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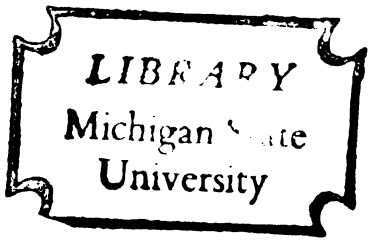

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WOODLAND AND ONEOTA SETTLEMENT AND SUBSISTENCE SYSTEMS IN THE MENOMINEE RIVER WATERSHED

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Marla M. Buckmaster

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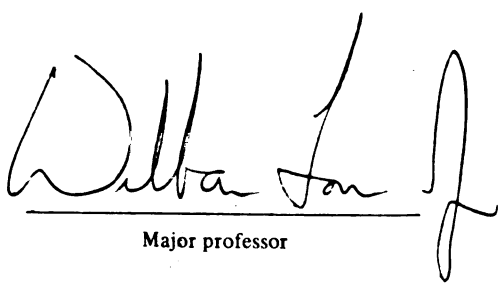
Ph.D. degree in Anthropology



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WOODLAND AND ONEOTA SETTLEMENT AND SUBSISTENCE SYSTEMS IN THE MENOMINEE RIVER WATERSHED

By

Marla M. Buckmaster

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ABSTRACT

WOODLAND AND ONEOTA SETTLEMENT AND SUBSISTENCE SYSTEMS
IN THE MENOMINEE RIVER WATERSHED

By

Marla M. Buckmaster

This study utilizes the archaeological data collected between 1973 and 1977 in the Menominee River Watershed, a large drainage basin located in the west central portion of Michigan's Upper Peninsula. This 4,500 square mile area was systematically surveyed. Sites located by the survey were then tested using a system of stratified unaligned sampling. A total of twenty-six Woodland and/or Oneota sites were identifed and tested. These sites provide a statistically representative sample which is used to identify settlement and subsistence systems for Early Woodland, Middle Woodland, Late Woodland, and Oneota occupations. This is accomplished by interrelating environmental data and data recovered during the test excavations.

Site catchment analysis, a technique which analyzes arachaeological sites by conceiving of the site as the center of an arbitarily delineated area and evaluating the resource potential of this area, is used as the focus of the settlement system analysis. To assess the resource potential of each catchment zone, a series of thirty-three variables was constructed to identify and measure water resouces, climate, presettlement vegetation soils, topography, and geomorphic features. This information was evaluated using principal component analysis and a

numerical taxonomic classification. Principal component analysis was also used to evaluate the twenty-five variables constructed to identify and measure the structure and/or functional variability of each site. The data derived from this analysis was then interrelated and presented by chronological period.

The Early Woodland occupation is represented by a minimal number of sites located in the lower portion of the Watershed. The sites were selected primarily for their close association with riverine resources and the heterogeneity of the surrounding forest. These sites occupied during the warm weather months probably served as base camps from which a wide variety of resources were utilized.

A majority of Middle Woodland sites are located in similar environmental situations, being located near rivers and in areas of mixed vegetation. These sites, however, appear to have served as fishing and hunting camps during the summer months. A second type of site is located so as to have access to both riverine and lascutrine resources in areas of pine forests. The structural and/or functional characteristics of this type of site are unknown.

A significant change in the settlement system occurred during the transition from Middle to Late Woodland. This is reflected by an increase in the number of sites and the selection of several new environmental situations for habitation. Four types of Late Woodland sites are recognized. The first is a small site located in the northern portion of the Watershed in pine forests with easy access to lascutrine resources. A second type is found in the central portion of the Watershed in areas of mixed coniferous-deciduous and pine forests. A majority of Late Woodland sites are located in areas of moderate climate in the southern

portion of the Watershed. The fourth type is located in areas forested by pines adjacent to riverine resources. It is suggested the Late Woodland settlement and subsistence pattern involved seasonal mobility which included large summer fishing villages with a number of satellite camps, small winter hunting camps, and a number of transitional base camps.

Oneota ceramics were recovered from several sites. Many of these sites contained mixed ceramic assemblages. Definite Oneota occupations were represented at two sites. These relatively large sites were located adjacent to riverine resources in areas where there was also a preponderance of lascutrine resources. The residents of these large villages exploited a wide variety of resources.

ACKNOWLEDGMENTS

Four seasons of archaeological survey and testing in the Menominee River Watershed provided the data which serves as the basis of these volumes. This research was conceived and initiated while I was employed by Northern Michigan University and was therefore conducted under the auspices of Northern Michigan University's Archaeological Laboratory. This research was supported by a National Science Foundation Institutional Grant for Science in 1973. The National Register Grant Program administered by the Michigan History Division provided additional support for the 1974 field season. Northern Michigan University Faculty Research Grants provided funding for the 1975 and 1976 field seasons. Northern Michigan University's School of Arts and Science provided supplemental funding throughout the four years of field research, and the succeeding year was devoted to laboratory analysis.

My doctoral committee, under the chairmanship of Dr. William Lovis, offered many helpful suggestions on both preliminary and final drafts of this study. Their comments and criticism were both useful and appreciated.

Many other individuals contributed in a variety of ways to the successful completion of this manuscript. Although too numerous to identify individually, I am indebted to the members of the 1973, 1974, 1975, and 1976 field crews. These crews composed primary of Northern

Michigan University students spent many hours collecting the data which appears in the appendices of this manuscript. I am particularly indebted to John Franzen, who served as an able field assistant during the 1973 and 1976 field seasons, and Jerry Galm and Sally McBeth Galm who were primarily responsible for the successful survey of the northern portion of the Menominee River Watershed in 1974. John Richards, Peter DePuydt, and Christopher Asbury devoted many hours to washing, cataloging, and describing the material recovered from the Little Cedar River, Riverside II, Pemene Falls, and Pemene Creek sites. I am also indebted to John Richards for his cartographic skills which are reflected in the maps included in these volumes.

Finally, I wish to acknowledge the help and support given to me throughout my graduate career by my parents, Burl E. and Caroline Buckmaster; my friend, Kathryn Robinson Albert; and to my teacher, Moreau Maxwell. To these individials, I owe a great debt.

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CHAPTER I

INTRODUCTION

The Research Area

The purpose of this research is two-fold. First, this paper provides a description of the archaeological data recovered during four years of archaeological survey and test excavation in the Menominee River Watershed, a large drainage basin in the central and western regions of Michigan's Upper Peninsula. Much of this work, therefore, consists of descriptive reports for each of the twenty-six Woodland sites located during the four seasons of field work. These twenty-six site reports have been included as appendices. Secondly, and more importantly, this study attempts to examine and understand the way in which the people of three prehistoric cultural systems exploited a large drainage basin within the Canadian Biotic Province in the upper Great Lakes region, by analyzing the morphology of their settlement system.

Although Michigan has been the focus of much archaeological research, most of this work has been concentrated in the Lower Peninsula. What little archaeological attention the Upper Peninsula has received has been primarily limited to site surveys (Bigony, n.d.; Buckmaster and Galm, n.d.; Franzen, 1975; Franzen and Weston, 1973) and the excavation of selected sites in the eastern half of the peninsula

(Bianchi, n.d.; Brose, 1970; Cleland, 1971; Fitting, 1974; Janzen, 1968; McPherron, 1967). All of these sites are located along the shores of Lake Michigan, Lake Huron, or Lake Superior, the three Great Lakes which surround and delineate the Upper Peninsula. Except for the Lasanen site, a historic burial locality, all of the sites appear to be relatively large seasonal fishing villages. As a result the majority of the current literature affords only a limited glimpse of Upper Peninsula prehistory. The prehistory of the western half of the peninsula, as well as that of the eastern interior, are relatively unknown.

In 1973, in an attempt to begin filling this void in the archaeological record, Northern Michigan University began four years of archaeological research in the Menominee River Watershed. Several variables were considered before selecting the Menominee River drainage basin as an area in which to begin this research. Most important among these variables were: size of the drainage basin; location within the peninsula; the range of environmental diversity within the watershed; and public support for the research. Although many of these variables are inter-related they are considered independently in the following discussion:

1. size: The Menominee River Watershed is a sixth order dendritic river system. It is the largest drainage system in the Upper Peninsula and the fourth largest river system in the State of Michigan. It originates in eastern Baraga County just south of Lake Superior and flows southeast approximately 180 miles until it empties into Lake Michigan. The watershed drains approximately 4,500 square miles of the Upper Peninsula interior. The Menominee River drainage basin is significantly larger than any of the other river systems in the Upper Peninsula. Table 1 compares the size of the Menominee River Watershed with the other major river systems in the Upper Peninsula.

Table 1.--River Systems in the Upper Peninsula.

River	Watershed Size	Length
Menominee River	4,500 square miles	180 miles
Manistique River	1,500 square miles	50 miles
Ontonagon River	1,400 square miles	40 miles
Escanaba River	890 square miles	30 miles
Tahquamenon River	850 square miles	50 miles
Sturgeon River	750 square miles	45 miles
Ford River	480 square miles	50 miles
Cedar River	400 square miles	80 miles
Presque Isle River	380 square miles	40 miles
Whitefish River	350 square miles	30 miles
Montreal River	300 square miles	30 miles
Black River	300 square miles	35 miles

2. location: Two aspects were considered significant in evaluating the location of the Menominee River watershed within the Upper Peninsula. First, it is the only river system which could have served as a major transportation route between Lake Superior and Lake Michigan. No other river system in the Upper Peninsula extends as far north and south through the Peninsula. Secondly, its central location within the peninsula avoids the low flat and relatively marshy land which dominates much of the eastern half of the Upper Peninsula as well as the rough and somewhat mountainous terrain in the northwest portion of the peninsula. Thus, located in the central region of the Upper Peninsula along the southern edge of the Canadian Shield, it includes portions of both the higher and rougher terrain to the north and west and the low flat lands to the east, but is dominated by neither.

3. environmental diversity: Initially three environmental characteristics; non-riverine water resources, temperature, and precipitation were considered significant in evaluating environmental diversity. In addition to the hundreds of

miles of rivers, streams, and creeks, the Menominee River Watershed includes thirty-five lakes with surface areas of over one square mile, several hundred smaller lakes, ponds, and bogs, as well as numerous acres of cedar swamp and marshland. Although located entirely within a northern temperate climate, temperatures are greatly effected by local variations in surface elevation which varies from approximately 1,900 to 600 feet above sea level and the ameliorating effects of the Great Lakes. As a result of these local variations in temperature, the growing season varies from 140 frost free days immediately adjacent to Lake Michigan, to less than ninety frost free days in the west central portion of the watershed. Precipitation, measured in both snowfall and rainfall, also varies throughout the watershed. Snowfall, a dominant feature of the Upper Peninsula landscape between the months of November and April, varies from as little as fifty inches per year in the southern part of the watershed to approximately 120 inches per year in the northeastern corner of the watershed. Rainfall within the watershed also increases from south to north, varying between twenty-nine and thirty-four inches per year. The complex system of bogs, marshes, swamps, lakes and rivers and the local variations in climate within the Menominee River Watershed create an ecologically diverse area in which to observe the ways in which cultural systems articulate with their environment.

4. public support: Michigan's Upper Peninsula is geographically and ethnically distinct from the remainder of the state. Local residents take pride in their ethnic heritage and ability to adapt to this harsh and sparsely populated region. Local pride and identity, coupled with lack of information regarding research projects and their goals, has resulted in limited success or failure of other university or state supported research projects in the Upper Peninsula (Weise, Robinson, Hook, and Mech, 1975; Robinson and Smith, 1977; Fantor and Spaulding, personal communication, 1978). Therefore, it was considered essential, as an outsider beginning a research project in the Upper Peninsula, to gain local support. Fortunately the Iron Range Historical Society in Iron Mountain, Michigan, a small city centrally located in the center of the watershed, is extremely active and interested in many aspects of the area's history. The historical society as well as many members of the Iron Mountain community were enthusiastically receptive to the project and encouraged the initial fieldwork.

In summary, the Menominee River Watershed is a large southeast flowing river system which is centrally located in the Upper Peninsula. The southern part of the drainage basin is a relatively warm and dry

region while the north central part of the drainage basin provides some of the harshest weather in the state. The entire area is sprinkled with lakes, ponds, bogs and marshes which are linked by a major river system, thus creating numerous micro-environments which provide a wide variety of potential resources for the prehistoric occupants of the Upper Peninsula. The Menominee River Watershed provides an ideal environmental situation in which to seek information regarding the ways in which prehistoric cultures articulated with a diverse and plentiful northern environment. Local interest in the project made it possible to undertake a major field project in this area.

The Study Problem

The Menominee River Watershed is a large drainage basin located along the northernmost edge of the Midwest between Lakes Superior and Michigan. Although located entirely within a northern temperature environment, it has been characterized as an environmentally diverse area due to the effects of varying elevation and the modifying effects of the Great Lakes. Thus not only is there seasonal variation in temperature and precipitation, but climate varies from area to area within the watershed i.e., as you move north precipitation increases and temperature decreases. This variation is considered important to the prehistoric residents of the area since it increases the number of plant and animal species available for exploitation, thereby increasing the number of potentially successful subsistence-settlement opportunities available to the residents. Chang (1962) and Watanabe (1968) have proposed and characterized several different hunter-gather settlement strategies.

Watanabe proposes a classification of residential shift patterns of northern food gatherers which includes six basic or fundamental types of settlement patterns. These settlement strategies vary from that of the Semang, who move throughout their environment during the entire year, to that of the Owens Valley Paiute (Steward, 1938) and the Ainu (Watanabe, 1968) who inhabit more or less permanent villages year around. This high degree of permanency is made possible by rather narrowly spaced micro-environmental zones. Watanabe (1968:72) was able to explain this locational stability by documenting five ecological or exploitative zones.

> One of the fundamental factors relevant to the high stability of residence among the Ainu may have been the distribution of the ecological zones within narrow river valleys they inhabited. . . . The subsistence activities of the Ainu were conducted in the following ecological zones, each of which yielded specific resources in specific seasons: (1) The river: cherry salmon fishing (summer, in the main stream and some tributaries); dog salmon fishing (autumn, in the main stream); (2) The river banks: collecting of wild plants (spring to autumn); (3) The river terraces: deer hunting (autumn); plant collecting (spring to autumn); human habitation (all year); (4) The hillsides along the river course: deer hunting (early winter at or near the animals' winter quarters); (5) The mountain region around the source of the river: bear hunting, specialized (spring and autumn); collection of elm bark for clothing (usually spring).
>
> Zones 1-3 were exploited from a single center, namely the permanent settlement which is usually situated on the edge of the river terrace. The outermost zones 4 and 5 were hunting areas, each exploited from a different hunting hut.
>
> The permanent houses in the settlement were occupied by the entire family for nine to ten months of the year, by housewives and their children nearly all year.

Likewise, Steward (1938:50) documented residential stability in the Owens Valley:

> This extraordinarly varied environment afforded all essential food resources within 20 miles of the villages, which were situated on the various streams. Although people sometimes remained away from home several days, it was usually possible to return within a day or two.

David Thomas (1973) subjected Steward's interpretation of Great Basin cultural ecology and settlement patterns to empirical test. Using data obtained from a random sampling project in the Reese Valley of central Nevada, and a computer simulation model to generate 130 archaeologically testable predictions from Steward's ethnographic data, Thomas was able to statistically verify 75 percent of these predictions and conclude that the archaeological manifestation of the Shoshonean settlement pattern, which he refers to as the Reese River subsistence-settlement system, existed in the Great Basin from 2500 B.C. through historic times.

Although a sedentary settlement pattern has been documented on two continents and has existed in the Great Basin for 4,500 years, its distribution is limited to those areas with narrowly spaced microenvironments (Watanabe, 1968). In areas with more broadly spaced microenvironments, such as the Menominee River Watershed, different settlement patterns are necessary. In these areas it is not feasible to remain in one place all year without an inordinate expenditure of energy, nor is it likely due to the energy expenditure required in a constantly moving camp that people would seek an adaptation similar to the Semang. The optimal alternative settlement strategies in such areas will probably not resemble either the extremely mobile pattern, or what Watanabe (1968) has classified as a type I residence pattern, or the purely sedentary type VI residence pattern but will be more diverse, including a number of villages, camps, or areas of temporary shelter which are utilized seasonally as the areas' residents schedule the exploitation of their environment. These more varied or diverse settlement patterns

are those Watanabe (1968:70) has classified as types II, IIIa, IIIb, IVa, IVb, and V patterns of residence.

The ethnographic literature from the Upper Great Lakes and adjacent areas (Rogers, 1962; Kinietz, 1965; Hickerson, 1970) indicates a yearly subsistence pattern consisting of several seasonal camps and/or villages each centered around a particular economic activity or activities; patterns generally consistent with several of Watanabe's residential patterns. The settlement system, however, most typically associated with the Canadian biotic province and therefore the Upper Peninsula in the ethnographic and historical literature, is the Chippewa pattern (Fitting and Cleland, 1969). The Chippewa settlement pattern included large summer fishing villages and small winter hunting camps. The Juntunen site (McPherron, 1967) on Bois Blanc Island in the Straits of Mackinac, the Naomikong Point site (Janzen, 1968) on the south shore of Lake Superior, and the excavations on Summer Island (Brose, 1970) in Delta County, Michigan, are excellent examples of summer sites of the Chippewa pattern. Fitting and Cleland (1969) suggest that several of J. V. Wright's (1965) sites along Lake Superior are examples of winter sites associated with this pattern. Fitting (1969) also includes the Silver Lake site in Oceana County (Cleland, 1966:79-80), the Butterfield site in Bay County (Wobst, 1968) and the Late Woodland components of the Mahoney, Stadelmeyer and Foster sites (Bigony, 1969) as examples of winter camp sites.

Although this settlement pattern appears to generally fit both the ethnographic data and a large body of the archaeological data from the Upper Peninsula, there is no evidence to indicate this settlement pattern was exclusively utilized by the prehistoric inhabitants of the

Upper Peninsula, particularly those populations exploiting a large interior drainage basin like the Menominee River Watershed. This particular pattern, even if employed by the prehistoric populations of the Menominee River drainage, does not include the full range of settlement options which may have been used to supplement this pattern. Missing are sites which may have served as satellite hunting or gathering camps for the large summer villages, or transitional or seasonal camps occupied during the spring or fall of the year.

Although Fitting (1970) uses the Chippewa settlement pattern to characterize the Late Woodland period, as well as several northern Middle Woodland cultural complexes of what he has termed the Lake Forest Middle Woodland, this pattern clearly does not attempt to incorporate the changes in adaptive strategies which the archaeological data from the Upper Great Lakes suggest took place between these two periods.

This change in adaptive strategies is most noticeable in the striking increase in site size, site density and intensity of occupation during the Late Woodland period. Cleland (1966, 1976) has characterized the adaptation of the Laurel Middle Woodland as a diffuse adaptation and the adaptation of the Late Woodland and Upper Mississippian cultures of this area as focal. Brose (1970) also describes the total economic pattern of the Middle Woodland component at Summer Island as a diffuse adaptation. Although the subsistence data from the Upper Great Lakes suggests that a change in adaptive strategies took place during the transition from the Middle to Lake Woodland periods, this has not been entirely substantiated by settlement studies. Using settlement data from Michigan's Inland Waterway, Lovis (1978) was able to document a change in site location patterns between Middle and Late Woodland which

suggested a change in subsistence strategies in this interior rivero-lacustrine environment. The lack of systematically collected settlement data from many other regions in the Upper Great Lakes, however, has restricted other similar settlement studies, thus preventing possible confirmation, rejection and definition of the change in subsistence strategies during the Middle and Late Woodland transition.

The Menominee River Watershed project sought to provide additional information with which to address the issue of Woodland subsistence-settlement strategies. The project, which consisted of four years of archaeological survey within this large interior drainage basin, produced a body of systematically collected data consisting of site locations, site size, and site density. This study attempts to use this data and a number of environmental variables to identify the settlement system of Middle Woodland, Late Woodland, and Oneota peoples in the Menominee River Watershed. The major question addressed by this study is: Did prehistoric settlement systems within this area change through time; if so, what is the nature of this change.

Method of Analysis

Settlement archaeology has been an important part of American archaeology since 1956, when the Viking fund published Prehistoric Settlement Patterns in the New World. Although this volume seemed to stimulate interest in settlement archaeology it clearly emphasized the disparity in settlement data between various geographical regions. As a result research during the 1960s produced numerous studies which were based on a regional settlement model (Winters, 1967; Adams, 1965; Sanders, 1965). Archaeologists, working in less densely settled areas

such as the Great Lakes Region, however, had difficulty applying traditional structural classifications of settlement, i.e., village, town, city or ceremonial center, used in the nuclear and/or more densely populated areas.[1] Even the classification developed by Sears (1956) for the eastern United States was of little practical value in an area where site size is small, artifact densities are low, evidence of structures limited and temporal as well as social and political relationships between sites difficult to interpret. As a result settlement pattern studies in the Great Lakes Region have tended to focus on a variety of environmental and subsistence data in an attempt to understand the relationships between environmental change and temporal and/or regional adaptations (Griffin, 1956; Taggart, 1967; Cleland, 1966; Fitting and Cleland, 1969). Although excellent comparative studies of floral and faunal remains from the Upper Great Lakes Region are available (Yarnell, 1964; Cleland, 1966) and can be an aid in the determination of seasonality, many of the other variables used to isolate settlement patterns, such as site size and intensity of occupation, are ill defined, and until recently these studies have relied on data which has not been systematically collected. Thus, much still needs to be done to confirm or reject the settlement patterns identified by these studies.

More recent investigations of settlement patterns and/or systems display a shift in analytic focus away from the categorization of sites and a subjective evaluation of their environmental potential, toward

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[1] A more complete discussion of the difficulties involved in applying the traditional parameters of settlement classifications to archaeological data from the Great Lakes Region can be found in Settlement Analysis in the Great Lakes Region, Fitting, 1969.

new analytical approaches which emphasize quantitative assessment of resource potential, systematic data collection, and formation of statistically testable hypotheses. Many of these approaches are related to spatial theories, and analytical techniques developed in geography, biology, economics, and history. Perhaps because European archaeology has traditionally maintained a close association with geography and history, Old World archaeologists have made a significant contribution in the field of spatial archaeology, developing distributional maps, and numerous locational models e.g., gravity models, demographic models, economic models.

Among these contributions are two settlement models which have gained prominence in current archaeological research. The first of these is the predictive model developed by Jochim (1976). Using characteristics of the biotic resources i.e., weight, density and mobility, Jochim attempts to develop specific expectations of site size, location, and content to predict site characteristics and settlement structure as it should have existed over a yearly cycle. The model is predicated on two assumptions. The first or primary assumption relates to the need each society has for acquisition and utilization of resources. Secondly, Jochim assumes these choices are the result of long-range planning rather than immediate and opportunistic factors. Thus the model assumes each society develops a long range strategy which is used to make decisions concerning the productivity and utilization of resources within its environment.

The second current settlement model is site catchment analysis. A model was developed by Vita-Finzi and Higgs (1970), who skillfully employed it in analyzing the prehistoric economy of the Mount Carmel area.

Site catchment analysis rests on the following assumption: "the further the area is from the site, the less it is likely to be exploited (unless it is peculiarly productive) since the energy consumed in movement to and from the site will tend to cancel out that derived from the resource. Beyond a certain distance the area is unlikely to be exploited from that site at all: in terms of the technology available at the time, its exploitation becomes uneconomic" (Vita-Finzi and Higgs, 1970:7).

It is this second model which was selected and used to approach the archaeological data collected in the Menominee River Watershed. The selection of catchment zone as an analytical model rather than the model developed by Jochim relates primarily to the nature of the available data from the Menominee River Watershed rather than to a theoretical disagreement with Jochim's attempt to use characteristics of the environment thought relevant for human adaptation as a means of predicting site size, location and content. In reviewing "Hunter-Gatherer Subsistence and Settlement: A Predictive Model," Binford's most severe criticism is: "The problem with Jochim's work rests largely with the quality of the archaeological data available to him and his analytical procedure" (Binford, 1978:138). Binford expands his statement to demonstrate that the site summaries used by Jochim, rather than summaries by occupation are clearly inadequate in the analytical context of the model Jochim has developed. Unfortunately, the archaeological data from the Menominee River Watershed is plagued by the same difficulties as the data used by Jochim. A substantial majority of the sites are multi-component, and it was not possible to separate the recovered materials by occupations. Evaluation of the catchment area, therefore, appeared to be the more acceptable of these two models.

Using ethnographic data Vita-Finzi and Higgs recognized resource usage was distance dependent, and proposed that those resources which occupied a primary position in the subsistence activities of any group would exist within a set distance, or the catchment zone, of the settlement. Site placement was therefore seen not merely as a response to a specific location, but to the total range of resources and their distribution within a broader environmental setting. Several recent ethnographic studies (Jochim, 1976; Yellen, 1977; Yellen and Harpending, 1972) have further defined and documented this broader environmental approach to resource utilization among hunter-gatherers. As defined by Vita-Finzi and Higgs (1970) the catchment zone is a circular area with an arbitrary radius originating at a site location. Biotic resources and topographic and geomophic features within the catchment zone are used to assess the potential subsistence economy of each site. The radius of the catchment zone is arbitrarily determined but based on ethnographic studies. Thus Lee (1968:35) states when describing the catchment zone of the Kung Bushman,

> A day's round-trip of twelve miles serves to define the "core" area six miles in radius surrounding each water point. By fanning out in all directions from their well, the members of a camp can gain access to the food resources of well over 100 square miles of territory within a two-hour hike. Except for a few weeks each year, areas lying beyond this six-mile radius are rarely utilized, even though they are no less rich in plants and game than are the core areas.

Working among the G/wi Bushman, Silberbauer (1972) found their exploitive efforts were confined to a somewhat smaller area. While observing land use patterns among agriculturalists, Chisholm (1968) determined that the distance between home site and fields among rural peoples were generally no more than one to two kilometers. Among the Kuikuru, a

horticultural society in the Amazon Basin, Carneiro (1968) found traveling more than four miles to tend fields a cause of complaint. The use of a small radius, less than five miles, to define the catchment zone appears to be justified in the ethnographic literature. This is reinforced by Lee's statement: "At a given moment, the members of a camp prefer to collect and eat the most desirable foods that are the least distance from standing water" (1969:81).

Recently catchment zone analysis has been used in the Midwest. In 1975, Roper used catchment zone analysis to generate models of Woodland settlement patterns in the Sangamon River drainage of central Illinois and was able to define a change in settlement pattern between Middle Woodland and Late Woodland occupations. More recently, Holman (1978) and Martin (1977) employed this analytical technique to data from Michigan. Using catchment zone analysis, Holman defined and described the settlement system of the Mackinac Phase in the Straits of Mackinac. In an attempt to derive a predictive model for site locations in the Hiawatha National Forest in the eastern Upper Peninsula of Michigan, Martin (1977) utilized numerous characteristics of the biophysical environment within a three mile catchment zone of known sites within the forest and surrounding area. All three studies suggest catchment zone analysis is a useful model for understanding the way in which people interact and locate themselves with respect to their natural environment.

The present study uses a version of this technique to analyze the Woodland and Oneota site data from the Menominee River Watershed and explore the relationship between selected site characteristics and aspects of the biophysical environment within the arbitrarily delinated

catchment zone of each site. This is applied to each of four cultural periods; Early Woodland, Middle Woodland, Late Woodland, and Oneota, in an attempt to define the structure of each period's settlement system, thus allowing the question of changing adaptive strategies to be addressed. For the purpose of this study the catchment zone was defined as a 28.26 square mile area, the total area within a 3.0 mile radius of the site. The 3.0 mile radius is quite arbitrary but is considered reasonable since we know most people do not travel far from their home base on a daily basis (Lee, 1968, 1969; Silberauer, 1972; Chishohn, 1969). Tinsdale (1972) also documents the consideration given to distance traveled when describing the economic activities of Putjandjara women when he states: "A walk greater than three miles is sufficient to induce grumblings and cause scolding of their husbands" (1972:245). Although more distant excursions from the home base are made for acquiring culturally defined prestige items, usually by the male members of a community, it is doubtful that such excursions provide more than a fraction of the daily subsistence of that community (Jochim, 1976). Thus the use of a fairly small radius seems justifiable. The area within the 3.0 mile radius of the site represents the ideal catchment zone, which is circular. The actual catchment, however, is distorted by local variations in terrain affecting speed and ease of mobility within the exploited area, thus altering the outer boundary of the zone. Daily and seasonal weather patterns, geological variations as well as a host of other environmental factors affect the ability of individuals to traverse the local terrain. It was not possible to identify and consider all the factors which affect the exact size and shape of the catchment zone at each site, thus this study relies on the arbitrary

circle to define the catchment zone and makes no attempt to modify the shape of the catchment area to accommodate variation in local topography.

The catchment zone as defined above was evaluated using a number of biophysical variables including water resources, climate, presettlement vegetation, soils, topography and geomorphic features to assess the potential economies of each site.[2] Thirteen variables were isolated to evaluate the hydrographic situation within the catchment zones of the various sites. Water resources were considered important, since they are essential for the maintenance of daily life activities, being used for drinking, cooking and a host of other needs. Secondly, they provide adequate resources such as fish, mussels and turtles, and are an important environment for mammals, birds, reptiles and amphibians. In addition, streams and the many lakes linked by them provide a potential transportation network within the Watershed.

Climate is perhaps the most variable aspect of the environment of the Menominee River Watershed.[3] The immense variability suggests the possibility that climate may be an important factor in site location, season of occupation, length of occupation, and resource utilization. Climate, therefore, was considered to be an important characteristic of the catchment zone and five variables were constructed to evaluate the relationship between site placement and the climatic situation at each site.

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[2]A complete list of the variables, data source and description of how the values were obtained is provided in Appendix S.

[3]A description of the variation in climate within the Menominee River Watershed is provided in Chapter II, The Environmental Setting.

Vegetation types and their distribution within the catchment zone may be one of the more important variables in site location since it provides both resources and habitat for the hunter-gatherer. Seven variables were designed to assess the vegetation composition within the catchment zone. Since the data source used in evaluating vegetation within the catchment zone was Veatch's map "Presettlement Forest in Michigan" (1959), and a comparable presettlement forest map for Wisconsin was not available, the values for the vegetation were determined using only that portion of the catchment zone of each site which fell within the State of Michigan.

Only two variables deal primarily with soil conditions at the site location. Franzen and Weston (1973) indicated that particular soil conditions co-occur with site locations in greater frequencies than others in the Upper Peninsula. Considering this association, soil is given somewhat more cursory treatment than it perhaps deserves in this study. There are two reasons for this. First, the U.S. Department of Agriculture Soil Conservation Service mapping and publication of soil maps for the central and western portions of the Upper Peninsula are still incomplete. Only very general maps of soil type and soil associations are presently available. Secondly, this study utilized Veatch's map "Presettlement Forest in Michigan" in assessing the vegetation associated with each site location. Since Veatch relied heavily on soil types to identify and map the presettlement vegetation patterns in Michigan it was considered to be repetitive and redundant to give further attention to soil conditions.

Since all sites must be located on landforms, people must select particular landforms on which to locate their villages, camps,

etc. Sites, however, may not be selected due to their location on a particular landform, but may be chosen because they are adjacent forms which make their location more desirable. Several variables were constructed to assess the topography and geomorphology of the catchment zone. The major data source for these variable values was Martin's (1957) map, "Map of the Surface Geological Formations of Northern Michigan." A comparable geological formation map for Wisconsin could not be located; as a result, measurement of values for these variables was limited to that portion of the catchment zone which was located within the State of Michigan.

After identification of the biophysical characteristics of the catchment zones, the structural characteristic of the sites were evaluated to determine the nature of the socio-cultural unit which exploited the catchment zone. Presumably, sites located to have differential access to resources will occupy different positions in the settlement system and will be represented differently in terms of size, artifact assemblage, features, structures, and floral and faunal remains in the archaeological record. A series of variables was established and used to evaluate the structural characteristic of each site.[4] If changes in the exploitative strategy occurred between the Early Woodland, Middle Woodland, Late Woodland, and Oneota cultural periods, each period should be represented by sites located in differing environmental settings and exhibiting somewhat different structural characteristics in the archaeological record.

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[4]A complete list of these variables is provided in Appendix S.

An Evaluation of Catchment Analysis

Although site catchment analysis is based on ethnographic data and has been used successfully in a number of settlement studies, it is not a panacea for settlement archaeology. As with all attempts to conceptualize data, there are several problems in both the underlying assumptions and the specific application of site catchment analysis. These complications or awkward areas are considered in the following discussion.

The primary assumption underlying site catchment analysis views resources as having diminishing returns as distance from the site increases, since the energy consumed in movement to and from the site will tend to cancel out that derived from the resources. While this basic premise is generally supported by ethnographic literature which indicates that the majority of the day to day subsistence needs are obtained from a relatively restricted area, there is additional ethnographic data to indicate that more distant forays, particularly for hunting, are not uncommon. Thus Lee (1967) suggests that while women are unlikely to travel more than 10 km. from the base camp in search of plant foods, small groups of men will travel further in pursuit of game. Kinietz (1940) indicates Huron hunters were known to travel 100 leagues or more during a winter hunt. It is doubtful, however, if such forays supply more than a small fraction of the daily subsistence of the social unit. Yet one should consider that the catchment zone is probably a more accurate reflection of the area exploited by the women who forage for plant foods than that used by the male members of the community for hunting.

Somewhat related to the preceding issue is the fact that the catchment zone is defined by walking time rather than by other transport techniques such as canoe, frequently, though not exclusively, used by the male members of the community to provide easier access to more distant resources. Such variables have not been incorporated into site catchment analysis, although transport by other than foot travel is part of the logistical strategy of many hunter-gatherer adaptations.

The initial assumption that resource utilization is distance dependent implies that sites are located in direct proximity to those resources. Site catchment analysis, therefore, establishes a model for settlement which is solely based on the availability of resources. Such a model does not take into account social and cultural factors which may affect site location. Yet settlement systems are not entirely nor automatically determined by the characteristics of the natural environment. Thus Silberbaurer writes:

> The band temporarily migrates as one community to the territory of an allied band. This synoecious emigration is made during the seasons of plenty when conditions permit abnormally large concentrations of people. The motivation of such an emigration is social--to visit an allied band and to enjoy the company of its members (1972:296).

