May 2014

Understanding Use and Function: an Intrasite Comparative Analysis of the 2011 Uwm Aztalan Ceramic Assemblage

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UNDERSTANDING USE AND FUNCTION:
AN INTRASITE COMPARATIVE ANALYSIS
OF THE 2011 UWM AZTALAN CERAMIC ASSEMBLAGE

by

Jill M. Kotwasinski

A Thesis Submitted in

Partial Fulfillment of the

Requirements for the Degree of

Master of Science

in Anthropology

at

The University of Wisconsin-Milwaukee

May 2014

ABSTRACT

UNDERSTANDING USE AND FUNCTION: AN INTRASITE COMPARATIVE ANALYSIS OF THE 2011 UWM CERAMIC ASSEMBLAGE

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Jill M. Kotwasinski

The University of Wisconsin-Milwaukee, 2014
Under the Supervision of John D. Richards, Ph.D.

This thesis provides an analysis of a subset of the ceramics recovered during the 2011 UWM Aztalan excavations. The analysis was designed to determine if there is a difference between ceramic assemblages recovered from different site depositional contexts presumably reflective of different behaviors, such as refuse disposal, domestic activities, or ritual activity. This analysis consists of a comparison of ceramics from the 2011 UWM Collection, in addition to the three main recovery contexts of the Northeast Mound: the Northeast Mound Top, Sub Mound, and Fill at Aztalan (Zych 2013) and vessels from the 2013 UWM collection. Utilizing only the rim sherds morphometric data, use wear traces and vessel compositional data were recorded, as they are the most informative relating to function, temporal, and cultural inferences of vessels. The results of this study demonstrate the ceramics are significantly different in regards to morphological and metric data. The analysis indicates the different practices associated with each depositional context are reflected in the differences observed in the statistical tests and compositional analysis.

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ACKNOWLEDGEMENTS

I would like to thank my thesis committee Dr. John Richards, Dr. Patricia Richards, and Dr. Jeske for their time and assistance. First, I would like to thank my advisor, Dr. John Richards, for his constant support, resources and assistance throughout the process of writing this thesis. Without his knowledge and guidance, this work would not have been possible. Thanks to Dr. Patricia Richards and Dr. Robert Jeske for their helpful comments, this contributed a great deal to my research.

Completion of the comparative analysis would not have been possible without Thomas Zych's (2013) data and assistance throughout my ceramic research. I greatly appreciate the 2013 Aztalan field school students, who analyzed the more recent data included in the comparative analysis. Several researchers at the University of Wisconsin-Milwaukee, in particular Elissa Hulit and Seth Schneider, deserve thanks for their assistance with the pXRF analysis and the associated statistical procedures. Dr. Patrick Gray deserves my gratitude for computing hours of statistical tests.

I would also like to thank friends and colleagues at the University of Wisconsin-Milwaukee for their support and encouragement throughout the last three years. To my family, especially my parents, I am forever grateful for your love and understanding throughout my academic career and choice to pursue archaeology.

CHAPTER 1 INTRODUCTION

Excavations at the Aztalan site have recovered ceramics from a number of distinct depositional contexts. During the 2011 University of Wisconsin-Milwaukee (UWM) archaeological field school excavations targeted six locations adjacent to the west bank of the Crawfish River within the formerly palisaded portion of the site. The aim of these excavations was to expose stratified sequences at these locations that might document midden deposits associated with later Mississippian occupation and abandonment of the site. This thesis focuses on ceramics recovered from three distinct contexts: Feature 8, Test Units 4, 8, and 9, and Test Unit 2. The rim sherds from these distinct contexts are used to determine if significant differences in ceramic assemblages from each context exist. The results of the analysis are compared to the Northeast Mound ceramic assemblage (Zych 2013). The ceramics from the three main recovered contexts: mound-top, mound fill, and sub-mound, of the Northeast Mound provide insight into how prehistoric Native Americans used these ceramic vessels and whether or not there are differences between specific recovery contexts at Aztalan.

Research Problem

The ceramic assemblage at Aztalan has been the subject of various studies. Researchers have addressed questions as specific as typological framework to temporal assignments and cultural affiliations (Baerreis and Freeman 1958, Barrett 1933, Bleed 1970, Christiansen 2003, Hurley 1977, Mollerud 2005, Richards 1992, Zych 2013). Barrett (1933), the first to discuss the MPM ceramic assemblage in detail, provided the

initial description of the ceramic materials. This includes identifying Woodland, Transitional and Mississippian components in the assemblage. The results of Barrett's research led him to conclude that the shell-tempered pottery was the dominant ware at Aztalan, thus representing a "southern island" in an otherwise Upper Mississippi, and Woodland territory (Barrett 1933:372). A more specific approach taken by Baerreis and Freeman's (1958) analysis, addressed collared ware ceramics at the site. Their study demonstrated distinct differences exist between the Point Sauble collared pottery and the Aztalan collared pottery at the site (Baerreis and Freeman 1958). Although the two major types are related types of the same general time period in Wisconsin's prehistory, it is not known whether they represent spatial or temporal variants (Baerreis and Freeman 1958:61; Kelly 2002).

Adding to previous work, Peter Bleed's 1970 analysis focused on a more detailed analysis of ceramics, specifically addressing the collections housed at the University of Wisconsin-Madison and the Wisconsin Historical Society. His analysis (1970) was the first to describe the ceramics according to raw proportions of all sherds present in the collections. This method of analysis led Bleed to conclude that grit-tempered pottery was clearly dominant (Bleed 1970:2).

While addressing many issues regarding the Aztalan ceramic assemblage, a key concern of John Richards' (1992) review of ceramics from the MPM pottery collection and from the 1984 UW-Milwaukee Field School, was an attempt to better understand the opposing arguments regarding dominant temper type. Richards' analysis (1992) focused on the Milwaukee Public Museum collections, because Barrett's excavations recovered materials from all areas of the site thus providing the most representative sample of any

one collection. Richard's (1992) conducted his analysis using rim sherds, to identify discrete vessels in the collection. Results, suggest that the MPM collection is approximately evenly split between Late Woodland grit-tempered pots and shell-tempered Mississippian vessels (Richards 1992: 208; Richards 2003:143).

In 2003, George Christiansen III conducted a comprehensive analysis utilizing the ceramics, in addition to other material culture and site structure, to evaluate the location of Aztalan and its unique material assemblage. Christiansen (2003) compared his data to various aspects of the archaeological records from other locations to determine if the patterns in both places are similar enough to conclude whether migration, invasion or in situ developments took place. Christiansen (2003:241) concluded the explanation of the appearance of collared ceramics in Wisconsin and mixed collared ware and Ramey Incised Powell Plain assemblages is a complex package, one that cannot be fully supported through culture change as the result of invasion.

While incorporating previous methods derived from Richards' (1992) analysis of Aztalan ceramics, Thomas Zych (2013) conducted a study of records and materials from the Wisconsin Historical Society (WHS) excavations into the Northeast Mound. Zych (2013:1) utilized this data to understand the social implication resulting from the prehistoric construction of Aztalan's northeast platform mound. According to Zych's (2013:1) analysis, the construction of Northeast Mound demonstrates an initial Late Woodland sub-mound space, which was transformed into a Middle Mississippian monument by the multiple social groups who inhabited Aztalan.

The goal of this analysis is to determine if there is a difference between ceramic assemblages recovered from different depositional contexts presumably reflective of

different behaviors, such as refuse disposal, domestic activities, or ritual. A major contribution of this thesis is the completion of a formal analysis of the 2011 UWM ceramic collection.

This analysis differs from previous investigations because it involves a comparative analysis of ceramics from specific context areas of the site. The ceramics were recovered from three distinct riverbank midden contexts representing feature fill (Feature 8), undifferentiated midden deposits (Test Units 4, 8, & 9), and anthropogenic fill (Test Unit 2). Preliminary analysis of the material recovered from Test Unit 2, containing debris dating to the Mississippian settlement over aboriginal fill, suggests the context represents a filling episode of mixed material in an attempt to construct a level surface along the riverbank (Richards et al. 2012a: 96). Feature 8 is located below the riverbank midden deposit, and is suggested to represent Lohmann Phase feasting refuse (Picard 2012). The AMS date of 910±30 BP support this association, in addition to the presence of red-slipped seed jars and other material culture similar to Lohmann Phase feasting deposits at Cahokia (Picard 2012).

In order to understand the distinct contexts from which these ceramics were recovered from, a comparison was conducted between these ceramics and the ceramics recovered from the three main recovered contexts of the Northeast Mound: mound-top, mound fill, and sub-mound. The Northeast Mound ceramic assemblage includes an array of Late Woodland Mississippian forms in the mound fill and sub-mound contexts (Zych 2013: 158). The Late Woodland ceramic forms present are commonly associated with villages/domestic contexts (Clauter 2012; Meinholz and Kolb 1997; Overstreet and Clark 1995; Salkin 1993, 2000) elsewhere in the region and material types can also be

associated with supra-domestic contexts as well, including occasional association with burials in effigy mound contexts (Birmingham and Eisenberg 2000; Clauter 2011; McKern 1930; Rosebrough 2010). This data set can be informative, especially in direct comparison to Test Units 4, 8, & 9 and Feature 8, as it provides the opportunity to compare a dataset which is suggestive of Late Woodland and Mississippian domestic and ritual function.

In order to determine if significant differences in ceramic assemblages from each context exist my study focuses on typological and attribute-based analysis, accompanied by a chemical composition analysis of the pottery. Several ceramic attribute categories were chosen for analysis. These categories include vessel form, vessel size, exterior and interior finish, ceramic type, ceramic cultural affiliation, use-alteration traces, and RPR (Holley 1989) values where possible. These characteristics were selected, as they are the most informative relating to function, temporal placement, and cultural affiliation of vessels (Holley 1989; Rice 1987; Shepard 1956; Skibo 2013).

Pottery has many different uses that place different demands on the vessel (Rice 1987:209). The technical attributes of pottery; such as vessel form, vessel size and surface treatment influence a vessels performance in fulfilling its function. These technical aspects of vessels are can be used to infer the activities and customs of the people who used them (Shepard 1956:224).

For example, texturing the exterior surface of a pot increases a vessel's thermal shock resistance and is therefore common on pots used for cooking (Pierce 2005). In addition, roughened exterior surfaces are less likely to slip out of the user's grasp during

handling (Boulanger and Hudson 2012). These choices inform on the actual function of a vessel: i.e., the function the potter designed it to fulfill.

It is important to also analyze actual pottery function. Physical and chemical traces present on vessels allow archaeologists to infer actual vessel function (Skibo 2013:5). Use-alteration traces, such as sooting and carbonization can provide clues to actual function. The patterns of external or internal carbonization can be used to infer cooking activities (Rice 1987, Schiffer and Skibo 1989; Skibo et al. 1997, Skibo 1990, 1992, 1994, 2013).

George Holley's (1989) rim-protrusion ratio (RPR), most recently utilized by Pauketat (1998) as lip-protrusion ration, is an attempt to measure metric change in Mississippian jar rim morphology. Rim-protrusion ratio (RPR) measurements calculate the ratio of wall thickness to rim width. The RPR value highlights temporally sensitive changes in shell-tempered jar rims from slightly modified early forms to later strongly everted forms (Holley 1989). In his analysis of ceramics recovered from the ICT-II tract at Cahokia, Holley (1989) demonstrated that higher RPR values indicate earlier vessel forms while lower values mark later varieties. The use of Holley's (1989) RPR index is important for this analysis as it provides a method of assessing temporal placement of Mississippian ceramics.

The final component to this study is the compositional analysis. A compositional analysis allows researchers to determine the degree of variation in ceramic pastes. Depending on the results, inferences assess how many, if more than one, clay resources were used by the site's culturally diverse occupants. In addition, these results may be used to infer the degree to which vessels have a native or foreign association.

The results from each vessel attribute category will be used to compare the contexts against one another. Although the present study has limitations due to the fragmentary nature of the recovered ceramic assemblage, the research is intended to determine if there are patterns present in specific contexts.

Aztalan

The Aztalan site (47Je1) is located on the west bank of the Crawfish River in Jefferson County, Wisconsin (Figure 1.1). The site consists of a palisaded village and mound complex. The outer most walls are reinforced by towers, enclosing an area of about 20 acres. Within the confines of the palisade are the remains of three mounds, a natural knoll, a central plaza, and a domestic zone. There is also a series of prehistoric earthwork and mounds, thought to be unrelated to Aztalan, located on the east bank of the river south of the Aztalan site proper. Aztalan is predominantly a Late Woodland and Middle Mississippian site ranging in age from A.D. 800 to A.D. 1200 (Richards and Jeske 2002).

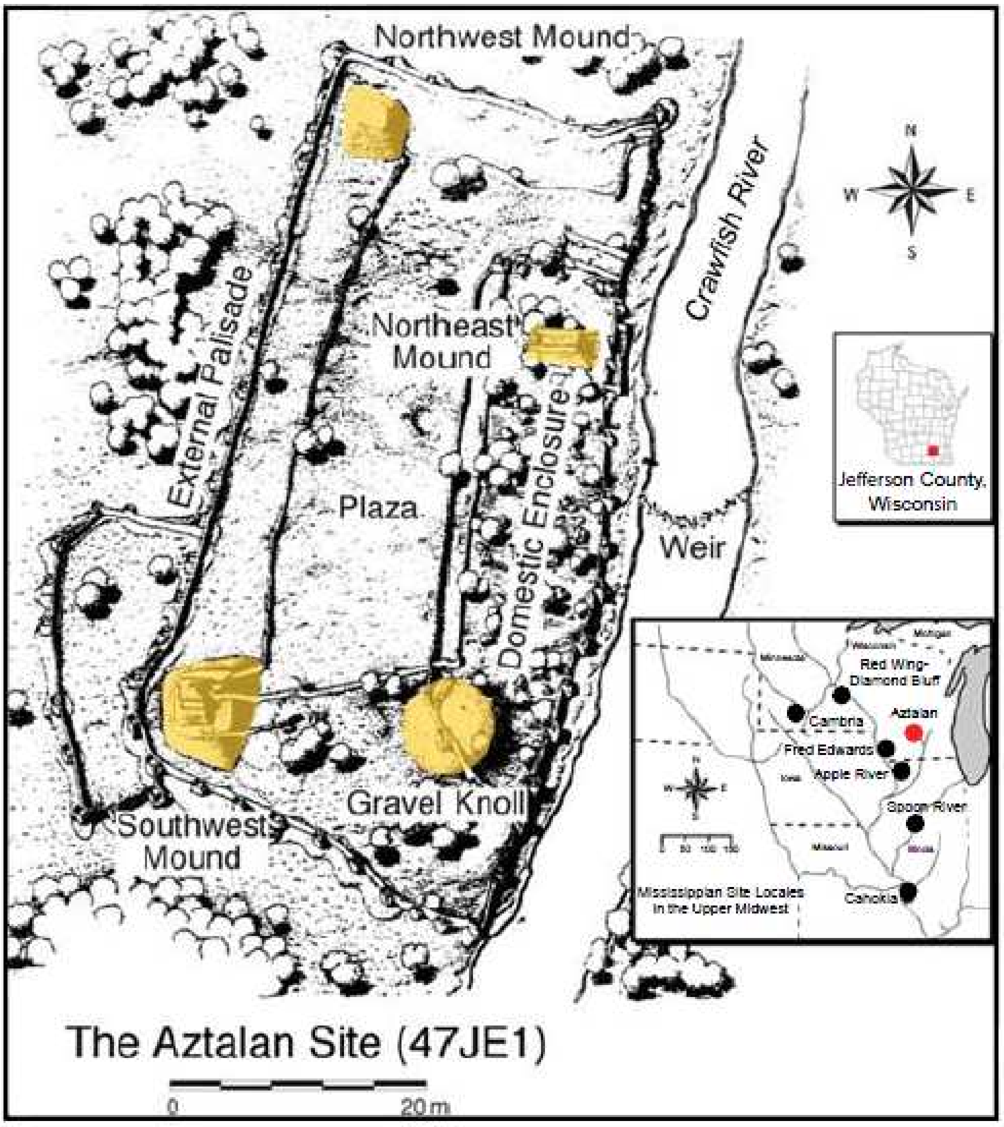


Figure 1.1: Map of the Aztalan site (after Richards 2003: 6, Fig. 6).

Reported structural forms include small and large rectangular single-post structures, circular, and T-shaped buildings made using wall-trench and single-post techniques (Barrett 1933; Wittry and Baerreis 1958). Within Middle Mississippian community organization, circular structures are often interpreted as sweat lodges, T-shaped buildings as elite and perhaps religious structures, and larger single-post

structures often serve as temples or charnel structures (Alt 2006; Emerson 1997; Mehrer 1995; Pauketat 1998, 2004). The majority of the structures at Aztalan have been interpreted as domestic structures, while those atop the platform mounds likely served as temples or public buildings (Freeman 1986; Goldstein and Freeman 1997; Goldstein and Richards 1991; Hurley 1977; Maher 1958; Rowe 1956).

There have been many interpretations of the Aztalan site, but there seem to be key items on which archaeologists agree: Middle Mississippian people from the city of Cahokia arrived at the site around A.D. 1100 (Goldstein and Richards 1991; Price, et al. 2007; Richards 2007a; Stoltman 2001) and established an occupation with an existing local Late Woodland occupation (Baerreis 1958; Barrett 1933; Goldstein and Freeman 1997; Goldstein and Richards 1991; Richards 1992). This is supported by petrographic and elemental analyses, which suggest that pottery vessels made from American Bottom clays are present at the site (Richards, et al. 2010; Stoltman 1989, 2000). In addition, radiocarbon dates place the major prehistoric occupation between A.D. 1000-1200 (Richards and Jeske 2002).

Aztalan Material Culture

Similar to the site structure evidence, the artifacts recovered at Aztalan suggest the presence of Late Woodland and Mississippian culture. Excavations at Aztalan have yielded a large and relatively homogeneous artifact assemblage (Richards 1992:140). The Aztalan lithic assemblage is extremely varied, it includes knives, drills, scrapers, projectile points, and a few chert hoes, which are found with more regularity at Mississippian sites further south (Barrett 1933:271; Freeman 1986:347; Goldstein and

Freeman 1997:237). Although in the minority, there are examples of small, triangular, side-notched "Cahokia" points (Barrett 1933; Freeman 1986:347; Goldstein and Freeman 1997:237; Maher and Baerreis 1958). Ground stone artifacts recovered include grooved axes, celts, net sinkers, abraders, and a discoidal or chunkey stones (Barrett 1933; Maher and Baerreis 1958:24).

Tools and ornaments of animal bone, antler, and freshwater mussel shell are common at Aztalan (Richards 1992:53). Personal ornamentation artifacts recovered include gorgets, beads, ear spools and pendants, fashioned from a variety of materials including bone, shell, copper, clay and stone. Among the ornaments found at Aztalan are two copper long-nosed god maskettes. These small, face-like earrings are linked to the Native American cultural hero legend of Red Horn (Hall 1991); similar maskettes have been found throughout areas of Mississippian influence.

Ceramic items constitute the largest category of artifact materials recovered from the Aztalan site (Richards 1992:50). In Barrett's 1933 report he identified three types of pottery at Aztalan (Figure 1.2) including a grit-tempered, cordmarked "Lake Michigan Ware" (Barrett 1933:304).

Figure 1.2: Aztalan ceramic wares; restored vessels from MPM collections (after Richards 2003 Figure 3).

Upon further observation, Barrett sorted the pottery in to two major types: Woodland pottery and Middle Mississippi Valley pottery (Barrett 1933:322). Mississippian shell-tempered vessels have been recovered from the site in a variety of forms and types, including seed jars, bottles, beakers and pans, as well as Powell Plain , Ramey Incised, Monk’s Mound Red, and Cahokia Red-Filmed wares (Bleed 1970; Richards 1992, 2003; Richards and Jeske 2002). The ceramic attributes displayed on shell-tempered vessel forms and types at Aztalan are consistent with late Lohmann and Early Stirling ceramic styles at Cahokia (Holley 1989; Richards 1992; Richards and Jeske 2002). These early Mississippian ceramic vessel trends are displayed in Figure 1.3.

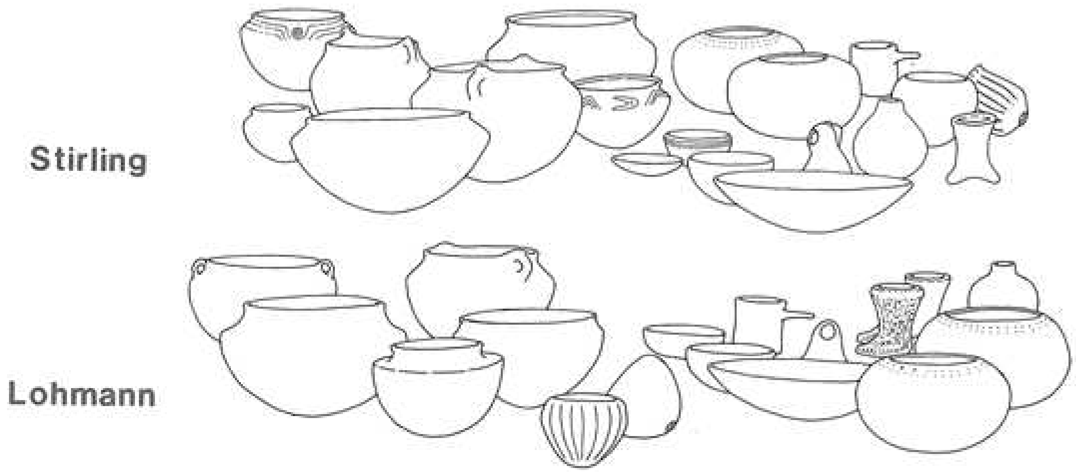


Figure 1.3: Example Early Mississippian Ceramic Vessel Trends (from Milner, et al. 1984: Figure 57).

The Late Woodland pottery found at the site is predominantly collared ware; Aztalan Collared is the most frequently identified collared type (Baerreis and Freeman 1958; Richards 1992; 2003:143). Aztalan Collared has a broad geographic range in Wisconsin and Illinois, but is rarely the dominant type outside of the Aztalan site (Richards 2003:143). Other collared wares were identified as well, including Point Sauble Collared and Starved Rock Collared (Hurley 1977; Richards 1992, 2003; Richards and Jeske 2002). Grit-tempered, collared pottery types commonly found at Aztalan are displayed in Figure 1.4.

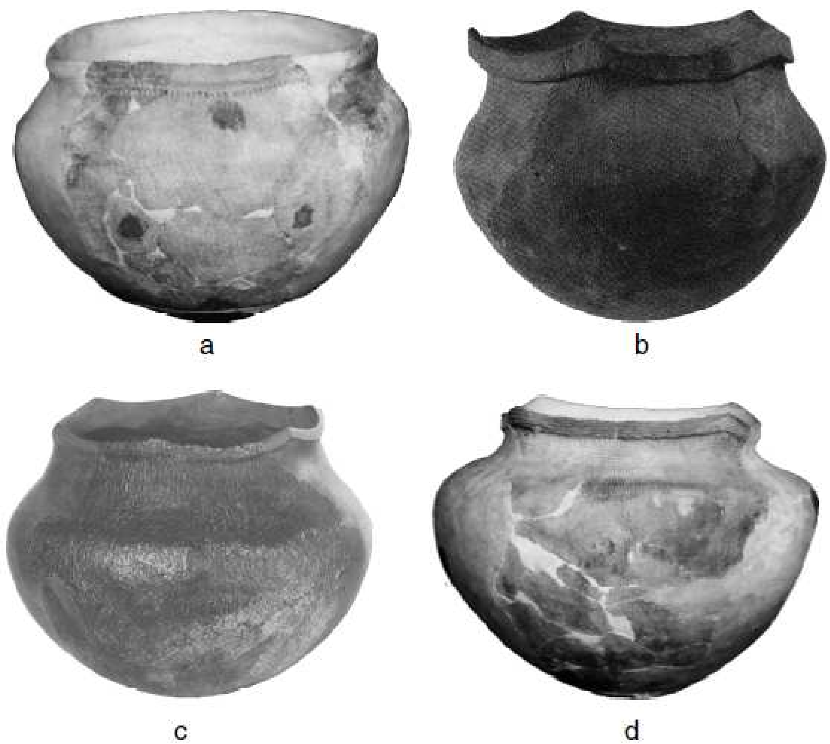


Figure 1.4: Grit-tempered ceramic types associated with Aztalan: (a) Aztalan Collared, circular orifice; (b) Aztalan Collared, polygonal orifice; (c) Starved Rock Collared; (d) Point Sauble Collared (from Richards and Jeske 2002).

Additional Late Woodland types found at Aztalan include Madison Ware and a variant of the Maples Mills series of pottery types. Madison Ware pottery has been associated with local Effigy Mound and other Late Woodland groups (Hurley 1977; Richards 1992). Madison Ware types represent a minority ceramic complex at Aztalan (Richards 2003:143). Maples Mills pottery was first defined by Cole and Duel (1937) from materials recovered from excavations in Fulton county Illinois at the Late Woodland Gooden site. Maples Mills has conventionally been assigned to the A.D. 900-1100 time period. However, Esarey has recently re-defined the phase to an earlier assignment circa cal A.D. 750-1000 (Esarey 2000:397). Maples Mills-like pottery occurs

in southern Wisconsin (Finney and Stoltman 1991; Hall 1962:83; Richards 1992), eastern Iowa (Benn 1980), and extensively over central and northern Illinois (Benn 1980; Fowler 1955). Throughout the central Illinois River Valley there is documented association between Maples Mills-like ceramics and collared wares, Maples Mills pottery and early Mississippian ceramics in association were also identified at a number of Illinois sites.

History of Investigations

Aztalan was first discovered in 1836 by Timothy Johnson, but was not surveyed until 1837 by Nathaniel Hyer. Hyer hastily surveyed the area and soon afterwards published a brief description and sketch map of the site (Figure 1.5) (Barrett 1933:24; Richards 2007b). In the following year W.T. Sterling began the first recorded excavation at the site (Birmingham and Goldstein 2005:2). His excavations consisted of digging through one of the high ruined walls encircling the site and the largest oval mound in the enclosure (Birmingham and Goldstein 2005:2). Additional amateur excavations continued, occasionally mentioned in short articles in regional newspapers (Titus 1924).

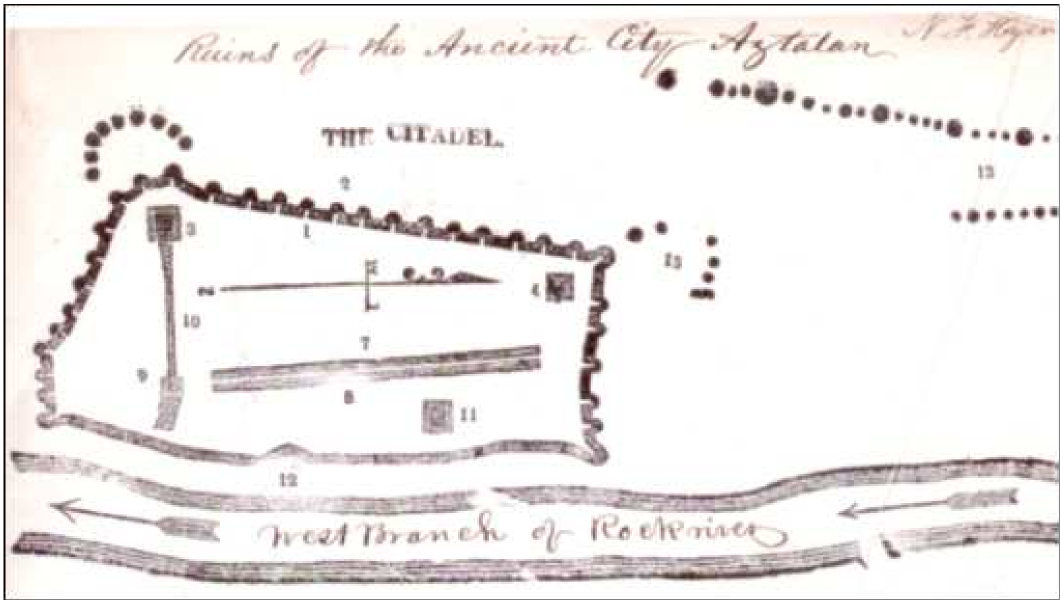


Figure 1.5: Sketch map of Aztalan by Nathaniel Hyer (N.F. Hyer to Edw. Everett, letter 30 April 1838, facsimile on file at the University of Wisconsin-Milwaukee Archaeological Research Laboratory, original on file at the Wisconsin State Historical Society, Madison).

It was not until the 1850s that the first professional investigations occurred, performed under the direction of Increase Lapham. Along with a brief report of the site's features, Lapham created the first detailed map of the site (Figure 1.6). Lapham's descriptions and associated map are considered the best representation of the site's features, eventually agricultural and natural processes caused degradation of the site. Following these investigations, the site was transformed as a result of cultivation.

In 1919, 1920, and 1932 Samuel Barrett from the Milwaukee Public Museum (MPM), directed three archaeological field seasons at Aztalan. The series of excavations carried out by Barrett and the MPM on all areas of the site, included the marker mounds to the north of the fortified village, the mound complex and the east bank of the Crawfish River remains. The series of excavations included unearthing and mapping segments of

the palisade walls that bounded and traversed the site, in addition to areas within the palisade. The investigations consisted of excavating several domestic features and the associated structures and storage pits, and portions of the three pyramidal mounds within the bounding stockade line, including the Northeast Mound. Barrett's excavations recovered a large ceramic assemblage consisting of approximately 1200 vessels. Richard's 1992 analysis of the MPM collection concluded that 40% of the vessels reference grit-tempered Late Woodland types, while Mississippian pottery types make up about 49% of the total vessels. The remaining 11% is composed of Middle Woodland pots, hybrid Late Wood-Mississippian vessels and Hyer Plain, a pottery type that includes Mississippian vessel forms rendered in grit-tempered pastes (Richards 1992). Barrett's work is compiled into a book entitled *Ancient Aztalan.*

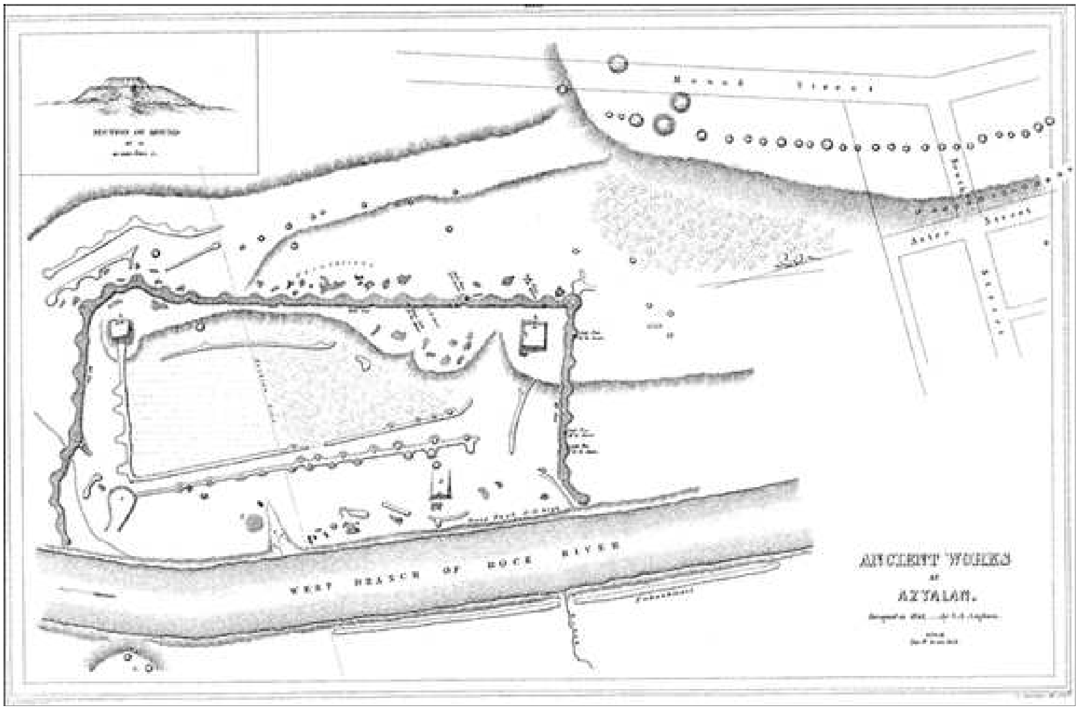


Figure 1.6: Map of Aztalan by Increase A. Lapham (1855: Plate XXXIV).

Between 1949 and 1952, additional excavations were carried out at Aztalan by the Wisconsin Archaeological Survey (WAS). Preliminary reports of these excavations are reported in *The Wisconsin Archeologist* (Baerreis 1958). In the 1960s the Wisconsin Historical Society, under the direction of Joan Freeman, conducted fieldwork concentrating on the residential area of the site (Birmingham and Goldstein 2005:14). Freeman also conducted excavations on the Northeast Mound (Zych 2013). Unfortunately, the results of these excavations have never been published.

Continuing into the 1970s, excavations were conducted in conjunction with the Crawfish and Rock River Archaeological Projects (Goldstein 1979) and Aztalan State Park management requirements (Goldstein 1983; Goldstein and Patin 1979). Goldstein's work was the first systematic survey of the area surrounding Aztalan.

In 1984 the Crawfish and Rock River Archaeological Projects switched to a focus on the Aztalan site itself (Birmingham and Goldstein 2005:15). The project was conducted by a University of Wisconsin-Milwaukee (UWM) field school under the direction of Dr. Lynne Goldstein. Excavations targeted a riverbank midden described by Barrett as well as the open plaza area (Richards 1985; 1992). Intact feature deposits were discovered beneath the plow zone. In addition, accumulated alluvial deposits at the edge of the riverbank where materials had washed down from higher elevations to the west. This work identified the initial Late Woodland occupation at Aztalan as early as the 9th century A.D. with a mixed Late Woodland/Middle Mississippian occupation after A.D. 1100 (Richards 1985, 1992).

In 2011 archaeological excavations were conducted by a UWM field school, under the direction of Dr. John Richards. The 2011 research was an effort to reassess the site chronology and riverbank depositional sequences (Richards et al. 2012b). Further details specifically regarding the 2011 excavations are provided in Chapter 2. Results of the 2011 fieldwork demonstrate that intact midden deposits are located in a number of areas along the riverbank (Richards et al. 2012b). In addition, the 2011 work uncovered evidence of aboriginal land leveling activities involving filling of an erosional ravine. The 2011 excavations also revealed concentrations of worked copper recovered in close proximity to a location from which Barrett (1933) also reported finding native copper remains (Picard 2012).

CHAPTER 2 CERAMIC METHODS AND ANALYSIS

INTRODUCTION

The formal analysis was conducted using rim sherds as the basis for identifying discrete vessels in the collection. The 2011 UWM field school excavations at Aztalan recovered pottery that comprises a mixed Late Woodland-Mississippian collection. Analytical procedures in Midwest prehistoric ceramic studies have been largely conventionalized and grounded in the fundamentals of ceramic vessel analysis as described by Shepard (1956), Rice (1987), and Sinopoli (1991), thus making it possible to compare the 2011 Aztalan ceramic sample to previous analyses. For the most part, the methodology presented here follows Richards' (1992) analysis, although some minor additions were made. The morphological and metric data obtained by using these methods will characterize the various collections according to cultural affiliation, function and suggested temporal assignments. The following paragraphs will clarify how each category is used to infer cultural, functional or temporal information.

In addition to these methods, use-ware analysis was conducted on the ceramics to determine the presence of carbonization, attrition, and residue. Most recently described by Skibo (2012), this performance-based life history approach to ceramics can allow inferences to be made on the actual vessel function, or how these vessels were utilized by their owners.

A portable X-ray fluorescence (pXRF) analysis was performed as well. The pXRF analysis aims to highlight the chemical similarity, or dissimilarity of the selected vessels. Results of the pXRF analysis were compared to Zych's (2013) pXRF analysis of ceramics from the Wisconsin Historical Society investigations of Aztalan's Northeast

Platform Mound. The results of this comparison highlight the degree to which vessels within a single site were manufactured locally or somewhere else.

Sorting

Initial sorting separated the pottery into categories representing rim sherds, shoulder sherds, and body sherds. Rim sherds, were checked for cross-mends between other rims, shoulder sherds, and body sherds within each provenience, and between all proveniences. Body and shoulder sherds not associated with identified vessels were excluded from further analysis.

For the purpose of this analysis rim sherds were further sorted by provenience. Provenience categories refer to test units one through twelve. The rim sherds were further sorted by surface treatment and decoration, if present. Each rim sherd was assigned a numbered, starting at 1152 (the next number in the UWM-ARL Helix ceramic database), following previous organization of Aztalan ceramics.

Data Control

After the initial sorting of sherds each rim sherd was entered in the UWM-ARL Helix database. As previously stated rim sherds were assigned numbers starting with vessel number 1152. Vessel ID numbers were automatically populated starting with ID number 1172. As illustrated in Figure 2.1 the collection and provenience information was entered next. Cultural affiliation is the first ceramic category identified, as the UWM-ARL Helix database separates ceramic ware into Madison ware, collared ware, and Mississippian or other culturally affiliated wares as each ceramic ware has a descriptive page designed to describe the distinct characteristics of each ceramic ware. Each ceramic ware category includes the same basic descriptive categories such as vessel morphology,

surface treatment, and Munsell color. Minor changes to the basic template were required in order to adequately characterize collared ware and Madison The collected data was exported to Excel for use by other statistical packages including “R”.

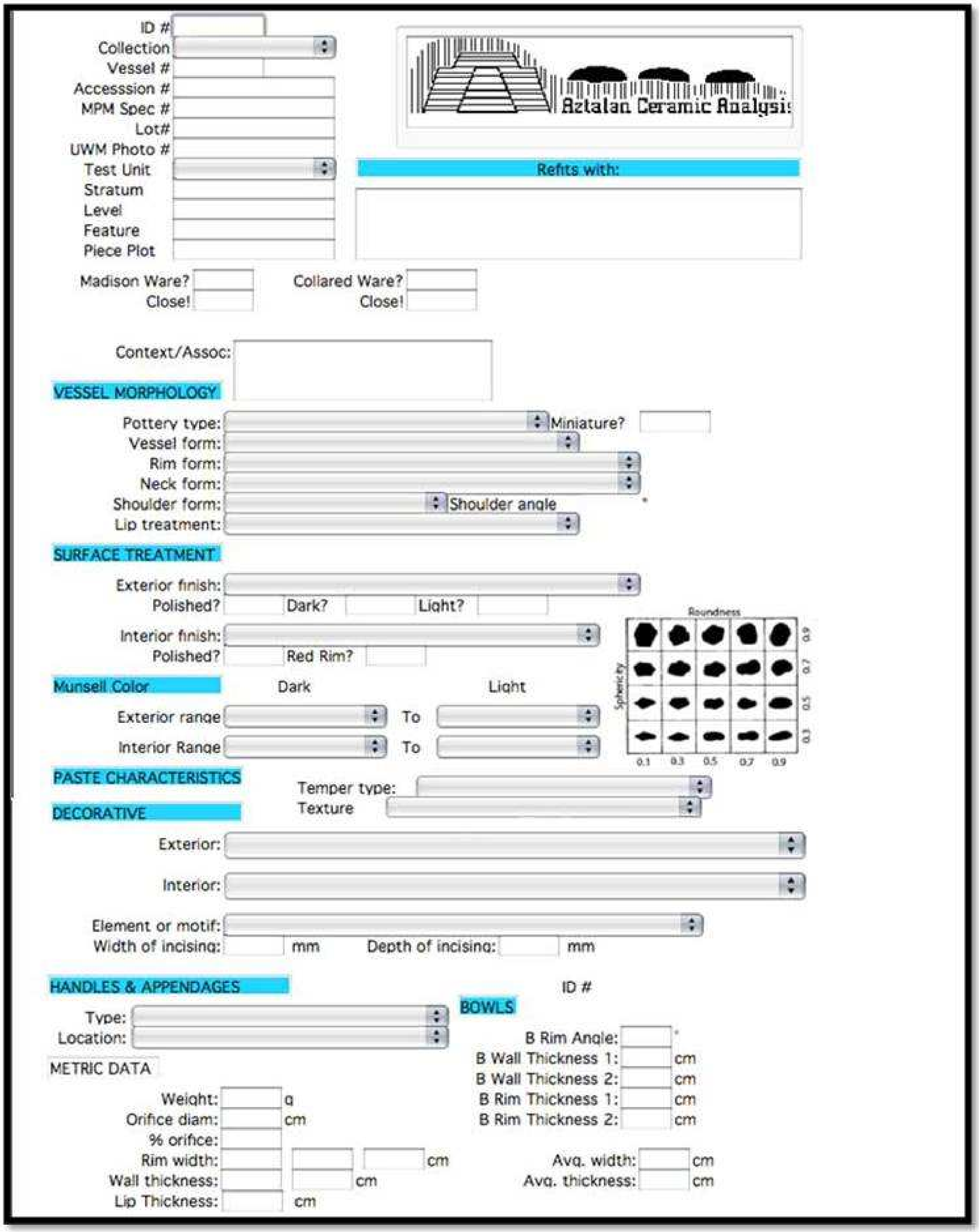

ID #
Collection
Vessel #
Accesssion #
MPM Spec #
Lot#
UWM Photo #
Test Unit
Stratum
Level
Feature
Piece Plot
Aztalan Ceramic Analysis
Refits with:
Madison Ware? Collared Ware?
Close! Close!
Context/Assoc:
VESSEL MORPHOLOGY
Pottery type: Miniature?
Vessel form:
Rim form:
Neck form:
Shoulder form: Shoulder angle
Lip treatment:
SURFACE TREATMENT
Exterior finish:
Polished? Dark? Light?
Interior finish:
Polished? Red Rim?
Roundness
Sphericity
Munsell Color Dark Light
Exterior range To
Interior Range To
PASTE CHARACTERISTICS Temper type:
DECORATIVE Texture
Exterior:
Interior:
Element or motif:
Width of incising: mm Depth of incising: mm
HANDLES & APPENDAGES ID #
BOWLS
Type:
Location:
B Rim Angle: °
METRIC DATA
B Wall Thickness 1: cm
B Wall Thickness 2: cm
Weight: g
B Rim Thickness 1: cm
Orifice diam: cm
B Rim Thickness 2: cm
% orifice:
Rim width: cm
Avg. width: cm
Wall thickness: cm
Avg. thickness: cm
Lip Thickness: cm

Figure 2.1. Data entry form for the UWM-ARL Helix database.

Number of Vessels

There are 107 vessels represented by the rims analyzed. For the purpose of this analysis it is assumed that each rim sherd represents a distinct vessel. Attempts were made to cross-fit all rims in order to determine a minimum number of vessels. Rim sherds or body sherds that were found to refit to rim sherds were noted.

Attributes

Ceramic analysis considers a number of attributes that correspond to variations in vessel morphology, manufacturing and decorative technique, and metric data. Rim sherds were coded according to these attribute categories to facilitate comparisons to previous Aztalan assemblages and assemblages elsewhere in the Midwest. In order to account for the variety of attributes present in the collection vessels were separated into Mississippian, Madison ware, and collared ware before attributes were identified.

Temper and Paste Characteristics

The majority of vessel paste examination was conducted by macroscopic observation and a 10x handheld lens. In some instances microscopic equipment was utilized. Following Richard’s (1992) previous study of Aztalan materials, fresh breaks along sherd edges were utilized in order to record paste characteristics. The most common temper agents in the ceramic assemblage are grit and shell. Shell tempering is evident by the presence of flat, shell platelets, or similar flat voids. Grit tempering was identified by the presence of crushed igneous rock fragments.

Grain Size and Texture

A 10x handheld lens was used to determine paste grain size and texture for each rim sherd. During examination a number of criteria were recorded: aplastic size, sorting, shape, inclusions, and paste texture. A sand grain sizing folder reference standard (Figure 2.2) was used for these observations, prepared by the Gamma Zeta Chapter of the Sigma Gamma Epsilon (National Earth Honor Society for the Earth Sciences) at Kent State University. The shape of the temper is described in terms of sphericity and roundness (Table 2.1). Sorting of temper was separated into categories by the presence of like-sized, defined as well sorted, or dissimilar sized particles, noted as poorly sorted. Particle size was categorized into coarse (over 2 mm diameter), medium (1/16 to 2 mm diameter), fine (under 1/16 mm diameter), and very fine (0.0625-0.125 mm).

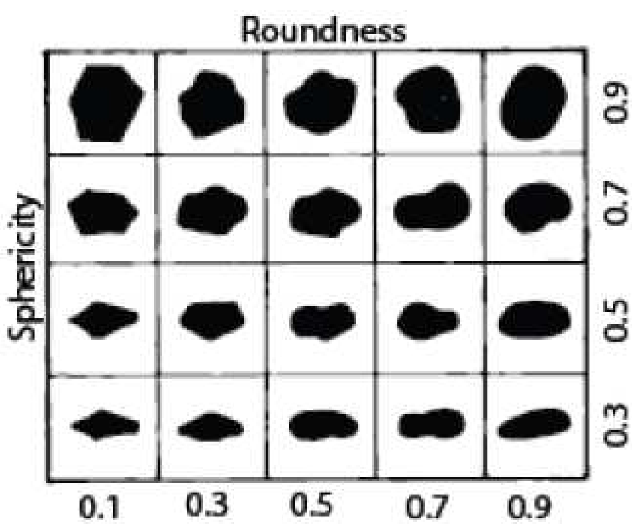


Figure 2.2. Temper shape chart (Gamma Zeta Chapter of the Sigma Gamma Epsilon Kent State University).

Table 2.1. Paste Texture Categories (after Gamma Zeta Chapter of the Sigma Gamma Epsilon Kent State University).

Silt	< 1/16 mm
Very Fine Sand	1/16 - 1/8 mm
Fine Sand	1/8 - 1/4 mm
Medium Sand	1/4 – 1/2 mm
Coarse Sand	1/2 – 1.0 mm
Very Coarse Sand	1.0 – 2.0 mm
Granules	2.0 – 4.0 mm
Pebbles	4.0 – 64.0 mm
Cobbles	64.0 – 256.0 mm
Boulders	>256.0 mm

Paste Core Cross-section

The degree of oxidation or reduction present was determined by observing the paste core cross-section. Table 2.2 lists the categories identified using those outlined by Richards (1992:247). The atmosphere of firing affects paste core cross-sections categories. When pottery is fired in an environment with free air circulation and ample oxygen to bind with the elements the atmosphere is oxidized. Paste core color of such pottery, while depending on the amount, particle size, and combination of impurities, is defined as light (Shepard 1956). The opposite affect when firing is reduction, it refers to a kiln atmosphere, which does not have enough oxygen in it to completely consume the fuel as it burns. Due to this deficiency, the flame pulls oxygen molecules out of the clay bodies and glazes, changing their character (Shepard 1956:81). The surface itself frequently shows sooting or formation of fire-clouds, while the paste core is dark in color.

Table 2.2. Paste Core Cross-Section Categories.

Uniformly Dark
Uniformly Light
Dark margins/light core
Light margins/dark core
Dark Exterior margin/light interior margin
Light exterior margin/dark interior margin
Very light exterior margin/slightly darker interior margin
Very light margins; slightly darker core
Light exterior margin/slightly darker interior margin

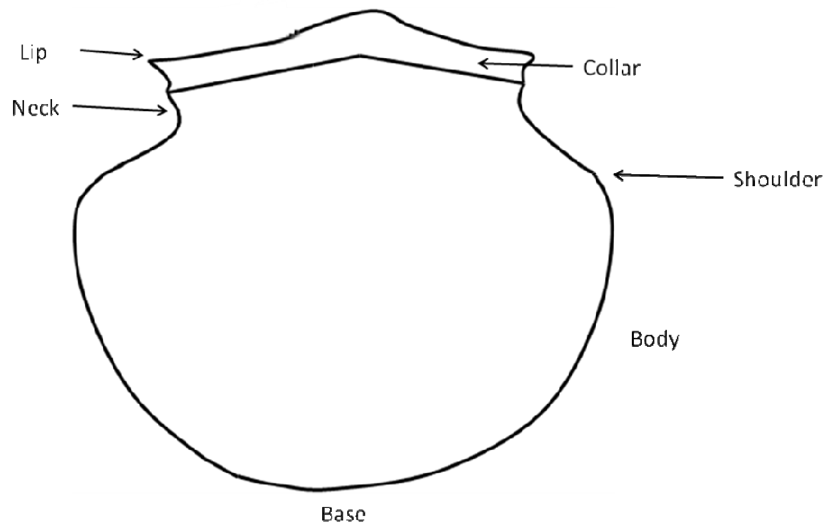
Vessel Morphology

The following discussion of vessel morphology is rooted in concepts proposed by Birkhoff (1933), which were developed into formal terminology by Anna Shepard (1956). While most terms used in describing the shape and components of a vessel have become conventionalized, usage often varies within studies. Vessel morphology for this study is described following Richards (1992:217), and is depicted in Figure 2.3 and Figure 2.4.

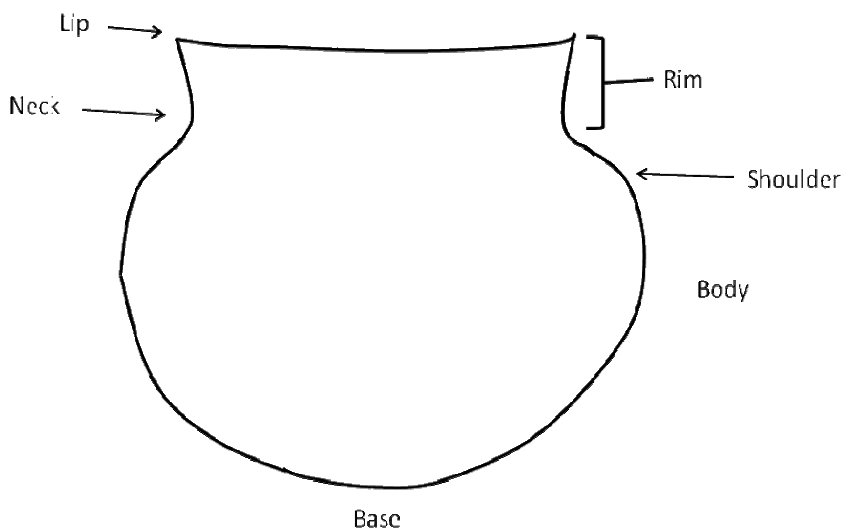
(A)

(B)

Figure 2.3. Attributes of vessel morphology [(A & B) Mississippian forms after Richards 1992: Figure 5.3.]



(C)



(D)

Figure 2.4. Attributes of vessel morphology continued [(C) and (D) Woodland vessel morphology].

The majority of vessels in the 2011 assemblage are jar forms. Vessels assigned to this category describe a vessel with a restricted orifice smaller than the maximum diameter of the vessel. Seed jars, often referred to as tecomates, are defined as a restricted neck-less jar with a globular body (Richards 2007a:2). Viewing seed jars in profile

distinguishes these rims as exhibiting a rounded inward angled or slightly convex interior rim margin.

Rim Form

Rim refers to the margin of the vessel orifice, just below the lip (refer to Figure 2.3). Eleven forms of rim shapes were recorded in the 2011 assemblage. These forms attempt to assess manufacturing technique along with general morphology (Richards 1992). These forms are the results of various treatments to the margin of a vessel's orifice: outward eversion, extrusion, bolstering, folding, rolling (or coiling), angling, thickening, collaring, or no modification (Figure 2.5). Any rim form attributes that could not be determined due to weathering, exfoliation or fragmentation were recorded as 'indeterminate'.

