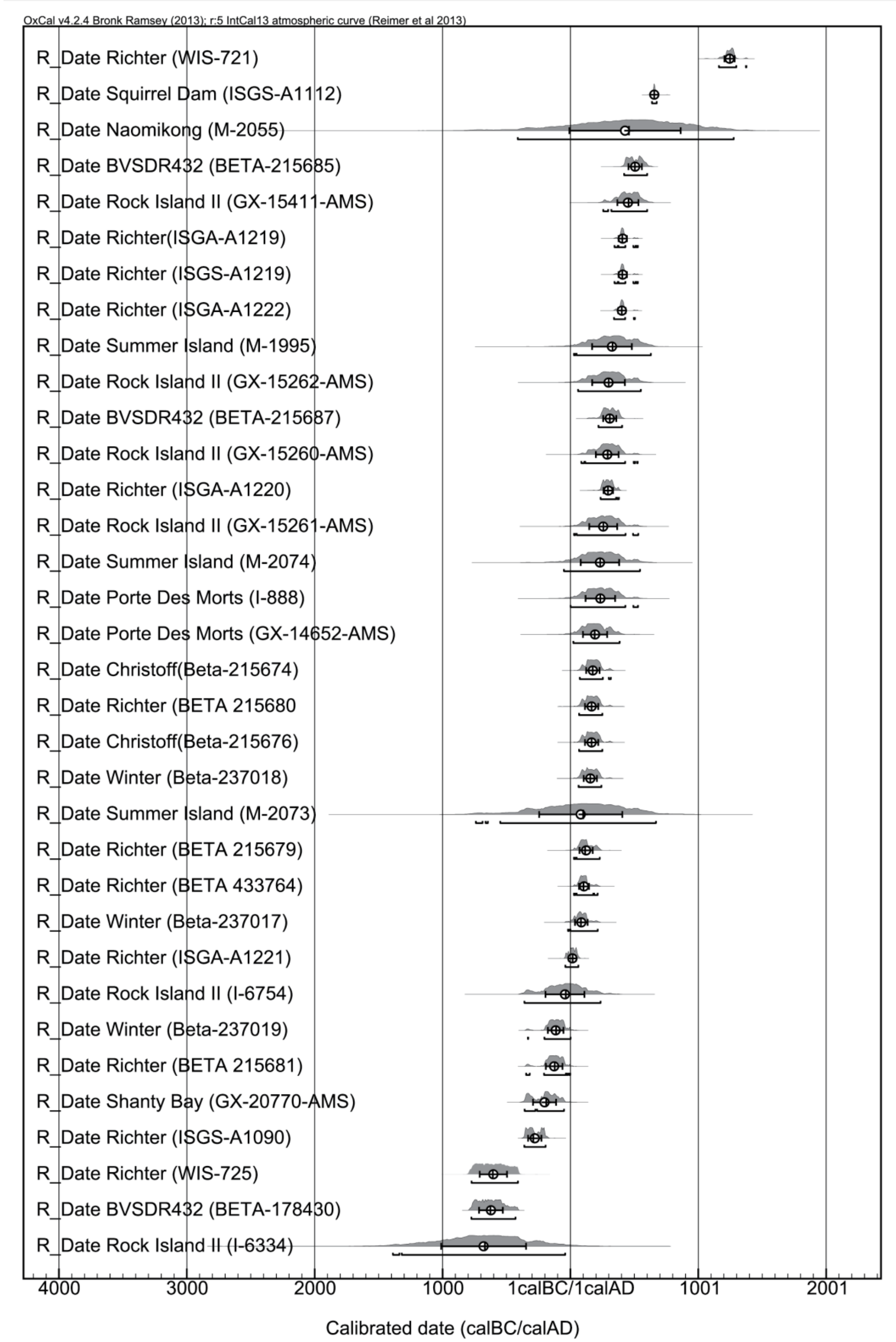


Figure 7.1. Richter site and regional radiocarbon dates.

Early Woodland Pottery and the Richter Site Occupations

The earliest vessel from the Richter site is the only one of its type found at the site. It is associated with a house structure but this structure is also associated with dates that are more recent than those from the vessel context. The Early Woodland I date associated with V1 does not overlap with any other dates at the site. Currently, only a date from the Beaudhuin Village site in southern Door County falls in the same date range. However, these dates do overlap with EW dates from Lasley's Point and Hilgen Springs.

From a technological perspective, V1 is different from V2 and 3. Vessels technologically similar to V1 have been found at Beaudhuin Village, Mero, and the Ports des Morts sites. However, V1 differs from a North Bay vessel recovered from the Shanty Bay site where Dirst had identified initial and later North Bay occupations (Dirst 1995). The Shanty Bay vessel is friable and in poor condition and vessel walls are 9 – 15 cm in thickness. Recovered body sherds are smoothed on the exterior surface. Temper is described as consisting of large size quartz and feldspar particles. Vessel form appears to be a shouldered jar with a slightly incurvate rim (Dirst 1995:33-34). Dirst considers this pot to be part of an initial North Bay occupation. Although not directly dated, the vessel was recovered from a feature stratigraphically below a deposit considered to represent a lake level encroachment dated to ca. 350 B.C. This deposit was in turn buried by a second North Bay occupation. The Shanty Bay vessel is smooth and decorated with multiple rows of oblique linear stamped decoration and compares favorably to the type North Bay Linear Stamped. This vessel differs in surface treatment, decoration and temper from the three Richter site vessels dated to the later Early Woodland range at the Richter site.

According to Mason (1966:78), a single smoothed surface rim sherd (typed as North Bay Plain) was recovered from below the buried beach at the Mero site. Mason noted that cord roughened body sherds dominated smooth surface varieties from contexts below the buried beach. However, smooth surface sherds are numerically superior from beach contexts (Mason 1966:78-80). How these smooth surface vessels compare to V1 from the Richter site is uncertain. Although smooth surface rims were recovered at the Richter site, most are not large enough to determine if all the vessel surfaces were smooth. Without a fairly complete vessel with a direct or contextual date it is difficult to say if there are smooth vessels that are contemporary to the cordmarked thick vessels at Mero, Porte des Morts, and Shanty Bay (Dirst 1995; Mason 1966, 1967). If the high water levels also created the beach level at Mero then the vessels found in and under the beach level would predate 350 B.C., making them possible contemporaries to V1 from the Richter site. Dates at the Richter site for V2 and V3 place them into the temporal period following the 350 B.C. high water event which roughly coincides with the Early Woodland occupation at the site.

Vessel 2 and V3 are similar but not identical to vessels recovered from other area sites. Technologically, V3 resembles Dane Incised vessels found at the Shanty Bay and Mero sites. The Dane Incised vessel from Shanty Bay was direct dated to a 2-sigma date range of calibrated 351-50 B.C. with a median probability of 190 B.C. This vessel was recovered from contexts stratigraphically superior to the North Bay Linear Stamped pot associated with the initial North Bay occupation. The problem with looking to other sites for clarification is that their cordmarked and Laurel materials are found in mixed contexts as at Shanty Bay. There is also no documentation of coil breaks or cord wrapped paddle and anvil breaks in published reports. Clearly, cordmarked vessels are associated with the later portion of the Early Woodland and early Middle Woodland, but without dates related to the vessels it is impossible to compare them to the Richter site technological chronology.

Laurel Pottery and the Richter Site Occupations

It is unclear whether the people who made the Early Woodland vessels at the Richter site were culturally related to the potters that produced the Laurel ceramics in later occupations. Lacking more direct dated vessels, it is difficult to know if there was an overlap in the vessel types, if transitional vessel types were being produced, or if an abrupt transition from cordmarked slab built pots to smooth surface coiled vessels best describes temporal change at the Vessel 5, a Laurel-like scallop stamped pot, was recovered from Area E, a location harboring contexts dated to 2-sigma calibrated A.D. 342 – 505 (ISGS-A1222). However, another area at the Richter site that also produced Laurel-like rim sherds and a linear stamped smooth body sherd with a coil break is, Area D. Bone collagen from a human burial recovered from this locale has been dated to 2-sigma calibrated A.D. 23 – 230 (BETA 215679). In fact, both dated burials at the Richter site fall within the interval of about 50 B.C to A.D. 100. This is a time period that appears to coincide with the early Middle Woodland North Bay occupation, but prior to the Laurel occupation at the site. Unfortunately, neither burial included culturally diagnostic artifacts. Additionally as discussed above the features contained examples of all surface treatments found in the Richter site ceramic assemblage.

It is interesting to note that the dated burials predate or slightly overlap with the early end of the range of Laurel dates from the Richter site. Evidence of injuries that could possibly indicate violence was found on the burials (Burial 2 healing sternum fracture, Burial 3 healing V-shaped occipital bone depression fracture) (Wellner 2006). There are a number of scenarios that could make these individuals refugees of conflict among those producing Laurel-like materials; the individuals were victims of violence, sought refuge at the Richter site then died of their wounds. They also could be local individuals that succumbed to injuries due to conflict with the people represented by Laurel ceramics. This of course presupposes that ceramic technological differences are also equal to group identity. Change in ceramic technology could reflect regional adoption of new ways of producing ceramics without changes in cultural identity. There are other changes in habitation and material culture at Richter associated with the Laurel ceramic materials including repeat occupations in Area E and long term occupation in Area D. All of these could be linked to larger, regional behavioral patterns of change in technology, subsistence and culture. Answers to the question of cultural identity and technological change require additional regional scale data.

In sum, the Richter site data suggests that slab-built pottery that compares favorably to known Midwestern thick ware types typically associated with Early Woodland cultures, was produced on Washington Island as early as 700 B.C. Sometime after 350 B.C., thinner walled, cordmarked, slab-built pottery comes into use and continues to be produced throughout the traditional North Bay time frame. By about A.D. 250, a late Middle Woodland pottery tradition is present, represented by coil-built pots that compare favorably to varieties typically associated with Laurel cultures. This Laurel-like pottery does not appear to entirely replace the thin-walled cordmarked types, suggesting that both Laurel and North Bay potters were present at the Richter site during the timeframe associated with North Bay. With data from the Richter site it is not possible to distinguish when and if a transition took place. Laurel materials found at the site date to what is considered the time of the transition from North Bay to Late Woodland Heins Creek. It is possible that Laurel occupations continued at the site into the Late Woodland unlike other sites in the region that indicate a transition to Heins Creek by this point. The exact nature of the interactions of Laurel and North Bay continue to be unclear, however the Richter site may represent a lengthier and less ephemeral Laurel presence during the Middle Woodland into the early Late Woodland. This type of Laurel occupation would make Richter the location of direct contact with Laurel peoples and place a long-term Laurel presence very near to the Door Peninsula and North Bay territory.

Directions for Future Research

The performance based behavioral chain created for selected Richter site vessels demonstrates the utility of this method for identifying significant technological differences within a ceramic assemblage. The variation observed in the Richter site assemblage correlates with temporal shifts and also with cultural differences. How the ceramic technology at the Richter site mirrors other contemporary ceramic technologies in the region and farther afield still needs to be addressed. Producing behavioral chains when possible for other regional ceramic assemblages would allow additional insight on the transfer and adoption of ceramic production methods.

Beyond exploring the performance characteristics of ceramic materials, this dissertation demonstrates the importance of understanding and documenting vessel production methods. At the Richter site, construction differences provided an explanation for some of the variation initially perceived in the taxon. With dates from the Richter site these variations in vessel construction have been found to be representative of wide spread ceramic technological horizons evident during the Early and Middle Woodland periods. Documentation and dating of additional vessels from sites within these broad ceramic technological horizons would provide for insights in the transmission and adoption processes of technology.

In order to document evidence of construction methods, those collecting the data need to know what characteristics to look for in the materials. Often the signatures are subtle and not easy to perceive during a cursory review. It is imperative that researchers educate themselves on the indicators of the various construction methods. Researchers also need to examine materials themselves and not rely on methods documented for specific types. As this dissertation and the work of others document, construction methods have been incorrectly identified in the past (Hart and Brumbach 2009; Nolan and Olson 2015).

In reviewing existing Early Woodland ceramic types for this dissertation it is clear that construction methods vary widely (Brumbach 2016; Hart and Brumbach 2009). The significance of this variation temporally, technologically, or culturally has yet to be addressed. It would be a worthwhile endeavor to explore and study this documented variation as part of the study of Early Woodland ceramic horizons.

Additional analysis of the Mero and Porte des Morts collection is also necessary. New data including petrographic data, production analysis, and use and function analysis, along with general attribute and metric data would allow for comparisons with the data collected at the Richter site. It is also critical that more ceramic samples from these sites be directly dated as personal examination of these sherds suggests the presence of residue that can be dated.

The study reported in this dissertation has relied on an approach drawn from behavioral archaeology to reevaluate local cultural history as well as contribute to a broader understanding of the innovation and/or adoption of ceramic container technologies within the highly mobile Middle Woodland societies of the region. Behavioral archaeology approaches are of course well suited to investigations of any kind of technology but a focus on human behavior is particularly appropriate to the study of additive technologies like ceramics. The plastic medium that potters work in allows for an almost infinite number of ad hoc decisions by a potter during the production process. Modeling this dynamic interplay between behavior, raw materials, technology, and actual use requires an equally dynamic approach. I believe that this approach is what has allowed me to recognize the technological sophistication of the Richter site potters in what might otherwise be considered a ceramic technological backwater.

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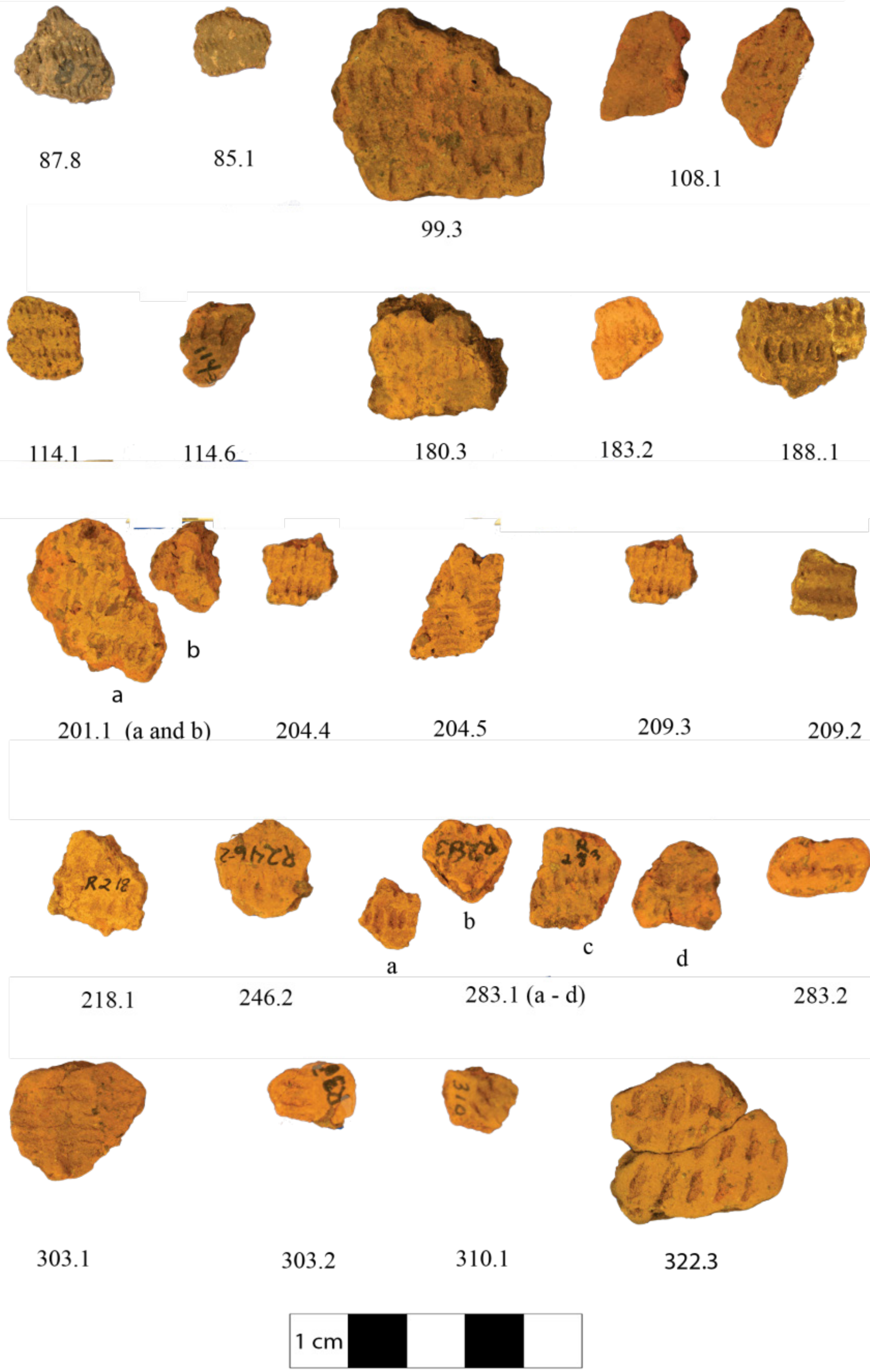
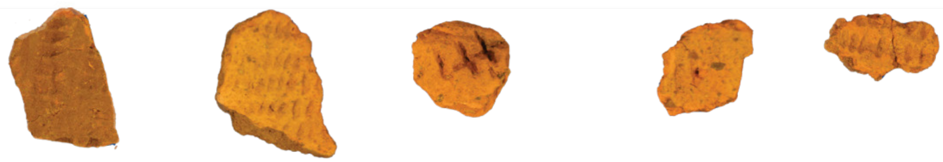
Appendix A:
Examples of Decorated Body Sherds

(Number under sherd is lot number plus individual sherd number)

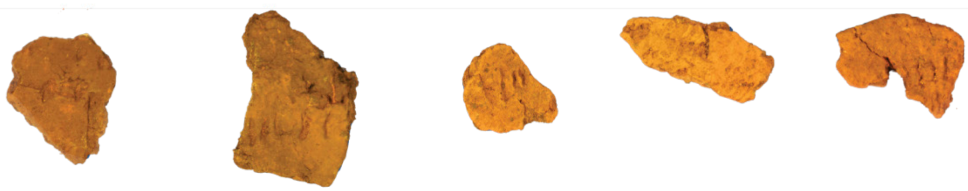
Cord Wrapped Stick (CWS)





326.3 341.1 342.1 347.1 356.1

366.1 379.4 379.5 407.1 428.3 (a and b)



431.1 435.1 436.6 436.8 440.2

450.1 455.1 469.8 on CM 469.1 (a and b) 469.6

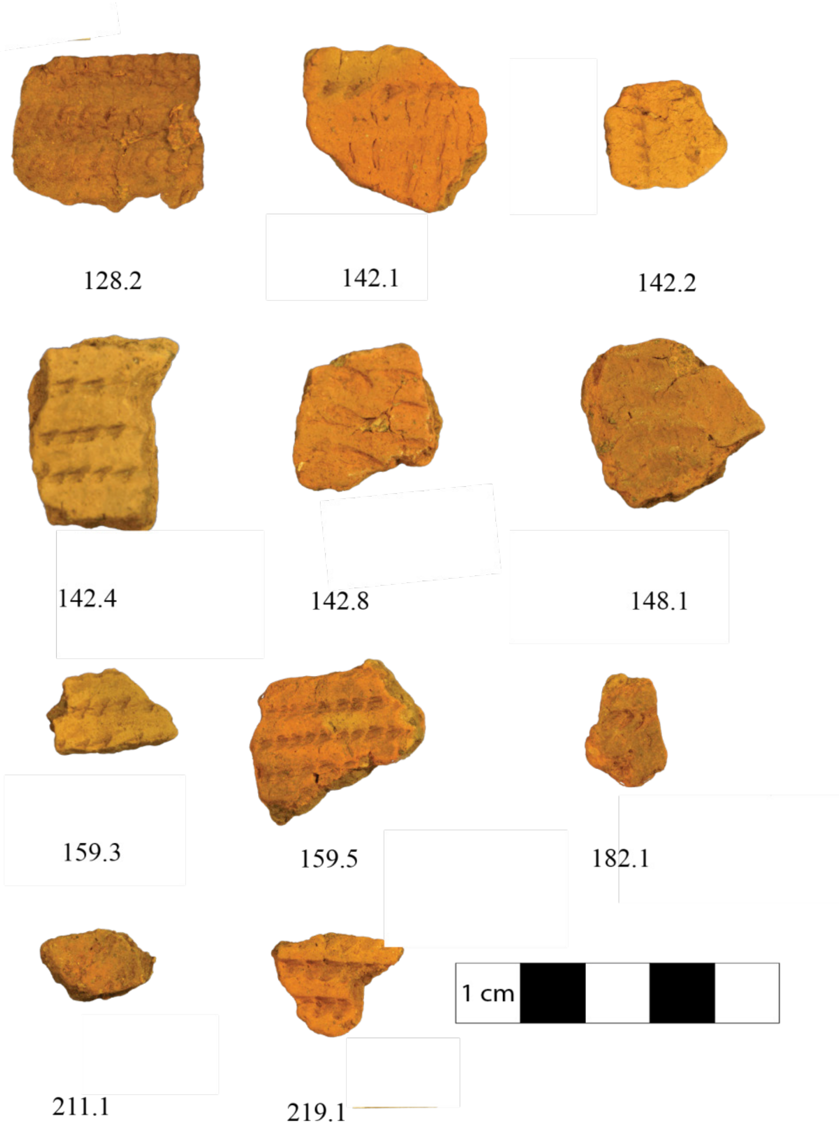
501.3

CWS with Annular Punctates

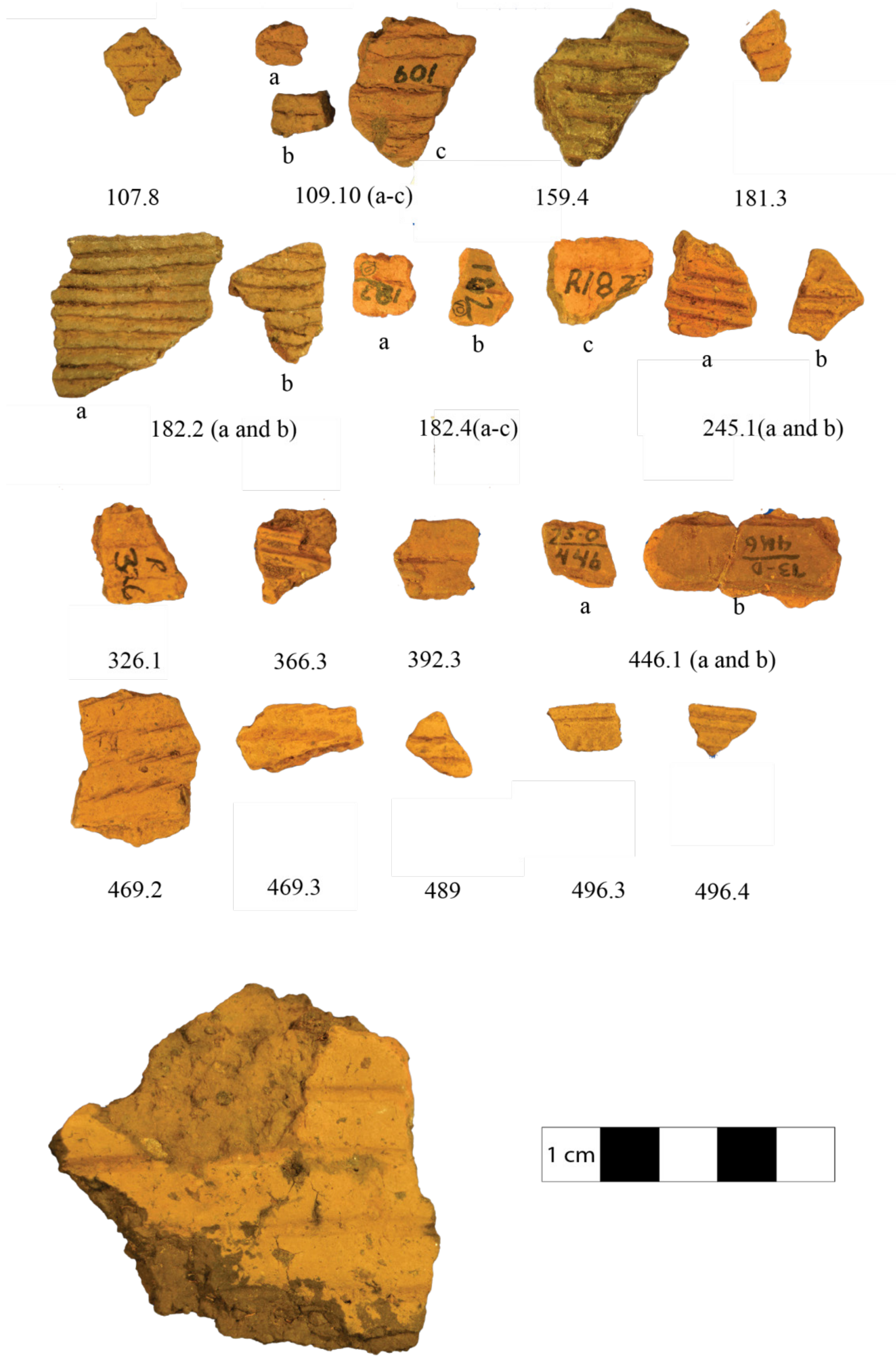
115.1

101.12

Stamp-and-Drag

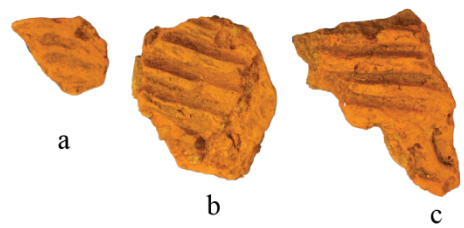


Stamp-and-Drag Plain Tool



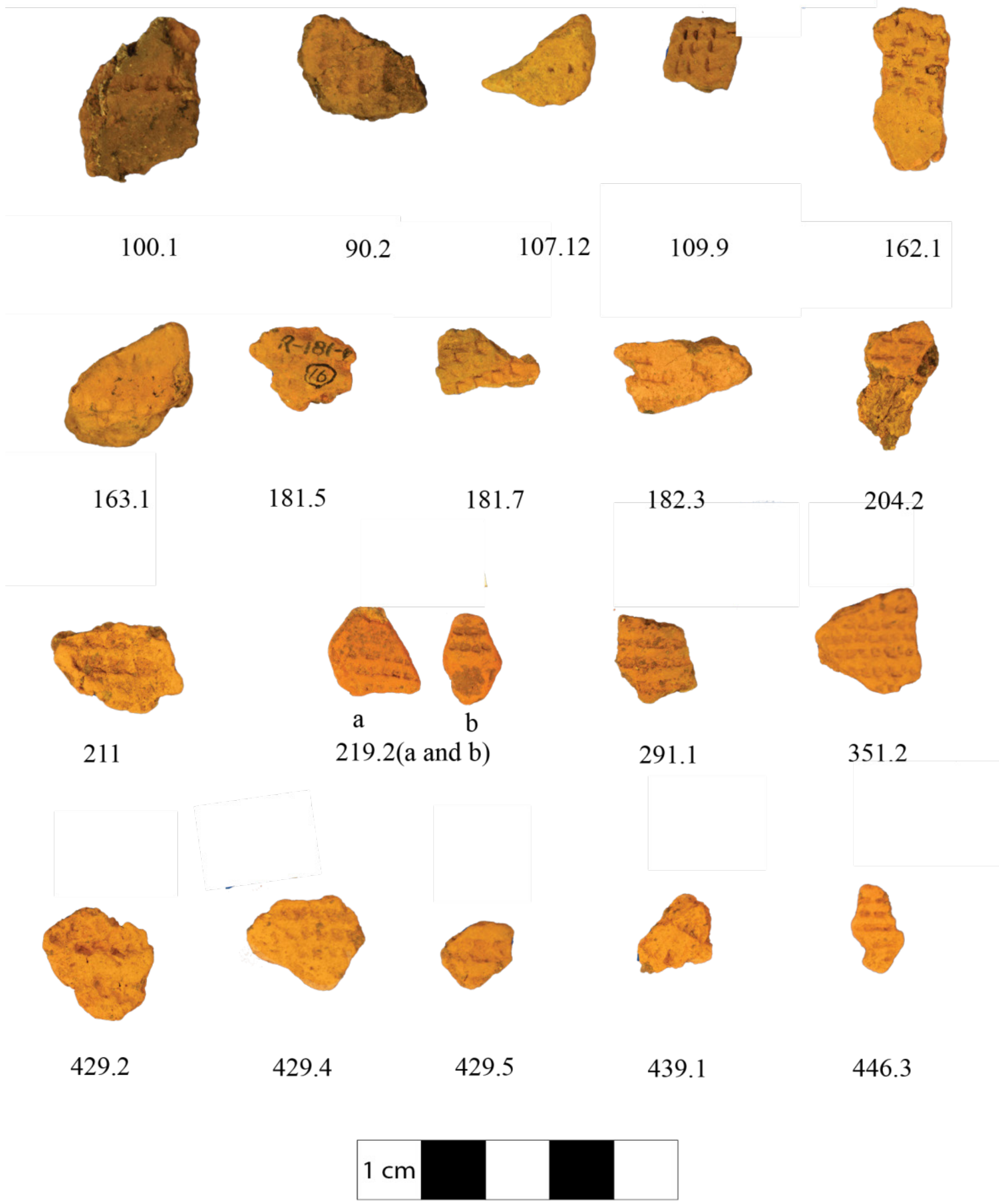
129.1

Stamp-and-Drag Plain Tool with Fingernail or Crescent Stamp



438.2 (a - c)

Dentate


100.1
90.2
107.12
109.9
162.1
163.1
181.5
181.7
182.3
204.2
211
a
b
219.2(a and b)
291.1
351.2
429.2
429.4
429.5
439.1
446.3
1 cm

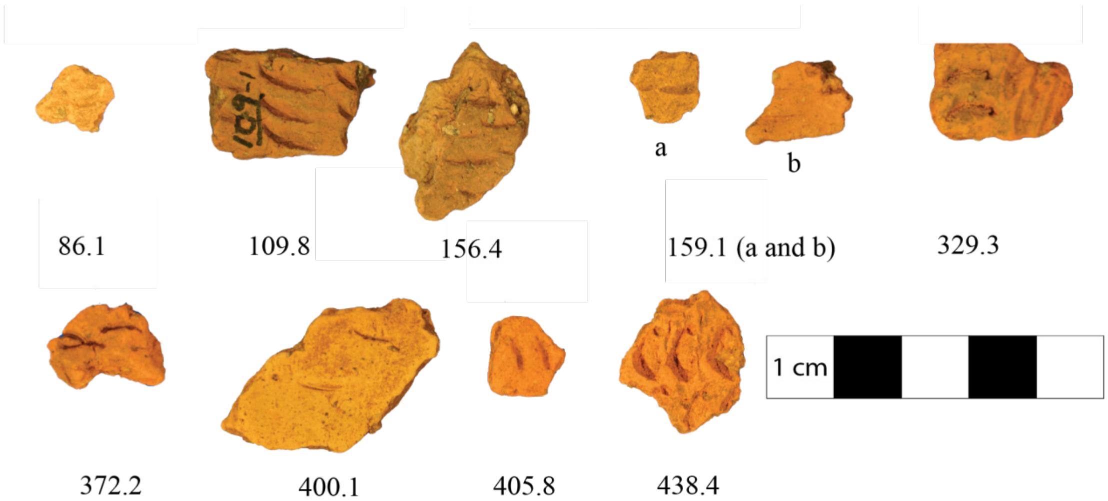
Incised

128.1

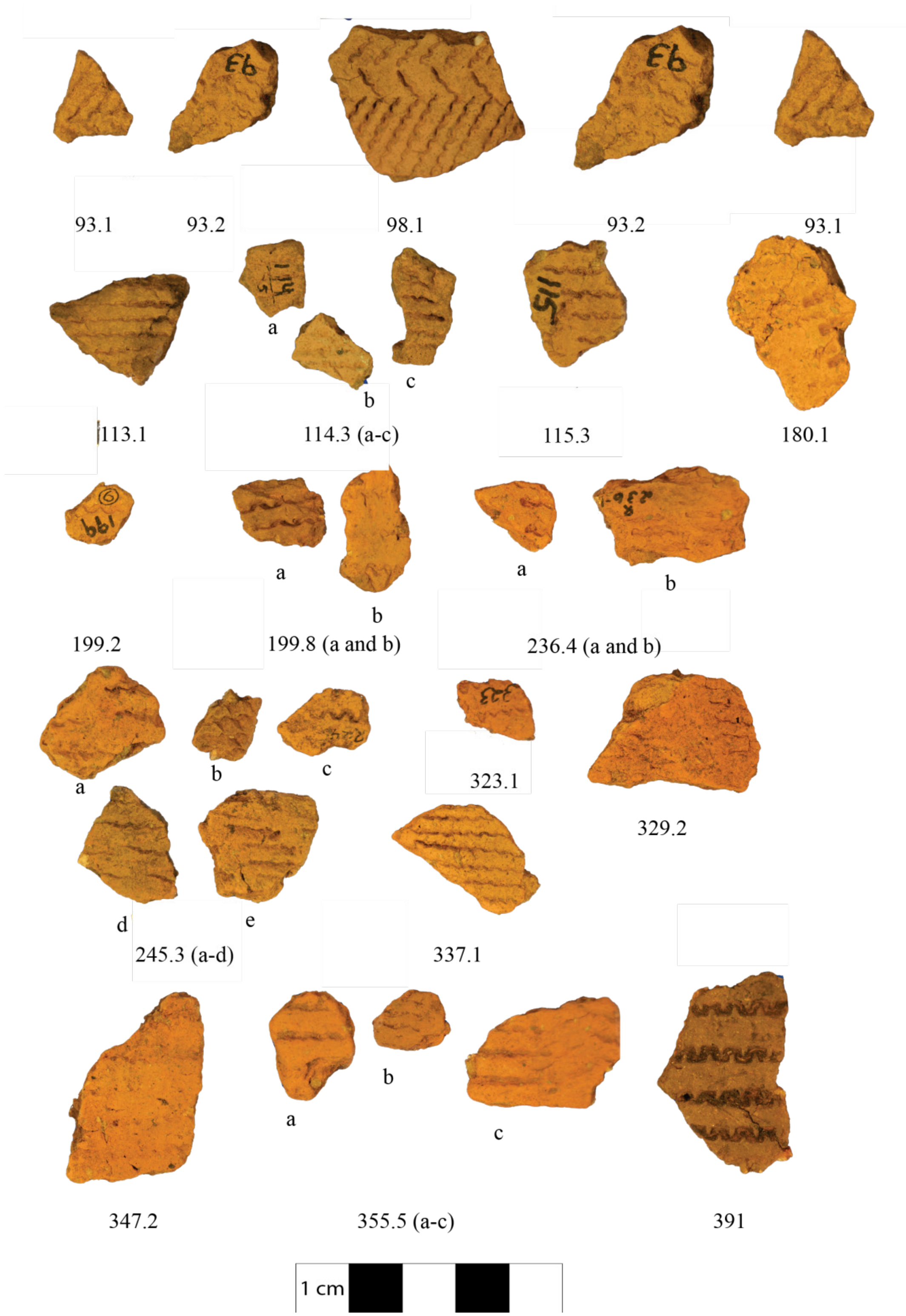
148.2

Linear Stamp

Linear Stamp Fingernail or Crescent Stamp



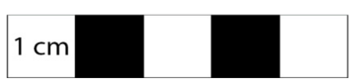
Psuedo-scallop Stamp



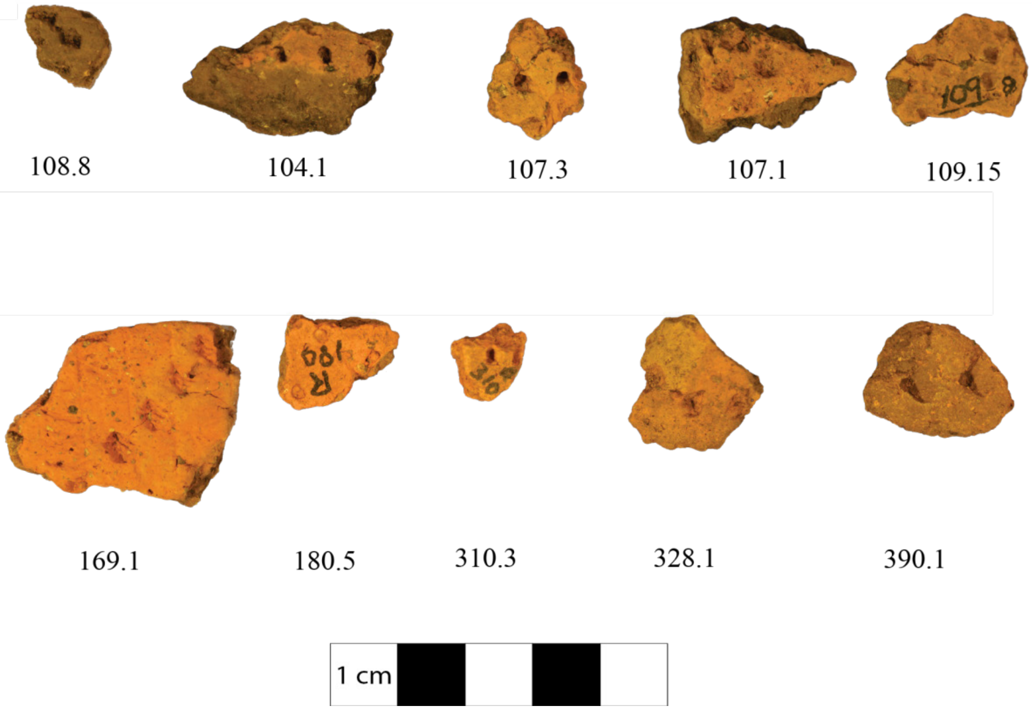
438.3 456.3 457.5

Pseudo-Scallop on Cordmarked Surface
(with possible incising)

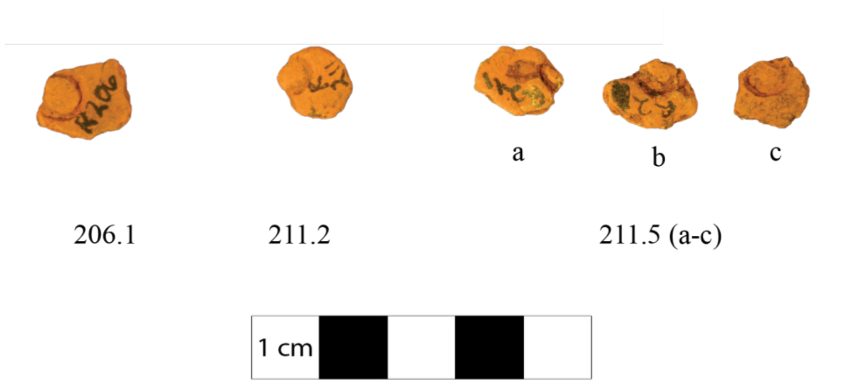
119.2



Punctate

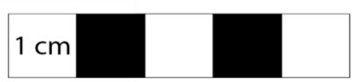


Punctate Annular



Unidentified
(Cordmarked Surface)

469. 12 (a, b and c)



Appendix B:
Rim Data

Rim Data Part 1: General Information

Sherd ID	Vessel Number	Lot Number	Surface Exterior	Surface Interior	Weight (g)	Height (mm)	Length (mm)	Thickness 1 (mm)	Thickness 2 (mm)	Thickness 3 (mm)	Average (mm)
RS00016	43	086	SM	SM	2.14	20.00	16.00	4.83	5.05	5.61	5.16
RS00018	71	087	CM	SM	3.23	14.00	24.00	6.94	6.83	7.60	7.12
RS00028	18	088	SM	SM	9	31.00	24.00	6.34	6.57	7.09	6.67
RS00034	7	092	SM	SM	0.91	12.00	12.00	4.49	4.51	4.33	4.44
RS00038	50	095	SM	SM	2.49	14.00	21.00	5.39	5.84	6.03	5.75
RS00040	17	096	SM	SM	18	42.00	37.00	6.30	6.93	9.25	7.49
RS00042	32	099	SM	SM	4.64	25.00	30.00	3.43	3.80	4.48	3.90
RS00045	28	096	CM	SM	11.74	33.00	47.00	6.09	6.74	8.23	7.02
RS00047	47	099	SM	SM	0.66	15.00	16.00	1.72	2.46	3.35	2.51
RS00053	49	101	SM	SM	4.83	19.00	29.00	8.80	8.39	7.96	8.38
RS00054	67	101	SM	SM	2.32	21.00	21.00	3.54	3.78	5.58	4.30
RS00058	12	101	SM	SM	2.8	19.00	18.00	7.06	8.23	9.43	8.24
RS00062	54	101	SM	SM	9.05	18.00	45.00	7.64	8.36	10.02	8.67
RS00072	37	104	SM	SM	8.96	29.00	34.00	7.35	6.88	6.55	6.93
RS00074	30	104	SM	SM	10.65	27.00	39.00	6.91	7.26	7.30	7.16

Rim Data Part 1: General Information

Sherd ID	Vessel Number	Lot Number	Surface Exterior	Surface Interior	Weight (g)	Height (mm)	Length (mm)	Thickness 1 (mm)	Thickness 2 (mm)	Thickness 3 (mm)	Average (mm)
RS00079	39	107	SM	SM	3.12	17.00	23.00	8.41	8.81	7.71	8.31
RS00088	44	107	SM	SM	3.7	21.00	26.00	3.47	3.94	5.53	4.31
RS00096	55	109	SM	SM	1.22	12.00	17.00	4.39	4.59	4.94	4.64
RS00103	23	113	SM	SM	0.74	13.00	11.00	4.74	5.48	5.04	5.09
RS00110	73	120	SM	SM	0.77	17.00	21.00	3.36	3.77	5.02	4.05
RS00114	13	136	CM	SM	2.68	13.00	22.00	8.50	8.71	6.82	8.01
RS00121	64	142	SM	SM	8.21	29.00	29.00	6.07	6.08	7.13	6.43
RS00123	53	142	SM	SM	5.25	20.00	25.00	5.93	6.45	7.63	6.67
RS00134	69	156	CM	SM	1.98	22.00	15.00	4.55	4.99	4.78	4.77
RS00135	9	156	SM	SM	2	20.00	13.00	4.60	5.11	5.43	5.05
RS00136	35	156	SM	SM	2	12.00	16.00	3.30	3.25	2.90	3.15
RS00137	6	159	SM	SM	2.28	23.00	16.00	5.47	5.08	4.69	5.08
RS00150	42	180	SM	SM	2.25	27.00	14.00	2.72	3.48	4.63	3.61
RS00153	62	181	SMCM	SM	2	18.00	16.00	4.65	4.86	5.04	4.85
RS00161	57	182	SM	SM	0.63	18.00	11.00	2.78	2.40	3.57	2.92

Rim Data Part 1: General Information

Sherd ID	Vessel Number	Lot Number	Surface Exterior	Surface Interior	Weight (g)	Height (mm)	Length (mm)	Thickness 1 (mm)	Thickness 2 (mm)	Thickness 3 (mm)	Average (mm)
RS00167	25	193	SM	SM	3	20.00	22.00	4.99	5.26	6.59	5.61
RS00170	10	193	SM	SM	3	14.00	23.00	7.01	7.20	7.84	7.35
RS00201	68	219	CM	SM	5	20.00	32.00	7.31	7.21	6.58	7.03
RS00210	22	239	SMCM	SM	6	22.00	25.00	9.65	9.70	6.59	8.65
RS00226	34	251	SM	SM	3	17.00	19.00	5.10	5.33	5.77	5.40
RS00232	51	256	W	SM	2.33	15.00	21.00	4.18	4.16	6.07	4.80
RS00240	14	261	SMCM	SM	2.5	15.00	22.00	7.56	6.89	6.51	6.99
RS00248	26	281	SMCM	SM	9.21	32.00	27.00	3.97	4.26	4.52	4.25
RS00253	52	283	CM	SM	3.8	22.00	18.00	6.82	6.86	7.41	7.03
RS00254	63	283	SM	SM	1	14.00	12.00	6.21	4.40	5.70	5.44
RS00260	8	291	CM	SM	3.39	21.00	24.00	6.17	6.18	5.37	5.91
RS00262	59	298	W	SM	8	27.00	27.00	7.57	8.50	9.46	8.51
RS00267	60	327	SM	SM	3.59	28.00	16.00	5.77	5.99	6.67	6.14
RS00268	24	329	CM	SM	9.85	32.00	25.00	9.55	8.52	9.46	9.18
RS00269	20	329	SM	SM	2.88	18.00	19.00	8.53	8.99	6.17	7.90

Rim Data Part 1: General Information

Sherd ID	Vessel Number	Lot Number	Surface Exterior	Surface Interior	Weight (g)	Height (mm)	Length (mm)	Thickness 1 (mm)	Thickness 2 (mm)	Thickness 3 (mm)	Average (mm)
RS00272	48	332	SM	SM	3.62	18.00	24.00	4.39	6.18	7.96	6.18
RS00273	46	338	SM	SM	3.95	24.00	27.00	6.09	7.07	5.21	6.12
RS00274	27	339	CM	SM	11.97	42.00	27.00	8.54	9.13	8.06	8.58
RS00275	70	351	SM	SM	3.38	23.00	20.00	5.45	5.86	7.03	6.11
RS00276	61	362	SM	SM	3.59	25.00	21.00	4.40	4.30	7.84	5.51
RS00282	66	399	SM	SM	3	15.00	31.00	3.09	3.91	5.81	4.27
RS00284	11	401	CM	SM	23.06	53.00	48.00	5.65	6.43	8.31	6.80
RS00285	38	405	SM	SM	3	14.00	24.00	6.70	6.84	7.75	7.10
RS00288	21	408	SMCM	SM	19.86	50.00	45.00	10.15	10.08	6.70	8.98
RS00296	72	438	SM	SM	2.1	16.00	19.00	5.32	5.09	6.79	5.73
RS00299	31	443	SM	SM	15.04	39.00	50.00	3.58	4.30	5.97	4.62
RS00300	15	446	SM	SM	1.41	11.00	22.00	5.56	5.40	4.80	5.25
RS00302	29	452	W	SM	5.73	20.00	26.00	3.85	7.49	7.45	6.26
RS00305	33	469	SM	SM	6.71	21.00	34.00	9.04	10.00	8.84	9.29
RS00306	40	469	SM	SM	10.89	34.00	34.00	4.58	4.99	7.07	5.55

Rim Data Part 1: General Information

Sherd ID	Vessel Number	Lot Number	Surface Exterior	Surface Interior	Weight (g)	Height (mm)	Length (mm)	Thickness 1 (mm)	Thickness 2 (mm)	Thickness 3 (mm)	Average (mm)
RS00308	5	475	SM	SM	9	36.00	40.00	5.02	5.25	6.72	5.66
RS00309	45	476	SMCM	SM	4.96	34.00	20.00	4.80	4.65	7.66	5.70
RS00310	36	482	SM	SM	2.35	21.00	17.00	4.81	5.30	6.59	5.57
RS00316	56	501	SM	SM	5.04	23.00	30.00	4.18	5.05	6.28	5.17
RS00318	65	304	SM	SM	21	0.00	0.00	6.47	6.65	8.98	7.37
RS00339	1	460	CM	SM	50	46.00	77.00	10.72	10.18	14.51	11.80
RS00344	2	089	CM	SM	13	43.00	32.00	5.09	5.42	7.71	6.07

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00016	Uniformly Light	5YR5/4	reddish brown	7.5YR6/4	light brown	7.5YR6/4	light brown	7.5YR7/4	pink
RS00018	Unknown	7.5YR4/1	dark gray	7.5YR5/1	gray	7.5YR5/3	brown	7.5YR6/3	light brown
RS00028	Uniformly Dark	5YR5/1	gray	7.5YR6/1	gray	5YR3/1	very dark gray	5YR4/1	dark gray
RS00034	Uniformly Light	10YR7/2	light gray	10YR8/2	very pale brown	10YR6/2	light brownish gray	10YR7/2	light gray
RS00038	Uniformly Dark	5YR3/1	very dark gray	5YR5/2	reddish gray	5YR3/1	very dark gray	5YR4/1	dark gray
RS00040	Uniformly Dark	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR4/3	reddish brown	5YR5/3	reddish brown
RS00042	Dark Margins/Light Core	5YR5/3	reddish brown	5YR6/4	light reddish brown	5YR5/3	reddish brown	5YR6/3	light reddish brown
RS00045	Uniformly Dark	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR4/2	dark reddish gray	5YR5/2	reddish gray

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00047	Uniformly Light	5YR5/4	reddish brown	5YR6/4	light reddish brown	5YR6/4	light reddish brown	5YR7/4	pink
RS00053	Unknown	7.5YR4/1	dark gray	7.5YR5/1	gray	7.5YR5/2	brown	7.5YR6/2	pinkish gray
RS00054	Light Ext Margin/Dark Interior Margin	7.5YR7/3	pink	7.5YR8/3	pink	7.5YR3/1	very dark gray	7.5YR4/1	dark gray
RS00058	Unknown	5YR4/1	dark gray	5YR5/1	gray	5YR4/1	dark gray	5YR5/1	gray
RS00062	Uniformly Dark	7.5YR4/1	dark gray	7.5YR6/2	pinkish gray	7.5YR4/1	dark gray	7.5YR6/2	pinkish gray
RS00072	Light Ext Margin/Dark Interior Margin	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR5/3	reddish brown	5YR6/3	light reddish brown
RS00074	Light Ext Margin/Dark Interior Margin	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR6/2	pinkish gray	5YR7/2	pinkish gray

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00079	Uniformly Light	7.5YR6/3	light brown	7.5YR7/3	pink	5YR6/4	light reddish brown	7.5YR7/4	pink
RS00088	Uniformly Dark	5YR3/1	very dark gray	5YR4/1	dark gray	5YR3/1	very dark gray	5YR4/1	dark gray
RS00096	Uniformly Light	7.5YR6/3	light brown	7.5YR7/3	pink	5YR6/3	light reddish brown	7.5YR7/3	pink
RS00103	Uniformly Light	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR5/3	reddish brown	5YR6/3	light reddish brown
RS00110	Uniformly Light	7.5YR6/3	light brown	7.5YR7/3	pink	7.5YR6/3	light brown	7.5YR7/3	pink
RS00114	Uniformly Light	7.5YR2.5/1	black	7.5YR4/1	dark gray	7.5YR4/2	brown	7.5YR5/2	brown
RS00121	Uniformly Light	7.5YR5/4	brown	7.5YR6/4	light brown	7.5YR5/4	brown	7.5YR6/4	light brown

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00123	Light Margins/Dark Core	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR5/3	reddish brown	5YR6/3	light reddish brown
RS00134	Light Ext Margin/Dark Interior Margin	5YR6/3	light reddish brown	5YR7/3	pink	5YR6/3	light reddish brown	5YR7/3	pink
RS00135	Uniformly Light	10YR7/3	very pale brown	10YR8/3	very pale brown	10YR7/3	very pale brown	10YR8/3	very pale brown
RS00136	Light Ext Margin/Dark Interior Margin	5YR6/3	light reddish brown	5YR7/3	pink	5YR3/1	very dark gray	5YR4/1	dark gray
RS00137	Uniformly Light	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR5/2	reddish gray	5YR6/2	pinkish gray
RS00150	Unknown	5YR3/1	very dark gray	5YR4/1	dark gray	5YR3/1	very dark gray	5YR4/1	dark gray
RS00153	Light Ext Margin/Dark	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR5/2	reddish gray	5YR6/2	pinkish gray

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
	Interior Margin								
RS00161	Light Ext Margin/Dark Interior Margin	7.5YR6/3	light brown	7.5YR7/3	pink	5YR3/1	very dark gray	7.5YR4/1	dark gray
RS00167	Unknown	5YR6/2	pinkish gray	5YR7/2	pinkish gray	5YR5/2	reddish gray	5YR6/2	pinkish gray
RS00170	Unknown	5YR3/1	very dark gray	5YR4/1	dark gray	5YR3/1	very dark gray	5YR4/1	dark gray
RS00201	Unknown	7.5YR5/2	brown	7.5YR6/2	pinkish gray	7.5YR5/2	brown	7.5YR6/2	pinkish gray
RS00210	Light Ext Margin/Dark Interior Margin	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR4/2	dark reddish gray	5YR5/2	reddish gray
RS00226	Uniformly Dark	10YR5/2	grayish brown	10YR6/2	light brownish gray	10YR2/1	black	10YR3/1	very dark gray

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00232	Uniformly Light	7.5YR5/3	brown	7.5YR6/3	light brown	7.5YR6/3	light brown	7.5YR7/3	pink
RS00240	Uniformly Dark	7.5YR3/2	dark brown	7.5YR4/2	brown	7.5YR2.5/1	black	7.5YR3/1	very dark gray
RS00248	Light Ext Margin/Dark Interior Margin	7.5YR6/3	light brown	7.5YR7/3	pink	7.5YR2.5/1	black	7.5YR3/1	very dark gray
RS00253	Light Ext Margin/Dark Interior Margin	5YR4/2	dark reddish gray	5YR5/2	reddish gray	5YR4/3	reddish brown	5YR5/3	reddish brown
RS00254	Uniformly Light	7.5YR5/4	brown	7.5YR6/4	light brown	7.5YR5/4	brown	7.5YR6/4	light brown
RS00260	Uniformly Light	5YR6/4	light reddish brown	5YR7/4	pink	5YR6/4	light reddish brown	5YR7/4	pink
RS00262	Uniformly Light	2.5YR5/4	reddish brown	2.5YR6/4	light reddish brown	5YR6/4	light reddish brown	5YR7/4	pink

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00267	Uniformly Dark	5YR4/1	dark gray	5YR5/1	gray	5YR3/1	very dark gray	5YR4/1	dark gray
RS00268	Light Ext Margin/Dark Interior Margin	2.5YR5/4	reddish brown	2.5YR6/4	light reddish brown	2.5YR4/2	weak red	2.5YR5/2	weak red
RS00269	Uniformly Light	2.5YR5/3	reddish brown	2.5YR6/3	light reddish brown	2.5YR5/3	reddish brown	2.5YR6/3	light reddish brown
RS00272	Dark Ext Margin/Ligh t Int Margin	5YR4/1	dark gray	5YR5/1	gray	5YR6/4	light reddish brown	5YR7/4	pink
RS00273	Uniformly Light	7.5YR6/4	light brown	7.5YR7/4	pink	7.5YR6/4	light brown	7.5YR7/4	pink
RS00274	Light Ext Margin/Dark Interior Margin	2.5YR5/4	reddish brown	2.5YR6/4	light reddish brown	2.5YR5/2	weak red	2.5YR6/2	pale red

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00275	Light Margins/Dark Core	5YR6/4	light reddish brown	5YR7/4	pink	2.5YR5/4	reddish brown	2.5YR6/4	light reddish brown
RS00276	Light Ext Margin/Dark Interior Margin	5YR6/3	light reddish brown	5YR7/3	pink	5YR5/1	gray	5YR4/1	dark gray
RS00282	Uniformly Dark	5YR5/1	gray	5YR6/1	gray	5YR3/1	very dark gray	5YR4/1	dark gray
RS00284	Unknown	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR5/3	reddish brown	5YR6/3	light reddish brown
RS00285	Light Ext Margin/Dark Interior Margin	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR4/1	dark gray	5YR5/1	gray
RS00288	Unknown	5YR4/1	dark gray	5YR5/1	gray	5YR4/1	dark gray	5YR5/1	gray
RS00296	Light Ext Margin/Dark	7.5YR6/3	light brown	7.5YR7/3	pink	7.5YR5/2	brown	7.5YR6/2	pinkish gray

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
	Interior Margin								
RS00299	Uniformly Light	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR5/2	reddish gray	5YR6/2	pinkish gray
RS00300	Uniformly Dark	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR3/1	very dark gray	5YR4/1	dark gray
RS00302	Uniformly Light	7.5YR5/3	brown	7.5YR6/3	light brown	7.5YR5/3	brown	7.5YR6/3	light brown
RS00305	Uniformly Dark	5YR4/2	dark reddish gray	5YR5/2	reddish gray	5YR5/3	reddish brown	5YR6/3	light reddish brown
RS00306	Uniformly Light	7.5YR5/3	brown	7.5YR6/3	light brown	5YR6/4	light reddish brown	5YR7/4	pink
RS00308	Light Ext Margin/Dark Interior Margin	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR5/2	reddish gray	5YR6/2	pinkish gray

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00309	Uniformly Light	5YR5/3	reddish brown	5YR6/3	light reddish brown	5YR5/3	reddish brown	5YR6/3	light reddish brown
RS00310	Uniformly Light	2.5YR5/4	reddish brown	2.5YR6/4	light reddish brown	2.5YR5/3	reddish brown	2.5YR6/3	light reddish brown
RS00316	Light Ext Margin/Dark Interior Margin	7.5YR4/2	brown	7.5YR5/2	brown	7.5YR3/1	very dark gray	7.5YR4/1	dark gray
RS00318	Unknown	2.5YR5/3	reddish brown	2.5YR6/3	light reddish brown	2.5YR3/1	dark reddish gray	2.5YR4/1	dark reddish gray
RS00339	Light Ext Margin/Dark Interior Margin	5YR4/3	reddish brown	5YR5/3	reddish brown	5YR4/3	reddish brown	5YR5/3	reddish brown
RS00344	Unknown	7.5YR5/3	brown	7.5YR6/3	light brown	5YR5/4	reddish brown	5YR6/4	light reddish brown

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name

Rim Data Part 3: Exterior and Interior Rim Decorative Elements

Sherd ID	Rim (Ext) Decoration Type	Rim (Ext) Decoration Orientation	Rim (Interior) Decoration Type	Rim (Interior) Decoration Orientation
RS00339			Unid	Oblique R
RS00344	Scallop	Oblique R		
RS00280				
RS00308	Scallop	Oblique R	Unid	Perpendicular
RS00137	Punctate	Oblique R		
RS00034	Dentate	Perpendicular		
RS00260	Linear Stamp	Perpendicular		
RS00135	Scallop	Parallel		
RS00170	CWS	Oblique L	CWS	Oblique L
RS00284				
RS00058	Dentate	Parallel	Dentate	Oblique R
RS00114				
RS00240	CWS	Parallel		

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00300	Linear Stamp		Oblique R						
RS00027	Linear Stamp		Oblique R						
RS00040	Scallop		Oblique R		Scallop		Oblique L		
RS00028	Punctate		Parallel						
RS00269	Unid		Perpendicular						
RS00288	Punctate								
RS00210					Unid		Perpendicular		
RS00103	Unid		Oblique R						
RS00268									
RS00167	CWS		Oblique L		CWS		Oblique R		
RS00248	CWS		Parallel		CWS		Oblique R		
RS00274									
RS00045									
RS00302					CWS		Oblique R		
RS00074	CWS		Oblique L		CWS		Oblique L		

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00299	Linear Stamp		Oblique R						
RS00042	Linear Stamp		Oblique R						
RS00305	CWS		Oblique L						
RS00226	Dentate		Oblique R						
RS00136	Dentate		Perpendicular						
RS00310	Linear Stamp		Perpendicular						
RS00072	Linear Stamp		Oblique R						
RS00285	Linear Stamp		Oblique R						
RS00079	Linear Stamp		Perpendicular						
RS00306	Dentate		Oblique R						
RS00314	Dentate		Perpendicular						
RS00150	Dentate		Perpendicular						
RS00016	Scallop		Oblique L						
RS00088	Punctate								
RS00309	Incised		Unid						

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00273	Linear Stamp		Perpendicular						
RS00047									
RS00272									
RS00053	Dentate		Oblique R						
RS00038	Unid		Perpendicular		Linear Stamp		Oblique L		
RS00232	Unid		Parallel						
RS00253									
RS00123	Stamp/Drag		Oblique R						
RS00062	CWS		Oblique L						
RS00096	Scallop		Parallel						
RS00316	CWS		Unid						
RS00161	Linear Stamp		Perpendicular						
RS00315	Unid		Oblique R						
RS00262									
RS00267									

Rim Data Part 2: Paste Core and Munsell Color

Sherd ID	Paste Core	Ext Color Dark	Ext Color Dark Name	Ext Color Light	Ext Color Light Name	Int Color Dark	Int Color Dark Name	Int Color Light	Int Color Light Name
RS00276	Scallop		Oblique R						
RS00153	Linear Stamp		Oblique R						
RS00254									
RS00121	Scallop		Oblique R						
RS00318					Scallop		Perpendicular		
RS00282	Scallop		Perpendicular						
RS00054	Scallop		Perpendicular						
RS00201	Linear Stamp		Oblique R						
RS00134	Linear Stamp		Oblique R						
RS00275	CWS		Perpendicular						
RS00018									
RS00296	Linear Stamp		Oblique R						
RS00110	Scallop		Perpendicular						

Rim Data Part 4A: Rim Exterior Decorative Element Metrics

Sherd ID	Rim Exterior Dec Element Width 1	Rim Exterior Dec Element Width 2	Rim Exterior Dec Element Width 3	Rim Exterior Dec Element Height 1	Rim Exterior Dec Element Height 2	Rim Exterior Dec Element Height 3
RS00339	0.00	0.00	0.00	0.00	0.00	0.00
RS00344	0.00	0.00	0.00	0.00	0.00	0.00
RS00280	0.00	0.00	0.00	0.00	0.00	0.00
RS00308	1.68	0.00	0.00	0.00	0.00	0.00
RS00137	1.48	2.15	2.29	0.00	0.00	0.00
RS00034	2.03	2.93	2.33	9.25	9.59	0.00
RS00260	2.90	3.11	3.84	9.35	9.55	0.00
RS00135	1.66	1.66	1.22	0.00	0.00	0.00
RS00170	5.03	4.47	0.00	0.00	0.00	0.00
RS00284	0.00	0.00	0.00	0.00	0.00	0.00
RS00058	2.32	0.00	0.00	0.00	0.00	0.00
RS00114	0.00	0.00	0.00	0.00	0.00	0.00
RS00240	0.00	0.00	0.00	0.00	0.00	0.00
RS00300	4.08	0.00	0.00	0.00	0.00	0.00
RS00027	2.78	2.49	3.03	9.93	7.89	6.83
RS00040	1.69	2.18	1.90	13.17	19.05	18.94
RS00028	0.00	0.00	0.00	0.00	0.00	0.00
RS00269	2.08	4.03	0.00	0.00	0.00	0.00
RS00288	3.36	2.69	2.66	0.00	0.00	0.00
RS00210	0.00	0.00	0.00	0.00	0.00	0.00
RS00103	2.01	0.00	0.00	0.00	0.00	0.00
RS00268	0.00	0.00	0.00	0.00	0.00	0.00
RS00167	1.49	1.84	2.30	4.98	0.00	0.00
RS00248	4.31	4.10	3.09	0.00	0.00	0.00
RS00274	0.00	0.00	0.00	0.00	0.00	0.00
RS00045	0.00	0.00	0.00	0.00	0.00	0.00

Rim Data Part 4A: Rim Exterior Decorative Element Metrics

Sherd ID	Rim Exterior Dec Element Width 1	Rim Exterior Dec Element Width 2	Rim Exterior Dec Element Width 3	Rim Exterior Dec Element Height 1	Rim Exterior Dec Element Height 2	Rim Exterior Dec Element Height 3
RS00302	0.00	0.00	0.00	0.00	0.00	0.00
RS00074	4.29	4.30	3.59	0.00	0.00	0.00
RS00299	3.09	2.79	3.13	0.00	0.00	0.00
RS00042	1.50	2.08	1.35	5.72	5.95	5.00
RS00305	4.90	0.00	0.00	0.00	0.00	0.00
RS00226	1.57	1.69	1.35	0.00	0.00	0.00
RS00136	0.69	1.39	1.05	0.00	0.00	0.00
RS00310	1.88	1.57	1.51	6.48	6.47	6.75
RS00072	1.61	2.34	1.60	9.26	8.86	8.03
RS00285	2.67	1.59	1.51	0.00	0.00	0.00
RS00079	1.82	3.31	1.83	0.00	0.00	0.00
RS00306	1.17	0.94	0.83	0.00	0.00	0.00
RS00314	3.53	0.00	0.00	0.00	0.00	0.00
RS00150	2.45	2.45	2.73	12.42	12.78	0.00
RS00016	3.98	4.03	2.89	0.00	0.00	0.00
RS00088	2.49	2.83	2.50	0.00	0.00	0.00
RS00309	3.29	1.81	0.00	0.00	0.00	0.00
RS00273	1.04	1.67	1.04	4.57	4.49	4.67
RS00047	0.00	0.00	0.00	0.00	0.00	0.00
RS00272	0.00	0.00	0.00	0.00	0.00	0.00
RS00053	1.40	1.44	1.13	0.00	0.00	0.00
RS00038	2.45	0.00	0.00	0.00	0.00	0.00
RS00232	0.00	0.00	0.00	0.00	0.00	0.00
RS00253	0.00	0.00	0.00	0.00	0.00	0.00
RS00123	0.51	0.94	0.60	4.64	5.04	6.23
RS00062	4.82	5.35	0.00	0.00	0.00	0.00
RS00096	1.22	1.58	0.00	0.00	0.00	0.00

Rim Data Part 4A: Rim Exterior Decorative Element Metrics

Sherd ID	Rim Exterior Dec Element Width 1	Rim Exterior Dec Element Width 2	Rim Exterior Dec Element Width 3	Rim Exterior Dec Element Height 1	Rim Exterior Dec Element Height 2	Rim Exterior Dec Element Height 3
RS00316	1.15	1.30	0.91	0.00	0.00	0.00
RS00161	1.81	1.58	0.00	3.51	3.98	0.00
RS00315	1.42	1.02	1.67	0.00	0.00	0.00
RS00262	0.00	0.00	0.00	0.00	0.00	0.00
RS00267	0.00	0.00	0.00	0.00	0.00	0.00
RS00276	2.20	0.00	0.00	5.24	0.00	0.00
RS00153	1.93	0.00	0.00	11.18	0.00	0.00
RS00254	0.00	0.00	0.00	0.00	0.00	0.00
RS00121	1.02	1.11	1.83	0.00	0.00	0.00
RS00318	0.00	0.00	0.00	0.00	0.00	0.00
RS00282	0.92	1.04	1.12	0.00	0.00	0.00
RS00054	1.63	1.10	0.00	0.00	0.00	0.00
RS00201	1.75	1.37	1.34	12.63	13.12	0.00
RS00134	1.39	1.46	1.23	8.53	8.34	0.00
RS00275	2.06	1.41	1.15	9.37	0.00	0.00
RS00018	0.00	0.00	0.00	0.00	0.00	0.00
RS00296	2.42	1.87	2.49	0.00	0.00	0.00
RS00110	1.00	1.15	1.12	0.00	0.00	0.00

Rim Data Part 4A: Rim Exterior Decorative Element Metrics

Sherd ID	Rim Exterior Dec Element Depth 1	Rim Exterior Dec Element Depth 2	Rim Exterior Dec Element Depth 3	Rim Exterior Dec Element Distance 1	Rim Exterior Dec Element Distance 2	Rim Exterior Dec Element Distance 3
RS00339	0.00	0.00	0.00	0.00	0.00	0.00
RS00344	0.00	0.00	0.00	0.00	0.00	0.00
RS00280	0.00	0.00	0.00	0.00	0.00	0.00
RS00308	23.20	0.00	0.00	0.00	0.00	0.00
RS00137	0.00	0.00	0.00	3.03	3.17	2.51
RS00034	0.41	0.63	0.00	2.15	1.52	2.35
RS00260	0.00	0.00	0.00	5.27	5.22	4.01
RS00135	0.00	0.00	0.00	1.40	1.36	1.68
RS00170	0.00	0.00	0.00	4.14	2.73	2.34
RS00284	0.00	0.00	0.00	0.00	0.00	0.00
RS00058	0.64	0.00	0.00	0.00	0.00	0.00
RS00114	0.00	0.00	0.00	0.00	0.00	0.00
RS00240	0.00	0.00	0.00	0.00	0.00	0.00
RS00300	0.00	0.00	0.00	0.00	0.00	0.00
RS00027	1.60	0.89	0.99	2.33	3.05	2.98
RS00040	1.18	1.02	0.93	6.27	7.00	7.68
RS00028	0.00	0.00	0.00	0.00	0.00	0.00
RS00269	4.03	0.00	0.00	0.00	0.00	0.00
RS00288	4.22	3.96	4.27	3.52	4.99	5.63
RS00210	0.00	0.00	0.00	0.00	0.00	0.00
RS00103	0.00	0.00	0.00	0.00	0.00	0.00
RS00268	0.00	0.00	0.00	0.00	0.00	0.00
RS00167	0.00	0.00	0.00	6.22	4.65	0.00
RS00248	0.00	0.00	0.00	1.86	4.85	2.98
RS00274	0.00	0.00	0.00	0.00	0.00	0.00
RS00045	0.00	0.00	0.00	0.00	0.00	0.00

Rim Data Part 4A: Rim Exterior Decorative Element Metrics

Sherd ID	Rim Exterior Dec Element Depth 1	Rim Exterior Dec Element Depth 2	Rim Exterior Dec Element Depth 3	Rim Exterior Dec Element Distance 1	Rim Exterior Dec Element Distance 2	Rim Exterior Dec Element Distance 3
RS00302	0.00	0.00	0.00	0.00	0.00	0.00
RS00074	0.00	0.00	0.00	5.56	6.83	0.00
RS00299	9.01	9.30	8.80	2.49	1.38	1.88
RS00042	0.00	0.00	0.00	2.61	2.92	3.18
RS00305	0.00	0.00	0.00	0.00	0.00	0.00
RS00226	0.00	0.00	0.00	2.76	3.05	3.45
RS00136	0.00	0.00	0.00	3.41	2.65	2.50
RS00310	0.00	0.00	1.68	1.30	0.00	0.00
RS00072	0.00	0.00	0.00	5.01	3.76	5.34
RS00285	9.48	9.51	9.16	1.82	1.84	2.79
RS00079	1.62	0.00	0.00	3.65	2.60	3.00
RS00306	17.11	16.31	19.03	3.41	3.91	2.57
RS00314	6.26	0.00	0.00	3.94	0.00	0.00
RS00150	0.00	0.00	0.00	4.40	3.53	0.00
RS00016	0.60	0.94	0.84	0.74	1.18	0.00
RS00088	0.00	0.00	0.00	5.16	5.59	3.90
RS00309	0.00	0.00	0.00	0.00	0.00	0.00
RS00273	0.00	0.00	0.00	2.26	2.97	4.16
RS00047	0.00	0.00	0.00	0.00	0.00	0.00
RS00272	0.00	0.00	0.00	0.00	0.00	0.00
RS00053	0.00	0.00	0.00	7.73	4.41	6.42
RS00038	0.00	0.00	0.00	0.00	0.00	0.00
RS00232	0.00	0.00	0.00	0.00	0.00	0.00
RS00253	0.00	0.00	0.00	0.00	0.00	0.00
RS00123	0.00	0.00	0.00	4.15	2.49	4.86
RS00062	0.00	0.00	0.00	0.00	0.00	0.00
RS00096	0.00	0.00	0.00	3.32	0.00	0.00

Rim Data Part 4A: Rim Exterior Decorative Element Metrics

Sherd ID	Rim Exterior Dec Element Depth 1	Rim Exterior Dec Element Depth 2	Rim Exterior Dec Element Depth 3	Rim Exterior Dec Element Distance 1	Rim Exterior Dec Element Distance 2	Rim Exterior Dec Element Distance 3
RS00316	5.27	5.06	5.69	3.33	3.38	3.17
RS00161	0.00	0.00	0.00	2.77	0.00	0.00
RS00315	0.00	0.00	0.00	2.95	0.00	0.00
RS00262	0.00	0.00	0.00	0.00	0.00	0.00
RS00267	0.00	0.00	0.00	0.00	0.00	0.00
RS00276	0.00	0.00	0.00	3.84	0.00	0.00
RS00153	0.00	0.00	0.00	0.00	0.00	0.00
RS00254	0.00	0.00	0.00	0.00	0.00	0.00
RS00121	0.00	0.00	0.00	2.95	5.39	7.49
RS00318	0.00	0.00	0.00	0.00	0.00	0.00
RS00282	0.00	0.00	0.00	3.44	3.22	3.74
RS00054	0.00	0.00	0.00	3.32	0.00	0.00
RS00201	0.00	0.00	0.00	3.03	6.03	4.31
RS00134	0.00	0.00	0.00	5.35	5.00	0.00
RS00275	0.00	0.00	0.00	3.85	0.00	0.00
RS00018	0.00	0.00	0.00	0.00	0.00	0.00
RS00296	0.00	0.00	0.00	1.83	3.56	0.00
RS00110	0.00	0.00	0.00	1.63	3.54	2.54

Rim Data Part 4B: Rim Interior Decorative Element Metrics

Sherd ID	Rim Interior Dec Element Width 1	Rim Interior Dec Element Width 2	Rim Interior Dec Element Width 3	Rim Interior Dec Element Height 1	Rim Interior Dec Element Height 2	Rim Interior Dec Element Height 3
RS00339	3.59	4.57	3.40	7.29	7.27	6.08
RS00344	0.00	0.00	0.00	0.00	0.00	0.00
RS00280	0.00	0.00	0.00	0.00	0.00	0.00
RS00308	3.11	0.00	0.00	0.00	0.00	0.00
RS00137	0.00	0.00	0.00	0.00	0.00	0.00
RS00034	0.00	0.00	0.00	0.00	0.00	0.00
RS00260	0.00	0.00	0.00	0.00	0.00	0.00
RS00135	0.00	0.00	0.00	0.00	0.00	0.00
RS00170	5.20	4.13	0.00	0.00	0.00	0.00
RS00284	0.00	0.00	0.00	0.00	0.00	0.00
RS00058	0.00	0.00	0.00	0.00	0.00	0.00
RS00114	0.00	0.00	0.00	0.00	0.00	0.00
RS00240	0.00	0.00	0.00	0.00	0.00	0.00
RS00300	0.00	0.00	0.00	0.00	0.00	0.00
RS00027	0.00	0.00	0.00	0.00	0.00	0.00
RS00040	1.51	1.55	2.48	13.51	13.37	0.00
RS00028	0.00	0.00	0.00	0.00	0.00	0.00
RS00269	0.00	0.00	0.00	0.00	0.00	0.00
RS00288	0.00	0.00	0.00	0.00	0.00	0.00
RS00210	1.81	0.00	0.00	6.54	0.00	0.00
RS00103	0.00	0.00	0.00	0.00	0.00	0.00
RS00268	0.00	0.00	0.00	0.00	0.00	0.00
RS00167	2.91	2.59	0.00	12.00	0.00	0.00
RS00248	4.50	4.01	0.00	9.81	0.00	0.00
RS00274	0.00	0.00	0.00	0.00	0.00	0.00
RS00045	0.00	0.00	0.00	0.00	0.00	0.00

Rim Data Part 4B: Rim Interior Decorative Element Metrics

Sherd ID	Rim Interior Dec Element Width 1	Rim Interior Dec Element Width 2	Rim Interior Dec Element Width 3	Rim Interior Dec Element Height 1	Rim Interior Dec Element Height 2	Rim Interior Dec Element Height 3
RS00302	5.88	4.94	0.00	0.00	0.00	0.00
RS00074	5.17	4.30	4.54	14.42	14.03	16.90
RS00299	0.00	0.00	0.00	0.00	0.00	0.00
RS00042	0.00	0.00	0.00	0.00	0.00	0.00
RS00305	0.00	0.00	0.00	0.00	0.00	0.00
RS00226	0.00	0.00	0.00	0.00	0.00	0.00
RS00136	0.00	0.00	0.00	0.00	0.00	0.00
RS00310	0.00	0.00	0.00	0.00	0.00	0.00
RS00072	0.00	0.00	0.00	0.00	0.00	0.00
RS00285	0.00	0.00	0.00	0.00	0.00	0.00
RS00079	0.00	0.00	0.00	0.00	0.00	0.00
RS00306	0.00	0.00	0.00	0.00	0.00	0.00
RS00314	0.00	0.00	0.00	0.00	0.00	0.00
RS00150	0.00	0.00	0.00	0.00	0.00	0.00
RS00016	0.00	0.00	0.00	0.00	0.00	0.00
RS00088	0.00	0.00	0.00	0.00	0.00	0.00
RS00309	0.00	0.00	0.00	0.00	0.00	0.00
RS00273	0.00	0.00	0.00	0.00	0.00	0.00
RS00047	0.00	0.00	0.00	0.00	0.00	0.00
RS00272	0.00	0.00	0.00	0.00	0.00	0.00
RS00053	0.00	0.00	0.00	0.00	0.00	0.00
RS00038	3.27	2.93	4.36	0.00	0.00	0.00
RS00232	0.00	0.00	0.00	0.00	0.00	0.00
RS00253	0.00	0.00	0.00	0.00	0.00	0.00
RS00123	0.00	0.00	0.00	0.00	0.00	0.00
RS00062	0.00	0.00	0.00	0.00	0.00	0.00
RS00096	0.00	0.00	0.00	0.00	0.00	0.00

Rim Data Part 4B: Rim Interior Decorative Element Metrics

Sherd ID	Rim Interior Dec Element Width 1	Rim Interior Dec Element Width 2	Rim Interior Dec Element Width 3	Rim Interior Dec Element Height 1	Rim Interior Dec Element Height 2	Rim Interior Dec Element Height 3
RS00316	0.00	0.00	0.00	0.00	0.00	0.00
RS00161	0.00	0.00	0.00	0.00	0.00	0.00
RS00315	0.00	0.00	0.00	0.00	0.00	0.00
RS00262	0.00	0.00	0.00	0.00	0.00	0.00
RS00267	0.00	0.00	0.00	0.00	0.00	0.00
RS00276	0.00	0.00	0.00	0.00	0.00	0.00
RS00153	0.00	0.00	0.00	0.00	0.00	0.00
RS00254	0.00	0.00	0.00	0.00	0.00	0.00
RS00121	0.00	0.00	0.00	0.00	0.00	0.00
RS00318	4.10	4.31	4.46	0.00	0.00	0.00
RS00282	0.00	0.00	0.00	0.00	0.00	0.00
RS00054	0.00	0.00	0.00	0.00	0.00	0.00
RS00201	0.00	0.00	0.00	0.00	0.00	0.00
RS00134	0.00	0.00	0.00	0.00	0.00	0.00
RS00275	0.00	0.00	0.00	0.00	0.00	0.00
RS00018	0.00	0.00	0.00	0.00	0.00	0.00
RS00296	0.00	0.00	0.00	0.00	0.00	0.00
RS00110	1.48	1.08	1.14	0.00	0.00	0.00

Rim Data Part 4B: Rim Interior Decorative Element Metrics

Sherd ID	Rim Interior Dec Element Depth 1	Rim Interior Dec Element Depth 2	Rim Interior Dec Element Depth 3	Rim Interior Dec Element Distance 1	Rim Interior Dec Element Distance 2	Rim Interior Dec Element Distance 3
RS00339	1.32	0.99	1.29	9.12	7.57	6.67
RS00344	0.00	0.00	0.00	0.00	0.00	0.00
RS00280	0.00	0.00	0.00	0.00	0.00	0.00
RS00308	4.41	0.00	0.00	6.04	0.00	0.00
RS00137	0.00	0.00	0.00	0.00	0.00	0.00
RS00034	0.00	0.00	0.00	0.00	0.00	0.00
RS00260	0.00	0.00	0.00	0.00	0.00	0.00
RS00135	0.00	0.00	0.00	0.00	0.00	0.00
RS00170	0.00	0.00	0.00	7.43	0.00	0.00
RS00284	0.00	0.00	0.00	0.00	0.00	0.00
RS00058	0.00	0.00	0.00	8.67	0.00	0.00
RS00114	0.00	0.00	0.00	0.00	0.00	0.00
RS00240	0.00	0.00	0.00	0.00	0.00	0.00
RS00300	0.00	0.00	0.00	0.00	0.00	0.00
RS00027	0.00	0.00	0.00	0.00	0.00	0.00
RS00040	0.78	0.65	0.71	7.27	7.45	0.00
RS00028	0.00	0.00	0.00	0.00	0.00	0.00
RS00269	0.00	0.00	0.00	0.00	0.00	0.00
RS00288	0.00	0.00	0.00	0.00	0.00	0.00
RS00210	0.00	0.00	0.00	0.00	0.00	0.00
RS00103	0.00	0.00	0.00	0.00	0.00	0.00
RS00268	0.00	0.00	0.00	0.00	0.00	0.00
RS00167	0.00	0.00	0.00	6.43	0.00	0.00
RS00248	0.00	0.00	0.00	6.18	0.00	0.00
RS00274	0.00	0.00	0.00	0.00	0.00	0.00
RS00045	0.00	0.00	0.00	0.00	0.00	0.00

Rim Data Part 4B: Rim Interior Decorative Element Metrics

Sherd ID	Rim Interior Dec Element Depth 1	Rim Interior Dec Element Depth 2	Rim Interior Dec Element Depth 3	Rim Interior Dec Element Distance 1	Rim Interior Dec Element Distance 2	Rim Interior Dec Element Distance 3
RS00302	12.22	0.00	0.00	11.46	0.00	0.00
RS00074	0.00	0.00	0.00	5.82	3.99	4.39
RS00299	0.00	0.00	0.00	0.00	0.00	0.00
RS00042	0.00	0.00	0.00	0.00	0.00	0.00
RS00305	0.00	0.00	0.00	0.00	0.00	0.00
RS00226	0.00	0.00	0.00	0.00	0.00	0.00
RS00136	0.00	0.00	0.00	0.00	0.00	0.00
RS00310	0.00	0.00	0.00	0.00	0.00	0.00
RS00072	0.00	0.00	0.00	0.00	0.00	0.00
RS00285	0.00	0.00	0.00	0.00	0.00	0.00
RS00079	0.00	0.00	0.00	0.00	0.00	0.00
RS00306	0.00	0.00	0.00	0.00	0.00	0.00
RS00314	0.00	0.00	0.00	0.00	0.00	0.00
RS00150	0.00	0.00	0.00	0.00	0.00	0.00
RS00016	0.00	0.00	0.00	0.00	0.00	0.00
RS00088	0.00	0.00	0.00	0.00	0.00	0.00
RS00309	0.00	0.00	0.00	0.00	0.00	0.00
RS00273	0.00	0.00	0.00	0.00	0.00	0.00
RS00047	0.00	0.00	0.00	0.00	0.00	0.00
RS00272	0.00	0.00	0.00	0.00	0.00	0.00
RS00053	0.00	0.00	0.00	0.00	0.00	0.00
RS00038	0.78	1.24	0.00	0.00	0.00	0.00
RS00232	0.00	0.00	0.00	0.00	0.00	0.00
RS00253	0.00	0.00	0.00	0.00	0.00	0.00
RS00123	0.00	0.00	0.00	0.00	0.00	0.00
RS00062	0.00	0.00	0.00	0.00	0.00	0.00
RS00096	0.00	0.00	0.00	0.00	0.00	0.00

Rim Data Part 4B: Rim Interior Decorative Element Metrics

Sherd ID	Rim Interior Dec Element Depth 1	Rim Interior Dec Element Depth 2	Rim Interior Dec Element Depth 3	Rim Interior Dec Element Distance 1	Rim Interior Dec Element Distance 2	Rim Interior Dec Element Distance 3
RS00316	0.00	0.00	0.00	0.00	0.00	0.00
RS00161	0.00	0.00	0.00	0.00	0.00	0.00
RS00315	0.00	0.00	0.00	0.00	0.00	0.00
RS00262	0.00	0.00	0.00	0.00	0.00	0.00
RS00267	0.00	0.00	0.00	0.00	0.00	0.00
RS00276	0.00	0.00	0.00	0.00	0.00	0.00
RS00153	0.00	0.00	0.00	0.00	0.00	0.00
RS00254	0.00	0.00	0.00	0.00	0.00	0.00
RS00121	0.00	0.00	0.00	0.00	0.00	0.00
RS00318	8.16	9.08	9.17	5.47	5.00	7.52
RS00282	0.00	0.00	0.00	0.00	0.00	0.00
RS00054	0.00	0.00	0.00	0.00	0.00	0.00
RS00201	0.00	0.00	0.00	0.00	0.00	0.00
RS00134	0.00	0.00	0.00	0.00	0.00	0.00
RS00275	0.00	0.00	0.00	0.00	0.00	0.00
RS00018	0.00	0.00	0.00	0.00	0.00	0.00
RS00296	0.00	0.00	0.00	0.00	0.00	0.00
RS00110	0.00	0.00	0.00	2.92	1.24	2.29

Rim Data Part 5: Lip

Sherd ID	Lip Form	Lip Decoration Type	Lip Decoration	Lip Decoration Orientation
RS00339	Flattened	Impressed	CWS	Perpendicular
RS00344	Rounded			
RS00280	Flattened	Notched	CWS	Perpendicular
RS00308	Flattened			
RS00137	Flattened			
RS00034	Flattened	Notched	Dentate	Perpendicular
RS00260	Flattened	Notched	Linear Stamp	Perpendicular
RS00135	Rounded			
RS00170	Flattened	Impressed	CWS	Oblique R
RS00284	Rounded	Notched	Unid	Perpendicular
RS00058	Rounded			
RS00114	Flattened	Notched	Unid	Oblique R
RS00240	Flattened	Notched	CWS	Oblique R
RS00300	Flattened	Incised	Incised	Oblique R
RS00027	Rounded	Incised	Incised	Oblique L
RS00040	Flattened			

Rim Data Part 5: Lip

Sherd ID	Lip Form	Lip Decoration Type	Lip Decoration	Lip Decoration Orientation
RS00028	Rounded			
RS00269	Rounded	Impressed	Cordage	Parallel
RS00288	Flattened	Incised	Incised	
RS00210	Flattened			
RS00103	Rounded	Notched	Scallop	Perpendicular
RS00268	Rounded	Notched	CWS	Perpendicular
RS00167	Rounded			
RS00248	Rounded			
RS00274	Flattened	Notched	CWS	Perpendicular
RS00045	Rounded			
RS00302	Rounded			
RS00074	Rounded			
RS00299	Rounded	Notched	Linear Stamp	Perpendicular
RS00042	Rounded	Notched	Unid	Perpendicular
RS00305	Flattened	Notched	CWS	Perpendicular
RS00226	Flattened			

Rim Data Part 5: Lip

Sherd ID	Lip Form	Lip Decoration Type	Lip Decoration	Lip Decoration Orientation
RS00136	Flattened	Notched	Dentate	Oblique R
RS00310	Rounded			
RS00072	Rounded	Notched	Linear Stamp	Oblique R
RS00285	Flattened			
RS00079	Flattened	Notched	Linear Stamp	Oblique R
RS00306	Flattened			
RS00314	Flattened			
RS00150	Rounded	Notched	Dentate	Oblique L
RS00016	Flattened			
RS00088	Rounded			
RS00309	Flattened			
RS00273	Rounded			
RS00047	Beveled			
RS00272	Rounded			
RS00053	Beveled			
RS00038	Flattened			

Rim Data Part 5: Lip

Sherd ID	Lip Form	Lip Decoration Type	Lip Decoration	Lip Decoration Orientation
RS00232	Flattened			
RS00253	Flattened	Notched	Unid	Oblique R
RS00123	Flattened			
RS00062	Flattened			
RS00096	Flattened			
RS00316	Rounded			
RS00161	Flattened			
RS00315	Rounded			
RS00262	Flattened	Notched	Unid	Perpendicular
RS00267	Rounded			
RS00276	Rounded			
RS00153	Flattened	Notched	Dentate	Oblique L
RS00254	Rounded			
RS00121	Flattened			
RS00318	Flattened			
RS00282	Beveled	Notched	Scallop	Perpendicular

Rim Data Part 5: Lip

Sherd ID	Lip Form	Lip Decoration Type	Lip Decoration	Lip Decoration Orientation
RS00054	Rounded	Notched	Scallop	Perpendicular
RS00201	Rounded	Impressed	Unid	
RS00134	Flattened	Notched	Unid	Perpendicular
RS00275	Rounded	Impressed	CWS	Perpendicular
RS00018	Flattened			
RS00296	Rounded	Notched	Linear Stamp	Perpendicular
RS00110	Rounded	Notched	Scallop	Perpendicular

Rim Data Part 5A: Lip Decorative Element Metrics

Sherd ID	Lip Dec Element Width 1	Lip Dec Element Width 2	Lip Dec Element Width 3	Lip Dec Element Depth 1	Lip Dec Element Depth 2	Lip Dec Element Depth 3
RS00339	0.00	0.00	0.00	0.00	0.00	0.00
RS00344	0.00	0.00	0.00	0.00	0.00	0.00
RS00280	5.11	4.76	0.00	0.00	0.00	0.00
RS00308	0.00	0.00	0.00	0.00	0.00	0.00
RS00137	0.00	0.00	0.00	0.00	0.00	0.00
RS00034	2.20	1.80	1.22	3.72	3.84	3.67
RS00260	3.13	4.32	2.27	4.01	3.07	4.74
RS00135	0.00	0.00	0.00	0.00	0.00	0.00
RS00170	0.00	0.00	0.00	0.00	0.00	0.00
RS00284	2.70	3.10	3.33	0.00	0.00	0.00
RS00058	0.00	0.00	0.00	0.00	0.00	0.00
RS00114	2.95	2.88	2.89	9.57	0.00	0.00
RS00240	3.84	0.00	0.00	10.19	0.00	0.00
RS00300	1.10	1.00	4.10	0.00	0.00	0.00
RS00027	1.13	1.36	1.20	5.05	4.39	4.38
RS00040	0.00	0.00	0.00	0.00	0.00	0.00
RS00028	0.00	0.00	0.00	0.00	0.00	0.00

Rim Data Part 5A: Lip Decorative Element Metrics

Sherd ID	Lip Dec Element Width 1	Lip Dec Element Width 2	Lip Dec Element Width 3	Lip Dec Element Depth 1	Lip Dec Element Depth 2	Lip Dec Element Depth 3
RS00269	3.43	2.91	0.00	0.00	0.00	0.00
RS00288	1.62	1.12	1.20	0.00	0.00	0.00
RS00210	0.00	0.00	0.00	0.00	0.00	0.00
RS00103	1.48	0.00	0.00	3.73	0.00	0.00
RS00268	4.14	4.48	0.00	0.00	0.00	0.00
RS00167	0.00	0.00	0.00	0.00	0.00	0.00
RS00248	0.00	0.00	0.00	0.00	0.00	0.00
RS00274	5.19	8.01	0.00	0.00	0.00	0.00
RS00045	0.00	0.00	0.00	0.00	0.00	0.00
RS00302	0.00	0.00	0.00	0.00	0.00	0.00
RS00074	0.00	0.00	0.00	0.00	0.00	0.00
RS00299	1.96	1.46	1.27	0.00	0.00	0.00
RS00042	0.00	0.00	0.00	0.00	0.00	0.00
RS00305	7.81	6.50	0.00	0.00	0.00	0.00
RS00226	0.00	0.00	0.00	0.00	0.00	0.00
RS00136	1.19	1.38	1.11	4.25	4.29	5.04
RS00310	0.00	0.00	0.00	0.00	0.00	0.00
RS00072	2.54	0.00	0.00	6.19	0.00	0.00

Rim Data Part 5A: Lip Decorative Element Metrics

Sherd ID	Lip Dec Element Width 1	Lip Dec Element Width 2	Lip Dec Element Width 3	Lip Dec Element Depth 1	Lip Dec Element Depth 2	Lip Dec Element Depth 3
RS00285	0.00	0.00	0.00	0.00	0.00	0.00
RS00079	2.08	2.87	3.02	7.31	7.54	0.00
RS00306	0.00	0.00	0.00	0.00	0.00	0.00
RS00314	0.00	0.00	0.00	0.00	0.00	0.00
RS00150	2.67	0.00	0.00	4.76	0.00	0.00
RS00016	0.00	0.00	0.00	0.00	0.00	0.00
RS00088	0.00	0.00	0.00	0.00	0.00	0.00
RS00309	0.00	0.00	0.00	0.00	0.00	0.00
RS00273	0.00	0.00	0.00	0.00	0.00	0.00
RS00047	0.00	0.00	0.00	0.00	0.00	0.00
RS00272	0.00	0.00	0.00	0.00	0.00	0.00
RS00053	0.00	0.00	0.00	0.00	0.00	0.00
RS00038	0.00	0.00	0.00	0.00	0.00	0.00
RS00232	0.00	0.00	0.00	0.00	0.00	0.00
RS00253	2.46	2.69	0.00	6.40	5.46	0.00
RS00123	0.00	0.00	0.00	0.00	0.00	0.00
RS00062	0.00	0.00	0.00	0.00	0.00	0.00
RS00096	0.00	0.00	0.00	0.00	0.00	0.00

Rim Data Part 5A: Lip Decorative Element Metrics

Sherd ID	Lip Dec Element Width 1	Lip Dec Element Width 2	Lip Dec Element Width 3	Lip Dec Element Depth 1	Lip Dec Element Depth 2	Lip Dec Element Depth 3
RS00316	0.00	0.00	0.00	0.00	0.00	0.00
RS00161	0.00	0.00	0.00	0.00	0.00	0.00
RS00315	0.00	0.00	0.00	0.00	0.00	0.00
RS00262	1.83	2.75	0.00	0.00	0.00	0.00
RS00267	0.00	0.00	0.00	0.00	0.00	0.00
RS00276	0.00	0.00	0.00	0.00	0.00	0.00
RS00153	0.00	0.00	0.00	0.00	0.00	0.00
RS00254	0.00	0.00	0.00	0.00	0.00	0.00
RS00121	0.00	0.00	0.00	0.00	0.00	0.00
RS00318	0.00	0.00	0.00	0.00	0.00	0.00
RS00282	2.07	0.90	1.16	0.00	0.00	0.00
RS00054	1.20	0.00	0.00	3.22	0.00	0.00
RS00201	0.00	0.00	0.00	0.00	0.00	0.00
RS00134	2.13	1.75	0.00	3.34	2.43	0.00
RS00275	0.00	0.00	0.00	0.00	0.00	0.00
RS00018	0.00	0.00	0.00	0.00	0.00	0.00
RS00296	0.00	0.00	0.00	0.00	0.00	0.00
RS00110	1.29	1.14	0.99	3.02	2.99	2.82