Further evidence of the impact of socio-political factors on a settlement system can be found in the following passage describing the movements of the Huron.

> When war is declared in a country, they destroy all the towns, hamlets, cities, and villages on the frontiers incapable of stopping the enemy, or else they fortify them, and each one places himself in the cities or fortified places of his jurisdiction, where they build new cabins for their residence with the help of the inhabitants of the place (Sagard, cited in Kinietz, 1965:84).

Hickerson, when describing the historical background of the Chippewa also indicates the effects of socio-political affairs on the settlement system and writes:

> The main reason Chippewa were able to move westward was a peace and alliance they had made with once hostile Siouan Dakota tribes living south and west of western Lake Superior . . . (1970:65-66).

Social and cultural factors similar to those cited have probably always exerted an influence on the settlement system of any region. Such influence, however, was probably minimal in terms of the long range subsistence strategy which is essentially responsible for establishing the general character of the settlement system for hunter-gatherers.

A third area which may complicate or distort a settlement model based on catchment zone analysis is the assumption that the variables constructed to measure the characteristics of the biophysical environment are an indirect measure of the resources utilized by the prehistoric economic system. This assumption affects the analysis of the catchment zone data in two ways. First, it raises the question of changing environment, a consistent objection to catchment analysis. Certainly, lumbering, farming, and industrial development have instituted vast changes in the natural environment. During the last century the large scale lumbering activities centered in the Upper Peninsula have drastically altered the flora and fauna. This fact cannot be changed. We are therefore left to choose between giving up in defeat or reconstructing the prehistoric environment as best we can and proceeding. Secondly, this assumption questions if it is possible for contemporary archaeology to evaluate and measure the natural environment in a manner which accurately reflects the prehistoric hunter-gatherers' view of their

natural surroundings. This is the same issue faced by archaeologists in establishing criteria for ceramic typology: Do ceramic types reflect a classification which parallels the cognitive patterns of potters. Such an issue opens an endless discussion for which there is no resolution. The most we can do is select environmental characteristics which affect resource potential and measure these as accurately as contemporary data permits.

Although catchment zone analysis rests on several underlying assumptions which can be questioned, it provides a reasonably objective method of understanding and comparing the distribution of sites in relation to the potential resource base and greatly facilitates the application of a wide range of non-archaeological empirical data to archaeological problems.

CHAPTER II

THE ENVIRONMENTAL SETTING

Physical Geography

The Menominee River Watershed covers an area of more than 4,500 square miles in the west central portion of Michigan's Upper Peninsula and the extreme northeast corner of Wisconsin. The watershed is approximately seventy-five miles wide at its broadest point and drains portions of the area located between R 26W and R 38W. The north/south axis of the watershed extends approximately 100 miles between T 49N and T 32N.

The headwaters of the Menominee River originate in the southeast portion of Baraga County. This is a low, marshy area drained by a system of first order streams and small lakes which eventually empty into the Peshekee River. The Peshekee River discharges into Lake Michigamme which is the largest inland lake within the watershed. Lake Michigamme is in turn drained by the Michigamme River which flows south to join the Brule River approximately three miles south of Peavy Pond. This confluence creates the Menominee River which then flows generally southeast and drains into Lake Michigan at the twin cities of Menominee, Michigan and Marinette, Wisconsin.

The terrain throughout most of the watershed is rugged and heavily wooded, although glacial outwash plains and riverine flood plains also occur. The topography is basically the result of Pleistocene

glacial advances which have carved extensive systems of ravines and canyons and created innumerable small lakes and ponds. Topographic relief within the Menominee River Watershed is approximately 1,295 feet. Surface elevations within the watershed generally decrease from north to south. However, the highest point in the watershed occurs just north of the Brule River at a point approximately five miles south of the city of Iron River, Michigan. Here, in the west central portion of the watershed, the land rises to 1,875 feet above sea level. The lowest point within the watershed is, of course, the level of Lake Michigan at 580 feet above sea level.

The Menominee River becomes a sixth order stream at its confluence with the Pine River and the watershed is thus a sixth order dendritic drainage system. Included in the watershed are approximately thirty-five lakes of one square mile or more in area.

The Menominee River has been extensively dammed by Wisconsin Michigan Power Company since the early part of this century. A series of nineteen hydro-electric dams on the Menominee, Michigamme, Brule, Paint and Sturgeon rivers has created more than 15,000 acres of reservoir. Two of the larger bodies of water within the watershed, Peavey Pond and the Michigamme Reservoir, owe their existence to dam construction. The resultant flooding of adjacent areas is a significant factor in an evaluation of the archaeological resources of the area. It is of course impossible to estimate the number of sites destroyed by dam construction and subsequent flooding of reservoirs. However, a survey of presently identified sites within the watershed indicates that fully a third of the locations are situated on land belonging to Wisconsin Michigan Power

Company. It is thus possible to assume that a similar number of archaeological sites have been permanently lost as a result of dam construction.

Geology

The geology of the Menominee River Watershed will be discussed in terms of the geologic history of the entire Upper Peninsula. Two considerations prompt this approach. First, a comprehensive survey of the geology of the watershed is beyond the scope of this dissertation. Due to the complexity and scope of the research involved, a survey of this nature would in itself provide sufficient material for a separate doctoral thesis. Secondly, due to the comparatively large size of the watershed and its centralized location within the Upper Peninsula, it is, in fact, a reflection of the overall geologic history of the Upper Peninsula.

The geological history of Michigan's Upper Peninsula begins with the Precambrian Era almost 3.5 billion years ago. The Precambrian was a period of time during which tremendous changes in the earth's surface occurred. During this era a series of geological stages marked by sedimentary deposition, crustal upheaval and volcanic activity occurred. These alternating periods of deposition and upheaval resulted in the formation of a complex underlying rock structure many layers thick. This structure, known as the Canadian Shield, forms the oldest stratigraphic deposit in the Upper Peninsula. Throughout most of the area now occupied by Michigan's Upper Peninsula these deposits have been compressed and altered by recrystalization to form the economically important mineral deposits of the region. By the end of the Precambrian

Era the Canadian Shield had been formed, recrystalized and uplifted and the process of erosion had begun. In many areas extensive folding and faulting had produced local mountain chains which rose noticeably from the remainder of the Precambrian surface.

Today, most of the Canadian Shield lies deeply buried beneath the Earth's surface. However, a large portion of this very old rock forms the underlying bedrock for northern Wisconsin and the western one-half of the Upper Peninsula. In many areas throughout this region, erosion has left the Precambrian rocks exposed and visible to the causal viewer.

The Paleozoic Era, a period of almost 400 million years, followed the Precambrian. During most of this era Michigan's Lower Peninsula and the eastern one-half of the Upper Peninsula were covered by a series of shallow seas. Sedimentary deposition on the floor of these seas resulted in the formation of sedimentary rocks containing an abundance of fossil materials. Interpretation of this fossil record makes possible the reconstruction of the geologic history of the period.

At the beginning of the Paleozoic Era a mountain belt of Precambrian origin extended across the central and southern portion of the Upper Peninsula. Streams flowing northward washed eroded sand and gravel from these mountains and deposited it on what is now the floor of Lake Superior and the northern shore of the eastern Upper Peninsula. While erosion was gradually wearing away these early Precambrian mountains, seas slowly began to invade the North American continent. The shores of these great seas eventually reached the Precambrian bedrock and sedimentary deposits of the Great Lakes Region. Wind and wave action at the shores of these seas eventually built up massive deposits.

Today this Paleozoic deposit is known as Chapel Rock Sandstone or the Munising Formation and is visible along the south central section of the Lake Superior shore. The Paleozoic seas persisted into Ordovician times, completely inundating Michigan with the exception of portions of the Upper Peninsula. The Ordovician Era gave way to the Silurian Era, marked in Michigan by a series of extensive sedimentary deposits. These deposits lie in an east/west band across the eastern one-half of the Upper Peninsula and form the region's underlying bedrock. These deposits are known as Bass Island, Salina, Manistique, Burnt Bluff and Cataract.

The Silurian Period was followed by a period of nondeposition over much of the North American continent. Eventually, however, seas once more rose and invaded the land. These new seas were extensive in area, covering most of the eastern United States. The water advanced slowly, reaching and eventually covering most of the Lower Peninsula of Michigan. However, current evidence indicates that the shores of these seas never reached the Upper Peninsula. The same evidence suggests that the periods of major deposition in the Upper Peninsula were completed during the Silurian. If additional deposits were formed in the Upper Peninsula they are no longer represented in the geologic record.

From the end of the Silurian up to the beginning of the final stage of the Pleistocene, the geologic record of Michigan's Upper Peninsula is incomplete. Glacial drift from the last Pleistocene ice advance lies directly on the Precambrian bedrock and the sedimentary deposits of the Paleozoic Era. Rocks from the Mesozoic and Cenozoic

are missing in the Upper Peninsula although they do occur in a small portion of the central Lower Peninsula.

Sometime between one and two million years ago, the warm climate which had been generally prevalent began to cool. The warmer climate of earlier epochs was gradually replaced by colder, more rigorous weather. This climatic reversal marks the beginning of the last major geologic epoch, the Pleistocene. The Pleistocene comprised a series of worldwide climatic variations including at least four periods of extensive glaciation. These periods of colder weather were separated by at least three warmer periods marked by glacial retreat. The glacial advances which intermittently buried what is now the State of Michigan under as much as 10,000 feet of ice are, in sequential order: the Nebraskan; the Kansan; the Illinoian; the Wisconsin. Although the geologic record in Michigan provides evidence of only the Wisconsin stage, the glacial deposits from earlier stages have been found in Ohio and Indiana. It is thus reasonable to assume that earlier advances also covered the Michigan area.

The advance and retreat of the ice did much to alter the landscape of Michigan and the entire Great Lakes Region. The glaciers advanced in a general north/south direction following the path of least resistance along existing valleys and streams. As the ice moved it scraped, gouged and scratched the existing surface, modified landforms and transported and deposited soil and rock. Present day surface features in the Great Lakes area are thus a direct result of this glacial abrasion and deposition.

During the earlier sub-stages of the Wisconsin glaciation, all of Michigan lay buried beneath the Pleistocene ice sheet. It was not

until the Tazewell Stadial which occurred near the end of the Wisconsin's third sub-stage that the ice sheet diminished and began to retreat northward. The area comprising present day Michigan was, however, not exposed until the following sub-stage known as the Cary. The Cary began approximately 16,000 years ago and lasted until 13,500 B.P. This was a period of general ice retreat incorporating minor readvances and short periods of glacial stasis. It was during this period that many of the recessional moraines found in present day Michigan were formed.

The earliest morainic system of Cary age is the Valparaiso. This system along with the Tinley and Lake Border Systems marks the southern rim of Lake Michigan. Farther north and slightly younger, the Port Huron moraine can be traced from Minnesota through Michigan and into New York state. In northeastern Indiana and southeastern Michigan, another series of morainic systems is concentrated in the western end of Lake Erie. These systems include the Mississ-newa, Fort Wayne and Defiance moraines.

The Cary was followed by the Two Creeks Interstadial, (Broecker and Farrand, 1963; Black, 1970) an extremely important period in the geochronology of the Great Lakes region. This was a period which incorporated a gradual retreat of the ice and subsequent growth of spruce, pine and birch forests. The forests flourished for several hundred years until readvance of the ice inundated the area through glacial ponding. Continued advance of the ice sheet then sheared off the trees and laid over in the direction of ice movement. The trees were subsequently buried and thus preserved beneath glacial till. Present day erosion of the Lake Michigan shoreline exposed portions of

this prehistoric forest allowing collection of C-14 datable samples. Results of extensive C-14 testing indicate that the Two Creeks interval lasted approximately 1,000 years and ended a little less than 12,000 years ago.

This event, known as the Valders stadial, was identified in 1943 and named for the area in northeast Wisconsin where the type till occurred. More recent research, (Farrand and Eschman, 1976), suggests that this reddish Valders drift is actually a pre-Two Creekan phenomenon. This interpretation has led to the proposal of the time-stratigraphic term, "Great-Lakean" as a replacement for Valderan. Similarly the type Valders till would be reassigned to the Two Rivers till group. Ongoing research will certainly resolve this issue in the near future and lead to general acceptance of a uniform terminology. Since, however, the argument at present is primarily one of nomenclature, this discussion will continue to utilize the conventional explanation of the glacial sequence during the period known as the Valders stadial. During this period, ice following the Lake Michigan basin advanced southward, covering the Upper Peninsula as well as the northern half of the Lower Peninsula. Glacial drift from this period carried red silt and clay from bottom sediments of Lake Superior and Precambrian iron formations of the western Upper Peninsula. This suggests that at least portions of the Lake Superior basin had been free of ice during the Two Creeks interval. Maximum expansion of the ice during the Two Creeks Interstadial occurred about 11,800 years ago and was followed by a gradual retreat punctuated by a series of minor ice recessions and advances.

Recent evidence suggests that an event similar in nature to the Two Creeks episode occurred in the Upper Peninsula a little less than 10,000 years ago (personal communication with John D. Hughes). Black Spruce and Tamarack trees were found embedded in glacial-lacustrine deposits, southwest of Marquette, Michigan during construction of a tailings basin. A United States Forest Service date of 9,850 $\pm$ 300 B.P. (W3866) was obtained from wood and forest floor samples taken from the site. Geological evidence indicates that ponding caused by glacial readvance halted the growth of the trees and preserved them beneath layers of lacustrine sediments and glacial outwash. This suggests that the greater portion of the Upper Peninsula was ice-free by approximately 9,700 B.P.

During this period the whole of Michigan's Lower Peninsula and the Straits of Mackinac were left ice free. Thus, although it is impossible to state with certainty, it appears that gradual warming of the climate left the whole of Michigan free of ice by 10,000 to 9,500 years ago.

About 9,500 years ago Glacial Lake Houghton occupied the Lake Superior basin. The Lake Michigan basin contained Glacial Lake Chippewa which discharged into Glacial Lake Stanley in the Lake Huron basin. The three lakes then discharged via the North Bay outlet into a salty embayment known as the Saint Lawrence Sea.

Following the final retreat of the ice from the Lake Superior basin the North Bay outlet began to rise as a consequence of crustal rebound. Approximately 4,500 years ago the North Bay outlet was raised to 605 feet above sea level, the level of the Port Huron and Chicago outlets. These three outlets created and maintained the

Nipissing Great Lakes. Nipissing beaches are found in the Upper Peninsula at elevations of 605 and 625 feet above sea level. Within the Menominee River Watershed, however, Nipissing related features are found only at 605 foot elevations.

The Nipissing Great Lakes endured until about 3,500 years ago when continued crustal rebound caused the abandonment of the North Bay outlet. Likewise, the Chicago outlet was also abandoned when more rapid downcutting of the Port Huron outlet caused lake levels to fall below the elevation of the Chicago sill. Present day Lake Michigan and Lake Huron thus came into being and their combined discharge began to flow through the St. Clair River.

Following the creation of Lake Michigan and Lake Huron, Lake Superior was separated from Lake Huron by continued crustal rebound and falling water levels in Lakes Michigan and Huron. Thus, the present day Great Lakes have existed with only minor fluctuations in water level for approximately 2,500 years.

Climate

The Menominee River Watershed is located within the Canadian Biotic Province and its basically northern temperate climate. Latitudinal position is primarily responsible for determining the amount of solar insulation received by a particular region. This in turn defines the general climatic limits of that region. Climatic variations within the Menominee River Watershed can be ascribed to ameliorating effects of proximity to Lake Michigan and to variations in surface elevation in different areas of the watershed. By far the most important determinant of climatic conditions within the watershed is the influence of

Lake Michigan. In fact, throughout Michigan's Upper Peninsula in general, localized climate is largely the result of the influence of the Great Lakes.

The effect of Lake Michigan is such that in spring the cooler lake temperature acts to retard the growth of vegetation, thereby lessening the danger of damage from late frosts. In the Fall, warmer lake temperatures delay extreme cold weather until crops have matured. Thus, within a 2.5 to 3 mile zone roughly paralleling the shore of Lake Michigan, the growing season can be as much as 140 days in length. This decreases to less than 90 frost free days in the extreme west central portion of the watershed. This suggests that in terms of prehistoric horticulture, successful cultivation of relatively slow maturing cultigens such as corn, would be possible only in the southernmost portions of the watershed. Even here, within this "banana belt" of generally milder climatic conditions, prehistoric farmers would have only minimal assurance of year to year harvests.

Rainfall within the Menominee River Watershed avarages 31.5 inches per year and is generally heaviest in the interior. Annual rainfall ranges from 29 inches per year in the southern portion of the watershed to 34 inches per year in the landlocked northwest corner of the watershed.

Annual snowfall averages 85 inches per year with interior areas of the watershed experiencing the heaviest precipitation. From a low of 50 inches per year in the southernmost parts of the watershed, annual snowfall increases to 120 inches per year in the northwest corner of the watershed.

Flora

The generally humid climate of the Menominee River Watershed is also responsible for the wide range of plant life found throughout the region. The species composition of the original or late prehistoric forests of the watershed was essentially similar to present day forests in the same area (Veatch, 1959). The northern half of the watershed contained large tracts of pine barrens mixed with wet and dry land forests. The southern half of the watershed was dominated by extensive cedar swamps and stands of mixed hardwoods and conifers.

The original geographic distribution of the various forest types has, however, been altered by several factors. First extensive logging operations in the early part of this century virtually eliminated the great stands of white pine once found throughout the watershed. Secondly, residential, commercial and industrial development along major streams has necessitated the draining and filling of many wetland areas. A third contributing factor was the development of hydro-electric power and the resulting alteration of stream flow and drainage patterns.

Present day forests within the Menominee River Watershed are broadly classifiable into six categories; xeric, mesic, wetland, boreal, pine barren and sphagnum bog. Xeric forests occur in the drier regions of the watershed and typically contain jack pine, red pine and white pine, as well as red maple, oak and trembling aspen. Mesic forests are found in areas of moderate moisture and generally include sugar maple, hemlock, beech, yellow birch, elm and basswood. In lowland areas throughout the watershed, wetland forests of black spruce, tamarack and northern white cedar occur. These forests commonly provide winter yards for

whitetail deer. Boreal forest communities are found in the colder regions of the watershed and are characterized by balsam fir and white spruce. Occasionally white birch and aspen are also found in these forests. Pine barrens, in which jack pine is most common, are widely scattered throughout the watershed and also support ground cover vegetation of sweet ferns, blueberries and cherries. Spaghnum bogs, found in poorly drained areas, provide various types of wild food including labrador tea and cranberries.

Fauna

Although it is not possible to accurately map the species distribution of wild animals, species are associated with particular micro-environments. In the following tables, species endemic to the pre-contact Menominee River Watershed are listed with both common and scientific names and a generalized description of their preferred habitat.

Mammal

Among the fifty-six species of mammals reported from the Menominee River Watershed are four of North America's largest ungulates. Of these the white-tail deer was probably always more common than either the moose or elk. Woodland caribou probably represented an erratic seasonal resource as the Menominee River Watershed lies on the southern periphery of caribou migration routes (Cahalane, 1961). Black bear, important for its heavy coat and fatty meat, was widely distributed throughout the wooded swampy portions of the watershed. Smaller mammals such as rabbit, squirrel and beaver were also widely dispersed and generally available year round. Table 2 lists the mammals found within

Table 2.--Potentially Available Mammals.

Common Name	Scientific Name	Habitat
Starnose Mole	Condylura cristat	swamps, bogs, wet meadows
Masked Shrew	Sorex cinereus	bushy, grassy swamps
Arctic Shrew	Sorex arcticus	tamarack and spruce swamps
Northern Water Shrew	Sorex Palustris	small streams low bogs
Pygmy Shrew	Microsorex hoyi	wooded areas
Shorttail Shrew	Blarina brevicavda	heavy forests
Little Brown Myotis	Myotis lucifugus	hollow trees
Keen Myotis	Myotis keeni	forested areas
Silver haried bat	Lasionycteris noctiuagans	forested areas
Big Brown Bat	Eptesicus fuscus	trees, caves
Red Bat	Lasiurus borealis	wooded areas
Hoary Bat	Lasiurus cinereus	wooded areas
Black Bear	Ursus americanus	wooded areas and swamps
Raccoon	Procyon lotor	wooded areas along water
Shorttail weasel	Mustela erminea	woodlands
Longtail weasel	Mustela frenata	forests, brushland near water
Least Weasel	Mustela rixosa	meadows, fields
Mink	Mustela vison	wooded streams
River Otter	Lutra canadensis	along streams and lakes
Badger	Taxidea taxus	open grassland
Striped Skunk	Mephitis mephitis	semi open country near water
Red Fox	Vulpes fulva	broke woodlands
Gray Fox	Urocyon cinereoargenteus	forests and open brushland
Coyote	Canis latrans	open country
Gray Wolf	Canis lupus	forested regions
Lynx	Lynx canadensis	heavey forests
Bobcat	Lynx rufus	swamps
Woodchuck	Marmota monax	forests, heavy brush
Thirteen Lined Ground Squirrel	Citellus tridecemlineatus	open grassland
Least Chipmunk	Eutamias minimus	cedar, spruce, hemlock forests
Eastern Chipmunk	Tamias striatus	hardwood forests
Red Squirrel	Tamiasciurus hudsonicus	coniferous forests
Eastern Gray Squirrel	Scivrus carolinensis	large hardwoods
Southern Flying Squirrel	Glaucomys volans	wooded areas

Table 2.--Continued.

Common Name	Scientific Name	Habitat
Northern Flying Squirrel	Glaucomys savrinus	wooded areas
Beaver	Castor canadensis	wooded streams and lakes
Prairie Deer Mouse	Peromyscus maniculatos bairdi	open, dry, grass-lands
Woodland Dear Mouse	Peromyscus maniculatus gracilis	forested areas
White-footed Mouse	Peromyscus leucopus	forested areas
Southern Bog Lemming	Synaptomys cooperi	damp bogs, meadows
Bored Redback Vole	Clethrionomys gopperi	hardwood forests, con. swamp
Meadow Vole	Microtus pennsylvanicus	low wetlands
Muskrat	Ordatra zibethica	marshes, ponds, lake
Meadow Jumping Mouse	Zapus hudsonios	low meadows
Woodland Jumping Mouse	Napaeozapus insignis	forests
Porcupine	Erethizon dorsatum	forests
Snowshoe Hare	Lepus americanus	spruce and cedar swamps
Eastern Cottontail	Sylvilagus floridanus	brushy areas
Elk	Cervus caradensis	forests open meadows
Whitetail deer	Odocoileus virginianus	forest borders
Moose	Alces alces	forested, swampy areas
Woodland Caribou	Rangifer caribou	forests, upland bogs
Wolverine	Gulo luscus	boreal forests
Mountain Lion	Felis canolor	forests
Marten	Martes americanus	dense, conifer forests
Fisher	Martes pennanti	woodlands

the Menominee River Watershed. This list is summarized from Mammals of North America (Cahalane, 1961), Mammals of the Great Lakes Regions (Burt, 1972) and Mammals of Michigan (Burt, 1946).

Birds

At least forty-eight species of birds are known from the Menominee River Watershed. Probably most important to pre-historic inhabitants were the migratory waterfowl such as ducks and geese. Spruce grouse, ruffer grouse and the now extinct passenger pigeon also provided ready food sources to pre-historic hunters/gatherers. Table 3 provides a list of forty-eight species of birds recorded from the Menominee River Watershed. This list was compiled with the aid of the Checklist of the Birds of Michigan (VanTyne, 1938).

Fish

A minimum of eighty-two species of fish are widely distributed within the Menominee River Watershed. Anadromous varieties are represented by lake trout, rock strugeon and sucker. Many species such as perch, northern pike and chubs are available year round thus constituting an important standby resource. Table 4 records the variety of fish reported from the Menominee River Watershed and their habitat. This list was summarized from the Guide to the Fishes of the Great Lakes and Tributary Waters (Hubbs and Ragler, 1941).

Reptiles and Amphibians

Of the twenty-one species included in this faunal group, it is likely that only turtles and large frogs constituted a significant addition to the pre-historic diet. The remaining species were probably

Table 3.--Birds.

Common Name	Scientific Name	Habitat
Common Loon	Gavia immer	aquatic
Pied-billed Grebe	Podilymbus podiceps	aquatic
Double-crested Cormorant	Phalacrocorar auritus	coastal
Trumpeter Swan	Olor buccinator	lakes
Canada Goose	Branta canadensis	coastal
Mallard Duck	Anas platyrhychos	aquatic
Red-tailed Hawk	Buteo jamaicensis	woodlands
Red-shouldered Hawk	Buteo lineatus	heavey wet forests
Broad-winged Hawk	Buteo platypterus	woodlands
Osprey	Pardion haliaetus	coastal, or near water
Sparrow Hawk	Falco sparverius	open country
Spruce Grouse	Canachites canadensis	conifer forests
Ruffed Grouse	Bonasa umbellus	woodlands-uplands
Willow Ptarmigan	Lagopus lagopus	deep thickets
Bobwhite	Colinus virginianus	Brushland
Great Blue Heron	Ardea herodias	aquatic
American Brittern	Botauros lentiginosus	swamps
American Coot	Fulica americana	marshes
American Woodcock	Philohela minor	bogs and swamps
Ring-billed Gull	Larus delawrensis	coastal
Pigeon	Columba livia	general
Mourning Dove	Zenaidura macrovra	brushland
Passenger Pigeon	Extopistes migratorius	general
Screech Owl	Otus asio	light woodlands
Great Horned Owl	Bubo virginianus	confiers forests
Short-eared Owl	Asio flammeus	open areas
Whip-poor-will	Caprimulgus vociferous	forest edge
Ruby-throated Hummingbird	Archilochus cdubris	light woods
Yellow-shafted Flicker	Colaptes auratus	open country
Hairy Woodpecker	Denrocopos villosus	forests
Downy Woodpecker	Dendrocopos pubescens	forests
Eastern Phoebe	Sayornis phoebe	rocky cliffs
Barn Shallow	Hirundo rustica	rocky cliffs
Blue Jay	Cganocitta cristata	forests
Common Crow	Corvus bracyrhychas	general
Blackcapped Chickadee	Parus atricapillus	woodlands
White Breasted Nuthatch	Silta carolinensis	hardwoods
House Wren	Troglodytes aedon	Brushland
Robin	Turdus migratorius	general
Eastern Bluebird	Sialia sialis	woodlands
Red-eyed Vireo	Vireo olivaceus	woodlands
American Restart	Setophaga ruticilla	hardwoods
Red-winged Blackbird	Agelaius phoeniceus	marshes
Baltimore Oriole	Lcterus galbula	light woodlands
Evening Grosbeck	Hesperiphona vespertina	conifers

Table 3.--Continued

Common Name	Scientific Name	Habitat
Slate-colored Junco	Junco hyemalis	brushland
White-throated Sparrow	Zonotrichia albicollis	brushland
Bald Eagle	Haljaeetus levcocepholus	near large bodies of water

Table 4.--Fish.

Common Name	Scientific Name	Habitat
Silver Lamprey	Lehthyomyzon unicuspis	large lakes and rivers
Michigan Brook Lamprey	Lehthyomyzon fossor	large lakes and rivers
Chestnut Lampry	Lehtyomyzon castaneus	Lake Michigan and tributaries
American Brook Lamprey	Entosphenus lamotenii	creeks
Rock Sturgeon	Acipenser fulvescens	large lakes and rivers
Spotted Gar	Lepisostesu productus	Lake Michigan drainage
Northern Longnose Gar	Lepisosteus osseus	Great Lakes except Superior
Bowfir	Amia calva	lakes, rivers swamps
Lake Herring	Leucichthys artedi	Lake Michigan
Clear Lake Cisco	Leucichthys artedi	Lake Michigan and tributaries
Michigan Shortnose Chub	Leucichthys reighardi	Lake Michigan
Shortjaw Chub	Leucichthys zenithicus	Lake Michigan
Longjaw Chub	Leucichthys alpenae	Lake Michigan
Great Lakes Bloater	Leucicthys hoyi	Lake Michigan
Deepwater Chub	Leucichthys johannae	Lake Michigan
Michigan Kiyi	Leucichthys kiyi	Lake Michigan
Michigan Blackfin	Leucichthys nigripinnis	Lake Michigan
Great Lakes Whitefish	Coregonus clupea formis	Lake Michigan
Common Menominee Whitefish	Prosopium cylindraceum	Lake Michigan
Common Brook Trout	Salvelinus fontinalis	colder lakes and streams
Common Lake Trout	Cristivomer namaycush	Lake Michigan and tributaries
Common White Sucker	Catostomus commersonnii	lakes and streams
Greater Redhorse	Moxostoma duquesnii	rivers
Golden Redhorse	Moxostoma erythrurum	rivers
Silver Redhorse	Mosostomannisurum	lakes and rivers
Northern Redhorse	Moxostoma auredum	lakes
Northern Creek Chub	Semotilus atromaculatus	creeks
Northern Pearl Dace	Margariscus margarita	lakes, bogs
Lake Northern Chub	Couesius plumbeus	Lake Michigan
Hornyhead Chub	Nocomis bigottatus	creeks
Western Blacknose Dace	Rhinichthys atratulus	tributaries
Great Lake Longnose Dace	Rhinichthys cataractae	shore of Lake Michigan
Western Golden Shiner	Notemigonos crysoleucas	lakes
Lake Emerald Shiner	Notropis atherinoides	Lake Michigan
Northern Common Shiner	Notropis cornutus	creeks and lakes
Blackchin Shiner	Notropis heterodon	lakes
Spotfin Shiner	Notropis spilopterus	lakes and streams

Table 4.--Continued.

Common Name	Scientific Name	Habitat
Northern Mimic Shiner	Notropis vollucellus	lakes and creeks
Northern Blacknose Shiner	Notropis heterolepis	glacial lakes
Pugnose Shiner	Notropis anogenus	lakes
Brassy Minnow	Hybognathus hankinsoni	bog waters
Northern Fathead Minnow	Pimephales promelas	boggy lakes
Largescale Stoneroller	Campostoma anomalum	creeks and rivers
Northern Channel Catfish	Lctalvrus lacustris	lakes and large rivers
Northern Black Bullhead	Ameivrus melas	ponds and sloughs
Northern Brown Bullhead	Ameivrus nebulosus	lakes and rivers
Northern Yellow Bullhead	Amerivrus natalis	rivers
Shovelhead Catfish	Pilodictis olivaris	large rivers
Tadpole Madtom	Schilbeodes gyrinus	weedy streams
Western Mudminnow	Umbra limi	spring fed pools
Northern Pike	Esox lucius	lakes and rivers
Great Lakes Muskellunge	Esox masquinongy	lakes
Western Banded Killifish	Fundulus diaphanus	shallow lakes
Troutperch	Percopsis omiscomaycus	Lake Michigan and tributaries
White Bass	Lepiboma chrysops	larger lakes and rivers
Yellow Perch	Perca flavescens	lakes and ponds
Eastern Sauger	Stizostedion canadense	rivers and lakes
Yellow Pike perch	Stizotedion uitreum	Lake Michigan and tributaries
Blackside Darter	Hadropterus maculatos	streams
Northern Logperch	Percina caprodes	lakes and streams
Scaly Johnny Darter	Boleosoma nigrum	weedy lakes
Central Johnny Darter	Boleosoma nigrum	sandy lakes
Iowa Darter	Poecilichthys exilis	lakes and streams
Striped Fantail	Catonotus flabellaris	small streams
Northern Least Darter	Microperca microperca	lakes and streams
Northern Smallmouth Bass	Micropterus dolomieu	lakes and streams
Largemouth Bass	Huro samoides	lakes and ponds
Green Sunfish	Lepomis cyanellus	lakes and ponds
Pumpkinseed	Leopmis gibbosus	lakes and ponds
Common Bluegill	Leopmis macrochirus	lakes and ponds
Northern Rock Bass	Amboplites rupestris	lakes and streams
Black Carppie	Promoxis nigro-maculatus	streams and ponds
Freshwater Sheepshead	Apodinctus grunniens	large rivers and lakes
Deepwater Sculpin	Triglopsis thompsonii	Lake Michigan
Spoonhead Muddler	Cottus ricei	Lake Michigan
Great Lakes Muddler	Cottus bairdi	Lake Michigan
Slimy Muddler	Cottus cognatus	streams and lakes
Brook Stickleback	Eucalia inconstans	boggy lakes and streams
Ninespine Stickleback	Pungitius pungitius	Lake Michigan
Eastern Burbot	Lota lota	lakes and streams

utilized on a more casual and sporadic basis. A list of reptiles and amphibians found within the Menominee River Watershed is presented in Table 5. This list was summarized from Herpetology of Michigan (Ruthuen, 1928).

Table 5.--Reptiles and Amphibians.

Common Name	Scientific Name	Habitat
Mudpuppy	Nocturus maculosus	aquatic
Newt	Triurus viridescens	aquatic
Jeffersons Salamander	Ambystoma jeffersonianum	aquatic
Spotted Salamander	Ambystoma maculatum	terrestrial
Red-backed Salamander	Plethodon cinereus	terrestrial
American Toad	Bufo americanus	general
Swamp Tree-toad	Pseudacris triseriata	marshes
Spring Peeper	Hyla crucifer	marshes
Common Tree Toad	Hyla versicolor	trees and bushes
Wood Frog	Rana cantabrigensis	woodlands
Green Frog	Rana clamitans	aquatic
Leopard Frog	Rana pipiens	along streams-fields
Mink Frog	Rana soptentrionalis	aquatic
Green Snake	Liopeltis vernalis	open dry land
Fox Snake	Elaphe vulpina	grasslands
Red-bellied Snake	Storeria occipito maculata	woodlands
Common Garter Snake	Thamnophis sirtalis	general, near water
Snapping Turtle	Chelydra sorpentina	lakes, ponds, large streams
Bells Turtle	Chrysemys belli	lakes and ponds
Painted Turtle	Chrysemys picta	lakes and ponds

Summary

In general, an environmental overview of the Menominee River Watershed suggests that its diverse micro-environments probably provided a variety of subsistence choices to prehistoric hunter/gatherers. Prehistoric settlement patterns should reflect this enormous variability as they respond to resource use choices based on seasonal availability of specific resources.

