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Understanding Complex Late and Terminal Woodland Sites in the Red Wing, Minnesota, Area

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Understanding Complex Late and Terminal Woodland Sites in the Red Wing, Minnesota, Area

By
Jaclyn Ann Skinner

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science In Applied Anthropology

Minnesota State University, Mankato Department of Anthropology Mankato, Minnesota April 2018
April 2, 2018

Understanding Complex Late and Terminal Woodland Sites in the Red Wing, Minnesota, Area

Jaclyn Ann Skinner

This thesis has been examined and approved by the following members of the student’s committee.

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ABSTRACT

Understanding Complex Late and Terminal Woodland Sites in the Red Wing, Minnesota, Area

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Master of Science in Applied Anthropology
Minnesota State University, Mankato
Mankato, Minnesota, 2018

The Late Woodland and Terminal Woodland traditions encompass a number of Native American cultural groups living in the Upper Midwest United States, dating between A.D. 400/500 and 1100/1200. Although archeological work has been done on many Woodland and Terminal Woodland sites in Illinois, Iowa, Michigan, Wisconsin, comparatively little has been done in Minnesota, and only a small amount has been done in southeastern Minnesota. As a result, Late Woodland and Terminal Woodland pottery complexes in the Red Wing, Minnesota area are still poorly understood.

Pottery types are the single most important artifact class used to identify population segments and trace both culture change and culture blending in the region. It has been proposed that evidence of cultural blending and relationships can be seen in Late Woodland pottery styles in the Red Wing area and a Terminal Woodland period may be present in observable changes in those Late Woodland pottery styles.

This thesis will result in a better understanding of how some of these complex sites fit into regional systems and will start to roughly define a Late Woodland archeological sequence for the Red Wing area. This will be accomplished by conducting a thorough examination and analysis of the pottery sequences present in four key late Woodland sites, the Bartron site (21GD02), the Pickerel Slough site (21GD181), the Silvernale West Terrace site (21GD254), and the Mosquito Terrace site (21GD260).
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CHAPTER 1: INTRODUCTION

The Upper Midwest and Lower Midwest encompasses a large area of the United States which includes Illinois, Indiana, Iowa, Kentucky, Michigan, Missouri, Minnesota, Ohio, and Wisconsin. The area of focus in this thesis includes the Midwest, looking generally into the Upper Midwest region of Minnesota, Wisconsin, and Iowa and then specifically in the Red Wing, Minnesota area.

Complex Late Woodland and Terminal Woodland sites in and around Red Wing, Minnesota, and elsewhere in Minnesota, are still poorly understood. Much archeological work has been done in the state but sites of this period are hard to find and examine because it is widely thought that occupations were brief and populations were limited in size. This thesis contributes to a better understanding of how some of these sites fit into the roughly defined archeological sequences of the Red Wing area and helps fill in some of those archeological gaps in the Red Wing area through cleaning, cataloguing, and analyzing, the artifact assemblages of the Late and Terminal Woodland occupations at four Red Wing sites, Bartron (21GD02), Pickerel Slough (21GD181), Silvernale West Terrace (21GD254), and Mosquito Terrace (21GD260).

Pottery is the single most important artifact class used to identify population segments and trace both culture change and culture blending in the region (Anfinson 1979; McKern 1928). Therefore, precise attention is paid here to the pottery types and styles found at the above four sites and how they relate to known phases in the surrounding areas. It is proposed and demonstrated in this thesis that evidence of cultural blending and relationships can be seen in Late Woodland pottery styles in the Red Wing area and a Terminal Woodland period may be present in observable changes in those Late Woodland pottery styles. Research questions pertaining to this thesis are below.
RESEARCH QUESTIONS

It has been casually mentioned (e.g., Fleming 2009; Kelly 2009; Rodell 1997; Schirmer 2002; and others) that intensive interaction and possible cultural “blending” (see definition in Chapter 2) that characterize the post-Late Woodland in Red Wing were likely active during the Late Woodland. A recent, thorough re-analysis of “Effigy Mound Cultures” in Wisconsin (Rosebrough 2010) has established cultural blending clearly in that state, but it has not been formally assessed in Red Wing. Major questions that this research will address are: 1) what Late Woodland pottery complexes are present in Red Wing?; 2) how do those complexes relate to their assumed cultural sources?; 3) is there pottery that has no known external source area and that therefore may be a locally unique ware?; and 4) is there evidence of cultural blending, as seen in the mixing of what are otherwise distinctive pottery types elsewhere?

CHAPTER DISCUSSION

Chapter 2 begins with a discussion of the terms and definitions that will be used in this thesis to avoid potential confusions. The main purpose of this chapter will be focused on Late and Terminal Woodland traditions in the Upper Midwest. These traditions will be briefly introduced and defined in the manor of known, generalized research data.

Chapter 3 focuses on the Red Wing area and persisting problems in defining Woodland phases and pottery types in the region. This discussion includes known Late and Terminal Woodland pottery phases, types, and wares in Northeastern Illinois, Northern Iowa, Central and Southern Minnesota, and Western and Southwestern
Wisconsin, along with an introduction of the locations of some Late Woodland sites in the Red Wing area.

Chapter 4 states the research methodology used in this thesis. This discussion includes the sites and assemblages examined in this thesis and the processes used to catalogue and examine each of the assemblages. Decoration definitions are also included.

Chapter 5, 6, 7, and 8 presents the site histories and data analyzed at the Bartron, Mosquito Terrace, Pickerel Slough, and Silvernale West Terrace sites. Each artifact assemblage is briefly presented and a detailed analysis of the pottery assemblage is then described in great detail. This detailed information is compared to known pottery typologies in the surrounding states and within the area of Red Wing.

Chapter 9 includes final interpretations and conclusions of this thesis and gives an overview of how this research contributes to formally defining Late and Terminal Woodland pottery types in the Red Wing area. Future research ideas and concepts are also presented.
CHAPTER 2: DEFINITIONS AND DISCUSSION OF WOODLAND TRADITIONS

The Woodland tradition has been commonly characterized into three main traditions: the Early, Middle, and Late. Even within these three traditions there can be more subdivisions (late Early Woodland, early Middle Woodland, late Middle Woodland, etc.). Hence, in this thesis, there is a discussion pertaining to the Late Woodland and Terminal Woodland (late Late Woodland) traditions. It is first important to define many terms that will be used in this thesis to decrease any confusion in comparison to other Woodland research in the Upper Midwest (see below).

Type (definition and discussion as it applies to pottery)

A type, as discussed by Alex D. Krieger, is defined by a specific and cohesive combination of features of paste, temper, texture, hardness, finish, vessel shape, technique and arrangement of decoration, etc., and includes what is believed to be individual variation within the technical pattern. As a whole, a type is understood to occupy a definable historical position, that is, its distribution is delimited in space, time, and association with other cultural material. A type should hold its form with essential consistency wherever found, but absolute consistency is neither possible nor necessary for the analysis. Even if there are small differences between specimen groups, these differences are of type importance, if their distribution in space, time, and cultural association are distinct. The differences between types must not be so obscure that others will encounter excessive difficulty in recognizing them and the typological framework for any given class of material must be flexible enough to allow for additions, subdivisions, recombinations, and rewording, in the groups where needed, without disturbing others (1944:277-278).
Put more simply, a type is a group of objects exhibiting interrelated similar features which have temporal and spatial significance (Ritchie and MacNeish 1949:98).

**Ware** (definition and discussion as it applies to pottery)

*Ware*, as discussed by Prudence M. Rice, is the classificatory unit of the type-variety system which deals with the technological attributes of pottery relating to past composition and surface finish. These attributes include texture, temper, hardness, thickness, color, slip (presence, absence, color), and the smoothing luster, and “feel” of the surface, whether slipped or unslipped. This unit therefore embraces the attributes which most directly reflect patterns of clay and temper selection and preparation, and vessel forming and finishing techniques. Ware is generally regarded as constituting a broader, higher-order level of comparison than types, and may be derived from completed type definitions (1976:538).

**Phase**

A *phase* is an archaeological unit possessing traits sufficiently characteristic to distinguish it from all other units similarly conceived, whether of the same or other cultures or civilizations, spatially limited to the order of magnitude of a locality or region and chronologically limited to a relatively brief interval of time (Willey and Phillips 2001:22).

**Horizon**

A *horizon* is a primarily spatial continuity represented by cultural traits and assemblages whose nature and mode of occurrence permit the assumption of a broad and rapid spread (Willey and Phillips 2001:33).
Tradition

An archaeological tradition is a (primarily) temporal continuity represented by persistent configurations in single technologies or other systems of related forms (Willey and Phillips 2001:37).

Cultural Blending (definition and discussion as it applies to the Late Woodland Tradition)

Within the development of the Late Woodland tradition and even earlier, many separate and culturally distinct groups of Native Americans in the Upper Midwest were transitioning to a more sedentary lifestyle, with a greater reliance on horticulture, and population densities began to increase. Groups in close proximity of each other continued to intact and may have formed ties through marriages. These interactions and ties allowed for a mixing of their cultures, therefore, blending certain aspects of each culture into their own.

Woodland Traditions

Within the Woodland traditions, three important technological developments are generally discussed. These include the manufacture of pottery containers, construction of earthen mounds, and the cultivation of domesticated plants (e.g. Arzigian and Stevenson 2003; Gibbon 2012; Johnson 1988; Stevenson et al. 1997; Theler and Boszhardt 2003; Thurston Myster and O’Connell 1997). These technological developments happened at different times in a number of different regions. However, in some regions, these stages started to occur in the Late Archaic (3000 B.C. to 700 B.C. (Price 1985:449)). Either way, the manufacturing of pottery vessels is a major characteristic in the Upper Midwest Woodland tradition and has been used to date and characterize different cultural groups
due to being the most widely used and available source for the indication of differences between cultural phases, horizons, and traditions. Therefore, pottery is one of the single most important artifact classes used to identify population segments and trace both culture change and culture blending in the region.

It is important to realize that what archeologists classify as the Early, Middle, and Late Woodland traditions are not absolute. There are many cultures that form the Woodland traditions and these cultures lived in a number of regions and environments. The general social and technological innovations that developed in the Woodland time periods impacted different groups of people, societies, and cultures at different times and in different ways (e.g. Arzigian and Stevenson 2003; Benchley et al. 1997; Emerson et al. 2000; Gibbon 2012; Hoffman et al. 1996; Theler and Boszhardt 2003; Thurston Myster and O’Connell 1997; Schirmer 2002; Stevenson et al. 1997). Furthermore, it is important to note that different regions become occupied at different periods of time and many regions are occupied, deserted, and reoccupied (e.g. Benchley at al. 1997; Emerson et al. 2000; Green et al. 1995; Theler and Boszhardt 2003; Wood et al. 1998). This realization is important in understanding that “general” time frames for each tradition can change depending on the region and locality.

Late Woodland

The Late Woodland is a tradition generally dated from A.D. 400/500 to 1000 in the Upper Midwest (as discussed by Emerson et al. 2000:3 for the states of Illinois, Indiana, Iowa, Kentucky, Michigan, Missouri, Ohio, and Wisconsin). Within the Late Woodland, three main transitions are described for the general Upper Midwest (e.g. Arzigian and Stevenson 2003; Benchley et al. 1997; Emerson et al. 2000; Stevenson et al.
The first, A.D. 300/400 to 600, is the transition from Middle Woodland to Late Woodland. This transition includes a fundamental demographic shift that implies substantial and regionally variable changes in settlement systems (Emerson et al. 2000:12). The second transition, A.D. 600 to 800/900, is the widespread adaptation of the bow and arrow (Emerson et al. 2000:12). The third and final major transition, A.D. 800/900 to 1000, is the widespread incorporation of maize as a dominant element in food production systems (e.g. Emerson et al. 2000:12). It must be said here that these transitions and defining attributes below are generally applied to the Upper Midwest but as they applied to Minnesota specifically, remains to be assessed, unless specified otherwise. See Figure 1 for a map of some Late Woodland sites in Iowa, Minnesota, and Wisconsin (Benchley et al. 1997:103).

Figure 1: Variety of Late Woodland sites in Iowa, Minnesota, and Wisconsin (Benchley et al. 1997:103).
Pottery changes from the Middle Woodland to Late Woodland, A.D. 300/400-600, were generally steady and it is clear that some Middle Woodland traits persisted differentially into Late Woodland times (Emerson 2000:13). In some areas of Wisconsin evidence of terminal Middle Woodland ceramic traits lasted until A.D. 700 (Emerson et al. 2000:13). An interesting ceramic decoration change that occurred around ca. A.D. 800 in the Greater Midwest and American Bottom, is an almost exclusive use of s-twist cords to an almost exclusive use of z-twist cords for cordmarking (Emerson et al. 2000). Why this cord twist shift occurred is still under debate.

Habitations consisted of sites near riverbeds, on floodplains, and in the uplands/terraces. Some areas showed large sedentary settlements in the lowlands and smaller, shorter occupations in the uplands (e.g. Arzigian 1993; Benchley et al. 1997; Emerson et al. 2000; Schirmer 2002; Wendt 2002). House shapes varied from circular, to rectangular, and semi-rectangular, but keyhole-shaped house-floor plans have also been found at many sites in the Upper Midwest (Stevenson et al. 1997; Theler and Boszhardt 2006). Settlements in the initial Late Woodland of the Upper Midwest followed a seasonal round of macroband congregation along major rivers during the warm season and microband dispersal into interior hills and valleys and rock shelters during the winter (Arzigian 1993; Stevenson et al. 1997; Theler and Boszhardt 2006:461).

In many regions of the Midwest, in the ninth century, populations and settlements began to increase and so did social complexity. Though, in some areas (mid-Ohio River Valley) there was a movement to small habitations creating a trend toward nucleated settlements (Benchley et al. 1997; Emerson et al. 2000).

In some areas of the Upper Midwest, within the Middle and Late Woodland, there
was a fading of Hopewell burial practices and an influence of Mississippian groups (e.g. Benchley et al. 1997; Emerson et al. 2000; Fagan 2005; Schirmer 2002; Theler and Boszhardt 2006, 2003). This is evident in a widespread social change of burial treatment around the same time as the widespread use of the bow and arrow (Emerson et al. 2000). Mound burials and earthen mounds are still dated to this period but there is clear shift of the use of stone to line crypts and chambers (Emerson et al. 2000, not including Minnesota). Burials, usually in mounds, were lined on paving or deposited in stone-lined pit features and in aboveground stone vaults or crematories (Arzigian and Stevenson 2003; Emerson et al. 2000:16; Stoltman and Christiansen 2000). Body positions include both flexed and extended burials that were also found on river bluff tops or at habitation sites and bundle burials deposited in pits, in middens, or in burial mounds (Emerson et al. 2000:16; Stevenson et al. 1997; Stoltman and Christiansen 2000).

After A.D. 600, new mound shapes developed in southern and western Wisconsin and adjacent portions of Illinois, and Iowa, which many call the “Effigy Mound Culture” (e.g. Arzigian 2008; Benchley et al. 1997; Stevenson et al. 1997; Stoltman and Christiansen 2000; Theler and Boszhardt 2006, 2003; Thurston Myster and O’Connell 1997; Wendt 2002). Round conical mound shapes continued but elongated linear forms and animal effigy forms became more common. Long-tailed panther, bird, turtle, and bear effigy mounds are common in southern Wisconsin (Stevenson et al. 1997; Theler and Boszhardt 2006, 2003). It must be said here that due to the lack of local Late Woodland research done in certain areas, the “Effigy Mound Culture” has been lumped together to include many sites in Minnesota. Such generalizations have become problematic in defining pottery types in Minnesota as effigy mounds are only found in
counties along the Mississippi River and in southeastern Minnesota and northeast Iowa, no effigy mounds have been documented in the interior of the state (Schirmer 2015, personal communication). Hence, burial mounds in Minnesota consisted generally of circular, conical, and linear shapes.

Subsistence practices changed gradually from A.D. 300/400 to 800/900 and a possible change in cooking methods and a use of large storage facilities (A.D. 600-800/900) may have occurred (Arzigian and Stevenson 2003; Emerson et al. 2000:18). In the American Bottom, there is evidence of the use of large deep storage features which peaked during the seventh and ninth centuries (Emerson et al. 2000:18).

Maize became largely present after A.D. 800/900 in the Midwest (e.g. Benchley et al. 1997; Emerson et al. 2000). In the Upper Midwest the 8-row hybrid Northern Flint maize developed around A.D. 900/1000 (Benchley et al. 1997; Hart 1990; Theler and Boszhardt 2003; Woods et al. 1992). There is some evidence that corn was present in Middle Woodland times but such evidence is small and sporadic (Arzigian 1993; Fritz 1992:24; Stevenson et al. 1997). The use of maize is dated at different times in different areas. Charred maize remains have been found in several Late Woodland sites along the Mississippi River of southwestern Wisconsin. The quantity of these remains suggests small-scale cultivation, not extensive agriculture (Arzigian 1993; Theler and Boszhardt 2003; Fritz 1992; Stoltman and Christiansen 2000).

Other plants that were grown or/and were utilized in the Upper Midwest, generally, include wild rice, maygrass, goosefoot, knotweed, barely, sunflower, tubers, tobacco, squash, and variety of nuts and berries (Arzigian 1993; Benchley et al. 1997; Emerson et al. 2000; Fagan 2005; Theler and Boszhardt 2003; Thurston Myster and

**Terminal Woodland**

By A.D. 1000, the majority of Late Woodland peoples adopted a Mississippian or Upper Mississippian lifestyle (Emerson et al. 2000:21), which includes groups in the American Bottom (Emerson et al. 2000; Fagan 2005). In Iowa, Michigan, northern Illinois, Wisconsin, and Minnesota, Late Woodland groups may have developed directly into Upper Mississippian social entities (Emerson et al. 2000:21), which may have led into the Oneota tradition, but this is highly debated (e.g. Emerson et al. 2000; Theler and Boszhardt 2006, 2003; Schirmer 2002; Stevenson et al. 1997; Wendt 2002; Woods et al. 1992). Whatever theory one chooses to employ, this was a time of profound cultural change (Stoltman and Christiansen 2000:514).

After A.D. 1000, evidence of “pure” Late Woodland sites are rare (Stoltman and Christiansen 2000:514). In many areas of the Upper Midwest, effigy mound construction had been largely abandoned by A.D. 1050 (Stoltman and Christiansen 2000:514).

At a site just across the river from the Red Wing area, the Diamond Bluff mounds (along the Mississippi River in Pierce County, Wisconsin), has evidence of grit and shell tempered pottery with incised decorations over smoothed-over cordmarked surfaces (Stoltman and Christiansen 2000:517-518). Which could be interpreted as a “mixing” or “blending” of Woodland, Middle Mississippian, and Oneota properties (Stoltman and Christiansen 2000:518).
After A.D. 1050, maize remains and tools used to cultivate and process maize, such as bison or deer scapula hoes and milling stones, are frequently seen at archeological sites across the Upper Midwest (Theler and Boszhardt 2003). Large subterranean storage pits also become very common in the Upper Midwest with increasing size of sites and longer periods of site occupation. These changes highlight an economic shift from seasonal hunters, gatherers, and small scale horticulturists to more sedentary, local hunters and gatherers and larger scale horticulturists/small scale agriculturists (Benchley et al. 1997; Gibbon 2012; Theler and Boszhardt 2003).
CHAPTER 3: DEFINED UPPER MIDWEST TYPOLOGIES

Over the last 60 years, archeological work in the Red Wing area has been extensive but the meaning of the data retrieved remains poorly defined. This particularly pertains to Late and Terminal Woodland contexts and undefined phases (e.g. Arzigian 2008; Hildebrant Iffert 2010; Kelly 2009; Schirmer 2008, 2015; Wendt 2002). This is not because there are no Late Woodland sites, there are actually many. Instead it would seem that not many of these sites have been extensively investigated for the presence of Late and Terminal Woodland occupations or the information that has been collected, has not always been properly integrated into Late and Terminal Woodland contexts because of the underdeveloped research pertaining to the northern Mississippi Valley. Many times, the lack of research on these sites is due to sampling bias or differently focused research. Currently, “pure” Late Woodland sites are almost unknown. Many sites that have a Late Woodland component also have other cultural components. This would make sense as many groups come back to the same areas year after year and would want to utilize well positioned areas near resource concentration. It is also the case that excavation techniques have changed throughout the years; whereas 1960s excavators used ½” mesh screen at some sites with Late Woodland components, the current standard is to use ¼” mesh (Schirmer 2015, personal communication). This is significant because fine grit tempered pottery tends to break easily and into very small sherds over time, thus biasing older collections against full recovery. Modern data accumulated using better standards can thus shed more insight on the Woodland traditions.

Due to the lack of formal Woodland phases in the Red Wing area, many archeologists have relied on other formalized pottery phases, types, and wares from the
surrounding areas (Northwestern Illinois, Northern Iowa, and Southwestern and Western Wisconsin) to describe and try to understand what is going on in the Late and Terminal Woodland traditions along the Minnesota-Wisconsin border and within Red Wing. This “lumping” of ideas and pottery phases, types, and wares tends to cause a number of misconceptions on what is seen in the Red Wing area. Below is a brief discussion of the Middle, Late, and Terminal Woodland pottery types and wares known in the surrounding areas and how they are defined.

**Angelo Punctated**


**Vessel Form:** Vessels have circular orifices. Necks are high (up to 10 cm) and straight with rounded shoulders. Rims are typically straight. Bases are round or sub-conoidal. Wall thickness ranges from 3-6 mm, and is thickest at the base of the neck.

**Temper:** Small angular grit particles.

**Surface Treatment and Decoration:** Exterior surfaces are usually covered with vertical cord marks, although a few were smoothed prior to decoration. Interior surfaces were wiped smooth, but several inner shoulders exhibit faint cord marks, as if the paddle was held here during formation of the neck. Decoration consists of carefully applied bands of incisions that are frequently, but not always, bordered by small punctates. These are located on the neck, often beginning immediately beneath the lip, and continue to the upper shoulder. Incised bands alternate between horizontal and oblique lines. The horizontal bands are commonly composed of three parallel lines but may include as many as six. In few instances, horizontal bands are crossed by oblique lines, forming motifs similar to those on Great Oasis types such as Chamberlain Incised. Most punctates are triangular wedges with some ranging to a slash-like effect. A few circular examples are also known. Rims are typically straight with deep, angular notches oriented perpendicular to the orifice.