Rim Data Part 5B: Lip Metrics and Description

Sherd ID	Lip Dec Element Height 1	Lip Dec Element Height 2	Lip Dec Element Height 3	Lip Dec Element Distance1	Lip Dec Element Distance2	Lip Dec Element Distance 3	Lip Description
RS00339	0.00	0.00	0.00	0.00	0.00	0.00	
RS00344	0.00	0.00	0.00	0.00	0.00	0.00	
RS00280	0.00	0.00	0.00	0.00	0.00	0.00	closely spaced CWS stamps perp to rim
RS00308	0.00	0.00	0.00	0.00	0.00	0.00	
RS00137	0.00	0.00	0.00	0.00	0.00	0.00	
RS00034		0.00	0.00	2.47	3.12	2.66	shallow stamped notches possibly with same tool as rim stamping
RS00260	0.00	0.00	0.00	4.13	3.26	0.00	3 complete perp linear stamped notches on int side of lip. Flattened lip.
RS00135	0.00	0.00	0.00	0.00	0.00	0.00	
RS00170	0.00	0.00	0.00	0.00	0.00	0.00	
RS00284	5.30	4.80	4.73	3.72	3.93	3.16	
RS00058	0.00	0.00	0.00	0.00	0.00	0.00	
RS00114	0.00	0.00	0.00	0.00	0.00	0.00	1 complete and 2 partial oblique CWS stamps or what Mason and others call corded stamped. These stamped start on the int and roll across lip to ext.
RS00240	0.00	0.00	0.00	0.00	0.00	0.00	1 complete oblique CWS stamp across flattened lip. Excess lip clay extrudes over ext rim
RS00300	0.00	0.00	0.00	0.00	0.00	0.00	2 almost parallel oblique incised fine lines

Rim Data Part 5B: Lip Metrics and Description

Sherd ID	Lip Dec Element Height 1	Lip Dec Element Height 2	Lip Dec Element Height 3	Lip Dec Element Distance1	Lip Dec Element Distance2	Lip Dec Element Distance 3	Lip Description
RS00027	0.00	0.00	0.00	2.88	2.75	1.53	Incised line perp to lip
RS00040	0.00	0.00	0.00	0.00	0.00	0.00	
RS00028	0.00	0.00	0.00	0.00	0.00	0.00	
RS00269	0.00	0.00	0.00	0.00	0.00	0.00	lip over laps rim. Single cord stamp down middle of rim, parallel.
RS00288	9.54	11.14	11.54	4.36	6.72	5.33	flat lip with 3 complete and 1 partial oblique incised lines
RS00210	0.00	0.00	0.00	0.00	0.00	0.00	Mess lip, overlaps ext rim
RS00103	0.00	0.00	0.00	0.00	0.00	0.00	1 complete scallop notch
RS00268	6.49	5.85	0.00	9.38	0.00	0.00	Lip/Rim variable thickness. 2 set of perp CWS notches.
RS00167	0.00	0.00	0.00	0.00	0.00	0.00	
RS00248	0.00	0.00	0.00	0.00	0.00	0.00	
RS00274	5.77	5.01	0.00	5.99	0.00	0.00	2 sets of very weathered CWS notches on lip, perp
RS00045	0.00	0.00	0.00	0.00	0.00	0.00	
RS00302	0.00	0.00	0.00	0.00	0.00	0.00	
RS00074	0.00	0.00	0.00	0.00	0.00	0.00	
RS00299	3.28	3.48	3.90	5.19	4.85	5.60	rounded lip notched with 4 perp linear stamps
RS00042	0.00	0.00	0.00	0.00	0.00	0.00	
RS00305	9.52	8.97	0.00	6.08	0.00	0.00	2 complete and 1 partial CWS stamps
RS00226	0.00	0.00	0.00	0.00	0.00	0.00	
RS00136	0.00	0.00	0.00	2.92	2.18	2.48	5 complete perp dentate stamps notch top of lip

Rim Data Part 5B: Lip Metrics and Description

Sherd ID	Lip Dec Element Height 1	Lip Dec Element Height 2	Lip Dec Element Height 3	Lip Dec Element Distance1	Lip Dec Element Distance2	Lip Dec Element Distance 3	Lip Description
RS00310	0.00	0.00	0.00	0.00	0.00	0.00	
RS00072	1.54	0.00	0.00	0.00	0.00	0.00	1 complete oblique linear stamp notch
RS00285	0.00	0.00	0.00	0.00	0.00	0.00	
RS00079	0.00	0.00	0.00	4.27	2.94	1.52	2 partial and 2 complete oblique linear stamps
RS00306	0.00	0.00	0.00	0.00	0.00	0.00	some overlapping lip clay on ext
RS00314	0.00	0.00	0.00	0.00	0.00	0.00	
RS00150	0.00	0.00	0.00	4.71	0.00	0.00	1 complete and 1 partial oblique dentate stamps.
RS00016	0.00	0.00	0.00	0.00	0.00	0.00	
RS00088	0.00	0.00	0.00	0.00	0.00	0.00	
RS00309	0.00	0.00	0.00	0.00	0.00	0.00	
RS00273	0.00	0.00	0.00	0.00	0.00	0.00	
RS00047	0.00	0.00	0.00	0.00	0.00	0.00	
RS00272	0.00	0.00	0.00	0.00	0.00	0.00	
RS00053	0.00	0.00	0.00	0.00	0.00	0.00	
RS00038	0.00	0.00	0.00	0.00	0.00	0.00	
RS00232	0.00	0.00	0.00	0.00	0.00	0.00	
RS00253	0.00	0.00	0.00	3.78	0.00	0.00	2 complete oblique unid stamped notches on flattened rim.
RS00123	0.00	0.00	0.00	0.00	0.00	0.00	
RS00062	0.00	0.00	0.00	0.00	0.00	0.00	
RS00096	0.00	0.00	0.00	0.00	0.00	0.00	
RS00316	0.00	0.00	0.00	0.00	0.00	0.00	
RS00161	0.00	0.00	0.00	0.00	0.00	0.00	
RS00315	0.00	0.00	0.00	0.00	0.00	0.00	

Rim Data Part 5B: Lip Metrics and Description

Sherd ID	Lip Dec Element Height 1	Lip Dec Element Height 2	Lip Dec Element Height 3	Lip Dec Element Distance1	Lip Dec Element Distance2	Lip Dec Element Distance 3	Lip Description
RS00262	6.46	4.95	0.00	10.76	0.00	0.00	flattened lip with 2 stamped? Notches perp to rim
RS00267	0.00	0.00	0.00	0.00	0.00	0.00	
RS00276	0.00	0.00	0.00	0.00	0.00	0.00	
RS00153	0.00	0.00	0.00	0.00	0.00	0.00	Flat lip excess folded over rim
RS00254	0.00	0.00	0.00	0.00	0.00	0.00	lip excess hangs over ext rim
RS00121	0.00	0.00	0.00	0.00	0.00	0.00	
RS00318	0.00	0.00	0.00	0.00	0.00	0.00	
RS00282	3.04	3.42	3.83	2.20	2.41	2.91	ext portion of lip is stamped by fine closely spaces scallop stamps
RS00054	0.00	0.00	0.00	0.00	0.00	0.00	1 perp dentate stamp
RS00201	0.00	0.00	0.00	0.00	0.00	0.00	
RS00134	0.00	0.00	0.00	4.04	0.00	0.00	Flat lip with 2 complete unid notches on int edge of lip.
RS00275	0.00	0.00	0.00	0.00	0.00	0.00	CWS marks on rim seem to extend to outer edge of lip
RS00018	0.00	0.00	0.00	0.00	0.00	0.00	
RS00296	0.00	0.00	0.00	0.00	0.00	0.00	1 linear stamp perp to rim on rounded lip
RS00110	0.00	0.00	0.00	3.27	2.08	1.20	6 closely spaced perp dentate notches

Rim Data Part 6: Grit Temper

Sherd ID	Temper Color	Temper Size 1 (mm)	Temper Size 2 (mm)	Temper Size 3 (mm)	Temper Sort	Temper %
RS00339	Black, Brown, Grey, Pink, White	4.0-8.0	8.0-16.0	0.5-1.0	Poorly	25
RS00344	Black, Brown, Grey, Pink	0.5-1.0	2.0-4.0	2.0-4.0	Poorly	25
RS00280	Brown, Pink, White	1.0-2.0	1.0-2.0	1.0-2.0	Well	20
RS00308	Black, Grey, Pink, White	1.0-2.0	2.0-4.0	2.0-4.0	Poorly	35
RS00137	Black, Grey, White	2.0-4.0	2.0-4.0	2.0-4.0	Well	15
RS00034	Grey, White	2.0-4.0	2.0-4.0	0.5-1.0	Poorly	5
RS00260	Black, Grey, Pink, White	2.0-4.0	4.0-8.0	1.0-2.0	Poorly	20
RS00135	Grey, White	4.0-8.0	2.0-4.0	2.0-4.0	Poorly	20
RS00170	Black, Pink, Red	2.0-4.0	4.0-8.0			
RS00284	Black, Pink, White	4.0-8.0	4.0-8.0	2.0-4.0	Poorly	30

Rim Data Part 6: Grit Temper

Sherd ID	Temper Color	Temper Size 1 (mm)	Temper Size 2 (mm)	Temper Size 3 (mm)	Temper Sort	Temper %
RS00058	Black, Grey	4.0-8.0	2.0-4.0	2.0-4.0	Poorly	30
RS00114	Black, Grey, White	2.0-4.0	4.0-8.0	1.0-2.0	Poorly	30
RS00240	Black, Pink	2.0-4.0	2.0-4.0	2.0-4.0	Well	25
RS00300	Black, Grey, Pink, White	1.0-2.0	2.0-4.0	1.0-2.0	Poorly	30
RS00027	Grey	2.0-4.0	1.0-2.0	1.0-2.0	Poorly	20
RS00040	Black, Grey	1.0-2.0	2.0-4.0	2.0-4.0	Poorly	20
RS00028	Grey, Pink, White	0.5-1.0	1.0-2.0	1.0-2.0	Poorly	20
RS00269	Grey, Pink, White	4.0-8.0	2.0-4.0	2.0-4.0	Poorly	40
RS00288	Grey, Pink, White	2.0-4.0	2.0-4.0	2.0-4.0	Poorly	35
RS00210	Black, Grey, White	4.0-8.0	2.0-4.0	1.0-2.0	Well	30
RS00103	Black, White	4.0-8.0	2.0-4.0	2.0-4.0	Poorly	10
RS00268	Black, Brown	2.0-4.0	2.0-4.0	1.0-2.0	Poorly	40
RS00167	Black, Grey, Pink	2.0-4.0	2.0-4.0	2.0-4.0	Well	30
RS00248	Black, Red	2.0-4.0	4.0-8.0	1.0-2.0	Poorly	25
RS00274	Grey, Pink, White	2.0-4.0	1.0-2.0	4.0-8.0	Poorly	30

Rim Data Part 6: Grit Temper

Sherd ID	Temper Color	Temper Size 1 (mm)	Temper Size 2 (mm)	Temper Size 3 (mm)	Temper Sort	Temper %
RS00045	Grey, Pink, White	1.0-2.0	4.0-8.0	1.0-2.0	Poorly	25
RS00302	Black, Brown	2.0-4.0	0.5-1.0	1.0-2.0	Poorly	30
RS00074	Black, Grey	4.0-8.0	2.0-4.0	2.0-4.0	Poorly	35
RS00299	Black, Grey, White	4.0-8.0	4.0-8.0	0.5-1.0	Poorly	25
RS00042	Black, Grey, White	2.0-4.0	0.5-1.0	1.0-2.0	Poorly	15
RS00305	Brown, White	1.0-2.0	2.0-4.0	1.0-2.0	Poorly	35
RS00226	Black, Grey, Pink	1.0-2.0	2.0-4.0	2.0-4.0	Poorly	25
RS00136	Grey, Pink, White	1.0-2.0	1.0-2.0	1.0-2.0	Well	10
RS00310	Black, Brown, Grey	4.0-8.0	4.0-8.0	1.0-2.0	Poorly	50
RS00072	Brown, Red	4.0-8.0	4.0-8.0	2.0-4.0	Poorly	35
RS00285	Black, Pink	2.0-4.0	2.0-4.0	4.0-8.0	Poorly	30
RS00079	Black, Grey	4.0-8.0	2.0-4.0	2.0-4.0	Poorly	25
RS00306	Black, Grey, White	4.0-8.0	4.0-8.0	2.0-4.0	Poorly	20
RS00314	Black, Grey	2.0-4.0	4.0-8.0	1.0-2.0	Poorly	25
RS00150	Grey, Pink, White	2.0-4.0	1.0-2.0	4.0-8.0	Poorly	20

Rim Data Part 6: Grit Temper

Sherd ID	Temper Color	Temper Size 1 (mm)	Temper Size 2 (mm)	Temper Size 3 (mm)	Temper Sort	Temper %
RS00016	Black	1.0-2.0	0.5-1.0	0.5-1.0	Poorly	20
RS00088	Black, Grey	2.0-4.0	4.0-8.0	2.0-4.0	Poorly	20
RS00309	Grey, Pink, Red	4.0-8.0	0.5-1.0	0.5-1.0	Poorly	35
RS00273	Brown, Grey, Red	2.0-4.0	4.0-8.0	0.5-1.0	Poorly	35
RS00047	Black, Grey	0.5-1.0	4.0-8.0	0.5-1.0	Poorly	15
RS00272	Black, Grey, Pink, White	2.0-4.0	1.0-2.0	4.0-8.0	Poorly	35
RS00053	Black, Grey, White	2.0-4.0	2.0-4.0	1.0-2.0	Poorly	40
RS00038	Black, Pink, White	2.0-4.0	2.0-4.0	0.5-1.0	Poorly	30
RS00232	Brown, Grey	4.0-8.0	2.0-4.0	0.5-1.0	Poorly	25
RS00253	Grey, Pink, White	1.0-2.0	2.0-4.0	0.5-1.0	Poorly	30
RS00123	Black, Grey, Pink	2.0-4.0	2.0-4.0	2.0-4.0	Poorly	10
RS00062	Black, Grey, Red, White	2.0-4.0	4.0-8.0	4.0-8.0	Poorly	40
RS00096	Black, Grey, White	4.0-8.0	2.0-4.0	0.5-1.0	Poorly	15

Rim Data Part 6: Grit Temper

Sherd ID	Temper Color	Temper Size 1 (mm)	Temper Size 2 (mm)	Temper Size 3 (mm)	Temper Sort	Temper %
RS00316	Black, Grey, Pink, White	2.0-4.0	2.0-4.0	1.0-2.0	Poorly	25
RS00161	Black, Grey, Pink	1.0-2.0	1.0-2.0	1.0-2.0	Well	10
RS00315	Black	0.5-1.0	1.0-2.0	0.5-1.0	Poorly	35
RS00262	Brown, Grey	4.0-8.0	1.0-2.0	1.0-2.0	Poorly	30
RS00267	Grey, Pink, White	1.0-2.0	1.0-2.0	2.0-4.0	Poorly	40
RS00276	Grey, Pink, White	2.0-4.0	0.5-1.0	0.5-1.0	Poorly	30
RS00153	Grey, Pink, White	2.0-4.0	1.0-2.0	0.5-1.0	Poorly	25
RS00254	Black, White	1.0-2.0	2.0-4.0	1.0-2.0	Well	30
RS00121	Black, Grey, White	4.0-8.0	4.0-8.0	4.0-8.0	Poorly	30
RS00318	Brown, Grey, Pink, White	0.5-1.0	4.0-8.0	1.0-2.0	Poorly	30
RS00282	Black, Brown, Pink, White	1.0-2.0	2.0-4.0	4.0-8.0	Poorly	40
RS00054	Black	4.0-8.0	0.5-1.0	2.0-4.0	Poorly	35
RS00201	Black, Grey, White	4.0-8.0	4.0-8.0	1.0-2.0	Poorly	15

Rim Data Part 6: Grit Temper

Sherd ID	Temper Color	Temper Size 1 (mm)	Temper Size 2 (mm)	Temper Size 3 (mm)	Temper Sort	Temper %
RS00134	Grey, White	2.0-4.0	2.0-4.0	2.0-4.0	Well	15
RS00275	Black, Brown	0.5-1.0	0.5-1.0	0.5-1.0	Well	20
RS00018	Black, Grey	4.0-8.0	1.0-2.0	1.0-2.0	Poorly	10
RS00296	Black, Brown, Grey, White	2.0-4.0	2.0-4.0	2.0-4.0	Well	30
RS00110	Grey, White	2.0-4.0	2.0-4.0	1.0-2.0	Poorly	10

Rim Data Part 7: Sand

Sherd ID	Sand Size 1 (mm)	Sand Size 2 (mm)	Sand Size 3 (mm)	Sphericity/Roundness	Sand Sort	Comments
RS00339	0.25-0.50	0.5-1.0	0.125-0.25	0.9/0.7	Poorly	amber,
RS00344	0.5-1.0	1.0-2.0	0.25-0.50	0.9/0.5	Poorly	much sand various colors even opaque's
RS00280	.0625	0.125-0.25	0.125-0.25	0.7/0.7	Well	a lot of sand low temper very high sand
RS00308	.0625	.0625-0.125	.0625-0.125	0.9/0.7	Well	mica flecks
RS00137	0.125-0.25	.0625-0.125	0.125-0.25	0.7/0.9	Well	
RS00034	0.25-0.50	0.125-0.25	0.25-0.50	0.7/0.9	Poorly	lots of sand
RS00260	.0625-0.125	0.5-1.0	0.5-1.0	0.7/0.9	Poorly	at least 2 different rocks
RS00135	.0625-0.125	1.0-2.0	1.0-2.0	0.9/0.7	Well	course sand lots of small temper
RS00170						too dark to measure temper amount
RS00284	.0625-0.125	0.125-0.25	.0625-0.125	0.9/0.7	Well	
RS00058	.0625-0.125	0.5-1.0	.0625-0.125	0.9/0.7	Well	
RS00114	1.0-2.0	0.25-0.50	0.125-0.25	0.7/0.7	Poorly	big piece of sand
RS00240	.0625	.0625-0.125	.0625-0.125	0.9/0.7	Well	

Rim Data Part 7: Sand

Sherd ID	Sand Size 1 (mm)	Sand Size 2 (mm)	Sand Size 3 (mm)	Sphericity/Roundness	Sand Sort	Comments
RS00300	.0625	.0625-0.125	.0625-0.125	0.7/0.7	Well	very fine sand visible thought could be better sorted
RS00027				Too Dark		hard to see sand
RS00040	0.5-1.0	0.25-0.50	0.25-0.50	0.9/0.7	Poorly	much sand
RS00028				Too Dark		sand not visable
RS00269	.0625-0.125	0.125-0.25	0.125-0.25	0.7/0.7	Well	much sand
RS00288	.0625-0.125	0.125-0.25	.0625-0.125	0.9/0.5	Well	mica flecks larger
RS00210	0.5-1.0	0.125-0.25	0.5-1.0	0.7/0.5	Poorly	
RS00103	0.125-0.25	0.5-1.0	0.25-0.50	0.7/0.7	Poorly	separate black and white temper
RS00268	0.125-0.25	0.5-1.0	.0625-0.125	0.9/0.5	Poorly	much sub rounded sand
RS00167				Too Dark		
RS00248	.0625-0.125	.0625	.0625	0.5/0.7	Well	
RS00274	0.125-0.25	0.5-1.0	1.0-2.0	0.9/0.7	Poorly	much sand poor sorted
RS00045	0.125-0.25	0.125-0.25	0.25-0.50	0.9/0.7	Well	Pink granite. A lot of voids

Rim Data Part 7: Sand

Sherd ID	Sand Size 1 (mm)	Sand Size 2 (mm)	Sand Size 3 (mm)	Sphericity/Roundness	Sand Sort	Comments
RS00302	.0625			Not Visible		much fine temper can't find sand grains
RS00074	.0625-0.125	.0625	.0625-0.125	0.9/0.5	Well	
RS00299	.0625	0.125-0.25	0.125-0.25	0.9/0.7	Well	yellowish brown sand
RS00042	0.125-0.25	0.125-0.25	.0625-0.125	0.9/0.7	Well	sand visible
RS00305	.0625	.0625-0.125	.0625-0.125	0.9/0.7	Well	seems to be at least 2 different rock types present. Might have some limestone
RS00226	.0625-0.125	0.25-0.50	0.25-0.50	0.9/0.5	Poorly	
RS00136	.0625-0.125	0.125-0.25	0.5-1.0	0.9/0.5	Poorly	more sand than usual might compensate for less temper
RS00310	0.125-0.25	.0625	.0625-0.125	0.9/0.7	Well	
RS00072	.0625-0.125	.0625-0.125	0.125-0.25	0.9/0.7	Well	looks like use more than 1 rock type for temper
RS00285	.0625-0.125	.0625	0.5-1.0	0.9/0.7	Well	a few larger sub rounded multi colored sand grains

Rim Data Part 7: Sand

Sherd ID	Sand Size 1 (mm)	Sand Size 2 (mm)	Sand Size 3 (mm)	Sphericity/Roundness	Sand Sort	Comments
RS00079	.0625-0.125	.0625-0.125	0.125-0.25	0.9/0.7	Well	
RS00306	.0625	.0625-0.125	0.125-0.25	0.9/0.7	Well	
RS00314	.0625	0.125-0.25	.0625	0.9/0.7	Well	
RS00150	.0625-0.125	0.5-1.0	0.25-0.50	0.9/0.7	Poorly	much sand in the bigger range
RS00016	0.125-0.25	.0625-0.125	0.25-0.50	0.9/0.7	Well	hard to see sand with all the temper a lot of small temper
RS00088	0.25-0.50	0.125-0.25	1.0-2.0	0.7/0.7	Poorly	
RS00309	.0625	0.125-0.25	0.125-0.25	0.9/0.7		all pink and all gray temper, not much more sand compact clay also piece red gray. Did see a piece of black sand
RS00273	.0625	.0625	.0625-0.125	0.9/0.5	Well	very silty
RS00047	0.25-0.50	0.125-0.25	0.125-0.25	0.5/0.9	Well	1 large piece pink quartz
RS00272	.0625	.0625-0.125	.0625-0.125	0.9/0.5	Well	possible more than 1 type of temper rock

Rim Data Part 7: Sand

Sherd ID	Sand Size 1 (mm)	Sand Size 2 (mm)	Sand Size 3 (mm)	Sphericity/Roundness	Sand Sort	Comments
RS00053	.0625-0.125	.0625	.0625-0.125	0.9/0.7	Well	
RS00038	0.125-0.25	0.125-0.25	0.25-0.50	0.9/0.7	Well	ton of temper
RS00232	.0625	.0625-0.125	.0625	0.9/0.7		a lot of very small temper pieces
RS00253	.0625-0.125	1.0-2.0	0.125-0.25	0.9/0.5	Poorly	more larger sand pieces than most sherds
RS00123	0.25-0.50	0.125-0.25	.0625-0.125	0.9/0.7	Well	not that much sand
RS00062	0.125-0.25	0.5-1.0	0.25-0.50	0.9/0.7	Poorly	
RS00096	0.5-1.0	0.25-0.50	0.5-1.0	0.7/0.7	Well	course sand bigger brown and yellow. Some opaque
RS00316	.0625	.0625-0.125	.0625-0.125	0.9/0.5	Well	
RS00161	.0625-0.125	0.125-0.25	0.125-0.25	0.9/0.5	Well	
RS00315	0.125-0.25	.0625-0.125	0.125-0.25	0.9/0.5		multi colored course sand Could this be an import.
RS00262	0.125-0.25	0.25-0.50	0.125-0.25	0.9/0.5	Poorly	Weathering exposed sand well for id and amount
RS00267	.0625-0.125	.0625-0.125	.0625	0.9/0.7	Well	

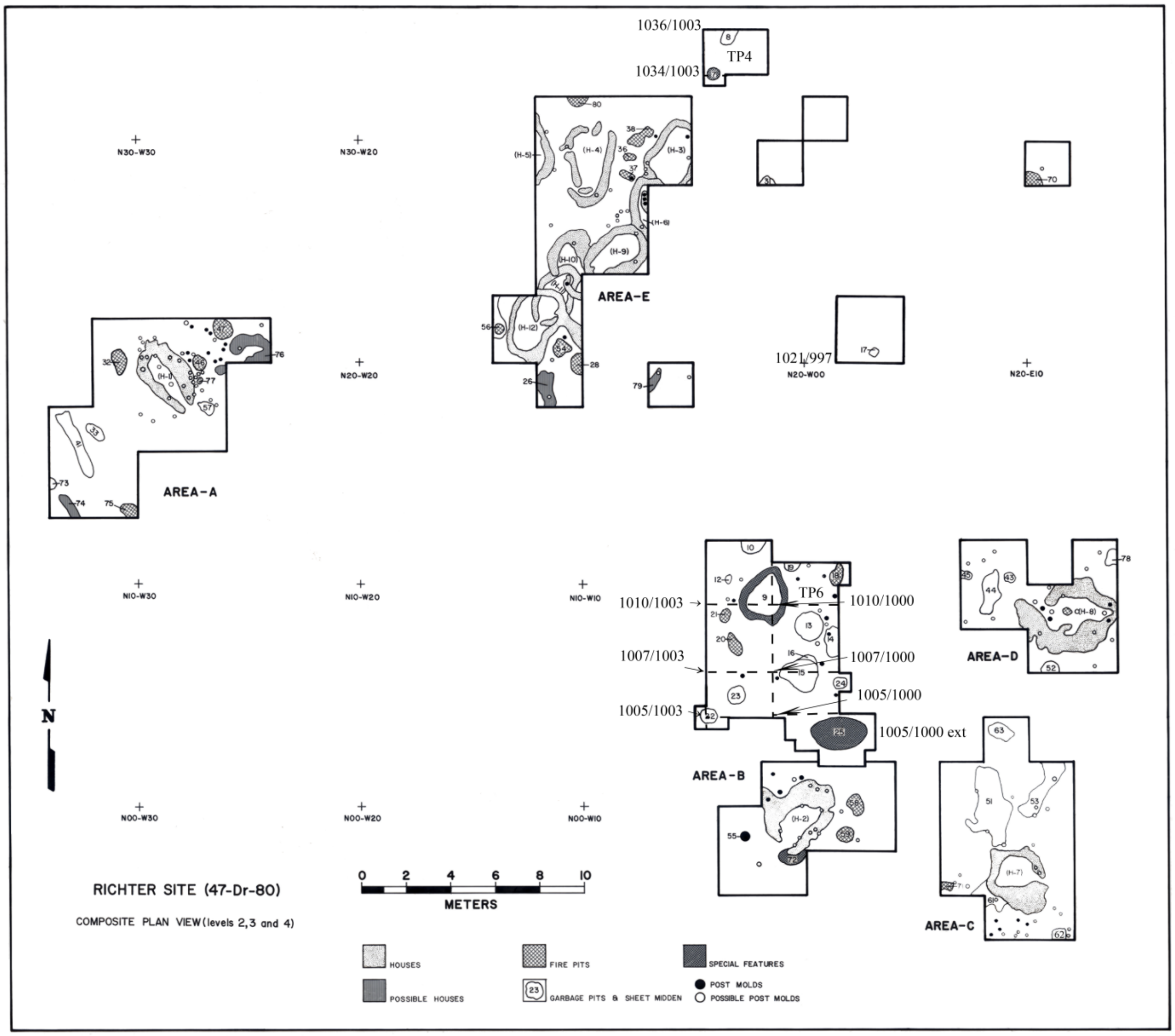
Rim Data Part 7: Sand

Sherd ID	Sand Size 1 (mm)	Sand Size 2 (mm)	Sand Size 3 (mm)	Sphericity/Roundness	Sand Sort	Comments
RS00276	.0625-0.125	0.25-0.50	.0625-0.125	0.9/0.7	Well	too dark to just temper amount
RS00153	0.125-0.25	.0625-0.125	0.5-1.0	0.7/0.7	Poorly	
RS00254	.0625-0.125	0.125-0.25	.0625-0.125	0.9/0.7	Well	
RS00121	0.25-0.50	0.125-0.25	0.125-0.25	0.9/0.7	Well	lots of mica. Some dark temper. Not a lot of sand
RS00318				0.7/0.7	Poorly	
RS00282	.0625-0.125	0.125-0.25	.0625-0.125	0.9/0.7	Well	
RS00054	0.125-0.25	0.5-1.0	0.5-1.0	0.7/0.5	Poorly	lot of bigger sand size
RS00201	0.125-0.25	.0625-0.125	.0625-0.125	0.7/0.7	Well	
RS00134	.0625-0.125	0.125-0.25	0.125-0.25	0.9/0.7	Well	not much sand
RS00275	0.25-0.50	0.25-0.50	0.125-0.25	0.9/0.5	Poorly	more sand at larger end than I have seen in other sherds
RS00018	0.25-0.50	.0625-0.125	.0625-0.125	0.7/0.7	Well	Sand seems less fine and more in volume than most sherds but so hard to tell. Lots of sand

Rim Data Part 7: Sand

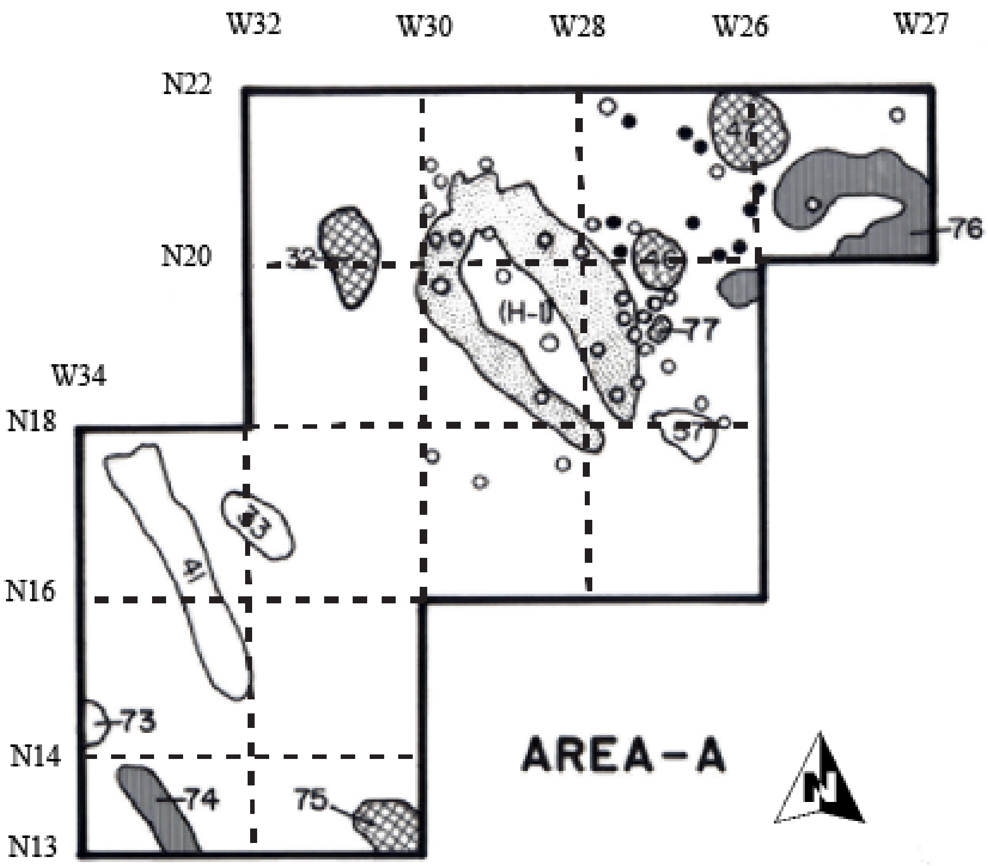
Sherd ID	Sand Size 1 (mm)	Sand Size 2 (mm)	Sand Size 3 (mm)	Sphericity/Roundness	Sand Sort	Comments
RS00296	.0625	.0625-0.125	.0625-0.125	0.9/0.7	Well	mica flecks.
RS00110	0.5-1.0	0.125-0.25	0.5-1.0	0.7/0.7	Poorly	a lot of visible sand grains.

Appendix C:
Richter Site Planview Maps



Original Site Composite Planview Map Peters n.d.

Area A Maps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W30
W28
W26
W27
N22
N20
W34
N18
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(H-I)
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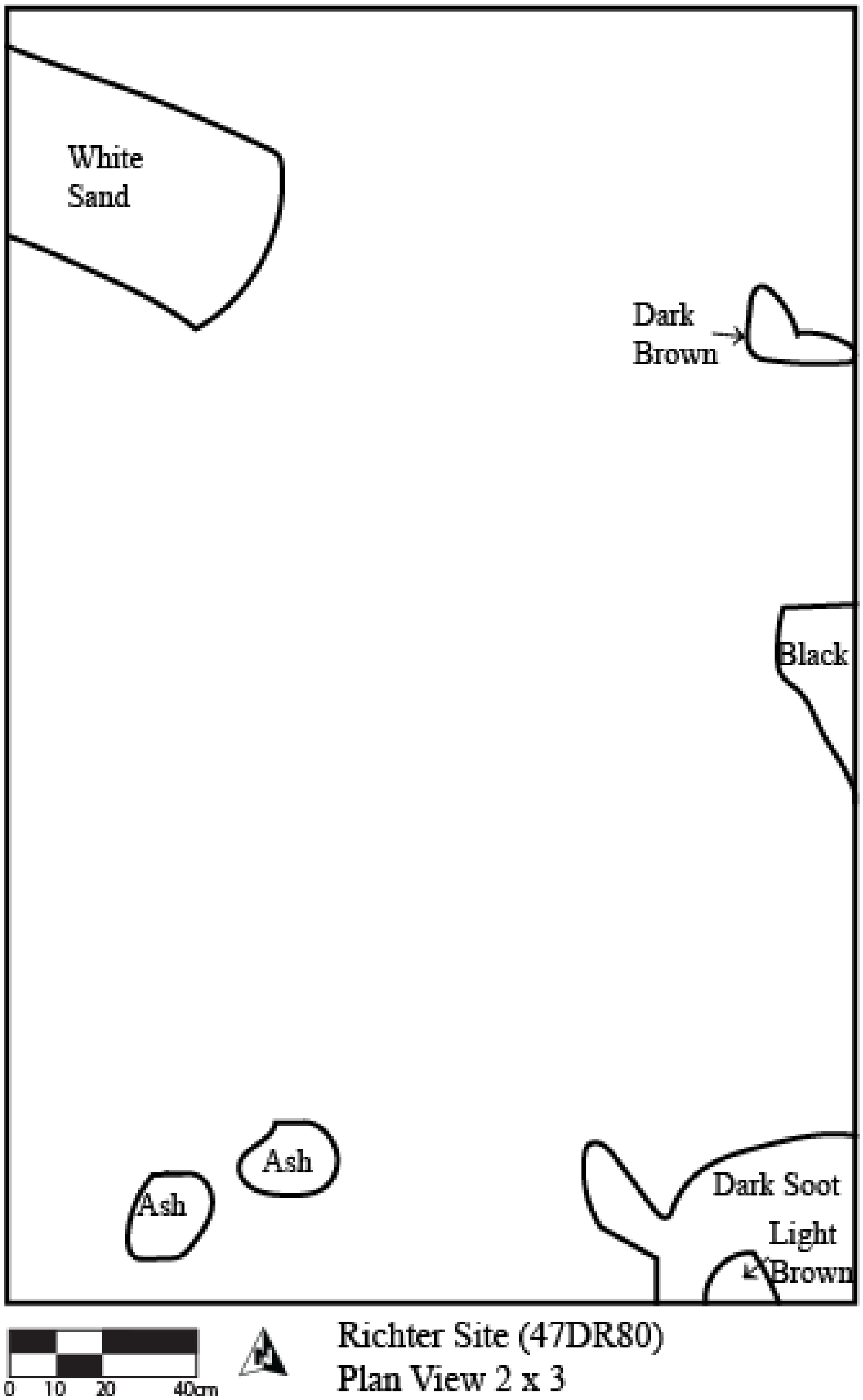
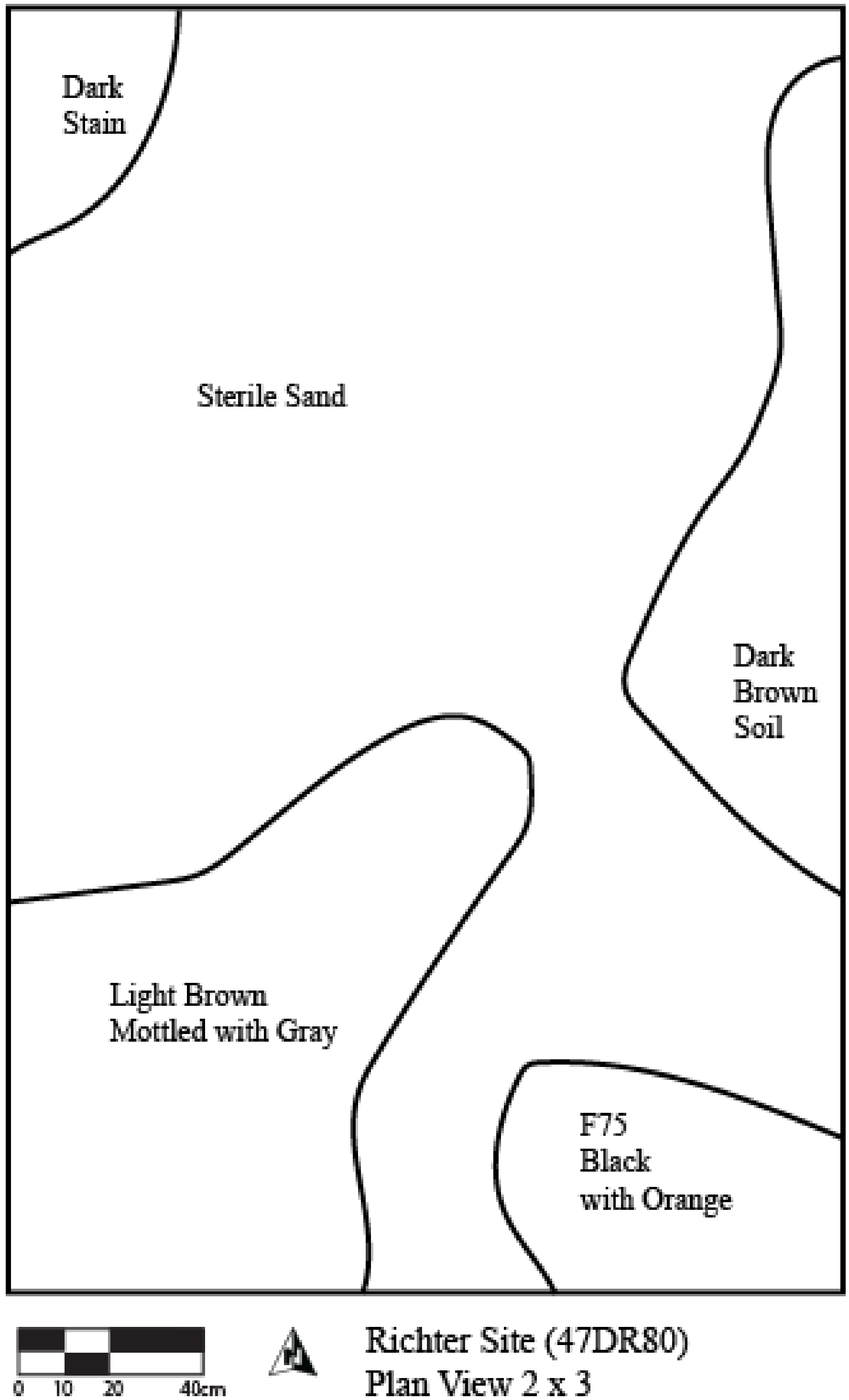
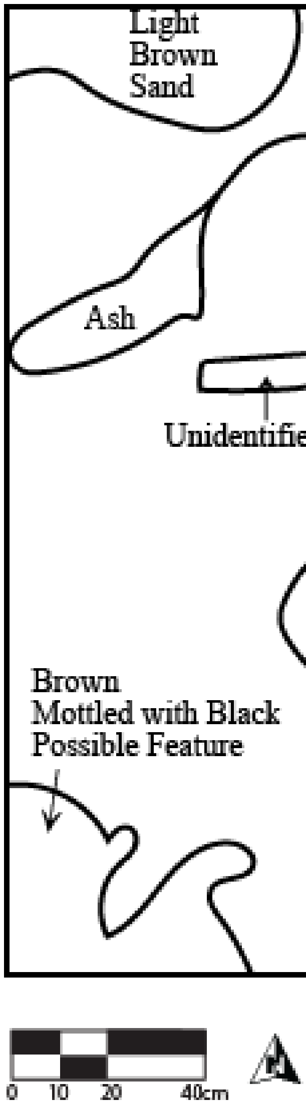
46
76
77
57
33
41
73
74
75
AREA-A
N



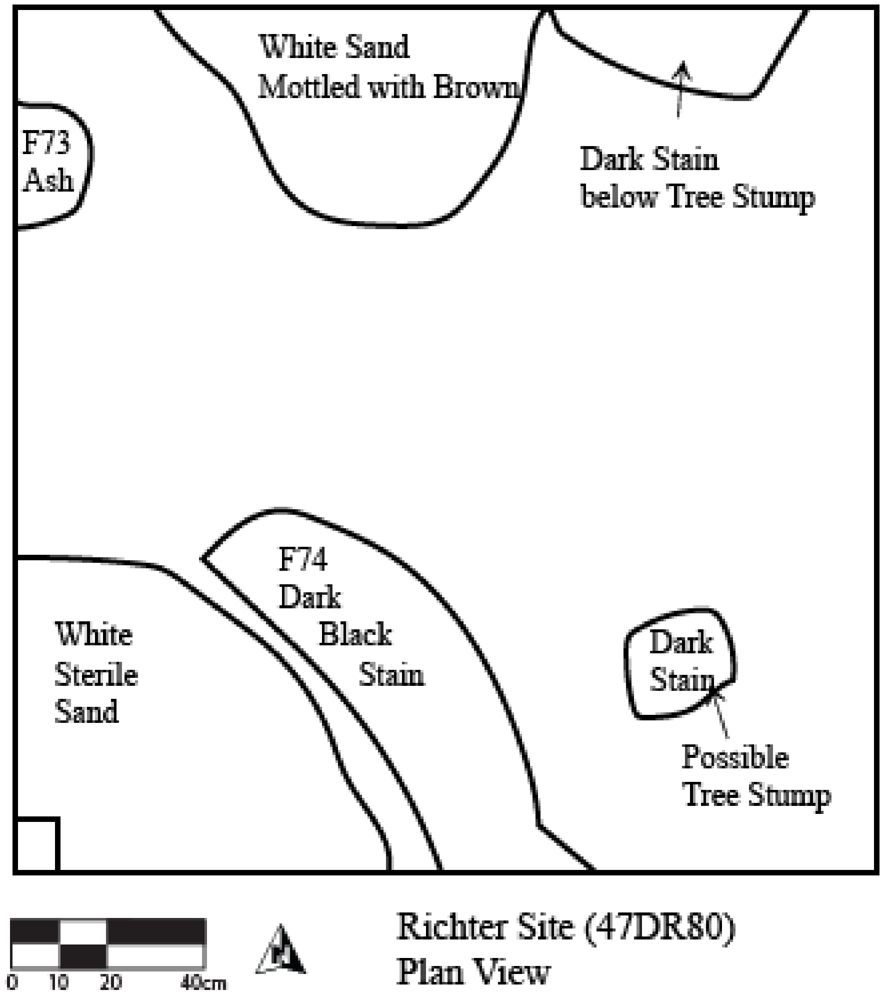
Richter Site (47DR80)
Plan View 2 x 3
Unit N13/W32
Level 2, 29 cm
1973



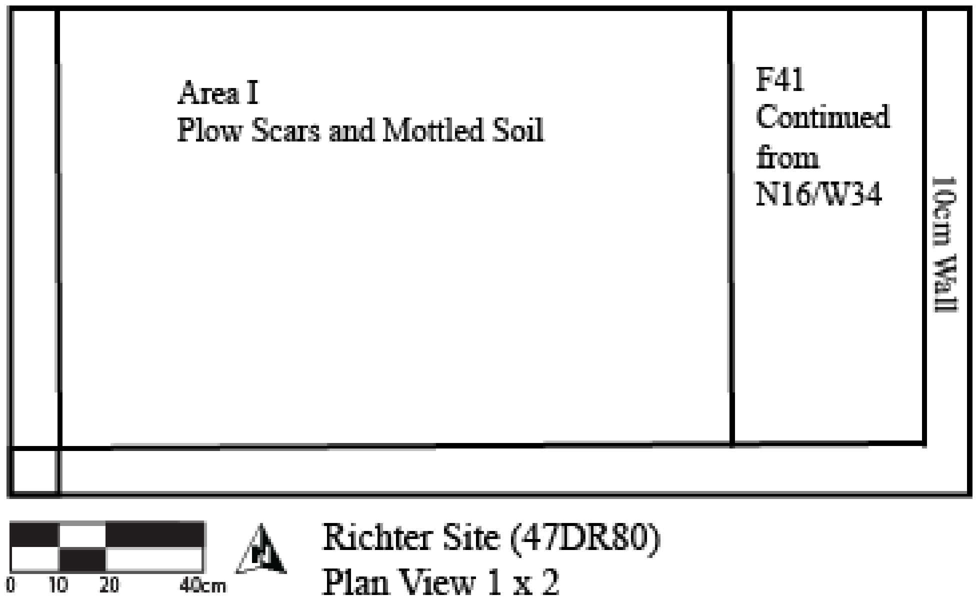
Richter Site (47DR80)
Plan View 2 x 3
Unit N13/W32
Level 3, 40 cm
1973



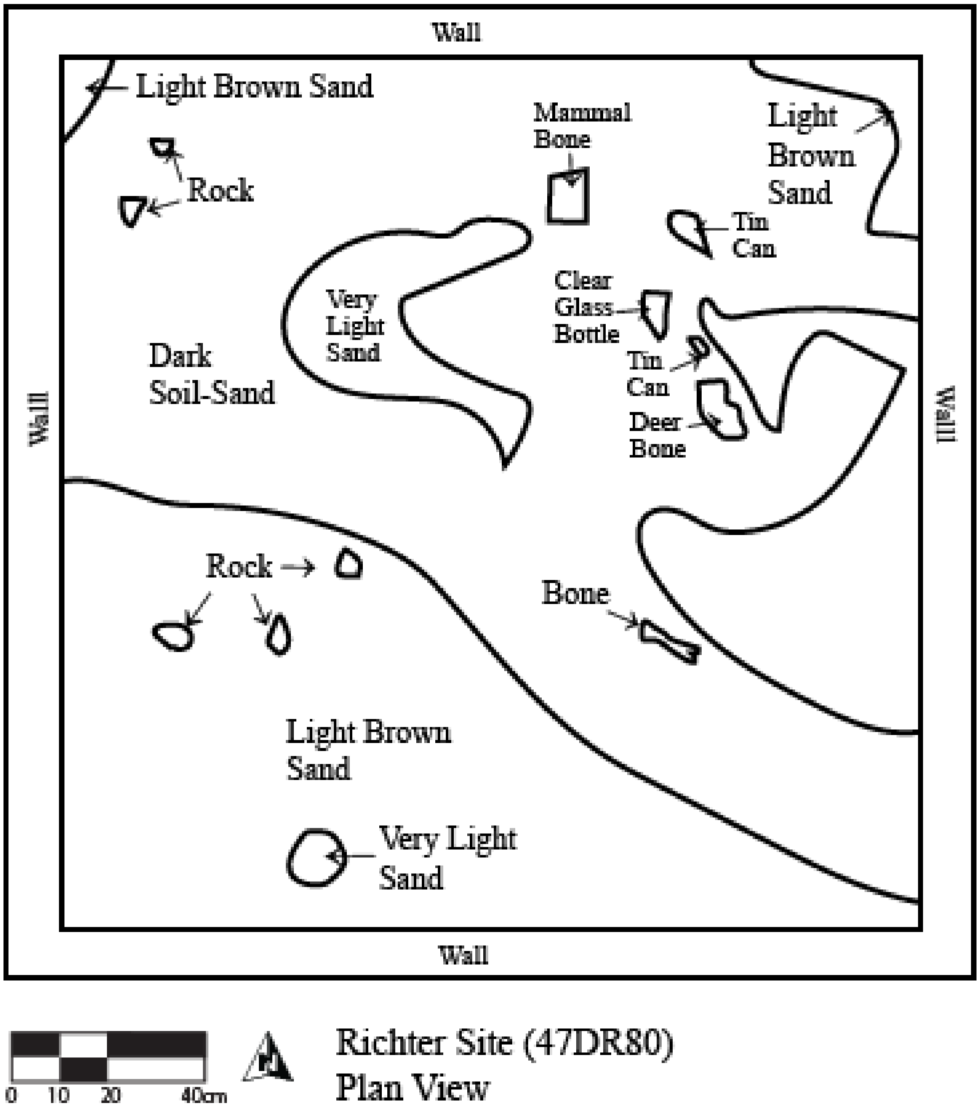
Richter Site (47DR80)
Plan View
Unit N13/W34
Level 2, 25 cm
1973



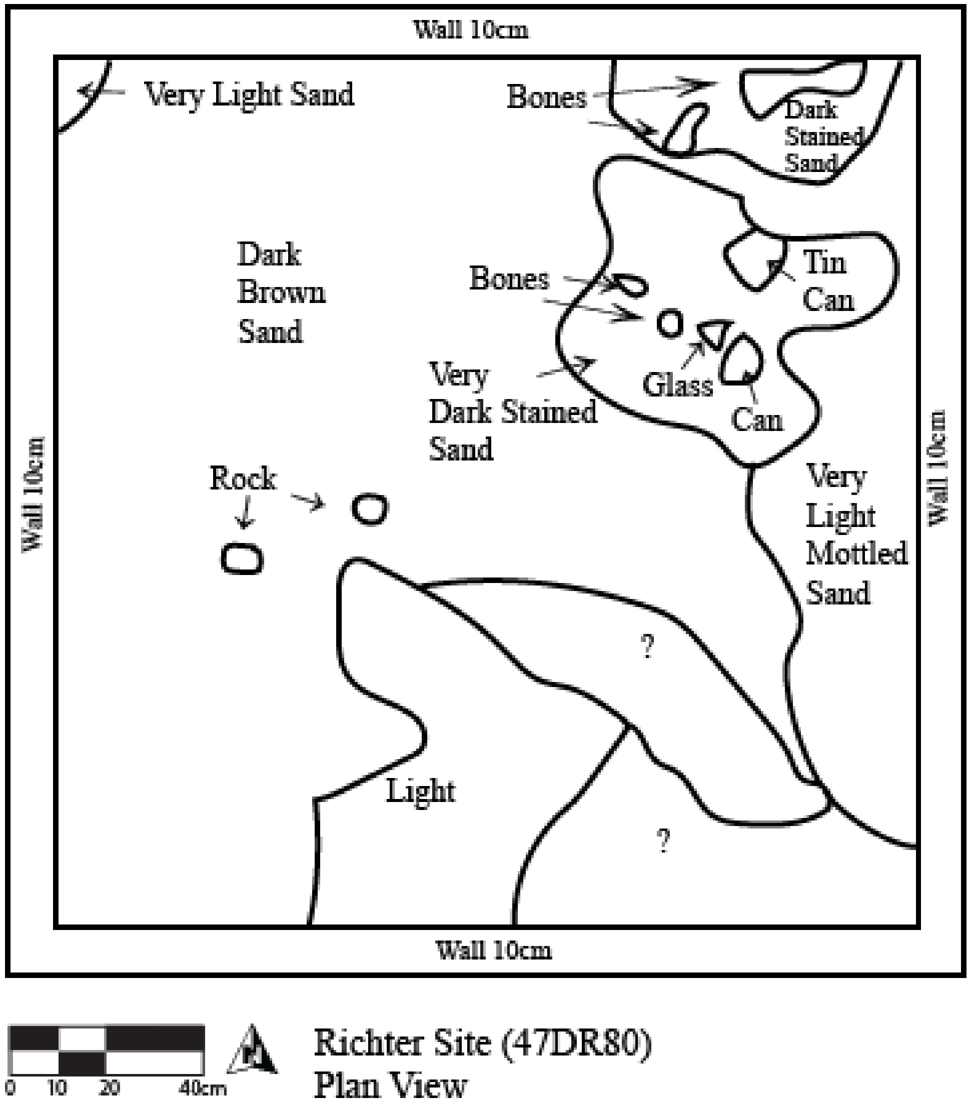
Richter Site (47DR80)
Plan View
N13/W34
Level 2, 30 cm
1973



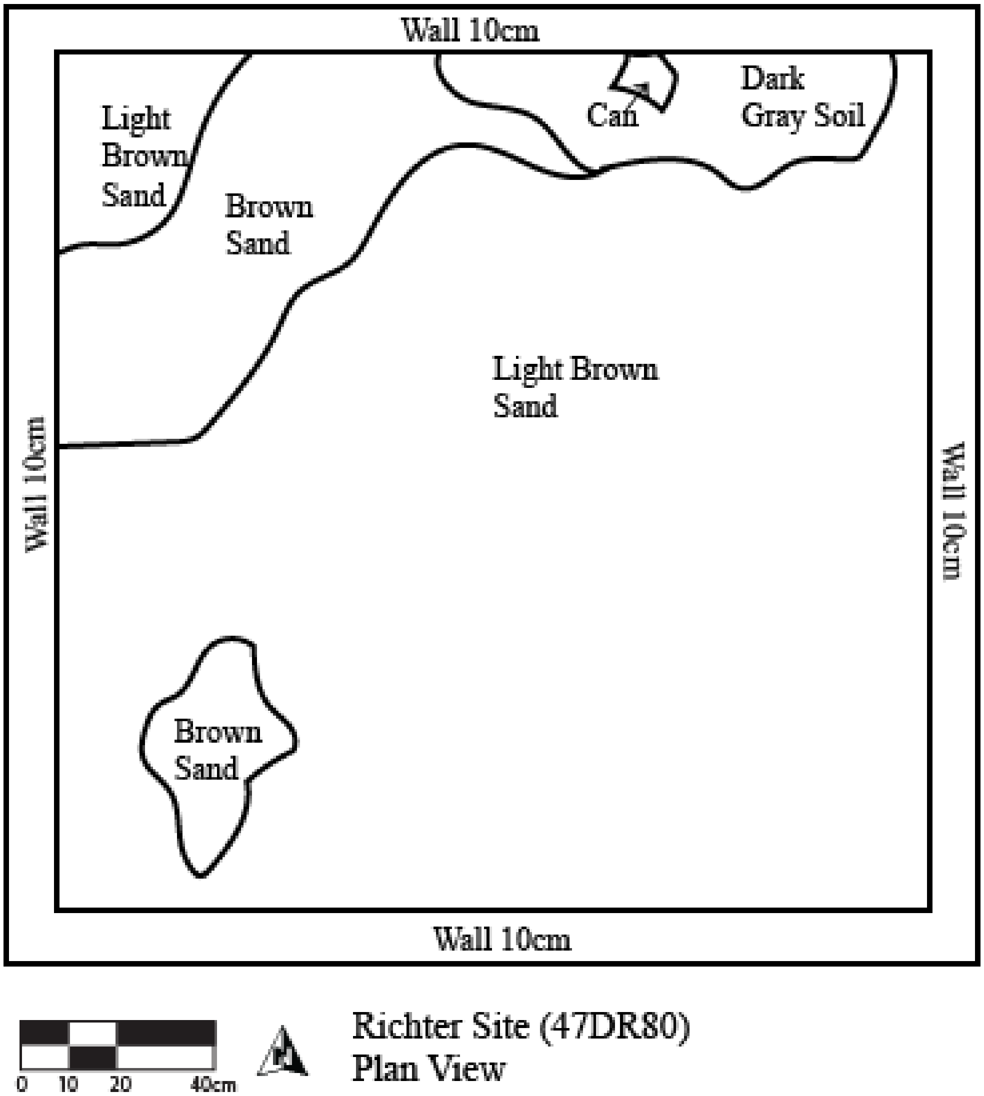
Richter Site (47DR80)
Plan View 1 x 2
Unit N15/W34
Level 2, 21cm
1973



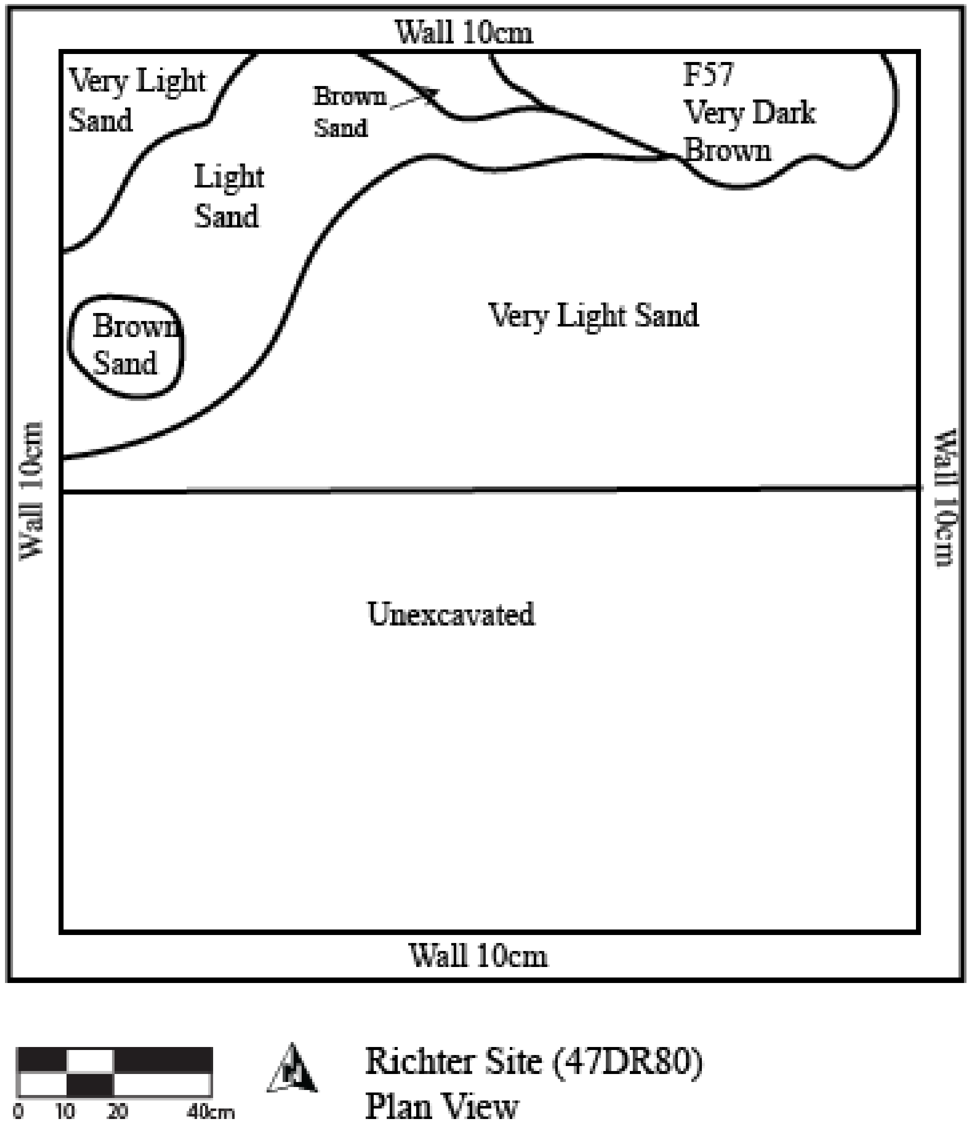
Richter Site (47DR80)
Plan View
Unit N16/W28
Level 2, top, 18cm
1973



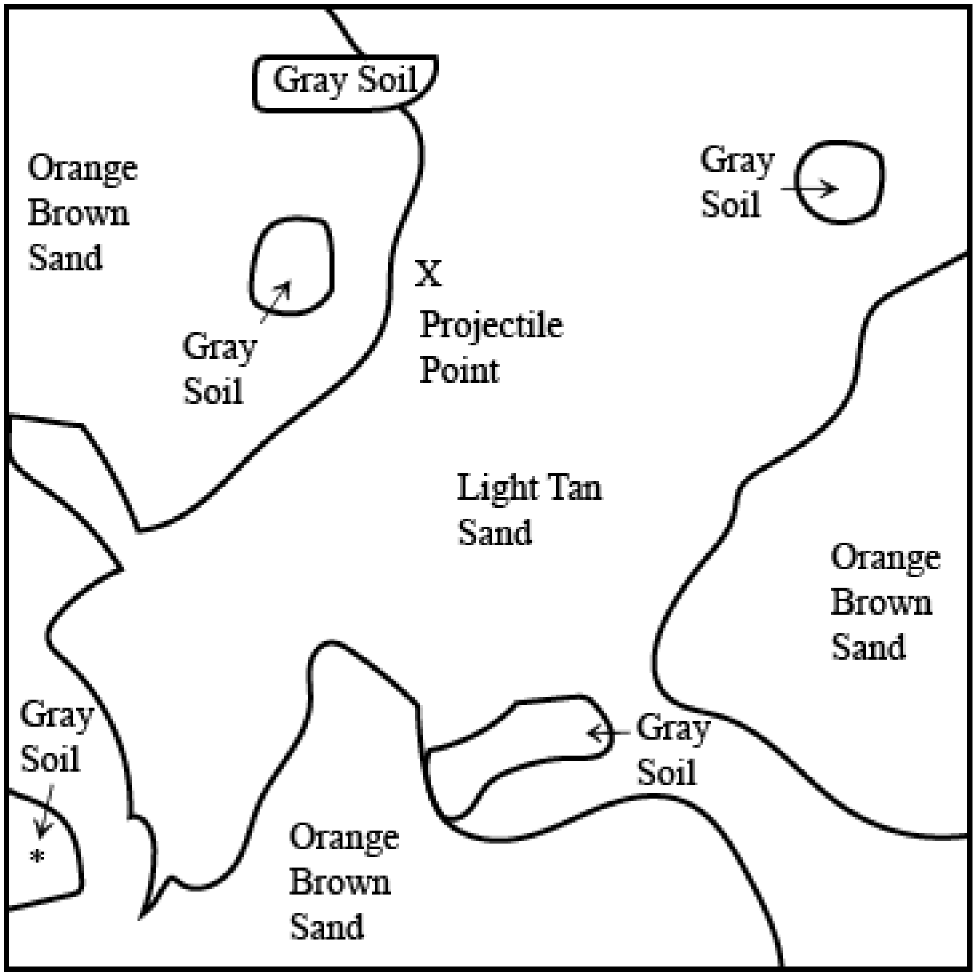
Richter Site (47DR80)
Plan View
Unit N16/W28
Level 3, 22cm
1973



Richter Site (47DR80)
Plan View
Unit N16/W28
Level 4, top, 30cm
1973



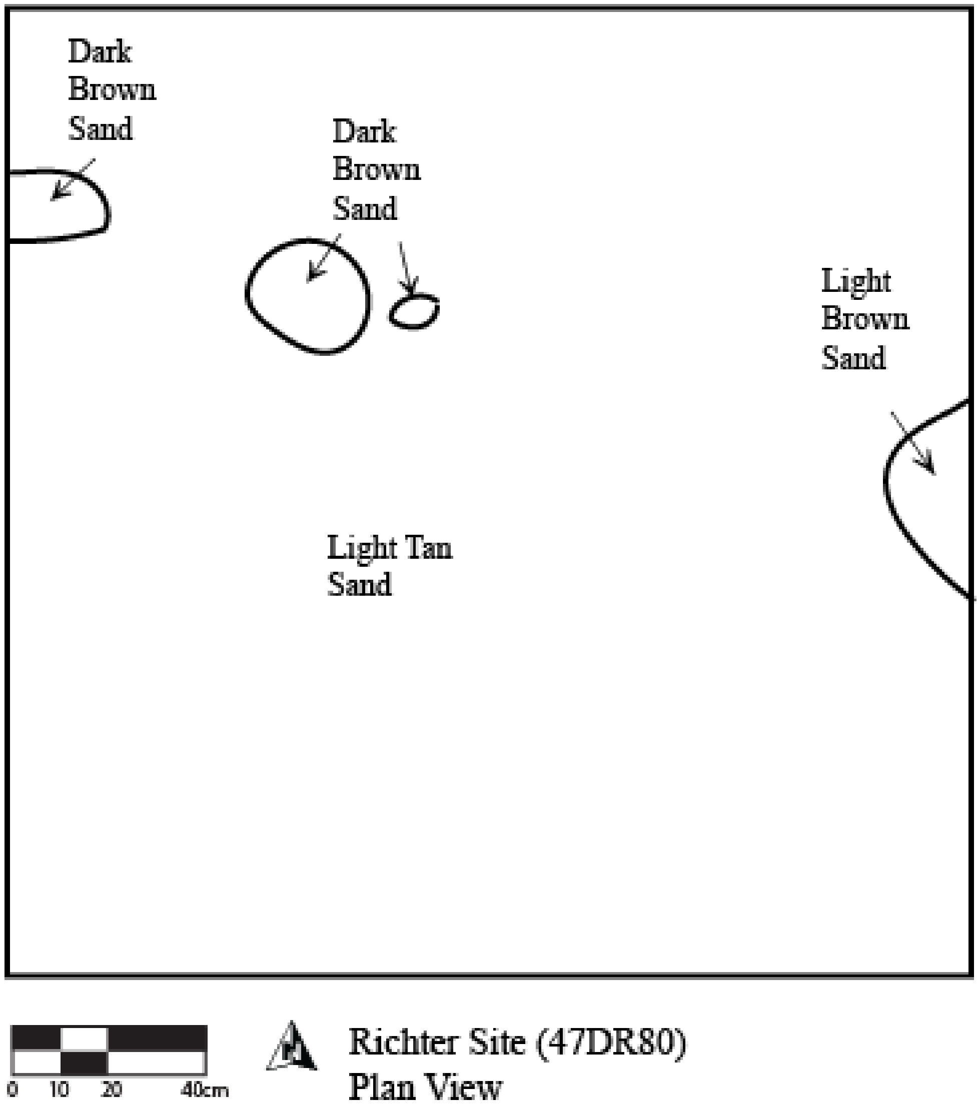
Richter Site (47DR80)
Plan View
Unit N16/W28
Level 5, 36cm
1973



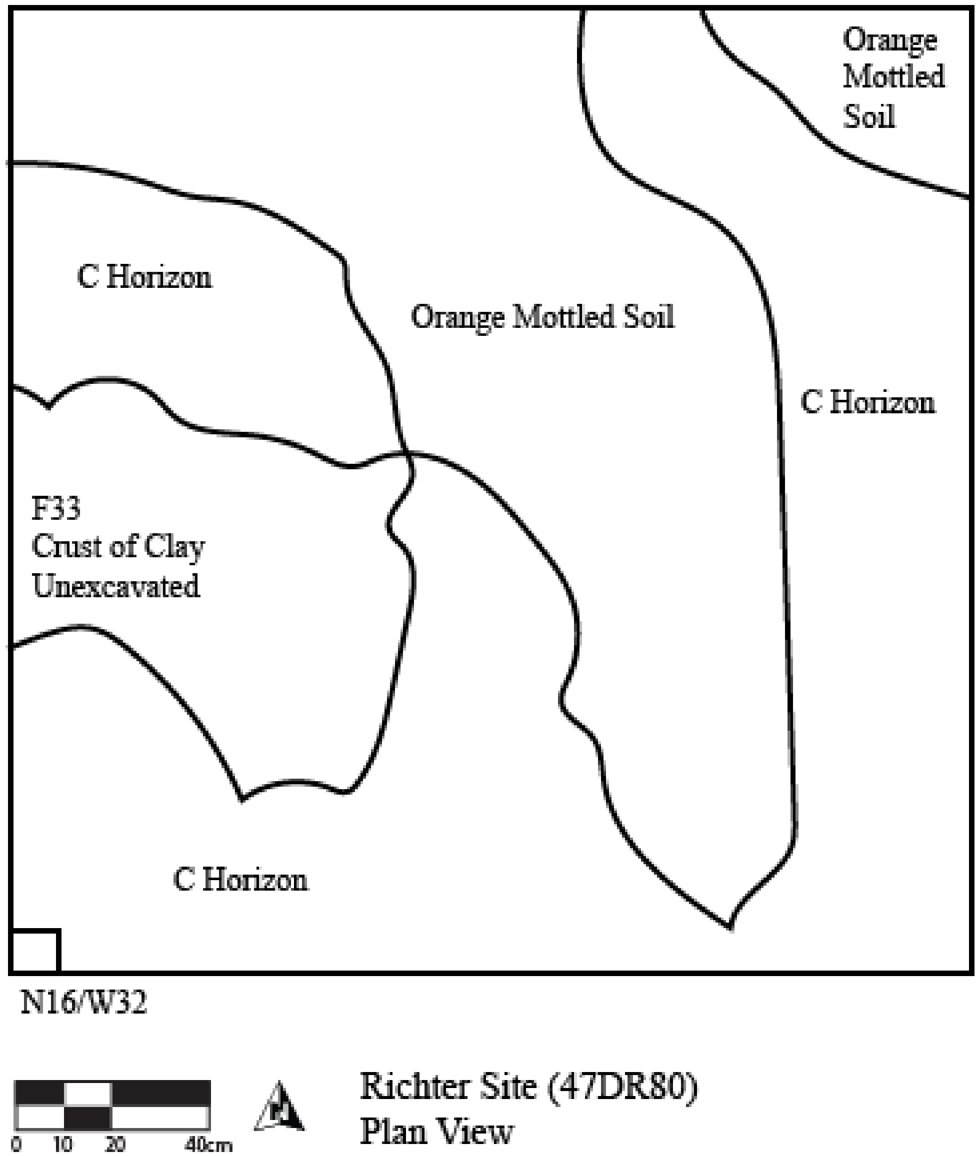
*Charcoal

0 10 20 40cm

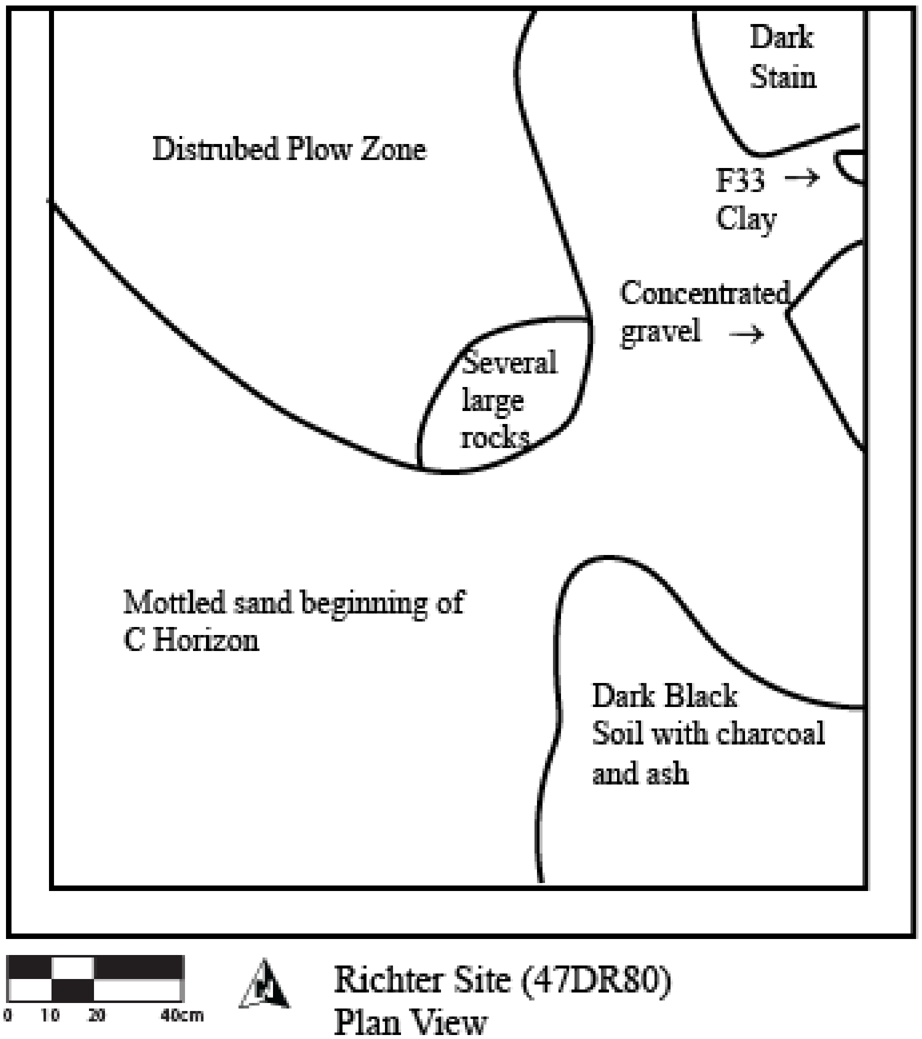
Richter Site (47DR80)
Plan View
Unit N16/W30
Level 2, 23cm
1973



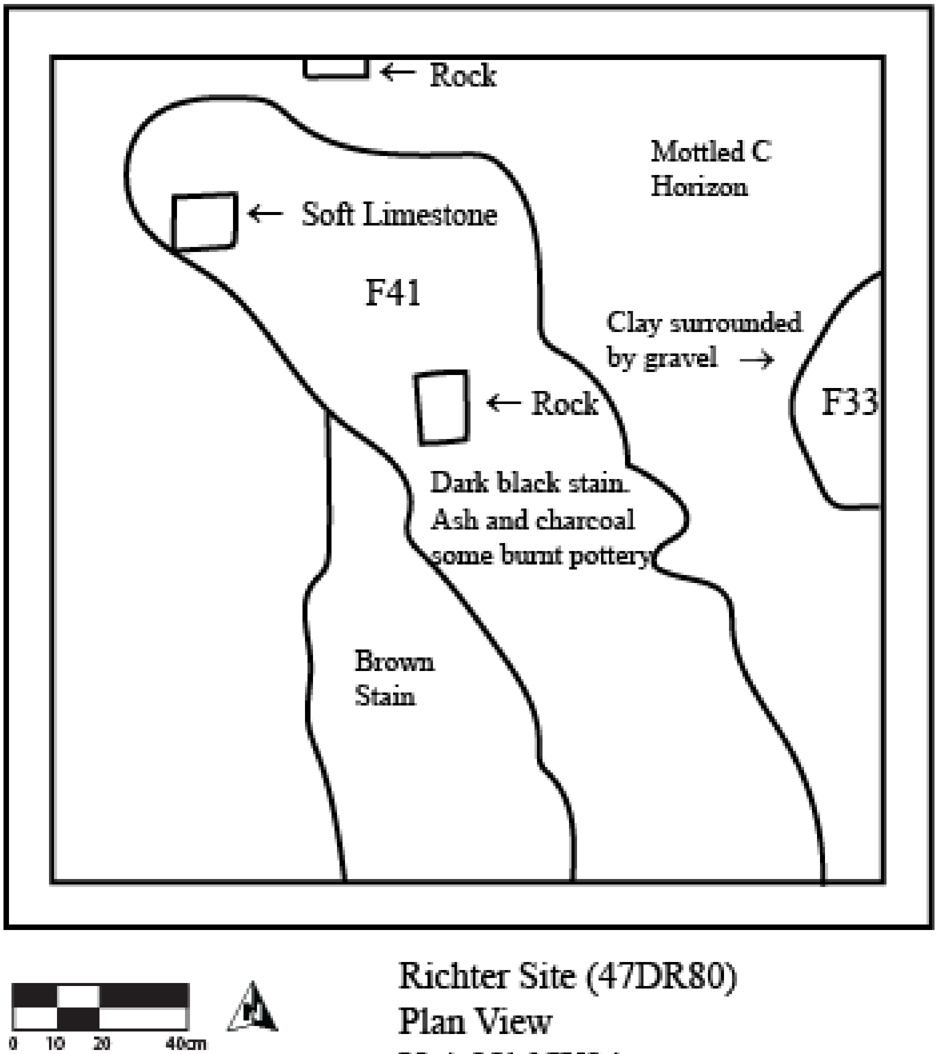
Richter Site (47DR80)
Plan View
Unit N16/W30
Level 3, 34cm
1973



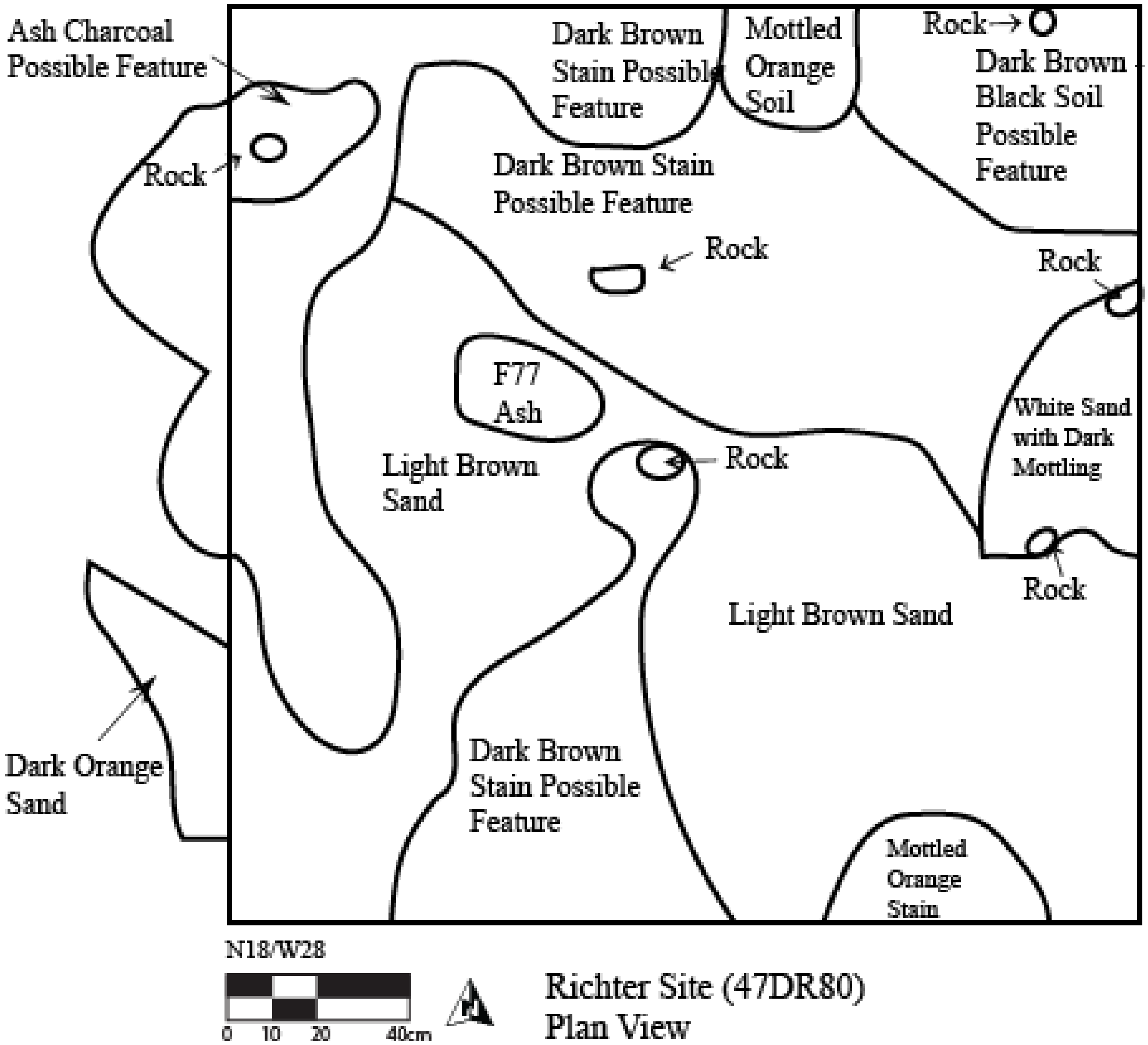
Richter Site (47DR80)
Plan View
Unit N16/W32
Level 2, 29cm
1973



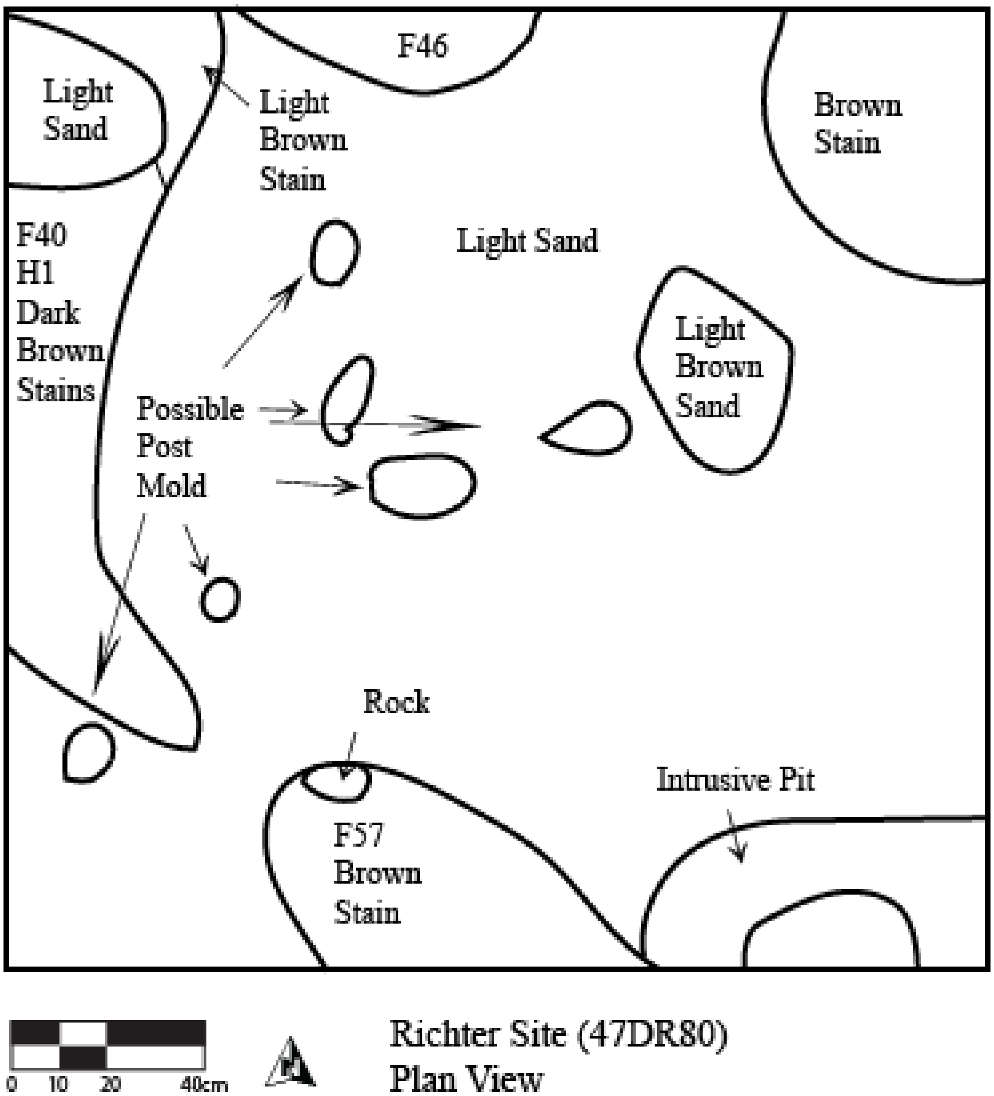
Richter Site (47DR80)
Plan View
Unit N16/W34
Level 2 top (original labled Level 3 top), 24 cm



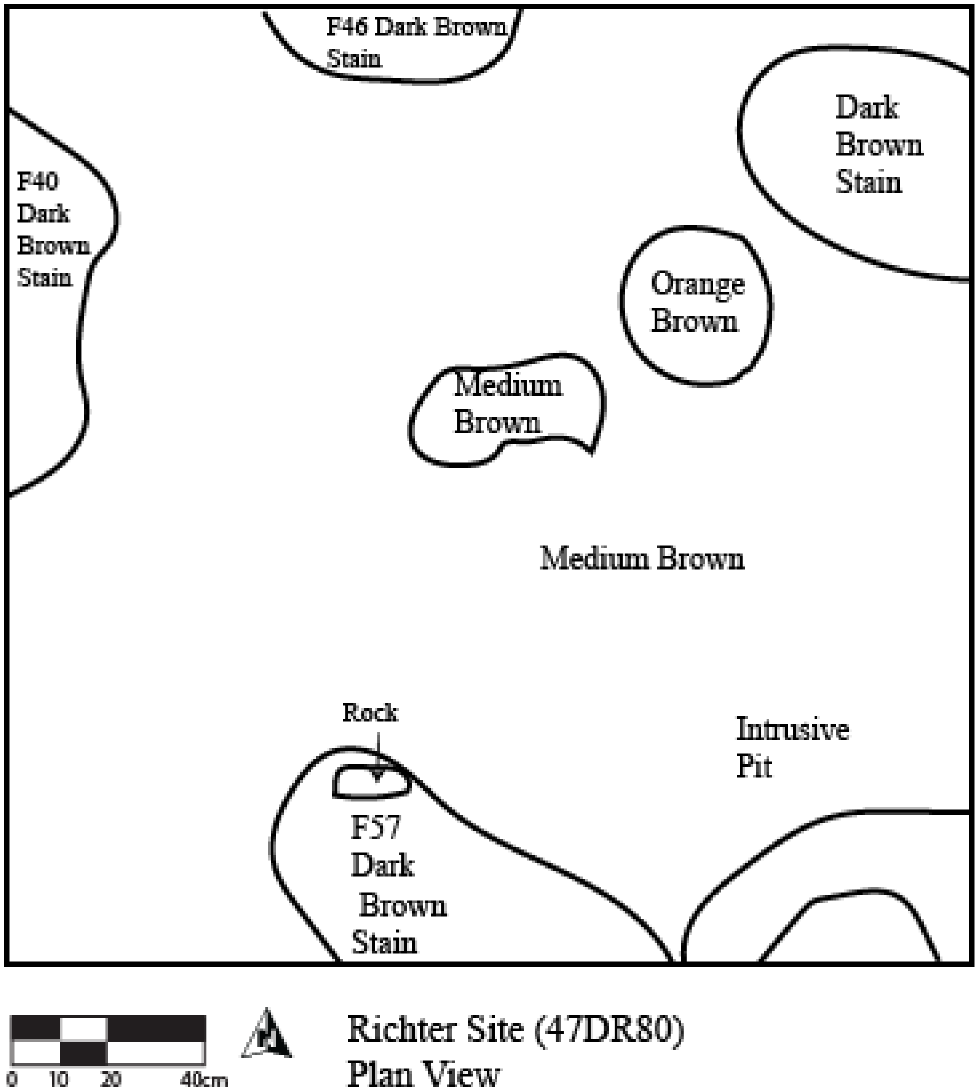
Richter Site (47DR80)
Plan View
Unit N16/W34
Top Level 3, 31 cm



Richter Site (47DR80)
Plan View
Unit N18/W28
Level 2, 20cm
1973



Richter Site (47DR80)
Plan View
Unit N18/W28, House 1
Level 3?, 39cm
1973



Richter Site (47DR80)
Plan View
Unit N18/W28
Level 4?, 46cm
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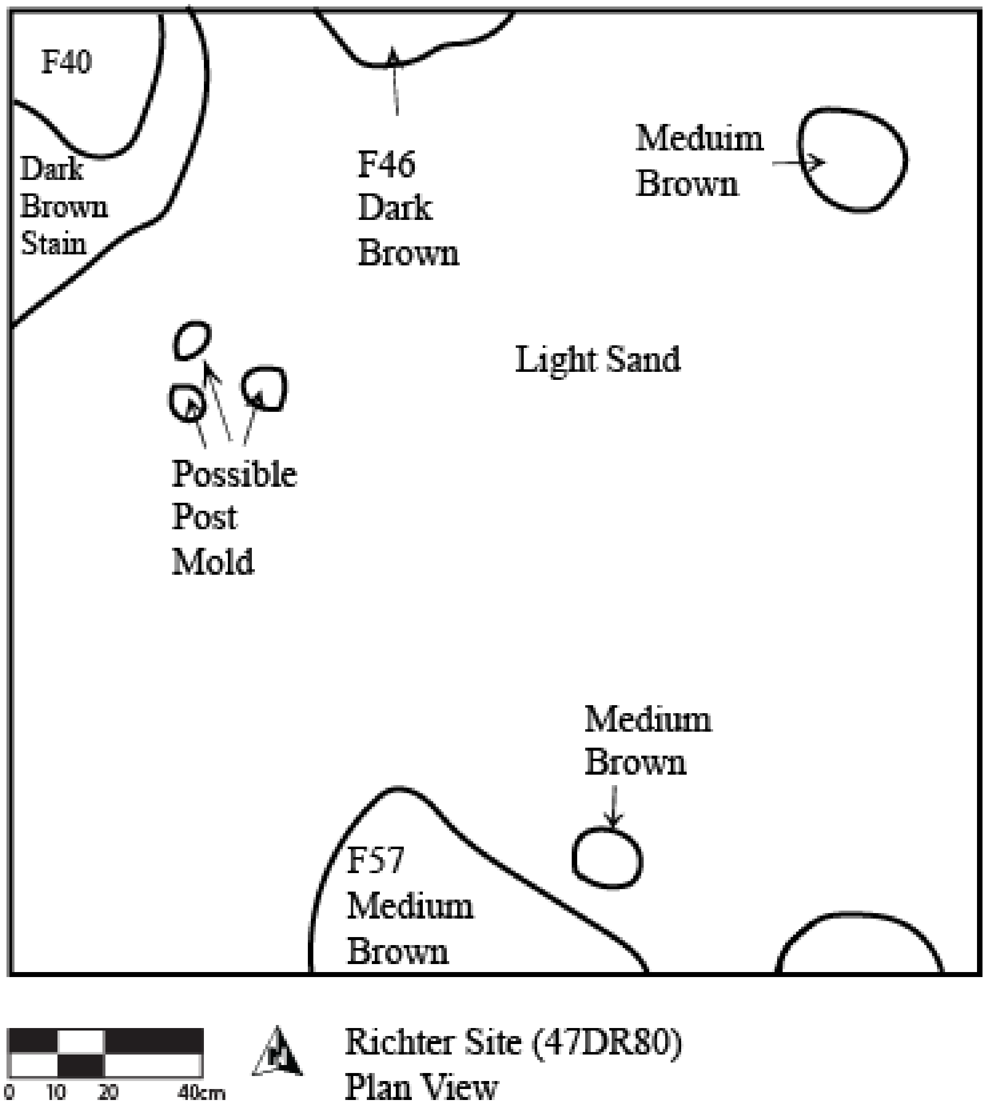
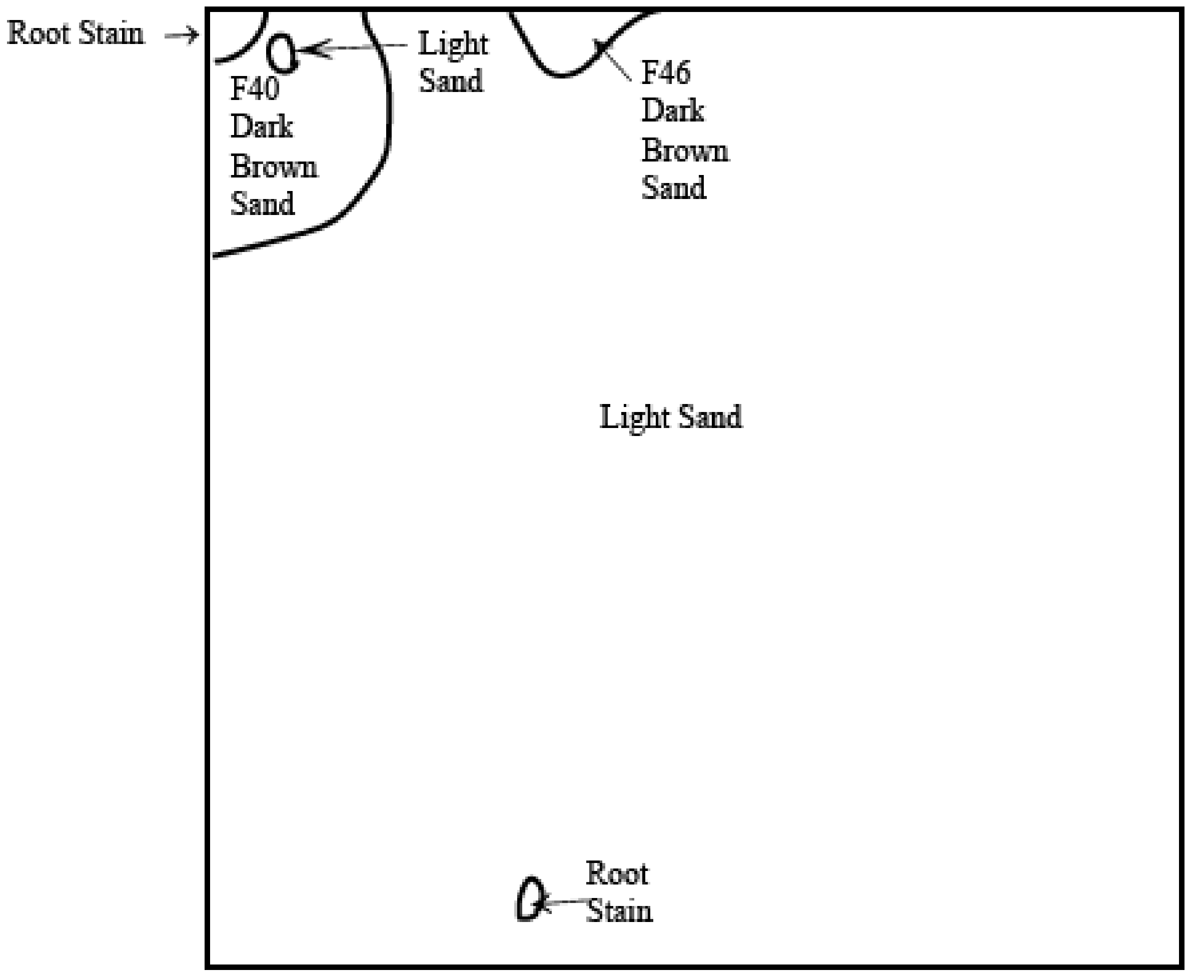
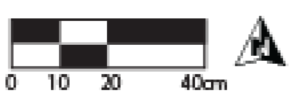
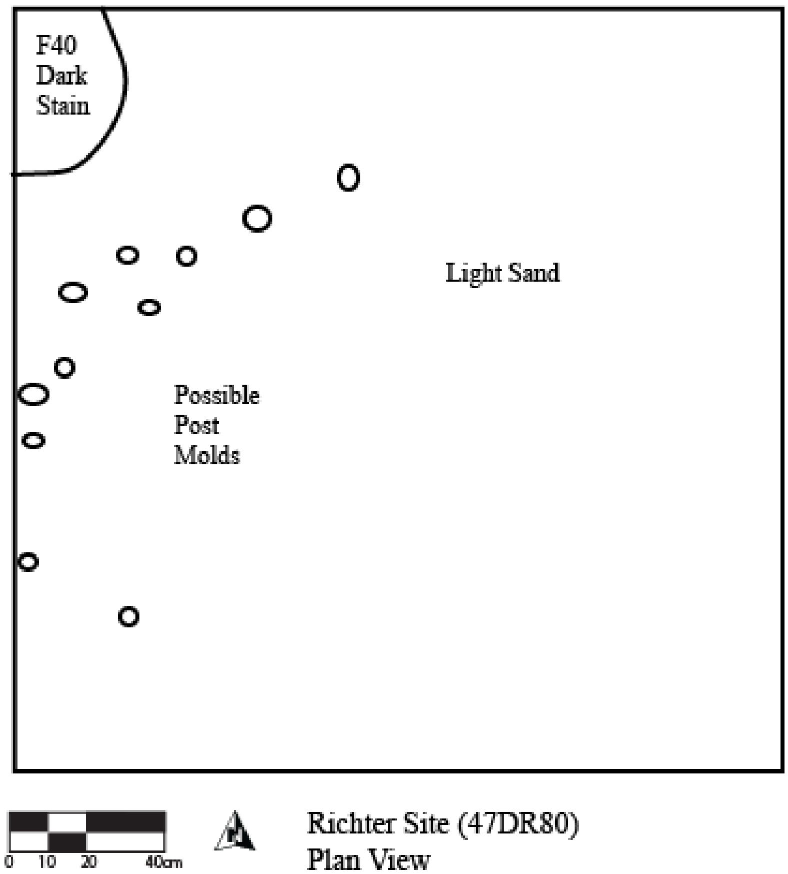