Seasonally abundant resources were complemented by the year round availability of many species of animals and fish. In the southern portion of the watershed the less rigorous climate would have allowed the practice of primitive horticulture. Emerging sedentism was probably also confined to the southern reaches of the watershed, specifically to areas adjacent to the mouth of the Menominee River.

CHAPTER III

FIELD TECHNIQUES

Geographical Factors

The Menominee River basin drains approximately 4,500 square miles of heavily wooded land. Most of this area was extensively logged during the latter part of the nineteenth century and early part of the twentieth century. As a result much of the forested land is a dense tangle of secondary forest growth dominated by birch, maple, and poplar. Within this forested area, the ground surface is obscured by a dense covering of ferns, grasses, wild berries, mosses, leaves, etc. Little of this land has been cleared for farming or commercial development. Cleared land is essentially limited to the lower portion of the watershed, where there is a higher population density and longer growing season. Open areas, however, quickly disappear as you travel upstream from the mouth of the Menominee River at Menominee and Marinette. As developed land is replaced by forested tracts, there is a corresponding decrease in the number of state, county, and township roads. While much of the lower one-third of the drainage basin is therefore accessible by car or truck, this accessibility is greatly reduced upstream, away from the more populated regions of the watershed. North of the city of Iron Mountain many regions are accessible, only by frequently overgrown

former logging roads, canoe, or foot. These characteristics of the Menominee River Watershed: dense forest, obscured ground surface, minimal cleared land, and difficult access create a challenge for the archaeologist who attempts an extensive site survey.

Sampling

A survey of the entire drainage basin was obviously an impossibility, given the size of the watershed, and the difficulties of surveying a densely wooded and undeveloped environment. In the past, archaeologists have tended to concentrate survey work in those areas which appear likely to produce the greatest quantitative results. If this procedure had been followed in the Menominee River Watershed, a survey of the banks of the lower Menominee River as well as confluence areas and portage areas throughout the watershed would probably have located a number of relatively large sites and recovered a sufficient number of diagnostic artifacts to allow identification of the cultural traditions represented at these sites. This data, however, could not have been considered typical or representative of the entire watershed. Binford (1964:434-36), Clarke (1968:549-51), Plog (1968:13-17) and Mueller (1974) are among those who have emphasized the importance of utilizing objective sampling techniques in archaeological research to eliminate collector bias, and to obtain an analytically representative sample.

In order to avoid such bias and insure that the site survey data from the Menominee River Watershed could be considered a representative sample of sites in the entire watershed, it was necessary to adopt objective sampling procedures. Sampling, however, posed a problem

in this survey. Earlier surveys in the Upper Peninsula (Franzen and Weston, 1973; Franzer, 1975; Bigony, n.d.) indicate prehistoric sites simply do not occur with great frequency. Objective sampling procedures often result in considerable field research with very little data recovered; utilizing such sampling procedures in an area of low site density seemed likely to result in a maximum amount of energy expenditure and minimal data recovery. The problem, therefore, was to design a sampling procedure which would provide both a reliable and unbiased sample and a sufficient amount of data with which to approach problems of settlement patterning.

A major consideration in utilizing any survey procedures for the Menominee River Watershed would be locating as many sites as possible in order to obtain an adequate analytical sample. The initial decision, therefore, in developing a survey strategy for this area was to concentrate the survey in those areas which appeared to have the greatest potential for providing the necessary data. Hickerson (1970), Rogers (1962), Kinietz (1965), McPherron (1967), Brose (1970), and Janzen (1968) are among those who indicate, in the ethnographic and archaeological data from the Upper Great Lakes and adjacent areas, that aquatic resources played an important role in the Late and Middle Woodland period. Assuming this to be true of the Menominee River Watershed, it seemed probable that the greatest site density would be in those areas adjacent to the Menominee River and its tributaries. In addition to providing abundant resources, the river system would also have facilitated travel. The Menominee River Watershed connects Lake Michigan with the more interior regions of the Upper Peninsula which extend northward to within fifteen miles of Lake Superior. The Menominee River and its

tributaries could thus provide a major north/south inland waterway connecting Lake Superior and Lake Michigan. With transportation and resource potential concentrated along the banks of river systems, it seemed probable that focusing the survey in this area would yield the necessary quantitative results.

Although focusing the initial survey on the areas immediately adjacent to the river system greatly reduced the size of the area to be surveyed, surveying the thousands of miles of river bank within the watershed was also impossible given the financial constraints of the survey. A system of objective sampling for the river banks was planned. This plan involved establishing the stream order for each of the tributaries using the system of hierarchical ordering developed by Strahler:

> Given a map of a complete stream channel network, we can subdivide the network into individual lengths of channel, or channel segments, according to a hierarchy of orders of magnitude, assigning a sequence of numbers to the orders. . . . Each finger tip channel is designated as a segment of the first order. At the junction of any two first order segments, a channel of the second order is produced and extends down to the point where it joins another second order channel, whereupon a segment of third order results, and so forth. However, should a segment of the first order join a second- or third-order segment, no increase in order occurs at that point of junction. The trunk stream of any watershed bears the highest order number of the entire system (1965:483).

After identifying the correct order for each of the tributaries, all the channel segments of each order were sequentially numbered. A table of random numbers was then used to select a 20 percent sample from each group of similarly ranked streams. Those streams selected as part of the sample were to be intensively surveyed.

Implementing this procedure in the field, however, proved to be overly cumbersome and time consuming. The inaccessibility of most first, second, and third order streams as well as many of the fourth

order and fifth order streams resulted in an extremely inefficient use of time as trained survey personnel spent most of each day attempting to reach their established destinations. Within the first week of the field season it became painfully obvious that continuing this procedure would be inefficient.

The survey procedure was therefore altered to better accommodate the restraints of the physical environment. Utilizing a 1:250,000 USGS topographic map composite of the watershed with each stream entering the Menominee River, the sixth order trunk stream was identified. These streams were then sequentially listed and numbered in order, beginning at the mouth of the Menominee River. Using a table of random numbers, a sample of 20 percent was selected from this list to be surveyed. Table 6 provides a list of all the streams which empty directly into the Menominee River, identifies their order, and indicates which streams were surveyed. If selected as part of this sample, the stream as well as its tributaries was surveyed. After reaching the stream a survey team could simply follow the stream and its tributaries until completing the survey. Many first, second, or third order tributaries could be easily located and surveyed while surveying the main stream. Surveying the entire stream system greatly increased the efficiency of the field crew. Many of the third and fourth order streams were navigable, and the survey procedures were further simplified by using a canoe to reach many otherwise more inaccessible areas.

The Menominee River, the sixth order trunk stream, posed a slightly different sampling problem which could not be solved using the procedure developed for the tributaries. To obtain an objective survey sample of the river bank adjacent to the main stream, it was decided to

Table 6[a].--Streams Entering the Menominee River.

	Stream	Order	Surveyed
1.	Little River	third	no
2.	----------	first	no
3.	Twin Creek	third	no
4.	Little Cedar River	fourth	yes
5.	Phillips Creek	first	no
6.	----------	first	no
7.	----------	first	no
8.	Wausaukee River	third	no
9.	Wolf Creek	first	no
10.	Shakey River	second	yes
11.	Holmes Creek	second	no
12.	Pike River	fourth	no
13.	Squaw Creek	first	no
14.	Coldwater Creek	first	no
15.	----------	first	yes
16.	Mescauno Creek	second	no
17.	----------	second	no
18.	Pemene Creek	second	yes
19.	Peme Brook	second	yes
20.	Pemebonwon River	second	no
21.	----------	first	no
22.	----------	first	no
23.	Harter Creek	second	no
24.	----------	second	no
25.	Sturgeon River	fourth	no
26.	----------	first	yes
27.	Little Popple River	second	no
28.	Pine River	fifth	no
29.	----------	first	no
30.	----------	second	yes
31.	----------	first	no
32.	----------	first	no
33.	----------	first	no
34.	----------	first	no
35.	Brule River	fifth	yes
36.	Michigamme	fourth	yes

[a]Many first and second order streams were not identified by name on the U.S.G.S. maps used to complete this list. The unidentified streams are represented in this table by a dotted line.

divide the stream and its adjacent banks into sections from which a 20 percent random sample could then be selected and surveyed. Division of the main stream and its adjacent banks was facilitated by the original northwest territory survey which was inaugurated in 1784. This survey established a grid of north and south meridian lines and a series of east and west lines at right angles to the meridians. These grid lines are located at six mile intervals, thus creating a system of townships. In theory each township would be six miles square. Although converging meridians make the system mathematically impossible, an elaborate system of correction factors was worked out to provide as many regular townships as possible.[1] A 1:250,000 USGS map composite of the Menominee River watershed was used to identify the forty-four townships in both Michigan and Wisconsin which border the river channel. The east side of the river is bounded by twenty Michigan townships. An additional twenty-four Wisconsin townships border the west bank of the river. Frequently only a very short segment of river channel adjoins the east or west boundary of a township. This is primarily a result of the irregular river channel and a number of adjustments or corrections made in both Michigan and Wisconsin to correct for the convergence of the meridians. All townships, however, no matter how small the segment of river channel adjacent to them, were identified, listed, sequentially numbered, and included in the universe from which the 20 percent sample was drawn. A table of random numbers was used to select the nine townships which constituted the 20 percent sample of this universe. The

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[1]A detailed description of the principles and procedures as well as the system of corrections used to survey the northwest territory can be found in Elementary Surveying by Russell C. Brink.

banks of the Menominee River in each of these nine townships were then intensively surveyed. Table 7 lists the townships from which the sample was drawn and identifies the nine townships selected to be surveyed.

Although these survey procedures allowed a reasonably unbiased sample of the river bank and immediately adjacent land along the Menominee River and its tributaries to be surveyed, it is readily apparent this sampling procedure has a built-in bias. That is, only those sites situated along the fluvial system would be located. In order to investigate the possibility of sites being located in areas other than those adjacent to the river system it was necessary to supplement these survey procedures. In order to expand the survey and obtain an objective sample, the survey relied on the original land survey which constructed a grid of range and township lines which created a series of townships, each containing thirty-six square miles. The Menominee River Watershed encompasses 134 townships. These townships were identified and sequentially numbered beginning in the northwest corner of the survey region and working from left to right. Using a table of random numbers, a sample of 5 percent or seven townships was selected to be surveyed. All of the land within these seven townships was surveyed. A total of 252 square miles were surveyed as part of this sampling procedure.

Survey Methodology

The present study was organized and initiated during the fall of 1972. At that time work began on defining and identifying the river system and developing the sampling procedure. The field survey was

Table 7.--Townships Bordering the Menominee River.

Township	Surveyed
T.32N.R.27W.	yes
T.33N.R.28W.	no
T.33N.R.27W.	yes
T.34N.R.27W.	yes
T.35N.R.27W.	no
T.35N.R.28W.	no
T.34N.R.28W.	no
T.34N.R.29W.	no
T.35N.R.29W.	yes
T.36N.R.28W.	no
T.37N.R.28W.	yes
T.38N.R.28W.	no
T.38N.R.29W.	no
T.39N.R.28W.	no
T.39N.R.29W.	no
T.39N.R.30W.	no
T.40N.R.30W.	yes
T.41N.R.30W.	no
T.41N.R.31W.	no
T.30N.R.24E.	no
T.30N.R.23E.	no
T.31N.R.23E.	no
T.31N.R.22E.	no
T.32N.R.22E.	no
T.33N.R.22E.	no
T.33N.R.23E.	yes
T.34N.R.22E.	no
T.33N.R.21E.	no
T.34N.R.21E.	no
T.35N.R.21E.	no
T.35N.R.22E.	no
T.36N.R.22E.	no
T.36N.R.22E.	no
T.37N.R.21E.	yes
T.37N.R.21E.	no
T.38N.R.21E.	yes
T.38N.R.20E.	no
T.38N.R.19E.	no
T.39N.R.19E.	no
T.40N.R.19E.	no
T.40N.R.18E.	no

begun during the late spring of 1973, was continued during the summer of 1974, and completed the following summer. The survey produced only a limited number of diagnostic artifacts. As a result, several sites were selected for further excavation. These excavations were undertaken during the late spring and early summer of 1976. During the four field seasons, a total of thirty-eight weeks was spent in survey and excavation within the Menominee River Watershed. Except for the summer of 1973, when funding for the field research was reduced, crew size varied between ten and fifteen individuals. The 1973 field personnel consisted of myself and two others.

During the three summers of survey work, field personnel visited the three county historical societies within the survey region as well as talked with area residents to obtain information regarding possible site locations. However, most of the time during these three field seasons was spent actively investigating those areas selected for intensive survey. Field personnel walked all dirt roads in these selected areas as well as checked eroded banks, tree falls, cleared fields, or other exposed areas. Dense vegetation, however, severely hampered surface collecting in most areas. To reduce the possibility of vegetation obscuring surface debris and preventing identification and location of a site during survey, personnel distributed themselves at 15 meter intervals throughout each area surveyed. Using a standard #2 spade, field personnel dug a series of units approximately 35 centimeters square and 35 to 40 centimeters deep. These units were excavated every 15 meters as the field personnel walked through the area. Soil from these small shovel tests was crumbled and searched for evidence of prehistoric activity.

If a site was located, cultural material was collected and information regarding the site, its location, and the surrounding environment recorded on a site survey form. A sketch map of the site and its nearest access route was drawn on the grid on the reverse side of the form. Each site location was recorded on the appropriate 7.5 minute topographic map. In the more densely wooded areas of the watershed a number of trees were marked with a ring of fluorescent orange paint to aid in relocation of the site.

Test Excavations

As already noted, the vegetation within the Menominee River Watershed greatly reduced the effectiveness of surface collecting. Surface collection of areas adjacent to cultural material found in road cuts along eroded banks or in other minimally exposed areas often failed to produce any other cultural material. In order to recover additional information and a sufficient number of diagnostic artifacts to enable identification of the cultural components, each site was test excavated. To ensure comparability of the data collected in this manner, a sampling and testing procedure was designed and utilized at each site. This procedure involved excavating a number of 2 x 2 meter test pits at each site. The location of each test pit was established by using a system of stratified systematic unaligned sampling. To implement this sampling procedure, a grid of north/south and east/west lines placed at 30 meter intervals was superimposed over the site. This sampling procedure appeared to be the most efficient means of dealing with an unknown universe. This was substantiated by Berry and Baker who state:

> When the exact nature of the distribution of the phenomena is unknown, a choice of an optimal sampling procedure cannot definitely be made. However, it appears that a stratified systematic unaligned sample includes the most desirable features of the others and has the greatest efficiency under these circumstances. . . . Because it contains the systematic, stratified, and random elements it appears to have the advantage of foreseeing most possible eventualities (1968:94).

For practical purposes the initial 30 x 30 meter unit was centered over the area which first revealed evidence of prehistoric activity. This unit was then subdivided into 225 potential 2 x 2 meter test pits. Beginning in the northwest corner of the 30 x 30 meter unit and moving from left to right, each of the 225 2 x 2 meter subdivisions was sequentially numbered. A table of random numbers was then used to select two 2 x 2 meter test pits for excavation. Each test pit was excavated in 10 centimeter levels until sterile soil was reached. All excavated soil was screened using a half inch hardward cloth. If cultural material was recovered from the test excavations, the grid system was expanded in radial fashion and the table of random numbers used to select an additional two test pits in each of the surrounding 30 x 30 meter units. The grid was expanded outward in this fashion until both test pits within a 30 x 30 meter unit failed to produce evidence of prehistoric activity.

Testing in this manner not only satisfied the requisite of an adequate number of items for analysis but provided a reliable sample of the total cultural assemblage from each site. A secondary benefit of this sampling procedure was the recognition of site size. Although site boundaries were somewhat arbitrarily defined as the absence of cultural material in a 30 meter area, this testing procedure permitted estimates of approximate site size. Site size, an important variable

and source of archeological information, is frequently unavailable from survey data collected in forested regions such as the Upper Peninsula.

CHAPTER IV

SEASONALITY AND SUBSISTENCE

Introduction

The identification and analysis of the faunal and floral remains collected during the summer field seasons in the Menominee River Watershed provide the majority of the evidence used to determine seasonality and subsistence activities at the twenty-six sites referred to in this study. Faunal and floral remains were collected and analyzed from only those test pits which were excavated as part of the stratified unaligned sample at each of the sites. These initial test excavations were expanded at several of the sites in order to obtain a larger and more complete artifact assemblage, evidence of structures, and more detailed strategraphic soil profiles. Although floral and faunal remains were recovered from these expanded excavations, cleaned, catalogued, and housed in the archaeological lab on the campus of Northern Michigan University, Marquette, Michigan, this data was not included in this chapter. The floral and faunal remains detailed in this chapter are limited to those remains obtained from the test pits which were part of the stratified unaligned sample at each site and therefore represent a statistically valid and comparable sample from each site.

Floral or faunal remains were not recovered from seven sites or approximately one quarter of the twenty-six sites. Sites from

which the test excavation produced no floral or faunal remains included: Abolins Farm site, Casey Lake North site, Brulee' Trestle site, Chalk Hills site, Quartz Workshop site, Shakey Lakes Parks site, and Van Riper site. Four of these sites are small sites with an areal extent of less than 1800 square meters; two sites, Chalk Hills and Van Riper, could not be excavated because of their location on public land which has been extensively utilized for recreational purposes during the summer months. The lack of floral and faunal remains at the seventh site could be expected since the site appears to be a specialized activity area and the archaeological evidence from this site suggests the area was used solely for the production of lithic tools. Floral remains were recovered from the test excavations at five sites: Allgeyer site, Backlund Village site, Grand Rapids site, Little Cedar River site, and Pemene Fall site. Test excavations at eighteen of the twenty-six sites produced faunal remains.

Floral Remains

Floral remains consist of organic remains recovered by floating soil saved from the test excavations. No pollen samples were taken, therefore, the floral remains consist entirely of macro-floral remains.

Soil for flotation was recovered and saved from any feature located within a test pit which was excavated as part of the stratified unaligned sample at each of the sites included in this study. These features were excavated using standard archaeological techniques. Areas which appeared to have soil discoloration were troweled until the discolored area could be defined. Once a soil stain was defined and identified as a feature, the stain was mapped, photographed and

cross-sectioned. The cross-section was then drawn and photographed. After a feature was assigned a feature number the soil was removed using a trowel and a discarded bleach or ammonia bottle that had been modified by removing the bottom of the bottle and a portion of one side to form a flexible scoop. Every fourth scoop of dirt removed from each feature was saved for flotation. This soil was partially dried and stored in burlap sacks lined with plastic garbage containers. The soil was then taken to Northern Michigan University, Marquette, Michigan, where it was stored and processed the following fall.

Processing the soil for floral remains involved flotating the soil in a large metal garbage can. Soil from each feature was gradually poured into a 2.5 gallon bucket, which was submerged in the water contained in the large metal garbage can. The bottom of the bucket was replaced with quarter-inch hardware cloth. Although the process was somewhat cumbersome, it sorted the material contained within the soil sample into three parts. Sand, silt and any clay particles contained in the soil were collected on the bottom of the garbage can. Non-organic cultural material such as lithic debris or sherds which may have been missed in excavating the feature was collected in the bucket and organic remains floated on the surface of the water. This organic debris was skimmed off using a fine cloth sieve such as is frequently used in handling tropical fish. This organic debris was then placed on paper toweling and allowed to dry thoroughly before further processing.

The organic debris collected in this manner contained large quantities of small fibrous roots, twigs, charcoal fragments, etc.

Once the organic material from each feature was dried the laborious task of removing the roots, twigs, etc., from the collected material began. Because extremely small seeds and other bits of organic material frequently clung to the numerous hair-like roots, this sorting procedure was accomplished using a microscope. This task was extremely time consuming and produced only minimal traces of floral remains. These remains were then turned over to Steven Gill, a graduate student at Northern Michigan University engaged in ethnobotanical research in the Upper Peninsula.

The seeds were compared to floral collections belonging to Steven Gill, Northern Michigan University, or the University of Michigan for identification. Many of the seeds were charred, fragmented or weathered in such a manner as to hamper specific identification. These seeds are therefore listed in the following text by genus or class if more specific identification was not possible. Whenever possible, common names are given in parentheses under the botanical classification for the reader unfamiliar with the more technical terms.

Faunal Remains

Animal remains recovered during the site survey and test excavations during the 1973 and 1974 field seasons were catalogued and sent to Elizabeth A. Cardinal at the Museum of Anthropology, University of Michigan, for identification and preliminary interpretation. Ms. Cardinal's completed report was then given to William Robinson, mammalogist in the Department of Biology, Northern Michigan University, for information concerning seasonal availability of the identified

species. The following faunal data is therefore primarily a product of Ms. Cardinal's work, however, additional data has been added to her report and the format of that report has been substantially altered.

A total of 3,103 bone or shell fragments was recovered from the test excavations at eighteen of the twenty-six sites. Approximately 87 percent of these fragments or 2,710 pieces of bone or shell were too fragmentary for specific identification. These fragments are identified only by the taxonomic class or order in the following charts. The predominant pattern for the identification of the faunal remains recovered from these sites was for the largest species to be the most frequently identifiable species and for the small animals to be less frequently identifiable.

Unfortunately data on soil pH was not collected during the survey and test excavations in the Menominee River Watershed. This information would have been helpful in interpreting the faunal records at these sites and may have explained both the absence of faunal remains at several sites and the scant remains of fish from many of the sites which are ideally situated to exploit the spring spawning runs in the Menominee River.

Floral and Faunal Remains

The floral and faunal remains are presented and discussed in this section on a site by site basis. The sites from which test excavations produced floral and/or faunal evidence are arranged alphabetically below. The floral and faunal data for each site is presented in the chart and outline format immediately following the discussion of the site's seasonality. Floral remains, if recovered, are presented first

in a table which identifies the feature from which the floral remains were recovered, identification of the floral remains, quantity of seeds recovered and a determination of the seasonal availability of the floral remains. The faunal remains are summarized in two forms for each site. The faunal remains are initially listed according to the taxonomic classification and secondly a table showing the location and quantity of the remains is provided.

The Allgeyer Site

Seasonality and Subsistence

All eight seeds were similar being small, spherical in shape, and highly carbonized. They appear to represent a single unidentified species. The lack of faunal remains from this site and the inability to identify the floral remains make any determination of seasonality extremely difficult. Tentatively, however, I would suggest that the presence of carbonized seeds indicates a summer to early fall utilization of the Allgeyer site. This tentative seasonal assignment is suggested because seeds are generally unavailable until mid-summer and would be dispersed by the end of October in this northern climate. Table 8 summarizes the floral remains from the Allgeyer site.

Table 8.--Floral Remains from the Allgeyer site.

Feature	Flora	Quantity	Available Season
Feature 1	Unidentified	3	--
Feature 5	Unidentified	5	--

Backlund Village Site

Seasonality and Subsistence

The floral and faunal remains from this relatively large Oneota village suggest its prehistoric inhabitants' diet was diverse. These hunter-gatherers exploited a variety of flora which included hawthorne, pin cherry, and wild berries such as raspberries, blackberries and thimbleberries. The faunal record suggests the inhabitants of the Backlund Village site extensively exploited the aquatic environments surrounding their village. Beaver, sturgeon, turtles and shellfish are among the resources which were hunted or collected from either the nearby lakes and rivers or their banks. In addition to these resources, it appears these prehistoric inhabitants also supplemented their diet with venison and a variety of small mammals.

The floral and faunal record indicates the site was most likely occupied during the warmer half of the year. This occupation probably began as early as May.

When the spring sturgeon runs occur in the Upper Peninsula, sturgeon are plentiful and easy to obtain. Although sturgeon may be in some rivers in the Upper Peninsula all year round, they spend the greater portion of this time in deep water and are difficult if not impossible to catch, suggesting that the Backlund Village site was occupied during the late spring of each year, a time during which the inhabitants of the site could easily obtain sturgeon from the Menominee River. The presence of snapping turtle, shellfish and beaver among the faunal remains suggests this occupation probably continued throughout the summer and into the fall of each year. Snapping turtle and shellfish

are readily available throughout the warm months from May to September. Although available throughout the year, beaver is most likely to be obtained during the later summer and early fall of each year when they are the most active, building new dams and storing food for the winter months. The floral record also substantiates a warm season occupation of this site.

Although many of the species represented in the faunal remains could have been obtained during the winter months, a winter occupation is considered unlikely. The abandonment of the site during the winter months is suggested by the lack of any evidence in the archaeological record which would indicate the presence of the substantial structures needed to endure the harsh Upper Peninsula winters. Tables 9, 10 and 11 summarize the floral and faunal remains from this site.

Casey Lake South Site

Seasonality and Subsistence

Faunal remains from the Casey Lake South site consist of seventeen small weathered fragments, identified only as mammal bone. The fragments were recovered from the surface of the site. These remains provide little information regarding seasonality and subsistence activities except to suggest hunting was an important economic activity for the Late Woodland residents of the site.

Table 9.--Floral Remains from the Backlund Village Site.

Feature	Flora	Quantity	Available Season
Feature 2	Unidentified	5	--
Feature 3	Crataegus sp. (hawthorne)	1	Fall
Feature 4	Prunus pensylvanica (pin cherry)	2	Late Summer
	Rhus sp. (sumac/poison ivy)	1	Summer & Fall
	Rubus sp. (raspberry, blackberry, thimbleberry)	4	Late Summer
Feature 5	Rubus sp. (raspberry, blackberry, thimbleberry)	5	Late Summer
Feature 7	Unidentified	8	Late Summer

Table 10.--Faunal Remains from the Backlund Village Site.

Mammals
- Bos boris (cow)
- Castor canadensis (beaver)
- Odocoileus virginiana (whitetail deer)
- Ursus americanus (bear)
- Canidae (unidentified canis)
- Mammalius (unidentified mammal)

Birds
- None

Reptiles
- Testudinidae (unidentified turtle)

Amphibians
- Chelydra serpentina (snapping turtle)

Fish
- Acipenser fulvescens (sturgeon)
- Osteichthyes (unidentified fish)

Shell
- Lampsilis
- Pelecypoda (unidentified shell)

Table 11.--Distribution of Faunal Remains from the Backlund Village Site.

	Castor canadensis (beaver)	Canidae	*Bos boris* (cow)	*Odocoileus virginiana* (white tail deer)	Unidentified Mammal	Total Mammal	*Chelydra serpentina* (snapping turtle)	Unidentified Turtle	Total Turtle	Total Amphibian	*Acipenser fulvescens* (sturgeon)	Unidentified Fish	Total Fish	*Lampsilis*	Unidentified Shell	Total Shell
Test Pit 1/Level 1												1		1		1
Test Pit 2/Level 1			1		38	39	2		2	4			1		1	1
Test Pit 3/Level 2					1	1										
Test Pit 4/Level 1					1	1										
Test Pit 4/Level 3					1	1										
Test Pit 6/Level 2	1				3	4										
Test Pit 10/Level 1					1	1										
Test Pit 11/Level 2		1		3	2	6					3	1	4		3	2
Test Pit 11/Level 3					2	2										
Test Pit 12/Level 1					1	1										
Test Pit 13/Level 1					2	2										
Test Pit 13/Level 2					1	1										
Test Pit 14/Level 1				1	2	3										
Test Pit 14/Level 2					7	7								1		1
Feature 2					12	12										
Feature 4	6				5	11		1	1	1						
Feature 7					2	2		4	4	4						
Feature 8					2	2										
Feature 9	1				24	25		3	3	3	1		1			
Total	8	1	1	4	109	123	2	8	10	10	4	2	6	2	4	6

Table 12.--Faunal Remains from the Casey Lake South Site.

Mammals
Mammalius (unidentified mammal)
Birds
None
Reptiles
None
Amphibians
None
Fish
None
Shells
None

Table 13.--Distribution of Faunal Remains from the Casey Lake South Site.

	Unidentified Mammal	Total Mammal
Surface	17	17
Total	17	17

Chappee Rapids Site

Seasonality and Subsistence

The Chappee Rapids site is a relatively small Late Woodland site with thinly scattered debris. The only floral or faunal remains recovered from the test excavations consisted of a single unidentified fragment of shell from the third level of test pit 5. Except for suggesting the site was occupied during the months when the river would have been ice free, a time period from April to November of each year, little can be determined regarding the seasonality or subsistence activities at the site. Faunal remains from the Chappee Rapids site are summarized in Tables 14 and 15.

Table 14.--Faunal Remains from the Chappee Rapids Site.

Mammals
None
Birds
None
Amphibians
None
Reptiles
None
Fish
None
Shell
Pelecypoda (unidentified shell)

Table 15.--Distribution of Faunal Remains from the Chappee Rapids Site.

	Unidentified Shell	Total Shell
Test Pit 5/Level 3	1	1
Total	1	1

Cook Site

Seasonality and Subsistence

Although the artifact assemblage recovered from the Cook site is not diagnostic of any particular time period, the location of the site on the first terrace of the Menominee River and its close proximity to the water's edge suggest the site was occupied by the Late Woodland peoples. Little evidence of the subsistence activities of these residents was recovered from the test excavations at the site. These excavations produced only seven small fragments of mammal bones. None of the fragments could be identified by species and/or genus. As a result, any accurate assessment of seasonality or subsistence activities

at the site is impossible to ascertain. All the limited faunal record indicates is that the residents of this site engaged in some hunting activities. Faunal remains from the Cook site are summarized in Tables 16 and 17.

Table 16.--Faunal Remains from the Cook Site.

Mammals
Mammalius (unidentified mammals)
Birds
None
Reptiles
None
Amphibians
None
Fish
None
Shell
None

Table 17.--Distribution of Faunal Remains from the Cook Site.

	Unidentified Mammal	Total Mammal
Test Pit 1/Level 1	3	3
Test Pit 2/Level 1	4	4
Total	7	7

Grand Rapids Dam Site

Seasonality and Subsistence

Like several of the Late Woodland sites included in this study, this Middle Woodland site is represented by a limited number of bone fragments. Unfortunately none of these fragments could be identified

as to species or genus. Except for identifying the fragments as those belonging to mammals little information is available to indicate the subsistence activities of the site's occupants. Although the presence of mammal bones indicates that hunting provided at least a portion of the prehistoric diet, fishing must have been as important if not more important. The site is located just below the Grand Rapids Hydro-electric Dam, an area which would have provided a falls along with excellent fishing opportunities when the site was occupied. Certainly the residents of this site did not ignore this source of protein, although this subsistence activity is not reflected in the faunal record. A summer occupation at the site is suggested by its location along a high unsheltered bluff above the river, a location which would not have afforded any protection from the cold winds, rain and snow which dominate the weather from mid October to May in the Upper Peninsula. Faunal remains are summarized in Tables 18 and 19.

Table 18.--Faunal Remains from the Grand Rapids Dam Site.

Mammals
Mammalius (unidentified mammal)
Birds
None
Reptiles
None
Amphibians
None
Fish
None
Shell
None

Table 19.--Distribution of Faunal Remains from the Grand Rapids Dam Site.

	Unidentified Mammal	Total Mammal
Test Pit 1/Level 1	1	1
Test Pit 2/Level 1	1	1
Test Pit 2/Level 2	3	3
Test Pit 9/Level 1	3	3
Total	8	8

Grand Rapids Site

Seasonality and Subsistence

Approximately 87 percent of the recovered faunal remains or 118 bone fragments could be identified only as Mammalius. The identified fragments therefore provide only limited data concerning the seasonality and subsistence activities at this multi-component site. Two of the identified species, Bos boris and Sus scrofa are undoubtedly associated with the historic cabin situated only a short distance from the site. The remaining bone fragments, however, may be associated with the prehistoric occupations of the site since they do not exhibit the more contemporary cut marks found on the remains of two historic species. Several of the faunal remains recovered from the test pits and feature 6 suggest a May to September or October occupation. The recovery of sturgeon bone suggests the site was occupied during the spring spawning runs which generally occur during May of each year. Although it is possible to obtain sturgeon at other times of the year,

they generally remain in deep water and are rather elusive except during the annual spawning run. The identification of painted turtle in feature 6 and several fragments of unidentified turtle recovered from the test pits suggest a May to September occupation. Turtle are most likely to be available in the months of warm weather from late spring to early fall. Beaver is a species which is available all year but is most active, and therefore most likely to have been hunted, in the late summer and early fall when the species builds or repairs dams and lodges as well as stores food in preparation for winter. Unfortunately, none of these faunal remains can be associated with a particular cultural component at this multi-component site.

Somewhat more culturally specific information is associated with the floral remains. Floral remains were recovered from features 1 and 2. These seeds were carbonized and crushed, preventing an accurate identification by species. Their presence in the features, however, indicates a summer to early fall occupation, the only time of the year seeds would have been readily available to the local inhabitants. Both features, in addition to the floral remains, contained ceramics which clearly identify the features as belonging to the Late Woodland occupation at the site. Thus it seems reasonable to suggest that at least the Late Woodland inhabitants utilized this area during the summer months, hunting a variety of local mammals and perhaps fishing and gathering other aquatic resources from the nearby rivers.

It is not clear whether the Middle Woodland and Oneota peoples who also utilized the site did so in a similar manner or not. Several of the test pits along the river bank contain numerous deep and well

defined post molds. Although no pattern was detected in the location of the post molds, their presence suggests the possibility that at least one of the occupations at the site may have constructed a durable shelter in order to be able to utilize the area during periods of inclement weather.

Faunal and floral remains are summarized in Tables 20, 21 and 22.

Little Cedar River

Seasonality and Subsistence

Several species represented among the faunal remains from the Little Cedar River site suggest the site was occupied during the seven months of relatively moderate to warm weather in the Upper Peninsula. The presence of sturgeon indicates the site was probably occupied during the annual spring spawning runs which occur in May. A summer occupation is further supported by the presence of passenger pigeon, a species which would have been available only from April to early November and a limited number of mollusk fragments, most likely collected during the ice free months. Duck, although present year round in limited numbers, was most likely hunted or trapped from April to October, a period during which ducks are plentiful in Upper Peninsula waters. Although these species suggest late spring to early fall occupation, slightly more than 90 percent of the recovered faunal remains are those of mammals. The majority of these mammal bone fragments could not be identified as to genus or species and therefore provide little information regarding seasonality. The identified

Table 20.--Floral Remains from the Grand Rapids Site.