Direct-unmodified rims are characterized by the lack of additional modification of the rim margin. Unmodified direct rims are attributes on simple bowls and jars with straight or flaring necks. Everted rims are the result of turning the rim outward to varying degrees, characterized by a distinct break between the lower rim margin and the vessel neck. Everted rims may also include varieties that are folded, extruded, filleted or curled. Everted-extruded rims are characterized by drawing together the exterior and interior rim margins of an already everted rim, giving it a tapered or pinched look. Everted-folded rims are created by bending a folded, everted rim back towards the exterior of the vessel neck. The degree of folding varies as defined by Richards (1992:228-231). The eight distinct sub-types were included in the identification of folded rims when possible. Included in the everted-folded sub-categories is Richards' everted-curled type.

Everted-filleted and everted-bolstered rims are produced by adding a strip of clay to the exterior rim margin and the lip. This form of rim is not the same as the addition of a collar. Everted-filleted rims exhibit a curved in exterior rim margin while everted-bolstered rims exhibit a rounded or curved exterior rim margin.

Rolled rims are manufactured by tightly curling the upper rim margin into the lower rim margin, producing a round exterior margin. Rolled rims often do not have a definable lip. Thickened rims are almost exclusively associated with seed jars, but bowl forms do exhibit this form as well. Thickened rims have slightly swollen or convex interior rim margins.

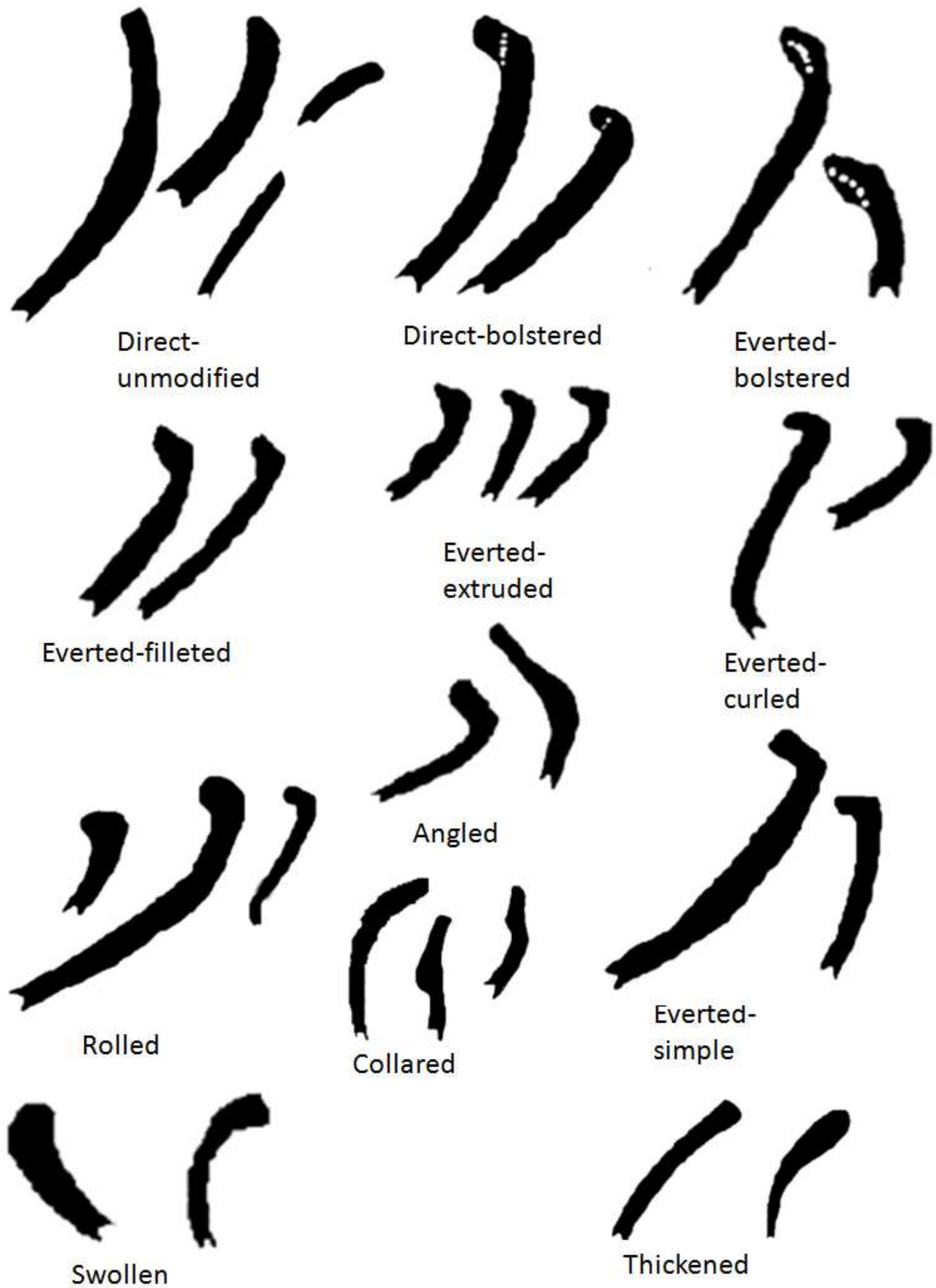


Figure 2.5. Rim form variation (after Richards 1992: Figure 5.5).

Collared rims are manufactured by adding a band of clay or folding the rim outward and pressing it onto the exterior surface of the vessel. Collared rims are a common characteristic of the Late Woodland vessels in this assemblage. Richards (1992:233) distinguished several collar types based on the manufacturing process used, including: appliquéd, filleted, folded, or folded over fillet. Appliquéd collars are produced by the adding of a strip of clay to the entire exterior rim margin. These forms are often not possible to distinguish because the junction between the collar and exterior rim margin may not be visible. Therefore, the majority of collared rims are defined as indeterminate.

Collar Profile

Collared vessels were further analyzed to determine collar profiles. Richards (1992:272-275) systematically categorized a variety of profile forms in his analysis of the MPM Aztalan ceramic assemblage. These examples of collared ware cross-section profiles from Aztalan are illustrated in Figure 2.6. Collared profile categories are distinguished by examining the outline of the exterior rim margin to the vessel orifice. For example, a convex profile exhibits an inward curve of the exterior rim margin.

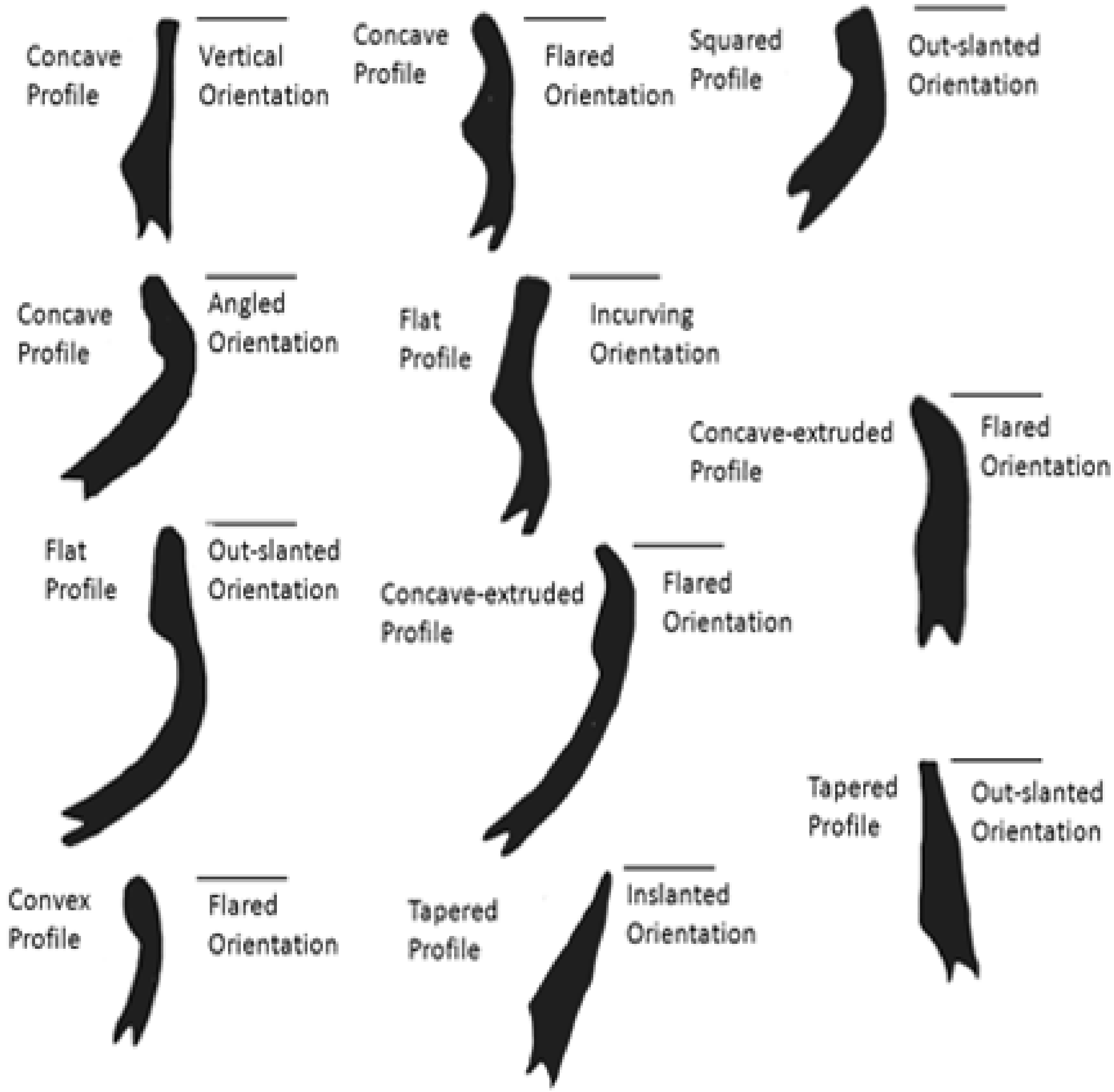


Figure 2.6. Collared rim profile and orientations (after Richards 1992: Figure 5.14).

Orifice Shape

There are two broad categories that vessels fall into when determining collared ware vessel orifices: circular and polygonal orifices. The presence or absence of castellations, or peaks at the orifice often varies the orifice shape. Typically, peaks result in a polygonal orifice, but there are exceptions. Peak morphology varies between angled

or rounded peaks. Orifice shape for non-collared vessels is primarily circular when enough of the orifice is present to make a distinction.

Lip Form

The lip of a vessel is located on the crest of the vessel wall spanning the exterior wall to the interior wall (Holley 1989:20) (Refer to Figure 2.3). Lip forms in this collection represent three distinct forms: rounded, flattened, and pinched. These lip forms are illustrated in several variations (Figure 2.7). Flattened lips occur where the lip surface is perpendicular to the orifice plane. Rounded lip form is the curving of the lip surface to create a convex surface form. Pinched lips are produced by drawing the clay outward at the exterior-most upper and lower rim margin to produce a distinct convergence (Richards 1992:235).

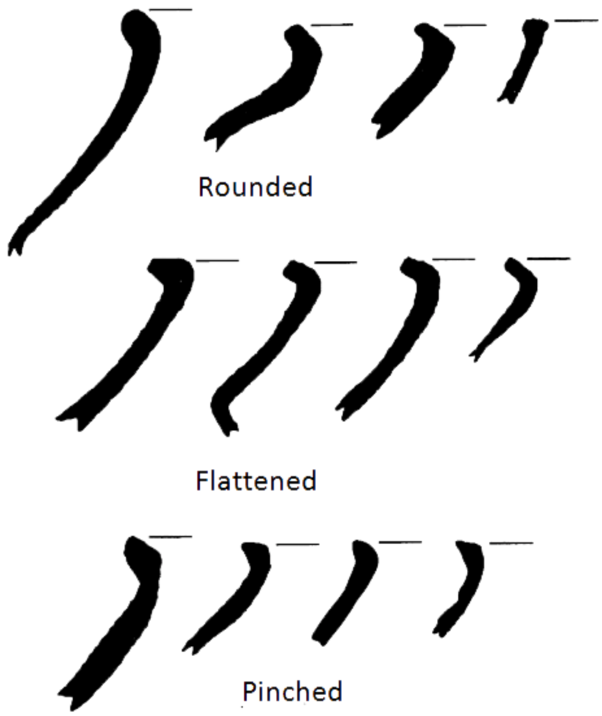


Figure 2.7. Lip form morphology (after Richards 1992:294 Figure 5.7).

Neck Form

Neck categories were determined based on overall profile of the rim sherds. The variations in vessel neck form are shown in Figure 2.8 (Richards 1992:232, 237). Vessels with angled necks turn sharply outward. Sherds with an insufficient amount of the body present are categorized as having indeterminate necks. Flared necks have a gentle outward turn of the vessel neck. Straight necks are defined as having relatively vertical orientation of the upper interior neck. Inslanted necks angle inward from the shoulder toward the orifice plane.

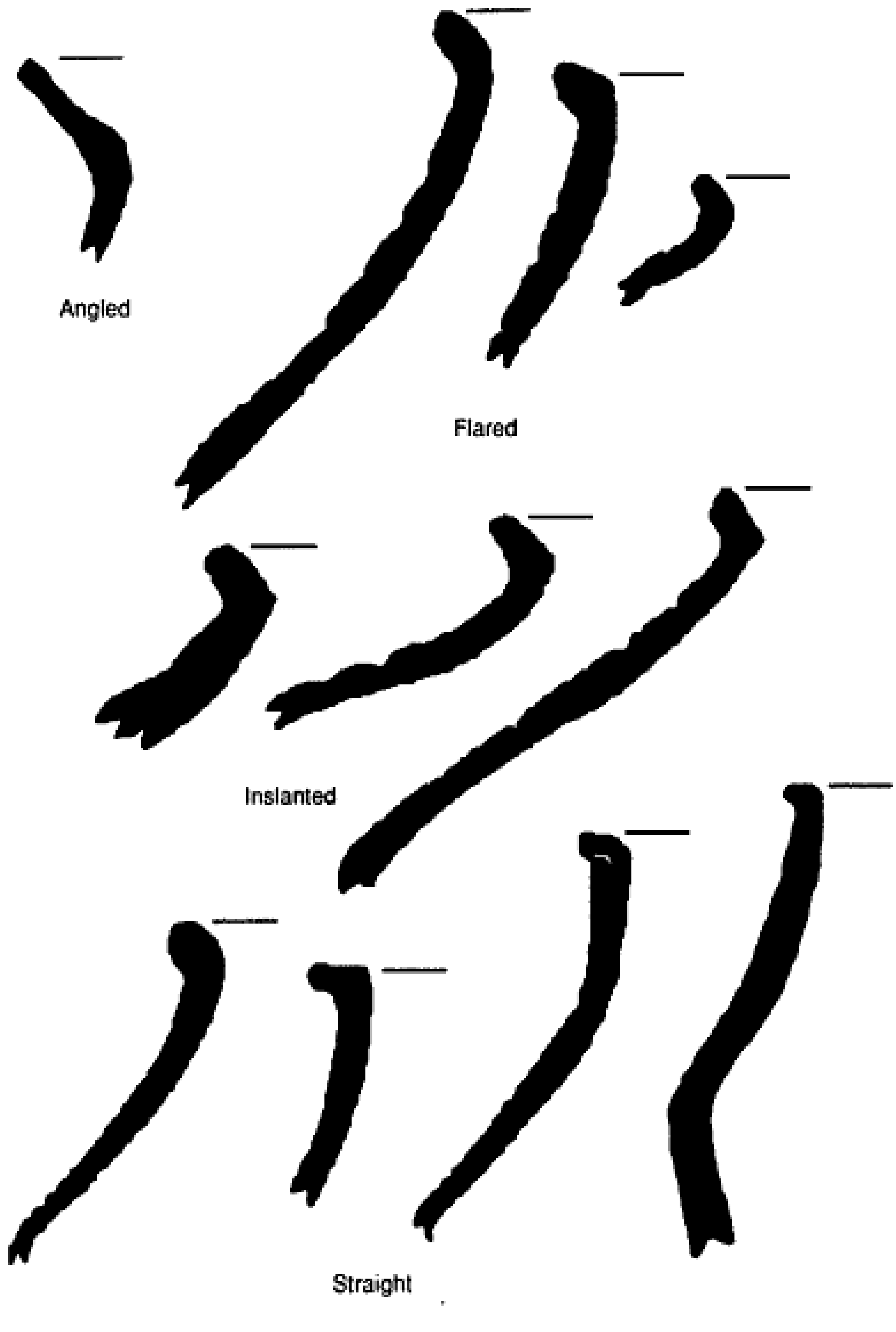


Figure 2.8. Neck Forms (after Richards 1992: Figure 5.8).

Shoulder Form

Shoulder form was recorded based on previously established criteria (Richards 1992). However, very few vessels were complete enough to identify shoulder morphology; these were sorted into an indeterminate category. The first category, rounded, exhibits the least contour in shape illustrated as slight curve in form. Angled shoulders demonstrate a form with a distinct corner point, at which the upper vessel body slopes inward toward the vessel interior (Richards 1992:238). The last categories sharp-angled and hyper-angled represent an increased scale of shoulder angle from the previous. Sharp-angled shoulders have a slightly more distinct corner point at the shoulder. Hyper-angular shoulders show the sharpest corner point and an incurving or concave shaped upper body.

Surface Finish

The technical aspects of physical attributes are extremely important when exploring pottery function. While all of these attributes can also be largely influenced by cultural conventions and social contexts, it is crucial to first investigate how these features affect functional performance. Surface treatments include texturing, corrugation, slips, and glazes, and they affect the performance characteristics of thermal shock resistance, permeability, abrasion resistance, and heating effectiveness (Schiffer 1988, 1990). Of important in this study is the presence of texturing, classified as cordmarking or cord roughened in the Aztalan collections. In the Woodland Great Lakes region cordmarking or cord roughened of vessel surfaces is known to increase thermal shock resistance and thus likely used primarily on cooking pots (Pierce 2005; Skibo 2013).

Additional surface treatment categories were identified ranging from smoothed or plain surfaces to slipped and/or decorated examples. Sherds that were badly weathered, unidentifiable or exfoliated were sorted as indeterminate. The surface color for the interior and exterior of each sherd was recorded using a standard Munsell color book.

Slipped surfaces are the result of applying a thin liquid clay film to a vessel prior to firing. Slipped surfaces are recognizable in a sherd's profile as a thin layer of a color usually contrasting with the underlying paste. These surfaces often hide temper additives. Slipped surfaces are often identified as polished with a smooth stone prior to firing, producing a waxy-like finish on the competed vessel; however polishing is not required to categorize a surface as slipped. Slip coloring includes red, tan and white slips.

The process of smudging vessels also occurs in this assemblage. Colors can range from darker brown to very dark red varieties. Smudging is a means of blackening pottery by causing carbon and tarry products of combustion to be deposited on the vessel (Shepard 1956:88). This category can be problematic as vessels may be improperly sorted into categories. For example, small plain surfaced sherds may actually represent unsmudged portions of mottled black-smudged vessels. A surface was considered polished if it exhibited a reflective surface when examined under indoor light.

Decorative Treatments

Decorative treatments include any additions and modifications to the surface of vessels, not directly related to basic function as a container. The categories for decoration follow previously documented decorative treatments on ceramic vessels at Aztalan (Baerreis and Freeman 1958; Birmingham and Goldstein 2005; Mollerud 2005; Richards

1992, 2003, 2007a). Although plain, undecorated vessels far outnumber decorated types in this assemblage, decoration includes twisted cord impressions, cord-wrapped stick impressions, and incising.

Twisted cord impressions are an imprint of a segment of twisted cord on the vessel surface prior to firing it. The impressions appear as parallel twists of cord oriented in an ‘S’ or ‘Z’ pattern, which are the mirror image of the actual cord used. Cordwrapped stick impressions are manufactured by tightly wrapping a dowel with a twisted cord, then pressing this into the vessel surface. Cordwrapped stick impressions are distinguished form cord impressions because the design of parallel twists runs perpendicular to the direction of the impression. Cordwrapped stick and cord impressions are executed in a wide variation of designs. This includes notches, punctates, and use of a knotted cord to produce impressions in the vessel wall.

Sherds bearing trailed designs impressed into a plastic vessel wall were sorted into an incised category. Incising is technique that involves cutting linear designs into the clay surface. Incised examples can exhibit controlled, well-executed lines or be quite variable in size and execution.

Use-Alteration Traces

Pottery use-alteration is defined as the chemical or physical changes that occur to the surface or subsurface of ceramics as a result of use (Skibo 1990:81). Use-alteration analysis is important when analyzing the function of a vessel because this level of analysis can provide archaeologists with inferences about the actual function of the

vessel. Actual function is essential in determining vessel use because of its ability to help create more fine-grained inferences about pottery use (Rice 1987:207-242).

Several studies (Hally 1983a, 1983b) have employed use-alteration to formulate inferences about pottery use. Hally's analysis of the Barnett phase ceramics (1983a, 1986) demonstrates how many sources of information, including morphology, performance characteristics, ethnographic information, context of recovery, and use- alteration can be combined to interpret a vessel function. Hally's (1983a, 1986) results include demonstrating soot and oxidation patterns reflect how vessels were positioned in relation to the fire.

A further informative study performed by Skibo and Schiffer (2008) analyzed seed jar examples from the Prayer Rock Caves collection for use-alteration traces. This use-alteration analysis observed soot and several carbon patterns in the interior of these vessels (Skibo and Schiffer 2008:48-49). From these traces the authors were able to demonstrate that the vessels were used for cooking, moreover, the patterns of traces exhibited suggested that the mode of cooking included boiling, simmering and roasting (Skibo and Schiffer 2008:104).

Building on the work of Skibo and Schiffer (2008), Susan Kooiman (2012) conducted a use-alteration trace analysis of ceramic sherds from two sites in the Upper Peninsula of Michigan: Naomikong Point and Sand Point, which date to the Middle and Late Woodland Periods.

The importance of this study is her ability to make inferences based on sherds rather than whole pots as in Skibo and Schiffer's (2008) study. Using use-alteration traces such as carbonization, attrition, and residue traces Kooiman's (2012) results directly

connected pottery to use over a fire. The varying patterns left by traces further indicated that occupants of these sites employed different cooking practices (Kooiman 2012).

In this study the presence or absence of carbonization traces on the exterior and interior of rim sherds is focused on. Carbon deposition on the vessels is caused by charring of food. Food residues that adhere to or are absorbed into a vessel surface become carbonized when the pot is heated to a sufficient temperature (Skibo 1990:233). These use-alteration traces only occur on portions of the vessel that exceed a temperature of 300° C (Kooiman 2012:29). Pottery surfaces only reach these high temperatures above the water line of a pot used for boiling or simmering, or in modes of cooking where water cannot act to temper the heating process, often resulting in a scum line (Kooiman 2012:29).

The presence or absence of exterior sooting, exterior carbonization and interior carbonization was recorded for each sherd analyzed. Blackened regions on the exterior and interior of rim sherd surfaces were examined closely with macroscopic observation and a 10x handheld lens. Carbonization patterns proved to be a varied use-alteration trace so observation of its location/distribution was split into four categories: traces present only on the top 1-3 cm of the interior or exterior rim (Type 1; Figure 2.9), traces present beginning 3 cm below the interior lip (Type 2; Figure 2.10), traces present on the entire intact interior or exterior surface of a sherd (Type 3; Figure 2.11), and spotty distribution of traces on the interior or exterior surface of a sherd (Type 4 Figure 2.12). Vessels with multiple patterns were labeled with the appropriate combination of type categories.

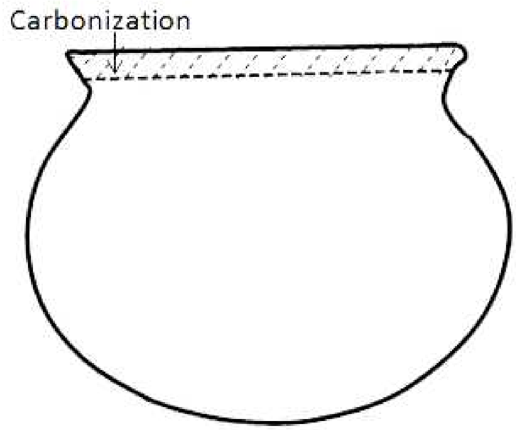


Figure 2.9. Type 1 Carbonization Distribution.

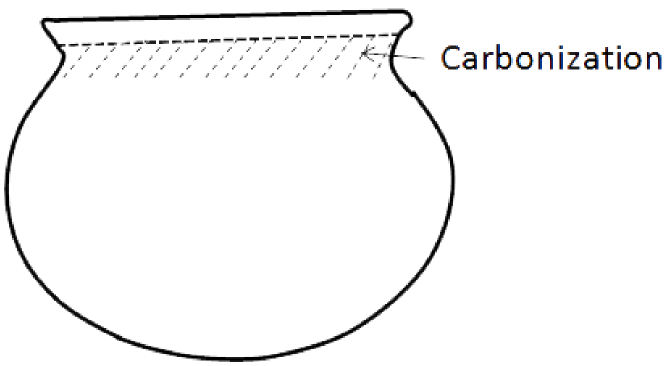


Figure 2.10. Type 2 Carbonization Distribution.

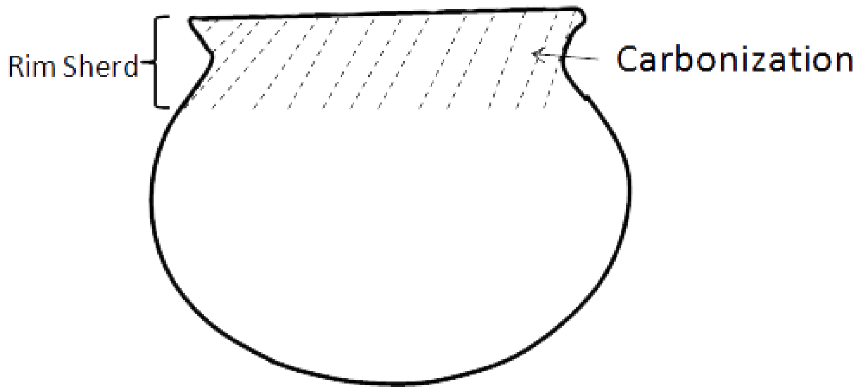


Figure 2.11. Type 3 Carbonization Distribution (after Kooiman 2012: Figure 47).

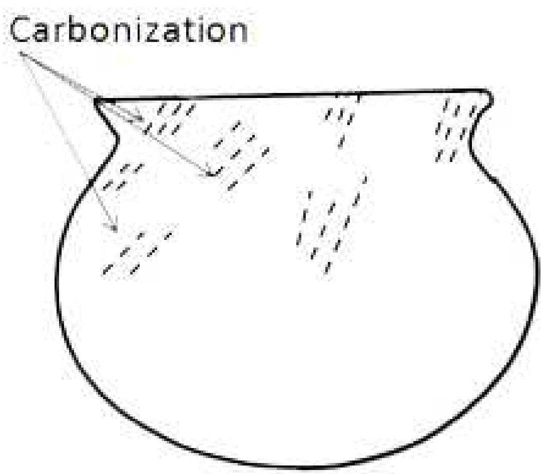


Figure 2.12. Type 4 Carbonization Distribution (after Kooiman 2012: Figure 48).

Appendages

This category is represented by one handle attached to the side of Powell Plain vessel 1270.

Metric Data

Metric information recorded for analysis includes counts, weight, orifice diameter, width and depth of incising, and RPR values. All numerical data was recorded using a caliper. Multiple measurements were taken when possible. Orifice diameter and percentage of orifice were determined from a sheet of paper with concentric circles listing radius for each circle and split into wedges by lines radiating from the center illustrating orifice percentage. An effort was made to draw cross-section profiles for each rim sherd using calipers and a contour gauge. All vessel profiles are documented in Appendix B. The following discussion clarifies the locations and procedures for metric measurements, seen in Figure 2.13.

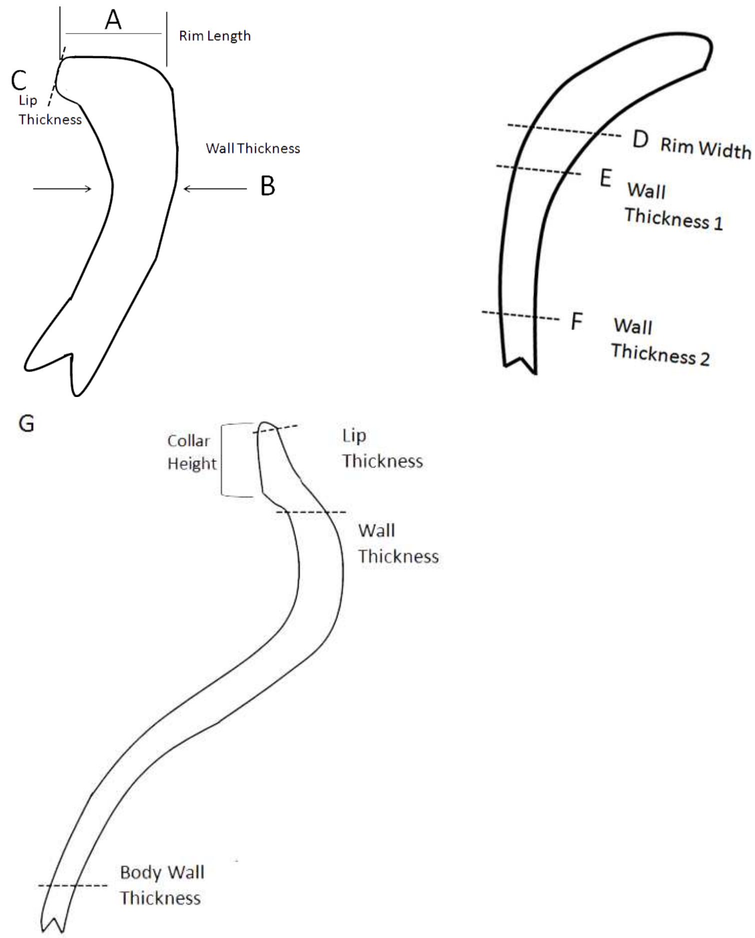


Figure 2.13. Jar metric attributes A –C jars; Seed Jar metric attributes D-F; G Collared vessel attributes (after Zych 2013:52 Figure 3.8.).

Lip thickness refers to the distance between the exterior and interior walls of a vessel at the crest of the vessel. Rim width measures the protrusion of the rim margin from the interior wall of the vessel body. Wall width measurements were recorded at the juncture of the lower rim margin and the upper portion of the vessel neck. Body wall width measurements were distinguished from wall width as measurements were taken below the juncture of the rim margin and neck of a vessel. This was not always possible on rim sherds with exfoliated portions.

Collared rim sherd measurements were recorded in different locations due to their unique rim morphology. For these rim sherds, measurements include maximum collar height and thickness, lip width, and wall thickness. Maximum collar height is measured from the lip to the junction of the collar to the neck of the vessel. Maximum collar thickness measures from the exterior collar to the interior vessel wall. On collared vessels wall thickness is recorded at the juncture of the collar and main body of the vessel.

Additional metric data was recorded for bowls and seed jars. Bowl rim thickness is measured as the distance between the exterior and interior rim margin. Three measurements were averaged to obtain this value. Bowl wall thickness is measured from below the juncture of the exterior rim margin and the vessel body. Refer to Figure 3.3 for the location of the various measurements taken.

In order to highlight temporally sensitive features of the analyzed ceramic assemblage (after Holley 1989) vessel wall thickness was divided by rim width to calculate the rim protrusion ratio (RPR). This ratio provides a crude measurement of the elaboration of jar rim shape, where early jar rims have an RPR value closer to 1.0 and RPR values closer to 0.1 indicate a later jar (Holley 1989:21). This calculation was performed only for Mississippian jars. Exfoliated rim sherds, or rims too fragmentary to allow three separate measurements per rim were excluded from the analysis.

Mean RPR values were calculated separately for Ramey Incised, Powell Plain, and Hyer Plain vessels. A mean value for each context and the entire 2011 UWM collection was calculated also. RPR values for Powell Plain, Ramey Incised, and Hyper Plain, provided by Zych’s (2013) analysis of the Northeast Mound ceramic assemblage were compared to the 2011 contexts suggested temporal phases.

Portable X-Ray Fluorescence Analysis

A portable X-ray fluorescence (pXRF) analyzer was used to collect useful spectra for elemental data on the vessels from the 2011 collection depositional contexts. The pXRF analysis aims to highlight the degree of chemical heterogeneity of ceramics to investigate the use of different clay sources and paste recipes at Aztalan. X-ray fluorescence has only become common in archaeological uses within the past few decades. The appeal of X-ray analysis for archaeological purposes is its advantages: it is non-destructive, fast, easy to use, and cost-effective.

The study reported here was undertaken to provide data on the geochemical variability of the Aztalan pottery to explore the degree to which clay resources may have been shared by the site's culturally diverse occupants. Previous compositional studies of Aztalan pottery utilizing both petrographic analysis as well as pXRF have demonstrated that some of the Aztalan pottery was made from clays similar to American Bottom sources and likely represents pots imported to the site. This study was designed to shed light on the compositional variation within the collection of 2011 ceramic collection and in comparison to the ceramics of the Northeast Mound. The statistical tests that are explained in the following paragraphs were utilized for both pXRF analyses.

Elemental data was collected using a Bruker Tracer IIIiv+ handheld X-ray fluorescence analyzer. The analyzer was configured to return useful spectra for elements ranging from iron to molybdenum. The methods used are those outlined in Hulit's "Tutorial" which established a standard pXRF statistical method that is currently used by UW-Milwaukee's ARL (Hulit 2012a).Prior to each run, readings were collected from a standard clay sample procured from the Clay Minerals Society. In this case, a kaolin standard (Kga-2) was used. Readings were taken also at the end of each run and all

readings were compared to ensure consistency between data collection episodes. Use of the standard is also designed to allow ARL data to be calibrated for comparison to datasets collected by other researchers.

Hulit (2012a: 38-39) has demonstrated that multiple readings at multiple locations on each sample allow for detection of anomalous readings that might alter resulting calculations. Thus, each sample (i.e. vessel) in this analysis was scanned at three different locations and each location was scanned three consecutive times at 180 seconds per reading. Thus, nine readings were recorded from each sample, for a total of 27 minutes each. When sampling ceramics, care is taken to collect readings from the exterior, interior, and if possible, from a fresh cross-section break as well. Net intensity values for elements in the targeted range were derived using Bruker's Artax software and saved as a text file for importation into Excel. Excel was used to properly format the data and produce a text file readable by the "R" statistics platform.

Statistical analysis was conducted using the R Statistical Analysis Program version 2.15.2 that was developed by the R Development Core Team (2012). The methods used are those outlined in Hulit's "Tutorial" which established a standard pXRF statistical method that is currently used by UW-Milwaukee's ARL (Hulit 2012a). The "R" computing environment was used to normalize the data. The individual readings were then checked for internal consistency by calculating Mahalanobis distance values. Extreme readings, likely caused by a label or fragment of temper, were removed and the revised data set was then examined using principle components analysis.

A principle components analysis (PCA) is a statistical procedure that reduces the variation among the transformed elements into to select 'principle components' that

explain a percentage of the variation within the dataset, respective of the relationships between variables (Hulit 2012b:10, 130; Rogerson 2010:301). The compositional data from the pXRF results must be transformed for use in PCA using isometric log-ratio (ILR) in order to calculate compositional outliers and initial identification of clustering based on similarity of matrices (Filzmoser, et al. 2012:77; Hulit 2012b: 129). The PCA was run using the *GrayILRv2* function (Hulit 2012c) which both transformed the data using the ILR function and performed the PCA. Several bi-plots highlighting temper and pottery type were produced from these results. Each bi-plot was examined for clusters or the absence of clustering between the vessels. From this data inferences can suggest whether the ceramics show a significant difference between in clays enough to represent multiple clay sources used in manufacture.

The results were tested for statistical validity using ANOVA and Tukey post-hoc tests against select categorical variables (e.g. pottery type and temper) and were visually examined in a series of biplots. A 95% confidence interval is used ($\alpha=0.05$) for all statistical tests. Examining the bi-plots of the ANOVA tests can show pottery type or temper as significantly different or similar to other pottery types or temper present.

Compositional outliers were detected using the *Hulitmvout* function (Hulit 2012c), a modified version of *mvoutlier* (Filzmoser and Gschwandtner 2011). This function compares readings against one another and highlights significant readings that may have been masked by the large ‘categorical’ during the ANOVA, hiding variations (Hulit 2012a:68). The outliers are highlighted in the original PCA bi-plot. This data can add additional insight as to whether multiple clay sources or combinations of clays were

used in vessel manufacture; or possibly these vessels were brought to the site by immigrant individuals or groups.

CHAPTER 3 DATA SET

INTRODUCTION

The data set is composed of ceramics recovered from different depositional contexts at the Aztalan site. These contexts include feature fill (Feature 8), undifferentiated midden deposits (Test Units 4, 8, & 9), anthropogenic fill (Test Unit 2), and the Northeast Mound. The collection from the 2011 UWM collection, Feature 8, Test Units 4, 8, & 9, and Test Unit 2 is composed of 107 vessels. Three additional rim sherds recovered from Feature 8 by the 2013 UWM field school were included also in the data set, adding two additional vessels; the third rim sherd refits with a vessel from the 2011 UWM collection. Ceramic data from the Northeast Mound contexts were obtained from Thomas Zych's (2013) previous analysis of the Northeast Mound ceramic assemblage. The Northeast Mound ceramic assemblage is composed of 133 vessels and a review of Zych’s data is included in this study for comparative purposes.

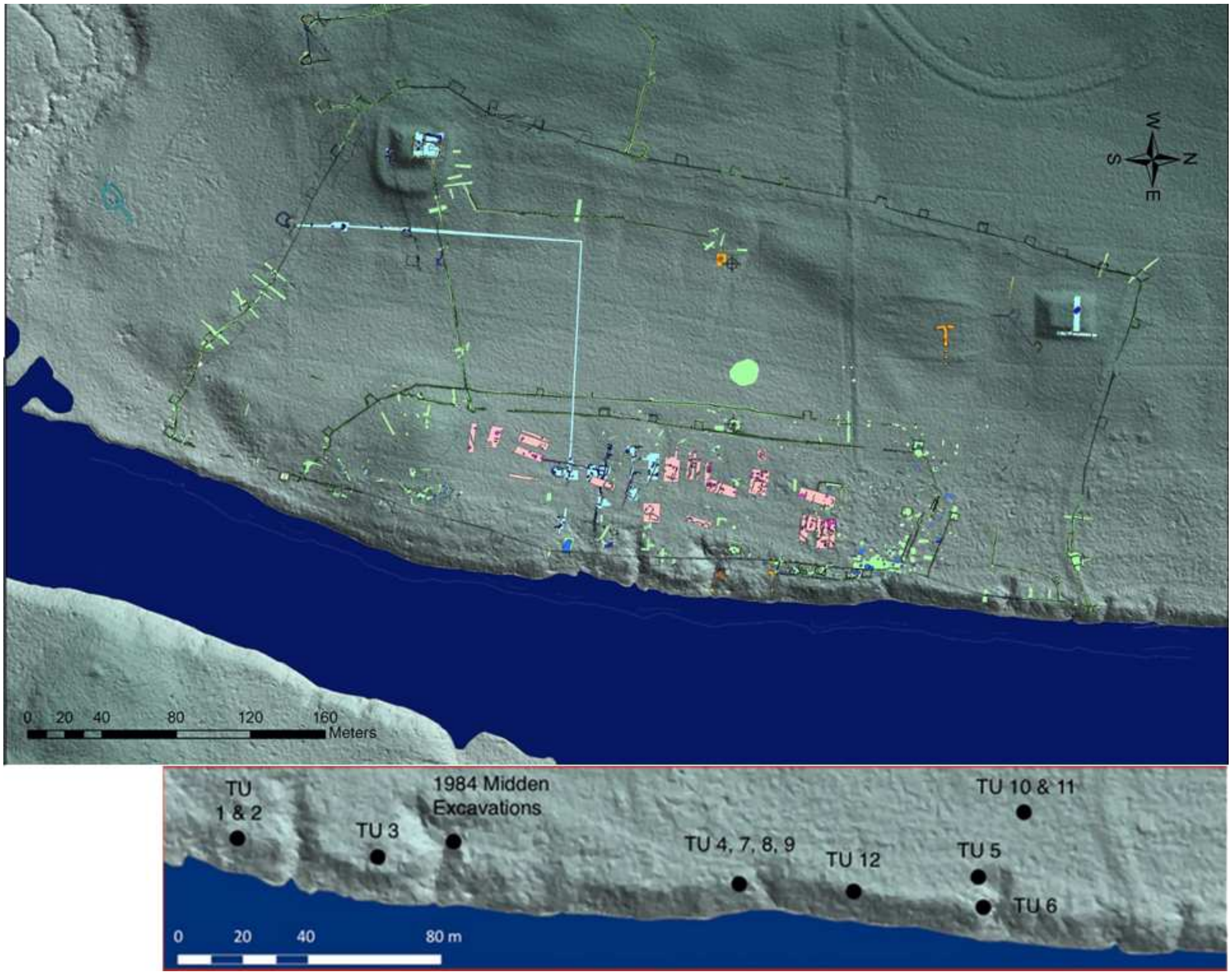


Figure 3.1. Bare earth LiDAR image of Aztalan site showing archaeological excavations 1919-2011, 2011 excavations zoomed in shown in red insert (Richards et al. 2012b; earlier excavations based on Goldstein 1999).

Test Unit 2 excavations were located at the southern end of the riverbank midden. Excavations included removal of backfill from a 1949 Wisconsin Archeological Survey trench (WAS), then expanding the unit from that point. Investigations exposed the redeposition of upslope sediments containing aboriginal debris, dating to the Mississippian settlement of Aztalan, above a massive deposit of aboriginal “buckshot” fill (Richards, et al. 2012b). The “buckshot” fill appears to represent Mississippian

alteration of the landscape in order construct a level surface and post structure (Richards et al. 2012a: 96).

Test Units 4, 8, 9, and Feature 8 were excavated along the riverbank in the northeast section of the site, to the east of the Northeast Mound. Investigations identified concentrations of lithic debris, both grit and shell-tempered pottery, copper and copper-stained materials. Test Units 4, 8, and 9 appears to represent aboriginal fill. Feature 8 ceramics are analyzed as a separate context due to its stratigraphic location below the riverbank midden deposit. A preliminary analysis of flora, fauna, copper, charcoal deposits, and ceramic data suggests that Feature 8 may not represent a typical refuse deposit in comparison to Test Units 2, 4 ,8 and 9 (Picard 2012). Superpositioning of Feature 8 suggests the possibility of deposition prior to or contemporaneous with the palisade construction (Picard 2012).

The 2013 Field School was planned to further investigate the aboriginal filling program observed in 2011 as well as the Feature 8 locale. The 2013 UWM Aztalan Field School excavated the remnants of Feature 8, which produced an assemblage that includes ceramics, native copper, and faunal and floral remains (Richards and Picard 2013:7). In addition, the 2013 work was designed to recover additional information about the Northeast Mound (Richards and Picard 2013:2).

The Wisconsin Historical Society (WHS) 1964, 1967, and 1968 excavations of the Northeast mound exposed approximately 679 m^2 of mound surface and 500 m^2 of sub-mound surface of the Northeast Mound at Aztalan (Zych 2013:62). The WHS Northeast Mound assemblage contains a mixed ceramic assemblage of Late Woodland and Middle Mississippian materials consisting of 133 vessels (Zych 2013). The ceramic

assemblage was analyzed by Thomas Zych using methods derived from Richards' (1992) analysis of Aztalan ceramics from the Milwaukee Public Museum collections and 1984 UW-Milwaukee Field School at the site. In addition to a stylistic analysis of these materials, Zych (2013) performed a portable X-ray fluorescence (pXRF) analysis on a selection of ceramic vessels in this assemblage. The pXRF results of sampled Northeast Mound ceramics are provided in Appendix C. Thomas Zych's Appendix C (2013) provides a complete list of the metric and ceramic attributes of the 133 vessels used in this study.

These vessels are important for comparison as the ceramics were recovered from context specific areas: mound fill, mound top, and sub mound. Below the mound, excavations exposed the original 'village level' surface (Zych 2013:62). Within the sub-mound surface several remnants of structures were uncovered, along with pit features, hearths and isolated post features (Zych 2013:64). Structure five, which Zych (2013: 119) contextualizes as one of many supra-domestic features, will provide significant information when comparing the ceramic contexts of the 2011 collection. Additional features were identified outside the structures. For example, Feature 2, is a pit containing an inverted whole Starved Rock Collared vessel (v50).

Mound top excavations exposed portions of a large, single-post structure, nine pit features, representing storage/refuse pits and five, mostly whole, vessels (76, 77, 78, 133, and the fifth vessel not located) interred in the mound fill just below the surface (Zych 2013:108,112,114). Zych (2013) suggests the presence of interred vessels and mound-top hearth features indicate special purpose areas or practices were being reestablished atop the mound in order to recite those created below the mound.

2011 UWM Ceramic Collection

The 2011 UWM excavations focused on a midden deposit adjacent to the exterior of the riverbank palisade line. Barrett (1933:83) describes the area as a typical kitchen-midden or refuse heap consisting of dumping from the former village area, extending for some 500 feet along the riverbank. This feature is important to research at Aztalan as it is suggested to document midden deposits associated with the later Mississippian occupation and abandonment of the site (Richards et al 2012b: 95). Thirteen test units were excavated in eight locations along the riverbank (Figure 3.1). Although the scope of this study is limited to the ceramics recovered from Test Units 2, 4, 8, 9 and Feature 8, the entire collection is reported in Appendix B.

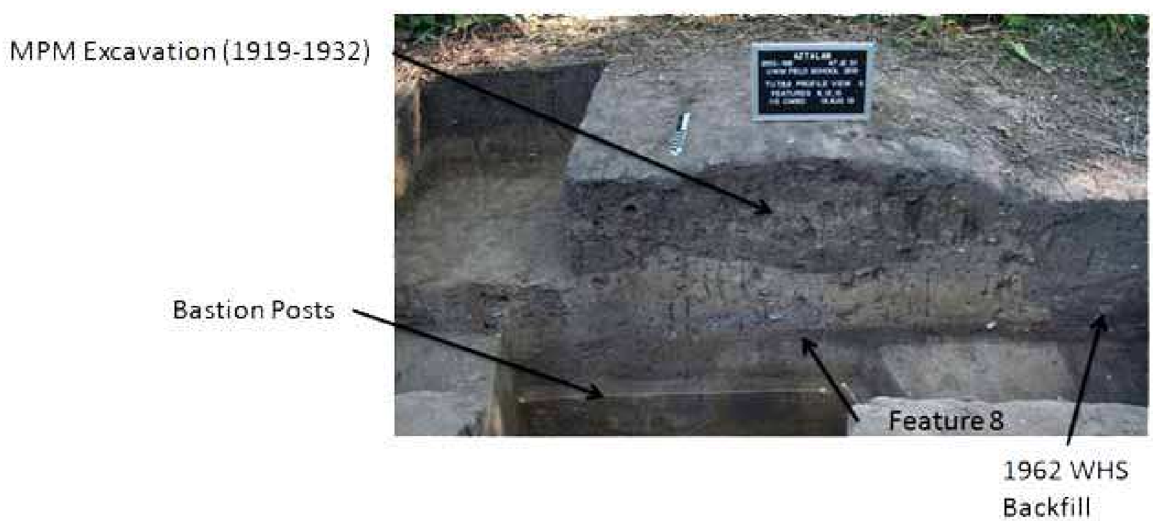


Figure 3.2. 2011/2013 Photograph of south wall Test Units 7, 8, 9 and Feature 8. (UWM ARL Photo 08-16-4782C1.jpg).

The following description begins with some general trends of this collection. Then each ceramic ware is discussed by ceramic types found both at the site and throughout the region highlighting trends among the three main UWM contexts: Test Unit 2, Feature 8, and Test Units 4, 8, and 9.

The collection focused on in this study is composed of a mixed Late Woodland-Mississippian assemblage consisting of 107 vessels. The collection is similar in overall composition to assemblages from previous work at the site (Richards and Kotwasinski 2013). The frequency of the ceramic type varieties is summarized in Table 3.1. However, unlike most other ceramic assemblages the 2011 collection is more fragmentary and contains fewer large rims in comparison with other collections from the site. The Late Woodland component is primarily composed of Aztalan Collared vessels (n=16), the signature Late Woodland type of the Aztalan site. The remaining collared vessels include two Starved Rock Collared vessels, one Hahn Cord-impressed pot, two Point Sauble Collared vessels, and five collared vessel fragments.

The remaining Late Woodland ceramics are uncollared vessels. The majority represent Madison ware vessels. The remainder includes a vessel that compares favorably to Maples Mills pottery as well as three untyped fragments Maples Mills pottery is best known from the central Illinois River valley but is occasionally recovered from southern Wisconsin as well (Finney and Stoltman 1991; Hall 1962:83; Richards 1992).

The remaining vessels are Mississippian types (n=76). This includes 23 vessels identified as Powell Plain, three Ramey Incised, eight Hyer Plain and one Cahokia Red Filmed seed jar. Furthermore, 32 vessels were classified as indeterminate. The ‘indeterminate category’ includes 29 shell-tempered vessels and three grit-tempered

vessels. Due to the incomplete nature of these vessels, a definitive type could not be identified.

Table 3.1. Ceramic Types Present by Context.

	Test Unit 2		Midden		Feature 8		Total	
Ceramic Type	f	%	f	%	f	%	f	%
Powell Plain	3	10	15	22.1	5	55.6	23	21.5
Cahokia Red-filmed	-	-	1	1.5	-	-	1	0.9
Ramey Incised	1	3.3	2	2.9	-	-	3	2.8
Hyer Plain	3	10.0	5	7.4	-	-	8	7.5
Maples Mills	-	-	1	1.5	-	-	1	0.9
Aztalan Collared	5	16.7	9	13.2	2	22.2	16	15.0
Collared-Fragment	2	6.7	3	4.4	-	-	5	4.7
Hahn Cord-Impressed	-	-	1	1.5	-	-	1	0.9
Point Sauble Collared	1	3.3	1	1.5	-	-	2	1.9
Starved Rock Collared	1	3.3	1	1.5	-	-	2	1.9
Madison Plain	3	10.0	1	1.5	-	-	4	3.7
Madison Cord-impressed	1	3.3	3	4.4	-	-	4	3.7
Madison Fabric-impressed	-	-	1	1.5	-	-	1	0.9
Madison Folded Lip	1	3.3	-	-	-	-	1	0.9
Indeterminate	9	30	24	35.3	2	22.2	35	32.7
Total	30		68		9		107	

Table 3.2 illustrates the vessel forms present in the collection. Vessel forms that could not be defined were sorted as indeterminate. The small size of these vessels prevented further determination. No miniature vessels were identified.

Table 3.2. Vessel Forms Present by Context.