Richter Site (47DR80)
Plan View
Unit N18W28
Level 5 (bottom?), 55cm
1973

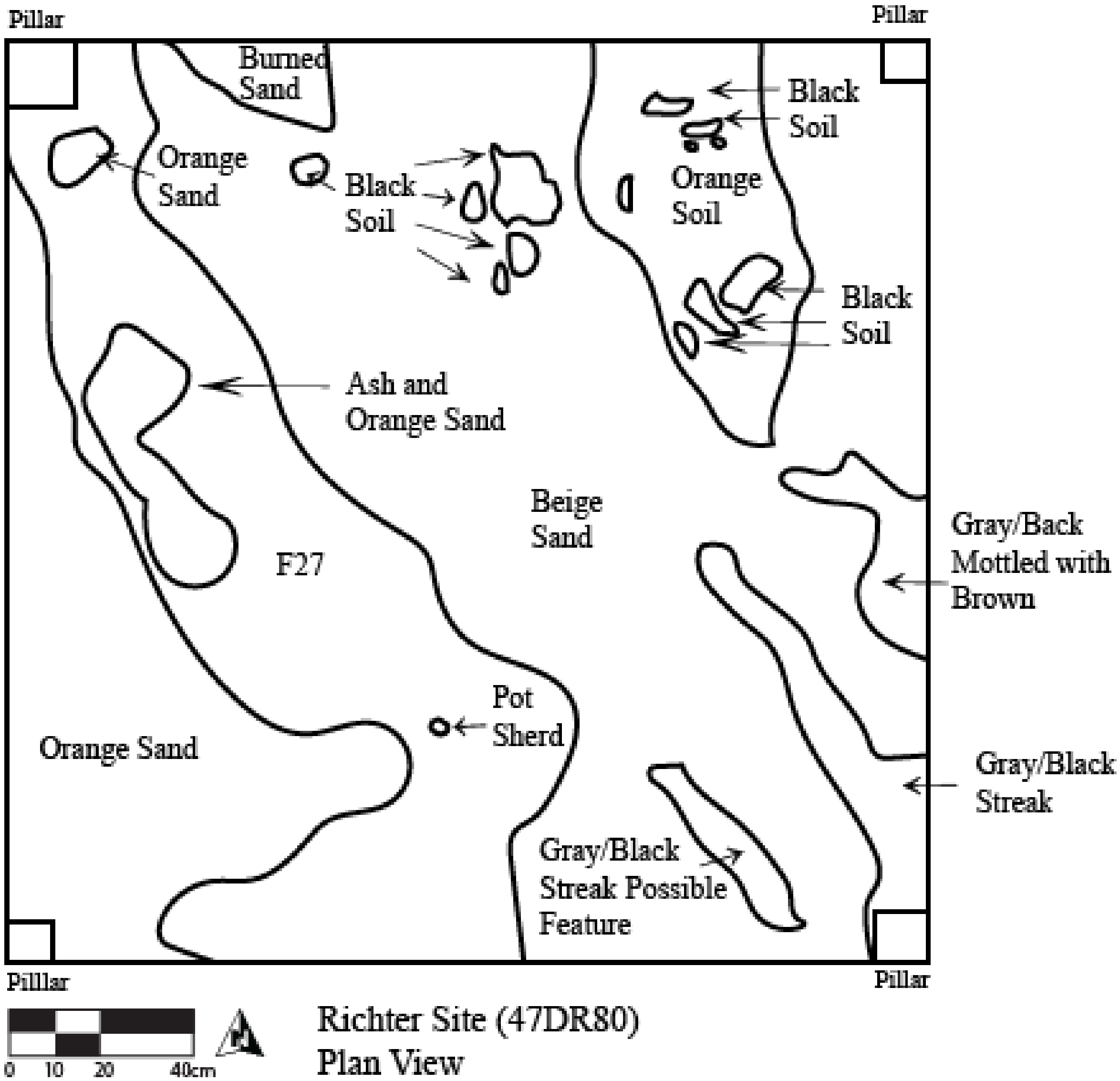




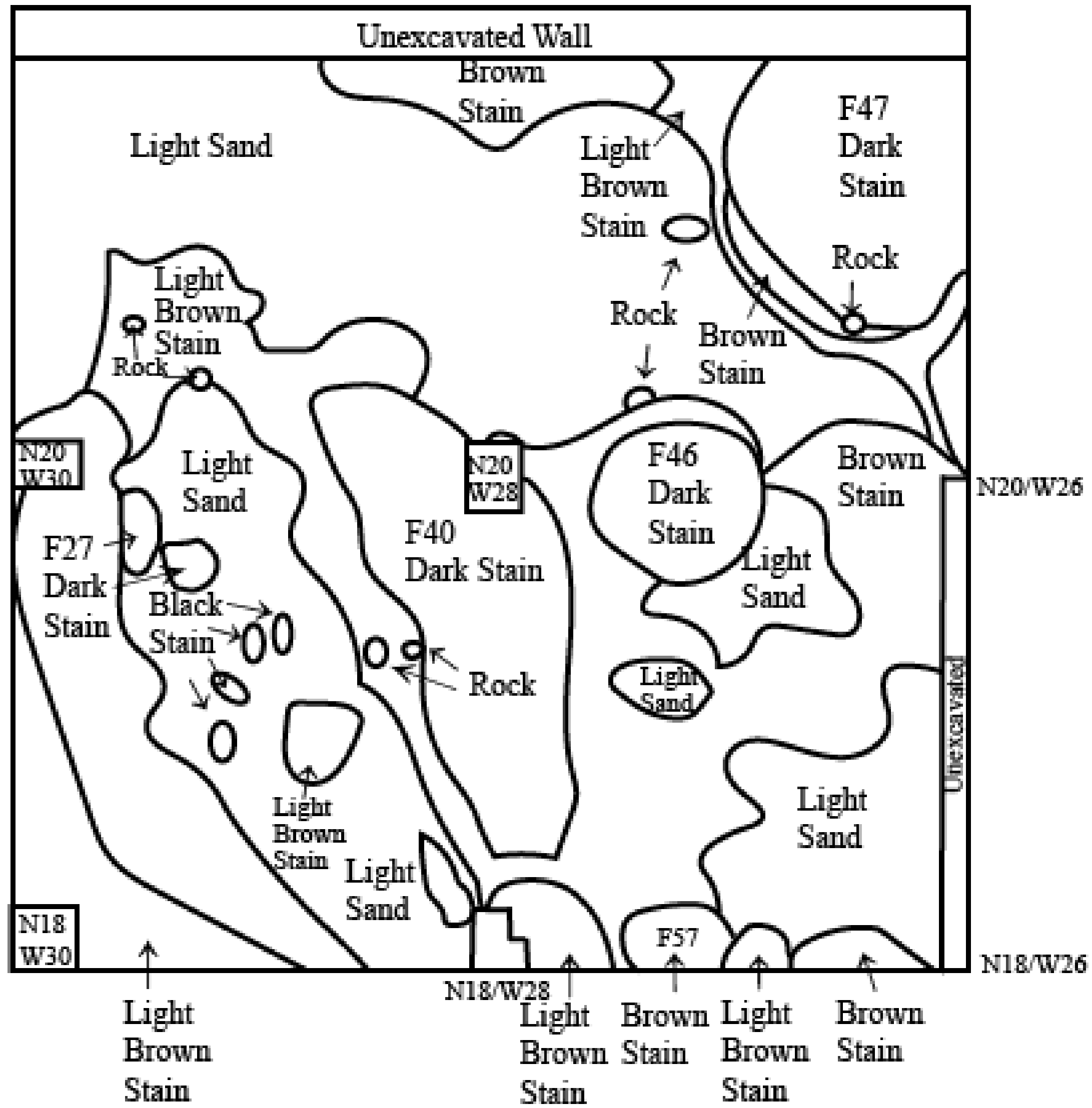
Richter Site (47DR80)
Plan View
Unit N18/W28
Level 5, 60cm
1973

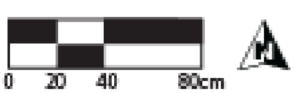


Richter Site (47DR80)
Plan View
Unit N18W28
Level 6, 62cm
1973

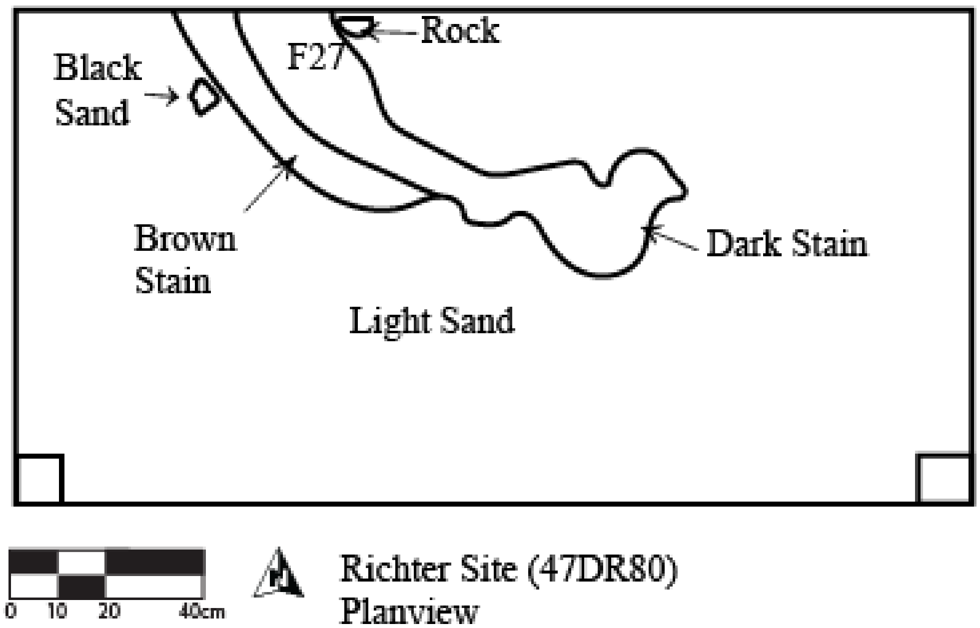


Richter Site (47DR80)
Plan View
N18/W30
Level 2, 28cm
1973

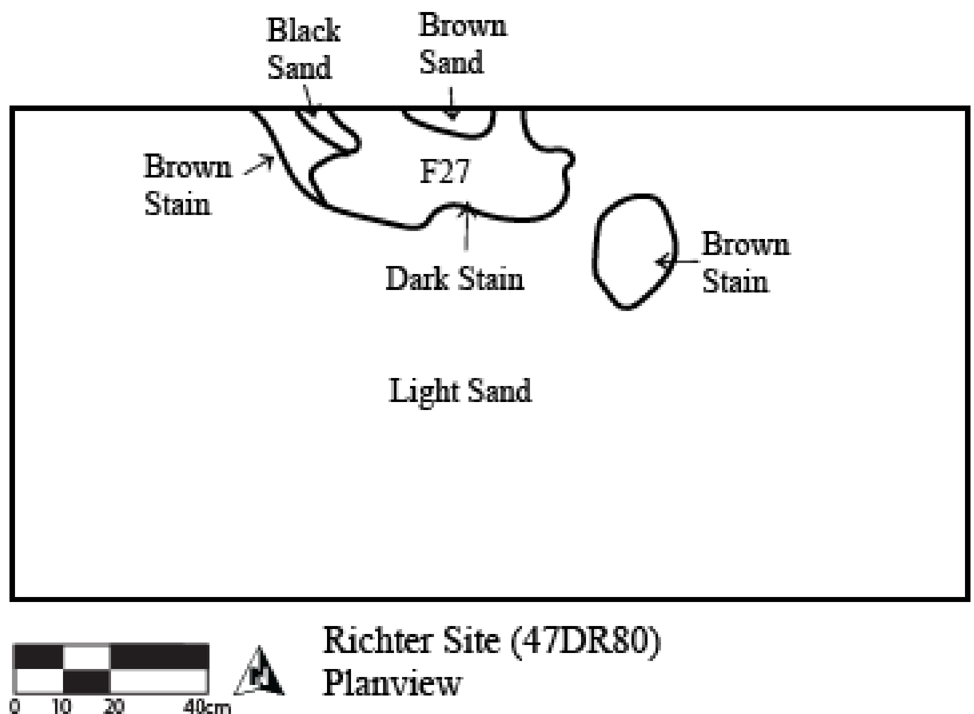




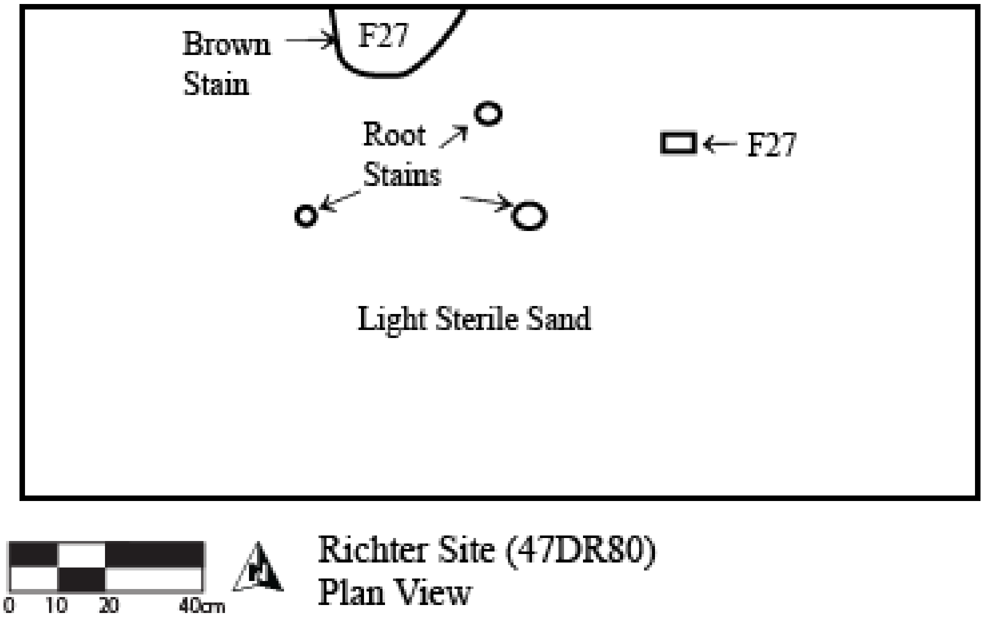
Richter Site (47DR80)
Plan View 4x4
Unit N18/W30
Level 3A, 30cm
1973



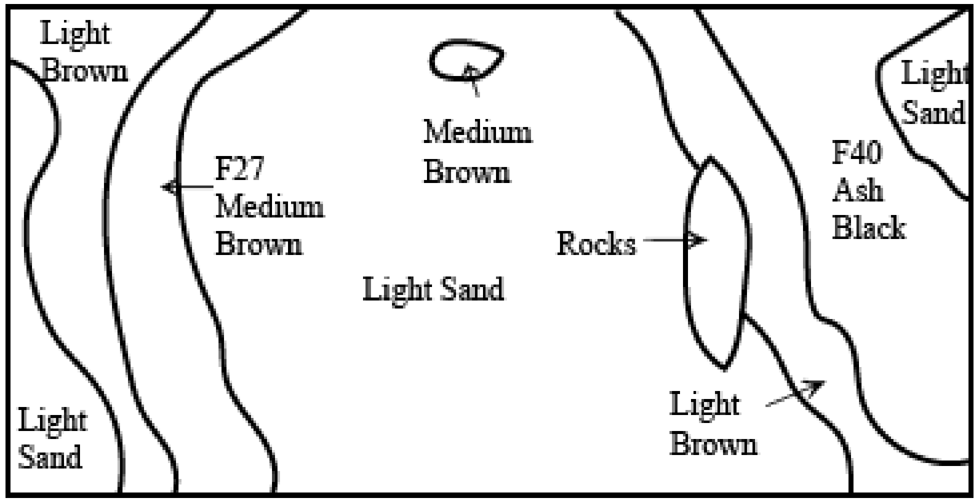
Richter Site (47DR80)
Planview
Unit N18W30 (S 1/2)
Level 4, 50cm
1973

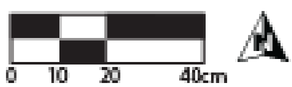


Richter Site (47DR80)
Planview
Unit N18W30 (S 1/2)
Level 5, 60cm
1973

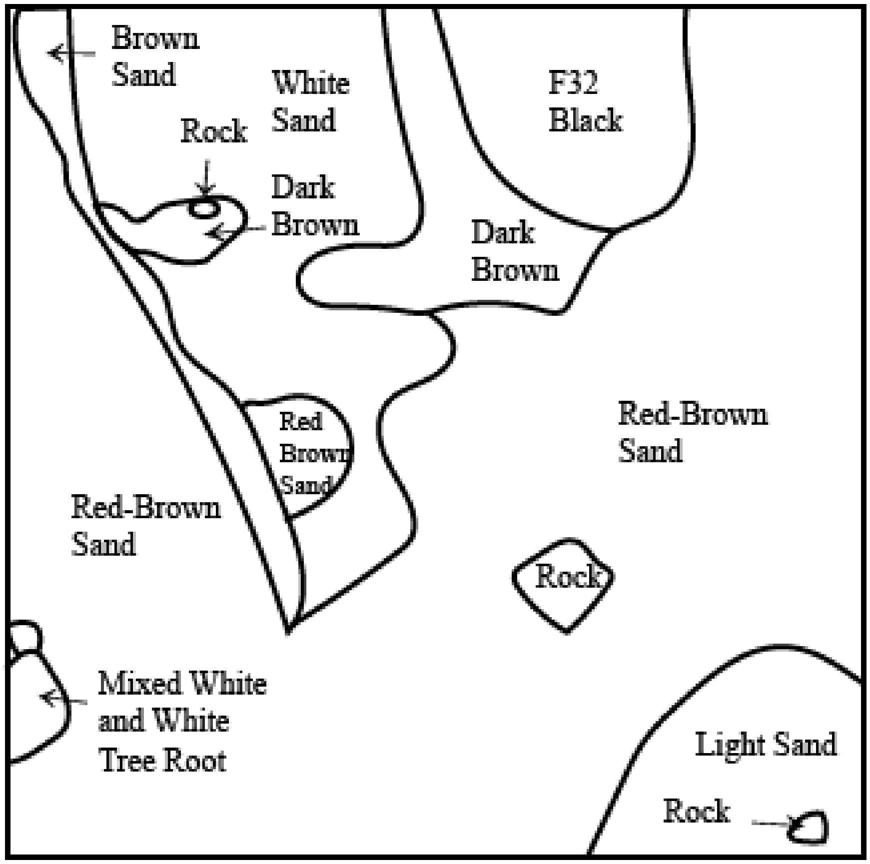


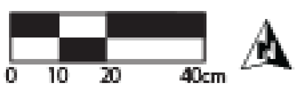
Richter Site (47DR80)
Plan View
Unit N18/W30 (S 1/2)
Level 6, 70cm
1973





Richter Site (47DR80)
Plan View
Unit N18/W30 (N 1/2)
Level 5, 50cm
1973





Richter Site (47DR80)
Plan View
Unit N18/W32
Level 2, 35cm
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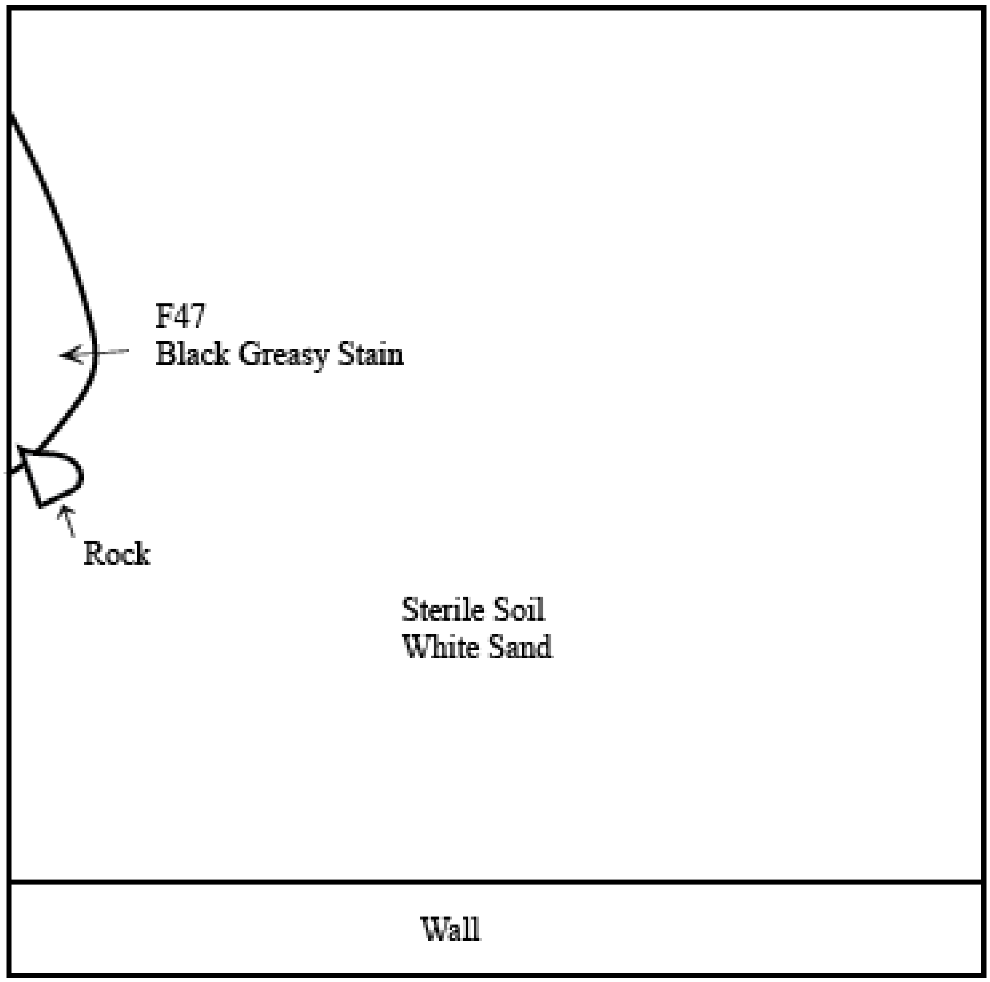

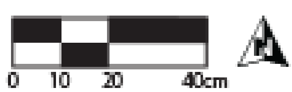

Richter Site (47DR80)
Plan View
Unit N20/W26
Level 3, 30 cm
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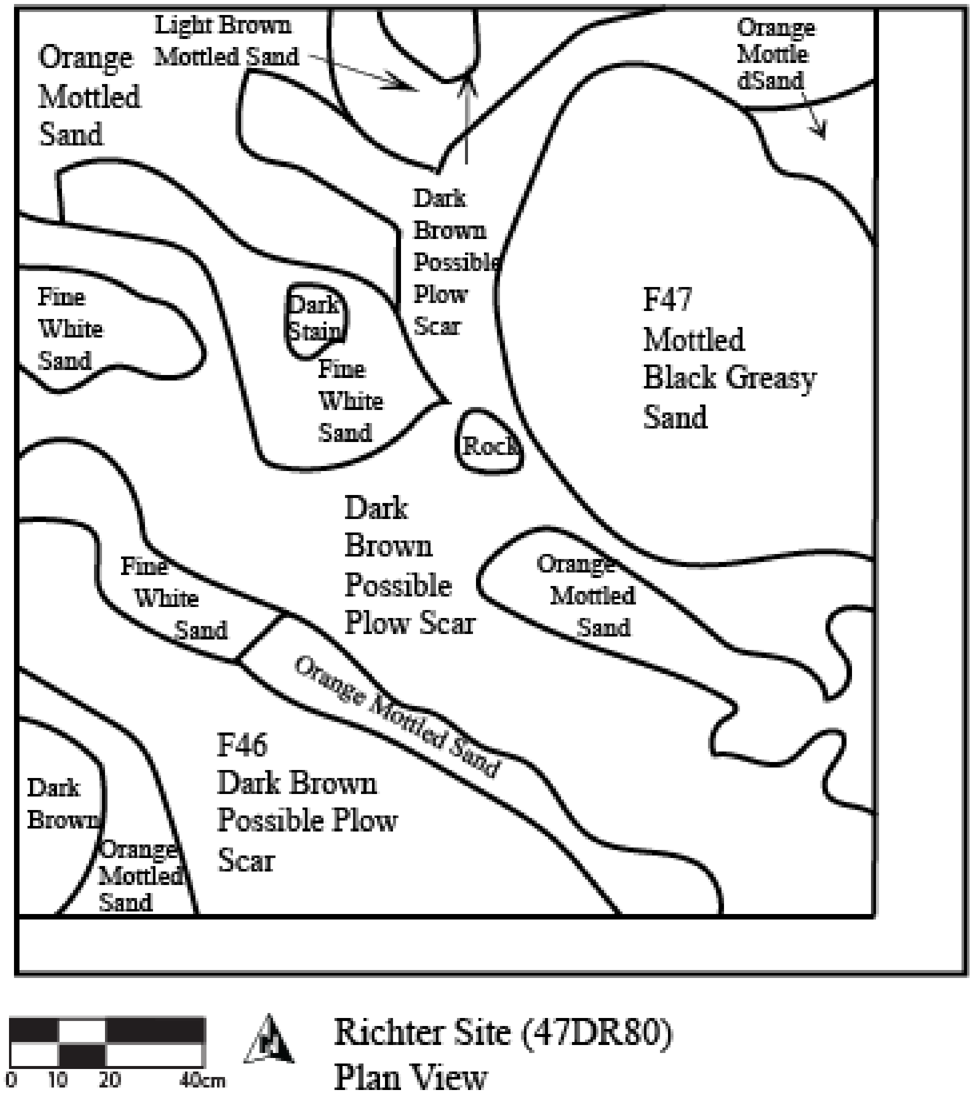

Richter Site (47DR80)
Plan View
Unit N20/W28
Level 2, 25cm
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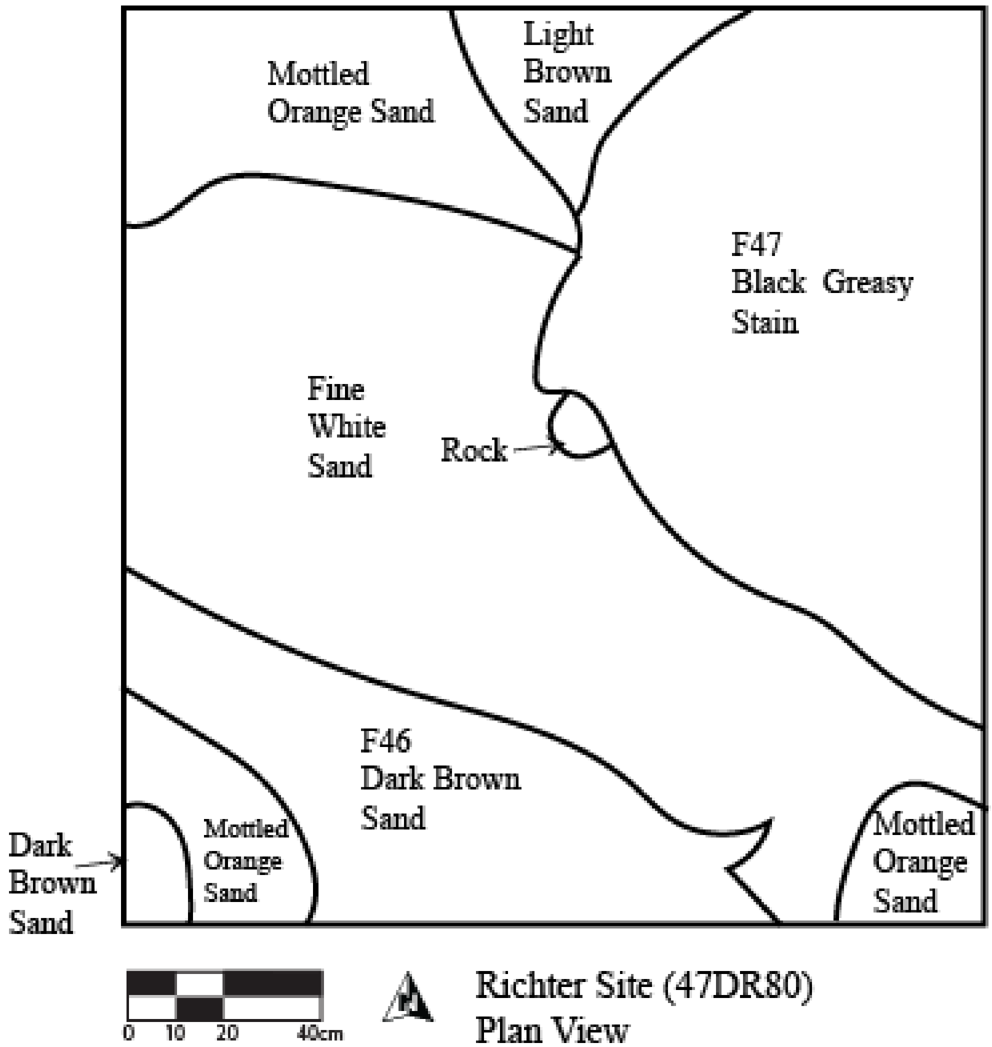

Richter Site (47DR80)
Plan View
Unit N20/W28
Level 2 (bottom), 30 cm
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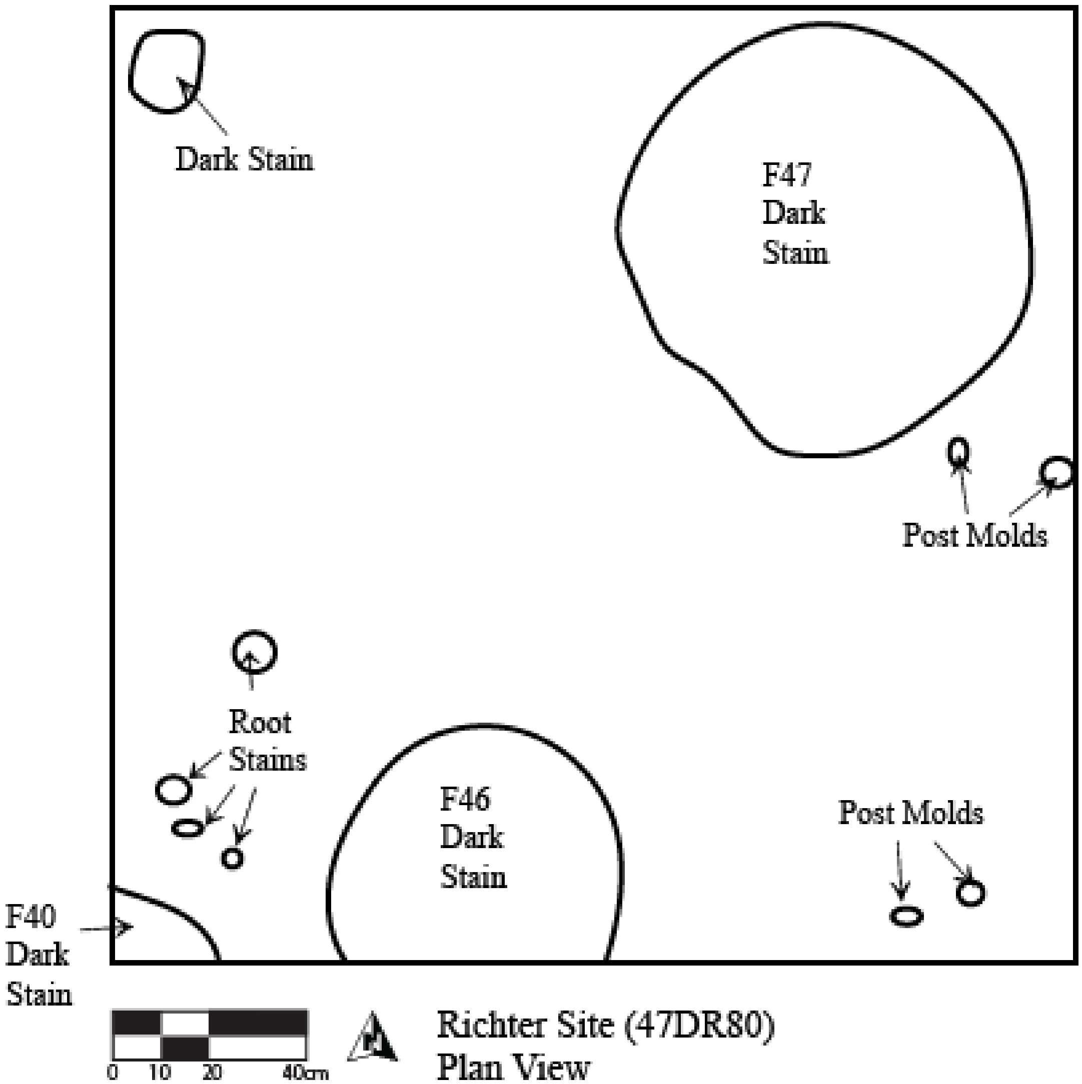
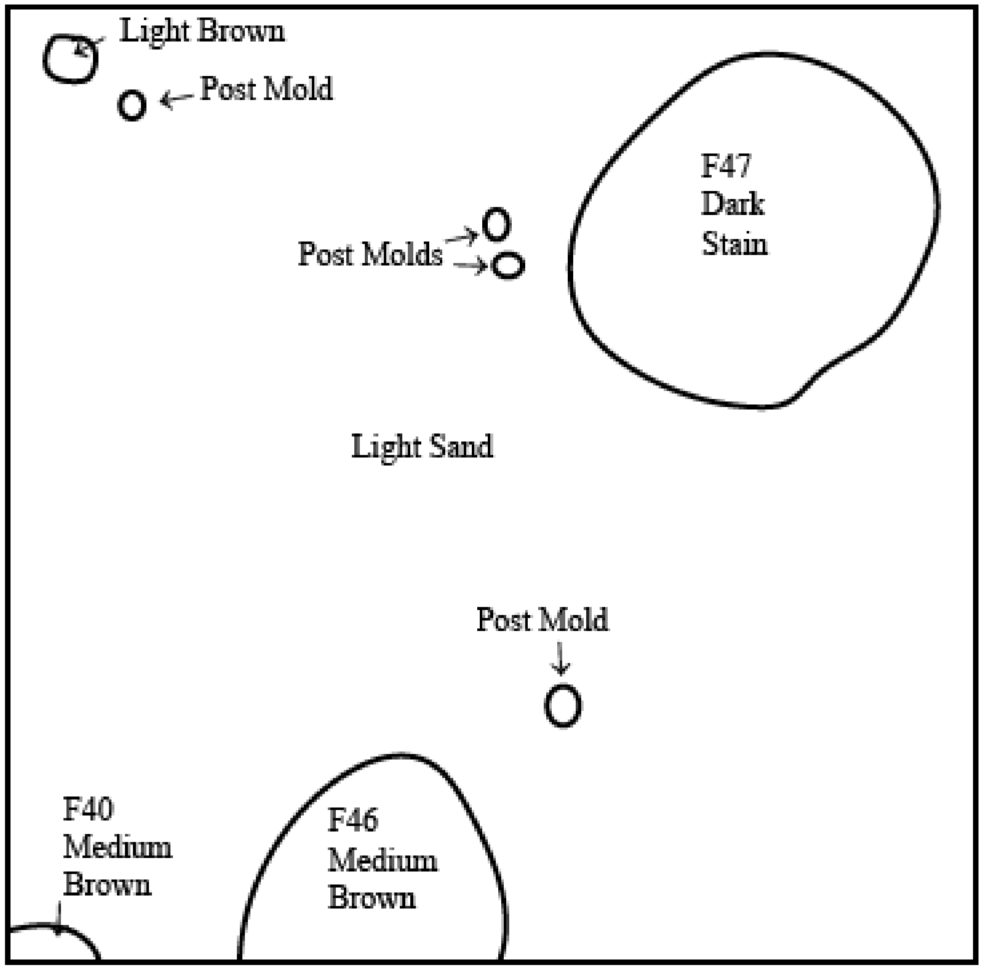
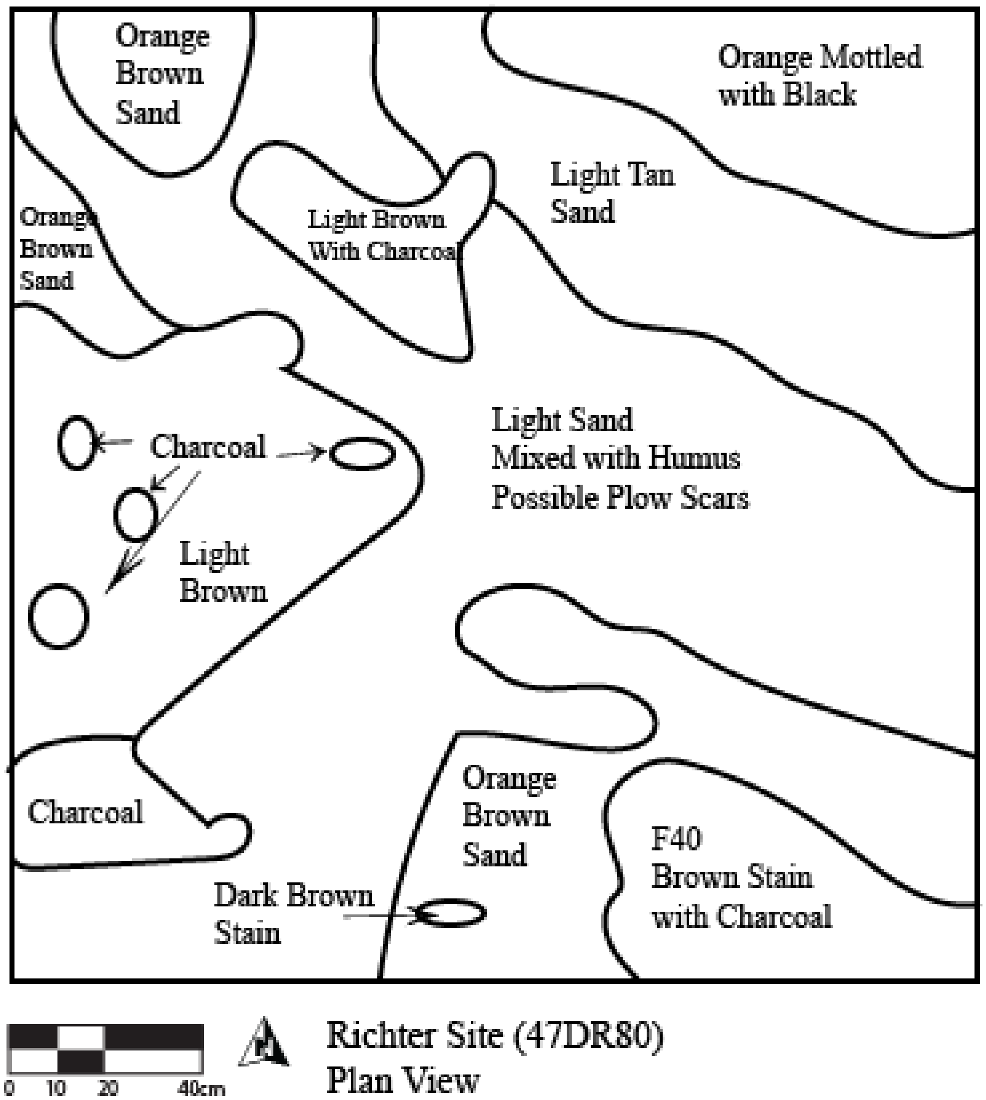


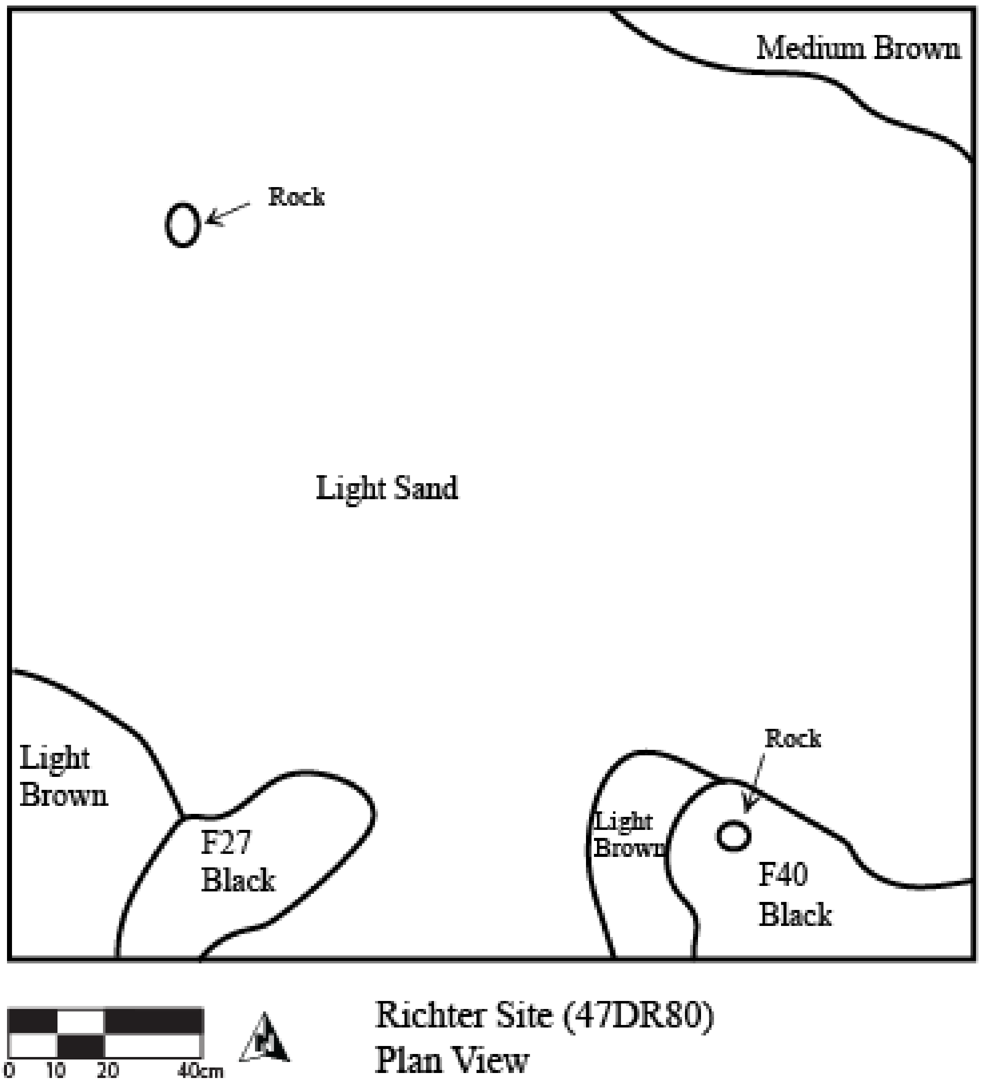
Richter Site (47DR80)
Plan View
Unit N20/W28
Level 4, 60 cm
1973



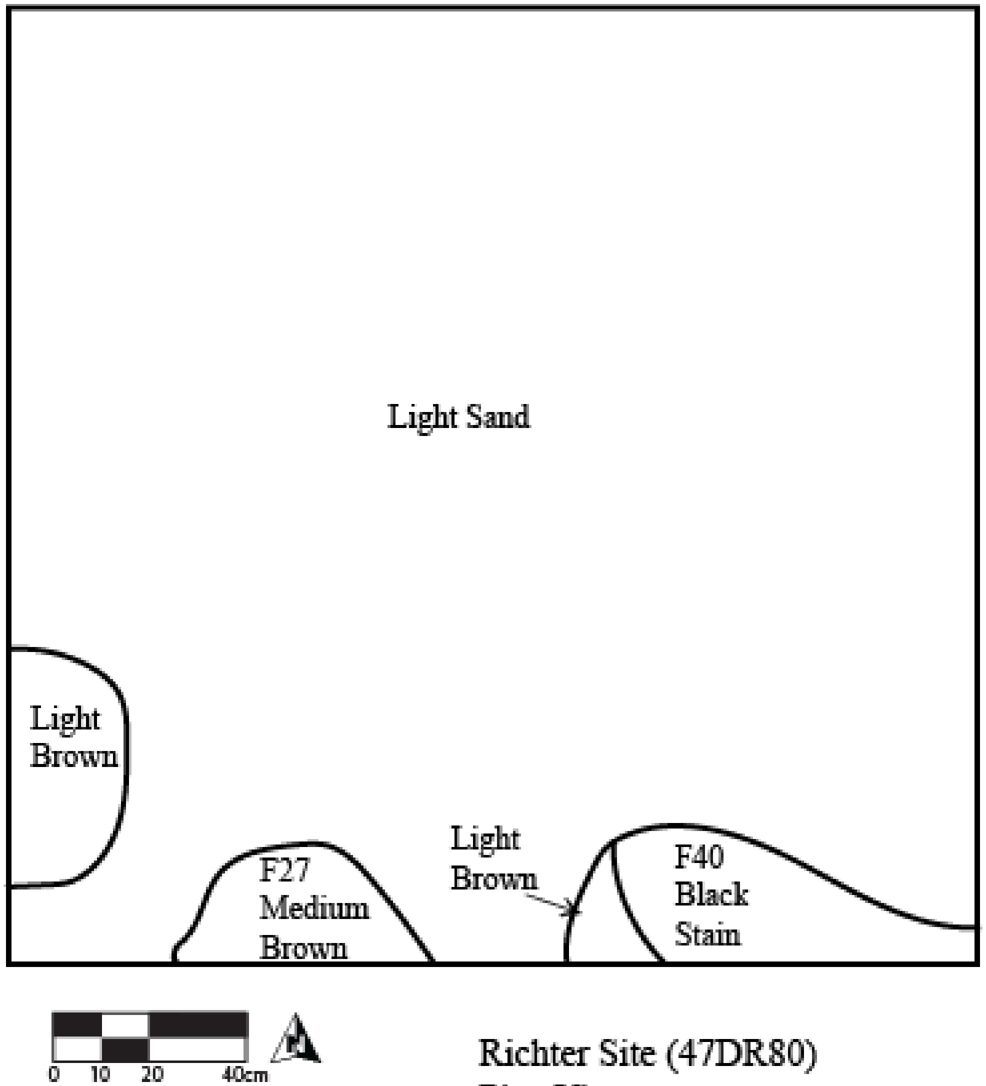
Richter Site (47DR80)
Plan View
Unit N20/W28
Level 7, 70cm
1973



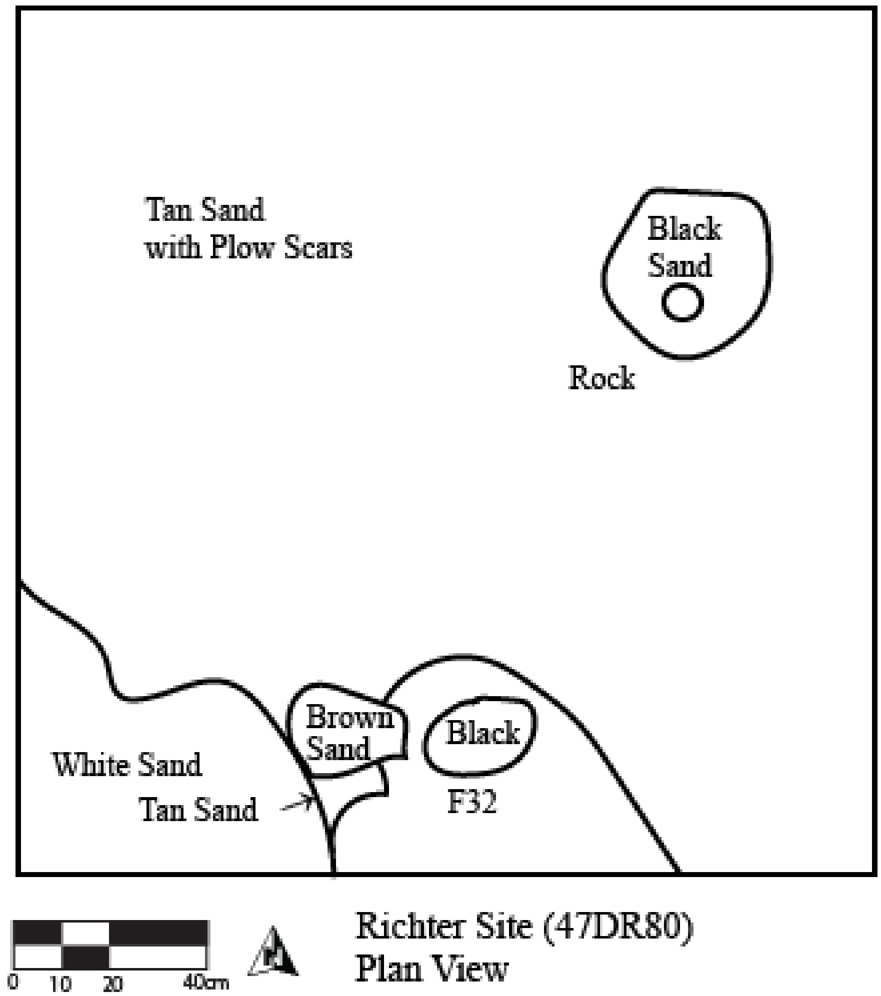
Richter Site (47DR80)
Plan View
Unit N20/W30
Level 2, 30 cm
1973



Richter Site (47DR80)
Plan View
Unit N20/W30
Level 4, 40cm
1973

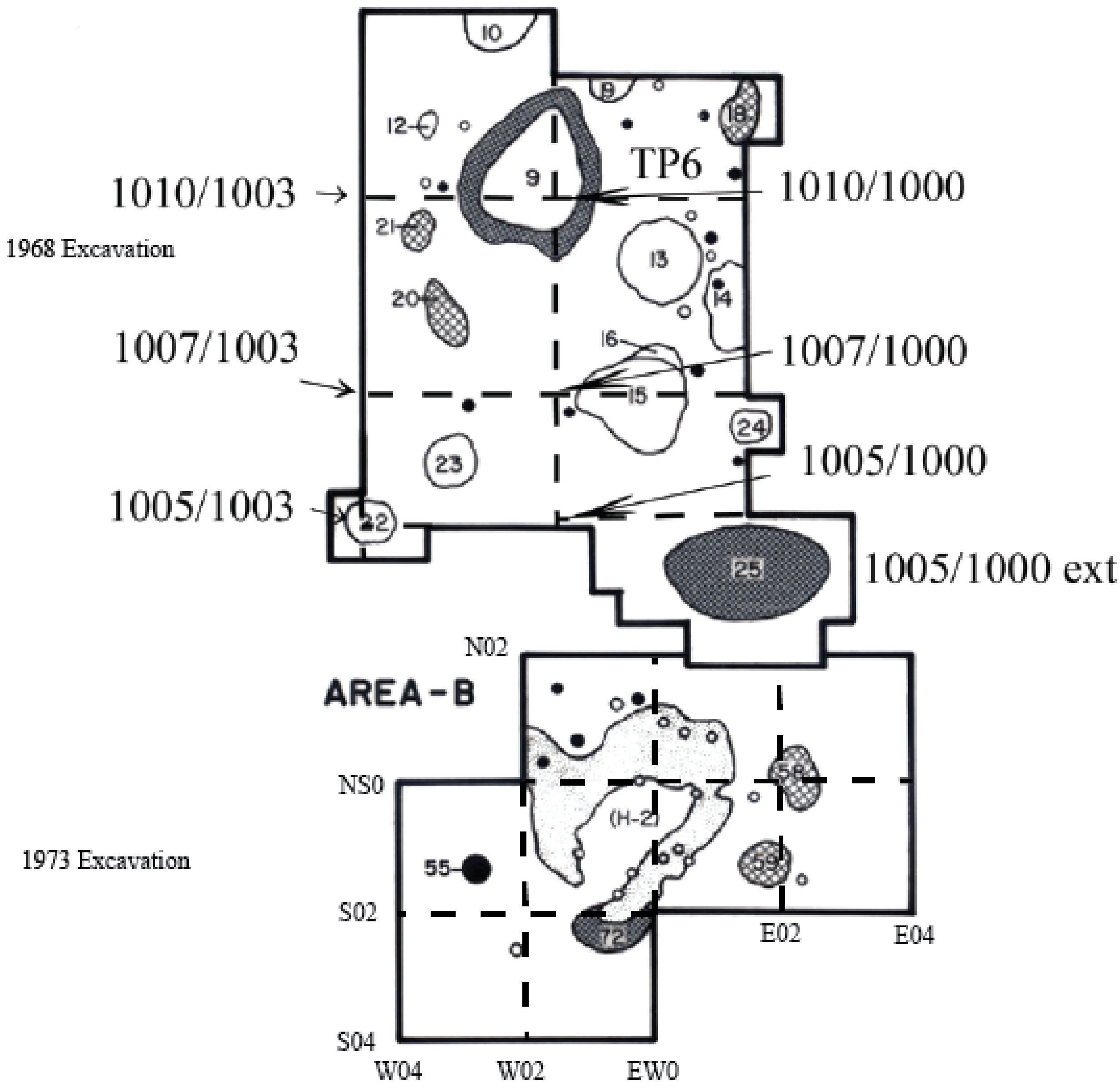


Richter Site (47DR80)
Plan View
Unit N20/W30
Level 5, 55cm
1973

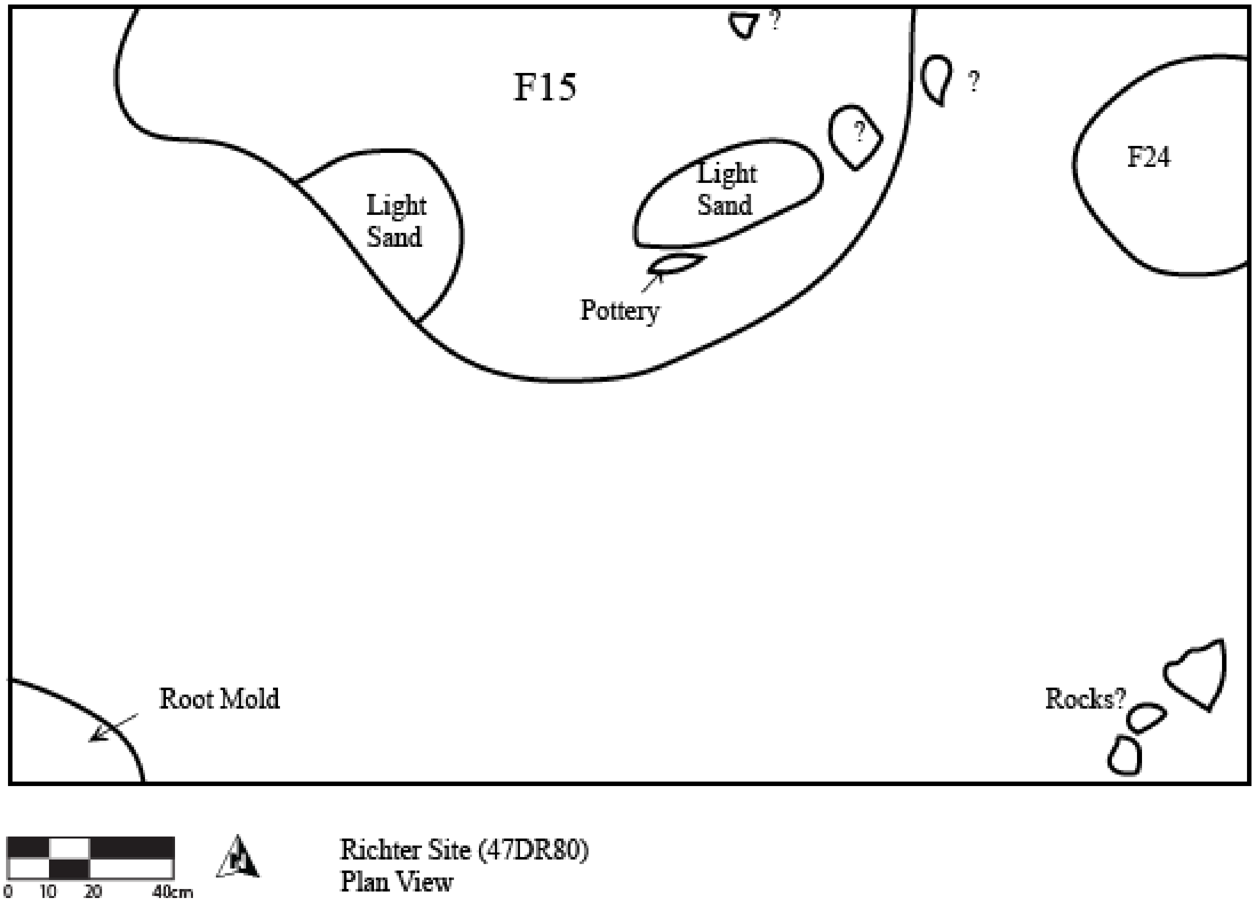


Richter Site (47DR80)
Plan View
Unit N20/W32
Level 2, base, 25 cm.
1973

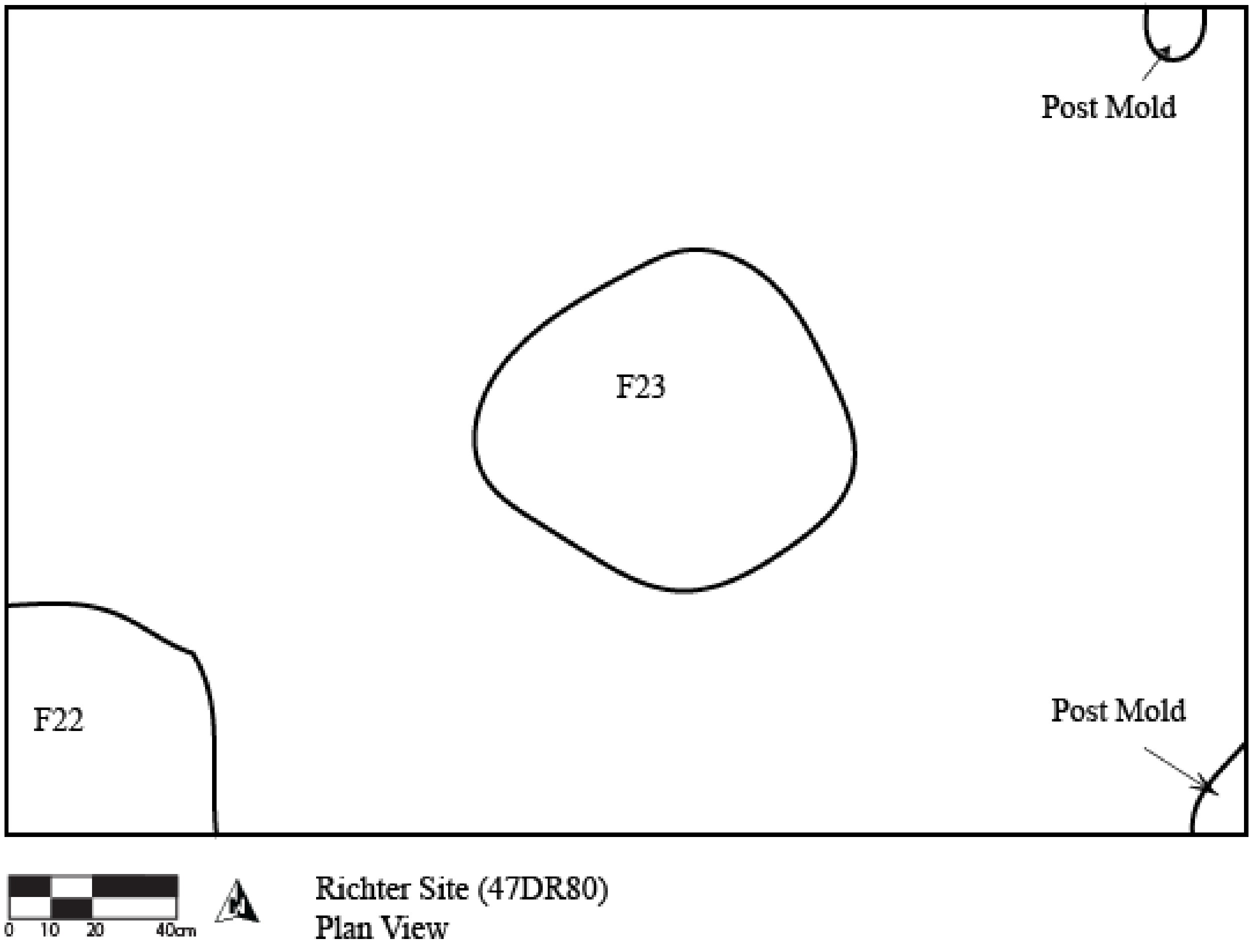
Area B Maps



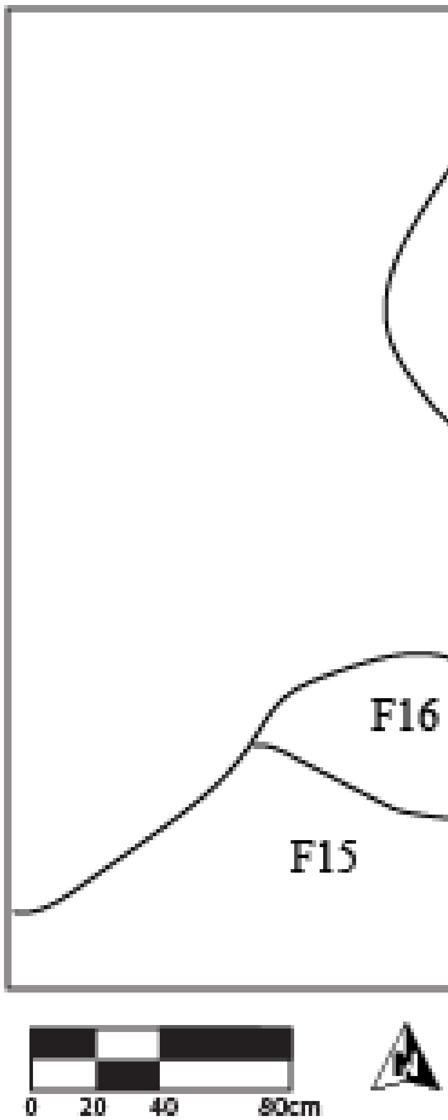
10
19
18
12
9
TP6
1010/1003
1010/1000
21
1968 Excavation
13
20
14
16
1007/1003
1007/1000
15
24
23
1005/1000
1005/1003
22
25
1005/1000 ext
N02
AREA-B
NS0
58
(H-2)
1973 Excavation
55
59
S02
72
E02
E04
S04
W04
W02
EW0



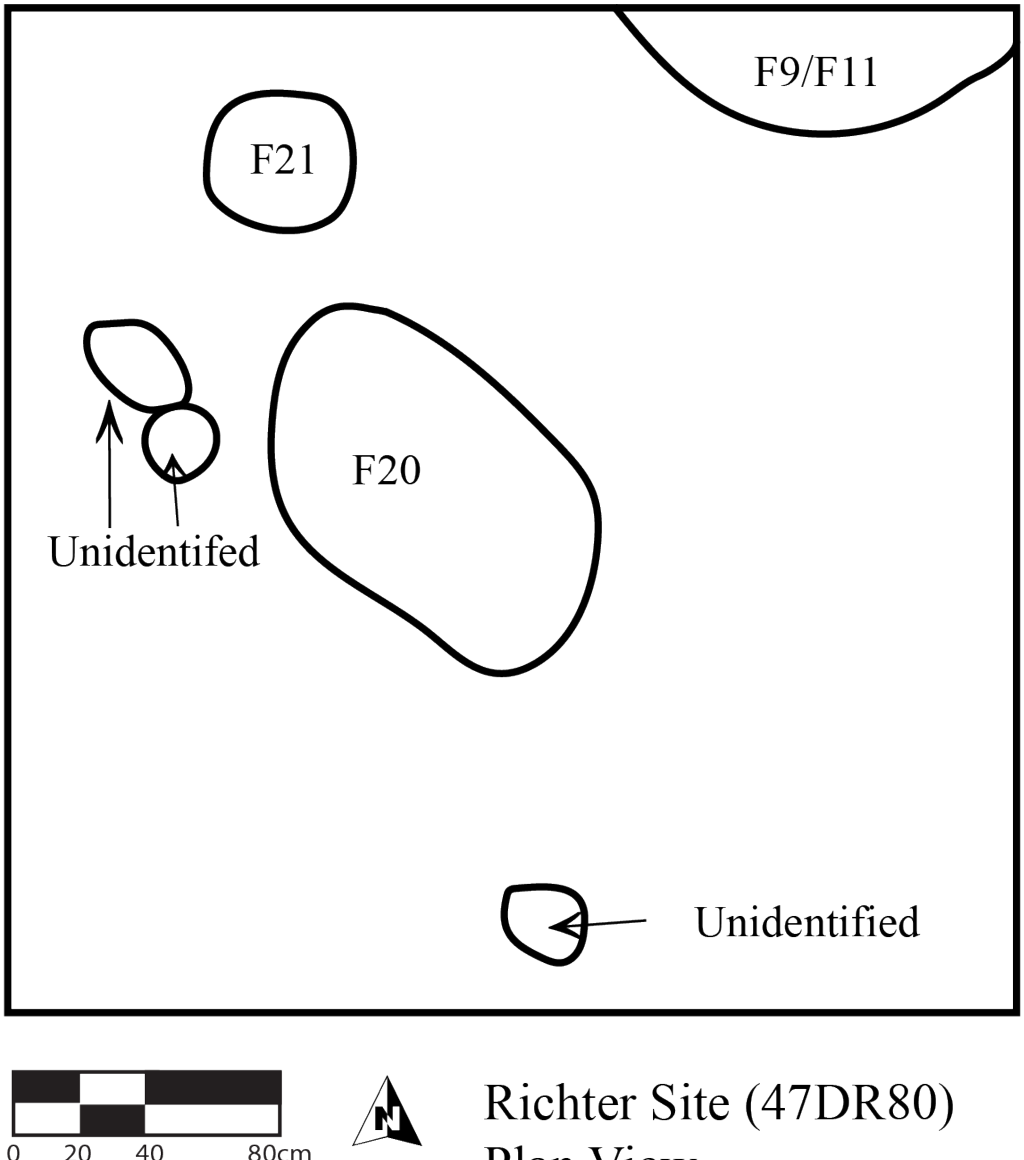
Richter Site (47DR80)
Plan View
Unit 1005/1000
Level 2, 18 cm
1968



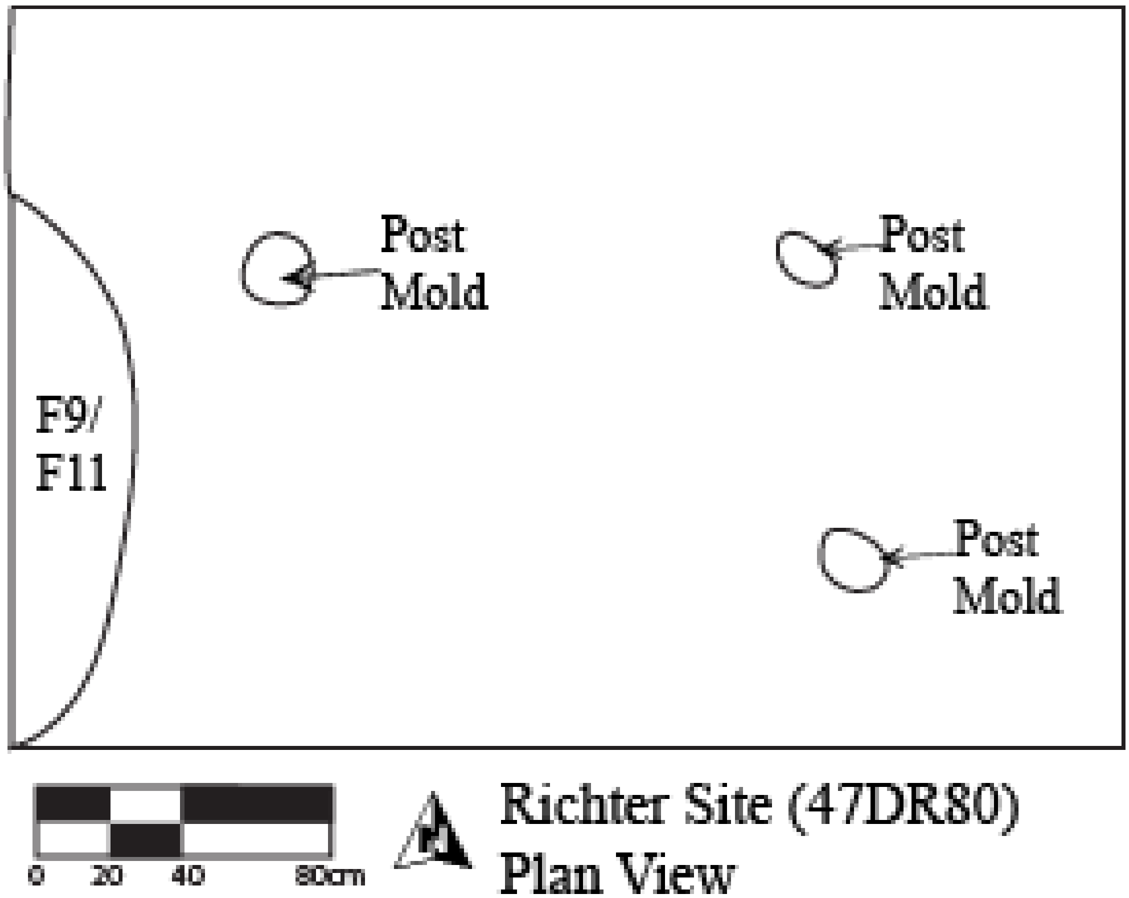
Richter Site (47DR80)
Plan View
Unit 1005/1003
Level 2, 15 cm
1968



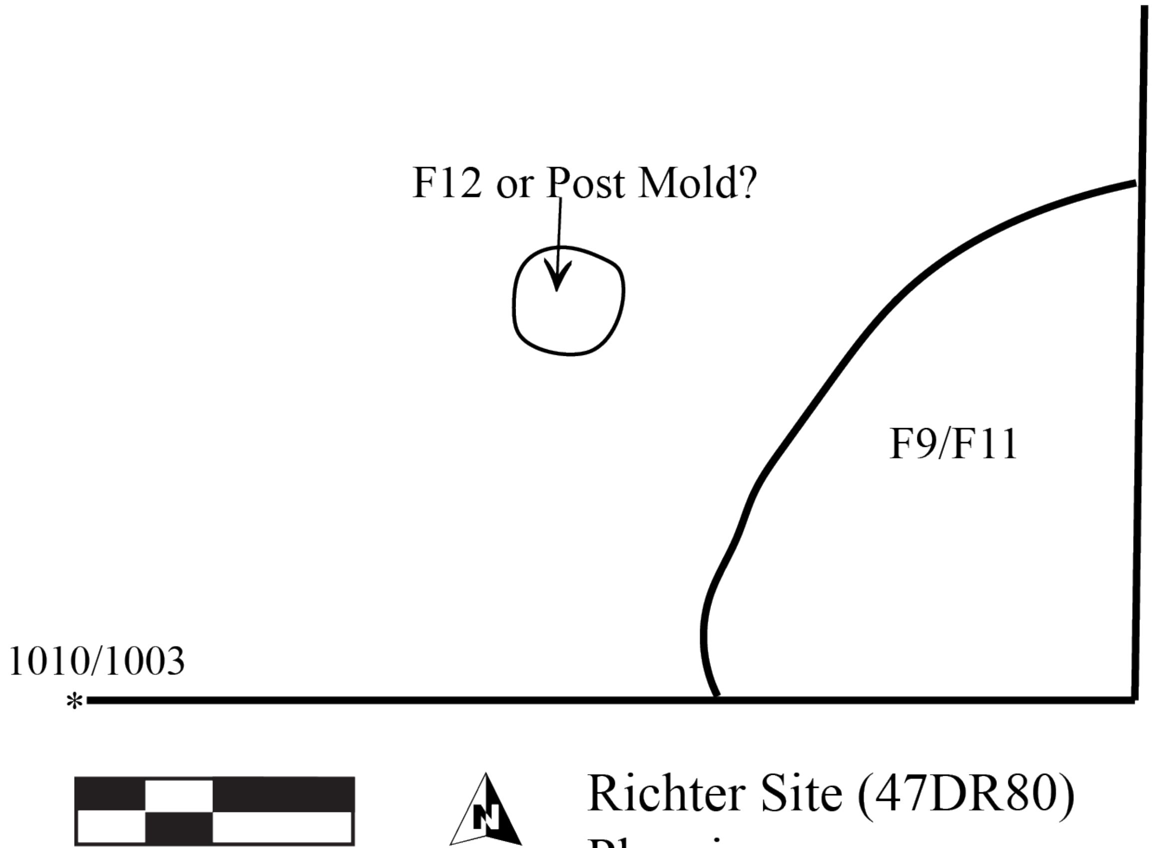
Richter Site (47DR80)
Plan View
1007/1000, No Level Given
1968



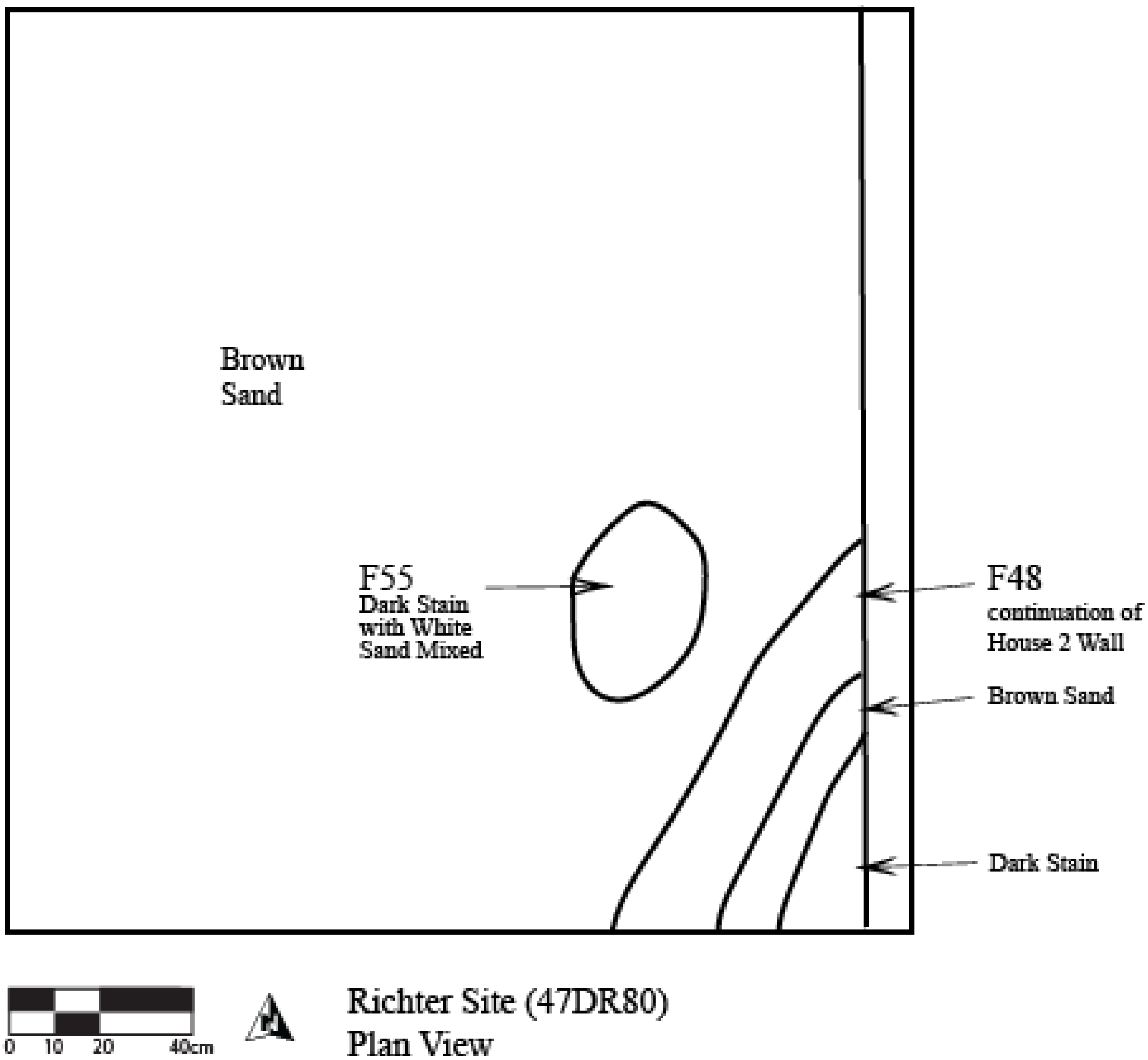
Richter Site (47DR80)
Plan View
1007/1003, No Level Given
1968



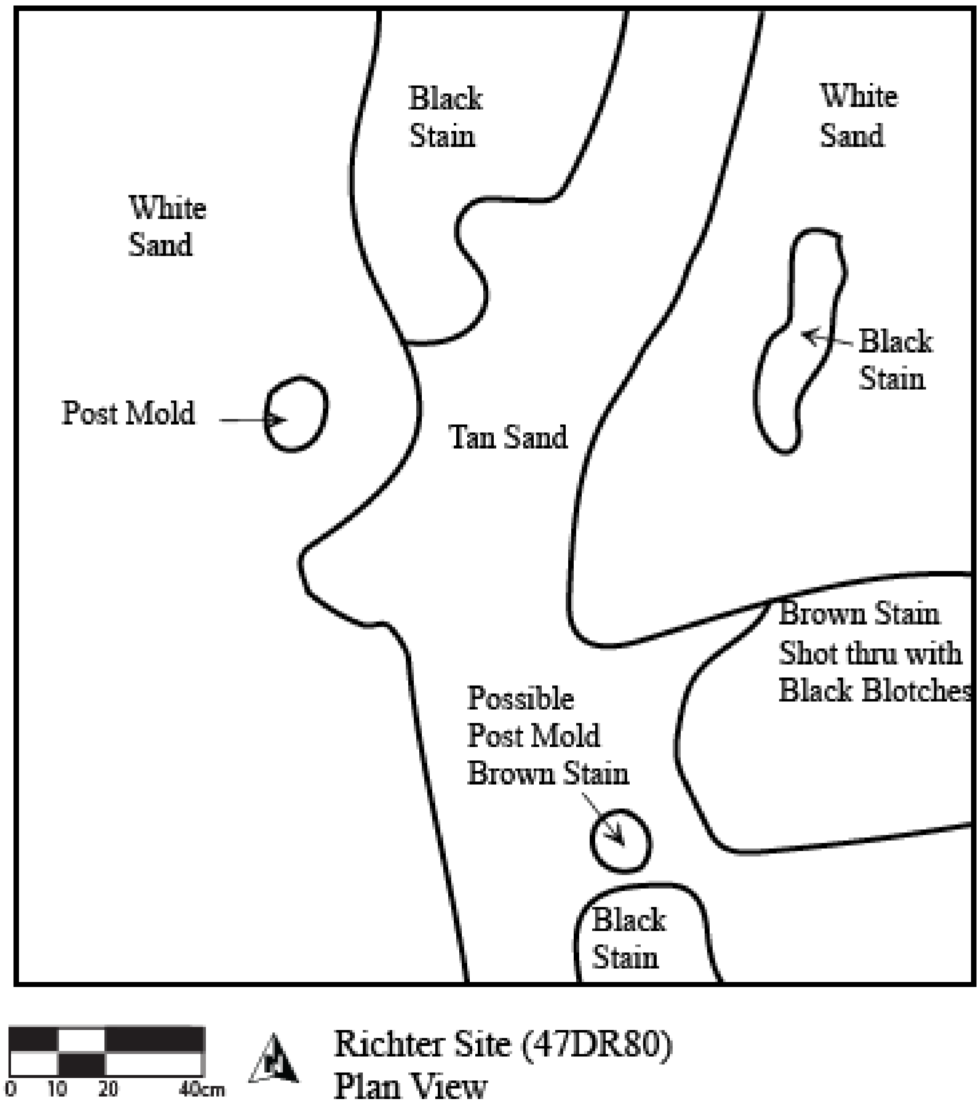
Richter Site (47DR80)
Plan View
1010/1000, No Level Given
1968



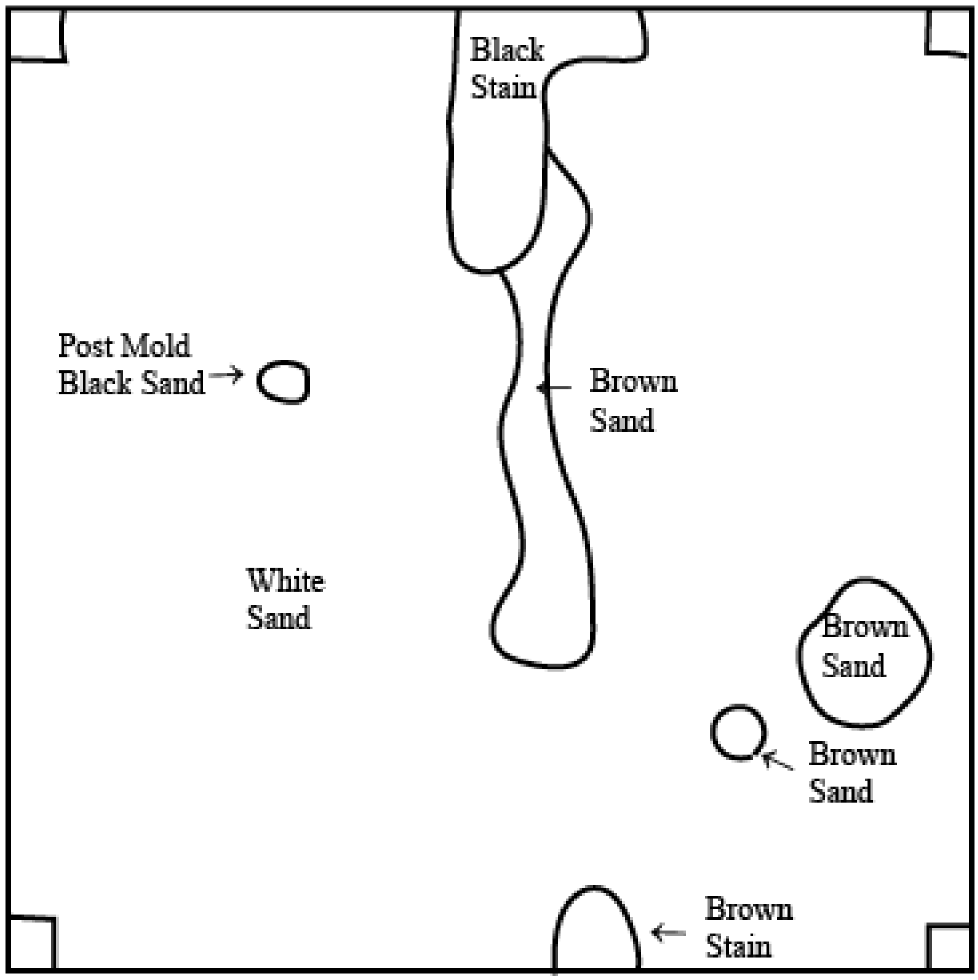
Richter Site (47DR80)
Planview
(No Complete Planview Found)
1010/1003, No Level Given
1968

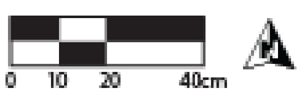


Richter Site (47DR80)
Plan View
Unit S02/W04
Level 2, 30cm
1973

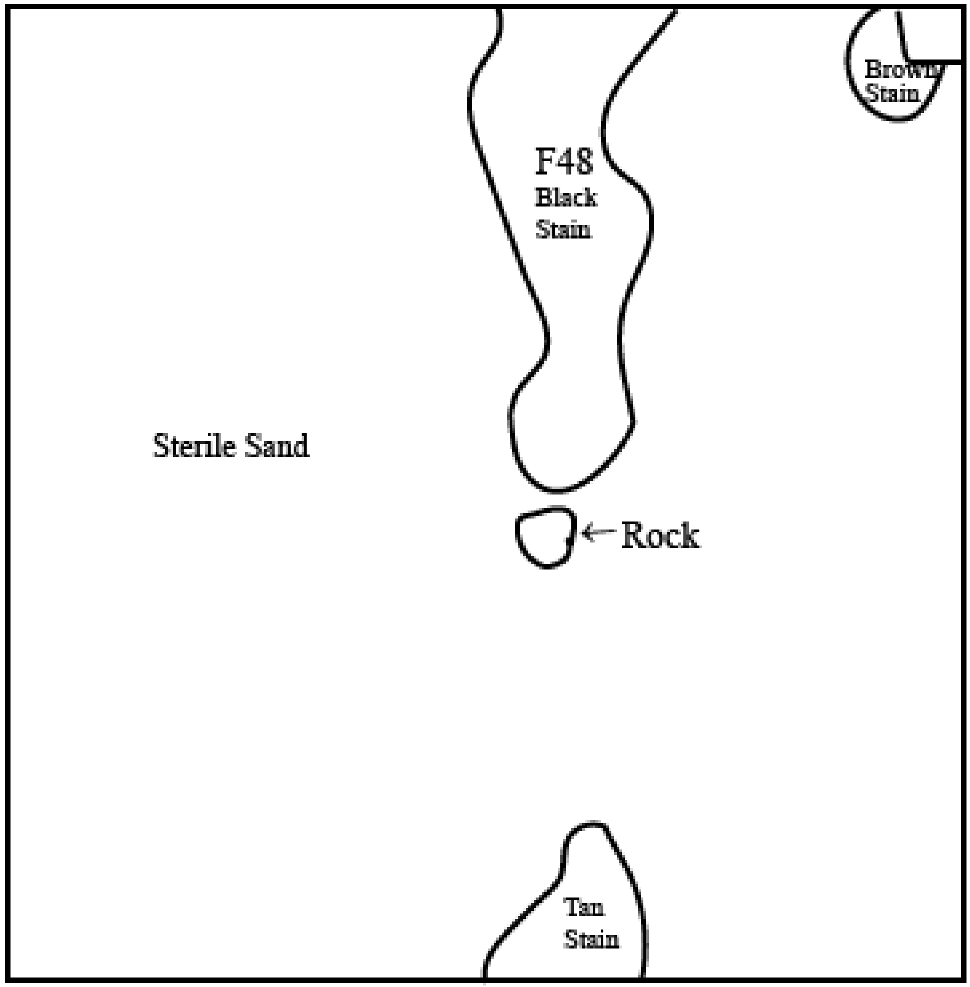


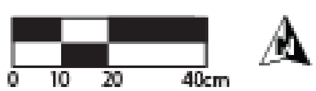
Richter Site (47DR80)
Plan View
Unit S02/W02
Level 3B, 40cm
1973