**Distribution:** This type is found in small frequencies throughout counties bordering the Upper Mississippi Valley from La Crosse and extending at least to Red Wing. (West-Central Wisconsin, Southeastern Minnesota and parts of Northwestern Wisconsin.) Origins may extend back to Early Woodland incised and punctated types as Prairie Incised (formerly Spring Hallow Incised) (Boszhardt 1996:135).
Associations: Angelo Punctated may represent a terminal Late Woodland type with affinities to Great Oasis types such as Chamberlain and Mankato Incised, and Late Woodland cord-impressed styles that emphasize carefully applied alternating triangular pendant motifs (Boszhardt 1996:135).

Figure 2: Examples of Angelo Punctated (adapted from Boszhardt 1996:130-131, 133)

Brainerd Net-Impressed Ware

Early Woodland, approximately 800 B.C. – A.D. 250 (2750 B.P. – 1700 B.P.) (Hohman-Caine and Syms 2012:16-19; 75):

Vessel Form: Vessels exhibit an overall conoidal to subconoidal body form. Rims are slightly insloping and may have a slight flare near the lip. Some rims may be vertical. Lips range from flat to gently rounded and may have a slight to moderate outslope. Body thickness ranges from 5-9mm. Vessels were enclosed within a net bag and formed and thinned from the interior, causing a convex profile that is typically curved near the rim and gradually diminishes in curvature near the base.

Temper: Grit and sand tempered

Surface Treatment and Decoration: Exterior surfaces are net impressed and interiors are typically plain. Exterior decorations vary but can include some form of cordwrapped-object stamps, vertical to slightly obliquely oriented angled stamps or shallow punctates, oblique to vertical incised lines, and/or circular “hollow reed” or bones stamps. Some
vessels exhibited oblique cordwrapped-object stamps or incised lines on the interior. Lips are usually plain or exhibit net markings.

Distribution: Northcentral Minnesota

Associations: LaSalle Creek Ware (formerly Brainerd Horizontally Corded)

Figure 3: Examples of Brainerd Net-Impressed Ware (Hohman-Caine and Syms 2012:17)

Bremer Triangular Punctated

Late Woodland (Jenson 1959:29-30)

Vessel Form: Round bottom jars with curved sides leading to a vertical neck. Slight out flaring rims and slightly constructed necks. Lips are flat, smooth, cord-wrapped paddle marked (cordmarked) or crenelated (punctates). Rounded body with no abruptly flaring rim. Base is most likely rounded. Wall thickness ranges from 2.6-6.0 mm.

Temper: Fine grit tempered

Surface Treatment and Decoration: Exterior surface is usually cord-wrapped paddled (cordmarked) and the interior can either be cord-wrapped paddled (cordmarked) or smoothed. Rims are smooth or punctated (scalloped) and have small triangular punctate decoration on the upper body. The triangular punctates are closely spaced and are commonly arranged in horizontal rows.

Distribution: East Southcentral Minnesota (Previously seen at the Bremer Site (21DK06), Sorg Site (21DK01), Ranelius Site (21DK04), and Schilling Site (21WA01) (Fleming and Hager 2011:84).
Figure 4: Examples of Bremer Triangular Punctated (Fleming and Hager 2010:84)

*Clam River Ware*

Late Woodland, approximately A.D. 500 – A.D. 900 or later (Anfinson 1979:67-72; Wendt 2002:2-3):

Vessel Form: Globular vessels with rounded shoulders and constricted necks. Neck-rims are usually high with outcurve. Lip can be unthickened to slightly thickened and sometimes rolled but usually flattened or slightly rounded.

Temper: Medium to fine grit temper

Surface Treatment and Decoration: Interior surface is usually smooth and the exterior can be treated with cordmarking, usually a criss-cross design. Decorations can consist of cordwrapped stick impressions at oblique or right angles across edge of lip, some oblique or vertical cordwrapped stick impressions on interior downward lip, and parallel (horizontal) cord impressions can be present around the neck and sometimes cordwrapped punctates present above or below the cord impressions.

Distribution: Northwestern Wisconsin and East Central Minnesota.

Associations: Kathio and Clam River are related and distinguished by minor stylistic differences. Also, associated with Blackduck pottery.

Types: Clam River Plain-combed, Cord-stamped, and Twisted-cord
Grant Ware


Vessel Form: Globular jars and less common bowl forms. Moderately constricted neck. Rims are slightly curved, relatively tall and flaring. Can be uncollared or pseudo-collared with fillets produced by the addition of rim strips. Lips can be rounded, squared, or folded. Some varieties have castellations. Wall thickness ranges from 5-8mm.

Temper: Crushed hematite temper with occasional instances of crushed sandstone and/or granite.

Surface Treatment and Decoration: Types based primarily on exterior surface treatments. Plain surfaces and cord-marked surfaces both common. Single-cord, knot or cord-wrapped stick impressions on some lip crests. Cord impressions are the dominant decorative technique.


Types: Grant Cord Impressed, Plain, Cordmarked, and Collared
Fox Lake Ware


Vessel Form: Small to medium sized thick walled and wide mouthed vessels with flat to slightly rounded lips, straight rims, slightly rounded shoulders, and conoidal bases.

Temper: Fine grit or sand temper

Surface Treatment and Decoration: External surfaces are usually cordmarked (vertically or horizontally) and occasionally smoothed-over. Rims are decorated in geometric zones of exterior trailed lines, sharp incised lines, and/or bosses with interior cordwrapped stick impressions.

Distribution: Prairie Lakes region in Northern Iowa and Southwestern Minnesota.

Associations: Fox Lake pottery precedes Lake Benton pottery.

Types: Fox Lake Trailed, Vertical Cordmarked, Horizontal Cordmarked, Cordwrapped Stick, and Smooth
Figure 7: Examples of Fox Lake Ware (adapted from Anfinson 1979:84 (left); Benn and Green 2000:447 (right)):

Kathio Ware

Late Woodland, approximately A.D. 800/900 – A.D. 1200/1300 (Anfinson 1979:103-107; Benchley et al. 1997:133-134; University of Minnesota Ware Descriptions)

Vessel Form: Globular vessels with constricted necks, short outward flaring rims, and flattened or slightly rounded lips. Thickness ranges from 3-5mm.

Temper: Grit temper

Surface Treatment and Decoration: Exterior surface is cordmarked and the rim are usually smoothed. Decoration consists mainly of fine cordwrapped stick impressions in closely spaced horizontal rows over the rim and constricted neck area. Short oblique cord impressions are common below and across the lip (crenellated).

Distribution: Northwestern Wisconsin and Central and Northern Minnesota.

Associations: Kathio and Clam River are related and distinguished by minor stylistic differences. Also, associated with Blackduck pottery.

Figure 8: Examples of Kathio Ware (adapted from Anfinson 1979:106)
Lake Benton Phase


Vessel Form: Subconoidal vessels with walls of moderate thickness (6-7mm). Rim orientation is slightly inflaring to slightly outflaring and usually with a slightly curved profile. Lips can be flat or round. Some wall thickening can occur in the shoulder.

Temper: Grit, crushed-rock temper

Surface Treatment and Decoration: Exterior surfaces of the body usually exhibit well-defined vertical cordmarking and the rims and upper shoulders of decorated vessels are usually smoothed. Interior surfaces are usually smoothed but can be vertically cordmarked. Vessel exteriors can be undecorated or feature cordwrapped stick impressions, dentate stamps, and/or punctates on the rim and/or upper shoulder. Lips can be cordmarked, with some having cordwrapped stick impressions.

Distribution: Prairie Lakes region in Northern Iowa and Southwestern Minnesota.

Associations: Part of the “Cordage Horizon” in Iowa (Benn and Green 2000:455). Fox Lake pottery precedes Lake Benton pottery.

Types: Lake Benton Cordwrapped Stick Impressed, Vertical Cordmarked, Dentate Impressed, and Plain.

Figure 9: Examples of Lake Benton Phase (adapted from Benn and Green 2000:465)
Laurel Ware

Middle Woodland, approximately 150 B.C. – A.D. 650 (Anfinson 1979:121-135; Arzigian 2008:53-62; Stoltman 1973:46-111; University of Minnesota Ware Descriptions):

Vessel Form: Moderately thick walled (3-8mm) jars with a conoidal or rounded bases, straight rims, and slight to no neck construction. Rims are relatively straight but may be slightly inverted or everted. Lips are flat to slightly rounded and infrequently decorated. If a neck is present, it is slightly constricted. If a shoulder is present, it is slightly rounded.

Temper: Grit, fine to medium crushed granite or other types of grit (quartz, feldspar, mica, and hornblende).

Surface Treatment and Decoration: Exterior surface treatment is usually smoothed but can occasionally be cord-roughened. Decorations are exhibited on the exterior rim, neck, and occasionally the upper shoulder. Decorative techniques include dentate stamping, trailing, push-pull or stab-and-drag bands, pseudo-scallop shell stamp, bosses, and punctates. Most often, decoration involves the use of a stamping tool.

Distribution: Central and Northern Minnesota and Northwestern Wisconsin


Figure 10: Examples of Laurel (adapted from Anfinson 1979:128-129, 131, 133)
**Linn Ware**

Late Middle Woodland and Early Late Woodland, A.D. 200 – A.D. 750 (Howell 2001:102-103):

Vessel Form: Globular vessel bodies, with rounded or conoidal bases. Straight or slightly flaring, vertical rims. Lips are rounded or flattened and sometimes slightly inverted. Wall thickness ranges from 5-8mm.

Temper: Evenly distributed, very fine to very coarse sized.

Surface Treatment and Decoration: Decoration may be executed on a smoothed surface, on a cordmarked surface, or both. Decorations are highly varied but usually consist of both small external and internal punctates, cord-wrapped stick impressions, and/or a variety of tool stamping motifs.


Associations: Part of the “Weaver Horizon” in Iowa (Benn and Green 2000:435).

Types: Lane Farm Cord-Impressed and Stamped, Leland Cordmarked, Levsen Punctated and Stamped, Spring Hollow Brushed, Cordmarked, Cross-hatched, and Plain, and Windrow Cord-Impressed.

Figure 11: Examples of Linn Ware (adapted from Ben and Green 2000:436 (right); Logan 1976:96-97 (left and center))
Madison Ware

Terminal Late Woodland, A.D. 700 – A.D 1000 (Howell 2001:130-131):

Vessel Form: Globular jars with slightly conical bottoms. Rim are insloping, vertical, or slightly outflaring. Lips are flattened, rounded, slightly thickened, beveled to the exterior or interior, or slightly rolled. Thickness ranges from 4-6mm.

Temper: Medium to granular size grit temper.

Surface Treatment and Decoration: Common surface finish is cord-wrapped paddle cordmarking from the base to the lip or collar, some vessels have smoothed-over-cord or smoothed areas. Exterior cordmarking ranges from fine to pronounced vertical imprints that do not demonstrate excessive paddle overlapping. Decorative elements range from plain surface treatments, small punctates, cord-impressed motifs and fabric impressions. Decoration is generally limited to lip, rim, and shoulder areas.

Distribution: Southern two-thirds of Wisconsin, Northern Illinois, Northeastern Iowa, and Southeastern Minnesota.

Associations: Part of the “Cordage Horizon” in Iowa (Benn and Green 2000:455).

Types: Madison Cord Impressed, Punctated, and Plain
Marion Ware

Early Woodland to Middle Woodland, approximately 300 B.C. – 100 B.C. or later (Gibbon 1986:84-90; Howell 2001:44-45):

Vessel Form: Thick-walled, wide-mouthed jars, with flattened lips and straight rims. Thickness can be over 10mm.

Temper: Large grit, crushed stone

Surface Treatment and Decoration: Vertical or oblique cordmarked, smoothed-over cordmarked, or smooth exteriors and cordmarked or smoothed-over cordmarked interiors. Decoration is usually minimal and can include fingernail impressions and/or punctates along the lip and/or rim.

Distribution: Throughout the Central and Upper Midwest.

Types: La Moille Thick, Marion Thick, and Indian Isle Punched
Figure 13: Example of La Moille Thick-Marion Ware (adapted from Anfinson 1979:118)

Figure 14: Example of a Marion Thick-Marion Ware (adapted from Logan 1976:90)
Onamia Series

Late Middle Woodland to Late Woodland, approximately A.D. 600 – A.D. 1000
(Anfinson 1979:149-155; University of Minnesota Ware Descriptions):

Vessel Form: Jars with conoidal to sub-conoidal bases, slightly rounded shoulders, slight neck constrictions, high straight to inslanting rims, and flat thickened lips that are occasionally beveled outwards. Average wall thickness is about 5mm.

Temper: Grit temper

Surface Treatment and Decoration: Exterior body surface treatment of vessels can be cordmarked or smoothed-over cordmarked. The exterior rim surface is usually smoothed. Decoration consists of long, widely spaced, horizontal, vertical, or oblique impressions made by a cordwrapped-stick or a “heavy” dentate stamp. The impressions stretch down the exterior rim surface from the lip to the rim base. Similar vertical or oblique impressions are frequently present on the rim interior.

Distribution: Northeastern, Central, and Southeastern Minnesota

Associations: Many similarities to St. Croix Stamped Ware.

Types: Onamia Cordwrapped Stick Impressed and Onamia Dentate

Figure 15: Examples of Onamia Rims (interior decorations) (adapted from Anfinson 1979:153-154)
St. Croix Stamped Ware

Middle to Late Woodland, approximately A.D. 300 – A.D. 600 or A.D. 500 – A.D. 800 (Anfinson 1979:169-174; University of Minnesota Ware Descriptions; Wendt 2002:2):

Vessel Form: Vessels are sub-conoidal to round with slight neck constrictions, pronounced shoulders, and high straight to slightly excurvate rims. Lip is usually unthickened and flattened but occasionally rounded. Thickness ranges from 4-6mm.

Temper: Grit temper

Surface Treatment and Decoration: Exterior surface is cordmarked but the rim area is usually smoothed before decoration is applied. Decorations, confined to the exterior of the rim surface, consist of bands of horizontal or oblique dentate stamping, comb stamping, or cordwrapped-stick impressions in geometric patterns. Stamping tends to go up into the lip and creates a wavy “crimped” appearance.

Distribution: Northwestern Wisconsin and Northwestern, Central, and Northeastern Minnesota

Types: St. Croix Dentate Stamped, Combed Stamped, and proposed, Cordwrapped-Stick Stamped

Figure 16: Examples of St. Croix Stamped (adapted from Anfinson 1979:173)
**Sorg**

Middle Woodland, approximately 100/200 B.C. – A.D. 200/300 (Anfinson 1979:197-202; Arzigian 2008; University of Minnesota Ware Descriptions):

Vessel Form: Thick-walled, wide-mouthed jars with flat lips, straight rims, slightly constricted necks, rounded shoulders, and conoidal to sub-conoidal bottoms. Thickness varies from 6-12mm.

Temper: Course grit temper

Surface Treatment and Decoration: Vessel bodies are cordmarked and rims are smoothed prior to decoration placement. Decoration is generally confined to the rim and upper shoulder and consists of zoned and banded areas of dentate stamped impressions, punctates, bosses, and oblique trailed lines which are separated by horizontal trailed lines. Lips can be decorated with dentate stamped impressions.

Distribution: East Southcentral and Southeastern Minnesota

Associations: Havana-related

Types: Sorg Banded Dentate and Sorg Banded (previously Sorg Banded Trailed)

Figure 17: Examples of Sorg (adapted from Anfinson 1979:200-201)
Iowa Pottery Horizons:

**The Weaver Horizon**

Early Late Woodland, approximately A.D. 250 – A.D. 400 (Benn and Green 2000:434-452):

Vessel Form: Thinner walls compared to Middle Woodland pottery, slightly curving rims, constricted orifices, low, flaring shoulders, full bodies, and sharply rounded (conoidal) bases.

Temper: Grit tempered and pastes are compact

Surface Treatment and Decoration: Vessel surfaces are marked by finer cord roughening that is often smoothed-over to varying degrees. The principal decorations are tool impressions and/or punctates around the rim and/or lip.

Distribution: Traced across Iowa and the Prairie Peninsula.

Phases/Wares/Types: Multiple pottery phases make up the Weaver horizon and include Arthur Cord Roughened, Madrid ware (Riverbend phase), Held Creek ware (Boyer variant), Chariton Plain, Henry ware, Weaver ware (Gast phase), Spring Hollow Plain, and Cordmarked of Linn ware (late Allamakee phase). These phases developed out of the indigenous Middle Woodland traditions.

**The Cordage Horizon**

Late Woodland, approximately A.D. 650 – A.D. 800 (Benn and Green 2000:453-466):

Vessel Form: Vessel shapes consist of smoothly curving and vertically oriented rims, expanding shoulders, globular bodies, and rounded bases.

Temper: Crushed rock temper

Surface Treatment and Decoration: Cordage impressions cover the entire exterior surface, and the main rim decoration consists of parallel horizontal or geometric designs done in single cords or fabrics.

Distribution: Traced across Iowa and into Southern Minnesota, Southwestern Wisconsin, and Northwestern Illinois.

Phases/Wares/Types: Loseke Variant, Lake Benton/Onamia, Madison Ware (Unnamed phase), Keyes Phase, Missouri Bluffs Cord Impressed, and Burris Ware (Louisa Phase).
**The High Rim Horizon**

Late Late Woodland, approximately A.D. 800 – A.D. 1100 (Benn and Green 2000:469-479):

**Vessel Form:** High rims and broader vessel shoulders (as compared to the Cordage Horizon). Rims can also be slightly curved or flared. Lips can be rounded or flattened and beveled outward.

**Temper:** Grit temper

**Surface Treatment and Decoration:** Surfaces are cordmarked and sometimes smoothed before the application of decoration. Decorations include cord impressions, cordwrapped stick impressions, tool impressions, castellations, collars, and/or other special lip treatments. Decorations below the lip and along the rim can include cord impressions, cordwrapped stick impressions, and punctates.

**Distribution:** Traced across Iowa and Southern Minnesota, Southwestern Wisconsin, and Northwestern Illinois.

**Phases/Wares/Types:** Great Oasis Variant, Grant Collared and Cord Impressed, Minotts Ware, and Sterns Creek Phase.
CHAPTER 4: METHODOLOGY

Among sites with Late Woodland components, excavations have been done at the Bartron site (21GD02), the Pickerel Slough site (21GD181), the Silvernale West Terrace site (21GD254), and the Mosquito Terrace site (21GD260) (Figure 19). This work includes Lloyd Wilford (1948), Elden Johnson (1960, 1968, and 1969), and Minnesota State University, Mankato (MNSU) (2008) at the Bartron site; the Minnesota County and Highway Survey Project (1987) and MNSU (2006) at the Pickerel Slough site; MNSU (2006 and 2011) at the Silvernale West Terrace site; and MNSU (2006, 2011, and 2013) at the Mosquito Terrace site. The pottery assemblages available at Minnesota State University, Mankato were readily available and re-examined for this thesis.

Assemblages Examined

The Bartron assemblage included the MNSU 2008 collection, originally catalogued by Emily Hildebrant Ifert (2010). Only the pottery was re-examined and re-catalogued for this thesis. Other artifact types were not changed and should be re-examined in the future.

The Pickerel Slough assemblage included the MNSU 2006 collection, originally catalogued by Steven M. Kelly (2009) and a variety of MNSU archeology laboratory students. Kelly’s analysis of the 1987 assemblage was examined and noted in the Pickerel Slough site history (Chapter 7). Kelly did not present the MNSU 2006 assemblage in his Master’s Thesis. Again, only the pottery in the 2006 assemblage was re-examined and re-catalogued.

The Silvernale West Terrace assemblage included the MNSU 2006 and 2011 collections. The 2006 collection was originally catalogued by Kelly (2009) and the 2011
collection was originally catalogued by the author. The 2006 collection was re-examined and re-catalogued by Skinner to ensure continuity among the two collections.

The Mosquito Terrace assemblage included the MNSU 2006 and 2012 collections. The 2006 collection was originally catalogued by Kelly (2009) and the 2012 collection was originally catalogued by the author. The 2006 collection was re-examined and re-catalogued for this thesis to ensure continuity among the two collections. The MNSU 2013 collection was originally catalogued by Cory Nowak (2014) and it was not recatalogued for this work. Nowak’s catalogue is in a newer format than Skinner’s and the data collected in 2013 was minimally examined in this thesis due to differences in analysis.

As stated above, many of the MNSU assemblages were re-catalogued due to changes in format and because more detailed information was required. At the time, many aspects of the pottery assemblages (i.e. twist direction, cordmarking patterns, wall thicknesses, etc.) were not consistently examined.

MNSU, Mankato archeology student’s separated each site’s artifacts into artifact classes (lithic, pottery, flora, fauna, metal, mineral, etc.), artifact names (tool, debitage, sherd, bone, charcoal, shell, etc.), artifact morphology (scraper, body sherd, lip, rim, shoulder, flake, mammalian, avian, wood, non-wood, etc.), and specifically, pottery decorations and cordmarking patterns. Each artifact was weighed by a metric balance in grams, the raw material of each artifact was identified, and specific pottery surface treatments and decorations were described in detail. Each site, unit, and level were catalogued in a systematic manner.
A Geographical Information System (GIS) was implemented (when able) to digitally map each of the sites for better documentation and analysis. Furthermore, to better understand and compare the four sites, additional Late and Terminal Woodland materials, specifically, a variety of written archeological works (Anfinson and Peterson 1987; Arzigian 1993, 2008; Benchley et al. 1997; Emerson et al. 2000; Fagan 2005; Fleming 2009; Gibbon 1979, 1990; Hildebrant Iffert 2010; Kelly 2009; Nowak 2014; Schirmer 2002, 2008, 2015; Theler and Boszhardt 2003, 2006; Wendt 2002; Wood 1998; many others) were examined as part of this thesis.

Given that there is great diversity in pottery expressions at Late Woodland sites (e.g. Emerson et al. 2000; Howell 2001; Rosebrough 2012), diagnostic pottery decorations were meticulously described, basic temper was identified, and cord twist directionality was determined (Figure 18). Rim sherds were also profiled and used to help in site comparison. This aided in identifying pottery types across sites and better definition of regional complexes in which Red Wing potters participated. This was a critical step in making comparisons among the above sites and regional types. Considering that no Late Woodland sites in Red Wing have been radiometrically dated, these comparisons facilitate site and component cross-dating by style.