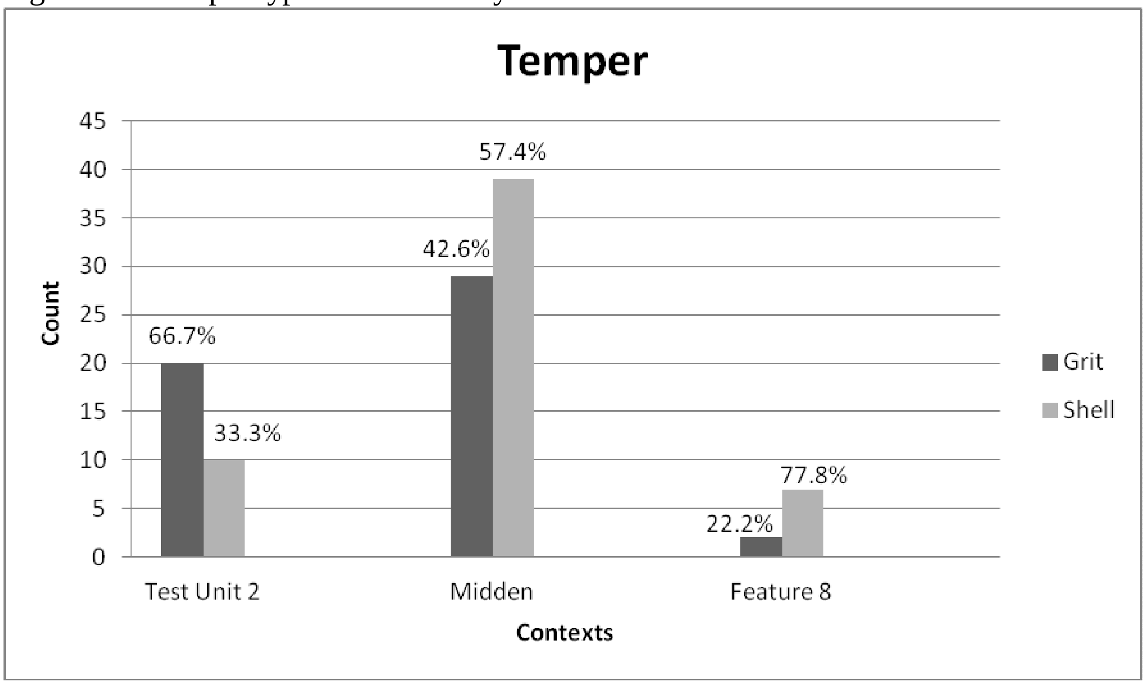
	Test Unit 2		Midden		Feature 8		Total	
Vessel Form	f	%	f	%	f	%	f	%
Jar	30	100	64	94.1	6	75.0	99	93.4
Seed Jar	-	-	3	4.4	3	37.5	6	5.7
indeterminate	-	-	1	1.5	-	-	1	0.9
Total	30		68		8		106	

General Trends

Temper

Temper was identified by macroscopic inspection of the broken/exposed edge of the sherds. The predominant tempering agent in the recovered ceramics is shell-temper, representing 52% of the assemblage. Grit-temper accounts for 47% (Figure 3.3).

Figure 3.3. Temper type distribution by context.



Surface Treatment

For grit-tempered ceramics the surface treatments include cordmarking (54%), plain surfaces (35%), and fabric impressed (2%) (Table 3.3). For collared ware, surface treatment categories are based on the collar surface, while uncollared vessel surface treatments were tabulated based on the exterior rim margin surface. Surfaces of several items were too eroded to classify, thus they were sorted as indeterminate (7%).

Table 3.3. Grit-tempered Ceramic Exterior Surface Treatments.

	Test Unit 2		Midden		Feature 8		Total	
Surface Treatment	f	%	f	%	f	%	f	%
Cordmarked	10	50.0	16	55.2	2	100.0	28	54.9
Plain	9	45.0	9	31.0	-	-	18	35.3
Fabric Impressed	-	-	1	3.4	-	-	1	2.0
Indeterminate	1	5.0	3	10.3	-	-	4	7.8
Total	20		29		2		51	

Table 3.4. Shell-tempered Ceramic Exterior Surface Treatments.

	Test Unit 2		Midden		Feature 8		Total	
Surface Treatment	f	%	f	%	f	%	f	%
Plain	8	80.0	32	82.05	5	71.4	45	80.4
Black smudge/slip	2	20.0	3	7.69	-	-	5	8.9
Tan-slipped	-	-	-	-	1	14.3	1	1.8
Red-slipped	-	-	1	2.56	-	-	1	1.8
Brown smudge/slip	-	-	1	2.56	1	14.3	2	3.6
Indeterminate	-	-	2	5.13	-	-	2	3.6
Total	10		39		7		56	

Surface treatment for shell-tempered ceramics, as illustrated in Table 3.4, is characterized by a high occurrence of plain exterior surfaces (80%). Black smudged/slip surfaces are the second most frequent finishes present (8%). The next section gives a summary of the vessel varieties present in the assemblage.

Collared Vessels

There are twenty-six vessels in the sampled assemblage which represent jars with globular bodies, constricted orifices and a collared rim form (see Chapter 2). These vessels further separate into various types based on categories determined by previous researchers according to the decorative treatment applied to the vessel during

manufacture. Based on morphological attributes, 16 vessels compare favorably with the type termed Aztalan Collared (Baerreis and Freeman 1958; Hurley 1977). Aztalan Collared vessels display lip and/or interior rim margin decoration through the application of cord-impressions. Collared vessels that are undecorated are included in the Aztalan Collared category, as the original definition included this as well (see Baerreis and Freeman 1958). Two collared vessels are Starved Rock Collared. Hall (1987) distinguished this type from other collared vessel types by the presence of tooled notching on the lip and/or interior rim margin. This type of collared rim exhibits distinct, interior, tooled, non-cord-impressed, notchings with no other decoration present.

Hahn Cord Impressed (n=1), as defined by Richard Keslin (1958:221), is similar to Madison Cord Impressed, with the exception of the distinguishing characteristic of a fillet or collar present. The main decorative motif is horizontal cord impressions, which extend the circumference of the neck and are typically arranged in single strands or bands of twisted cord impressions, the presence of punctates, which may be combined with cord-wrapped stick impressions, appear as well (Keslin 1958:222). Point Sauble Collared type (n=2), was originally defined by Freeman (1956) and Baerreis and Freeman (1958). Point Sauble Collared vessel exterior is decorated with a series of parallel cord or fabric impressed lines, these impressions cover the collar and continue across the neck of vessels (Baerreis and Freeman 1958). Point Sauble Collared vessels are typically distinguished by the collar form, the collar tapers to a rounded or pointed lip, but on occasion is squared or beveled (Baerreis and Freeman 1958:54).

Aztalan Collared Morphology

Orifice form is primarily indeterminate (62%), with no observable variation between the contexts (Table 3.5). The indeterminate category was expected to leading orifice form because these vessels do not have enough of the orifice present to make a distinction. Circular forms represent the next highest category representing 31% of the Aztalan Collared assemblage.

Table 3.5. Aztalan Collared Orifice Forms.

	Test Unit 2		Midden		Feature 8		Total	
Orifice Form	f	%	f	%	f	%	f	%
Circular	-	-	3	33.3	2	100.0	5	31.3
Polygonal	-	-	1	11.1	-	-	1	6.3
indeterminate	5	100.0	5	55.6	-	-	10	62.5
Total	5		9		2		16	

The majority of collar types could not be determined (50%). The remaining collar types vary between appliqué, fillet, and folded forms (Table 3.6). Collar profile form is summarized in Table 3.7. Flat profiles are common in both Test Unit 2 (40%) and Feature 8 (66%) contexts. Concave forms are the second most frequent in the assemblage (37.5%). Table 3.8 highlights the collar orientations for each identified context. Collar orientations are primarily vertical (56%) with flared forms (25%) as the second most frequently identified. There is slightly more variety among Test Unit 2 and Midden contexts, however the sample size is substantially larger for these contexts then Feature 8. Neck form could not be determined for 62% of the Aztalan Collared vessels (Table 3.9). The only other identified neck forms are flared (31%) and straight (6%). The majority of

vessels do not have enough of the wall surface present to make an accurate identification. Lip forms are typically flattened (50%) followed by rounded (43%) and pinched (6%) varieties. Collar lip form is summarized in Table 3.10.

Table 3.6. Aztalan Collared Collar Types.

	Test Unit 2		Midden		Feature 8		Total	
Collar Type	f	%	F	%	f	%	f	%
Appliqué	1	20.0	3	33.3	1	50.0	5	31.3
Fillet	1	20.0	-	-	-	-	1	6.3
Folded	-	-	1	11.1	1	50.0	2	12.5
Indeterminate	3	60.0	5	55.6	-	-	8	50.0
Total	5		9		2		16	

Table 3.7. Aztalan Collared Collar Profile

	Test Unit 2		Midden		Feature 8		Total	
Collar Profile	f	%	F	%	f	%	F	%
Concave	2	40.0	2	22.2	2	100.0	6	37.5
Concave-extruded	-	-	-	-	-	-	-	-
Convex	-	-	-	-	-	-	-	-
Flat	2	40.0	6	66.7	-	-	8	50.0
Tapered	1	20.0	1	11.1	-	-	2	12.5
Total	5		9		2		16	

Table 3.8. Aztalan Collared Collar Orientation.

	Test Unit 2		Midden		Feature 8		Total	
Orientation	f	%	f	%	f	%	f	%
Angled	-	-	-	-	-	-	-	-
Flared	-	-	3	33.3	1	50.0	4	25.0
In-curving	-	-	1	11.1	-	-	1	6.3
Inslanted	1	20.0	-	-	-	-	1	6.3
Out-slanted	1	20.0	-	-	-	-	1	6.3
Vertical	3	60.0	5	55.6	1	50.0	9	56.3
indeterminate	-	-	-	-	-	-	-	-
Total	5		9		1		16	

Table 3.9. Aztalan Collared Neck Forms.

	Test Unit 2		Midden		Feature 8		Total	
Neck Form	f	%	F	%	f	%	f	%
Angled	-	-	-	-	-	-	-	-
Flared	1	20.0	3	33.3	1	50.0	5	31.3
Inslanted	-	-	-	-	-	-	-	-
Straight	-	-	-	-	1	50.0	1	6.3
indeterminate	4	80.0	6	66.7	-	-	10	62.5
Total	5		9		1		16	

Table 3.10. Aztalan Collared Lip Form.

	Test Unit 2		Midden		Feature 8		Total	
Lip Form	f	%	f	%	f	%	f	%
Flattened	3	60.0	5	55.6	-	-	8	50.0
Rounded	2	40.0	3	33.3	2	100.0	7	43.8
Pinched	-	-	1	11.1	-	-	1	6.3
indeterminate	-	-	-	-	-	-	-	-
Total	5		9		2		16	

Exterior surface treatments of Aztalan Collared vessels are summarized in Table 3.11-3.13. Decoration is tabulated from three locations: the lip, exterior collar and neck of vessels, where decorations are primarily observed. Surface treatment is mostly cordmarked. This is followed by smoothed-over-cordmarked. The remaining exterior surface treatments include cord impressed and weathered vessels. Interior surface treatments differ from exterior surface treatments because the majority of the vessels have a plain interior neck, collar and rim margin surface (Table 3.14-3.16). The next largest category consists of vessels with cordmarked interior rim margins.

Table 3.11. Aztalan Collared Exterior Surface Treatments for the Midden.

Midden						
	Lip		Exterior Collar		Neck	
Surface Treatment	f	%	f	%	f	%
Cordmarked	9	100.0	7	77.8	5	55.6
Plain	-	-	2	22.2	4	44.4
Smoothed-over-cordmarked	-	-	-	-	-	-
indeterminate	-	-	-	-	-	-
Total	9		9		9	

Table 3.12. Aztalan Collared Exterior Surface Treatments for Feature 8.

Feature 8						
	Lip		Exterior Collar		Neck	
Surface Treatment	f	%	f	%	f	%
Cordmarked	1	50.0	2	100.0	2	100.0
Plain	1	50.0	-	-	-	-
Smoothed-over-cordmarked	-	-	-	-	-	-
indeterminate	-	-	-	-	-	-
Total	2		2		2	

Table 3.13. Aztalan Collared Exterior Surface Treatments for Test Unit 2.

Test Unit 2						
	Lip		Exterior Collar		Neck	
Surface Treatment	f	%	f	%	f	%
Cordmarked	4	80.0	3	60.0	1	20.0
Plain	1	20.0	2	40.0	4	80.0
Smoothed-over-cordmarked	-	-	-	-	-	-
indeterminate	-	-	-	-	-	-
Total	5		5		5	

Table 3.14. Aztalan Collared Interior Surface Treatments for the Midden.

Midden						
	Interior Rim Margin		Interior Collar		Interior Neck	
Surface Treatment	f	%	f	%	f	%
Cordmarked	1	11.1	-	-	-	-
Plain	8	88.9	9	100.0	9	100.0
Smoothed-over-cordmarked	-	-	-	-	-	-
indeterminate	-	-	-	-	-	-
Total	9		9		9	

Table 3.15. Aztalan Collared Interior Surface Treatments for Feature 8.

Feature 8						
	Interior Rim Margin		Interior Collar		Interior Neck	
Surface Treatment	f	%	f	%	f	%
Cordmarked	-	-	-	-	-	-
Plain	2	100.0	2	100.0	2	100.0
Smoothed-over-cordmarked	-	-	-	-	-	-
indeterminate	-	-	-	-	-	-
Total	2		2		2	

Table 3.16. Aztalan Collared Interior Surface Treatments.

Test Unit 2						
	Interior Rim Margin		Interior Collar		Interior Neck	
Surface Treatment	f	%	f	%	f	%
Cordmarked	2	40.0	-	-	-	-
Plain	3	60.0	5	100.0	5	100.0
Smoothed-over-cordmarked	-	-	-	-	-	-
indeterminate	-	-	-	-	-	-
Total	5		5		5	

Aztalan Collared decorative treatments are summarized in Table 3.17. Decorative treatments were observed on several locations: the interior rim margins, exterior collar/rim margin, the exterior junction of the collar and neck. Decorations include twisted cord impressions, cordwrapped stick impressions, notching and knotted

punctates. The Aztalan Collared decorative treatments were tabulated into modes that were determined following Richard's (1992:286) previous classification of Aztalan Collared varieties (Table 2.18). Richard's (1992:284) modes describe variation ranging from completely undecorated (Mode A and B) to highly elaborated vessels (Mode S and T), thus it is important to note when decoration is present it is minor. The frequencies of the decorative modes are illustrated in Figure 3.4.

As illustrated in Figure 3.4 there is a variety of decorative modes present across the contexts. The most frequent decorative modes are H (n=3) and F (n=3), represented by vessels with cordmarked collars and the presence of cord impressions on the interior of the vessel and no punctates. Aztalan Collared vessel decoration primarily involves cordmarking collars.

In comparison, the most frequent decorative mode in the Aztalan Collared assemblage from the Northeast Mound is F (Zych 2013:137) Figure 3.4 includes the an additional decorative mode, XX, the indeterminate category added by Zych (Zych 2013:137). A similar diversity of decorative modes is also present in the Northeast Mound Aztalan Collared assemblage (see Zych 2013:140 Figure 5.2). A comparison of the Aztalan Collared vessels in the 2011 UWM collection to previous studies (Baerreis and Freeman 1958; Hurley 1977; Richards 1992; Zych 2013) demonstrates collared vessels are typically decorated with cordmarked collars and cord impressed interior surfaces. Aztalan Collared decorative modes in the 2011 UWM collection contexts differ little when compared to the previous Aztalan Collared vessels found in other contexts at the site.

Table 3.17. All Aztalan Collared Decorative Treatments.

Mode	Description
A	Smoothed collar Undecorated lip No cord impressions No exterior or interior punctates
B	Cordmarked collar Undecorated lip No cord impressions No exterior or interior punctates
C	Smoothed collar Smoothed collar No exterior or interior Punctates
D	Cordmarked collar Cord impressed lip only No exterior or interior punctates
E	Smoothed collar Undecorated lip Cord impressed interior rim margin No exterior or interior punctates
F	Cordmarked collar Undecorated lip Cord impressed interior rim margin No exterior or interior punctates
G	Smoothed collar Cord impressed lip Cord impressed interior rim margin No exterior or interior punctates
H	Cordmarked collar Cord impressed lip Cord impressed interior rim margin No exterior or interior punctates
I	Cordmarked collar Cord impressed lip Cord impressed exterior rim margin Cord impressed interior rim margin No exterior or interior punctates
J	Cordmarked collar Notched lip No cord impressions No exterior or interior punctates
K	Cordmarked collar Undecorated lip No cord impressions Exterior punctates only
L	Cordmarked collar Notched lip No cord impressions Exterior punctates only
M	Smoothed collar Smoothed collar Exterior punctates only
N	Cordmarked collar Cord impressed lip Exterior punctates only
O	Smoothed collar Undecorated lip Cord impressed interior rim margin Exterior punctates only
P	Cordmarked collar Undecorated lip Cord impressed interior rim margin Exterior punctates only
Q	Smoothed collar Cord impressed lip Cord impressed interior rim margin Exterior punctates only
R	Cordmarked collar Cord impressed lip Cord impressed interior rim margin Exterior punctates only
S	Cord impressed collar No exterior or interior punctates
T	Cord impressed collar Exterior punctates
U	Various singular combinations of cord impressed and punctated rims

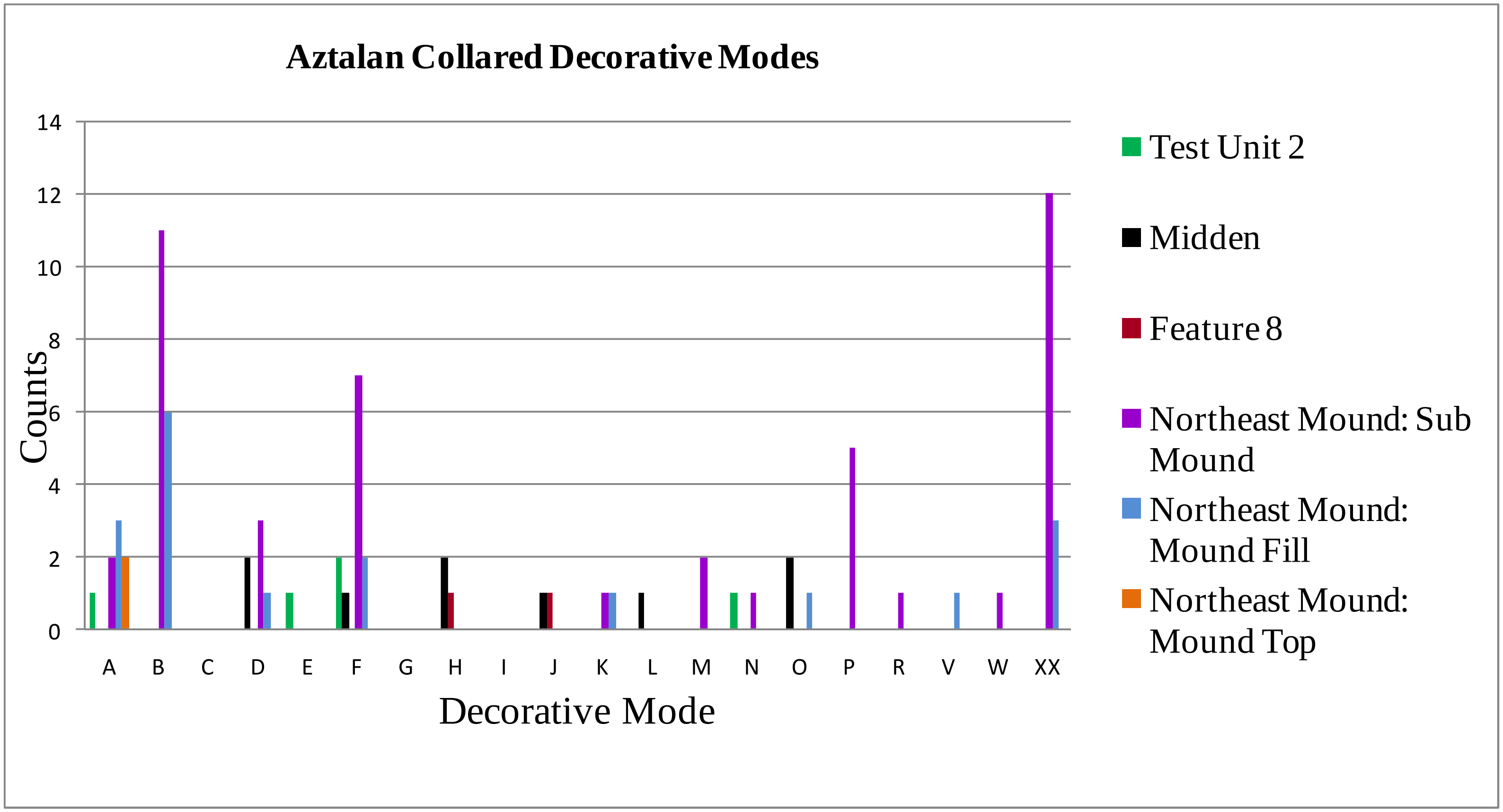


Figure 3.4. Comparison of Aztalan Collared decorative mode frequencies.

Table 3.18. Aztalan Collared decorative mode frequencies Northeast Mound and the 2011 UWM Collection.

	Test Unit 2		Midden		Feature 8		Northeast Mound: Sub Mound		Northeast Mound: Mound Fill		Northeast Mound: Mound Top		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	
A	1	20.0	-	-	-	-	2	4.3	3	16.7	2	100.0	8	9.8
B	-	-	-	-	-	-	11	23.9	6	33.3	-	-	17	20.7
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	-	-	2	22.2	-	-	3	6.5	1	5.6	-	-	6	7.3
E	1	20.0	-	-	-	-	-	-	-	-	-	-	1	1.2
F	2	40.0	1	11.1	-	-	7	15.2	2	11.1	-	-	12	14.6
G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	2	22.2	1	50.0	-	-	-	-	-	-	3	3.7
I	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J	-	-	1	11.1	1	50.0	-	-	-	-	-	-	2	2.4
K	-	-	-	-	-	-	1	2.2	1	5.6	-	-	2	2.4
L	-	-	1	11.1	-	-	-	-	-	-	-	-	1	1.2
M	-	-	-	-	-	-	2	4.3	-	-	-	-	2	2.4
N	1	20.0	-	-	-	-	1	2.2	-	-	-	-	2	2.4
O	-	-	2	22.2	-	-	-	-	1	5.6	-	-	3	3.7
P	-	-	-	-	-	-	5	10.9	-	-	-	-	5	6.1
R	-	-	-	-	-	-	1	2.2	-	-	-	-	1	1.2
V	-	-	-	-	-	-	-	-	1	5.6	-	-	1	1.2
W	-	-	-	-	-	-	1	2.2	-	-	-	-	1	1.2
XX	-	-	-	-	-	-	12	26.1	3	16.7	-	-	15	18.3
Total	5		9		2		46		18		2		82	

Aztalan Collared Metric Attributes

A general summary is provided below regarding the metric attributes of Aztalan Collared jars from Test Unit 2, Midden context (Test Unit 4, 8, 9), and Feature 8 (Table 3.19, 3.20 & 3.21). For each measurement category vessels were measured in two different locations and averaged to obtain the measurements utilized for statistical tests in each context. Data on all vessel attributes are provided in Appendix B.

Table 3.19. Aztalan Collared Jar Metric Summaries Test Unit 2 in Millimeters.

Measurement	n*	mean	std. dev.	median
Orifice Diameter	5	32	9.8	30
Collar Height	5	1.8	1.3	2.1
Maximum Collar Thickness	5	0.8	0.5	1.1
Neck Thickness	5	0.80	0.3	0.80
Lip Width	5	1.2	1.9	0.6

* measurable vessels

Table 3.20. Aztalan Collared Jar Metric Summaries Midden Context in Millimeters.

Measurement	n*	mean	std. dev.	median
Orifice Diameter	9	44	12.6	44
Collar Height	9	1.9	0.4	2.0
Maximum Collar Thickness	9	0.9	0.2	0.9
Neck Thickness	5	0.70	0.2	0.70
Lip Width	9	0.5	0.1	0.5

* measurable vessels

Table 3.21. Aztalan Collared Jar Metric Summaries Feature 8 in Millimeters.

Measurement	n*	mean	std. dev.	median
Orifice Diameter	2	38	14.1	38
Collar Height	2	1.3	1.2	1.2
Maximum Collar Thickness	2	0.9	0.1	0.9
Neck Thickness	2	0.6	0.1	0.60
Lip Width	2	0.5	0.03	0.5

* measurable vessels

Orifice diameter varied between the contexts for Aztalan Collared vessels. Collar height differs very little between each context. The maximum collar thickness on vessels in the Midden context (0.9 mm) and Feature 8 (0.9 mm) share similar collar thicknesses, however vessels in Test Unit 2 (0.8 mm) differ slightly. Overall the measurements of Aztalan collared vessel neck thickness, lip width, and collar height tend to have similar means.

Starved Rock Collared Morphology

Based on morphological attributes, two grit-tempered vessels compare favorably to Starved Rock Collared ware. The small sample size inhibits the ability to identify predominant trends in the assemblage. There is one Starved Rock Collared vessel in Test Unit 2 and the other vessel is located in Midden context, specifically Test Unit 9. The Starved Rock Collared vessel in Test Unit 2 has a rounded lip, and a polygonal orifice form. The collar type could not be determined. Collar profile is flat, which is typical of Starved Rock Collared vessels. Collar orientation was identified as outslanted and the neck form is flared. The Starved Rock Collared vessel in Test Unit 9 has a flattened lip form. The orifice type and collar type could not be determined. The collar profile is flat and is a vertically oriented. The neck form was identified as flared.

Exterior collar treatment for both vessels is cordmarked, with the decoration continuing onto the neck of the vessel. The interior rim margin on the vessel is decorated with v-shaped tool notches. There is no additional decoration present on the interior rim margin aside from the notches. Additional vessel attributes are provided in Appendix B.

Starved Rock Collared Metric Attributes

The following table provides a general overview for the metric attributes of Starved Rock Collared vessels recovered from Test Unit 2 and Test Unit 9 (Table 3.22). There was not a sufficient amount of rim, collar, neck or lip present to obtain multiple measurements.

Table 3.22. Test Unit 2 and Feature 8 Starved Rock Collared Jar Metric Summaries.

Measurement	n*	mean	std. dev.	median
Orifice Diameter	2	30	2.8	30
Collar Height	4	1.7	0.2	1.7
Maximum Collar Thickne	4	0.9	0.2	0.9
Neck Thickness	4	0.7	0.2	0.7
Lip Width	4	0.7	0.1	0.6

* total ‘measurable’ observations

Madison Ware

Ten vessels have been attributed to ceramic types comparable to the established Madison Ware categories. The most frequent types of Madison Ware present, four vessels per type, compare favorably with Madison Plain and Madison Cord-impressed. The rim form for all the vessels is direct-unmodified. Lip form is displayed in Table 3.24.

The majority of vessels exhibit rounded lip forms. Neck form and shoulder form could not be determined for any vessels. The exterior and interior surface finishes for all of the vessels are plain.

Table 3.23. 2011 UWM Collection Madison Ware Ceramic Types.

	Test Unit 2		Midden		Total	
Ceramic Type	f	%	f	%	f	%
Madison Plain	3	60.0	1	20.0	4	40.0
Madison Cord-impressed	1	20.0	3	60.0	4	40.0
Madison Fabric-impressed	-	-	1	20.0	1	10.0
Madison Folded Lip	1	20.0	-	-	1	10.0
Total	5		5		10	

Table 3.24. Lip Form Madison Ware Vessels.

	Test Unit 2		Midden		Total	
Form	f	%	f	%	f	%
Flattened	1	20.0	-	-	1	10.0
Rounded	3	60.0	5	100.0	8	80.0
Pinched	1	20.0	-	-	1	10.0
Total	5		5		10	

The dominant exterior surface treatment for Madison Ware vessels is cordmarked. The remaining vessel exhibits fabric impressions on the exterior rim surface (v1332).

Table 3.25. Exterior Surface Treatment Madison Ware Vessels.

	Test Unit 2		Midden		Total	
Surface Treatment	f	%	f	%	f	%
Cordmarked	5	100.0	4	80.0	9	90.0
Plain	-	-	-	-	-	-
Fabric Impressed	-	-	1	20.0	1	10.0
Total	5		5		10	

Powell Plain

Twenty-three shell-tempered vessels compare favorably to the Powell Plain variety of the American Bottom Region (Griffin 1949; Holley 1989; O'Brien 1972). The bulk of the vessels are jars, with five representing seed jar forms (v1170, v1213, v1228, v1232, v1237). Rim form is displayed in Table 3.26. Rim form is predominantly everted-simple (52%). Direct-unmodified rims are next largest rim form present on vessels, the large number of these rims may have been affected by the presence of seed jars. The dominant lip form is rounded representing over 50% of the lip forms present (see Table 3.27). Although rounded lips form the majority, the Midden context and Feature 8 have a variety of lip forms presents.

The majority of vessels are characterized by flared necks, although straight varieties are present also (Table 3.28). Shoulder form, when observable, tends to be angled (v1153, v1160, v1163, v1270). Plain surfaces are present on over 70% of the Powell Plain vessels. The remaining vessels exhibit dark slipped or smudged-slipped surfaces (Table 3.29). Polished or reflective exterior surfaces were observed on nine of the Powell Plain vessels (Table 3.30). Interior vessel surfaces are overwhelmingly plain, with the exception of four exfoliated vessels, therefore no table is provided.

Table 3.26. Rim Form Powell Plain Jars.

	Test Unit 2		Midden		Feature 8		Total	
Form	f	%	f	%	f	%	f	%
Everted-extruded	1	33.3	-	-	-	-	1	4.3
Direct-unmodified	1	33.3	5	33.3	3	60.0	9	39.1
Everted-simple	1	33.3	9	60.0	2	40.0	12	52.2
Everted-folded	-	-	-	-	-	-	-	-
Everted-folded: Type 1	-	-	1	6.7	-	-	1	4.3
Total	3		15		5		23	

Table 3.27. Lip Form Treatment Powell Plain Vessels.

	Test Unit 2		Midden		Feature 8		Total	
Form	f	%	f	%	f	%	f	%
Flattened	-	-	4	26.7	3	60.0	7	30.4
Rounded	3	100.0	8	53.3	1	20.0	12	52.2
Pinched	-	-	2	13.3	1	20.0	3	13.0
indeterminate	-	-	1	6.7	-	-	1	4.3
Total	3		15		5		23	

Table 3.28. Neck Form Powell Plain Jars.

	Test Unit 2		Midden		Feature 8		Total	
Neck Form	f	%	f	%	f	%	f	%
Flared	1	33.3	5	33.3	2	40	8	34.8
Indeterminate	1	33.3	4	26.7	2	40	7	30.4
Inslanted	1	33.3	-	-	-	-	1	4.3
Straight	-	-	6	40.0	1	20	7	30.4
Total	3		15		5		23	

Table 3.29. Exterior Surface Powell Plain Vessels.

	Test Unit 2		Midden		Feature 8		Total	
Surface Treatment	f	%	f	%	f	%	f	%
Plain	2	66.7	11	73.3	3	60.0	17	73.9
Black smudge/slip	1	33.3	2	13.3	-	-	3	13.0
Tan-slipped	-	-	-	-	1	20.0	1	4.3
Red-slipped	-	-	-	-	-	-	-	-
Brown smudge/slip	-	-	1	6.7	1	20.0	2	8.7
Indeterminate	-	-	1	6.7	-	-	1	4.3
Total	3		15		5		23	

Table 3.30. Frequency of Polished Surface Powell Plain.

	Test Unit 2		Midden		Feature 8		Total	
Exterior Polish	f	%	f	%	f	%	f	%
Yes	2	66.7	3	20.0	5	100.0	10	43.5
No	1	33.3	12	80.0	-	-	13	56.5
Total	3		15		5		23	

It was possible to calculate the rim protrusion ratio (RPR; see Chapter 3) on ten Powell Plain vessels. The Powell Plain vessels have an average RPR value of .59, a median RPR value of .58, with a standard deviation of .09. The high and low RPR values for Powell Plain vessels indicate there is a mix of early and late vessel varieties, comparing favorably with ranges for Lohmann to Early Stirling phase.

Ramey Incised

There are three vessels attributed to the Ramey Incised variety. These rim sherds were recovered from the Midden context (Test Unit 4 n=2) and Test Unit 2 (n=1). The exterior of Vessel 1262 (Test Unit 2) is decorated with nested diagonal lines. Vessel 1259

exhibits nested horizontal lines decoration on the exterior surface. These motifs compare with Emerson's (1989: Chart I) motif type II. Motif II exhibits parallel lines in the form of horizontal, vertical or diagonal sets (Emerson 1989). This category appears commonly on Ramey Incised ceramics (Mollerud 2005:73). The diagonal and vertical motif is associated with the "body tattooing" of Red horn at Gottschall, and also the body markings of the human at Picture Cave (Mollerud 2005:73).

Vessel 1244 is decorated with nested chevrons. This vessel correlates to Emerson's (1989) Ramey Incised category Ia. Chevron motifs have been symbolically associated with the thunderbird or falcon; most likely representing the tail of the animal (Hall 1991:29).

Vessel 1259 has an everted –extruded rim, rounded lip, and a flared neck. Vessel 1262 exhibits an everted-simple rim, rounded lip, and a straight neck. The rim form for vessel 1244 was identified as everted-folded type 1; the lip form is rounded and the neck form could not be determined. None of the Ramey Incised vessels have an observable shoulder form.

It was possible to calculate trailing width and depth for one vessel, v1244. Trailing width for v1244 is 1.7 mm and depth is 1.0 mm. Due to the lack of wall present RPR values could only be calculated for one vessel, v1262. The RPR value for this vessel is .74, which corresponds well with Stirling phase values recorded at Cahokia (Holley 1989; Pauketat 1998).

Hyer Plain

Originally defined from the Aztalan Collection at the Milwaukee Public Museum (Richards 1992) eight vessels were assigned to the Hyer Plain type. Three vessels were

recovered from Test Unit 2, one from Test Unit 4, three from Test Unit 8, and one vessel from Test Unit 9. Lip form is illustrated in Table 3.31. Lip form is split between rounded (50%) and pinched forms (50%). Rim form (Table 3.32) is predominantly everted-extruded. Neck form was not able to be determined for the majority of vessels, the remaining vessels exhibit flared (12%) and straight neck forms (37%) (Table 3.33).

Table 3.31. Lip Form Hyer Plain Vessels.

	Test Unit 2		Midden		Total	
Form	f	%	f	%	f	%
Flattened	-	-	-	-	-	-
Rounded	2	66.7	2	40.0	4	50.0
Pinched	1	33.3	3	60.0	4	50.0
Total	3		5		8	

Table 3.32. Rim Form Hyer Plain Jars.

	Test Unit 2		Midden		Total	
Form	f	%	f	%	f	%
Everted-extruded	1	33.3	4	80.0	5	62.5
Direct-unmodified	1	33.3	-	-	1	12.5
Everted-simple	-	-	-	-	-	-
Everted-folded	-	-	-	-	-	-
Rolled	1	33.3	1	20.0	2	25.0
Total	3		5		8	

Table 3.33. Neck Form Hyer Plain Jars.

	Test Unit 2		Midden		Total	
Neck Form	f	%	f	%	f	%
Flared	-	-	1	20.0	1	12.5
Indeterminate	2	66.7	2	40.0	4	50.0
Inslanted	-	-	-	-	-	-
Straight	1	33.3	2	40.0	3	37.5
Total	3		5		8	

Exterior and interior vessel surfaces for Hyer Plain vessels are uniformly plain, with the exception of one exfoliated interior vessel surface v1224. In addition, none of the vessels exhibit a polished surface. RPR values could only be calculated for three vessels, which averaged to 0.86.

Shell-Tempered Seed Jars

There are six vessels identified as seed jars, two from Test Unit 8, one from Test Unit 9, and three seed jars from Feature 8. Five of these vessels were identified as Powell Plain vessels. Based on temper and the red slipped interior and exterior surface treatment, the remaining seed jar (v1211) corresponds with the type Griffin (1949) termed Cahokia Red-filmed. Red-slipped, shell-tempered seed jars such occur in late Terminal Late Woodland contexts in the American Bottom and carry on through the Lohmann phase, appearing with less frequency by the mid-Stirling phase(Richards 2007a: 1). All the seed jars exhibit direct-unmodified rim forms, rounded lips, constricted circular orifices, and incurving rim forms. Neck form was only able to be determined for four vessels. Vessel 1170 exhibits a straight neck form, while the remaining identified neck forms are flared. Aside from vessel 1211, vessel 1232 exhibits a brown slipped exterior surface, the

remaining vessels have plain interior and exterior surfaces. Temper consists of medium to fine, poorly sorted crushed mussel shell.

Indeterminate Vessels

There are thirty-four rims, representing a mix of grit-tempered and shell-tempered Mississippian vessels, and three Late Woodland uncollared ceramic vessels determined as too fragmentary to further identify a ceramic type. Proveniences for these include nine from Test Unit 2, 24 from the Midden context, and two from Feature 8. The majority of vessels are jar forms, with the exception of one indeterminate form. The majority of the Mississippian indeterminate vessels have plain interior and exterior surface finish. The exterior surface treatment for the Late Woodland indeterminate vessels varies between possible cordmarking and no decoration. The surface finish for the interior and exterior of these vessels is plain. See Appendices A & B for additional information on vessel profiles, images, and attributes.

Collared Fragments

Due to the presence of a collar and the small size there are five vessels considered collared fragments. Test Unit 2 and 4 include two collared fragments and the remaining vessels are from Test Unit 8.

CHAPTER 4 RESULTS AND CONCLUSIONS

The results presented below are divided into several sections to facilitate discussions of the differences between depositional contexts (Table 4.1) regarding vessel morphology, surface treatment and metric data. Each section presents the results of two

separate comparison methods using the percentages and totals of each ceramic attribute category.

Table 4.1 Summary of the archaeological contexts the ceramics were recovered from.

	Test Unit 2	Test Units 4, 8 ,9	Feature 8	Northeast Mound
Archaeological Contexts	Purposeful fill	Episodic garbage dumping	Refuse deposit	Intentional episodic building

DESCRIPTIVE RESULTS

The following sections were produced to identify any trends present in the ceramic data that might provide a general characterization of the assemblage. In addition, the results of these comparisons are meant to summarize the sample and form the basis of the initial description of the data as part of a more extensive statistical analysis.

Ceramic Type

A comparison of ceramic types among the 2011 UWM Collection contexts was conducted first (Table 4.2). Ceramic type is an important category for comparison as it provides information relating to temporal and cultural inferences of vessels. The results indicate the Midden has the greatest diversity of ceramic types present. However, the diversity of ceramic types present in the Midden may be due to the larger sample size.

Putting aside the difference in sample size, Test Unit 2 and the Midden context both exhibit similar proportions of Late Woodland and Mississippian vessels. The vessels recovered from Feature 8 are predominantly Mississippian wares, the opposite of Test Unit 2 and Feature 8.

Table 4.2. Ceramic Type Distribution 2011 UWM Collection Contexts

	Test Unit 2		Midden		Feature 8		Total	
Ceramic Type	f	%	f	%	f	%	f	%
Powell Plain	3	10.0	15	22.1	5	55.6	23	29.9
Cahokia Red-filmed	-	-	1	1.5	-	-	1	1.3
Ramey Incised	1	3.3	2	2.9	-	-	3	3.9
Hyer Plain	3	10.0	5	7.4	-	-	8	10.4
Maples Mills	-	-	1	1.5	-	-	1	1.3
Aztalan Collared	5	16.7	9	13.2	2	22.2	16	20.8
Collared-Fragment	2	6.7	3	4.4	-	-	5	6.5
Hahn Cord-Impressed	-	-	1	1.5	-	-	1	1.3
Point Sauble Collared	1	3.3	1	1.5	-	-	2	2.6
Starved Rock Collared	1	3.3	1	1.5	-	-	2	2.6
Madison Ware	5	16.7	5	7.4	-	-	10	13.0
Indeterminate	9	30.0	24	35.3	2	22.2	35	45.5
Total	30		68		9		107	

A comparison of the ceramic types between Feature 8 and the ceramics recovered from the Northeast Mound: Mound Top is illustrated in Table 4.3. The majority of ceramics present in each context are Mississippian wares. However, the Northeast Mound: Mound Top ceramic assemblage includes a greater diversity of Mississippian types and a larger more diverse array of Late Woodland ceramics.

Table 4.3. Ceramic Type Distribution Feature 8 and Northeast Mound: Mound Top.

	Feature 8		Mound Top		Total	
Ceramic Type	f	%	f	%	f	%
Powell Plain	5	55.6	2	16.7	7	33.3
Cahokia Red-filmed	-	-	2	16.7	2	9.5
Ramey Incised	-	-	1	8.3	1	4.8
Hyer Plain	-	-	2	16.7	2	9.5
Maples Mills	-	-	-	-	-	-
Aztalan Collared	2	22.2	2	16.7	4	19.0
Collared-Fragment	-	-	-	-	-	-
Hahn Cord-Impressed	-	-	-	-	-	-
Point Sauble Collared	-	-	-	-	-	-
Starved Rock Collared	-	-	1	8.3	1	4.8
Madison Ware	-	-	1	8.3	1	4.8
Indeterminate	2	22.2	1	8.3	3	14.3
Total	9		12		21	

Table 4.4 illustrates the comparison of ceramic types present in Feature 8 and the Northeast Mound: Sub Mound. While the sample sizes do differ greatly, concentrating specifically on the presence of certain ceramic types, the Sub Mound is predominantly a Late Woodland mix of ceramics. While 10 Hyer Plain vessels are present in the Sub Mound no vessels attributable to Hyer Plain are present in Feature 8.

Table 4.4. Ceramic Type Distribution Feature 8 and the Northeast Mound: Sub Mound.

	Feature 8		Sub Mound		Total	
Ceramic Type	f	%	f	%	f	%
Powell Plain	5	55.6	-	-	5	5.8
Cahokia Red-filmed	-	-	-	-	-	-
Ramey Incised	-	-	-	-	-	-
Hyer Plain	-	-	10	13.0	10	11.6
Maples Mills	-	-	-	-	-	-
Aztalan Collared	2	22.2	43	55.8	45	52.3
Collared-Fragment	-	-	2	2.6	2	2.3
Hahn Cord-Impressed	-	-	-	-	-	-
Point Sauble Collared	-	-	-	-	-	-
Starved Rock Collared	-	-	8	10.4	8	9.3
Madison Ware	-	-	3	3.9	3	3.5
Indeterminate	2	22.2	11	14.3	13	15.1
Total	9		77		86	

The comparison of ceramic types from Feature 8 and the Northeast Mound: Mound Fill contexts Late Woodland ceramics represent the majority of ceramics present in the Northeast Mound assemblage (Table 4.5). Feature 8, on the other hand, is dominated by Powell Plain vessels.

Table 4.5. Ceramic Type Distribution Feature 8 and the Northeast Mound: Mound Fill.

	Feature 8		Mound Fill		Total	
Ceramic Type	f	%	f	%	f	%
Powell Plain	5	55.6	-	-	5	10.0
Cahokia Red-filmed	-	-	1	8.3	1	2.0
Ramey Incised	-	-	-	-	-	-
Hyer Plain	-	-	5	41.7	5	10.0
Maples Mills	-	-	-	-	-	-
Aztalan Collared	2	22.2	19	158.3	21	42.0
Collared-Fragment	-	-	-	-	-	-
Hahn Cord-Impressed	-	-	-	-	-	-
Point Sauble Collared	-	-	-	-	-	-
Starved Rock Collared	-	-	7	58.3	7	14.0
Madison Ware	-	-	-	-	-	-
Indeterminate	2	22.2	9	75.0	11	22.0
Total	9		41		50	

While Test Unit 2 and the Northeast Mound: Sub Mound contexts both contain Late Woodland and Mississippian vessels, the Sub Mound assemblage includes more collared vessels. In addition, there is only one type of Mississippian ware, Hyer Plain, represented in the Sub Mound vessels (Table 4.6).

Table 4.6. Ceramic Type Distribution Test Unit 2 and Northeast Mound: Sub Mound.

	Test Unit 2		Sub Mound		Total	
Ceramic Type	f	%	f	%	f	%
Powell Plain	3	10.0	-	-	3	2.8
Cahokia Red-filmed	-	-	-	-	-	-
Ramey Incised	1	3.3	-	-	1	0.9
Hyer Plain	3	10.0	10	13.0	13	12.1
Maples Mills	-	-	-	-	-	-
Aztalan Collared	5	16.7	43	55.8	48	44.9
Collared-Fragment	2	6.7	2	2.6	4	3.7
Hahn Cord-Impressed	-	-	-	-	-	-
Point Sauble Collared	1	3.3	-	-	1	0.9
Starved Rock Collared	1	3.3	8	10.4	9	8.4
Madison Ware	5	16.7	3	3.9	8	7.5
Indeterminate	9	30.0	11	14.3	20	18.7
Total	30		77		107	

While it is clear the sample sizes differ between the Midden context and the Northeast Mound: Mound Top context, both contexts contain a similar diversity of ceramic. As illustrated in Table 4.7, both contexts contain collared ware, Madison ware, and Mississippian ceramics (Table 4.7).

Table 4.7. Ceramic Type Distribution Test Unit 2 and Northeast Mound: Mound Top.

	Test Unit 2		Mound Top		Total	
Ceramic Type	f	%	f	%	f	%
Powell Plain	3	10.0	2	16.7	5	11.9
Cahokia Red-filmed	-	-	2	16.7	2	4.8
Ramey Incised	1	3.3	1	8.3	2	4.8
Hyer Plain	3	10.0	2	16.7	5	11.9
Maples Mills	-	-	-	-	-	-
Aztalan Collared	5	16.7	2	16.7	7	16.7
Collared-Fragment	2	6.7	-	-	2	4.8
Hahn Cord-Impressed	-	-	-	-	-	-
Point Sauble Collared	1	3.3	-	-	1	2.4
Starved Rock Collared	1	3.3	1	8.3	2	4.8
Madison Ware	5	16.7	1	8.3	6	14.3
Indeterminate	9	30.0	1	8.3	10	23.8
Total	30		12		42	

Table 4.8 illustrates the comparison between Test Unit 2 and the Northeast Mound: Mound Fill contexts regarding ceramic types. The Northeast Mound: Mound Fill ceramics are dominated by collared wares, while Test Unit 2 contains a broader diversity of Late Woodland and Mississippian ceramic wares.

Table 4.8. Ceramic Type Distribution Test Unit 2 and Northeast Mound: Mound Fill.

	Test Unit 2		Mound Fill		Total	
Ceramic Type	f	%	f	%	f	%
Powell Plain	3	10.0	-	-	3	4.2
Cahokia Red-filmed	-	-	1	1.3	1	1.4
Ramey Incised	1	3.3	-	-	1	1.4
Hyer Plain	3	10.0	5	6.5	8	11.3
Maples Mills	-	-	-	-	-	-
Aztalan Collared	5	16.7	19	24.7	24	33.8
Collared-Fragment	2	6.7	-	-	2	2.8
Hahn Cord-Impressed	-	-	-	-	-	-
Point Sauble Collared	1	3.3	-	-	1	1.4
Starved Rock Collared	1	3.3	7	9.1	8	11.3
Madison Ware	5	16.7	-	-	5	7.0
Indeterminate	9	30.0	9	11.7	18	25.4
Total	30		41		71	

A comparison of ceramic types present in the Midden context and the Northeast Mound: Sub Mound illustrates Late Woodland nature of the Northeast Mound: Sub Mound context(Table 4.9). On the other hand, the Midden context include a more diverse array of Late Woodland and Mississippian vessels.

Table 4.9. Ceramic Type Distribution the Midden context and Northeast Mound: Sub Mound.

	Midden		Sub Mound		Total	
Ceramic Type	f	%	f	%	f	%
Powell Plain	15	22.1	-	-	15	10.3
Cahokia Red-filmed	1	1.5	-	-	1	0.7
Ramey Incised	2	2.9	-	-	2	1.4
Hyer Plain	5	7.4	10	13.0	15	10.3
Maples Mills	1	1.5	-	-	1	0.7
Aztalan Collared	9	13.2	43	55.8	52	35.9
Collared-Fragment	3	4.4	2	2.6	5	3.4
Hahn Cord-Impressed	1	1.5	-	-	1	0.7
Point Sauble Collared	1	1.5	-	-	1	0.7
Starved Rock Collared	1	1.5	8	10.4	9	6.2
Madison Ware	5	7.4	3	3.9	8	5.5
Indeterminate	24	35.3	11	14.3	35	24.1
Total	68		77		145	

A comparison of the ceramics present in the Midden context and the Northeast Mound: Mound Top suggest less variety in the Northeast Mound: Mound Top (Table 4.10). The Northeast Mound: Mound Top ceramics context is mainly composed of Powell Plain vessels, Cahokia Red-Filmed vessels, Ramey Incised vessels, and Hyer Plain vessels, all Mississippian wares. While these ceramic types are present in the Midden context, the Midden context contains multiple types of collared wares and Madison Wares as well.

Table 4.10. Ceramic Type Distribution the Midden context and Northeast Mound: Mound Top.

	Midden		Mound Top		Total	
Ceramic Type	f	%	f	%	f	%
Powell Plain	15	22.1	2	16.7	17	21.3
Cahokia Red-filmed	1	1.5	2	16.7	3	3.8
Ramey Incised	2	2.9	1	8.3	3	3.8
Hyer Plain	5	7.4	2	16.7	7	8.8
Maples Mills	1	1.5	-	-	1	1.3
Aztalan Collared	9	13.2	2	16.7	11	13.8
Collared-Fragment	3	4.4	-	-	3	3.8
Hahn Cord-Impressed	1	1.5	-	-	1	1.3
Point Sauble Collared	1	1.5	-	-	1	1.3
Starved Rock Collared	1	1.5	1	8.3	2	2.5
Madison Ware	5	7.4	1	8.3	6	7.5
Indeterminate	24	35.3	1	8.3	25	31.3
Total	68		12		80	

A comparison of the ceramics present in the Midden and Northeast Mound: Mound Fill illustrates a difference based on the absence or presence of collared wares (Table 4.11). The Northeast Mound: Mound Fill contains predominantly Aztalan Collared vessels, while the Midden context is a mix of Late Woodland and Mississippian vessels.

Table 4.11. Ceramic Type Distribution the Midden context and Northeast Mound: Mound Fill.

	Midden		Mound Fill		Total	
Ceramic Type	f	%	f	%	f	%
Powell Plain	15	22.1	-	-	15	18.8
Cahokia Red-filmed	1	1.5	1	8.3	2	2.5
Ramey Incised	2	2.9	-	-	2	2.5
Hyer Plain	5	7.4	5	41.7	10	12.5
Maples Mills	1	1.5	-	-	1	1.3
Aztalan Collared	9	13.2	19	158.3	28	35.0
Collared-Fragment	3	4.4	-	-	3	3.8
Hahn Cord-Impressed	1	1.5	-	-	1	1.3
Point Sauble Collared	1	1.5	-	-	1	1.3
Starved Rock Collared	1	1.5	7	58.3	8	10.0
Madison Ware	5	7.4	-	-	5	6.3
Indeterminate	24	35.3	9	75.0	33	41.3
Total	68		41		109	

Vessel Form

A comparison of vessels form among the 2011 UWM Sub-collection contexts and the three Northeast Mound contexts suggests that jar forms dominate all contexts (Table 4.12). While jar forms are the dominant vessel form represented in each depositional context, the Feature 8 assemblage, the Midden assemblage, the Northeast Mound Fill and Mound Top assemblages include seed jar forms also.

Table 4.12. Vessel Form Distribution 2011 UWM Collection and the Northeast Mound Contexts.