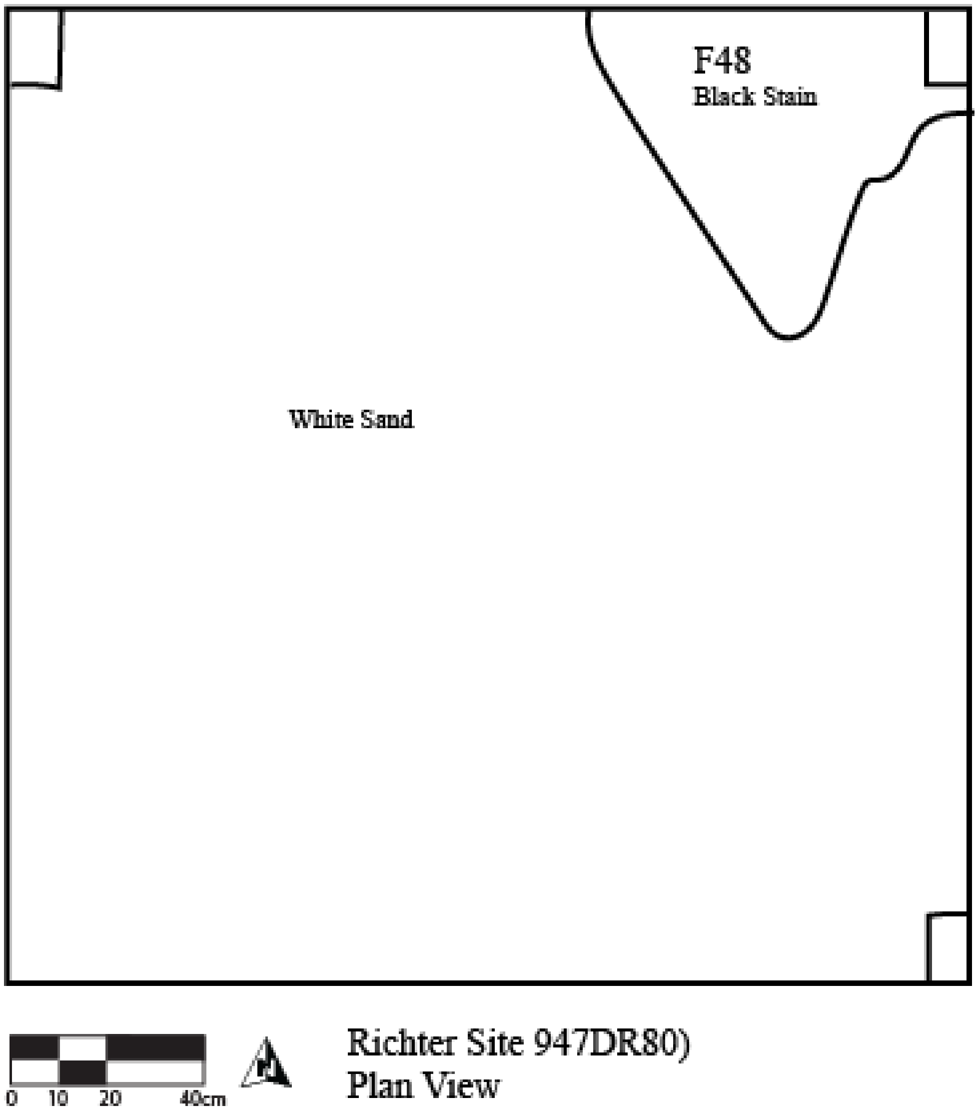


Richter Site (47DR80)
Plan View
Unit S02/W02
Level 5, 50 cm
1973

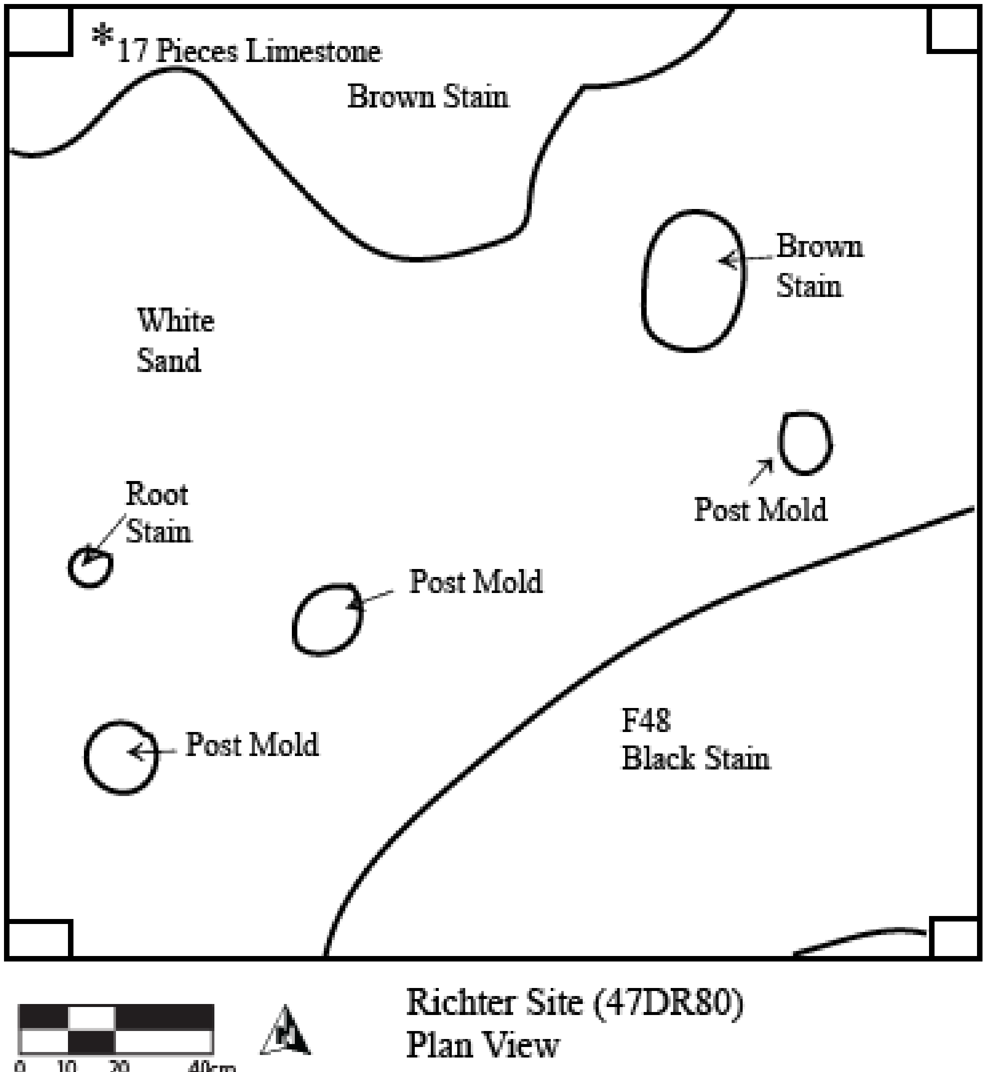




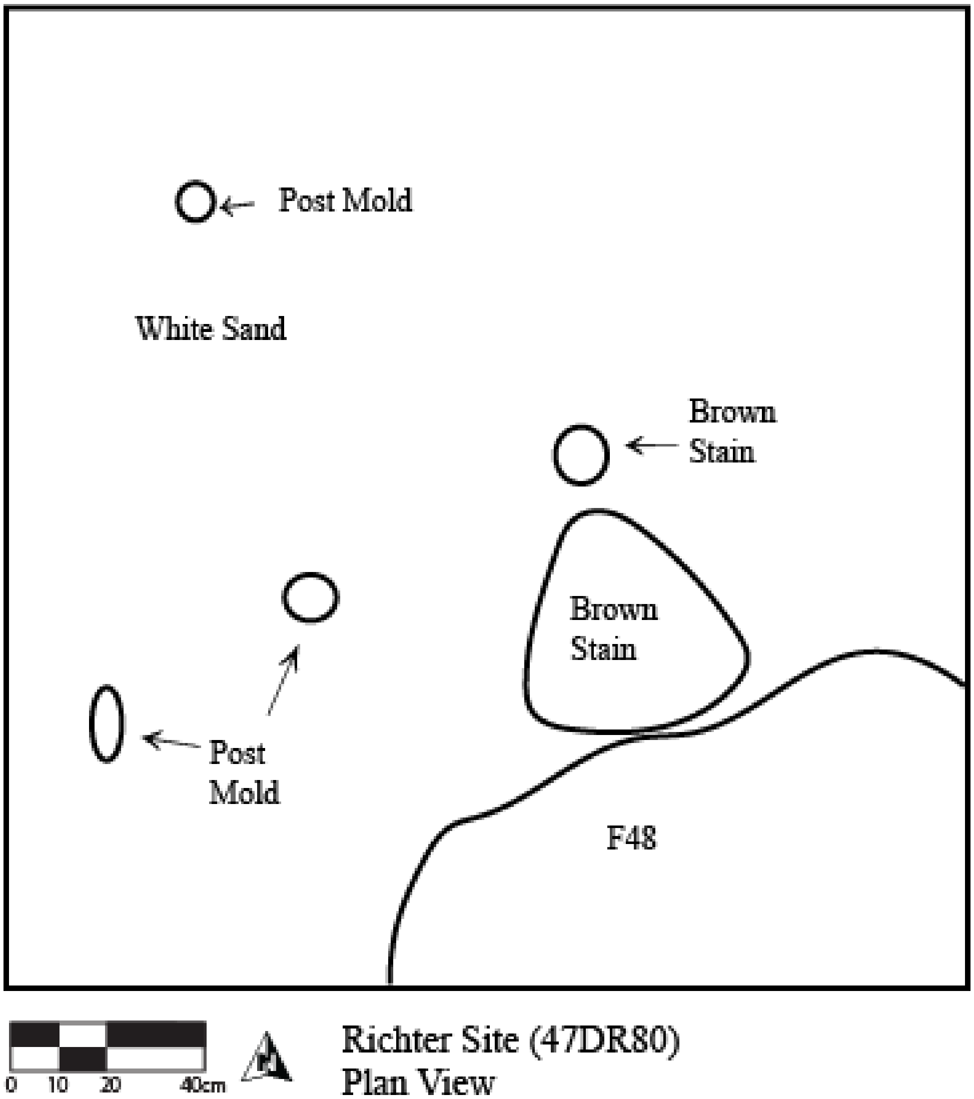
Richter Site (47DR80)
Plan View
Unit S02/W02
Level 5, 55 cm
1973



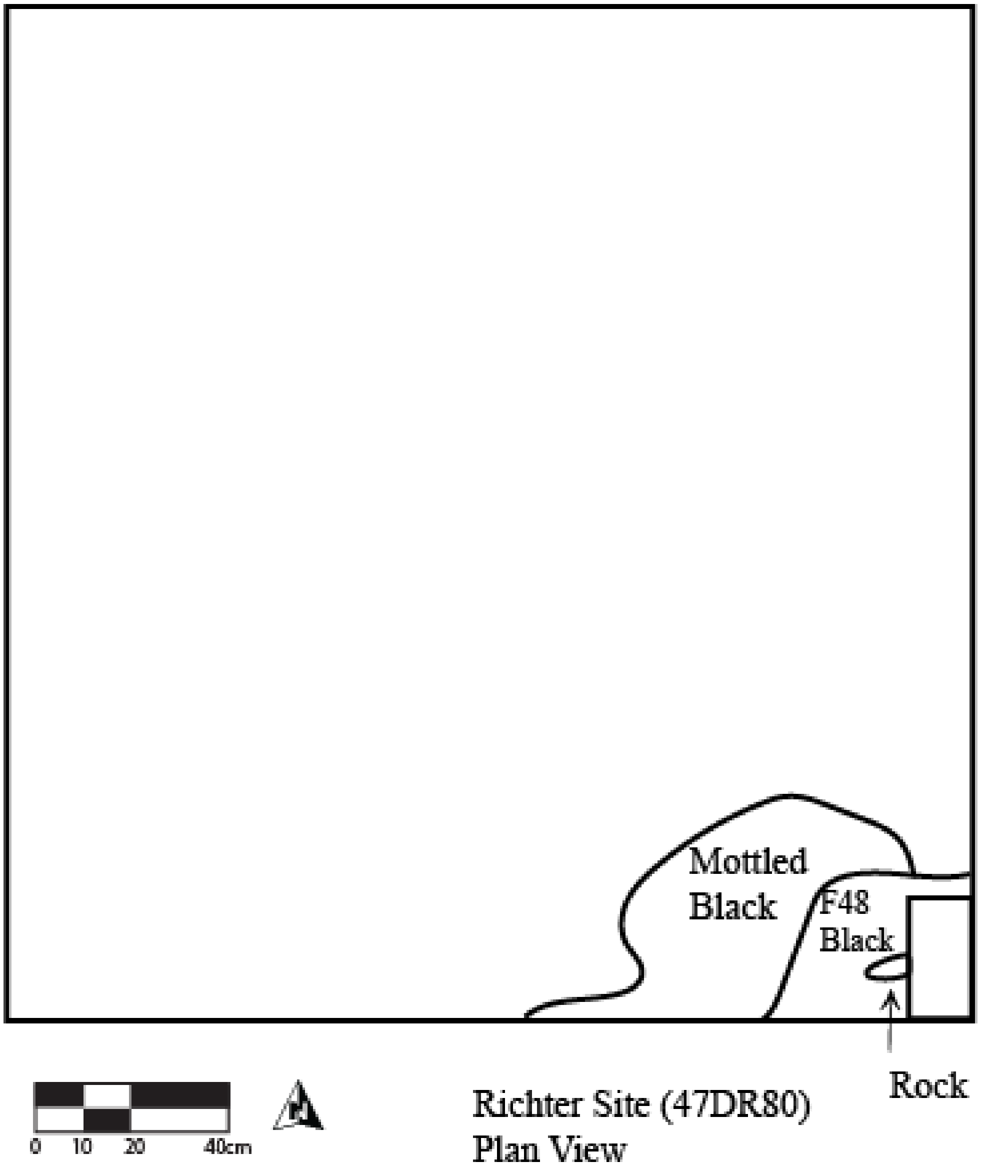
Richter Site 947DR80)
Plan View
Unit S02W02
Level 7, 75cm



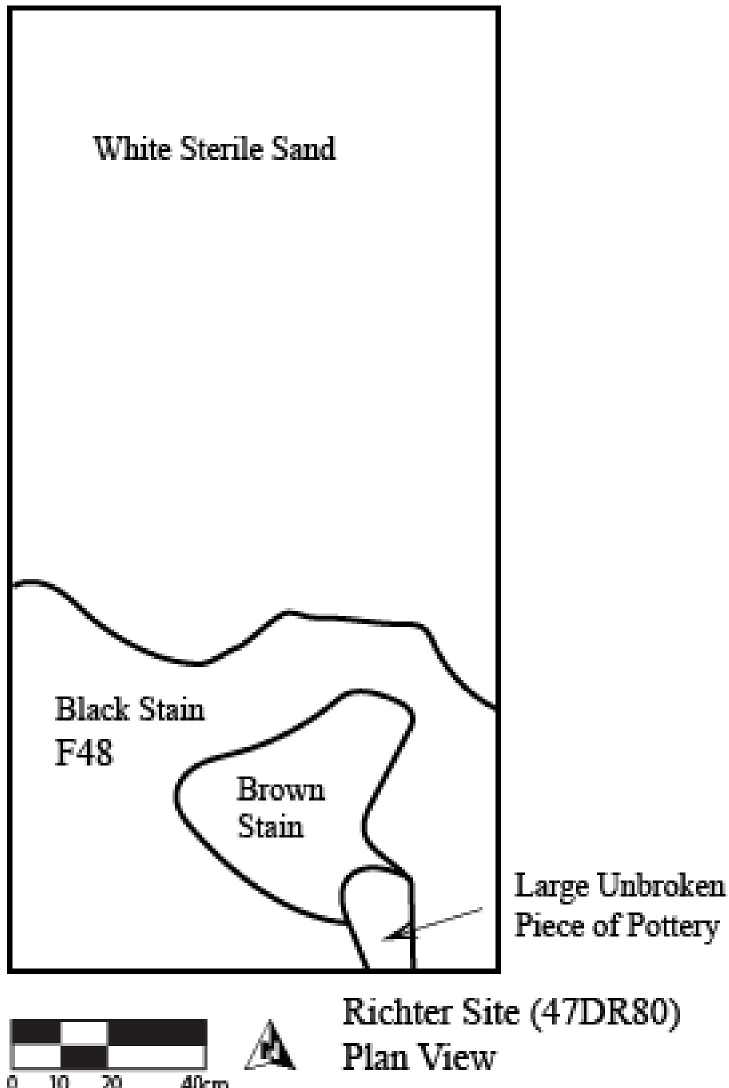
Richter Site (47DR80)
Plan View
Unit NS0/W02
Level 3A bottom, 34 cm
1973



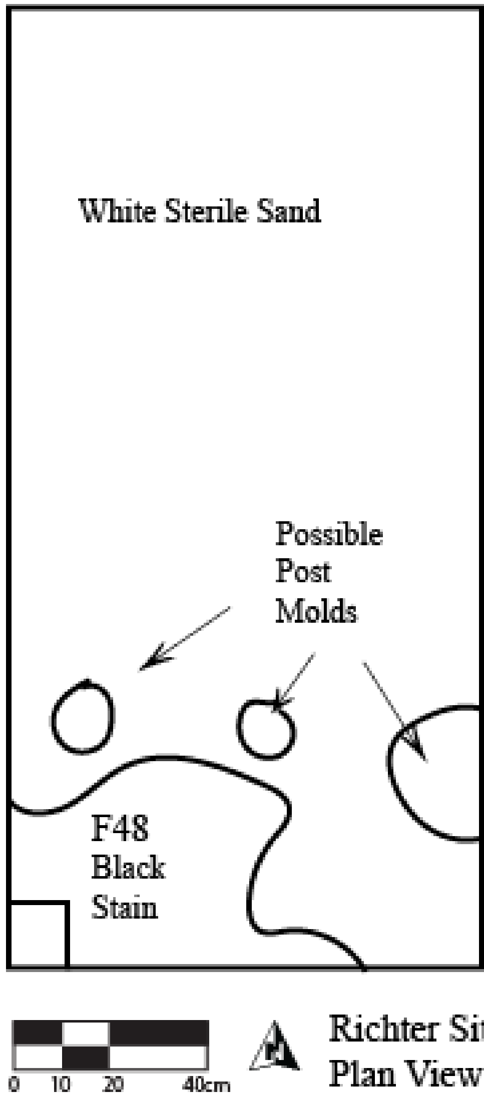
Richter Site (47DR80)
Plan View
Unite NS0/W02
Level 3B bottom, 40 cm
1973



Richter Site (47DR80)
Plan View
Unit NS0/W02
Level 5, 60 cm
1973

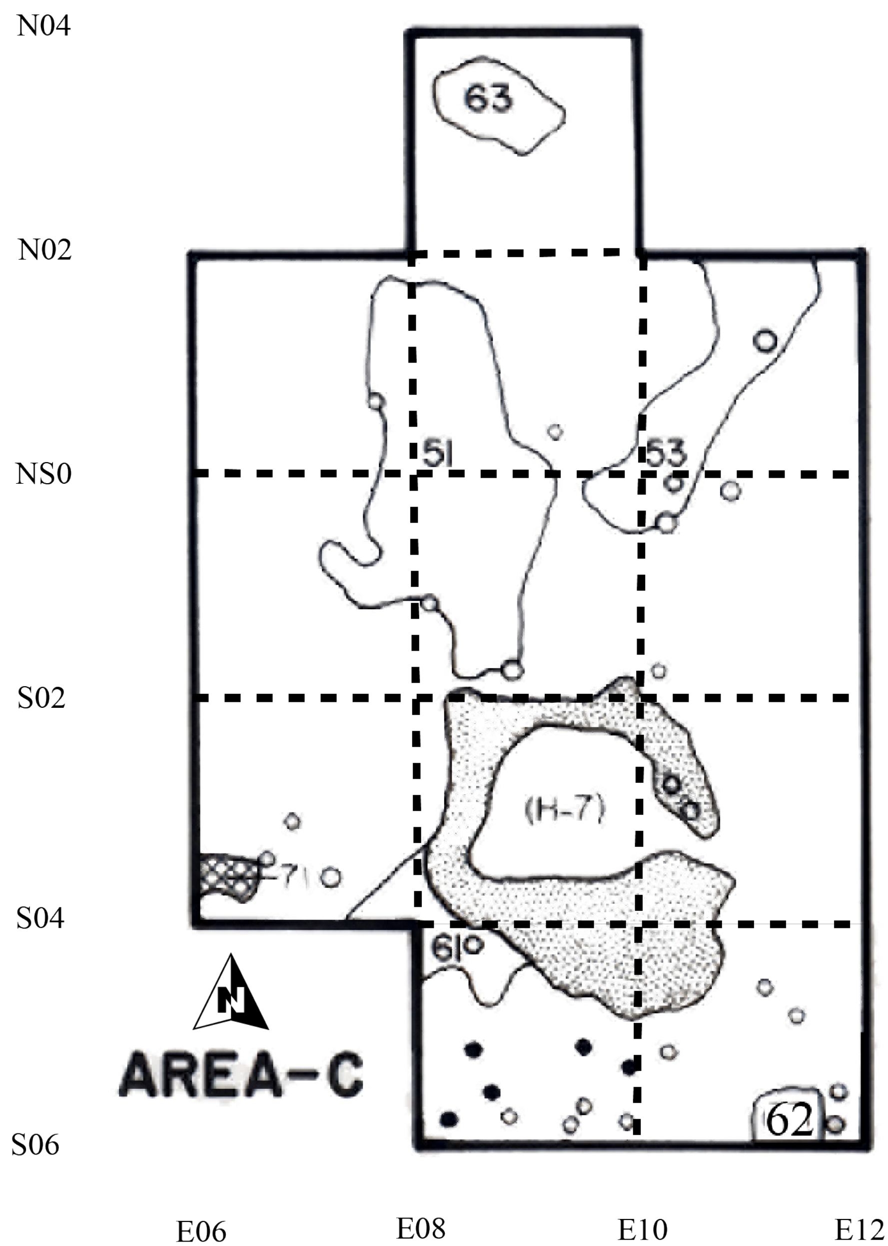


Richter Site (47DR80)
Plan View
NS0/EW0
Level ?, 45cm

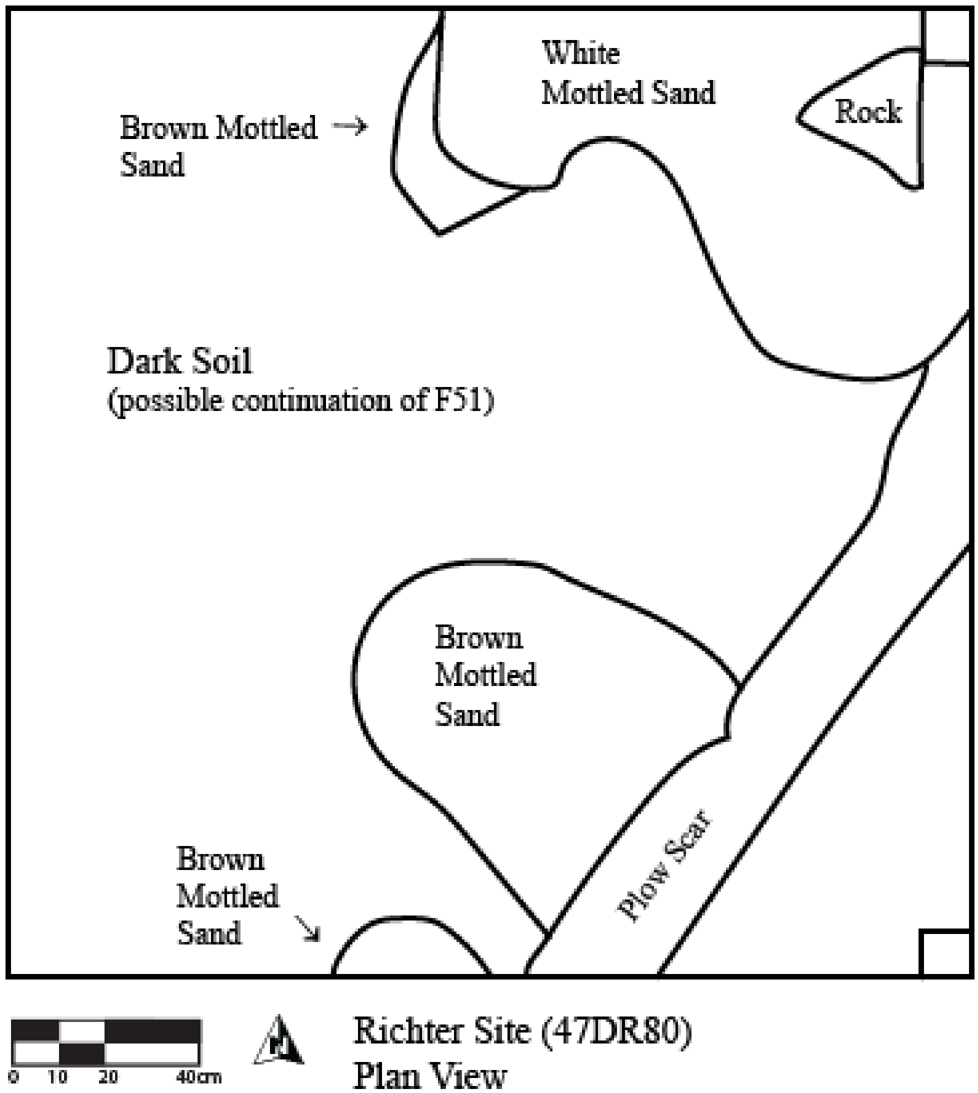


Richter Site (47DR80)
Plan View
NS0/EW0
Level ?, 58 cm
1973

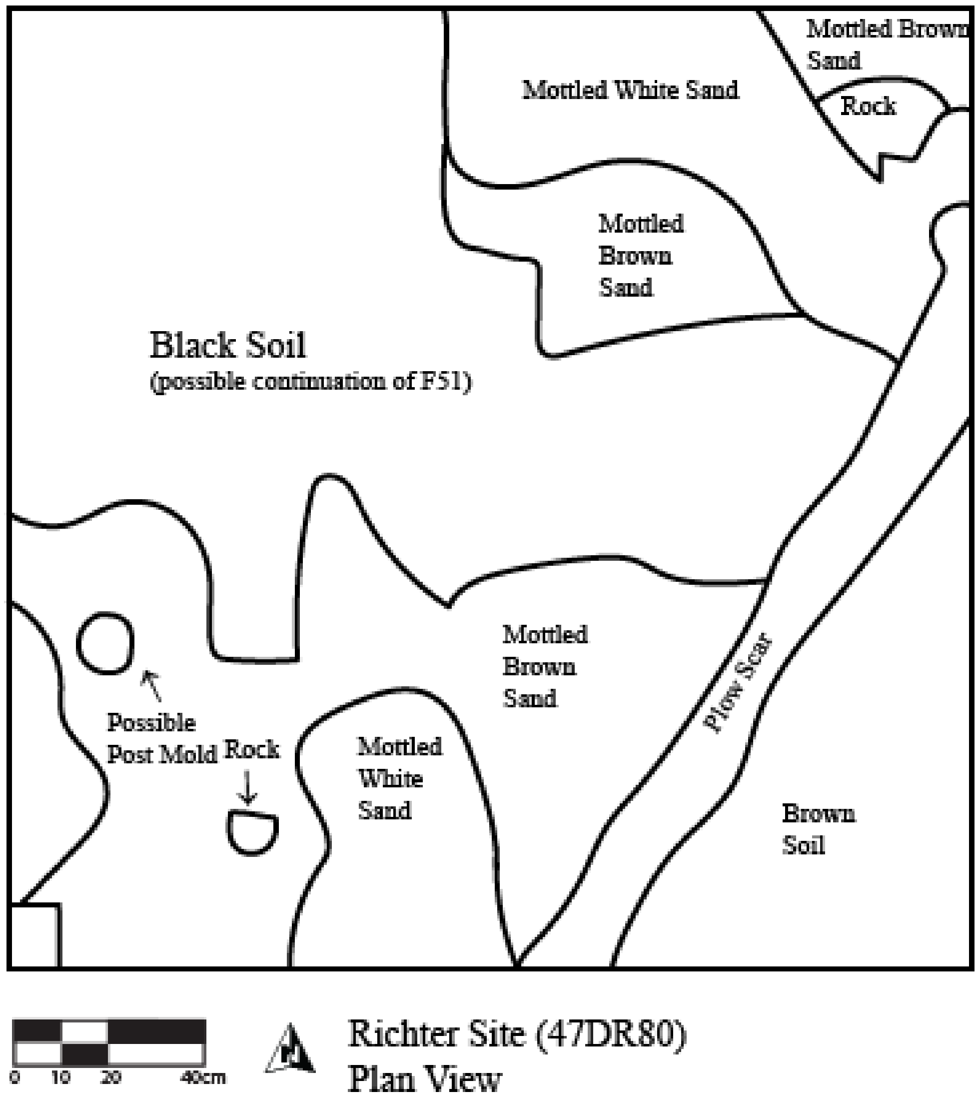
Area C Maps



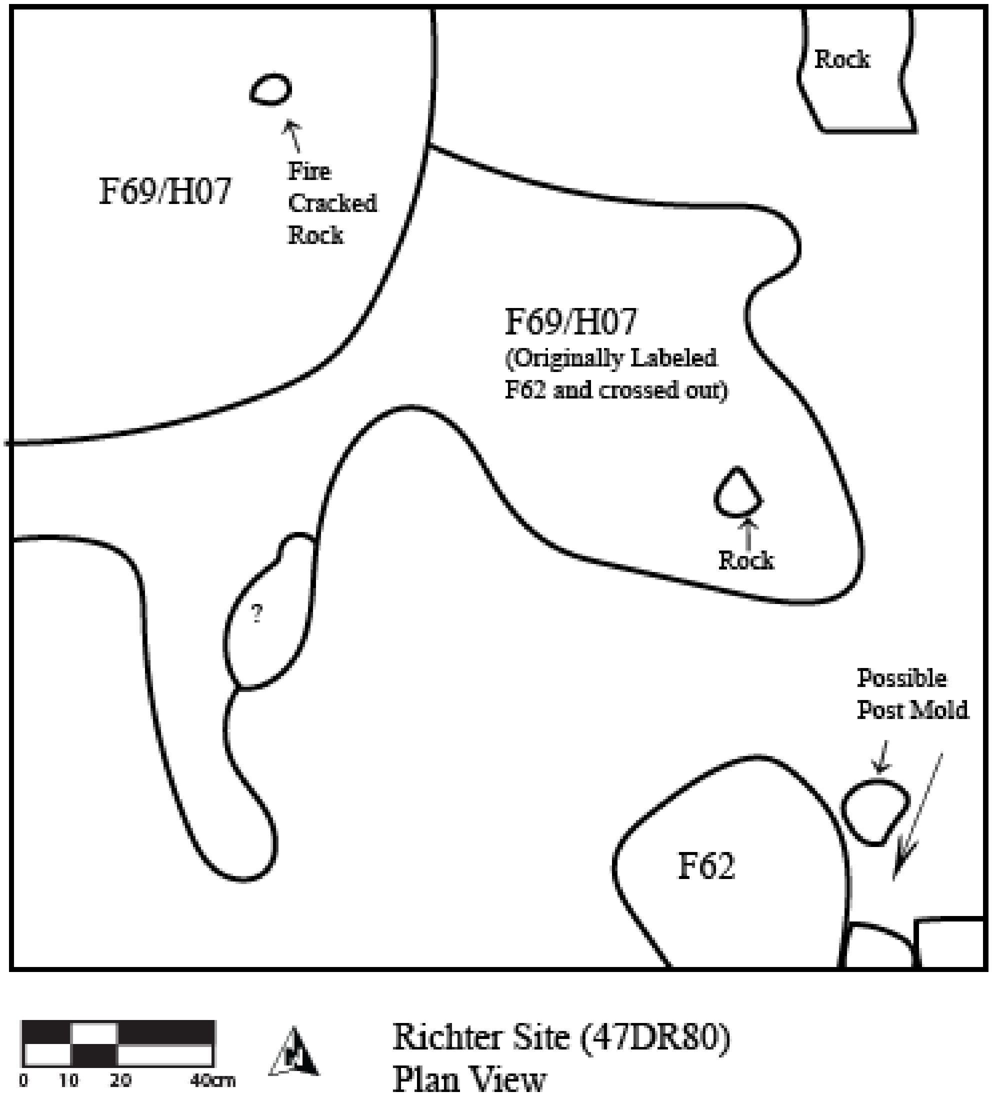
N04
N02
NS0
S02
S04
S06
63
51
53
(H-7)
71
61
62
N
AREA-C
E06
E08
E10
E12



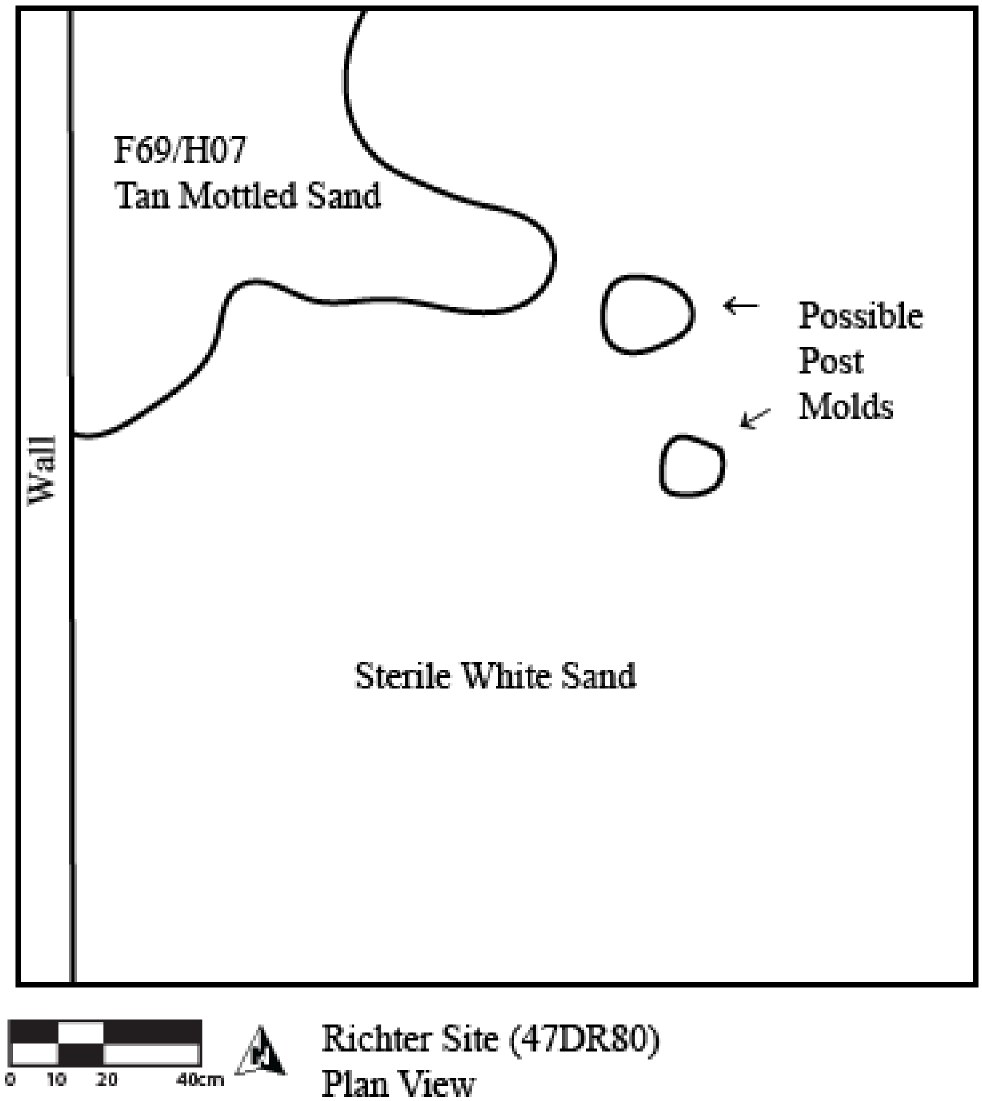
Richter Site (47DR80)
Plan View
Unite S06/E10
Level 2, 32 cm
1973



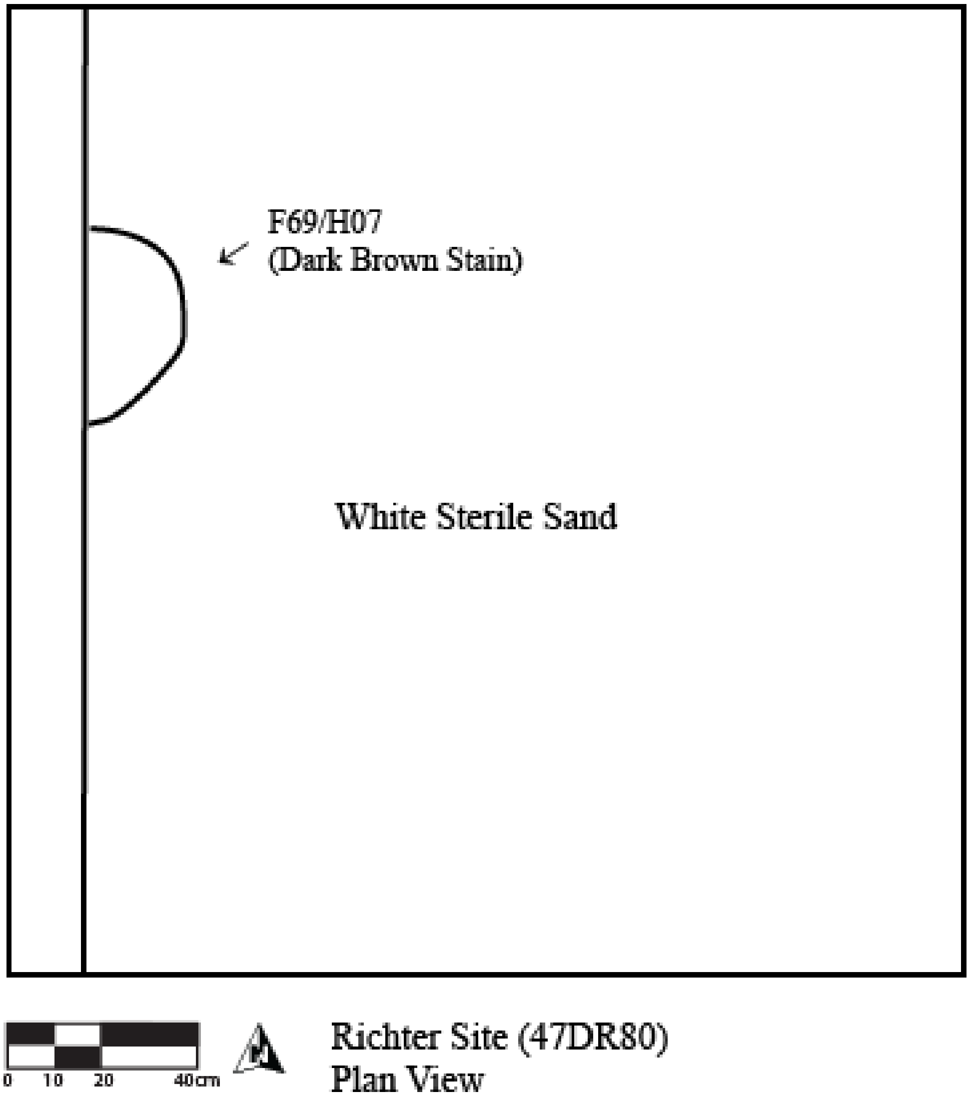
Richter Site (47DR80)
Plan View
Unit S06/E10
Level 3, top, 37 cm
1973



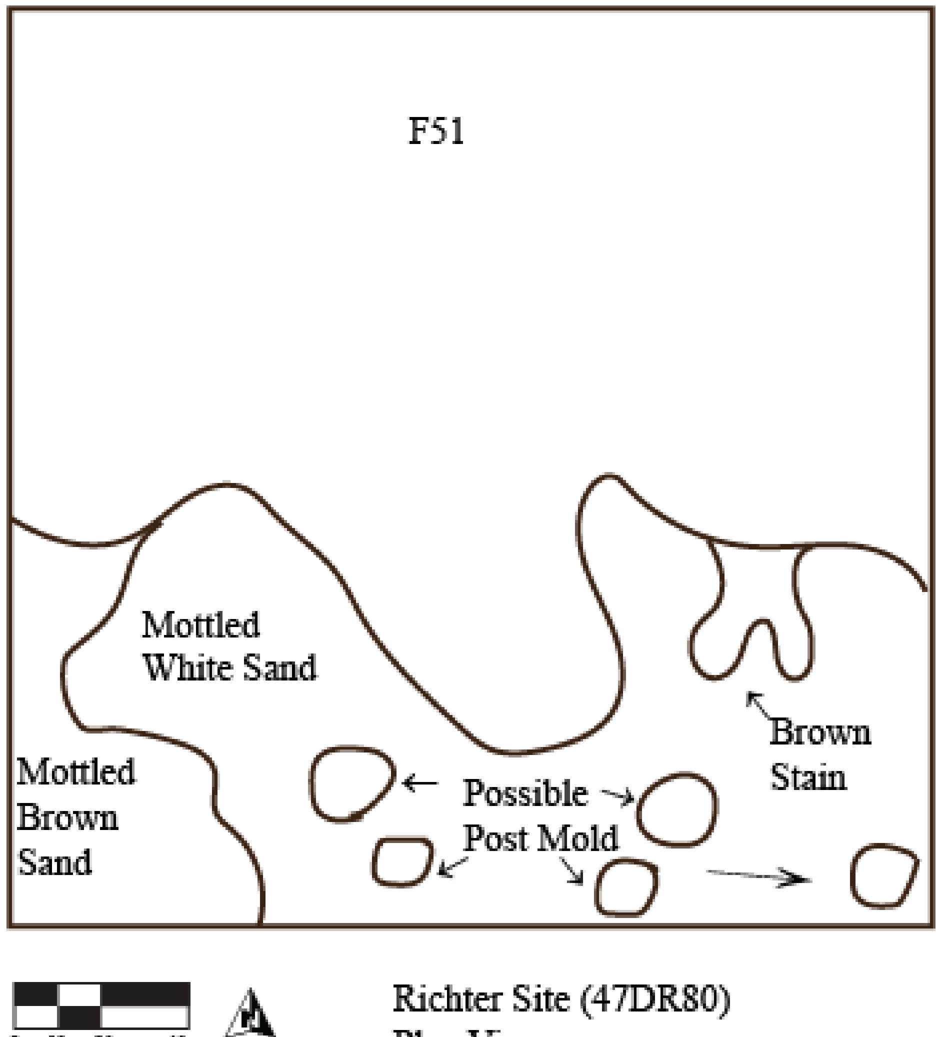
Richter Site (47DR80)
Plan View
Unit S06/E10
Level 3, bottom, 47 cm
1973



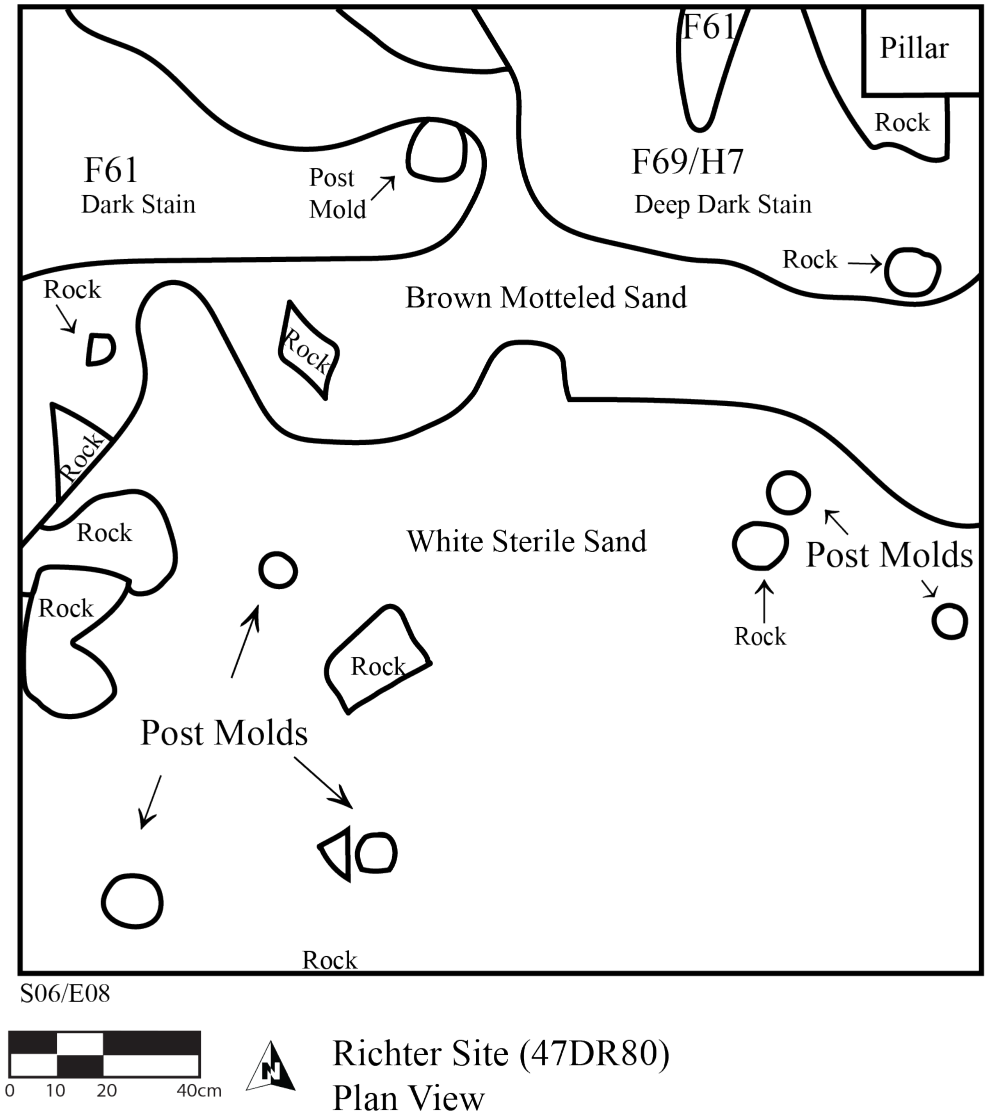
Richter Site (47DR80)
Plan View
Unite S06/E10
Level 4, bottom, 57 cm
1973



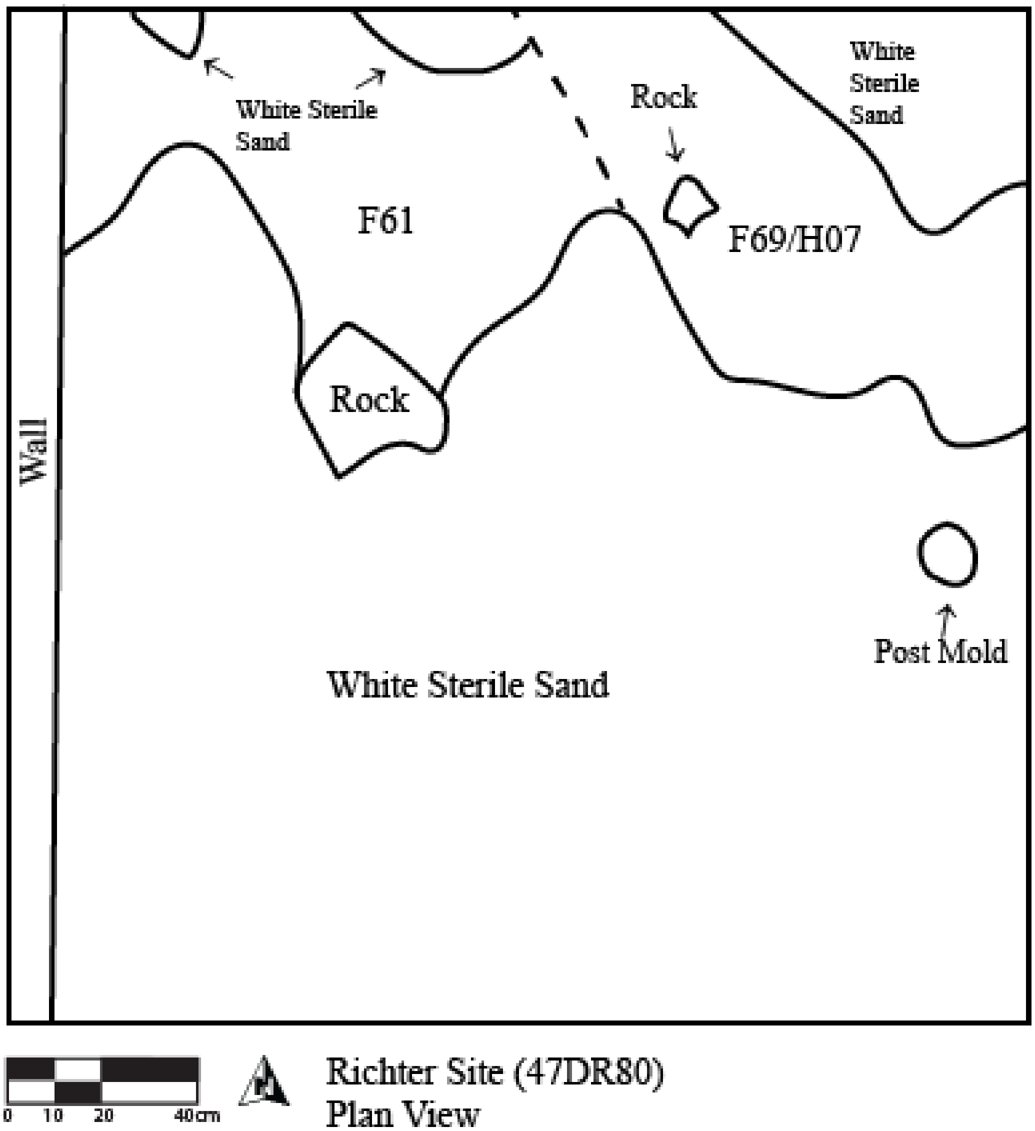
Richter Site (47DR80)
Plan View
Unite S06/E10
Level 5, 62 cm
1973



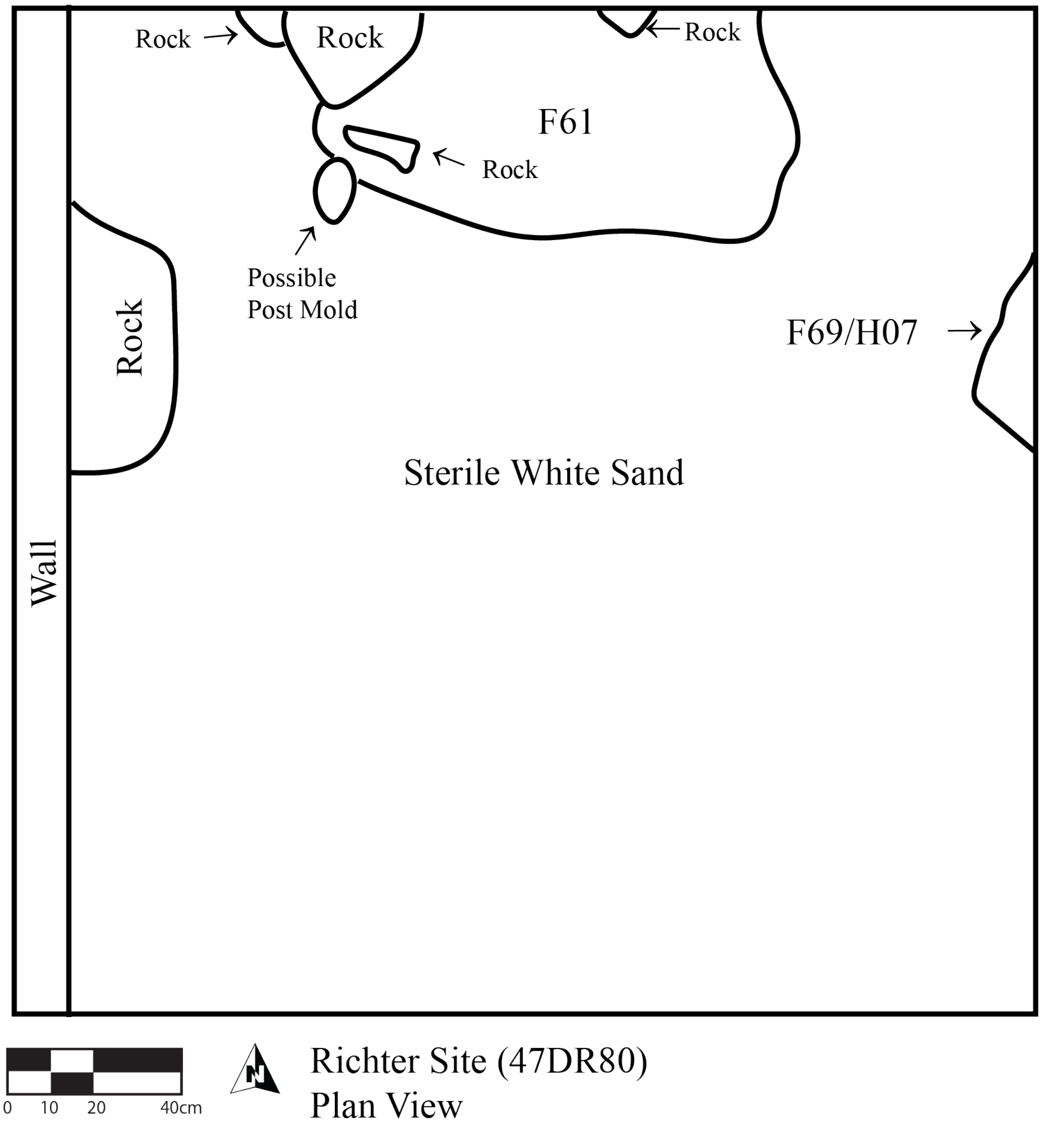
Richter Site (47DR80)
Plan View
Unit S06/E08
Level 3, 38 cm
1973



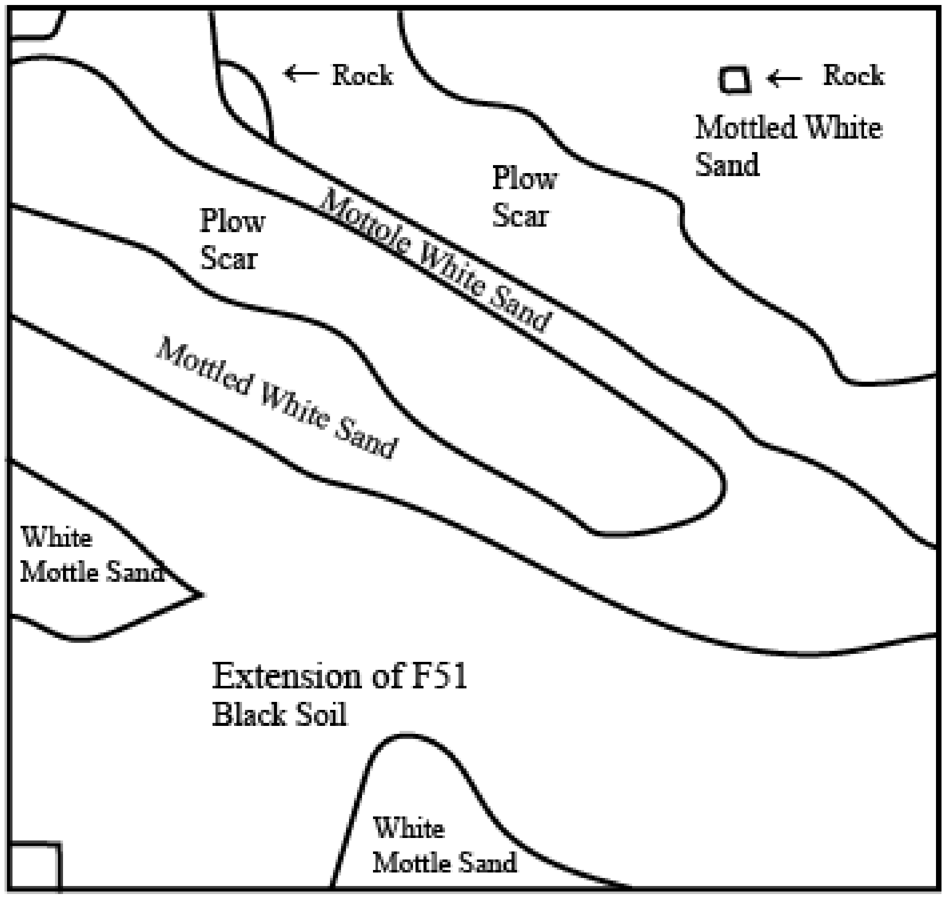
Richter Site (47DR80)
Plan View
Unit S06/E08
Level 3, bottom, 52cm
1973



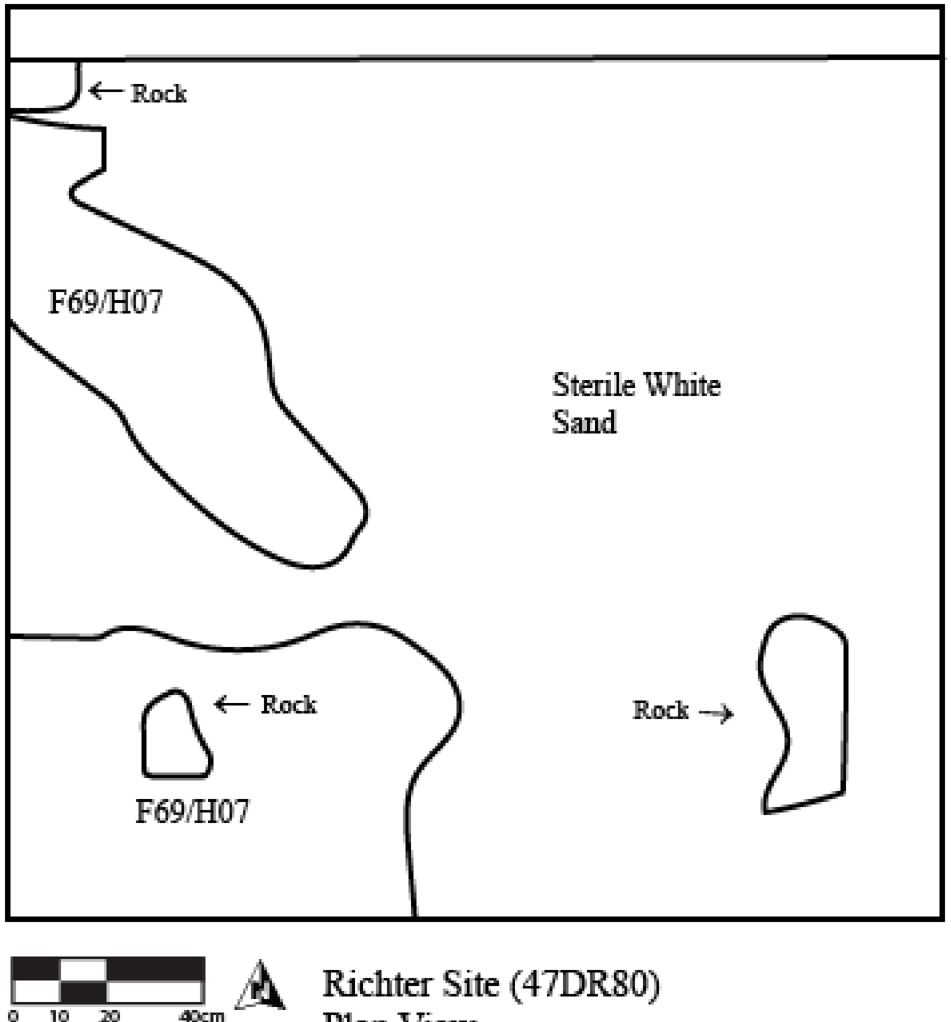
Richter Site (47DR80)
Plan View
Unite S06/E08
Level 4, bottom, 61 cm
1973



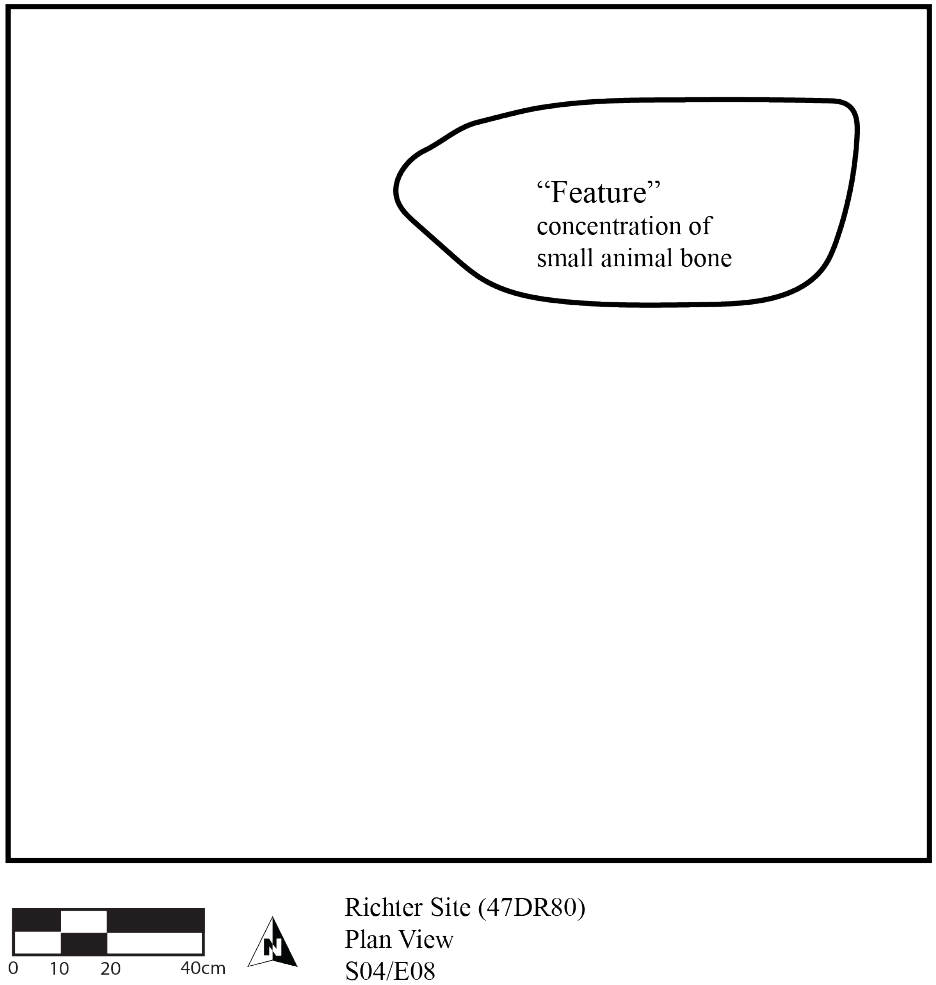
Richter Site (47DR80)
Plan View
Unit S06/E08
Level 5, 69cm
1973



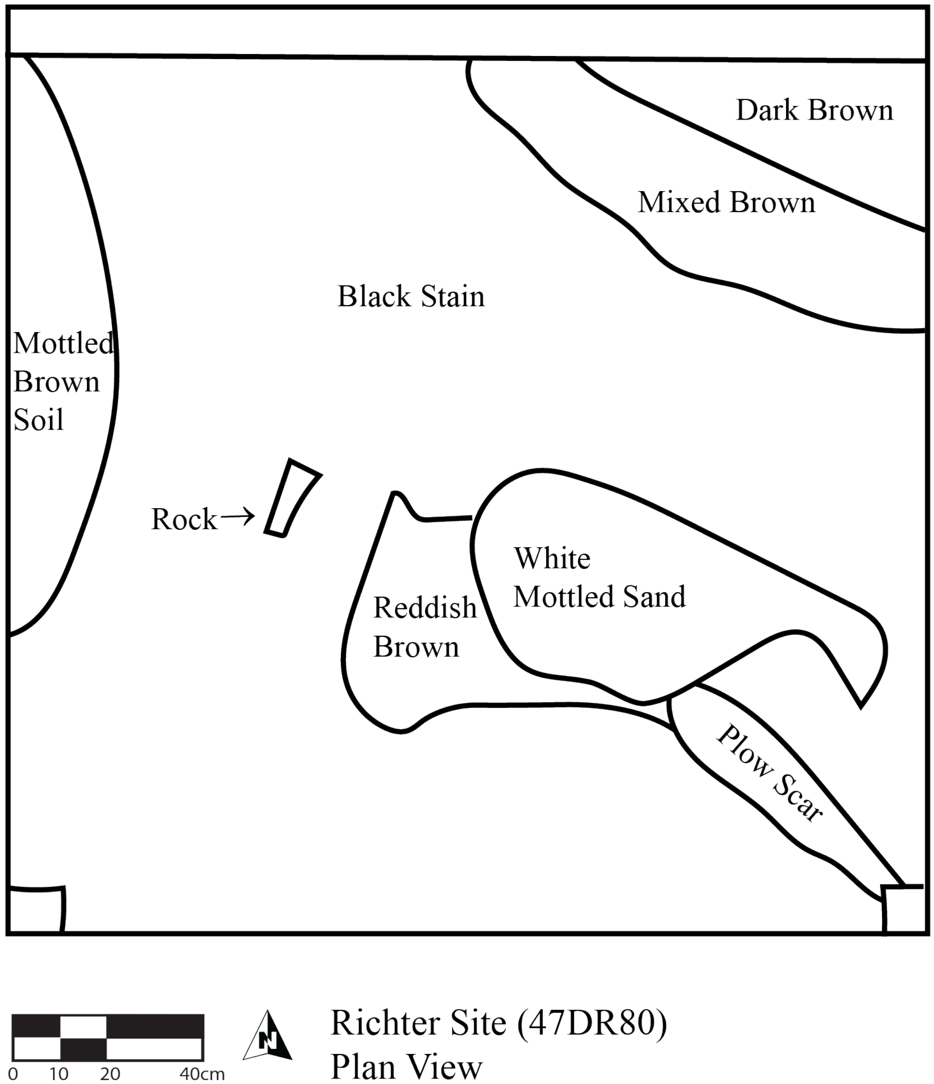
Richter Site (47DR80)
Plan View
Unit S04/E10
Level 2, 25cm
1973



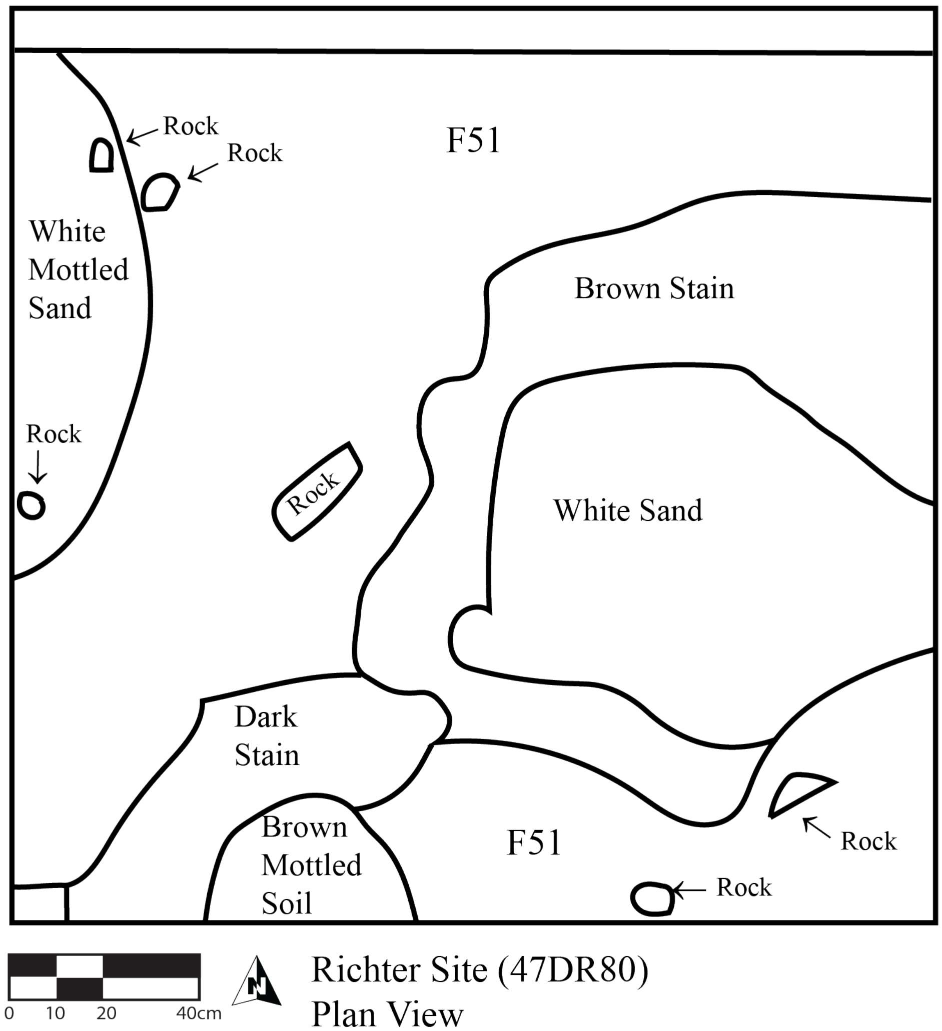
Richter Site (47DR80)
Plan View
Unit S04/E10
Level 3, 35 cm
1973



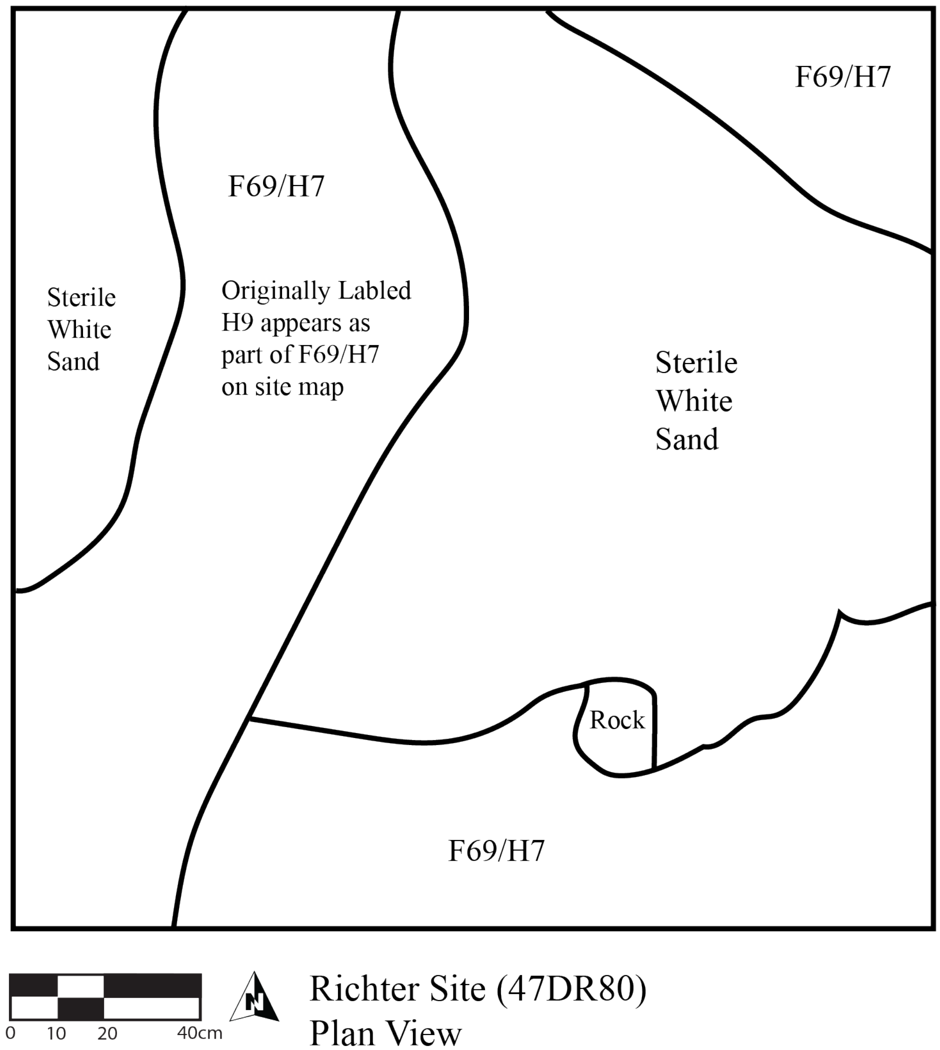
Richter Site (47DR80)
Plan View
S04/E08
Level 1, base of Level 1, 22 cm
1973



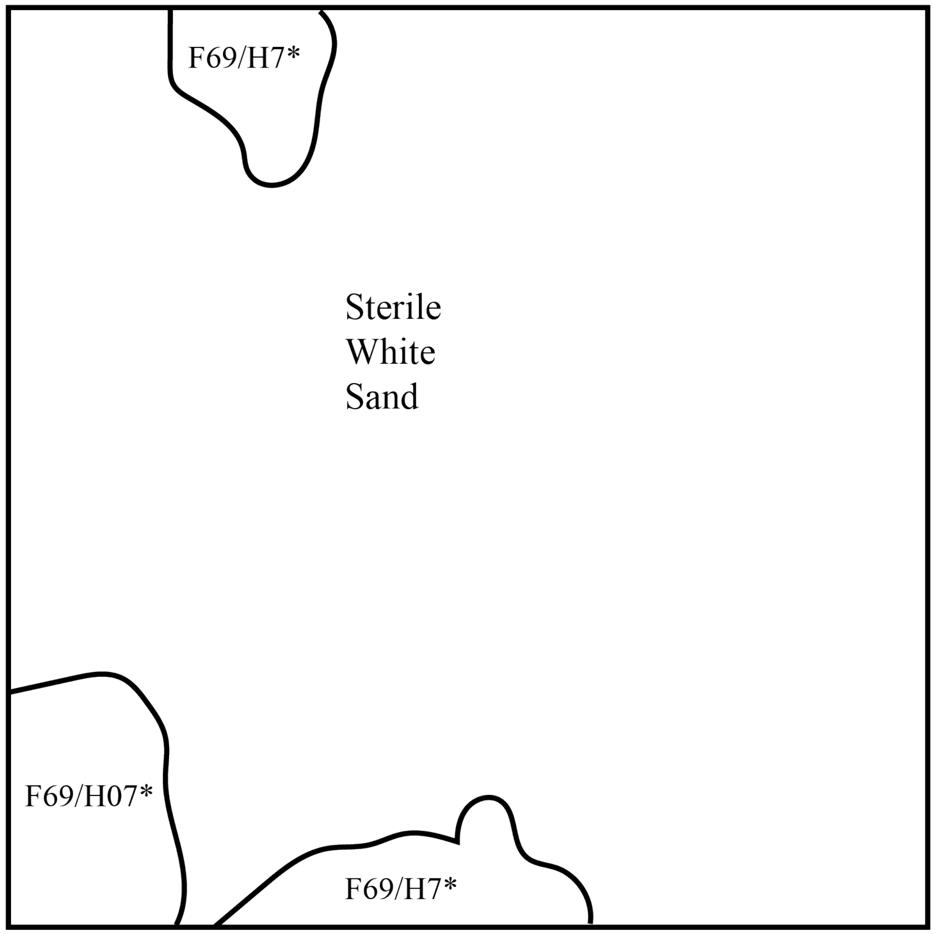
Richter Site (47DR80)
Plan View
Unit S04/E08
Level 2, 27cm
1973



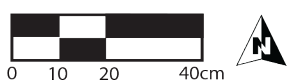
Richter Site (47DR80)
Plan View
Unit S04/E08
Level 3, top, 30 cm
1973



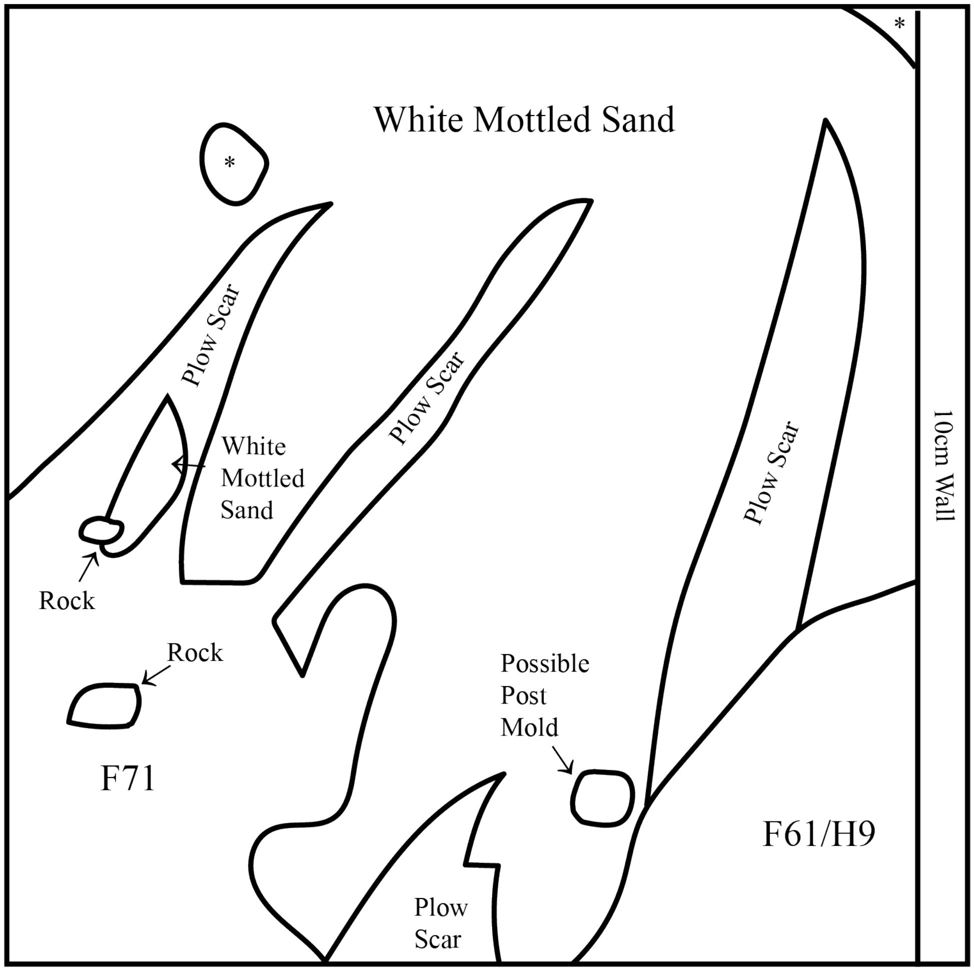
Richter Site (47DR80)
Plan View
Unit S04/E08
Level 3, bottom, 41cm
1973



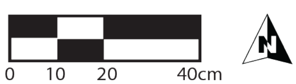
*Originally labeled H9. Site map locates H9 in Area E not in Unit S04/E08. Not clear if features associated with H9 in this Unit constitute a separate structure.



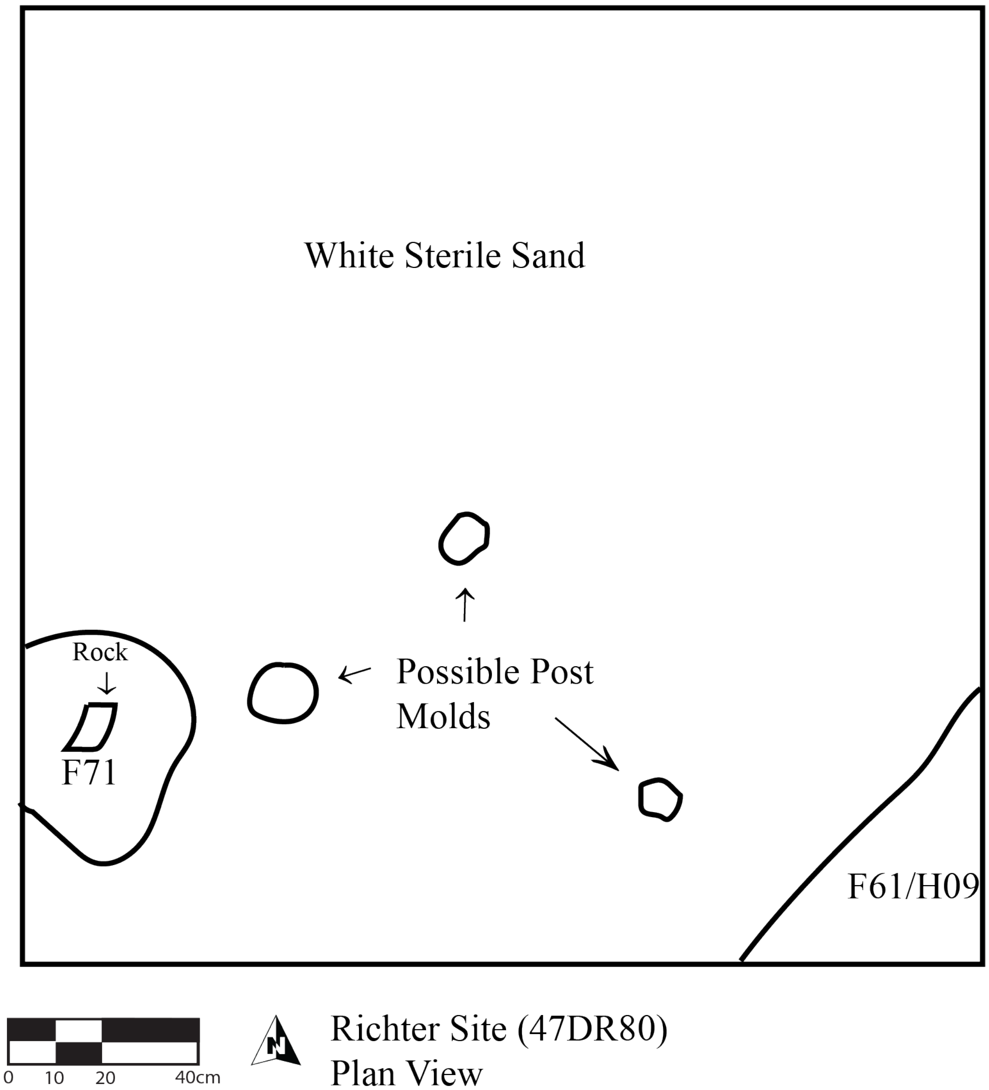
Richter Site (47DR80)
Plan View
Unite S04/E08
Level 4, 59cm
1973



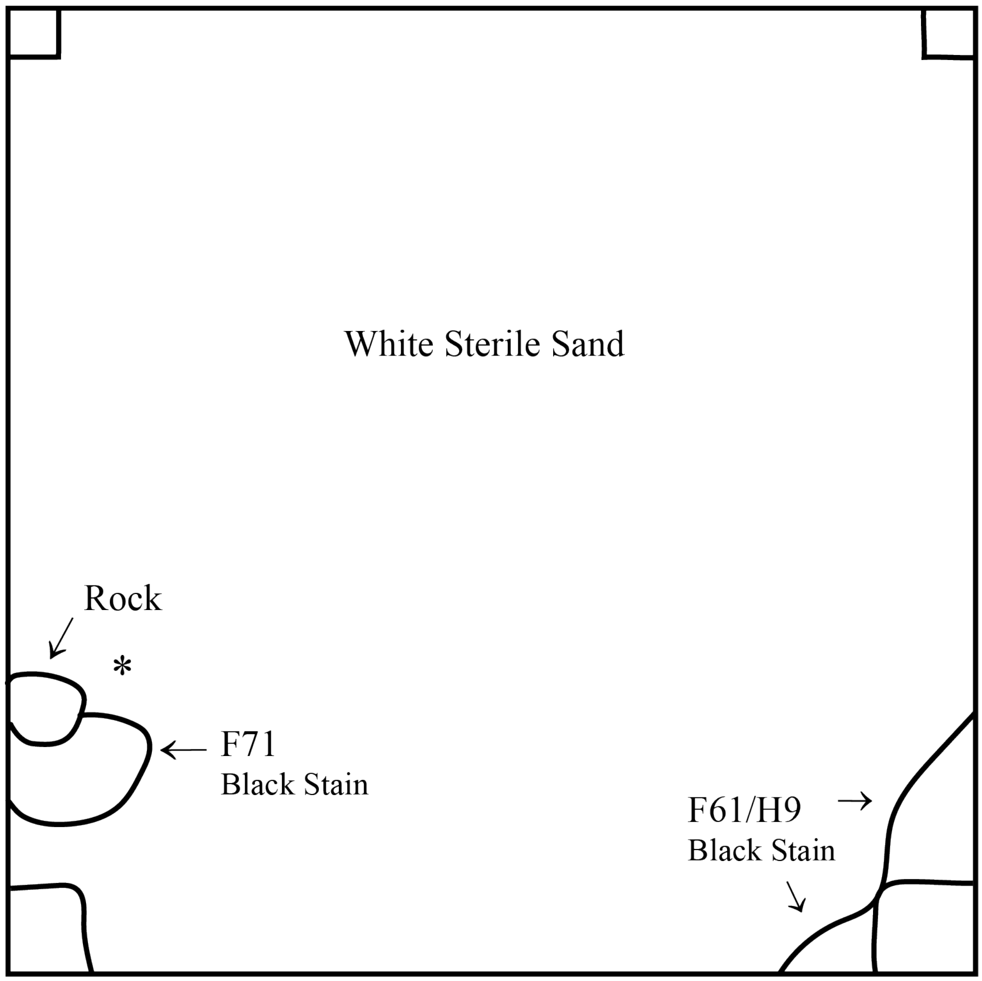
S04/E06
*Color on original map legend indicated these were Plow Scars though this is not clearly reflected by shape.
**Orginal map does not indicate the boundary between F71 and the Plow Scars.



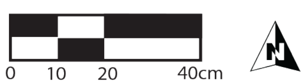
Richter Site (47DR80)
Plan View
Unit S04/06
Level 2 , 26 cm
1973



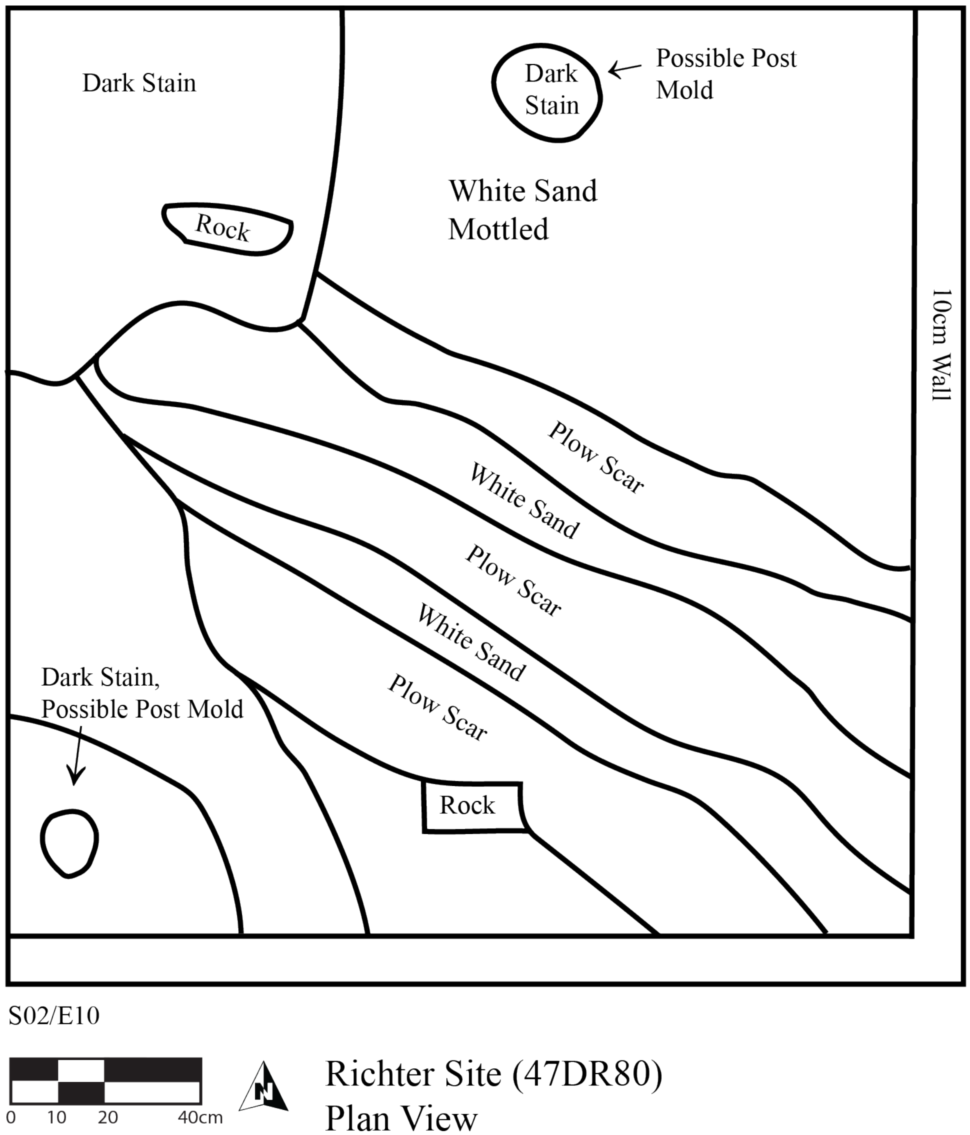
Richter Site (47DR80)
Plan View
Unit S04/E06
Level 3? (Level not indicated), 50cm
1973



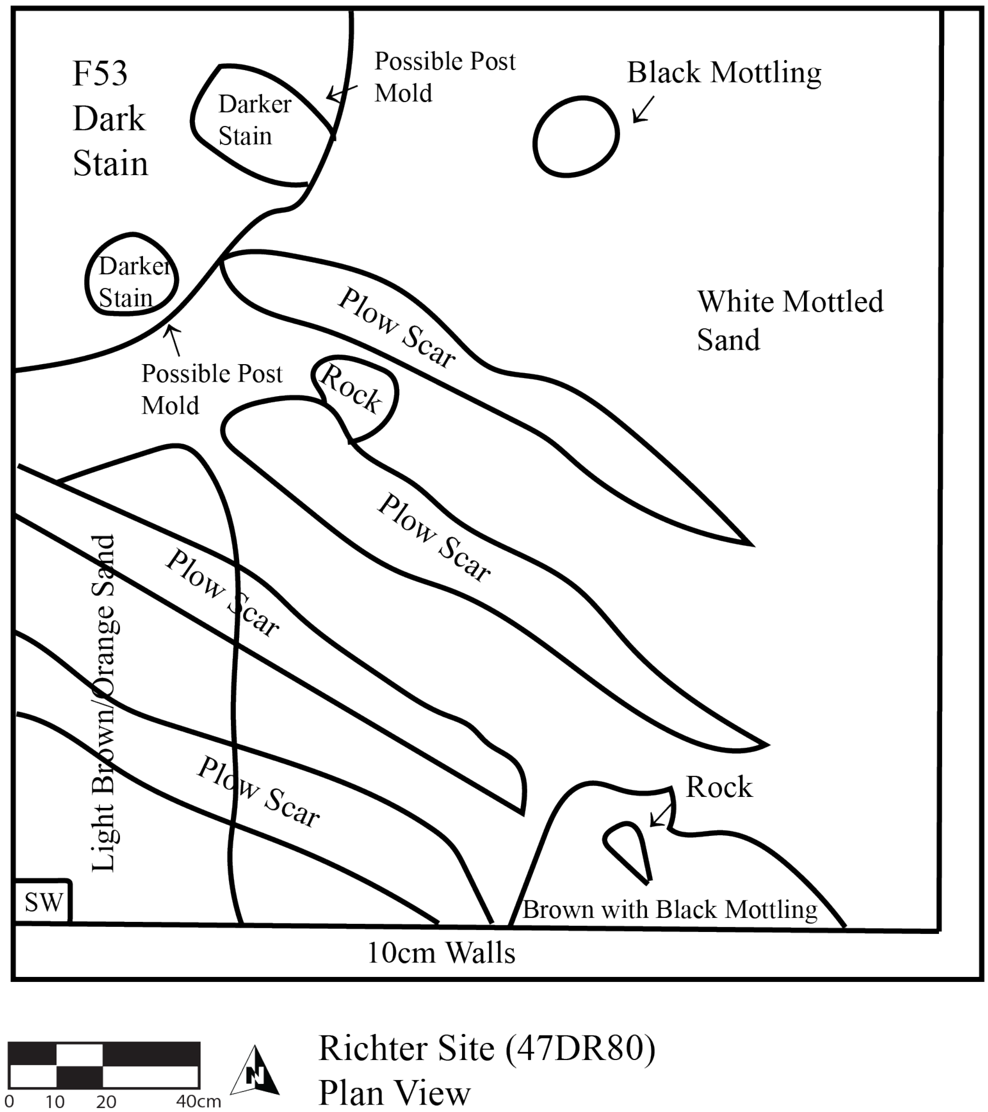
*Several large pieces of deer bone found here with 2 pieces of fire cracked rock.