Figure 18: Cord twist directional difference between Z- and S-twist
Each collection’s catalogue data was placed into Microsoft Excel and ArcGIS (when applicable). This enabled a number of different analyses for each site. Specifically, looking at the percentages of materials, types of pottery and pottery decorations, floral and faunal, and types of tools found at each site. This was used to establish baseline data for comparing sites and providing context to the pottery.

Figure 19: Topographic Map of the Bartron, Pickerel Slough, Mosquito Terrace, Silvernale, and Silvernale West Terrace Sites
Defining, identifying, describing pottery decorations are some of the most important activities in discussing pottery style. To eliminate any confusion, many of the most common pottery decorations are defined and demonstrated below. The tiles in these photographs, were made by Skinner for the MNSU archeology lab, to aid in teaching students about pottery decorations. The clay-like material was made from modeling clay that can be baked in the oven and the tools used to make the decorations included fiber that was twisted into cordage (sweet grass) and both wood and bone instruments. However, a modern instrument was occasionally used.

_Pottery Decoration Definitions_ (pertaining to this thesis)

_Bossed_ is a decoration in which the end of a reed, stick, bone, or other stamp-like tools are pressed into a plastic paste (Anfinson 1979:6), causing a depression on the interior or exterior surface of a vessel. Bossing is like a negative impression of a punctate in which an impression is made from the interior of a vessel towards the exterior or vice versa. However, bossing is a purposeful decoration that is distinct from incidental raised areas on the opposite side of a punctate. Bossing is usually described by the shape of the impression on the surface of the vessel. These shapes are usually described as circular or ovular but can include other shapes.

Figure 20: Clay Tile - Bossing
*Cord impressed* is a decoration in which cordage (s- or z-twist) is impressed into a plastic paste. The actual impression is a mirrored version of the physical cordage. Hence, the physical cordage made could be s-twist but on the pottery, the impression looks like z-twist. Accordingly, the physical cordage made that is z-twist, looks like s-twist when impressed on the pottery.

In this thesis, the twist direction recorded and catalogued (s- or z-twist) is that of the physical cordage made before it was impressed on the pottery.

Figure 21: Clay Tile - Cord Impressed (z-twist)
Cordwrapped-stick impressed is a decoration in which cordage is wrapped around a thin, long, rounded object (i.e. stick or bone) and pressed into a plastic paste.

Figure 23: Clay Tile - Cordwrapped Stick Impressed

Dentate stamped is a decoration in which a tool carved with a row of “teeth”, tines, or points is impressed into a plastic paste. This tool can be carved out of wood or bone.
*Incised* is defined as a freehand decoration in which narrow, deep lines are cut, using a sharp object, into a plastic or leather-hard paste (Anfinson 1979:6). This decoration involves the actual removal of material from the surface of a vessel.

*Punctated* is defined as a decoration in which the end of a reed, stick, bone, or other stamp-like tools are pressed into a plastic paste (Anfinson 1979:6), causing an depression on the exterior surface of a vessel. Punctates are usually described by the
shape of the impression on the exterior surface of the vessel. These shapes can be circular, ovular, triangular, linear, lunate, arcuate, and so on.

Figure 26: Clay Tile - Punctates

_Trailed_ is defined as a freehand decoration in which broad, shallow lines are formed by dragging a blunt tool across the surface of a plastic paste (Anfinson 1979:6). This decoration involves pushing material out of the way on the surface of a vessel.

Figure 27: Trailed Lines

_Cordage_

Cordage is made by knotting or twisting coarse fibers together. This is done by overlapping individual fibers of various lengths and twisting them together, adding more
and more fibers to produce length as they are being twisted. Twisting techniques can be done by either finger twisting or thigh rolling. Modern techniques can involve a spindle or spinning wheel. Fibers can only be twist in two directions and the twist direction is referred to as either “S” or “Z”, based on the direction that the cordage is slanted. Hence, cordage slanted “\" is “S” and cordage slanted “/" is “Z” (see Figure 18). To create cordage from fiber, an initial twist is made and then a final, opposite twist is made. This locks the fibers together and creates a strong hold that keeps the cordage from untwisting. Therefore, there is an initial twist and a final twist. The cordage can become even stronger by twisting the fibers even more times, creating a double-twist cord and so on.

Theories of Final Cord Twist Direction (pertaining to this thesis)

There are many different types of cord impressions that can be seen on pottery (single cord, double cord, cordwrapped stick, cordwrapped paddled, and so forth). Cord impressions can be impressed on the pottery in many different directions and in many different ways. This decoration leaves a negative impression of the physical cord. However, cord direction (z or s) cannot always be determined depending on how the cordage was impressed on the pottery and/or what was done to the pottery after the cord impression was made.

When a cord twist direction can be determined, it can give another level of insight on the techniques and preferences used by the potter. This in turn, could give archaeologists another important component to look at when determining style, function, and/or cultural differences between woodland groups. However, twist direction does not seem to be uniformly documented among site catalogues and are not usually discussed when typing pottery.
There are many different theories pertaining to the importance and analysis of cordage. Only a few will be discussed here. The first theory describes cordage as another form of pottery decoration and not a separate form of material culture (Maslowski 1996:89). Cordage is then just another decoration and only needs to be analyzed to a certain point, when giving a general characteristic description within a pottery type. However, diving deeper into the different attributes of cordage, twist direction, more information may be discovered. This idea leads into an alternative approach where “…cordage twist patterns are the result of highly standardized, culture-specific motor habits” (Maslowski 1996:89). The motor habits within making cordage are learned at an early age and are taught from generation to generation within family groups or work groups (Maslowski 1996; Minar 2001). This would mean that children learn how to make cordage from their elders and generally continue to teach others the same way as they themselves age. Thus, the same cordage making technique would mostly be shared among a group. However, this is not to say that differences in cordage twist direction might not be present within a group “…due to handedness or other idiosyncratic behavior” (Maslowski 1996:90). Rather, it is most likely to be a behavior that is shared and executed in common among group members, and thus is an important contributor to the stylistic content seen in the group’s pottery.

This theory then suggests that when analyzing a pottery collection, archeologists may be able to distinguish between different populations based on twist direction, which in turn, may help differentiate similar seemingly similar cultural complexes. However, cordage twist analysis should be used in conjunction with other diagnostic artifacts, as the
same twist direction techniques by themselves do not prove a direct cultural relationship between two or more groups or sites (Maslowski 1996:88-99; Minar 2001).
CHAPTER 5: THE BARTRON SITE (21GD02)

Site Location and History

The Bartron site (21GD02) is located on the southern tip of Prairie Island in Red Wing, MN. On the northwest, the site is bordered by a low backwater area and on the southwest, by a steep slope down to Birch Lake, a Vermillion river flowage (Gibbon 1979:91). The Mississippi River is to the east (Figure 19).

The village area of the Barton site was excavated by Lloyd Wilford in 1948 (University of Minnesota), by Elden Johnson in 1968 and 1969 (University of Minnesota), and by Ronald Schirmer in 2008 (MNSU) (Figure 28). T.H. Lewis recorded at least 260 mounds and earthworks on Prairie Island in 1885 (Brower et al. 1911), including a group of 51 mounds (21GD01) terminating adjacent to the village area. The mounds are considered to be primarily Woodland in origin (Gibbon 1979:92), but shell tempered sherds were recovered during amateur exploration of mounds near Bartron in the 1940s (Schirmer, personal communication).
Excavations revealed numerous features, including fire pits, postmolds, storage and garbage pits, and house floors (Gibbon 1979). Wilford recovered thousands of predominantly shell tempered pottery sherds. Only a handful were grit tempered (8) with five having cordmarked exteriors (Gibbon 1979:112). During Johnson’s excavations, three rim sherds and eleven decorated body sherds were found to have the form and
decorative style of Cambria or general Mississippian ceramics. Fifteen sherds were found to be decorated within the Woodland pottery tradition (Gibbon 1979:113-114). Gibbon (1979:118) later concluded that Middle Mississippian, Cambria, Oneota, and Woodland components were present. During Schirmer’s excavations, shell tempered pottery was found throughout, but the western portion of the site appears to have been the location of some Late Woodland pits and grit tempered pottery sherds, thus revealing a more extensive Late Woodland component than had been reported in the 1960s, due to investigative bias at the time (Hildebrant Iffert 2010). Careful examination of the artifacts, catalogues, and excavation notes do not support Gibbon’s assertion of there being a Middle Mississippian or Cambria component to the site (Schirmer, personal communication). Thus, Historic, Oneota, and Late Woodland cultural components are present, and there is no evidence of Middle Mississippian artifacts or construction styles (Schirmer 2008). Another large Late Woodland site (21GD148) exists to the north of the site and likely intersects with parts of the Oneota village.

The artifact assemblage examined in this thesis is the collection gathered by Schirmer in the summer of 2008 and first analyzed by Emily Hildebrant Iffert (2010). The original research goal was to investigate a reported wall trench structure previously cited as evidence of Mississippian contact or influence in the Red Wing Locality (Hildebrant Iffert 2010:ii). Hildebrant’s project study area spanned both the southern border of the Prairie Island Nuclear Generating Plant (PINGP) property and the northern portion of a cultivated field farmed by a private landowner (2010:93).

In May of 2008, Donald W. Johnson performed a survey using magnetometry and electrical resistance methods at the Bartron site (Hildebrant Iffert 2010:93; Johnson
This was done to delineate the spatial extent and better understand the current condition of the site (Hildebrant Iffert 2010:93). Archeological field methods used during the MNSU field school included a surface pedestrian survey and block excavation (Hildebrant Iffert 2010:93).

The placement of the block unit excavations focused a few goals. These goals included the re-excavating of Johnson’s Feature 13 and to investigate one of the anomalies identified by the geophysical survey (Hildebrant Iffert 2010:93). A total of two blocks were excavated and within those blocks a number of units were excavated (Figure 29). Through excavation a total number of 6 features were found, none of which were classified as Late Woodland (Figure 30).

Figure 29: Bartron 2008 Blocks and Excavation Units (adapted from Hildebrant Iffert 2010:100)
Hildebrant Iffert’s initial artifactual analysis of the 2008 Bartron excavations included 2175 lithic and stone artifacts, 1719 pottery artifacts, 110.877 grams of botanical material, and 103.592 grams of faunal material (2010:128). Additionally, 128.9 liters of soil from the features selected for analysis were processed in the fall of 2008 by Emily Hildebrant, Jared Langseth, and Travis Hager, in addition to a number of other soil samples from the Bartron site (Hildebrant 2010:128). Jaclyn Skinner finished floating the remaining soil samples in the 2011. The exact amount that Skinner floated is unknown at this time and these samples were not processed any further.
Hildebrant Iffert’s basic lithic analysis recovered in the 2008 excavation included at least 17 different types of lithic raw materials. Her analysis is as follows:

PDC (92.6%) dominated the lithic raw material assemblage by count. The distribution of the number of lithic raw material types was similar across the site, even when compared between primary and secondary contexts. Material types common in all contexts were Basaltic Rock, Burlington Chert, Grand Meadow Chert, Granitic Rock, Hixton Orthoquartzite, and Prairie du Chien Chert, with cherts predominating. Fire cracked rock was also relatively evenly distributed between basaltic, granitic, and limestone materials. Sandstone and other sedimentary rocks exposed to fire were found in smaller quantities. There are 13 types of tools excavated from Bartron in 2008: bifaces, blades, grinding stones, hammerstones, knives, manos, metates, projectile points, scrapers, short-faced scrapers, unidentified (broken), unidentified (monofacial), and utilized flakes. Interestingly, the greatest diversity in tool types came from the secondary context (10 types) though the greatest number of tools came from the primary context in Excavation Units Six through 12 (58 out of 88 site total). (Hildebrant Iffert 2010:128-130)

Hildebrant Iffert’s basic faunal and floral analysis in the 2008 excavation is as follows:

Small amounts of charred maize, wood charcoal, mammal bone, shell, and unidentified animal bone were recovered from Excavation Units One through Five (A – C). Wood charcoal came from Excavation Units One D, E; Two D, E; Three D; Four D. Wood charcoal, charred maize, avian bone, mammal bone, piscid bone, shell, and unidentified bone were excavated from Excavation Units Six through 12, which was both the most diverse and heaviest floral and faunal assemblage from 2008. Overall, a minimum of 35.677 grams of botanical material (largely wood charcoal) and 103.592 grams of faunal material (mostly shell) was excavated, which includes materials from the processed feature excavations. (Hildebrant Iffert 2010:134)

Hildebrant Iffert’s basic pottery analysis in the 2008 excavation is as follows:

Most of the pottery from the 2008 excavation was badly exfoliated and of indeterminate decoration and surface treatment (67.5% of the total assemblage). Rim sherds and handles were not present in abundance; there were 36 rims and near rims (necks) and four handles. Approximately 7% of the 2008 site assemblage was cordmarked with no additional decoration. A
small amount (0.4%) of the sherds were cordmarked and decorated, including five sherds from the secondary context that had cordmarked surface treatment with punctates. Pottery sherds were decorated with circular and tool punctates, incised lines, and trailed lines; several sherds had multiple rows of punctates. (Hildebrant Iffert 2010:132)

*Pottery Analysis - 2008 Assemblage*

Although Hildebrant Iffert performed a basic pottery analysis of 2008 assemblage, Skinner re-catalogued and re-analyzed the assemblage. Thus, the pottery analysis of the 2008 assemblage has changed. A total of 1180 pottery sherds were re-catalogued. Of those sherds, 247 are grit tempered (20.93%), 929 are shell tempered (78.73%), and 4 are of mixed temper (0.34%) (shell and sand) (Figure 31). Surface treatments seen on the grit tempered pottery sherds consist of cordmarking (23.89%), smooth (17.41%), smoothed-over cordmarking (16.19%), multidirectional cordmarking (28.34%), oblique cordmarking (0.40%), net impressed (0.81%), oblique smoothed-over cordmarking (0.40%), vertical cordmarking (2.83%), vertical smoothed-over cordmarking (0.81%), and exfoliated (8.91%) (Figure 32). Grit tempered sherd morphology counts consist of 213 body sherds, 27 neck sherds, and 7 rim sherds (from 4 different vessels). Twist direction of cordmarked, multidirectional cordmarked, and oblique cordmarked sherds are s-twist (5.11%), z-twist (72.26%), and indeterminant (22.63%) (Figure 33).

Decorations identified on grit tempered sherds include incised lines, trailed lines, cord impressions (all z-twist), tool impressions (lip), knot impressions, and triangular, circular, arcuate, and linear punctates. See figures below for examples of decorated neck and rim sherds categorized by traditions and typology associations.
Figure 31: Bartron Pottery Temper Count and Percentage - 2008 Excavation

Bartron:
Pottery Temper Count and Percentage - 2008 Excavation

Figure 32: Bartron Grit Tempered Pottery Surface Treatment Count and Percentage - 2008 Excavation
The pottery assemblage consists of both shell and grit tempered sherds, majority of which are shell tempered (78.73%) and identified broadly as “Oneota”. However, older cultural components can be identified as Early Woodland, Late Woodland, and Terminal Woodland. The presence of all of these cultural components suggests a long history of differing site occupations.

The Early Woodland rim below (XU5.10-20.016) has been typed as Brainerd Net-Impressed with a flat net impressed lip, straight rim, and net impressed exterior. The neck sherd XU4A.40-50.003 exhibits traits of Brainerd Net-Impressed with knotted impressions over a net impressed surface. However, the sherd is not a rim and there just isn’t enough there to definitively type.

Late Woodland rims below (XU2E.0-20.001/ XU3.20-30.006 and XU3D.10-20.001/ XU3D.20-30.001/ XU4.10-20.001/ XU4D.30-30.001) have been typed as a
variation of Bremer Triangular Punctated with flat tool impressed lips, straight everted rims, and horizontal rows of triangular punctates, all over smoothed-over cordmarking.

Terminal Woodland neck and rims below have been identified as Angelo Punctated, a variation of Angelo Punctated, a mix of Bremer Triangular Punctated and Angelo Punctated, or Madison Cord-Impressed. Necks typed as a mix are XU4.0-10.001/ XU5.10-20.001/ XU5.10-20.002/ XU5.0-10.003 and are from the same vessel. The decorative elements exhibited on the sherds are parallel horizontal rows of closely spaced and sometimes slightly overlapping circular punctates over a form of cordmarking. The closely spaced punctates arranged in horizontal rows over smoothed-over cordmarking with the absence of trailed or incised lines resemble the type Bremer Triangular Punctated. However, the punctates are circular and not triangular which is occasionally seen in the type Angelo Punctated. Thus, a possible mix of the two types.

Neck XU2E.0-10.002 has been typed as a variation of Angelo Punctated with linear tool impressions followed by a two parallel horizontal rows of incised lines over smoothed-over cordmarking. The linear-like tool impressions are only partial but are uncharacteristic of the current description of Angelo Punctated. However, the association of the tool impressions with parallel rows of incised lines has been described here as a variation of Angelo Punctated.

Neck sherds XU1D.0-10.003 and XU1N.10-20.007 are from the same vessel. XU1D.0-10.003 exhibits horizontal incised lines intersected by oblique incised lines, followed by a row of parallel triangular punctates over a smoothed surface. The sherd likely broke just below the rim. Neck sherd XU1N.10-20.007 exhibits horizontal parallel lines over oblique cordmarking and broke closer to the body of the vessel. Neck sherd
XU4.30-40.002 is also described and typed as Angelo Punctated. The sherd exhibits one partial parallel horizontal row of triangular punctates, followed by three parallel horizontal incised lines, followed by one parallel horizontal row of triangular punctates, all over smoothed-over cordmarking. These decorative elements are most reminiscent of the current description of Angelo Punctated.

Rim XU3D.10-20.002 has been typed as Madison Cord-Impressed with a straight, vertical rim, round smoothed-over cordmarked lip, and exterior decoration of a horizontal row of triangular punctated, followed by a horizontal cord impression (z-twist), followed by vertical cordmarking or small vertical incised lines, all over smoothed-over cordmarking.

The final Terminal Woodland neck sherd is XU4.30-40.001. It is an unidentified type with three oblique rows of arcuate punctates positioned in an “L” shape over vertical cordmarking (z-twist). Further research must be on this sherd.

The Oneota sherds below (XU11.10-20.010, XU4A.50-50.001, and XU10-20.30.010) are all from the same grit tempered vessel. The sherds are very thin with a thickness of 2.66 to 3.71mm and are tempered with finally crushed granite. The “Oneota” decorative elements include a number of broad trailed lines over a smooth surface. Intaglio is present, suggesting the decoration was placed when the vessel was leather hard. These sherds are a great example of grit tempered Oneota wares.
Sample of Diagnostic Pottery

Early Woodland:

Brainerd Net-Impressed
XU5.10-20.016 (Figure 34)
Lip: Flat; net impressed
Rim: Straight; vertical
Exterior: Net impressed
Interior: Smooth

Figure 34: Bartron Rim – XU5.10-20.016
Unidentified Type
Possibly Brainerd Net Impressed
XU4A.40-50.003 (Figure 35)
Neck
Exterior: Two rows of knot impressions (2 full and 2 partial); over net impressed surface
Interior: Smooth
Thickness: 5.31mm

Figure 35: Bartron Neck - XU4A.40-50.003
Late Woodland:

Variation of Bremer Triangular Punctated
XU2E.0-20.001 (Figure 36)
Lip: Tool impressed (3 impressions); flat; crenelated; smoothed-over cordmarked
Rim: Straight; everted
Exterior: Horizontal row of triangular punctates (2 full and 2 partial); over smoothed-over cordmarking
Interior: Smooth
XU3.20-30.006
Lip: Tool impressed (1 full and 1 partial impression); flat; crenelated; smoothed-over cordmarked
Rim: Straight; everted
Exterior: Horizontal row of triangular punctates (2 partial); over smoothed-over cordmarking
Interior: Smooth

Figure 36: Bartron Rims - XU2E.0-20.001 and XU3.20-30.006
Variation of Bremer Triangular Punctated
XU3D.10-20.001 (Figure 37)
Lip: Exteriorly tool impressed (2 impressions); round; crenelated; smooth
Rim: Straight; everted
Exterior: Horizontal row of triangular punctates (1 full and 2 partial), impressed obliquely (/); over smoothed-over cordmarking.
Interior: smooth
XU3D.20-30.001
Lip: Exteriorly tool impressed (2 impressions); round; crenelated; smooth
Rim: Straight; everted
Exterior: Two horizontal rows of triangular punctates (row 1: 3 full and 1 partial, row 2: 3 full and 1 partial) and impressed obliquely (/); over smoothed-over cordmarking.
Interior: Smooth
XU4.10-20.001
Lip: Exteriorly tool impressed (4 impressions); round; crenelated; smooth
Rim: Straight; everted
Exterior: Two horizontal rows of triangular punctates (row 1: 4 full and 1 partial, row 2: 3 full and 2 partial), impressed obliquely (/); over smoothed-over cordmarking.
Interior: Smooth
XU4D.30-30.001
Neck
Exterior: Two oblique (/) incised lines over two parallel horizontal incised lines, followed by one horizontal row of triangular punctates (3), impressed obliquely (/); over vertical smoothed-over cordmarking
Interior: Smooth

Figure 37: Bartron Rims and Shoulder - XU3D.10-20.001, XU3D.20-30.001, XU4.10-20.001, and XU4D.30-30.001
Terminal Woodland:

Undefined Type (Mix of Bremer Triangular Punctated and Angelo Punctated)
XU4.0-10.001 (Figure 38)
Neck
Exterior: Three horizontal rows of circular punctates (row 1: 5 partial, row 2: 7 full and 1 partial, row 3: 1 full and 1 partial); over vertical cordmarking
Interior: Slightly oblique (\) cord impressions (1) (s-twist); over smoothed-over cordmarking
Thickness: 5.22mm
XU5.10-20.001
Neck
Exterior: Three horizontal rows of circular punctates (row 1: 4 partial, row 2: 3 full and 2 partial, row 3: 1 full and 2 partial); over vertical cordmarking
Interior: Slightly oblique (\) cord impressions (2) (z-twist); over smoothed-over cordmarking
Thickness: 5.33mm
XU5.10-20.002
Neck
Exterior: Three horizontal rows of circular punctates (row 1: 1 partial, row 2: 4 full, row 3: 3 full); over vertical cordmarking
Interior: Slightly oblique (\) cord impressions (3) (z-twist); over smoothed-over cordmarking
Thickness: 5.26mm
XU5.0-10.003
Neck
Exterior: Three horizontal rows of circular punctates (row 1: 1 partial, row 2: 2 full, row 3: 1 partial); over vertical cordmarking
Interior: Smoothed-over cordmarking
Thickness: 5.18mm