Feature	Flora	Quantity	Available Season
Feature 1	Unidentified	1	--
Feature 2	Unidentified	3	--

Table 21.--Faunal Remains from the Grand Rapids Site.

Mammals
- *Bos boris* (cow)
- *Castor candensis* (beaver)
- *Odocoileus virginiana* (whitetail deer)
- *Sus scrofa* (pig)
- Mammalius (unidentified mammal)

Birds
- None

Reptiles
- None

Amphibian
- *Chrysemys picta* (painted turtle)
- Testudinidae (unidentified turtle)

Fish
- *Acipenser fulvescens* (sturgeon)

Shell
- None

Table 22.--Distribution of Faunal Remains from the Grand Rapids Site.

	Castor canadensis (beaver)	*Bos boris* (cow)	*Sus scrofa* (pig)	*Odocoileus virginiana* (whitetail deer)	Unidentified Mammal	Total Mammal	*Chrysemys picta* (painted turtle)	Unidentified Turtle	Total Turtle	*Acipenser fulvescens* (sturgeon)	Total Fish
Test Pit 1/Level 1					23	23					
Test Pit 1/Level 2			1		2	3					
Test Pit 2/Level 2					2	2					
Test Pit 2/Level 3					5	5					
Test Pit 4/Level 3					1	1					
Test Pit 10/Level 1					25	25					
Test Pit 10/Level 2		1		4	23	28					
Test Pit 10/Level 3	1				4	5					
Test Pit 11/Level 1					2	2					
Test Pit 13/Level 1	1				21	22				1	1
Test Pit 14/Level 1				1	2	3					
Test Pit 14/Level 3					2	2		3	3	1	1
Feature 2					4	4					
Feature 6					2	2	1		1	2	2
Total	2	1	1	5	118	127	1	3	4	4	4

species, including dog, longtail weasel and whitetail deer, are species which could have been obtained during any of the four seasons, although it is more likely the longtail weasel was trapped during the winter months when its white coat makes it highly desirable for its decorative fur.

The archaeological record indicates that the Little Cedar River site has had a long cultural history being utilized by Early Woodland, Middle Woodland, Late Woodland, and Oneota peoples. The numerous occupations of the site further complicates any interpretation of seasonality and subsistence activities. Only one feature containing faunal remains could be clearly associated with a specific cultural period. Feature 4 contained Late Woodland wares and several mammal bone fragments. Unfortunately, none of these fragments could be more specifically identified. Features 1 and 2 could not be clearly associated with a particular cultural period. Although feature 6 contained Heins Creek ware, it also contained a wide variety of historic materials. As a result it is impossible to associate with any certainty the bones of longtail weasel, passenger pigeon, and ruffed grouse with the Late Woodland occupation.

The only floral remains recovered from the site consisted of a single seed identified as Rubus sp. Unfortunately, it was also recovered from feature 6 and cannot be clearly associated with either the Late Woodland or historic component at the site.

Although the test excavations recovered 625 fragments of bone or shell, these fragments do not clearly identify the basic subsistence activities at the site except to suggest hunting was an important

activity for at least some of the residents who lived near the mouth of the Little Cedar River. Unfortunately, none of the faunal remains can be specifically associated with any of the four occupations represented at the site.

Floral and faunal remains are summarized in Tables 23, 24 and 25.

Martells Lake Site

Seasonality and Subsistence

Faunal remains from the Martells Lake site consist of only eleven small fragments identified only as mammal bone recovered from the surface of the site. These remains provide little information regarding seasonality and subsistence activities except to suggest that hunting was an important economic activity for the Late Woodland inhabitants of this site. Faunal remains are summarized in Tables 26 and 27.

Michigamme Falls Site

Seasonality and Subsistence

The Michigamme Falls site is a small site situated along a high bluff that overlooks the confluence of the Brule, Michigamme, and Menominee Rivers. Test excavations at the site produced a rather limited artifact assemblage consisting of the distal end of a long quartz projectile point and a few chert flakes. The absence of tools typically associated with women's activities, the limited size of the site and the presence of a relatively large number of mammal bone

Table 23.--Floral Remains from the Little Cedar River.

Feature	Flora	Quantity	Available Season
Feature 6	Rubus sp. (raspberry, blackberry, thimbleberry)	1	Late Summer

Table 24.--Faunal Remains from the Little Cedar River Site.

Mammals
- Canis familiaris (dog)
- Mustela frenata (long tail weasel)
- Odocoileus virginiana (whitetail deer)
- Mammalius (unidentified mammal)

Birds
- Anas (duck)
- Bonasa umbellus (ruffed grouse)

Reptiles
- None

Amphibian
- None

Fish
- Acipenser fulvescens (sturgeon)

Shell
- Triodopsis multilineas

Table 25.--Distribution of Faunal Remains from the Little Cedar River Site.

	Canis familiaris (dog)	Mustela frenata (longtail weasel)	Odocoileus virginiana (whitetail deer)	Unidentified Mammal	Total Mammal	Anas (duck)	Ectopistes migratueius (passenger pigeon)	Bonasa umbellus (ruffed grouse)	Unidentified Bird	Total Bird	Acipenser fulvescens (sturgeon)	Unidentified Fish	Total Fish	Triodopsis multilineas	Unidentified Shell	Total Shell
Surface				94	94											
Test Pit 1/Level 2				3	3											
Test Pit 1/Level 3				2	2											
Test Pit 2/Level 2				1	1						1					
Test Pit 3/Level 1				153	164											
Test Pit 3/Level 2				33	33											
Test Pit 3/Level 3				1	1											
Test Pit 3/Level 4				8	10											
Test Pit 4/Level 1				1	1											
Test Pit 5/Level 2				3	3											
Test Pit 5/Level 3				1	1											
Test Pit 7/Level 1				1	1											
Test Pit 7/Level 2				27	27						5		5			
Test Pit 7/Level 3				1	1						1		1			
Test Pit 17/Level 1				1	1											
Test Pit 18/Level 2				56	57	4				4						
Test Pit 18/Level 3				2	2											
Test Pit 18/Level 4				8	8									1		1
Test Pit 18/Level 5				3	3											
Feature 1				4	4											
Feature 2	56				56	2		1								
Feature 4				2	2											
Feature 6	1	1	16	73	91	3	1	1	3	8	8	30	38		1	1
Total	57	1	30	478	566	9	1	2	3	12	15	30	45	1	1	2

Table 26.--Faunal Remains from the Martells Lake Site.

Mammals
Mammalius (unidentified mammal)
Birds
None
Reptiles
None
Amphibians
None
Fish
None
Shell
None

Table 27.--Distribution of Faunal Remains from the Martells Lake Site.

	Unidentified Mammal	Total Mammal
Surface	11	11
Total	11	11

fragments, when compared to the recovered lithic assemblage, suggest the site was utilized as a hunting camp. The two identified species represented in the recovered faunal remains, moose and whitetail deer, are both species which would most likely have been hunted by small hunting parties composed of several males.

Both species identified in the faunal remains from this site are species which would have been available throughout the entire year. The site, however, is located on a high bluff which, because of the confluence of the Brule, Michigamme, and Menominee Rivers, is exposed on three sides. Vegetation along the southern edge of the site would have provided the only protection from inclement weather. It is

unlikely that a site exposed to the harsh north winds would have been selected as a camp site during the winter months. Faunal remains are summarized in Tables 28 and 29.

Pemebonwon Site

Seasonality and Subsistence

The quantity of faunal remains from the Pemebonwon site is somewhat unusual. The site was originally located when the survey crew noticed numerous bone fragments scattered throughout the area later defined as the site. Further exploration of this area located several areas in which bone density was so great that shovel tests frequently disturbed only bone fragments. Although none of the test pits excavated as part of the stratified unaligned sample were located in one of the areas of high bone density, the cultural remains recovered from the thirteen test pits do reflect a high bone density. A total of 934 pieces of mammal bone and ten shell fragments were recovered. Only two species of mammal, deer and bear, were identified among the recovered faunal remains. Deer was by far the most numerous species. Bear was represented by only two fragments. Both fragments were recovered from the surface of the site and may not be associated with the prehistoric occupation. Three of the shell fragments were identified as Lampsilis.

Although the density of faunal remains is high, the test excavations do not indicate a settled or dense occupation associated with the site. Except for the numerous faunal remains, cultural debris was limited to 77 sherds and 262 fragments of chipped stone. No

Table 28.--Faunal Remains from the Michigamme Falls Site.

Mammals
Alces alcaes (moose)
Odocoileus virginiana (whitetail deer)
Mammalius (unidentified mammal)
Birds
None
Reptiles
None
Amphibians
None
Fish
None
Shell
None

Table 29.--Distribution of Faunal Remains from the Michigamme Falls Site.

	Alces alcaes (moose)	*Odocoileus virginiana* (whitetail deer)	Unidentified Mammal	Total Mammal
Test Pit 1/Level 1			10	10
Test Pit 1/Level 2	2	1	17	20
Test Pit 2/Level 1			9	9
Total	2	1	36	39

evidence of hearths or storage pits was uncovered at the site and structural evidence was limited to three post molds. The limited size of the occupation at the site and the relatively large numbers of mammal bone fragments suggest the inhabitants were engaged in intensive hunting activities. Deer appears to have been the most desirable mammal, although bear and small mammals which might not have been identified in the faunal remains may also have been hunted or trapped.

The abundance of deer in the recovered faunal remains suggests the site was occupied at a time during the yearly cycle when deer would have been clustered and/or easily available to the prehistoric hunter. Typically, deer yard in low brushy land during the winter months and would have been easy prey for a group of hunters. Also, during the late fall and spring, deer will frequently migrate as much as 50 miles between winter and summer territories along well established trails. Deer could easily have been obtained in the quantities suggested by the faunal record during these semi-annual migrations. Winter exploitation of a large winter deer yard appears to be the less likely pattern of subsistence activity. Deer, at the present time, do not yard as tightly in the southern and central portions of Menominee County as they do in other areas of the Upper Peninsula, nor are these yarding areas as large. Secondly, the presence of several shell fragments scattered throughout the site suggest the site was occupied at a time of the year when the river would have been ice free and the fresh water shellfish could have been gathered from the adjacent rivers. It, therefore, seems most likely that the Late Woodland and possibly Middle Woodland people in the Menominee River Watershed

camped at the Pemebonwon site and exploited the deer as they moved between their winter and summer territories. The faunal remains from this site are summarized in Tables 30 and 31.

Table 30.--Faunal Remains from the Pemebonwon Site.

Mammals
Odocoileus virginiana (whitetail deer)
Ursus americanus (bear)
Mammalius (unidentified mammal)
Birds
None
Reptiles
None
Amphibians
None
Fish
None
Shell
Lampsilis
Pelecypoda (unidentified shell)

Pemene Creek Site

Seasonality and Subsistence

The Pemene Creek site is located along the banks of Pemene Creek, a small stream which empties into the Menominee River several hundred feet below Pemene Falls. The large pool beneath the falls must have provided an ideal habitat for many of the large fish, whose remains appear in the faunal record from this site. Fishing appears to have been a major subsistence activity for the prehistoric inhabitants who camped along the banks of Pemene Creek. The bones of sturgeon as well as other freshwater fish are well represented in the faunal remains. None of the other sites in the Menominee River Watershed tested using a system of stratified unaligned sampling has produced

Table 31.--Distribution of Faunal Remains from the Pemebonwon Site.

	Ursus americanus (bear)	*Odocoileus virginiana* (whitetail deer)	Unidentified Mammal	Total Mammal	*Lampsilis*	Unidentified Shell	Total Shell
Surface	2	22	215	239			
Test Pit 2/Level 1			10	10			
Test Pit 2/Level 2		19	190	209		1	1
Test Pit 2/Level 3			8	8			
Test Pit 2/Level 4		30	243	273	2	2	4
Test Pit 3/Level 1		1	19	20			
Test Pit 4/Level 1			17	17	1		1
Test Pit 6/Level 1			5	5			
Test Pit 7/Level 1			1	1			
Test Pit 7/Level 2			4	4			
Test Pit 8/Level 1			1	1			
Test Pit 10/Level 1		9	34	43		4	4
Test Pit 10/Level 2			10	10			
Test Pit 11/Level 1			1	1			
Test Pit 11/Level 4			1	1			
Test Pit 12/Level 1			2	2			
Test Pit 12/Level 2		1	2	3			
Test Pit 13/Level 1		11	75	86			
Test Pit 13/Level 3			1	1			
Total	2	97	835	934	3	7	10

as many fragments of fish. Sturgeon dominate the faunal record from Pemene Creek. This large fish must have been a primary source of protein. Although fishing appears to have been a major subsistence activity, hunting of both large and small mammals played a supplemental role in the prehistoric diet of the Late Woodland/Oneota peoples who utilized this site.

This site located along the low and well protected ground between Pemene Creek and the high ridge which parallels the north side of the creek would have provided an ideal location for an early spring camp. The site was well protected from the cold north and northwesternly spring winds and provided easy access to the nearby Menominee River with its spring sturgeon runs. South of the Pemene Creek site is an area of low land, ideal habitat for deer and other game. The faunal remains from the Pemene Creek site are summarized in Tables 32 and 33.

Table 32.--Faunal Remains from the Pemene Creek Site.

Mammals
Castor canadensis (beaver)
Odocoileus virginiana (whitetail deer)
Ursus americanus (bear)
Mammalius (unidentified mammal)
Birds
None
Reptiles
None
Amphibians
None
Fish
Acipenser fulvescens (sturgeon)
Octeichthyes (unidentified fish)
Shell
Pelecypoda (unidentified shell)

Table 33.--Distribution of Faunal Remains from the Pemene Creek Site.

	Castor canadensis (beaver)	*Ursus americanus* (bear)	*Odocoileus virginiana* (whitetail deer)	Unidentified Mammal	Total Mammal	*Acipenser fulvescens* (sturgeon)	Unidentified Fish	Total Fish	Unidentified Shell	Total Shell
Test Pit 2/Level 1			1	43	44					
Test Pit 3/Level 1	1	1	8	133	143	2		2		
Test Pit 3/Level 2			1*	24	25	33	8	41	1	1
Test Pit 4/Level 1				3	3					
Total	1	1	10	203	215	35	8	43	1	1

Pemene Falls Site

Seasonality and Subsistence

Although located only a short distance from the Pemene Creek site, a locality in which spring fishing dominated the subsistence activities of the Late Woodland/Oneota residents, the floral and faunal evidence indicates the Late Woodland/Oneota residents of the Pemene Falls site relied primarily on hunting and collecting a variety of berries and seeds to provide their subsistence needs. Evidence of fishing is limited to a single fragment recovered from the surface of the site. Since the site has had a long history as a recreational and fishing area for Upper Peninsula residents, it is entirely possible this fragment may be associated with the historic use of this area rather than the prehistoric occupation.

It seems most likely the Late Woodland/Oneota peoples of the Menominee River watershed utilized the Pemene Falls site during the

late summer and early fall, a time when the sturgeon, which provided the major protein source at the Pemene Creek site, would not have been readily available. Raccoon and beaver, two species represented in the faunal record from this site, are most active during the summer and early fall and therefore most likely to be obtained at this time. Deer, the third species of mammal identified in the faunal record, would also have been available during the fall as they moved to winter territories. Turtle, the only other species recognized in the faunal record, also would have been available at this time.

A summer and early fall occupation is also suggested by the floral remains recovered from feature 1. A variety of seeds were recovered which would have been available from July through October.

In addition to the floral and faunal remains which suggest the site was occupied during the summer and early fall, the location of the site on a high bluff overlooking the Menominee River also indicates a warm weather occupation. This location is exposed to northerly winds and probably would not have provided the necessary protection from the harsh climate except during the warmer months of the year.

The floral and faunal remains from the Pemene Falls site are summarized below in Tables 34, 35 and 36.

Penn Brook Site

Seasonality and Subsistence

Faunal remains from the Penn Brook site were limited to thirty-three mammal bone fragments. Two species, beaver and whitetail deer,

Table 34.--Floral Remains from the Pemene Falls Site.

Feature	Flora	Quantity	Available Season
Feature 1	Prunus virginiana (choke cherry)	3	Late Summer/ Early Fall
	Rubus sp. (raspberry, blackberry, thimbleberry)	1	Late Summer
	Chenopodiaceae	1	Summer/Fall
	Unidentified	11	--

Table 35.--Faunal Remains from the Pemene Falls Site.

Mammals
- Castor canadensis (beaver)
- Odocoileus virginiana (whitetail deer)
- Procyon lotor (raccoon)

Birds
- None

Reptiles
- Testudinidae (unidentified turtle)

Amphibians
- None

Fish
- Acipenser fulvescens (sturgeon)

Shell
- None

Table 36.--Distribution of Faunal Remains from the Pemene Falls Site.

	Castor canadensis (beaver)	*Procyon lotor* (raccoon)	*Odocoileus virginiana* (whitetail deer)	Unidentified Mammal	Total Mammal	Unidentified Turtle	Total Turtle	*Acipenser fulvescens* (sturgeon)	Total Fish
Surface								1	1
Test Pit 1/Level 1				7	7	3	3		
Test Pit 1/Level 2				3	3				
Test Pit 2/Level 1			16	42	58				
Test Pit 3/Level 1			7	129	136				
Test Pit 5/Level 2			5	32	37	1	1		
Test Pit 5/Level 3				2	2				
Test Pit 6/Level 1				1	1				
Test Pit 6/Level 2		1			1				
Test Pit 7/Level				2	2				
Test Pit 8/Level 1				2	2				
Test Pit 8/Level 2				1	1				
Test Pit 9/Level 1									
Total	5	1	29	223	258	4	4	1	1

were identified among these fragments. Both species, however, are represented by a single fragment recovered from the surface of the site. Although beaver are most active in the late summer and early fall and therefore more likely to be obtained during this time, beaver as well as deer are available throughout the year. The faunal remains, therefore, provide little evidence of seasonality. The faunal records and the lack of any floral remains, however, do seem to indicate hunting was the primary subsistence of the Late Woodland residents at this site. The faunal remains from this site are summarized in Tables 37 and 38.

Table 37.--Faunal Remains from the Penn Brook Site.

Mammals
- *Castor canadensis* (beaver)
- *Odocoileus virginiana* (whitetail deer)
- Mammalius (unidentified mammal)

Birds
- None

Reptiles
- None

Amphibians
- None

Fish
- None

Shell
- None

Table 38.--Distribution of Faunal Remains from the Penn Brook Site.

	Castor canadensis (beaver)	*Odocoileus virginiana* (whitetail deer)	Unidentified Mammal	Total Mammal
Surface	1	1	24	26
Test Pit 2/Level 1			1	1
Test Pit 2/Level 2			5	5
Test Pit 3/Level 1			1	1
Total	1	1	31	33

Porterfield Lake Site

Seasonality and Subsistence

Faunal remains from the Porterfield Lake site consist of twenty-two small burned bone fragments identified only as mammal bone. All of the fragments were recovered from the surface of an area exposed by a road cut. These remains provide little information regarding seasonality and subsistence activities except to suggest that hunting was an important economic activity in the lives of the Late Woodland peoples who utilized this site. These faunal remains are summarized in Tables 39 and 40.

Table 39.--Faunal Remains from the Porterfield Lake Site.

Mammals
Mammalius (unidentified mammal)
Birds
None
Reptiles
None
Amphibians
None
Fish
None
Shell
None

Table 40.--Distribution of Faunal Remains from the Porterfield Lake Site.

	Unidentified Mammal	Total Mammal
Feature 1	22	22
Total	22	22

Reindle Site

Seasonality and Subsistence

A total of 250 faunal remains were recovered from this multi-component site. Although only three species, whitetail deer, sturgeon and Crassotrea virginica, a salt water shellfish, could be specifically identified, the faunal records indicate a variety of resources were being exploited. The prehistoric diet at the Reindle site included a variety of large and small mammals, fowl, turtle, fish and shellfish.

The faunal record indicates the site was most likely occupied during the months of relatively warm weather. Sturgeon were probably caught during the spring spawning runs which occur during May. Several other resources including turtle, birds, amphibian, fish, and shellfish would most likely have been resources which were readily available during the summer months. It is surprising, however, that none of the large excavated features contained floral remains which are present at several other sites occupied during the summer months throughout the watershed.

Unfortunately, except for the faunal remains recovered from feature 3, none of the bone and shell fragments from this site can be clearly associated with either the Early Woodland, Middle Woodland, Late Woodland, or Oneota components. Feature 3 contained a variety of lithic artifacts and ceramics which clearly identified it as Oneota in origin. The single fragment of Crassotrea virginica, a salt water shellfish, and the forty-eight mammal bones recovered from the feature

can therefore be considered to represent the subsistence activities of the Oneota occupants at this time.

The faunal remains from the Reindle site are summarized below in Tables 41 and 42.

Table 41.--Faunal Remains from the Reindle Site.

Mammals
Odocoileus virginiana (whitetail deer)
Mammalius (unidentified mammal)
Birds
Avis (unidentified bird)
Reptiles
Testudinidae (unidentified turtle)
Amphibians
Amphibia (unidentified amphibian)
Fish
Acipenser fulvescens (sturgeon)
Osteichthyes (unidentified fish)
Shell
Pelecypoda (unidentified shell)

River Park Site

Seasonality and Subsistence

The faunal remains from the River Park site resemble the faunal remains from several other small Late Woodland sites located in the Menominee River watershed. The faunal remains consist of twenty-seven bone fragments. These fragments could be identified only as mammal bone. The faunal record, therefore, provides little information regarding seasonality and subsistence activities at the site, except to suggest hunting was an important economic activity.

Table 42.--Distribution of Faunal Remains from the Reindle Site.

	Odocoileus virginiana (whitetail deer)	Unidentified Mammal	Total Mammal	Unidentified Bird	Total Bird	Unidentified Turtle	Total Turtle	Unidentified Amphibian	Total Amphibian	*Acipenser fulvescens* (sturgeon)	Unidentified Fish	Total Fish	*Crassotrea virginica*	Unidentified Shell	Total Shell
Surface											1	1		1	2
Test Pit 1/Level 1		5	5												
Test Pit 1/Level 2		7	7												
Test Pit 1/Level 3		2	2	1	1										
Test Pit 2/Level 2		10	10												
Test Pit 4/Level 1	2	1	3												
Test Pit 4/Level 3		1	1												
Test Pit 4/Level 4		1	1			1	1			1	1	2			
Test Pit 4/Level 5										2	2	4			
Test Pit 6/Level 3								2	2						
Test Pit 7/Level 1											3	3			
Test Pit 7/Level 2		11	11												
Test Pit 7/Level 3		4	4												
Test Pit 7/Level 4		1	1												
Test Pit 8/Level 1		1	1												
Test Pit 8/Level 2		5	5							8	2	10			
Test Pit 8/Level 3		3	3												
Test Pit 9/Level 1		2	2			1	1								
Test Pit 9/Level 2		109	109												
Test Pit 9/Level 3		1	1												
Feature 1		6	6												
Feature 2		3	3												
Feature 3		48											1		
Total	2	221	175	1	1	2	2	2	2	11	9	20	1	1	2

Table 43.--Faunal Remains from the River Park Site.

Mammals
Mammalius (unidentified mammal)
Birds
None
Reptiles
None
Amphibians
None
Fish
None
Shell
None

Table 44.--Distribution of Faunal Remains from the River Park Site.

	Unidentified Mammal	Total Mammal
Test Pit 3/Level 1	24	24
Test Pit 4/Level 1	2	2
Test Pit 8/Level 1	1	1
Total	27	27

Riverside II Site

Seasonality and Subsistence

Fishing and hunting appear to have been the important economic activities at this large multi-component site. Unidentified mammal bone dominates the faunal record from this site suggesting hunting of both small and large animals supplied a primary protein source. Fishing, however, must have provided a greater portion of the prehistoric diet than is suggested by the five fragments identified as sturgeon or white sucker. The Riverside II site is located along the banks of the Menominee River only a few miles upstream from the mouth of the river. The site is ideally located to take advantage of the spring spawning runs which begin in April of each year. During these spawning runs fish could have easily been caught in large quantities. In addition to being available during the spring spawning run, white suckers are a common and easily obtainable fish through the summer and fall months.

The presence of sturgeon, a species which is readily available only during their spawning runs, suggests the site was occupied during the spring. The identification of white sucker and amphibians in the faunal record also suggest a spring or summer occupation. Although no floral remains were recovered from the features excavated as part of the stratified unaligned sample, floral remains consisting of Tilia sp. (Basswood) and Chenopodiaciae were recovered in subsequent excavations. Chenopodiaciae seeds are available during the summer and fall months. Tilia or Basswood seeds do not mature until late summer or early fall. The presence of these floral remains suggests the site was occupied throughout the summer months.

Unfortunately, none of the faunal or floral remains were recovered in a context which would clearly indicate their association with a particular cultural component. Therefore, it is impossible to determine if there was temporal variation in the way in which the residents of the Riverside II site exploited their environment.

The faunal remains from the Riverside II site are summarized in Tables 45 and 46.

Table 45.--Faunal Remains from the Riverside II Site.

Mammals
Bos boris (cow)
Canis familiaris (dog)
Odocoileus virginiana (whitetail deer)
Mammalius (unidentified mammal)
Birds
None
Reptiles
None
Amphibians
Amphibia (unidentified amphibian)
Fish
Acipenser fulvescens (sturgeon)
Catostomus commersoni (white sucker)
Shell
None

Rye Site

Seasonality and Subsistence

Faunal remains from the Rye site consist of twenty-three bone fragments. These fragments could be identified only as mammal bone. Unfortunately, the limited nature and identification of these faunal remains provide little information regarding seasonality and subsistence activities at the site, except to suggest that hunting was an important economic activity in the lives of the Late Woodland people who utilized the site.

Table 46.--Distribution of Faunal Remains from the Riverside II Site.

	Bos boris (cow)	*Canis familiaris* (dog)	*Odocoileus virginiana* (whitetail deer)	Unidentified Mammal	Total Mammal	Unidentified Amphibian	Total Amphibian	*Acipenser fulvescens* (sturgeon)	*Catostomus commersoni* (white sucker)	Total Fish
Surface				2	2			1	1	2
Test Pit 1/Level 1				1	1					
Test Pit 3/Level 1				1	1			1		1
Test Pit 3/Level 3				7	7					
Test Pit 4/Level 2				1	1			1		1
Test Pit 5/Level 2				1	1					
Test Pit 7/Level 2				2	2					
Test Pit 7/Level 3				1	1	3	3			
Test Pit 8/Level 1				1	1					
Test Pit 8/Level 2				6	6					
Test Pit 8/Level 3				1	1					
Test Pit 10/Level 2	1		1	1	3					
Test Pit 12/Level 1				11	11					
Test Pit 12/Level 2				4	4					
Test Pit 12/Level 3		27		155	182					
Test Pit 13/Level 1				5	5					
Test Pit 13/Level 2				3	3			1		1
Test Pit 13/Level 3				28	28					
Test Pit 13/Level 4				25	25					
Feature 1				45	45					
Total	1	27	1	301	330	3	3	4	1	5

Tables 47 and 48 summarize the faunal remains recovered from this site.

Table 47.--Faunal Remains from the Rye Site.

Mammals
Mammalius (unidentified mammal)
Birds
None
Reptiles
None
Amphibians
None
Fish
None
Shell
None

Table 48.--Distribution of Faunal Remains from the Rye Site.

	Unidentified Mammal	Total Mammal
Test Pit 3/Level 1	23	23
Total	23	23

Concluding Remarks

The faunal record from the Menominee River Watershed is dominated by a variety of mammals. Whitetail deer, represented by 180 fragments recovered from ten different sites, is the most common species identified in the faunal remains, suggesting the whitetail deer was an important source of protein in the prehistoric diet in the Menominee River Watershed. Beaver and bear are the second and third most commonly identified species. Their importance in the diet of this region, however, may have been displaced by sturgeon. This large fish, represented by its dermal armor in the faunal record, must have been a major food source. This prehistoric diet, dominated by deer, beaver, bear and sturgeon, appears to have been supplemented with any number of smaller mammals, birds, fish, and amphibians which also occur in the faunal record from these sites.

Using the faunal record and the limited floral remains as an aid to determining seasonality proved to be difficult at many sites. It was possible to identify a number of spring, summer and fall occupations. These were identified by the presence of a variety of species including turtle, fish, shellfish and some mammals which are either available only during the warmer months of the year or more easily obtained during the months of relatively warm to moderate weather. Floral remains, recovered from six of the sites, also identified summer and early fall occupations. Because species which are available from November to March are also available throughout the entire year it was difficult to identify sites which were occupied during the winter months. The absence of species readily available during the

spring and summer months, in the frequently limited to scanty faunal and floral remains at many sites, was not considered enough evidence to identify these sites as winter occupations. Many of these sites, however, must certainly have been occupied from November to March, although positive identification of a winter occupation could not be determined.

Many of the faunal remains were recovered from multi-component sites, which created additional difficulties. Establishing an association between the recovered faunal or floral remains and specific cultural periods at these multi-component sites proved to be impossible. Thus the faunal record from many sites such as Reindle and Riverside II is indicative of the entire site and could not be used to establish differences in subsistence activities which may have occurred between Early Woodland, Middle Woodland, Late Woodland, and Oneota occupations.

Although the occurrence of multi-component sites and limited faunal and floral remains complicated any attempt to associate particular subsistence strategies with specific cultural periods, several general observations regarding seasonality should be noted. The seasonality and subsistence data collected from the Menominee River Watershed and summarized in Table 49 suggests that Early and Middle Woodland peoples utilized the watershed primarily during the summer months. Early Woodland ceramics were recovered from Riverside II, Reindle, and the Little Cedar River sites. These three sites, as well as the Grand Rapids Dam site and the Chalk Hills site, produced evidence of the Middle Woodland occupation in the watershed. Floral and faunal evidence recovered from all of the sites, except the Chalk Hills site

Table 49.--Summary of Seasonality and Subsistence Data.

Site	Cultural Components*				Floral Remains	Faunal Remains	Season of Occupation
	E.W.	M.W.	L.W.	ON			
Abolin's Farm	-	-	x	-	Not recovered	Not recovered	--
Allgeyer	-	-	-	-	Recovered	Not recovered	Summer/Fall
Backlund	-	-	-	x	Recovered	Recovered	Spring/Summer/Fall
Brulee' Trestle	-	-	x	-	Not recovered	Not recovered	--
Casey Lake North	-	-	x	-	Not recovered	Not recovered	--
Casey Lake South	-	-	x	-	Not recovered	Recovered	--
Chalk Hills	-	x	-	-	Not recovered	Not recovered	--
Chappee Rapids	-	-	x	-	Not recovered	Recovered	--
Cook	-	-	x	-	Not recovered	Recovered	--
Grand Rapids Dam	-	x	-	-	Not recovered	Recovered	Summer
Grand Rapids	-	-	x	x	Recovered	Recovered	--
Little Cedar River	x	x	x	x	Recovered	Recovered	Summer
Michigamme Falls	-	-	x	-	Not recovered	Recovered	--
Martells Lake	-	-	x	-	Not recovered	Recovered	--
Pemebonwon	-	-	x	-	Not recovered	Recovered	Spring/Fall
Pemene Creek	-	-	x	x	Not recovered	Recovered	Spring
Pemene Falls	-	-	x	x	Not recovered	Recovered	Summer/Fall
Penn Brook	-	-	x	-	Not recovered	Recovered	--
Porterfield Lake	-	-	x	-	Not recovered	Recovered	--
Quartz Workshop	-	-	-	-	Not recovered	Not recovered	--
Reindle	x	x	x	x	Not recovered	Recovered	Summer
Riverside II	x	x	x	x	Not recovered	Recovered	Summer
Rye	-	-	x	-	Not recovered	Recovered	--
River Park	-	-	x	-	Not recovered	Recovered	--
Shakey Lakes Park	-	-	x	-	Not recovered	Not recovered	--
Van Riper	-	-	x	-	Not recovered	Not recovered	--

*Abbreviations: E.W.=Early Woodland, L.W.=Late Woodland, M.W.=Middle Woodland, ON=Oneota.

which was not tested due to its location in an area designated and maintained as a public recreational facility, indicates the most likely period of occupation was the months of June, July and August. Shell tempered Oneota ceramics were recovered at seven of the twenty-six sites included in this study. Floral and faunal data recovered from these sites suggest Oneota peoples utilized a subsistence strategy based on a more varied seasonal exploitation of the resources within the Menominee River Watershed. The floral and faunal remains from the Backlund site, a relatively large Oneota village situated in the south central portion of the watershed, indicates a three season, spring, summer and fall, occupation. Fall and spring utilization of the watershed by Oneota peoples is further substantiated by the faunal and floral data from the Pemene Falls and Pemene Creek sites, while summer utilization occurs at the Riverside II, Reindle, and Little Cedar River sites. Seasonality could be determined for only five of the twenty-one sites which contained evidence of a Late Woodland occupation. Two of these five sites, Riverside II and Reindle, appear to have been occupied only during the summer months. Pemene Falls, a third summer location, appears to have been utilized into the months of September and October, while Pemene Creek, a small site just downstream from Pemene Falls, was occupied during the spring. The Pemebonwon site appears to have been utilized as a hunting station during the spring and fall of each year. Although seasonality could not be accurately determined for the remaining sixteen Late Woodland sites, some of these sites must surely represent winter hunting camps. Many of these sites are small sites located on inland lakes in the northern portion

of the watershed. They appear to be the archaeological counterparts of the small nuclear family winter hunting camp described in the ethnographic literature for this area (Rogers, 1962; Hickerson, 1967; Leacock, 1954). If these are winter hunting camps, Late Woodland peoples appear to be the only peoples to have utilized the Menominee River Watershed throughout the entire year.