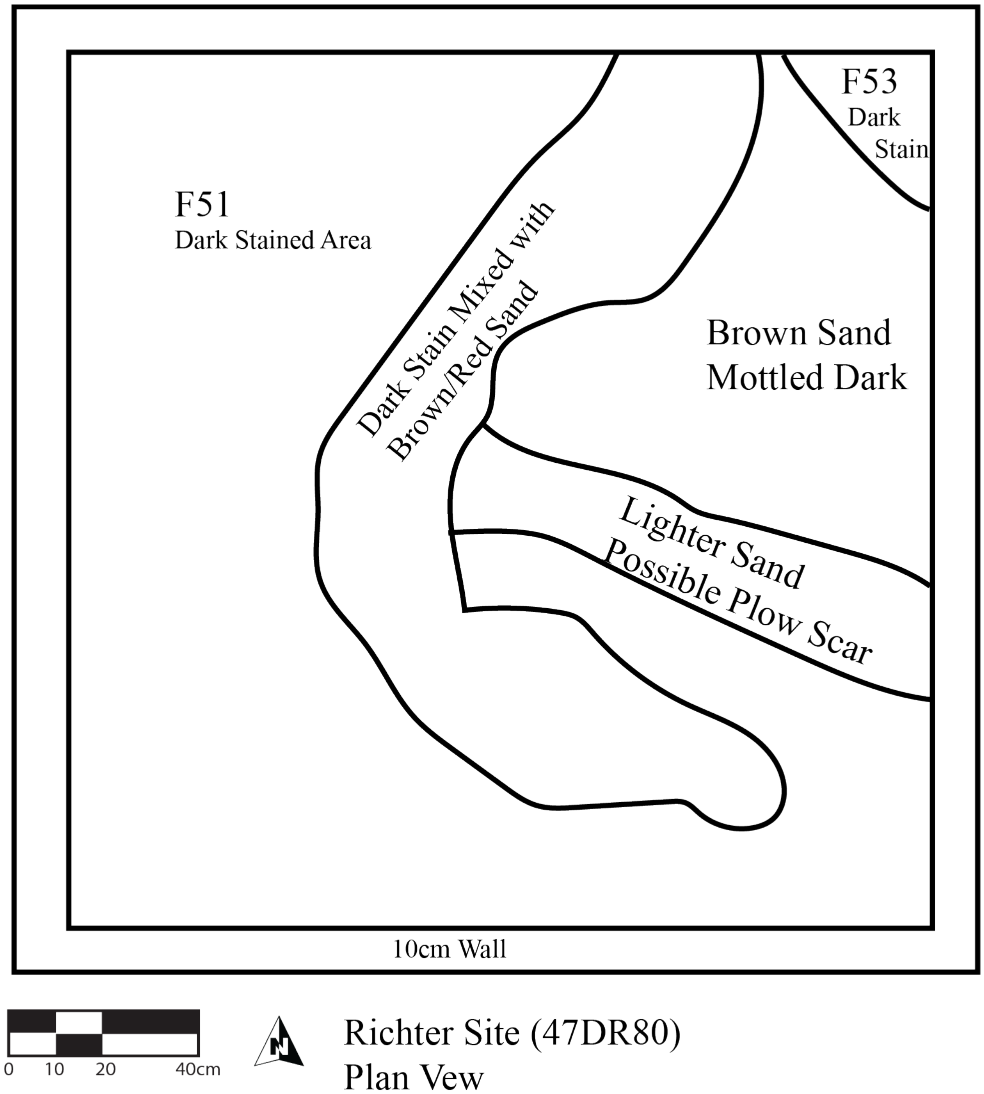
Richter Site (47DR80)
Plan View
Unit S04/E06
Level 4, no depth given
1973



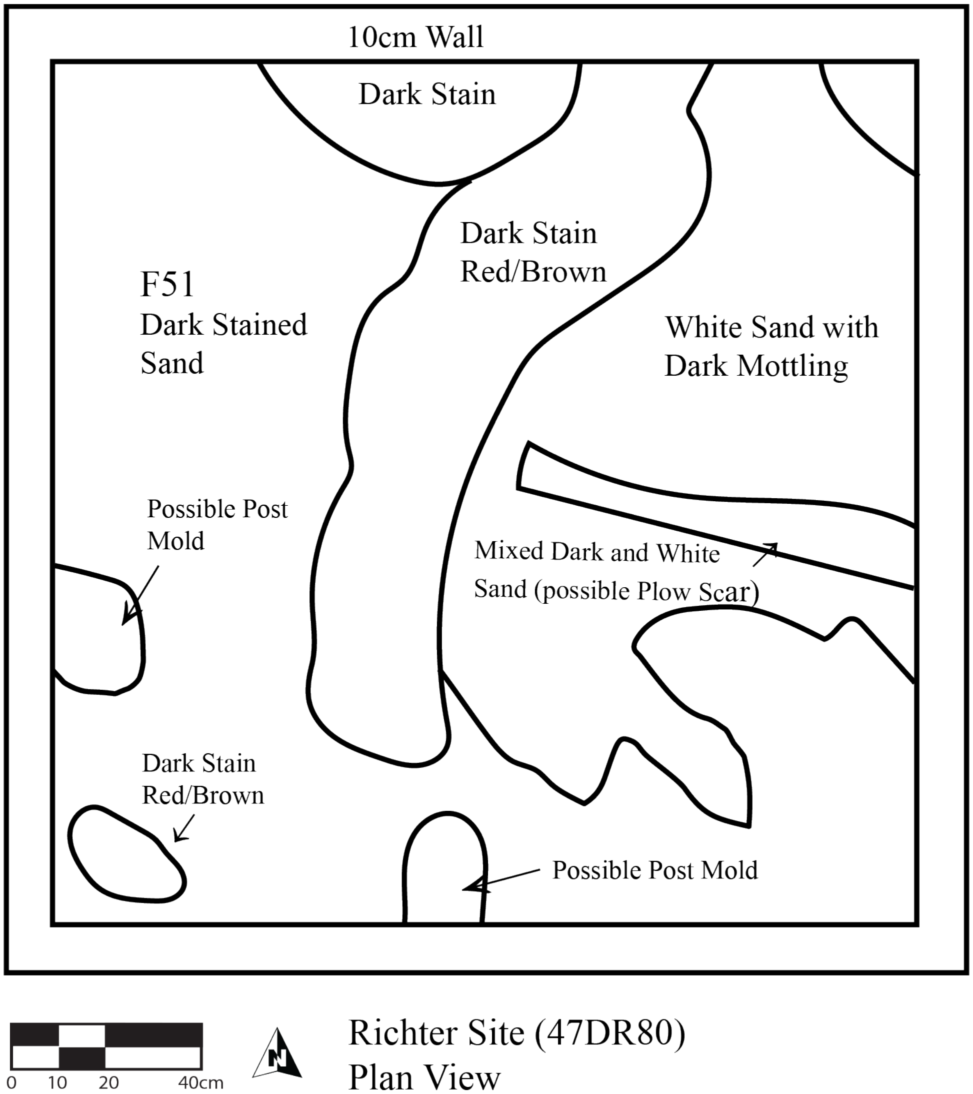
Richter Site (47DR80)
Plan View
S02/E10
Level 2, 14 cm
1973



Richter Site (47DR80)
Plan View
Unit S02/E10
Level 3, 17 cm
1973

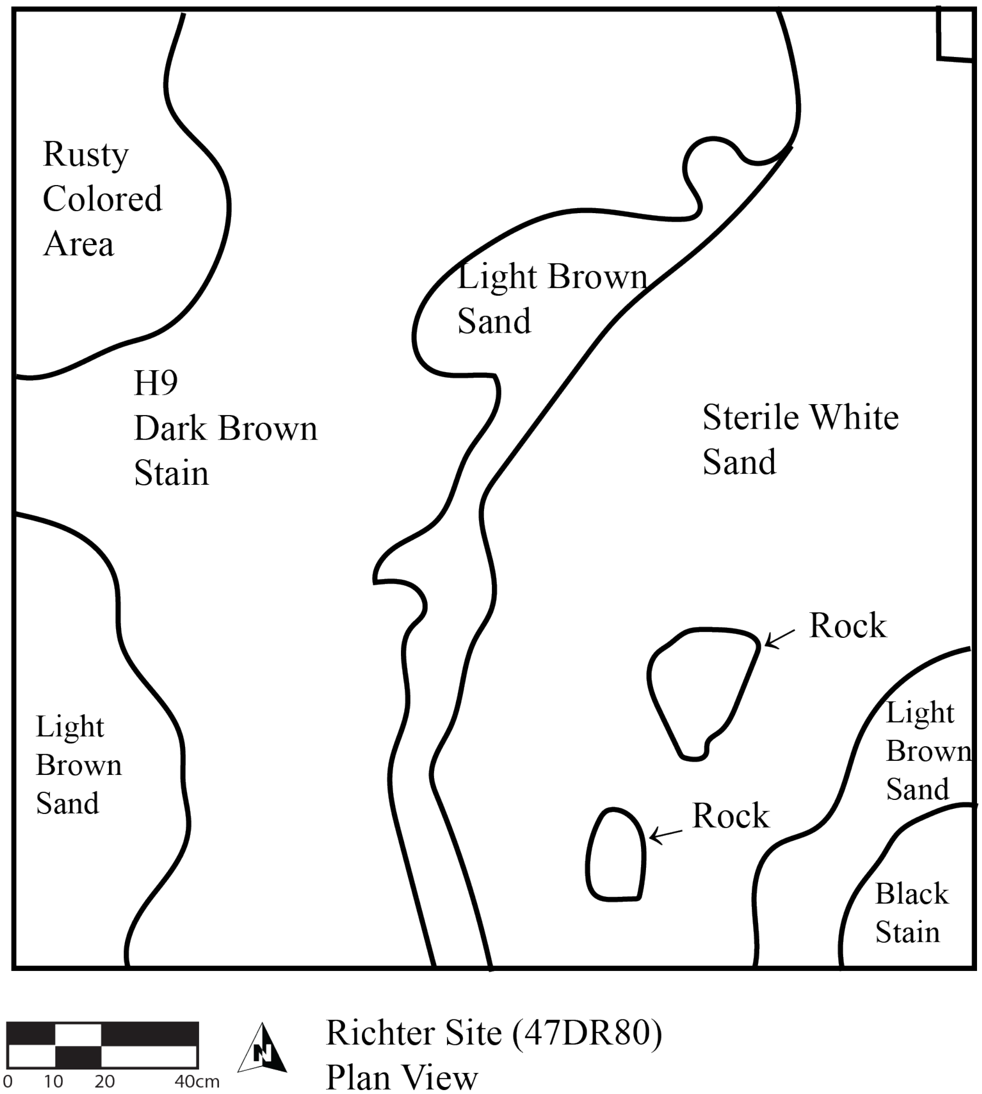


Richter Site (47DR80)
Plan Vew
Unit S02/E08
Level 2, 17cm
1973

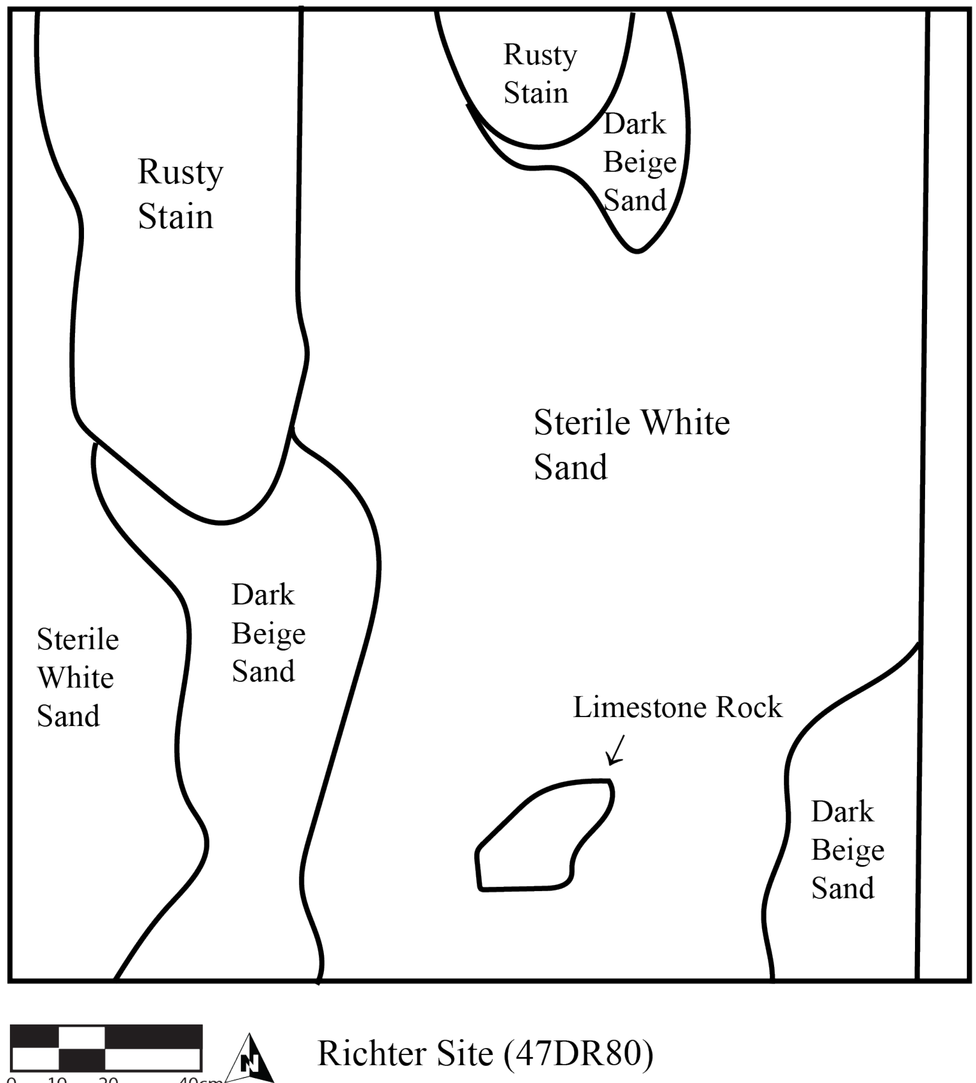


Richter Site (47DR80)
Plan View
Unite S02/E08
Level 3, 20cm
1973

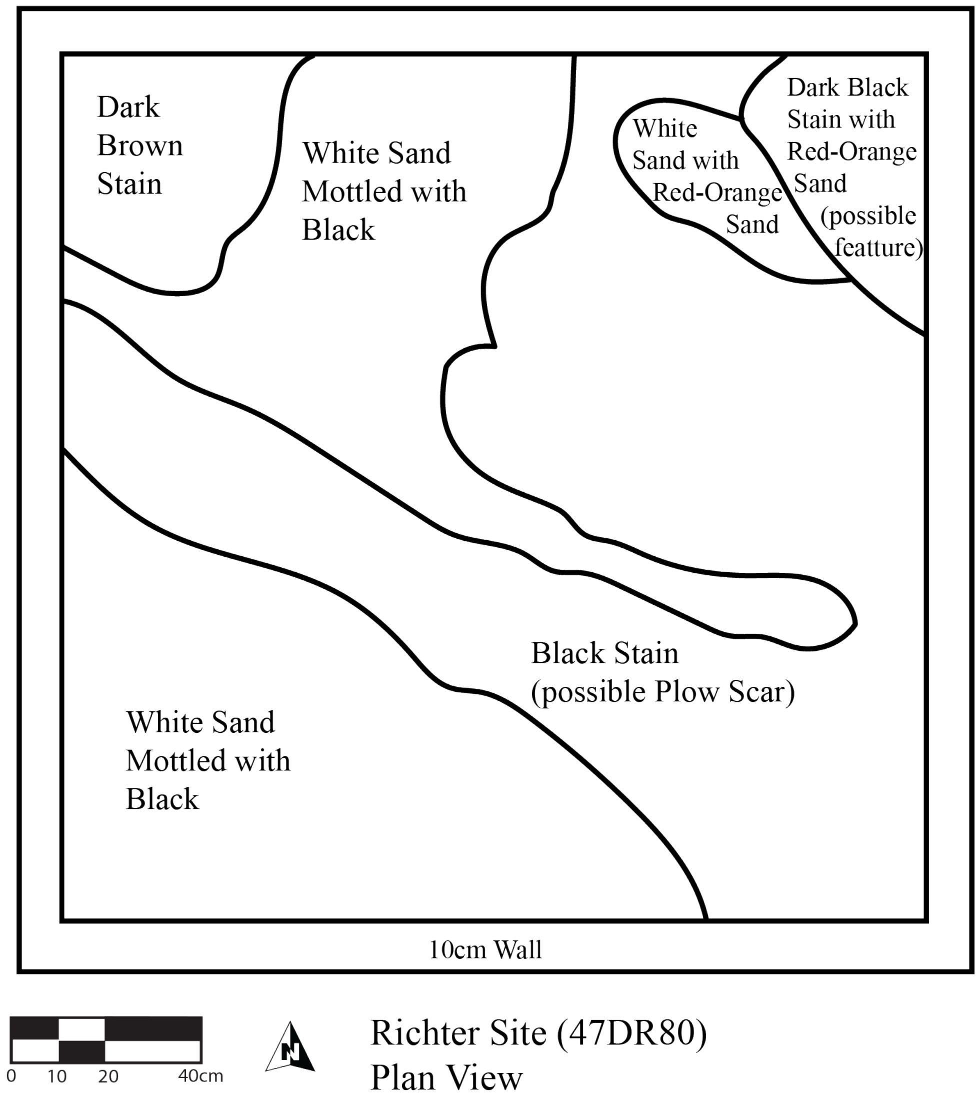
This Plan View was incorrected identified as N02/E06



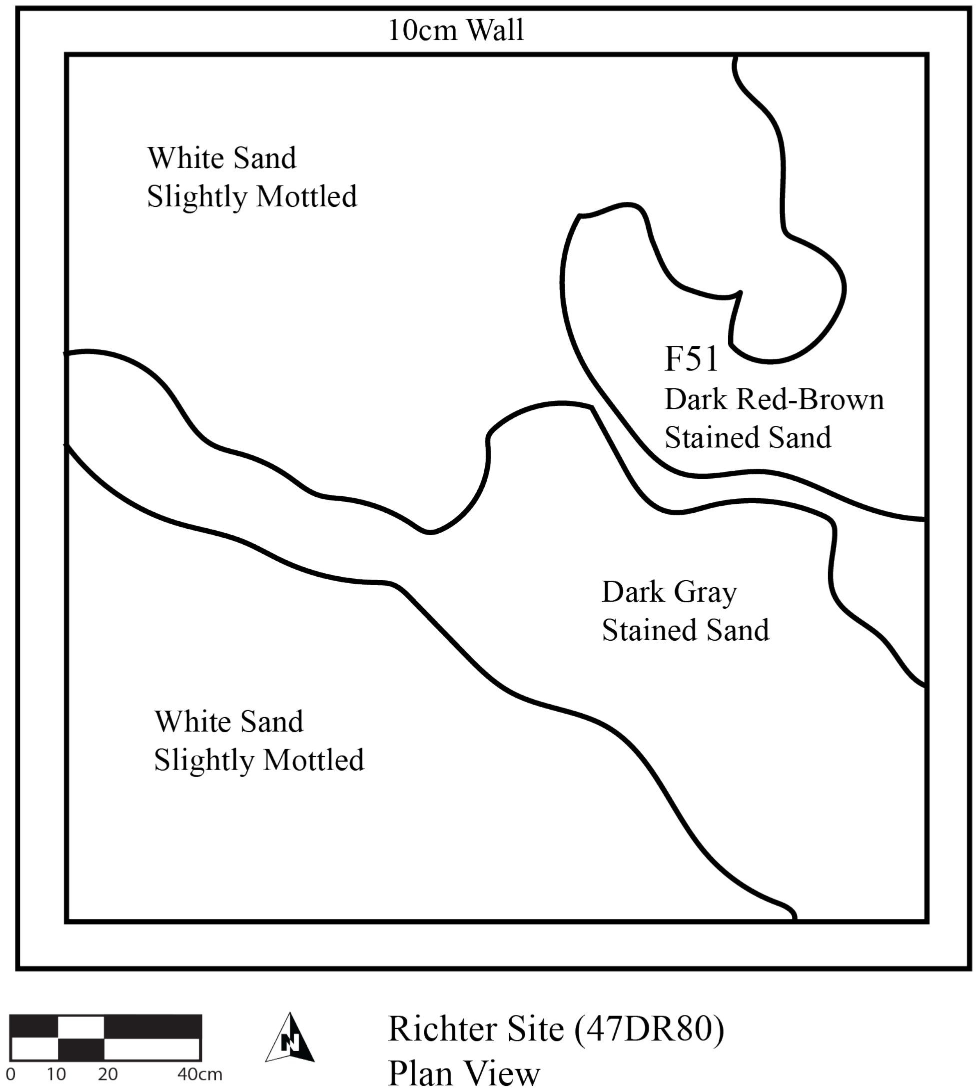
Richter Site (47DR80)
Plan View
Unit S02/E08
Level 4, top, 25 cm
1973



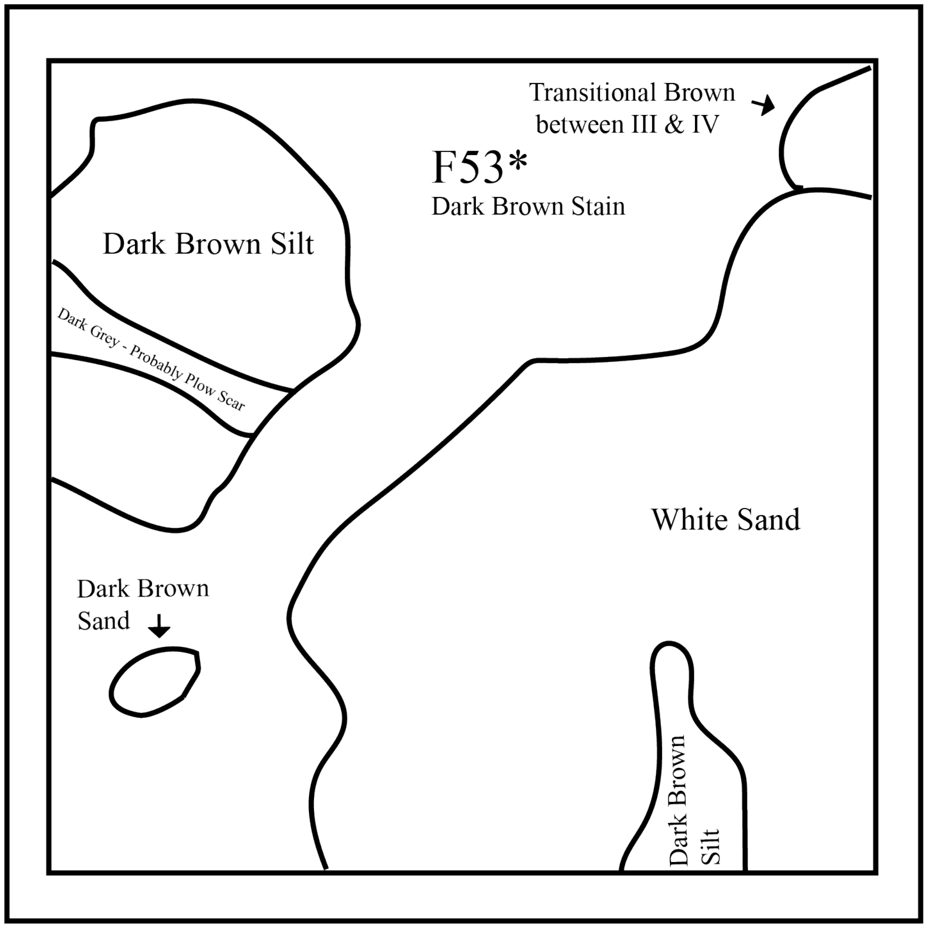
Richter Site (47DR80)
Plan View
Unite S02/E08
Level 4, Bottom, 34cm
1973



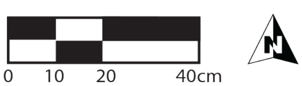
Richter Site (47DR80)
Plan View
Unit S02/E06
Level 2, 22 cm.
1973



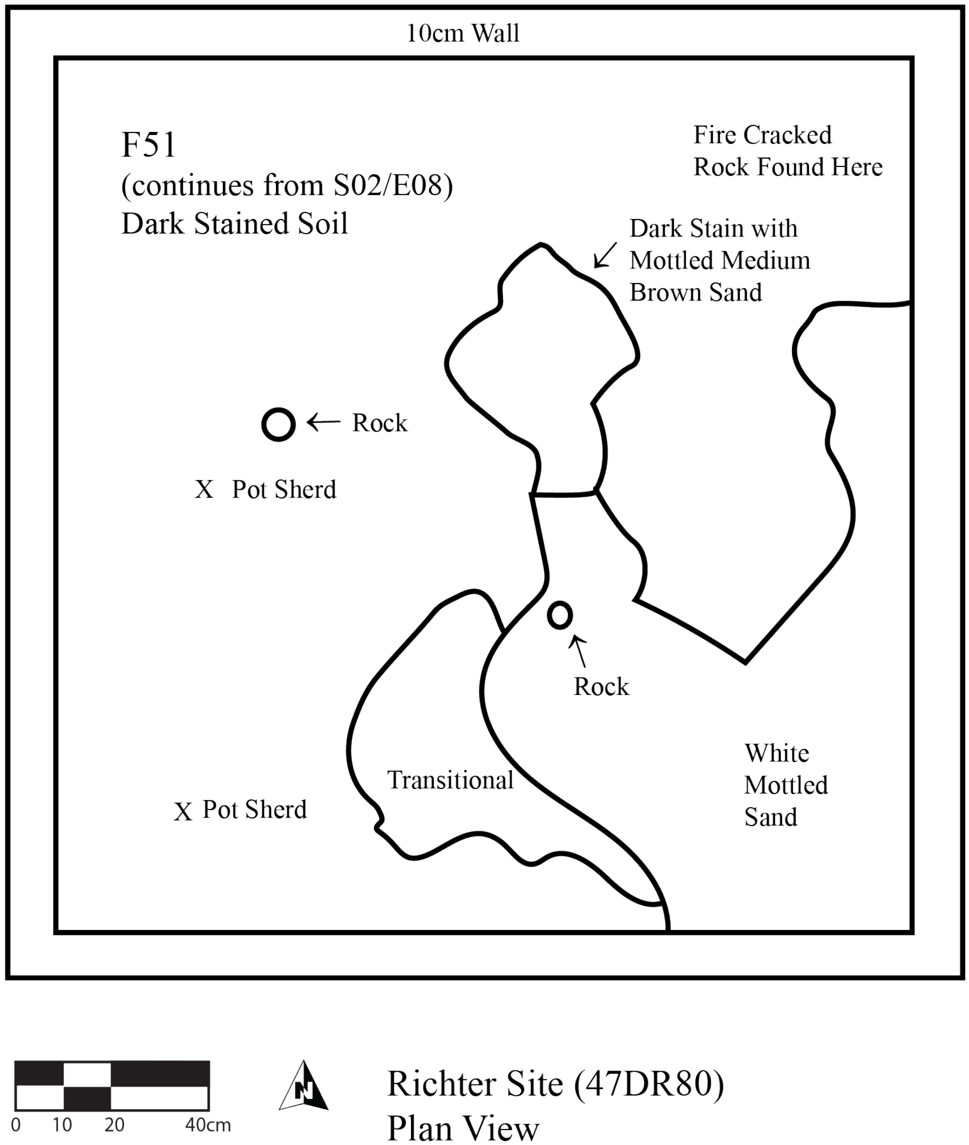
Richter Site (47DR80)
Plan View
Unit S02/E06
Level 3, 24 cm
1973



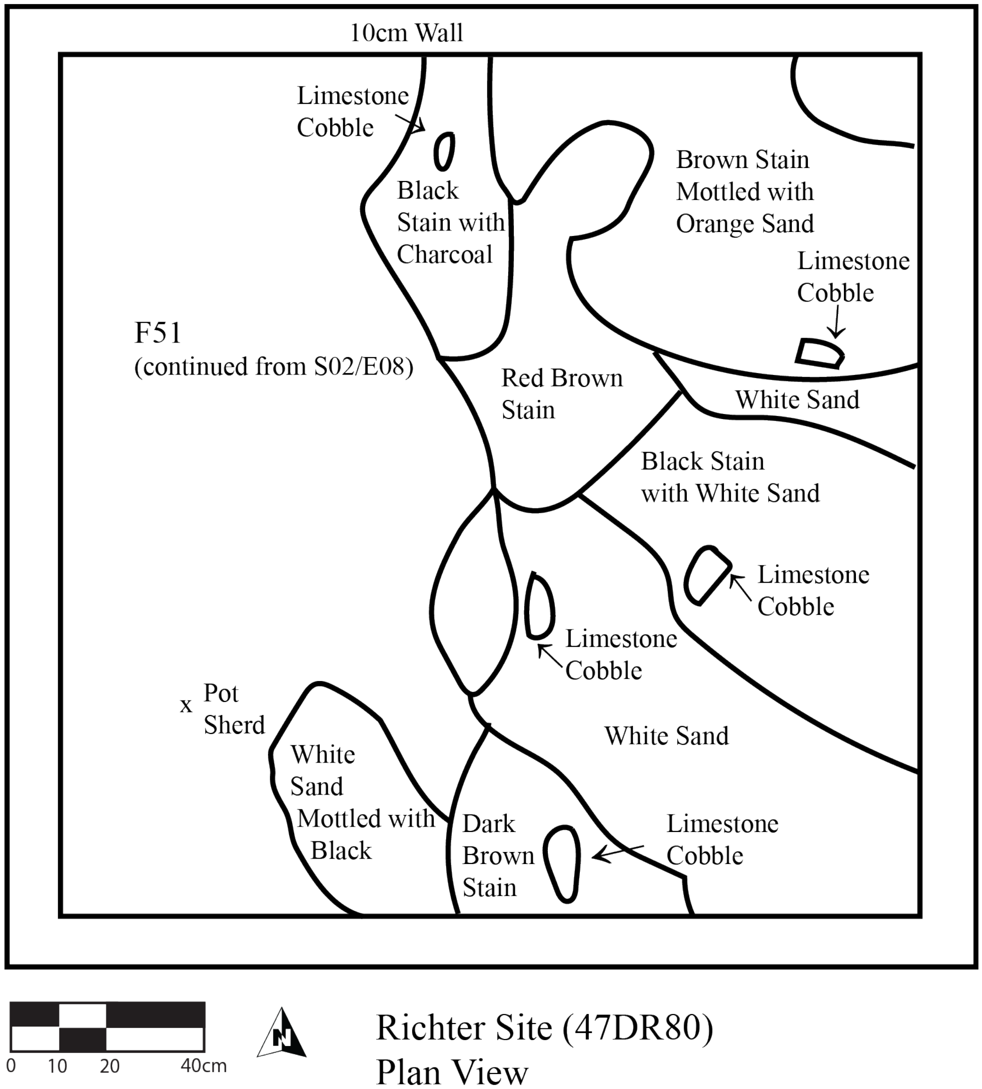
*Excavators indicated that this was F51 continued from S02/E10 & S02/E08 and that it also runs into N02/E10. Original map was subsequently labeled F53. It is assumed tidentification as F51 was an error .



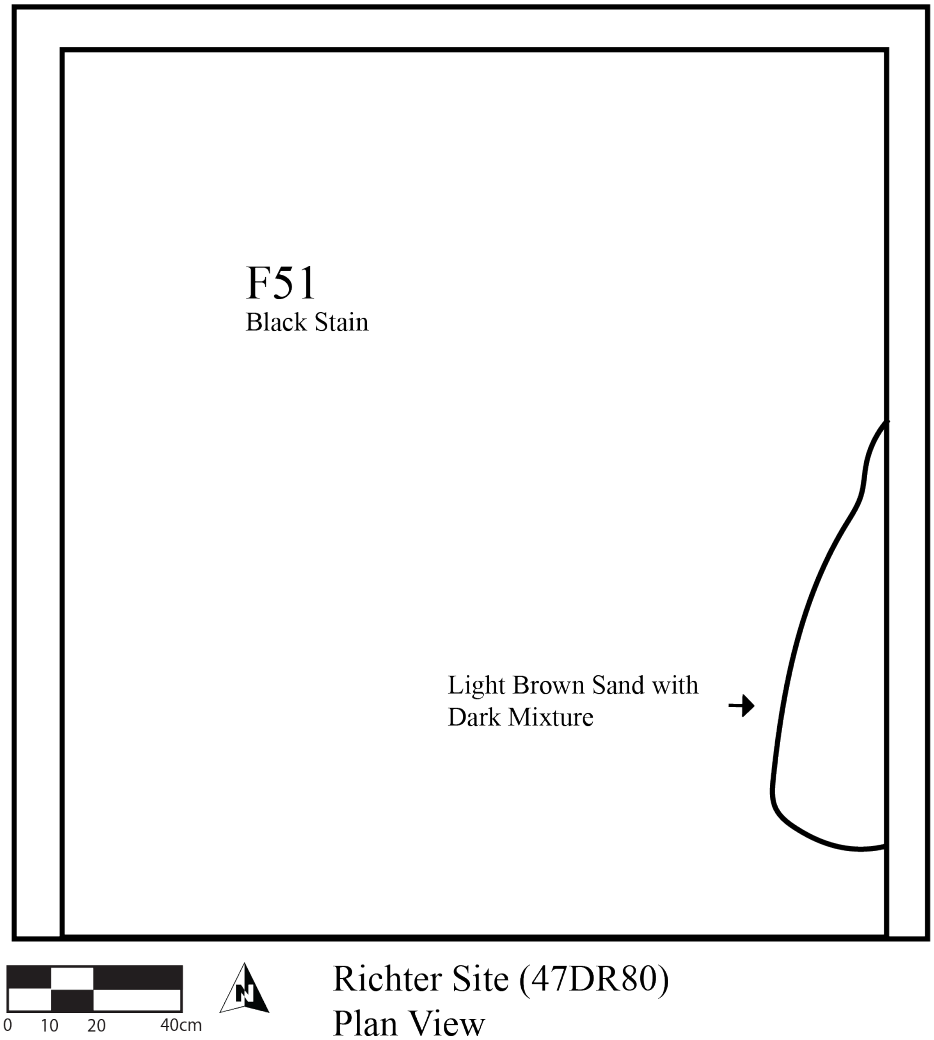
Richter Site (47DR80)
Plan View NS0/E10
Top of Level 2, 19cm
1973



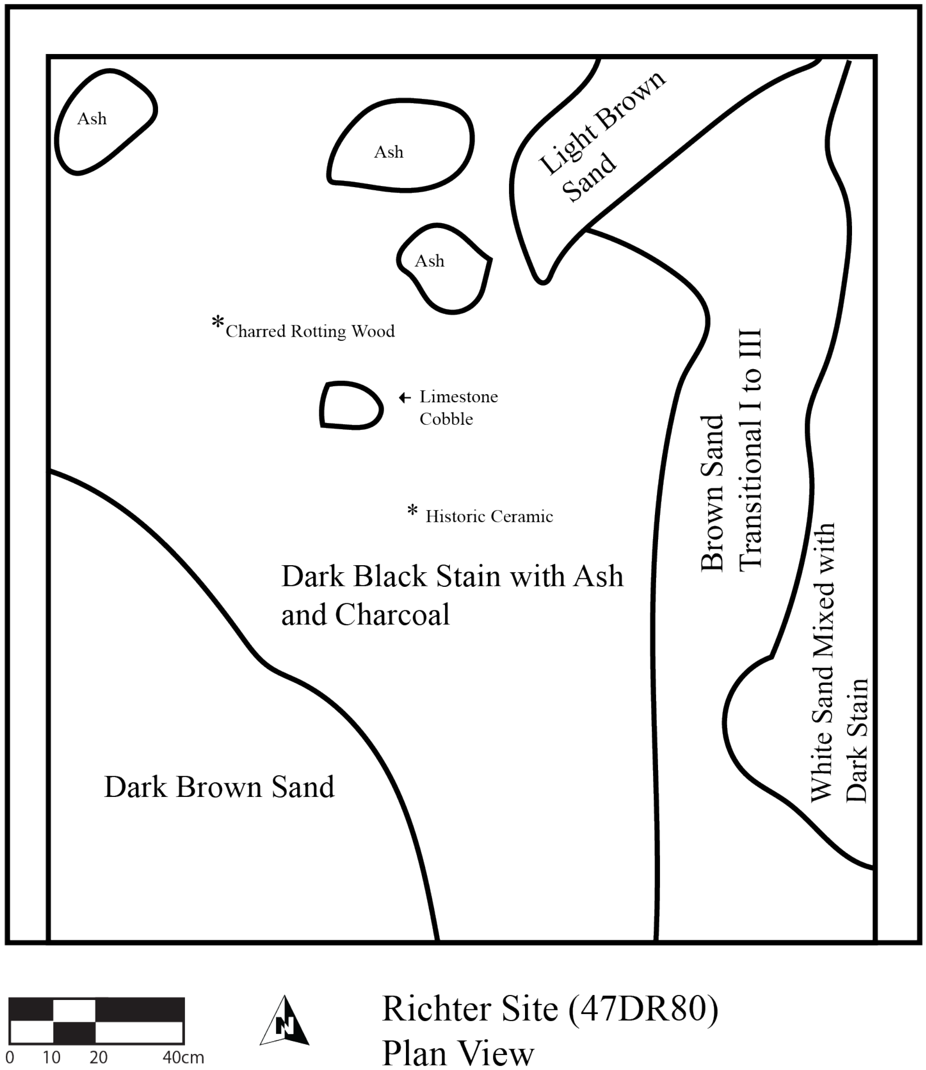
Richter Site (47DR80)
Plan View
Unit NS0/E08
Level 2, top, 20cm
1973



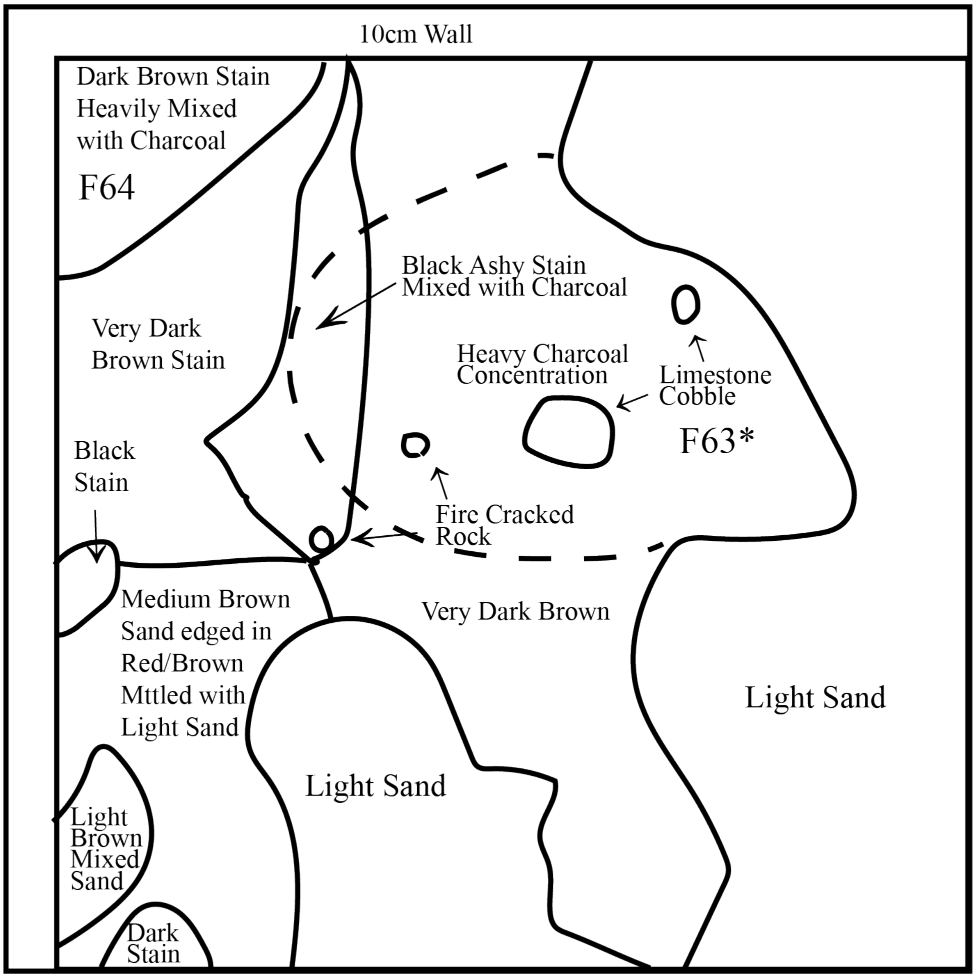
Richter Site (47DR80)
Plan View
Unit NS0/E08
Level 3, top, 27cm
1973



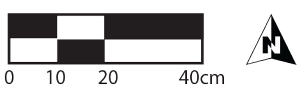
Richter Site (47DR80)
Plan View
Unit N02/E08
Top Level 2, 22cm
1973



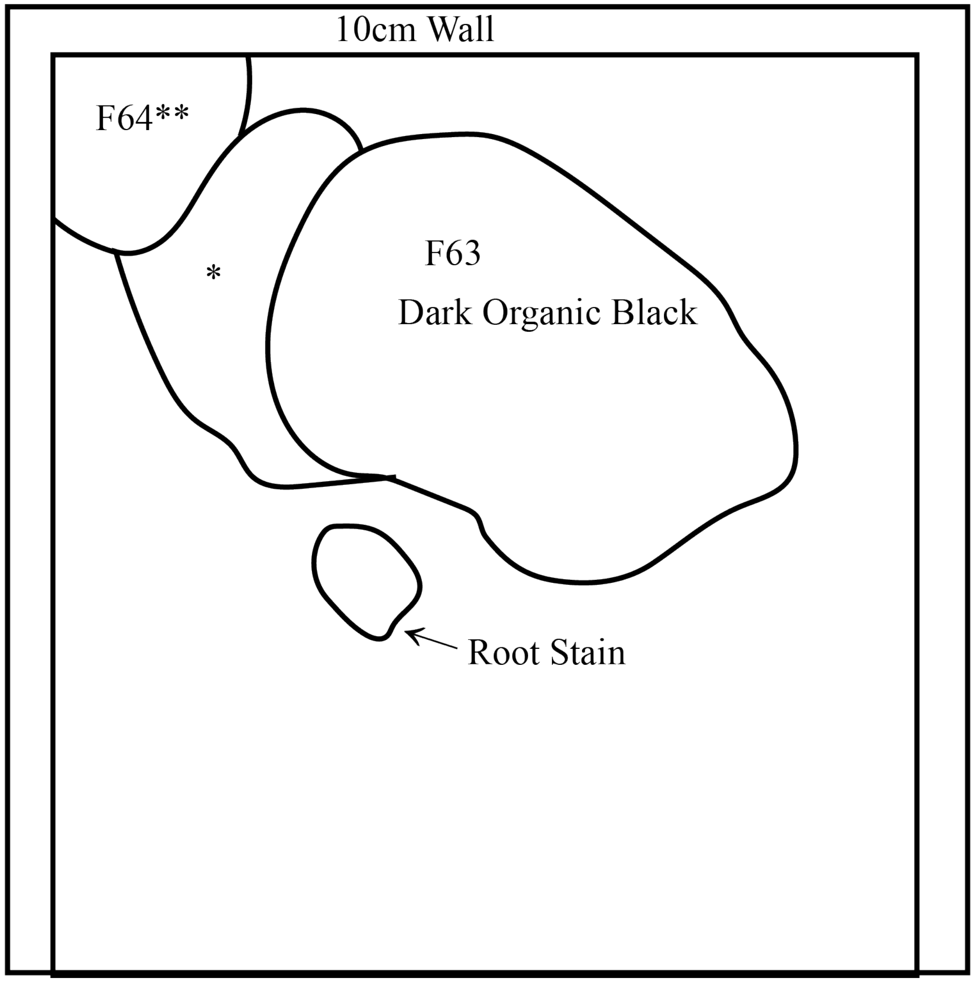
Richter Site (47DR80)
Plan View
Unit N02/E08
Top of Level 3, 28cm
1973



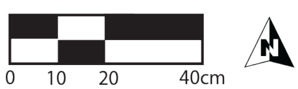
*Identification as F63 and dashed line outlining feature added later.



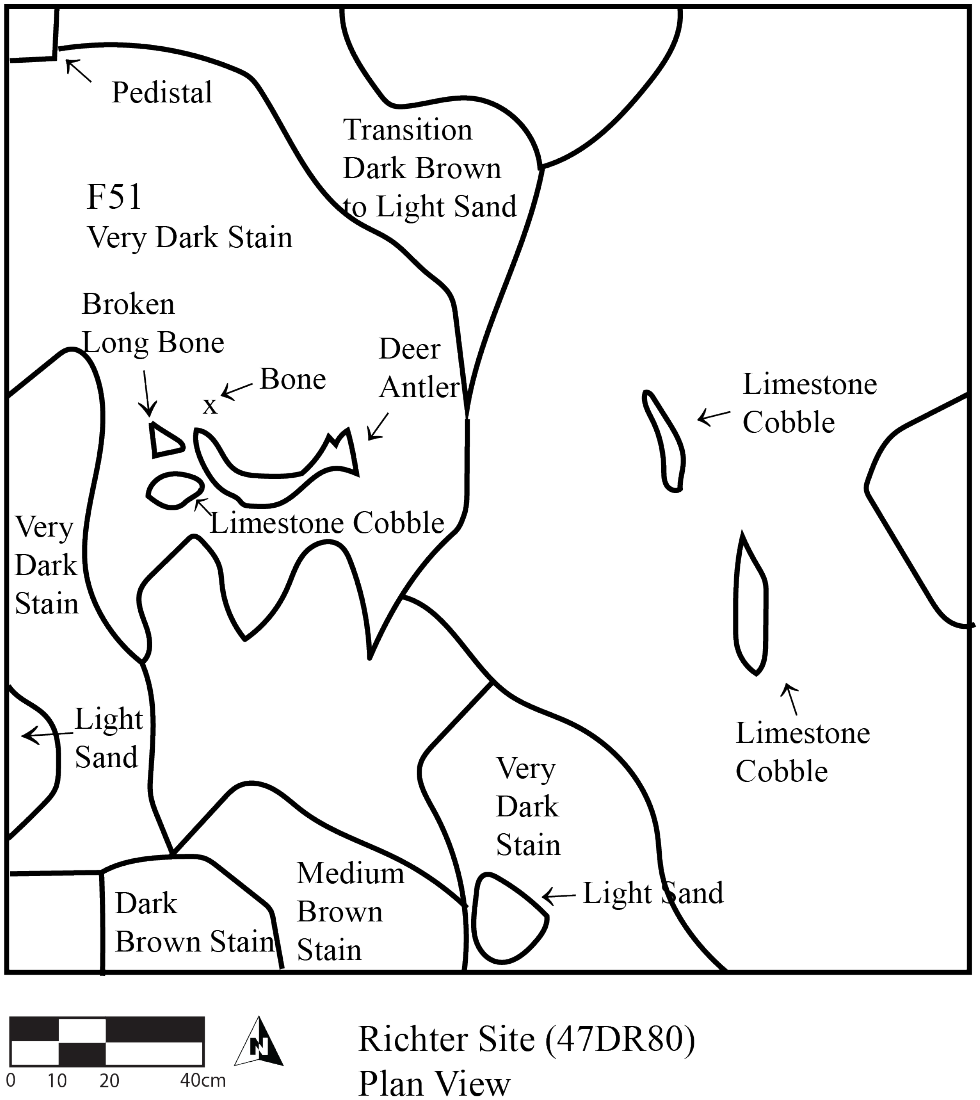
Richter Site (47DR80)
Plan View
Unit N02/E08
Level 4, top, 43cm



*No description given most likely similar to same area in Unit N02/E08, Level 4, top planview. In that planview this area is described as black ashy stain with heavy concentration of charcoal.
**No description given. In Level 4, top planview for unit this area is described as dark brown stain heavily mixed with charcoal

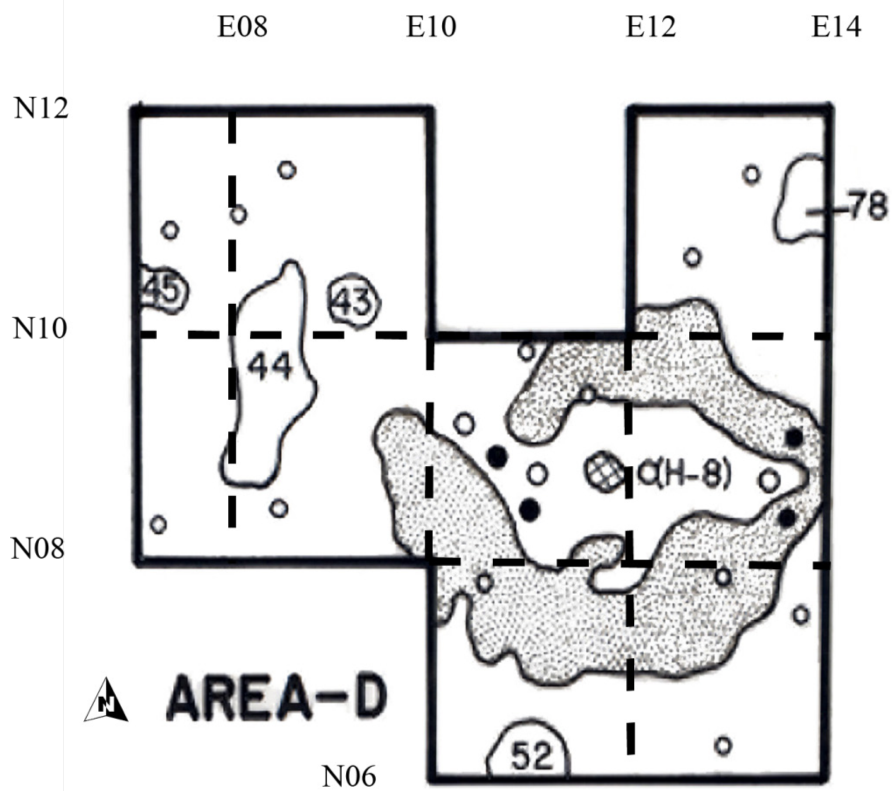


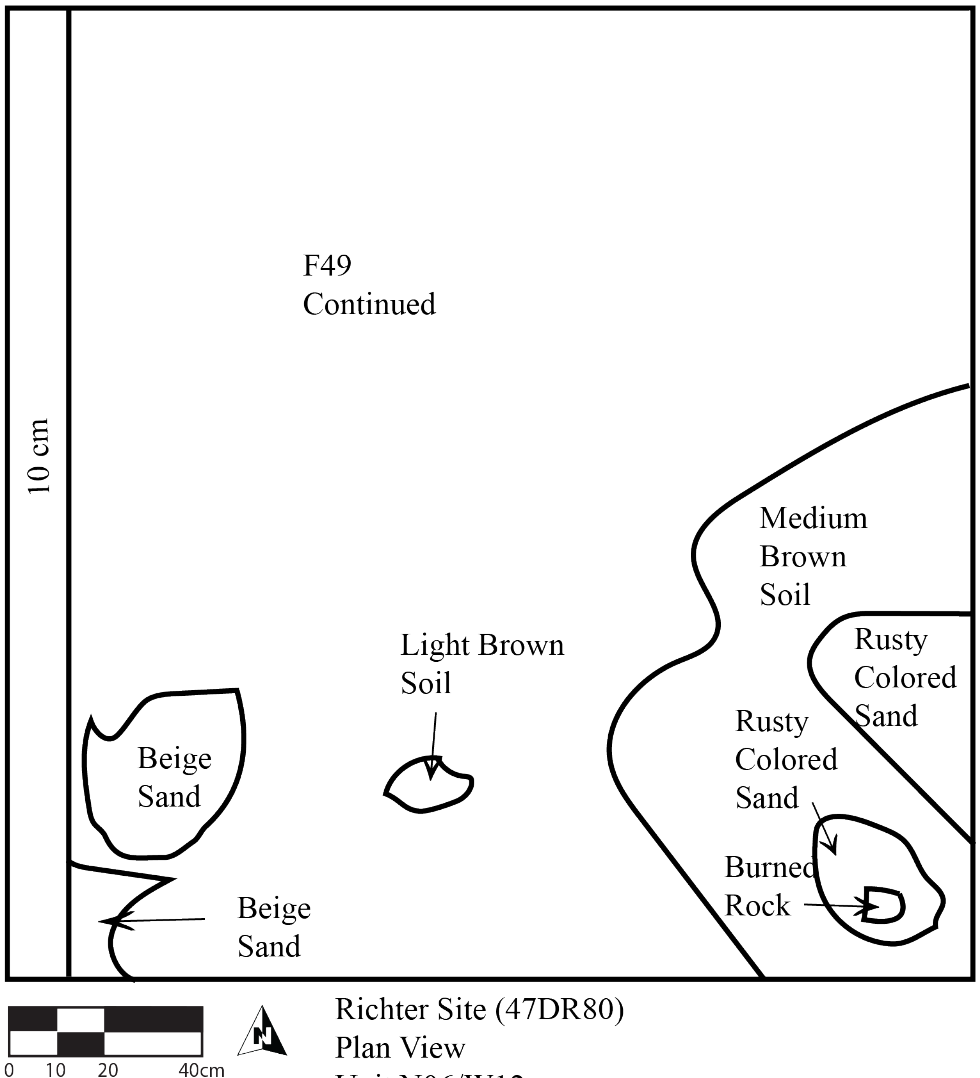
Richter Site (47DR80)
Plan View
Unit N02/E08
Level 4, bottom, 52cm



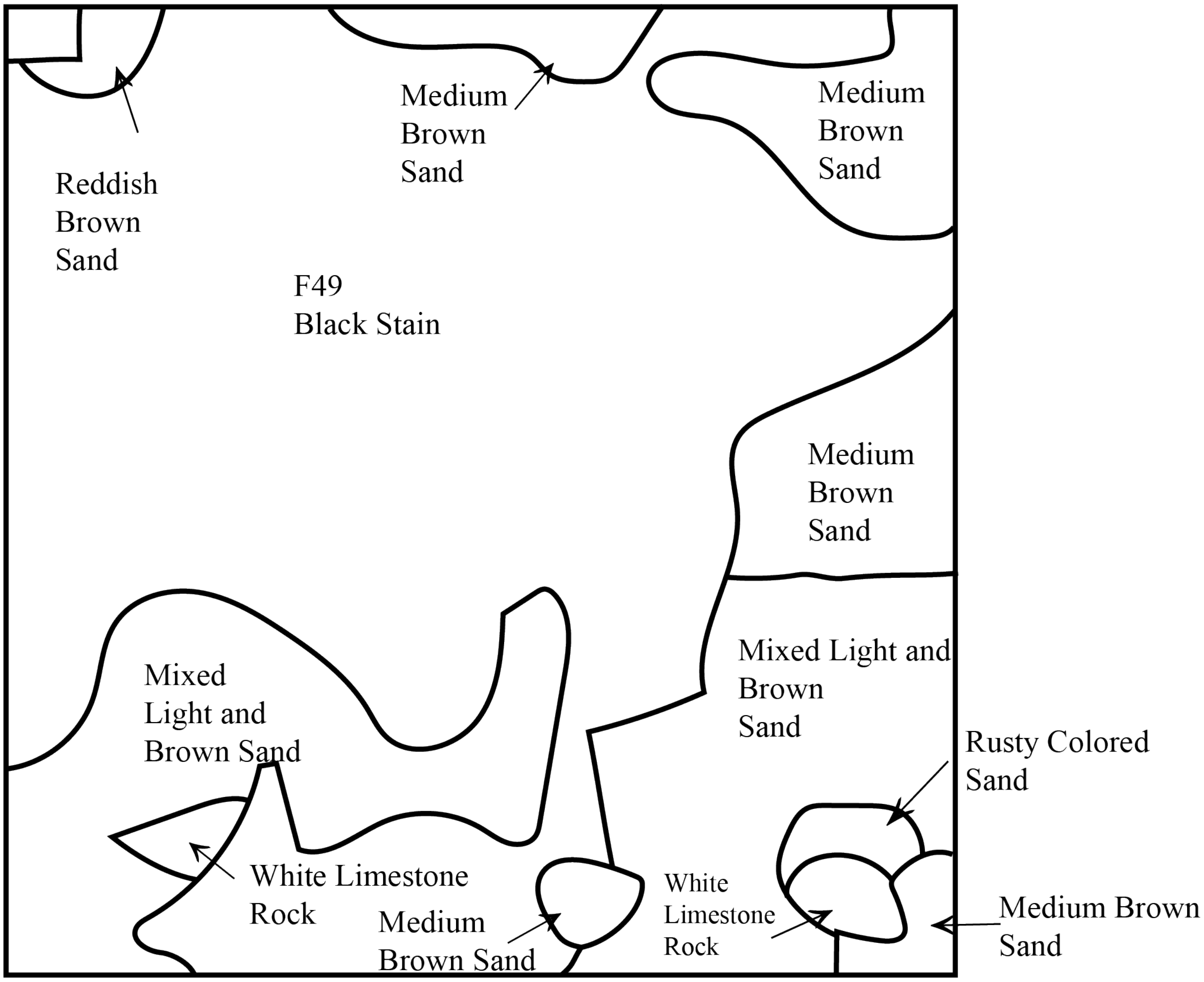
Richter Site (47DR80)
Plan View
Unit NS0/E08
Level 4, top, 36cm
1973

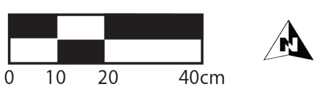
Area D Maps



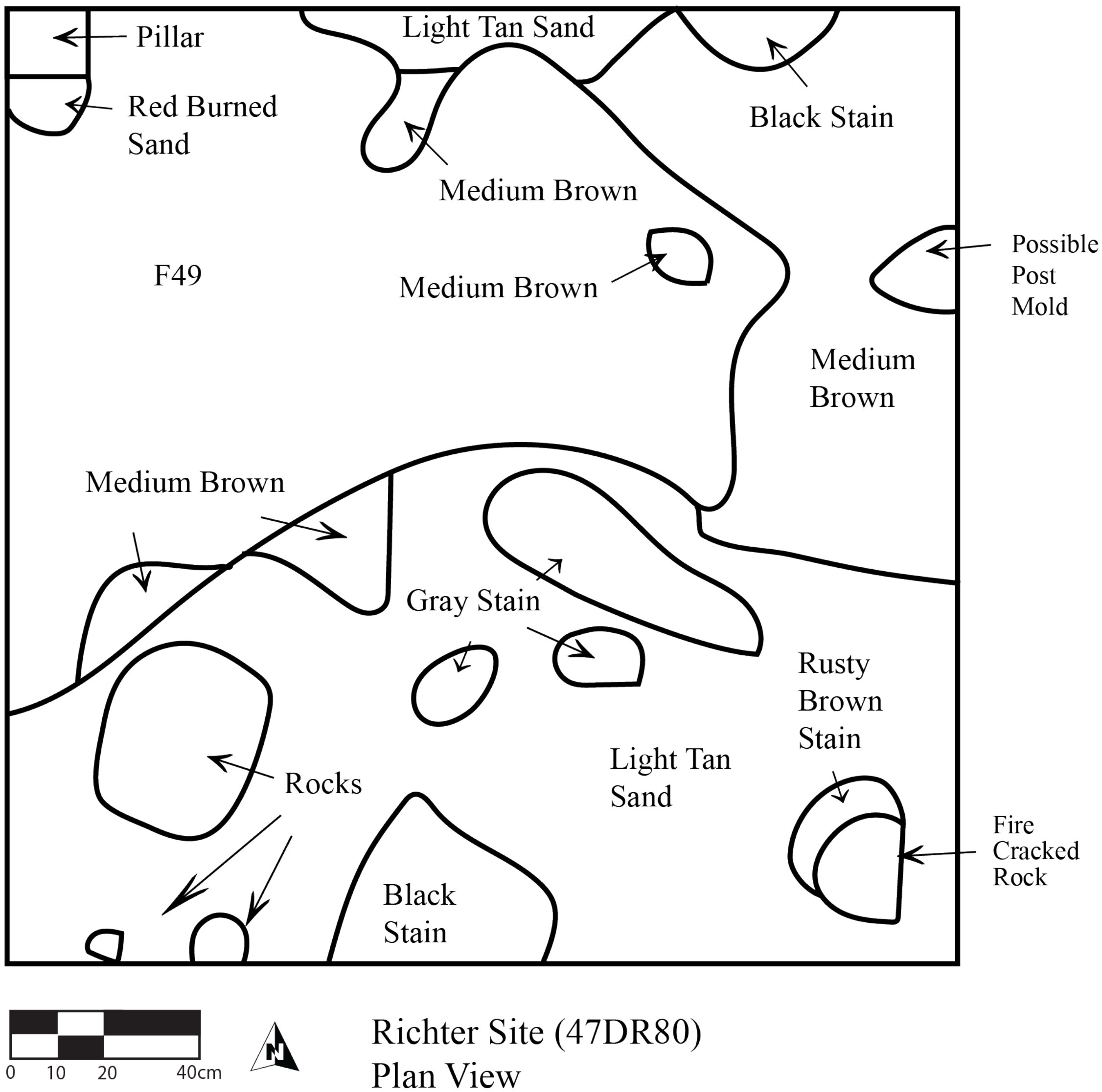


Richter Site (47DR80)
Plan View
Unit N06/W12
Level 2, bottom, 25 cm
1973

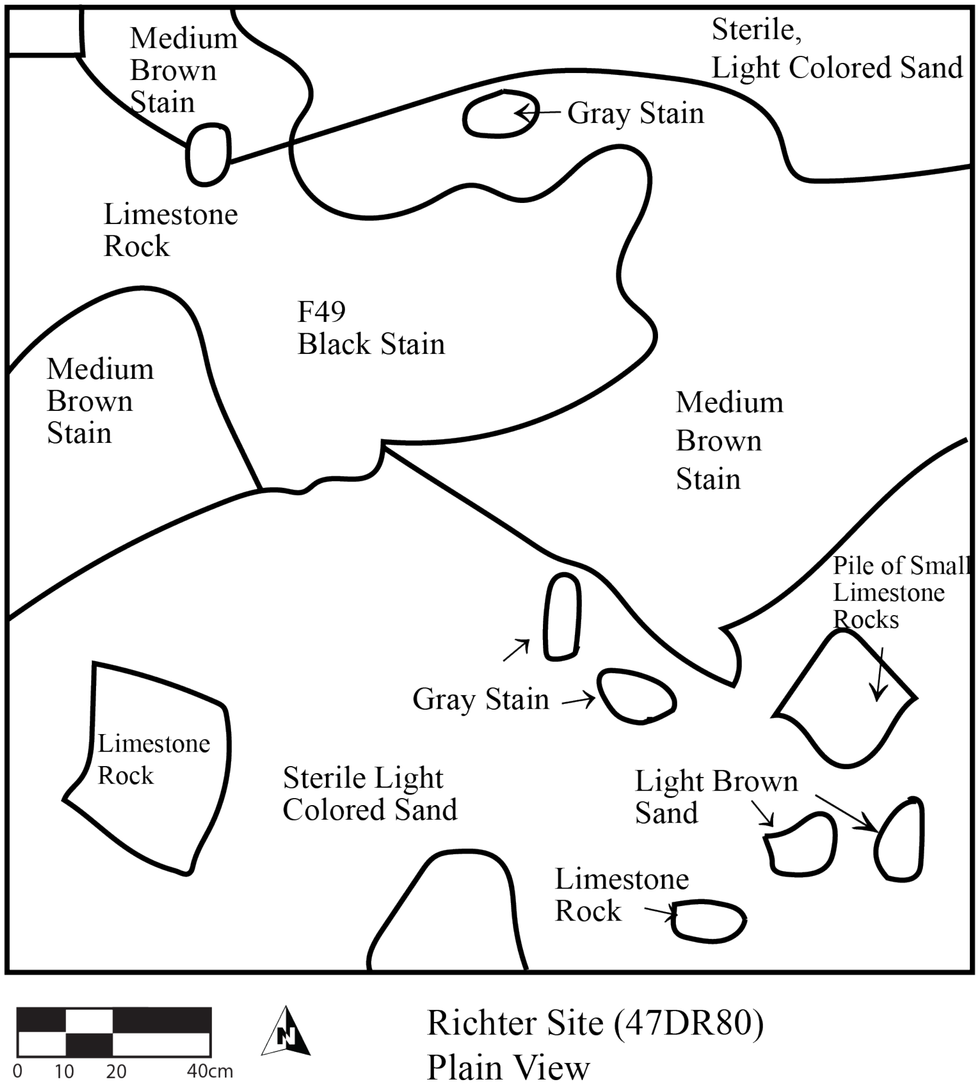




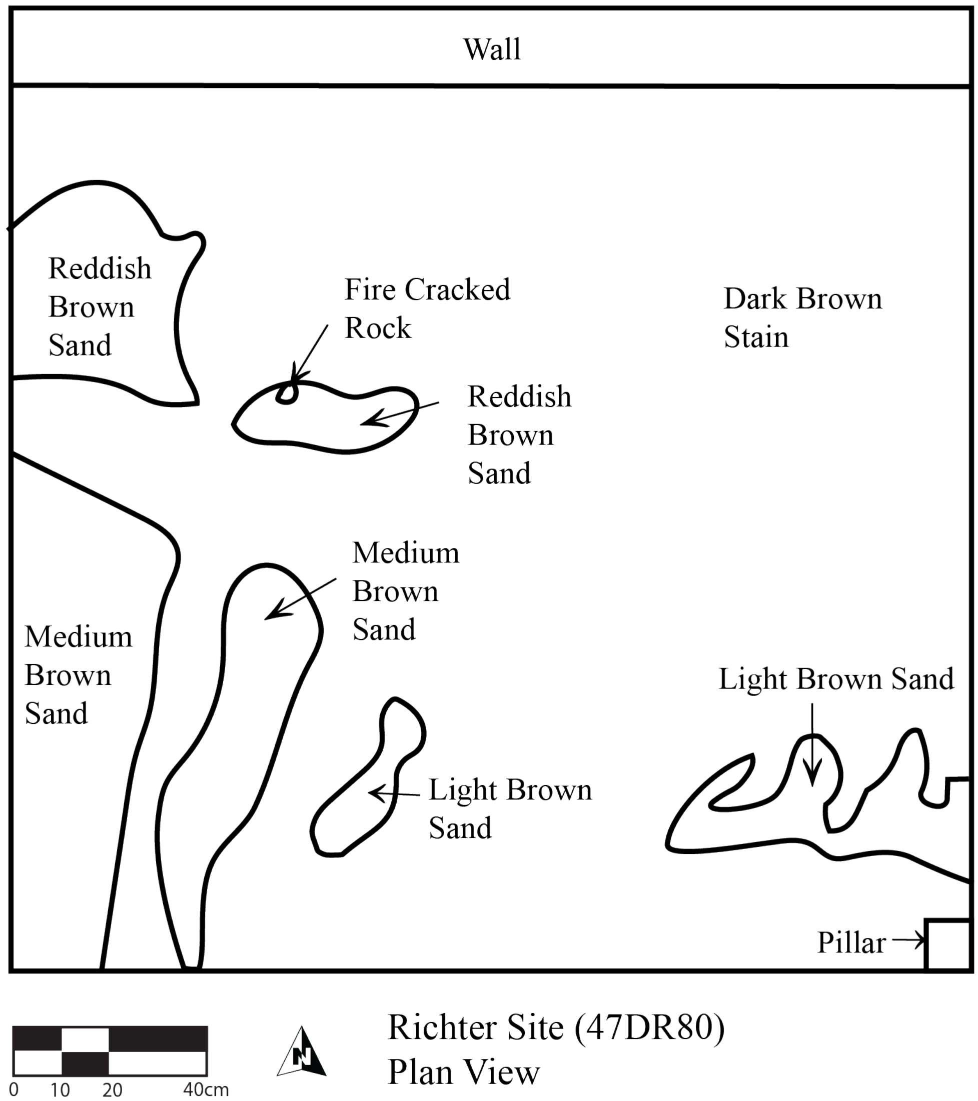
Richter Site (47DR80)
Plan View
Unit N06/E12
Level 3A, 28cm
1973



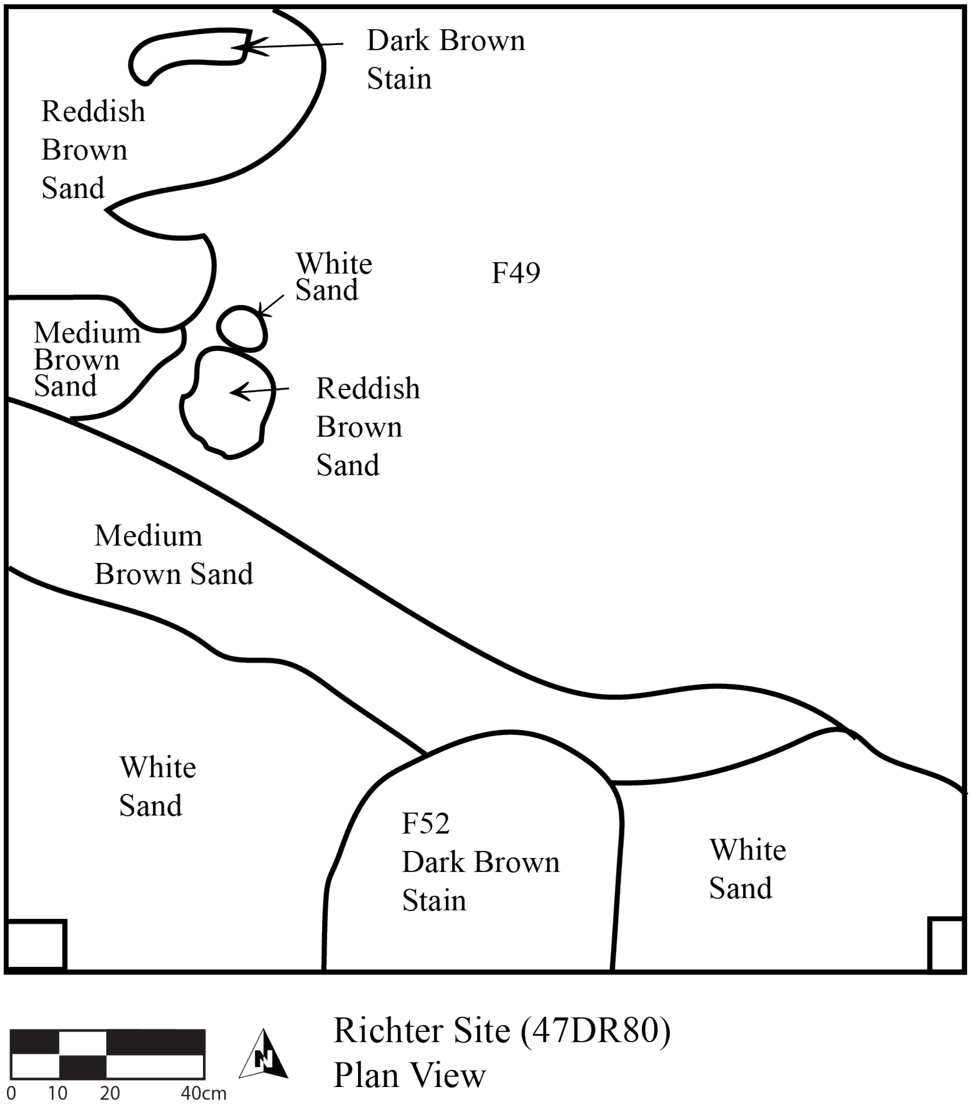
Richter Site (47DR80)
Plan View
Unit N06/E12
Level 3B, 32cm
1973



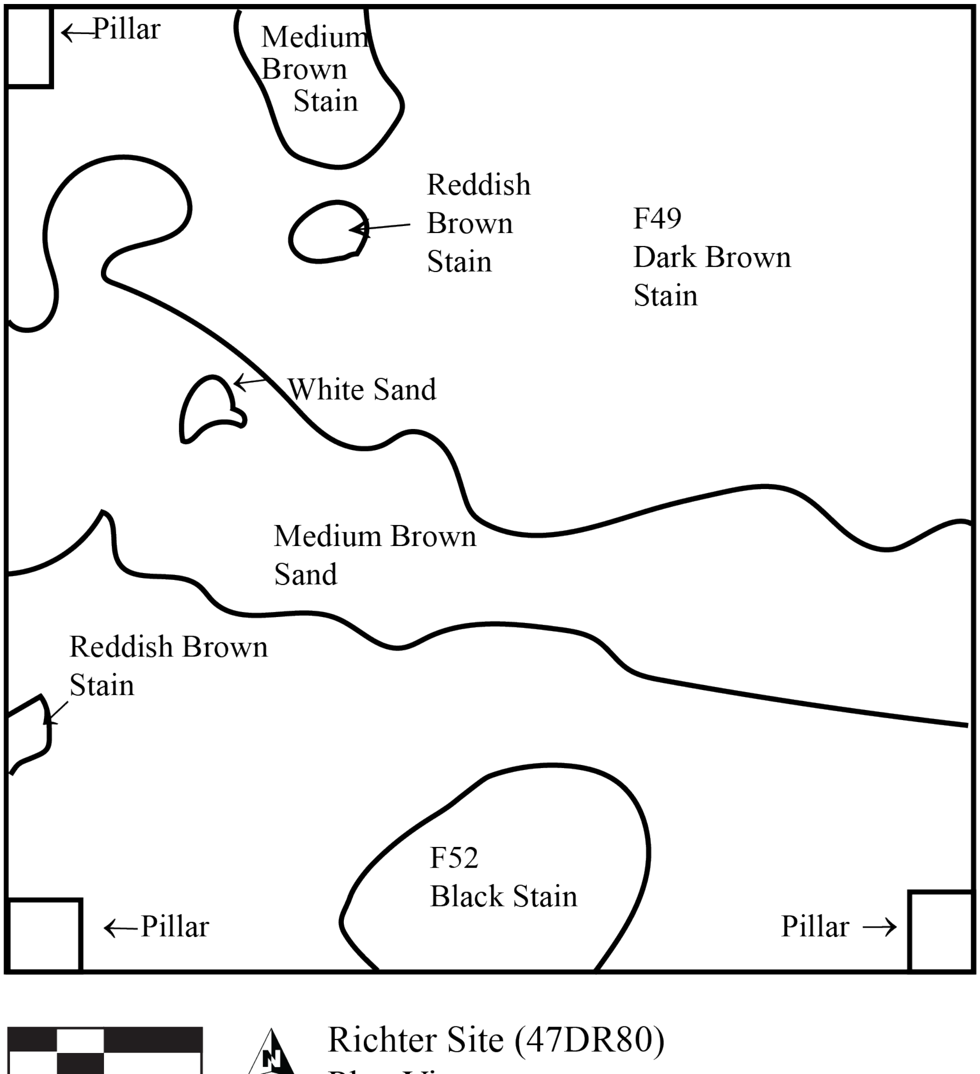
Richter Site (47DR80)
Plain View
Unit N06/E12
Level 4, 58 cm
1973



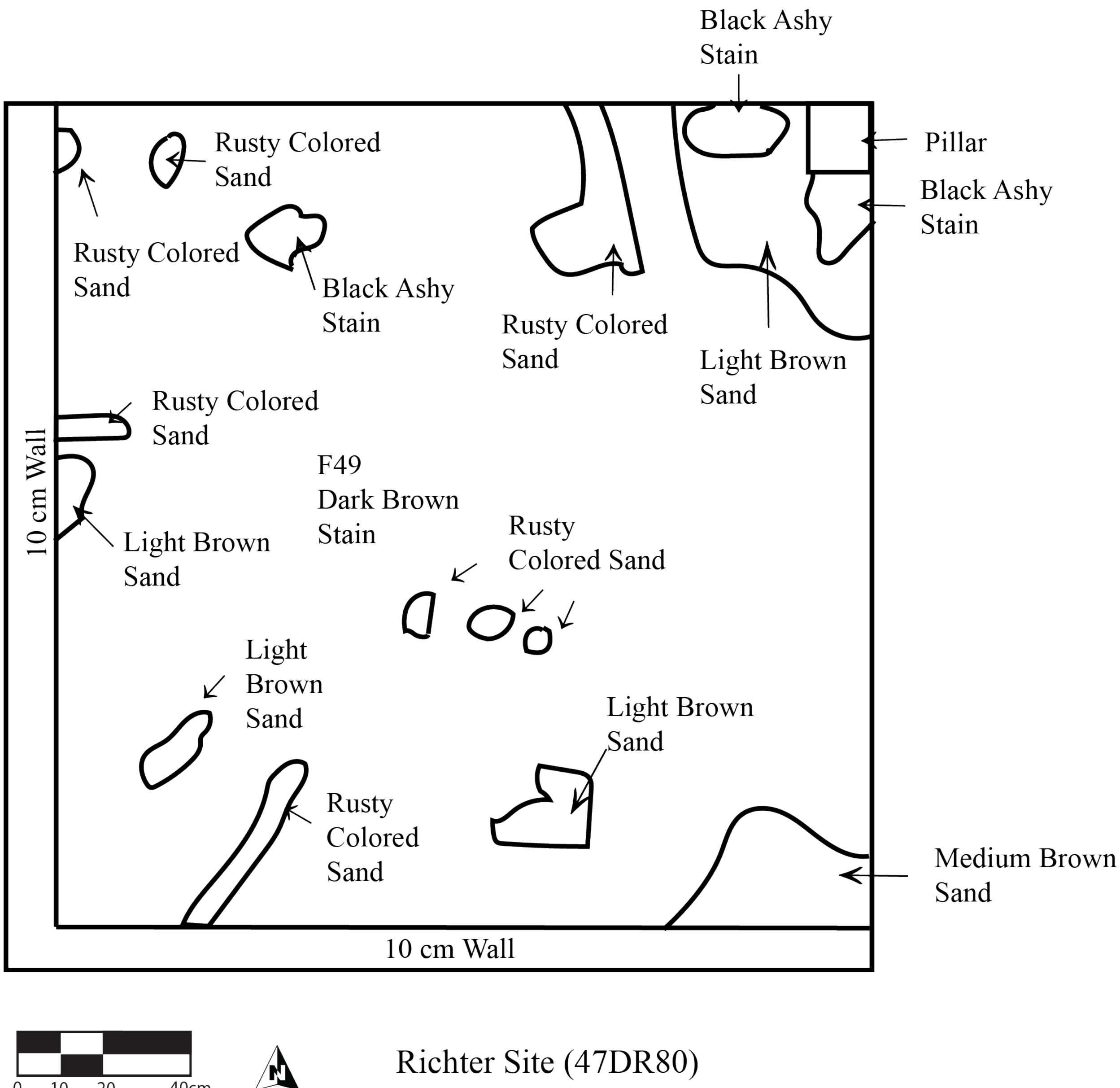
Richter Site (47DR80)
Plan View
Unit N06/E10
Level 2, 25 cm
1973



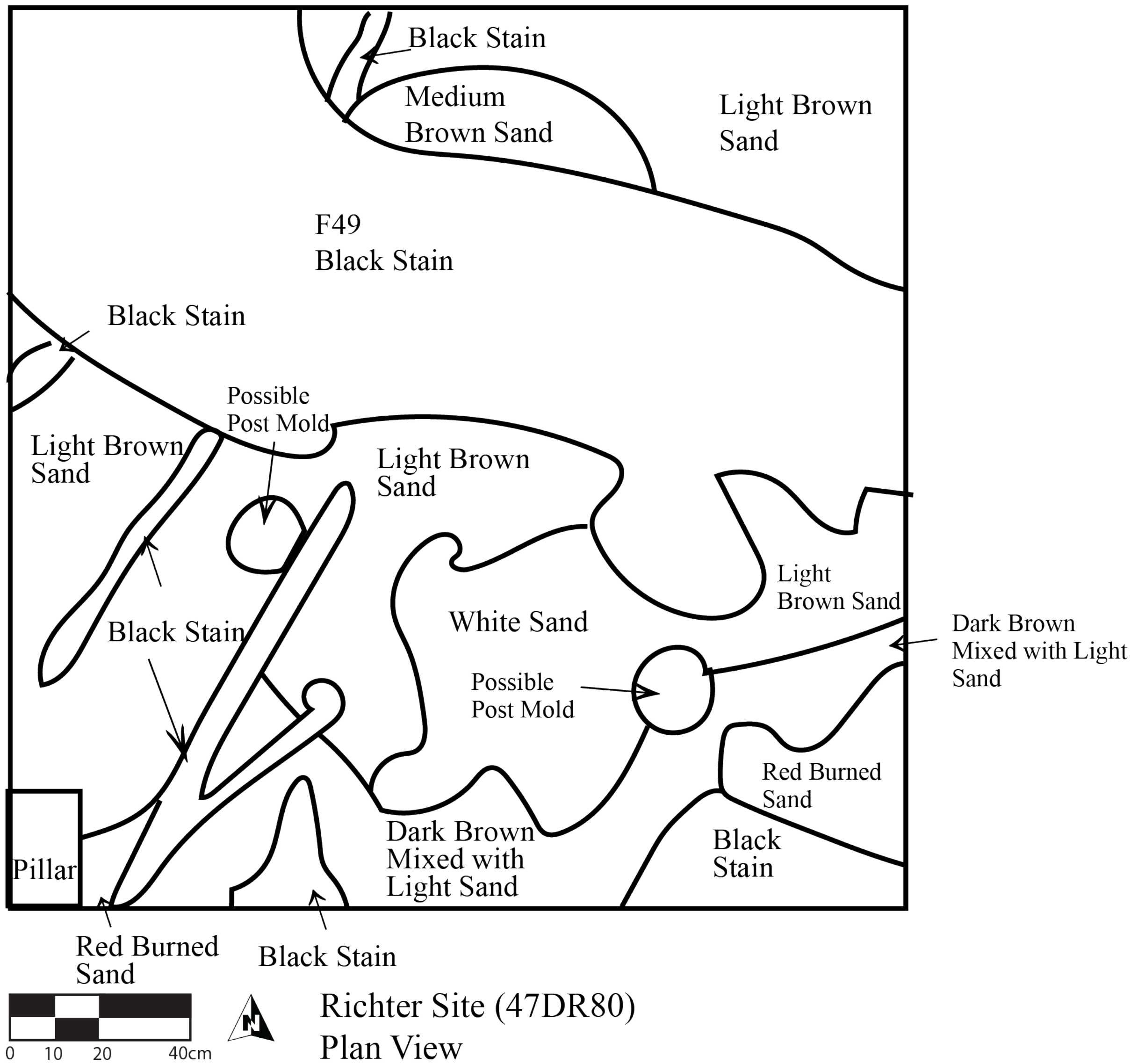
Richter Site (47DR80)
Plan View
N06/E10
Level 2, bottom, 28 cm
1973



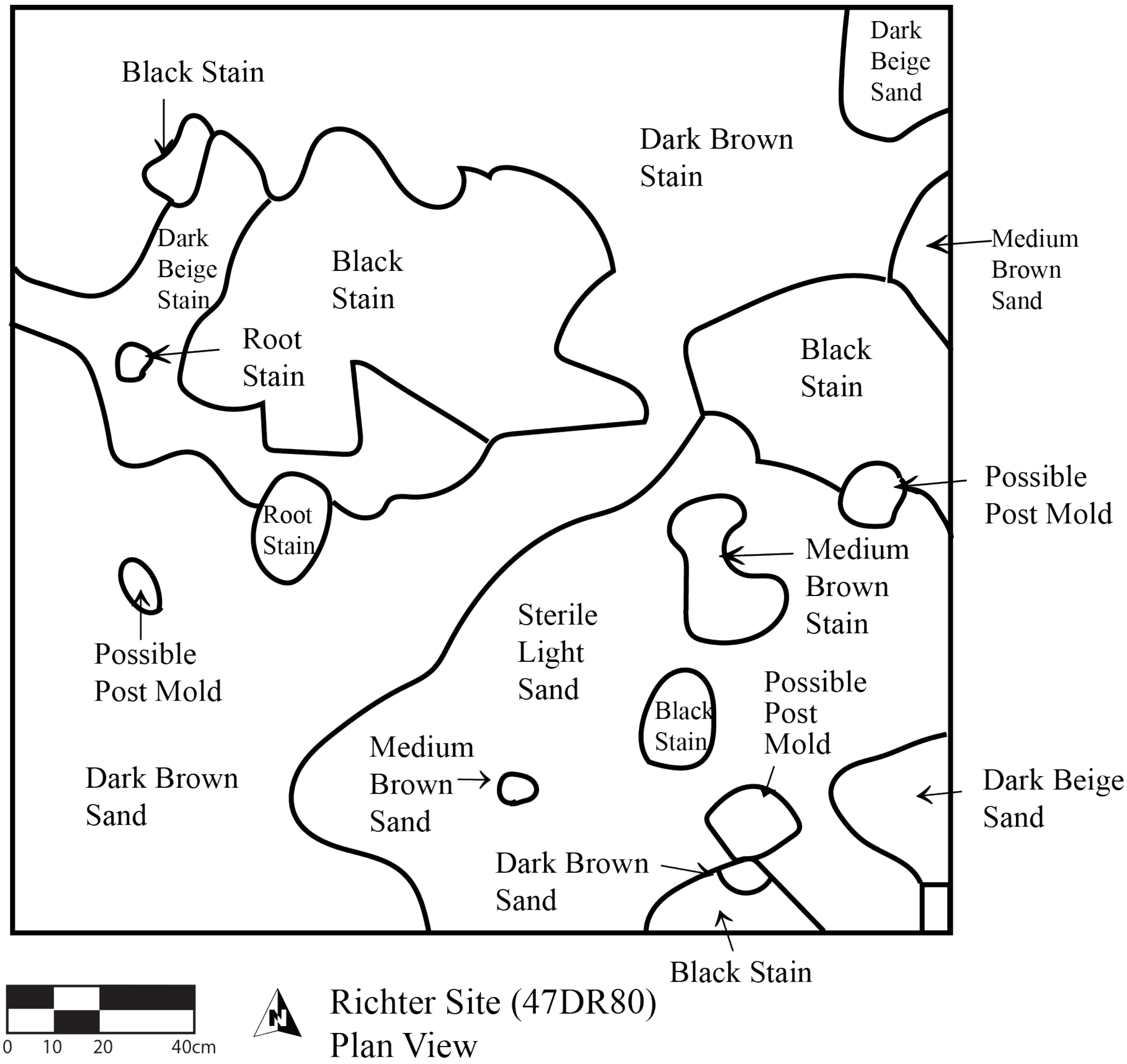
Richter Site (47DR80)
Plan View
Unit N06/E10
Level 3, 33 cm
1973



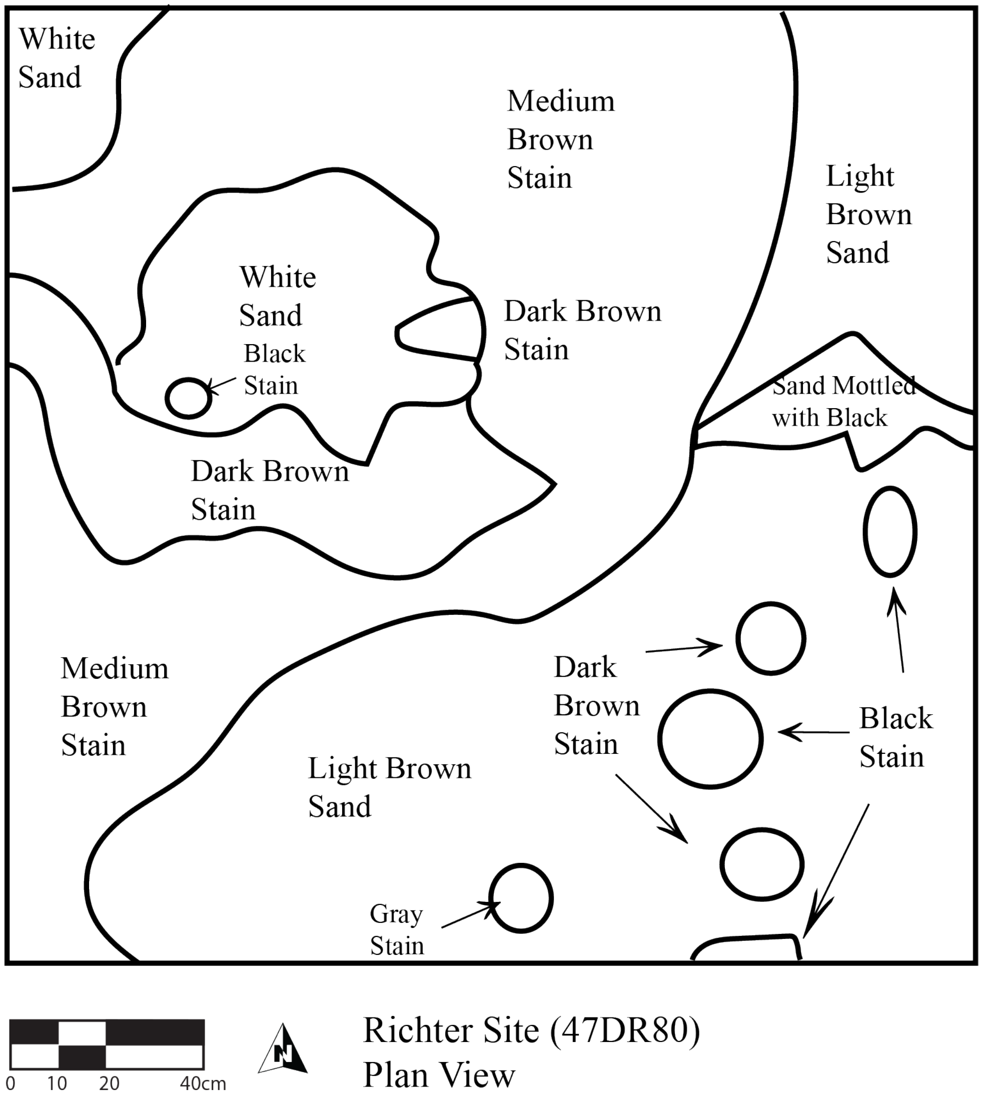
Richter Site (47DR80)
Plan View
Unit N08/E12
Level 2, 24 cm
1973



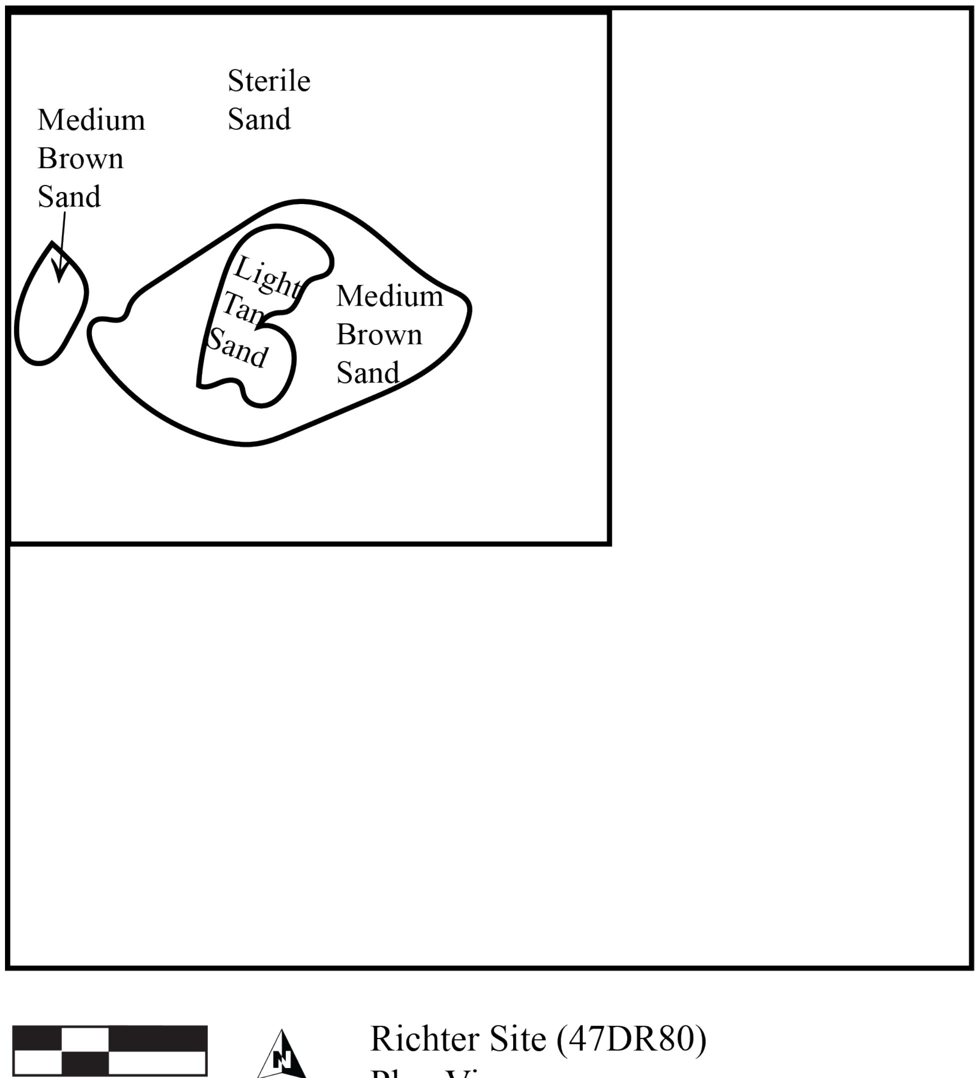
Richter Site (47DR80)
Plan View
Unit N08/E12
Level 3A, 27cm
1973



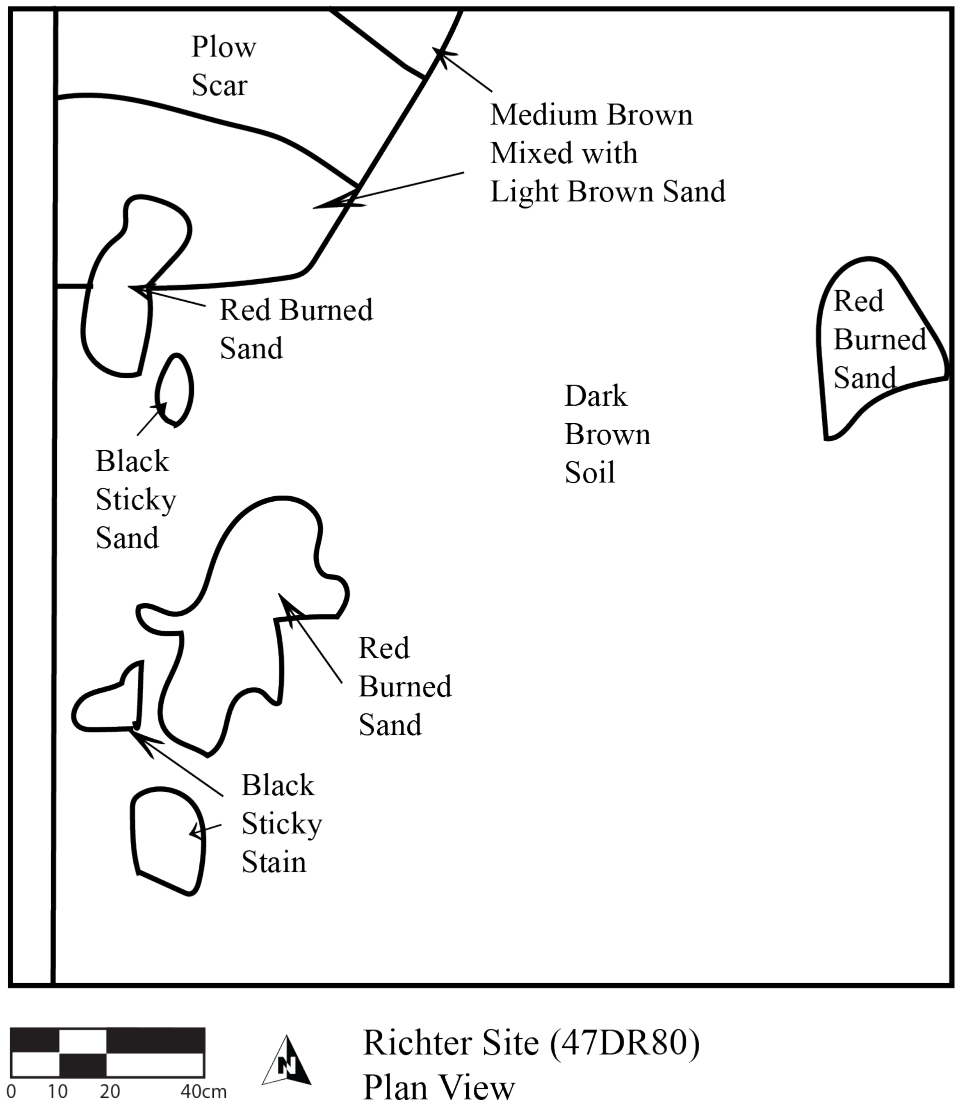
Richter Site (47DR80)
Plan View
Unit N08/E12
Level 3B, 33 cm
1973