	Test Unit 2		Midden		Feature 8		Sub Mound		Mound Fill		Mound Top		Total	
Vessel Form	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Jar	30	100	64	94.1	6	75.0	68	88.3	36	87.8	10	83.3	214	90.7
Seed Jar	-	-	3	4.4	3	37.5	-	-	1	2.4	1	8.3	8	3.4
indeterminate	-	-	1	1.5	-	-	9	11.7	4	9.8	1	8.3	15	6.4
Total	30		68		8		77		41		12		236	

Exterior Surface Finish of Mississippian Vessels

Surface finish and treatment were utilized for comparison because these technical attributes of pottery were potentially used to influence a vessel's performance in fulfilling its function; in addition these provide a general characterization for the assemblage. Table 4.13 illustrates Mississippian vessel exterior surface finish among the 2011 UWM Collection depositional contexts. Plain surface exteriors are the dominant finish. However, slipping and smudging do occur on a small number of vessels in the Midden context and Feature 8 context.

Table 4.13. Exterior Surface Finish Proportions for the 2011 UWM Collection.

	Test Unit 2		Midden		Feature 8		Total	
Surface Finish	f	%	f	%	f	%	f	%
Plain	8	80.0	32	82.05	5	71.4	45	80.4
Black smudge/slip	2	20.0	3	7.69	-	-	5	8.9
Tan-slipped	-	-	-	-	1	14.3	1	1.8
Red-slipped	-	-	1	2.56	-	-	1	1.8
Brown smudge/slip	-	-	1	2.56	1	14.3	2	3.6
Indeterminate	-	-	2	5.13	-	-	2	3.6
Total	10		39		7		56	

Table 4.14 illustrates there comparison between the depositional contexts, Feature 8 and the Northeast Mound: Sub Mound regarding exterior surface finish. Vessel exteriors within both contexts are predominantly plain.

Table 4.14. Exterior Surface Finish Feature 8 and the Northeast Mound: Sub Mound.

	Feature 8		Sub Mound		Total	
Surface Finish	f	%	f	%	f	%
Plain	5	71.4	14	93.3	19	86.4
Black smudge/slip	-	-	1	6.7	1	4.5
Tan-slipped	1	14.3	-	-	1	4.5
Red-slipped	-	-	-	-	-	-
Brown smudge/slip	1	14.3	-	-	1	4.5
Indeterminate	-	-	-	-	-	-
Total	7		15		22	

The comparison between the ceramics recovered from Feature 8 and the Mound Top ceramics from the Northeast Mound indicates Feature 8 vessels are predominantly plain, while the Mound Top vessel surfaces exhibit a diversity of slips and/or smudges. (Table 4.15).

Table 4.15. Exterior Surface Finish Feature 8 and Northeast Mound: Mound Top.

	Feature 8		Mound Top		Total	
Surface Finish	f	%	f	%	f	%
Plain	5	71.4	2	28.6	7	50.0
Black smudge/slip	-	-	2	28.6	2	14.3
Tan-slipped	1	14.3	-	-	1	7.1
Red-slipped	-	-	2	28.6	2	14.3
Brown smudge/slip	1	14.3	-	-	1	7.1
Indeterminate	-	-	1	14.3	1	7.1
Total	7		7		14	

The comparison of Feature 8 and the Northeast Mound: Mound Fill Mississippian vessel exterior surface finishes illustrates both contexts are composed predominantly of vessels with plain exterior surfaces (Table 4.16). There are additional surface finishes present in both contexts; however, these are in the minority.

Table 4.16. Exterior Surface Finish Feature 8 and Northeast Mound: Mound Fill.

	Feature 8		Mound Fill		Total	
Surface Finish	f	%	f	%	f	%
Plain	5	71.4	7	87.50	12	80.0
Black smudge/slip	-	-	-	-	-	-
Tan-slipped	1	14.3	-	-	1	6.7
Red-slipped	-	-	1	12.50	1	6.7
Brown smudge/slip	1	14.3	-	-	1	6.7
Indeterminate	-	-	-	-	-	-
Total	7		8		15	

The comparison between Test Unit 2 and the Northeast Mound: Sub Mound vessels regarding exterior surface finish is illustrated in Table 4.17. The results indicate both contexts exhibit primarily plain exterior surfaces, in addition to small occurrences of smudging and/or slipping.

Table 4.17. Exterior Surface Finish Test Unit 2 and the Northeast Mound: Sub Mound.

	Test Unit 2		Sub Mound		Total	
Surface Finish	f	%	f	%	f	%
Plain	8	80.0	14	93.3	22	88.0
Black smudge/slip	2	20.0	1	6.7	3	12.0
Tan-slipped	-	-	-	-	-	-
Red-slipped	-	-	-	-	-	-
Brown smudge/slip	-	-	-	-	-	-
Indeterminate	-	-	-	-	-	-
Total	10		15		25	

The comparison of Mississippian exterior vessel surfaces between Test Unit 2 and the Northeast Mound: Mound Top vessels illustrates there is a trend toward plain exterior vessel surfaces. However, several of the Northeast Mound Top vessels exhibit black smudged/slip and red-slipped surfaces (Table 4.18).

Table 4.18. Exterior Surface Finish Test Unit 2 and the Northeast Mound: Mound Top.

	Test Unit 2		Mound Top		Total	
Surface Finish	f	%	f	%	f	%
Plain	8	80.0	2	28.6	10	58.8
Black smudge/slip	2	20.0	2	28.6	4	23.5
Tan-slipped	-	-	-	-	-	-
Red-slipped	-	-	2	28.6	2	11.8
Brown smudge/slip	-	-	-	-	-	-
Indeterminate	-	-	1	14.3	1	5.9
Total	10		7		17	

Similar to previous comparisons, there is a trend toward Mississippian vessels exhibiting plain exterior surfaces in Test Unit 2 and the Northeast Mound: Mound Fill assemblages (Table 4.19).

Table 4.19. Exterior Surface Finish Test Unit 2 and the Northeast Mound: Mound Fill.

	Test Unit 2		Mound Fill		Total	
Surface Finish	f	%	f	%	f	%
Plain	8	80.0	7	87.50	15	83.3
Black smudge/slip	2	20.0	-	-	2	11.1
Tan-slipped	-	-	-	-	-	-
Red-slipped	-	-	1	12.50	1	5.6
Brown smudge/slip	-	-	-	-	-	-
Indeterminate	-	-	-	-	-	-
Total	10		8		18	

A comparison of the Midden context and the Northeast Mound: Sub Mound Mississippian exterior vessel surfaces indicates that exterior surfaces are primarily plain (Table 4.20). The Midden context also includes vessels with a variety of slipped and smudged surfaces.

Table 4.20. Exterior Surface Finish Midden and the Northeast Mound: Sub Mound.

	Midden		Sub Mound		Total	
Surface Finish	f	%	f	%	f	%
Plain	32	82.1	14	93.3	46	85.2
Black smudge/slip	3	7.7	1	6.7	4	7.4
Tan-slipped	-	-	-	-	-	-
Red-slipped	1	2.6	-	-	1	1.9
Brown smudge/slip	1	2.6	-	-	1	1.9
Indeterminate	2	5.1	-	-	2	3.7
Total	39		15		54	

Table 4.21 illustrates the comparison of the Midden context and the Northeast Mound: Mound Top vessels regarding exterior vessel surface. Both assemblages are composed of a variety of exterior surface finishes, with the majority of Mississippian exterior surfaces exhibiting a plain surface.

Table 4.21. Exterior Surface Finish Midden context and the Northeast Mound: Mound Top.

	Midden		Mound Top		Total	
Surface Finish	f	%	f	%	f	%
Plain	32	82.1	2	28.6	34	73.9
Black smudge/slip	3	7.7	2	28.6	5	10.9
Tan-slipped	-	-	-	-	-	-
Red-slipped	1	2.6	2	28.6	3	6.5
Brown smudge/slip	1	2.6	-	-	1	2.2
Indeterminate	2	5.1	1	14.3	3	6.5
Total	39		7		46	

The exterior surface finish of Mississippian vessels in the Midden context and the Northeast Mound: Mound Fill exhibit predominantly plain surfaces (Table 4.22). However, the Midden context assemblage contains a diversity of exterior vessel surfaces. The small sample size of Mississippian vessels in the Mound Fill of the Northeast Mound may explain the lack of additional surface finishes.

Table 4.22. Exterior Surface Finish Midden context and the Northeast Mound: Mound Fill.

	Midden		Mound Fill		Total	
Surface Finish	f	%	f	%	f	%
Plain	32	82.1	7	87.50	39	83.0
Black smudge/slip	3	7.7	-	-	3	6.4
Tan-slipped	-	-	-	-	-	-
Red-slipped	1	2.6	1	12.50	2	4.3
Brown smudge/slip	1	2.6	-	-	1	2.1
Indeterminate	2	5.1	-	-	2	4.3
Total	39		8		47	

Exterior Surface Treatment Late Woodland Vessels

The exterior surface treatment on Late Woodland vessels was tabulated from the collar treatment on collared vessels and the exterior sub-rim surface on uncollared vessels. A comparison of the exterior surface treatments on Late Woodland vessels among the 2011 UWM Collection and the three Northeast Mound contexts indicated each context exhibits primarily cordmarked surface exteriors as the dominant treatment (Table 4.23).

Table 4.23. Exterior Surface Treatment Proportions for the 2011 UWM Collection and the Northeast Mound contexts.

	Test Unit 2		Midden		Feature 8		Sub Mound		Mound Fill		Mound Top		Total	
Surface Treatment	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Cordmarked	10	50.0	16	55.2	2	100.0	51	82.3	25	75.8	2	40.0	106	70.2
Smoothed	9	45.0	9	31.0	-	-	10	16.1	5	15.2	3	60.0	36	23.8
Fabric Impressed	-	-	1	3.4	-	-	-	-	-	-	-	-	1	0.7
Indeterminate	1	5.0	3	10.3	-	-	1	1.6	3	9.1	-	-	8	5.3
Total	20		29		2		62		33		5		151	

Based on collar surface

Based on exterior, sub-rim surface

Interior Finish/Treatment

Shell-tempered Mississippian vessels exhibit predominately plain interior surfaces (74%). The interior treatment of Late Woodland vessels is almost uniformly plain (99%).. Further information on the interior finish of all vessels can be found in Appendix B.

Ceramic Affiliation

Ceramic affiliation was used in this study to characterize the assemblage and provide inferences relating to temporal placement. From a qualitative perspective there appears to be a trend across each context regarding ceramic culture (Table 4.24). Test Unit 2 is split evenly between Mississippian vessels and Late Woodland vessels, while the Midden context and Test Unit 2 exhibit similar proportions of Late Woodland and Mississippian ceramics.

Table 4.24. Ceramic Affiliations of Feature 8, the Midden context and Test Unit 2.

	Test Unit 2		Midden		Feature 8		Total	
Ceramic Affiliation	f	%	f	%	f	%	f	%
Late Woodland	15	50.0	23	33.8	2	22.2	40	37.4
Mississippian	15	50.0	45	66.2	7	77.8	67	62.6
Total	30		68		9		107	

The comparison of the presumed cultural affiliation of ceramic types present in Feature 8 and the Northeast Mound: Sub Mound is illustrated in Table 4.25. The Sub

Mound vessels represent mostly Late Woodland types, while the majority of vessels in Feature 8 represent a Mississippian affiliation.

Table 4.25. Ceramic Affiliations of Feature 8 and the Northeast Mound: Sub Mound.

	Feature 8		Sub Mound		Total	
Ceramic Affiliation	f	%	f	%	f	%
Late Woodland	2	22.2	61	79.2	63	73.3
Mississippian	7	77.8	16	20.8	23	26.7
Total	9		77		86	

The results of the comparison between Feature 8 and the Northeast Mound: Mound Top regarding ceramic affiliation are illustrated in Table 4.26. The Mound Top and Feature 8 represent ceramics of primarily Mississippian affiliation.

Table 4.26. Ceramic Affiliations of Feature 8 and the Northeast Mound: Mound Top.

	Feature 8		Mound Top		Total	
Ceramic Affiliation	f	%	f	%	f	%
Late Woodland	2	22.2	5	41.7	7	33.3
Mississippian	7	77.8	7	58.3	14	66.7
Total	9		12		21	

When comparing the ceramic cultural affiliations between Feature 8 and the Northeast Mound: Mound Fill results suggest the contexts do not share similar proportions of culturally affiliated ceramics (Table 4.27). The Mound Fill vessels

represent ceramics of Late Woodland cultural types, while Feature 8 contains primarily Mississippian ceramic types.

Table 4.27. Ceramic Affiliations of Feature 8 and the Northeast Mound: Mound Fill.

	Feature 8		Mound Fill		Total	
Ceramic Affiliation	f	%	f	%	f	%
Late Woodland	2	22.2	32	78.0	34	68.0
Mississippian	7	77.8	9	22.0	16	32.0
Total	9		41		50	

The comparison of ceramic cultural affiliation between Test Unit 2 and the Northeast Mound: Sub Mound context is illustrated in Table 4.28. Test Unit 2 contains a small sample of mixed Late Woodland and Mississippian ceramic types, while the Northeast Mound: Sub Mound assemblage primarily includes Late Woodland vessels.

Table 4.28. Ceramic Affiliations of Test Unit 2 and the Northeast Mound: Sub Mound.

	Test Unit 2		Sub Mound		Total	
Ceramic Affiliation	f	%	f	%	f	%
Late Woodland	15	50.0	61	79.2	76	71.0
Mississippian	15	50.0	16	20.8	31	29.0
Total	30		77		107	

The comparison of presumed cultural affiliation of the ceramics present in the Northeast Mound: Mound Top and the Test Unit 2 indicate both contexts contain a fairly mixed sample of Mississippian and Late Woodland ceramic types (Table 4.29).

Table 4.29. Ceramic Affiliations of Test Unit 2 and the Northeast Mound: Mound Top.

	Test Unit 2		Mound Top		Total	
Ceramic Affiliation	f	%	f	%	f	%
Late Woodland	15	50.0	5	41.7	20	47.6
Mississippian	15	50.0	7	58.3	22	52.4
Total	30		12		42	

The comparison between Test Unit 2 and the Northeast Mound: Mound Fill culturally affiliated ceramic types is presented in Table 4.30. The Mound Fill contains primarily Late Woodland ceramic types, while Test Unit 2 contains a mix of Late Woodland and Mississippian ceramic types.

Table 4.30. Ceramic Affiliations of Test Unit 2 and the Northeast Mound: Mound Fill.

	Test Unit 2		Mound Fill		Total	
Ceramic Affiliation	f	%	f	%	f	%
Late Woodland	15	50.0	32	78.0	47	66.2
Mississippian	15	50.0	9	22.0	24	33.8
Total	30		41		71	

The proportions of culturally sensitive ceramic types in the Midden context and the Northeast Mound: Sub Mound are different (Table 4.31). The Midden context

assemblage includes primarily Mississippian ceramic types, while the Sub Mound vessels are primarily Late Woodland.

Table 4.31. Ceramic Affiliations of the Midden context and the Northeast Mound: Sub Mound.

	Midden		Sub Mound		Total	
Ceramic Affiliation	f	%	f	%	f	%
Late Woodland	23	33.8	61	79.2	84	57.9
Mississippian	45	66.2	16	20.8	61	42.1
Total	68		77		145	

The comparison of culturally sensitive ceramic types in the Midden context and the Northeast Mound: Mound Top is illustrated in Table 4.32. The table indicates both contexts are composed of primarily Mississippian ceramic types.

Table 4.32. Ceramic Affiliations of the Midden context and the Northeast Mound: Mound Top.

	Midden		Mound Top		Total	
Ceramic Affiliation	f	%	f	%	f	%
Late Woodland	23	33.8	5	41.7	28	35.0
Mississippian	45	66.2	7	58.3	52	65.0
Total	68		12		80	

The comparison of culturally affiliated ceramic types in the Midden context and the Northeast Mound: Mound Fill indicates the contexts do not share a similar make up

of ceramic types (Table 4.33). The Midden ceramics are primarily Mississippian types, while the Mound Fill ceramics are primarily Late Woodland.

Table 4.33. Ceramic Affiliations of the Midden context and the Northeast Mound: Mound Fill.

	Midden		Mound Fill		Total	
Ceramic Affiliation	f	%	f	%	f	%
Late Woodland	23	33.8	32	78.0	55	50.5
Mississippian	45	66.2	9	22.0	54	49.5
Total	68		41		109	

Use-alteration Analysis

Recognition of use-alteration in this study was based only on the presence of exterior and interior carbonization. The other forms of use-alteration, such as sooting and attrition, were examined in the initial stages of analysis; however, there were no traces observed, therefore these forms could not be included in this study. Exterior carbonization and interior carbonization was recorded based on observation of the observed location and distribution. Based on the locations used in this study, frequency and percent of each type were tabulated for the 2011 UWM collection contexts. This analysis was restricted to this subset, because this level of analysis has not been performed on any other collection of Aztalan ceramics.

The majority of vessels displayed Type 1 carbonization traces present only on the top 1-3 cm of the interior or exterior rim (Table 4.34). The majority of Type 1 vessels were identified in the Midden context. Putting aside the location of carbonization, the midden context has the most vessels with carbonization present; this suggests the

function of the vessels in this context likely played a role in cooking. The small number of carbonization trace occurrences out of the entire collection suggests this assemblage as a whole did not play a primary role in cooking related activities.

Table 4.34. Use-alteration Analysis 2011 UWM Collection.

	Test Unit 2		Midden		Feature 8		Total	
Location	f	%	f	%	f	%	f	%
Type 1	1	25.0	4	50.0	-	-	5	38.5
Type 2	-	-	2	25.0	-	-	2	15.4
Type 3	-	-	1	12.5	1	100.0	2	15.4
Type 4	3	75.0	1	12.5	-	-	4	30.8
Total	4		8		1		13	

Table 4.35 breaks down the use-alteration into a comparison between Late Woodland collared ware and Mississippian vessels. This comparison was created to determine if carbonization was present on certain culturally sensitive vessels. The table demonstrates that Late Woodland vessels are more likely to exhibit carbonization patterns than are Mississippian pots. This suggests that the Late Woodland vessels were predominantly used as cooking pots. The low incidence of carbonization on the Mississippian vessels suggests that these pots may have served a non-culinary function.

Table 4.35. Use-alteration Analysis 2011 UWM Collection highlighting Ceramic Affiliation.

	Test Unit 2		Midden		Feature 8		Total	
Ceramic Affiliation	f	%	f	%	f	%	f	%
Late Woodland	3	75.0	3	37.5			6	46.2
Collared Ware	-	-	4	50.0	1	100.0	5	38.5
Mississippian	1	25.0	1	12.5	-	-	2	15.4
Total	4		8		1		13	

Rim-Protrusion Ratio

For each context the mean, median and standard deviation of Mississippian jar rim-protrusion ratio (RPR) values was calculated (Table 4.36). The use of Holley's (1989) RPR index provides a method of assessing temporal placement of Mississippian ceramics. Test Unit 2 vessels demonstrate the highest mean RPR (0.78), followed by Feature 8 (.63), and the Midden (0.66). The RPR values indicate that Feature 8 (.63), the midden (.66) and Test Unit 2 (.78) compare favorably to Lohmann phase jars in the American Bottom (Holley 1989; Pauketat 1998). Overall, the RPR values appear to be similar between the 2011 contexts.

Table 4.36. Comparing RPR Values within the 2011 UWM Collection Contexts.

	Count	Mean	Median	Standard Deviation
Contexts				
Feature 8	8	0.63	0.61	0.09
Midden	9	0.66	0.62	0.14
Test Unit 2	8	0.78	0.78	0.18

When comparing the 2011 contexts to the Northeast Mound mean RPR values the values appear to be temporally close (Table 4.37). With exception of the RPR values for the Mound Top (.56), the remaining RPR values compare favorably to Lohmann phase jars (Holley 1989; Pauketat 1998). The Mound Top RPR value of .56 compares favorably to Early Stirling phase jars.

Table 4.37. Comparing RPR Values Between the 2011 UWM Collection and the Three Main Contexts of Northeast Mound.

Contexts	Count	Mean	Median	Standard Deviation
Feature 8	8	0.63	0.61	0.09
Midden	9	0.66	0.62	0.14
Test Unit 2	8	0.78	0.78	0.18
Sub Mound	8	0.70	0.78	0.19
Mound Fill	4	0.60	0.65	0.18
Mound Top	5	0.56	0.60	0.17

Orifice Diameter

Orifice diameter is used as an indirect estimate of vessel size for this study because the ceramic data consists entirely of sherds. The comparison of the orifice diameter values between the contexts indicates the Fill context has an overrepresentation of the largest vessels, with the smallest size absent (Table 4.38). The Fill context has a greater size range than in the Northeast Sub Mound and Fill contexts. Specifically, the Northeast Sub Mound and Fill vessels represent the smallest vessels. Overall, vessel orifice diameter ranges from 21-30 cm.

Table 4.38. Comparing Orifice Diameter Values Between the Contexts: the Northeast Sub Mound-Fill, Fill, and Feature 8.

	Feature 8		Fill		Northeast SubMound and Mound Fill		Total	
Orifice Diameter	f	%	f	%	f	%	f	%
0-9	-	-	-	-	7	11	7	5
10-20	2	22	11	17	29	48	42	32
21-30	4	44	23	37	22	36	49	37
31-40	2	22	11	17	3	5	16	12
>41	1	11	18	29	-	-	19	14
Total	9		63		61		133	

Orifice Percent

The comparison of the orifice percent values is important to understanding the nature of the ceramics in this study. Orifice percent can prove to be useful in determining discard related behavior. Orifice percent (Table 4.39) illustrates the overall fragmentary nature of these ceramics. The majority of ceramics fall into the 0-5% range for the amount of sherd present.

Table 4.39. Comparing Orifice Percent Between the Contexts: the Northeast Sub Mound-Fill, Fill, and Feature 8.

	Feature 8		Fill		Northeast SubMound and Mound Fill		Total	
Orifice %	f	%	f	%	f	%	f	%
0-5	5	56	51	76	86	74	142	74
6-10	4	44	13	19	18	16	35	18
11-15	-	-	1	1	5	4	6	3
16-20	-	-	-	-	2	2	2	1
20-50	-	-	-	-	4	3	4	2
100	-	-	2	3	1	1	3	2
Total	9		67		116		192	

STATISTICAL ANALYSIS

In order to determine if the previous comparisons between the depositional contexts are significant statistical tests were performed on the ceramic data set. The ceramic data set was subjected to several statistical tests, but only the analyses with statistically significant results are fully reported in this section. The variables that will not be presented include surface finish, surface treatment, and use alteration. Initial statistical tests proved to be difficult to perform using these variables. Regarding surface finish, the statistical test (ANOVA) could not be performed because there was not enough variation present in the sample to test for patterns. The purpose of running an analysis of variance (ANOVA) statistical test is to compare the variation among and between groups, therefore the combined effect of sample size and number of analyzed variables prevented this test from being performed. A discussion of the statistical tests used and why in this study will be further explained below. The use-alteration data set could not be run through an ANOVA test for similar reasons, and in addition there were no other data sets to compare these results too. An ANOVA test could be performed on exterior and interior surface treatment for vessels. The results of this test indicated there was no significant difference among the vessels in the six depositional contexts. Furthermore, exterior and interior surface treatment, in addition to surface finish, were left out of further statistical testing because these ceramic attribute categories are affected by cultural affiliation.

The remaining set of attributes used for comparison in the statistical tests comprises vessel form, orifice size, orifice percent, ceramic affiliation and ceramic type. The initial run of statistical tests indicated the attributes ceramic type and cultural affiliation could not be run as is, due to sample size, i.e. too many variables were present

for ceramic type and the opposite was true for cultural affiliation. Therefore the category ceramic type was re-coded to include Collared Ware, Mississippian Ware, Madison Ware and Hyer Plain. Subsequently, this category was further simplified to include only Late Woodland ware, Collared ware, and Mississippian ware.

Orifice percent, orifice size and vessel form were run without changes, with the exception of removing the indeterminate category from all of the statistical tests, as this variable is not useful in the overall interpretation of the results.

After performing statistical tests on the original data set, the contexts were also collapsed due to the combined effect of sample size, number of depositional contexts, and the number of analyzed variables. The three collapsed contexts are Northeast Sub Mound/Fill, Fill, and Feature 8. The Northeast Mound: Sub Mound and Fill ceramics were combined given that according to Zych's analysis "the Northeast Mound was a continuous rapid series of episodes of construction" (Zych 2013:122). Furthermore, Zych's (2013) analysis of the Northeast Mound ceramic assemblage indicate the Northeast Sub Mound and Fill are almost entirely grit-tempered Late Woodland types. The second context Fill is composed of the Midden, the Northeast Mound: Mound Top, and Test Unit 2. These contexts were collapsed because each likely represents debris fills from later in the sites history, and comparisons of the data set determined each is composed of Mississippian pottery. The last context, Feature 8, represents a distinct feature therefore only the remaining rim sherds from the 2013 UWM Field School were added to this context. The sample size represented by Feature 8 is too small to accurately perform a chi-square test, therefore the chi-square tests performed in the following sections only compare the Fill data and the Northeast Mound Base-Fill data.

The statistical tests were run using the R Statistical Analysis Program version 2.15.2 developed by the R Development Core Team (2012). Variables of vessel form, ceramic type, and ceramic affiliation are coded as nominal data, while the RPR value, orifice diameter and orifice percent metric data is the value of the actual measurement. A 95% confidence interval was used (α=0.05) for all statistical tests. Three different types of tests were run using the R program: Chi-squared test of independence (X^2), t-test, and Wilcox Rank Sum test. These tests use nominal data to compare counts of observed frequencies with expected frequencies (Drennan 1996). In the present analysis the t-test, chi-squared test and the Wilcox Rank Sum test is used as a test of independence to assess whether the means of two (t-test) or more groups (X^2 or Wilcox Rank Sum test) are statistically different from each other (Hinton 1995:246). The t-test is performed on the RPR values. Pearson's chi-squared test is used to examine ceramic culture, ceramic type, and vessel form, while the Wilcox Rank Sum test is performed on orifice diameter and orifice percent for each context.

T-test RPR Values

Table 4.40 lists the calculated mean RPR value for each depositional context reviewed in this study. Values are ordered from largest to smallest and should thus represent a chronological sequence from earliest (Test Unit 2) to most recent (Northeast Mound Top). Review of Table 4.40 suggests that in general RPR values do correspond to the presumed archaeological sequence of the depositional contexts. However, the Feature 8-Midden relationship is inverted as Feature 8 was identified stratigraphically below the Midden deposits. In an effort to determine if the observed differences in RPR values could be considered statistically significant t-tests were run on all possible combinations

of contests. Results, shown in Table 4.41, suggest that none of the RPR values differ significantly from one another at the 95% confidence level. This may support Richards and Picard's (2013) suggestion that the development of the Aztalan site structure occurred rapidly over a short period of time.

Table 4.40: Mean RPR Values for Depositional Contexts at Aztalan.

Context	N	Mean RPR	SD
Aztalan-TU2	8	0.78	0.18
Aztalan-NE Md-Sub-Mound	8	0.70	0.19
Aztalan-Midden	9	0.66	0.14
Aztalan-F8	8	0.63	0.09
Aztalan-NE Md-Fill	4	0.60	0.18
Aztalan-NE Md-Top	5	0.56	0.17

Table 4.41: Unpaired t-Test Comparison of Depositional Contexts at Aztalan.

Comparison		t-value	p=value	df	SE
TU2 to:	NE Md SubMd	0.8645	0.4019	14	0.093
	Midden	1.5443	0.1434	15	0.078
	F8	2.1082	0.0535	14	0.071
	NE Md Fill	1.6330	0.1335	10	0.110
	NE Md Top	2.1873	0.0512	11	0.101
NE Md SubMd to:	Midden	0.4982	0.6256	15	0.080
	F8	0.9417	0.3623	14	0.074
	NE Md Fill	0.8730	0.4031	10	0.115
	NE Md Top	1.3421	0.2066	11	0.104
Midden to:	F8	0.5175	0.6124	15	0.058
	NE Md Fill	0.6571	0.5246	11	0.091
	NE Md Top	1.1900	0.2571	12	0.084
F8 to:	NE Md Fill	0.7012	0.3949	10	0.076
	NE Md Top	0.9811	0.3476	11	0.071
NE Md Fill to:	NE Md Top	0.3420	0.7424	7	0.117

Chi-squared Test of Independence Ceramic Type

In order to distinguish if the differences between the contexts indicate functional variation the initial contexts (refer to Table 4.1) were collapsed into three contexts and the ceramic type categories were reduced. Table 4.42 illustrates the comparison of proportions between the collapsed contexts and reduced ceramic type variables. Based on the chi-squared test the difference between the contexts is significant (X^2=53.1, df =3, p=1.742e-11). The Northeast Mound Base-Fill is over-represented for collared ware ceramics and underrepresented for Mississippian Ware and Madison Ware.

Table 4.42. Ceramic Type Distribution Between the Northeast Mound Base-Fill, Fill and Feature 8.

	Mound Base-Fill		Fill		Feature 8		Total	
Ceramic Type	f	%	f	%	f	%	f	%
Collared Ware	79	81	27	36	1	13	107	59
Mississippian Ware	1	1	27	36	7	88	35	19
Madison Ware	3	3	11	15	-	-	14	8
Hyer Plain	15	15	10	13	-	-	25	14
Total	98		75		8		181	

Chi-squared Test of Independence Ceramic Affiliation

A chi-squared test of independence was performed to compare the ceramic cultural affiliation among the 2011 UWM Collection. While there appeared to be a difference among the contexts from a qualitative perspective (Table 4.42), this test

showed no significant difference between the ceramic cultural affiliation of the 2011 UWM Collection (X^2=3.2, df = 2, p-value = 0.19).

The variables for ceramic affiliation were rerun according to Mississippian, Late Woodland, and collared ware in order to highlight any differences between the collapsed contexts (Table 4.43). This test showed there is a significant difference in cultural affiliation of the ceramic types between the Northeast Mound Base-Fill and the Fill context . This is supported by the chi-square test for independence performed regarding ceramic type, which indicated the Northeast Mound Base-Fill is predominantly collared ware ceramics, while the Fill context is overrepresented for Mississippian Ware and Madison Ware.

Table 4.43. Ceramic Affiliation Distribution Between the Northeast Mound Base-Fill, Fill and Feature 8.

	Mound Base-Fill		Fill		Feature 8		Total	
Ceramic Affiliation	f	%	f	%	f	%	f	%
Late Woodland	3	3	11	41	-	-	14	8
Mississippian	16	16	37	137	7	88	60	33
Collared Ware	79	81	27	100	1	13	107	59
Total	98		75		8		181	

Chi-squared Test of Independence Vessel Form

Due to the small sample sizes detailed statistical analyses could not be performed on the six contexts regarding vessel form, therefore the six contexts were collapsed into three contexts and rerun to identify if vessel form in certain contexts relates to function or use. The comparison of vessel form between the three contexts, Northeast Sub Mound-

Fill, Fill, and Feature 8 is tabulated in Table 4.44. The chi-squared test indicates there is no significant difference between the vessels present in the Northeast Mound Base-Fill context and vessels in the Fill context (X^2=9.598, df = 2, p-value = 0.008239). Due to the small sample size of vessels recovered from Feature 8 statistical analyses could not be performed to determine if the differences were significant.

Table 4.44. Vessel Form Distribution Between the Northeast Sub Mound- Fill, Fill and Feature 8.

	Feature 8		Fill		Northeast SubMound and Mound Fill		Total	
Vessel Form	f	%	f	%	f	%	f	%
Jar	7	70	104	96	104	99	215	96
Seed Jar	3	30	4	4	1	1	8	4
Total	10		108		105		223	

Wilcox Rank Sum Statistical Test Orifice Diameter

A Wilcox Rank Sum test was performed to compare the Northeast Mound Base-Fill and Fill vessel orifice diameters (refer to Table 4.56 for Orifice diameter measurements). The test demonstrated there is a significant difference between the vessel diameters in the Fill and Northeast Mound Base-Fill (W= 2613, p-value= 1.915e-06). The results indicate the Fill context vessels tend to be larger than the vessels within the Northeast Mound Base-Fill.

Wilcox Rank Sum Statistical Test Orifice Percent

Based on the Wilcox Rank Sum test, there is a significant difference in the orifice percentages between the Northeast Mound Base-Fill vessels and the Fill vessels (W=4729, p-value 0.007175). The test suggests that the orifice percentages for Fill context vessels tend to have higher percentages than the Northeast Mound Base-Fill vessels (refer to Table 4.57).

DISCUSSION

A summary of the results from the statistical test comparisons are tabulated in Table 4.45. Overall, the results suggest that the Northeast Mound Base-Fill context contains significantly different vessels than the Fill context vessels based on morphological data and metric data.

Table 4.45 Summary of Statistical Results for Ceramic Type, Vessel Form, and Ceramic Affiliation.

Contexts	Ceramic Type	Vessel Form	Ceramic Affiliation	Orifice Percent	Orifice Diameter	RPR
Mound Base-Fill VS Fill	+	-	+	+	+	-

(+) Indicates a signficant difference

(-) Indicates not signficantly different

In order to compare exterior vessel surface treatment between the contexts the data was separated out into two sections: Late Woodland vessels surface treatments and Mississippian vessel surface finish. When interpreting the difference between the exterior surfaces on Late Woodland vessels the samples differed based on the presence or absence of cordmarking. The result of comparing Mississippian vessel exterior surfaces indicates that the dominant choice of surface finish across every context is a plain surface. There are several occurrences of slipping and smudging that do occur, although in the minority.

The proportional comparison between the 2011 UWM collection contexts regarding ceramic cultural affiliation illustrated that Feature 8 and the Midden context share similar proportions of Late Woodland and Mississippian vessels. However, upon further statistical analysis there is no significant difference regarding ceramic cultural affiliation among the 2011 UWM Collection. Since Feature 8 is superimposed by the midden, this suggests the ceramics in this area continued to be manufactured by a diverse group of people. The equal proportions of Late Woodland and Mississippian ceramics within Test Unit 2 likely reflects the act of constructing a level surface along the riverbank by filling the area with materials from all areas of the site.

As previously discussed, carbonization traces were present predominantly in the Midden context. The location of these traces were primarily on the exterior or interior of the rim. Overall the small sample size of use-altered vessels and lack of ability to compare to additional contexts prevented additional inferences relative to the actual function of the vessels recovered from the three contexts of the 2011 UWM collection.

The RPR values of the Sub Mound, Mound Fill, Feature 8, Test Unit 2 and the Midden context suggest a Lohmann phase time range (Figure 4.1). The mean value of the

Northeast Mound: Mound Top context suggests an Early Stirling assignment based on temporal ranges suggested by Holley (1989). With exception of the Midden-Feature 8 inversion the RPR values are consistent with the presumed archaeological sequence of the deposits.

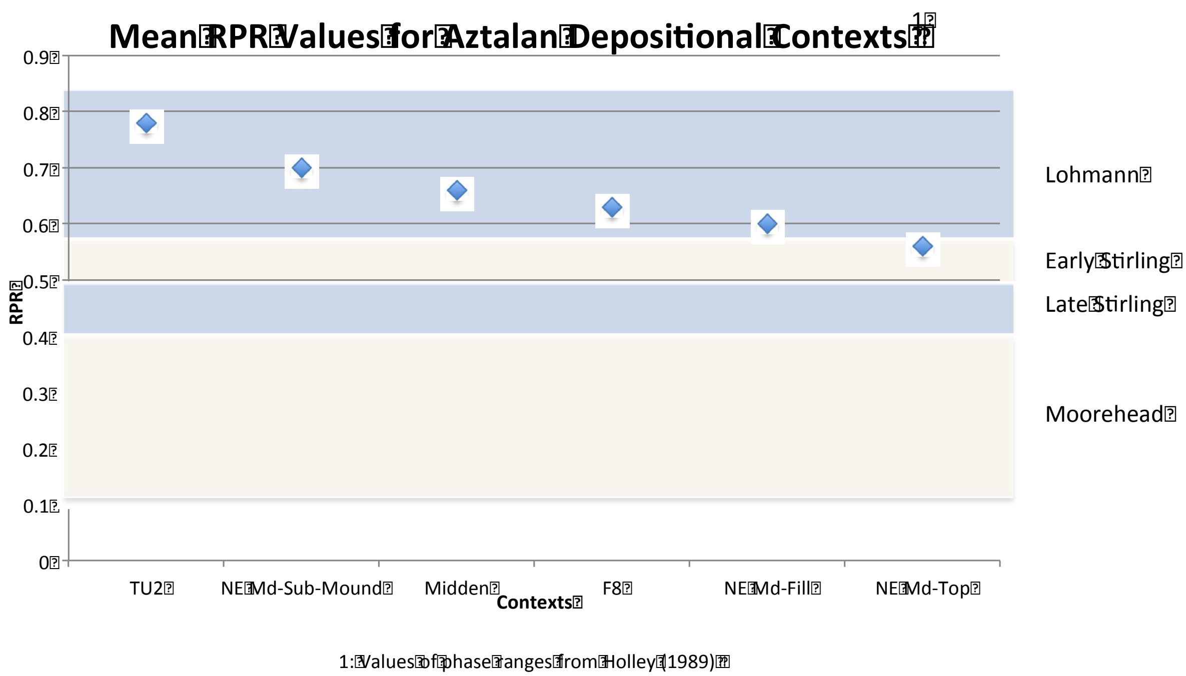


Figure 4.1. Comparison of mean RPR values for Aztalan depositional contexts.

Portable X-Ray Florescence Results

A pXRF analysis was run on all the vessels from the 2011 UWM collection. In addition, data provided by Zych's (2013) pXRF analysis of 130 vessels from the Northeast Mound main contexts were included in the analysis. Prior to scanning the vessels, readings were taken at the beginning and end of each scan from a standard clay

sample procured from the Clay Minerals Society. Using a kaolin standard (Kga-2), in this case, it ensures consistency between data collecting episodes and allows ARL data to be calibrated for comparison to data sets collected by other researchers (Richards and Kotwasinski 2013).

In Hulit's (2012a, b) analysis of clay resources in the Crawfish and Rock River drainages in southeast Wisconsin, she demonstrates data should be collected multiple times at multiple locations in order to identify any indications of irregular readings. The ARL protocol requires nine readings of 180 seconds duration, at three different locations, to scan the artifact. When sampling the 2011 collection ceramics readings were collected from the exterior, interior, and if possible, from a broken sherd edges as well. The total data set includes 1014 readings taken on sherds from the 2011 UWM collection and 333 readings from the Northeast Mound sample. Net intensity values for elements in the targeted range were generated using Bruker's Artax software and saved as a text file for importation into Microsoft Excel.

Statistical analyses were conducted using the R Statistical Analysis Program version 2.15.2 developed by the R Development Core Team (2012). Methods utilized here follow those outlined by Hulit (2012b, d) in her analysis of clay resources in the Crawfish and Rock River drainages in southeast Wisconsin. These methods were revised to establish standard pXRF statistical methods currently used by the Archaeological Research Laboratory at the University of Wisconsin-Milwaukee (see: Hulit 2012a). Data packages used in the R statistics program include *compositions* (Boogaart, et al. 2011), *mvoutlier* (Filzmoser and Gschwandtner 2011), and the source code *HulitSourceCodes.R* (Hulit 2012c).

Once data is collected and run through the Artax software, samples are checked for internal consistency using the Mahalanobis distance measure, provided in the *HulitSourceCodes.R* (Hulit 2012c). The Mahalanobis distance measure provides a measurement of the distance of each reading from the center of all the readings for the artifact (Hulit 2012a: 18). If three measurements from the same location are scored the furthest from the center, they are considered suspicious. Each reading is removed one at a time and the Mahalanobis distance is recalculated to see if the pattern changes. If one location is consistently scored the furthest from the center, it is removed from further analyses. Samples whose readings resulted in element net intensities with negative values or zeros were removed from the dataset as the ILR transformations are unable to handle zero values within the raw datasets (Pawlosky-Glahn and Olea 2004, cited in Hulit 2012c). Many of the removed readings were from the Northeast Mound: Mound fill samples (n=36).

The Mahalanobis distance measurements highlighted four anomalous reading locations that were subsequently removed from the dataset, for a total of 15 individual readings. Readings with anomalous measurements or raw net intensity values of zero or less than zero, that were removed from the dataset consisted of 245 readings removed from the 2011 sample and 73 readings from the Northeast Mound, leaving a total of 985 readings.

In this study, a principle components analysis (PCA) is used. This is a statistical procedure that reduces the variation among the transformed elements to select principle components that explain a percentage of the variation within the dataset (Hulit 2012b:10, 130). After checking for anomalous readings, the compositional data from the pXRF

results must be transformed for use in PCA using isometric log-ratio (ILR) in order to calculate compositional outliers and initial identification of clustering based on similarity of matrices (Filzmoser, et al. 2012:77; Hulit 2012b:129). The PCA was run using the *GrayILRv2* function (Hulit 2012c) which both transformed the data using the ILR function and performed the PCA.

Principle Components Analysis

A line-plot of the principle component variation illustrates that the variation in the dataset begins to level off after the second principle component. This indicates that the second principal component may still contain valuable information for this study (Figure 4.2). The principal components analysis suggests that like most compositional data sets, this one is weakly structured as the first and second principal components account for approximately 30% of the total variation; the first principle component explains 17%, and the second explains 13%.

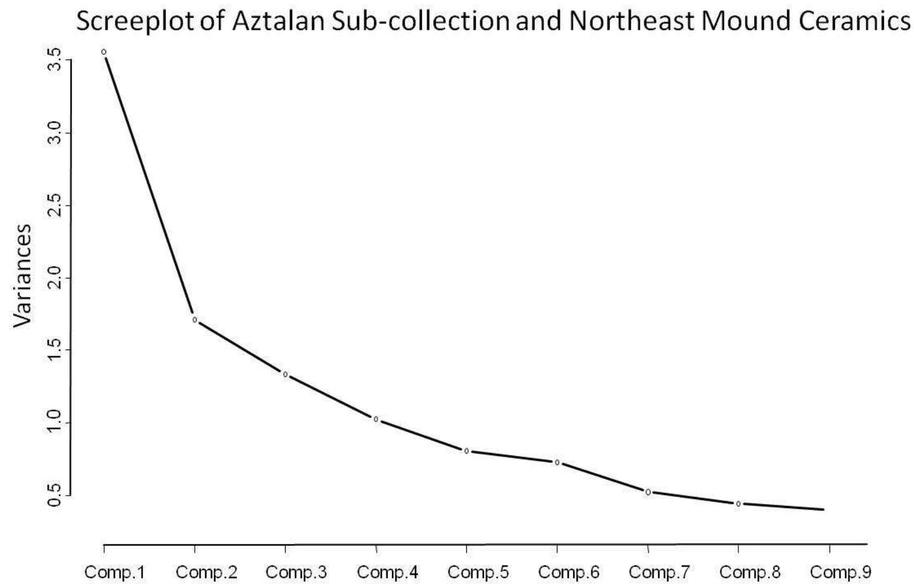


Figure 4.2. ScreePlot of Aztalan PCA principle component variation.

Principle component analysis indicates the main source of variation in the dataset is primarily due to the opposition of Bromine (Br) and Rubidium (Rb) on the first component and Zinc (Zn) and zirconium (Zr) on the second principal component. These oppositions are illustrated in Table 4.46.

Table 4.46. Primary Oppositions on First and Second Principal Component 2011 Contexts and Northeast Mound Sample.

Element	Component 1	Component 2
As	-0.327	-0.027
Br	-0.746	0.121
Cu	-0.235	-0.400
Fe	0.053	0.125
Ga	-0.063	0.320
Nb	0.164	0.268
Ni	0.085	-0.294
Rb	0.280	0.123
Sr	0.153	-0.404
Y	0.230	0.175
Zn	0.238	-0.416
Zr	0.168	0.408

Next, the mean compositions for each artifact were calculated. A comparison of the loadings between the net intensities (i.e. all 985 readings) and the mean composition value for each artifact shows the same elements oppose one another in the first and second principle components, suggesting that there is no loss of detail in using the mean compositions for analysis. A bi-plot of the artifact mean compositions is illustrated in Figure 4.3 labeled by each vessel/artifact ID. This plot highlights a series of vessels that appear isolated from the main body of items, including six mound top vessels (v56, v63, v64, v71, v1223, v1276, v1291).

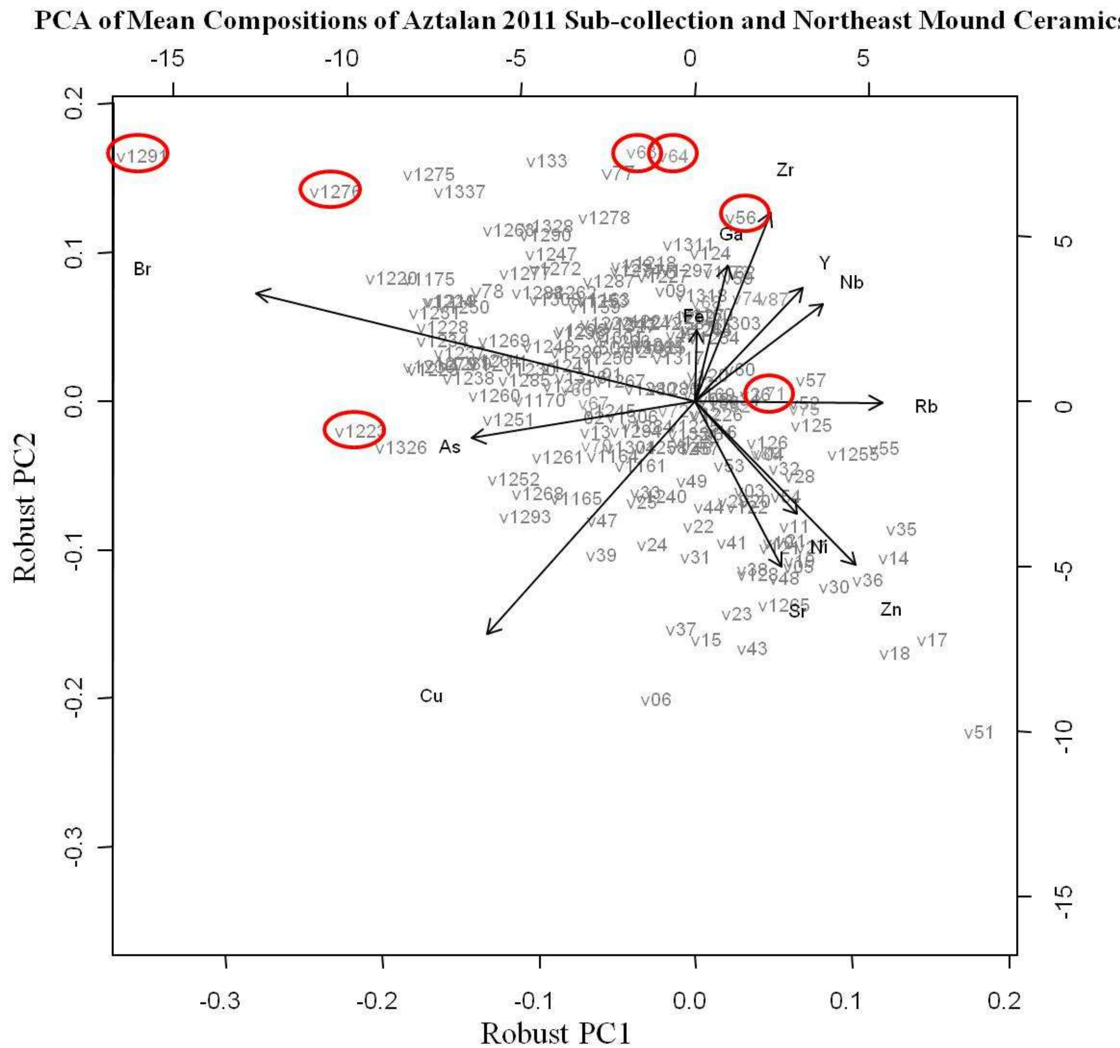


Figure 4.3. 2011 Collection Contexts and Northeast Mound Data PCA bi-plot of Mean Compositions highlighting outliers.

PCA ANOVA Tests

Analysis of variance (ANOVA) tests and Tukey Post-hoc tests were run on the PCA results against the selected categorical variables (pottery type, decorative mode, etc.) at a 95% confidence interval (α=0.05). Analysis of variance (ANOVA) tests were run to identify any difference between the 2011 Collection contexts and Northeast Mound 3 main contexts. A 95% confidence interval is used (α=0.05) when running these

analyses. Results for the first principle component show that there is a significant difference between the Northeast ceramic contexts and the 2011 UWM Collection contexts. This is illustrated in Figure 4.4 with a bi-plot identifying vessels from each context. There is a general separation between Northeast Mound: Sub-mound ceramics, Northeast Mound: Mound top ceramics and the midden ceramics, Feature 8 ceramics and Test Unit 2 ceramics. ANOVA and Tukey post hoc tests indicate that the difference is significant at the .05 level. The bi-plot indicates that there is not only a separation between the Northeast Mound ceramics and the 2011 Collection, but there is a general point cluster for each context. The separation of these contexts suggests vessels are compositionally different within each context. It is important to note Test Unit 2 vessels exhibit an extensive geographic distribution; this further supports the interpretation that Test Unit 2 context represents a filling episode of mixed material in an attempt to construct a level surface along the riverbank. The midden contexts vessels also exhibit a widespread distribution.

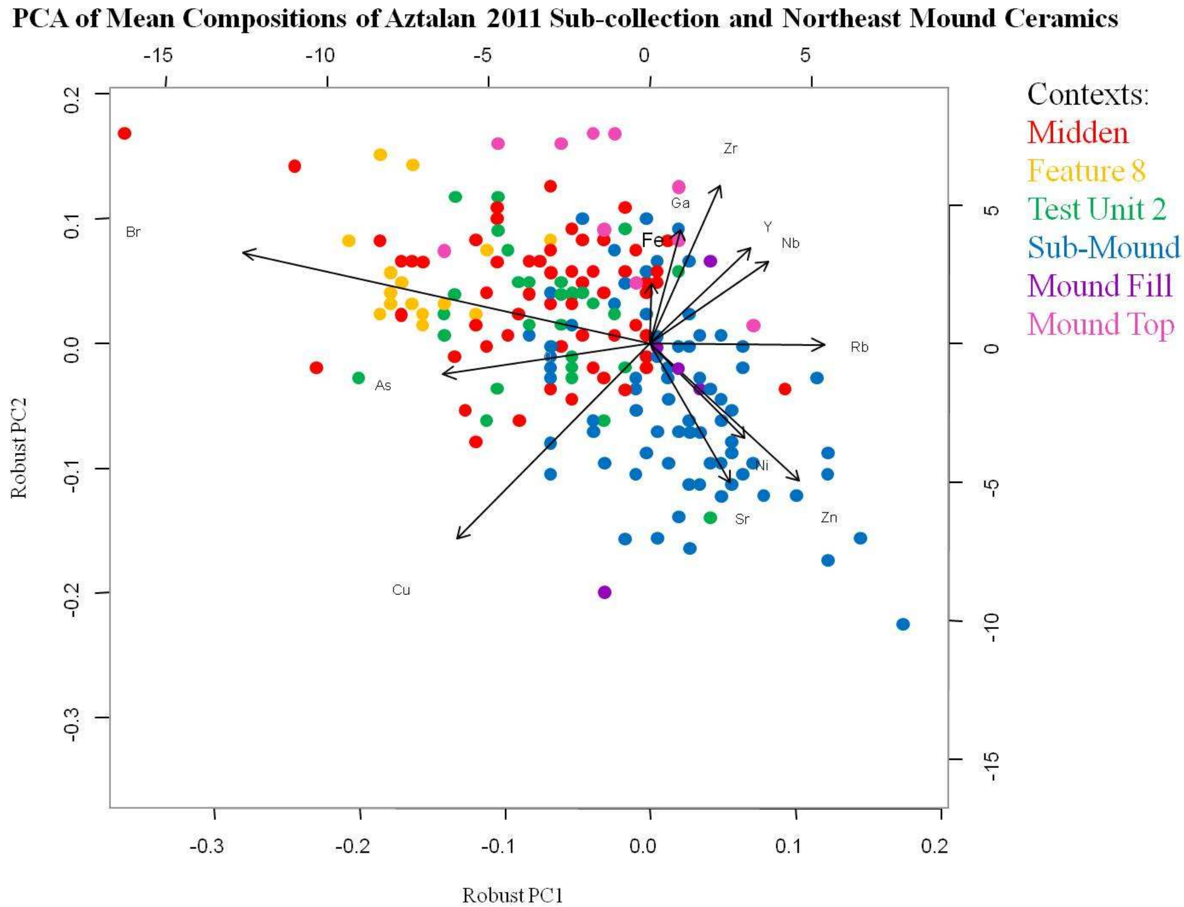


Figure 4.4. 2011 Contexts and Northeast Mound Data PCA bi-plot of Mean Compositions highlighting the contexts.