CHAPTER V

THE ANALYSIS

Introduction

Field work for the Menominee River Watershed project was done during four summers beginning in 1973 and ending 1976. The project sought to explore the relationship between prehistoric site localities within the 4,500 square miles designated as the Menominee River Watershed and the natural environment. To accomplish this a system of sampling was devised to allow us to collect adequate empirical data in an area that could not be totally surveyed within the available temporal framework. The present study uses this data to answer the following questions: Has there been a change in the utilization of the natural environment within the Menominee River Watershed from Early Woodland to Late Woodland and Oneota occupations, and, if there has been a change, what is the nature of this change?

At the outset, it was established that catchment zone analysis provided an excellent method to investigate the prehistoric utilization of the Menominee River Watershed. Chapter I also established that the most relevant environmental characteristics of the catchment zone would be those relating to water resources, climate, presettlement vegetation, soil, and topography and geomorphology. A series of variables was constructed to evaluate these characteristics and used in a

two part approach, involving interval scale data and interval and nominal scale data, to understand the environmental characteristics important for site location.

The second stage of the analysis attempted to evaluate the structural composition of the sites located by the survey of the Watershed. To accomplish this, a second series of variables was constructed to evaluate the archaeological data recovered from the stratified unaligned test pits excavated at each site. A complete list of the variables used in each step of the analysis, including the data source and measurement techniques used for obtaining the variable values, can be found in Appendix S.

Analysis of Interval Scale Environmental Variables

Twenty-five of the thirty-three variables or categories constructed to measure the environmental characteristics of the catchment zones were interval scale variables. In order to take advantage of analytical techniques available for use with interval scale data and as yet undeveloped for nominal and ordinal scale data, these twenty-five variables were selected for separate analysis. A number of multivariate procedures exist for the study of interval scale data similar to that available for this project. In general, these procedures provide a choice between a variety of clustering methods. Prominent among these methods is factor analysis, an analytical procedure originally developed by psychologists to study personality. Factor analysis is basically a technique which is designed to take a large number of attributes, expressed either as raw data or indices which have very

little theoretical or conceptual meaning, and reduce these to a smaller number of attribute clusters or factors which may then be interpreted. It is also an analytical procedure which is well suited for weakly or less structured data. These characteristics make it ideally suited for investigating the environmental structure of the catchment zones. A more detailed description of the purposes and objectives of factor analysis can be found in Doran and Hodson (1975) and Blalock (1960).

Using SPSS sub-program FACTOR, principal component analysis was carried out on these twenty-five interval scale variables. This R-mode analysis and Varimax orthogonal rotation was used to: (1) investigate potential linear relationships among variables, and (2) reduce the mass of variables to a limited and nonduplicate set of clusters. Although several options are available to users of sub-program FACTOR, only option 1 was selected for use. This option causes missing value indicators to be ignored and enters all data into the computations. Without selection of option 1, data related to several of the site locations would have been entirely omitted, although each location was missing data for a single variable.

In the analysis all sites and all variables were entered on the SPSS/PA2 principal component model. Varimax rotation of the factor matrix revealed seven factor loadings on the original variables. Values for each factor loading, along with the percent of variance accounted for by each factor and the cumulative percent of variance, are presented in Table 50. Loadings upon which factor interpretations were based are underscored in the table.

Although seven factors account for 100 percent of the observed variance, factors 6 and 7 jointly account for only 10.7 percent of

Table 50.--SPSS/PA2 Analysis of Environmental Variables.

Variable	Factor						
	I	II	III	IV	V	VI	VII
1	.30	-.19	.45	-.01	-.06	.03	.09
2	-.14	.61	-.12	-.02	.10	-.15	-.32
3	-.49	.05	-.36	-.47	-.20	-.41	-.14
4	-.53	-.04	-.19	-.40	-.13	-.29	.17
5	-.48	-.37	.20	-.05	-.12	-.21	.31
6	.33	-.09	.37	.78	-.10	.03	.09
7	.61	.17	.20	.60	-.00	.07	.13
8	.68	.23	.01	.23	.42	-.07	.15
9	.23	-.03	-.07	.88	-.03	.08	-.01
10	-.03	.09	.07	-.02	.96	-.05	.06
11	.15	.80	-.11	.11	.08	.04	.14
12	.83	-.07	.16	.26	.00	.13	-.03
13	.90	-.16	-.15	.29	-.00	-.03	.09
14	-.83	.20	-.26	-.01	.08	-.08	-.13
15	-.38	.81	.08	-.17	-.07	.03	-.29
16	-.01	-.05	.27	.22	-.17	.84	.01
17	-.04	-.30	-.20	.34	-.50	.16	.45
18	-.00	-.25	-.90	-.09	-.13	-.19	.08
19	.08	-.14	.89	.13	.08	.16	.04
20	-.11	.93	.05	-.05	.15	.11	.08
21	-.09	.04	-.03	-.00	-.05	-.02	.73
22	-.62	.02	-.36	-.30	.11	.36	-.08
23	.43	.35	.15	-.02	.02	.58	.25
24	.55	.43	.26	-.14	-.11	.41	-.11
25	.96	.19	.04	.16	-.06	.08	.09
Percent of variance	41.0	19.8	12.4	8.7	7.4	5.7	5.1
Cumulative percent of variance	41.0	60.8	73.2	81.9	89.3	94.9	100.0

this variance, while factors 1 through 5 account for 89.3 percent or approximately 90 percent of the variance. Factors 6 and 7, while jointly accounting for only 10 percent of the variance, were also difficult if not impossible to interpret. The following discussion is therefore limited to a definition and interpretation of factors 1 through 5. Each of these five factors is discussed separately and the discussion includes: (1) identification of both positively and negatively correlated variables; (2) an interpretation of the factor; (3) a list of the sites which appear to have positive association with the factor. This association was determined by a general inspection of the data. This inspection assumed that the variables with recorded value greater than the mean of the twenty-six variable values had a positive association, while a value less than the mean had a negative association. Sites exhibiting scores greater than the mean for positively associated variables, and less than the mean for negatively associated variables for more than 50 percent of the variables which identified the factor, were considered to be associated with the factor. For convenience, the mean and the values for each of the variables associated with the five factors are listed in table format following the discussion of each factor.

Factor I is identified by nine variables. It is positively correlated with variables 7 (total inland lake interface within an area lying between the one mile and two mile radii of the site location), 8 (total inland lake interface within the area lying between the two and three mile radii of the site location), 12 (normal annual precipitation), 13 (average seasonal snowfall), 24 (percentage of the catchment zone area accounted for by the most areal extensive surface geological

formation within a three mile radius of the site location) and 25 (elevation above sea level), and is negatively associated with variables 4 (total stream length within the area lying between the one mile and two mile radii of the site location), 14 (average annual consecutive frost free days) and 22 (density of surface geological formations). This factor is dominated by a number of environmental characteristics associated with sites located in the northern portion of the Watershed. Located nearer the headwaters of the Watershed, these sites are situated at higher elevations and away from the modifying effects of the Great Lakes and thus are also located in areas of higher precipitation and fewer frost free days. Sites located in this more northerly area of the Watershed also appear to be associated with the numerous inland lakes which dot the landscape of the upper two thirds of the Watershed rather than the riverine resources. In addition, a large portion of the catchment zone is dominated by a single geological formation. Sites with factor scores having extreme positive association with this factor are spatially clustered in the northeastern portion of the Watershed. These sites include Porterfield Lake, Martells Lake, Casey Lake North, Casey Lake South, and Van Riper. Positive values were also associated with the following sites: Michigamme Falls; Quartz Workshop; Brulee Trestle; and Cook. Several of these latter sites, although exhibiting positive values for a majority of the variables which identify this factor, did not score positive values with those variables associated with inland lakes. Values for the variables associated with Factor I are presented in Table 51.

Table 51.--Values for Variables Associated with Environmental Factor I.

	Positively Associated Variables						Negatively Associated Variables		
	7	8	12	13	24	25	4	14	22
Mean	1.6	2.4	29.4	65.5	66.5	906.9	2.8	112.7	0.14
Porterfield Lake*	3.2	6.1	31	95	86	1440	3.5	73	.00
Martells Lake*	3.0	1.9	31	95	86	1460	.0	73	.07
Casey Lake North*	4.1	8.1	31	95	86	1480	.0	73	.07
Casey Lake South*	6.6	6.6	31	95	86	1480	.0	73	.07
Van Riper*	6.1	9.4	31	135	73	1580	1.4	112	.11
Michigamme Falls*	.0	2.6	29	75	70	1140	4.0	93	.11
Quartz Workshop*	.0	2.6	29	75	70	1120	4.0	93	.11
Brulee Trestle	.5	.0	29	75	80	1440	1.0	78	.11
Cook*	4.3	9.1	29	75	47	1100	2.3	93	.11
Abolin's Farm	.0	.0	29	45	66	640	2.3	131	.35
Allgeyer	.0	.0	29	55	52	640	3.4	131	.16
Backlund	.8	9.0	29	55	54	700	2.3	123	.17
Chalk Hills	1.4	.0	29	55	87	760	3.4	122	.11
Chappee Rapids	.0	.0	29	45	54	620	5.4	131	.18
Grand Rapids	.0	.0	29	55	41	660	4.0	131	.15
Grand Rapids Dam	.0	.0	29	55	37	660	5.3	131	.22
Little Cedar River	.0	.0	29	55	41	640	4.1	131	.14

Table 51.--Continued.

	Positively Associated Variables						Negatively Associated Variables		
	7	8	12	13	24	25	4	14	22
Pembonwon	2.4	.0	29	55	80	780	4.4	123	.20
Pemene Creek	.0	.0	29	55	63	760	2.6	123	.20
Pemene Falls	.0	.0	29	55	63	780	2.6	123	.20
Penn Brook	1.5	1.4	29	55	53	800	3.3	123	.15
Reindle	3.0	5.0	29	45	100	600	3.0	131	.15
Riverside II	3.5	.0	29	45	89	600	2.2	131	.19
River Park	.0	.0	29	45	71	660	2.4	131	.18
Rye	.0	.0	29	55	41	640	3.6	131	.15
Shakey Lakes	4.4	.0	29	55	53	700	1.0	123	.08

*Indicates sites considered to be positively associated with Factor I.

Factor II is identified by three variables. It is positively correlated with variables 11 (surface area of inland lakes within the area lying between the two and three mile radii of the site location), 15 (density of vegetation classes), and 20 (percentage of catchment zone forested by coniferous-deciduous forests. This factor reveals an association between particular features of the vegetation and nearby aquatic resources. The association between vegetative diversity and variable 20, which reflects the tendency for an area to be dominated by coniferous-deciduous forests, appears to be somewhat contradictory until examined in further detail. Both variables were measured using Veatch's map, "Presettlement Forest in Michigan." Veatch identifies a variety of specific forest types as well as grouping these specific types into four general categories. Variable 15 refers to the specific forest types while variable 20 refers to the general categories. Thus the association between variables 15 and 20 can be explained as either a situation in which a number of specific forest types belonging to the general category coniferous-deciduous dominate the catchment zone, or one in which coniferous-deciduous forests dominate the catchment zone and include in the catchment zone area a number of different forest types present in only a small percentage of the total catchment area. In reality it is a combination of these two explanations which accounts for the actual situations which resulted in the association. This vegetative environment is also associated with inland lake resources between the two and three mile radii of the site or, approximately, a 40 to 60 minute walk from the specific site location. The sites which are highly associated with

this factor include: Backlund, Reindle, Riverside II and Cook. Values for variables 10, 15, and 20 can be found in Table 52.

Factor III is identified by a single positively correlated variable and a single negatively associated variable. It is positively associated with variable 19 (percentage of the catchment zone forested by pine forests). It is negatively correlated with variable 18 (percentage of the catchment zone forested by deciduous-coniferous forests). Except for the negative association with a differing forest type, this variable is independent of any of the other observed environmental characteristics with respect to site location and/or resource choice. This factor is positively associated with fourteen sites. These sites include: Chalk Hills, Penn Brook, Backlund, Pemene Creek, Pemene Falls, Pembonwon, Shakey Lakes, River Park, Chappee Rapids, Cook, Porterfield Lake, Martells Lake, Casey Lake North, and Casey Lake South. Values for the two variables associated with Factor III can be found in Table 53.

Factor IV is identified by three variables. It is positively correlated with variables 6 (total inland lake interface within a one mile radius of the site location), 7 (total inland lake interface within the area lying between the one mile and two mile radii of the site location) and 9 (surface area of inland lakes within a one mile radius of the site location). This factor reveals an association between a group of variables related to aquatic environments. In addition, this factor indicates these site locations were selected to be situated less than two miles from these aquatic environments and their resources. This situation appears to be related to small interior lakes which are scattered throughout portions of the Watershed. This factor is reflected by extreme positive values on the following sites: Shakey

Table 52.--Variable Values for Sites Associated with Environmental Factor II.

	Positively Associated Variables		
	11	15	20
Mean	.34	.18	4.31
Backlund*	.50	.16	15.0
Reindle*	5.10	.41	53.0
Riverside II*	.00	.40	39.0
Cook*	1.0	.20	.0
Abolin's Farm	.0	.18	.0
Allgeyer	.0	.17	.0
Casey Lake North	.3	.11	.0
Casey Lake South	.2	.11	.0
Brulee Trestle	.0	.13	.0
Chalk Hills	.0	.24	.0
Chappee Rapids	.0	.24	.0
Grand Rapids	.0	.17	.0
Grand Rapids Dam	.0	.17	.0
Little Cedar River	.0	.17	.0
Martells Lake	.0	.11	.0
Michigamme Falls	.0	.12	.0
Pembonwon	.0	.16	.0
Pemene Creek	.0	.16	.0
Pemene Falls	.0	.16	.0
Penn Brook	.0	.16	.0
Porterfield Lake	.3	.11	.0
Quartz Workshop	.0	.12	.0
River Park	.0	.29	.0
Rye	.0	.11	.0
Shakey Lakes	.0	.15	5.0
Van Riper	1.4	.11	.0

*Indicates sites considered to be positively associated with Factor II.

Table 53.--Values for Variables Associated with Environmental Factor III.

	Positively Associated Variable	Negatively Associated Variable
	19	18
Mean	66	29
Casey Lake North*	100	0
Casey Lake South*	100	0
Chalk Hills*	100	0
Cook*	100	0
Martells Lake*	100	0
Porterfield Lake*	100	0
Shakey Lakes*	95	0
Pembonwon*	89	11
Pemene Creek*	89	11
Pemene Falls*	89	11
Penn Brook*	89	11
Backlund*	85	0
Chappee Rapids*	73	19
River Park*	65	9
Abolin's Farm	29	71
Allgeyer	41	59
Brulee' Trestle	43	57
Grand Rapids	41	59
Grand Rapids Dam	41	52
Little Cedar River	41	59
Michigamme Falls	32	68
Quartz Workshop	32	68
Reindle	47	0
Riverside II	46	11
Rye	31	69
Van Riper	4	96

*Indicates site considered to be positively associated with Factor III.

Lakes, Porterfield Lake, Martells Lake, Casey Lake South, Casey Lake North, Van Riper and Cook. Table 54 lists the values of variables 6, 7 and 9 for each site.

Factor V is identified by a single variable. It is positively correlated with variable 10 (surface area of inland lakes between the one mile and two mile radii of the site location). This variable is independent of any of the other observed environmental variables with respect to site locations and/or resource choice. Three sites exhibited positive values associated with the factor. These sites are: Backlund, Reindle, and Van Riper. Values for variable 10 can be found in Table 55.

Analysis of Interval and Nominal Scale Environmental Variables

Because interval scale data could not fully accommodate the wide range of environmental information available and necessary to understand the criteria for site locations, it was decided to utilize a numerical taxonomic classification as a second analytical step. A total of two hundred and thirty variables in thirty-three categories were utilized in this analysis. The thirty-three categories consisted of the twenty-five interval scale variables used in the SPSS sub-program FACTOR which were coded for this analysis, and an additional eight nominal scale multistate and dichotomous environmental variables which evaluated the general environmental situation associated with each site. In addition to providing a means to incorporate a wider range of environmental data than utilized in the principal component analysis, the numerical taxonomic classification also served as an aid for interpreting this clustering procedure.

Table 54.--Values for Variables Associated with Environmental Factor IV.

	Positively Associated Variables		
	6	7	9
Mean	1.0	1.6	.05
Shakey Lakes*	1.0	1.6	.5
Martells Lake*	4.6	3.0	.1
Porterfield Lake*	4.0	3.2	.1
Casey Lake South*	2.5	6.6	.1
Casey Lake North*	2.5	4.1	.1
Van Riper*	2.4	6.1	.4
Cook*	2.9	4.3	.0
Abolin's Farm	.0	.0	.0
Allgeyer	.0	.0	.0
Backlund	.0	.8	.0
Brulee' Trestle	.0	.5	.0
Chalk Hills	.5	1.4	.0
Chappee Rapids	.0	.0	.0
Grand Rapids	.0	.0	.0
Grand Rapids Dam	.0	.0	.0
Little Cedar River	.0	.0	.0
Michigamme Falls	.0	.0	.0
Pembonwon	.0	.0	.0
Pemene Creek	.0	.0	.0
Pemene Falls	.0	.0	.0
Penn Brook	.0	1.5	.0
Quartz Workshop	.0	.0	.0
Reindle	.0	3.0	.0
River Park	.0	.0	.0
Riverside II	.0	.0	.0
Rye	.0	.0	.0

*Indicates sites considered to be positively associated with Factor IV.

Table 55.--Variable Values for Sites Associated with Environmental Factor V.

	Positively Associated Variable
	10
Mean	.7
Backlund*	15.0
Reindle*	1.6
Van Riper*	1.0
Abolin's Farm	.0
Allgeyer	.0
Brulee' Trestle	.0
Casey Lake North	.1
Casey Lake South	.1
Chalk Hills	.0
Chappee Rapids	.0
Cook	.0
Grand Rapids	.0
Grand Rapids Dam	.0
Little Cedar River	.0
Martells Lake	.1
Michigamme Falls	.0
Pembonwon	.0
Pemene Creek	.0
Pemene Falls	.0
Penn Brook	.0
Porterfield Lake	.0
Quartz Workshop	.0
River Park	.0
Riverside II	.0
Rye	.0
Shakey Lakes	.2

*Indicates site considered to be positively associated with Factor V.

The numerical taxonomic analysis tested the similarity of sites according to presence/absence (1,0) criteria. Although numerous measures of similarity are available for such criteria (Sneath and Sokal, 1973; Clifford and Stephenson, 1975), the Jaccard similarity coefficient was used. This method of measure was chosen to avoid the high number of negative matches which results with the utilization of both multistate and nominally coded interval scale variables. The Jaccard similarity coefficient ignores the d or conjoint absence cell in its calculations.

$$\text{similarity} = \frac{a}{a + b + c}$$

a = number of co-occurrences (1,1)
b = number of mismatches (1,0)
c = number of mismatches (0,1)

The Q-mode similarity matrix presented in Table 56 resulted from the computation of the measure of similarity for all pairs of sites. Site linkages were derived from this matrix using the highest group average similarity technique. Doran and Hodson (1975) present a rationale for this approach in archaeological analysis. The linkages obtained with this method are illustrated in the dendrogram in Figure 1.

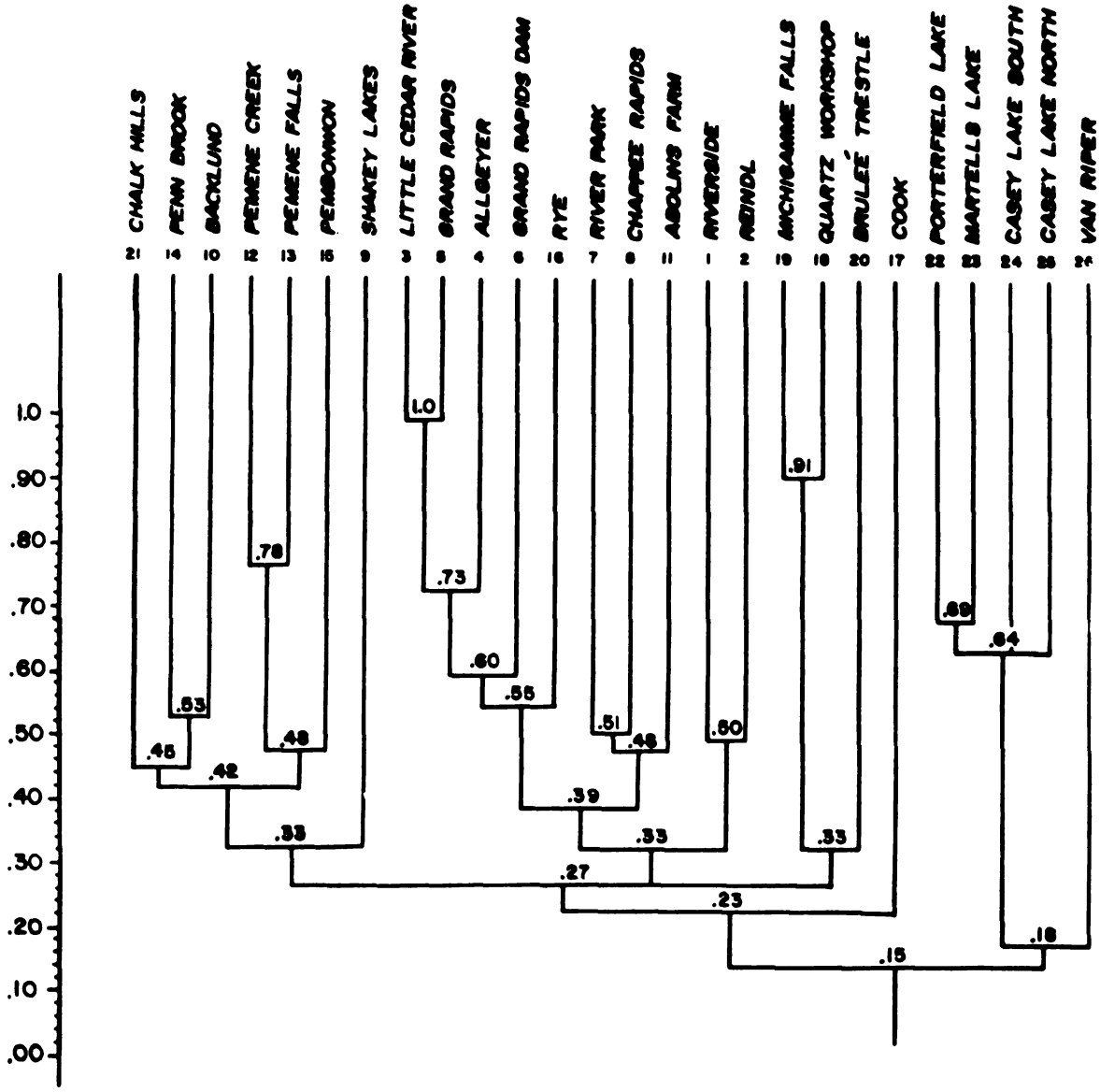
Choosing a level of similarity for the interpretation of numerical taxonomic results is somewhat subjective. Often this choice depends on what level of similarity creates "acceptable" groupings. Consideration of several alternatives suggested the .40 level of similarity created the most reasonable and interpretable site groupings. The .40 level of similarity creates ten site clusters.

Cluster I consists of five sites: Chalk Hills, Penn Brook, Backlund, Pemene Creek, Pemene Falls, and Pembonwon. All of these

Table 56.--Q-Mode Similarity Matrix.

	Riverside II	Reindl	Little Cedar River	Allgeyer	Grand Rapids	Grand Rapids Dam	River Park	Chappee Rapids	Shakey Lakes	Backlund	Abolins Farm	Pemene Creek	Pemene Falls	Penn Brook	Pemebonwon	Rye	Cook	Quartz Workshop	Michigamme Falls	Bruleé Trestle	Chalk Hills	Porterfield Lake	Martells Lake	Casey Lake South	Casey Lake North	Van Riper
Riverside II	1.0																									
Reindl	.50	1.0																								
Little Cedar River	.37	.32	1.0																							
Allgeyer	.32	.29	.73	1.0																						
Grand Rapids	.37	.32	1.0	.73	1.0																					
Grand Rapids Dam	.35	.24	.61	.53	.65	1.0																				
River Park	.46	.27	.37	.37	.37	.32	1.0																			
Chappee Rapids	.40	.32	.37	.40	.37	.37	.51	1.0																		
Shakey Lakes	.16	.10	.20	.20	.20	.24	.16	.26	1.0																	
Backlund	.29	.20	.32	.29	.29	.27	.27	.40	.35	1.0																
Abolins Farm	.43	.29	.43	.37	.43	.40	.50	.46	.27	.32	1.0															
Pemene Creek	.29	.18	.32	.40	.37	.35	.29	.36	.27	.46	.37	1.0														
Pemene Falls	.22	.08	.27	.32	.29	.32	.26	.27	.35	.50	.29	.78	1.0													
Penn Brook	.24	.28	.32	.36	.32	.29	.32	.37	.32	.53	.27	.37	.43	1.0												
Pemebonwon	.22	.18	.40	.32	.37	.29	.22	.32	.37	.46	.32	.46	.50	.43	1.0											
Rye	.40	.18	.61	.50	.61	.46	.40	.37	.24	.43	.53	.35	.18	.37	.34	1.0										
Cook	.24	.12	.20	.22	.20	.18	.27	.29	.29	.29	.32	.20	.22	.36	.24	.24	1.0									
Quartz Workshop	.22	.12	.37	.29	.37	.29	.16	.20	.14	.24	.27	.29	.29	.24	.32	.29	.25	1.0								
Michigamme Falls	.22	.16	.43	.32	.43	.32	.18	.27	.16	.29	.29	.27	.32	.27	.32	.32	.27	.91	1.0							
Bruleé Trestle	.22	.22	.37	.35	.37	.27	.24	.24	.16	.27	.32	.27	.24	.20	.29	.18	.18	.32	.34	1.0						
Chalk Hills	.37	.24	.40	.37	.35	.32	.43	.35	.29	.43	.32	.40	.37	.46	.37	.40	.18	.20	.22	.27	1.0					
Porterfield Lake	.16	.14	.10	.14	.16	.16	.14	.14	.29	.16	.14	.14	.16	.20	.14	.20	.16	.10	.10	.24	.15	1.0				
Martells Lake	.16	.08	.14	.14	.14	.16	.10	.16	.32	.16	.14	.16	.16	.14	.22	.14	.14	.10	.16	.27	.18	.89	1.0			
Casey Lake South	.12	.12	.10	.08	.10	.10	.10	.12	.32	.16	.08	.14	.16	.16	.14	.16	.16	.08	.08	.20	.16	.61	.66	1.0		
Casey Lake North	.12	.10	.12	.14	.14	.14	.12	.14	.35	.20	.16	.16	.16	.20	.18	.14	.20	.16	.16	.27	.18	.65	.65	.61	1.0	
Van Riper	.08	.08	.12	.12	.12	.12	.12	.12	.18	.20	.10	.12	.12	.14	.16	.18	.12	.14	.14	.22	.10	.16	.16	.20	.20	1.0

Fig. 1.--Site Clusters.


CHALK HILLS 21
PENN BROOK 14
BACKLUND 10
PEMENE CREEK 12
PEMENE FALLS 13
PEMBONNON 15
SHAKEY LAKES 9
LITTLE CEDAR RIVER 3
GRAND RAPIDS 5
ALLGEYER 4
GRAND RAPIDS DAM 6
RYE 16
RIVER PARK 7
CHAPPEE RAPIDS 8
ABOLINS FARM 11
RIVERSIDE 1
REINDL 2
MICHIGAMME FALLS 19
QUARTZ WORKSHOP 18
BRULÉE TRESTLE 20
COOK 17
PORTERFIELD LAKE 22
MARTELLS LAKE 23
CASEY LAKE SOUTH 24
CASEY LAKE NORTH 25
VAN RIPER 26
1.0
.90
.80
.70
.60
.50
.40
.30
.20
.10
.00
.45
.53
.42
.78
.48
.33
1.0
.73
.60
.55
.39
.51
.48
.33
.50
.27
.91
.33
.23
.15
.69
.64
.18

sites are located along the banks of the Menominee River in areas of predominantly pine forests and therefore are highly correlated with Factor III. Except for Chalk Hills, a Middle Woodland site, all of the sites in this cluster are Late Woodland and/or Oneota occupations.

Cluster II consists of a single Late Woodland site. The Shakey Lakes site is located adjacent to a group of interconnected interior lakes, in a heterogeneous vegetation situation. It is associated with three of the factors identified by the SPSS sub-program FACTOR. These are factors II, III, and IV which related to interior lakes, coniferous-deciduous forests, and pine forests.

Cluster III includes five sites. This cluster includes a number of multi-component as well as temporally diverse occupations. The sites tend to be located along the Menominee River in areas dominated by coniferous-deciduous forest near small interior lakes, and therefore show some association with Factor II. The Little Cedar River, Grand Rapids, Allgeyer, Grand Rapids Dam, and Rye sites are included in this cluster.

Cluster IV includes three sites with thinly scattered debris located adjacent to the Menominee River in heterogeneous environmental situations. Included in this cluster are the River Park, Chappee Rapids and Abolin's Farm sites. This cluster forms a temporally distinct cluster of Late Woodland sites.

Cluster V consists of two multi-component sites. Both sites are located near the mouth of the Menominee River within three miles of Lake Michigan. Both sites are highly associated with factor II, having a catchment zone dominated by coniferous-deciduous forest but also including a wide variety of specific vegetation types. Both

sites have an Early, Middle, and Late Woodland as well as an Oneota occupation.

Cluster VI also consists of two sites. Both sites are located near the confluence of the Brule, Michigamme, and Menominee Rivers. These two sites are centrally located in the Watershed in an area of somewhat higher elevation and precipitation, and are associated with factor I. Temporal association could not be determined for either the Michigamme Falls site or the Quartz Workshop site.

Cluster VII includes a single Late Woodland site. The Brulee' Trestle site is adjacent to the Brule River just below the confluence of the Brule and Iron Rivers. It is the only site included in this study which was not adjacent to either the Menominee River, the sixth order trunk stream or small interior lakes. It is associated with factor I due to its location in the northern half of the Watershed, an area of higher precipitation and elevation, and consequently lower temperatures and fewer frost free days.

Cluster VIII also consists of a single small Late Woodland site. The Cook site exhibits positive values for factor III as well as showing some association with factor I. This association with factor I is related to its location in the central portion of the Watershed in an area of somewhat greater elevation and precipitation than many of the other site locations. The Cook site environment, however, lacks the small interior lakes which are highly associated with this factor. The surrounding vegetation is dominated by pine forests, accounting for the association with factor III.

Cluster IX includes four sites: Porterfield Lake, Martells Lake, Casey Lake South, and Casey Lake North. All four sites show high

association with factors I, III, and IV. All of the sites are situated along the shores of numerous small lakes in the northern portion of the Watershed. This area of the Watershed is characterized by high snowfall and low temperatures due to its higher elevation. The site locations are dominated by pine forests and a single geological situation. The numerous small lakes which dot the surrounding landscape provide intermittent aquatic resources throughout the various catchment zones. Among the significant aspects of this site group is the fact that they are all Late Woodland occupations forming a temporally distinct cluster with overall similarity in locational characteristics.

Cluster X consists of a single site. The Van Riper site is located in the upper or northern portion of the Watershed on a large interior lake. The catchment zone shows positive association with factors I, IV and V. This Late Woodland site, like those in cluster IX, is also located in an area of high elevation and precipitation, and low temperatures. However, it is located in a heterogeneous vegetation situation rather than a pine forest. Its location on Lake Michigamme accounts for its association with factors IV and V.

Analysis of Interval Scale Structural Variables

In order to view the structural and/or functional variability (i.e., composition of tool kits, site size, etc.) of the twenty-six sites included in the study, the data recovered from the stratified unaligned test excavations at each site was utilized in a second analytical step. Although additional excavation was undertaken at several of the sites (see Appendices A through R), only data recovered

from those test pits which were part of the stratified unaligned sample at each site was considered in the following analysis.

Twenty-five interval scale variables were created to describe and measure the recovered data. SPSS sub-program FACTOR was again selected for analytical use, since the structure of the data as well as the objectives of the analysis were similar to that for the environmental analysis. Except for the omission of option 1, the essential steps and procedures in this second stage of the analysis follow those used in the previous SPSS sub-program FACTOR. R-mode analysis and varimax orthogonal rotation were utilized to investigate the relationships between variables. Two of the twenty-six sites, Chalk Hills and Van Riper, were not included in the analysis. Both sites are located in recreational areas, and property owners were reluctant to allow excavation during the most popular tourist season. As a result field procedures were modified and limited to intensive surface collecting. Surface collecting, however, could not provide a comparable sample, and to avoid the difficulties associated with dissimilar data, both sites were excluded from the analysis.

The varimax rotated factor matrix revealed six factor loadings. The variable values for each factor, along with the percent of variance accounted for by each factor and the cumulative percent of variance, are presented in Table 57. Loadings upon which factor interpretations were based are underscored.

One hundred percent of the observed variance is accounted for by six factors. However, approximately 90 percent of the variance is explained by factors 1 through 4. Factors 5 and 6 account for only 12.1 percent of the variance. These latter factors are difficult if

Table 57.--SPSS/PA2 Analysis of Structural Variables.

	Variable	Factor					
		1	2	3	4	5	6
Site size	1	.40	.53	.24	.39	.37	.30
Potsherds	2	.31	.43	.58	.05	.46	.30
Lithic debris	3	.54	.53	.24	.07	.10	.57
Stone tools	4	.89	.29	.21	.20	.09	.14
Projectile points	5	.74	.03	.31	.29	.11	.40
Scrapers	6	.87	.04	-.22	.16	.27	.07
Drills	7	-.02	-.15	-.03	.98	-.05	-.03
Wedges	8	.85	.00	.20	-.06	.04	-.30
Biface and knives	9	.68	.47	.35	-.04	-.05	-.02
Retouched flakes	10	.87	-.01	.14	.10	.02	.14
Spokeshaves	11	.13	-.07	.92	-.01	-.03	.00
Cores	12	.23	.64	.54	-.01	.36	.00
Ground stone	13	.38	-.09	-.21	-.12	-.02	.34
Postmolds	14	.18	.01	.93	-.01	.06	.00
Storage or refuse pits	15	.05	.75	-.04	-.08	.08	.24
Hearths	16	.33	.40	.37	-.07	-.09	-.30
Other features	17	-.06	.12	.62	-.05	.42	-.10
Copper tools	18	.07	.62	-.05	.03	-.05	.64
Copper fragments	19	.14	.74	.34	.43	-.07	.25
Total fauna	20	.25	.45	-.03	.84	.09	.05
Mammal bone	21	.25	.41	-.03	.86	.07	.05
Fish bone	22	.07	.75	-.02	.08	.07	-.07
Bird bone	23	-.09	.95	.00	.08	-.05	-.08
Amphibian bone	24	.31	.00	.22	-.03	.90	.04
Shell	25	-.14	.02	-.05	.64	.72	.09
Percent of variance		44.7	17.4	14.2	11.6	6.9	5.2
Cumulative percent of variance		44.7	62.1	76.3	87.9	94.8	100.0

not impossible to interpret. As a result, the following discussion is limited to the identification and interpretation of factors one through four.