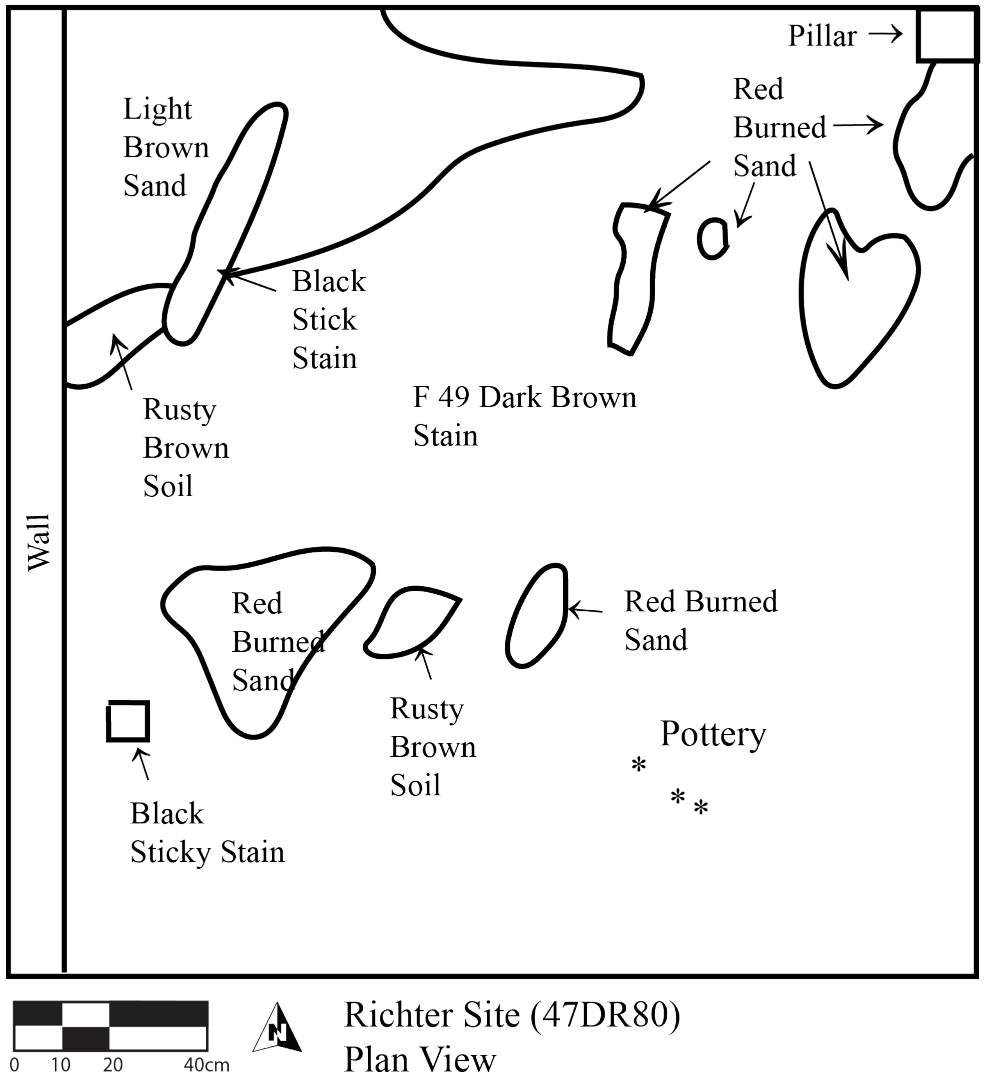
Richter Site (47DR80)
Plan View
Unit N08/E12
Level 4, 33 cm
1973



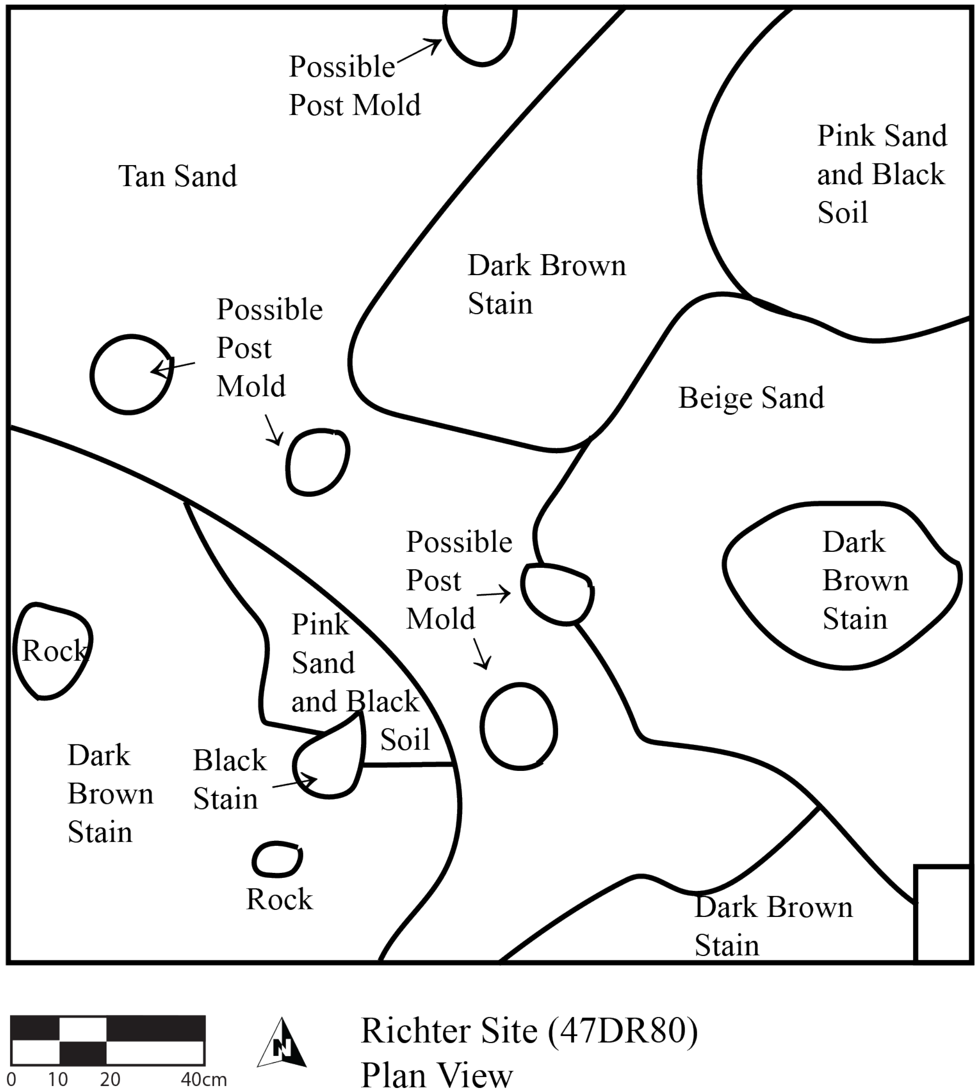
Richter Site (47DR80)
Plan View
Unit N08/E12
Level 6, 58 cm
1973



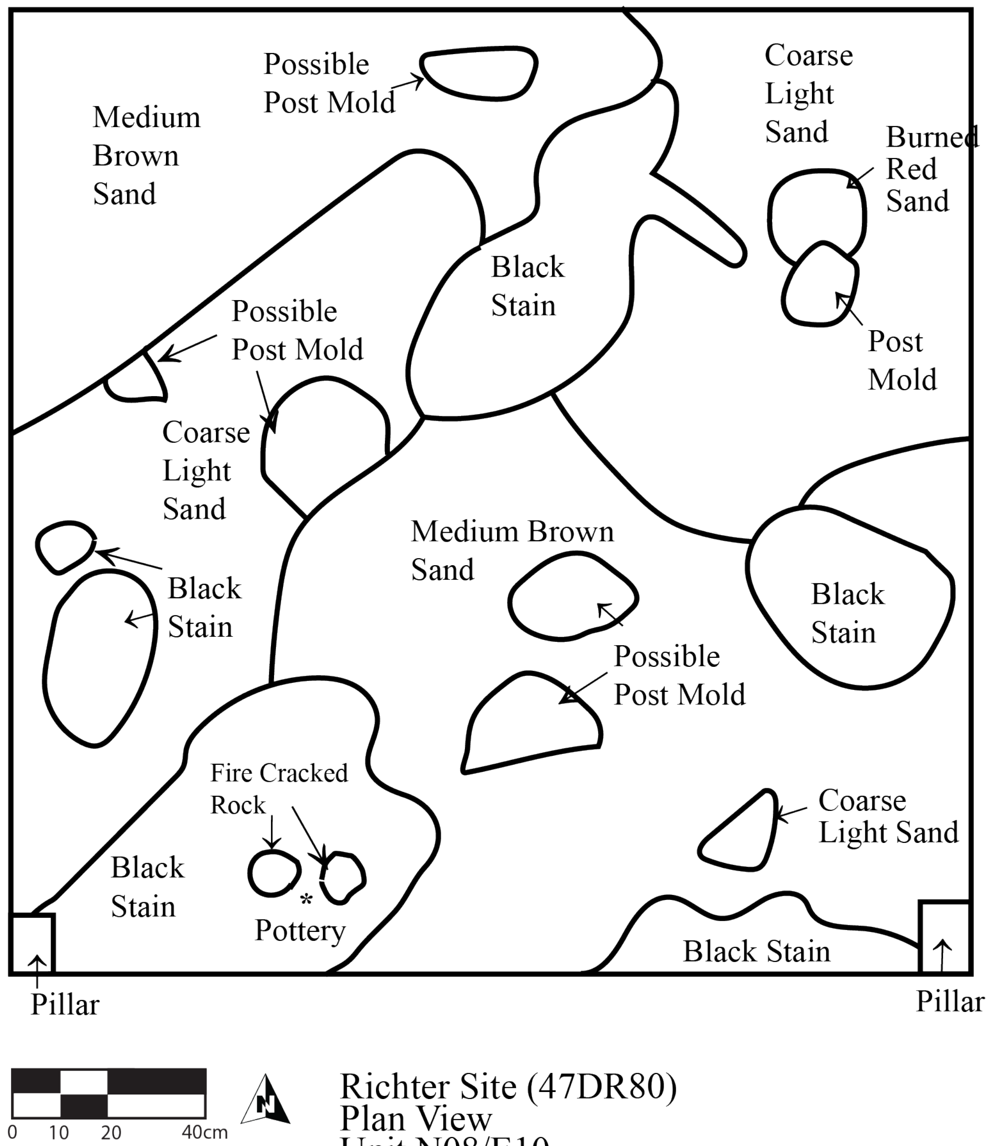
Richter Site (47DR80)
Plan View
Unit N08/E10
Level 2, 27 cm
1973



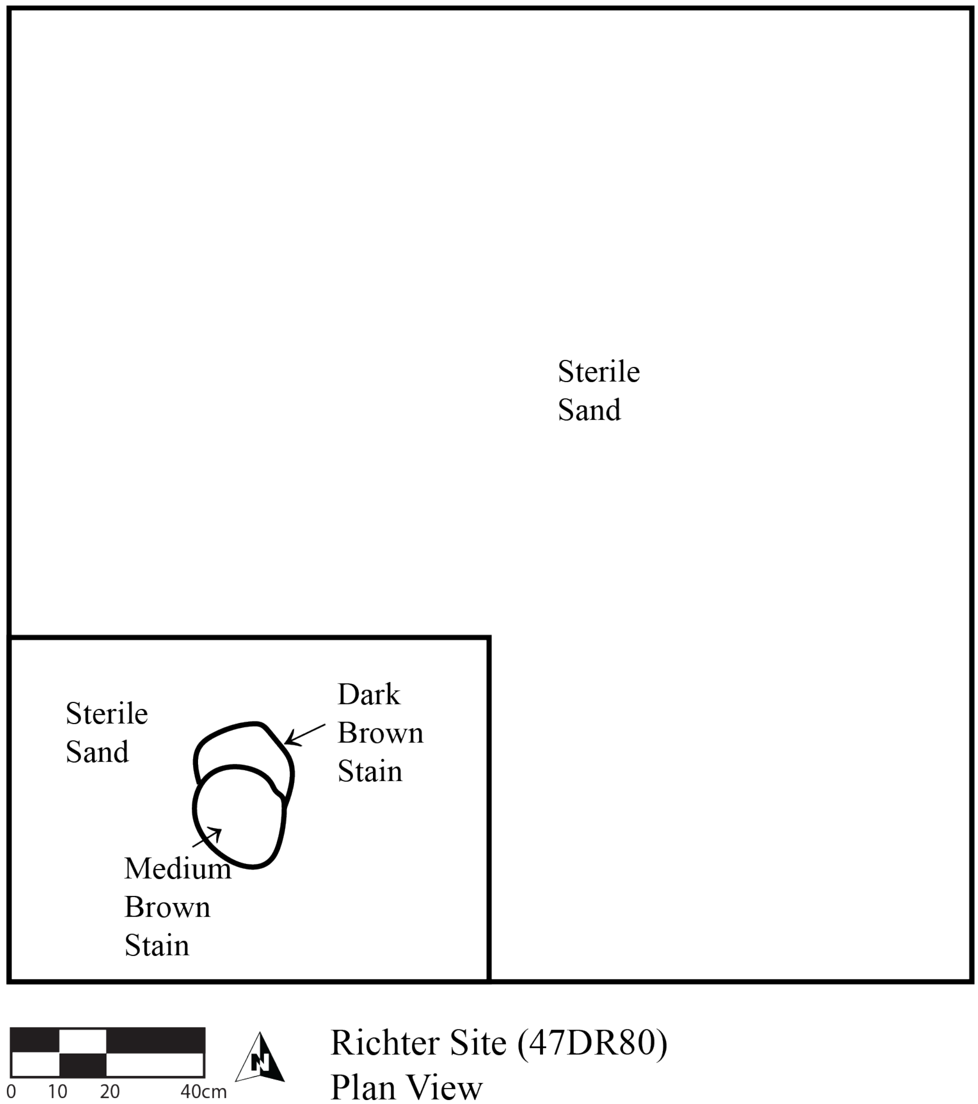
Richter Site (47DR80)
Plan View
Unit N08/E10
Level 2B, 29 cm
1973



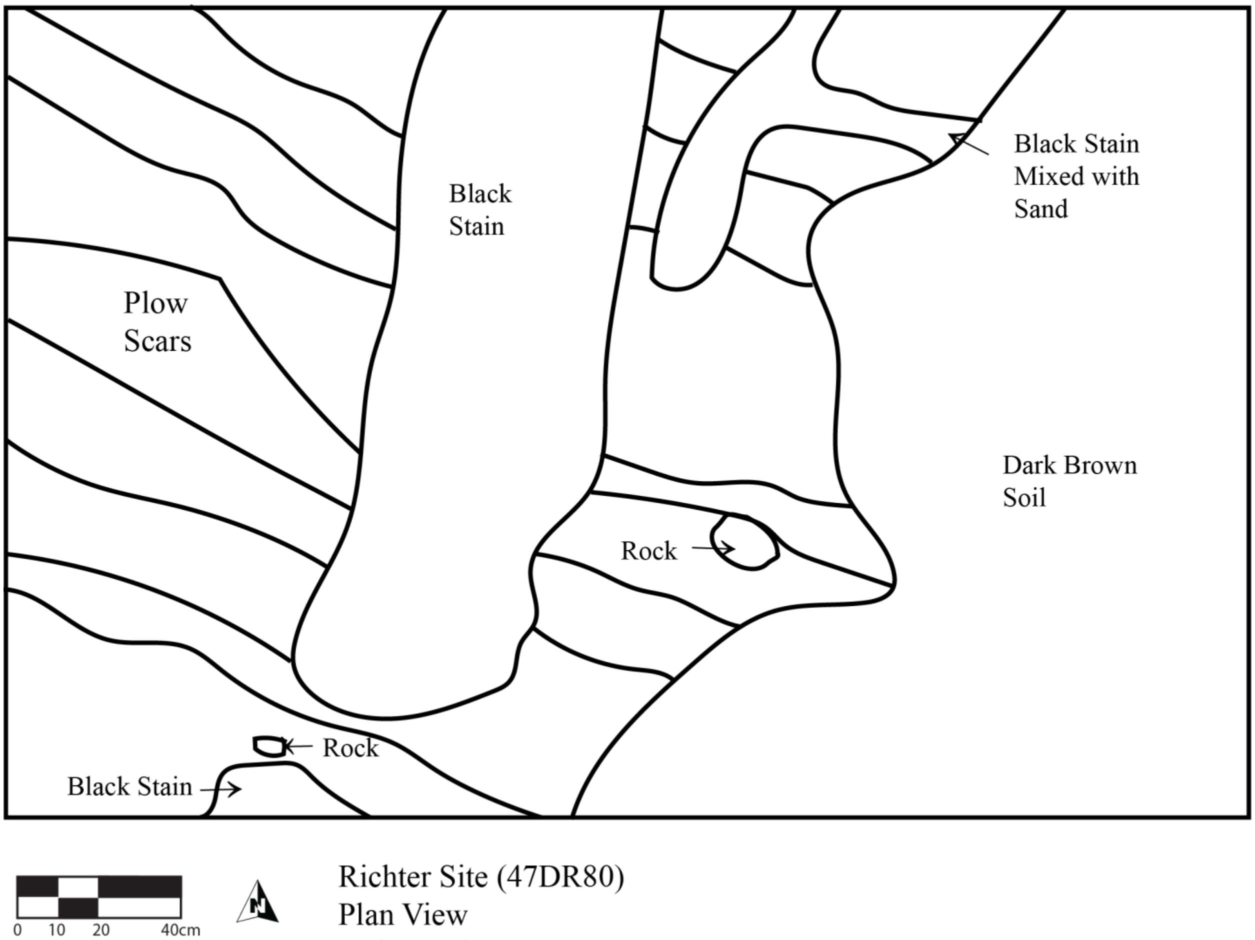
Richter Site (47DR80)
Plan View
Unit N08/E10
Level 3A, 31 cm
1973



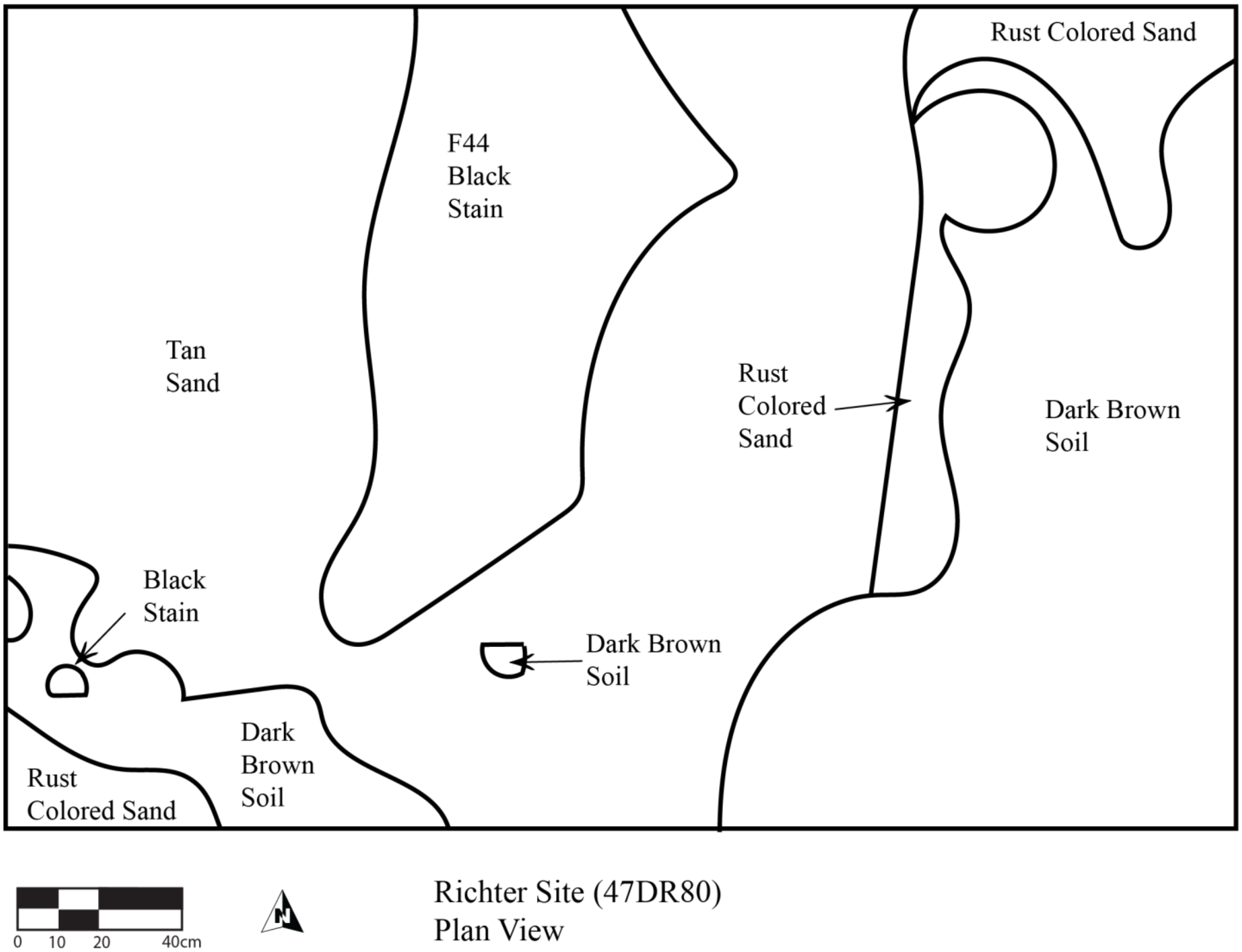
Richter Site (47DR80)
Plan View
Unit N08/E10
Level 3B, 39 cm
1973



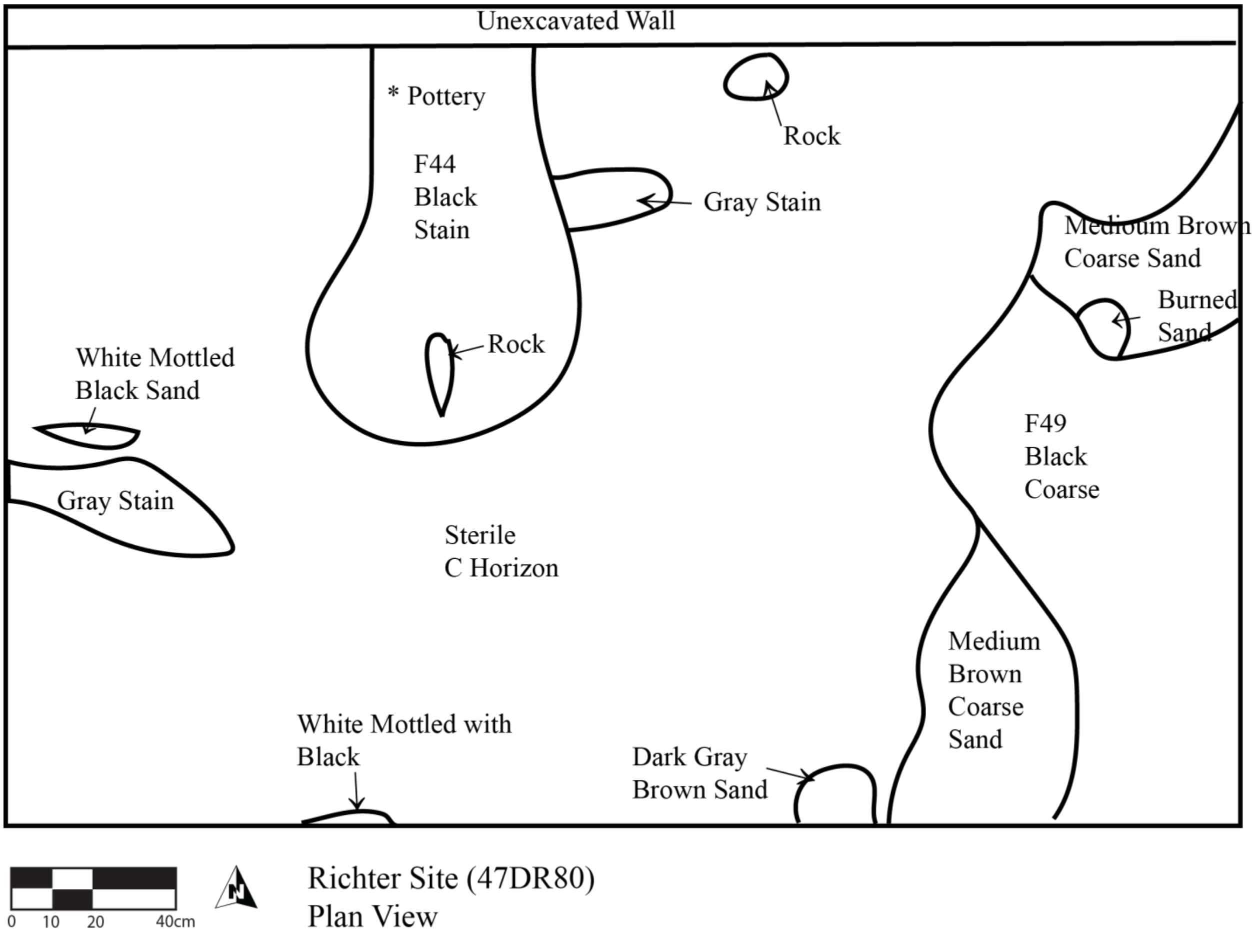
Richter Site (47DR80)
Plan View
Unit N08/E10
Level 4, 60 cm
1973



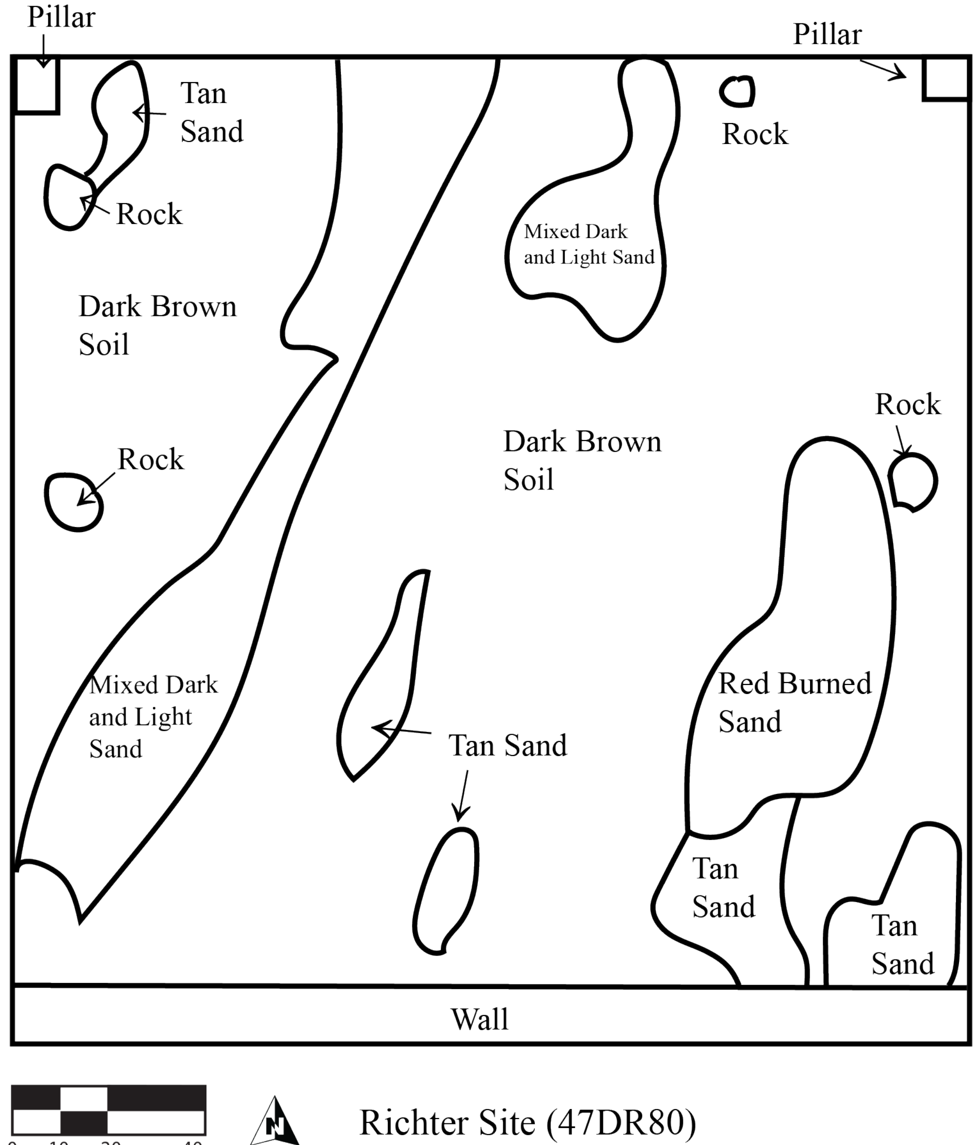
Richter Site (47DR80)
Plan View
Unit N08/E07
Level 2, 19 cm
1973



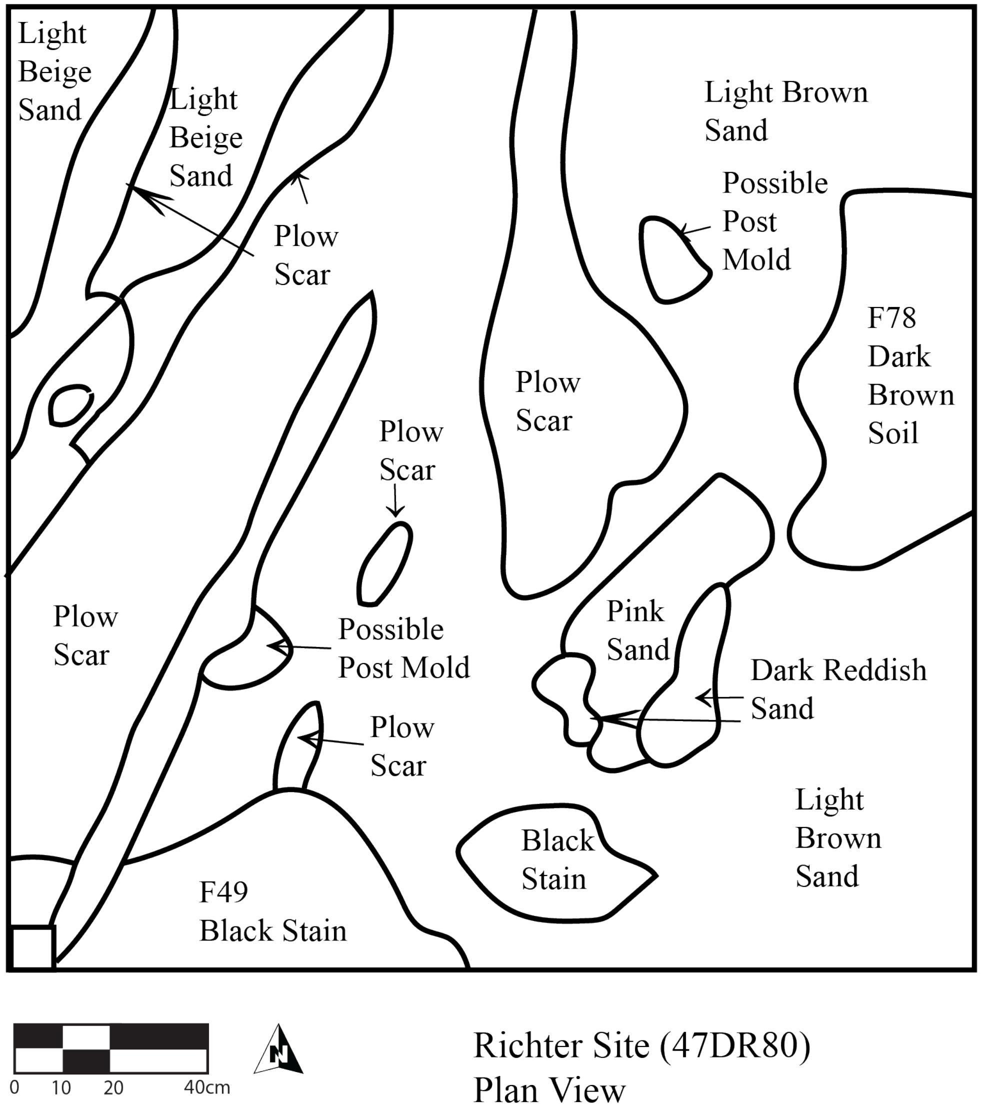
Richter Site (47DR80)
Plan View
Unit N08/E07
Level 3, top, 23 cm
1973



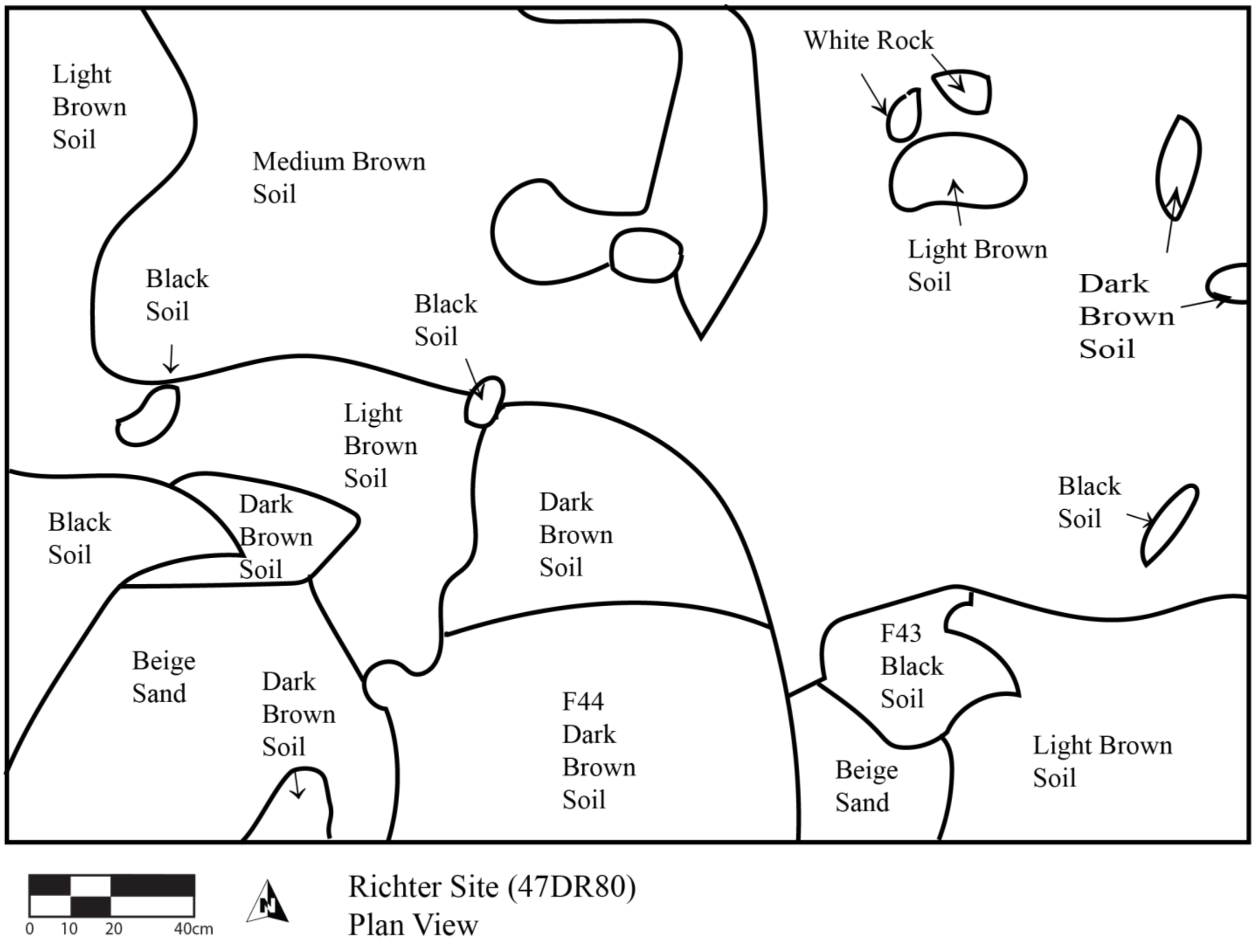
Richter Site (47DR80)
Plan View
Unit N08/E07
Level 3A, 36 cm
1973



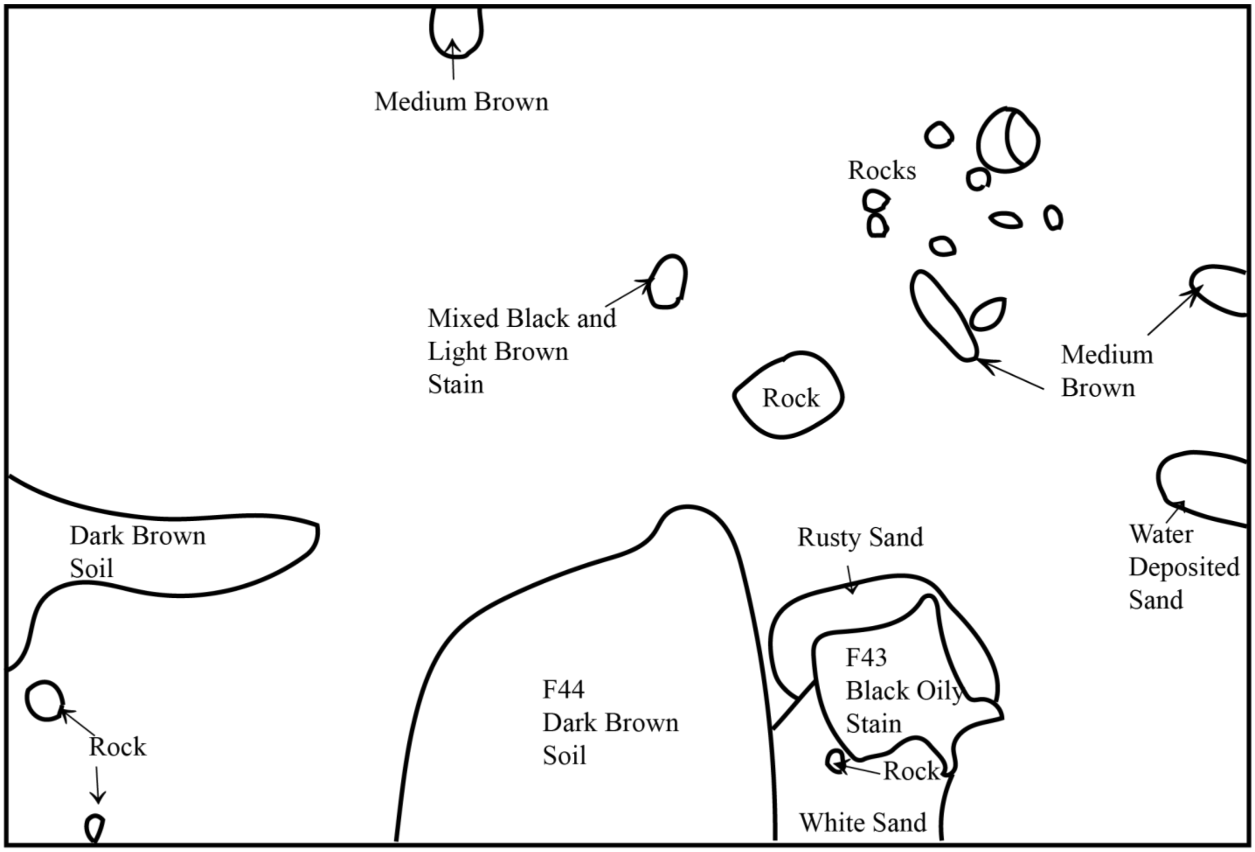
Richter Site (47DR80)
Plan View
Unit N10/E12
Level 2, 26 cm
1973

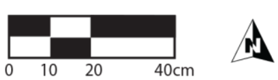


Richter Site (47DR80)
Plan View
Unit N10E12
Level 3A, 30 cm
1973

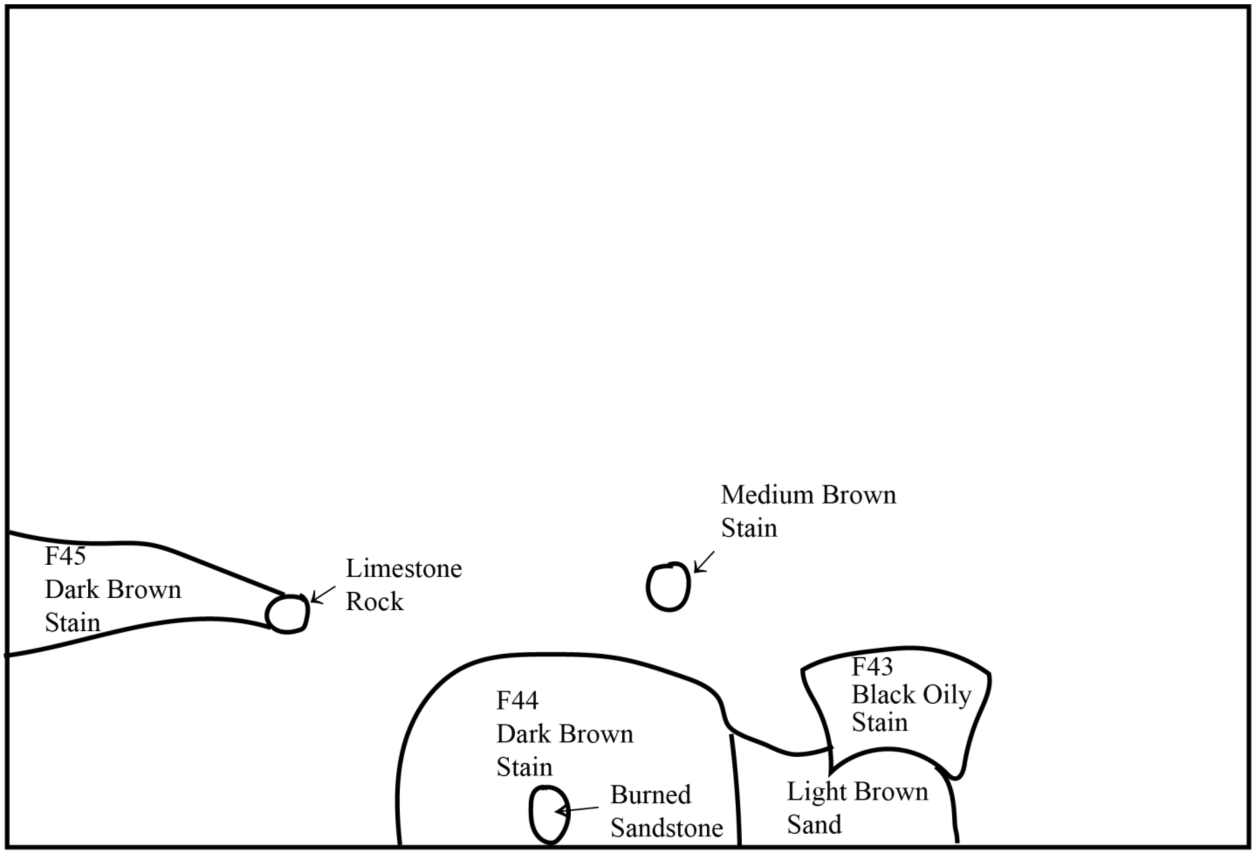


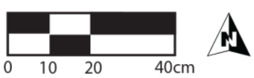
Richter Site (47DR80)
Plan View
Unit N10/E07
Level 2, 28 cm
1973



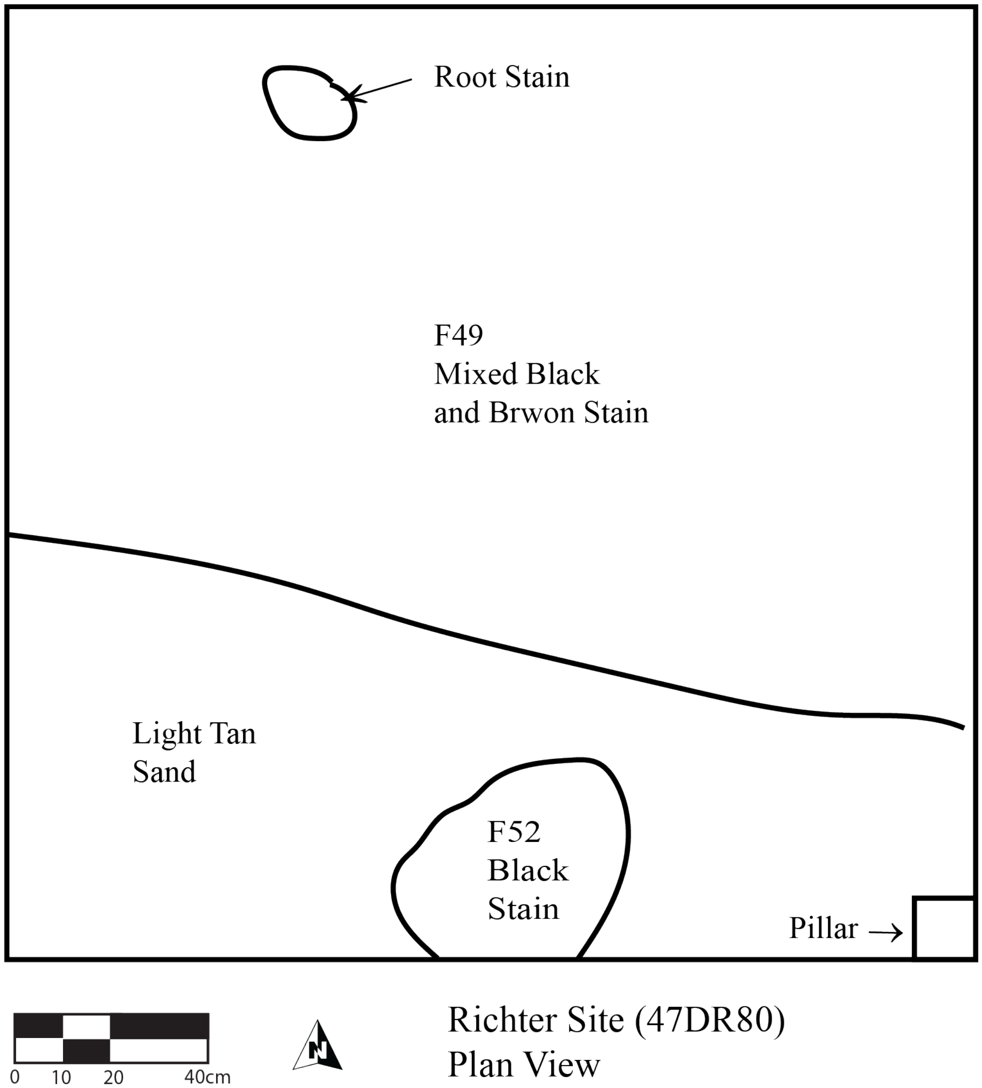


Richter Site (47DR80)
Plan View
Unit N10/E07
Level 3A, 33 cm
1973



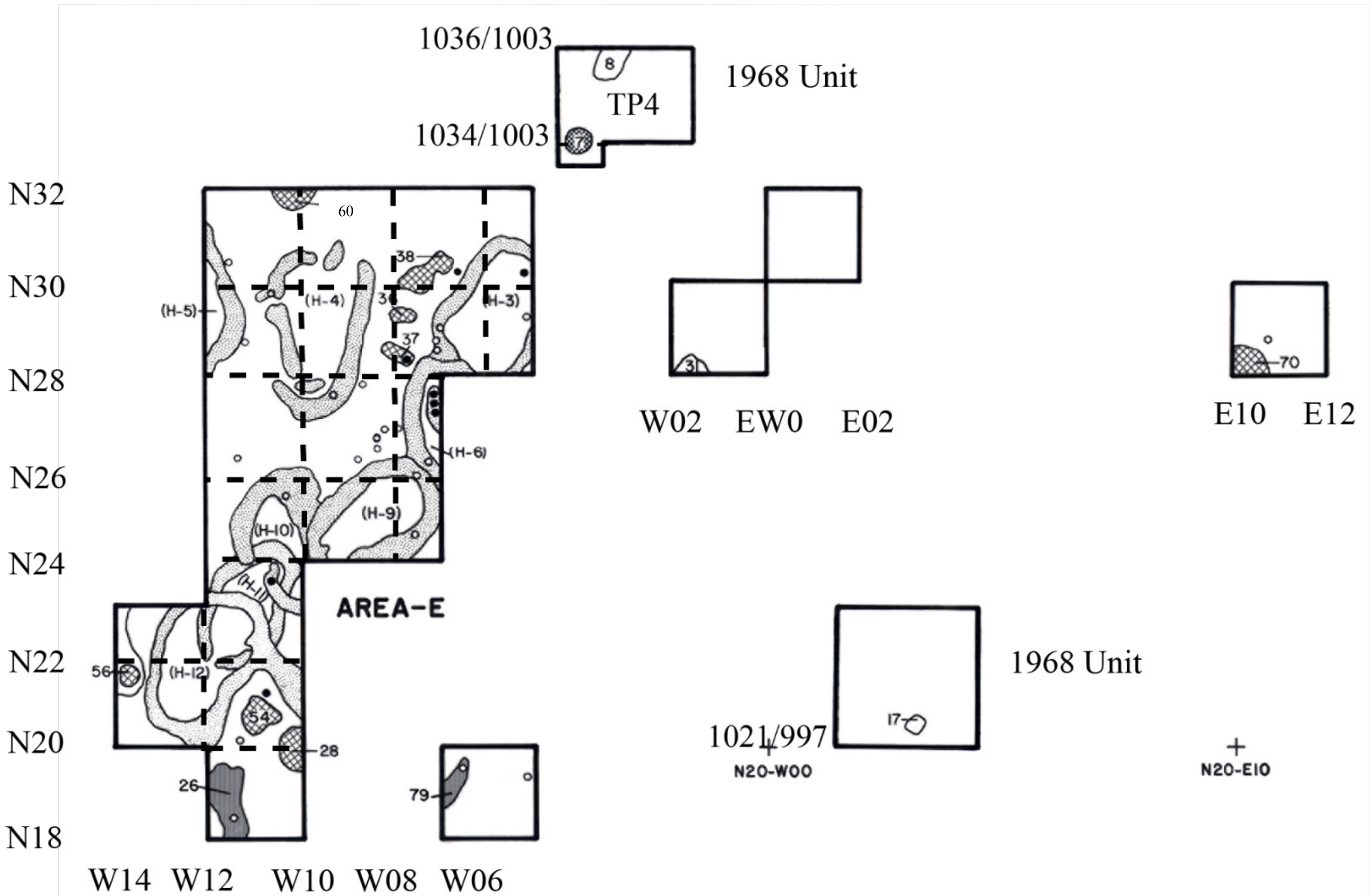


Richter Site (47DR80)
Plan View
Unit N10E07
Level 3B, 38 cm
1973

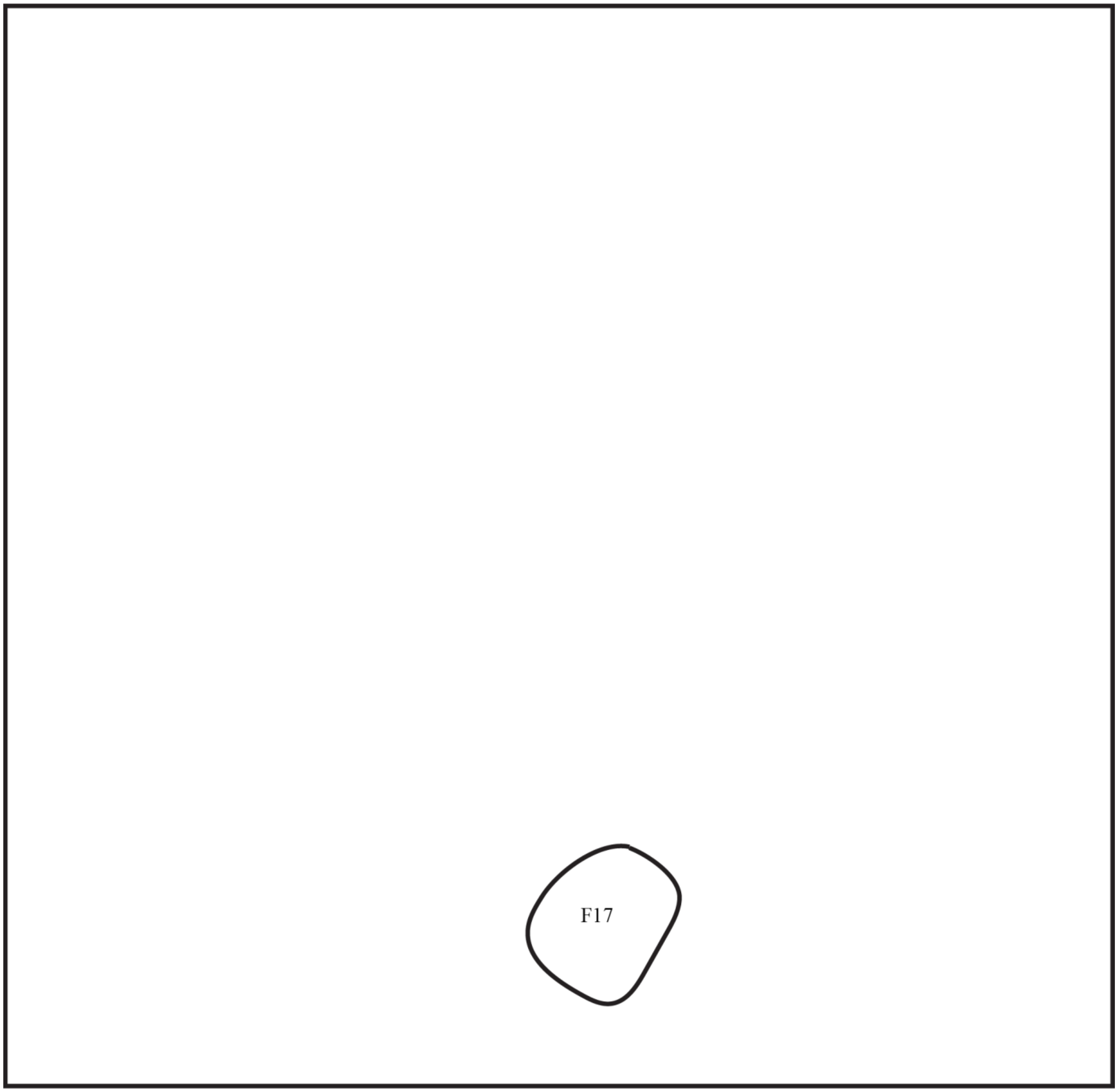


Richter Site (47DR80)
Plan View
Unit N06/E10
Level 4, 38 cm
1973

Area E Maps

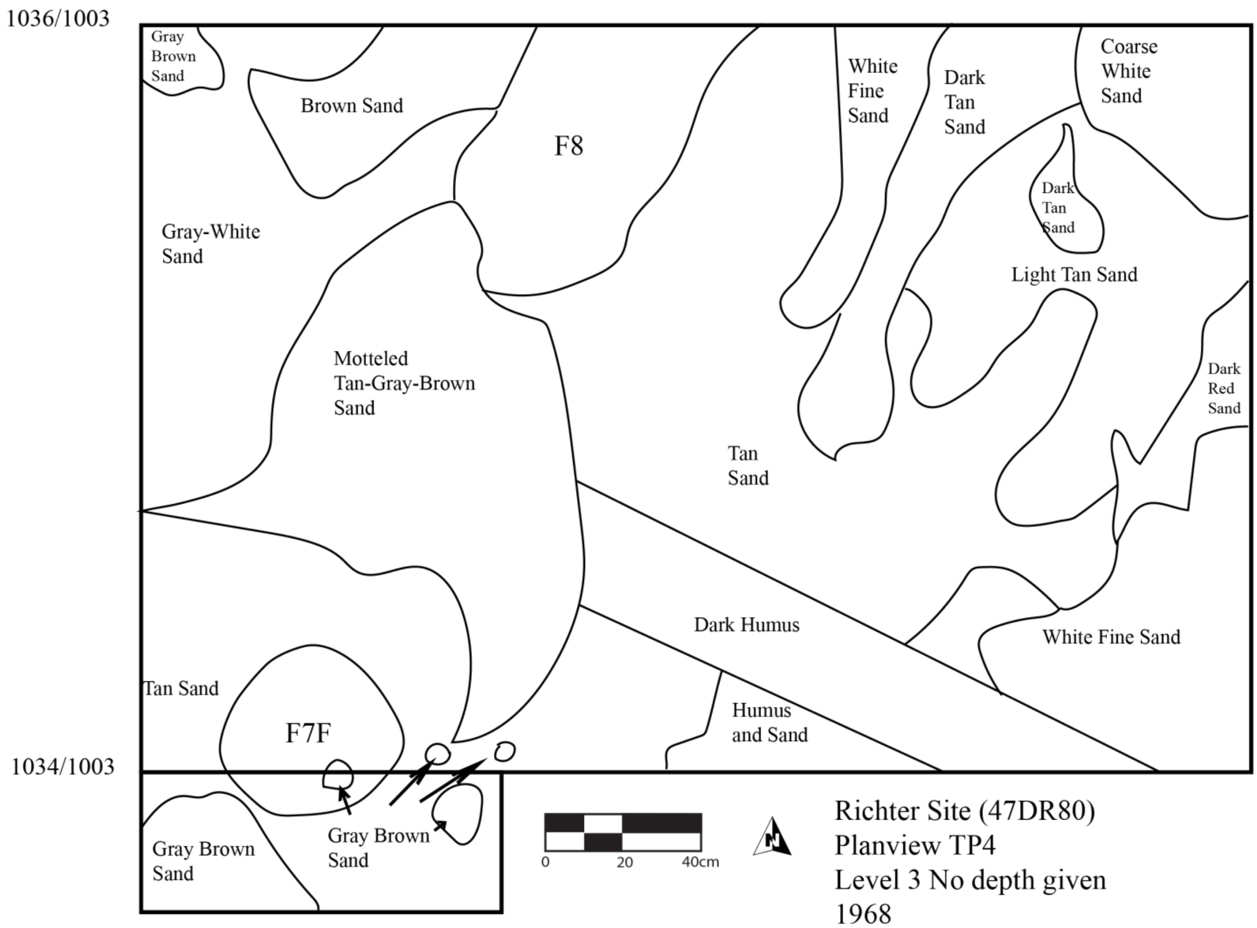


1036/1003
1968 Unit
TP4
1034/1003
N32
N30
N28
N26
N24
N22
N20
N18
W14 W12 W10 W08 W06
W02 EW0 E02
E10 E12
AREA-E
(H-3)
(H-4)
(H-5)
(H-6)
(H-9)
(H-10)
(H-11)
(H-12)
1968 Unit
1021/997
N20-W00
N20-E10

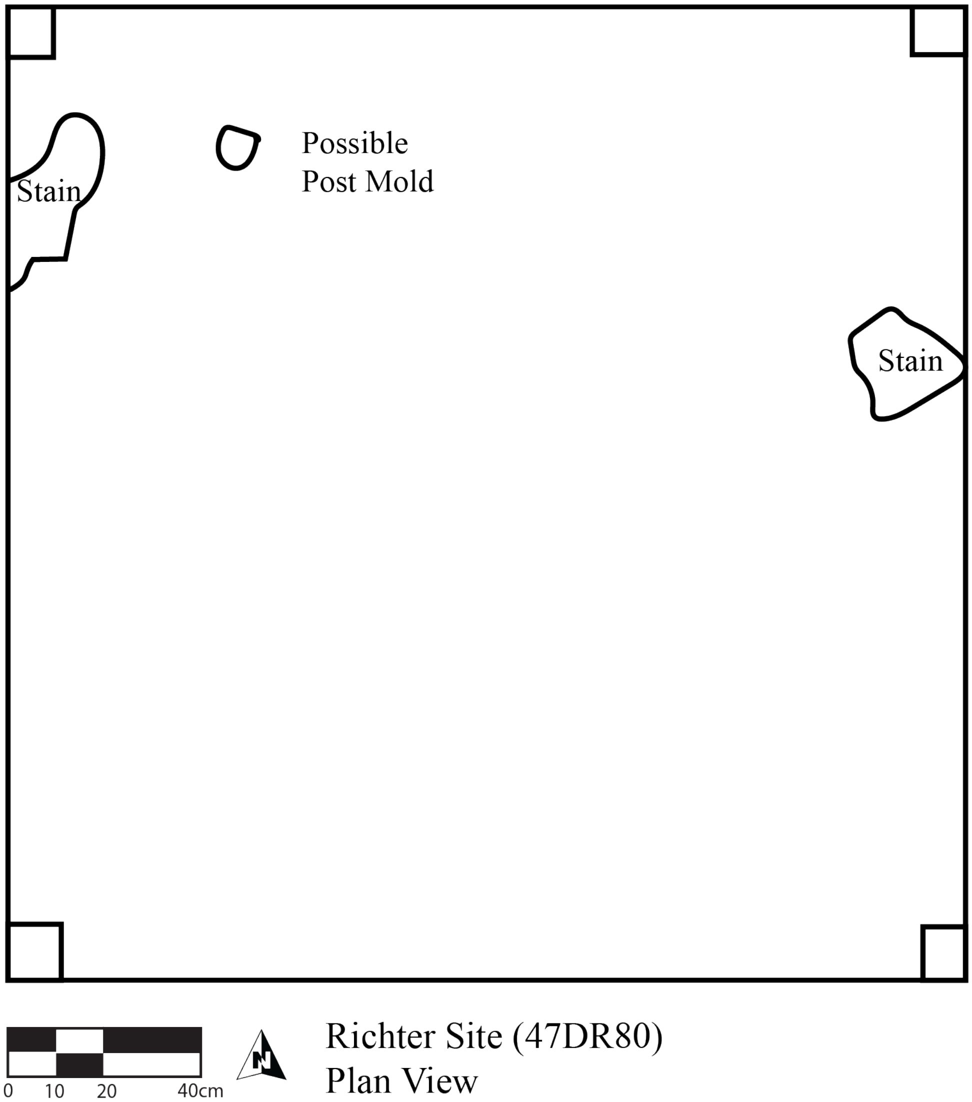


0 10 20 40cm

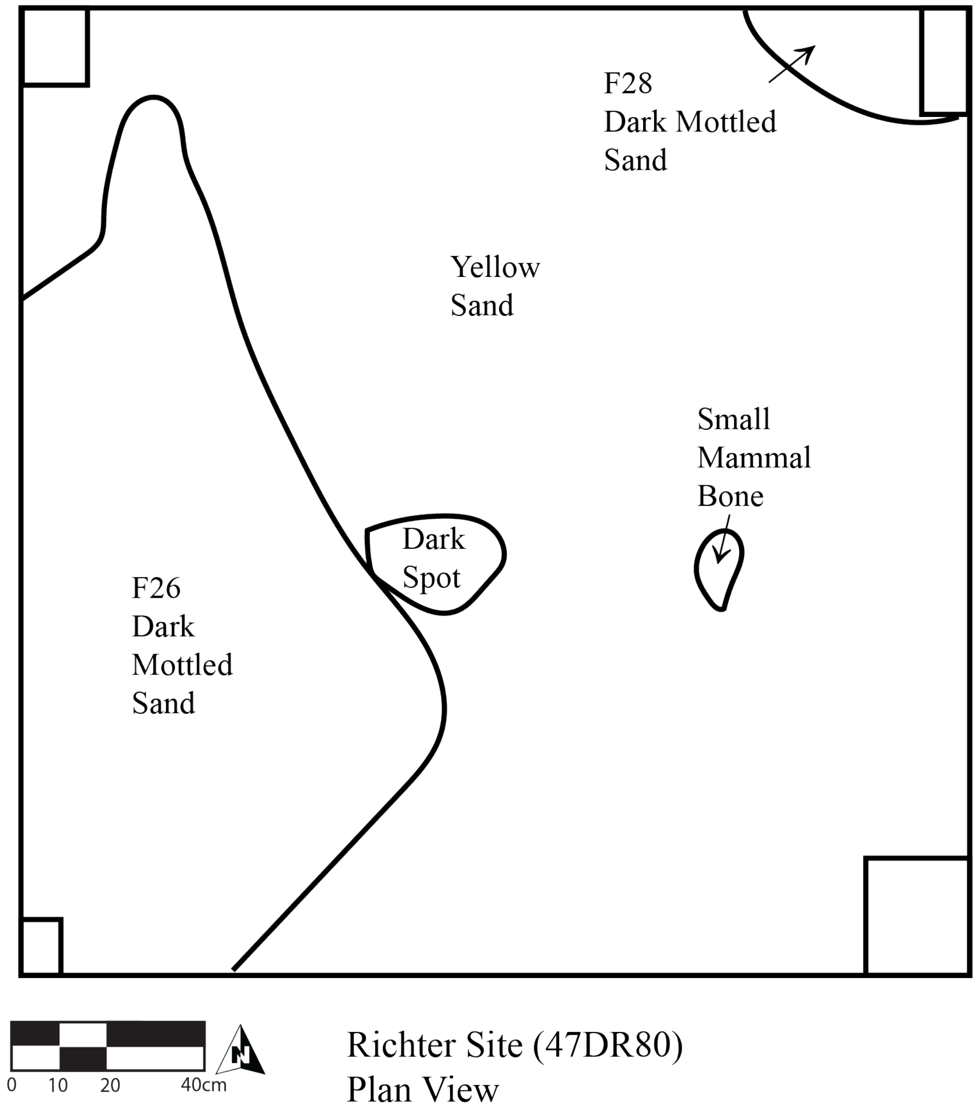
Richter Site (47DR80)
Planview
Unit 1021/997
Level ?, depth ?
1968



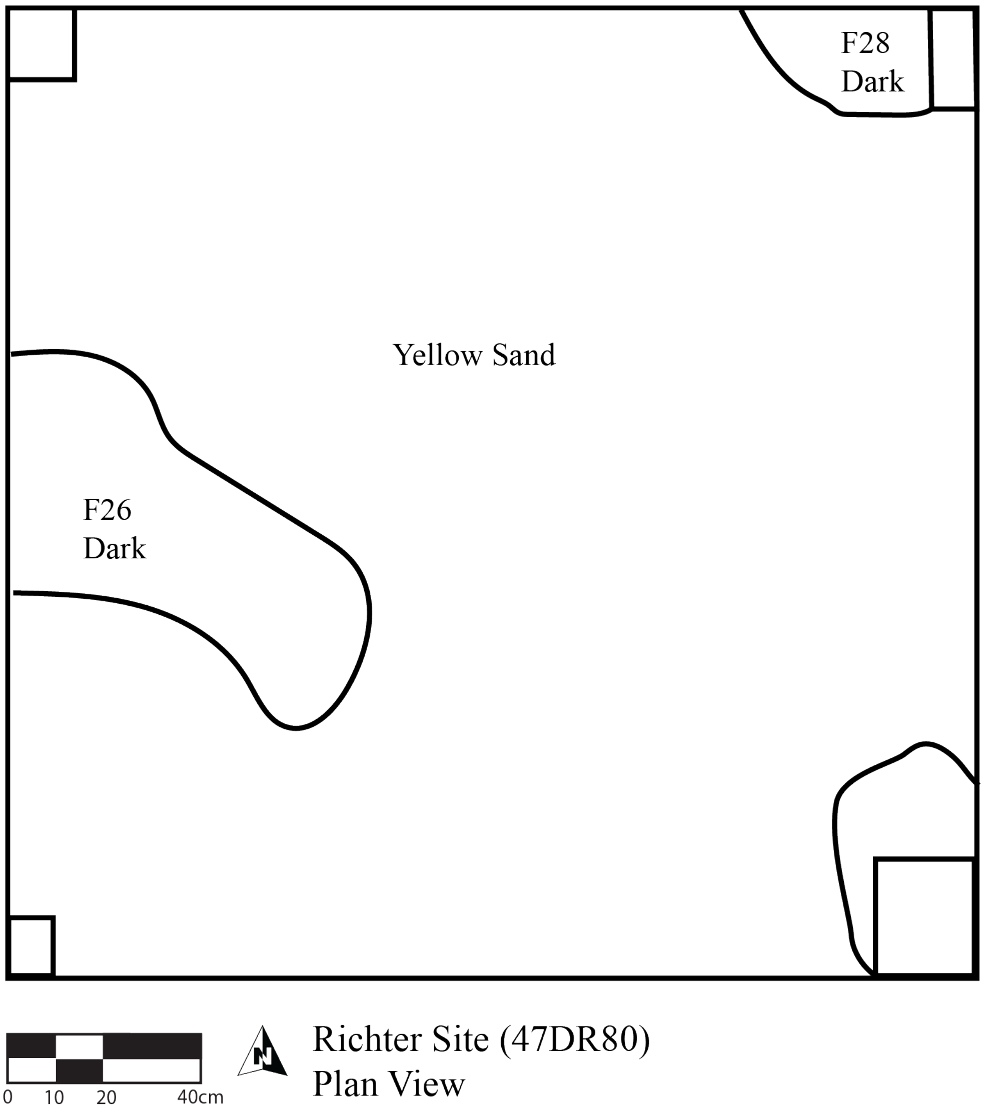
Richter Site (47DR80)
Planview TP4
Level 3 No depth given
1968



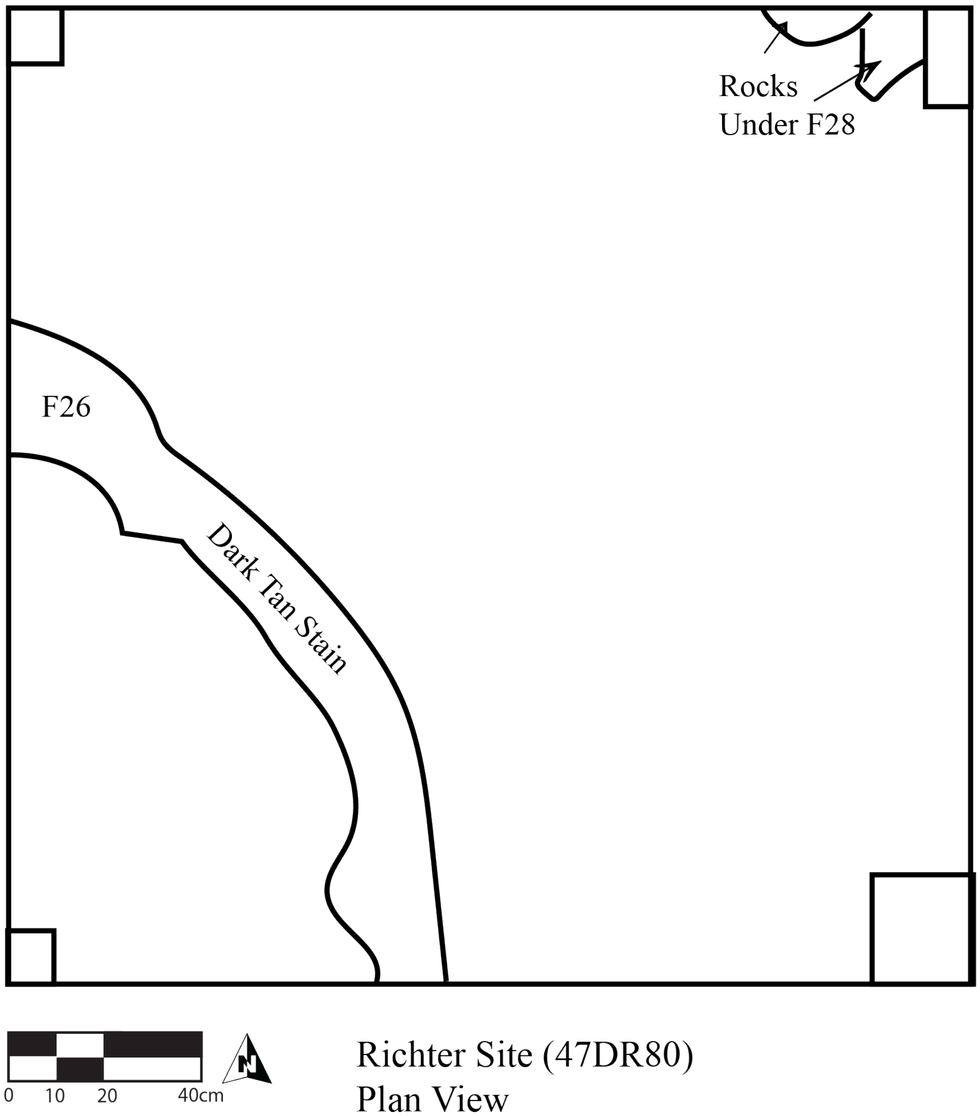
Richter Site (47DR80)
Plan View
Unit N18/W07
Level 2B, 38cm
1973



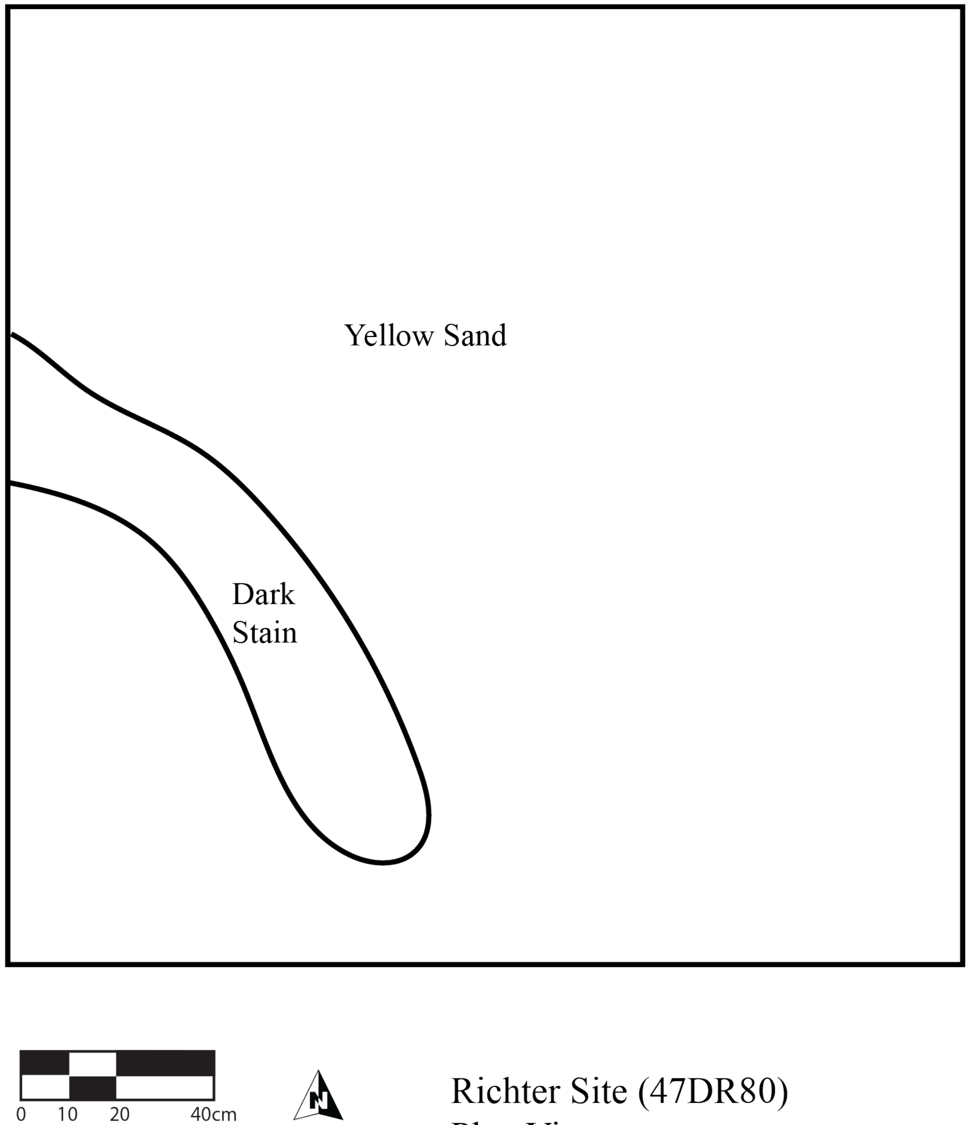
Richter Site (47DR80)
Plan View
Unit N18/W12
Level 2, 30 cm
1973



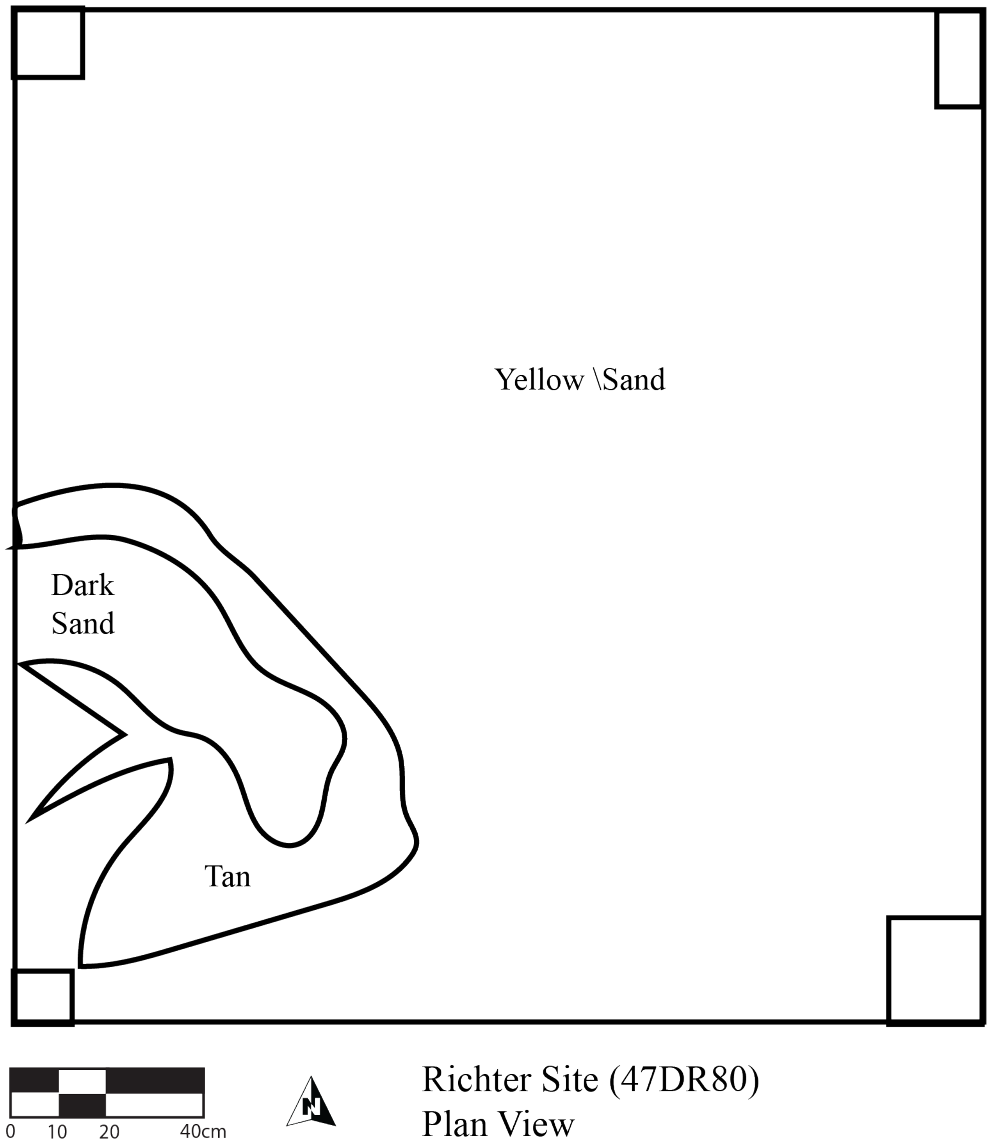
Richter Site (47DR80)
Plan View
Unite N18/W12
Level 3, 39cm
1973



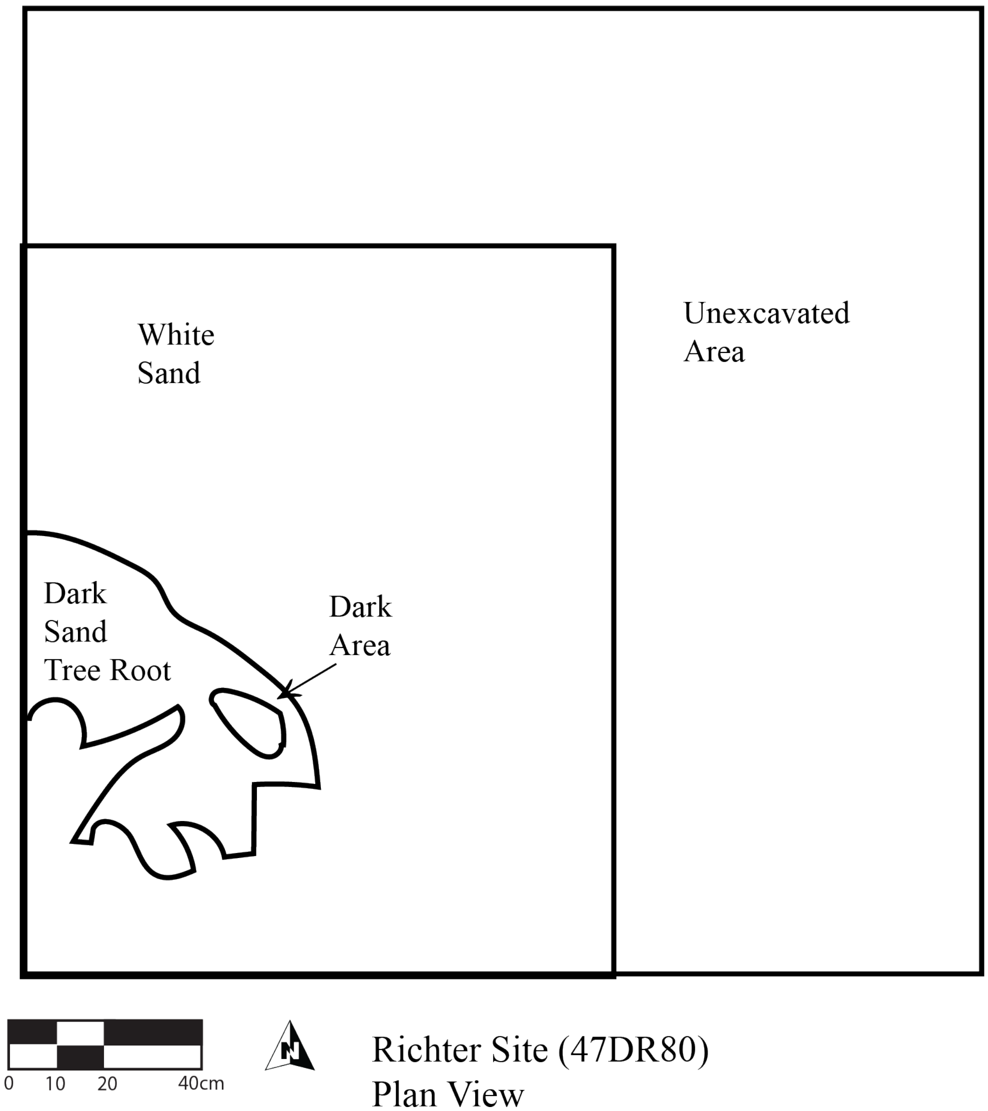
Richter Site (47DR80)
Plan View
Unit N18/W12
Level 4, 49 cm
1973



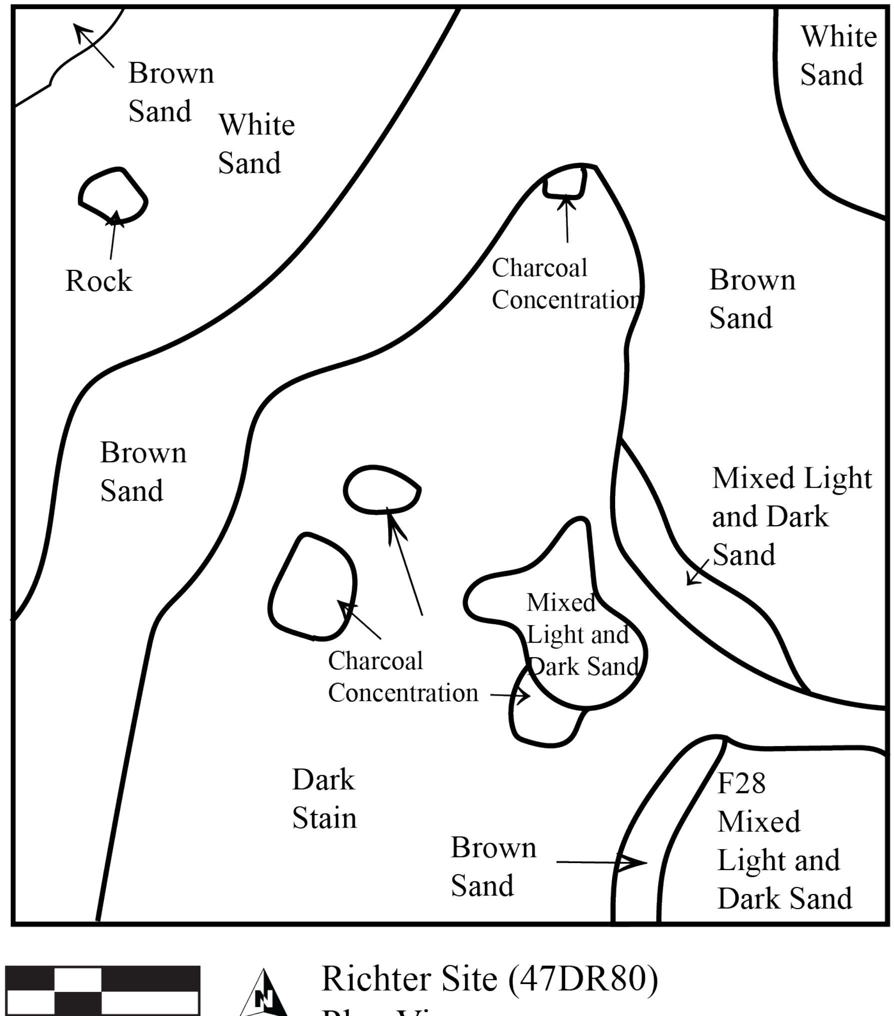
Richter Site (47DR80)
Plan View
Unit N18/W12
Level 5, 59cm
1973



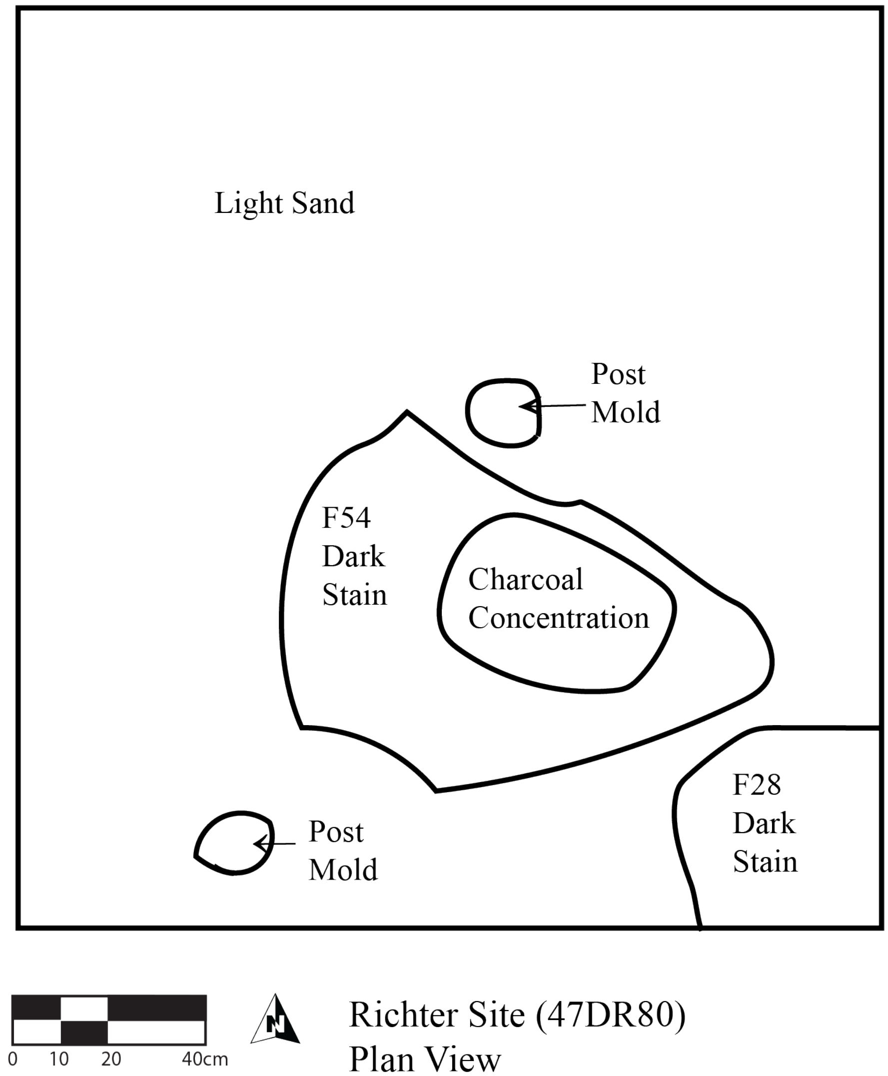
Richter Site (47DR80)
Plan View
N18/W12
Level 6, 69cm
1973



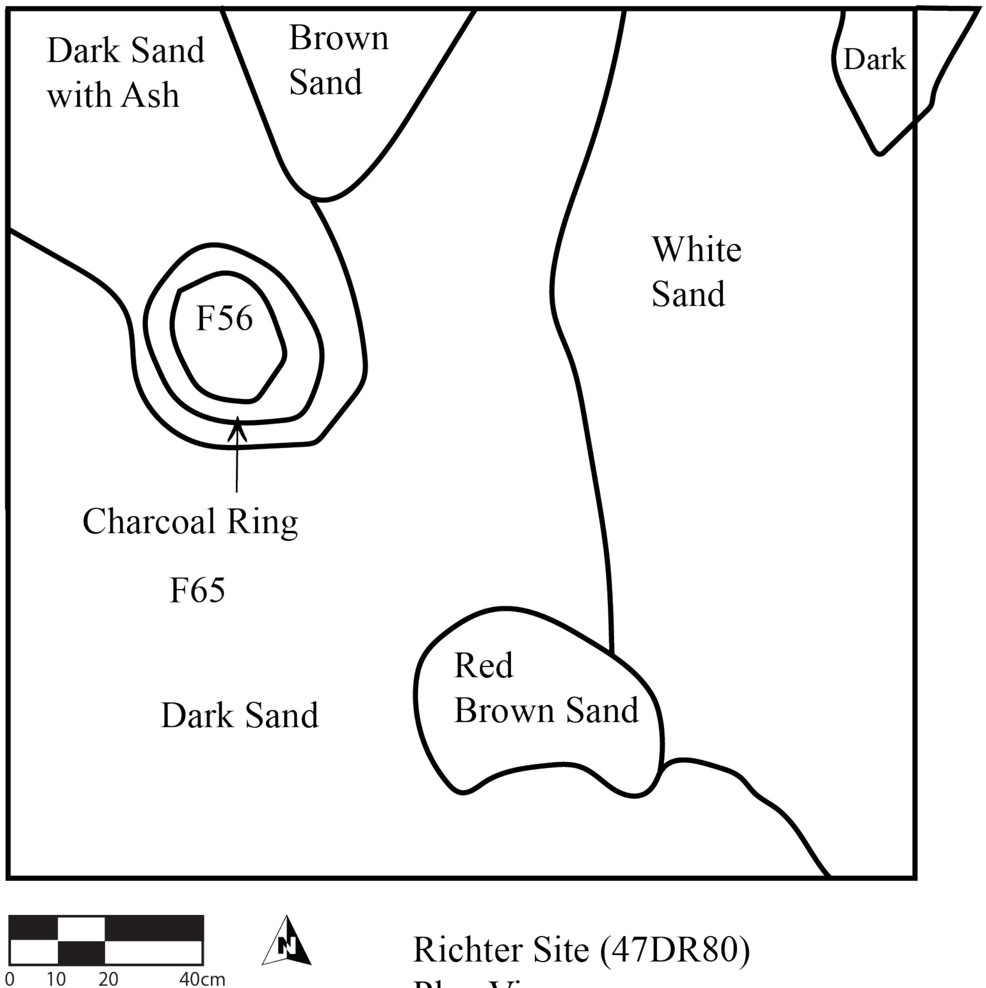
Richter Site (47DR80)
Plan View
Unit N18/W12
Level 7, 79 cm
1973



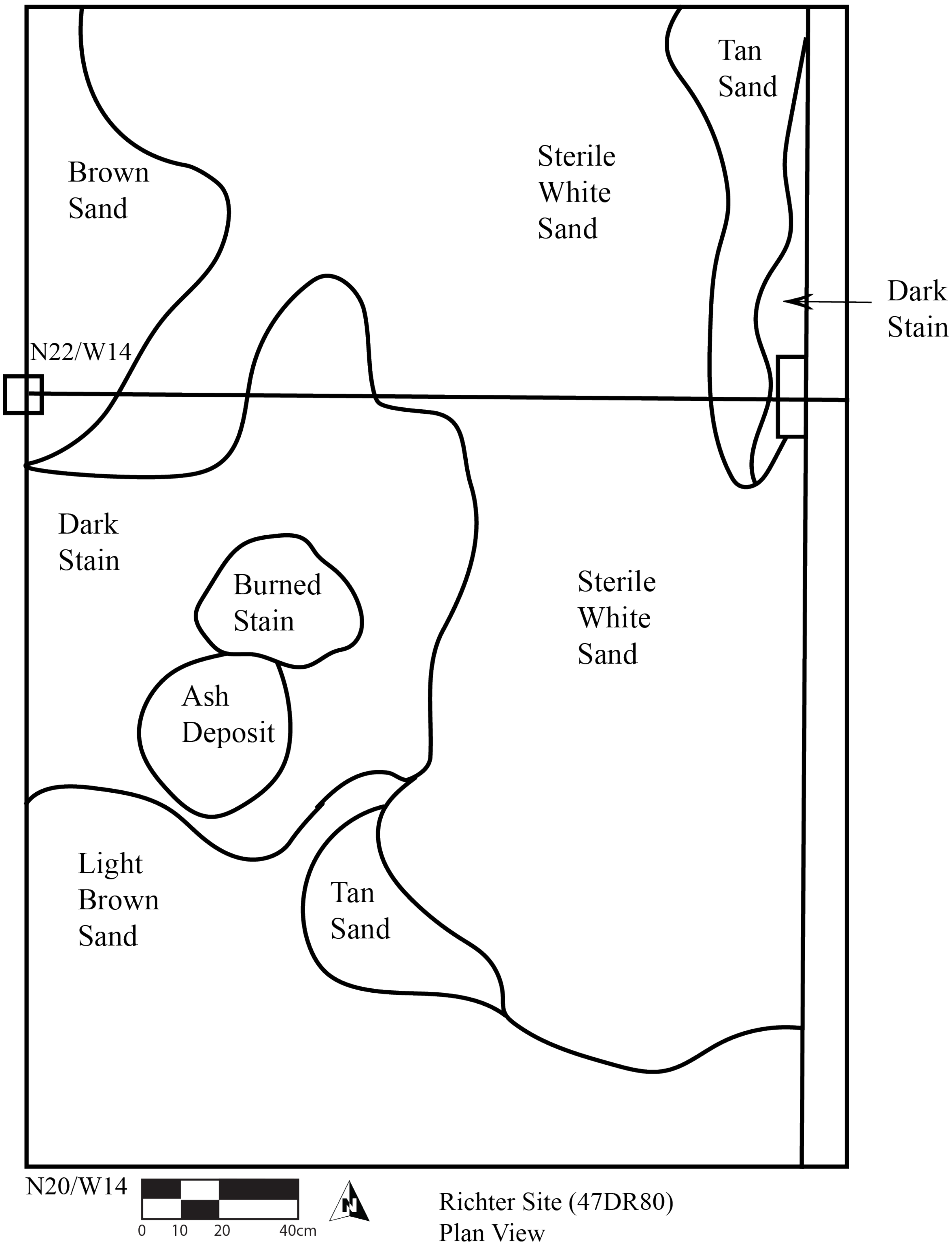
Richter Site (47DR80)
Plan View
Unit N20/W12
Level 2, 27 cm
1973