If the data is re-plotted according to temper (Figure 4.5), there is a general separation between the shell-tempered ceramics and the grit-tempered pottery. ANOVA and Tukey post hoc tests indicate that the difference is significant at the .05 level. This data is also significant because the element calcium was removed from the data set to control for separation due to the use of crushed mussel shell as a tempering agent by Mississippian potters (Richards and Kotwasinski 2013:8). Even with the removal of calcium, the plot resembles the preliminary study biplot (see Richards and Kotwasinski 2013) which indicates a general separation within the central point cloud. This data

suggest that the separation between shell-tempered and grit-tempered may reflect paste variation more than clay source. This conclusion is further supported when examining the indeterminate ceramic types illustrated in Figure 4.56 which show there is a clear choice between grit-tempered and shell-tempered paste.

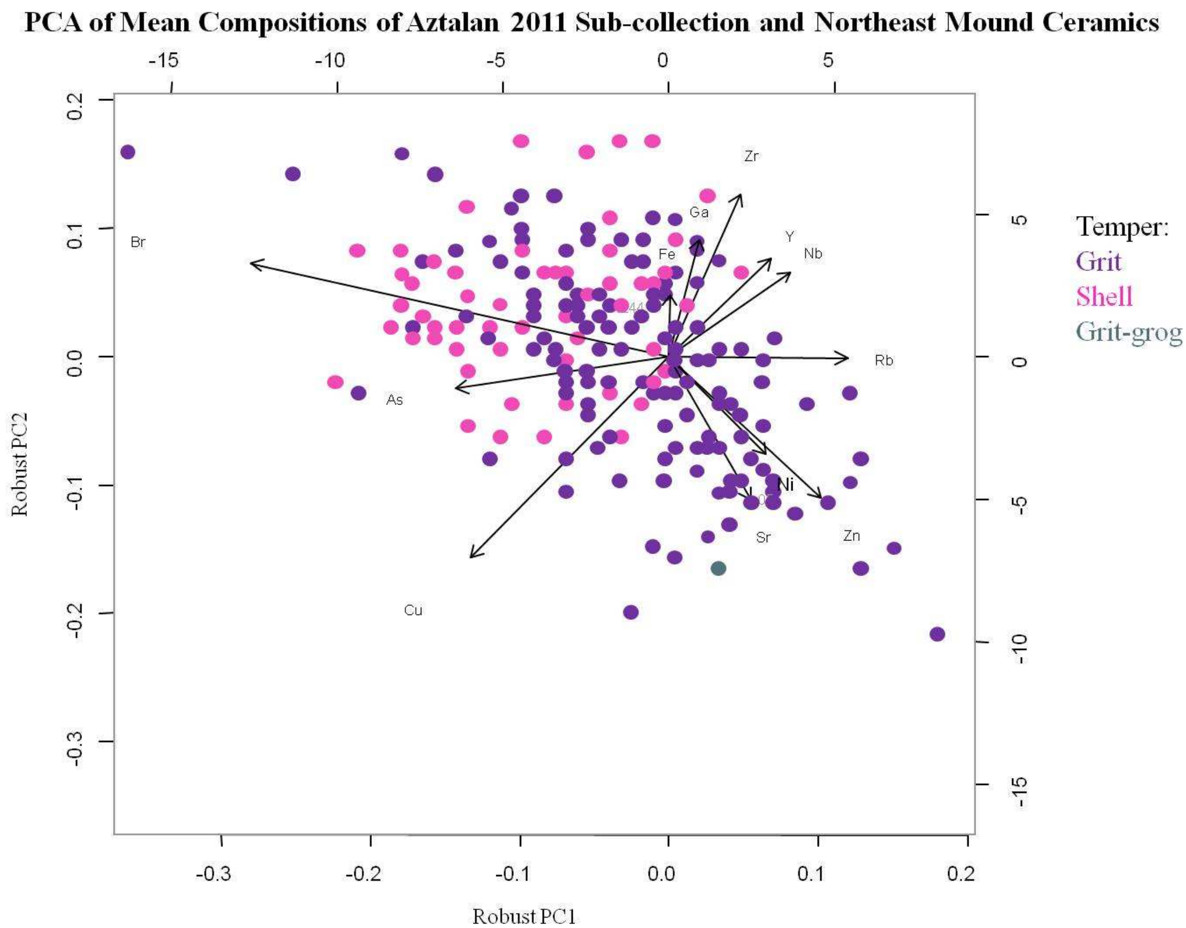


Figure 4.5. 2011 Collection Contexts and Northeast Mound Data PCA bi-plot of Mean Compositions highlighting temper.

A plot of the data according to ceramic type (Figure 4.6) indicates that the majority of grit-tempered Aztalan Collared and Starved Rock Collared vessels plot together suggesting a similar, probably local derivation for clay. However, several grit-tempered Aztalan Collared vessels and Starved Rock Collared vessels plot with shell-

tempered wares; this suggests that these vessels may have been made from a different source of clay than the outlying pots. Aztalan Collared has been reported from sites throughout northern Illinois, as well as eastern and central Wisconsin (Richards and Kotwasinski 2013:8). Therefore the Aztalan Collared vessels plotting outside of the point cloud may represent imported pots. Figure 4.6 also highlights several significant differences among the chemical compositions for Mississippian ceramics. It is important to note Hyer Plain, Cahokia Red-Filmed, and Powell Plain vessels do not plot with the Northeast Mound vessels of the same ceramic type. The separate distribution of these vessels may suggest a non-local origin for these pottery types. Aside from outlying Hyer Plain vessels, the remaining Mississippian vessels plot opposite of Late Woodland vessels. To summarize the data suggests compositional diversity, representing a mix of local and foreign pots and/or a mix of paste recipes.

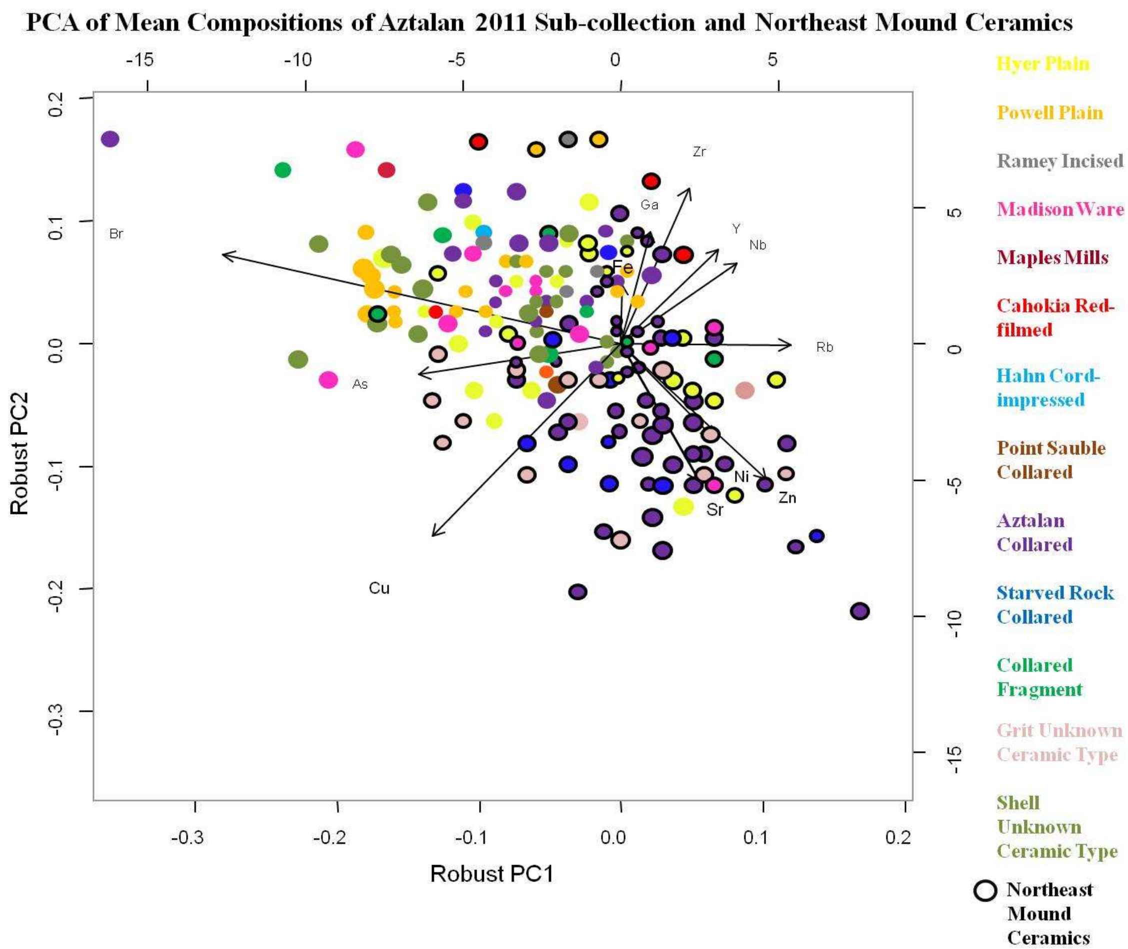


Figure 4.6. 2011 Contexts and Northeast Mound Data PCA bi-plot of Mean Compositions highlighting ceramic type.

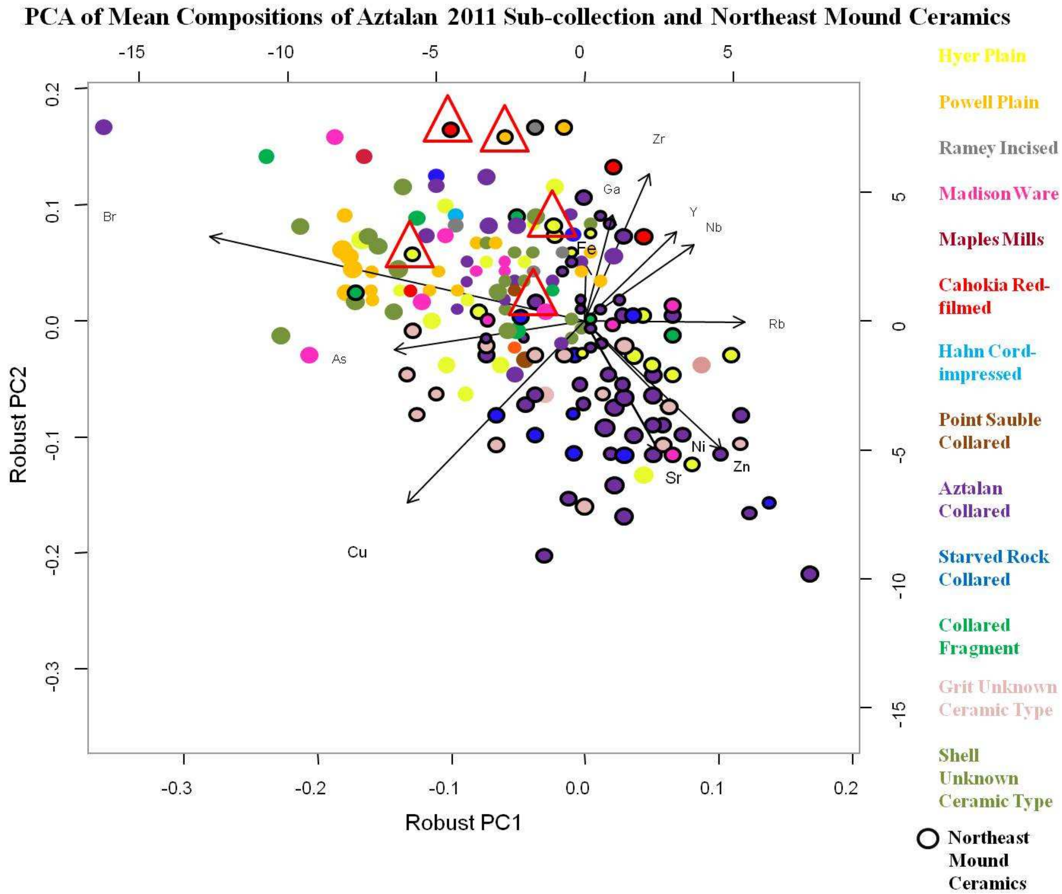


Figure 4.7. 2011 Contexts and Northeast Mound Data PCA bi-plot of Mean Compositions highlighting Northeast Mound Upside Down Vessels.

An additional biplot (Figure 4.7) was created to highlight the vessels placed in the Northeast Mound upside down. The Aztalan Collared vessel (v50), placed upside down in the sub mound context, plots in close proximity to the major cluster of Aztalan Collared sub mound vessels. The Hyer Plain vessels that were placed upside down (v76 and v78) in the mound top do not plot with the near the clusters of the Hyer Plain from the Northeast Mound. The outlying position of these vessels may suggest the chemical a different distinct chemical paste was manufactured for these vessels that were placed on

the mound top. The Powell Plain vessel (v77) and the Cahokia Red-Filmed vessel (v133) which was also placed upside down within the mound top, plot with the majority of mound top vessels (refer to Figure 4.53). The cluster of mound top Middle Mississippian vessels suggests these vessels were not manufactured from the same clays as the sub mound vessels.

The Tukey post-hoc test further highlight that least one pottery type is significantly different from at least one other pottery type ($F=16.74$, $p=<2e-16$) for first principle component. Table 4.47 lists the 30 significant differences among the pottery types.

Table 4.47. Tukey Post-hoc Test: Significant Differences in Mean Scores for Pottery Type of First principle Component.

Pottery Type Ordered Pairing	*p* value
Hyer Plain - Maples Mills	0.0165
Starved Rock Collared - Maples Mills	0.0030
Aztalan Collared - Maples Mills	0.0012
Northeast Mound Unclassified - Maples Mills	1.00E-08
Starved Rock Collared - Cahokia Red-Filmed Jar	0.0187
Aztalan Collared - Cahokia Red-Filmed Jar	0.0074
Northeast Mound Unclassified - Cahokia Red-Filmed Jar	0.0000
Hyer Plain - Collared-Fragment	0.0003
Starved Rock Collared - Collared-Fragment	1.05E-04
Aztalan Collared - Collared-Fragment	0.0000
Northeast Mound Unclassified - Collared-Fragment	0.0000
Hyer Plain - Powell Plain	1.00E-06
Starved Rock Collared - Powell Plain	0.0000
Aztalan Collared - Powell Plain	0.0000
Northeast Mound Unclassified - Point Sauble Collared	0.0011
Northeast Mound Unclassified - Maples Mills	3.40E-06
Northeast Mound Unclassified - Cahokia Red-Filmed seed jar	1.69E-05
Northeast Mound Unclassified - Ramey Incised	9.00E-07
Aztalan Collared - Ramey Incised	0.0380
Northeast Mound Unclassified - Aztalan Collared	0.0010
Northeast Mound Unclassified - Starved Rock Collared	0.0040
Northeast Mound Unclassified - Hyer Plain	9.30E-06
Northeast Mound Unclassified - Madison Cord impressed	6.90E-06
Northeast Mound Unclassified - 2011 Sub-collection Indeterminate	0.0000
Aztalan Collared - 2011 Sub-collection Indeterminate	0.0000
Starved Rock Collared - 2011 Sub-collection Indeterminate	1.55E-05
Hyer Plain -2011 Sub-collection Indeterminate	0.0002
Aztalan Collared - Powell Plain	0.0000
Northeast Mound Unclassified - Powell Plain	0.0000
Northeast Mound Unclassified - Hahn Cord impressed	0.0043

Overall, the post-hoc tests on the first and second principle component illustrate the compositional variation in the vessels of the Northeast Mound and the 2011 UWM Collection. This diversity could be the result of multiple groups at the site, as visitors or

emigrants, bringing pots made from distant clays. The variation in vessel chemical composition may also be due to the use of multiple chemically distinct clay deposits.

CONCLUSION

Even though an intrasite comparison was conducted, the primary goal of the analysis was to determine if there is a difference in the 2011 UWM collection depositional contexts that might relate to differences in use/function of the pottery. This study has utilized three approaches including morphometric analyses, use-alteration analysis, and portable x-ray fluorescence analysis to determine if these distinct depositional archaeological contexts at the Aztalan site harbor different ceramic samples. The vessels from these contexts were analyzed in accordance with the following categories: cultural affiliation, vessel form, orifice diameter, orifice percent, surface finish/treatment, ceramic type, RPR value, use-alteration, and elemental composition.

Preliminary analyses of the contexts in this study characterized each archaeological context in the following ways: 1) the Northeast Mound contexts are considered purposeful episodic building, 2) Feature 8 is interpreted as a distinct refuse deposit, possibly related to feasting, 3) Test Unit 2 represents intentional filling, 4) the Midden represents episodic dumping. The results of the elemental compositional analyses can further add to the understanding of the behaviors associated with these archaeological contexts. The practices and behaviors involved in forming these distinct contexts are reflected in the ANOVA bi-plots.

In the ANOVA bi-plot regarding context (Figure 4.53) the Northeast Mound Sub Mound and Mound Top, and Feature 8 vessels form separate clusters. These results

suggest that there are different behaviors associated with the deposits in each context. The intentional episodic construction of the Northeast mound is reflected in the close clustering of vessels recovered from the Northeast Mound Sub Mound and Fill and the distinct separation between the Northeast Mound contexts and the 2011 UWM Collection. The variety of vessels recovered from Test Unit 2 likely reflects the action of intentionally filling with mixed materials to fill a ravine and produce a level surface along the riverbank. In addition, the variety of vessels recovered from the Midden context is consistent with the interpretations of this area as an episodic garbage dump.

Interestingly, the pXRF data suggests there is also a general separation between shell-tempered and grit-tempered pots. These results suggest potters were intentionally manufacturing vessels using clay from specific areas at or near the site.

The pXRF biplots also suggest vessels were brought to the site by immigrant individuals or groups. This is reflected in the fact that outlier vessels on the scatterplot are those from contexts such as the Northeast Mound, the Midden and Feature 8. The outlier vessels recovered from the Northeast Mound reinforce Zych's (2013) conclusion that these materials were used in the Northeast Mound as opportunities for immigrant and local group interaction and community construction. The differences among the contexts are reflected also in the metric and attribute based analyses.

A comparison of cultural affiliation across the three collapsed contexts indicates collared ware vessels are overrepresented in the Northeast Mound Base and Fill, while the Fill context and Feature 8 contain a majority of Mississippian vessels. There are also Hyer Plain ceramics recovered from the Northeast Mound Base and Fill assemblage, which support Zych's (2013:184) conclusion that cohabitation by Mississippian and Late

Woodland groups had begun by the time the mound was constructed. Cohabitation is also indicated by the increasing appearance of Mississippian vessels recovered from the Northeast Mound Top context and in the Midden and Test Unit 2 contexts. Aside from an abundance of Mississippian vessels, the Midden and Test Unit 2 vessels represent a diverse assortment of ceramic wares, reinforcing Zych's (2013:187) inference that a multitude of regional identities arrived at Aztalan and began to remake the landscape and create a new community at Aztalan.

It is important to note the presence of use-alteration on several vessels from the 2011 UWM Collection. Several factors control for the presence or lack of carbonization patterns due to exposure to a cooking fire. These factors include different modes of cooking, whether contents are being cooked with water or without water, and temperature of the fire (Skibo 2013:63). The lack or presence of these patterns can indicate several possible interpretations regarding the depositional contexts.

Exterior and interior carbonization is best described as charred food remains that occur above the water line of a pot used for boiling or simmering, or in modes of cooking where water cannot act to temper the heating process (Kooiman 2012:124). Evidence of boiling or simmering of foods to the point of creating a distinct ring of residue around the top of the pot seems to be the prevalent mode of cooking for all of the 2011 UWM Sub-collection contexts. In particular, the Midden context is overrepresented for this pattern. However, each of the four types created for this study are represented in the Midden context. This may indicate the inhabitants were primarily boiling their food, in addition to using several other modes of cooking. The results of the use-alteration analysis reinforce the notion that the Midden formed due to periodic garbage dumping.

Overall, very few vessels were identified with use-altering traces present. The lack of carbonization patterns on vessels also provides clues about how the inhabitants of Aztalan prepared food. Different types of cooking can leave different patterns of carbonization, therefore the lack of carbonization present may be attributable to changing cooking practices, particularly the placement of vessels over the fire or differences in food processing. The small sample size of use-altered vessels may also be the result of washing the vessel or removal due to the depositional environment. Further use-alteration comparison among the vessels of the 2011 UWM Collection, focused on Late Woodland and collared ware vessels. The results indicated there was a trend toward Late Woodland vessels containing carbonization traces.

Vessel shape can provide further functional clues about the use of pottery in these contexts. The restricted variety of vessel forms, and lack of serving vessels like bowls and beakers, could be an indicator of communal food consumption or storage. The lack of additional vessel forms may indicate living situations in which households were nucleated along the riverbank, cooking in larger household groups. There are several situations that could also explain the lack of serving vessels or additional vessel forms. For example, inter-household work parties and certain rituals or celebrations in which food-consuming groups did not necessarily correspond to households might produce this effect (Shapiro 1984:707). Ceremonial use of the mounds at the site might generate large social gatherings that involved communal food consumption.

Given that the Northeast Mound and the 2011 contexts ceramic samples share a similar composition of vessel shapes and decoration, vessel size was studied to identify if differences in vessel size may be directly related to function. The greater volume of food

consumed by a large group will likely necessitate larger cooking and serving vessels than required by a smaller group of people (Blitz 1993:85). Vessels found in the Northeast Sub Mound and Fill exhibit a smaller range of sizes and includes the smallest vessels in any of the contexts. The Fill context vessels have a greater range in size and are over representative of the largest vessels while the smallest sizes are absent. Since the Wilcox Rank Sum tests indicated these results are significant, this suggests that there is a functional difference between the vessels from the Northeast Mound Base-Fill and in Test Unit 2, the Midden, and the Mound Top. Two hypotheses that can account for the differences between vessel orifice sizes among the context areas are outlined below.

The abundant sample of smaller sized vessels in the Northeast Sub Mound and Fill likely may be the result of immigrants bringing vessels to Aztalan. Traveling long distances may have precluded transporting larger vessels. The larger vessel sizes recovered from site contexts representing later periods in the Aztalan's development suggest the manufacture of these pots at or near Aztalan.

The analysis of vessel orifice percentage demonstrated that the Fill context sherds represent proportionately larger vessel fragments than those in the Northeast Mound Base-Fill. This may be attributed to the actions involved in discard. For instance, the vessels recovered from the Northeast Mound may have been subject to a number of post-depositional processes such as trampling (Skibo 1990:79) that may have reduced sherd size. The Test Unit 2 sherds, on the other hand, may have been large enough to be re-used as scoops, pot lids, or palettes (Hally 1998) before being discarded and redeposited in a sealed environment

Overall, the 2011 UWM Collection contexts at Aztalan seem to represent contexts of different use/function related areas. The practices associated with the transformation of the landscape and the construction of the Northeast Mound that produced these contexts are reflected in the differences observed in the contexts discussed in this study. Future research on the Aztalan ceramic assemblage should focus on analyzing the Northeast Mound ceramics from a use-alteration perspective in order to obtain additional information on cooking methods or cooking-related areas. In addition, the identification of additional clay resources, from the site of Aztalan and outside areas, would further aid in our understanding of how vessels were manufactured or transported to Aztalan. Finally, analyses of functional areas like houses, domestic compounds, and public or communal activity areas need to be conducted in order to determine ceramic use in contexts other than discard related deposition.

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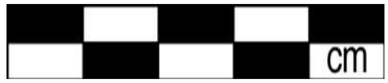
Appendix A: Vessel Plan and Profile Illustrations



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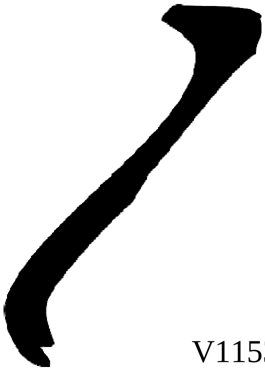

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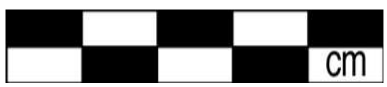

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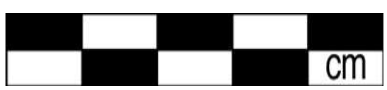
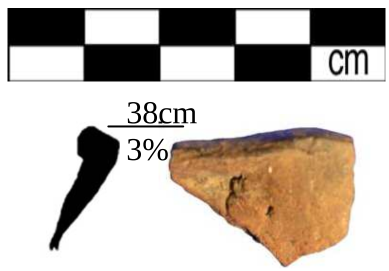


Exfoliated
interior
No profile

V1160

Collared
Fragment
No profile

V1161



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V1163

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V1164

Exfoliated
interior
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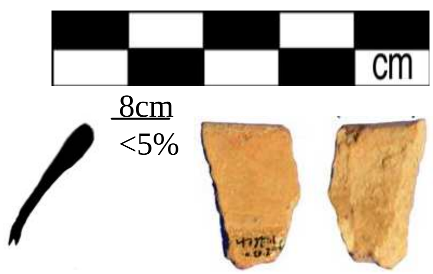
V1169



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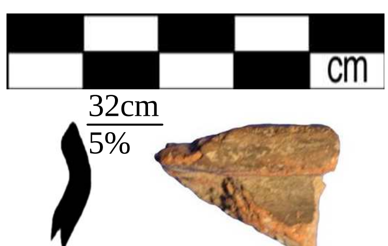
V1170



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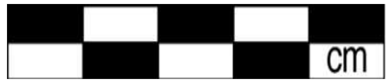
V1175



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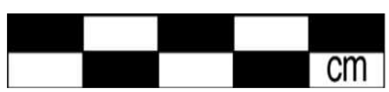
Interior
No profile

V1207

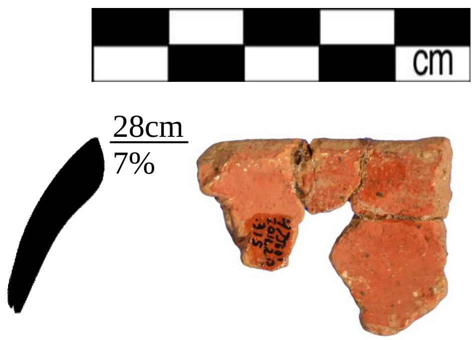
V1208



Exfoliated
interior
No profile

V1209

V1210



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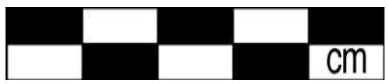
V1212

V1213



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interior
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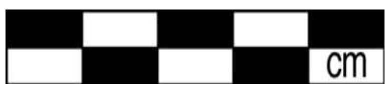
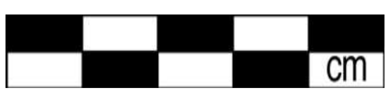


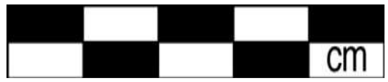
Exfoliated
interior
No profile

V1215



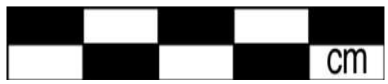
Exfoliated
interior
No profile

V1217



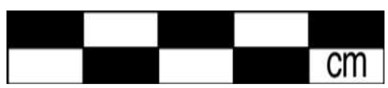
Exfoliated
interior
No profile

V1218



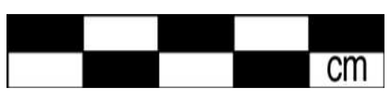
Fragment
No profile

V1219



Ind.
<5

V1220

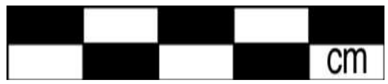


Fragment
No profile

V1221

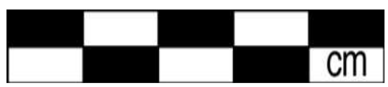
Fragment
No profile

V1222



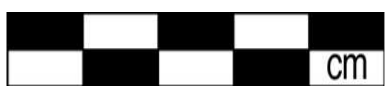
Fragment
No profile

V1223



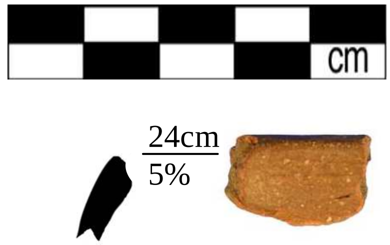
Fragment
No profile

V1225, V1226

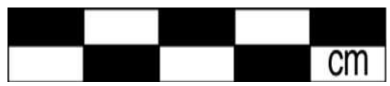


Exfoliated
interior
No profile

V1227



V1228,V1235



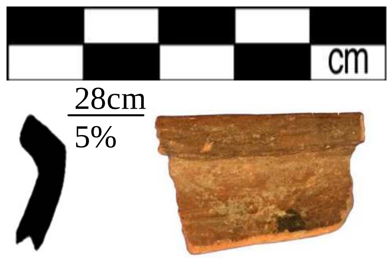
Fragment
No Profile

V1229

V1230, V1231, V1233, V1234, V1238, V1239

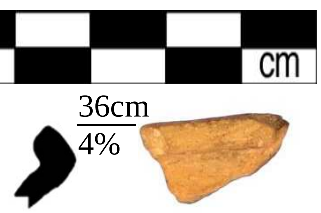
V1384

V1232



V1236

V1237



V1240

V1241

Fragment
No profile

V1242

Exfoliated
interior
No profile

V1243

Exfoliated
interior
No profile

V1244

Fragment
No Profile

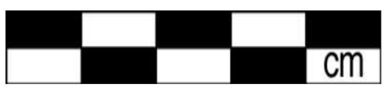
V1245

Exfoliated
interior
No profile

V1246

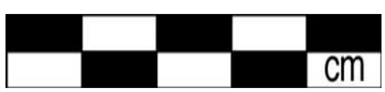
Fragment
No profile

V1247



Fragment
No profile

V1248



24cm
5%

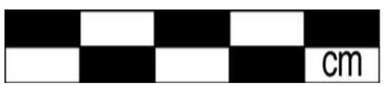
V1249

Fragment
No profile

V1250

Fragment
No profile

V1251



Fragment
No profile

V1252

Fragment
No profile

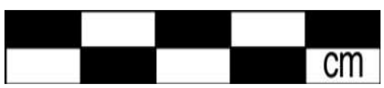
V1253

Exfoliated
interior
No profile

V1254

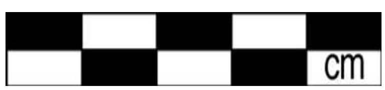
Fragment
No profile

V1255



Fragment
No profile

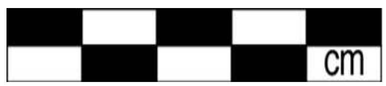
V1256



Fragment
No profile

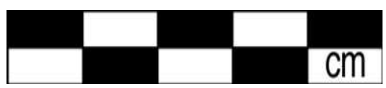
V1257, V1258

V1259



Fragment
No profile

V1260

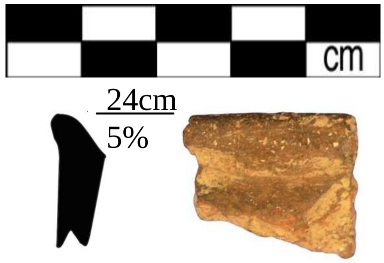


Exfoliated
interior
No profile

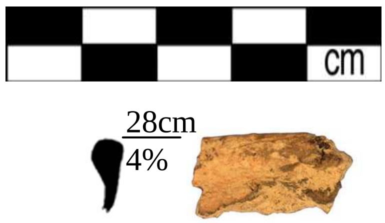
V1261

Fragment
No profile

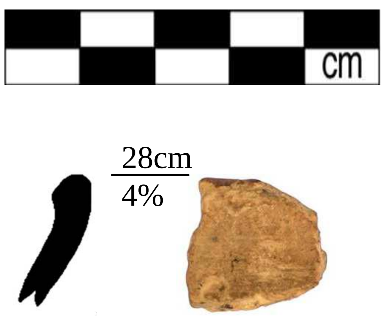
V1262



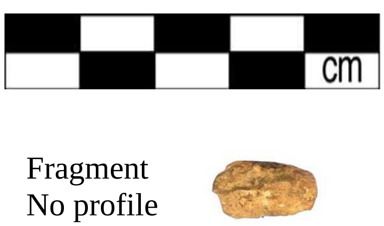
V1263



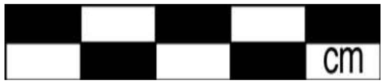
V1264



V1265



V1266



Fragment
No profile

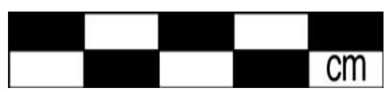
V1267

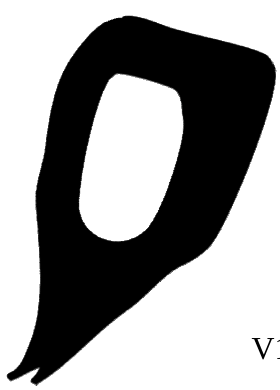
Fragment
No profile

V1268

Fragment
No profile

V1269





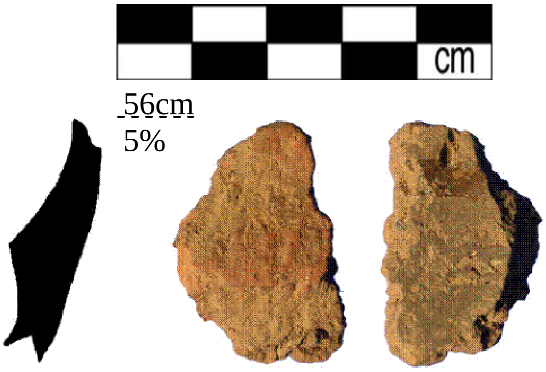
60cm
5%

V1270

V1271, V1280

V1272

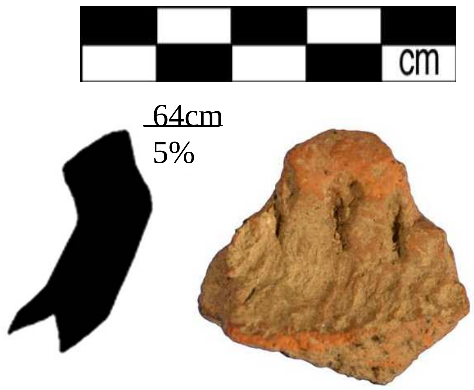
V1273



V1274

V1275

V1276



64cm
5%

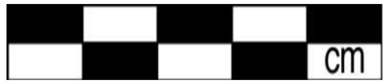
V1277

44cm
5%

V1278

Collared
Fragment
No profile

V1279

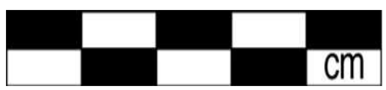


28cm
2%

V1281

Fragment
No profile

V1283



Collared
Fragment
No profile

V1284

16cm
6%

V1285

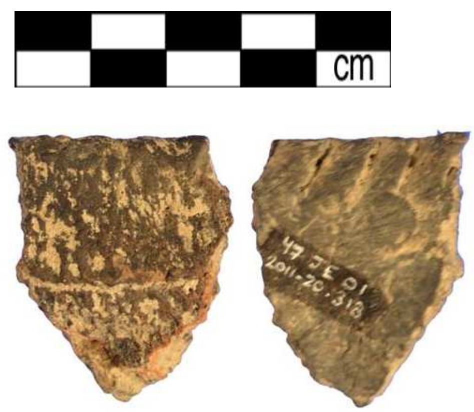
Exfoliated
interior
No profile

V1286

28cm
10%

V1287

48cm
4%

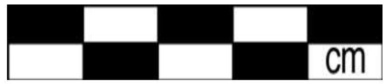


V1288

V1289

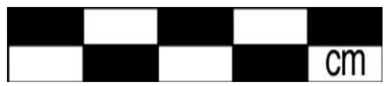
V1290

V1291



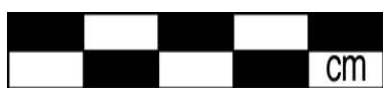
Fragment
No profile

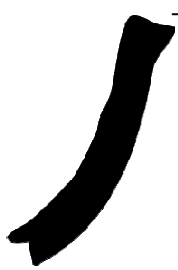
V1293



Fragment
No profile

V1294

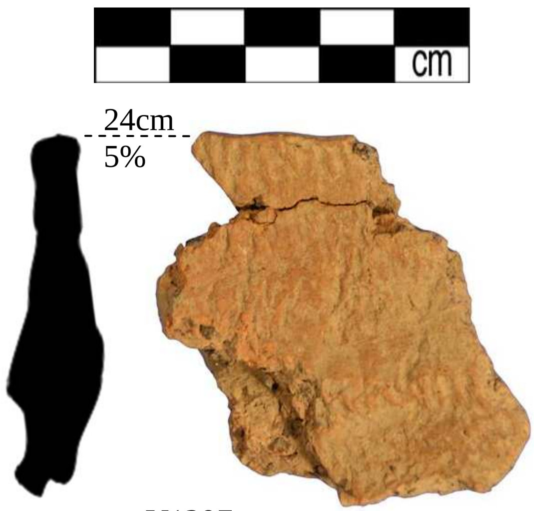




24cm
5%

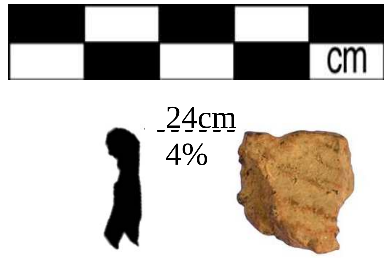
V1295

V1296



V1297

V1298, V1299

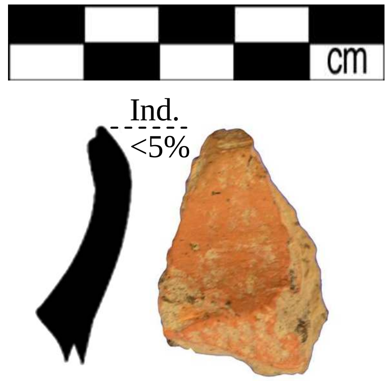


V1300

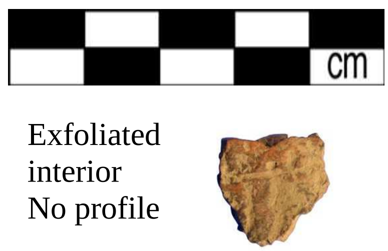
V1301

V1303

V1304

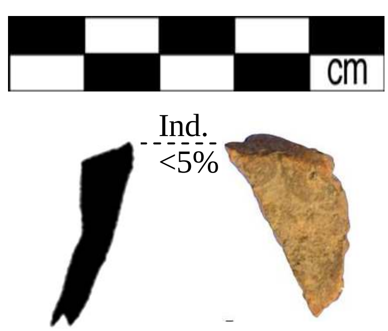


V1306



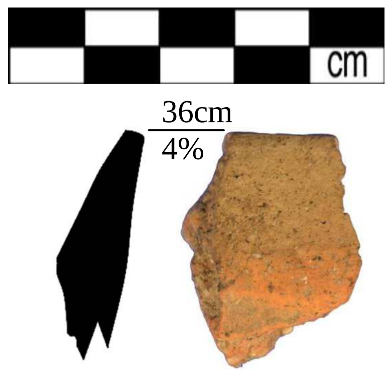
V1308

V1311

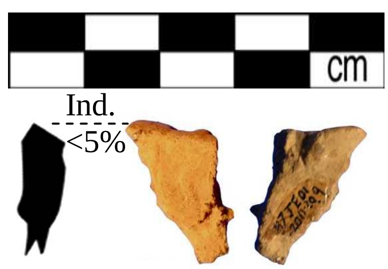


V1317

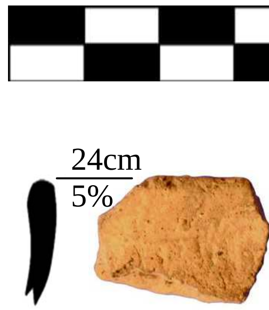
V1318



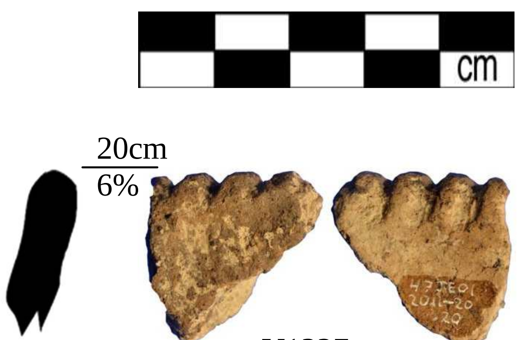
V1321



V1325

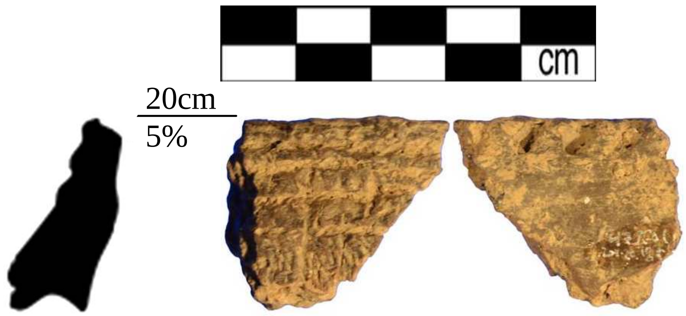


V1326

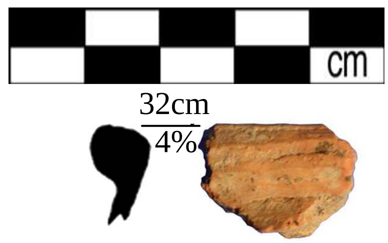


V1327

V1328



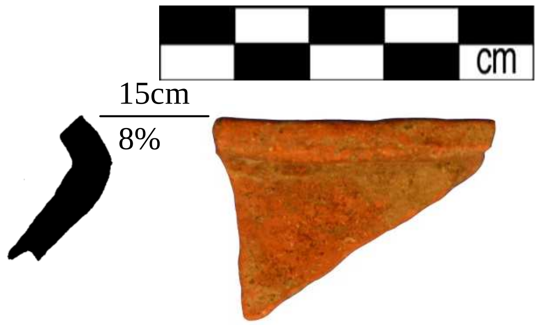
V1332



V1336

V1337

between peak



V1372

V1383

Appendix B: Ceramic Material Inventory

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory.

ID #	Collection	Vessel #	Lot Number	Test Unit	Stratum	Refits	Level	Depth	Feature	Temper	Ceramic Type
1172	UWM-ARL	1152	2011-20.0156	TU 2 West	4			72 cmbd		Shell	Powell Plain
1173	UWM-ARL	1153	2011-20.0020	TU 2	4			88-172 cmbd		Shell	Powell Plain
1176	UWM-ARL	1156	2011-20.0067	TU 6			3	40-50cmbd		Shell	Powell Plain
1179	UWM-ARL	1159	2011-20.0187	TU 9			2	35-45cmbd		Shell	Powell Plain
1180	UWM-ARL	1160	2011-20.0233	TU 9			3ZoneF	45-55cmbd		Shell	Powell Plain
1182	UWM-ARL	1162	2011-20.0233	TU 9			3ZoneF	45-55cmbd		Shell	Indeterminate
1183	UWM-ARL	1163	2011-20.0247	TU 9			3	55-57cmbd		Shell	Powell Plain
1184	UWM-ARL	1164	2011-20.0181	TU 9		1165	1	8-35cmbd		Shell	Powell Plain
1185	UWM-ARL	1165	2011-20.0181	TU 9		1164	1	8-35cmbd		Shell	Powell Plain
1186	UWM-ARL	1166	2011-20.0416	TU 10							
1189	UWM-ARL	1169	2011-20.0181	TU 9			1	8-39cmbd		Shell	Indeterminate
1190	UWM-ARL	1170	2011-20.0296	TU 9			47	73-80		Shell	Powell Plain
1192	UWM-ARL	1172	2011-20.0026	TU 3			3	35-50		Grit	Hyer Plain
1193	UWM-ARL	1173	2011-20.0026	TU 3			3			Shell	Powell Plain
1195	UWM-ARL	1175	2011-20.0253	TU 9			4 Zone A	57-80cmbd		Shell	Powell Plain
1199	UWM-ARL	1179	2011-20.0017	TU 3			1	0-20cmbd		Shell	Powell Plain
1201	UWM-ARL	1181	2011-20.002	TU 1			1	0-46cmbs		Shell	Powell Plain
1202	UWM-ARL	1182	2011-20.002	TU 1			1	0-46cmbd		Shell	Powell Plain
1207	UWM-ARL	1187	2011-20.0182	TU 2 West	14-12			50-135cmbd		Shell	Powell Plain
1208	UWM-ARL	1188	2011-20.0090	TU 2 West	3			67-84cmbd		Shell	Powell Plain
1209	UWM-ARL	1189	2011-20.0102	TU 2 West	4			43-96cmbd		Shell	Powell Plain
1210	UWM-ARL	1190	2011-20.0274	TU 2 West					3	Shell	Powell Plain
1211	UWM-ARL	1191	2011-20.0086	TU 2 West	2			16-67cmbd		Shell	Powell Plain
1212	UWM-ARL	1192	2011-20.0173	TU 2 West	5			50-128cmbd		Shell	Powell Plain

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

1213	UWM-ARL 1193	2011-20.0102	TU 2 West	4		43-96 cmbd	Shell	Powell Plain
1214	UWM-ARL 1194	2011-20.0203	TU 2 West	6		60-153cmbd	Shell	Powell Plain
1215	UWM-ARL 1195	2011-20.0173	TU 2 West	5		50-128cmbs	Shell	Cahokia Red-Filmed
1216	UWM-ARL 1196	2011-20.0102	TU 2 West	4		43-96cmbd	Grit	Hyer Plain
1217	UWM-ARL 1197	2011-20.0102	TU 2 West	4		43-96cmbd	Shell	Unknown
1218	UWM-ARL 1198	2011-20.0089	TU 2 West	2		45.5cmbd	Shell	Powell Plain
1219	UWM-ARL 1199	2011-20.0102	TU 2 West	4		43-96cmbd	Shell	Powell Plain
1220	UWM-ARL 1200	2011-20.0173	TU 2 West	5		50-128cmbd	Shell	Unknown
1221	UWM-ARL 1201	2011-20.0002	TU 1		1	0-46 cmbd	Shell	Unknown
1222	UWM-ARL 1202	2011-20.0086	TU 2 West	2		16-67cmbd	Shell	Powell Plain
1224	UWM-ARL 1204	2011-20.0102	TU 2 West	4		43-96cmbd	Shell	Unknown
1225	UWM-ARL 1205	2011-20.0102	TU 2 West	4		43-96cmbd	Shell	Unknown
1227	UWM-ARL 1207	2011-20.0315	TU 8		8	45-80cmbd	Shell	Indeterminate
1228	UWM-ARL 1208	2011-20.0315	TU 8		8	45-80cmbd	Shell	Powell Plain
1229	UWM-ARL 1209	2011-20.0315	TU 8		8	45-80cmbd	Shell	Indeterminate
1230	UWM-ARL 1210	2011-20.0308	TU 8	3		40-47cmbd	Shell	Indeterminate
1231	UWM-ARL 1211	2011-20.0315	TU 8		8	45-80cmbd	Shell	Cahokia Red-Filmed
1232	UWM-ARL 1212	2011-20.0315	TU 8		8	45-80cmbd	Shell	Powell Plain
1233	UWM-ARL 1213	2011-20.0318	TU 8				Shell	Powell Plain
1234	UWM-ARL 1214	2011-20.0318	TU 8				Shell	Indeterminate
1235	UWM-ARL 1215	2011-20.0318	TU 8				Shell	Indeterminate
1238	UWM-ARL 1218	2011-20.0287	TU 8	2		20-54cmbd	Shell	Indeterminate
1239	UWM-ARL 1219	2011-20.0287	TU 8	2		20-54cmbd	Shell	Indeterminate
1240	UWM-ARL 1220	2011-20.0318	TU 8			8	Shell	Indeterminate
1241	UWM-ARL 1221	2011-20.0315	TU 8		8	45-80 cmbd	Grit	Hyer Plain
1242	UWM-ARL 1222	2011-20.0315	TU 8		8	45-80 cmbd	Grit	Hyer Plain

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Collection	Vessel #	Lot Number	Test Unit	Stratum	Refits	Level	Depth	Feature	Temper	Ceramic Type
1243	UWM-ARL	1223	2011-20.0315	TU 8			8	45-80 cmbd		Shell	Indeterminate
1244	UWM-ARL	1224	2011-20.0315	TU 8			8	45-80 cmbd		Grit	Hyer Plain
1245	UWM-ARL	1225	2011-20.0287	TU 8	2	1226		20-54 cmbd		Shell	Indeterminate
1246	UWM-ARL	1226	2011-20.0287	TU 8	2	1225		20-54 cmbd		Shell	Indeterminate
1247	UWM-ARL	1227	2011-20.0287	TU 8	2			20-54 cmbd		Shell	Powell Plain
1248	UWM-ARL	1228	2011-20.0318	TU 8		1235			8	Shell	Powell Plain
1249	UWM-ARL	1229	2011-20.0318	TU 8					8	Shell	Indeterminate
1250	UWM-ARL	1230	2011-20.0318	TU 8		1231, 1234, 1238, 1239			8	Shell	Powell Plain
1251	UWM-ARL	1231	2011-20.0318	TU 8		1230, 1234, 1238, 1239			8	Shell	Powell Plain
1252	UWM-ARL	1232	2011-20.0318	TU 8					8	Shell	Powell Plain
1253	UWM-ARL	1233	2011-20.0318	TU 8					8	Shell	Powell Plain
1254	UWM-ARL	1234	2011-20.0318	TU 8		1230, v1231, 1238, 1239			8	Shell	Powell Plain
1255	UWM-ARL	1235	2011-20.0318	TU 8		1228			8	Shell	Powell Plain
1256	UWM-ARL	1236	2011-20.0318	TU 8					8	Shell	Powell Plain
1257	UWM-ARL	1237	2011-20.0318	TU 8					8	Shell	Powell Plain
1258	UWM-ARL	1238	2011-20.0318	TU 8		1230, 1231, 1234, 1239			8	Shell	Powell Plain
1259	UWM-ARL	1239	2011-20.0318	TU 8		1230, 1231, 1234, 1238			8	Shell	Powell Plain
1260	UWM-ARL	1240	2011-20.0259	TU 2			6	215-251 cmbd		Shell	Indeterminate
1261	UWM-ARL	1241	2011-20.0035	TU 4			2	35-45 cmbd		Shell	Powell Plain
1262	UWM-ARL	1242	2011-20.0030	TU 4			1	0-35 cmbd		Shell	Indeterminate
1263	UWM-ARL	1243	2011-20.0122	TU 4			7	80-85 cmbd		Shell	Indeterminate
1264	UWM-ARL	1244	2011-20.0051	TU 4			4 ZoneA	55-65 cmbd		Shell	Ramey Incised
1265	UWM-ARL	1245	2011-20.0030	TU 4			1	0-35 cmbd		Shell	Indeterminate
1266	UWM-ARL	1246	2011-20.0044	TU 4			3	45-55 cmbd		Shell	Powell Plain
1267	UWM-ARL	1247	2011-20.0074	TU 4			5	65-70 cmbd		Grit	Hyer Plain
1268	UWM-ARL	1248	2011-20.0058	TU 4			4 Zone C	55-65cmbd		Shell	Powell Plain