Figure 38: Bartron Necks - XU4.0-10.001, XU5.10-20.001, XU5.10-20.002, and XU5.0-10.003
Angelo Punctated
XU1D.0-10.003 (Figure 39)
Neck
Exterior: Horizontal incised lines (2) intersected by oblique (/) incised lines (2), followed by a row of parallel triangular punctates (2 full and 1 partial); over smooth surface
Interior: Smooth
Thickness: 4.34mm
Associated with XU1N.10-20.007

Figure 39: Bartron Neck - XU1D.0-10.003
Angle Punctated (based on associated sherd)
XU1N.10-20.007 (Figure 40)
Neck
Exterior: Parallel horizontal incised lines (4 full and 1 partial); over oblique cordmarking (\)
Interior: Smooth
Thickness: 4.55mm
Associated with XU1D.0-10.003

Figure 40: Bartron Neck - XU1N.10-20.007
Angelo Punctated
XU4.30-40.002 (Figure 41)
Neck
Exterior: One parallel horizontal row of triangular punctates (4 partial), followed by three parallel horizontal incised lines, followed by one parallel horizontal row of triangular punctates (3 full and 2 partial); over smoothed-over cordmarking
Interior: Smooth
Thickness: 3.19mm

Figure 41: Bartron Neck - XU4.30-40.002
Variation of Angelo Punctated  
XU2E.0-10.002 (Figure 42)  
Neck  
Exterior: Tool impression (possibly linear punctates (1 full and 1 partial)), followed by parallel horizontal incised lines (2); over smoothed-over cordmarking  
Interior: Smooth  
Thickness: 4.85mm

Figure 42: Bartron Neck - XU2E.0-10.002
Madison Cord-Impressed
XU3D.10-20.002 (Figure 43)
Lip: Round; smoothed-over cordmarked
Rim: Straight; vertical
Exterior: Triangular punctates (2) impressed obliquely (/), followed by a horizontal cord impression (1) (z-twist), followed by vertical cordmarking or small vertical incised lines; over smoothed-over cordmarking
Interior: Smoothed-over cordmarking

Figure 43: Bartron Rim – XU3D.10-20.002
Unidentified Type (Seen in Southcentral Minnesota (Schirmer, personal communication))
XU4.30-40.001 (Figure 44)
Neck
Exterior: Three oblique (/) rows of arcuate punctates (row 1: 1 partial, row 2: 1 full, row 3: 2 full); arcuate positions makes an "L" shape; over vertical cordmarking (z-twist).
Interior: Smooth
Thickness: 5.40mm

Figure 44: Bartron Neck - XU4.30-40.001
Oneota:

Grit Tempered Oneota
XU11.10-20.010 (Figure 45)
Shoulder
Exterior: Parallel trailed lines (1 full and 2 partial); over smooth surface
Interior: Smooth; intaglio present
Temper: Crushed granite
Thickness: 3.71mm
XU4A.50-50.001
Shoulder
Exterior: Parallel curving broad trailed lines (2); over smooth surface
Interior: Smooth; intaglio present
Temper: Crushed granite
Thickness: 3.28mm
XU10.20-30.010
Shoulder
Exterior: Parallel broad trailed lines (2 full and 2 partial); over smooth surface
Interior: Smooth; intaglio present
Temper: Crushed granite
Thickness: 2.66mm

Figure 45: Bartron Shoulders - XU11.10-20.010, XU4A.50-50.001, and XU10.20-30.010
CHAPTER 6: THE MOSQUITO TERRACE SITE (21GD260)

Site Location and History

The Mosquito Terrace site (21GD260) overlooks the Vermillion River near its combined delta with the Cannon River as they empty into the Mississippi River at Red Wing, MN (Figure 19). The land was cultivated in the past and is now a pine plantation owned by the Minnesota Department of Natural Resources. At the northwest end of the terrace is site 21GD20, a group of 6 conical mounds mapped by T.H. Lewis in 1885 (Winchell 1911). (Figure 46)

The site was excavated in 2006, 2012, and 2013 by Ronald Schirmer (MNSU). In the summer of 2006, MNSU’s Archeological field school excavated 30 shovel tests in two transects and three 1x2 meter units (XU1-6) (Figure 46). Twenty-four of the thirty shovel tests produced cultural material. Artifacts appeared as far down as 70 cmbd but the majority appeared between 30 and 60 cmbd. A total of 713 artifacts were recovered during the 2006 field school: 447 pieces of chipping debris, 195 pottery sherds, 27 fragmentary faunal remains, 35 fragments of wood charcoal, a single bifacial tool, and eight miscellaneous artifacts including daub fragments (Kelly 2009:61).

The lithic raw material assemblage was predominantly Prairie du Chien chert (93%) with small quantities of Grand Meadow chert, Hixton silicified sediment, quartz, silicified sediment, basalt, and multiple pieces of unidentified cherts and other materials (Kelly 2009:61). Faunal remains recovered were fragmentary and the floral remains consisted of wood charcoal (Kelly 2009:62). The pottery assemblage was exclusively grit tempered and mostly cordmarked (Kelly 2009:61). Multiple fragments of a single vessel were recovered (The Mosquito Terrace Vessel) and so was another rim sherd, described
as part of a small pinch pot (Kelly 2009:62) (Figure 63 and 74). The pottery data were re-analyzed by Skinner and the 2012 field data were added (see below).

In the summer of 2012, MNSU returned to the site. The 2006 shovel tests were relocated and seventy-nine new shovel tests were dug, based on the original grid placed in 2006. Data were immediately tabulated and mapped in the field in order to inform placement of excavation units. Two 1x2 meter excavation units were placed in the southwest end of the site and one 1x5 meter unit was placed relatively close to the 2006 units that produced the rim (Figure 47 and 48). Postmolds just below the plow zone indicated the possible presence of at least two structures (Figure 49). Another 1x2 meter unit was placed next to the 1x5 meter unit and suggested the corner of a structure. As time constrictions were a factor, further excavation of the area surrounding the uncovered postmolds were continued in 2013, but the results were inconclusive. Preliminary conclusions of the cultural association with the Mosquito Terrace site are of Late and Terminal Woodland, dating between ca. A.D. 900 and 1100. (Skinner 2012, 2014)

In the summer of 2013, MNSU returned again to the site. Before the MNSU field school began, a small part of the site’s ground surface near excavation units 7-11 and 14-15 was cleared and geophysics were conducted by Donald Johnson in an attempt to define the possible Late Woodland house structure (Nowak 2014:19). Hence, the first goal of this field school was to continue excavation of the location of the excavation unit 7-11 and 14-15 in order to try and expose habitation features (Nowak 2014:18). The second goal was to continue shovel testing the area to determine the site boundaries, artifact distribution, and potential locations for further excavation (Nowak 2014:18). The shovel test grid of the 2006 and 2012 field schools were relocated (Grid 1) and a new grid
(Grid 2) was established in order to continue the 2012 excavations (Nowak 2014:21).

This oriented the new units at 338 degrees magnetic north. A total of 45 1x1 units and 128 shovel tests were excavated (Nowak 2014:21-22).

Figure 46: Mosquito Terrace Site Map with 21GD20 Mound Group (adapted from Skinner 2012)
Figure 47: Mosquito Terrace Excavation Units 1-11 and 14-15 (Skinner 2012)
Figure 48: Mosquito Terrace Excavation Units 12-13 and 16-17 (Skinner 2012)
Figure 49: Mosquito Terrace Post Molds (Skinner 2012)
2006 and 2012 Assemblages

In the 2006 and 2012 Mosquito Terrace assemblages a total of 1718 artifacts were recovered. These artifacts include 1007 pieces of chipping debris (debitage), 561 pottery sherds, 95 fragments of wood charcoal, 50 faunal fragments, 8 pieces of daub, 1 piece of fire cracked rock, 1 biface, 1 scraper, 1 utilized flake, and 2 retouched flakes. The chipping debris material consists of mainly Prairie du Chien chert (94.14%) and small quantities of Cedar Valley chert (0.20%), Galena chert (0.10%), Grand Meadow chert (0.60%), granite (0.10%), Hixton orthoquartzite (0.40%), Lake Superior Agate (0.10%), orthoquartzite (0.40%), Platteville chert (0.10%), quartz (1.99%), quartzite (0.50%), unidentified chert (0.60%), and unidentified raw material (0.79%) (Figure 50). Tools present consist of one scraper, one biface, one retouched flake, and one utilized flake, all made from Prairie du Chien chert. There is also one retouched flake made from Cedar Valley chert.

Figure 50: Mosquito Terrace Total Debitage Count and Percentage by Lithic Material - 2006 and 2012 Excavations
Pottery Analysis – 2006 and 2012 Assemblages

Of the 561 pottery sherd recovered in the shovel tests and excavation units, there are 546 grit tempered sherds (97.33%), 9 shell tempered sherds (1.60%), and 6 mixed tempers sherds consisting of sand and shell (1.07%) (Figure 51). Surface treatments seen on the grit tempered pottery sherds consist of cordmarking (53.65%), vertical cordmarking (1.96%), oblique cordmarking (1.25%), multidirectional cordmarking (1.96%), smoothed-over cordmarking (9.63%), smooth (5.53%), fabric impressed (0.36%), brushed (0.18%), exfoliated (24.24%), and indeterminant (1.25%) (Figure 52). Grit tempered sherd morphology counts consist of 470 body sherds, 59 neck sherds, and 17 rim sherds. Twist direction of cordmarked, multidirectional cordmarked, vertical cordmarked, and oblique cordmarked sherds are s-twist (9.70%), z-twist (45.45%), and indeterminant (44.85%) (Figure 53). Decorations identified on grit tempered sherds include trailed lines, incised lines, cord impressions, punctates, cord-wrapped stick impressions, bossing, and knot or fiber-wrapped dowel impressions. See figures below for examples of decorated neck and rim sherds categorized by traditions and typology associations.
Figure 51: Mosquito Terrace Pottery Temper Count and Percentage - 2006 and 2012 Excavations

Figure 52: Mosquito Terrace Grit Tempered Pottery Surface Treatments – 2006 and 2012 Excavations
The pottery assemblage consists of grit, shell, and mix tempered sherds, majority of which are grit tempered (97.33%) and identified broadly as Late Woodland. However, older cultural components can be identified as Middle Woodland. The Middle Woodland sherds below are difficult to identify and have not be typed. The first Middle Woodland neck sherd (CAT# 834) has a smooth, flat lip, straight rim, and smoothed, undecorated neck. The lip is fairly thick and measures at 5.63mm. The second Middle Woodland neck sherd below (CAT# 795) is fairly thick (8.44mm) and exhibits interesting properties. The exterior is cordmarked (s-twist) and has a parallel row of indeterminant tool impressions (punctate-like). The interior has evidence of bracing, going in an opposite direction of the row of tool impressions on the exterior, over cordmarking (indeterminant twist). This makes properly positioning the sherd difficult and the picture below may not represent the correct orientation. The last Middle Woodland neck sherd (CAT# 93) is exteriorly decorated with a parallel row of cordwrapped stick impressed punctates over horizontal
cordmarking. The interior displays the negative impression of the exterior punctates over a smooth surface. The sherd has a thickness of 4.07mm.

Late Woodland rims below (CAT# 594, 12, and 31) have been typed as a variation of Bremer Triangular Punctated. They all exhibit flat lips, straight and slightly everted rims, and multiple rows of triangular punctates on the neck exterior. The sherds are considered a “variation” of Bremer Triangular Punctated because the lips are not crenelated and rims (CAT# 594 and 12), have interior oblique (/) incised lines going up to the edge of the lip. These attributes differ slightly from Peter Jenson’s description of Bremer Triangular Punctated (1959:29-30). The third variation (CAT# 31) exhibits a flat cordmarked lip but the rim decoration, (staggered rows of relatively large triangular punctates), varies from the traditional Bremer Triangular Punctated type description. Traditionally, Bremer Triangular Punctated rims are decorated with small triangular punctates which are closely spaced together in a horizontal row.

The last Late Woodland rim (CAT# 743) has been typed as a variation of Clam River. The top parallel oblique row of cordwrapped stick impressions go slightly into the lip of the sherd and is similar to the Clam River Ware description. However, the second row of parallel oblique rows of cordwrapped stick impressions is uncharacteristic. Not enough of the sherd is present to definitively type, as is the problem with many Woodland rims.

There are two diagnostic pottery sherds defined as Late/Terminal Woodland. The rim below (CAT# 709) has been typed as Madison Plain. The rim sherd has a flat smoothed-over cordmarked lip, a straight and vertical rim, and the exterior is vertically cordmarked over oblique cordmarking. The second Late/Terminal Woodland sherd
(CAT# 858) is a neck sherd with exterior parallel horizontal cord impressions over oblique cordmarking. Not enough of the sherd is present so it has been defined as part of Benn and Green’s Cordage Horizon (2000:453-466).

There are a number of Terminal Woodland diagnostic sherds below (Mosquito Terrace Vessel and CAT# 159, 233, 701, 600, 854, 647, 74, 794, and 676). The Mosquito Terrace Vessel (CAT# 422, 424, 423, 436, and 437) has been typed as part of the High Rim Horizon (Benn and Green 2000) with aspects of Angelo Punctated. The vessel has a tool impressed, crenelated, flat lip; a high, straight everted rim; and a heavily decorated neck (description below). High Rim Horizon vessels have a high rim and broad shoulders. They can be cordmarked or smoothed-over before decorations are applied. Both the lip, rim, and neck treatments can vary. The Mosquito Terrace Vessel has a fairly high rim (48.63mm) and the lip, rim, and neck are highly decorated (exterior and interior). Aspects of Angelo Punctated include a high, straight neck and a 3.94mm lip thickness. The exterior decoration consists of alternating bands of tool impressions (circular punctates) and oblique incised lines. Characteristics that are rarely seen in Angelo Punctated sherds, which can be seen on the Mosquito Terrace vessel, include a tool impressed lip (cordwrapped stick impressed) and interior horizontal rows of oblique cordwrapped stick impressions. The next Terminal Woodland rims and necks (CAT# 159, 233, 701, 600, 854, 647, 74, 794, and 676) have been typed as variations of Angelo Punctated. Rim CAT# 159 has a tool impressed lip with vertical incised lines extending from the interior lip margin extending down to the neck and the exterior neck is decorated with one row of parallel oblique triangular punctates followed by parallel oblique trailed lines. Neck sherd CAT# 233 has a partial oblique row of triangular
punctates over oblique (\ and /) cordmarking. Neck sherd CAT# 701 has one row of oblique triangular punctates, followed by a possible row of horizontal cord impression or a multidirectional cordmarked surface. The sherd is exfoliated and the decoration is hard to see.

Rim CAT# 600 has a flat, vertical cord impressed lip and the exterior is decorated with one row of horizontal diamond-like punctates, followed by an oblique incised line over oblique cordmarking. Neck sherd CAT# 854 has a horizontal row of parallel lunate punctates, followed by parallel horizontal incised lines, followed by parallel oblique incised lines. Interestingly, a similar (rim) sherd with lunate-like punctates and oblique incised lines was recovered at the Ranelius Site (21DK04) in Dakota County, Minnesota (Fleming and Hager 2010:58) in 1953.

Rim CAT# 647 has a flat, tool impressed lip (vertical incised lines) and the exterior is decorated with parallel oblique incised lines over vertical cordmarking. The interior is decorated with one row of oblique cordwrapped stick impressions over a smooth surface. Neck sherds CAT# 74, 794, and 676 display alternating directions of trailed or incised lines. Since only a fragment of the decorations can be seen, they have been typed as possibly Angelo Punctated.

There is an unidentified rim sherd (CAT# 825) with a flat, smoothed-over cordmarked lip. The rim itself is straight and slightly everted. The exterior has an ovular piercing going all the way through the piece (exterior to interior). Exterior smoothing lines below the lip are present. The interior has the same ovular piercing, followed by a partial row of oblique cordwrapped stick impressions over a smooth surface. This sherd could be typed as part of the Onamia Series but is relatively thin (3.12mm). The last
A sherd cannot be typed (CAT# 287), as it is a bowl. The sherd has a round, smooth lip; a straight, incurving rim; and the interior and exterior are smooth. The sherd is from a small, round vessel and could possibly be described as a small “pinch pot” bowl.

Sample of Diagnostic Pottery

Middle Woodland

Middle Woodland Type
Cat# 834 (Figure 54)
Lip: Flat; smooth
Rim: Straight; vertical
Exterior: Smooth
Interior: Smooth

Figure 54: Mosquito Terrace Rim - Catalogue Number 834

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Middle Woodland Type
Cat# 795 (Figure 55)
Neck
Exterior: Indeterminant parallel row of punctates; over cordmarking (s-twist)
Interior: Bracing present, going opposite direction of the row of punctates on the exterior; over cordmarking (indeterminant twist)
Thickness: 8.44mm

Figure 55: Mosquito Terrace Neck - Catalogue Number 795
Middle Woodland Type  
Cat# 93 (Figure 56)
Neck  
Exterior: Parallel row of cordwrapped stick impressed punctates (1 full and 1 partial); over horizontal cordmarking (indeterminant twist)  
Interior: Intaglio present, negative impression of punctate (boss); smooth surface  
Thickness: 4.07mm

Figure 56: Mosquito Terrace Neck - Catalogue Number 93
Late Woodland:

Variation of Bremer Triangular Punctated
Cat# 594 (Figure 57)
Lip: Flat; cordmarked
Rim: Straight; slightly everted
Exterior: Two slightly oblique (/) rows of overlapping triangular punctates (2 punctates in each row) and one partial row of triangular punctates (2); over vertical cordmarking (indeterminant twist)
Interior: Oblique (/) incised lines (3) going up to the edge of the lip; over smooth surface

Figure 57: Mosquito Terrace Rim - Catalogue Number 594
Variation of Bremer Triangular Punctated
Cat# 12 (Figure 58)
Lip: Interiorly tool impressed, oblique (/) incised lines (1 full and 1 partial); flat; smoothed-over cordmarked
Rim: Straight; vertical
Exterior: Two horizontal rows of triangular punctates (row 1: 1 total, row 2: 2 full and 1 partial); over smoothed-over cordmarking
Interior: Oblique (/) incised lines coming down from the lip (1 full and 1 partial); over smooth surface

Figure 58: Mosquito Terrace Rim - Catalogue Number 12
Variation of Bremer Triangular Punctated
Cat# 31 (Figure 59)
Lip: Flat; cordmarked
Rim: Straight; everted
Exterior: Three horizontal rows of triangular punctates (row 1: 1 full and 1 partial, row 2: 1 full and 1 partial, row 3: 3 partial); over vertical cordmarking (indeterminant twist)
Interior: Cordmarked

Figure 59: Mosquito Terrace Rim - Catalogue Number 31
Variation of Clam River
Cat# 743 (Figure 60)
Lip: Flat; exfoliated
Rim: Straight; vertical
Exterior: Two rows of parallel oblique (/) cordwrapped stick impressions (row 1: 6 full and 1 partial, row 2: 2 full and 2 partial); over smooth surface
Interior: Smooth

Figure 60: Mosquito Terrace Rim - Catalogue Number 743
Late/Terminal Woodland

Madison Plain
Cat# 709 (Figure 61)
Lip: Flat; smoothed-over cordmarked
Rim: Straight; vertical
Exterior: Vertical cordmarking over oblique (\) cordmarking (z-twist)
Interior: Smooth

Figure 61: Mosquito Terrace Rim - Catalogue Number 709
Cordage Horizon
Cat# 858 (Figure 62)
Neck
Exterior: Parallel horizontal cord impressions (3) (z-twist); over oblique (\) cordmarking
Interior: Smooth
Thickness: 3.79mm

Figure 62: Mosquito Terrace Neck - Catalogue Number 858
Terminal Woodland:

High Rim Horizon and Aspects of Angelo Punctated
Cat# 422, 423, 436, and 437 (Figure 63)
Mosquito Terrace Vessel (as a whole rim)
Lip: Tool impressed (cordwrapped stick impressions) (29); crenelated; flat; smoothed-over cordmarked
Rim: Straight; everted
Exterior: Horizontal row of circular knot or fiber-wrapped dowel impressions (28), followed by a horizontal row of oblique (\) incised lines (34), followed by a horizontal row of circular knot or fiber-wrapped dowel impressions (29), followed by a horizontal row of oblique (\) lightly incised trailed lines (26+), followed by a horizontal row of circular knot or fiber-wrapped dowel impressions along the start of the shoulder (3); over vertical cormarking (s-twist)
Interior: Three horizontal row of oblique (\) cordwrapped stick impressions (row 1: 20 total, row 2: 23 total, row 3: 12 total); over smoothed-over cordmarking; interior bossing of each exterior circular knot or fiber-wrapped dowel impressions are present
Cat# 424 (Figure 63)
Neck (Belongs to Mosquito Terrace Vessel)
Exterior: Horizontal row of circular knot or fiber-wrapped dowel impressions (4); all over vertical cordmarking (s-twist)
Interior: Horizontal row of oblique (\) cordwrapped stick impressions (2 full and 2 partial); over smoothed-over cordmarking
Figure 63: Mosquito Terrace Vessel - Exterior, Interior, Lip, and Profile

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Mosquito Terrace Vessel
Variation of Angelo Punctated
Cat# 159 (Figure 64)
Lip: Tool impressed, parallel vertical incised lines extending from the interior lip margin extending down to the neck (2); flat, slightly rounded; smooth
Rim: Straight; vertical
Exterior: One row of parallel oblique (\) triangular punctates (2 full and 1 partial), followed by parallel oblique (\) trailed lines (2); over smoothed-over cordmarking
Interior: Parallel vertical incised lines extending from the interior lip margin extending down to the neck (2); over smoothed-over cordmarking