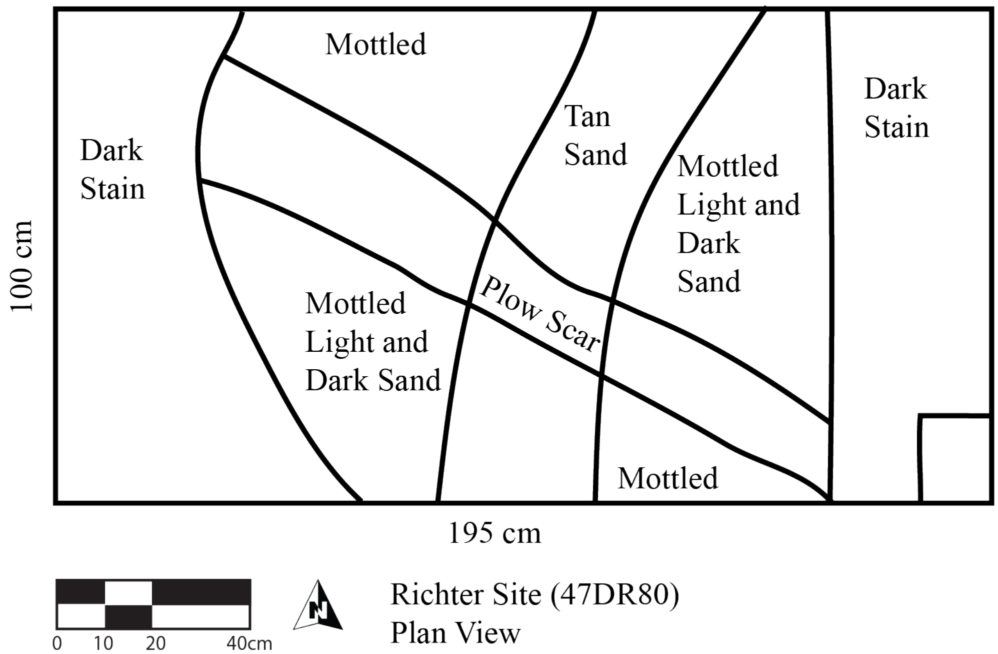
Richter Site (47DR80)
Plan View
Unit N20/W12
Level 3, 35 cm
1973



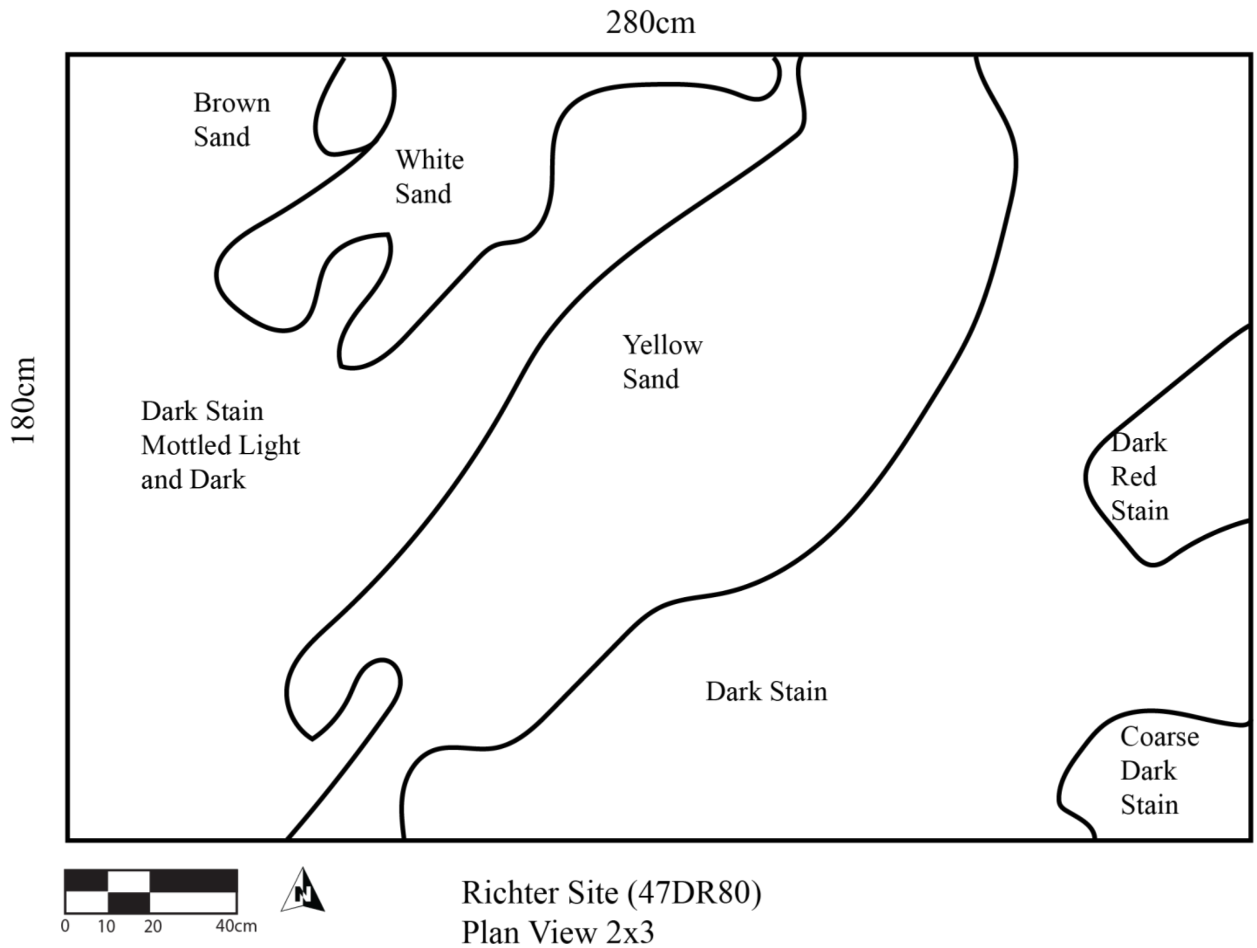
Richter Site (47DR80)
Plan View
Unit N20/W14
Level 3, 23cm
1973



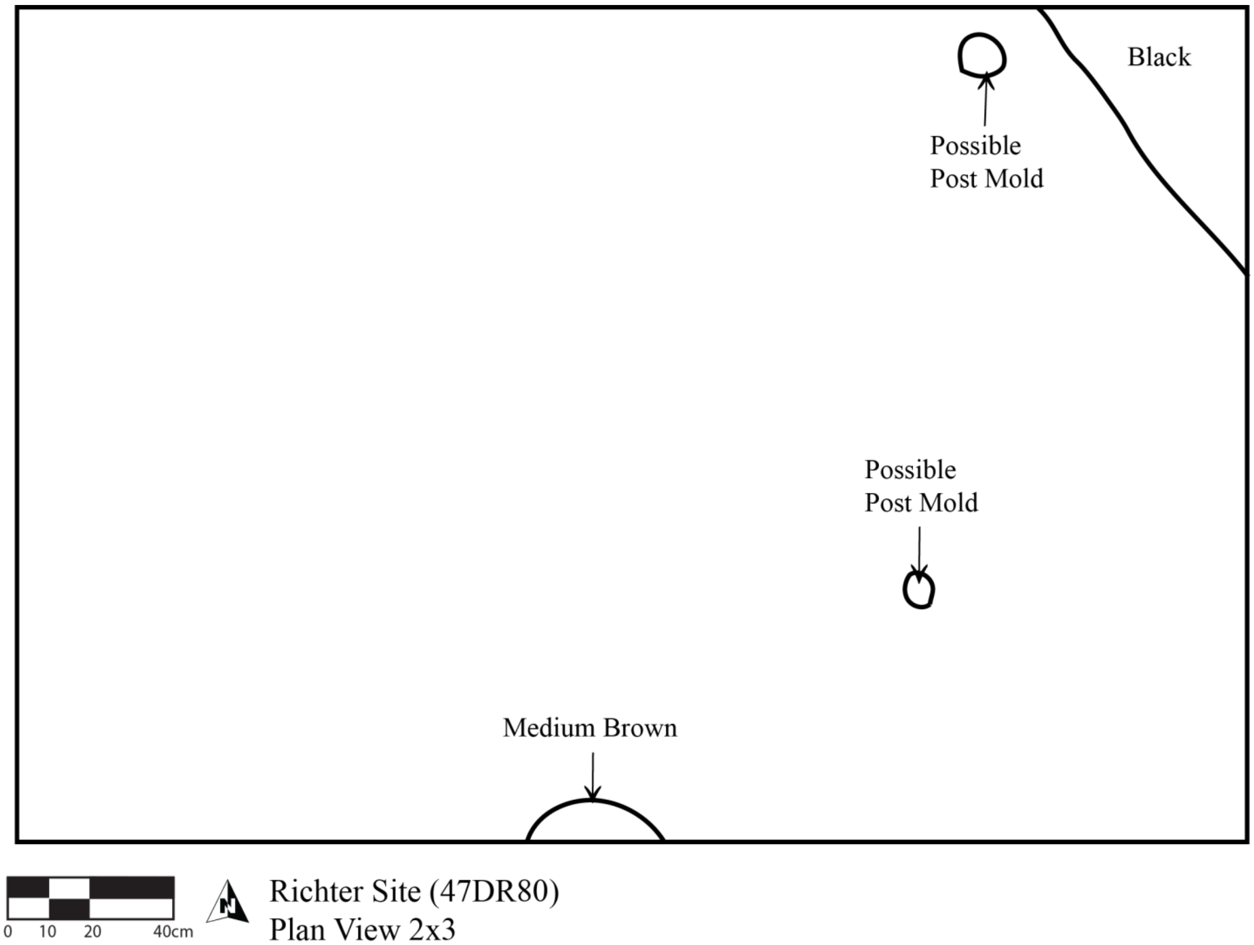
Richter Site (47DR80)
Plan View
Unit N20/W14 & N22/W14
Level 3, 34cm
1973



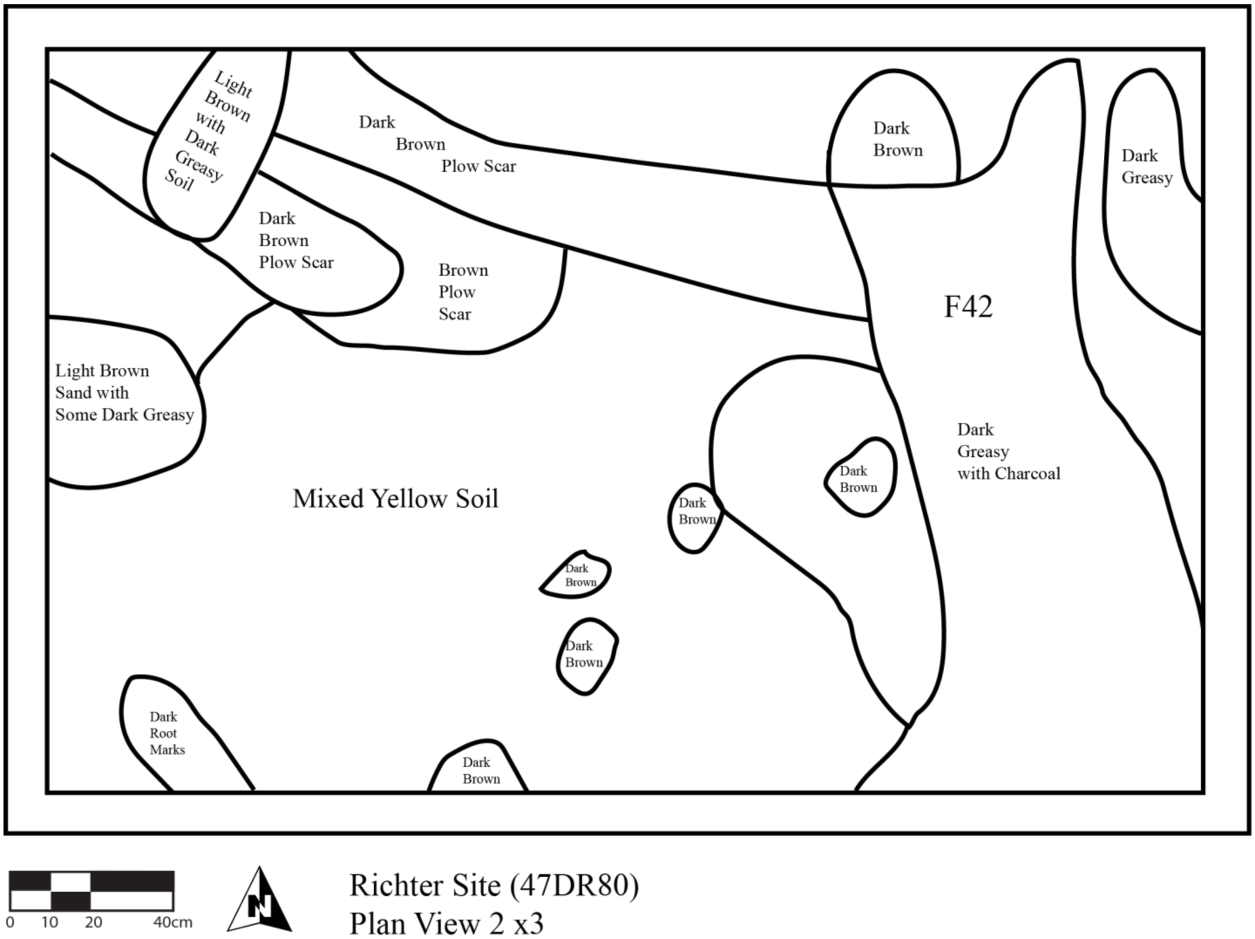
Richter Site (47DR80)
Plan View
Unit N22/W14
Level 2, 21 cm
1973



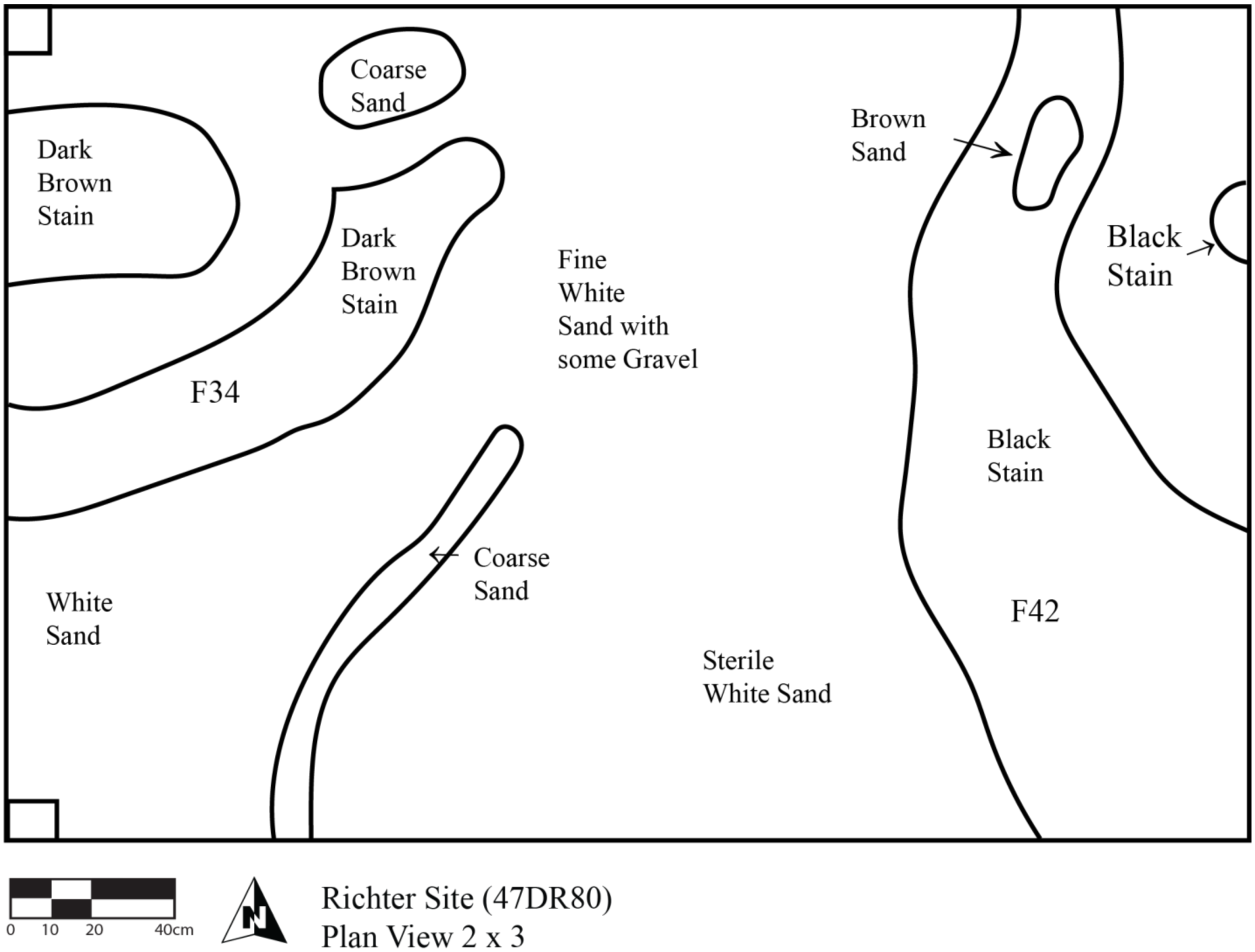
Richter Site (47DR80)
Plan View 2x3
N24/W10
Level , 24cm
1973



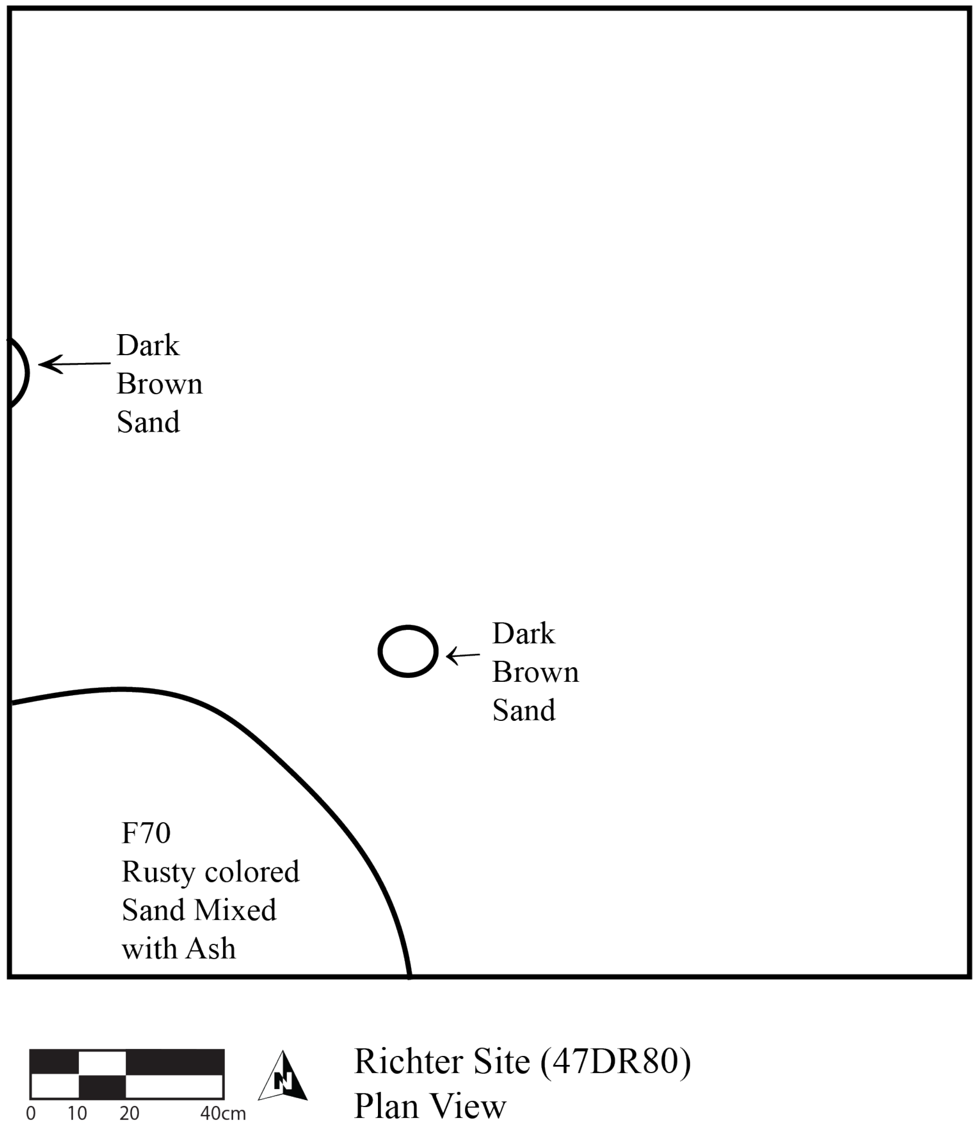
Richter Site (47DR80)
Plan View 2x3
Unit N24/W10
Level 3, 36cm
1973



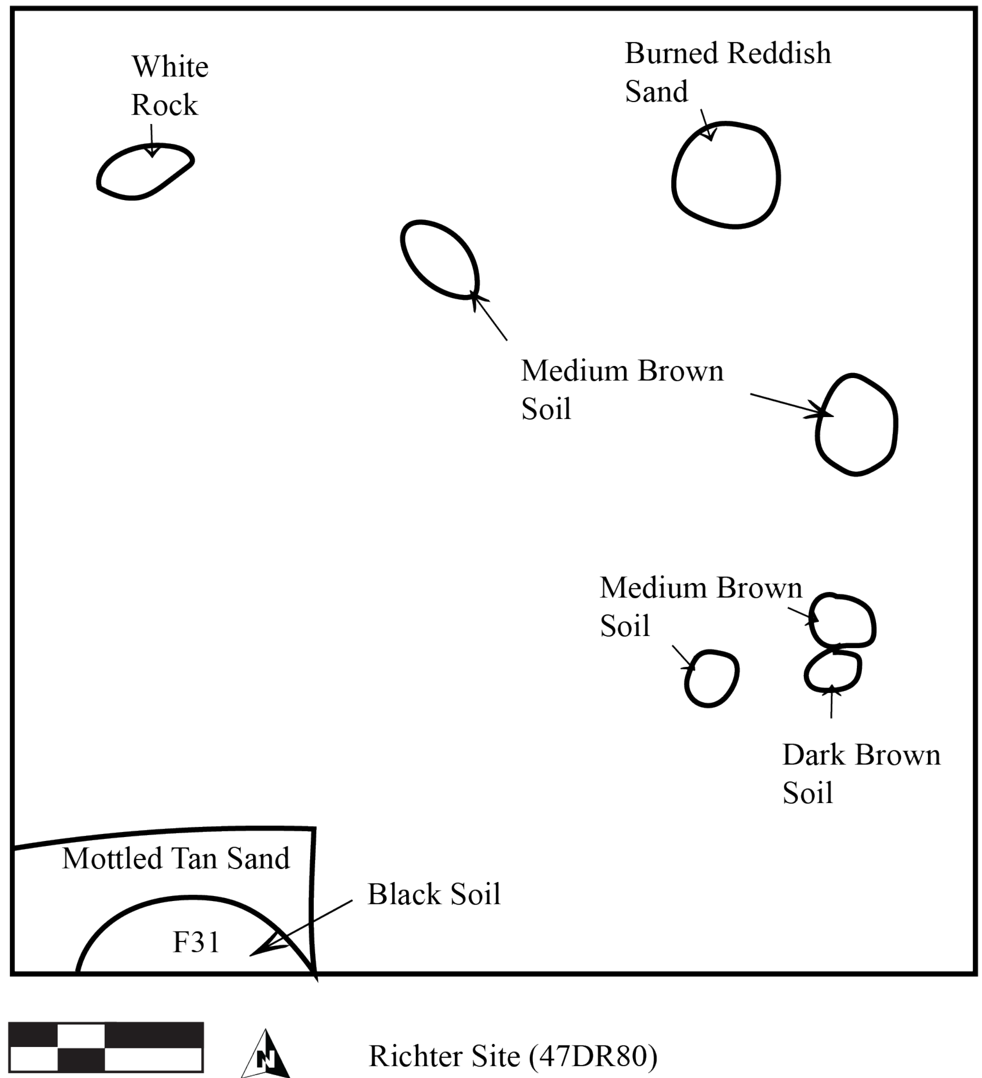
Richter Site (47DR80)
Plan View 2 x3
N26 /W10
Level 2, 26cm
1973



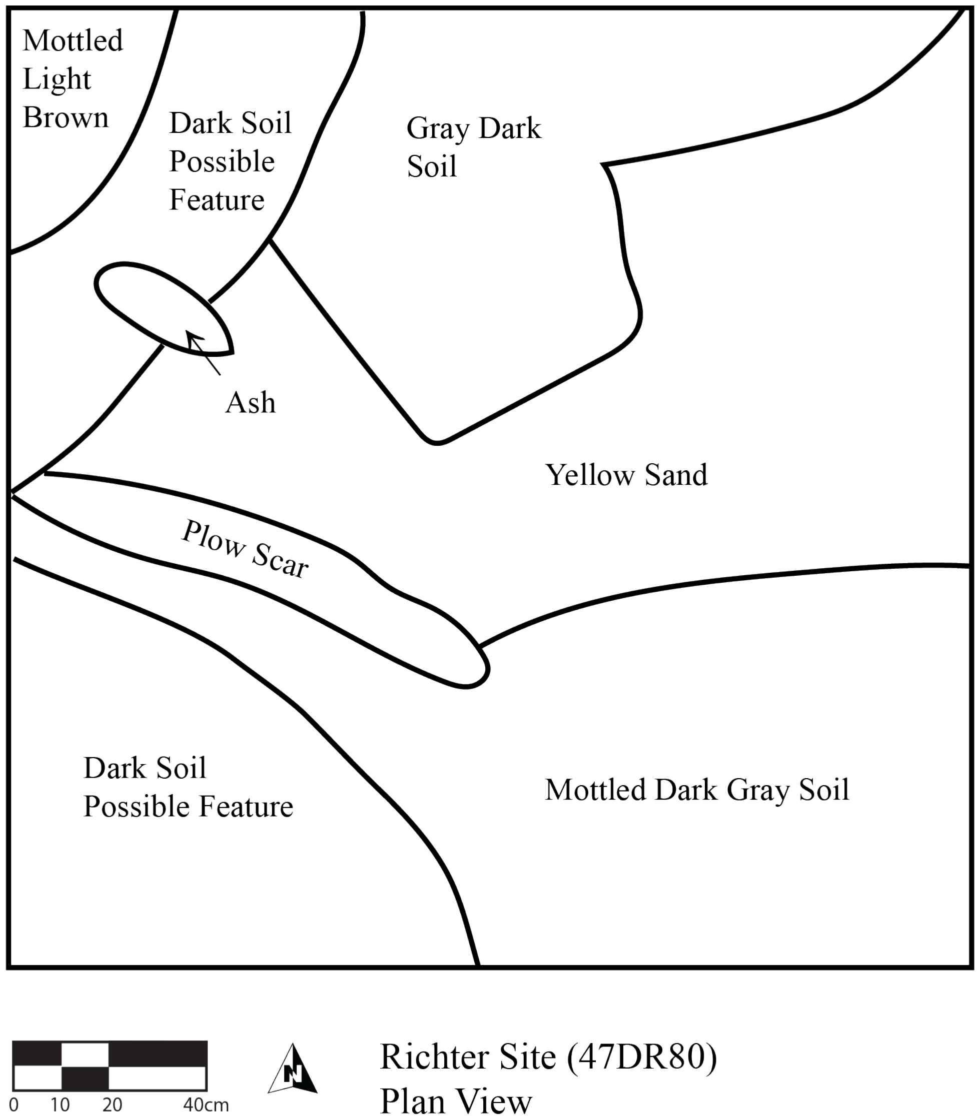
Richter Site (47DR80)
Plan View 2 x 3
N26 W10
Level 3
1973



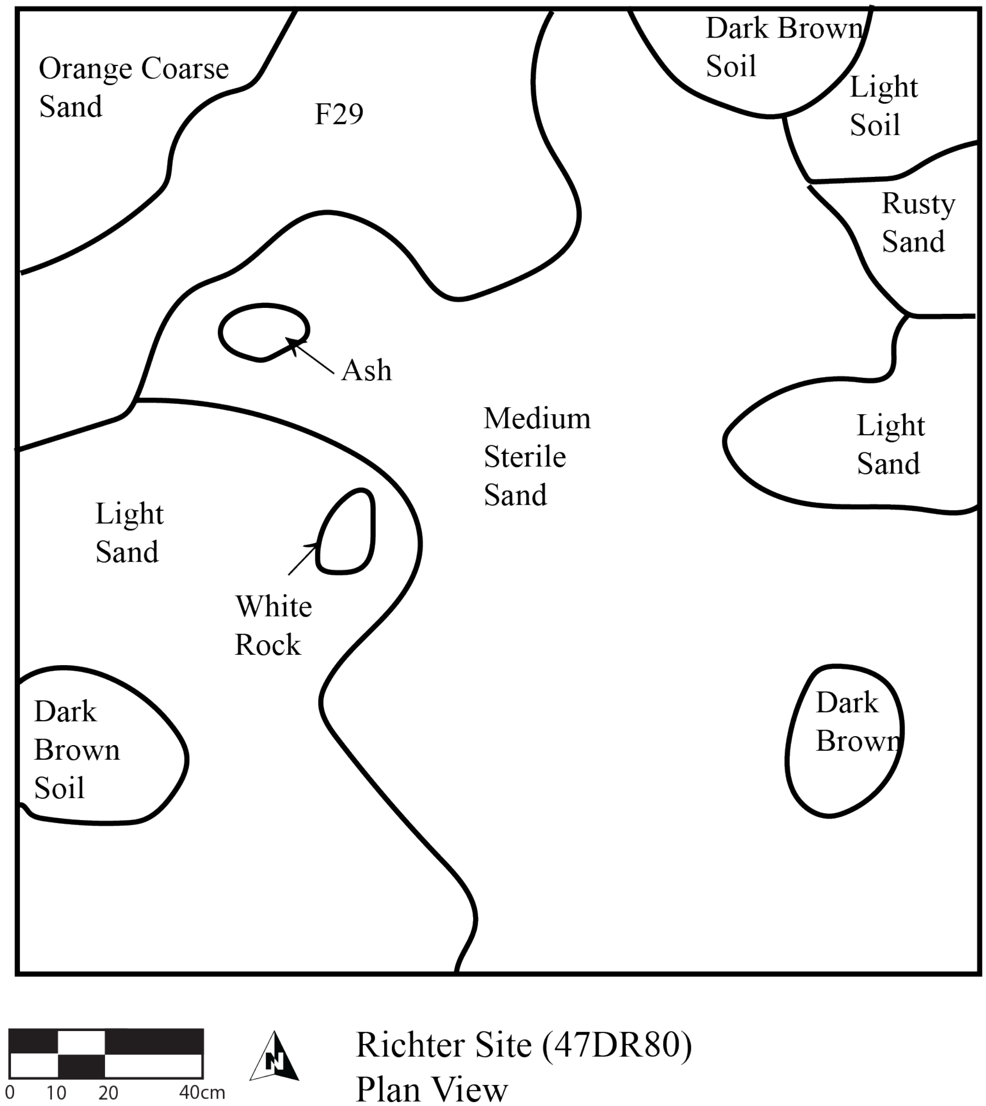
Richter Site (47DR80)
Plan View
Unit N28/E10
Level 2, 31 cm
1973



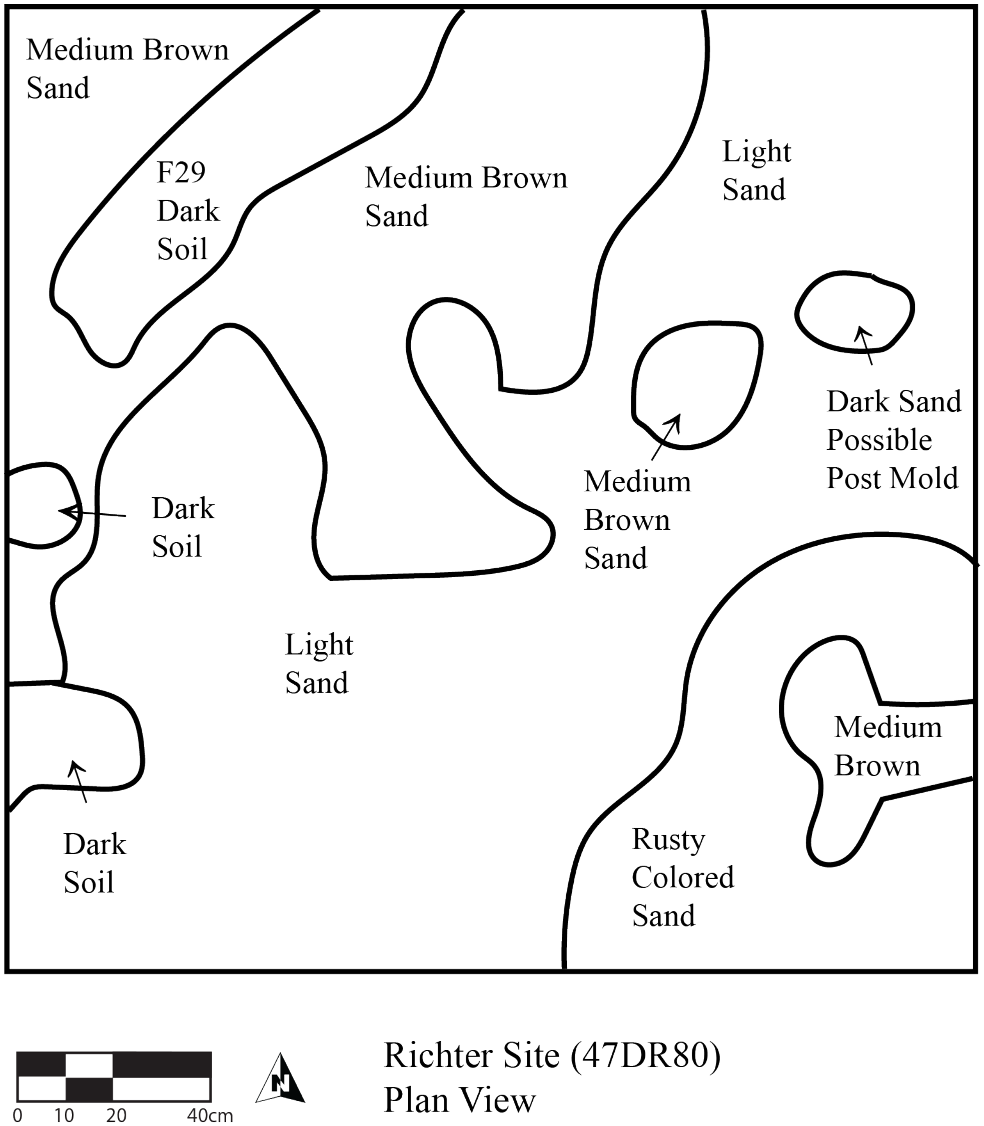
Richter Site (47DR80)
Plan View
Unit N28/W02
Level 2, 29 cm
1973



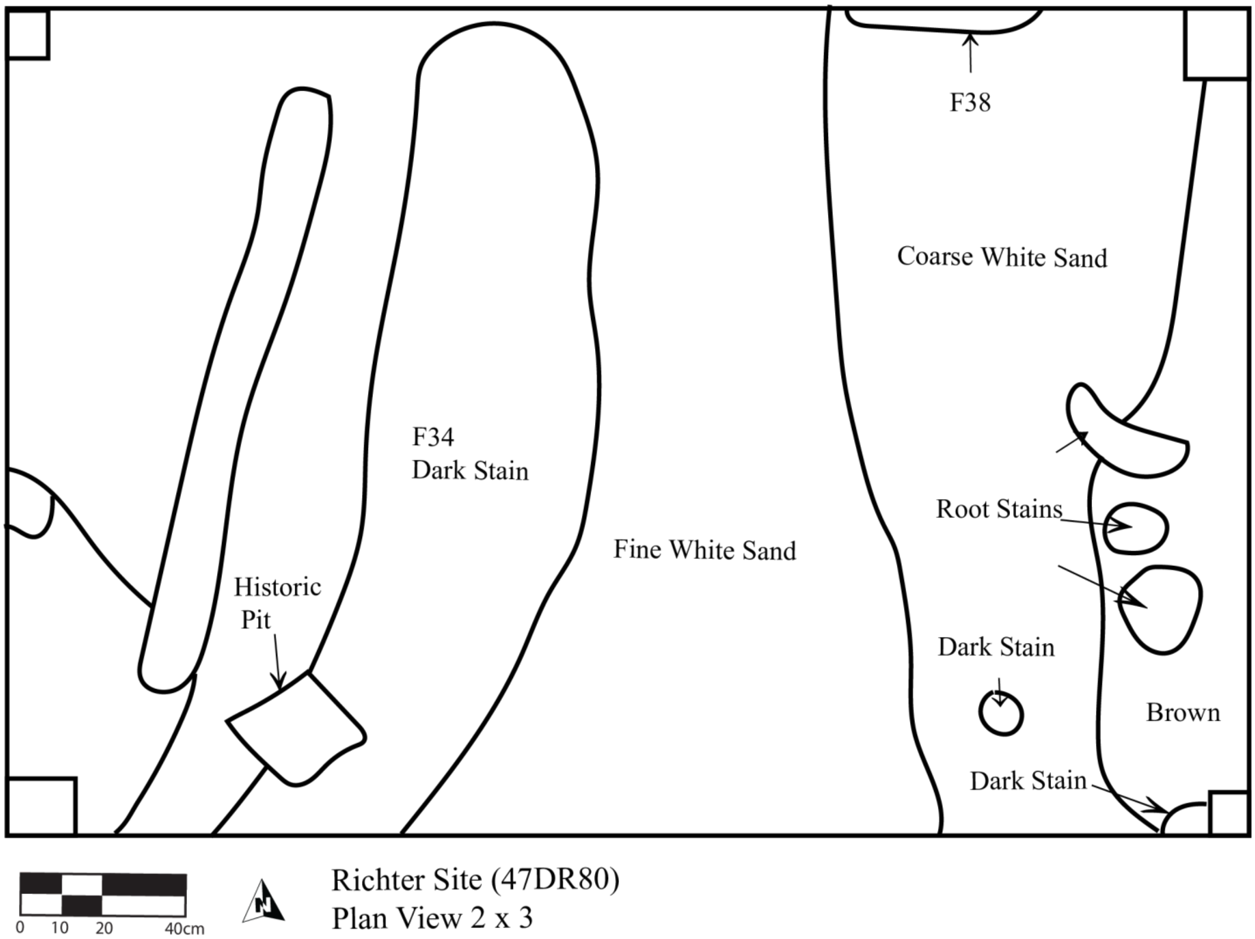
Richter Site (47DR80)
Plan View
Unit N28/W07
Level 1, 24 cm
1973



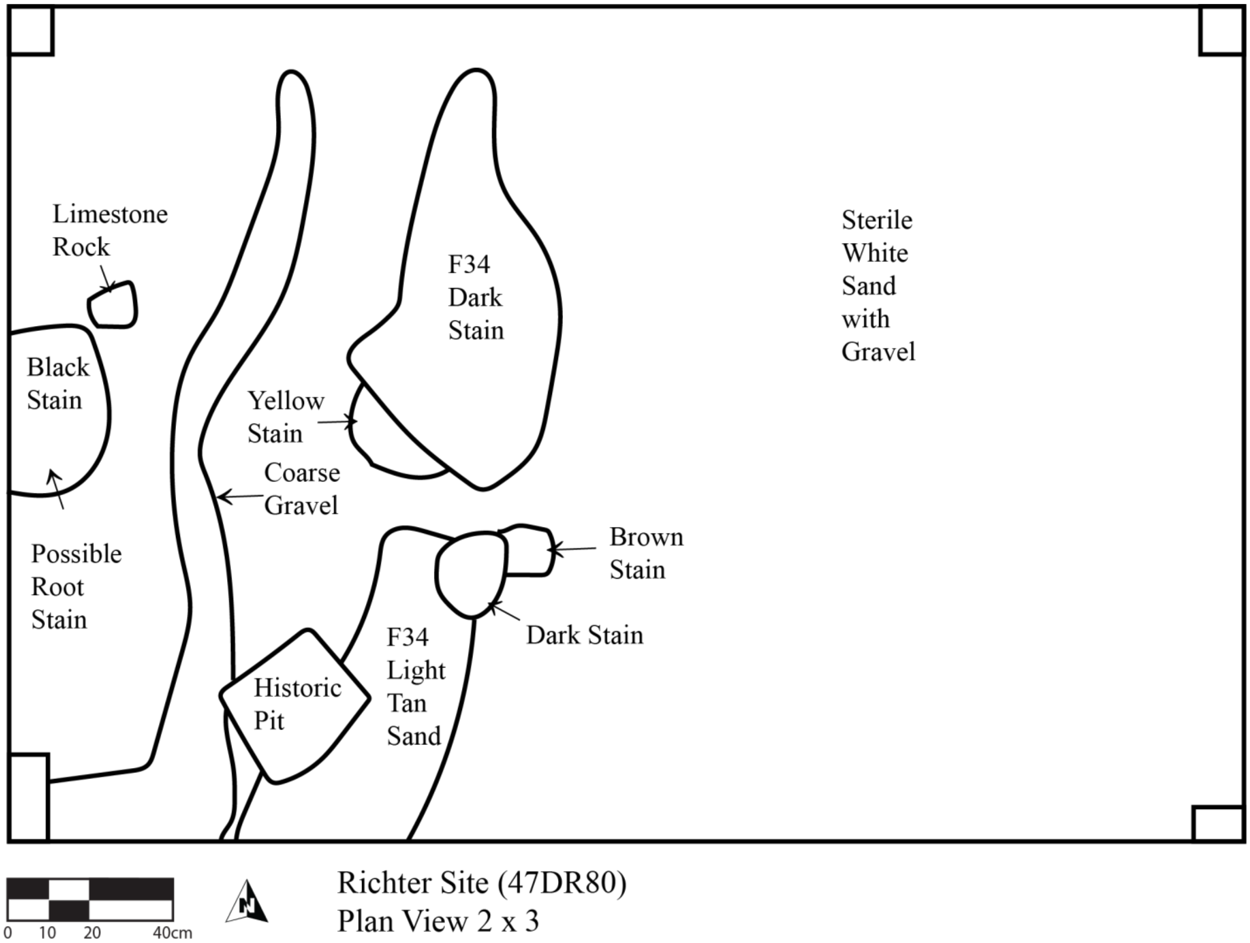
Richter Site (47DR80)
Plan View
Unit N28/W07
Level 2, 34 cm
1973



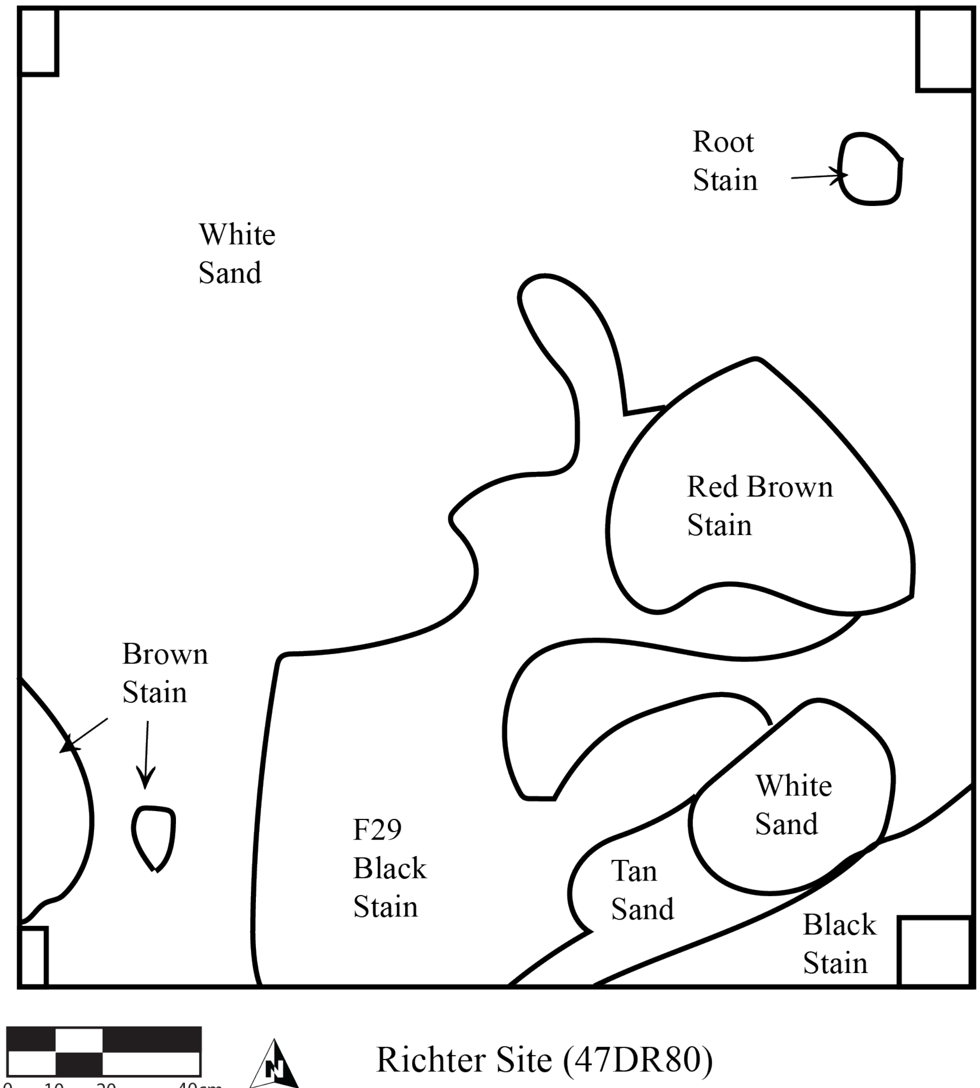
Richter Site (47DR80)
Plan View
Unit N28/W07
Level 3, 44 cm
1973



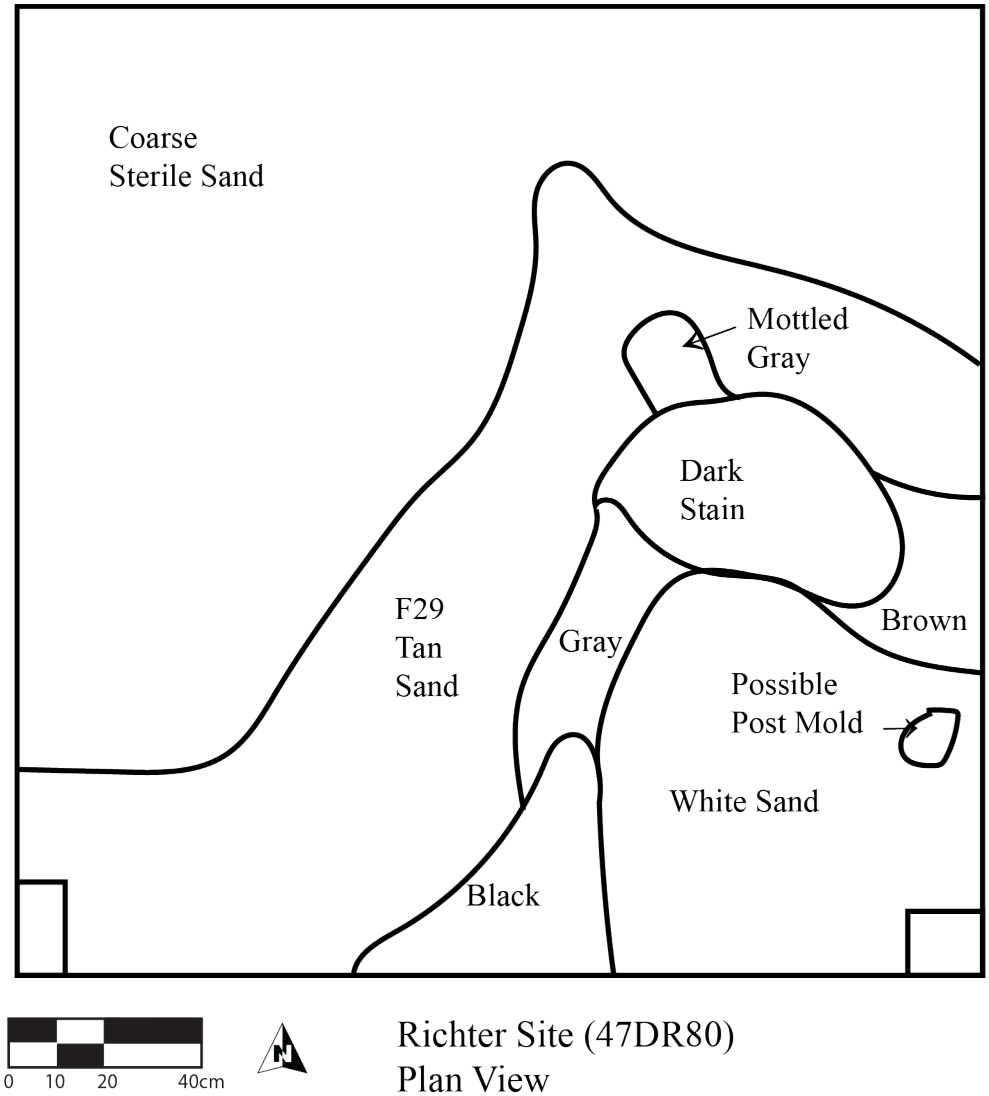
Richter Site (47DR80)
Plan View 2 x 3
Unit N28/W10
Level 3, 30 cm
1973



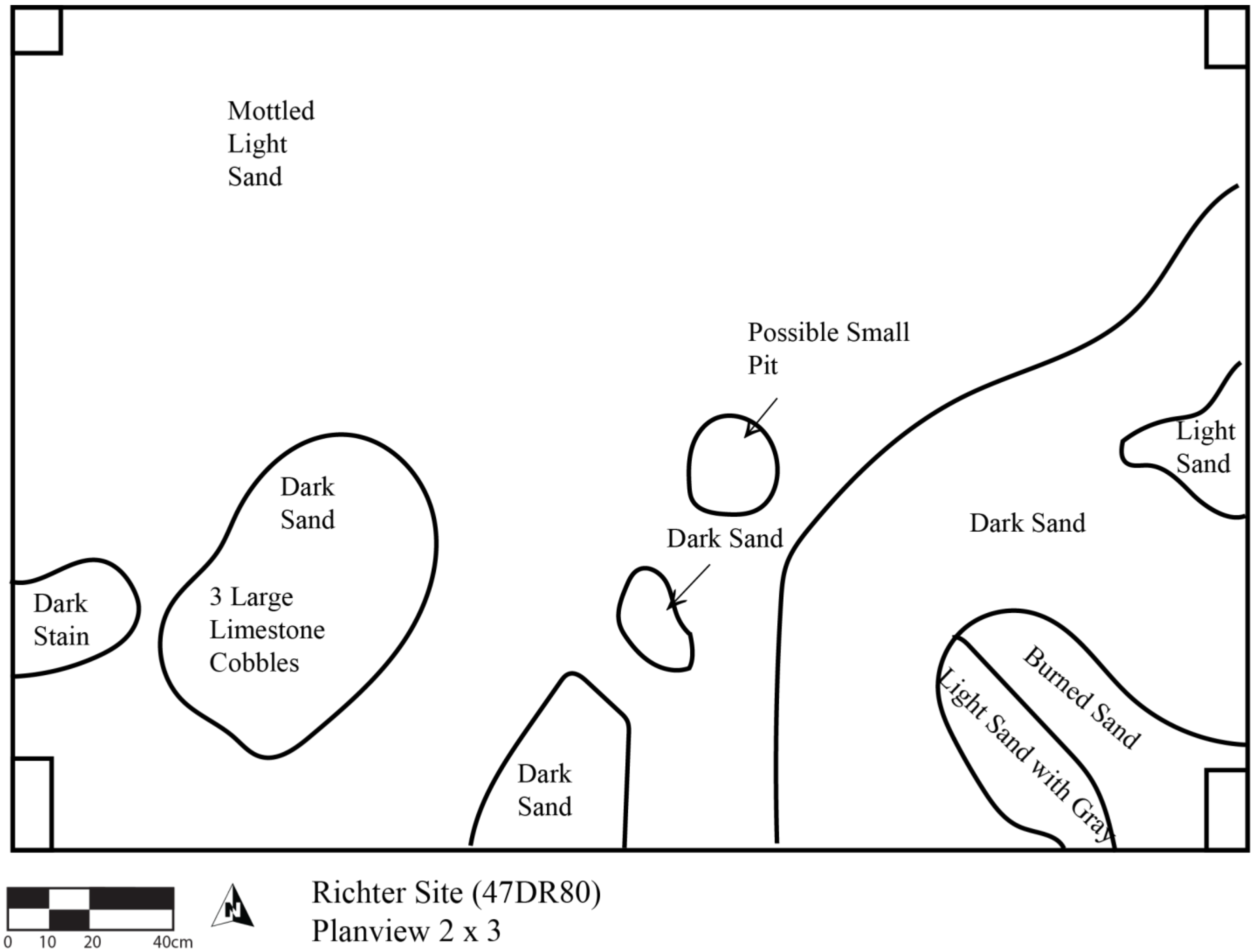
Richter Site (47DR80)
Plan View 2 x 3
Unit N28/W10
Level 4, 46 cm
1973



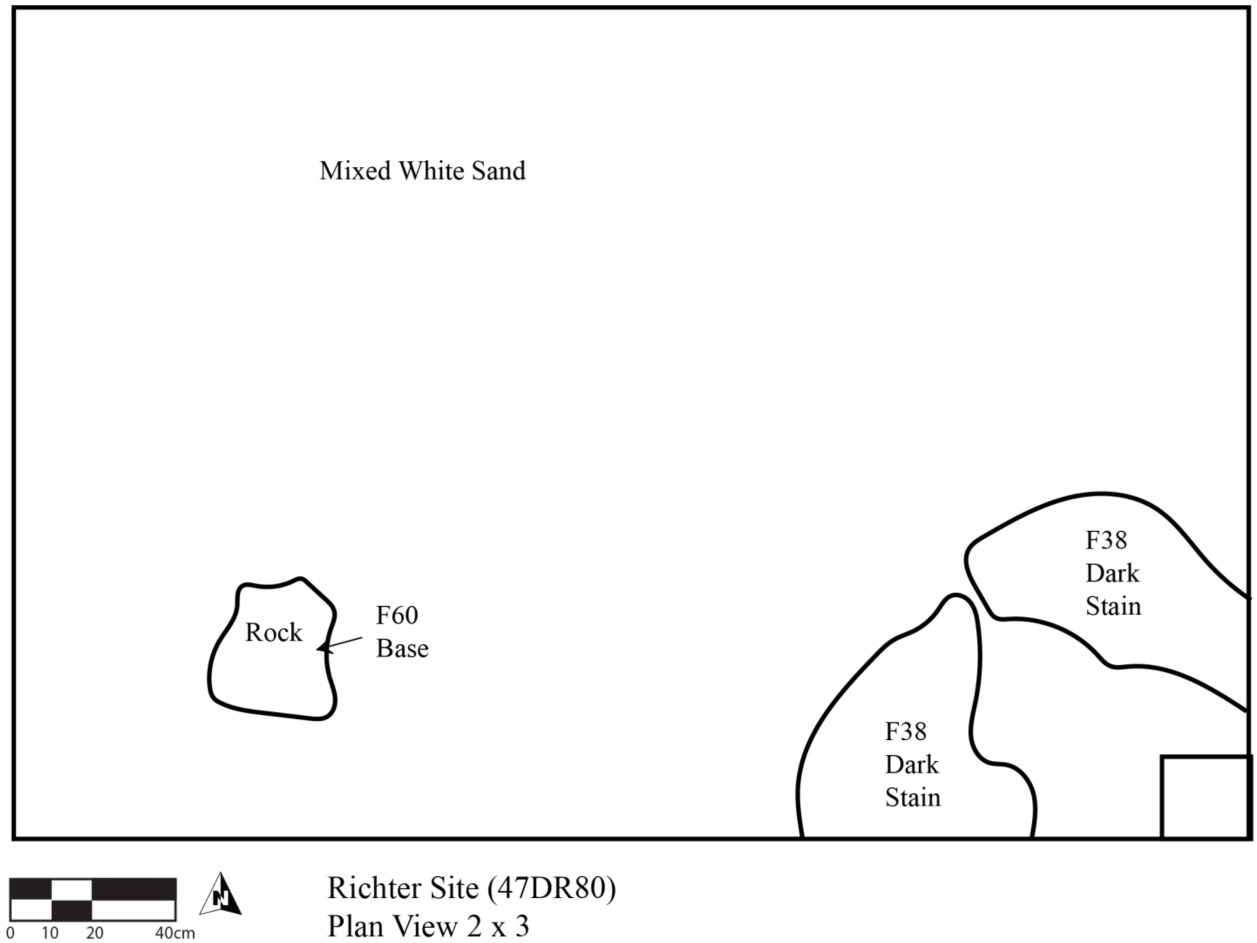
Richter Site (47DR80)
Plan View
Unit N30/W07
Level 2, 32 cm
1973



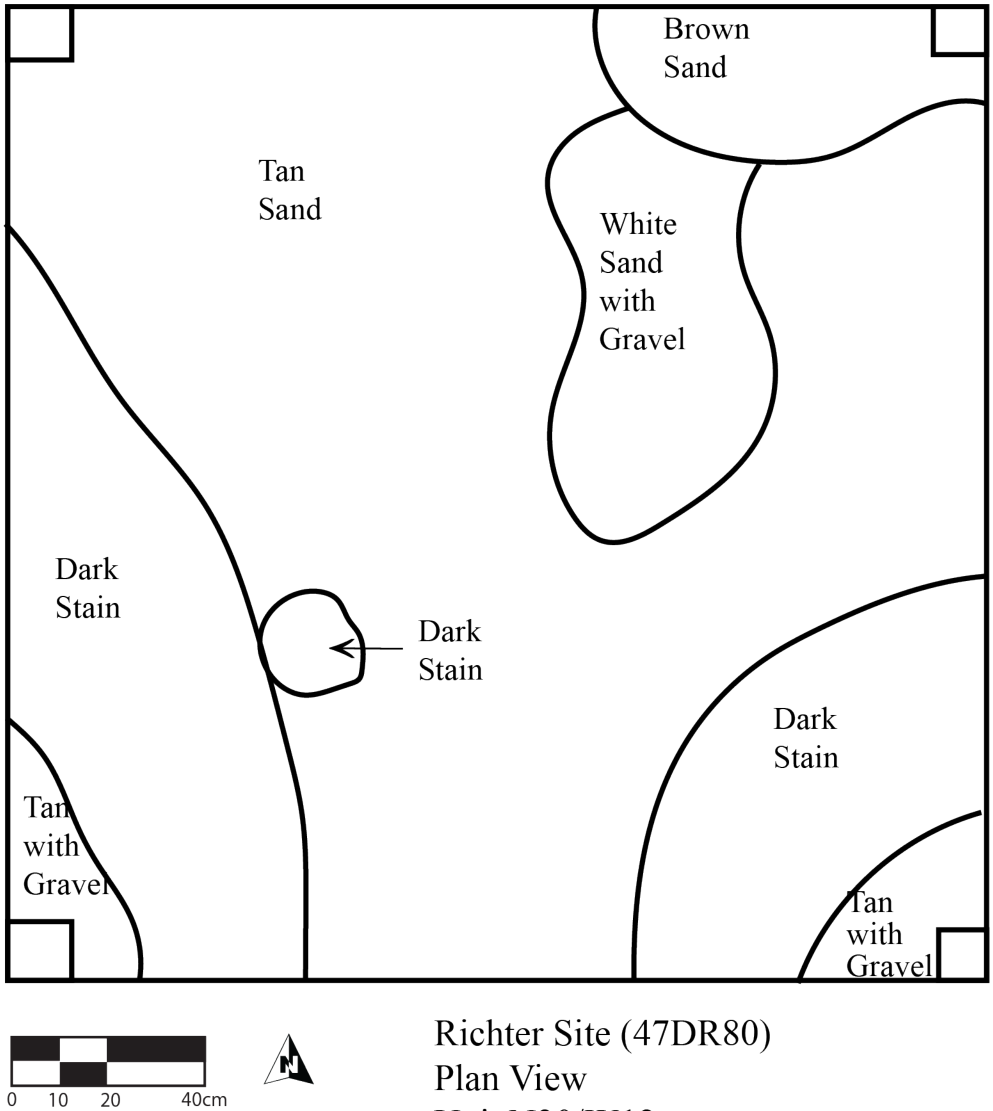
Richter Site (47DR80)
Plan View
Unit N30/W07
Level 3, 42 cm
1973



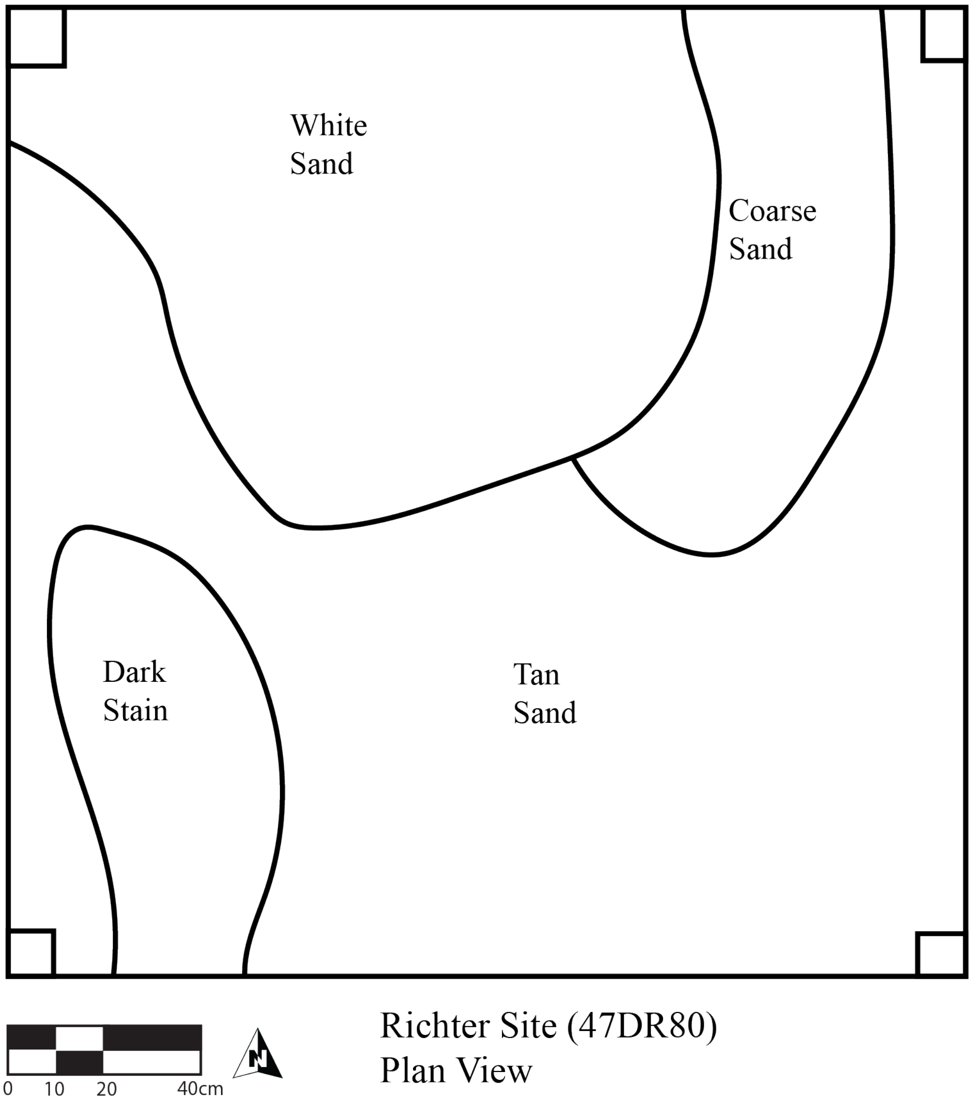
Richter Site (47DR80)
Planview 2 x 3
Unit N30/W10
Level 2 bottom, 24 cm
1973



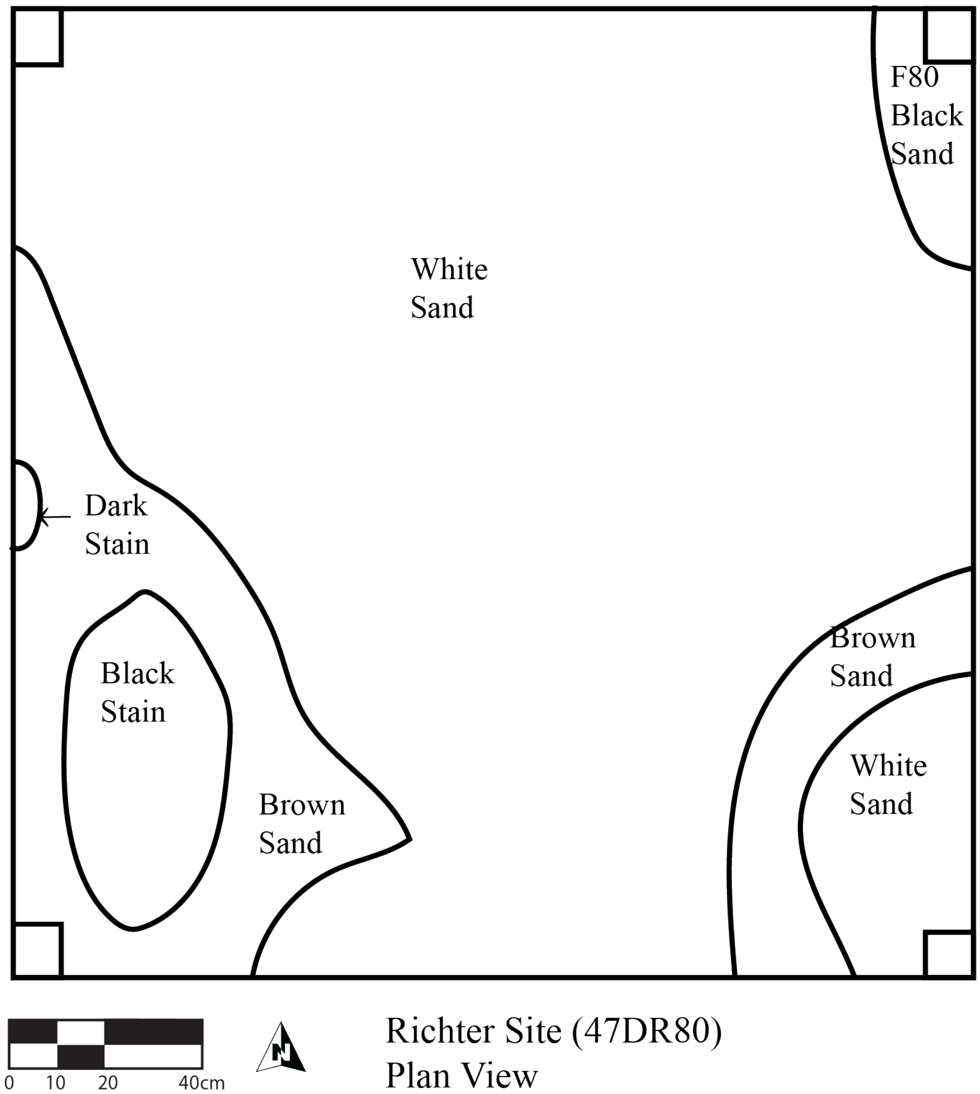
Richter Site (47DR80)
Plan View 2 x 3
Unit N30/W10
Level 3 base, 31 cm
1973



Richter Site (47DR80)
Plan View
Unit N30/W12
Level 2 bottom, 27 cm
1973

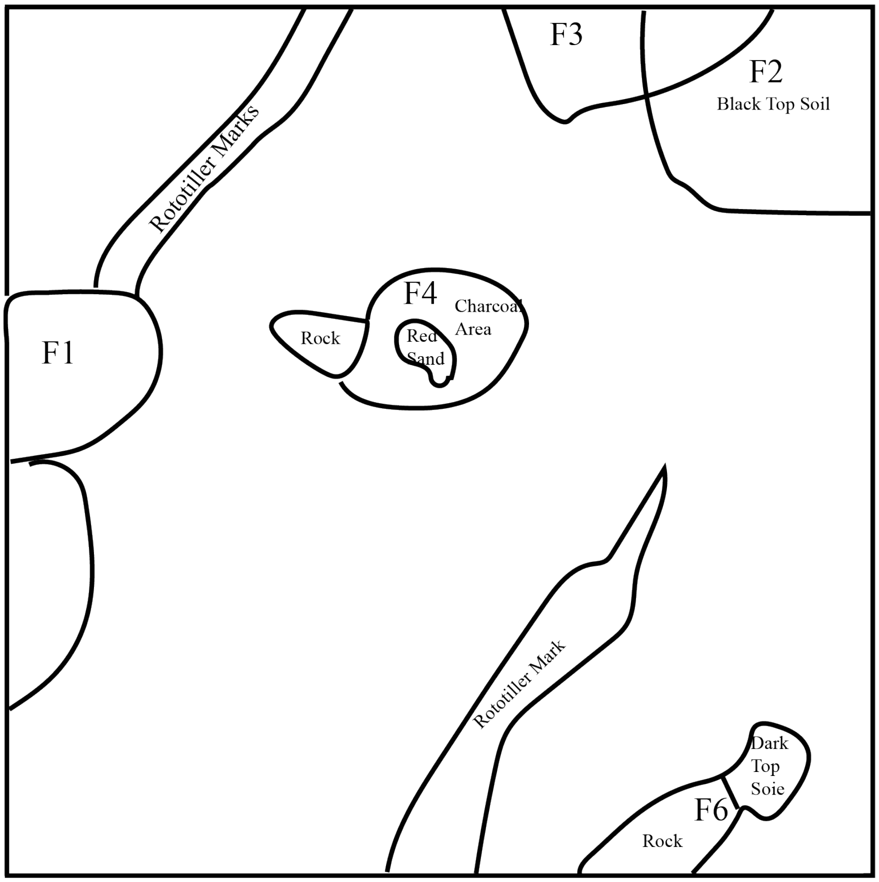


Richter Site (47DR80)
Plan View
Unit N30/W12
Level 3 base, 34 cm
1973

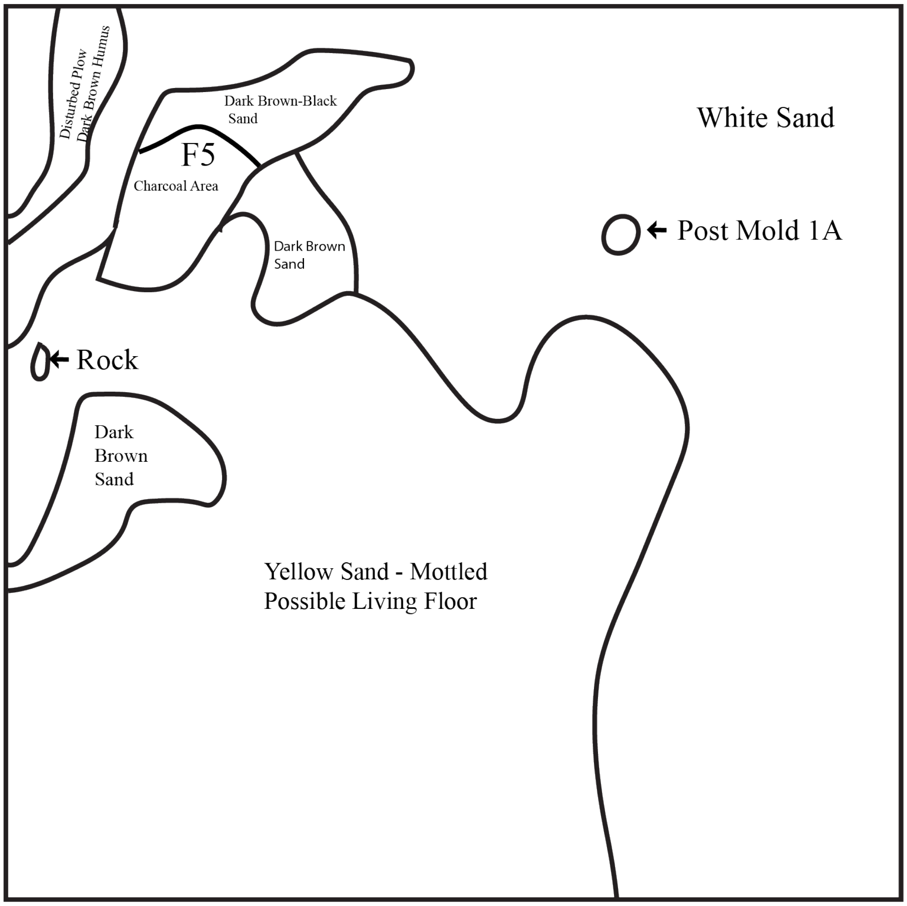


Richter Site (47DR80)
Plan View
Unit N30/W12
Level 4 base, 44 cm
1973

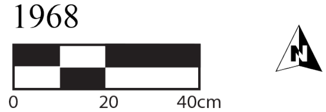
Miscellaneous Units Outside of Main Excavation Area

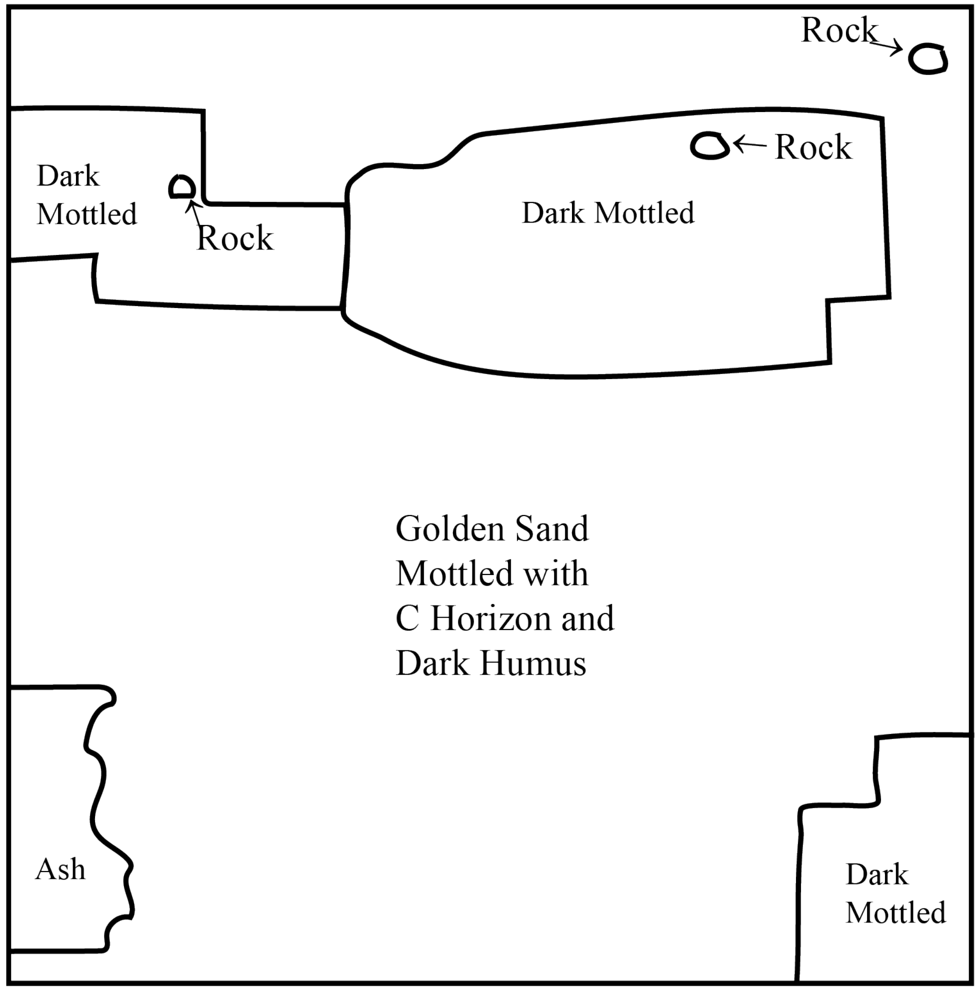


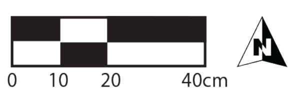
Richter Site (47DR80)
Planview Unit
TP1, Base of Level 1
1968



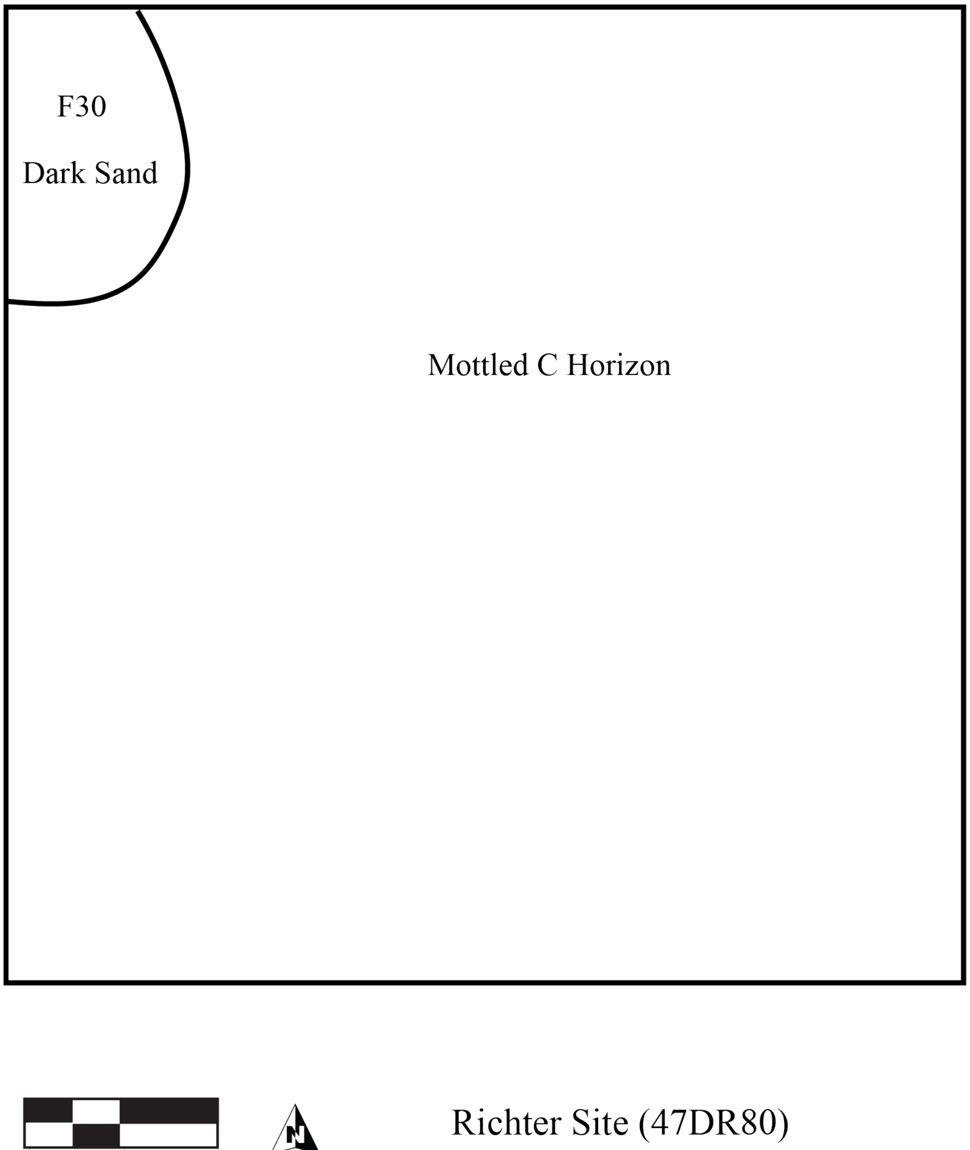
Richter Site (47DR80)
Planview
TP2
Level 1 Base, 23 cm
1968



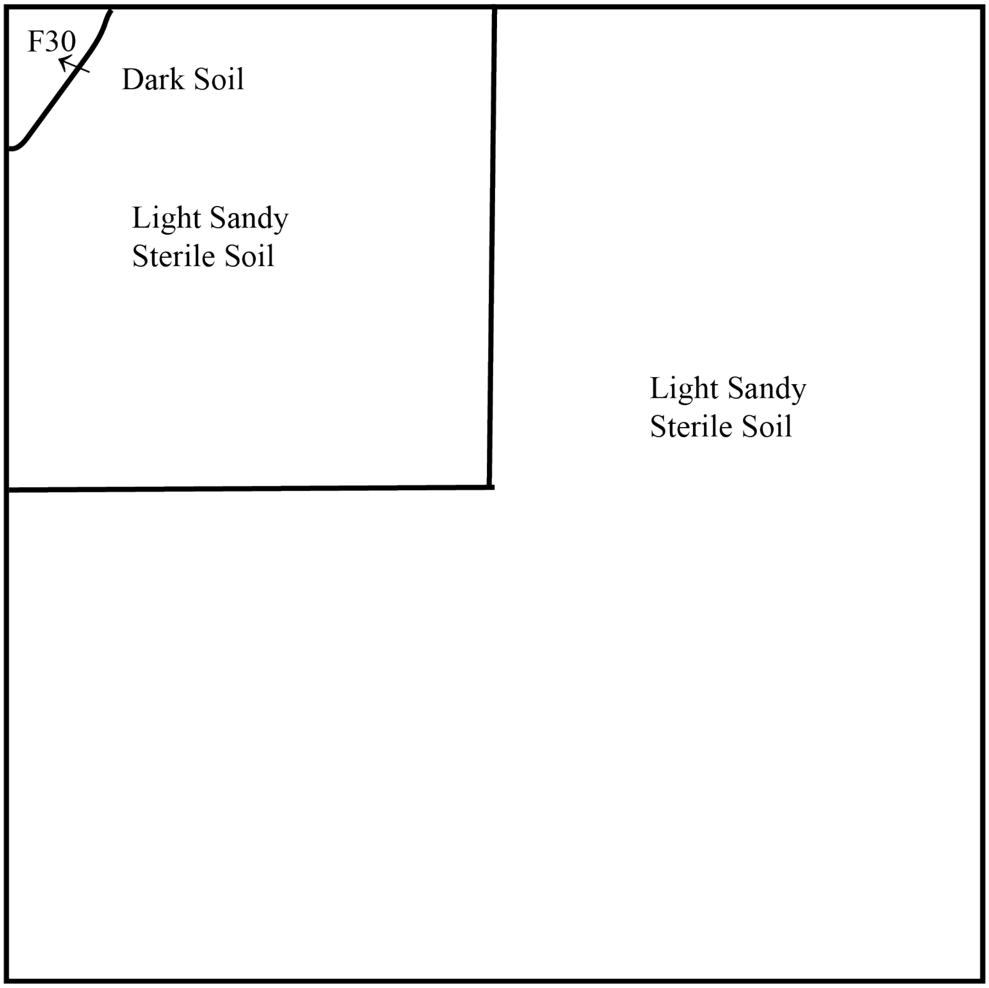


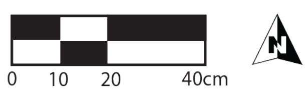


Richter Site (47DR80)
Plan View
Unit N35/W30
Level 2, 29 cm
1973

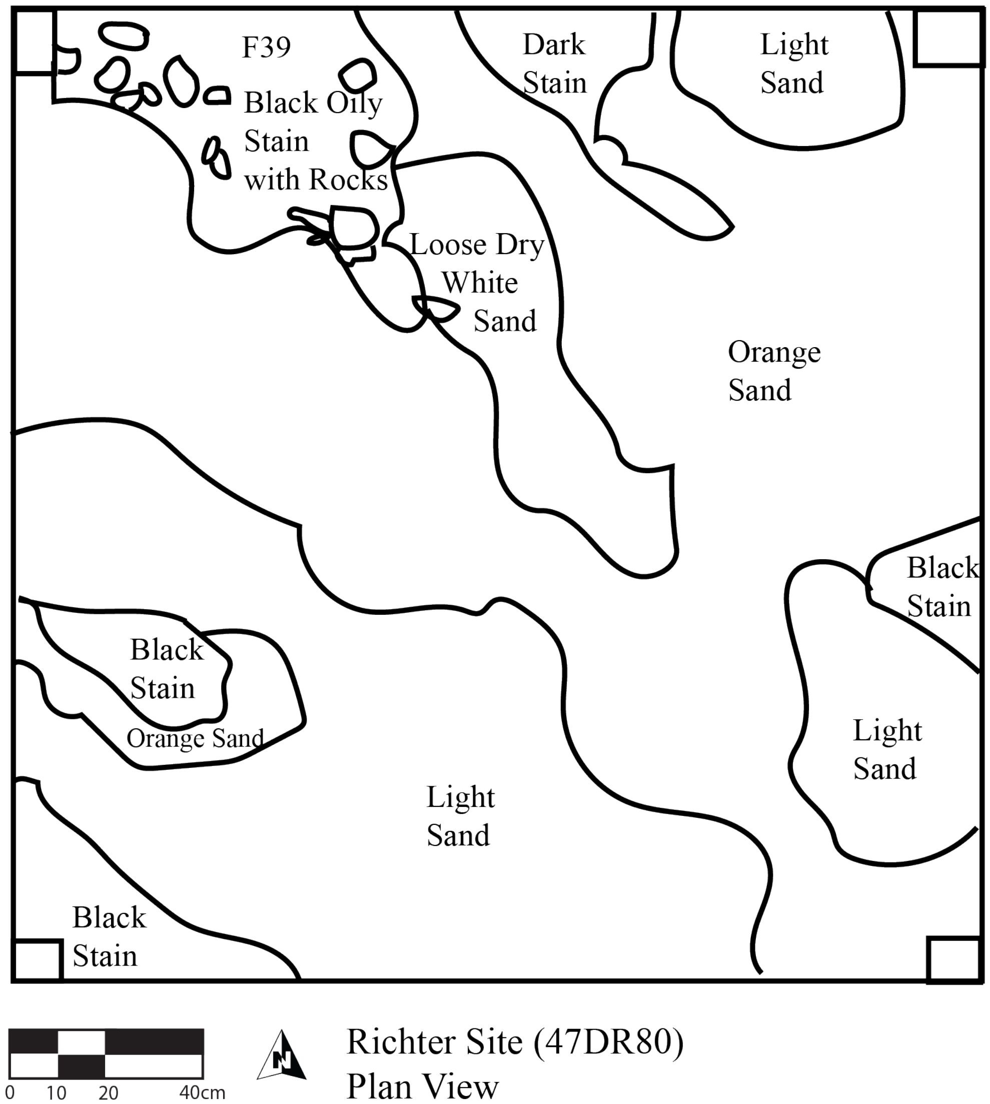


Richter Site (47DR80)
Plan View
Unit N35/W30
Level 3, 39 cm
1973

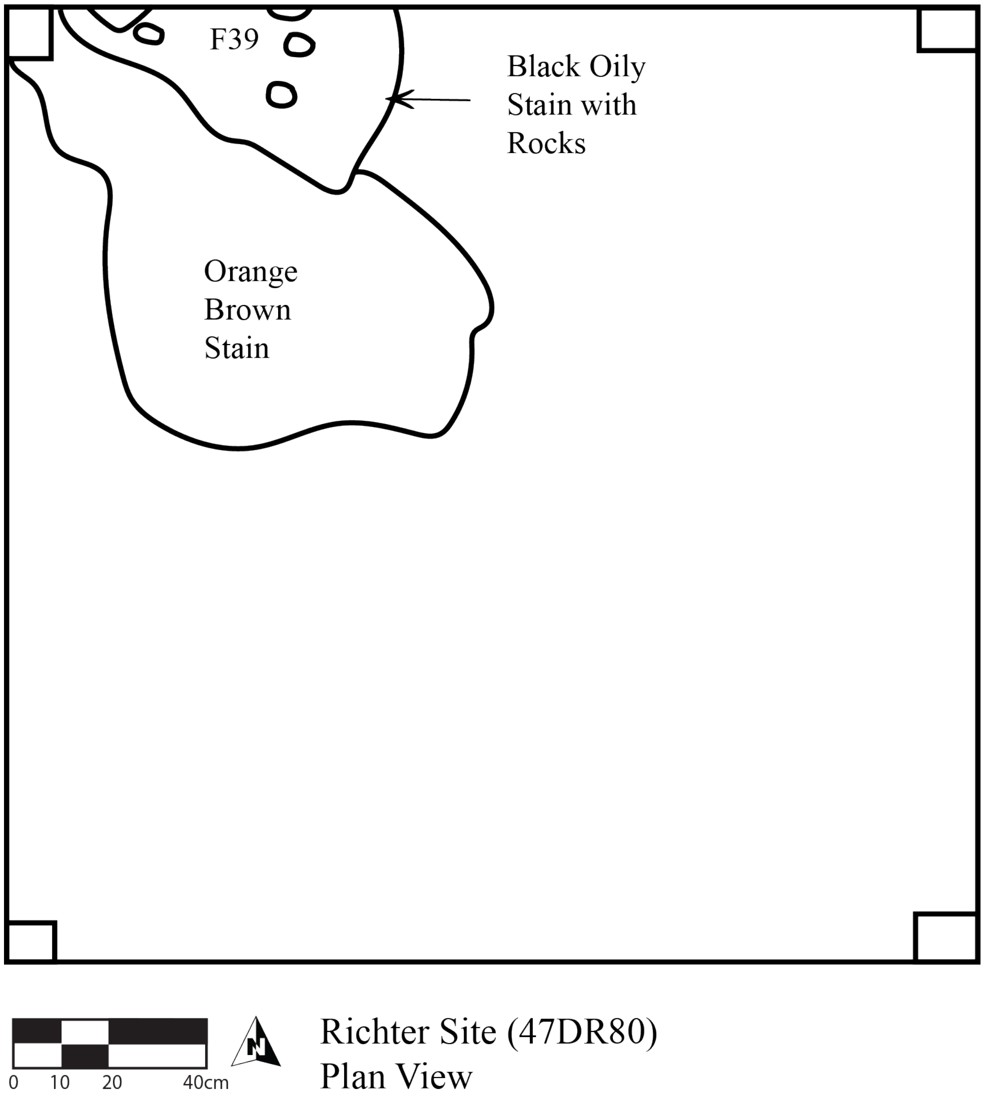




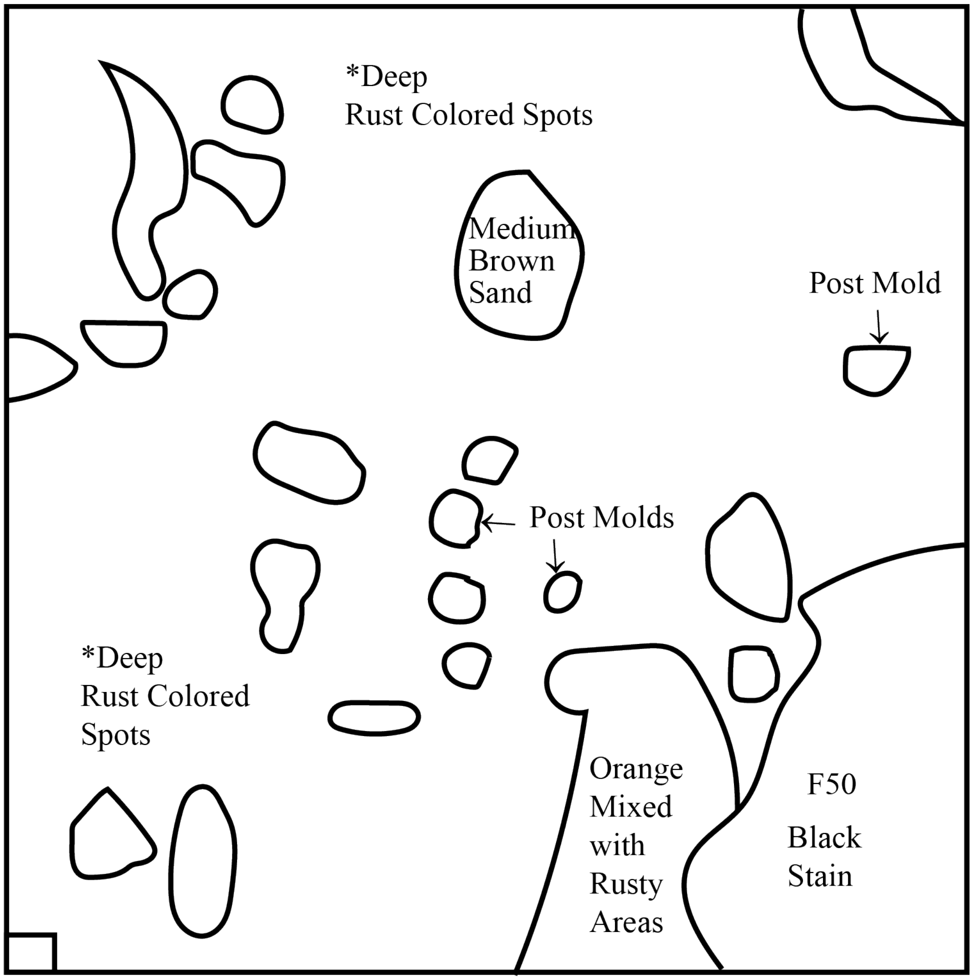
Richter Site (47DR80)
Plan View
Unit 35N/W30
Level 4, 53 cm
1973