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Collection	Vessel #	Lot Number	Test Unit	Stratum	Refits	Level	Depth	Feature	Temper	Ceramic Type
1269	UWM-ARL	1249	2011-20.0074	TU 4			5	65-70 cmbd		Shell	Powell Plain
1270	UWM-ARL	1250	2011-20.0030	TU 4			1	0-25 cmbd		Shell	Indeterminate
1271	UWM-ARL	1251	2011-20.0051	TU 4			4 Zone A	55-65 cmbd		Shell	Indeterminate
1272	UWM-ARL	1252	2011-20.0051	TU 4			4 Zone A	55-65 cmbd		Shell	Indeterminate
1273	UWM-ARL	1253	2011-20.0077	TU 4			6 Zone A	70-80 cmbd		Shell	Indeterminate
1274	UWM-ARL	1254	2011-20.0077	TU 4			6 Zone A	70-80 cmbd		Shell	Powell Plain
1275	UWM-ARL	1255	2011-20.0064	TU 4			4 Zone E	55-65 cmbd		Grit	Indeterminate
1276	UWM-ARL	1256	2011-20.0064	TU 4			4 Zone E	55-65 cmbd		Shell	Indeterminate
1277	UWM-ARL	1257	2011-20.0030	TU 4		1258	1	0-35 cmbd		Shell	Indeterminate
1278	UWM-ARL	1258	2011-20.0030	TU 4		1257	1	0-35 cmbd		Shell	Indeterminate
1279	UWM-ARL	1259	2011-20.0030	TU 4			1	0-35 cmbd		Shell	Ramey Incised
1280	UWM-ARL	1260	2011-20.0009	TU 2			1	0-50 cmbs		Shell	Indeterminate
1281	UWM-ARL	1261	2011-20.0009	TU 2			1	0-50 cmbs		Shell	Powell Plain
1282	UWM-ARL	1262	2011-20.0019	TU 2	3			62-168 cmbd		Shell	Ramey Incised
1283	UWM-ARL	1263	2011-20.0019	TU 2	3			62-168 cmbd		Shell	Indeterminate
1284	UWM-ARL	1264	2011-20.0019	TU 2	3			62-168 cmbd		Grit	Hyer Plain
1285	UWM-ARL	1265	2011-20.0036	TU 2	8			62-168 cmbd		Grit	Hyer Plain
1286	UWM-ARL	1266	2011-20.0029	TU 2	6			8-177		Grit	Indeterminate
1287	UWM-ARL	1267	2011-20.0006	TU 2			1	0-50 cmbs		Shell	Indeterminate
1288	UWM-ARL	1268	2011-20.0028	TU 2	5					Shell	Indeterminate
1289	UWM-ARL	1269	2011-20.0008	TU 2			1	0-42 cmbs		Shell	Indeterminate

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Collection	Vessel #	Lot Number	Test Unit	Stratum	Refits	Level	Depth	Feature	Temper	Ceramic Type
1290	UWM-ARL	1270	2011-20.0046	TU 2						Shell	Powell Plain
1303	UWM-ARL	1283	2011-20.0064	TU 4			4 Zone E	55-65 cmbd		Shell	Indeterminate
1314	UWM-ARL	1294	2011-20.0009	TU 2			1	0-50 cmgs		Grit	Indeterminate
1331	UWM-ARL	1311	2011-20.0250	TU 9			4B			Grit	Hyer Plain
1339	UWM-ARL	1319	2011-20.0003	TU 1			1	0-46cmbs		Grit	Indeterminate
1355	UWM-ARL	1335	2011-20.0182	TU 2 West	14-12					Grit	Unknown
1356	UWM-ARL	1336	2011-20.0029	TU 2	6			89-177 cmbd		Grit	Hyer Plain

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Context/Assoc	V-Form	Rim-Form	Neck-Form	Shoulder-Form	Lip-Treatment	Exterior-Finish	Use-Alteration
1172		Jar	Everted-simple	Straight	n/a	Rounded	Black Smudged	
1173		Jar	Everted-extruded	Flared	Angled	Pinched	Plain	Carbonization_Bott
1176		Jar	Everted-simple	Flared	n/a	Flattened	Plain	
1179		Jar	Direct-unmodified	Flared	Indeterminate	Flattened	Plain	
1180		Jar	Everted-simple	Indeterminate	Angled	Flattened	Plain	
1182		Jar	Everted-folded_Type1	Straight	Indeterminate	Rounded	Plain	
1183	floor and wall scrape	Jar	Everted-simple	Straight	Angled	Rounded	Plain	
1184		Jar	Everted-simple	Straight	Indeterminate	Flattened	Brown Slipped	
1185		Jar	Everted-Folded	Straight	Indeterminate	Flattened	Brown Slipped	
1186		Jar	Everted-extruded	Flared	Indeterminate	Pinched	Black smudge/slip	
1189		Jar	Everted-extruded	Indeterminate	Indeterminate	Rounded	Plain	
1190		Seed Jar	Direct-unmodified	Straight	Indeterminate	Unmodified	Plain	
1192	possible barrett back dirt	Jar	Everted-simple	Indeterminate	n/a	Rounded	Plain	
1193	possible barrett back dirt	Jar	Direct-unmodified	Flared	n/a	Unmodified	Plain	
1195		Jar	Everted-simple	Straight	Indeterminate	Flattened	Black Slip	
1199		Jar	Everted-simple	Indeterminate	n/a	Flattened	Plain	
1201		Jar	Everted-simple	Straight	n/a	Rounded	Black Smudged	
1202		Jar	Everted-simple	Straight	n/a	Rounded	Plain	
1207		Jar	Everted-folded: Type 1	Straight	n/a	Rounded	Black Slip	
1208		Jar	Everted-simple	Straight	n/a	Rounded	Brown Slipped	

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Context/Assoc	V-Form	Rim-Form	Neck-Form	Shoulder-Form	Lip-Treatment	Exterior-Finish	Use-Alteration
1209		Jar	Everted-simple	Indeterminate	n/a	Flattened	Plain	
1210	post mold B flot heavy fraction	Jar	Everted-simple	Flared	n/a	Rounded	Plain	
1211		Seed Jar	Direct-unmodified	Straight	n/a	Unmodified	Red Rim, Tan Slipped	
1212		Jar	Everted-extruded	Indeterminate	n/a	Pinched	Plain	
1213		Jar	Everted-simple	Straight	n/a	Flattened	Plain	
1214		Jar	Everted-folded: Type 3	Flared	n/a	Flattened	Plain	
1215		Seed Jar	Direct-unmodified	Flared	n/a	Unmodified	Red-slipped	
1216		Jar	Everted-extruded	Straight	n/a	Pinched	Plain	
1217		Jar	Direct-unmodified	Indeterminate	n/a	Unmodified	Plain	
1218	12cmE of SW nail 67cmN of SW nail	Jar	Everted-folded: Type 3	Straight	n/a	Rounded	Plain	
1219		Jar	Direct-unmodified	Straight	n/a	Rounded	Black Slip	
1220		Unknown	Indeterminate	Indeterminate	n/a	indeterminate	Plain	
1221		Jar	Direct-unmodified	Indeterminate	n/a	Unmodified	Polished	
1222		Jar	Everted-simple	Indeterminate	n/a	Flattened	Black Slip	
1224		Unknown		Indeterminate	n/a	indeterminate	Plain	
1225		Jar	Direct-unmodified	Straight	n/a	Unmodified	Black Smudge	
1227		Unknown	Direct-unmodified	Inslanted	Indeterminate	Unmodified	Plain	
1228		Jar	Everted-simple	Flared	Indeterminate	Rounded	Plain	
1229		Jar	Everted-simple	Indeterminate	Indeterminate	Flattened	Plain	
1230		Jar	Everted-extruded	Straight	Indeterminate	Pinched	Plain	Carbonization exterior rim
1231		Seed Jar	Direct-unmodified	Flared	Indeterminate	Unmodified	Red-slipped	

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Context/Assoc	V-Form	Rim-Form	Neck-Form	Shoulder-Form	Lip-Treatment	Exterior-Finish	Use-Alteration
1232		Jar	Everted-simple	Straight	Indeterminate	Rounded	Plain	FireClouds
1233	Heavy Fraction	Seed Jar	Direct-unmodifi	Flared	Indeterminate	Unmodified	Plain	
1234	Heavy Fraction	Jar	Direct-unmodifi	Straight	Indeterminate	Unmodified	Exfoliated	
1235	Heavy Fraction	Jar	Unknown	Indeterminat	Indeterminate	Indeterminate	Plain	FireClouds
1238		Jar	Everted-Folded	Indeterminat	Indeterminate	Rounded	Black Smudge	
1239		Jar	Everted-extrude	Straight	Indeterminate	Pinched	Plain	
1240	Heavy Fraction	Jar	Direct-unmodifi	Straight	Indeterminate	Unmodified	Plain	
1241		Jar	Direct-unmodifi	Flared	Indeterminate	Unmodified	Exfoliated	
1242		Jar	Direct-unmodifi	Straight	Indeterminate	Unmodified	Plain	
1243		Jar	Direct-unmodifi	Indeterminat	Indeterminate	Rounded	Plain	
1244		Jar	Everted-extrude	Indeterminat	Indeterminate	Pinched	Plain	
1245		Jar	Direct-unmodifi	Straight	Indeterminate	Unmodified	Plain	
1246		Jar	Direct-unmodifi	Straight	Indeterminate	Unmodified	Plain	
1247		Jar	Everted-simple	Flared	Indeterminate	Rounded	Exfoliated	FireClouds
1248	Heavy Fraction	Seed Jar	Direct-unmodifi	n/a	Indeterminate	Unmodified	Plain	
1249	Heavy Fraction	Jar	Everted-simple	Straight	Indeterminate	Rounded	Plain	
1250	Heavy Fraction	Jar	Everted-simple	Straight	Indeterminate	Rounded	Plain	
1251	Heavy Fraction	Jar	Everted-simple	Indeterminat	Indeterminate	Rounded	Plain	
1252	Heavy Fraction	Seed Jar	Direct-unmodifi	Indeterminat	Indeterminate	Rounded	Brown Slipped	FireClouds
1253	Heavy Fraction	Jar	Everted-simple	Indeterminat	Indeterminate	Rounded	Plain	
1254	Heavy Fraction	Jar	Everted-simple	Straight	Indeterminate	Rounded	Plain	
1255	Heavy Fraction	Seed Jar	Direct-unmodifi	n/a	Indeterminate	Unmodified	Plain	

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Context/Assoc	V-Form	Rim-Form	Neck-Form	Shoulder-Form	Lip-Treatment	Exterior-Finish	Use-Alteratio
1256	Heavy Fraction flot	Jar	Everted-simple	Flared	Indeterminate	Rounded	Tan Slipped	
1257	Heavy Fraction flot	Seed Jar	Direct-unmodified	Flared	Indeterminate	Unmodified	Plain	
1258	Heavy Fraction flot	Jar	Everted-simple	Indeterminate	Indeterminate	Rounded	Plain	
1259	Heavy Fraction flot	Jar	Everted-simple	Straight	Indeterminate	Rounded	Plain	
1260		Jar	Everted-simple	Indeterminate	Indeterminate	Rounded	Plain	
1261		Jar	Everted-simple	Indeterminate	Indeterminate	Rounded	Black Smudge/slip	
1262		Jar	Direct-unmodified	Indeterminate	Indeterminate	Rounded	Plain	
1263		Jar	Everted-extruded	Indeterminate	Indeterminate	Pinched	Plain	FireClouds
1264		Jar	Everted-folded_Type1	Indeterminate	Indeterminate	Rounded	Plain	
1265		Jar	Unknown	Indeterminate	Indeterminate	Indeterminate	Plain	
1266		Jar	Direct-unmodified	Indeterminate	Indeterminate	Unmodified	Plain	
1267		Jar	Everted-extruded	Straight	Indeterminate	Pinched	Plain	
1268		Jar	Everted-folded_Type1	Flared	Indeterminate	Folded	Plain	
1269		Jar	Everted-simple	Straight	Indeterminate	Rounded	Plain	
1270		Jar	Everted-simple	Indeterminate	Indeterminate	Rounded	Plain	
1271		Jar	Everted-folded_Type1	Flared	Indeterminate	Rounded	Plain	
1272		Jar	Everted-extruded	Indeterminate	Indeterminate	Unmodified	Plain	
1273		Jar	Everted-curled	Indeterminate	Indeterminate	Rounded	Plain	
1274		Jar	Direct-unmodified	Indeterminate	Indeterminate	Rounded	Plain	
1275		Jar	Everted-folded_Type3	Indeterminate	Indeterminate	Rounded	Plain	
1276		Jar	Everted-simple	Indeterminate	Indeterminate	Rounded	Plain	

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Context/Assoc	V-Form	Rim-Form	Neck-Form	Shoulder-Form	Lip-Treatment	Exterior-Finish	Use-Alteration
1277		Jar	Direct-unmodified	Straight	Indeterminate	Unmodified	Plain	
1278		Jar	Direct-unmodified	Straight	Indeterminate	Unmodified	Plain	
1279		Jar	Direct-unmodified	Flared	Indeterminate	Unmodified	Plain	
1280		Jar	Everted-simple	Indeterminate	Indeterminate	Rounded	Plain	
1281		Jar	Direct-unmodified	Indeterminate	Indeterminate	Rounded	Black Smudge	
1282		Jar	Everted-simple	Straight	Indeterminate	Rounded	Plain	
1283		Jar	Everted-simple	Straight	Indeterminate	Rounded	Plain	
1284		Jar	Everted-extruded	Straight	Indeterminate	Pinched	Plain	
1285		Jar	Direct-unmodified	Indeterminate	Indeterminate	Rounded	Plain	
1286		Jar	Unknown	Indeterminate	Indeterminate	Indeterminate	Plain	
1287		Jar	Direct-unmodified	Indeterminate	Indeterminate	Rounded	Plain	
1288		Jar	Direct-unmodified	Straight	Indeterminate	Unmodified	Black Smudge/slip	
1289		Jar	Everted-simple	Indeterminate	Indeterminate	Rounded	Plain	
1290		Jar	Everted-simple	Inslanted	Angled	Rounded	Plain	
1303	Piece Plot	Jar	Everted-extruded	Indeterminate	Indeterminate	Pinched	Plain	
1314		Jar	Everted-folded_Type5	Indeterminate	Indeterminate	Rounded	Plain	
1331		Jar	Rolled	Indeterminate	Indeterminate	Rounded	Plain	
1339		Jar	Direct-unmodified	Indeterminate	Indeterminate	Pinched	Black Smudge	
1355		Jar	Everted-extruded	Indeterminate	n/a	Unmodified	Plain	
1356		Jar	Rolled	Indeterminate	Indeterminate	Rounded	Plain	

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Munsell-Ext-Dark	Munsell-Ext-Light	Munsell-Int-Dark	Munsell-Int-Light
1172	5YR 4/2 (dark reddish grey)	5YR 6/4 (light reddish brown)	5YR 5/1 (grey)	5YR 5/1 (grey)
1173	5YR5/1(grey)	5YR5/3(reddishbrown)	5YR6/4(lightreddishbrown)	5YR6/4(lightreddishbrown)
1176	10YR 4/1 (dark gray)	10YR 7/4 (very pale brown)	10YR 7/4 (very pale brown)	10YR 7/4 (very pale brown)
1179	5YR4/2(darkreddishgrey)	5YR4/2(darkreddishgrey)	5YR5/2(reddishgrey)	5YR5/2(reddishgrey)
1180	10YR2/1(black)	10YR3/4(darkyellowishbrown)	10YR3/1(verydarkgray)	10YR3/1(verydarkgray)
1182	5YR2.5/1(black)	5YR5/6(yellowishred)	5YR5/4(reddishbrown)	5YR5/4(reddishbrown)
1183	5YR3/1(verydarkgrey)	5YR5/6(yellowishred)	5YR4/1(darkgrey)	5YR6/8(reddishyellow)
1184	5YR3/2(darkreddishbrown)	5YR4/6(yellowishred)	5YR3/1(verydarkgrey)	5YR4/6(yellowishred)
1185	5YR3/3(darkreddishbrown)	5YR3/3(darkreddishbrown)	5YR3/3(darkreddishbrown)	5YR3/3(darkreddishbrown)
1189	10YR5/3(brown)	10YR5/3(brown)	10YR5/3(brown)	10YR5/3(brown)
1190	10YR7/4(verypalebrown)	10YR7/4(verypalebrown)	10YR6/4(lightyellowishbrown)	10YR6/4(lightyellowishbrown)
1192	10YR 7/3 (very pale brown)	10YR 7/3 (very pale brown)	10YR 7/3 (very pale brown)	10YR 7/3 (very pale brown)
1193	5YR 3/1 (very dark grey)	5YR 5/6 (yellowish red)	5YR 4/1 (dark grey)	5YR 5/6 (yellowish red)
1195	5YR2.5/1(black)	5YR5/8(yellowishred)	5YR2.5/1(black)	5YR2.5/1(black)
1199	10YR 2/1 (black)	10YR 5/2 (grayish brown)	10YR 4/3 (dark brown–brown)	10YR 4/3 (dark brown–brown)
1201	5YR 2.5/1 (black)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)
1202	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)
1207	5YR 2.5/1 (black)	5YR 2.5/1 (black)	5YR 2.5/1 (black)	5YR 2.5/1 (black)
1208	5YR 2.5/1 (black)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)
1209	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)
1210	5YR 3/1 (very dark grey)	5YR 3/1 (very dark grey)	5YR 4/6 (yellowish red)	5YR 4/6 (yellowish red)

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Munsell-Ext-Dark	Munsell-Ext-Light	Munsell-Int-Dark	Munsell-Int-Light
1211	10R 4/1 (Dark reddish grey)	10R 4/8 (Red)	5YR 7/8 (reddish yellow)	5YR 7/8 (reddish yellow)
1212	5YR 4/3 (reddish brown)	5YR 4/3 (reddish brown)	5YR 4/2 (dark reddish grey)	5YR 4/2 (dark reddish grey)
1213	5YR 2.5/1 (black)	5YR 5/4 (reddish brown)	5YR 2.5/1 (black)	5YR 2.5/1 (black)
1214	5YR 6/6 (reddish yellow)	5YR 6/6 (reddish yellow)	5YR 5/3 (reddish brown)	5YR 5/3 (reddish brown)
1215	10R 4/4 (Weak red)	10R 4/4 (Weak red)	Not applicable	Not applicable
1216	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)
1217	5YR 5/4 (reddish brown)	5YR 5/4 (reddish brown)	5YR 3/1 (very dark grey)	5YR 3/1 (very dark grey)
1218	10YR 2/1 (black)	10YR 2/1 (black)	10YR 5/4 (yellowish brown)	10YR 5/4 (yellowish brown)
1219	10YR 2/1 (black)	10YR 2/1 (black)	10YR 2/1 (black)	10YR 2/1 (black)
1220	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)	5YR 5/6 (yellowish red)
1221	10YR 2/1 (black)	10YR 2/1 (black)	10YR 3/1 (very dark gray)	10YR 3/1 (very dark gray)
1222	10YR 2/1 (black)	10YR 2/1 (black)	10YR 2/1 (black)	10YR 2/1 (black)
1224	2.5YR 5/8 (Red)	2.5YR 5/8 (Red)	2.5YR 5/8 (Red)	2.5YR 5/8 (Red)
1225	5YR 2.5/1 (black)	5YR 4/6 (yellowish red)	5YR 4/4 (reddish brown)	5YR 4/4 (reddish brown)
1227	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/6(yellowishred)
1228	5YR4/3(reddishbrown)	5YR4/6(yellowishred)	5YR4/3(reddishbrown)	5YR4/4(reddishbrown)
1229	5YR2.5/1(black)	5YR2.5/1(black)	5YR2.5/1(black)	5YR2.5/1(black)
1230	5YR2.5/1(black)	5YR2.5/1(black)	5YR4/3(reddishbrown)	5YR4/3(reddishbrown)
1231	Notapplicable	Notapplicable	10R4/4(Weakred)	10R4/4(Weakred)
1232	5YR2.5/1(black)	5YR5/6(yellowishred)	5YR2.5/1(black)	5YR5/6(yellowishred)
1233	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/2(reddishgrey)	5YR5/2(reddishgrey)

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Munsell-Ext-Dark	Munsell-Ext-Light	Munsell-Int-Dark	Munsell-Int-Light
1234	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)	5YR3/2(darkreddishbrown)	5YR3/2(darkreddishbrown)
1235	5YR2.5/1(black)	5YR4/2(darkreddishgrey)	Notapplicable	Notapplicable
1238	5YR3/2(darkreddishbrown)	5YR3/2(darkreddishbrown)	5YR5/6(yellowishred)	5YR5/6(yellowishred)
1239	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)
1240	10YR3/4(darkyellowishbrown)	10YR3/4(darkyellowishbrown)	10YR2/1(black)	10YR7/2(lightgray)
1241	5YR4/1(darkgrey)	5YR5/6(yellowishred)	5YR4/1(darkgrey)	5YR4/1(darkgrey)
1242	10YR2/1(black)	10YR7/3(verypalebrown)	10YR2/1(black)	10YR7/3(verypalebrown)
1243	10YR5/2(grayishbrown)	10YR6/3(palebrown)	10YR5/2(grayishbrown)	10YR6/3(palebrown)
1244	5YR3/1(verydarkgrey)	5YR4/6(yellowishred)	5YR3/1(verydarkgrey)	5YR2.5/1(black)
1245	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/6(yellowishred)
1246	5YR3/2(darkreddishbrown)	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/6(yellowishred)
1247	5YR5/2(reddishgrey)	5YR5/6(yellowishred)	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)
1248	5YR2.5/1(black)	5YR4/6(yellowishred)	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)
1249	7.5YR6/6(reddishyellow)	7.5YR6/6(reddishyellow)	5YR6/6(reddishyellow)	5YR6/6(reddishyellow)
1250	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/6(yellowishred)
1251	2.5YR5/6(Red)	2.5YR5/6(Red)	2.5YR5/6(Red)	2.5YR5/6(Red)
1252	10YR2/1(black)	10YR3/1(verydarkgray)	10YR2/1(black)	10YR3/3(darkbrown)
1253	5YR5/4(reddishbrown)	5YR5/6(yellowishred)	5YR6/6(reddishyellow)	5YR6/6(reddishyellow)
1254	2.5YR5/6(Red)	2.5YR5/6(Red)	2.5YR6/8(Lightred)	2.5YR6/8(Lightred)

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Munsell-Ext-Dark	Munsell-Ext-Light	Munsell-Int-Dark	Munsell-Int-Light
1255	5YR3/2(darkreddishbrown)	5YR5/6(yellowishred)	Notapplicable	Notapplicable
1256	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)	5YR5/6(yellowishred)	5YR5/6(yellowishred)
1257	5YR3/1(verydarkgrey)	5YR4/3(reddishbrown)	5YR4/2(darkreddishgrey)	5YR4/2(darkreddishgrey)
1258	2.5YR5/6(Red)	2.5YR5/6(Red)	2.5YR5/6(Red)	2.5YR5/6(Red)
1259	2.5YR5/4(Reddishbrown)	2.5YR5/4(Reddishbrown)	2.5YR5/4(Reddishbrown)	2.5YR5/4(Reddishbrown)
1260	10YR6/4(lightyellowishbrown)	10YR6/3(palebrown)	10YR5/1(gray)	10YR5/1(gray)
1261	5YR6/6(reddishyellow)	5YR6/6(reddishyellow)	5YR4/3(reddishbrown)	5YR4/3(reddishbrown)
1262	5YR5/4(reddishbrown)	5YR5/4(reddishbrown)	5YR5/4(reddishbrown)	5YR5/4(reddishbrown)
1263	2.5YR4/4(Reddishbrown)	2.5YR4/6(Red)	Notapplicable	Notapplicable
1264	10YR5/3(brown)	10YR5/3(brown)	Notapplicable	Notapplicable
1265	10YR3/1(verydarkgray)	10YR3/1(verydarkgray)	Notapplicable	Notapplicable
1266	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/6(yellowishred)
1267	5YR4/2(darkreddishgrey)	5YR5/6(yellowishred)	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)
1268	10YR3/1(verydarkgray)	10YR3/1(verydarkgray)	10YR2/1(black)	10YR2/1(black)
1269	10YR6/4(lightyellowishbrown)	10YR6/4(lightyellowishbrown)	10YR6/4(lightyellowishbrown)	10YR6/4(lightyellowishbrown)
1270	10YR6/4(lightyellowishbrown)	10YR6/4(lightyellowishbrown)	10YR3/1(verydarkgray)	10YR6/4(lightyellowishbrown)
1271	10YR3/1(verydarkgray)	10YR3/1(verydarkgray)	10YR3/1(verydarkgray)	10YR3/1(verydarkgray)
1272	5YR6/6(reddishyellow)	5YR6/6(reddishyellow)	10YR6/4(lightyellowishbrown)	10YR6/4(lightyellowishbrown)
1273	10YR5/4(yellowishbrown)	10YR5/4(yellowishbrown)	Notapplicable	Notapplicable
1274	5YR5/1(grey)	5YR5/6(yellowishred)	Notapplicable	Notapplicable

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Munsell-Ext-Dark	Munsell-Ext-Light	Munsell-Int-Dark	Munsell-Int-Light
1275	5YR4/6(yellowishred)	5YR5/6(yellowishred)	5YR5/4(reddishbrown)	5YR5/4(reddishbrown)
1276	5YR6/8(reddishyellow)	5YR6/8(reddishyellow)	Notapplicable	Notapplicable
1277	5YR3/1(verydarkgrey)	5YR5/6(yellowishred)	5YR3/1(verydarkgrey)	5YR5/6(yellowishred)
1278	5YR3/2(darkreddishbrown)	5YR5/6(yellowishred)	5YR3/2(darkreddishbrown)	5YR5/6(yellowishred)
1279	5YR3/1(verydarkgrey)	5YR5/6(yellowishred)	5YR3/1(verydarkgrey)	5YR4/2(darkreddishgrey)
1280	5YR2.5/1(black)	5YR3/2(darkreddishbrown)	5YR2.5/1(black)	5YR2.5/1(black)
1281	10YR2/1(black)	10YR4/1(darkgray)	10YR2/1(black)	10YR2/1(black)
1282	10YR3/2(verydarkgrayishbrown)	10YR3/2(verydarkgrayishbrown)	10YR2/1(black)	10YR2/1(black)
1283	10YR3/1(verydarkgray)	10YR3/3(darkbrown)	10YR2/1(black)	10YR2/1(black)
1284	5YR2.5/1(black)	5YR5/6(yellowishred)	7.5YR2/0(black)	7.5YR4/0(darkgrey)
1285	10YR4/1(darkgray)	10YR4/1(darkgray)	10YR5/4(yellowishbrown)	10YR5/4(yellowishbrown)
1286	10YR2/1(black)	10YR3/1(verydarkgray)	10YR2/1(black)	10YR2/1(black)
1287	5YR4/2(darkreddishgrey)	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/6(yellowishred)
1288	5YR2.5/1(black)	5YR4/3(reddishbrown)	5YR2.5/1(black)	5YR4/3(reddishbrown)
1289	10YR6/4(lightyellowishbrown)	10YR6/4(lightyellowishbrown)	10YR6/4(lightyellowishbrown)	10YR2/2(verydarkbrown)
1290	10YR2/1(black)	10YR4/1(darkgray)	10YR4/1(darkgray)	10YR4/1(darkgray)
1303	5YR2.5/1(black)	5YR2.5/1(black)	5YR5/6(yellowishred)	5YR5/6(yellowishred)
1314	5YR5/4(reddishbrown)	5YR5/6(yellowishred)	5YR5/6(yellowishred)	5YR5/6(yellowishred)
1331	10YR6/3(palebrown)	10YR6/3(palebrown)	10YR2/1(black)	10YR6/3(palebrown)
1339	5YR 3/1 (very dark grey)	5YR 3/3 (dark reddish brown)	5YR 3/1 (very dark grey)	5YR 3/1 (very dark grey)
1355	10YR 3/1 (very dark gray)	10YR 6/3 (pale brown)	10YR 3/1 (very dark gray)	10YR 3/2 (very dark grayisl
1356	5YR5/6(yellowishred)	5YR6/4(lightreddishbrown)	5YR6/6(reddishyellow)	5YR6/6(reddishyellow)

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued

ID #	Ext. Polished?	Interior-Finish	TextureType	Shell?	Sort	Sphericity	Roundness	CalcinedShell?
1172	No	Plain	Fine (0.125-0.250)	No	Well Sorted	0.5	0.7	Yes
1173	No	Plain	Fine(0.125-0.250)	No	Poorly Sorted	0.3	0.5	Yes
1176	No	Plain	Fine (0.125-0.250)	No	Poorly Sorted	0.7	0.7	Yes
1179	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.9	0.7	Yes
1180	No	Exfoliated	Fine(0.125-0.250)	No	Well Sorted	0.9	0.9	No
1182	No	Exfoliated	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.9	Yes
1183	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.1	Yes
1184	Yes	Plain	Coarse(0.5-1.0mm)	No	Poorly Sorted	0.7	0.3	Yes
1185	Yes	Plain	Coarse(0.5-1.0mm)	No	Poorly Sorted	0.7	0.1	No
1186	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.5	0.9	No
1189	No	Exfoliated	Fine(0.125-0.250)	No	Well Sorted	0.9	0.9	No
1190	Yes	Plain	Veryfine(0.0625-0.125mm)	No	Well Sorted	0.7	0.5	No
1192	No	Exfoliated	Coarse (0.5-1.0 mm)	No	Poorly Sorted	0.9	0.3	No
1193	Yes	Plain	Coarse (0.5-1.0 mm)	No	Poorly Sorted	0.3	0.5	Yes
1195	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.3	No
1199	Yes	Plain	Coarse (0.5-1.0 mm)	No	Poorly Sorted	0.5	0.5	No
1201	Yes	Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.7	0.5	No
1202		Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.7	0.5	No
1207	No	Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.5	0.3	Yes
1208	No	Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.7	0.3	No
1209	No	Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.5	0.7	No
1210	No	Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.3	0.3	No

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Ext. Polished?	Interior-Finish	TextureType	Shell?	Sort	Sphericity	Roundness	CalcinedShell?
1211	Yes	Plain	Coarse (0.5-1.0 mm)	No	Poorly Sorted	0.9	0.3	No
1212	No	Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.5	0.5	No
1213	No	Plain	Coarse (0.5-1.0 mm)	No	Poorly Sorted	0.7	0.1	Yes
1214	No	Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.7	0.1	Yes
1215	Yes	Exfoliated	Fine (0.125-0.250)	No	Well Sorted	0.5	0.9	No
1216	No	Plain	Coarse (0.5-1.0 mm)	No	Poorly Sorted	0.5	0.5	No
1217	No	Plain	Fine (0.125-0.250)	No	Well Sorted	0.5	0.9	No
1218	Yes	Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.3	0.3	Yes
1219	Yes	Plain	Fine (0.125-0.250)	No	Well Sorted	0.7	0.7	No
1220	No	Plain	Fine (0.125-0.250)	No	Poorly Sorted	0.5	0.9	No
1221	Yes	Plain	Fine (0.125-0.250)	No	Poorly Sorted	0.5	0.5	No
1222	Yes	Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.5	0.1	No
1224	No	Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.7	0.9	No
1225	No	Plain	Medium (.025-.5 mm dia.)	No	Poorly Sorted	0.5	0.7	No
1227	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.3	0.9	Yes
1228	No	Plain	Coarse(0.5-1.0mm)	No	Poorly Sorted	0.5	0.5	Yes
1229	Yes	Exfoliated	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.1	No
1230	Yes	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.7	No
1231	No	Red-slipped	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.9	0.9	Yes
1232	No	Plain	Verycoarse(1-2mmdia.)	No	Poorly Sorted	0.7	0.3	Yes
1233	Yes	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.3	0.1	Yes
1234	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.7	Yes
1235	Yes	Exfoliated	Medium(.025-.5mmdia.)	No	Well Sorted	0.5	0.5	Yes
1238	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.5	No

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Ext. Polished?	Interior-Finish	TextureType	Shell?	Sort	Sphericity	Roundness	CalcinedShell?
1239	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.7	0.5	No
1240	No	Plain	Verycoarse(1-2mmdia.)	No	Poorly Sorted	0.9	0.3	No
1241	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.9	0.7	No
1242	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.5	0.9	No
1243	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.3	0.7	No
1244	No	Exfoliated	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.5	No
1245	No	Exfoliated	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.1	Yes
1246	No	Exfoliated	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.7	0.7	No
1247	No	Exfoliated	Fine(0.125-0.250)	No	Well Sorted	0.3	0.9	No
1248	Yes	Plain	Verycoarse(1-2mmdia.)	No	Poorly Sorted	0.7	0.5	Yes
1249	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.3	0.1	Yes
1250	Yes	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.5	Yes
1251	Yes	Exfoliated	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.7	0.5	Yes
1252	Yes	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.7	0.3	Yes
1253	Yes	Plain	Coarse(0.5-1.0mm)	No	Poorly Sorted	0.5	0.5	Yes
1254	Yes	Plain	Coarse(0.5-1.0mm)	No	Poorly Sorted	0.9	0.9	Yes
1255	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.7	0.1	Yes
1256	Yes	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.9	0.5	No
1257	Yes	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.7	0.3	Yes
1258	Yes	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.9	0.5	Yes
1259	Yes	Plain	Coarse(0.5-1.0mm)	No	Poorly Sorted	0.3	0.3	Yes
1260	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.7	0.5	No

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Ext. Polished?	Interior-Finish	TextureType	Shell?	Sort	Sphericity	Roundness	CalcinedShell?
1261	No	Redbrown Smudge	Medium(.025-.5mmdia.)	No	Well Sorted	0.5	0.5	Yes
1262	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.3	0.9	No
1263	No	Exfoliated	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.7	0.5	No
1264	No	Exfoliated	Veryfine(0.0625-0.125mm)	No	Well Sorted	0.3	0.3	No
1265	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.5	0.5	No
1266	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.9	0.9	No
1267	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.7	0.9	No
1268	No	Plain	Fine(0.125-0.250)	No	Poorly Sorted	0.5	0.5	No
1269	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.3	0.3	Yes
1270	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.7	0.3	No
1271	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.3	0.1	No
1272	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.7	0.1	No
1273	No	Exfoliated	Fine(0.125-0.250)	No	Well Sorted	0.7	0.9	Yes
1274	No	Exfoliated	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.9	Yes
1275	No	Exfoliated	Fine(0.125-0.250)	No	Well Sorted	0.5	0.7	No
1276	No	Plain	Coarse(0.5-1.0mm)	No	Poorly Sorted	0.7	0.3	No
1277	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.3	0.3	Yes
1278	Yes	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.1	No
1279	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.9	0.3	No

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Ext. Polished?	Interior-Finish	TextureType	Shell?	Sort	Sphericity	Roundness	CalcinedShell?
1280	No	Plain	Coarse(0.5-1.0mm)	No	Poorly Sorted	0.7	0.1	Yes
1281	No	Exfoliated	Coarse(0.5-1.0mm)	No	Poorly Sorted	0.3	0.3	Yes
1282	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.5	No
1283	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.9	0.9	Yes
1284	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.9	0.9	No
1285	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.7	0.9	No
1286	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.3	No
1287	No	Exfoliated	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.1	No
1288	Yes	Plain	Coarse(0.5-1.0mm)	No	Poorly Sorted	0.5	0.3	Yes
1289	No	Darkbrown Smudge/slip	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.3	0.3	No
1290	Yes	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.9	0.9	Yes
1303	No	Exfoliated	Fine(0.125-0.250)	No	Well Sorted	0.7	0.9	No
1314	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.7	0.9	No
1331	No	Plain	Fine(0.125-0.250)	No	Well Sorted	0.5	0.3	No
1339	No	Plain	Coarse (0.5-1.0 mm)	No	Poorly Sorted	0.3	0.1	No
1355	No	Plain	Fine (0.125-0.250)	No	Well Sorted	0.9	0.9	No
1356	No	Plain	Medium(.025-.5mmdia.)	No	Poorly Sorted	0.5	0.9	No

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Paste-Crossection	Decoration-Exterior	Decoration-Interior	Ramey-element-motif	Incising width	Incising depth
1172	Uniform oxidized	None	None	n/a	n/a	n/a
1173	Oxidized margins/reduced core	None	None	n/a	n/a	n/a
1176	Reduced margins/oxidized core	Incised	None	n/a	1.28	n/a
1179	Unknown	None	None	n/a	n/a	n/a
1180	Uniform reduced	None	None	n/a	n/a	n/a
1182	Oxidizedmargins/reducedcore	None	None	n/a	n/a	n/a
1183	Uniform reduced	None	None	n/a	n/a	n/a
1184	Uniform oxidized	None	None	n/a	n/a	n/a
1185	Uniform oxidized	None	None	n/a	n/a	n/a
1186	Uniform oxidized	None	None	n/a	n/a	n/a
1189	Uniform reduced	None	None	n/a	n/a	n/a
1190	Uniform oxidized	None	None	n/a	n/a	n/a
1192	Uniform oxidized	None	None	n/a	n/a	n/a
1193	Uniform oxidized	None	None	n/a	n/a	n/a
1195	Uniform reduced	None	None	n/a	n/a	n/a
1199	Uniform reduced	None	None	n/a	n/a	n/a
1201	Uniform oxidized	None	None	n/a	n/a	n/a
1202	Oxidized margins/reduced core	None	None	n/a	n/a	n/a
1207	Uniform oxidized	None	None	n/a	n/a	n/a
1208	Uniform reduced	None	None	n/a	n/a	n/a
1209	Uniform oxidized	None	None	n/a	n/a	n/a

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Paste-Crossection	Decoration-Exterior	Decoration-Interior	Ramey-element-motif	Incising width	Incising depth
1210	Unknown	None	None	n/a	n/a	n/a
1211	Uniform oxidized	None	None	n/a	n/a	n/a
1212	Uniform oxidized	None	None	n/a	n/a	n/a
1213	Uniform oxidized	None	None	n/a	n/a	n/a
1214	Uniform oxidized	None	None	n/a	n/a	n/a
1215	Uniform reduced	None	None	n/a	n/a	n/a
1216	Uniform oxidized	None	None	n/a	n/a	n/a
1217	Uniform oxidized	None	None	n/a	n/a	n/a
1218	Uniform reduced	None	None	n/a	n/a	n/a
1219	Uniform reduced	None	None	n/a	n/a	n/a
1220	Uniform oxidized	Exfoliated	Exfoliated	n/a	n/a	n/a
1221	Unknown	None	None	n/a	n/a	n/a
1222	Uniform oxidized	None	None	n/a	n/a	n/a
1224	Uniform oxidized	None	None	n/a	n/a	n/a
1225	Uniform oxidized	None	None	n/a	n/a	n/a
1227	Uniform oxidized	None	None	n/a	n/a	n/a
1228	Uniform oxidized	None	None	n/a	n/a	n/a
1229	Uniform oxidized	None	None	n/a	n/a	n/a
1230	Uniform oxidized	None	None	n/a	n/a	n/a
1231	Uniform oxidized	None	None	n/a	n/a	n/a

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Paste-Crossection	Decoration-Exterior	Decoration-Interior	Ramey-element-motif	Incising width	Incising depth
1232	Unknown	None	None	n/a	n/a	n/a
1233	Uniform oxidized	None	None	n/a	n/a	n/a
1234	Uniform oxidized	None	None	n/a	n/a	n/a
1235	Unknown	None	None	n/a	n/a	n/a
1238	Uniform oxidized	None	None	n/a	n/a	n/a
1239	Uniform oxidized	None	None	n/a	n/a	n/a
1240	Uniform oxidized	None	None	n/a	n/a	n/a
1241	Uniform oxidized	None	None	n/a	n/a	n/a
1242	Uniform oxidized	None	None	n/a	n/a	n/a
1243	Unknown	None	None	n/a	n/a	n/a
1244	Uniform oxidized	Exfoliated	Exfoliated	n/a	n/a	n/a
1245	Uniform oxidized	None	Indeterminate	n/a	n/a	n/a
1246	Uniform oxidized	None	Indeterminate	n/a	n/a	n/a
1247	Uniform oxidized	Exfoliated	Exfoliated	n/a	n/a	n/a
1248	Uniform oxidized	None	None	n/a	n/a	n/a
1249	Uniform oxidized	None	None	n/a	n/a	n/a
1250	Oxidized margins/reduced core	None	None	n/a	n/a	n/a
1251	Oxidized margins/reduced core	None	None	n/a	n/a	n/a
1252	Uniform reduced	None	None	n/a	n/a	n/a
1253	Oxidizedmargins/reducedcore	None	None	n/a	n/a	n/a

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Paste-Crossection	Decoration-Exterior	Decoration-Interior	Ramey-element-motif	Incising width	Incising depth
1254	Oxidizedmargins/reducedcore	None	None	n/a	n/a	n/a
1255	Unknown	None	None	n/a	n/a	n/a
1256	Uniform oxidized	None	None	n/a	n/a	n/a
1257	Uniform oxidized	None	None	n/a	n/a	n/a
1258	Oxidized margins/reduced core	None	None	n/a	n/a	n/a
1259	Oxidized margins/reduced core	None	None	n/a	n/a	n/a
1260	Unknown	None	None	n/a	n/a	n/a
1261	Uniform oxidized	None	None	n/a	n/a	n/a
1262	Uniform oxidized	None	None	n/a	n/a	n/a
1263	Uniform oxidized	None	None	n/a	n/a	n/a
1264	Unknown	Incised	None	Chevron	1.71	1.05
1265	Unknown	Incised	None	Indeterminate	Indeterminate	Indeterminate
1266	Unknown	None	None	n/a	n/a	n/a
1267	Unknown	None	None	n/a	n/a	n/a
1268	Uniform oxidized	None	None	n/a	n/a	n/a
1269	Uniform oxidized	None	None	n/a	n/a	n/a
1270	Uniform oxidized	None	None	n/a	n/a	n/a
1271	Uniform oxidized	None	None	n/a	n/a	n/a
1272	Uniform oxidized	None	None	n/a	n/a	n/a
1273	Uniform oxidized	Exfoliated	None	Indeterminate	Indeterminate	Indeterminate

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Paste-Crossection	Decoration-Exterior	Decoration-Interior	Ramey-element-motif	Incising width	Incising depth
1274	Uniform oxidized	None	None	n/a	n/a	n/a
1275	Uniform oxidized	Exfoliated	None	n/a	n/a	n/a
1276	Uniform oxidized	None	None	n/a	n/a	n/a
1277	Uniform reduced	None	None	n/a	n/a	n/a
1278	Uniform reduced	None	None	n/a	n/a	n/a
1279	Uniform oxidized	Incised	None	Nested horizontal lines	Indeterminate	Indeterminate
1280	Uniform oxidized	None	None	n/a	n/a	n/a
1281	Uniform reduced	None	None	n/a	n/a	n/a
1282	Uniform oxidized	Incised	None	Nested diagonal lines	Indeterminate	Indeterminate
1283	Uniform oxidized	Incised	None	Nested diagonal lines	4.51	0.73
1284	Uniform oxidized	Exfoliated	Exfoliated	n/a	n/a	n/a
1285	Uniform oxidized	None	None	n/a	n/a	n/a

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Paste-Crossection	Decoration-Exterior	Decoration-Interior	Ramey-element-motif	Incising width	Incising depth
1286	Uniform oxidized	None	None	n/a	n/a	n/a
1287	Unknown	None	None	n/a	n/a	n/a
1288	Uniform reduced	None	None	n/a	n/a	n/a
1289	Uniform oxidized	None	None	n/a	n/a	n/a
1290	Uniform oxidized	None	None	n/a	n/a	n/a
1303	Unknown	None	None	Indeterminate	3.39	Indeterminate
1314	Unknown	Indeterminate	Indeterminate	n/a	n/a	n/a
1331	Uniform oxidized	None	None	n/a	n/a	n/a
1339	Unknown	Indeterminate	None	n/a	n/a	n/a
1355	Unknown	None	None	n/a	n/a	n/a
1356	Uniform oxidized	None	None	n/a	n/a	n/a

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Handle-Type	Handle-Location	Weight	Orifice Diameter	% orifice	Rim width-1	Rim width-2	Rim width-3	Aver. rim
1172	n/a	n/a	38.3	28.0	5.0	0.86	0.78	0.85	0.83
1173	n/a	n/a	18.5	12.0	<5.0	0.81	0.82	0.83	0.82
1176	n/a	n/a	2.0	8.0	10.0	0.75	0.71	0.75	0.51
1179	n/a	n/a	3.7	24.0	5.0	0.78	0.75	0.80	0.78
1180	n/a	n/a	3.1	n/a	n/a	n/a	n/a	n/a	n/a
1182	n/a	n/a	2.1	48.0	<5.0	0.66	0.60	0.46	0.57
1183	n/a	n/a	8.6	20.0	10.0	n/a	n/a	n/a	n/a
1184	n/a	n/a	4.4	44.0	10.0	0.98	0.96	0.97	0.97
1185	n/a	n/a	0.7	n/a	n/a	n/a	n/a	n/a	n/a
1186	n/a	n/a	0.5	n/a	n/a	0.53	0.61	0.62	0.59
1189	n/a	n/a	0.6	n/a	n/a	n/a	n/a	n/a	n/a
1190	n/a	n/a	1.6	8.0	<5.0	n/a	n/a	n/a	n/a
1192	n/a	n/a	3.0	n/a	n/a	n/a	n/a	n/a	n/a
1193	n/a	n/a	5.0	22.0	10.0	0.98	0.97	0.98	0.98
1195	n/a	n/a	3.0	32.0	5.0	n/a	n/a	n/a	n/a
1199	n/a	n/a	3.0	n/a	n/a	n/a	n/a	n/a	n/a
1201	n/a	n/a	5.7	10.0	10.0	0.67	0.63	0.61	0.64
1202	n/a	n/a	4.1	14.0	10.0	0.73	0.68	0.65	0.69
1207	n/a	n/a	6.8	n/a	n/a	n/a	n/a	n/a	n/a
1208	n/a	n/a	1.9	n/a	n/a	n/a	n/a	n/a	n/a

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Handle-Type	Handle-Location	Weight	Orifice Diameter	% Orifice	Rim width-1	Rim width-2	Rim width-3	Aver. rim
1209	n/a	n/a	0.6	n/a	n/a	n/a	n/a	n/a	n/a
1210	n/a	n/a	0.9	n/a	n/a	n/a	n/a	n/a	n/a
1211	n/a	n/a	0.8	n/a	n/a	n/a	n/a	n/a	n/a
1212	n/a	n/a	0.6	n/a	n/a	n/a	n/a	n/a	n/a
1213	n/a	n/a	2.5	n/a	n/a	n/a	n/a	n/a	n/a
1214	n/a	n/a	7.7	8.0	5.0	0.47	0.48	0.45	0.47
1215	n/a	n/a	2.5	n/a	n/a	n/a	n/a	n/a	n/a
1216	n/a	n/a	4.5	n/a	n/a	n/a	n/a	n/a	n/a
1217	n/a	n/a	1.8	n/a	n/a	n/a	n/a	n/a	n/a
1218	n/a	n/a	2.9	14.0	5.0	0.27	0.28	0.28	0.27
1219	n/a	n/a	0.5	n/a	n/a	n/a	n/a	n/a	n/a
1220	n/a	n/a	1.2	n/a	n/a	n/a	n/a	n/a	n/a
1221	n/a	n/a	0.9	ind	n/a	n/a	n/a	n/a	n/a
1222	n/a	n/a	2.3	n/a	n/a	n/a	n/a	n/a	n/a
1224	n/a	n/a	1.0	n/a	n/a	n/a	n/a	n/a	n/a
1225	n/a	n/a	0.6	n/a	n/a	n/a	n/a	n/a	n/a
1227	n/a	n/a	3.0	n/a	n/a	n/a	n/a	n/a	n/a
1228	n/a	n/a	14.0	64.0	5.0	0.86	0.87	0.93	0.89
1229	n/a	n/a	1.6	n/a	n/a	n/a	n/a	n/a	n/a
1230	n/a	n/a	1.9	24.0	5.0	0.73	0.64	0.64	0.67

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Handle-Type	Handle-Location	Weight	Orifice Diameter	% Orifice	Rim width-1	Rim width-2	Rim width-3	Aver. rim
1231	n/a	n/a	3.7	28.0	7.0	n/a	n/a	n/a	n/a
1232	n/a	n/a	11.3	28.0	5.0	0.83	0.79	0.78	0.80
1233	n/a	n/a	4.6	44.0	4.0	n/a	n/a	n/a	n/a
1234	n/a	n/a	5.4	n/a	n/a	n/a	n/a	n/a	n/a
1235	n/a	n/a	6.8	n/a	n/a	n/a	n/a	n/a	n/a
1238	n/a	n/a	0.8	n/a	n/a	n/a	n/a	n/a	n/a
1239	n/a	n/a	1.4	24.0	5.0	n/a	n/a	n/a	n/a
1240	n/a	n/a	2.3	n/a	n/a	n/a	n/a	n/a	n/a
1241	n/a	n/a	1.8	n/a	n/a	n/a	n/a	n/a	n/a
1242	n/a	n/a	1.5	n/a	n/a	n/a	n/a	n/a	n/a
1243	n/a	n/a	0.5	n/a	n/a	n/a	n/a	n/a	n/a
1244	n/a	n/a	1.0	n/a	n/a	n/a	n/a	n/a	n/a
1245	n/a	n/a	0.7	n/a	n/a	n/a	n/a	n/a	n/a
1246	n/a	n/a	0.5	n/a	n/a	n/a	n/a	n/a	n/a
1247	n/a	n/a	2.4	n/a	n/a	n/a	n/a	n/a	n/a
1248	n/a	n/a	12.9	24.0	5.0	n/a	n/a	n/a	n/a
1249	n/a	n/a	2.4	24.0	6.0	0.69	0.66	0.62	0.65
1250	n/a	n/a	3.0	32.0	5.0	0.76	0.78	0.81	0.78
1251	n/a	n/a	2.3	n/a	n/a	n/a	n/a	n/a	n/a
1252	n/a	n/a	12.8	36.0	8.0	n/a	n/a	n/a	n/a