Figure 64: Mosquito Terrace Rim - Catalogue Number 159
Variation of Angelo Punctated
Cat# 233 (Figure 65)
Neck
Exterior: Oblique (\) row of triangular punctates (5 partial); over oblique cordmarking (\)
over oblique cordmarking (/) (z-twist)
Interior: Smooth
Thickness: 6.22mm

Figure 65: Mosquito Terrace Neck - Catalogue Number 233
Variation of Angelo Punctated
Cat# 701 (Figure 66)
Neck
Exterior: One oblique (/) row of triangular punctates (2 full and 1 partial), possibly followed by a horizontal cord impression (possibly z-twist) or over a multidirectional cordmarked surface
Interior: Smooth
Thickness: 5.70mm

Figure 66: Mosquito Terrace Neck - Catalogue Number 701
Variation of Angelo Punctated
Cat# 600 (Figure 67)
Lip: Tool impressed, parallel vertical cord impressed (4) (indeterminant twist); flat; smooth
Rim: Straight; slightly everted
Exterior: One row of horizontal diamond-like punctates (4 full and 1 partial), followed by an oblique (/) incised line (1); over oblique (\) cordmarking (indeterminant twist)
Interior: Smooth

Figure 67: Mosquito Terrace Rim - Catalogue Number 600
Variation of Angelo Punctated (Similarities to a rim at Ranelius)
Cat# 854 (Figure 68)
Neck
Exterior: Horizontal row of parallel lunate punctates (4 full and 1 partial), followed by parallel horizontal incised lines (4), followed by parallel oblique (/) incised lines (3); over smoothed-over cordmarking
Interior: Smooth
Thickness: 5.76mm

Figure 68: Mosquito Terrace Neck – Catalogue Number 854
Variation of Angelo Punctated
Cat# 647 (Figure 69)
Lip: Tool impressed, vertical incised lines (3); flat; cordmarked
Rim: Straight; vertical
Exterior: Parallel oblique (\) incised lines (3); over vertical cordmarking (indeterminant twist)
Interior: One row of oblique (\) cordwrapped stick impressions; over smooth surface

Figure 69: Mosquito Terrace Rim - Catalogue Number 647
Possibly Angelo Punctated
Cat# 74 (Figure 70)
Neck
Exterior: Parallel oblique (\) trailed lines (2) intersecting parallel horizontal trailed lines (2) (actual orientation could be reversed); over smooth surface
Interior: Exfoliated
Thickness: 5.66mm

Figure 70: Mosquito Terrace Neck - Catalogue Number 74

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Figure 70: Mosquito Terrace Neck - Catalogue Number 74
Possibly Angelo Punctated
Cat# 794 (Figure 71)

Neck
Exterior: Parallel horizontal incised lines (2) intersected by oblique (\) incised lines (5) (actual orientation could be reversed); over cordmarked surface (indeterminant twist)
Interior: Smoothed-over parallel horizontal cord impressions (2) or smoothed-over cordmarked
Thickness: 6.21mm

Figure 71: Mosquito Terrace Neck - Catalogue Number 794
Possibly Angelo Punctated
Cat# 676 (Figure 72)
Neck
Exterior: Oblique (/) incised lines (2) intersected by oblique (\) incised lines (5 full and 1 partial); over smoothed-over cordmarking
Interior: Smooth
Thickness: 5.04mm

Figure 72: Mosquito Terrace Neck - Catalogue Number 676
Other

Unidentified Type
Cat# 825 (Figure 73)
Lip: Flat; smoothed-over cordmarked
Rim: Straight; slightly everted
Exterior: Ovular piercing going through exterior to interior (1); smoothing lines visible; smoothed-over cordmarked
Interior: Ovular piercing going through exterior to interior (1) followed by one partial row of oblique (/) cordwrapped stick impressions; over smooth surface

Figure 73: Mosquito Terrace Rim - Catalogue Number 825
Bowl (no type)
Cat# 287 (Figure 74)
Lip: Round; smooth
Rim: Straight; incurving
Exterior: Smooth
Interior: Smooth
Comments: Sherd from small round vessel, perhaps a small “pinch pot” bowl.

Figure 74: Mosquito Terrace Bowl - Catalogue Number 287
CHAPTER 7: THE PICKEREL SLOUGH SITE (21GD181)

Site Location and History

The Pickerel Slough site (21GD181) is located in Goodhue County at the southeastern tip of Prairie Island overlooking the Pickerel Slough in Red Wing, MN (township 113N, range 15W, and ¼ sections N-SE-NW-SE and S-NE-NW-SE) (Figure 12). Pickerel Slough has been identified as a Woodland habitation site encompassing around 3.5 acres of land (MN Archaeological Site Form 1997, 2006). Installation of a lock and dam on the Mississippi River raised water levels that have since caused the mixing of soils and the commingling of artifacts belonging to separate prehistoric components (Schirmer 2010).

The site was first identified by the Minnesota Municipal County and Highway project in 1987 (Anfinson and Peterson 1987). At that time, the Pickerel Slough site was designated 21GD174. This site number was later found to be assigned to another site, Lake Byllesby 1, so Pickerel Slough was later assigned the site number 21GD181 (Schirmer 2015, personal communication). During the highway project field survey, Pickerel Slough was excavated along with a nearby site, Nauer (21GD01). The Nauer site is northwest of Pickerel Slough on a bluff top. Excavations associated with the Nauer site were shovel tests numbered 1-17 and a 1x2 meter excavation unit (A and B) (Figure 75). Between the Nauer and Pickerel Slough sites there was a borrow pit related to the Lock & Dam No. 3 construction. Three shovel tests, numbers 18, 19, and 22, were excavated southeast of the borrow pit (Anfinson and Peterson 1987:73).
On the floodplain neighboring Pickerel Slough, a total of eight shovel tests were excavated (#20-21 and #23-28) at 15 meter intervals within the 672-680’ contour area (Anfinson and Peterson 1987:82). Most of shovel tests were excavated between 120 and 140 cm below the ground surface. The deepest excavated was to a depth of 140 cm below the ground surface (ST #24). Overall, the water level varied from 85 to 135 cm below the surface and cultural material was found as deep as 120 cm below the surface. Artifact materials recovered consisted mostly of lithic flakes, burnt bone, fire-cracked rock, and grit-tempered pottery sherds. Soil profiles and textures varied greatly across the area. (Anfinson and Peterson 1987:82-85)

Preliminary analysis of all the artifactual materials recovered are as follows:

1 bifacial preform, 1 end scraper, 2 flake cores, 3 chert primary decortication flakes, 13 chert secondary decortication flakes, 99 secondary flakes (79 chert, 2 chalcedony, 1 chalcedony or moss agate, 1 Knife River flint, 1 Tongue River silicate, 14 quartzite, 1 basalt), 15 shatter (1 chert, 14
quartzite), 2 shell-tempered plain sherds, 130 grit and/or sand tempered sherds (8 rims, 91 cordmarked, 5 plain, 11 fabric impressed over cordmarking, 3 fabric impressed, 1 cordwrapped stick and fabric impressed, 3 cordwrapped stick impressed, 6 parallel trailed lines, 1 oblique trailed lines, 1 incised line), 2 grit and sand tempered plain sherds, 2 sand-tempered plain sherds, 95 sherd fragments and crumbs, 9 possible fire-cracked rocks, bone and burnt bone fragments, tooth fragments, fish scales, and bivalve mollusc shell fragments. Excluding sherd fragments and crumbs, flakes were 46% and sherds were 54% of the recovered material [Anfinson and Peterson 1987:85].

Stephen M. Kelly conducted a further analysis of the 1987 Pickerel Slough site material in his MNSU, Mankato Master’s Thesis (2009). Kelly stated that a total of 511 artifacts were collected from the eight shovel tests. This included 149 pieces of chipping debris and fire-cracked rock, 240 pottery sherds, 115 faunal fragments, five floral fragments, and two tools (Kelly 2009:64). Raw lithic materials of the chipping debris included a large percentage of Prairie du Chien chert (72%) and then smaller amounts of Cedar Valley chert, Grand Meadow chert, chalcedony, Gunflint Silica, Hixton silicified sediment, quartz, quartzite, rhyolite, basalt, and unidentified cherts and other materials (Kelly 2009:64). Kelly also identified thirteen small fragments of fire-cracked rock and two stone tools; a small end scraper and a biface, both manufactured from Prairie du Chien chert (2009:64).

Of the 240 pottery sherds recovered, 237 were grit-tempered and the other three were body sherds tempered with crushed mussel shell (shell-tempered). Overall, the grit tempered assemblage consisted of cordmarked sherds and a total of eight rims. Many of the pottery sherds were heavily worn from exposure to water and other elements. Of the eight rims, six were heavily worn and/or display no form of decoration on the exterior or interior. One rim is fairly thick (8mm) and is externally decorated with a vertical tool
impression extending from the lip downwards and a single horizontal roulette line on the interior. Kelly stated that this rim dates to the Middle Woodland tradition (2009:66). The other rim was decorated with three horizontal cord impressions on the exterior beginning just below the lip. A grit-tempered neck/body sherd was also found with superimposed tool impressions over three horizontal incised lines. Both the neck/body sherd and rim, described above, are believed to date to the Late Woodland tradition (Kelly 2009:66-67).

As mentioned above, 115 faunal remains were recovered, and over 88% of these were mammalian bone fragments. Other bone fragments consisted of fish ribs and vertebra, a turtle carapace, three fish scales, and four mollusk shell fragments. Floral remains consisted of five charcoal fragments. (Kelly 2009)

**MNSU Excavation**

The Pickerel Slough site was visited again by the MNSU, Mankato Red Wing field school from June 19 to 22, 2006. During this time, three shovel tests and six 1x1 meter excavation units (configured into a 2x2m and a 1x2m) were dug (Schirmer 2010) (Figure 76). The shovel tests were placed north of the road and two tested positive for artifacts. Both the shovel tests and excavation units were placed on a forested floodplain. Unit profiles documented the sifting and mixing of soils from varied episodes of flooding and water movement, causing a mixing of artifacts within the deposits resulting in an inconsistent stratigraphy (Schirmer 2010). Most of the excavation units were terminated at 60cm below surface, before reaching culturally sterile subsoil, due to the high water table (MN Archaeological Site Form 2006; Schirmer 2010).
Lithic artifacts found included a variety of debitage and a small number of tools. Debitage consisted of mainly flaking debris, fairly small in size (G3 and G4). A large variety of this lithic debris material is Prairie du Chien with a small percentage of Grand
Meadow chert, Hixton orthoquartzite, Cedar Valley chert, Burlington chert, Galena, Knife River silica, basalt, and quartzite. Only three fragmentary projectile points were recovered (Schirmer 2010).

Faunal materials were also recovered, a majority of which are mammalian. Other faunal materials found include piscid, reptilian, molluscan, and avian specimens. Small pieces of floral material recovered consist of only wood charcoal (Schirmer 2010). Additionally, a lead musket ball was recovered from the site and may be related to the initial French presence on the southern end of Prairie Island (MN Archaeological Site Form 2006).

Pottery Analysis – 2006 Assemblage

Initial analysis of the pottery types excavated in this 2006 assemblage showed that they consisted of almost exclusively grit tempered pottery sherds. Most are cordmarked or smoothed-over cordmarked with a very small number of smooth specimens (Schirmer 2010). Only five incomplete shell-tempered pieces were recovered. Rims recovered can be dated to from the Early Woodland to the Late Woodland (Schirmer 2010). These specimens are decorated with various orientations of cordwrapped stick impressions, punctations, and/or incised lines. Some of this pottery found shows similarities to types seen around the region, and others most likely constitute new pottery types or subtypes (MN Archaeological Site Form 2006).

Skinner’s analysis of the 2006 assemblage is as follows. A total of 2026 pottery sherds were catalogued. Of those sherds, 2,017 were grit tempered (99.56%), 6 were shell tempered (0.30%), 1 was sand tempered (0.05%), and 2 were mixed (sand and shell) tempered (0.10%) (Figure 77). Surface treatments seen on the grit tempered pottery
sherds consist of cordmarked (26.33%), vertical cordmarked (1.74%), smoothed-over vertical cordmarked (0.10%), smoothed-over cordmarked (6.00%), smooth (8.87%), oblique cordmarked (0.30%), net impressed (0.05%), multidirectional cordmarked (18.59%), horizontal cordmarked (0.10%), and exfoliated (37.93%) (Figure 78). Grit tempered sherd morphology counts consist of 1,796 body sherds, 166 neck sherds, 54 rims, and 1 indeterminant sherd. Twist direction of the variety of cordmarked sherds are s-twist (12.84%), z-twist (36.84%), and indeterminant (50.32%) (Figure 79).

Figure 77: Pickerel Slough Pottery Temper Count and Percentage - 2006 Excavation
The pottery assemblage consists of grit, shell, sand, and mix tempered sherds, a majority of which are grit tempered (99.56%) and broadly identified as Middle, Late, and/or Terminal Woodland. However, many of the diagnostic sherds are difficult to properly type. Possible timeframes and/or possible types have been listed when applicable. Evidence of an older cultural component was found and has been identified as
Early Woodland. Many of the diagnostic sherds are described below.

The first Early Woodland sherd is a rim (CAT# 1150) and has been identified as La Moille Thick with a smoothed-over cordmarked, flat lip, straight rim, and circular tool impressed neck over multidirectional cordmarking. The lip is fairly thick and measures to 9.70mm. The second Early Woodland sherd is a neck (CAT# 403) and has been identified only as Marion Ware, due to the lack of a rim to properly identify the sherd further. The sherd exterior is vertically cordmarked (s-twist) with possible oblique cordwrapped stick impressions on the interior. Neck thickness measures to 11.25mm.

There are three other possible Early Woodland sherds that have not been identified but exhibit properties of either Early and/or Middle Woodland types. The first of these sherds is a rim (CAT# 1387) with a thick (8.21mm), flat, cordmarked lip, straight rim, and horizontal cordwrapped stick impressed neck over cordmarking. The next sherd is a neck (CAT# 983) that exhibits exterior parallel, oblique incised lines over multidirectional cordmarking and is fairly thick (10.66mm). The last sherd is also a neck (CAT# 3653) and is exteriorly decorated with two parallel, horizontal rows of cordwrapped stick impressions framing one oblique cordwrapped stick impression (meeting at a 90 degree angles, representing a “Z” shape) and interiorly decorated with five parallel, horizontal rows of cordwrapped stick impressions (not pictured). The sherd is 10.76mm thick.

The first typed Middle Woodland rim sherd is Laurel Incised (CAT# 916) and exhibits a flat, smooth lip with a slight interior bevel, a straight and vertical rim. The exterior of the neck is decorated with short vertically incised lines, from the edge of the lip going down into the neck, followed by partial tool impressions. The exterior surface is
smoothed-over cordmarked and the lip measures to 8.10mm thick.

The second typed Middle Woodland sherd (CAT# 1280) is a neck that is exteriorly decorated with one oblique column of parallel, horizontal rows of short dentate stamps with a vertical cordmarked surface. It has been typed as Naples Stamped and is 7.46mm thick. The third typed Middle Woodland sherd (CAT# 917) is a rim with a flat decorated lip (oblique trailed lines), straight and vertical rim, and exteriorly decorated neck. The neck has short, vertical trailed lines starting from the edge of the lip going down into the top of the neck, followed by a horizontal row of deep circular punctates that were made with a thin, sharp instrument. The surface of the neck is smoothed-over cordmarked and the lip is 5.90mm thick.

There are a number of unidentified sherds that are considered as Middle Woodland. The first is a neck (CAT# 1496) that is exteriorly decorated with one horizontal cord impression, followed by parallel, vertical rows of dentate stamps, over a smoothed surface. The neck is 8.80mm thick. The second sherd is a neck (CAT# 3463) that is exteriorly decorated with two parallel oblique cordwrapped stick impressions, followed by one oblique trailed line, followed by vertical smoothed-over trailed lines, all over a smooth surface. The neck is 6.96mm thick.

The third unidentified, Middle Woodland sherd is a neck (CAT# 1172) that is exteriorly decorated with parallel, horizontal cordwrapped stick impressions over a vertical smoothed-over cordmarked surface. The neck is 8.17mm thick. The fourth and fifth sherds are necks and are from the same vessel (CAT# 1114 and 1134). They both have parallel, horizontal rows of dentate stamps, over a vertically cordmarked surface. Sherd CAT# 1114 is interiorly decorated with vertical combing over a smooth surface.
Both sherds have a hematite slip that was added to the clay. Sherd CAT# 1114 is 7.27mm thick and sherd CAT# 1134 is 4.60mm thick.

The sixth unidentified Middle Woodland sherd is a rim (CAT# 918) and has a flat lip decorated with oblique cord impressions, a straight and vertical rim, and an exteriorly decorated neck. The neck is decorated with slightly oblique, knotted string cord impressions, over a smooth surface. The lip is 6.28mm thick. The seventh and eighth sherds are from the same vessel (CAT# 1176 and 1177). Sherd CAT# 1176 is a split-rim sherd with a rounded, smooth lip and exteriorly decorated neck. The neck is decorated with oblique cordwrapped stick impressions alternating between circular punctates, all over a smooth surface. Sherd CAT# 1177 is a neck (7.31mm thick) that is exteriorly decorated with a circular punctate, over a smoothed-over cordmarked surface.

There are two sherds that are also unidentified but are possibly Middle Woodland. The first of these is a rim (CAT# 1096) with a round, smooth lip, rolled, slightly inverted rim, and has a small amount of tooling on the neck, just below the lip. The lip is 8.02mm thick and just below the lip, is 9.59mm thick. The second sherd is a rim (CAT# 1149) with a flat, cordmarked lip (6.39mm thick), straight and slightly inverted rim, and exteriorly decorated neck. The neck is decorated with what looks like a possible circular punctate over a smoothed-over cordmarked surface.

There are a number of typed sherds that correspond to the Middle to Late Woodland. The first is a rim (CAT# 1260) that has been typed as Onamia Cordwrapped Stick Impressed with a flat lip (5.11mm thick), straight, inverted rim, and exteriorly decorated neck with oblique rows of cordwrapped stick impressions, over an exfoliated surface. The second sherd is also a rim (CAT# 1311) and has been typed as Onamia
Dentate. It has a flat, smooth and exfoliated lip (5.51mm thick), a straight, everted rim, and an exteriorly decorated neck. The neck is decorated with an oblique row of dentate stamping over a smooth surface. The third sherd is a neck and has been generally typed as part of the Onamia Series (CAT# 991). It is exteriorly decorated with two oblique rows of cordwrapped stick impressions or dentate comb stamps. The decorations are over a smooth surface. Below the decoration, the surface is multidirectional cordmarked. The neck is 8.27mm thick.

The next two identified Middle to Late Woodland sherds are typed in the St. Croix Stamped Ware. The first of these sherds is a rim (CAT# 1305) that has been typed as St. Croix Dentate Stamped. The lip (5.19mm thick) is flat, cordmarked, and decorated with cordwrapped stick impressions. The cordwrapped stick impressions on the lip, are impressed into the interior and exterior edge of the lip. The sherd has a braced, vertical rim and is exteriorly decorated with oblique cordwrapped stick impressions, impressed from the lip into the neck, followed by rows of parallel, horizontal dentate stamping, all over a smoothed-over cordmarked surface. The interior of the sherd is decorated with parallel, oblique rows of cordwrapped stick impressions that are impressed from the lip down into the neck. The second sherd is also a rim but as only been typed at St. Croix Stamped (CAT# 1324). The sherd has a flat, oblique cordmarked lip (6.50mm thick), a straight and slightly everted rim, and is exteriorly decorated with horizontal cordwrapped stick impressions over a vertical cordmarked surface. The interior is decorated with vertical cordwrapped stick impressions over a smooth surface.

Like the unidentified Middle Woodland sherds, there are also a number of unidentified Middle to Late Woodland sherds. The first unidentified sherd is a neck
(CAT# 388) that is exteriorly decorated with vertical cord impressions (s-twist) and shallow horizontal and oblique incised lines sporadically placed below the cord impressions. The surface is smoothed-over and vertically cordmarked. The incised lines on the neck could be from the smoothing process. The neck is 7.09mm thick.

The second unidentified Middle to Late Woodland sherd is a neck (CAT# 3476) and is decorated with two parallel, horizontal cord impressions over an exfoliated surface. The neck is 8.10mm thick. The third sherd is a neck (CAT# 1325) and has a vertically cordmarked exterior and a decorated interior. The interior decoration consists of vertical cordwrapped stick impressions over a smooth surface. The neck sherd is 5.04mm thick.

The fourth sherd is a neck (CAT# 3619) and has a horizontal cordmarked (z-twist) exterior and a vertical smoothed-over cordmarked interior (indeterminant twist). The neck sherd is 5.58mm thick.

The fifth unidentified Middle to Late Woodland sherd is a neck (CAT# 3474) and is vertically cordmarked (z-twist) and 5.09mm thick. The sixth sherd is a neck (CAT# 407) and is exteriorly decorated with oblique opposing trailed chevrons, followed by multiple oblique and horizontal cord impressions (s-twist), over an exfoliated surface. There is a possible horizontal trailed line or cord impression above the chevrons. The interior is smooth and the sherd is 8.28mm thick.

The next four unidentified Middle to Late Woodland sherds exhibit some of the same decorative elements. The first sherd is a neck (CAT# 962) and is exteriorly decorated with cross-hatched cord impressions, over a smoothed-over cordmarked surface. This neck sherd is 4.42mm thick. The second sherd is also a neck (CAT# 1326), decorated with cross-hatched cord impressions but over a multidirectional cordmarked
surface. The interior is exfoliated and the sherd is 5.88mm thick. The third sherd is a neck (CAT# 3624) with a cross-hatched cord impressed exterior with a cordmarked surface. The interior is smooth and the sherd is 4.71mm thick. The last of these similarly decorated sherds is a neck (CAT# 3582), decorated with cord impressions in a chevron pattern (cross-hatched like), over a vertical cordmarked surface. The interior is smooth and the sherd is 6.59mm thick.

The last unidentified Middle to Late Woodland sherd (CAT# 3462) is a neck that has three parallel, oblique incised lines over two opposing parallel, oblique incised lines. The exterior surface is quite exfoliated and the interior surface is smooth. The sherd is 5.55mm thick.