Factor I is identified by positive correlation with seven variables, including variables 3 (total number of unmodified or waste flakes), 4 (total number of bifacially and unifacially flaked tools), 5 (number of chipped stone tools identified as projectile points or point fragments), 6 (number of chipped stone tools identified as scrapers or scraper fragments), 8 (number of chipped stone tools identified as wedges), 9 (number of chipped stone tools identified as knives or bifaces) and 10 (number of flakes which exhibit retouching). This factor which accounts for 44.7 percent, or almost one half of the observed variability, clearly identified a stone tool kit consisting of six functionally specific chipped stone tools and the manufacturing debris. The highest factor loadings (those above 0.70) were associated with those variables related to total number of recovered points, scrapers, wedges, retouched flakes, and chipped stone tools (a variable which is somewhat redundant with the former variables). It is most likely that this stone tool kit relates to hunting and the associated butchering and processing activities. This factor has high association with the following sites: Penn Brook, Pemene Creek, Pemene Falls, Pembonwon, Grand Rapids, Riverside II and Reindle. It also exhibits some association with the Little Cedar River, Grand Rapids Dam, Backlund, Shakey Lakes, Chappee Rapids, Abolin's Farm, Brulee' Trestle and Cook sites. Values for the variables associated with this factor can be found in Table 58.

Table 58.--Values for the Variables Associated with Structural Factor I.

	Positively Associated Variables						
	3	4	5	6	8	9	10
Mean	348	6.3	1.7	1.6	.3	.7	1.5
Penn Brook*	118	11.0	2.0	5.0	0.0	2.0	2.0
Pemene Creek*	313	10.0	1.0	3.0	1.0	1.0	4.0
Pemene Falls*	974	27.0	6.0	9.0	5.0	3.0	7.0
Pembonwon*	251	10.0	4.0	3.0	0.0	0.0	2.0
Grand Rapids*	1128	18.0	6.0	1.0	2.0	3.0	4.0
Riverside II*	2033	20.0	8.0	6.0	0.0	2.0	4.0
Reindle*	389	8.0	3.0	2.0	0.0	0.0	3.0
Little Cedar River	1397	13.0	1.0	1.0	0.0	3.0	0.0
Grand Rapids Dam	817	3.0	1.0	0.0	0.0	0.0	2.0
Backlund	248	4.0	1.0	3.0	0.0	0.0	0.0
Shakey Lakes	34	5.0	1.0	2.0	0.0	1.0	1.0
Chappee Rapids	43	5.0	2.0	0.0	0.0	1.0	1.0
Abolin's Farm	258	3.0	1.0	1.0	0.0	0.0	1.0
Brulee' Trestle	115	2.0	0.0	0.0	0.0	0.0	2.0
Cook	22	2.0	1.0	0.0	0.0	0.0	1.0
Allgeyer	46	1.0	0.0	1.0	0.0	0.0	0.0
Casey Lake North	25	2.0	0.0	0.0	0.0	1.0	0.0
Casey Lake South	9	1.0	0.0	0.0	0.0	0.0	1.0
Martells Lake	12	0.0	0.0	0.0	0.0	0.0	0.0
Michigamme Falls	4	1.0	1.0	0.0	0.0	0.0	0.0
Porterfield Lake	117	0.0	0.0	0.0	0.0	0.0	0.0
Quartz Workshop	201	3.0	0.0	1.0	0.0	0.0	1.0
River Park	43	1.0	1.0	0.0	0.0	0.0	0.0
Rye	8	1.0	1.0	0.0	0.0	0.0	0.0

*Indicates sites considered to be positively associated with Structural Factor I.

Factor II is identified by positive association with eight variables. It is most highly associated (factor loadings greater than .70) with variables 15 (total number of features identified as storage and/or refuse pits), 19 (total number of copper fragments), 22 (total number of fish bone or bone fragments), 23 (total number of bird bone or bone fragments). It is also associated with variables 1 (site size), 3 (total number of unmodified or waste flakes), 12 (total number of cores), and 18 (total number of copper tools). Factor loadings for these variables were greater than .50 but less than .70. This factor appears to represent two different sets of activities. The first of these activities appears to be the taking of avian and aquatic resources, while the second involves the manufacture and possible use of copper tools. Seasonality may account for the association of these two differing activities. Fish and wild fowl were extremely abundant during the late spring and early summer of each year, providing resources which would readily support a larger social unit. Such abundant resources would probably have been stored, thus accounting for the high factor loading for variable 15 (total number of features identified as storage and/or refuse pits). These abundant and easily obtained resources would most likely result in additional free time away from subsistence duties which could be used for obtaining copper through trade and/or travel, and for the manufacture of copper implements. Many of these completed copper implements, such as toggle harpoon heads and fish hooks, may also have facilitated the taking of fish. Factor II is associated with the following sites: Little Cedar River, Grand Rapids, Grand Rapids Dam, Riverside, Reindle and

Pemene Falls. Values for the variables associated with this factor can be found in Table 59.

Factor III is identified by four variables. It is positively associated with variables 2 (total number of recovered potsherds), 11 (total number of chipped stone tools identified as spokeshaves), 14 (total number of soil stains identified and recorded as post molds), and 17 (total number of features not identified as storage and/or refuse pits and hearths). The highest factor loadings (loadings above .70) were associated with variables 2 and 17. Variables 11 and 14 had factor loadings between .50 and .70. This factor is probably best interpreted as representing a domestic situation. The postmolds are probably the result of a variety of specific activity structures, such as shelters and drying racks, which would necessarily be associated with a base-camp settlement. Shallow and irregular features are probably the result of numerous day to day activities within the domestic unit. Pottery would also likely be found in an area where food was stored, processed, and prepared for consumption by the women. Secondary tools such as spokeshaves would also have been used for activities carried out in the base camp. The Little Cedar River, Grand Rapids, Pemene Falls and Reindle sites are associated with this factor. Values for the variables associated with this factor can be found in Table 60.

Factor IV is identified by positive association with variables 7 (number of chipped stone tools identified as drills), 20 (total number of faunal fragments), 21 (total number of mammal bones or bone fragments), and 25 (total number of shells or shell fragments). Variables 20 and 21 are somewhat redundant since the majority of faunal fragments recovered were mammal bone fragments, suggesting that the three

Table 59.--Values for Variables Associated with Structural Factor II.

	Positively Associated Variables							
	1	3	12	15	18	19	22	23
Mean	2053	348	1.4	.2	.1	.9	5.2	.5
Little Cedar River*	6300	1397	7.0	2.0	1.0	6.0	45.0	12.0
Grand Rapids*	4500	1128	7.0	0.0	0.0	3.0	4.0	0.0
Grand Rapids Dam*	3600	817	2.0	0.0	1.0	3.0	0.0	0.0
Riverside II*	5000	2033	1.0	1.0	1.0	2.0	5.0	0.0
Reindle*	4500	389	4.0	2.0	0.0	1.0	20.0	1.0
Pemene Falls*	4500	974	3.0	0.0	0.0	1.0	1.0	0.0
Abolin's Farm	20	258	0.0	0.0	0.0	0.0	0.0	0.0
Allgeyer	400	46	0.0	0.0	0.0	0.0	0.0	0.0
Backlund	4500	248	4.0	0.0	0.0	0.0	6.0	0.0
Brulee' Trestle	900	115	2.0	0.0	0.0	0.0	0.0	0.0
Casey Lake North	20	25	0.0	0.0	0.0	0.0	0.0	0.0
Casey Lake South	20	9	0.0	0.0	0.0	0.0	0.0	0.0
Chappee Rapids	2700	43	0.0	0.0	0.0	1.0	0.0	0.0
Cook	30	22	0.0	0.0	0.0	0.0	0.0	0.0
Martells Lake	20	12	0.0	0.0	0.0	0.0	0.0	0.0
Michigamme Falls	450	4	0.0	0.0	0.0	0.0	0.0	0.0
Pembonwon	4500	251	0.0	0.0	0.0	3.0	0.0	0.0
Pemene Creek	1800	313	0.0	0.0	0.0	0.0	3.0	0.0
Penn Brook	1800	118	1.0	0.0	0.0	0.0	0.0	0.0
Porterfield Lake	20	117	0.0	0.0	0.0	0.0	0.0	0.0
Quartz Workshop	900	201	0.0	0.0	0.0	0.0	0.0	0.0
River Park	2700	43	0.0	0.0	0.0	0.0	0.0	0.0
Rye	30	8	1.0	0.0	0.0	0.0	0.0	0.0
Shakey Lakes	80	34	1.0	0.0	0.0	0.0	0.0	0.0

*Indicates sites considered to be positively associated with Structural Factor II.

Table 60.--Values for Variables Associated with Structural Factor III.

	Positively Associated Variables			
	2	11	14	17
Mean	163	.1	.3	.8
Little Cedar River*	466	.0	.0	1.0
Grand Rapids*	862	2.0	5.0	1.0
Reindle*	336	.0	1.0	.0
Pemene Falls*	207	.0	.0	1.0
Abolin's Farm	0	.0	.0	.0
Allgeyer	78	.0	.0	.0
Backlund	517	.0	.0	.0
Brulee' Trestle	198	.0	.0	.0
Casey Lake North	0	.0	.0	.0
Casey Lake South	0	.0	.0	.0
Chappee Rapids	12	1.0	.0	.0
Cook	0	.0	.0	.0
Grand Rapids Dam	297	.0	.0	.0
Martells Lake	0	.0	.0	.0
Michigamme Falls	0	.0	.0	.0
Pembonwon	77	.0	.0	.0
Pemene Creek	331	.0	.0	.0
Penn Brook	1	.0	.0	.0
Porterfield Lake	0	.0	.0	1.0
Quartz Workshop	0	.0	.0	.0
River Park	8	.0	.0	.0
Riverside II	528	.0	.0	.0
Rye	0	.0	.0	.0
Shakey Lake	0	.0	.0	.0

*Indicates sites considered to be positively associated with Structural Factor III.

associated variables which represent this factor are drills, mammal bones and shells. This is a difficult, if not impossible, association to interpret. It is difficult to imagine drills being significant in the acquisition or processing of game or shellfish. However, it is possible that drills could have been used in extracting the muscle from the freshwater bivalves found in many of the lakes and rivers of this region. It is also possible that drills could have been important in converting the shell and bone into trinkets to be worn as ornaments. This factor is associated with five sites: Backlund, Pemene Creek, Pembonwon, Little Cedar River, and Reindle. Values for the variables associated with Factor IV are presented in Table 61.

Summary

A great deal of diversity is represented by the five factors and ten groupings resulting from the numerical taxonomic classification of the environmental situations, and the four factors which describe the structure of each of the sites in this study. Any attempt to synthesize this data is difficult, to say the least. The following discussion, however, attempts to present this data in as condensed a manner as possible. Needless to say, generalizations of this nature frequently neglect specific situations which do not fit the general pattern. While variation from the general pattern is given little attention in this section, these individual situations will be discussed in more detail in the following chapter.

Generally, the results of the preceding analysis distinguish four general site situations. Each of these situations is discussed below.

Table 61.--Values for Variables Associated with Structural Factor IV.

	Positively Associated Variables			
	7	20	21	25
Mean	.04	129.3	121.2	1.2
Backlund*	.0	151	123	12.0
Pemene Creek*	.0	259	215	1.0
Pembonwon*	1.0	953	943	10.0
Little Cedar River*	.0	625	566	2.0
Reindle*	.0	248	223	2.0
Abolin's Farm	.0	0	0	0.0
Allgeyer	.0	0	0	0.0
Brulee' Trestle	.0	0	0	0.0
Casey Lake North	.0	0	0	0.0
Casey Lake South	.0	8	8	0.0
Chappee Rapids	.0	1	0	1.0
Cook	.0	7	7	0.0
Grand Rapids	.0	135	127	0.0
Grand Rapids Dam	.0	8	8	0.0
Martells Lake	.0	7	7	0.0
Michigamme Falls	.0	37	37	0.0
Pemene Falls	.0	263	258	0.0
Penn Brook	.0	33	33	0.0
Porterfield Lake	.0	7	0	0.0
Quartz Workshop	.0	0	0	0.0
River Park	.0	0	0	0.0
Riverside II	.0	338	330	0.0
Rye	.0	23	23	0.0
Shakey Lakes	.0	0	0	0.0

*Indicates sites considered to be positively associated with Structural Factor III.

A number of sites appear to share a distinct variety of environmental characteristics. These sites are located along the shores of interior lakes in the northern portion of the Watershed, where they are removed from the immediate modifying effects of the Great Lakes. In these locations they are situated at elevations greater than 1400 feet above sea level and in areas of high snowfall and low temperatures. Association with inland lakes appears to be a requirement in site location. The lakes are scattered throughout the one, two, and three mile radii of the catchment zone. Four of the five sites in this category are also located in a vegetation situation which is dominated by pine forests. All of the sites are very small and recovery of archaeological data is scant, generally limited to a projectile point, a scraper, and/or a few fragments of lithic debris. This minimal amount of recovered material may explain the lack of clear association with any of the structural factors. Two sites, however, tend to show some association with structural factor I, which was defined as a hunting, butchering, and processing tool kit. The sites included in this category are Porterfield Lake, Martells Lake, Casey Lake South, Casey Lake North, and Van Riper.

A second group of four sites, including the Michigamme Falls, Quartz Workshop, Brulee' Trestle, and Cook sites, is more difficult to define. These sites tend to be located in the central region of the Watershed and are therefore in areas of slightly higher elevation and precipitation and lower temperature than a majority of the sites within the Watershed. However, they appear to be distinguished primarily by their environmental heterogeneity. They show little association with any of the environmental factors and, except for the .91 level of

similarity of the Michigamme Falls site and the Quartz Workshop site, these sites form independent clusters, in the numerical taxonomic classification. These sites are small and, like those in the previous category, produced little data for structural analysis. The recovered data, however, shows an association with structural factor I for two sites, Brulee' Trestle and Cook, suggesting these sites were hunting and primary butchering camps. The lack of scrapers, wedges, and bifaces in the assemblages suggests that additional processing was done elsewhere.

The third category consists of a number of sites located adjacent to the Menominee River in the southern half of the Watershed. The site locations exhibit no association with either inland lakes or a particular vegetation type. These locations appear to have been selected for their riverine environment in the relatively moderate weather of the lower portion of the Watershed. In addition, the catchment zones tend to be forested with coniferous-deciduous and pine forests in approximately equal proportions. The eight sites which share these environmental characteristics are: Little Cedar River, Grand Rapids, Allgeyer, Grand Rapids Dam, Rye, Riverside II, Reindle, and Abolin's Farm. These eight sites form clusters 3 and 5 in the numerical taxonomic classification. Except for the Allgeyer site, a specialized activity site, and the Rye site, all of these sites exhibit positive association with structural feature I, a hunting, butchering, and processing tool kit. A majority of the sites also exhibit an association with structural factor II, which included fishing and the taking of wild fowl as well as the manufacture of

copper implements, and with structural factor III, a factor related to domestic activities. Shell, mammal bone and drills, identified as structural facture IV, are also characteristic of several of the sites in this category. The residents of these sites appear to have extracted a number of resources which included large and small mammals, fish, wild fowl, and shellfish. This diverse resource base maintained relatively large populations which engaged in a variety of domestic tasks at many of these sites.

The fourth group consists of eight sites located along the banks of the Menominee River in the central one third of the Watershed. Six of these sites cluster to form the first group in the numerical taxonomic classification. The remaining two sites are included in the third cluster in the numerical taxonomic classification. All of the sites are situated in an environment dominated by pine forests. Included in this group are the following sites: Chalk Hills, Penn Brook, Backlund, Pemene Creek, Pemene Falls, Pembonwon, River Park, and Chappee Rapids. Again, hunting appears to have been an important subsistence activity, although the gathering of shellfish may have supplemented the diet of these prehistoric peoples. This is suggested by the high association with structural factor I, identified as a stone tool kit related to hunting and processing of game, as with factor IV, a factor which was difficult to interpret but was identified by variables measuring mammal bone, shell and drills.

CHAPTER VI

INTERPRETATIONS AND CONCLUSIONS

The preceding chapter identified and described four general environmental situations which were selected for habitation by the prehistoric inhabitants of the Menominee River Watershed. In addition, the analysis of the structural characteristics of the sites excavated as part of this project allowed the identification of particular prehistoric behavior patterns associated with each of these situations. This chapter addresses the specific research question asked at the beginning of the analysis: Did prehistoric settlement systems within the Menominee River Watershed change through time, and if there was a change in the settlement system, what was the nature of this change. To answer this question, this chapter looks at the specific site locations within the Menominee River Watershed and the associated subsistence behavior of each cultural period, beginning with Early Woodland and including Middle Woodland, Late Woodland and Oneota.

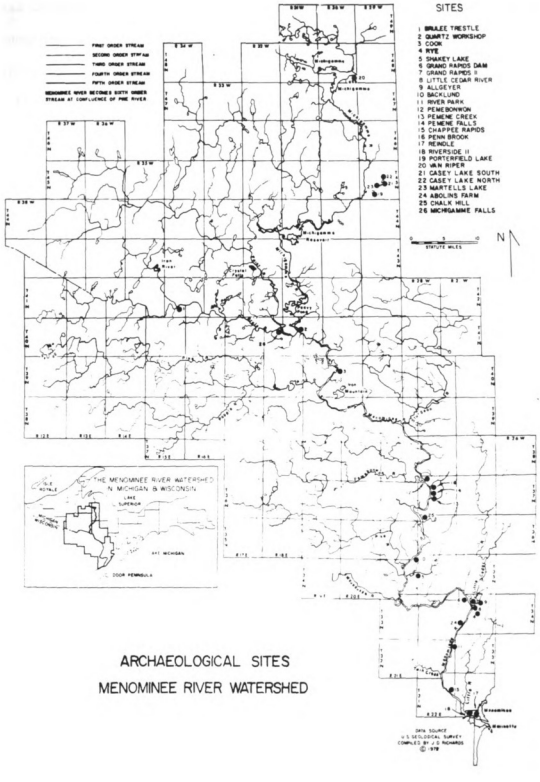
Although the Menominee River Watershed is a large area and represents a separate geographical unit within the Upper Peninsula of Michigan, it does not in all likelihood correspond to prehistoric cultural boundaries. A review of the ceramic relationships of the twenty-six sites (see Appendices A through R) included in this study reveals that cultural boundaries extended far beyond the geographical confines

of the Watershed. Therefore, it is essential to be aware of the possibility that only a portion of the entire settlement system may be represented in the Menominee River Watershed, for there is no logical reason why the Watershed need be considered a self-contained prehistoric entity. Thus the following discussion, although concerned principally with the settlement data from the Menominee River Watershed, will also include references and complementary data from adjacent areas. Figure 2 provides a detailed map of the twenty-six sites which provide the settlement data from the Menominee River Watershed for this study.

Early Woodland

The Early Woodland occupation in the Menominee River Watershed is represented by a minimal number of Dane Incised sherds recovered from three sites. Traditionally, Dane Incised ceramics have been considered an Early Woodland ceramic type due to their similarity to Black Sand Incised. Sherds identified as Black Sand Incised have been found stratigraphically beneath Hopewell in Illinois and have accordingly been assigned an Early Woodland status (Cole and Deuel, 1937). There is some evidence, however, that the type may also extend into the Middle Woodland period (Wray, 1952). A Middle Woodland association is also suggested by Mason's (1966) work at the Mero Site in northeastern Wisconsin where Dane Incised ceramics were recovered in association with the North Bay II Complex pottery, a Middle Woodland manifestation (Mason, 1966). Mason suggests that Dane Incised lasted well into the Middle Woodland period in northeastern Wisconsin.

Fig. 2.--Map of the Menominee River Watershed Showing Site Locations.



ARCHAEOLOGICAL SITES
MENOMINEE RIVER WATERSHED

Although this study considers Dane Incised to be an Early Woodland ceramic type, it is possible that the Dane Incised ceramics in the Menominee River Watershed are associated with the Middle Woodland period rather than the Early Woodland occupation. This is suggested by the fact that Dane Incised ceramics occur only on sites which also have Middle Woodland occupations. Lacking stratigraphic evidence with which to identify the association between Dane Incised and Middle Woodland ceramics, this study has considered Dane Incised ceramics to be an indication of an Early Woodland occupation. If this is the case, evidence of this Early Woodland occupation was recovered at the Riverside II, Reindle, and Little Cedar River sites. The Riverside II and Reindle sites are located adjacent to the Menominee River, slightly above the mouth of the river, while the Little Cedar River site is located at the confluence of the Menominee River and the Little Cedar River, a major tributary of the Menominee River. These three sites are located in areas which are dominated by a rather diverse coniferous-deciduous forest. Although coniferous and deciduous species dominate the catchment zone, pine forests are almost equally important, accounting for 40 to 47 percent of the catchment zone. Early Woodland sites appear to have been selected for their association with riverine resources and a heterogeneous vegetation situation.

All three sites are large multi-component sites with evidence of Early Woodland, Middle Woodland, Late Woodland and Oneota occupations. Any attempt to assess the structural data in terms of a single temporal occupation is impossible. All that can be documented is the association of structural factors I, II, III, and IV with these sites.

Clear association with all four factors is evident for the Reindle and Little Cedar River sites. The association of structural features III and IV with the Riverside II site is less obvious in the factor analysis. Additional excavation, however, recovered ceramics and features (see Appendix A) suggesting the Riverside II location should also be considered an area in which domestic activities were an important part of the behavior associated with the site.

The association of these structural features suggests the residents used these sites as base camps from which a wide variety of resources were exploited, including fish, wild fowl, shellfish and a variety of forest game which would have been readily available in the heterogeneous vegetation situations in which these sites were located. Floral remains from the Little Cedar River site indicate the occupants also gathered summer berries.

Analysis of floral and faunal data suggested these sites were most likely occupied during the months of warm weather, which in the Upper Peninsula include May, June, July, August, and September.

Data regarding the areal extent of this early ceramic producing culture is limited. Mason (1966) indicates that evidence of the North Bay Complex, which includes Dane Incised ceramics, has been found as far west as central Wisconsin and perhaps as far south as the northern shore of Lake Winnebago and the adjacent Fox Valley. How far east around the northern shore of Lake Michigan this complex may be found remains to be determined. At present, information regarding subsistence and settlement patterns in this area is limited to noting that people utilizing Dane Incised pottery occupied coastal sites along the Door

Peninsula and camped along the banks of the lower Menominee River, probably exploiting a variety of summer and early fall resources. Recovery of limited data associated with the minimal number of recovered Dane Incised sherds within the Menominee River Watershed hindered any attempt to construct the entire subsistence and settlement behavior.

Middle Woodland

Five sites produced evidence of the Middle Woodland occupation in the Menominee River Watershed. These include the Riverside II site, the Reindle site, and the Little Cedar River site, previously identified as having an Early Woodland component, as well as the Grand Rapids Dam and Chalk Hills sites. The latter two are single component sites. The Grand Rapids Dam site is situated along the banks of the Menominee River in an environment which is similar to that of the Riverside II, Reindle, and Little Cedar River locales. While the catchment zone is dominated by a diverse coniferous and deciduous forest, 48 percent of the catchment zone is forested by pines. Structural features I and II are also highly associated with the Grand Rapids Dam site, indicating that the subsistence base, like that of the Riverside II, Reindle and Little Cedar River sites, was based on fishing and hunting. This site, like the others, appears to have been occupied during late spring and summer. Although nearly 300 sherds were recovered from the excavations, features, post molds, and secondary tools were entirely lacking from the assemblage, suggesting the Grand Rapids Dam site was primarily used as a fishing and hunting camp. The possibility that the other three sites located in similar environmental situations were utilized in a

similar manner cannot be tested. Their multi-component composition prevents association of particular structural factors with only the Middle Woodland occupation. Structural feature II also indicates that the occupants of these sites were engaged in the manufacture of copper tools, which also may have been used for the acquisition of fish.

Chalk Hills, the fifth site with a Middle Woodland occupation, is located in a somewhat different environmental situation. Unlike the other four Middle Woodland sites, the catchment zone of this site is entirely forested with pines. Although it shares a riverine location with the other four sites, it appears to have been selected for habitation as a result of its location with respect to both riverine and lascutrine resources. In terms of the natural environment, the Chalk Hills site is uniquely located within the Watershed. It is unfortunate that it was not possible to test the site and include the recovered data in the second stage of the analysis. At present, a surface collection provides the only indication of the particular activities associated with this site. The surface collection, while including a variety of tools and debris typical of a Woodland occupation (i.e., sherds, scrapers, unifacially retouched tools, cores, and waste flakes) is dominated by large and rather massive flakes (see Appendix L). Future excavation will be needed before it is possible to provide an accurate interpretation of this rather unique assemblage. At present it is hypothesized that this site was used primarily as a fishing station, since its location in an area of pine forests would have provided poor hunting habitat.

Ceramics associated with the five Middle Woodland sites in the Menominee River Watershed have been identified as belonging to the North Bay Complex, which Mason (1966) defined on the basis of his excavations at the North Bay, Ports des Morts, and Mero sites in Door County, Wisconsin. This complex appears to be a regional expression of a northern Middle Woodland tradition found north of the Carolinian Biotic Province throughout the Great Lakes Region and termed the Lake Forest Middle Woodland (Fitting, 1970). In addition to the North Bay Complex, the Lake Forest Middle Woodland includes the Laurel culture in the north and west (Wright, 1967), the Saugeen focus of southwestern Ontario (Wright and Anderson, 1963), Point Peninsula in the east (Ritchie, 1965), and the Anderson and Nutimuk foci of southeastern Manitoba (MacNeish, 1958). Available evidence suggests these complexes shared a similar Middle Woodland adaptation. Sites located throughout this northern tier tend to be located in areas which appear to have been selected for favorable fishing. Fish remains are frequently abundant at these sites; even at those sites where the subsistence behavior was dominated by hunting.

It appears that throughout the area occupied by these northern Middle Woodland cultures a fishing-hunting complex emerges as the primary subsistence activity. Thus MacNeish, in comparing the Anderson focus with earlier foci in southeastern Manitoba states:

> . . . the most noticeable change is the numerous fish bones. The occurrence of net-impressed pottery suggests that the fish were caught in nets. One might guess that their life was now less nomadic and the groups were larger in size because of their heavy reliance on fishing, a more reliable food source in southeastern Manitoba (1958:178).

Kenyon (1959), in describing the faunal remains from the Inverhuron site, notes the presence of fish bone and scales in the deposit, and suggests the site was selected because of the excellent fishing opportunity it afforded.

The Naomikong Point site, a large Middle Woodland site located on the south shore of Lake Superior in Chippewa County, produced ceramics which exhibit similarity to the Laurel ceramics recovered by Wright (1967) along the north shore of Lake Superior, and by Stoltman (1962) in northern Minnesota.

Fitting, in characterizing the faunal remains and adaptation of the Naomikong Point site, writes:

> Because of the highly acid soil, preservation of faunal remains is poor. In the historic levels, fish bone and scales plus beaver bone are common. Most of the identified prehistoric bone, however, was preserved by charring in a single hearth area. Here mammal bone is more common than fish bone but I do not believe that this is generally true for the site. The site is located in an area that is traditionally important for fishing and poor for hunting. This coupled with the tool types present, indicates a large summer fishing camp . . . (1970:141).

Fishing also appears to have been the primary subsistence activity in the eastern Great Lakes Region. Ritchie notes that the remains of deer, moose, black bear, beaver, and raccoon occur in refuse pits but then continues by noting that

> . . . the general scarcity of such remains and the paucity of projectile points, as well as the situation of the sites themselves, argue that hunting was of less importance to the occupants of these sites than was fishing and collecting of freshwater mussels, as judged from the relative abundance of fishing gear and the organic remnants of these aquatic animals.

Although 70 percent of the faunal remains from the two lower levels of the Mero site are fish bone, Cleland (1966) indicates these sites cannot be considered fishing stations since fish provided only

20 percent of the meat represented by the faunal remains. However, he indicates fishing must be considered an important Middle Woodland subsistence activity and notes that its importance decreases in succeeding horizons.

The subsistence data suggests that fishing was an important Middle Woodland economic activity throughout the northern Great Lakes. A substantial majority of the sites are located in areas which would have provided favorable fishing, and fish bone and scales are plentiful at many of the sites. Although hunting may have been the major subsistence activity at some Middle Woodland sites such as the Mero site, fishing appears to have been an important supplemental subsistence activity. Fitting (1970) has suggested the Middle Woodland settlement pattern in this area was similar to that of the historic Chippewa, with summer villages primarily dependent on fishing, and smaller hunting camps utilized during the winter. Cleland (1966) also indicates the importance of summer fishing when describing the fishing-hunting complex which is characteristic of the northern Middle Woodland.

Data from the Menominee River Watershed is consistent with this pattern. Middle Woodland sites appear to have been located in areas which would have afforded favorable fishing opportunities. Although somewhat limited, floral and faunal remains suggest a late spring and summer occupation for these sites. The small winter hunting camps suggested by Fitting to be part of the Middle Woodland settlement system are not presently represented in the archaeological record for the Watershed. The absence of such sites in the Menominee River Watershed may be explained by either of the following possibilities.

First, winter hunting camps would be small, leaving only minimal archaeologically recoverable evidence. Such sites would be extremely difficult to locate in the secondary growth which dominates the Upper Peninsula. The Menominee River Watershed survey, however, did locate several small Late Woodland campsites, which suggests the possibility that Middle Woodland peoples may have sought areas outside of the Watershed for winter occupation. J. V. Wright (1967) has described several small Laurel sites north of Lake Superior. Many of these sites may be winter hunting camps. Similar sites may be found in other regions of this northern area as more archaeological survey work is undertaken.

Late Woodland

A significant change in the settlement system of the prehistoric residents of the Watershed seems to have occurred during the transition from Middle to Late Woodland. Not only is the Late Woodland period in the Menominee River Watershed characterized by a greater number of sites, but these sites are located in a greater variety of environmental situations. Twenty of the twenty-six sites in this study produced evidence of a Late Woodland occupation. At least one of these twenty sites is included in nine of the ten groups established by the .40 level of similarity in the numerical taxonomic classification. The tenth group consisted of two sites, the Michigamme Falls site and the Quartz Workshop site; positive temporal affiliation could not be determined from the recovered artifact assemblage for either site. Thus it is possible, perhaps even likely, that either or both of these sites may have been utilized by Late Woodland peoples. Four of the

twenty Late Woodland sites represented sites located with unique environments, separating into four groups each containing a single site at the .40 level of similarity. In addition, two of the remaining six clusters formed discrete units of Late Woodland sites. Thus six of the site clusters created by numerical taxonomy are solely associated with the Late Woodland occupation in the Menominee River Watershed. The preceding information suggests that the Late Woodland occupation of the study area is associated with a major change in the subsistence-settlement system.

Such a change is not unique to the Menominee River Watershed. The archaeological literature from the Upper Great Lakes has frequently noted the variation in adaptive strategy which occurs during the transition from Middle Woodland to Late Woodland (Cleland, 1966; Brose, 1970; Fitting, 1970; Lovis, 1977). This change is reflected in the archaeological record by an increase in both the number and size of Late Woodland sites, and corresponds to the Neo-Atlantic, a period extending from approximately A.D. 800 to A.D. 1300. During this period the weather was more favorable to an agricultural adaptation, being somewhat warmer and wetter. The increase in population density in the Great Lakes Region implied by the greater numbers of sites is most likely related to the Late Woodland agricultural adaptation in the Carolinian zone, and perhaps to patterns of exchange which must have developed between the southern agriculturalists and the northern hunter-gatherers throughout the Great Lakes Region.

In the Menominee River Watershed this adaptive shift is reflected by the selection of several new environmental situations for

habitation. Most distinctive among these are the sites which belong in the first general category defined in the preceding chapter. This includes those sites in clusters 9 and 10 of the numerical taxonomic classification. These are small sites, being less than 20 square meters in areal extent. They are located in the northern portion of the watershed and are associated with increased precipitation and fewer frost-free days. These sites tend to be located in areas forested entirely by pines with easy access to lacustrine resources which are available in numerous small lakes scattered throughout the catchment zone. The Van Riper site appears to be a slight exception, being situated on the shores of the largest inland lake in the watershed, in an area of heterogeneous vegetation. Yet in many other respects, it is similar to the other four lake shore sites.

Another type of Late Woodland site is represented by the sites included in the second general category. These sites, although small, are substantially larger than the preceding ones, averaging approximately 500 square meters in area. These sites appear to have been selected for their access to riverine resources in the central portion of the Watershed, in areas of mixed coniferous-deciduous and pine forests.

Sites located in both of these Late Woodland environmental situations appear to have been used as hunting camps. It is, however, impossible to determine if they represent satellite camps for the larger Late Woodland sites described below, or are winter camps occupied by nuclear families, such as those described in the ethnographic

literature for this region (Rogers, 1962; Hicherson, 1970; Kinietz, 1965).