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Handle-Type	Handle-Location	Weight	Orifice Diameter	% Orifice	Rim width-1	Rim width-2	Rim width-3	Aver. rim
1253	n/a	n/a	2.6	20.0	8.0	0.83	0.75	0.77	0.78
1254	n/a	n/a	2.5	28.0	6.0	0.98	0.97	0.88	0.94
1255	n/a	n/a	2.2	24.0	5.0	n/a	n/a	n/a	n/a
1256	n/a	n/a	3.3	28.0	5.0	0.84	0.85	0.82	0.84
1257	n/a	n/a	2.2	28.0	5.0	n/a	n/a	n/a	n/a
1258	n/a	n/a	0.9	28.0	6.0	n/a	n/a	n/a	n/a
1259	n/a	n/a	1.3	n/a	n/a	0.75	0.75	0.78	0.76
1260	n/a	n/a	1.7	36.0	<5.0	0.79	0.78	0.77	0.78
1261	n/a	n/a	2.7	n/a	n/a	0.76	0.76	0.83	0.78
1262	n/a	n/a	2.2	n/a	n/a	0.70	0.68	0.63	0.67
1263	n/a	n/a	2.8	n/a	n/a	n/a	n/a	n/a	n/a
1264	n/a	n/a	1.5	n/a	n/a	n/a	n/a	n/a	n/a
1265	n/a	n/a	0.5	n/a	n/a	n/a	n/a	n/a	n/a
1266	n/a	n/a	1.0	n/a	n/a	n/a	n/a	n/a	n/a
1267	n/a	n/a	2.1	24.0	5.0	0.69	0.72	0.70	0.70
1268	n/a	n/a	0.6	n/a	n/a	n/a	n/a	n/a	n/a
1269	n/a	n/a	4.2	24.0	5.0	0.90	0.92	0.92	0.91
1270	n/a	n/a	3.0	n/a	n/a	n/a	n/a	n/a	n/a
1271	n/a	n/a	2.3	n/a	n/a	0.80	0.84	0.79	0.81
1272	n/a	n/a	1.3	n/a	n/a	0.72	0.71	0.75	0.73

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Handle-Type	Handle-Location	Weight	Orifice Diameter	% Orifice	Rim width-1	Rim width-2	Rim width-3	Aver. rim
1273	n/a	n/a	0.6	n/a	n/a	n/a	n/a	n/a	n/a
1274	n/a	n/a	2.6	n/a	n/a	n/a	n/a	n/a	n/a
1275	n/a	n/a	0.6	n/a	n/a	n/a	n/a	n/a	n/a
1276	n/a	n/a	0.7	n/a	n/a	n/a	n/a	n/a	n/a
1277	n/a	n/a	0.3	n/a	n/a	n/a	n/a	n/a	n/a
1278	n/a	n/a	0.5	n/a	n/a	n/a	n/a	n/a	n/a
1279	n/a	n/a	1.4	48.0	5.0	n/a	n/a	n/a	n/a
1280	n/a	n/a	2.2	24.0	6.0	n/a	n/a	n/a	n/a
1281	n/a	n/a	5.2	n/a	n/a	n/a	n/a	n/a	n/a
1282	n/a	n/a	4.3	16.0	8.0	0.46	0.51	0.46	0.48
1283	n/a	n/a	10.4	24.0	5.0	0.81	0.82	0.85	0.82
1284	n/a	n/a	1.5	28.0	<5.0	n/a	n/a	n/a	n/a
1285	n/a	n/a	1.9	36.0	<5.0	0.41	0.44	0.44	0.43
1286	n/a	n/a	0.5	n/a	n/a	n/a	n/a	n/a	n/a
1287	n/a	n/a	0.6	n/a	n/a	n/a	n/a	n/a	n/a
1288	n/a	n/a	0.5	n/a	n/a	n/a	n/a	n/a	n/a
1289	n/a	n/a	1.0	n/a	n/a	n/a	n/a	n/a	n/a
1290	Strap handle	Rim & neck	44.3	60.0	5.0	0.93	0.92	0.97	0.94
1303	n/a	n/a	1.3	n/a	n/a	n/a	n/a	n/a	n/a
1314	n/a	n/a	0.7	n/a	n/a	n/a	n/a	n/a	n/a

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Handle-Type	Handle-Location	Weight	Orifice Diameter	% Orifice	Rim width-1	Rim width-2	Rim width-3	Aver. rim
1331	n/a	n/a	1.9	24.0	5.0	0.56	0.53	0.53	0.54
1339	n/a	n/a	2.1	n/a	n/a	n/a	n/a	n/a	n/a
1355	n/a	n/a	0.4	n/a	n/a	n/a	n/a	n/a	n/a
1356	n/a	n/a	3.3	32.0	<5.0	0.66	0.71	0.69	0.69

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Wall thick-1	Wall thick-2	Aver. wall	Lip Thickness	Wall/rim	Comments
1172	0.70	0.73	0.71	0.69	0.86	
1173	0.43	0.47	0.45	0.45	0.55	
1176	0.58	0.56	0.56	0.27	1.11	
1179	0.40	0.37	0.39	0.37	0.50	
1180	n/a	n/a	n/a	n/a	n/a	Fragment
1182	0.48	0.47	0.48	0.34	0.00	
1183	n/a	n/a	n/a	n/a	n/a	Fragment
1184	0.53	0.54	0.53	0.61	0.49	
1185	n/a	n/a	n/a	n/a	n/a	Fragment
1186	0.44	0.41	0.42	0.27	0.58	Fragment
1189	n/a	n/a	n/a	n/a	n/a	Fragment
1190	n/a	n/a	n/a	n/a	n/a	Fragment
1192	n/a	n/a	n/a	n/a	n/a	Fragment
1193	0.75	0.89	0.82	0.59	0.84	
1195	n/a	n/a	n/a	n/a	n/a	Fragment
1199	n/a	n/a	n/a	n/a	n/a	Fragment
1201	0.51	0.47	0.49	0.61	0.77	
1202	0.31	0.28	0.30	2.71	0.43	
1207	n/a	n/a	n/a	n/a	n/a	Fragment
1208	n/a	n/a	n/a	n/a	n/a	Fragment

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Wall thick-1	Wall thick-2	Aver. wall	Lip Thickness	Wall/rim	Comments
1209	n/a	n/a	n/a	n/a	n/a	Fragment
1210	n/a	n/a	n/a	n/a	n/a	Fragment
1211	n/a	n/a	n/a	n/a	n/a	Fragment
1212	n/a	n/a	n/a	n/a	n/a	Fragment
1213	n/a	n/a	n/a	n/a	n/a	Fragment
1214	0.3	0.33	0.32	0.3	0.68	
1215	n/a	n/a	n/a	n/a	n/a	Fragment
1216	n/a	n/a	n/a	n/a	n/a	Fragment
1217	n/a	n/a	n/a	n/a	n/a	Fragment
1218	0.18	0.17	0.17	0.15	0.64	
1219	n/a	n/a	n/a	n/a	n/a	Fragment
1220	n/a	n/a	n/a	n/a	n/a	Fragment
1221	n/a	n/a	n/a	n/a	n/a	Fragment
1222	n/a	n/a	n/a	n/a	n/a	Fragment
1224	n/a	n/a	n/a	n/a	n/a	Fragment
1225	n/a	n/a	n/a	n/a	n/a	Fragment
1227	n/a	n/a	n/a	n/a	n/a	Fragment
1228	0.51	0.54	0.53	0.66	0.60	
1229	n/a	n/a	n/a	n/a	n/a	Fragment
1230	0.42	0.42	0.42	n/a	0.62	

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Wall thick-1	Wall thick-2	Aver. wall	Lip Thickness	Wall/rim	Comments
1231	n/a	n/a	n/a	n/a	n/a	Fragment
1232	0.43	0.47	0.45	0.32	0.56	
1233	n/a	n/a	n/a	n/a	n/a	Fragment
1234	n/a	n/a	n/a	n/a	n/a	Fragment
1235	n/a	n/a	n/a	n/a	n/a	Fragment
1238	n/a	n/a	n/a	n/a	n/a	Fragment
1239	n/a	n/a	n/a	n/a	n/a	Fragment
1240	n/a	n/a	n/a	n/a	n/a	Fragment
1241	n/a	n/a	n/a	n/a	n/a	Fragment
1242	n/a	n/a	n/a	n/a	n/a	Fragment
1243	n/a	n/a	n/a	n/a	n/a	Fragment
1244	n/a	n/a	n/a	n/a	n/a	Fragment
1245	n/a	n/a	n/a	n/a	n/a	Fragment
1246	n/a	n/a	n/a	n/a	n/a	Fragment
1247	n/a	n/a	n/a	n/a	n/a	Fragment
1248	n/a	n/a	n/a	n/a	n/a	Fragment
1249	0.52	0.53	0.52	0.44	0.81	
1250	0.53	0.54	0.54	0.33	0.68	
1251	n/a	n/a	n/a	n/a	n/a	Fragment
1252	n/a	n/a	n/a	n/a	n/a	Fragment

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Wall thick-1	Wall thick-2	Aver. wall	Lip Thickness	Wall/rim	Comments
1253	0.43	0.46	0.45	0.42	0.58	
1254	0.57	0.58	0.58	0.35	0.62	
1255	n/a	n/a	n/a	n/a	n/a	Fragment
1256	0.44	0.42	0.43	0.50	0.52	
1257	n/a	n/a	n/a	n/a	n/a	Fragment
1258	n/a	n/a	n/a	n/a	n/a	Fragment
1259	0.52	0.53	0.53	0.34	0.69	
1260	0.61	0.58	0.59	0.45	0.76	
1261	0.47	0.47	0.47	0.54	0.60	
1262	n/a	n/a	n/a	n/a	n/a	Fragment
1263	n/a	n/a	n/a	n/a	n/a	Fragment
1264	n/a	n/a	n/a	n/a	n/a	Fragment
1265	n/a	n/a	n/a	n/a	n/a	Fragment
1266	n/a	n/a	n/a	n/a	n/a	Fragment
1267	0.52	0.54	0.53	0.29	0.75	
1268	n/a	n/a	n/a	n/a	n/a	Fragment
1269	0.57	0.57	0.57	0.45	0.63	
1270	n/a	n/a	n/a	n/a	n/a	Fragment
1271	0.48	0.48	0.48	0.45	0.60	
1272	n/a	n/a	n/a	n/a	n/a	Fragment

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Wall thick-1	Wall thick-2	Aver. wall	Lip Thickness	Wall/rim	Comments
1273	n/a	n/a	n/a	n/a	n/a	Fragment
1274	n/a	n/a	n/a	n/a	n/a	Fragment
1275	n/a	n/a	n/a	n/a	n/a	Fragment
1276	n/a	n/a	n/a	n/a	n/a	Fragment
1277	n/a	n/a	n/a	n/a	n/a	Fragment
1278	n/a	n/a	n/a	n/a	n/a	Fragment
1279	n/a	n/a	n/a	n/a	n/a	Fragment
1280	n/a	n/a	n/a	n/a	n/a	Fragment
1281	n/a	n/a	n/a	n/a	n/a	Fragment
1282	0.45	0.45	0.45	0.56	0.94	
1283	0.58	0.59	0.58	0.44	0.71	
1284	n/a	n/a	n/a	n/a	n/a	Fragment
1285	0.43	0.43	0.43	0.21	1.00	
1286	n/a	n/a	n/a	n/a	n/a	Fragment
1287	n/a	n/a	n/a	n/a	n/a	Fragment
1288	n/a	n/a	n/a	n/a	n/a	Fragment
1289	n/a	n/a	n/a	n/a	n/a	Fragment

Table B.1. 2011 UWM Aztalan Mississippian Vessel Inventory, continued.

ID #	Wall thick-1	Wall thick-2	Aver. wall	Lip Thickness	Wall/rim	Comments
1290	0.52	0.55	0.54	0.52	0.55	
1303	n/a	n/a	n/a	n/a	n/a	Fragment
1314	n/a	n/a	n/a	n/a	n/a	Fragment
1331	0.45	0.48	0.47	0.41	0.87	
1339	n/a	n/a	n/a	n/a	n/a	Fragment
1355	n/a	n/a	n/a	n/a	n/a	Fragment
1356	0.66	0.68	0.67	0.78	0.96	

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	Collection	Vessel#	Lot#	Test Unit	Stratum	Level	Depth	Feature	Pottery-Type
1226	UWM-ARL	1206	2011-20.0102	TU 2 West	4		43-96cmbd		Unknown-Fragment
1258	UWM-ARL	1217	2011-20.0315	Tu 8			45-80cmbd	8	Unknown-Fragment
1295	UWM-ARL	1275	2011-20.0318	TU 8				8	Madison Cord Impressed
1305	UWM-ARL	1285	2011-20.0122	TU 4		7 Zone A	80-85cmbd		Madison Plain
1306	UWM-ARL	1286	2011-20.0074	TU 4		5	65-70cmbs		Madison Cord Impressed
1313	UWM-ARL	1293	2011-20.0077	TU 4		6 Zone A	70-80cmbd		Unknown-Fragment
1315	UWM-ARL	1295	2011-20.0047	TU 2			9-154cmbd		Madison Plain
1316	UWM-ARL	1296	2011-20.0010	TU 2		1	0-50cmbd		Madison Cord Impressed
1320	UWM-ARL	1300	2011-20.0019	TU 2	3		62-168cmbd		Unknown-Fragment
1321	UWM-ARL	1301	2011-20.0019	TU 2		3	62-168cmbd		Madison Plain

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	Collection	Vessel#	Lot#	Test Unit	Stratum	Level	Depth	Feature	Pottery-Type
1325	UWM-ARL	1305	2011-20.0173	TU 2 West					Madison Plain
1328	UWM-ARL	1308	2011-20.0187	TU 9		2	35-45cmbd		Madison Cord Impressed
1336	UWM-ARL	1316	2011-20.0002	TU 01		1	0-46cmbs		Madison Plain
1340	UWM-ARL	1320	2011-20.0002	TU 1		1	0-46cmbs		Madison Plain
1344	UWM-ARL	1324	2011-20.0182	TU 2 West	12/14		50-135cmbd		Madison Plain
1347	UWM-ARL	1326	2011-20.0025	TU 2		4	88-172cmbd		Madison Plain
1348	UWM-ARL	1327	2011-20.0020	TU 2	4		88-172cmbd		Madison Folded Lip
1351	UWM-ARL	1331	2011-20.0002	TU 01		1	0-46cmbs		Madison Cord Impressed
1352	UWM-ARL	1332	2011-20.0187	TU 9		2	34-45cmbd		Madison Fabric Cord Impressed
1353	UWM-ARL	1333	2011-20.0182	TU 2 West	14-12				Madison Plain
1354	UWM-ARL	1334	2011-20.0182	TU 2 West	14-12				Madison Plain
1357	UWM-ARL	1337	2011-20.0330	TU 8	8		45-80cmbd		Maples Mills

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	Vessel-Form	Rim-Form	Lip-Form	Neck-Form	Shoulder-Form	Exterior-Finish	Cord Twist	Interior-Finish
1226	Jar	Everted-extruded	Rounded	n/a	n/a	Plain	Indeterminate	Plain
1258	Jar	Direct-unmodified	Rounded	n/a	n/a	Plain	None	Plain
1295	Jar	Direct-unmodified	Rounded	n/a	n/a	Plain	Indeterminate	Plain
1305	Jar	Direct-unmodified	Rounded	Flared	n/a	Plain	Indeterminate	Plain
1306	Jar	Direct-unmodified	Rounded	n/a	n/a	Plain	Z-twist	Plain
1313	Jar	Direct-unmodified	Rounded	n/a	n/a	Plain	Indeterminate	Plain
1315	Jar	Direct-unmodified	Flattened	Straight	Rounded	Plain	S-twist	Plain
1316	Jar	Direct-unmodified	Rounded	n/a	n/a	Plain	Z-twist	Plain
1320	Jar	Direct-unmodified	Rounded	n/a	n/a	Plain	Z-twist	Plain
1321	Jar	Direct-unmodified	Pinched	n/a	n/a	Plain	Indeterminate	Plain

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	Vessel-Form	Rim-Form	Lip-Form	Neck-Form	Shoulder-Form	Exterior-Finish	Cord Twist	Interior-Finish
1325	Jar	Direct-unmodified	Flattened	Indeterminate	Indeterminate	Plain	Z-twist	Plain
1328	Jar	Direct-unmodified	Rounded	n/a	n/a	Plain	Indeterminate	Plain
1336	Jar	Direct-unmodified	Flattened	n/a	n/a	Plain	Indeterminate	Plain
1340	Jar	Direct-unmodified	Flattened	Flared	Indeterminate	Plain	Z-twist	Plain
1344	Jar	Everted-simple	Pinched	Flared	n/a	Plain	n/a	Plain
1347	Jar	Direct-unmodified	Rounded	Flared	n/a	Plain	Indeterminate	Plain
1348	Jar	Direct-unmodified	Rounded	n/a	n/a	Plain	None	Plain
1351	Jar	Direct-unmodified	Flattened	Indeterminate	Indeterminate	Plain	S-twist	Plain
1352	Jar	Direct-unmodified	Rounded	Flared	n/a	Plain	S-twist	Darkbrown smudge/slip
1353	Jar	Everted-extruded	Pinched	Indeterminate	n/a	Plain	n/a	Plain
1354	Jar	Everted-extruded	Pinched	Indeterminate	n/a	Plain	n/a	Plain
1357	Jar	Direct-unmodified	Flattened	Flared	Rounded	Plain	Z-twist	Plain

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	Temper	Inclusions	Sort	Sphericity	Roundness	Texture	Paste Core
1226	Grit	None	Poorly Sorted	0.7	0.1	Medium (.025-.5 mm dia.)	Unknown
1258	Grit	black igneous	Poorly Sorted	0.3	0.5	Medium(.025-.5mmdia.)	Uniform oxidized
1295	Grit	None	Poorly Sorted	0.7	0.9	Fine(0.125-0.250)	Uniform oxidized
1305	Grit	None	Poorly Sorted	0.9	0.7	Medium (.025-.5 mm dia.)	Uniform oxidized
1306	Grit	None	Poorly Sorted	0.7	0.9	Fine(0.125-0.250)	Uniform oxidized
1313	Grit	black igneous	Poorly Sorted	0.5	0.5	Medium(.025-.5mmdia.)	Unknown
1315	Grit	None	Poorly Sorted	0.9	0.3	Medium(.025-.5mmdia.)	Uniform oxidized
1316	Grit	black igneous	Poorly Sorted	0.5	0.3	Medium(.025-.5mmdia.)	Uniform oxidized
1320	Grit	black igneous	Poorly Sorted	0.7	0.5	Medium(.025-.5mmdia.)	Uniform oxidized
1321	Grit	None	Well Sorted	0.7	0.9	Fine(0.125-0.250)	Uniform oxidized

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	Temper	Inclusions	Sort	Sphericity	Roundness	Texture	Paste Core
1325	Grit	None	Poorly Sorted	0.7	0.9	Medium (.025-.5 mm dia.)	Uniform oxidized
1328	Grit	None	Well Sorted	0.7	0.9	Fine(0.125-0.250)	Uniform oxidized
1336	Grit	black igneous	Well Sorted	0.9	0.9	Fine (0.125-0.250)	Uniform oxidized
1340	Grit	None	Well Sorted	0.7	0.9	Fine (0.125-0.250)	Uniform oxidized
1344	Grit	None	Poorly Sorted	0.9	0.9	Fine (0.125-0.250)	Uniform oxidized
1347	Grit	black igneous	Poorly Sorted	0.5	0.7	Medium(.025-.5mmdia.)	Unknown
1348	Grit	black igneous	Poorly Sorted	0.3	0.5	Veryfine(0.0625-0.125mm)	Uniform oxidized
1351	Grit	Quartz fragment	Poorly Sorted	0.7	0.9	Coarse (0.5-1.0 mm)	Uniform oxidized
1352	Grit	None	Poorly Sorted	0.9	0.9	Fine(0.125-0.250)	Uniform oxidized
1353	Grit	None	Poorly Sorted	0.5	0.9	Medium (.025-.5 mm dia.)	Unknown
1354	Grit	None	Well Sorted	0.7	0.5	Fine (0.125-0.250)	Oxidized exterior margin/reduced interior margin
1357	Grit	None	Poorly Sorted	0.7	0.3	Medium(.025-.5mmdia.)	Uniform reduced

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	Exterior-Decoration	Interior-Decoration	Use-Alteration
1226	None	None	None
1258	None	None	None
1295	Indeterminate	None	Carbonization interior,almost all rim and 1-2cm below
1305	Indeterminate, possible cordmarked	None	Carbonization: exterior spots and on rim
1306	Horizontal rows of cordimpressions	Notched cordimpressions	None
1313	Indeterminate	None	None
1315	Indeterminatecordmarked	None	Carbonization spots on exterior surafce and entire rim and interior 1-3cm down
1316	Cordimpressed exterior rim margin	None	None
1320	Diagonal rows cordimpressions	Notched cordimpressions	None
1321	Diagonal rows cordimpressions	None	None

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	Exterior-Decoration	Interior-Decoration	Use-Alteration
1325	None	None	Carbonization
1328	Horizontal and Vertical rows of cordimpressions	None	Carbonization small spots on exterior and spots on rim
1336	Indeterminate	None	None
1340	Cordmarked	None	None
1344	Indeterminate	Cordimpressed rim	None
1347	Horizontal and Vertical rows of cordimpressions	None	Carbonization small spots on interior
1348	Indeterminate	None	Carbonization exterior spots and spots on rim
1351	Cordimpressions	None	None
1352	Horizontal rows of Fabricimpressed	Single band of punctates	None
1353	Vertical Cordimpressions starting at neck	None	Carbonization exterior
1354	Indeterminate	None	None
1357	Vertical Cordimpressions starting at neck	None	None

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	Or Diameter	Orifice %	Weight	Wall1	Wall2
1226	n/a	n/a	0.30	0.50	0.58
1258	n/a	n/a	0.39	n/a	n/a
1295	44	6.00	9.79	0.57	0.59
1305	16	6.00	3.20	0.66	0.77
1306	n/a	n/a	1.13	n/a	n/a
1313	n/a	n/a	0.48	n/a	n/a
1315	24	5.00	13.75	0.49	0.48
1316	16	2.00	2.55	0.68	0.74
1320	24	4.00	2.14	0.46	0.46
1321	44	4.00	1.30	0.59	0.59

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	Or Diameter	Orifice %	Weight	Wall1	Wall2
1325	n/a	n/a	5.08	0.69	0.70
1328	24	4.00	1.40	n/a	n/a
1336	24	5.00	4.70	0.51	0.47
1340	n/a	n/a	2.95	0.49	0.52
1344	n/a	n/a	0.54	0.58	0.64
1347	24	5.00	3.20	0.32	0.32
1348	20	6.00	4.99	0.80	0.90
1351	20	5.00	5.22	0.47	0.55
1352	20	5.00	5.63	0.89	0.93
1353	n/a	n/a	0.30	0.64	0.62
1354	n/a	n/a	0.34	0.42	0.41
1357	24	5.00	22.51	0.79	0.77

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	MunsellExt-Dark	MunsellExt-Light	MunsellInt-Dark	MunsellInt-Light
1226	5YR 5/6 (yellowish red)	5YR 6/4 (light reddish brown)	5YR 6/4 (light reddish brown)	5YR 6/4 (light reddish brown)
1258	10YR5/4(yellowishbrown)	10YR6/4(lightyellowishbrown)	5YR3/3(darkreddishbrown)	5YR5/6(yellowishred)
1295	10YR2/1(black)	10YR2/1(black)	10YR2/1(black)	10YR2/1(black)
1305	5YR 2.5/1 (black)	5YR 2.5/1 (black)	5YR 4/2 (dark reddish grey)	5YR 4/2 (dark reddish grey)
1306	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)	5YR4/1(darkgrey)	5YR5/6(yellowishred)
1313	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)	5YR2.5/1(black)	5YR2.5/1(black)
1315	10YR2/1(black)	10YR4/1(darkgray)	10YR2/1(black)	10YR4/1(darkgray)
1316	5YR2.5/1(black)	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)	5YR5/6(yellowishred)
1320	5YR4/3(reddishbrown)	5YR4/3(reddishbrown)	5YR4/2(darkreddishgrey)	5YR4/2(darkreddishgrey)
1321	5YR6/6(reddishyellow)	5YR6/4(lightreddishbrown)	5YR6/6(reddishyellow)	5YR6/4(lightreddishbrown)

Table B.2. 2011 UWM Aztalan Late Woodland Vessel Inventory, continued.

ID#	MunsellExt-Dark	MunsellExt-Light	MunsellInt-Dark	MunsellInt-Light
1325	5YR3/1(verydarkgrey)	5YR5/6(yellowishred)	5YR5/2(reddishgrey)	5YR5/6(yellowishred)
1328	10YR 2/1 (black)	10YR 6/3 (pale brown)	10YR 2/1 (black)	10YR 6/3 (pale brown)
1336	10YR 3/3 (dark brown)	10YR 2/1 (black)	5YR 2.5/1 (black)	5YR 3/2 (dark reddish brown)
1340	10YR5/4(yellowishbrown)	10YR6/4(lightyellowishbrown)	5YR3/3(darkreddishbrown)	5YR5/6(yellowishred)
1344	10YR3/2(verydarkgrayishbrown)	10YR3/3(darkbrown)	10YR5/3(brown)	10YR7/2(lightgray)
1347	10YR 2/1 (black)	10YR 6/3 (pale brown)	10YR 2/1 (black)	10YR 6/3 (pale brown)
1348	10YR2/1(black)	10YR3/2(verydarkgrayishbrown)	10YR3/1(verydarkgray)	10YR3/1(verydarkgray)
1351	7.5YR 2/0 (black)	7.5YR 2/0 (black)	7.5YR 5/4 (brown)	7.5YR 5/4 (brown)
1352	10YR 2/1 (black)	10YR 6/3 (pale brown)	10YR 2/1 (black)	10YR 6/3 (pale brown)
1353	7.5YR3/0(verydarkgrey)	7.5YR3/2(darkbrown)	7.5YR3/0(verydarkgrey)	7.5YR5/2(brown)
1354	5YR 2.5/1 (black)	5YR 2.5/1 (black)	5YR 2.5/1 (black)	5YR 2.5/1 (black)
1357	10YR 2/1 (black)	10YR 6/3 (pale brown)	10YR 2/1 (black)	10YR 6/3 (pale brown)

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory.

ID#	Collection	Lot#	Vessel #	Test Unit	Stratum	Level	Depth	Feature	Piece Plot	Collared Ware Type
1175	UWM-ARL	2011-20.0032	1155	TU 6		1 (0-30cmbd)				Collared-Fragment
1181	UWM-ARL	2011-20.0253	1161	TU 9	2A	4	57-80cmbd			Aztalan Collared
1291	UWM-ARL	2011-20.0035	1271	TU 4		2	35-45cmbs			Aztalan Collared
1292	UWM-ARL	2011-20.0315	1272	TU 8		8	45-80cmbd			Hahn Cord-Impressed
1293	UWM-ARL	2011-20.0250	1273	TU 9		4B	57-80cmbd			Point Sauble Collared
1294	UWM-ARL	2011-20.0187	1274	TU 9		2	34-45cmbd			Aztalan Collared
1296	UWM-ARL	2011-20.0122	1276	TU 4		7ZoneA	80-85cmnd			Collared-Fragment
1297	UWM-ARL	2011-20.0152	1277	TU 4		7ZoneE	85-90cmbd			Collared-Fragment
1298	UWM-ARL	2011-20.0051	1278	TU 4		4ZoneA	55-65cmbd			Aztalan Collared
1299	UWM-ARL	2011-20.0308	1279	TU 8	3		40-47cmbd			Collared-Fragment
1301	UWM-ARL	2011-20.0035	1280	TU 4		1	0-35cmbd			Aztalan Collared
1301	UWM-ARL	2011-20.0327	1281	TU 8						Aztalan Collared
1302	UWM-ARL	2011-20.0175	1282	TU 1		6B	60-70cmbd			Aztalan Collared
1304	UWM-ARL	2011-22.0272	1284	TU 8	1		0-30cmbd			Aztalan Collared
1307	UWM-ARL	2011-20.0318	1287	TU 8				8		Aztalan Collared
1308	UWM-ARL	2011-20.0318	1288	TU 8				8		Aztalan Collared
1309	UWM-ARL	2011-20.0287	1289	TU 8	2		20-54cmbd			Aztalan Collared
1310	UWM-ARL	2011-20.0287	1290	TU 8	2		20-54cmbd			Aztalan Collared
1311	UWM-ARL	2011-20.0287	1291	TU 8	2		20-54cmbd			Aztalan Collared

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Collection	Lot#	Vessel #	Test Unit	Stratum	Level	Depth	Feature	Piece Plot	Collared Ware Type
1317	UWM-ARL	2011-20.0008	1297	TU 2		1	0-42cmbgs			Aztalan Collared
1318	UWM-ARL	2011-20.0019	1298	TU 2	3					Aztalan Collared
1319	UWM-ARL	2011-20.0019	1299	TU 2	3		62-168cmbd			Aztalan Collared
1322	UWM-ARL	2011-20.0118	1302	TU 2 West			63cmbd		11	Aztalan Collared
1323	UWM-ARL	2011-20.0018	1303	TU 2	2		33-170cmbd			Aztalan Collared
1324	UWM-ARL	2011-20.0018	1304	TU 2	2		33-170cmbd			Point Sauble Collared
1326	UWM-ARL	2011-20.0042	1306	TU 2						Collared-Fragment
1327	UWM-ARL	2011-20.0003	1307	TU 1		1	0-46cmbs			Aztalan Collared
1329	UWM-ARL	2011-20.0002	1309	TU 1		1	0.46cmbs			Collared-Fragment
1330	UWM-ARL	2011-20.0002	1310	TU 1		1	0.46cmbs			Collared-Fragment
1332	UWM-ARL	2011-20.0311	1312	TU 12		6	51-61cmbd			Aztalan Collared
1333	UWM-ARL	2011-20.03	1313	TU 1		1	0-46cmbs			Aztalan Collared
1334	UWM-ARL	2011-20.0002	1314	TU 1		1	0-46cmbs			Aztalan Collared

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Collection	Lot#	Vessel #	Test Unit	Stratum	Level	Depth	Feature	Piece Plot	Collared Ware Type
1335	UWM-ARL	2011-20.0003	1315	TU 1		1	0-46cmbs			Aztalan Collared
1337	UWM-ARL	2011-20.0041	1317	TU 2						Collared-Fragment
1338	UWM-ARL	2011-20.0187	1318	TU 9		2	34-45cmbd			Starved Rock Collared
1341	UWM-ARL	2011-20.0013	1321	TU 2						Aztalan Collared
1342	UWM-ARL	2011-20.0147	1322	TU 2 West	4		13-73cmbd			Starved Rock Collared
1343	UWM-ARL	2011-20.0121	1323	TU 2 West			1-71cmbd		12	Aztalan Collared
1345	UWM-ARL	2011-20.009	1325	TU 2		1	0-50cmbs			Aztalan Collared
1348	UWM-ARL	2011-20.0349	1328	TU 2	4		1-32cmbd			Starved Rock Collared
1349	UWM-ARL	2011-20.0157	1329	TU 2 West	4		15-89cmbd			Aztalan Collared
1350	UWM-ARL	2011-20.0086	1330	TU 2 West	2		16-67cmbd			Starved Rock Collared

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Temper	Inclusions	Sort Type	Sphericity	Roundness	Texture Type	Cord Twist	Refits	Paste Core
1175	Grit	Shell	Poorly Sorted	0.5	0.1	Medium (.025-.5 mm dia.)	Indeterminate		Uniform oxidized
1181	Grit	black igneous	Poorly Sorted	0.5	0.1	Coarse (0.5-1.0mm)	Indeterminate		Uniform oxidized
1291	Grit	None	Well Sorted	0.5	0.9	Fine (0.125-0.250)	S-twist	Yes	Uniform oxidized
1292	Grit	black igneous	Well Sorted	0.5	0.7	Fine (0.125-0.250)	Indeterminate		Uniform oxidized
1293	Grit	black igneous	Poorly Sorted	0.3	0.5	Medium (.025-.5mmdia.)	S-twist		Uniform oxidized
1294	Grit	black igneous	Well Sorted	0.7	0.9	Fine (0.125-0.250)	S-twist		Uniform oxidized
1296	Grit	None	Well Sorted	0.7	0.9	Fine (0.125-0.250)	S-twist		Uniform oxidized
1297	Grit	black igneous	Poorly Sorted	0.3	0.9	Medium (.025-.5mmdia.)	Z-twist		Uniform oxidized
1298	Grit	black igneous	Poorly Sorted	0.3	0.1	Medium (.025-.5mmdia.)	Indeterminate		Uniform oxidized
1299	Grit	black igneous	Well Sorted	0.7	0.9	Fine (0.125-0.250)	None		Uniform oxidized
1301	Grit	None	Well Sorted	0.7	0.9	Fine (0.125-0.250)	Z-twist	Yes	Uniform reduced
1301	Grit	black igneous	Poorly Sorted	0.5	0.5	Coarse (0.5-1.0mm)	None		Uniform oxidized
1302	Grit	black igneous	Well Sorted	0.7	0.9	Fine (0.125-0.250)	Indeterminate		Uniform oxidized
1304	Grit	None	Well Sorted	0.7	0.9	Medium (.025-.5mmdia.)	S-twist		Unknown
1307	Grit	Quartzsand	Well Sorted	0.3	0.5	Fine (0.125-0.250)	S-twist		Uniform oxidized
1308	Grit	None	Well Sorted	0.5	0.7	Fine (0.125-0.250)	S-twist		Uniform oxidized
1309	Grit	None	Well Sorted	0.7	0.9	Fine (0.125-0.250)	Z-twist		Uniform oxidized
1310	Grit	black igneous	Well Sorted	0.5	0.3	Fine (0.125-0.250)	S-twist		Reduced exterior margin/oxidized interior margin
1311	Grit	black igneous	Well Sorted	0.7	0.9	Fine (0.125-0.250)	S-twist		Uniform oxidized

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Temper	Inclusions	Sort Type	Sphericity	Roundness	Texture Type	Cord Twist	Refits	Paste Core
1317	Grit	black igneous	Poorly Sorted	0.3	0.5	Medium (.025-.5mmdia.)	S-twist		Uniform oxidized
1318	Grit	black igneous	Well Sorted	0.3	0.1	Fine (0.125-0.250)	Z-twist	Yes	Uniform oxidized
1319	Grit	black igneous	Well Sorted	0.7	0.9	Fine (0.125-0.250)	Z-twist	Yes	Uniform oxidized
1322	Grit	black igneous	Poorly Sorted	0.7	0.3	Medium (.025-.5 mm dia.)	Z-twist		Uniform oxidized
1323	Grit	None	Well Sorted	0.3	0.1	Fine (0.125-0.250)	Z-twist		Uniform reduced
1324	Grit	Quartzfragment	Well Sorted	0.7	0.9	Fine (0.125-0.250)	S-twist		Uniform oxidized
1326	Grit	black igneous	Well Sorted	0.7	0.9	Fine (0.125-0.250)	Indeterminate		Uniform oxidized
1327	Grit	black igneous	Poorly Sorted	0.9	0.9	Medium (.025-.5 mm dia.)	Indeterminate		Uniform oxidized
1329	Grit	Quartz sand	Well Sorted	0.5	0.3	Fine (0.125-0.250)	S-twist		Uniform oxidized
1330	Grit	Quartz sand	Poorly Sorted	0.7	0.3	Coarse (0.5-1.0 mm)	Indeterminate		Uniform reduced
1332	Grit	black igneous	Well Sorted	0.7	0.9	Fine (0.125-0.250)	S-twist		Uniform oxidized

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Temper	Inclusions	Sort Type	Sphericity	Roundness	Texture Type	Cord Twist	Refits	Paste Core
1333	Grit	Quartz fragmen	Poorly Sorted	0.5	0.1	Coarse (0.5-1.0 mm)	Indeterminate		Uniform oxidized
1334	Grit	black igneous	Poorly Sorted	0.5	0.9	Medium (.025-.5 mm dia.)	Indeterminate		Uniform oxidized
1335	Grit	None	Well Sorted	0.9	0.9	Fine (0.125-0.250)	Indeterminate		Uniform oxidized
1337	Grit	None	Well Sorted	0.9	0.9	Fine (0.125-0.250)	Indeterminate		Uniform oxidized
1338	Grit	None	Poorly Sorted	0.5	0.7	Fine (0.125-0.250)	Z-twist		Uniform reduced
1341	Grit	black igneous	Poorly Sorted	0.7	0.5	Coarse (0.5-1.0mm)	Indeterminate		Unknown
1342	Grit	Quartz sand	Poorly Sorted	0.7	0.3	Medium (.025-.5 mm dia.)	S-twist		Oxidized exterior margin/reduced interior margin
1343	Grit	black igneous	Poorly Sorted	0.7	0.3	Medium (.025-.5 mm dia.)	Indeterminate		Uniform oxidized
1345	Grit	black igneous	Poorly Sorted	0.7	0.9	Medium(.025-.5mmdia.)	Indeterminate		Uniform oxidized
1348	Grit	black igneous	Well Sorted	0.9	0.9	Fine (0.125-0.250)	S-twist		Uniform oxidized
1349	Grit	black igneous	Poorly Sorted	0.5	0.3	Medium (.025-.5 mm dia.)	Indeterminate		Reduced exterior margin/oxidized interior margin
1350	Grit	None	Well Sorted	0.5	0.9	Fine (0.125-0.250)	S-twist		Oxidized margins/reduced core

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Munsell Exterior-Dark	Munsell Exterior-Light	Munsell Interior-Dark	Munsell Interior-Light
1175	5YR 2.5/1 (black)	5YR 4/3 (reddish brown)	5YR 2.5/1 (black)	5YR 2.5/1 (black)
1181	5YR4/3(reddishbrown)	5YR4/3(reddishbrown)	5YR4/3(reddishbrown)	5YR4/3(reddishbrown)
1291	10YR2/1(black)	10YR2/1(black)	10YR2/1(black)	10YR2/1(black)
1292	10YR2/1(black)	10YR2/2(verydarkbrown)	10YR2/1(black)	10YR5/4(yellowishbrown)
1293	10YR5/4(yellowishbrown)	10YR5/4(yellowishbrown)	10YR5/1(gray)	10YR5/1(gray)
1294	5YR3/1(verydarkgrey)	5YR4/3(reddishbrown)	5YR2.5/1(black)	5YR2.5/1(black)
1296	10YR2/1(black)	10YR3/2(verydarkgrayishbrown)	10YR2/1(black)	10YR2/1(black)
1297	5YR4/3(reddishbrown)	5YR5/6(yellowishred)	5YR2.5/1(black)	5YR2.5/1(black)
1298	10YR2/1(black)	10YR6/2(lightbrownishgray)	10YR2/1(black)	10YR6/2(lightbrownishgray)
1299	5YR3/2(darkreddishbrown)	5YR3/2(darkreddishbrown)	5YR3/1(verydarkgrey)	5YR3/1(verydarkgrey)
1301	7.5YR2/0(black)	7.5YR3/0(verydarkgrey)	7.5YR3/0(verydarkgrey)	7.5YR3/0(verydarkgrey)
1301	5YR2.5/1(black)	5YR4/6(yellowishred)	5YR2.5/1(black)	5YR6/4(lightreddishbrown)
1302	5YR 5/6 (yellowish red)	5YR 6/4 (light reddish brown)	5YR 5/2 (reddish grey)	5YR 5/2 (reddish grey)
1304	5YR2.5/1(black)	5YR2.5/2(darkreddishbrown)	5YR2.5/1(black)	5YR3/3(darkreddishbrown)
1307	5YR4/3(reddishbrown)	5YR6/8(reddishyellow)	5YR5/2(reddishgrey)	5YR4/4(reddishbrown)
1308	5YR2.5/1(black)	5YR4/2(darkreddishgrey)	5YR2.5/1(black)	5YR2.5/1(black)
1309	5YR2.5/1(black)	5YR4/2(darkreddishgrey)	5YR2.5/1(black)	5YR4/2(darkreddishgrey)

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Munsell Exterior-Dark	Munsell Exterior-Light	Munsell Interior-Dark	Munsell Interior-Light
1310	5YR2.5/1(black)	5YR4/6(yellowishred)	5YR2.5/1(black)	5YR2.5/1(black)
1311	5YR2.5/1(black)	5YR2.5/1(black)	5YR2.5/1(black)	5YR4/3(reddishbrown)
1317	5YR4/6(yellowishred)	5YR6/8(reddishyellow)	5YR5/2(reddishgrey)	5YR5/2(reddishgrey)
1318	10YR4/1(darkgray)	10YR4/1(darkgray)	Notapplicable	Notapplicable
1319	10YR5/3(brown)	10YR6/4(lightyellowishbrown)	Notapplicable	Notapplicable
1322	5YR 3/1 (very dark grey)	5YR 4/4 (reddish brown)	5YR 4/6 (yellowish red)	5YR 4/6 (yellowish red)
1323	5YR3/1(verydarkgrey)	5YR4/6(yellowishred)	5YR3/1(verydarkgrey)	5YR4/4(reddishbrown)
1324	5YR5/1(grey)	5YR6/4(lightreddishbrown)	5YR5/1(grey)	5YR6/8(reddishyellow)
1326	2.5YR5/4(Reddishbrown)	2.5YR5/4(Reddishbrown)	2.5YR4/0(Darkgrey)	2.5YR4/0(Darkgrey)
1327	5YR 3/1 (very dark grey)	5YR 4/6 (yellowish red)	Not applicable	Not applicable
1329	5YR 2.5/1 (black)	5YR 2.5/1 (black)	5YR 2.5/1 (black)	5YR 2.5/1 (black)

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Munsell Exterior-Dark	Munsell Exterior-Light	Munsell Interior-Dark	Munsell Interior-Light
1330	5YR 2.5/1 (black)	5YR 3/2 (dark reddish brown)	5YR 2.5/1 (black)	5YR 2.5/1 (black)
1332	5YR 5/2 (reddish grey)	5YR 5/6 (yellowish red)	5YR 5/2 (reddish grey)	5YR 6/6 (reddish yellow)
1333	5YR 3/1 (very dark grey)	5YR 5/6 (yellowish red)	5YR 4/2 (dark reddish gre	5YR 5/2 (reddish grey)
1334	5YR 4/2 (dark reddish grey)	5YR 5/6 (yellowish red)	5YR 3/1 (very dark grey)	5YR 3/1 (very dark grey)
1335	5YR 2.5/1 (black)	5YR 5/2 (reddish grey)	5YR 2.5/1 (black)	5YR 5/2 (reddish grey)
1337	10YR3/1(verydarkgray)	10YR5/3(brown)	10YR5/1(gray)	10YR5/1(gray)
1338	10YR2/1(black)	10YR5/4(yellowishbrown)	10YR2/1(black)	10YR2/1(black)
1341	5YR5/6(yellowishred)	5YR6/1(gray)	10YR6/4(lightyellowishbro	10YR6/4(lightyellowishbrown
1342	5YR 4/4 (reddish brown)	5YR 4/4 (reddish brown)	10YR 5/4 (yellowish brow	10YR 5/4 (yellowish brown)
1343	10YR 3/4 (dark yellowish bro	10YR 6/3 (pale brown)	Not applicable	Not applicable
1345	10YR5/3(brown)	10YR5/3(brown)	10YR3/3(darkbrown)	10YR5/3(brown)
1348	5YR3/2(darkreddishbrown)	5YR4/4(reddishbrown)	5YR3/1(verydarkgrey)	5YR4/4(reddishbrown)
1349	5YR 5/4 (reddish brown)	5YR 5/4 (reddish brown)	5YR 5/4 (reddish brown)	5YR 5/4 (reddish brown)
1350	10YR 3/2 (very dark grayish	10YR 5/2 (grayish brown)	10YR 2/1 (black)	10YR 2/1 (black)

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Orifice Type	Collared Surface Exterior	Collared Surface Interior	Collared Profile	Collared Orientation
1175	Indeterminate	Indeterminate	Exfoliated	Flat	Out-slanted
1181	Indeterminate	Cordmarked	Plain	Flat	incurving
1291	Indeterminate	Cordmarked	Plain	Flat	vertical
1292	Circular	Cordimpressed	Cordimpressed	Convex	flared
1293	Circular	Cordimpressed, twisted horizontal	Cordimpressed, twisted horizontal	Flat	vertical
1294	Indeterminate	Cordmarked	Plain	Concave	vertical
1296	Circular	Cordmarked	Plain	Concave	vertical
1297	Polygonal	Cordmarked	Plain	Concave-extruded	Flared
1298	Circular	Plain	Plain	Flat	vertical
1299	Indeterminate	Plain	Plain	Concave	outslanted
1301	Indeterminate	Cordmarked	Plain	Flat	vertical
1301	Polygonal	Plain	Plain	Tapered	vertical
1302	Indeterminate	Cordmarked	Exfoliated	Concave	Indeterminate
1304	Indeterminate	Cordmarked	Plain	Flat	flared
1307	Circular	Cordmarked	Plain	Concave	flared
1308	Circular	Cordmarked	Plain	Concave	vertical
1309	Circular	Cordmarked	Plain	Flat	vertical

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Orifice Type	Collared Surface Exterior	Collared Surface Interior	Collared Profile	Collared Orientation
1310	Indeterminate	Cordmarked	Plain	Concave	flared
1311	Circular	Cordmarked	Plain	Flat	flared
1317	Indeterminate	Cordmarked	Plain	Concave	outslanted
1318	Indeterminate	Cordmarked	Plain	Flat	vertical
1319	Indeterminate	Cordmarked	Exfoliated	Flat	Indeterminate
1322	Indeterminate	Smoothed-over cordmarked	Plain	Tapered	vertical
1323	Indeterminate	Cordmarked	Plain	Concave	vertical
1324	Indeterminate	Cordimpressed, twisted horizontal	Cordimpressed, twisted horizontal	Tapered	vertical
1326	Polygonal	Plain	Plain	Concave-extruded	vertical
1327	Circular	Cordmarked	Exfoliated	Flat	Indeterminate
1329	Indeterminate	Cordmarked	Plain	Flat	vertical
1330	Indeterminate	Indeterminate	Plain	Concave	flared
1332	Indeterminate	Cordmarked	Plain	Concave	vertical
1333	Indeterminate	Cordmarked	Plain	Tapered	vertical

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Orifice Type	Collared Surface Exterior	Collared Surface Interior	Collared Profile	Collared Orientation
1334	Indeterminate	Cordmarked	Plain	Concave	vertical
1335	Indeterminate	Cordmarked	Plain	Concave	vertical
1337	Polygonal	Plain	Plain	Concave	vertical
1338	Indeterminate	Cordmarked	Plain	Flat	vertical
1341	Indeterminate	Plain	Plain	Tapered	vertical
1342	Indeterminate	Cordmarked	Plain	Concave	vertical
1343	Indeterminate	Exfoliated	Exfoliated	Concave-extruded	Indeterminate
1345	Indeterminate	Plain	Plain	Flat	inslanted
1348	Polygonal	Cordmarked	Plain	Flat	out-slanted
1349	Indeterminate	Plain	Plain	Flat	flared
1350	Polygonal	Plain	Plain	Flat	vertical

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Collared Type	Lip Form	Lip Surface	Lip Treatment
1175	Folded	Rounded	Indeterminate	Indeterminate
1181	Indeterminate	Flattened	Plain	Cordimpressed lip and rim margin end of wrapped paddle
1291	Applique	Flattened	Plain	Notched interior rim margin cordimpressed end of wrapped paddle
1292	Fillet	Rounded	Plain	Cordimpressed lip and rim margin end of wrapped paddle
1293	Indeterminate	Rounded	Plain	Notched orifice wall
1294	Indeterminate	Rounded	Plain	Notched Twisted CordImpressions
1296	Indeterminate	Rounded	Plain	Notched Twisted CordImpressions
1297	Indeterminate	Flattened	Plain	Plain
1298	Indeterminate	Flattened	Plain	Cordimpressed lip and rim margin end of wrapped paddle
1299	Indeterminate	Indeterminate	Plain	Notched Twisted CordImpressions
1301	Indeterminate	Flattened	Plain	Cordimpressions
1301	Indeterminate	Flattened	Plain	Cordimpressed lip and rim margin end of wrapped paddle
1302	Indeterminate	Rounded	Plain	Notched interior rim margin
1304	Applique	Pinched	Plain	Cordimpressed lip and rim margin end of wrapped paddle
1307	Folded	Rounded	Plain	Notched Twisted CordImpressions
1308	Applique	Rounded	Plain	Notched interior rim margin tool
1309	Indeterminate	Flattened	Plain	Cordimpressed lip and rim margin end of wrapped paddle

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Collared Type	Lip Form	Lip Surface	Lip Treatment
1310	Applique	Rounded	Plain	Notched interior rim margin cordimpressed
1311	Folded	Rounded	Plain	Notched end of paddle
1317	Indeterminate	Flattened	Plain	Notched Cordimpressed lip and upper rim margin
1318	Indeterminate	Rounded	Cordimpressed	Notched interior rim margin
1319	Indeterminate	Rounded	Cordimpressed	Indeterminate
1322	Fillet	Folded	Plain	Notched interior rim margin
1323	Indeterminate	Rounded	Plain	Notched Cordimpressed lip and upper rim margin
1324	Indeterminate	Rounded	Plain	Notched Twisted CordImpressions
1326	Applique	Flattened	Plain	None
1327	Fillet	Flattened	Plain	None
1329	Indeterminate	Flattened	Plain	None
1330	Indeterminate	Rounded	Cord impressed	Notched orifice wall
1332	Indeterminate	Flattened	Cordmarked	Indeterminate
1333	Fold-over-fillet	Flattened	Plain	None

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Collared Type	Lip Form	Lip Surface	Lip Treatment
1334	Applique	Flattened	Cord impressed	Notched interior rim margin
1335	Indeterminate	Flattened	Cord impressed	Notched interior rim margin
1337	Indeterminate	Flattened	Plain	None
1338	Indeterminate	Flattened	Plain	Notched interior rim margin
1341	Applique	Flattened	Plain	None
1342	Indeterminate	Notched	Plain	Notched interior rim margin
1343	Indeterminate	Notched	Plain	Notched interior rim margin
1345	Indeterminate	Flattened	Plain	Notched interior rim margin cordimpressed
1348	Indeterminate	Rounded	Plain	Notched interior rim margin Wedge-shaped notches
1349	Indeterminate	Pinched	Cord impressed	Notched interior rim margin
1350	Indeterminate	Flattened	Cord impressed	None

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Rim Margin Surface Exterior	Rim Margin Treatmeant Exterior	Rim Margin Surface Interior	Rim Margin Treatment Interior
1175	Indeterminate	Indeterminate	Exfoliated	None
1181	Plain	Cordmarked Cord-wrapped stick	Plain	None
1291	Plain	Cordmarked Cord-wrapped stick	Plain	None
1292	Plain	None	Plain	None
1293	Plain	Horizontal band of knotted punctates below rim	Plain	Horizontal bands of twisted cords on upper rim
1294	Plain	Cordmarked Cord-wrapped stick	Plain	None
1296	Plain	Cordmarked	Plain	Cordimpressed
1297	Plain	Cordimpressed notches	Plain	None
1298	Plain	None	Plain	None
1299	Plain	Plain	Plain	Cordimpressed
1301	Cordmarked	Cord-wrappedstick	Plain	None
1301	Plain	None	Plain	Cordimpressed end of paddle on interior rim margin
1302	Indeterminate	Indeterminate	Exfoliated	Notched interior rim margin
1304	Plain	Cordmarked Cord-wrapped stick	Plain	None
1307	Plain	Cordmarked Cord-wrapped stick	Plain	None
1308	Plain	Cordmarked Cord-wrapped stick	Plain	Notched interior rim margin
1309	Plain	Cordmarked Cord-wrapped stick	Plain	None