The next group of sherds are chronologically defined as Terminal and/or Late Woodland. Many of these sherds cannot be confidently typed by this author. Those that have and have not been typed and are discussed below.

The first Terminal/Late Woodland sherd is a rim (CAT# 1307) with a flat, smoothed-over cordmarked lip, a straight, slightly everted rim, and a vertically cordmarked (s-twist) neck. It has been typed Madison Plain and the lip is 2.71mm thick. The second sherd is also a rim (CAT# 919) and has been typed Madison Plain. The sherd has a flat, cordmarked lip, a straight and vertical rim, and a vertically cordmarked neck. The interior of the neck has some possible oblique cordwrapped stick impressions over a smooth surface. The lip is 3.03mm thick. The third sherd is another rim that has been typed Madison Plain (CAT# 951). The sherd has a flat, smoothed-over cordmarked lip, a straight, everted rim, and an obliquely cordmarked neck (z-twist). The interior is smooth and the lip is 3.15mm thick. The forth sherd is a split-rim and has been again, been typed
Madison Plain (CAT# 1273). The sherd has a flat, cordmarked lip and the exterior is vertically cordmarked (s-twist).

There are a number of Terminal/Late Woodland sherds that cannot be confidently typed as Madison Ware. These sherds have been labeled as “possibly Madison Plain” or just “possibly Madison Ware”. The first sherd is a rim (CAT# 3553) with a flat, interior oblique cordwrapped stick impressed lip, a straight, everted rim, and a vertically cordmarked neck (s-twist). The interior is decorated with short, oblique cordwrapped stick impressions, impressed from the lip down into the neck, over a smooth surface. The lip is 3.34mm thick. The second sherd is a neck (CAT# 3562) with a vertically cordmarked surface (s-twist). The interior is exfoliated and the sherd is 2.86mm thick.

The third of these “possibly Madison Plain” or “Madison Ware” is a neck sherd (CAT# 3604). The sherd is vertically cordmarked (s-twist) on the exterior and smooth on the interior. The neck is 3.93mm thick. The forth sherd was mistakenly catalogued as two different sherds. The sherds do articulate (CAT# 1226 and 1133) and together make a rim. This sherd has a flat, cordmarked lip, a straight, slightly inverted rim, and a vertically cordmarked (z-twist) neck (exterior). The interior is decorated with oblique cordwrapped stick impressions, over a horizontally smoothed-over cordmarked surface. The lip is 4.68mm thick. The fifth sherd is a rim (CAT#1452) with a flat, cordmarked lip, a straight, vertical rim, and a vertically cordmarked (z-twist) neck (exterior). The interior is decorated with short, parallel, oblique rows of cordwrapped stick impressions, over a smoothed-over cordmarked surface. The lip is 4.38mm thick.

The sixth sherd labeled as “possibly Madison Ware” is a rim (CAT# 1390) with a flat, decorated lip (interiorly tool impressed), a straight, vertical rim, and a vertically
cordmarked (z-twist) neck (exterior). The interior decoration consists of short, vertical incised lines that start at the interior lip and go down into the neck. The interior surface is smooth and the lip is 3.19mm thick. The seventh sherd is a rim (CAT# 1189) with a flat, smooth lip, a straight, vertical rim, and a smooth exterior and interior. The lip is 3.11mm thick. The eighth sherd is a rim (CAT# 1248) with a round, smooth lip, a straight vertical rim, and a smooth exterior and interior. The lip is 5.08mm thick. The ninth sherd is a rim (CAT# 3669) with a flat, thinned, and exfoliated lip, an incurved and vertical rim, and a vertically cordmarked exterior surface (z-twist). The interior is smooth and the lip is 2.58mm thick.

The tenth “possibly Madison Ware” sherd is a neck (CAT# 406) that is vertically cordmarked (s-twist) on the exterior and is decorated on the interior. The interior decoration consists of parallel, oblique cord impressions, over a smooth surface. There is residue present on the interior and the sherd is 5.12mm thick. The next three sherds are necks and are from the same vessel (CAT# 1093, 1411, and 3486). The orientation of these sherds may not be correct in the pictures shown and thus the descriptions may also be directionally incorrect. The neck sherds (CAT# 1093, 1411, and 3486) are decorated with rows of cordwrapped stick-like impressed punctates, over cordmarking (s-twist). The interior of these sherds are smoothed-over cordmarked. Sherd CAT# 1093 is 4.87mm thick, sherd CAT# 1411 is 6.79mm thick, and sherd CAT# 3486 is 4.98mm thick.

The last “possibly Madison Ware” sherd is a neck (CAT# 1474) with an exteriorly decorated surface. The exterior is decorated with a vertical row of cordwrapped stick-like impressed punctates, over double-twisted vertical cordmarking (z-twist). The interior is smooth with intaglio present and the sherd is 5.74mm thick.
The next set of Terminal/Late Woodland sherds are typed as Angelo Punctated and part of the High Rim Horizon. The first sherd is a rim (CAT# 1190) and is from the same vessel as the next sherd (neck; Cat# 1595). The rim has a flat, smooth lip, a straight, everted rim, and an exteriorly and interiorly decorated neck. The exterior decoration consists of oblique trailed lines just below the lip, followed by a horizontal row of triangular punctates, followed by parallel, horizontal incised lines, followed by a horizontal row of triangular punctates. The exterior surface is smoothed-over cordmarked and the lip is 3.77mm thick. The interior is decorated with short, oblique incised lines just below the lip, over a smooth surface. The corresponding sherd, from the same vessel, is a neck (CAT# 1595). This sherd is exteriorly decorated with a horizontal row of triangular punctates, followed by parallel, horizontal incised lines, followed by a horizontal row of triangular punctates, all over a smoothed-over cordmarked surface. The interior is smooth and exfoliated and the sherd is 6.12mm thick.

The third and fourth Angelo Punctated/High Rim Horizon sherds are two necks (CAT# 884 and 1063). These sherds are from the same vessel. The first neck (CAT# 884) is exteriorly decorated with oblique incised lines, followed by a horizontal row of triangular punctates, all over a smooth surface. The interior is smooth and the sherd is 4.15mm thick. The corresponding neck (CAT# 1063) is exteriorly decorated with a horizontal incised line, followed by a horizontal row of triangular punctates, followed by oblique incised lines, all over a smoothed-over cordmarked surface. The interior is smooth and the sherd is 6.57mm thick.

The fifth sherd is typed as Angelo Punctated. It is a neck (CAT# 915) that is exteriorly decorated with a horizontal row of partial triangular punctates, followed by
three parallel, horizontal incised lines, followed by a horizontal row of partial triangular punctates, all over a smooth surface. The interior is smooth and the sherd is 5.15mm thick. The sixth and seventh sherds are from the same vessel and are typed as Angelo Punctated/High Rim Horizon (CAT# 1113 and 3632). The first sherd is a neck (CAT# 1113) and is exteriorly decorated with parallel, horizontal trailed lines, followed by a horizontal row of triangular punctates, all over a smoothed-over cordmarked surface. The interior is smooth and the sherd is 4.73mm thick. The corresponding sherd (CAT# 3632) is also a neck. It is decorated with parallel, horizontal incised lines, followed by a triangular punctate, all over a smoothed-over cordmarked surface. The interior is smooth and the sherd is 4.13mm thick. The orientation of both sherds may not be entirely correct.

The eighth Angelo Punctated/High Rim Horizon sherd is a neck (CAT# 1259). This neck is exteriorly decorated with one horizontal incised line, followed by one horizontal row of large triangular punctates, followed by one oblique row of small triangular punctates, followed by an oblique incised line, all over a vertical cordmarked surface (z-twist). The interior is smooth with smoothing lines and the sherd is 5.82mm thick. The ninth sherd is possibly Angelo Punctated or Madison Ware, due to the limited amount of known decoration. This sherd is a neck (CAT# 1412) that is exteriorly decorated with one oblique row of ovular punctates, possibly followed by parallel, oblique trailed lines, with a possible vertical incised line to the left of the punctates. The exterior surface is smoothed-over cordmarked and the interior is smooth. The sherd is 5.91mm thick.

The next set of sherds vary in type. The first sherd has been typed as a variation of Angelo Punctated and Bremer Triangular Punctated (CAT# 965). This sherd is a rim with
a flat lip that is decorated with circular cordwrapped stick-like punctates and oblique incised lines between each punctate. The rim is straight and slightly inverted and the neck is exteriorly decorated with two parallel, horizontal rows of circular cordwrapped stick-like punctates, all over a smoothed-over cordmarked surface. The interior is smoothed-over cordmarked with intaglio present. The lip is 5.24mm thick. The second sherd has not be officially typed but shows many similarities to Bremer Triangular Punctated. This sherd is a neck (CAT# 1476) and is exteriorly decorated with a field of triangular punctates, over a smoothed-over cordmarked surface. The interior is smooth and the sherd is 5.07mm thick.

The next sherd is typed as either Kathio or Clam River Ware, as the two wares are so similar. This sherd is a rim (CAT# 1154) with a round, exterior cordwrapped stick tool impressed lip, with a smooth surface. The rim is straight and everted. The neck is exteriorly decorated with short, oblique rows of cordwrapped stick impressions, impressed from the lip down into the neck, followed by parallel horizontal rows of cordwrapped stick impressions. The exterior surface is vertically smoothed-over cordmarked and the interior is decorated with oblique incised lines over a smooth surface. The rim is 4.64mm thick.

Sherd CAT# 1309 has been typed as Kathio Ware and is a rim. The rim has a flat lip that is exteriorly, vertically cordwrapped stick tool impressed, over a smooth surface. The rim is straight and slightly everted. The exterior decoration consists of short, vertical cordwrapped stick impressions (starting from the lip going down into the neck), followed by parallel rows of horizontal cordwrapped stick impressions. The exterior surface is smoothed-over cordmarked and the interior is decorated with parallel, vertical rows of
cordwrapped stick impressions, over a smoothed-over cordmarked surface. The lip is 4.62mm thick.

Sherd Cat# 1415 has been possibly typed as part of the Lake Benton Phase. The sherd is a rim with an interior beveled, smooth lip and an outcurved and everted rim. The exterior is decorated with parallel rows of oblique dentate stamps, over a smooth surface. The interior is decorated with vertical tool impressions from the lip down in the neck, over a smooth surface. The lip is 3.44mm thick.

There are a number of unidentified Late and/or Terminal Woodland sherds. The first sherd is a neck (CAT# 1431) is exteriorly decorated with parallel, horizontal rows of cord impressions (s-twist), over a smooth surface. The interior is smooth and the sherd is 6.70mm thick. The second sherd is a neck (CAT# 1544) that is exteriorly decorated with parallel, horizontal incised lines, followed by parallel, oblique incised lines, over a smooth surface. The interior is exfoliated and the sherd is 5.47mm thick.

The third unidentified Terminal/Late Woodland sherd is a rim (CAT# 1505). The rim has a flat lip, decorated with oblique incised lines, over a smoothed-over cordmarked surface. The rim is outcurved and everted. The neck is exteriorly decorated with a band of oblique incised lines, followed by a horizontal incised line. The exterior surface is smoothed-over cordmarked and the interior is decorated with a band of oblique incised lines, followed by parallel, horizontal incised lines (along the apex of the neck), followed by a row of ovular tool impressions. The ovular tool impressions could be the top of a band of oblique incised lines. The interior surface is smoothed-over cordmarked and the sherd is sand tempered. The lip is 5.36mm thick.

The fourth unidentified Terminal/Late Woodland sherd is a neck (CAT# 1258).
The neck is exteriorly decorated with parallel rows of oblique triangular punctates, over parallel, horizontal cord impressions (z-twist). The surface is cordmarked (z-twist) over the cord impressions but under the punctates. The interior is smooth with intaglio present. The sherd is 4.78mm thick. The fifth sherd is also a neck (CAT# 3461). The exterior is obliquely cordmarked and the interior is decorated with parallel, oblique rows of cordwrapped stick impressions or dentate stamps, over a smooth surface. The sherd is 4.42mm thick.

The sixth unidentified Terminal/Late Woodland sherd is a neck (CAT# 3656) that is exteriorly decorated with parallel horizontal incised lines, over a smoothed-over cordmarked surface. The interior is decorated with oblique incised lines, over a smooth surface. The sherd is 6.99mm thick. The seventh sherd is also a neck (CAT# 1308) and is exteriorly decorated with parallel rows of deep oblique cordwrapped stick-like punctates, over a multidirectional cordmarked surface. The interior is exfoliated and the sherd broke into two pieces. One piece is 5.70mm thick and the other is 5.58mm thick. The eighth sherd (CAT# 3518) shows some similarities with sherd CAT# 1308. This sherd (CAT# 3518) is a neck that is exteriorly decorated with parallel, oblique cordwrapped stick-like punctates. The surface above the punctates is smooth and the surface below the punctates is obliquely cordmarked. The interior is smooth with intaglio present. The sherd is 5.32mm thick.

The ninth unidentified Terminal/Late Woodland sherd is a neck (CAT# 994) that is exteriorly decorated with two parallel rows of opposing lunate dentate stamps, with possible incised lines between the dentate stamps, over a smoothed-over cordmarked surface. The interior is exfoliated and the sherd is 2.81mm thick. The tenth sherd is a
neck (CAT# 1475), exteriorly decorated with one of row of arcuate punctates or dentate stamps. The exterior surface is smooth and in the interior is exfoliated. The sherd is 3.49mm thick.

The next two sherds are from the same vessel (CAT# 1497 and 1596). They are both necks with a horizontal row of rectangular tool impressions, connected by an oblique line of rectangular tool impressions, connected to another horizontal row of rectangular tool impressions. The tool impressions have be impressed over oblique, shallow trailed lines. The exterior and interior surface are smooth. The first sherd (CAT# 1497) is 6.09mm thick and the second sherd (CAT# 1596) is 7.67mm thick. These sherds are non-local and possibly a left-handed decoration (Schirmer 2015, personal communication).

The last set of “possibly” Late Woodland sherds are all undecorated rims. The first rim (CAT# 946) has a round, smooth lip, with a straight, slightly everted rim, and an exfoliated interior and exterior. The lip is 3.77mm thick. The second rim (CAT# 966) has a round, smooth lip, a modified-filleted, vertical rim, and a smooth/exfoliated exterior. There are possible smoothing line present on the exterior and the interior is smooth. The lip is 5.15mm thick. The third rim (CAT# 1407) has a flat, smooth lip, a straight, vertical rim, and a smooth exterior and interior surface. The lip is 2.10mm thick. The fourth rim (CAT# 1543) has a flat, smooth lip, a straight, inverted rim, and a smooth exterior and interior surface. The lip is 3.21mm thick. The last rim (CAT# 3525) has a round, smooth lip, a straight and vertical rim, and a smooth interior and exterior surface. The lip is 3.31mm thick.
Sample of Diagnostic Pottery

Early Woodland

La Moille Thick
Cat# 1150 (Figure 80)
Lip: Flat; smoothed-over cordmarked
Rim: Straight; vertical
Exterior: Circular tool impressions (2, possibly 3); over multidirectional cordmarking (possibly s-twist)
Interior: Smoothed-over cordmarked

Figure 80: Pickerel Slough Rim - Catalogue Number 1150
Marion Ware
Cat# 403 (Figure 90)
Neck
Exterior: Vertical cordmarked (s-twist)
Interior: Possible oblique (\ and /) cordwrapped stick impressions; smooth/exfoliated surface
Thickness: 11.25mm

Figure 81: Pickerel Slough Neck - Catalogue Number 403
**Middle Woodland**

Laurel Incised  
Cat# 916 (Figure 82)  
Lip: Flat with slight interior bevel; smooth  
Rim: Straight; vertical  
Exterior: Vertical incised lines starting from edge of lip into neck (8), followed by partial tool impressions (4) below neck; all over smoothed-over cordmarking  
Interior: Smooth

Figure 82: Pickerel Slough Rim - Catalogue Number 916
Naples Stamped  
Cat# 1280 (Figure 83)  
Neck  
Exterior: One oblique column (\) of parallel horizontal rows (5) of dentate stamps; over vertical cordmarking (s-twist)  
Interior: Smoothed toward “top” and cracked near curve  
Circular mending hole present  
Thickness: 7.46mm  

Figure 83: Pickerel Slough Neck - Catalogue Number 1280
Linn Ware
Cat# 917 (Figure 84)
Lip: Flat; oblique trailed lines; exfoliated
Rim: Straight; vertical
Exterior: Vertical trailed lines starting from edge of lip, followed by a horizontal row of
depth circular punctates (3) (made with thin, sharp instrument); over smoothed-over
cordmarked surface
Interior: Smooth

Figure 84: Pickerel Slough Rim - Catalogue Number 917
Middle to Late Woodland

Onamia Cordwrapped Stick Impressed
Cat# 1260 (Figure 85)
Lip: Flat; exfoliated
Rim: Straight; inverted
Exterior: Oblique (\) rows of cordwrapped stick impressions (4); exfoliated
Interior: Smooth/exfoliated

Figure 85: Pickerel Slough Rim - Catalogue Number 1260
Onamia Dentate
Cat#: 1311 (Figure 86)
Lip: Flat; smooth and exfoliated
Rim: Straight; everted
Exterior: Row of oblique (/) dentate stamping (1); over smooth surface
Interior: Smooth

Figure 86: Pickerel Slough Rim - Catalogue Number 1311
Onamia Series
Cat# 991 (Figure 87)
Neck
Exterior: Two rows of oblique cordwrapped stick impressions or dentate comb stamps (/) above multidirectional cordmarking (s-twist)
Interior: Smooth with two circular finger impressions
Thickness: 8.27mm

Figure 87: Pickerel Slough Neck - Catalogue Number 991
St. Croix Dentate Stamped
Cat# 1305 (Figure 88)
Lip: Flat; cordwrapped stick impressions (2) impressed into interior and exterior edge of lip; cordmarked
Rim: Braced; vertical
Exterior: Oblique (/) cordwrapped stick impressions (2) impressed from lip into neck, followed by rows of parallel horizontal dentate stamping (3); over vertical smoothed-over cordmarking
Interior: Rows of parallel oblique (/) cordwrapped stick impressions (2) impressed from lip into neck; over smoothed-over cordmarking

Figure 88: Pickerel Slough Rim - Catalogue Number 1305
St. Croix Stamped
Cat# 1324 (Figure 89)
Lip: Flat; oblique cordmarked (/)
Rim: Straight; slightly everted
Exterior: Horizontal cordwrapped stick impressions over vertical cordmarking
Interior: Parallel vertical cord impressions (11) (s-twist); over smooth surface

Figure 89: Pickerel Slough Rim - Catalogue Number 1324
Terminal/Late Woodland

Madison Plain
Cat# 1307 (Figure 90)
Lip: Flat; smoothed-over cordmarked
Rim: Straight; slightly everted
Exterior: Vertical cordmarked (s-twist)
Interior: Smooth

Figure 90: Pickerel Slough Rim - Catalogue Number 1307

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2.71mm
Madison Plain
Cat# 919 (Figure 91)
Lip: Flat; cordmarked
Rim: Straight; vertical
Exterior: Vertically cordmarked (possibly s-twist)
Interior: Possible oblique (\) cordwrapped stick impressions (exfoliated); over smooth surface

Figure 91: Pickerel Slough Rim - Catalogue Number 919
Madison Plain
Cat# 951 (Figure 92)
Lip: Flat; smoothed-over cordmarked
Rim: Straight; everted
Exterior: Oblique (\) cordmarked (z-twist)
Interior: Smooth

Figure 92: Pickerel Slough Rim - Catalogue Number 951

ACC A2006:1
21GD181
XU1
50-60cmbd
Cat# 951
Madison Plain
Cat# 1273 (Figure 93)
Lip: Flat; cordmarked
Rim: Split-rim
Exterior: Vertical cordmarked (s-twist)
Interior: Split rim; exfoliated

Figure 93: Pickerel Slough Rim - Catalogue Number 1273

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<td>XU4</td>
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<td>30-40cm bd</td>
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</table>
Possibly Madison Plain
Cat# 3553 (Figure 94)
Lip: Flat; oblique (/) cordwrapped stick impressions (2) impressed into interior lip going down into the neck; cordmarked
Rim: Straight; everted
Exterior: Deep vertical cordmarking (s-twist)
Interior: Parallel oblique (/) cordwrapped stick impressions from the lip into the neck; over smooth surface

Figure 94: Pickerel Slough Rim - Catalogue Number 3553
Possibly Madison Ware
Cat# 3562 (Figure 95)
Neck
Exterior: Deep vertical cordmarking (s-twist)
Interior: Exfoliated
Thickness: 2.86mm

Figure 95: Pickerel Slough Neck - Catalogue Number 3562
Possibly Madison Ware  
Cat# 3604 (Figure 96)  
Neck  
Exterior: Vertical cordmarking (s-twist)  
Interior: Smooth  
Thickness: 3.93mm

Figure 96: Pickerel Slough Neck - Catalogue Number 3604
Possibly Madison Plain
Cat# 1226 and 1133 (Figure 97)
Lip: Flat; cordmarked
Rim: Straight; slightly inverted
Exterior: Vertically cordmarked (z-twist)
Interior: Oblique (/) cordwrapped stick impression (1); over horizontal smoothed-over
cordmarking
Cat# 1226 and 1133 articulate

Figure 97: Pickerel Slough Rim - Catalogue Numbers 1226 and 1133

ACC A2006:1
21GD181
XU2
60-70cmbd
Cat# 1226 and 1133
Possibly Madison Ware
Cat# 1452 (Figure 98)
Lip: Flat; cordmarked
Rim: Straight; vertical
Exterior: Vertical cordmarked (z-twist)
Interior: Parallel oblique (/) rows of cordwrapped stick impressions (2); over smoothed-over cordmarking

Figure 98: Pickerel Slough Rim - Catalogue Number 1452
Possibly Madison Ware
Cat# 1390 (Figure 99)
Lip: Flat; short vertical incised lines pressed into interior of lip; smooth
Rim: Straight; vertical
Exterior: Vertical cordmarked (z-twist)
Interior: Short vertical incised lines from lip to neck (2); over smooth surface

Figure 99: Pickerel Slough Rim - Catalogue Number 1390
Possibly Madison Plain
Cat# 1189 (Figure 100)
Lip: Flat; smooth
Rim: Straight; vertical
Exterior: Smooth
Interior: Smooth