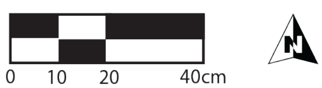
Richter Site (47DR80)
Plan View
Unit N40/W02
Top Zone B, 20 cm
1973



Richter Site (47DR80)
Plan View
Unit N40/W02
Level 2, 35 cm.
1973

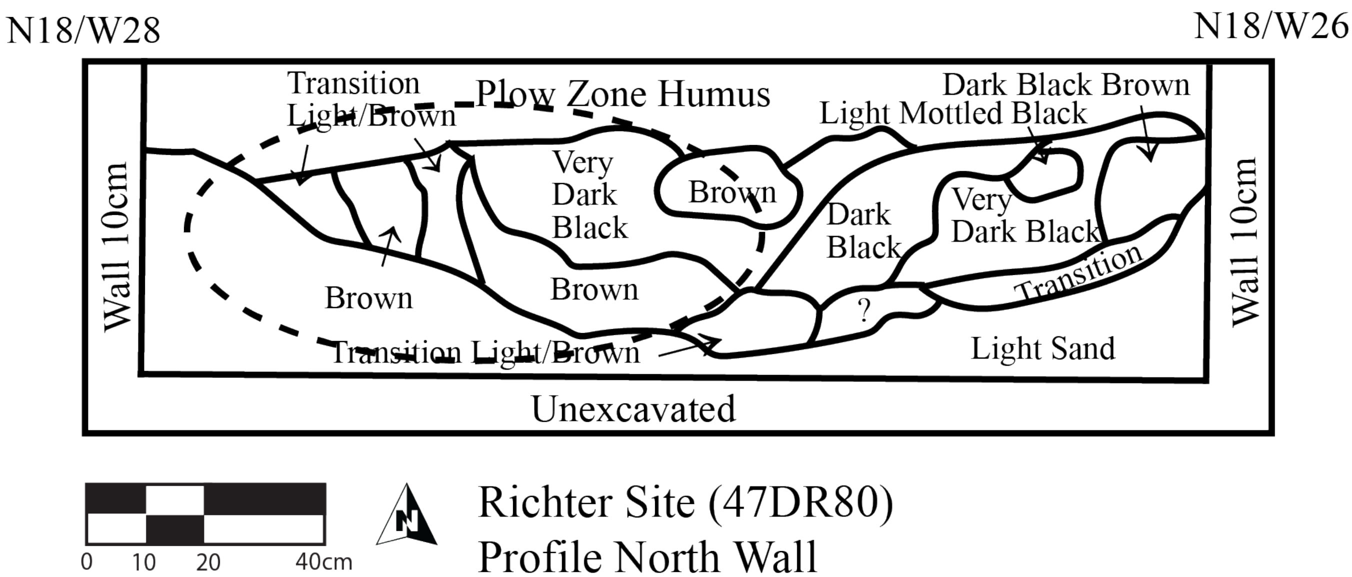


*Numerous unlabeled small areas are described as deep rust colored

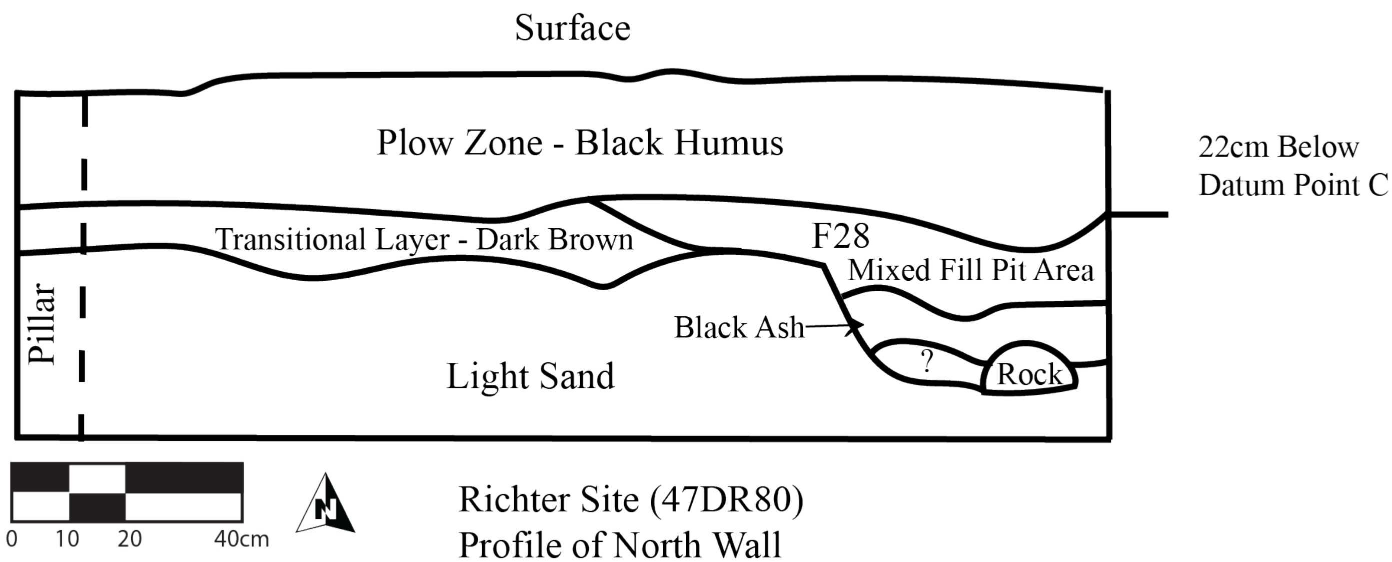


Richter Site (47DR80)
Plan View
Unit N88/E02
Level 2, top, 25 cm
1973

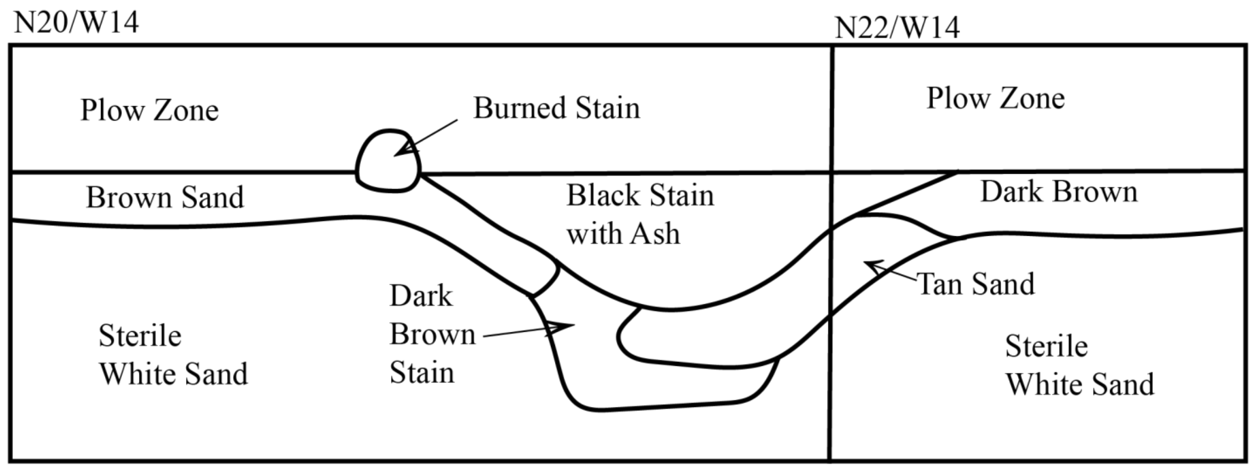
Appendix D: Unit Profiles

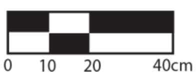


Richter Site (47DR80)
Profile North Wall
Unit N16/W28
1973

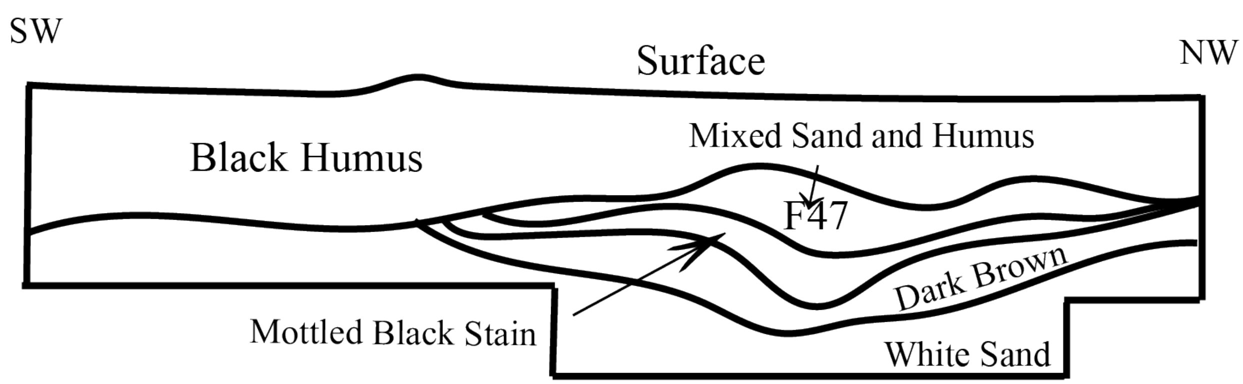


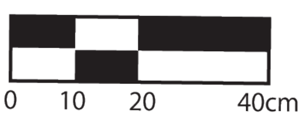
Richter Site (47DR80)
Profile of North Wall
Unit N18/W12
1973



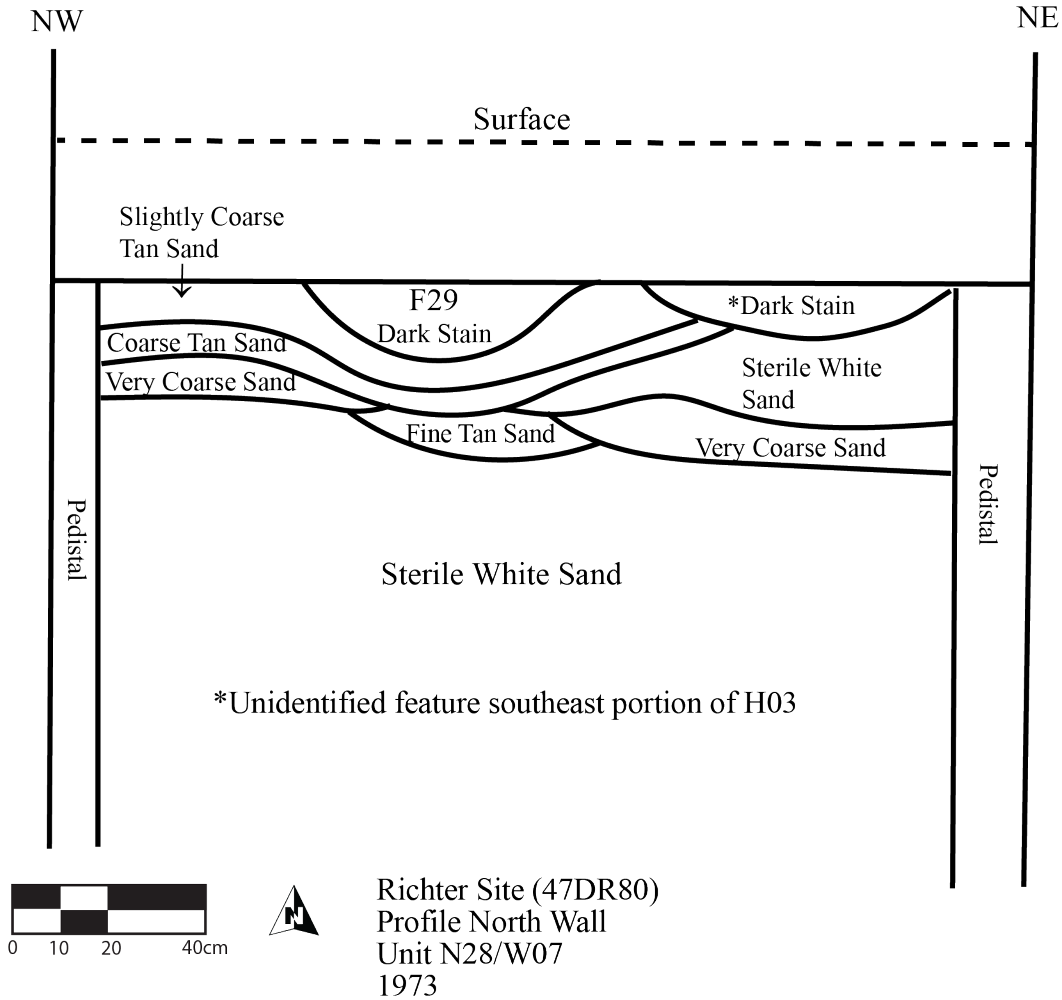


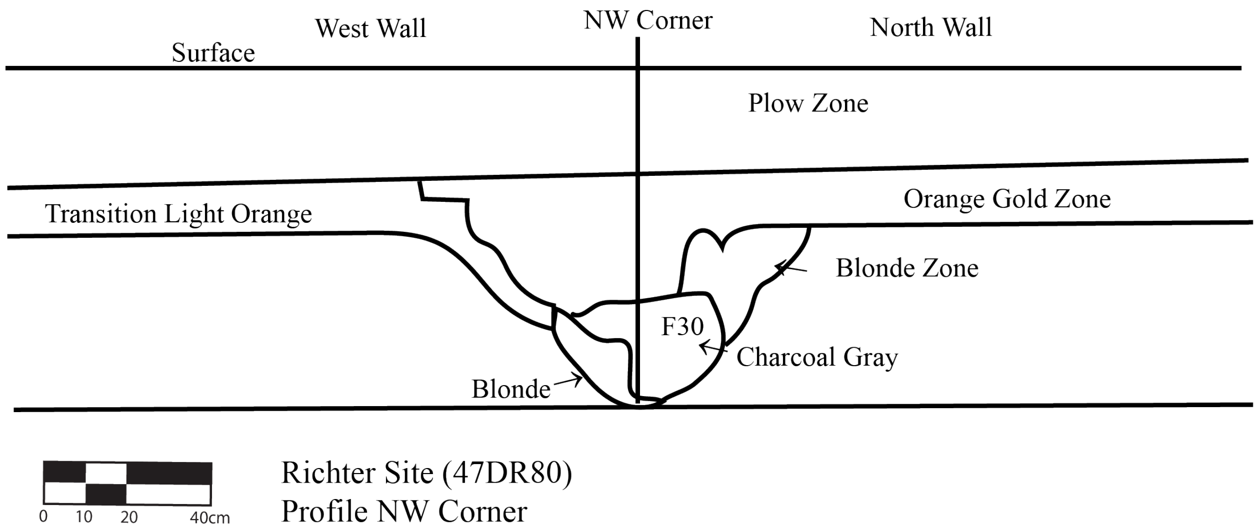
Richter Site (47DR80)
Profile West Wall
TP N20/W14 & N22/W14





Richter Site (47DR80)
Profile West Wall
Unit N20/W26


NW
NE
Surface
Slightly Coarse
Tan Sand
F29
Dark Stain
*Dark Stain
Coarse Tan Sand
Very Coarse Sand
Sterile White
Sand
Fine Tan Sand
Very Coarse Sand
Pedistal
Pedistal
Sterile White Sand
*Unidentified feature southeast portion of H03
0
10
20
40cm
N
Richter Site (47DR80)
Profile North Wall
Unit N28/W07
1973



Richter Site (47DR80)
Profile NW Corner
Unit N35/W30
1973

Appendix E:
Feature Data

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F1	Pit	TP 1	90 x 60	35	Cordmarked Body Sherds 9.3 9g (2); Decorated Sherds (3 Unidentified) 5.75 g (3); Smoothed Sherds 12.97g (7); Pottery Fragments 111.45 g (161); Rim Fragment .96 g (1); Size 1 Flakes 4.2 g (33); Size 2 Flakes 18.8 g (66); Size 3 Flakes 59.7 g (61); White Sucker, *Catostomus commersoni* .8 g (1); Unidentified fish .88 g (13); Unidentified mammal 4.39 g (8); Unidentified bone 1.89 g (10).
F2	Pit	TP1	50 x 50	30	Size 2 Flakes .4 g (1); Unidentified fish 1.97 g (18); Unidentified reptile 2.09 g (3); Unidentified bone 4.28 g (7).
F3	Pit	TP1	20 x 30	30	Size 1 Flakes .3 g (3); Size 2 Flakes 0.4 g (2); Size 3 Flakes 64.6 g (41); Size 4 Flakes 242 g (15).
F4	Hearth	TP1	34 x 60	45	Pottery Fragments 3.9 g (7); Size 3 Flakes 9.5 g (2); Unidentified fish .06 g (2); Unidentified mammal .32 (1).
F5	Midden	TP2	130 x 150	24	Cordmarked Sherds 4.24 g (1); Smoothed Pottery Fragments 4.15 g (2); Pottery Fragments 15.06 g (14); Size 1 Flakes 1 g (7); Size 2 Flakes 4.4 g (12); Size 3 Flakes 85.6 g (54); Size 4 Flakes 507.3 g (24); Biface Fragment (1); Bipolar Core (1); Straight Stem Haft Biface (1); Unifacial Flaked Tool (1); Unifacial Utilize Edge Tool (1); Turkey, *Meleagris gallopavo* 1.26 g (2); Whitetail deer, *Odocoileus virginianus*

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
					17.6 g (1); Unidentified fish .06 g (1).
F6	Pit	TP1	35 x 35	Unknown	No artifacts
F7	Dog Burial	TP4	45 x 50	27	Cordmarked Sherds 690.1 g (52); Smooth Sherds 229.55 g (121); Decorated Smooth Sherds (2 Psuedo-Scallop, 5 Unidentified, and 2 Linear Stamp) 63.67 g (16); Smoothed-over-Cordmarked Sherds 21.73 g (2); Decorated Smoothed-over-Cordmarked Sherds with Pseudo-Scallop stamping 197.68 g (25); Cordmarked Rim Sherds 19.87 g (2); Pottery fragments 472.32 g (511); Does not include reconstructed V2; Size 2 Flakes 1.7 g (5); Size 3 Flakes 4.1 g (2); Unidentified mammal .33 g (1); Unidentified .18 g (4).
F8	Midden	TP4	70 x 60	23	Cordmarked Sherds 3.81 g (1); Smooth Sherds 22.2 1 g (1); Decorated Smooth Sherds (1 Dentate and 1 Unidentified) 3.32 g (2); Pottery Fragments 10.93 g (15); Size 3 Flakes 3.9 g (3); Unidentified mammal 6.86 g (3).

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F9	Burial	1010/1000	200 x 160	45	Cordmarked Sherds 10.90 g (1); Smooth Sherds 13.43 g (6); Decorated Smooth Sherds (1 Punctate and 2 Pseudo-Scallop) 3.58 g (3); Pottery Fragments 80 g (112); Black bear Ursus americanus .62 g (1); Frog or toad Anura 0.7 g (5); Deer, elk or moose, *Artiodactyla* 1.35 g (1); Muskrat, *Ondatra zybethicus* .33 g (1); Turtle, *Testudines* 2.51 g (6); Walleye, *Stizostedion vitreum* .32 g (2); Whitetail deer, *Odocoileus virginianus* 1.88 g (1); Tentative ID Wolf, *cf. Canis lupus* 6.84 g (1); Yellow Perch, *Perca flavescens* .6 g (5); Medium carnivore, *Carnivora spp*. .43 g (1); Unidentified fish 4.66 g (63); Unidentified mammal 19.83 g (39); Unidentified small mammal .32 g (1); Unidentified medium mammal 4.04 g (4); Unidentified large mammal 14.86 g (12); Unidentified reptile .06 g (1); Unidentified 8.22 g (52).
F10	Midden	1010/1003	40 x 75	24	Pottery Fragments .52 g (2).

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F11	Burial	1010/1000	200 x 160	45	Cordmarked Sherds (1) 1.85 g; Smooth Sherds (6) 18.74 g; Decorated Smooth Sherds (1 CWS; 1 CWS with Annular Punctate; 1 Drag/Stamp Plain Tool; 1 Dentate; 1 Linear Stamp; 5 Pseudo-Scallop; 2 Unidentifed) 40.92 g (12); Beaver, *Castor canadensis* .61 g (1); Dog or coyote, *Canis sp*. .84 g (3); Largemouth bass, *Micropterus salmoides* .1 g (1); Medium carnivore, *Carnivora spp*. .79 g (1); Perch or Walleye, *Percidae spp*. .07 g (1); Whitetail deer, *Odocoileus virginianus* 5.97 g (3); Unidentified bird .39 g (2); Unidentified fish .91 g (15); Unidentified mammal 22.87 g (41); Unidentified small mammal .18 g (1); Unidentified medium mammal 2.08 g (5); Unidentified large mammal 11.88 g (8); Unidentified bone 7.66 g (60).
F12	Pit	1010/1003	45 x 50	18	No artifacts
F13	Pit	1007/1000	90 x 95	37	Cordmarked Sherds 11.75 g (2); Smoothed Sherds 12.45 g (9); Decorated Smooth Sherds (2 CWS, 1 Dentate, 1 Linear Stamp, 5 Pseudo-Scallop, 2 Unidentified) 31.22 g (11); Pottery Fragments 74.21 g (145); Size 1 Flakes 1.4 g (10); Size 2 Flakes 5.7 g (21); Size 3 Flakes 35.3 g (43); Size 4 Flakes 27.5 g (3); Utilized Pseudo-bladelet (1); Largemouth bass, *Micropterus salmoides*.19 g (1); Snail,

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
					Gastropod .12 g (4); Sunfish *Lepomis sp*. .06 g (2); Yellow Perch *Perca flavescens*.14 g (2); Unidentified amphibian 3.68 g (9); Unidentified fish 7.92 g (51); Unidentified mammal 36.7 g (54); Unidentified reptile 1.52 g (4); Unidentified bone 16.78 g (89); Flat worked copper fragment .44 g (1).
F14	Pit	1007/1000	130 x 95	11	Snail, *Gastropod* .08 g (1); Unidentified bone .38 g (2).
F15/ F16	Pit	1007/1000	200 x 200	35	Cordmarked Sherds 143.9 g (8); Smoothed Sherds 21.53 g (10); Decorated Smooth Sherds (2, CWS, 1 Punctate, and 3 Unidentified) 19.07 g (6); Pottery Fragments 120.86 g (121); Size 1 Flakes 1.6 g (12); Size 2 Flakes 17.7 g (59); Size 3 flakes 89.6 g (78); Size 4 Flakes 167.7 g (6); Expanding Stem Hafted Biface (1); Contracting Stem Biface Fragment (1); Straight Stem Biface Fragment (1); Biface Fragment (2); Bipolar Core (1); Unifacial Utilized Edge Tool (1); Freshwater drum, *Aplodinotus grunniens*.17 g (1); Freshwater mussel .65 g (5); Snail, *Gastropod* 10.73 g (80); Unidentified bird .32 g (3); Unidentified fish 39.65 g (187); Unidentified mammal 112.71 g (97); Unidentified reptile 2.08 g (4); Unidentified bone 52.99 g (309); Copper Fishhook 1.57 g (CP104).
F17	Pit	1021/997	25 x 30	25	No artifacts

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F18	Hearth	1010/1003	95 x 105	32	Decorated Smooth Sherd (1 Pseudo-Scallop) .81 g (1); Pottery Fragments 11.35 g (17).
F19	Pit	1010/1000	20 x 30	Unknown	No artifacts
F20	Hearth	1007/1003	120 x 75	15	Plain Sherds 4.29 g (2); Decorated Sherds (3 Pseudo-Scallop) 4.64 g (3); Pottery Fragments 11.99 g (21); Size 1 Flakes .8 g (7); Size 2 Flakes 2.1 g (9); Size 3 Flakes 13.2 g (18); Size 4 Flakes 10.4 g (2); Snail *Gastropod* .3 g (3); Unidentified mammal 2.89 g (6).
F21	Hearth	1007/1003	35 x 40	Unknown	No artifacts
F22	Pit	1005/1003	98 x 90	30	Cordmarked Sherds 2.19 g (1); Plain Sherds 22.23 g (11); Decorated Sherds (1 Dentate, 1 Pseudo-Scallop, 1 Linear Stamp, and 3 Unidentified) 32.26 g (6); Pottery Fragments 63.11 g (77); Size 2 Flakes 3.9 g (16); Size 3 Flakes 44.2 g (39); Size 4 Flakes 25.2 g (2); Whitetail deer, *Odocoileus virginianus* .59 (1); Unidentified fish 6.62 g (77); Unidentified mammal 12.63 g (15); Unidentified 5.82 g (19).

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F23	Pit	1005/1003	80 x 90	30	Smoothed-over-Cordmarked Sherds 25.27 g (4); Decorated Sherds (1 Linear Stamp, 1 Pseudo-Scallop with possible incising, and 1 Unidentified) 54.91 g (3); Pottery Fragments 13.54 g (19); Size 2 Flakes 1.9 g (8); Size 3 Flakes 26.8 g (19); Size 4 Flakes 7.8 g (1); Snail, *Gastropod* .06 g (1); Walleye, *Stizosterlian vitreum* .38 g (1); Yellow Perch, *Perca flavescens* .01 g (1); Unidentified mammal 12.03 g (10); Unidentified .74 g (4).
F24	Pit	1005/1000	55 x 40	27	Pottery Fragments 3.55 g (1); Size 1 Flakes .2 g (1); Size 2 Flakes 1.5 g (2); Size 3 Flakes 12.1 g (13); Biface Fragment (1); Rolled Worked Copper Fragment .44g (1); Unidentified fish .06 g (1); Unidentified mammal .29 g (2).
F25	Burial	1005/1000 ext	140 x 220	45	Burial 1; Burial 2; Burial 3; Burial 4; additional remains include Human Molar (1); Human Phalanges (4); Cordmarked Sherds 38.76 g (10); Smooth-over-Cordmarked Sherds Smooth 14.40 g (3); Smooth Sherds 14.63 g (2); Smooth Decorated Sherds (1 CWS, 1 CWS with Annular Punctate, 1 Dentate Stamp, 3 Linear Stamp, 1 Pseudo-Scallop Stamp, and 4 Unidentified) 25.31 g (11); Pottery Fragments 292.57 g (502) ; Copper Awl (1); Copper Fragment (1); Beaver,

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
					Castor canadensis 4.23 g (5); Black bear, *Ursus americanus*13.18 g (1); Frog or toad, *Anura spp*. .39 g (1); Largemouth bass, *Micropterus salmoides* .23 g (1); Muskrat, *Ondatra zybethicus* 1.39 g (1); Panfishes, *Centrarchidae spp*. .19 g (4); Perch or Walleye, *Percidae spp*. .92 g (5); Rodents, *Rodentia spp*. .02 g (2); Snail, *Gastropod* 1.43 g (39); Turtle, *Testudines* 3.55 g (3); Yellow Perch, *Perca flavescens* 1.02 g (6); Walleye, *Stizostedion vitreum* .7 g (2); Whitetail deer, *Odocoileus virginianus* 14.9 g (8); Tentatively Identified beaver, *cf. Castor canadensis* 1.28 g (1); Tentatively Identified mink, *cf. Mustela vison* .86 g (1); Unidentified bird 4.03 g (12); Unidentified medium bird .29 g (1); Unidentified fish 16.61 g (154); Unidentified mammal 74.28 g (118);Unidentified medium mammal 7.85 g (11); Unidentified large mammal 40.36 g (21); Unidentified 8.91 g (62).
F26	Structure (Partial)	N18/W12	190 x 90	75	Cordmarked Sherds 23.02 g (1); Smooth Sherds 4.72 g (1); Smoothed-over-Cordmarked 21.03 g (5); Decorated Smooth Sherds (1 Linear Stamp, 1 Dentate Stamp, and 1 Unidentified) 8.73 g (3); Pottery Fragaments 21.93 g (20); Size 3 Flakes 1.6g (4).

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F27	Structure	N18/W30	200 x 100	52	Smoothed Sherds 184.31 g (20); Smoothed-over-Cordmarked Sherds 6.64 g (2); Decorated Smooth Sherds (1 CWS) 1.88 g (1); Rim Fragments 1.02 g (1); Pottery Fragments 198.39 g (205); Size 2 Flakes .9 g (4); Size 3 Flakes 40.2 g (29); Unidentified Flora .054 g (1); Bark Charcoal .060 g (1); Copper Fishhook .47g (1); Snail, *Gastropod* .71 g (1); Unidentified bone .28 g (2).
F28	Hearth	N18/W12 N20/W12	60 x 45	30	No artifacts
F29	Structure	N28/W07	90 x 80	16	Smoothed-over-Cordmarked Sherds 9.05 g (2); Cordmarked Interior/Exterior Sherds 4.74 g (1); Decorated Sherds (Incised on Smooth) .79 g (1); Pottery Fragments 22.55 g (35); Size 1 Flakes .3 g (2); Size 2 Flakes 2.8 g (9); Size 3 Flakes 7.1 g (10); Size 4 Flakes 10 g (1).
F30	Pit	N35/W30	60 x 38	38	No artifacts
F31	Pit	N28/W02	18 x 50	34	Pottery Fragments 4.12 g (7); Size 1 Flakes .2 g (2); Size 3 Flakes .9 g (1).
F32	Hearth	N18/W32 N20/W32	55 x 75	20	Pottery Fragments 4.12 g (7); Size 1 Flakes .2 g (2); Size 2 Flakes 1 g (5); Size 3 Flakes 10.6 g (6); Size 4 Flake 26.2 g (2); Unidentified mammal 0.82 g (2).
F33	Structure (Partial)	N16/W34 N16/W32	50 x 80	10	Smoothed-over-Cordmarked Sherds 7.16 g (1); Pottery Fragments 24.52 g (32); Size 3 Flakes 10.8 g (8); Size 4 Flakes 163.7 g (5).

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F34	Structure	N28/W12 N30/W10 N30/W12	200 x 75	34	Cordmarked Sherds 4.96 g (2); Smoothed Sherds 33.7 g (11); Smoothed-over-Cordmarked Sherds 15.57 g (5); Decorated Smooth Sherds (7 CWS, 2 Pseudo-Scallop, and 3 Unidentified) 32.87 g (12); Pottery Fragments 190.66 g (211); Size 1 Flakes 1 g (9); Size 2 Flakes 12.8 g (45); Size 3 Flakes 114.7 g (88); Size 4 Flakes 56.2 g (9); Rodents, *Rodentia spp*. .03 g (1); Snail, *Gastropod* .66 g (2); Unidentified fish .18 g (1); Unidentified mammal .93 g (4).
F35	Unknown	Unknown	Unknown	Unknown	Smooth Sherds 3.98 g (1); Decorated Smooth Sherds (1 Pseudo-Scallop and 1 Unidentified) 4.48 g (2); Pottery Fragments .86 g (2);Whitetail deer, *Odocoileus virginianus* 8.32g (15); Unidentified bird .64g (3); Unidentified mammal 4.95 g (16); Utilized edge-only (1); Unidentified large mammal 2.89 g (1).
F36	Hearth	N28/W10	35 x 50	34	Pottery Fragments 118.43 g (204); Size 2 Flakes .6 g (4); Size 3 Flakes 1.5 g (2); Unidentified bone .61 g (10).
F37	Hearth	N28/W10	65 x 60	15	Pottery Fragments 0.63 g (2); Size 3 Flakes .9 g (1).

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F38	Pit	N28/W10 N30/W10 N30/W07	130 x 130	24	Cordmarked Sherds 8.81 g (4); Smooth Sherds 17.92 g (3); Smoothed-over-Cordmarked Sherds 13.72 g (2); Decorated Smooth Sherds (2 CWS, 1 Linear Stamp, and 1 Pseudo-Scallop) 6.35 g (4); Decorated Cordmarked Sherds (2 Incised) 7.46 g (2); Pottery Fragments 68.72 g (67); Rim Fragments 1.2 g (2); Size 2 Flakes 5.6 g (18); Size 3 Flakes 61.66 g (44); Size 4 Flakes 3.1 g (1); Bipolar Core (1); Unidentified mammal 3.01 g (2); Unidentified bone .82 g (3).
F39	Hearth	N40/W02	40 x 75	75	Smooth Decorated Sherds (1 Linear Stamp and 1 Unidentified) 13.21 g (2); Snail, *Gastropod* .75 g (5); Unidentified bone .13 g (2).
F40	Structure	N20/W02	70 x 95	20	Smoothed Sherds 4.2 g (2); Pottery Fragments 62.92 g (68); Size 2 Flakes 2.5g (13); Size 3 Flakes 14.1g (9); Unidentified flora .10 g (1).
F41	Structure (Partial)	N14/W34 N15/W34 N16/W34	320 x 60	34	Pottery Fragments 17.29 g (15); Size 2 Flakes .9g (5); Size 3 Flakes .8g (1); Unidentified bone .49g (1).
F42	Structure	N26/W10 N24/W10	200 x 85	34	Smoothed Sherds 5.49 g (3); Smoothed-over-Cordmarked Sherds 16.85 g (3); Decorated Smooth Sherds (1 Punctate, 1 Pseudo-Scallop Stamp, and 1 Unidentified) 6.3 g (3); Pottery Fragments 145.48 g (189); Size 2 Flakes 2.4 g (7); Size 3 Flakes 65.7 g (52); Size 4 Flakes 54.9 g (10); Bipolar Core (1); Core (1); Lake sturgeon, *Acipenser*

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
					fulvescens.97g (2); Yellow Perch, *Perca flavescens*.38 g (1); Whitetail deer, *Odocoileus virginianus* 16.77 g (3) Unidentified fish 2.14 g (39); Unidentified mammal 13.1 g (35); Unidentified large mammal 2.82 g (2).
F43	Pit	N10/E08	35 x 48	18	Cordmarked Sherds 10.25 g (2); Pottery Fragments 7.86 g (17); Size 1 Flakes .9 g (6); Size 2 Flakes .4 g (2); Size 3 Flakes 3.8 g (3).
F44	Hearth	N10/E07	148 x 80	27	Cordmarked Sherds 10.25 g (2); Decorated Cordmarked (1 Incised) 7.89 g (1); Decorated Smooth (1 Unidentified) .7 g (1);Pottery Fragments 7.86 g (17); Size 1 Flakes .9 g (6); Size 2 Flakes .4 g (2); Size 3 Flakes 3.8 g (3); Catfish, *Ictaluridae spp*. .06 g (1); Gray fox, *Urocyon cinereoargentus* .76 g (1); Panfishes, *Centrarchidae spp*. .01 g (1); Turtle, *Testudines* 1.09 g (3); Whitetail deer, *Odocoileus virginianus* 5.92 g (3); Tentatively Identified beaver, *cf. Castor canadensis* .38 (1); Unidentified amphibian .05 (1); Unidentified bird .09 g (1); Unidentified fish 2.08 g (20); Unidentified mammal Mammal 12.69 g (34); Unidentified 5.98 g (40).

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F45	Pit	N10/E07	38 x 70	33	Cordmarked Sherds 7.84 g (2); Decorated Smooth Sherds (1 CWS and 1 Unidentified) 1.92 g (2); Pottery Fragments 8.49 g (26); Size 2 Flakes .5 g (5); Size 3 Flakes 7.3 g (5); Size 4 Flakes 2.4 g (1); Dog or coyote, *Canis sp*. .69 g (1); Snail, *Gastropod* 1.29 g (13); Walleye, *Stizostedion vitreum*.14 g (3); Whitetail deer, *Odocoileus virginianus* 1.69 g (1); Unidentified fish .18 g (2); Unidentified mammal .96g (1); Unidentified 1.01 g (14).
F46	Pit	N18/W28 N20/W28	50 x 67	55	Pottery Fragments 36.63 g (43); Size 3 Flakes 6.8 g (9)
F47	Pit	N20/W28 N20/W26	100 x 90	65	Pottery Fragments 4.69 g (10); Size 2 Flakes .4 g (3); Size 3 Flakes 3 g (2); Unidentified fish .06 (1); Unidentified bone .42 g (3).
F48	Structure	NS0/W02 NS0/EW0 S04/W02 S02/W02 S02/EW0	180 x 180	48	Cordmarked Sherds 2,080.36 g (67); Smoothed Sherds 272.42 g (7); Smoothed-over-Cordmarked Sherds 333.78 g (38); Decorated Sherds 47.68 g (11); Decorated Sherds 47.68 g (11); Pottery Fragments 2,113.46 g (2,040); Rim Fragments 4.30 g (5); Size 1 Flakes .4g (4); Size 2 Flakes 9 g (6); Size 3 Flakes 154.3 g (39); Size 4 Flakes 44.4 g (4); Quercus (acorn) shell, uncarbonized .078 g (1); Frogs, *Rana spp*. .11 g (1); Green sunfish, *Lepomis cyanellus* .13 g (1); Snail, *Gastropod* .02 g (2);

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
					Unidentified fish 3.19 g (70); Unidentified bone 2.58 g (23).
F49	Structure	N06/E10 N06/E12 N08/E08 N08/E10 N08/E12 N10/E12	440 x 275	52	Cordmarked Sherds 188.3 g (28); Decorated Cordmarked Sherds (11 Unidentified Decoration) 127.17 g (11); Smoothed Sherds 85 g (24); Smoothed-over-Cordmarked 103.08 g (19); Decorated Smooth Sherds (8 CWS, 19 Drag Stamp Plain Tool, 2 Drag Stamp Fingernail, 2 Dentate Stamp, 2 Linear Stamp, 2 Linear Stamp Fingernail, 1 Punctate, 8 Pseudo-Scallop Stamp, and 20 Unidentified) 92.73 g (53); Shell Tempered Sherds 3.13 g (3); Pottery Fragments 1,200.36 g (2,047); Rim Fragments 12.46 g (14); Size 1 Flakes 16.2 g (103); Size 2 Flakes 160.1 g (500); Size 3 Flakes 480.9 g (397); Size 4 Flakes 369.4 g (49); Expanding Stem Hafted Biface (1); Crude Biface (1); Biface Fragment (3); Abrader (1); Bipolar Core (6); Unifacial Utilized Edge Tool (6); Unifacial Utilized Bipolar Edge Tool (1); Bipolar Core (6); Size 1 Flakes 16.2 g (103); Size 2 Flakes 160.1 g (500); Size 3 Flakes 480.9 g (397); Size 4 Flakes 369.4 g (49); Point? Solid Copper 9.43 g (1); Broken Awl? 0.77 g (1); Flat Bent Worked Fragment .29 g (1); Bass, *Micropterus sp*. .26 g (1); Beaver, *Castor canadensis* .78 g (1); Black

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
					bear, *Ursus americanus* 2.01 g (4); Bullhead *Ameiurus sp*, .32 g (1); Catfish, *Ictaluridae spp*. .39 g (1); Deer, elk or moose, *Artiodactyla* 14.64 g (1); Eastern gray squirrel, Sciurus caroliniensus .59 g (4); Frog or toad, *Anura* .77 g (2); Hawk, eagle or relative, *Acipitridae spp*. 2.77 g (3); Panfishes, *Centrarchidae spp*. .09 g (2); Perch or Walleye, *Percidae spp*. .04 g (1); Sunfish, *Lepomis sp*. .09 g (1); Turtle, *Testudines* 3.52 g (4); Yellow Perch, *Perca flavescens* .68 g (10); Walleye, *Stizostedion vitreum* .24 g (2); Whitetail deer, *Odocoileus virginianus* 42.4 g (37); Tentative ID Owl *cf. Strigiformes* .41 g (1); Tentative ID whitetail deer, *cf. Odocoileus virginianus* 6.01 g (1); Unidentified bird 6.34 g (9); Unidentified fish 12.05 g (212); Unidentified mammal 130.82 g (352); Unidentified small mammal 1.42 g (11); Unidentified medium mammal 9.37g (25); Unidentified large mammal 33.78 g (19); Unidentified reptile .12 g (1); Unidentified bone 71.88 g (462); Worked Antler Tine (1); Bone Point (1).
F50	Pit	N88/W02	90 x 60	Unknown	No artifacts

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F51	Midden	S02/E06 S02/E08 NS0/E06 NS0/E08	340 x 180	16	Cordmarked Sherds 22.52 g (7); Smooth Sherds 25.99 g (8); Smoothed-over-Cordmarked 12.63 g (8); Smooth Decorated (4 CWS, 4 Drag-Stamp Plain Tool, 2 Linear Stamp, 1 Punctate, and 10 Unidentified) 33.8 g (22); Decorated Cordmarked Sherds (1 CWS) 1.08 g (1); Pottery Fragments 509.18 g (1,139); Rim fragments 5.7 g (8); Size 2 Flakes 1.5 g (6); Size 3 Flakes 28.4 g (31); Size 4 Flakes 67 g (6); Unifacial Utilized Edge Tool (1); Flat worked copper fragment (1) CP501; Unidentified fish 1 g (8); Deer, elk or moose *Artiodactyla* .14 g (1); Unidentified large mammal 1.13 g (1); Unidentified mammal 4.24 g (18); Whitetail deer *Odocoileus virginianus* 237.53 g (34); Black bear, *Ursus americanus.*74 g (1); Unidentified Bone 3.02 g (23); Worked bone includes a single bone bead.
F52	Midden	N06/E10	42 x 60	35	Pottery Fragments 27.35 g (43); Size 2 Flakes .7 g (4); Size 3 Flakes 1.1 g (2); Bipolar Core (1); Snail *Gastropod* .53 g (2); Unidentified amphibian .06 g (1); Unidentified fish 1.59 g (26); Unidentified mammal 6.63 g (6); Unidentified bone 1.97 g (24).
F53		S02/E08, S02/E10 NS0/E08 NS0/E10	245 x 120	Unknown	See F66 and F67

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F54	Hearth	N20/W14	62 x 105	22	Snail Gastropod .4 g (14).
F55	Pit	S02/W04	45 x 30	55	Pottery Fragments 1.26 g (3); Size 3 Flakes 1.1 g (2).
F56	Hearth	N20/W14	35 x 45	21	No artifacts
F57	Pit	N18/W28	44 x 64	40	Pottery Fragments 0.36 g (2).
F58	Pit	NS0/E01 S02/E02	60 x 70	16	Smooth Sherds 2.23 g (1); Decorated Sherd (1 Dentate) .51 g (1); Pottery Fragments 13.43 g (30); Rim Fragments 5.91 g (2); Size 2 Flakes .9 g (3); Size 3 Flakes 5.7 g (5); Size 4 Flakes 11.1 g (3); Core (1); Unidentified mammal .05 g (1); Unidentified bone 5.99 g (12).
F59	Pit	S02/E00 S02/E02	44 x 60	13	No artifacts
F60	Pit	N30/W10	75 x 62	11	Pottery Fragments 4.84 g (3); Size 3 Flakes .9 g (1); Snail *Gastropod* 2.15 g (9).
F61	Structure (Partial)	S06/E08	80 x 70	35	Cordmarked Sherds 1.85 g (1); Smooth Sherds 10.09 g (3); Pottery Fragments 16.02 g (13); Size 3 Flakes 9 g (3); Size 4 Flakes 26.6 g (2); Corner-Notched Hafted Biface (1).
F62	Pit	S06/E10	50 x 45	10	Pottery Fragments 11.8 g (23); Size 1 Flakes .5 g (3); Size 2 Flakes 1.8 g (7); Size 3 Flakes 20.3 g Unidentified mammal 2.23 g (3).

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F63	Midden	N02/E08	115 x 113	21	Cordmarked Sherds 16.56 g (4); Plain Sherds 2.77 g (2); Smoothed-over-Cordmarked Sherds 6.68 g (1); Decorated Sherds (1 Drag-Stamp Plain Tool and 2 Pseudo-Scallop) 14.6 g (3); Pottery Fragments 88.39 g (249); Rim Fragments 1.86 g (2); Size 2 Flakes 3.7 g (15); Size 3 Flakes 27 g (26); Size 4 Flakes 21.1 g (3); Bipolar Core (1); Hammer Stone (1); Beaver, *Castor canadensis* .89 g (2); Brown bullhead, *Ameiurus nebulosis* .17 g (1); Catfish, *Ictaluridae spp*. .14 g (1); Deer, elk or moose, *Artiodactyla* 90.85 g (13); Dog or coyote, *Canis sp*. 1.78 g (1); Medium carnivore, *Carnivora spp*. .21 g (2); Northern pike, *Esox lucius* 1.46 g (2); Yellow Perch, *Perca flavescens* 1.54 g (16); Walleye, *Stizostedion vitreum* 8.97 g (24); Whitetail deer, *Odocoileus virginianus* 5.14 g (3); Unidentified fish 92.35 g (1,052); Unidentified mammal 22.63 g (54); Unidentified medium mammal 11.28 g (12); Unidentified large mammal 27.29 g (20);Unidentified Unidentified bone 24.6 g (312); Unidentified bone 216.02 g.
F64	Pit	N02/E08	45 x 55	Unknown	No artifacts

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F65	Structure	N20/W14	Unknown	Unknown	Smoothed Sherds 2.68g (1); Smoothed-over-Cordmarked Sherds 3.65g (1); Smooth Decorated Sherds (1 CWS and 2 Pseudo-Scallop) 4.97 g (3) Pottery Fragments 8.06 g (10); Size 2 Flakes 0.2g (1); Size 3 Flakes 4.5g (4); Bipolar Core (1); Unidentified fish .36g (2); Unidentified mammal 1.76g (2); Unidentified 2.07g (12)
F66	Midden	NS0/E10	70 x 40	13	Pottery Fragments 0.47g (1); Size 3 Flakes 1.4g (4); Bipolar Core (1); Hafted Biface (1); Unidentified mammal 1.01g (2)
F67	Midden	NS0/E10	95 x 55	13	Cordmarked Sherds 22.17g (4); Decorated Smooth Sherds (CWS) 2.13 g (1); Pottery Fragments 8.81 g (10); Size 2 Flakes .7 g (3); Size 3 Flakes 15 g (14); Hafted Biface (1); Bipolar Core (1); Bass, *Micropterus sp.*.33 g (2); Deer, elk or moose, *Artiodactyla*.63 g (1); Lake sturgeon, *Acipenser fulvescens* .35 g (2); Unidentified fish 1.16 g (21); Smallmouth bass, *Micropterus dolomeiau* .23 g (1); Yellow Perch, *Perca flavescens* .46 g (4); Walleye, *Stizostedion vitreum* .16 g (1); Unidentified mammal 16.4 g (29); Unidentified small mammal .19 g (2); Unidentified large mammal 18.8 1g (8); Unidentified bone 1.18 g (12); Antler tine point .29 g (1); Antler tine point (1).

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F68	Structure	N24/W12 N22/W14 N22/W12 N20/W12	Unknown	Unknown	Cordmarked Sherds 15 g (1); Decorated Smooth Sherds (1 CWS and 1 Unidentified) 2.1 g (2); Pottery Fragments 43.3 g (43); Rim Fragments .95 g (1); Size 2 Flakes 7.5 g (28); Size 3 Flakes 32.7 g (54); Size 4 Flakes 30.9 g (5); Bipolar Core (1); Unidentified flora .093 g (5); Worked Bent/Rolled Copper Fragment (1); Unidentified 1.26 g (3).
F69	Structure	S06/E08 S06/E10 S04/E08 S04/E10 S02/E08 S02/E10	260 x 300	17	Cordmarked Sherds 6.01 g (4); Smooth Sherds 21.39 g (5); Smoothed-over-Cordmarked Sherds 23.28 g (5); Smooth Decorated Sherds (1 Drag-Stamp Plain Tool, 1 Linear Stamp, and 1 Pseudo-Scallop) 4.68 g (3); Pottery Fragments 185.12 g (250); Rim Fragments 3.6 g (3); Size 1 Flakes 1.7 g (12); Size 2 Flakes 15.3 g (41); Size 3 Flakes 99.8 g (75); Size 4 Flakes 32.9 g (7); Bipolar Core 1.1 g (1); Unidentified Fish 1.76 g (19); Unidentified Mammal 13.84 g (19); Unidentified Bone 5.64 g (44); Worked bent/rolled Copper Fragment (CP490).
F70	Hearth	N28/E10	60 x 85	Unknown	No artifacts
F71	Hearth	S04/E0	50 x 40	Unknown	No artifacts
F72	Burial	S02/EW0 NS0/EW0	Unknown	Unknown	No artifacts
F73	Hearth	N13/W34	15 x 30	Unknown	No artifacts
F74	Midden	N13/W34	75 x 45	Unknown	unexcavated
F75	Hearth	N13/W32	50 x 75	Unknown	No artifacts

Feature Data

Feature Number	Feature Type	Unit Number	Size (cm)	Depth (cm)	Contents
F76	Structure Partial	N20/W26	158 x 122	Unknown	No artifacts
F77	Hearth	N18/W28	20 x 30	Unknown	No artifacts
F78	Midden	N10/E12	78 x 78	Unknown	No artifacts
F79	Midden	N18W07	120 x 45	Unknown	No artifacts

Appendix F: Charcoal Data

Weight of Unit Charcoal by Level

Unit	Level	Total Weight (g)
1005/1000EXT	2	0.23
1007/1000	2	0.38
1007/1003	2	1.06
1105/0940	3	0.25
N02/E08	2	150.37
N02/E08	3	90.1
N02/E08	4	8.06
N02/E08	P	5.35
N06/E10	2	5.62
N06/E10	3	0.58
N06/E10	P	2.39
N06/E12	2	9.53
N06/E12	P	7.92
N06/EW0	P	0.81
N08/E07	2	1.37
N08/E07	3	5.19
N08/E07	P	0.83
N08/E10	2	4.31
N08/E10	P	1.3
N08/E12	2	0.53
N08/E12	3	7.13
N08/E12	P	6.34
N08/EW0	P	0.08
N09/W02	2	0.89
N10/E07	2	1.12
N10/E07	3	0.32
N10/E07	P	1.68
N10/E12	2	9.99
N10/E12	P	11.38
N10/EW0	P	4.78
N10/W02	P	0.54
N124/E35	P	1.75
N13/W30	P	2.52
N13/W32	2	11.42
N13/W32	P	8.97
N13/W34	2	1.16
N13/W34	3	0.41
N13/W34	P	1.58

Weight of Unit Charcoal by Level

Unit	Level	Total Weight (g)
N15/W34	P	19.48
N16/W28		0.55
N16/W28	2	0.86
N16/W28	P	2.32
N16/W30		5.82
N16/W30	2	0.5
N16/W32	2	6.55
N16/W32	P	24.15
N16/W34	2	27.55
N16/W34	3	13.17
N16/W34	P	9.85
N18/W12	2	1.18
N18/W12	P	1.3
N18/W28	2	0.48
N18/W28	3	0.29
N18/W28	4	0.21
N18/W28	P	28.71
N18/W30	2	0.24
N18/W30	3	3.61
N18/W30	5	0.1
N18/W30	P	6.99
N18/W32	2	0.18
N18/W32	P	7.83
N20/W12	2	5.02
N20/W12	3	19.91
N20/W12	4	1.23
N20/W14	2	1.53
N20/W14	3	5.34
N20/W14	P	9.32
N20/W26	2	0.55
N20/W26	P	9.46
N20/W28	2	1.34
N20/W28	3	41.13
N20/W28	P	19.01
N20/W30	2	6.04
N20/W30	3	1.13
N20/W30	P	18.22
N20/W32	2	16.5

Weight of Unit Charcoal by Level

Unit	Level	Total Weight (g)
N20/W32	P	1.82
N22/W12	2	2.63
N22/W12	3	0.12
N22/W12	P	7.08
N24/W10	2	2.74
N24/W10	P	3.19
N24/W12	2	8.48
N24/W12	P	1.87
N26/W10	2	8.63
N26/W10	3	0.48
N26/W10	P	3.84
N26/W12		0.76
N26/W12	2	0.28
N28/E10	2	4.33
N28/W02	2	6.45
N28/W02	3	0.1
N28/W02	P	3.16
N28/W07	2	5.83
N28/W07	3	1.05
N28/W07	P	2.51
N28/W10	2	28.05
N28/W10	3	7.72
N28/W10	4	1.02
N28/W10	P	14.02
N28/W12	2	3.4
N28/W12	P	2.95
N30/EW0	P	0.45
N30/W07	P	1.36
N30/W10	2	4.4
N30/W10	P	10.42
N30/W12	2	0.34
N30/W12	P	7.82
N35/W30	P	4.19
N40/W02	P	1.98
N46/W10	3	0.23
N68/W02	P	19.34
N88/W02	P	2.45
NS0/E06	2	0.71

Weight of Unit Charcoal by Level

Unit	Level	Total Weight (g)
NS0/E06	3	1.44
NS0/E06	P	6.35
NS0/E08	2	39.91
NS0/E08	3	0.18
NS0/E08	P	13.51
NS0/E10	2	1.63
NS0/E10	3	0.37
NS0/E10	P	8.48
NS0/EW0	2	0.63
NS0/EW0	P	2.2
NS0/W02	3	0.61
NS0/W02	P	0.2
S02/E02	2	1.99
S02/E02	P	1.73
S02/E06	2	0.39
S02/E06	P	7.91
S02/E08	2	6.14
S02/E08	P	2.06
S02/EW0	3	26.65
S02/EW0	P	19.31
S02/W02	2	0.33
S02/W02	3	7.81
S02/W02	B ZONE	0.88
S02/W02	p	63.73
S02/W04	2	0.12
S02/W04	P	2.15
S04/E02	P	0.35
S04/E06	2	2.87
S04/E06	P	2.67
S04/E08	2	3.94
S04/E08	P	3.64
S04/E10	2	0.16
S04/E10	P	0.3
S04/W02	2	0.13
S04/W02	3	0.53
S04/W02	p	0.59
S04/W04	P	1.43
S06/E08	2	4.5

Weight of Unit Charcoal by Level

Unit	Level	Total Weight (g)
S06/E08	3	0.22
S06/E08	P	1.23
S06/E10	2	0.2
S06/E10	3	0.06
S06/E10	P	0.39
TP29	P	0.32
TP37	P	0.45

Appendix G: Lot Check List

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	N S	NSCo	E W	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
000																
038	TP6	1968			2		15	25	n	900	w	150	n	300	w	300
072	TP1	1968			2	01	15	30	s	2860	w	850	s	60	w	60
073	TP1	1968			3	01	30	50	s	2860	w	820	s	60	w	90
074	TP1	1968			2		30	45	s	2800	w	650	s	200	w	200
075	GSC	1968			S											
076	TP1	1968			P		0	45	s	2800	w	840	s	200	w	20
077	TP1	1968			2	01	15	30	s	2860	w	820	s	60	w	30
078	TP1	1968			2	02	15	45	s	2800	w	650	s	50	w	40
079	TP1	1968			2	02 & 03	15	45	s	2800	w	680	s	50	w	20
080	TP1	1968			2	03	15	45	s	2800	w	690	S	40	W	60
081	TP1	1968			2	04	15	60	S	2860	W	730	S	34	W	64
082	TP1	1968			P		0	15	S	2800	W	650	S	60	W	30
083	TP2	1968			2		25	40	S	1900	W	250	S	200	W	200
084	TP2	1968			2	05	25	49	S	1970	W	300	S	130	W	150
085	TP3	1968			2		15	30	S	1100	E	2550	S	100	E	100
086	TP4	1968			2		15	28	N	3300	W	0	N	200	W	300
087	TP4	1968			3		28	38	N	3300	W	0	N	200	W	300
088	TP4	1968			2	07	21	48	N	3290	W	230	N	10	W	45
089	TP4	1968			2	07	21	48	N	3300	W	230	N	34	W	45
090	TP4	1968			2	08	15	38	N	3430	W	140	N	70	W	74
091	TP5	1968			2		31	50	N	5500	E	3150	N	300	E	300
092	TP6	1968			2	09	25	40	N	850	W	130	N	200	W	160
093	TP6	1968			3	09	40	70	N	850	W	130	N	200	W	160

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
094	TP6	1968			2	11	25	40	N	870	W	150	N	6	W	110
095	GSC	1968			S											
096	GSC	1968			S											
097	GSC	1968			S											
098	TP6	1968			3	11	40	70	N	870	W	150	N	60	W	110
099		1968	W	750	2		15	50	S	200	W	550	S	200	W	200
100		1968	W	500	2	22	15	45	N	355	W	395	N	98	W	90
101		1968	E	50	2	25	25	70	N	270	E	25	N	140	E	220
102		1968	W	150	2		18	28	N	600	W	0	N	300	W	150
103		1968	E	0	2	13	18	55	N	760	E	0	N	90	E	95
104		1968	W	150	2	15	18	58	N	500	W	0	N	200	W	200
105		1968	E	0	2	14	18	39	N	660	E	55	N	130	W	95
106		1968	E	0	2	24	18	45	N	530	E	110	N	55	E	40
107		1968	E	450	2		15	25	N	600	E	150	N	300	E	300
108		1968	E	0	2		15	30	N	900	E	0	N	200	E	150
109		1968	E	150	2		26	48	N	2000	E	150	N	300	E	300
110		1968	E	150	2	17	29	54	N	2030	E	270	N	25	E	30
111	GSC	1968			S											
112		1968	W	450	2	10	27	52	N	1160	W	220	N	40	W	75
113		1968	W	450	2		15	35	N	400	W	150	N	200	W	300
114		1968	E	0	2		15	25	N	400	E	0	N	200	E	150
115		1968	W	450	2	11	25	70	N	870	W	150	N	60	W	110
116		1968	W	450	2		25	45	N	600	W	150	N	300	W	300
117		1968	W	450	2	1A	25	32	N	620	W	270	N	24	W	32
118		1968	W	450	2	1B	25	32	N	755	W	380	N	54	W	52
119		1968	W	450	2	23	15	45	N	460	W	245	N	80	W	90
120		1968	W	450	2	20	15	30	N	700	W	285	N	120	W	75

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
121		1968	W	0	2	1A	20	34	N	1015	W	70	N	30	W	30
122	GSC	1968			S											
123	GSC	1968			S											
124		1968	E	0	2	18	15	47	N	985	E	150	N	95	E	55
125		1968	E	0	2	18	15	47	N	985	E	100	N	95	E	50
126		1968	E	0	2	18	15	47	N	985	E	100	N	95	E	105
127		1968	E	0	2	18	15	47	N	985	E	100	N	95	E	105
128		1968	E	5850	3		25	42	N	10400	E	5850	N	200	E	200
129		1968	E	50	P		14	25	N	270	E	25	N	140	E	220
130		1968	E	50	2	25	25	70	N	270	E	25	N	140	E	220
131		1968														
132		1968														
133		1968	W	450	2	1A	25	70	N	1000	W	300	N	17	W	18
134	B01	1968			2	25	25	45	N	270	E	25	N	140	E	220
135	B02	1968			3	25	45	70	N	270	E	25	N	140	E	220
136	B03	1968			3	25	45	70	N	270	E	25	N	140	E	220
137	B04	1968			4	25	45	70	N	270	E	25	N	140	E	220
138		1973	E	1000	2		21	31	N	2800	E	1000	N	200	E	200
139		1973	W	3000	P		0	20	N	2000	W	2800	N	200	E	200
140		1973	W	3000	P		0	30	N	1800	W	2800	N	200	W	200
141		1973	W	1200	P		0	22	N	2800	W	1000	N	200	W	200
142		1973	E	0	P		0	24	N	3000	E	0	N	200	E	200

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
143		1973	W	1200	P		0	20	N	1800	W	1000	N	200	W	200
144		1973	W	3400	2		24	31	N	1600	W	3200	N	200	W	200
145		1973	W	3000			0	23	N	1600	W	2800	N	200	W	200
146		1973	W	3000	2		20	30	N	2000	W	2800	N	200	W	200
147		1973	W	700	3		34	44	N	2800	W	500	N	200	W	200
148		1973	W	1200	2		20	30	N	1800	W	1000	N	200	W	200
149		1973	W	3200	P		0	19	N	2000	W	3000	N	200	W	200
150	H03	1973	W	700	3	29	34	50	N	2815	W	500	N	90	W	80
151		1973	W	200	2		20	35	N	4000	W	0	N	200	W	200
152		1973	W	3400	P		0	24	N	1600	W	3200	N	200	W	200
153		1973	W	700	2		24	34	N	2800	W	500	N	200	W	200
154		1973	W	3000	2		23	34	N	1600	W	2800	N	200	N	200
155		1973	w	200	2	39	25	140	n	4160	w	120	n	40	w	75
156		1973	w	700	p		0	27	N	1800	W	500	N	200	W	200
157		1973	W	700	2		27	48	N	1800	W	500	N	200	W	200
158		1973	W	3200	P		0	19	N	1600	W	3000	N	200	W	200
159		1973	W	200	P		0	19	N	2800	W	0	N	200	W	200
160		1973	W	700	P		0	24	N	2800	W	500	N	200	W	200
161		1973	W	200	3		29	34	N	2800	W	0	N	200	W	200

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
162		1973	W	300	P		0	29	N	3500	W	2800	N	200	W	200
163		1973	W	1200	2	26	25	100	N	1800	W	1110	N	130	W	90
164	TP1	1973			P		0	0								
165	TP2	1973			P											
166	TP3	1973			P											
167	TP4	1973			P											
168	TP5	1973			P											
169	TP6	1973			P											
170	TP7	1973			P											
171	TP8	1973			P											
172	TP9	1973			P											
173	TP10	1973			P											
174	TP11	1973			P											
175	TP16	1973			P											
176	TP17	1973			P											
177	TP18	1973			P											
178		1973			P											
179	TP20	1973			P											
180		1973	W	1000	P		0	25	N	2800	W	700	N	200	W	300
181		1973	W	200	P		0	20	N	4000	W	0	N	200	W	200
182		1973	W	200	2		19	29	N	2800	W	0	N	200	W	200
183		1973	W	2800	P		0	20	N	1800	W	2600	N	200	W	200
184		1973	W	200	2	31	19	41	N	2800	W	135	N	18	W	50

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
185		1973	W	3400	P		0	21	N	1500	W	3200	N	100	W	200
186		1973	W	200	3		35	140	N	4000	W	0	N	200	W	200
187		1973	W	200	2	39	25	140	N	4160	W	120	N	40	W	75
188		1973	W	1000	3		30	38	N	2800	W	700	N	200	W	300
189		1973	W	1000	2	38	30	46	N	2980	W	720	N	200	W	85
190		1973	W	1000	2	36	30	64	N	2925	N	750	N	35	W	50
191	H03	1973	W	1000	2	35	30	44	N	2800	W	700	N	125	W	50
192		1973	W	100	2	37	30	35	N	2815	W	750	N	65	W	60
193	H04	1973	W	100	2	34	30	64	N	2800	W	870	N	200	W	75
194		1973	W	3200	3		25	35	N	2000	W	3000	N	200	W	200
195		1973	W	3200	2		19	25	N	2000	W	3000	N	200	W	200
196		1973	W	3200	2		19	29	N	1600	W	3000	N	200	W	200
197		1973	E	0	2		24	34	N	3000	E	0	N	200	E	200
198		1973	W	1200	2		22	32	N	2800	W	1000	N	200	W	200
199		1973	W	1000	2		25	30	N	2800	W	700	N	200	W	300
200		1973	W	3200	P		0	20	N	1800	W	3000	N	200	W	200
201		1973	W	1000	P		0	26	N	2600	W	700	N	200	W	300
202		1973	W	3400	3	41	31	65	N	1600	W	3230	N	180	W	115
203		1973	W	3400	3		31	45	N	1600	W	3200	N	200	W	200
204		1973	E	700	P		0	20	N	1000	E	700	N	200	E	300

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EWCo	NS Int	NS IntCo	EW Int	EW IntCo
205		1973	E	700	2		20	28	N	1000	E	700	N	200	E	300
206		1973	W	2800	P		0	25	N	2000	W	2600	N	200	W	200
207		1973	E	700	2		19	28	N	800	E	700	N	200	E	300
208		1973	w	200	p		0	20	s	0	w	0	s	200	w	200
209		1973	E	0	P		0	24	N	1000	E	1000	N	200	E	200
210		1973	W	200	2		26	30	S	0	W	0	S	200	W	200
211		1973	E	100	P		0	20	N	800	E	1000	N	200	E	200
212		1973	E	0	P		0	20	S	0	E	0	S	200	E	200
213		1973	W	2600	P		0	20	N	2000	W	2400	N	200	W	200
214		1973	W	600	P		0	22	S	0	E	600	S	200	E	200
215		1973	E	600	2		22	24	S	0	E	600	S	200	E	200
216	TP33 EXT	1973	E	3500	P		0	19	N	12400	E	3500	N	200	W	200
217		1973	W	200	2		19	29	N	6800	W	0	N	200	W	200
218		1973	W	1000	3		31	36	N	2600	W	700	N	200	W	300
219		1973	W	200	P		0	19								
220		1973	W	2600	2		20	30	N	2000	W	2400	N	200	W	200
221		1973	E	100	P		0	20	N	600	E	1000	N	200	E	200
222		1973	W	2800	2		20	25	N	1800	W	2600	N	200	W	200
223		1973	W	2800	P		0	40	N	2000	W	2790	N	200	W	20

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Dept h Top	Depth Bottom	N S	NSC o	E W	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
224		1973	W	3000	P		0	35	N	2000	W	2990	N	200	W	20
225		1973	W	3000	P		0	35	N	1800	W	2990	N	200	W	20
226		1973	W	3200	P		0	40	N	1590	W	3000	N	20	W	200
227		1973	W	3000			0	35	N	1600	W	2990	N	200	W	20
228		1973	W	2600	P		0	30	N	2000	W	2590	N	200	W	20
229		1973	W	3400	3		25	30	N	1300	W	3200	N	200	W	200
230		1973	W	2800	P		0	40	N	1600	W	2790	N	200	W	20
231		1973	W	2800	P		0	40	N	1790	W	2600	N	20	W	200
232		1973	W	2800	P		0	30	N	1990	W	2600	N	20	W	200
233		1973	W	3200	2	32	20	45	N	1945	W	3050	N	55	W	50
234		1973	E	100	2		20	28	N	600	E	1000	N	200	E	200
235		1973	W	2800	2		18	22	N	1600	W	2600	N	200	W	200
236		1973	E	1200	2		19	26	N	1000	E	1200	N	200	E	200
237		1973	W	400	2		20	30	S	0	W	200	S	200	W	200
238		1973	E	800	P		0	36	N	0	E	800	N	20	E	200

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
239		1973	E	1200	P		0	27	N	790	E	1200	N	20	E	200
240		1973	E	1200	P		0	27	N	800	E	1190	N	200	E	20
241	H01	1973	W	3000	5	27	60	70	N	1800	W	2800	N	100	W	200
242	H01	1973	W	3000	5	27	60	70	N	1875	W	2885	N	25	W	55
243		1973	E	600	P		0	40	S	190	E	600	S	20	E	200
244		1973	W	1200	2		17	27	N	3000	W	1000	N	200	W	200
245		1973	E	1200	P		0	19	N	1000	E	1200	N	200	E	200
246		1973	E	1200	p		0	30	N	990	E	1200	N	20	E	200
247		1973	W	1200	P		0	17	N	3000	W	1000	N	200	W	200
248		1973	E	100	P		0	28	N	790	E	1000	N	20	E	200
249		1973	E	1200	P		0	28	N	600	E	1190	N	200	E	20
250		1973	E	1000	P		0	31	N	800	E	990	N	200	E	20
251	H08	1973	E	700	3	49	23	30	N	800	E	875	N	185	E	125
252		1973	E	600	P		0	26	S	200	E	600	S	200	E	200
253		1973	E	600	2		26	36	S	200	E	600	S	200	E	200
254		1973	E	600	P		0	36	S	200	E	790	S	200	E	20
255		1973	E	800	P		0	36	N	0	E	790	N	200	E	20
256		1973	W	400	P		0	20	S	0	W	200	S	200	W	200

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
257		1973	E	800	P		0	22	N	200	E	800	N	200	E	200
258		1973	W	1400	P		0	21	N	2200	W	1200	N	100	W	200
259		1973	E	600	P		0	40	S	0	E	590	S	200	E	20
260	H01	1973	W	3000	4		50	60	N	1800	W	2800	N	200	W	200
261		1973	E	800	2		22	28	N	200	E	800	N	200	E	200
262		1973	E	600	P		0	40	S	0	E	600	S	20	E	200
263	H01	1973	W	2800	3		40	70	N	2000	W	2600	N	200	W	200
264	H01	1973	W	3000	3		45	50	N	1800	W	2800	N	200	W	200
265	H01	1973	W	3000	3		40	45	N	1800	W	2800	N	200	W	200
266	H01	1973	W	3000	3		40	60	N	2000	W	2800	N	200	W	200
267		1973	E	1000	2		20	29	N	800	E	1000	N	200	E	200
268		1973	W	400	P		0	30	S	0	W	390	S	200	W	20
269		1973	W	400	2	55	30	85	S	110	W	250	S	45	W	30
270	H01	1973	W	3000	2	40	28	75	N	2850	W	2800	N	150	W	40
271	H01	1973	W	3000	2	27	28	80	N	2800	W	2890	N	200	W	100
272		1973	W	3400	P		0	19	N	1300	W	3200	N	200	W	200
273		1973	W	1000	2		26	31	N	2600	W	700	N	200	W	300

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	N S	NSCo	E W	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
274		1973	W	3400	2		19	25	N	1300	W	3200	N	200	W	200
275	TP33 EXT	1973	E	3500	P		0	19	N	12400	E	3500	N	200	E	200
276	TP31	1973			P		0									
277	TP22	1973			P		0									
278		1973	E	0	P		0	24	N	800	E	0	N	200	E	100
279		1973	E	700	3		33	38	N	1000	E	700	N	200	E	300
280		1973	W	3200	P		0	19	N	1300	W	3000	N	300	W	200
281		1973	E	700	2	44	28	55	N	1000	E	795	N	48	E	80
282		1973	E	0	P		0	25	N	600	E	0	N	200	E	100
283		1973	W	1000	P		0	24	N	2400	W	700	N	200	W	300
284		1973	E	700	2	45	28	85	N	1045	E	700	N	38	E	70
285		1973	W	2800	P		0	18	N	1600	W	2600	N	200	W	200
286		1973	W	1200			0	24	N	2600	W	1000	N	200	W	200
287	H01	1973	W	2800	3	40	30	40	N	2000	W	2725	N	30	W	25
288		1973	W	200	P		0	24	N	900	W	0	N	100	W	200
289	H01	1973	W	3000	3	40	30	40	N	2000	W	2800	N	40	W	70
290	H01	1973	W	3000	3	27	28	80	N	1800	W	2890	N	200	W	100
291		1973	E	700	P		0	19	N	800	E	700	N	200	E	300
292		1973	W	1200	2		23	31	N	2400	W	1000	N	200	W	200

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
293		1973	W	3200	2		19	40	N	1300	N	1300	N	300	W	200
294	TP32	1973			P											
295		1973	E	700	2	43	28	46	N	1020	E	895	N	35	E	48
296		1973	W	3200	2	33	25	35	N	1660	W	3120	N	50	W	80
297		1973	E	0	P		0	22	N	0	E	0	N	200	E	100
298		1973	W	1000	2	36	30	64	N	2995	W	750	N	35	W	55
299	TP39	1973			P											
300	TP36	1973			P											
301	TP38	1973			P											
302	TP29	1973			P											
303		1973	W	1000	2		24	26	N	2400	W	700	N	200	W	300
304	H02	1973	E	0	2	48	22	58	N	0	E	0	N	90	E	100
305	TP23	1973			P											
306		1973	W	3200	2		20	35	N	1800	W	3000	N	200	W	200
307	H01	1973	W	3000	2	27	28	80	N	2800	W	2890	N	200	W	100
308		1973	W	1200	2		24	27	N	2600	W	1000	N	200	W	200
309		1973	E	700	3		28	33	N	1000	E	700	N	200	W	300
310		1973	W	1200	P		0	23	N	2400	W	1000	N	200	W	200
311	TP30	1973			P											
312	TP42	1973			P											
313	TP34	1973			P											
314	TP26	1973			P											

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
315	TP45	1973			P											
316	TP47	1973			P											
317		1973	W	2800	3		22	36	N	1600	W	2600	N	200	W	200
318	TP37	1973			P											
319	TP40	1973			P											
320	TP21	1973			P											
321	TP41	1973			P											
322		1973	E	600	P		0	13	N	0	E	600	N	200	E	200
323		1973	W	1400	2		18	22	N	2000	W	1200	N	200	W	200
324		1973	E	800	P		0	41	N	190	E	800	N	200	E	200
325		1973	W	1000	P		0	36	N	2590	W	700	N	20	W	200
326		1973	E	800	2		22	30	S	200	E	800	S	200	E	200
327		1973	E	1200	2		19	24	N	800	E	1200	N	200	E	200
328		1973	E	800	P		0	22	S	200	E	800	S	200	E	200
329		1973	E	1200	P		0	19	N	800	E	1200	N	200	E	200
330		1973	W	1400	P		0	18	N	2000	W	1200	N	200	W	200
331		1973	E	800	2		20	27	N	0	E	800	N	200	E	200
332		1973	W	200	P		0	34	S	190	W	0	S	20	W	200
333		1973	W	1200	P		0	32	N	2800	W	990	N	200	W	20
334		1973	E	6	2		13	17	N	0	E	600	N	200	E	200
335		1973	W	1200	3		32	40	N	2800	W	1000	N	200	W	200
336		1973	W	200	2		19	34	S	200	W	0	S	200	W	200

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
337		1973	W	200	P		0	22	N	0	W	0	N	200	W	200
338		1973	E	700	3		28	36	N	800	E	700	N	200	E	300
339		1973	W	1400	P		0	34	N	2000	W	1190	N	200	W	20
340		1973	W	1200	P		0	27	N	2390	W	1000	N	20	W	200
341		1973	W	1200	3		27	35	N	2000	W	1000	N	200	W	200
342		1973	E	1000	2		14	17	S	0	E	0	s	200	e	200
343		1973	w	200	p		0	19	s	200	w	0	S	200	W	200
344		1973	E	1000	P		0	14	S	0	E	0	S	200	E	200
345		1973	W	1200	P		0	41	N	2400	W	990	N	200	W	20
346		1973	W	200	B ZONE		26	30								
347		1973	W	1000	P		0	25	N	2800	W	690	N	200	W	20
348		1973	W	1200	3		31	41	N	2400	W	1000	N	200	W	200
349		1973	W	1000	P		0	36	N	2790	W	700	N	20	W	300
350		1973	W	1200	P		0	35	N	2190	W	1000	N	20	W	200
351		1973	E	100	P		0	25	N	0	E	100	N	200	E	300
352		1973	W	1200	P		0	23	N	2400	W	1000	N	200	W	200
353		1973	W	1200	P		0	36	N	2600	W	990	N	200	W	20

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
354		1973	W	1200	4		35	80	N	2000	W	1000	N	200	W	200
355		1973	E	800	P		0	20	N	0	E	800	N	200	W	200
356		1973	E	200	P		0	24	S	0	E	200	S	200	E	200
357		1973	W	1200	P		0	18	N	2000	W	1000	N	200	W	200
358		1973	E	800	2		17	20	S	0	E	800	S	200	E	200
359		1973	W	1200	2		18	27	N	2000	W	1000	N	200	W	200
360		1973	W	1200	P		0	36	N	1000	W	1000	N	20	W	200
361		1973	E	1200	2		18	25	N	600	E	1200	N	200	E	200
362		1973	W	3200	P		0	35	N	1990	W	3000	N	20	W	200
363		1973	W	3200	2	32	25	45	N	2000	W	3050	N	55	W	75
364		1973	W	3400	P		0	35	N	1590	W	3200	N	20	W	200
365		1973	W	3200	P		0	35	N	1990	W	3000	N	20	W	200
366		1973	E	1200	P		0	18	N	600	E	1200	N	200	E	200
367		1973	E	800	P		0	17	S	0	E	800	S	200	E	200
368		1973	W	3400	P		0	25	N	1490	W	3200	N	20	W	200
369		1973	W	3400	P		0	35	N	1600	W	3390	N	200	W	20

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Dept h Top	Depth Bottom	N S	NSC o	E W	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
370		1973	W	1200	P		0	19	N	2200	W	1000	N	200	W	200
371		1973	W	1200	2		19	27	N	2200	W	1000	N	200	W	200
372		1973	W	1200	4		35	80	N	2000	W	1000	N	200	W	200
373		1973	W	3000	3	46	33	40	N	2000	w	2800	N	200	W	200
374		1973	W	3200	P		0	40	N	1300	W	3190	N	300	W	20
375		1973	W	2800	3	46	30	85	N	2000	W	2690	N	50	W	67
376		1973	W	2800	3	47	30	95	N	2095	W	2600	N	100	W	90
377		1973	W	2800	3	46	30	85	N	2000	W	2690	N	50	W	67
378		1973	W	2800	3	47	30	95	N	2095	W	2600	N	100	W	90
379		1973	E	100	P		0	20	N	0	E	100	N	90	E	95
380	H01	1973	W	3000	3		30	33	N	1800	W	2600	N	400	W	400
381		1973	W	2800	3		25	30	N	1800	W	2600	N	200	W	200
382	H01	1973	W	2800	2	40	20	72	N	1860	W	2770	N	140	W	30
383	H01	1973	W	3000	2	27	28	80	N	2800	W	2890	N	200	W	100

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
384		1973	W	1200	3	54	27	49	N	2040	W	1045	N	62	W	105
385		1973	W	2800												
386		1973	E	3500	2	100	19	40	N	12480	E	3600	N	40	E	100
387		1973	W	3200	3	33	35	48	N	1660	W	3120	N	40	W	80
388		1973	W	2800	2	57	20	60	N	1800	W	2670	N	44	W	65
389	H03	1973	W	1000	2	35	30	44	N	2800	W	700	N	125	W	50
390	H06	1973	W	1000	2	42	26	60	N	2600	W	700	N	200	W	85
391		1973	E	1000	P		0	28	N	0	E	990	N	200	E	20
392	H08	1973	E	700	3	49	30	46	N	800	E	920	N	170	E	80
393	H01	1973	W	2800	5		50	60	N	1800	W	2600	N	200	W	200
394	H01	1973	W	2800	3		33	40	N	2000	W	2600	N	200	W	200
395		1973	E	800	5	61	61	69	S	400	E	800	N	65	E	95
396		1973	E	100	P		0	19	N	0	E	1000	N	200	E	200
397		1973	E	100	P		0	29	S	400	E	1000	S	200	E	200
398		1973	W	200	P		0	24	N	1000	W	0	N	200	W	200
399		1973	W	700	2		21	32	N	3000	W	500	N	200	W	200
400	H07	1973	E	800	4	69	60	69	S	400	E	895	S	65	E	105
401	H07	1973	E	800	3	69	52	60	S	400	E	895	S	65	E	105
402		1973	W	200	3		30	35	S	0	W	0	S	200	W	200
403	H02	1973	W	200	3	48	26	75	S	0	W	0	S	200	W	130

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
404		1973	W	200	3		22	34	N	0	W	0	N	200	W	200
405	H08	1973	W	1200	3	49	27	58	N	920	E	1200	N	80	E	200
406	H02	1973	W	200	3	48	22	70	N	0	W	0	N	90	W	130
407		1973	W	400	P		0	28	S	200	W	200	S	200	W	200
408		1973	W	1200	3		27	34	N	3000	W	1000	N	200	W	200
409	GSC	1973			SURFACE											
410		1973	E	1000	P		0	19	S	200	E	1000	S	200	E	200
411		1973	W	1000	3	60	24	35	N	3027	W	900	N	75	W	62
412		1973	E	1000	P		0	24	S	200	E	1190	S	200	E	20
413	H02	1973	W	200	2		20	26	S	0	W	0	S	200	W	200
414		1973	W	1200	4		34	44	N	3000	W	1000	N	200	W	200
415		1973	W	1000	3		24	31	N	3000	W	700	N	200	W	300
416		1973	W	1200	5		44	73	N	3000	W	1000	N	200	W	200
417	H01	1973	W	3000	3		33	40	N	2000	W	2800	N	200	W	200
418		1973	W	2800	2		25	30	N	2000	W	2600	N	200	W	200
419		1973	W	200	P		0	25	N	8800	W	0	N	200	W	200
420	H01	1973	W	2800	6		60	68	N	1800	W	2600	N	200	W	200

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
421		1973	W	1400	3		22	34	N	2000	W	1200	N	200	W	200
422		1973	W	2800	3	46	30	62	N	1985	W	2690	N	15	W	65
423		1973	E	800	3		38	40	S	400	E	800	S	200	E	200
424		1973	E	600	P		0	13	N	0	E	600	N	200	E	200
425		1973	W	200	2		24	30	N	900	W	0	N	100	W	200
426	H01	1973	W	2800	4		40	50	N	1800	W	2600	N	100	W	200
427		1973	W	700	2	38	32	71	N	3000	W	500	N	120	W	200
428		1973	W	1000	P		0	19	N	3000	W	700	N	200	W	300
429		1973	E	800	P		0	32	S	400	E	800	S	200	E	200
430		1973	E	10	3	66	28	40	N	124	E	1110	N	76	E	58
431	H11	1973	W	1200	2	68	27	40	N	2200	W	1140	N	200	W	60
432		1973	E	1200	3		26	30	N	1000	E	1200	N	200	E	200
433		1973	W	1200	3		27	40	N	2200	W	1000	N	200	W	200
434	H10	1973	W	1200	2	68	23	41	N	2400	W	1150	N	200	W	50
435		1973	E	1000	3	67	28	40	N	0	E	1000	N	113	E	68
436		1973	W	700	P		0	21	N	3000	W	500	N	200	W	200
437		1973	E	800	3	63	43	65	N	280	E	857	N	105	E	113
438	H08	1973	E	1200	2	49	26	43	N	1000	E	1200	N	13	E	95

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
439		1973	E	100	2	58	20	35	N	0	E	180	N	62	E	70
440		1973	E	600	2	51	16	30	N	0	E	753	N	200	E	47
441		1973	W	1000	3		26	36	N	2400	W	700	N	200	W	300
442		1973	E	800	3		28	48	N	200	E	800	N	200	E	200
443	H09	1973	E	600	2	61	26	61	S	320	E	720	S	80	E	70
444		1973	W	2800												
445	H01	1973	W	2800	3		33	40	N	1800	W	2600	N	200	W	200
446	H08	1973	E	100	2	49	29	50	N	800	E	1070	N	200	E	130
447		1973	E	800	3		20	25	S	0	E	800	S	200	E	200
448		1973	E	700	2	44	28	55	N	900	E	795	N	100	E	80
449		1973	e	800	4		25	34	s	0	e	800	s	200	e	200
450		1973	w	1200	3		31	41	N	2400	W	1000	N	200	W	200
451		1973	E	800	4		40	52	S	400	E	800	S	200	E	200
452		1973	E	600	3		17	27	N	0	E	600	N	200	E	200
453		1973	E	1000	2		19	28	N	0	E	1000	N	200	E	200
454		1973	W	1400	3		22	34	N	2000	W	1200	N	200	W	200
455	H01	1973	W	3000	3	27	28	80	N	1900	W	2860	N	100	W	140
456		1973	E	800	4	63	43	53	N	200	E	800	N	200	E	200
457		1973	E	1000	2		29	37	S	400	E	1000	S	200	E	200
458		1973	E	100	2		25	35	N	0	E	100	N	200	E	300

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Dept h Top	Depth Bottom	N S	NSC o	E W	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
459	H12	1973	W	1400	2	65	18	34	N	2000	W	1370	N	200	W	130
460	H02	1973	E	0	3	48	35	75	S	0	E	0	S	152	E	112
461		1973	e	200	2	58	24	40	s	0	e	180	s	60	e	70
462	H01	1973	W	3000	3	27	35	65	N	2000	W	2915	N	40	W	85
463		1973	E	200	2		24	40	S	0	E	200	S	200	E	200
464	H07	1973	E	1000	P	69	0	29	S	590	E	990	S	20	E	20
465	H07	1973	E	300	2	51	27	30	S	200	W	800	S	200	E	180
466		1973	w	3400	2	33	24	37	n	1700	w	3200	N	55	W	30
467	H07	1973	E	1000	3	69	25	35	S	200	E	1000	S	200	E	200
468		1973	E	100	3		35	45	N	0	E	100	N	200	E	300
469	H08	1973	E	1200	2	49	25	38	N	640	E	1200	N	160	E	180
470		1973	E	800	3		27	36	N	0	E	800	N	200	E	200
471		1973	E	600	3	51	24	40	S	0	E	720	S	100	E	80
472		1973	E	700	3		28	36	N	800	E	700	N	200	E	300
473		1973	E	800	4		36	53	N	0	E	800	N	200	E	200
474		1973	W	3200	3		29	35	N	1600	W	3000	N	200	W	200
475		1973	W	1000	2	38	24	41	N	3000	W	700	N	120	W	115
476		1973	W	700	2	38	32	71	N	3000	W	500	N	120	W	200
477		1973	W	1000	4		38	46	N	2800	W	700	N	200	W	300
478		1973	E	1000	3	62	47	57	S	750	E	1120	S	50	E	45
479		1973	W	1000	3		26	40	N	4600	W	800	N	200	W	200

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Depth Top	Depth Bottom	NS	NSCo	EW	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
480		1973	S	1000	P											
481		1973	E	1000	3		29	45	N	0	E	1000	N	200	E	200
482		1973	E	1000	3		37	57	S	400	E	1000	S	200	E	200
483		1973	E	600	2		13	17	N	0	E	600	N	200	E	200
484		1973	E	0	3		20	35	S	0	E	0	S	200	E	200
485		1973	E	1000	3		28	33	N	600	E	1000	N	200	E	200
486		1973	W	1000	2		19	24	N	3000	W	700	N	200	W	300
487		1973	W	1400	3	56	23	44	N	2105	W	1325	N	35	W	45
488		1973	E	1000	2		19	25	S	200	E	1000	S	200	E	200
489		1973	E	800	2		32	40	S	400	E	800	S	200	E	200
490	H07	1973	E	800	3	69	40	52	S	400	E	800	S	200	E	200
491		1973	E	1000	3	52	28	33	N	600	E	1000	N	200	E	200
492		1973	E	800	2		20	27	N	0	E	800	N	200	E	200
493		1973	E	800	3	51	38	52	S	400	E	800	S	110	E	200
494		1973	W	1400	3		22	34	N	2000	W	1200	N	200	W	200
495		1973	E	600	3	51	20	26	S	200	E	600	S	200	E	200
496	H08	1973	E	1000	2	49	28	40	N	660	E	1030	N	140	E	170
497		1973	E	600	3		24	40	S	0	E	600	S	200	E	200
498		1973	E	800	2	51	17	20	S	0	E	800	S	200	E	125
499		1973	E	800	3		30	41	S	200	E	800	S	200	E	200

Lot Check List

Lot Number	AKA	Year	EW Unit	EW Unit Co	Level	Feature	Dept h Top	Depth Bottom	N S	NSC o	E W	EW Co	NS Int	NS IntCo	EW Int	EW IntCo
500	H02	1973	W	200	3	48	34	70	S	200	W	20	S	65	W	85
501		1973	E	800	2	51	20	27	N	0	E	800	N	200	E	95

Michelle M. Birnbaum

EDUCATION

Ph.D. Doctor of Philosophy in Anthropology, University of Wisconsin–Milwaukee, May 2017.
Dissertation Title: The Richter Site (47DR80): A Millennium of Prehistoric Technological and Cultural Change on Washington Island, Door County, Wisconsin.
M.L.S. (Master of Library Science), State University of New York–Albany, 1993.

B.A. in Criminal Justice, University of Illinois at Chicago, 1991.

ARCHAEOLOGICAL FIELD AND ANALYTIC EXPERIENCE

FIELD TECHNICIAN, FIELD SUPERVISOR, ANALYST, STAFF ARCHAEOLOGIST, Midwest Archaeological Research Services, Marengo, Illinois (2003–2014)

Assisted and supervised field survey work in Illinois, Indiana, Iowa and Michigan. Assisted in Phase II and III excavations of both prehistoric and historic sites; as well as excavation of the historic Peoria City Cemetery. Preparation of Phase I and II reports. Provided analysis of fire cracked rocks, groundstone tools and prehistoric ceramic materials. Analysis included materials from the New Lenox Phase II & III and Multiple Pike County, Illinois Pipeline Phase II & III Projects.

FIELD SUPERVISOR/INSTRUCTOR, University of Wisconsin – Milwaukee College for Kids, (July 2006 and July 2007)

Provide instruction and supervision for one week archaeological field school for Middle School and High School students at the historic Trimborn Farm in Greendale, Wisconsin.

ASSISTANTSHIPS

LABORATORY MANAGER, Archaeological Research Laboratory, Department of Anthropology, University of Wisconsin-Milwaukee (Fall 2009-Present)

Manage laboratory and curation facilities. Oversee repairs to curation facility following flooding. Supervision of work study students. Creation of database for management of curated materials.

ASSISTANTSHIPS CONT'D

PROJECT ASSISTANT, University of Wisconsin-Milwaukee (Summer 2008)

Create and implement database for the management of the Milwaukee County Cemetery collection recently transferred from Marquette University. Begin inventory of 1600 sets of remains, and associated soil samples, grave goods and other materials for this collection.

PROJECT ASSISTANT, University of Wisconsin–Milwaukee (Fall 2007)

Assisted in collection of ceramic and clay samples. Analyzed and recorded ceramic sample data. Collected carbon residue samples for AMS analysis. Collected compositional data using Niton XRF Analyzer. Created Niton collection protocol.

TEACHING EXPERIENCE

INSTRUCTOR, Pioneer Farm, McHenry County (September/October 2009)

Developed and led workshops in experimental prehistoric ceramic production for historic re-enactors.

INSTRUCTOR, Sauk Trail Demonstration Day, Glacial Park, McHenry County Conservation District, McHenry County (September 2009)

Developed and led demonstration of prehistoric ceramic production techniques for both children and adults.

TEACHING ASSISTANT, University of Wisconsin – Milwaukee (2005–2007)

Discussion and Laboratory Instructor for Human Origins
Anthropology 101.

INSTRUCTOR, Belmont Technical College, St. Clairsville, Ohio (2002)

Instructor for Introduction to Learning Literacy Course on-line distance learning course.

TEACHING EXPERIENCE CONT'D

VOLUNTEER SCHOOL GUIDE, Holden Arboretum, Kirtland, Ohio (1997–2002)

Provided instructional programs for students (Pre-K through 12). Program topics included: basic ecology, forest discovery, habitats, sugarbush and pond studies

CONFERENCE PAPERS

Birnbaum, Michelle M.
2007 Comparative Compositional Analysis of North Bay Phase Ceramics from Two Sites in Door County, Wisconsin. Paper presented at Midwest Archaeological Conference, South Bend, Indiana

Birnbaum, Michelle M.
2008 Home Sweet Home: Woodland Structures at the Richter Site in Door County, Wisconsin. Paper presented at Midwest Archaeological Conference, Milwaukee, Wisconsin.

Birnbaum, Michelle M.
2008 Preliminary XRD Analysis of Ceramic and Clay Samples from the Door County Peninsula, Wisconsin. Paper presented at ITARP Science and Technology Symposium, Urbana, Illinois

Birnbaum, Michelle M.
2009 Is All Clay Created Equal: A Preliminary XRD (X-Ray Diffraction) Analysis of Early/Middle Woodland North Bay and Late Woodland Heins Creek Ceramics and Clay Samples from Door County Wisconsin. Paper presented at AGSA Symposium, Bloomington, Indiana.

Birnbaum, Michelle M.
2010 Fire cracked rock (FCR) can be more than just a box of rocks: Mineralogical and Use Analysis of FCR from the Late Prehistoric/Contact Period New Lenox Site (11WI213), New Lenox, Illinois. Paper presented at Society of American Archaeology, St. Louis, Missouri.

Birnbaum, Michelle M.
2012 Prehistoric Sites at Oak Forest Hospital. Paper presented at Midwest Archaeological Conference, East Lansing, Michigan.

Birnbaum, Michelle M.
2013 Characterizing North Bay Ceramic Pastes Using pXRF, XRD, and Optical Petrography. Paper presented at Society of American Archaeology, Honolulu, Hawaii.

CONFERENCE PAPTERS CONT'D

Calfas, George, Michelle Birnbaum and John Richards
2013 These Pots Talk: Where Were Face Vessels Manufactured? Paper presented at Society of American Archaeology, Honolulu, Hawaii.

PUBLICATIONS

Birnbaum, Michelle M.
2009 Home Sweet Home: Woodland Structures at the Richter Site in Door County, Wisconsin. *Wisconsin Archaeologist* 90(1&2):87-100.

EDITORSHIPS

ASSISTANT EDITOR, Wisconsin Archaeologist 2009-2011

SKILLS

Trained in use of Hitachi SEM/EDS system for analysis, imaging, and sample preparation and image production.

Trained in use, data collection and analysis utilizing a Niton XRF hand held analyzer and Bruker pXRF.

Trained in sample preparation, use, data collection and analysis using Bruker S4 Pioneer 4kW WDS XRF spectrometer and Bruker D8Focus Powder XRD.

Trained in petrographic ceramic thin section analysis.

Experienced in use of ArcGIS for archaeological spatial analysis and report preparation.

Word, Excel, Access, PowerPoint, and other Microsoft Applications.