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Rim Margin Surface Exterior	Rim Margin Treatmeant Exterior	Rim Margin Surface Interior	Rim Margin Treatment Interior
1310	Plain	Cordmarked Cord-wrapped stick	Plain	None
1311	Plain	None	Plain	None
1317	Plain	Cordmarked Cord-wrapped stick	Plain	Cordimpressed notches
1318	Plain	Cordmarked Cord-wrapped stick	Plain	None
1319	Cordmarked	Cordmarked Cord-wrapped stick	Exfoliated	Indeterminate
1322	Cordmarked	Cordmarked Cord-wrapped stick	Plain	None
1323	Plain	Cordmarked Cord-wrapped stick	Plain	Cordmarked Cord-wrapped stick
1324	Plain	Horizontal bands of twisted cordimpressions	Plain	Horizontal bands of twisted cordimpressions
1326	Plain	None	Plain	None
1327	Cordmarked	Cordmarked Cord-wrapped stick	Exfoliated	Indeterminate
1329	Cordmarked	Cordmarked Cord-wrapped stick	Cordimpressed	Twisted cords on interior rim and lip
1330	Indeterminate	Indeterminate	Plain	Cordimpressed notches

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Rim Margin Surface Exterior	Rim Margin Treatmeant Exterior	Rim Margin Surface Interior	Rim Margin Treatment Interior
1332	Cordmarked	Cordmarked Cord-wrapped stick	Plain	None
1333	Cordmarked	Cordmarked Cord-wrapped stick	Plain	None
1334	Cordmarked	Cordmarked Cord-wrapped stick	Cordimpressed	Twisted cords on interior rim and lip
1335	Exfoliated	Indeterminate	Plain	None
1337	Plain	None	Plain	None
1338	Plain	Cordmarked Cord-wrapped stick	Plain	Transverse, vee-shaped notches
1341	Plain	None	Plain	None
1342	Cordmarked	Cordmarked Cord-wrapped stick	Plain	Notched (vee-channel)
1343	Exfoliated	None	Exfoliated	None
1345	Plain	None	Plain	None
1348	Cordmarked	Cordmarked Cord-wrapped stick	Plain	None
1349	Plain	None	Cord impressed	Cord impressed notches
1350	Plain	Cordmarked Cord-wrapped stick	Plain	Notched (vee-channel)

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Neck Form	Neck Surface Exterior	Neck Surface Interior	Neck Treatment
1175	Indeterminate	Indeterminate	Indeterminate	Indeterminate
1181	Indeterminate	Cordmarked	Plain	Cordmarked Cord-wrapped stick
1291	Indeterminate	Cordimpressed	Plain	n/a
1292	Flared	Plain	Plain	Cordimpressions
1293	Flared	Cordimpressed	Plain	Horizontal rows of cordimpressions
1294	Flared	Cordmarked	Plain	Cordmarked Cord-wrapped stick
1296	n/a	n/a	n/a	n/a
1297	n/a	n/a	n/a	n/a
1298	Indeterminate	Plain	Plain	None
1299	n/a	n/a	n/a	n/a
1301	Indeterminate	Indeterminate	Indeterminate	Indeterminate
1301	Indeterminate	Plain	Plain	Punctated(corded)
1302	n/a	n/a	n/a	n/a
1304	n/a	n/a	n/a	n
1307	Straight	Cordmarked	Plain	None
1308	Flared	Cordmarked	Plain	Cordmarked Cord-wrapped stick
1309	Indeterminate	Cordimpressed	Plain	Cordimpressions

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Neck Form	Neck Surface Exterior	Neck Surface Interior	Neck Treatment
1310	Flared	Cordmarked	Plain	Cordmarked Cord-wrapped stick
1311	Flared	Plain	Plain	Punctated(corded)
1317	Flared	Cordmarked	Plain	Indeterminate
1318	n/a	n/a	n/a	n/a
1319	Indeterminate	Indeterminate	Indeterminate	Indeterminate
1322	Indeterminate	Indeterminate	Indeterminate	Indeterminate
1323	n/a	n/a	n/a	n/a
1324	Indeterminate	Knotted Punctates	Cordimpressed	Horizontal rows of cordimpressions
1326	Indeterminate	Cordmarked	Indeterminate	Indeterminate
1327	n/a	n/a	n/a	n/a
1329	n/a	n/a	n/a	n/a
1330	n/a	n/a	n/a	n/a

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Neck Form	Neck Surface Exterior	Neck Surface Interior	Neck Treatment
1332	Indeterminate	Cordmarked	Plain	Indeterminate
1333	n/a	n/a	n/a	n/a
1334	n/a	n/a	n/a	n/a
1335	n/a	n/a	n/a	n/a
1337	n/a	n/a	n/a	n/a
1338	Flared	Cordmarked	Plain	Cordmarked Cord-wrapped stick
1341	Indeterminate	Plain	Plain	None
1342	Indeterminate	Indeterminate	Indeterminate	Indeterminate
1343	Indeterminate	Indeterminate	Indeterminate	Indeterminate
1345	n/a	n/a	n/a	n/a
1348	Flared	Cordmarked	Plain	None
1349	Straight	Cordmarked	Plain	Knotted punctates on upper rim margin
1350	n/a	n/a	n/a	n/a

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Shoulder Form	Shoulder Surface Exterior	Shoulder Surface Interior	Shoulder Treatment	Use Alteration
1175	Indeterminate	Indeterminate	Indeterminate	Indeterminate	None
1181	n/a	n/a	n/a	n/a	None
1291	n/a	n/a	n/a	n/a	Carbonization line below 0.3cm and goes all way down
1292	n/a	n/a	n/a	n/a	Carbonization entire lip
1293	n/a	n/a	n/a	n/a	None
1294	n/a	n/a	n/a	n/a	None
1296	n/a	n/a	n/a	n/a	None
1297	n/a	n/a	n/a	n/a	None
1298	n/a	n/a	n/a	n/a	Carbonization rim, interior and exterior 0.4cm down
1299	n/a	n/a	n/a	n/a	None
1301	Indeterminate	Indeterminate	Indeterminate	Indeterminate	None
1301	n/a	n/a	n/a	n/a	None
1302	n/a	n/a	n/a	n/a	None
1304	n/a	n/a	n/a	n/a	None
1307	n/a	n/a	n/a	n/a	None

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Shoulder Form	Shoulder Surface Exterior	Shoulder Surface Interior	Shoulder Treatment	Use Alteration
1308	n/a	n/a	n/a	n/a	Carbonization exterior rim and exterior surface Type 3
1309	n/a	n/a	n/a	n/a	None
1310	n/a	n/a	n/a	n/a	None
1311	n/a	n/a	n/a	n/a	None
1317	n/a	n/a	n/a	n/a	None
1318	n/a	n/a	n/a	n/a	None
1319	Indeterminate	Indeterminate	Indeterminate	Indeterminate	None
1322	Indeterminate	Indeterminate	Indeterminate	Indeterminate	None
1323	n/a	n/a	n/a	n/a	None
1324	n/a	n/a	n/a	n/a	None
1326	Indeterminate	Indeterminate	Indeterminate	Indeterminate	None
1327	n/a	n/a	n/a	n/a	None
1329	n/a	n/a	n/a	n/a	None
1330	n/a	n/a	n/a	n/a	None

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Shoulder Form	Shoulder Surface Exterior	Shoulder Surface Interior	Shoulder Treatment	Use Alteration
1332	Indeterminate	Indeterminate	Indeterminate	Indeterminate	None
1333	n/a	n/a	n/a	n/a	None
1334	n/a	n/a	n/a	n/a	None
1335	n/a	n/a	n/a	n/a	Carbonization interior and exterior
1337	n/a	n/a	n/a	n/a	None
1338	n/a	n/a	n/a	n/a	Carbonization spots exterior rim and collar
1341	n/a	n/a	n/a	n/a	None
1342	Indeterminate	Indeterminate	Indeterminate	Indeterminate	None
1343	Indeterminate	Indeterminate	Indeterminate	Indeterminate	None
1345	n/a	n/a	n/a	n/a	None
1348	Indeterminate	Indeterminate	Indeterminate	Indeterminate	Fire Clouds
1349	Indeterminate	Indeterminate	Indeterminate	Indeterminate	None
1350	n/a	n/a	n/a	n/a	None

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Orifice Diameter	% Orifice	Collared Height1	Collared Height2	Collared Thick1	Collared Thick2
1175	n/a	n/a	n/a	n/a	n/a	n/a
1181	52	3.00	1.99	2.03	0.95	0.91
1291	44	5.00	1.77	1.77	0.84	0.84
1292	24	10.00	1.19	1.27	1.09	1.10
1293	56	5.00	2.53	2.61	0.87	0.84
1294	32	3.00	1.90	2.10	1.00	0.86
1296	64	5.00	1.60	1.60	1.40	1.05
1297	48	2.00	2.10	2.00	0.97	0.92
1298	44	5.00	2.10	2.33	0.90	0.96
1299	n/a	n/a	n/a	n/a	n/a	n/a
1301	n/a	n/a	1.63	1.68	n/a	n/a
1301	28	2.00	2.15	2.19	1.26	1.27
1302	n/a	n/a	n/a	n/a	n/a	n/a
1304	32	2.00	1.40	1.37	0.99	0.98
1307	28	10.00	2.27	2.36	0.79	0.80
1308	48	4.00	0.19	0.20	1.04	1.05
1309	40	5.00	1.96	2.04	0.77	0.78

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Orifice Diameter	% Orifice	Collared Height1	Collared Height2	Collared Thick1	Collared Thick2
1310	64	2.00	2.37	2.24	1.26	1.26
1311	60	5.00	1.13	1.00	0.56	0.66
1317	24	5.00	3.64	3.57	1.20	1.10
1318	44	5.00	2.20	2.20	1.20	1.40
1319	44	5.00	n/a	n/a	n/a	n/a
1322	n/a	n/a	2.03	2.08	1.22	1.28
1323	24	5.00	0.23	0.22	0.11	0.10
1324	60	4.00	1.30	1.50	0.98	1.24
1326	n/a	n/a	2.31	2.37	1.10	1.16
1327	n/a	n/a	1.46	1.50	n/a	n/a
1329	n/a	n/a	n/a	n/a	n/a	n/a
1330	n/a	n/a	n/a	n/a	n/a	n/a

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Orifice Diameter	% Orifice	Collared Height1	Collared Height2	Collared Thick1	Collared Thick2
1332	n/a	n/a	1.42	1.49	0.61	0.62
1333	n/a	n/a	2.50	2.61	1.13	1.08
1334	n/a	n/a	1.84	1.88	0.90	0.90
1335	n/a	n/a	2.70	2.67	0.90	0.88
1337	n/a	n/a	n/a	n/a	n/a	n/a
1338	32	4.00	1.89	1.87	0.79	0.82
1341	36	4.00	2.03	2.17	1.06	1.12
1342	n/a	n/a	2.02	2.02	0.84	0.82
1343	n/a	n/a	n/a	n/a	n/a	n/a
1345	n/a	n/a	1.10	1.20	0.51	0.52
1348	28	10.00	1.50	1.53	1.11	1.05
1349	n/a	n/a	2.13	2.04	1.00	0.98
1350	n/a	n/a	n/a	n/a	0.68	0.65

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Neck Thickness1	Neck Thickness2	Lip Width1	Lip Width2	Weight	Decorative Mode
1175	n/a	n/a	n/a	n/a	2.53	Fragment
1181	n/a	n/a	0.55	0.56	6.27	F
1291	0.69	0.69	0.60	0.60	7.22	D
1292	0.65	0.67	0.85	0.71	1.08	HCI
1293	0.51	0.50	0.48	0.45	14.69	PSC
1294	0.80	0.84	0.60	0.50	6.80	H
1296	n/a	n/a	0.74	0.70	10.50	Fragment
1297	n/a	n/a	0.99	1.02	12.30	Fragment
1298	0.59	0.54	0.61	0.65	9.30	O
1299	n/a	n/a	n/a	n/a	2.05	Fragment
1301	n/a	n/a	0.56	0.75	4.48	D
1301	n/a	n/a	0.53	0.50	4.83	O
1302	n/a	n/a	n/a	n/a	n/a	K
1304	n/a	0.40	0.40	0.20	3.82	J
1307	0.68	0.68	0.47	0.55	16.10	H
1308	0.51	0.52	0.51	0.47	9.93	J
1309	n/a	n/a	0.53	0.54	7.58	D

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Neck Thickness1	Neck Thickness2	Lip Width1	Lip Width2	Weight	Decorative Mode
1310	0.92	0.92	0.56	0.61	13.70	H
1311	0.61	0.61	0.29	0.40	9.97	L
1317	0.86	0.91	0.64	0.63	25.93	F
1318	1.00	1.30	0.80	6.70	6.37	N
1319	n/a	n/a	n/a	n/a	4.45	N
1322	n/a	n/a	0.84	0.77	20.52	K
1323	0.76	0.62	0.53	0.64	12.79	F
1324	0.71	0.69	0.40	0.40	9.04	PSC
1326	0.69	0.67	0.75	0.75	6.96	Fragment
1327	n/a	n/a	0.74	0.64	8.61	B
1329	n/a	n/a	n/a	n/a	1.18	Fragment
1330	n/a	n/a	n/a	n/a	1.28	Fragment

Table B.3. 2011 UWM Aztalan Late Woodland Collared Vessel Inventory, continued.

ID#	Neck Thickness1	Neck Thickness2	Lip Width1	Lip Width2	Weight	Decorative Mode
1332	n/a	n/a	0.62	0.63	2.75	B
1333	n/a	n/a	0.61	0.59	9.08	B
1334	n/a	n/a	0.49	0.52	8.66	O
1335	n/a	n/a	0.62	0.61	8.43	O
1337	n/a	n/a	0.83	0.55	2.37	Fragment
1338	0.60	0.57	0.64	0.64	6.99	SRC
1341	n/a	n/a	0.60	0.60	6.53	A
1342	n/a	n/a	0.35	0.45	6.28	SRC
1343	n/a	n/a	n/a	n/a	6.95	K
1345	0.39	0.30	0.44	0.52	1.21	E
1348	0.96	0.83	0.78	0.62	73.02	SRC
1349	0.83	0.81	4.07	0.41	14.90	G
1350	n/a	n/a	0.64	0.64	3.02	SRC

Table C .1. 2013 UWM Aztalan Feature 8 Vessel Inventory.

ID #	Collection	Vessel #	Lot Number	Test Unit	Stratum	Refits
1409	UWM-ARL_2013	1372	2013-106.0019	TU 08		
1420	UWM-ARL_2013	1383	2013-106.0017	TU 08		
1421	UWM-ARL_2013	1384	2013-106.0017	TU 08		1230, 1231, 1234, 1238, 1239

Table C .1. 2013 UWM Aztalan Feature 8 Vessel Inventory, continued.

ID #	Level	Feature	Context/Association	Ceramic Type	Vessel Form	Rim-Form
1409	3	8	2011-20FE SE1/2 Hand Excavation	Powell Plain	Jar	Everted-simple
1420	2	8	Hand Excavated	Powell Plain	Jar	Everted-folded: Type 7
1421	2	8	Hand Exacavation	Powell Plain	Jar	Everted-simple

Table C .1. 2013 UWM Aztalan Feature 8 Vessel Inventory, continued.

ID #	Neck-Form	Shoulder-Form	Lip-Treatment	Exterior-Finish	Exterior Polished
1409	Inslanted	Indeterminate	Flattened	Plain	No
1420	Inslanted	Indeterminate	Flattened	Plain	Yes
1421	Indeterminate	Indeterminate	Flattened	Plain	Yes

Table C .1. 2013 UWM Aztalan Feature 8 Vessel Inventory, continued.

ID #	Interior Finish	Interior Polish	Temper	TextureType	Other-Inclusions
1409	Plain	No	Shell	Fine(0.125-0.250)	None
1420	Plain	No	Shell	Medium(.025-.5mmdia.)	None
1421	Plain	No	Shell	Medium(.025-.5mmdia.)	Quartz sand

Table C .1. 2013 UWM Aztalan Feature 8 Vessel Inventory, continued.

ID #	Paste-Crossection	Munsell-Exterior-Dark	Munsell-Exterior-Light
1409	Reduced margins-oxidized core	5YR 4/6 (yellowish red)	5YR 6/6 (reddish yellow)
1420	Oxidized margins-reduced core	7.5YR 5/8 (strong brown)	7.5YR 6/6 (reddish yellow)
1421	Oxidized margins-reduced core	5YR 4/6 (yellowish red)	5YR 5/6 (yellowish red)

Table C .1. 2013 UWM Aztalan Feature 8 Vessel Inventory, continued.

ID #	Munsell-Interior-Dark	Munsell-Interior-Light	Decoration-Exterior	Decoration-Interior
1409	5YR 4/6 (yellowish red)	5YR 5/6 (yellowish red)	None	None
1420	7.5YR 6/6 (reddish yellow)	7.5YR 6/4 (light brown)	None	None
1421	5YR 4/6 (yellowish red)	5YR 5/6 (yellowish red)	None	None

Table C .1. 2013 UWM Aztalan Feature 8 Vessel Inventory, continued.

ID #	Weight	Orifice Diameter	% Orifice	Rim width-1	Rim width-2	Rim width-3	Average rim
1409	7.3	15	8.00	1.30	1.30	1.30	1.30
1420	24.3	34	<5.0	1.50	1.50	1.50	1.50
1421	3.0	15	0.02	1.05	1.00	0.95	1.00

Table C .1. 2013 UWM Aztalan Feature 8 Vessel Inventory, continued.

ID #	Wall thickness-1	Wall thickness-2	Average wall	Lip Thickness	Wall/rim (RPR)
1409	0.49	0.51	0.50	0.59	0.38
1420	0.60	0.59	0.59	0.6	0.4
1421	0.40	0.40	0.40	0.35	0.4

Appendix C: XRF DATA

Table C.1. 2011 UWM Collection Vessels Utilized in pXRF Analysis.

Test Unit 2		Midden			Feature 8
v1240	v1300	v1159	v1241	v1273	v1220
v1260	v1301	v1160	v1242	v1274	v1228
v1261	v1303	v1161	v1243	v1275	v1229
v1262	v1304	v1162	v1244	v1276	v1230
v1263	v1306	v1163	v1245	v1277	v1231
v1264	v1317	v1164	v1246	v1278	v1234
v1265	v1321	v1165	v1247	v1279	v1236
v1266	v1325	v1169	v1248	v1280	v1237
v1267	v1326	v1170	v1250	v1281	v1238
v1268	v1327	v1175	v1251	v1284	v1239
v1269	v1328	v1211	v1252	v1285	v1287
v1294	v1336	v1218	v1253	v1286	v1288
v1296		v1219	v1254	v1289	
v1297		v1221	v1255	v1290	
v1298		v1222	v1256	v1291	
		v1223	v1257	v1293	
		v1224	v1258	v1308	
		v1225	v1259	v1311	
		v1226	v1271	v1318	
		v1227	v1272	v1337	

Table C.2. Northeast Mound Vessels Utilized in pXRF Analysis**.**

Sub Mound			Mound Fill	Mound Top	Indeterminate Provenience Vessels
v01	v27	v60	v06	v56	v75
v02	v28	v61	v08	v57	
v03	v29	v62	v87	v58	
v04	v30	v65	v89	v59	
v05	v31	v66		v63	
v09	v32	v67		v64	
v10	v33	v68		v76	
v11	v34	v70		v77	
v12	v35	v71		v78	
v13	v36	v72		v133	
v14	v37	v73			
v15	v38	v74			
v16	v39	v120			
v17	v41	v121			
v18	v42	v122			
v19	v43	v123			
v20	v44	v124			
v21	v45	v125			
v22	v46	v126			
v23	v47	v127			
v24	v48	v128			
v25	v49	v129			
v26	v50	v130			
	v51				
	v52				
	v53				
	v54				
	v55				

Table C.3. Artifact Mean Compositions.

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v01	0.0022	0.0012	0.0054	0.7580	0.0010	0.0050	0.0122	0.0263	0.0667	0.0133	0.0092	0.0998
v02	0.0014	0.0012	0.0045	0.8030	0.0007	0.0048	0.0093	0.0206	0.0587	0.0116	0.0108	0.0737
v03	0.0016	0.0006	0.0029	0.7970	0.0009	0.0063	0.0103	0.0381	0.0462	0.0109	0.0053	0.0796
v04	0.0016	0.0008	0.0032	0.7370	0.0010	0.0061	0.0125	0.0274	0.0593	0.0121	0.0072	0.1323
v05	0.0011	0.0006	0.0049	0.7310	0.0009	0.0067	0.0131	0.0339	0.0531	0.0114	0.0111	0.1318
v06	0.0018	0.0009	0.0016	0.6780	0.0010	0.0065	0.0143	0.0341	0.1316	0.0081	0.0095	0.1126
v08	0.0013	0.0006	0.0044	0.8290	0.0006	0.0041	0.0069	0.0215	0.0417	0.0117	0.0083	0.0695
v09	0.0020	0.0010	0.0033	0.8110	0.0011	0.0054	0.0104	0.0246	0.0380	0.0120	0.0049	0.0857
v10	0.0021	0.0005	0.0040	0.7730	0.0008	0.0056	0.0116	0.0336	0.0551	0.0116	0.0113	0.0911
v11	0.0012	0.0004	0.0033	0.7690	0.0010	0.0041	0.0124	0.0243	0.0495	0.0097	0.0062	0.1188
v12	0.0018	0.0012	0.0038	0.7490	0.0011	0.0063	0.0131	0.0280	0.0610	0.0144	0.0101	0.1100
v13	0.0020	0.0010	0.0033	0.8130	0.0009	0.0045	0.0106	0.0225	0.0512	0.0095	0.0099	0.0711
v14	0.0017	0.0004	0.0031	0.7500	0.0011	0.0066	0.0111	0.0332	0.0564	0.0141	0.0114	0.1109
v15	0.0016	0.0007	0.0043	0.7140	0.0010	0.0067	0.0150	0.0334	0.0926	0.0114	0.0128	0.1071

Table C.3. Artifact Mean Compositions, Continued

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v16	0.0017	0.0008	0.0028	0.7770	0.0009	0.0049	0.0104	0.0210	0.0580	0.0112	0.0082	0.1033
v17	0.0018	0.0003	0.0048	0.6630	0.0010	0.0085	0.0151	0.0303	0.0787	0.0134	0.0121	0.1709
v18	0.0018	0.0003	0.0039	0.7230	0.0008	0.0069	0.0145	0.0466	0.0689	0.0142	0.0103	0.1082
v19	0.0018	0.0004	0.0041	0.7530	0.0007	0.0056	0.0123	0.0321	0.0640	0.0120	0.0089	0.1048
v20	0.0015	0.0005	0.0032	0.7630	0.0013	0.0052	0.0111	0.0257	0.0565	0.0104	0.0078	0.1142
v21	0.0018	0.0006	0.0031	0.7720	0.0010	0.0061	0.0110	0.0382	0.0516	0.0121	0.0120	0.0904
v22	0.0015	0.0007	0.0037	0.7860	0.0011	0.0057	0.0111	0.0294	0.0589	0.0113	0.0094	0.0810
v23	0.0020	0.0007	0.0024	0.7260	0.0014	0.0061	0.0126	0.0656	0.0653	0.0100	0.0090	0.0992
v24	0.0015	0.0008	0.0036	0.7750	0.0011	0.0049	0.0127	0.0307	0.0695	0.0113	0.0091	0.0796
v25	0.0018	0.0009	0.0034	0.7710	0.0011	0.0053	0.0127	0.0269	0.0743	0.0118	0.0091	0.0821
v26	0.0019	0.0010	0.0027	0.7680	0.0012	0.0059	0.0105	0.0302	0.0456	0.0127	0.0107	0.1098
v27	0.0017	0.0003	0.0032	0.7770	0.0010	0.0044	0.0117	0.0241	0.0589	0.0113	0.0090	0.0978
v28	0.0018	0.0006	0.0030	0.7710	0.0009	0.0064	0.0118	0.0341	0.0496	0.0124	0.0068	0.1014
v29	0.0018	0.0011	0.0022	0.7170	0.0013	0.0062	0.0144	0.0294	0.0868	0.0135	0.0077	0.1191
v30	0.0012	0.0004	0.0029	0.7470	0.0010	0.0060	0.0127	0.0292	0.0585	0.0107	0.0075	0.1227
v31	0.0017	0.0007	0.0043	0.7600	0.0010	0.0059	0.0125	0.0399	0.0684	0.0122	0.0093	0.0843
v32	0.0019	0.0005	0.0026	0.7970	0.0007	0.0050	0.0087	0.0250	0.0563	0.0123	0.0080	0.0818
v33	0.0015	0.0011	0.0030	0.7660	0.0008	0.0040	0.0121	0.0225	0.0778	0.0117	0.0103	0.0893

Table C.3. Artifact Mean Compositions, Continued.

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v34	0.0016	0.0006	0.0038	0.7920	0.0007	0.0046	0.0087	0.0257	0.0533	0.0129	0.0056	0.0901
v35	0.0021	0.0004	0.0030	0.7210	0.0009	0.0076	0.0108	0.0344	0.0677	0.0145	0.0089	0.1289
v36	0.0019	0.0005	0.0039	0.7040	0.0010	0.0087	0.0126	0.0368	0.0736	0.0139	0.0099	0.1337
v37	0.0013	0.0005	0.0042	0.7820	0.0008	0.0044	0.0116	0.0354	0.0664	0.0099	0.0095	0.0745
v38	0.0016	0.0005	0.0037	0.7880	0.0008	0.0052	0.0097	0.0348	0.0597	0.0113	0.0096	0.0752
v39	0.0017	0.0008	0.0047	0.7650	0.0008	0.0046	0.0115	0.0260	0.0846	0.0105	0.0122	0.0776
v41	0.0017	0.0004	0.0039	0.7760	0.0010	0.0045	0.0103	0.0259	0.0720	0.0115	0.0077	0.0850
v42	0.0024	0.0010	0.0044	0.7670	0.0008	0.0056	0.0118	0.0268	0.0657	0.0160	0.0087	0.0900
v43	0.0013	0.0005	0.0044	0.7600	0.0009	0.0051	0.0128	0.0318	0.0742	0.0127	0.0139	0.0821
v44	0.0022	0.0005	0.0036	0.8060	0.0009	0.0047	0.0100	0.0318	0.0477	0.0096	0.0093	0.0741
v45	0.0022	0.0012	0.0032	0.7580	0.0007	0.0046	0.0105	0.0228	0.0621	0.0126	0.0071	0.1147
v46	0.0015	0.0007	0.0048	0.7780	0.0008	0.0054	0.0109	0.0233	0.0612	0.0127	0.0076	0.0933
v47	0.0018	0.0010	0.0066	0.7540	0.0008	0.0057	0.0112	0.0407	0.0684	0.0113	0.0135	0.0852
v48	0.0020	0.0010	0.0026	0.7080	0.0013	0.0146	0.0116	0.0483	0.0687	0.0121	0.0128	0.1173
v49	0.0018	0.0008	0.0034	0.7690	0.0010	0.0053	0.0136	0.0288	0.0559	0.0108	0.0085	0.1013
v50	0.0024	0.0014	0.0053	0.7610	0.0010	0.0060	0.0110	0.0305	0.0535	0.0117	0.0105	0.1056
v51	0.0014	0.0001	0.0041	0.7680	0.0009	0.0053	0.0110	0.0332	0.0626	0.0122	0.0088	0.0927
v52	0.0016	0.0008	0.0030	0.7490	0.0011	0.0054	0.0119	0.0282	0.0492	0.0136	0.0069	0.1289

Table C.3. Artifact Mean Compositions, Continued.

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v53	0.0021	0.0005	0.0034	0.8190	0.0011	0.0055	0.0101	0.0302	0.0415	0.0106	0.0073	0.0692
v54	0.0016	0.0008	0.0026	0.7480	0.0014	0.0069	0.0134	0.0408	0.0513	0.0124	0.0074	0.1132
v55	0.0023	0.0004	0.0030	0.7680	0.0011	0.0068	0.0111	0.0375	0.0411	0.0131	0.0062	0.1096
v56	0.0025	0.0012	0.0016	0.8270	0.0008	0.0050	0.0065	0.0201	0.0319	0.0118	0.0076	0.0840
v57	0.0019	0.0006	0.0033	0.7940	0.0010	0.0062	0.0106	0.0287	0.0386	0.0134	0.0058	0.0957
v58	0.0021	0.0013	0.0026	0.7630	0.0011	0.0053	0.0134	0.0228	0.0612	0.0145	0.0050	0.1077
v59	0.0024	0.0009	0.0029	0.7640	0.0010	0.0056	0.0093	0.0269	0.0451	0.0121	0.0049	0.1251
v60	0.0024	0.0007	0.0030	0.7980	0.0012	0.0055	0.0100	0.0302	0.0414	0.0119	0.0065	0.0889
v61	0.0022	0.0008	0.0041	0.7710	0.0010	0.0061	0.0122	0.0337	0.0540	0.0131	0.0081	0.0943
v62	0.0020	0.0007	0.0028	0.8070	0.0012	0.0050	0.0099	0.0262	0.0444	0.0123	0.0083	0.0803
v63	0.0027	0.0021	0.0027	0.7840	0.0011	0.0056	0.0104	0.0243	0.0364	0.0127	0.0050	0.1128
v64	0.0054	0.0017	0.0027	0.7530	0.0013	0.0067	0.0113	0.0311	0.0431	0.0135	0.0058	0.1245
v65	0.0017	0.0017	0.0033	0.7330	0.0010	0.0060	0.0109	0.0245	0.0565	0.0118	0.0093	0.1402
v66	0.0016	0.0014	0.0042	0.7830	0.0009	0.0056	0.0116	0.0271	0.0522	0.0098	0.0068	0.0956
v67	0.0014	0.0013	0.0040	0.7760	0.0007	0.0044	0.0118	0.0220	0.0669	0.0112	0.0059	0.0942
v68	0.0018	0.0012	0.0030	0.8120	0.0009	0.0055	0.0086	0.0248	0.0370	0.0130	0.0081	0.0846
v70	0.0020	0.0013	0.0030	0.7380	0.0010	0.0051	0.0107	0.0291	0.0951	0.0112	0.0058	0.0978
v71	0.0019	0.0009	0.0025	0.7840	0.0010	0.0070	0.0119	0.0402	0.0327	0.0109	0.0056	0.1014

Table C.3. Artifact Mean Compositions, Continued.

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v72	0.0022	0.0007	0.0037	0.7950	0.0011	0.0053	0.0097	0.0304	0.0469	0.0097	0.0060	0.0890
v73	0.0015	0.0007	0.0023	0.8400	0.0008	0.0035	0.0065	0.0158	0.0349	0.0113	0.0050	0.0775
v74	0.0019	0.0012	0.0030	0.7740	0.0011	0.0057	0.0102	0.0276	0.0434	0.0148	0.0069	0.1098
v75	0.0016	0.0007	0.0027	0.7970	0.0009	0.0058	0.0094	0.0337	0.0398	0.0131	0.0063	0.0891
v76	0.0032	0.0013	0.0030	0.7630	0.0011	0.0057	0.0111	0.0298	0.0476	0.0115	0.0061	0.1168
v77	0.0058	0.0029	0.0025	0.7350	0.0014	0.0085	0.0118	0.0358	0.0465	0.0130	0.0090	0.1281
v78	0.0023	0.0012	0.0046	0.8310	0.0010	0.0043	0.0088	0.0266	0.0371	0.0077	0.0051	0.0706
v87	0.0018	0.0011	0.0018	0.8070	0.0008	0.0058	0.0093	0.0225	0.0328	0.0114	0.0060	0.0998
v89	0.0025	0.0009	0.0024	0.7240	0.0010	0.0062	0.0133	0.0447	0.0538	0.0108	0.0066	0.1335
v120	0.0023	0.0009	0.0045	0.7830	0.0009	0.0062	0.0114	0.0305	0.0490	0.0142	0.0086	0.0888
v121	0.0021	0.0004	0.0028	0.7940	0.0010	0.0059	0.0101	0.0367	0.0490	0.0103	0.0087	0.0786
v122	0.0017	0.0009	0.0057	0.7500	0.0009	0.0056	0.0137	0.0336	0.0489	0.0142	0.0235	0.1013
v123	0.0026	0.0007	0.0023	0.8120	0.0012	0.0050	0.0091	0.0337	0.0477	0.0104	0.0076	0.0674
v124	0.0022	0.0011	0.0029	0.7800	0.0009	0.0051	0.0087	0.0209	0.0487	0.0131	0.0050	0.1114
v125	0.0023	0.0007	0.0044	0.7400	0.0009	0.0070	0.0125	0.0349	0.0565	0.0159	0.0081	0.1173
v126	0.0016	0.0010	0.0030	0.7420	0.0011	0.0067	0.0119	0.0305	0.0524	0.0124	0.0096	0.1276

Table C.3. Artifact Mean Compositions, Continued.

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v127	0.0016	0.0009	0.0074	0.7770	0.0008	0.0059	0.0116	0.0211	0.0532	0.0173	0.0057	0.0972
v128	0.0013	0.0004	0.0028	0.8170	0.0010	0.0041	0.0096	0.0220	0.0542	0.0102	0.0091	0.0684
v129	0.0026	0.0014	0.0019	0.8000	0.0011	0.0051	0.0081	0.0258	0.0478	0.0102	0.0043	0.0914
v130	0.0029	0.0008	0.0033	0.7800	0.0010	0.0052	0.0103	0.0381	0.0467	0.0121	0.0101	0.0896
v133	0.0061	0.0027	0.0031	0.7140	0.0012	0.0067	0.0114	0.0265	0.0586	0.0107	0.0086	0.1505
v1159	0.0027	0.0011	0.0170	0.7540	0.0004	0.0064	0.0148	0.0331	0.0453	0.0132	0.0069	0.1057
v1160	0.0042	0.0011	0.0050	0.7470	0.0008	0.0060	0.0191	0.0305	0.0524	0.0162	0.0077	0.1101
v1161	0.0027	0.0011	0.0032	0.7470	0.0007	0.0048	0.0211	0.0225	0.0633	0.0100	0.0102	0.1133
v1162	0.0039	0.0012	0.0051	0.7570	0.0004	0.0071	0.0121	0.0303	0.0458	0.0148	0.0083	0.1138
v1163	0.0039	0.0015	0.0110	0.7130	0.0006	0.0071	0.0155	0.0333	0.0659	0.0157	0.0098	0.1230
v1164	0.0034	0.0010	0.0095	0.7200	0.0006	0.0063	0.0164	0.0394	0.0735	0.0127	0.0115	0.1056
v1165	0.0032	0.0010	0.0070	0.7300	0.0008	0.0057	0.0243	0.0375	0.0712	0.0111	0.0089	0.1000
v1169	0.0039	0.0016	0.0039	0.6960	0.0005	0.0069	0.0196	0.0279	0.0879	0.0180	0.0126	0.1213
v1170	0.0050	0.0018	0.0053	0.6930	0.0007	0.0063	0.0176	0.0317	0.1077	0.0130	0.0104	0.1074
v1175	0.0038	0.0012	0.0415	0.6960	0.0004	0.0059	0.0172	0.0300	0.0689	0.0122	0.0068	0.1162
v1211	0.0029	0.0007	0.0161	0.8320	0.0001	0.0036	0.0102	0.0206	0.0340	0.0068	0.0096	0.0640
v1218	0.0038	0.0012	0.0087	0.7460	0.0005	0.0064	0.0117	0.0340	0.0543	0.0149	0.0069	0.1121

Table C.3. Artifact Mean Compositions, Continued.

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v1219	0.0042	0.0020	0.0182	0.7090	0.0002	0.0054	0.0150	0.0316	0.0898	0.0135	0.0085	0.1022
v1220	0.0047	0.0016	0.0243	0.7140	0.0003	0.0053	0.0122	0.0369	0.0726	0.0094	0.0071	0.1113
v1221	0.0033	0.0010	0.0039	0.8110	0.0005	0.0052	0.0092	0.0250	0.0435	0.0109	0.0090	0.0772
v1222	0.0026	0.0014	0.0061	0.7660	0.0006	0.0059	0.0114	0.0293	0.0535	0.0118	0.0077	0.1037
v1223	0.0045	0.0028	0.0346	0.6110	0.0002	0.0074	0.0286	0.0467	0.1093	0.0115	0.0137	0.1294
v1224	0.0031	0.0008	0.0335	0.7690	0.0002	0.0049	0.0103	0.0256	0.0544	0.0100	0.0070	0.0814
v1225	0.0033	0.0008	0.0049	0.7450	0.0010	0.0058	0.0148	0.0352	0.0622	0.0129	0.0088	0.1058
v1226	0.0033	0.0009	0.0041	0.7420	0.0007	0.0062	0.0153	0.0344	0.0649	0.0138	0.0073	0.1073
v1227	0.0034	0.0012	0.0078	0.7540	0.0006	0.0067	0.0118	0.0347	0.0417	0.0132	0.0094	0.1151
v1228	0.0039	0.0012	0.0485	0.6560	0.0004	0.0064	0.0184	0.0351	0.0904	0.0141	0.0073	0.1180
v1229	0.0029	0.0010	0.0661	0.6640	0.0002	0.0061	0.0172	0.0362	0.0745	0.0115	0.0072	0.1135
v1230	0.0036	0.0005	0.0536	0.6790	0.0003	0.0059	0.0143	0.0345	0.0746	0.0123	0.0060	0.1148
v1231	0.0048	0.0007	0.0630	0.6430	0.0023	0.0068	0.0236	0.0373	0.0680	0.0130	0.0070	0.1311
v1234	0.0033	0.0008	0.0658	0.6920	0.0002	0.0053	0.0144	0.0331	0.0619	0.0103	0.0070	0.1065
v1236	0.0033	0.0010	0.0504	0.6820	0.0002	0.0055	0.0159	0.0362	0.0723	0.0100	0.0071	0.1160
v1237	0.0035	0.0009	0.0421	0.6820	0.0004	0.0058	0.0151	0.0395	0.0719	0.0107	0.0066	0.1217

Table C.3. Artifact Mean Compositions, Continued.

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v1238	0.0034	0.0004	0.0722	0.6860	0.0004	0.0050	0.0134	0.0340	0.0617	0.0097	0.0067	0.1070
v1239	0.0030	0.0007	0.0608	0.6760	0.0003	0.0056	0.0159	0.0320	0.0670	0.0102	0.0060	0.1220
v1240	0.0049	0.0011	0.0090	0.6380	0.0005	0.0074	0.0315	0.0424	0.0743	0.0122	0.0161	0.1627
v1241	0.0041	0.0009	0.0189	0.7420	0.0002	0.0062	0.0173	0.0312	0.0629	0.0128	0.0080	0.0953
v1242	0.0032	0.0011	0.0052	0.7670	0.0009	0.0059	0.0118	0.0328	0.0515	0.0134	0.0084	0.0991
v1243	0.0037	0.0013	0.0060	0.7410	0.0008	0.0069	0.0149	0.0321	0.0610	0.0140	0.0079	0.1108
v1244	0.0041	0.0010	0.0114	0.7320	0.0006	0.0060	0.0159	0.0294	0.0601	0.0163	0.0145	0.1086
v1245	0.0035	0.0010	0.0071	0.7440	0.0007	0.0060	0.0168	0.0291	0.0709	0.0132	0.0097	0.0977
v1246	0.0033	0.0006	0.0110	0.7630	0.0004	0.0061	0.0130	0.0336	0.0422	0.0132	0.0067	0.1070
v1247	0.0026	0.0009	0.0121	0.8050	0.0005	0.0040	0.0101	0.0226	0.0445	0.0118	0.0060	0.0801
v1248	0.0038	0.0021	0.0105	0.6580	0.0006	0.0065	0.0181	0.0357	0.0986	0.0158	0.0108	0.1393
v1250	0.0045	0.0022	0.0131	0.6910	0.0003	0.0062	0.0179	0.0274	0.1002	0.0139	0.0088	0.1144
v1251	0.0039	0.0010	0.0206	0.7100	0.0004	0.0057	0.0162	0.0314	0.0845	0.0118	0.0116	0.1030
v1252	0.0040	0.0015	0.0130	0.6900	0.0005	0.0057	0.0244	0.0337	0.0918	0.0136	0.0213	0.1005
v1253	0.0039	0.0019	0.0074	0.7320	0.0004	0.0061	0.0192	0.0256	0.0725	0.0173	0.0093	0.1045

Table C.3. Artifact Mean Compositions, Continued.

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v1254	0.0040	0.0012	0.0051	0.7200	0.0005	0.0073	0.0146	0.0334	0.0694	0.0167	0.0084	0.1198
v1255	0.0033	0.0005	0.0043	0.7530	0.0006	0.0060	0.0202	0.0318	0.0463	0.0148	0.0078	0.1111
v1256	0.0030	0.0008	0.0126	0.7650	0.0002	0.0051	0.0150	0.0187	0.0714	0.0139	0.0063	0.0886
v1257	0.0038	0.0007	0.0089	0.7340	0.0005	0.0064	0.0160	0.0343	0.0669	0.0144	0.0124	0.1022
v1258	0.0038	0.0007	0.0114	0.7310	0.0005	0.0059	0.0200	0.0339	0.0635	0.0139	0.0115	0.1046
v1259	0.0038	0.0011	0.0045	0.7390	0.0007	0.0062	0.0115	0.0324	0.0585	0.0131	0.0080	0.1215
v1260	0.0038	0.0024	0.0073	0.7220	0.0004	0.0058	0.0267	0.0310	0.0708	0.0116	0.0117	0.1068
v1261	0.0028	0.0012	0.0051	0.7560	0.0009	0.0058	0.0235	0.0235	0.0613	0.0098	0.0101	0.1003
v1262	0.0043	0.0023	0.0036	0.7160	0.0009	0.0066	0.0151	0.0318	0.0685	0.0118	0.0083	0.1311
v1263	0.0039	0.0018	0.0114	0.7390	0.0006	0.0058	0.0110	0.0312	0.0667	0.0135	0.0073	0.1080
v1264	0.0029	0.0024	0.0061	0.7670	0.0004	0.0053	0.0199	0.0303	0.0589	0.0115	0.0091	0.0859
v1265	0.0042	0.0004	0.0058	0.7420	0.0006	0.0071	0.0221	0.0424	0.0511	0.0118	0.0202	0.0917
v1266	0.0066	0.0019	0.0029	0.7350	0.0006	0.0061	0.0237	0.0319	0.0610	0.0131	0.0115	0.1054
v1267	0.0035	0.0014	0.0080	0.7330	0.0005	0.0050	0.0192	0.0331	0.0469	0.0117	0.0181	0.1198
v1268	0.0040	0.0012	0.0151	0.7350	0.0001	0.0050	0.0314	0.0326	0.0557	0.0101	0.0167	0.0930

Table C.3. Artifact Mean Compositions, Continued.

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v1269	0.0047	0.0023	0.0050	0.7370	0.0007	0.0058	0.0215	0.0294	0.0746	0.0124	0.0092	0.0970
v1271	0.0033	0.0018	0.0071	0.6990	0.0010	0.0070	0.0152	0.0431	0.0827	0.0142	0.0100	0.1152
v1272	0.0048	0.0017	0.0074	0.6810	0.0010	0.0063	0.0197	0.0290	0.0658	0.0114	0.0072	0.1646
v1273	0.0039	0.0015	0.0033	0.7550	0.0005	0.0089	0.0112	0.0268	0.0639	0.0111	0.0087	0.1049
v1274	0.0033	0.0010	0.0049	0.7970	0.0005	0.0047	0.0138	0.0237	0.0412	0.0116	0.0053	0.0928
v1275	0.0028	0.0013	0.1275	0.5740	0.0005	0.0067	0.0130	0.0343	0.0730	0.0185	0.0068	0.1417
v1276	0.0035	0.0011	0.0641	0.7120	0.0004	0.0051	0.0108	0.0254	0.0604	0.0105	0.0057	0.1011
v1277	0.0033	0.0010	0.0149	0.7670	0.0003	0.0050	0.0099	0.0279	0.0564	0.0107	0.0055	0.0977
v1278	0.0044	0.0012	0.0117	0.7070	0.0006	0.0052	0.0135	0.0241	0.0790	0.0171	0.0060	0.1304
v1279	0.0037	0.0009	0.0409	0.7020	0.0004	0.0055	0.0141	0.0324	0.0638	0.0100	0.0125	0.1141
v1280	0.0027	0.0013	0.0062	0.7190	0.0010	0.0074	0.0145	0.0418	0.0610	0.0133	0.0084	0.1238
v1281	0.0028	0.0013	0.0030	0.7560	0.0005	0.0045	0.0138	0.0243	0.0665	0.0152	0.0061	0.1065
v1284	0.0037	0.0012	0.0055	0.7280	0.0007	0.0064	0.0167	0.0389	0.0684	0.0137	0.0121	0.1043
v1285	0.0036	0.0016	0.0114	0.6190	0.0005	0.0067	0.0140	0.0352	0.1204	0.0116	0.0077	0.1681
v1286	0.0037	0.0008	0.0089	0.6940	0.0004	0.0062	0.0132	0.0394	0.0685	0.0116	0.0071	0.1461

Table C.3. Artifact Mean Compositions, Continued.

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v1287	0.0036	0.0007	0.0339	0.7040	0.0004	0.0068	0.0116	0.0389	0.0608	0.0164	0.0069	0.1161
v1288	0.0032	0.0007	0.0464	0.7060	0.0002	0.0051	0.0124	0.0276	0.0728	0.0145	0.0052	0.1055
v1289	0.0032	0.0011	0.0055	0.7520	0.0007	0.0046	0.0131	0.0222	0.0759	0.0119	0.0081	0.1014
v1290	0.0029	0.0012	0.0064	0.8030	0.0007	0.0040	0.0105	0.0218	0.0495	0.0121	0.0058	0.0818
v1291	0.0042	0.0013	0.1374	0.6570	0.0008	0.0043	0.0127	0.0272	0.0624	0.0092	0.0049	0.0786
v1293	0.0031	0.0011	0.0062	0.6770	0.0005	0.0052	0.0117	0.0310	0.1519	0.0116	0.0092	0.0915
v1294	0.0026	0.0008	0.0081	0.7680	0.0004	0.0051	0.0201	0.0240	0.0456	0.0102	0.0103	0.1049
v1296	0.0027	0.0012	0.0051	0.7960	0.0007	0.0052	0.0104	0.0307	0.0439	0.0099	0.0082	0.0861
v1297	0.0029	0.0019	0.0029	0.7590	0.0008	0.0060	0.0110	0.0355	0.0503	0.0150	0.0074	0.1077
v1298	0.0035	0.0022	0.0031	0.7530	0.0005	0.0057	0.0135	0.0297	0.0684	0.0121	0.0083	0.0998
v1300	0.0035	0.0014	0.0033	0.7670	0.0006	0.0056	0.0125	0.0308	0.0568	0.0123	0.0096	0.0967
v1301	0.0028	0.0021	0.0036	0.7420	0.0007	0.0056	0.0129	0.0331	0.0665	0.0137	0.0093	0.1082
v1303	0.0032	0.0017	0.0024	0.7150	0.0008	0.0075	0.0130	0.0298	0.0596	0.0136	0.0087	0.1451
v1304	0.0034	0.0031	0.0018	0.7130	0.0007	0.0089	0.0235	0.0429	0.0620	0.0108	0.0106	0.1199
v1306	0.0041	0.0010	0.0017	0.8030	0.0009	0.0045	0.0189	0.0250	0.0489	0.0094	0.0074	0.0753

Table C.3. Artifact Mean Compositions, Continued.

Object	As	Br	Cu	Fe	Ga	Nb	Ni	Rb	Sr	Y	Zn	Zr
v1308	0.0030	0.0011	0.0122	0.7600	0.0005	0.0048	0.0118	0.0294	0.0509	0.0113	0.0089	0.1056
v1311	0.0041	0.0016	0.0095	0.6720	0.0004	0.0070	0.0215	0.0282	0.0622	0.0182	0.0071	0.1677
v1317	0.0067	0.0008	0.0020	0.7800	0.0007	0.0046	0.0161	0.0222	0.0582	0.0106	0.0082	0.0905
v1318	0.0039	0.0012	0.0036	0.7420	0.0007	0.0057	0.0124	0.0281	0.0671	0.0156	0.0066	0.1133
v1321	0.0037	0.0015	0.0018	0.6990	0.0010	0.0064	0.0208	0.0280	0.0887	0.0130	0.0073	0.1287
v1325	0.0038	0.0011	0.0070	0.7240	0.0005	0.0054	0.0183	0.0240	0.0643	0.0143	0.0119	0.1256
v1326	0.0044	0.0026	0.0097	0.6870	0.0010	0.0050	0.0271	0.0736	0.0649	0.0095	0.0132	0.1025
v1327	0.0052	0.0024	0.0026	0.7040	0.0007	0.0060	0.0203	0.0269	0.0805	0.0151	0.0122	0.1238
v1328	0.0033	0.0033	0.0038	0.7410	0.0007	0.0061	0.0125	0.0277	0.0614	0.0130	0.0083	0.1190
v1336	0.0051	0.0010	0.0148	0.7470	0.0003	0.0070	0.0179	0.0312	0.0464	0.0110	0.0184	0.1003
v1337	0.0042	0.0010	0.0250	0.7560	0.0004	0.0041	0.0083	0.0303	0.0588	0.0113	0.0053	0.0955

Table D.1. 2011 Collection and Northeast Mound PCA Loadings.

Element	Component										
	Comp.1	Comp.2	Comp.3	Comp.4	Comp.5	Comp.6	Comp.7	Comp.8	Comp.9	Comp.10	Comp.11
As	-0.32667	-0.02660	0.12825	-0.44129	-0.19935	0.11441	-0.69638	-0.19081	0.14529	0.05119	-0.01212
Br	-0.74650	0.12096	0.09253	0.41720	-0.07522	-0.32037	0.14375	0.12433	0.00390	-0.13312	0.00030
Cu	-0.23513	-0.39998	-0.04938	-0.55015	0.24330	0.05937	0.54849	-0.12423	-0.04592	0.01742	0.12199
Fe	0.05259	0.12481	-0.30479	-0.04561	0.19525	0.06083	0.01616	0.09430	0.06907	-0.06146	-0.86245
Ga	-0.06294	0.32039	-0.62444	0.14860	0.16569	0.41333	-0.07939	-0.01793	-0.16092	0.10709	0.39467
Nb	0.16382	0.26768	0.09309	-0.08267	-0.26282	-0.24230	0.18642	0.10299	0.09242	0.78801	0.00623
Ni	0.08546	-0.29367	0.29502	0.12637	-0.25613	0.44681	-0.01857	0.51185	-0.43506	-0.00443	-0.05699
Rb	0.28029	0.12308	-0.19370	-0.18140	-0.48548	-0.15239	0.14667	0.22471	0.34847	-0.51713	0.18100
Sr	0.15265	-0.40391	0.11047	0.42210	0.22687	0.18847	-0.05410	-0.07654	0.65159	0.11027	0.08571
Y	0.23025	0.17474	0.24590	-0.12334	0.61834	-0.37138	-0.23877	0.32476	-0.12822	-0.13544	0.19978
Zn	0.23845	-0.41587	0.25869	0.21503	-0.15982	-0.43885	-0.16341	-0.39931	-0.41121	-0.00999	-0.01505
Zr	0.16772	0.40839	0.46574	0.09515	-0.01062	0.24208	0.20912	-0.57412	-0.12943	-0.21240	-0.04309