The third general category of sites defined in the previous chapter consists of eleven sites. Evidence of a Late Woodland occupation was recovered from nine of these sites. These nine sites vary in size and structural composition but appear to have been selected for their location adjacent to riverine resources in areas of rather moderate climatic conditions which average more than 120 consecutive frost free days, and with less than 60 inches of snowfall each year. They are also located in areas of mixed coniferous-deciduous and pine forests. Analysis of the structural variables suggests hunting was an important subsistence activity at all of these sites. Hunting, however, appears to have been the only subsistence activity at several of the smaller sites in this group. Such sites include the Rye site, the River Park site, the Chappee Rapids site, and the Abolin's Farm site. These smaller sites exhibit no association with structural factor III, which was interpreted as representing a domestic unit and may be satellite hunting camps for the larger base camps included in this group. A majority of these larger sites exhibit positive association with structural variables I, II, and III, indicating fishing and the taking of wild fowl were also important subsistence activities. These larger sites also appear to have been base camps since they show a high association for the domestic unit factor. Faunal and floral data from these sites indicate they were most likely occupied during the late spring and summer.

The fourth general category of sites consists of six sites which are also located adjacent to riverine resources. Their catchment zones, however, are almost exclusively dominated by pine forests. Although these sites exhibit positive association with structural factor I, interpreted as a stone tool kit related to the hunting, butchering and processing of game, their location in a pine forest environment suggests hunting could not have been the only important subsistence activity, although several square miles of low moist land within each catchment could have afforded excellent habitat for deer. In addition to hunting, several of these sites are located at or near falls or rapids, areas which would have afforded excellent fishing opportunities. Fishing must have provided a substantial portion of the diet for the local residents. Analyses of recovered fauna and flora from these sites suggests these locations were utilized primarily during the spring and fall of each year, which is consistent with these times of the year when fish are most plentiful.

The data suggests a general Late Woodland subsistence-settlement pattern which involved seasonal mobility; moving inland along the river system during the fall and returning to the southern portion of the Watershed during the late spring and summer. Summers appear to have been spent in relatively large fishing villages located either near the mouth of the Menominee River or at major confluences in the southern portion of the Watershed and perhaps along the shores of the Great Lakes. The assemblages from the Heins Creek and Mero sites, located along the shore of Lake Michigan on the Door Peninsula in Wisconsin, exhibit striking ceramic similarity to Lake Woodland pottery

recovered throughout the Menominee River Watershed. These sites may have been occupied by people who occasionally spent the winter months in the Upper Peninsula of Michigan. These large summer fishing villages appear to have been utilized as base camps. However, a number of secondary or satellite camps also occur in the archaeological record. These sites most likely served as temporary hunting camps, providing both a secondary source of protein and dietary variety. Although large summer fishing villages with satellite hunting camps appear to be the typical Late Woodland settlement-subsistence pattern, the excavations at Summer Island suggest Late Woodland people maintained some fluidity in selecting a summer residence and subsistence pattern. When describing the Late Woodland occupation at Summer Island Brose writes:

> This component of the site apparently represents a number of short-term midsummer occupations by small family groups . . . sustained by collecting mollusks from the gravel shoal to the north and fish from the weedy shallows of the harbor to the east of the site, while deer and small mammals could be hunted either on the island or on the nearby Garden Peninsula (1970:216).

A number of sites located more centrally within the Watershed along the banks of the Menominee River appear to have been occupied during the transitional seasons. These sites, probably occupied during the spring and/or fall, are represented by widely dispersed but thinly scattered debris and appear to have served as temporary base camps for individuals who sustained themselves by hunting and fishing.

The Northern portion of the Watershed appears to have been utilized by numerous small groups that camped adjacent to the many small inland lakes which are characteristic of this area. Although

excavations at these sites did not produce faunal or floral evidence which would permit positive seasonal identification, these sites potentially represent winter hunting camps occupied by nuclear families who moved inland along the Menominee River, and camped in this northern region of the Watershed where hunting dominated their subsistence activities.

This pattern of subsistence and settlement is not dissimilar to that described in the diary of Alexander Henry, who spent the winter of 1763-64 with a Chippewa family in the Straits area. Quimby (1962) has described the seasonal activities of this family, which spent the summer months in the area off the Straits where fishing was the primary subsistence activity. After trading with the Ottawa, the family moved inland following a river Quimby identifies as the Pere Marquette. The winter months were spent hunting and collecting furs. In the spring the family members traveled to a maple sugar camp where they were joined by other families. They returned to summer fishing activities in the Straits area after leaving this spring sugar camp.

This pattern appears to be generally characteristic of the upper Great Lakes Region. While early spring and winter camps have not often been identified in the archaeological record, summer fishing villages are represented. Excavations at the Juntunen site (McPherron, 1967) on Bois Blanc Island indicate this pattern of summer fishing villages was established in the Straits area by A.D. 800. Cleland (1968) interprets the Indian Point site on Isle Royale as a summer fishing village. MacNeish also emphasizes the importance of fishing in describing the subsistence patterns of the Selkirk Focus.

> The subsistence at this time was definitely based on fishing, with the hunting of moose, deer, buffalo, bear, and wolf; trapping of hare, beaver, and muskrat; and food-gathering of shells, plums, and wild rice being of secondary importance. Such a subsistence pattern would allow for larger, more sedentary groups. This is confirmed by sites that are uniformly large, even though the depth of the refuse is not great (1958:178).

Salzer (n.d.) concurs with the importance of lacustrine resources when describing Lakes Phase site locations in an area slightly west and south of the Menominee River Watershed in Wisconsin. Salzer notes:

> Most of the known sites (80%) are found in lacustrine situations, with eastern lake shores, near outlets, peninsulas, and islands being preferred localities (n.d.:26).

Thus it appears that Lake Woodland people throughout the Canadian Biotic Province were adapted to an environment which provided excellent fishing and hunting opportunities. In order to avail themselves of these opportunities, these people developed and maintained a settlement pattern based on seasonal mobility. During the summer, when fishing provided a substantial resource base, family groups met and resided in relatively large fishing villages, but as opportunity to obtain lacustrine resources diminished with seasonal changes, these family groups separated and hunted in more inland regions.

Oneota

Between A.D. 1100 and A.D. 1200 a new life style, characterized by intensively occupied settlements, substantial house structures, mounds, a variety of shell tempered ceramics, and efficient horticulture and intensive exploitation of local resources, appears throughout an area which skirts the northern fringe of the Mississippi River Valley. Although the process by which this new life style emerged in this region has been discussed and debated for over three decades (Ford

and Willey, 1941; Griffin, 1960; Hall, 1962; Henning, 1970; Gibbon, 1972; Hurley, 1975) it is still a focus of dispute. The relationship between the resident Late Woodland cultures of this region and their more southern Middle Mississippian neighbors remains unclear. Gibbon (1972) suggests that Oneota emerged from a Woodland base modified in the direction of the Mississippian pattern. Gibbon views this new life style with its distinctive socio-political organization as the by-product of a new ecological adaptation centered around the cultivation of maize. Mason, using data from the Mero site, suggests the resident Woodland cultures were replaced by Upper Mississippian peoples. In summarizing his data he concludes:

> The picture emerging from this and related archaeological investigations on the peninsula is one of replacement in the second of the two millenia A.D. of the resident Woodland cultures by others of Upper Mississippian (Oneota) affiliation . . . one wonders why after approximately fifteen hundred years of residence, the Woodland cultures of the peninsula were seemingly so suddenly and completely replaced by a Mississippian culture when there is no evidence, particularly locally, of a technologically superior adaptation to the environment on the part of the newcomers (1966: 193-194).

Hurley (1975) accepts neither the idea of cultural replacement suggested by Mason nor the acculturation of Late Woodland hunters and gatherers to a subsistence pattern based on horticulture advocated by Gibbon as the origins of Oneota, but suggests Oneota emerged from a Late Woodland (Heins Creek complex) base in northeastern Wisconsin and the Upper Peninsula of Michigan. Fitting, however, has pointed to the absence of pure Oneota assemblages in Michigan, stating:

> . . . all of the northern Lake Michigan sites even those with close stratigraphic control, show a mixture of ceramics. Oneota ceramics were found in the Juntunen Phase levels at the Juntunen site and along with Juntunen and Mackinac Wares in the surface collections from Point Scoot site as well as at several sites

> recently reported by David S. Brose . . . . In view of the mixture of Late Woodland and Oneota ceramics on so many of these sites I see no need to postulate separate peoples or separate cultures to account for the blending of ceramic traits. Groups with patrilocal postmarital residence patterns and marriage and trade contacts over long distances, such as the central Algonquin groups in this area were not bound to single stylistic traditions (Fitting, 1970:188-189).

The Oneota materials from the Menominee River Watershed, suggest, however, that the relationship between the resident Late Woodland cultures and Oneota settlements in the Upper Peninsula of Michigan was more complicated than that suggested by Fitting. Cultural materials characteristic of Oneota or Upper Mississippian cultures were recovered from seven of the twenty-six sites included in this study. These include the Riverside II site, the Little Cedar River site, the Grand Rapids site, the Pemene Creek site, the Pemene Falls site, the Reindle site, and the Backlund Village site. Five of these sites produced a mixture of Woodland and Oneota ceramics which could easily be explained by patrilocal residence and trade as Fitting has suggested. These five sites although exhibiting no association with environmental factors I, IV, and V, factors which indicated a relationship between site locations and inland lakes, exhibit an association with environmental factors II and III in the same proportions as Late Woodland sites. The Backlund and Reindle sites, the remaining two sites, produced evidence of a definite Oneota occupation. A variety of shell tempered ceramics similar to those from the Mero site were recovered from these intensively occupied sites. A large structure was uncovered at the Reindle site and both the Reindle site and the Backlund site (Brose, 1968) have associated mounds. The catchment zones of both sites are dissimilar to those typically

associated with the Late Woodland sites included in this study. While only one, the Cook site, of the twenty Late Woodland sites located by the Menominee River Watershed survey was associated with environmental factor II, both the Backlund and Reindle sites exhibit an association with this factor. The Backlund site and the Reindle site also exhibit an association with environmental factor V. Again only one Late Woodland site, the Van Riper site, was associated with this factor. Both sites therefore are located in somewhat distinctive environmental situations. It appears that Oneota people selected specific environmental situations distinct from those selected by Late Woodland peoples for occupation. The catchment zones of the locations selected for habitation are characterized by: a forest dominated by coniferous-deciduous vegetation; diversity of specific vegetation types; and a predominance of lake surfaces between one and three miles from the site location. These Oneota sites, situated along the banks of the Menominee River, appear to have been located in areas which would provide access to the greatest variety of resources. This adaptation is further suggested by the association of structural factors I, II, and IV with these Oneota sites. These factors indicate that hunting, fishing, the taking of wild fowl and the collecting of shellfish were important subsistence activities. Faunal remains from these two sites consist of a variety of species including beaver, whitetail deer, snapping turtle and sturgeon as well as a number of unidentified mammals, turtles, birds, fish and amphibians. Floral remains from the Backlund site are also diverse, including hawthorne, pin cherry, sumac and/or poison ivy, and berries. Both the floral and faunal remains are additional indicators of the

diverse Oneota subsistence base. These remains also indicate a spring through fall occupation for the Oneota inhabitants of the Menominee River Watershed.

Although both Gibbon (1972) and Cleland (1966) have suggested the Oneota tradition was at least in part based on horticultural food resources, there is no evidence to suggest the economy of either the Backlund site or the Reindle site was based upon horticulture. Successful prehistoric crop production requires a growing season greater than that available in most areas of the Upper Peninsula. Yarnell (1964) has calculated the present average frost-free period for Upper Mississippian sites to be 168 days. This frost free period is substantially longer than the frost-free period of either the Reindle or Backlund sites, which are 130 and 123 days respectively. The short growing season and failure to recover any evidence of horticultural resources suggests the Oneota adaptation within the Menominee River Watershed was based solely on intensive exploitation of a diverse habitat.

Summary and Concluding Statements

In summary, we can state that the data gathered from the Menominee River Watershed indicates that there is a substantial change in the prehistoric settlement system through time. The preceding discussion indicates that a significant adaptive readjustment occurred during the transition from Middle to Late Woodland in this area. Early and Middle Woodland sites are located in the lower portions of the Watershed adjacent to riverine resources in areas of high vegetation diversity, although the catchment zone is dominated by

coniferous-deciduous forests. These sites appear to have been occupied during the late spring and summer months. If this determination of seasonality is accurate, the Menominee River Watershed seems not to have been utilized by Early and Middle Woodland peoples for their winter and fall subsistence activities.

During the Late Woodland a number of new habitats are utilized. In addition to the coniferous-deciduous environments in the lower Menominee River Watershed utilized by Early and Middle Woodland peoples, the Late Woodland occupants of the watershed selected a variety of new habitats which are located in the central and northern regions of the Watershed. These habitats include catchment zones dominated by pine forest and lacustrine resources. A population expansion is suggested by an increase in the number of sites. A settlement system consisting of (1) large summer riverine settlements in the lower regions of the watershed with supporting satellite hunting camps in the summer months; (2) a number of smaller transitional spring and fall hunting and fishing camps located in the central region of the watershed; and (3) numerous small hunting camps which served as satellite camps for overnight hunting parties and/or winter homes for nuclear families was developed.

The Oneota occupation is difficult to understand. An Oneota component is clearly represented at two of the twenty-six sites in this study, however, Oneota material at several other sites may represent exchange or other forms of social interaction rather than actual occupation.

Earlier in this study reference was made to Watanabe's (1968) classification of residential shift patterns among northern food gatherers. It was suggested that neither the seasonal wandering associated with the subsistence activities of the Semang nor the residential stability of the Ainu or the Owen's Valley Paiute would be suitable subsistence patterns for the residents of the Mid-western Canadian Biotic Province. Although it is somewhat difficult to apply Watanabe's classification, which generalizes and identifies only two seasons, to the subsistence-settlement data from the Menominee River Watershed, some comparisons can be made. The available data appears to reflect only a portion of the Early and Middle Woodland and Oneota settlement systems representing only the early spring through fall subsistence behavior. This data, however, appears to be most consistent with Watanabe's type V residential pattern, which he describes as having permanently settled winter and summer residence. The Late Woodland residence pattern, however, appears to be best characterized by Watanabe's type IVa and/or IVb, which, while characterized by permanent shelter during both summer and winter, includes periodic expeditions to additional sites where either permanent or temporary shelter is available. It is this classification, although it does not recognize the transitional spring and fall seasons, that best suits the Late Woodland settlement data, which generally gives the impression of involving more movement from season to season and within many seasons than Early or Middle Woodland or Oneota subsistence-settlement strategies.

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APPENDICES

APPENDIX A

THE RIVERSIDE II SITE

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THE RIVERSIDE II SITE

Introduction

The Riverside II Site is located in Government Lot 4, Section 4, (T.31N, R.27W) in the City of Menominee, Menominee County, Michigan. The site is situated along the north bank of the Menominee River, approximately three and one-half miles from the mouth of the river. The Riverside II Site, along with the Reindle site, is one of the last relatively undisturbed areas in what must have been an almost unbroken zone of intense prehistoric activity. This zone, somewhat over four miles in length, once stretched from the mouth of the Menominee River upstream past the present day location of the Riverside Cemetery. Unfortunately, this once archaeologically rich area is now an almost unbroken zone of commercial, residential, and recreational development. The Riverside II Site has escaped complete destruction due to its location in what is now the undeveloped section of the Riverside Cemetery. This area was at one time the site of a municipal amusement park and was connected to the City of Menominee by a streetcar line. No traces of this utilization remain today, although it is apparent that surface grading and filling has taken place.

The site is bounded on the east by a golf course, and while the two areas were at one time archaeologically continuous, the landscaping

of the golf course has effectively destroyed any archaeological context in that portion of the site. The western boundary of the site lies approximately one hundred and fifty meters from the property line separating the golf course and the unimproved portion of the city cemetery. Beyond the sites' western boundary is an archaeologically sterile area of approximately three hundred meters in length. West of this sterile zone, and just north of the Scott Paper Company dam, lies an area of approximately thirty-five thousand square meters. This area, once the site of a prehistoric village, has become one of the more glaring examples of unrestrained destruction of archaeological resources.

The area has been so heavily pockmarked with the "potholes" dug by artifact collectors that it is literally unsafe to walk in. This activity has been going on for some fifty years and several local residents have large collections of artifacts from the site. Unfortunately, the materials were removed without regard to provenience information and thus have little or no archaeological significance. A small section in the southwest portion of the site was tested by Dr. Albert Spaulding in 1956 and 1957. In 1961, 1962, and 1963 Robert Hruska excavated a small section in the southwest portion of the site. Between the southwest corner of the village occupation and the bank of the Menominee River are several Late Archaic burials, excavated by Hruska and reported on in The Wisconsin Archaeologist (1967).

The Riverside II Site was archaeologically tested and surveyed during the summer of 1973 by a Northern Michigan University field crew under the direction of Marla Buckmaster. A system of stratified unaligned sampling was used to locate thirteen, 2x2 meter pits. The test

pits were dug to an average depth of forty-five centimeters and all earth removed was sifted through screens constructed of half-inch hardware cloth. Materials recovered were a mixture of prehistoric and historic artifacts, indicating that large portions of the site had been graded and filled. However, several undisturbed cultural middens were found beneath the disturbed fill zone in one portion of the site, and subsequent excavations were planned.

In 1975, a second team of Northern Michigan University students returned to Riverside Cemetery. With Marla Buckmaster as Field Director and John Franzen as Field Assistant, thirteen additional 2x2 meter test pits were excavated in the southeast section of the site. At this time, a coordinate system based on a magnetic north-south line was established. Using a transit and steel tape, surveying pins were placed at four meter intervals along the N100 and W100 coordinates. Test pits were then referenced to these points by the aid of a transit and identified by the coordinates of their southeast corners.

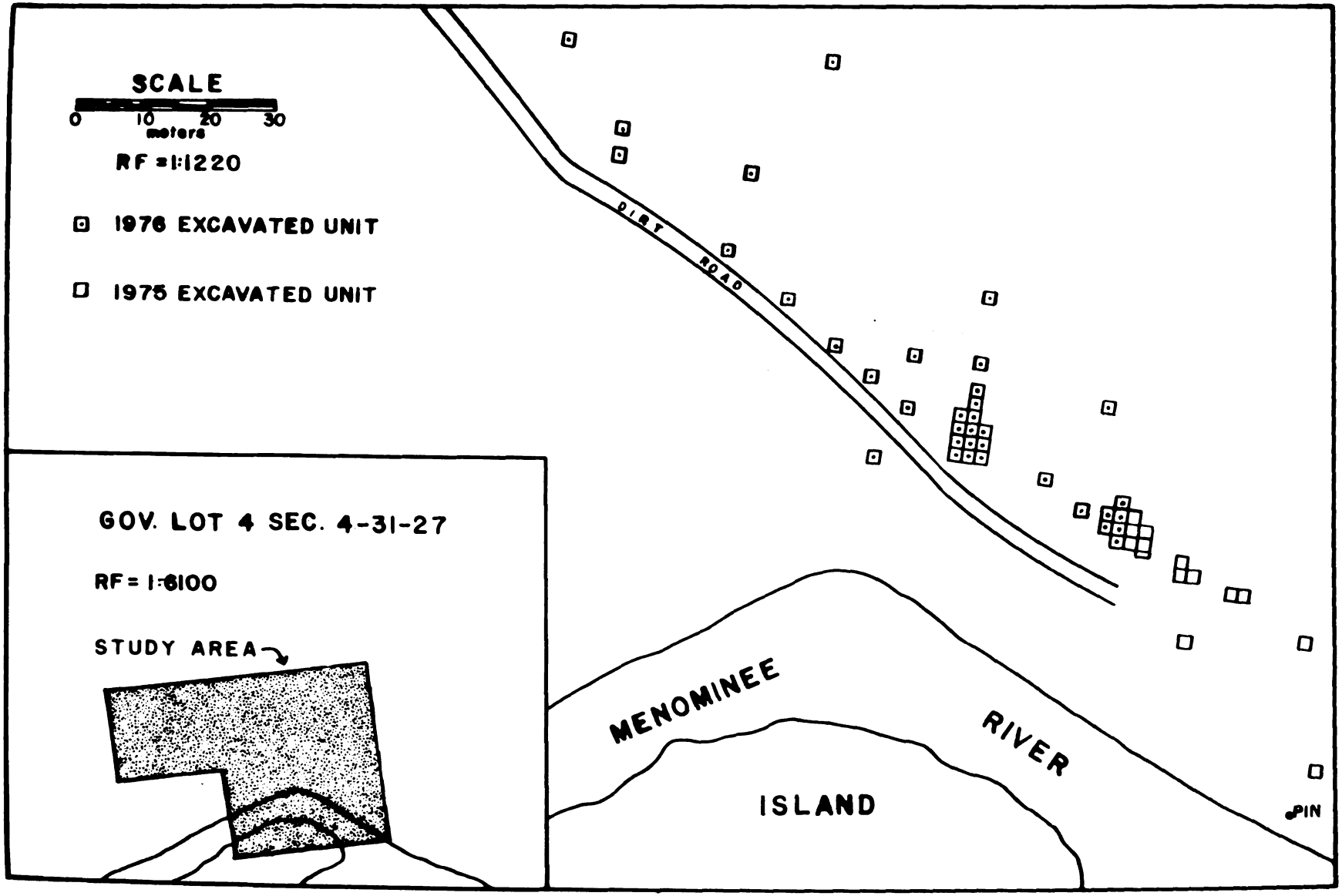
Taking into account the disturbed nature of the fill zone, excavation plans called for the removal of the upper twenty centimeters of each test pit as a single level. The test pits were then excavated in ten centimeter levels to a depth of at least fifty centimeters. All excavated material was sifted through half-inch hardware cloth and a square sheet was drawn prior to beginning each new level or provenience unit. After each 2x2 test pit had been excavated to sterile sand, the walls were troweled and profile drawings made. All test pits were backfilled and the sod replaced at the end of the field season. Due to the brevity of the field season, further excavations were planned for the following summer.

During the 1976 field season, Northern Michigan University students again returned to the Riverside II site, this time under the direction of John Franzen. A total of thirty-six 2x2 meter test pits were excavated adjacent to the western edge of the 1975 excavation units. A map of the site and excavated units is presented in Figure A-1. Initial plans called for the removal of the sod zone as a single unit and subsequent levels of fifteen centimeters each. However, once it was well established that the upper twenty centimeters represented a disturbed fill zone, this was removed as a single unit. Initially, this upper level was screened and sifted; however, in the latter half of the field season, this practice was discontinued in favor of simple visual inspection. Lower levels were not excavated in arbitrary fifteen centimeter intervals, but were dug as indicated by changes in soil color and composition. A square sheet was drawn for each level excavated, and all materials were screened through one-half inch hardware cloth. All features were assigned separate provenience designations, cross sectioned, and photographed. Soil from features was flotated at the site using three sixty-fourths inch screen mesh. All organic material was preserved for future analysis. All test pits were backfilled and the sod replaced at the end of the field season.

Cultural material and field records relating to the 1973, 1975, and 1976 field seasons at the Riverside II Site are housed at Northern Michigan University's Birdseye Building. The cultural material has been catalogued in Northern Michigan University's numerical coding system between 1.0.0 and 1.102.0.

We are extremely grateful to the City of Menominee for permission to excavate test pits on municipally owned land. Special

Figure A-1. Map of the Riverside II site.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MENOMINEE RIVER
ISLAND
PIN

thanks are extended to Mr. Fred La Brun, sexton at Riverside Cemetery, and to Mrs. La Brun for all of their many kindnesses. Their cooperation and support is greatly appreciated by me and by all of the students involved in the excavations.

We would also like to thank Scott Paper Company for providing us with maps of their recently commissioned survey of the north and south banks of the Menominee River. This enabled us to locate our grid system with an extra degree of precision.

Stratigraphy

The parcel of land on which the Riverside II site is located has, in the past, been the scene of extensive grading and filling activities which have significantly altered the archaeological context at the site. Although it is difficult to determine the total extent of previous land leveling activities, the sheer size of the site suggested that undisturbed cultural middens might somehow have escaped destruction. This hope was confirmed when test excavations in the southeast portion of the site disclosed the existence of what appeared to be an undisturbed cultural deposit. Excavations also indicated the presence of at least one fill zone stratigraphically above the midden. Artifacts recovered from the fill zone included modern debris in association with prehistoric materials. Wall profiles and square sheets for each level indicated that the association of modern debris with prehistoric artifacts was not the result of intrusion of more contemporary pits into the older cultural material, but rather the direct result of more massive land dislocation.

Apparently, the southeast portion of the site was at one time lower than the surrounding areas, and leveling activities preserved the midden by depositing up to 49 cm. of fill over the culture bearing strata. Unfortunately, the fill was obtained from the surrounding higher areas which themselves contained cultural deposits.

Excavations in the southeast portion of the site revealed four distinct stratigraphic levels. Zone 1 varied in depth from 12 to 20 cm. and contained sandy soil which was medium brown in color. With the exception of an occasional chert flake or small potsherd, this zone was sterile.

Zone 2 was the fill zone and ranged in depth from 7 to 40 cm. Soil was sandy and varied in color from mottled tan to dark brown. As mentioned previously, this zone contained an unstratified mixture of modern and prehistoric artifacts.

Zone 3 was an undisturbed prehistoric midden which varied in depth from 5 to 35 cm. with an average depth of 11.5 cm. The organically stained black sand, in association with high artifact density, clearly identified this prehistoric occupation. In some areas, the lower portion of the midden displayed a gradation into brown sandy soil, but the phenomenon was not continuous and did not appear to indicate a separate or earlier occupation.

The culture bearing strata was underland with sterile gold sand which afforded clear delineation of features which extended into it.

Pottery

Introduction

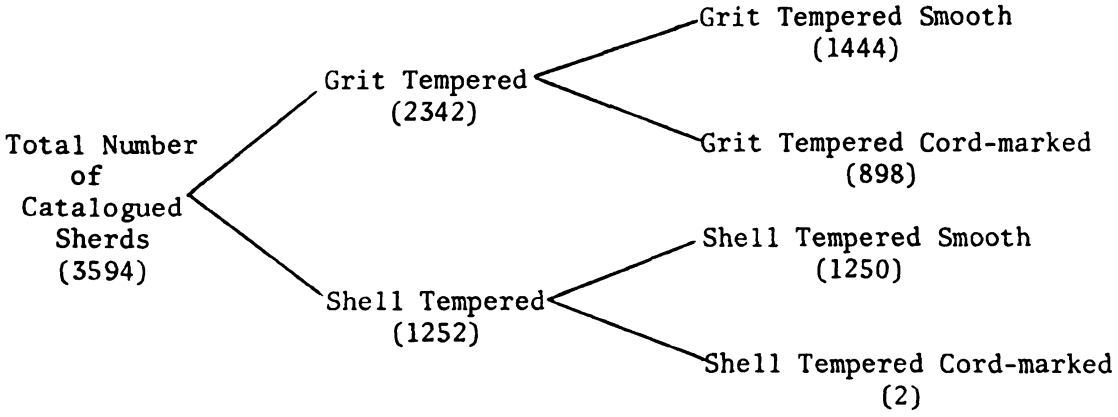
The 1973, 1975, and 1976 field seasons at the Riverside II site produced a varied sample of ceramic material. Although this sample does not constitute the major category of cultural material recovered, it is sufficiently large to allow for identification of twenty-six ceramic types. All pottery collected in the one-half inch hardware cloth used for screening was washed, counted, and catalogued. For this reason, many of the 3,594 sherds catalogued are quite small. Nonetheless, all catalogued sherds were subjected to preliminary sorting according to temper and exterior surface treatment.

Body sherds were first sorted according to the tempering agent. Shell and grit were the only tempering mediums identified in the sherds recovered from the Riverside II site. Two thousand three hundred grit tempered sherds accounted for 64 percent of the total number of sherds recovered. Gabbro, feldspar, hornblende, and quartzite have been identified in the grit tempered sherds. In addition, there are a number of unidentifiable rock particles utilized as tempering agents. Although these particles are of granitic origin, their specific mineral content cannot be determined. Thus, in some of the following ceramic descriptions, the grit temper is identified only as crushed granitic rock.

The remaining 1,259 sherds, representing 36 percent of the total number recovered, were classified as having shell temper. Occasionally, both grit and shell tempering were found in the same sherd. However, in all cases where this mixing occurred, shell temper appeared to predominate, and these sherds were thus classified as

shell temper. The mixing of tempering agents was considered to be the result of accidental inclusion during the manufacturing process or simply an attribute of the clay deposit used.

Exterior surface treatment was the second criteria used in sorting sherds. Both shell and grit were classified according to smooth exterior or cord-marked exterior. Thus, the four categories used in the initial sorting were: smooth grit tempered sherds; smooth shell tempered sherds; cord-marked grit tempered sherds; and cord-marked shell tempered sherds. The following diagram represents the sorting procedure and total number of sherds in each of the four main categories.



Measurement of sherd thickness indicated no significant variation between smooth grit-tempered sherds and cord-marked grit tempered sherds. Grit tempered smooth sherds ranged from 3.0 mm. to 9.1 mm. with a mean thickness of 5.9 mm. Grit tempered cord-marked sherds had a range of 3.4 mm. to 9.5 mm. with a mean thickness of 6.0 mm. The shell tempered smooth sherds tended to be thinner and ranged from 2.9 mm. to 6.0 mm. with a mean thickness of 4.0 mm. Thus, the average thickness of shell tempered smooth sherds is approximately 2.0 mm.

less than the average thickness of the grit tempered pottery at the Riverside II site.

Identification of decorative techniques was the next step in the ceramic analysis. The separation of sherds according to decorative technique increased the diagnostic classifications from four to seven main categories. These seven main categories are: grit tempered, cord-marked, undecorated, representing 837 sherds, or 23.3 percent of the total number of sherds; grit tempered, smooth, undecorated, representing 1,310 sherds, or 35.8 percent of the total number of sherds; shell tempered, smooth, undecorated, represented by 1,205 sherds of 33.5 percent of the total number; grit tempered, smooth, decorated, represented by 135 sherds or 3.7 percent of the total number; grit tempered cord-marked, decorated, represented by 61 sherds or 1.7 percent of the total number of sherds; shell tempered, smooth, decorated, represented by 45 sherds or 1.3 percent of the total number; shell tempered, cord-marked, undecorated, represented by 2 sherds or .06 percent of the total number.

The next phase of sorting entailed separation of rimsherds, decorated rimsherds, and decorated body sherds from the previously described categories. A total of 164 rimsherds, 87 of which exhibited some form of decorative technique, and 240 decorated body sherds were identified. The decorated rimsherds were grouped with the decorated body sherds to produce a total of 327 decorated sherds. The remaining 77 undecorated rimsherds were small and badly fragmented, but were assigned types when possible.

The decorated sherds were sorted according to the decorative technique used on the vessel lip and/or interior and exterior surfaces.

The principal decorative techniques identified were: corded stamped, cord-wrapped stick, cord impressed, pseudo-scallop shell, punctation, trailing and incising, and fabric impressed.

The groups resulting from this sorting procedure were then compared to established ceramic types from Michigan and Wisconsin. When possible, in this final phase of sorting, previously established ceramic types have been correlated with pottery from the Riverside II site. Due to the relatively small sample of pottery, many of the sherds could not be identified within the previously established categories. These unidentified examples of decorated sherds were then designated as unclassified, but were separated into various categories such as unclassified punctated cord-marked, unclassified punctated grit tempered smooth, unclassified cord-wrapped stick, unclassified cord-impressed, unclassified fabric impressed and unclassified Oneota.

Two characteristics frequently used in ceramic analysis have been excluded in the description of the Riverside pottery; these characteristics are hardness and color. It was felt that an accurate measurement of hardness could not be obtained from the small sample available for testing. Because of the non-homogeneous nature of prehistoric firing techniques, sherds from the same vessel may register widely varying degrees of hardness. Thus, when a vessel is representated by only one or two sherds, an entirely erroneous measurement may result. Color was excluded for much the same reason. The number of sherds representing the same vessel were considered insufficient to accurately assess the vessels' predominant color. It is felt that prehistoric firing techniques, being relatively uncontrolled, resulted in a

variation of color on the same vessel, thus leading to consequent difficulty when attempting accurate descriptions.

Except for the presence of cord-wrapped paddle impressions on some of the Late Woodland vessels, no clues to the specific manufacturing techniques used, such as the presence of coil breaks, could be identified.

Although 35 percent of the sherds from the Riverside II site were identified as Oneota, no appendages were found. Six of the shell tempered Oneota sherds exhibited perforations which were probably used for vessel suspension. No evidence of perforation was found on any of the Late Woodland sherds.

Early Woodland/Middle Woodland Transitional Ceramics

Dane Incised

This Early to Middle Woodland ceramic type is represented by two rimsherds and thirty-two body sherds. Typical Dane Incised sherds are shown in Figure A-2. The relatively small size of the potsherds recovered has made estimation of total vessel count impossible. Although only two rimsherds are represented in the sample, it is apparent that more than two vessels are represented. All of the sherds are grit tempered by the addition to the paste of varying size particles of crushed granitic rock. All of the sherds exhibit cord-marked exteriors, with two of the body sherds displaying partial smoothing.

The body sherds vary in thickness from 3.0 mm. to 11.1 mm. with a mean thickness of 6.9 mm. The decorative technique used is incising, sometimes with the addition of circular punctates. Three of the body

Figure A-2. Riverside II Ceramics; (A) Dane Incised, (B) Pseudo-Scallop Shell, (C) Fabric Impressed Pottery.



A



B



C





sherds display this treatment. The depth of the incised lines vary from extremely shallow to deep, bold impressions. There does not appear to be a correspondence between line depth and width as the latter fluctuates randomly from 1.0 to 3.5 mm. The incised lines are arranged in groups of oblique parallel lines, perpendicular to the cord-markings, and are separated from one another by areas of cord-marking 2.9 mm. to 6.9 mm. in width.

One rimsherd is 8.1 mm. thick at the lip, which is smooth and rounded and entirely devoid of decoration. The area just below the lip is decorated with a row of lineal punctates, 6.0 mm. in length, applied perpendicular to the lip. An incised line, 2.1 mm. in width separates the first band of lineal punctations from a second set directly below it. There is evidence of a second incised line on the extreme lower edge of the rimsherd. The exterior of the rimsherd is cord-marked, while the interior surface is smooth with protrusions of coarsely crushed granitic rock.