Figure 100: Pickerel Slough Rim - Catalogue Number 1189

ACC A2006:1
21GD181
XU6
50-60cm bd
Cat# 1189
Possibly Madison Plain
Cat# 1248 (Figure 101)
Lip: Round; smooth
Rim: Straight; vertical
Exterior: Smooth
Interior: Smooth and exfoliated

Figure 101: Pickerel Slough Rim - Catalogue Number 1248

ACC A2006:1
21GD181
XU4
60-70cmbd
Cat# 1248
Possibly Madison Plain
Cat# 3669 (Figure 102)
Lip: Flat; thinned; exfoliated
Rim: Incurved; vertical
Exterior: Vertical cordmarked (z-twist)
Interior: Smooth

Figure 102: Pickerel Slough Rim - Catalogue Number 3669
Possibly Madison Plain
Cat# 406 (Figure 103)
Neck
Exterior: Vertical cordmarked (s-twist)
Interior: Parallel oblique (\) cord impressions (3) (possibly s-twist); smooth; residue present
Thickness: 5.12mm

Figure 103: Pickerel Slough Neck - Catalogue Number 406
Possibly Madison Ware
Cat# 1093 (Figure 104)

Neck
Exterior: One oblique (\(\backslash\)) row of oblique (\(\backslash\)) cordwrapped stick impressed punctates (2 full and 1 partial); all over oblique (\(\backslash\)) cordmarking (s-twist)
Interior: Smoothed-over cordmarked

Thickness: 4.87mm
Orientation may not be correct.
Possibly from same vessel as Cat# 1411 and 3486

Figure 104: Pickerel Slough Neck - Catalogue Number 1093
Possibly Madison Ware
Cat# 1411 (Figure 105)
Neck
Exterior: Two parallel oblique rows (/) of oblique ovular punctates (4 total); over oblique cordmarking (/)
Interior: Smoothed-over cordmarked
Thickness: 6.79mm
Orientation may not be correct.
Possibly from same vessel as Cat# 1093 and 3486

Figure 105: Pickerel Slough Neck - Catalogue Number 1411
Possibly Madison Ware
Cat# 3486 (Figure 106)
Neck
Exterior: Two parallel vertical columns of cordwrapped stick impressed punctates (column A: 3 punctates, column B: 2 punctates close together and 1 partial); all over oblique (\) cordmarking
Interior: Smoothed-over cordmarked
Thickness: 4.98mm
Orientation may not be correct.
Possibly from same vessel as Cat# 1093 and 1411

Figure 106: Pickerel Slough Neck - Catalogue Number 3486
Possibly Madison Ware
Cat# 1474 (Figure 107)
Neck
Exterior: One vertical row of cordwrapped stick impressed punctates (6); over double-twisted vertical cordmarking (z-twist)
Interior: Smooth; intaglio present from punctates
Thickness: 5.74mm

Figure 107: Pickerel Slough Neck - Catalogue Number 1474
Angelo Punctated
Cat# 1190 (Figure 108)
Lip: Flat; smooth
Rim: Straight; everted
Exterior: Oblique (\) trailed lines (4), followed by horizontal row of triangular punctates (2 full and 1 partial), followed by parallel horizontal incised lines (3), followed by a horizontal row of triangular punctates (3 partial); all over smoothed-over cordmarking
Interior: Oblique (/) incised lines just below lip (3); over smooth surface
From same vessel as Cat# 1595

Figure 108: Pickerel Slough Rim - Catalogue Number 1190
Angelo Punctated
Cat# 1595 (Figure 109)
Neck
Exterior: Horizontal row of triangular punctates (3), followed by parallel horizontal incised lines (3), followed by a horizontal row of triangular punctates (3 partial); all over smoothed-over cordmarking
Interior: Smooth and exfoliated
Thickness: 6.12mm
From same vessel as Cat# 1190

Figure 109: Pickerel Slough Neck - Catalogue Number 1595
High Rim Horizon, Angelo Punctated
Cat# 884 and 1063 (Figure 110)
Necks (from same vessel)
Exterior Cat# 884: Oblique (\) incised lines (3), followed by one horizontal row of triangular punctates (1 partial and 2 full); all over smooth surface
Interior Cat# 884: Smooth
Thickness Cat# 884: 4.15mm

Neck
Exterior Cat# 1063: Horizontal incised line (1), followed by one horizontal row of triangular punctates (2 full and 1 partial), followed by oblique (\) incised lines (4); all over smoothed-over cordmarking
Interior Cat# 1063: Smooth
Thickness Cat# 1063: 6.57mm

Figure 110: Pickerel Slough Necks - Catalogue Numbers 884 and 1063
Angelo Punctated
Cat# 915 (Figure 111)

Neck
Exterior: Horizontal rows of partial triangular punctates framing (2 rows total: 1 row above and 1 row below) horizontal parallel incised lines (3); all over smoothed surface
Interior: Smooth
Thickness: 5.15mm

Figure 111: Pickerel Slough Neck - Catalogue Number 915

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<tr>
<td>Cat# 915</td>
</tr>
</tbody>
</table>
High Rim Horizon, Angelo Punctated
Cat# 1113 (Figure 112)

Neck
Exterior: Parallel horizontal trailed lines (3), followed by one horizontal row of triangular punctates (2); all over smoothed-over cordmarking
Interior: Smooth
Thickness: 4.73mm
Most likely from same vessel as Cat# 3632
Orientation may not be correct.

Figure 112: Pickerel Slough Neck - Catalogue Number 1113
High Rim Horizon, Angelo Punctated
Cat# 3632 (Figure 113)
Neck
Exterior: Horizontal parallel incised lines (2), followed by a triangular punctate (1); all over smoothed-over cordmarking
Interior: Smooth
Thickness: 4.13mm
Most likely from same vessel as Cat# 1113
Orientation may not be correct.

Figure 113: Pickerel Slough Neck - Catalogue Number 3632
High Rim Horizon, Angelo Punctated  
Cat# 1259 (Figure 114)  
Neck  
Exterior: One horizontal incised line, followed by one horizontal row of large triangular punctates (2 full and 2 partial), followed by one oblique (/) row of small triangular punctates (3 full and one partial), followed by a corresponding parallel oblique (/) incised line; all over vertical cordmarking (z-twist)  
Interior: Smooth with smoothing lines  
Thickness: 5.82mm

Figure 114: Pickerel Slough Neck - Catalogue Number 1259
Possibly Angelo Punctated or Madison Ware
Cat# 1412 (Figure 115)
Neck
Exterior: One oblique (/) row of ovular punctates (4), followed by possible parallel oblique (/) trailed lines (2), possible partial vertical incised line to left of punctates; over smoothed-over cordmarking
Interior: Smooth
Thickness: 5.91mm

Figure 115: Pickerel Slough Neck - Catalogue Number 1412
Variation of Angelo Punctated and Bremer Triangular Punctated
Cat# 965 (Figure 116)
Lip: Flat; tool impressed- circular cordwrapped stick punctates (2 full and 2 partial); oblique (/) incised line between each punctate (3); over smoothed surface
Rim: Straight; slightly inverted
Exterior: Two parallel horizontal rows of circular cordwrapped stick punctates: row 1: 2 full and 2 partial, row 2: 1 full and 1 partial; all over vertical smoothed-over cordmarking
Interior: Smoothed-over cordmarked; intaglio present

Figure 116: Pickerel Slough Rim - Catalogue Number 0965
Similar to Bremer Triangular Punctated Cat# 1476 (Figure 117)

Neck

Exterior: Field of triangular punctates (4 full and 3 partial); over smoothed-over cordmarking

Interior: Smooth

Thickness: 5.07mm

Figure 117: Pickerel Slough Neck - Catalogue Number 1476

| ACC A2006:1 |
|---|---|
| 21GD181 |
| XU4 |
| 80-90cmbd |
| Cat# 1476 |
Kathie or Clam River Ware
Cat# 1154 (Figure 118)
Lip: Round; cordwrapped stick impression (1 full and 2 partial) impressed on lip exterior into neck; smooth
Rim: Straight; everted
Exterior: Oblique (/) rows (3) of cordwrapped stick impressions (1 full and 2 partial) impressed from lip to neck; followed by parallel horizontal rows (2) of cordwrapped stick impressions; all over vertical smoothed-over cordmarking
Interior: Oblique (\) incised lines (2); smooth

Figure 118: Pickerel Slough Rim - Catalogue Number 1154

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<tr>
<td>70-80cmbd</td>
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<tr>
<td>Cat# 1154</td>
</tr>
</tbody>
</table>
Kathio Ware
Cat# 1309 (Figure 119)
Lip: Flat; short vertical cordwrapped stick impressions impressed into exterior of lip (6); smooth
Rim: Straight; slightly everted
Exterior: Short vertical cordwrapped stick impressions (6) from lip to neck, followed by parallel rows of horizontal cordwrapped stick impressions (7); all over smoothed-over cordmarking
Interior: Parallel vertical rows of cordwrapped stick impressions (7); over smoothed-over cordmarking
Possible radius: 4.5cm

Figure 119: Pickerel Slough Rim - Catalogue Number 1309
Possibly Lake Benton Phase
Cat# 1415 (Figure 120)
Lip: Interior bevel; smooth
Rim: Outcurved; everted
Exterior: Rows of oblique (/) dentate stamps (5); over smooth surface
Interior: Vertical tool impressions from lip to neck (4); over smooth surface

Figure 120: Pickerel Slough Rim - Catalogue Number 1415
Unidentified

Unidentified Type
Early to Middle Woodland
Cat# 1387 (Figure 121)
Lip: Flat, cordmarked
Rim: Straight, vertical
Exterior: Horizontal rows of cordwrapped stick impressions (3); over cordmarking
Interior: Smooth

Figure 121: Pickerel Slough Rim - Catalogue Number 1387
Unidentified Type
Early to Middle Woodland
Cat# 983 (Figure 122)
Neck
Exterior: Parallel oblique (\) incised lines (2); over multidirectional cordmarking
Interior: Exfoliated
Thickness: 10.66mm

Figure 122: Pickerel Slough Neck - Catalogue Number 983

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<td>70-80cmbd</td>
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<tr>
<td>Cat# 983</td>
</tr>
</tbody>
</table>
Unidentified Type
Early Middle to Middle Woodland
Cat# 3653 (Figure 123)
Neck
Exterior: Two parallel horizontal rows of cordwrapped stick impressions framing one oblique cordwrapped stick impression (meeting at 90 degree angles); exfoliated
Interior: Five parallel horizontal rows of cordwrapped stick impressions (not pictured); exfoliated
Thickness: 10.76mm

Figure 123: Pickerel Slough Neck - Catalogue Number 3653
Unidentified Type  
Middle Woodland  
Cat# 1496 (Figure 124)  
Neck  
Exterior: Horizontal cord impression (indeterminant twist), followed by parallel vertical rows of dentate stamps (2 partial rows and 3 full rows) that were smoothed over; all over smoothed surface  
Interior: Smooth  
Thickness: 8.80mm

Figure 124: Pickerel Slough Neck - Catalogue Number 1496
Unidentified Type
Middle Woodland
Cat# 3463 (Figure 125)

Neck
Exterior: Two parallel slightly oblique (/) rows of cordwrapped stick impressions (one is a partial row), followed by one slightly oblique (/) trailed line, followed by three vertical smoothed-over trailed lines; over smooth surface
Interior: Smooth with smoothing lines
Thickness: 6.96mm

Figure 125: Pickerel Slough Neck - Catalogue Number 3463
Unidentified Type
Middle Woodland
Cat# 1172 (Figure 126)
Neck
Exterior: Three rows of parallel horizontal cordwrapped stick impressions; over vertical smoothed-over cordmarking
Interior: Smooth
Thickness: 8.17mm

Figure 126: Pickerel Slough Neck - Catalogue Number 1172
Unidentified Type
Middle Woodland
Cat# 1114 (Figure 127)
Neck
Exterior: Two parallel horizontal rows of dentate stamping; over vertical cordmarking
Interior: Vertical combing (/); over smooth surface
Exterior dentate stamping direction is opposite of interior combing.
Thickness: 7.27mm
Other: Hematite slip added to clay
From same vessel as Cat# 1134

Figure 127: Pickerel Slough Neck - Catalogue Number 1114
Unidentified Type
Middle Woodland
Cat# 1134 (Figure 128)
Neck
Exterior: One row of horizontal dentate stamping; over vertical cordmarking
Interior: Exfoliated
Thickness: 4.60mm
Other: Hematite slip added to clay
From same vessel as Cat# 1114

Figure 128: Pickerel Slough Neck - Catalogue Number 1134

<table>
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</table>
Unidentified Type  
Middle Woodland  
Cat# 918 (Figure 129)  
Lip: Flat; oblique (/) cord impressions (4); exfoliated  
Rim: Straight; vertical  
Exterior: Slightly oblique (/) knotted string cord impressions (5); over smooth surface with some smoothing lines present  
Interior: Smooth  

Figure 129: Pickerel Slough Rim - Catalogue Number 918
Unidentified Type
Middle Woodland
Cat# 1176 (Figure 130)
Lip: Round; smooth
Rim: Split-rim sherd
Exterior: Oblique (/) cordwrapped stick impressions (2) alternating with circular punctates (1 full and 1 partial); all over smooth surface
Interior: Bossing present from exterior punctates (intaglio); exfoliated
From same vessel as Cat# 1177

Figure 130: Pickerel Slough Rim - Catalogue Number 1176
Unidentified Type
Middle Woodland
Cat# 1177 (Figure 131)
Neck
Exterior: Circular punctate (1); possible oblique incised lines (/); over smoothed-over cordmarking
Interior: Bossing present from exterior punctate (intaglio); smooth
Thickness: 7.31mm
From same vessel as Cat# 1176

Figure 131: Pickerel Slough Neck - Catalogue Number 1177
Unidentified Type
Possibly Middle Woodland
Cat# 1096 (Figure 132)
Lip: Round; smooth
Rim: Rolled; slightly inverted
Exterior: Small amount of tooling below lip; smooth
Interior: Smooth

Figure 132: Pickerel Slough Rim - Catalogue Number 1096
Unidentified Type
Possibly Middle Woodland
Cat# 1149 (Figure 133)
Lip: Flat; cordmarked
Rim: Straight; slightly inverted
Exterior: Possible circular punctate; smoothed-over cordmarked
Interior: Smoothed-over cordmarked

Figure 133: Pickerel Slough Rim - Catalogue Number 1149
Unidentified Type  
Middle to Late Woodland  
Cat# 388 (Figure 134)  
Neck  
Exterior: Vertical cord impressions (7) (s-twist); shallow horizontal and oblique (/) incised lines sporadically placed, possibly from the smoothing process; smoothed-over cordmarked/vertical cordmarked  
Interior: Smooth  
Thickness: 7.09mm

Figure 134: Pickerel Slough Neck - Catalogue Number 388
Unidentified Type
Middle to Late Woodland
Cat# 3476 (Figure 135)
Neck
Exterior: Two parallel horizontal cord impressions (indeterminant twist); over exfoliated surface
Interior: Exfoliated
Thickness: 8.10mm

Figure 135: Pickerel Slough Neck - Catalogue Number 3476

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Figure 135: Pickerel Slough Neck - Catalogue Number 3476
Unidentified Type
Middle to Late Woodland
Cat# 1325 (Figure 136)
Neck
Exterior: Vertical cordmarking (indeterminant twist)
Interior: Two rows of vertical cordwrapped stick impressions; over smooth surface
Thickness: 5.04mm

Figure 136: Pickerel Slough Neck - Catalogue Number 1325
Unidentified Type  
Middle to Late Woodland  
Cat# 3619 (Figure 137)  
Neck  
Exterior: Horizontal cordmarking (z-twist)  
Interior: Vertical smoothed-over vertical cordmarking (indeterminant twist)  
Thickness: 5.58mm  

Figure 137: Pickerel Slough Neck - Catalogue Number 3619
Unidentified Type
Middle to Late Woodland
Cat# 3474 (Figure 138)
Neck
Exterior: Vertical cordmarking (z-twist)
Interior: Smooth
Thickness: 5.09mm

Figure 138: Pickerel Slough Neck - Catalogue Number 3474

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<tr>
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Unidentified Type
Middle to Late Woodland
Cat# 407 (Figure 139)

Neck
Exterior: Oblique (> and <) opposing trailed chevrons, followed by multiple oblique (\) and horizontal cord impressions (s-twist); possible trailed line or cord impression (1) above chevrons; exfoliated
Interior: smooth
Thickness: 8.28mm

Figure 139: Pickerel Slough Neck - Catalogue Number 407
Unidentified Type
Middle to Late Woodland
Cat# 962 (Figure 140)
Neck
Exterior: Cross-hatched cord impressed (indeterminant twist); over smoothed-over cordmarking
Interior: Smooth
Thickness: 4.42mm

Figure 140: Pickerel Slough Neck - Catalogue Number 962
Unidentified Type
Middle to Late Woodland
Cat# 1326 (Figure 141)
Neck
Exterior: Cross-hatch cord impressed (indeterminant twist); over multidirectional cordmarking
Interior: Exfoliated
Thickness: 5.88mm
Broken into two pieces

Figure 141: Pickerel Slough Neck - Catalogue Number 1326
Unidentified Type
Middle to Late Woodland
Cat# 3624 (Figure 142)

Neck
Exterior: Cross-hatch cord impressed (indeterminant twist); over cordmarking
Interior: Smooth
Thickness: 4.71mm

Figure 142: Pickerel Slough Neck - Catalogue Number 3624
Unidentified Type
Middle to Late Woodland
Cat# 3582 (Figure 143)
Neck
Exterior: Chevron cord impressions; all over vertical cordmarking (s-twist)
Interior: Smooth
Thickness: 6.59mm

Figure 143: Pickerel Slough Neck - Catalogue Number 3582
Unidentified Type
Middle to Late Woodland
Cat# 3462 (Figure 144)
Neck
Exterior: Three parallel oblique incised lines (\) over two parallel oblique incised lines in opposite direction (/); exfoliated
Interior: Smooth
Thickness: 5.55mm

Figure 144: Pickerel Slough Neck - Catalogue Number 3462
Unidentified Type
Late Woodland
Cat# 1431 (Figure 145)
Neck
Exterior: Four parallel horizontal rows of cord impressions (s-twist); over smooth surface
Interior: Smooth
Thickness: 6.70mm

Figure 145: Pickerel Slough Neck - Catalogue Number 1431
Unidentified Type
Late Woodland
Cat# 1544 (Figure 146)
Neck
Exterior: Three parallel horizontal incised lines, followed by parallel oblique (\) incised lines (2 full and 2 partial); all over smooth surface
Interior: Exfoliated
Thickness: 5.47mm

Figure 146: Pickerel Slough Neck - Catalogue Number 1544
Unidentified Type
Terminal/Late Woodland
Cat# 1505 (Figure 147)

Lip: Flat; oblique (/) incised tool impressions (6); smoothed-over cordmarked

Rim: Outcurved; everted

Exterior: Band of oblique (/) incised lines (5), followed by a horizontal incised line (1); all over smoothed-over cordmarking

Interior: Band of oblique (/) incised lines (5), followed by parallel horizontal incised lines (2) along the apex of the neck, followed by a row of ovular tool impressions (3) (possibly the start of a band of oblique (/) incised lines); over smoothed-over cordmarking

Grit Type: Sand

Figure 147: Pickerel Slough Rim - Catalogue Number 1505
Unidentified Type
Terminal/Late Woodland
Cat# 1258 (Figure 148)

Neck
Exterior: Two parallel rows of oblique (/) triangular punctates (Row A: 3 punctates, Row B: 4 punctates), over four parallel horizontal cord impressions (z-twist); surface is multidirectional cordmarked (z-twist), some cordmarking is over the cord impressions but underneath the punctates
Interior: Intaglio present from punctates; smooth
Thickness: 4.78mm

Figure 148: Pickerel Slough Neck - Catalogue Number 1258
Unidentified Type
Terminal/Late Woodland
Cat# 3461 (Figure 149)
Neck
Exterior: Oblique cordmarked (/)
Interior: Two parallel oblique rows of cordwrapped stick impressions or dentate stamping
(\); over smooth surface
Thickness: 4.42mm

Figure 149: Pickerel Slough Neck - Catalogue Number 3461
Terminal/Late Woodland
Unidentified Type
Cat# 3656 (Figure 150)
Neck
Exterior: Three parallel horizontal incised lines; over smoothed-over cordmarking
Interior: Three oblique incised lines (/); over smooth surface
Thickness: 6.99mm

Figure 150: Pickerel Slough Neck - Catalogue Number 3656
Unidentified Type
Terminal/Late Woodland
Cat# 1308 (Figure 151)
Neck
Exterior: Two parallel rows of deep oblique (/) cordwrapped stick punctates (9 punctates total); over multidirectional cordmarking (possibly z-twist)
Interior: Exfoliated
Thickness: 5.70mm and 5.58mm
Broken into two pieces

Figure 151: Pickerel Slough Neck - Catalogue Number 1308

| ACC A2006:1 | 21GD181 | XU3 | 60-70cmbd | Cat# 1308 |
Unidentified Type
Terminal/Late Woodland
Cat# 3518 (Figure 152)

Neck
Exterior: Smoothed surface followed by two parallel oblique cordwrapped stick punctates (/), followed by oblique cordmarking (/)
Interior: Smooth, intaglio present from cordwrapped stick impressions
Thickness: 5.32mm

Figure 152: Pickerel Slough Neck - Catalogue Number 3518
Terminal/Late Woodland
Unidentified Type
Cat# 994 (Figure 153)
Neck
Exterior: Two parallel rows of opposing lunate dentate stamps; possible incised lines between dentate stamps (\); over smoothed-over cordmarking
Interior: Exfoliated
Thickness: 2.81mm
Orientation may not be correct.

Figure 153: Pickerel Slough Neck - Catalogue Number 994

| ACC A2006:1 | 21GD181 | XU1 | 80-90cmbd | Cat# 994 |
Unidentified Type
Terminal/Late Woodland
Cat# 1475 (Figure 154)

Neck
Exterior: One row of arcuate punctates or dentate stamps (3 full and 2 partial); over smooth surface
Interior: Exfoliated
Thickness: 3.49mm
Orientation may not be correct.

Figure 154: Pickerel Slough Neck - Catalogue Number 1475
Unidentified Type  
Terminal/Late Woodland  
Cat# 1497 (Figure 155)  

Neck  
Exterior: One horizontal row of rectangular tool impressions (2) connected by an oblique line (\) of rectangular tool impressions (4), which are boarder by shallow oblique trailed lines (2 total, 1 on each side), connected to another horizontal row of triangular tool impressions (1 full and 1 partial); all over a smooth surface  
Interior: Smooth  
Thickness: 6.09mm  
Non-local; possible left-handed decoration (Schirmer, personal communication)  
From same vessel as Cat# 1596

Figure 155: Pickerel Slough Neck - Catalogue Number 1497
Unidentified Type
Terminal/Late Woodland
Cat# 1596 (Figure 156)
Neck
Exterior: One oblique (\) row of rectangular tool impressions (2 partial and 2 full) connected to a horizontal row of rectangular tool impressions (1 partial), all tool impressions over shallow oblique (\) trailed lines; smooth surface
Interior: Smooth
Thickness: 7.67mm
Non-local; possible left-handed decoration (Schirmer, personal communication)
From same vessel as Cat# 1497

Figure 156: Pickerel Slough Neck - Catalogue Number 1596
Unidentified Type
Possibly Late Woodland
Cat# 946 (Figure 157)
Lip: Round; smooth surface
Rim: Straight; slightly everted
Exterior: Exfoliated
Interior: Exfoliated

Figure 157: Pickerel Slough Rim - Catalogue Number 946
Unidentified Type
Late Woodland
Cat# 966 (Figure 158)
Lip: Round; smooth
Rim: Modified-filleted; vertical
Exterior: Smooth/exfoliated (smoothing lines present)
Interior: Smooth

Figure 158: Pickerel Slough Rim - Catalogue Number 966
Unidentified Type
Possibly Late Woodland
Cat# 1407 (Figure 159)
Lip: Flat; smooth
Rim: Straight; vertical
Exterior: Smooth
Interior: Smooth

Figure 159: Pickerel Slough Rim - Catalogue Number 1407
Unidentified Type
Possibly Late Woodland
Cat# 1543 (Figure 160)
Lip: Flat; smooth
Rim: Straight; inverted
Exterior: Smooth
Interior: Smooth

Figure 160: Pickerel Slough Rim - Catalogue Number 1543
Unidentified Type
Possibly Late Woodland
Cat# 3525 (Figure 161)
Lip: Round; smooth
Rim: Straight; vertical
Exterior: Smooth
Interior: Smooth

Figure 161: Pickerel Slough Rim - Catalogue Number 3525
CHAPTER 8: THE SILVERNALE WEST TERRACE SITE (21GD254)

Site Location and History:

The Silvernale West Terrace site (21GD254) is located on a terrace bench approximately 20-25 meters below the western edge of the Silvernale Village site (21GD03) and north of the Cannon Valley Trail (Kelly 2009) in Red Wing, MN (Figure 19).

The site was first identified during a field school survey (Minnesota State University, Mankato) in 2006 by Schirmer (Kelly 2009). The site area is heavily wooded and there is no evidence of a plow-zone. Historical photographs indicate the site area was used as a pasture (Schirmer 2010). The only disturbance that seems to impact the site is a two-track path created by all-terrain vehicles.

From May 23rd to May 25th, the MNSU field school students excavated 15 shovel tests. These shovel tests were first plotted on a 10 x 10 meter grid imposed on the terrace bench before being excavated (Figure 162). Shovel test size was 30 cm by 30 cm squares and were dug to an average depth of 70 cm below surface, with two exceptions, shovel test A4 and B5 being dug to 80 cm below surface (Kelly 2009; MN Archaeological Site Form 2006; Schirmer 2010).
Eleven out of the fifteen shovel tests tested positive for artifacts. The occupation of the site area was not intensive as only 39 artifacts were recovered from all the shovel tests (Kelly 2009:53). Cultural materials were found at varying depths between 10 and 70 cm below the surface. The pottery assemblage was predominantly thin walled grit-tempered body sherds with both plain and cordmarked surfaces. No rims were found. Two shell-tempered body sherds were recovered and are believed to be associated with the Silvernale Village, upslope (Kelly 2009).

The lithic assemblage included 20 pieces of chipping debris, one biface, and two pieces of fire-cracked rock. The chipping debris was predominantly Prairie du Chien
chert (15 flakes), with two flakes made from Grand Meadow chert, two flakes made from quartz, and one flake manufactured from an unidentified raw material (Kelly 2009:53). The biface was manufactured from Grand Meadow chert. One piece of the fire-cracked rock was manufactured from Prairie du Chien chert (heat-treated) and the other from an unidentified raw material. No faunal or floral remains were observed or collected from the site (Kelly 2009:54).

Data gathered from the site at this time indicated a separate occupational timeframe from the Silvernale Village site. The relatively low artifact assemblage suggests a short occupation dating to the Late Woodland tradition. The recovery of two shell-tempered sherds could possibly be explained by the artifacts transportation by colluvial processes (Kelly 2009; MN Archaeological Site Form 2006; Schirmer 2010).

Further excavations were conducted by the same institution in 2011, again by Schirmer, to further explore the presence of a Woodland occupation. The 2006 shovel test grid was reestablished and three 1x2 meter units were excavated. Each unit was partitioned into two separate 1x1 meter units (XU 1, 2, 3, 4, 5, and 6). Excavation depth varied between each 1x2 meter unit (Figure 163 and 164). Cultural material was recovered in each excavation unit.
Figure 163: Silvernale West Terrace 2011 Excavation Unit Map
Following excavation, each unit was soil probed to ensure that sterile soil was reached before each unit was terminated. In excavation units 5 and 6, the results of a soil probe showed the possible presence of a paleosol. These units were excavated to 130 cmbd and then terminated. Unfortunately, no paleosol was found. Artifactual materials were recovered at various depths, ranging from 0-70 cmbd with the exception of units 5 and 6. Unit 5 had artifactual material as deep as 120 cmbd and Unit 6 had material as deep as 90 cmbd.

A total of 295 artifacts were recovered during the 2011 excavation: 149 pieces of chipping debris (debitage), 115 pottery sherds, 11 fragments of wood charcoal, 1 piece of charred hazel nut shell, 10 fragments of fire cracked rock, zero fragments of faunal, 1 retouched flake, 1 broken projectile point, 1 piece of burnt earth, and 6 pieces of Michael Kelly's thorny barbed wire (patent 1868). Chipping debris raw material consists of predominantly Prairie du Chien chert (88.59%) and Grand Meadow chert (8.05%). Other raw materials present in small percentages (0.67% each) are quartz, orthoquartzite, Platteville chert, an unidentified chert, and an unidentified lithic material (Figure 165). Tools present consist of one retouched flake manufactured from Grand Meadow chert and a broken projectile point also manufactured from the same raw material. The
projectile point is a side notched triangular point with a slightly arched base. The tip of the projectile point is broken and was found in XU4 at 10-20cmbd.

Figure 165: Silvernale West Terrace Debitage Count and Percentage - 2011 Excavation

Pottery Analysis - 2011 Assemblage

Of the 115 pottery sherds recovered in the excavation units, there are 98 sherds that are grit tempered (85.22%) and 17 sherds that are shell tempered (14.78%) (Figure 166). Surface treatments seen on the grit tempered pottery sherds consist of cordmarking (24.49%), smooth (13.27%), smoothed-over cordmarking (20.41%), multidirectional cordmarking (15.31%), oblique cordmarking (2.04%), and exfoliated (24.49%) (Figure 167). Grit tempered sherd morphology counts consist of 90 body sherds, 5 neck sherds, and 3 rim sherds. Twist direction of cordmarked, multidirectional cordmarked, and oblique cordmarked sherds are s-twist (68.29%) and indeterminant (31.72%) (Figure 168). Interestingly, no sherds could be identified as having been surface treated with z-twist cordage. Decorations identified on grit tempered sherds include trailed lines, cord

<table>
<thead>
<tr>
<th>Material</th>
<th>Count</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>grand meadow chert</td>
<td>12</td>
<td>8.05%</td>
</tr>
<tr>
<td>orthoquartzite</td>
<td>0.67%</td>
<td></td>
</tr>
<tr>
<td>platteville chert</td>
<td>0.67%</td>
<td></td>
</tr>
<tr>
<td>prairie du chein chert</td>
<td>132</td>
<td>88.59%</td>
</tr>
<tr>
<td>quartz</td>
<td>0.67%</td>
<td></td>
</tr>
<tr>
<td>unidentified chert</td>
<td>0.67%</td>
<td></td>
</tr>
<tr>
<td>unidentified lithic material</td>
<td>0.67%</td>
<td></td>
</tr>
</tbody>
</table>

Pottery Analysis - 2011 Assemblage

Of the 115 pottery sherds recovered in the excavation units, there are 98 sherds that are grit tempered (85.22%) and 17 sherds that are shell tempered (14.78%) (Figure 166). Surface treatments seen on the grit tempered pottery sherds consist of cordmarking (24.49%), smooth (13.27%), smoothed-over cordmarking (20.41%), multidirectional cordmarking (15.31%), oblique cordmarking (2.04%), and exfoliated (24.49%) (Figure 167). Grit tempered sherd morphology counts consist of 90 body sherds, 5 neck sherds, and 3 rim sherds. Twist direction of cordmarked, multidirectional cordmarked, and oblique cordmarked sherds are s-twist (68.29%) and indeterminant (31.72%) (Figure 168). Interestingly, no sherds could be identified as having been surface treated with z-twist cordage. Decorations identified on grit tempered sherds include trailed lines, cord
impressions (all s-twist), dentate stamping, and bossing. See figures below for examples of decorated neck and rim sherds categorized by traditions and typology associations.

Figure 166: Silvernale West Terrace Pottery Temper Count and Percentage - 2011 Excavation

Figure 167: Silvernale West Terrace Grit Tempered Surface Treatment Count and Percentage – 2011 Excavation
The pottery assemblage consists of both shell and grit tempered sherds, majority of which are grit tempered (85.22%) and identified as Late or Terminal Woodland. However, an older cultural component was identified as Middle Woodland through one unique rim, at about 86cmbd (Figure 169). Cultural association will this site is predominantly Terminal Woodland with some Middle Woodland and Silvernale/Oneota components. The presence of the shell tempered sherds likely represent the down-slope movement of materials from the village site on the adjacent terrace above (21GD03).

The Middle Woodland rim below (CAT# 223) has been typed as Sorg Banded Dentate with a flat dentate stamped lip, straight rim, and bands of dentate stamps and bosses, separated by a horizontal trailed line. The Terminal Woodland rims below (CAT# 224 and 216) are most characteristic of Madison Ware with flattened lips, straight rims, and exterior vertical or oblique cordmarked surfaces. The neck sherd (CAT# 125) can relate to a number of Late and Terminal Woodland pottery wares but not enough of the neck is available to definitively type. Based on the few rims available, the neck below has

<table>
<thead>
<tr>
<th>Twist Direction</th>
<th>Sum of Count</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>I</td>
<td>13</td>
<td>31.71%</td>
</tr>
<tr>
<td>S</td>
<td>28</td>
<td>68.29%</td>
</tr>
<tr>
<td>Z</td>
<td>0</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

*Figure 168: Silvernale West Terrace Grit Tempered Pottery Twist Direction Count and Percentage – 2011 Excavation*
been tentatively typed as Madison Cord-Impressed. The shell tempered neck sherd below (CAT# 222) is shown here to demonstrate a Silvernale/Oneota presence, as stated above, that most likely came down from the Silvernale village on the adjacent terrace above (21GD03).

Sample of Diagnostic Pottery

Middle Woodland:

Sorg Banded Dentate
Cat# 223 (Figure 169)
Lip: Parallel vertical dentate stamped (8 rows); flat; smooth
Rim: Straight; vertical
Exterior: Parallel rows of oblique (/) dentate stamps (7), followed by 1 horizontal trailed line, followed by a horizontal row of circular bosses (2); over smooth surface
Interior: One parallel horizontal row of circular punctates (2); smooth

Figure 169: Silvernale West Terrace Rim – Catalogue Number 223
Terminal Woodland

Madison Plain
Cat# 224 (Figure 170)
Lip: Flat; smooth
Rim: Straight; gradual curve from neck to shoulder
Exterior: Vertical cordmarked (possibly s-twist)
Interior: Exfoliated (possibly smooth)

Figure 170: Silvernale West Terrace Rim – Catalogue Number 224
Madison Plain
Cat# 216 (Figure 171)
Lip: Smoothed-over cordmarked; exteriorly smoothed downwards
Rim: Straight; vertical
Exterior: Oblique cordmarked (\) (indeterminant twist)
Interior: Smooth; slightly exfoliated

Figure 171: Silvernale West Terrace Rim – Catalogue Number 216
Madison Cord-Impressed
Cat# 125 (Figure 172)
Neck
Exterior: Oblique (\) cord impressions (7), tight s-twist; over multidirectional cordmarking
Interior: Smooth/exfoliated
Thickness: 6.24mm

Figure 172: Silvernale West Terrace Neck – Catalogue Number 125
Silvernale/Oneota:

Cat# 222 (Figure 173)
Neck/Shoulder – broke near a handle
Exterior: Broad, parallel, and fairly vertical trailed lines (4 full and 1 partial)
Interior: Smooth/exfoliated

Figure 173: Silvernale West Terrace Neck/Shoulder – Catalogue Number 222

| ACC 436 |
| 21GD254 |
| Field Specimen #3 |
| XU6 |
| 6-7mE, North Unit |
| 26-31cmN, 47-52cmE |
| 78cmbd |
| Cat# 222 |
CHAPTER 9: INTERPRETATIONS AND CONCLUSIONS

As seen in the evidence represented in this thesis, there are many different types of pottery at each of these four sites, Bartron (21GD02), Mosquito Terrace (21GD260), Pickerel Slough (21GD181), and Silvernale West Terrace (21GD254), demonstrating that the Red Wing area is a place that many different cultural groups lived and/or visited throughout the Early, Middle, Late, and Terminal Woodlands.

INTERPRETATIONS

Based on the diagnostic pottery sherds researched in this thesis, the Early Woodland, Late Woodland, and Oneota timeframes are evident at the Bartron site; Middle Woodland, Late Woodland, and Terminal Woodland at Mosquito Terrace site; Early Woodland, Middle Woodland, Late Woodland, and Terminal Woodland at Pickerel Slough site; and Middle Woodland, Late/Terminal Woodland, and Silvernale/Oneota at Silvernale West Terrace site. Pottery surface treatments range from an array of cordmarking, smoothed-over cordmarking, and/or smooth at all the sites and grit tempered pottery is predominantly found at the Mosquito Terrace (97.33%), Pickerel Slough (99.56%), and Silvernale West Terrace (85.22%) sites. The Bartron site is excluded in the above statement, as it has only 20.93% grit. This is because the Bartron site is predominantly an Oneota/Bartron Phase occupation (Hildebrant Iffert 2010).

Decorations vary at each site, however, cord impressions (both s- and z-twist) are present at each site, as are trailed and incised lines (oblique, horizontal, and/or vertical). Punctates are found at each site but vary in shape. Triangular punctates are found at the Bartron, Mosquito Terrace, and Pickerel Slough sites, circular punctates are found at all sites, arcuate punctates are found at the Bartron and Pickerel Slough sites, and lunate
punctates are found at the Mosquito Terrace and Pickerel Slough sites. Zoned decorations and both interiorly and exteriorly decorated sherds can also be found at all four sites. Late and/or Terminal Woodland sherds with crenelated and tool impressed lips can be found at the Bartron, Mosquito Terrace, and Pickerel Slough sites. Fabric and/or net impressed pottery is seen at the Bartron, Mosquito Terrace, and Pickerel Slough sites. When identifiable, z-twist cordmarking/cord impressions are predominantly seen (as compared to s-twist) at the Bartron (72.26%), Mosquito Terrace (45.45%), and Pickerel Slough (36.84%) sites. S-twist is predominantly seen (as compared to z-twist) at the Silvernale West Terrace (68.29%) site (Figure 174).

Figure 174: Percentage of Twist Compared to each Archeological Site

Examining deeper into the combined Late and Terminal Woodland pottery traits found at these four sites, a plain or “basic” pottery type emerges. Many of these rims exhibit a very limited and/or undecorated lip and neck (interior and exterior). Exterior surface treatments tend to be cordmarked (vertically or obliquely) or smooth and the interior treatments tend to be smoothed-over cordmarked or smooth. Lips tend to be flat
or rounded and rims tend to be straight and vertical. Lip thickness can vary anywhere between 2mm and 6mm. Examples of this pottery type are generally typed as Madison Plain but do not completely fit that typology (see Mosquito Terrace CAT# 709; Pickerel Slough CAT# 1307, 919, 951, 1273, 3553, 1226, 1133, 1452, 1390, 1189, 1248, 3669, 946, 1407, 1543, and 3525; and Silvernale West Terrace CAT# 224 and 216).

Another combined Late and Terminal pottery type that has been found at these sites is a “blending” or “variation” of Angelo Punctated, Bremer Triangular Punctated, Madison Ware, and/or the High Rim Horizon. In many cases rims exhibit crenelated or flat lips with a cordmarked, smoothed-over cordmarked, or smoothed surface and a straight, everted or vertical rim. The neck is exteriorly decorated with horizontal fields of tightly spaced punctations (circular, triangular, linear, lunate, cordwrapped stick impressed, etc.) that can sometimes be bordered or followed by incised lines (vertical, horizontal, and/or oblique). The exterior surface can be cordmarked, smoothed-over cordmarked, or smooth. The neck can be interiorly decorated with short, vertical or oblique tool impressions (incised lines or cordwrapped stick impressed), starting from the lip and going down into the neck. The interior surface treatment can be cordmarked, smoothed-over cordmarked, or smooth. Lip thickness can vary anywhere between 3mm and 5mm. Examples of this pottery type can be seen in rims and necks at the Bartron, Mosquito Terrace, and Pickerel Slough sites (see Bartron CAT# XU2E.0-20.001 and XU3.20-30.006; XU3D.10-20.001, XU3D.20-30.001, XU4.10-20.001, and XU4D.30-30.001; XU4.0-10.001, XU5.10-20.001, XU5.10-20.002, and XU5.0-10.003; Mosquito Terrace CAT# 594, 12, 31, Mosquito Terrace Vessel, 159, and 647; Pickerel Slough CAT# 1093, 1474, 884, 965, 1476, and 1258).
Interestingly, there is also clear evidence at the Pickerel Slough site that Middle Woodland decorations can most definitely be seen in the Late and Terminal Woodland. Evidence of this is the similarities of the Middle Woodland Pickerel Slough sherd CAT# 3653 and the Late/Terminal Woodland Pickerel Slough sherd CAT# 1596. Both of which are exteriorly decorated necks with horizontal tool impressions bordering oblique tool impressions.

CONCLUSIONS

Based on the evidence presented in this thesis and elsewhere (Anfinson 1979; Arzigian 2008; Hildebrant Iffert 2010; Kelly 2009; Nowak 2014; Schirmer 2002, 2010; Skinner 2014; and many others), there is a wide variety of pottery types found in and around the Red Wing area along the Mississippi River. It can thus be argued that the Red Wing area was a central place where occupation ranges overlapped, a frontier that bordered numerous distinct cultural groups, each with their own local, definable pottery types (Clam River Ware, Kathio Ware, Laurel Ware, Onamia Series, St. Croix Stamped Ware, Sorg, and others). Importantly, it was also a place where these distinct cultural groups interacted and created the harder to define intermediate or “blended” types. This is evident in the variety of “variation of” and “unidentified” pottery types see in this thesis.

It is also clear that typing pottery is not a simple process and is a large issue in Minnesota archeology, even in southeastern Minnesota where borders are better studied. Many of the bordering state typologies and cultural groupings (Wisconsin, Illinois, and Iowa) seem to be comparatively well worked (Benn and Green 2000; Boszhardt 1996; Gibbon 1986; Howell 2001; Wendt 2002; and many others), but do not entirely work for
the Red Wing area. Instead, archeologists often “lump” Red Wing Late and Terminal Woodland pottery into the “next best” typology as a matter of convenience.

Some of the issues that prevent better understanding of pottery types in the Red Wing area are due to the location of the area itself, being on the edge of numerous proposed “type” areas, but not clearly fitting into any of them because of cultural “blending”. Additionally, many of the Woodland sherds found in the Red Wing area and elsewhere in Minnesota, are finely grit tempered and thin walled which makes those sherds predisposed to breakage. Furthermore, many sites have been cultivated or otherwise disturbed, causing further breakage.

Soil composition in the Red Wing area and in other areas of Minnesota, can also cause a few complications. Many Woodland sites are on low terraces adjacent to major waterways, causing a lack of stratigraphy and discrete feature deposits. This is due to soil and water erosion and fluctuating water tables, mixing the deposits and making it very difficult to differentiate between cultural occupations. This also makes it hard to obtain reliable samples for carbon 14 dating (thus, no radiocarbon dates have been obtained in the Red Wing area for Woodland sites). The lack of stratigraphy may also arise out of Woodland lifeways in general; semi-sedentary, small family groups frequently moved from one area to another looking for new resources, never staying the same area for long periods of time. This may or may not be true for Red Wing; at least some sites like Cooling Tower (21GD148) and Mosquito Terrace are fairly large and may have been occupied for longer periods, but no feature deposits have yet been found at them (Schirmer 2018, personal communication). Additionally, as stated above, the Red Wing
area was a place where many cultural groups lived/visited and the same sites may have been used by different groups throughout the same timeframe.

Understanding the issues above, new pottery types need to be described and/or existing types need to be improved and uniformly described. For the Red Wing area, this would involve archeologists looking at multiple Late and Terminal Woodland collections and describing the pottery in a strict and uniform way, including twist directionality. Definitions of pottery decorations and attributes would need to be consistent, certain criteria would need to be met, photographs would need to be taken, profiles would need to be drawn, and a very specific cataloguing/recording system would need to be put into place.

Comparing this data could eventually show another component of distinguishability between groups that occupied the same or similar archeological sites within a known region and timeframe. It may also help relate typologies within known regions throughout time. Then archeologists could confidently understand and describe new and/or develop more well-rounded typologies for the Red Wing area and elsewhere in Minnesota.
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