The second rimsherd has a flattened lip, 10.4 mm. thick and a virtually straight profile. Very shallow incised lines are placed diagonally to the rim on the exterior surface of the vessel. The interior surface is smooth with no evidence of decorations.

Middle Woodland Ceramics

Rocker Stamped

Four body sherds representing one vessel are included in this ceramic category. All of the sherds are grit tempered by the addition to the paste of medium sized particles of crushed granitic rock. Mean sherd thickness is 5.5 mm. The interior and exterior surfaces of the

sherds are smooth with the decorative motif occurring only on the exterior surface. The decorative treatment consists of rocker stamping applied by a tool having a serrated or notched edge. The resulting impression is somewhat reminiscent of fine dentate stamping.

Psuedo Scallop Shell

Psuedo scallop shell impressions are exhibited on four body sherds and two rimsherds. The total of six sherds represent a minimum of four vessels. All of the sherds are grit tempered with four body sherds and one rimsherd displaying cord-marked exteriors. A single rimsherd has a smooth exterior. The sherds range in thickness from 4.5 mm. to 9.1 mm. and have a mean thickness of 7.5 mm. Pseudo-scallop shell sherds are illustrated in Figure A-2.

One vessel represented by two body sherds is decorated with parallel rows of psuedo scallop shell impressions. The impressions are spaced at irregular intervals of 2.5 mm. to 5.0 mm. These impressions are placed parallel to the cord marking on the vessel. Average thickness of these two body sherds is 8.5 mm.

A second vessel is also represented by two body sherds. The psuedo scallop shell impressions are on a cord-marked surface and are parallel to the cord marking. The two body sherds are 4.5 mm. and 5.1 mm. thick, suggesting they represent a different vessel than the one previously described.

A third vessel is represented by a single rimsherd with psuedo scallop shell impressions superimposed over a smooth exterior. The impressions are in parallel rows separated by an average distance of 4.9 mm. The sherd is tempered by the addition to the paste of large

angular fragments of crushed granitic rock. There is no evidence of any cord marking on either the interior or the exterior of the vessel.

The fourth vessel is represented by a single rimsherd. The rimsherd is grit tempered with a cord-marked exterior surface and a smooth interior surface exhibiting many small striations. The psuedo scallop shell impressions are arranged transversely across the lip of the vessel at 3.0 mm. intervals. The lip is rounded with a slight exterior bevel. There are no other decorations on either the interior or exterior surfaces.

Late Woodland Ceramics

Heins Creek Cord-wrapped Stick

Two vessels represented by seven body sherds were assigned to this classification. Heins Creek Cord-wrapped Stick sherds are pictured in Figure A-3. All of the sherds are grit tempered by the addition to the paste of crushed granitic rock. Exterior surface treatment is smooth or smoothed over cord-marking. The sherds range in thickness from 5.9 mm. to 8.1 mm. with a mean thickness of 7.3 mm.

The decorative technique employed is cord-wrapped stick impressions formed by the application of a cord-wrapped stick or similar object placed end to end in continuous rows. The resultant banding is parallel to the rim of the vessel. The rows of impressions range in width from 2.0 mm. to 3.5 mm. and are spaced at intervals of 3.1 mm. to 9.5 mm. One sherd displays cord-wrapped stick impressions applied at random over a smoothed over cord-marked surface. It is not possible, however, to infer the extent of this treatment on the vessel proper.

Figure A-3. Riverside II Ceramics; (A) Heins Creek Cord-wrapped Stick, (B) Heins Creek Corded-stamped.

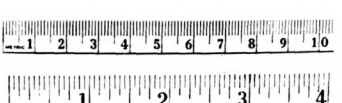


A





B



All of the sherds in this category exhibit smooth interior surfaces with no evidence of decorative treatment.

Heins Creek Corded-stamped

Fourteen rimsherds and seven body sherds that fall into this ceramic category were recovered from the Riverside II site. Several examples of this ceramic type are illustrated in Figure A-3. This ceramic type, as well as the other Heins Creek types described below, have been previously identified and described by Mason (1966, 1967). A minimum of twelve vessels are represented by these twenty-one sherds. All of the sherds are grit tempered by the addition to the paste of fine to coarse crushed granitic rock and all exhibit cord-marking. The rimsherds vary in thickness from 5.1 mm. to 9.2 mm. with a mean thickness of 6.7 mm. The seven body sherds are heavily exfoliated on their interior surfaces, rendering accurate measurement of their thickness impossible. The rimsherds have straight to slightly everted profiles. Four of the rimsherds have flat lips while the remaining ten have rounded lips. The lips vary in thickness from 5.5 mm to 13.0 mm.

The decorative technique employed is cord-wrapped stick impressions. The stick or similar tool was closely wound with cord in such a manner that the resulting impressions form dentate-like imprints in the clay. The impressions vary in length from 6.0 mm. to 13.0 mm. and are between 2.5 mm. and 8.0 mm. in width.

The corded-stamped impressions are employed on the rimsherds in a variety of ways. The usual placement is transverse and somewhat diagonal across the lip. Seven of the rimsherds have been decorated on the interior with rows of vertically placed corded-stamped impressions

just below the lip or impinging on the lip area. One vessel displays the corded-stamped impressions on both the area below the lip and the lip itself. This particular set of impressions is considerably deeper than average, being 4.0 mm. in depth. This sherd is decorated on both the interior and exterior surfaces with the interior impressions spaced at intervals of 9.0 mm. and the exterior set of impressions spaced 10.0 mm. apart. Both the interior and exterior decorations are placed perpendicularly to the lip. The lip is flat with corded-stamped impressions applied diagonally on both the lip and the juncture of the lip and rim.

A second vessel is decorated with rows of horizontally placed corded-stamped impressions below the lip. The rows of impressions are each 2.5 mm. in width and spaced at intervals of 4.0 mm. The lip of this vessel is also decorated with corded-stamped impressions spaced at intervals of 3.0 mm. to 5.0 mm. The body sherds exhibit single rows of corded-stamped impressions applied over a partially smoothed surface.

Point Sauble Collared

Four rimsherds from the Riverside II site represent four different vessels that can be classified as Point Sauble Collared. All four of the rimsherds are broken immediately below the collar, rendering identification of vessel shape and body decoration impossible.

Each of the rimsherds has a small collar on the upper rim and two of the rimsherds have collars that appear to have been formed by the folding over of clay from the upper rim and lip. The other two rimsherds have collars formed by the addition of a clay strip. Two of

the rimsherds have pinched lips, while the other two have rounded lips. The thickness of the sherds range from 5.1 mm. to 9.1 mm. with a mean of 6.3 mm.

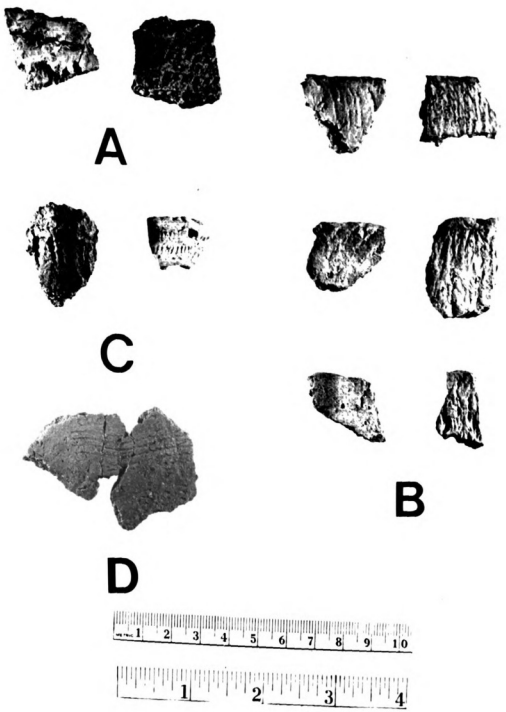
One of the rimsherds has horizontal bands of twisted cord impressions on the collar. The impressions range from 2.1 mm. to 3.0 mm. in distance from one another. The smooth interior has two rows of horizontally placed twisted cord impressions, spaced at intervals of 2.1 to 3.0 mm. The lip is rounded with a single row of twisted cord impressions on the very top. A second rimsherd also displays horizontally placed bands of twisted cord impressions below the lip, but unlike the previously described rimsherd, the lip is tapered to a relatively sharp edge. There are no decorations on either the lip or the smooth interior surface of the vessel.

The lip of the third rimsherd is tapered to an edge with rows of horizontally placed twisted cord impressions located just below the lip on the exterior surface of the collar. A row of double-knot impressions separates two rows of twisted cord impressions, the interval between the rows being 8.0 mm. A row of small punctates decorates the smooth interior surface just below the lip. The fourth rimsherd has diagonally transverse twisted cord impressions placed on the exterior surface, beginning just below the lip. The lip is rounded with a series of punctates directly on top of the vessel rim. The interior surface is smooth with no decorations present.

Madison Plain

Nine rimsherds representing eight vessels are included in this ceramic type. (Six of these rimsherds are shown in Figure A-4.) All

Figure A-4. Riverside II Ceramics; (A) Madison Cord-impressed; (B) Madison Plain, (C) Pipe Bowl Fragments, (D) Micro Cord-impressed.


A
C
B
D
1 2 3 4 5 6 7 8 9 10
1 2 3 4

of the sherds are grit tempered, by the addition to the paste of medium to fine crushed granitic rock. The exterior surfaces are either cord-marked or smoothed over cord-marked. The interior surfaces are smooth, showing no evidence of cord-marking.

The sherds vary in thickness from 4.9 mm. to 9.0 mm. with a mean thickness of 7.3 mm. Eight of the rimsherds' profiles are slightly incurving. The remaining rim is beveled to the exterior of the vessel. All of the rimsherd lips are generally flattened with a small excess of clay extending out from the exterior edge of the lip. The lips of the vessels average 8.5 mm. in thickness.

Decoration on the vessels is confined to the lip or to the interior of the vessels, directly below the lip. The lips of three vessels included in this category are decorated with diagonally transverse cord impressions, placed at intervals which vary from 1.9 mm. to 3.9 mm. One of the vessels has a row of shallow punctates above the cord impressions on the extreme inner edge of the lip. Directly beneath the interior edge of the lip, on the interior surface of the vessel, are a row of cord impressions placed diagonally to the vessel rim. These impressions average 7.0 mm. in length and are spaced at intervals of approximately 2.0 mm. Five of the rimsherds are decorated with punctates on the top of the lips at varying and random intervals. One rimsherd has a plain smooth rounded lip. The sherd has a thickness of 6.0 mm. and is otherwise characteristic of Madison Plain pottery.

Madison Cord-impressed

Ten body sherds and three rimsherds representing a maximum of eight vessels and one vessel which has been partially reconstructed

from nine rimsherds and eleven body sherds comprise this ceramic type. Madison Cord-impressed sherds are illustrated in Figure A-5. The reconstructed vessel is approximately 50 percent complete with the majority of the missing pieces being body sherds. The rim, lip, and neck area have been entirely reconstructed with the exception of a 3.5 mm. sect of rim.

The reconstructed vessel is grit tempered by the addition to the paste of fine to medium sized particles of crushed granitic rock. Exterior surface treatment is cord-marked, with decoration confined to the rim, lip, and neck area. Body sherds range in thickness from 4.0 mm. to 6.5 mm. with a mean thickness of 5.1 mm.

The lip of the vessel has been pinched to a sharply defined edge and is beveled approximately sixty degrees to the exterior of the vessel. Transverse cord impressions measuring 1.5 mm. to 2.5 mm. in width have been applied diagonally to the beveled portion of the lip. The impressions are spaced at intervals of 1.2 mm. to 3.0 mm. and are approximately 9.0 mm. in length. Average thickness of the vessel lip is 7.9 mm.

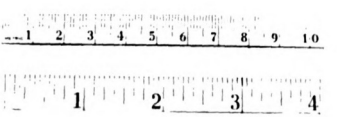
Directly below the lip are contiguous vertical rows of diagonally placed cord impressions. The rows of impressions are 2.1 mm. to 3.9 mm. in width and are 22.0 mm. to 28.0 mm. long, terminating at the juncture of vessel neck and shoulder.

The vessel which measures 17 cm. in diameter is globular in shape with a marked shoulder and a rounded base. The rim flares slightly. This vessel is pictured in Figure A-5.

The remaining thirteen sherds are also grit tempered with randomly sized granitic fragments. The exterior surfaces are

Figure A-5. Riverside II Ceramics; Madison Cord-impressed vessel.




1 2 3 4 5 6 7 8 9 10
1 2 3 4

cord-marked or smoothed over cord-marking. The sherds vary in thickness from 4.5 mm. to 9.1 mm., with a mean thickness of 5.5 mm.

All of the body sherds exhibit single or multiple imprints of twisted cord. Seven of the sherds have multiple parallel rows of twisted cord impressions. The remaining sherds are too small to permit identification of more than one row of twisted cord impressions.

One of the rimsherds has a flattened lip, slightly beveled to the exterior of the vessel, with impressions of twisted cord placed in a diagonally transverse fashion on the lip. The lip is 7.9 mm. thick. The rows of twisted cord impressions are separated from one another by intervals of 1.5 mm. to 2.6 mm. A single row of twisted cord impressions occurs just below and parallel to the lip. A second rimsherd has a rounded lip with twisted cord impressions occurring perpendicular to the lip. The impressions are spaced at intervals of 3.4 mm. and begin on the exterior of the lip, continuing 12.0 mm. down the interior surface of the vessel. There are no decorations present on the exterior surface of the vessel below the lip.

The third rimsherd has a rounded and smoothed lip with rows of twisted cord impressions placed at intervals of 5.0 mm. directly below the lip on the exterior surface of the vessel. The interior of the vessel exhibits twisted cord impressions placed perpendicularly to the lip and arranged in vertical rows spaced 1.1 to 2.0 mm. apart. The vertical rows of twisted cord impressions begin at the interior edge of the lip and continue down to a distance of 11.0 mm. The remaining portion of the interior surface is smooth with no indication of cord-marking or smoothed over cord-marking.

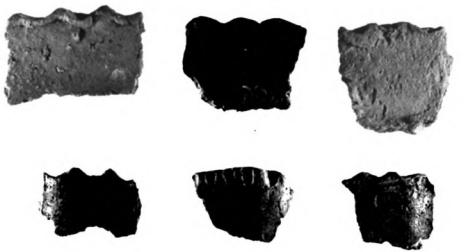
Oneota Ceramics

Carcajou Plain

The 1973 and 1975 field seasons at the Riverside II site produced sixteen rimsherds which may be classified as Carcajou Plain. Several examples of this ceramic type are illustrated in Figure A-6. The sherds represent a minimum of six vessels, all but one of which are shell tempered by the addition to the paste of finely crushed shell particles. The single exception represents a vessel tempered with both crushed granitic rock and crushed shell. It is included in this category due to its diagnostic attributes of smooth interior and exterior surfaces and notched lip. Surface treatment of the sherds is uniformly smooth on both the interior and exterior surfaces. Some of the sherds exhibit indistinct striations on the interior surface, perhaps the result of wiping with bunched grass while still pliable. The sherds exhibit a distinctly layered appearance and, due to this layering, tend to exfoliate rather easily. It is not clear whether this layering effect is due to a laminate manufacturing process or is simply an attribute of the tempering medium. It should be noted, however, that the one sherd which possesses both grit and shell temper also displays the same layered construction.

The sherds range in thickness from 2.5 mm. to 6.0 mm. with a mean thickness of 4.4 mm. Lip thickness is only slightly greater, ranging from 3.1 mm. to 7.1 mm. with a mean thickness of 4.5 mm. The sole decorative technique employed is notching of the upper lip or exterior lip surface. On all but one sherd the notching is applied directly on the top of the lip. However, in one case, notching has

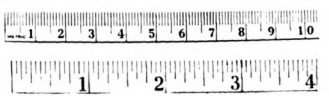
Figure A-6. Riverside II Ceramics; (A) Carcajou Plain, (B) Grand River Plain.



A



B



been employed on the exterior surface of the lip, vertical to the rim. The notched impressions range in width from 2.0 mm. to 10.0 mm. with a mean of 6.3 mm. The interior surface of the vessel is smooth with the exception of a continuous row of diagonally placed cord impressions parallel to and immediately below the lip. The impressions are approximately 2.0 mm. in width, 5.0 mm. in length, and are spaced at intervals of 1.0 mm. The vessel exhibits relatively heavy deposits of carbonized cooking residues distributed irregularly over the entire interior surface. It appears that the heaviest build-up of these residues occurs near the bottom of the vessel, rather than near the rim area.

Grand River Plain

Eleven vessels represented by twenty-nine rimsherds are included in this ceramic category. Figure A-6 illustrates several Grand River Plain sherds. Seventeen of the rimsherds are shell tempered by the addition to the paste of fine to medium sized particles of crushed shell. The remaining twelve rimsherds are tempered with fine to medium sized particles of crushed granitic rock. All of the sherds display smooth interior and exterior surfaces with a thickness range of 3.2 mm. to 9.2 mm. and a mean thickness of 5.1 mm. Rimsherd profiles are without exception straight to slightly everted. Eight of the rimsherds have flattened lips with an exterior bevel and twenty-one rimsherds have lips which are rounded. The lips frequently display a slight fold of excess clay on the exterior surface. Lip thickness ranges from 3.5 mm. to 9.3 mm. with a mean thickness of 5.7 mm.

There is no evidence of decorative treatment on any of the twenty-nine rimsherds. However, tool marks and other surface imperfections are quite common on both the interior and exterior surfaces. These marks are diagnostic of this ceramic type as defined by Hall (1962).

Although handles are associated with this particular ceramic type, none were recovered from the Riverside II site, nor does the sample contain sherds that exhibit evidence of areas where handles may have been attached.

Grand River Trailed

Two rimsherds and nine body sherds from the Riverside II site were classified as Grand River Trailed. The two rimsherds and six body sherds are grit tempered by the addition to the paste of fine to medium sized particles of crushed granitic rock. The remaining three body sherds are tempered with fine to medium sized particles of crushed shell. The sherds range in thickness from 3.0 mm. to 7.1 mm. Mean thickness of the grit tempered sherds is 5.8 mm., while the mean for the shell tempered sherds is slightly less. Both rimsherds have everted rim profiles with rounded lips beveled slightly to the interior of the vessel. One of the rimsherds has a lip which is 4.5 mm. thick while the other has a lip which is 7.0 mm. thick.

The sample represents one shell tempered vessel and a minimum of four grit tempered vessels. The decorative treatment consists of shallow trailed lines applied to the exterior surface of the vessel. These lines range in width from 1.0 mm. to 7.1 mm. with an average of 3.0 mm. Taken as a group, the shell tempered sherds have an average

line width of 5.5 mm., while trailing on the grit tempered sherds averages somewhat less at 1.9 mm.

Trailing on one rimsherd consists of horizontal lines placed parallel to the lip. The lines are 2.1 mm. wide and are spaced at intervals of 3.0 mm. The second rimsherd has trailing applied in a random manner and appears to have been somewhat smoothed over. There are no other decorations present on either of the rimsherds. None of the sherds exhibit evidence to indicate the presence of handles; however, one sherd has a perforation 3.5 mm. in diameter which was probably used for vessel suspension.

Unclassified Ceramics

Cord-marked Fingernail Impressed Ceramics

One rimsherd and two body sherds are included in this ceramic category. All of the sherds are grit tempered by the addition to the paste of medium size particles of crushed granitic rock, and all of the sherds exhibit cord-marking on their exterior surfaces. The exterior of the rimsherd displays a band of deep, bold, verticle fingernail impressions arranged in horizontal band just below the lip. The lip itself is rounded with a slight exterior bevel and is undecorated. The interior is decorated with shallow linear punctates just below the lip. Lip thickness is 7.1 mm. with wall thickness slightly less at 6.5 mm.

The exterior surfaces of the two body sherds also bear similar fingernail impressions but both are badly fragmented and thus prevent any determination of location or arrangement of the motif.

Fabric Impressed Ceramics

Two rimsherds and three body sherds representing five vessels exhibit fabric or net impression on their exterior surfaces. Several of these sherds are shown in Figure A-2. The sherds are tempered by the addition to the paste of fine to medium size particles of crushed granitic material.

One rimsherd has a flat lip with rectangular punctates centrally located on the lip. Fabric or net impressions begin just below the vessel lip. The lip is 5.0 mm. thick and has a smooth interior surface.

A second rimsherd has a collar formed by the addition of a clay strip to the rim. Fabric or net impressions have been applied over the collar. Below the collar is a row of punctates formed by the impression of knots into the clay. The punctates are arranged in a single row parallel to the vessel lip. The lip itself is rounded with impressions of knotted fabric or net placed on the very top. Lip thickness is 7.2 mm. The interior surface just below the lip is decorated with three rows of twisted cord impressions placed parallel to the lip. The area directly below the twisted cord impressions exhibits knotted cord impressions 2.1 mm. in diameter and spaced at intervals of 3.2 mm. The impressions are arranged in a row parallel with the rim.

Each of the three body sherds in this category exhibits a separate and distinct type of fabric or net impression on the exterior surface, suggesting that each sherd represents a different vessel. This is further supported by the individual sherd thickness which varies from 10.5 mm. to 5.9 mm. to 4.5 mm.

Punctated Grit Tempered Smooth Ceramics

Four rimsherds and seven body sherds exhibit punctates on their smooth exterior surfaces. All of the sherds are grit tempered by the addition to the paste of medium to large size particles of crushed granitic rock. The sole decorative treatment consists of generally round, but sometimes irregularly shaped punctations. These punctations were formed by the application of the end of a stick or similar tool to the vessel wall while the clay was still plastic.

The four rimsherds exhibit punctations centrally located along the upper surface of the lip. Lips are generally rounded but tend to be somewhat flattened, probably due to the pressure involved in applying the punctates. The punctates are placed on the lips at random intervals and no other decoration is present on either the interior or exterior surfaces. Lip thickness varies between 4.8 mm. and 7.4 mm.

Five body sherds are decorated with circular punctates arranged in parallel rows on their exterior surfaces. The exact orientation of the rows in respect to the vessel rim cannot be determined from the recovered sample. The sherds range in thickness from 5.1 mm. to 8.2 mm. There is no other decoration present on either the interior or exterior surfaces.

The two remaining sherds exhibit exterior lineal punctates arranged in a banded motif. A series of vertical punctates 8.2 mm. in length and 2.1 mm. in width are arranged in a horizontal band at 3.0 mm. intervals. Above and below this band of vertical punctates is a single row of horizontal lineal punctates placed end to end and separated by less than a millimeter. The punctates forming these horizontal

rows measure 4.0 mm. in length and 1.5 mm. in width. The interior of the vessel is plain.

Smooth Cord-wrapped Stick Ceramics

Fifteen rimsherds and one body sherd are included in this category. All of the sherds are grit tempered by the addition to the paste of various size particles of crushed granitic rock. Exterior surfaces are smooth with no evidence of cord-marking.

Ten rimsherds display cord-wrapped stick impressions applied to a rounded lip. The lips range in thickness from 5.0 mm. to 6.0 mm. The cord-wrapped stick impressions extend from the top of the lip to the exterior juncture of the lip and vessel neck. Three rimsherds display additional decorations located directly beneath the cord-wrapped stick impressions. The decorations consist of circular punctates arranged horizontally on the exterior surface.

Three rimsherds display cord-wrapped stick impressions only on the top of the lip. The impressions are arranged diagonally on the lip which is flat with a slight exterior bevel. Interior and exterior surfaces are smooth with no other decorations present.

One rimsherd is decorated with parallel rows of cord-wrapped stick impressions placed perpendicular to the lip on the smooth exterior surface. The lip is flat with a straight profile and measures 3.4 mm. in thickness. There are no other decorations on either the interior or exterior surfaces.

The remaining rimsherd is decorated with cord-wrapped stick impressions placed just below the lip on the exterior surface. The impressions are arranged in parallel rows perpendicular to the lip.

Directly below this is another horizontal row of twisted cord impressions placed parallel to the lip. The interior surface of the vessel also exhibits parallel rows of twisted cord impressions placed parallel to the lip. The lip itself is 5.9 mm. in thickness and is rounded. There are no other decorations present on either the interior or exterior surfaces.

Brushed Ceramics

One vessel represented by two rimsherds exhibits a brushed exterior surface. Both sherds are tempered by the addition to the paste of medium sized particles of crushed granitic rock. Sherd thickness for both is 7.1 mm. There is no evidence indicating that the brushing was applied to a previously cord-marked surface. The brushing has either completely obliterated evidence of cord-marking or was applied as a decorative technique to a smooth surface.

The lips of the two rimsherds are flat and have an incised groove placed on the very top of the lip. The groove measures 1.5 mm. in width, is 1.1 mm. deep and appears to encircle the entire vessel. Interior surfaces of both rimsherds are smooth and do not exhibit the brushed appearance of the exterior surfaces. There are no other decorations on either sherd.

Smooth Micro Cord-impressed Ceramics

Twelve body sherds representing a single vessel comprise this ceramic category. Examples of this ceramic category are shown in Figure A-4. All of the sherds are grit tempered by the addition to the paste of liberal amounts of fine to medium sized particles of crushed granitic rock. Mean sherd thickness is 7.8 mm.

The common characteristic of this ceramic category is the application of very fine cord impressions over a smooth exterior surface. The impressions average .3 mm. in width and have a mean depth of .2 mm. The arrangement of the cord impressions forms parallel rows separated by intervals of 1.0 mm. to 3.0 mm. Both interior and exterior surfaces are smooth and there are no other decorations on either the interior or exterior surfaces. The lack of rimsherds prevents any determination of the orientation of the decorative motif with respect to the vessel itself.

Smooth Trailed Ceramics

The single rimsherd comprising this category is unique enough to be classified separately. The sherd is tempered by the addition to the paste of both shell and finely crushed granitic material. Interior and exterior surfaces are uniformly smooth with decoration confined to the top of the lip. The lip is flattened and is 10.0 mm. thick. Decoration consists of one deeply trailed line on the top of the lip, placed at a right angle to the vessel rim. The line is 4.1 mm. wide and 2.1 mm. deep and extends from one edge of the lip to the other. Also occurring on the lip are randomly spaced lines arranged in a concentric pattern on the top of the vessel lip. These lines are quite shallow, appearing to have been formed by the application of a multiple toothed implement.

Shell Tempered Smooth Punctated Sherds

Thirteen rimsherds can be classified only as smooth punctated sherds. All of the sherds contain particles of crushed shell added to

the paste as a tempering medium. In addition, some sherds also contain very finely ground particles of crushed granitic rock.

Decorative treatment on six of the rimsherds consists of relatively circular punctates applied at random intervals to the very top of the lip. Two of the rimsherds also exhibit the same type of punctation on their smooth interior surfaces directly below the lip. Lips range in thickness from 4.9 mm. to 6.0 mm. and are generally rounded. Surface treatment on both interior and exterior surfaces is uniformly smooth.

Another six rimsherds also display circular punctates applied to the very top of the lip. The lips of these rimsherds, however, are generally flattened and range in thickness from 3.1 mm. to 8.7 mm. Interior and exterior surfaces are both smooth and no other decorations are present.

One rimsherd has circular punctates arranged in parallel rows perpendicular to the lip. The punctates occur on the exterior surface directly below the lip. The lip is somewhat rounded and is 4.0 mm. thick. Circular punctates also appear on the very top of the lip.

Smooth Perforated Ceramics

This category is composed of five body sherds, all of which are tempered by the addition to the paste of finely crushed particles of shell. Interior and exterior surfaces are uniformly smooth with each sherd exhibiting a single perforation, approximately 3.0 mm. in diameter. While it is possible that the perforations represent a decorative motif, it is more likely that they were used for vessel suspension.

Pipes

Two ceramic pipe fragments were recovered from the Riverside II site. Both of the sherds are grit tempered by the addition to the paste of finely crushed particles of granitic rock. Both fragments are presented in Figure A-4. The assumption that the sherds represent pipes was made on the basis of their relatively small, projected outside diameters. One of the fragments represents at least half of the pipe bowl and indicates a projected outside diameter of 4.0 cm. The other sherd represents somewhat less than half of the pipe bowl and indicates a projected outside diameter of 3.5 cm.

Decoration of one of the pipes consists of twisted cord impressions placed just below the lip. The impressions are arranged in parallel rows perpendicular to the rim and are 2.5 mm. wide with rows spaced at intervals of 3.0 mm. The lip of the fragment is 8.5 mm. thick and displays a marked collar. The interior surface is smooth and no other decorations are present on either the interior or exterior surface.

The second pipe fragment is decorated with corded-stamped impressions placed on the very top of the lip of the pipe bowl. The lip is flat and is 6.5 mm. thick. The impressions are 2.0 mm. wide and are spaced at intervals of 1.0 mm. Corded-stamped impressions also occur on the exterior surface just below the lip. These impressions are arranged in parallel rows and are placed parallel to the pipe rim. The rows of corded-stamped impressions are spaced at intervals of 2.5 mm. The interior surface of the fragment is smooth and no other decorations are present on either the interior or exterior surfaces.

Lithic Description

Introduction

The single largest category of cultural material recovered from the Riverside II site consists of lithic debris. A total of 10,670 fragments of worked and unworked chert, flint and quartz are included in the sample. Chert is by far the most extensively utilized raw material and accounts for 92 percent of the total debitage. Although a variety of chert types were utilized during the various occupations at the site, the only non-local type recovered was Blois Blanc chert. This variety accounts for 33 percent of the chert used, with the remainder derived from localized glacial deposits and occasional beach finds. The majority of chert is of a coarse texture, often exhibiting crystalline intrusions and remnants of the cortex.

Other than the presence of Blois Blanc chert in the sample, there is scant evidence of any attempt to procure higher quality raw materials. This may account, in part, for the generally poor and haphazard workmanship which characterizes the lithic industries at the Riverside II site.

Approximately 2 percent of the lithic material is recognizable as a poor quality flint. Since no local source of flint has been found, it was probably obtained indirectly or as isolated beach finds.

Quartz accounts for 6 percent of the debitage and is sufficiently plentiful in local glacial deposits to allow for its presence in the sample.

A total of 391 artifacts representing 4 percent of the total lithic debris were classified as follows: Projectile points (58

examples); Knives (12 examples); drills (4 examples); distal fragments (14 examples); scrapers (21 examples); blades (16 examples); bladelets (12 examples); blade core fragments (7 examples); block cores (27 examples); bipolar cores (20 examples); choppers (10 examples); spokeshaves (2 examples); perforaters (4 examples); wedges (12 examples); bifacial implements (61 examples); unclassified chipped stone (2 examples); worked flakes (49 examples); utilized flakes (39 examples); ground and pecked stone (21 examples).

Chipped Stone

Projectile Points

Triangular points

Twenty-four triangular points were recovered from the Riverside II site. This category, typical of the general style of Late Woodland points, consists of twenty-one complete specimens, two basal fragments, and one specimen from which a portion of the base and lateral edge is missing.

Morphological variation within the general type suggested further sub-division into three sub-types according to basal shape. The sub-types identified are: Sub-type one, points with straight bases; Sub-type two, points with sub-concave bases; and Sub-type three, points with convex bases. The sub-types are further described below and in Table A-1 and are illustrated in Figure A-7.

Sub-type one: This sub-type consists of eleven triangular points with straight bases. The points are symmetrical and isosceles in outline. Six of the points are bifacially flaked and are biconvex

Table A-1.--Summary Statistics on Projectile Points.

Attribute	Triangular				Side Notched				Expanding Stemmed				Straight Stemmed			
	Range	x	s	n	Range	x	s	n	Range	x	s	n	Range	x	s	n
Length (mm)	11.9-34.1	22.03	5.42	21	30.7-40.1	35.40	6.65	2	20.2-35.5	29.24	5.17	8	26.1-51.9	34.34	10.31	5
Width (mm)	3.9-27.1	15.06	4.78	24	17.6-27.0	23.60	3.77	7	14.0-22.0	18.09	2.23	20	13.5-27.2	19.90	4.61	6
Thickness (mm)	2.0-6.1	4.01	1.42	24	3.5-8.1	5.69	1.59	7	2.5-9.6	6.36	1.58	20	2.5-11.5	6.02	3.13	6
Weight (gm)	.3-5.5	1.75	1.30	24	1.0-6.0	2.50	2.10	7	1.0-8.0	3.81	1.81	20	.5-9.0	2.75	3.31	6

	Whole		Broken		Whole		Broken		Whole		Broken		Whole		Broken	
Condition	21		3		2		5		8		12		5		1	
	ST	SC	CV	n	ST	SC	CV	n	ST	SC	CV	n	ST	SC	CV	n
Base[a]	11	9	4	24	2	3	2	7	12	2	5	19	4	1	-	5
Unifacial	5	2	2	9	-	-	-	-	-	1	1	2	1	-	-	1
Bifacial	6	7	2	15	2	3	2	7	12	1	4	17	5	-	-	5

[a] ST = Straight base

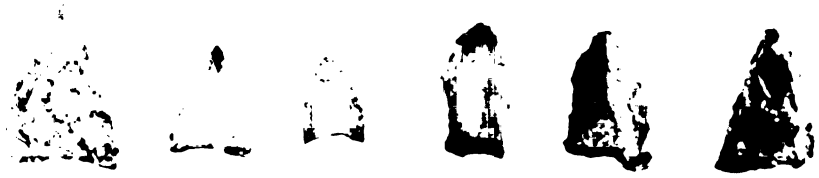
SC = Sub-concave base

CV = Convex base

Figure A-7. Riverside II Lithics; (A) Straight Based Triangular Projectile Points, (B) Sub-Concave Based Triangular Projectile Points and Projectile Point Fragments, (C) Convex Based Triangular Projectile Points; (D) Straight Based Serrated Triangular Projectile Points.



A



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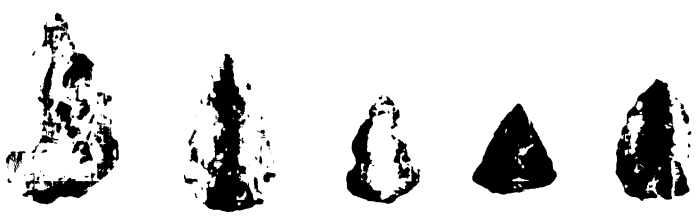

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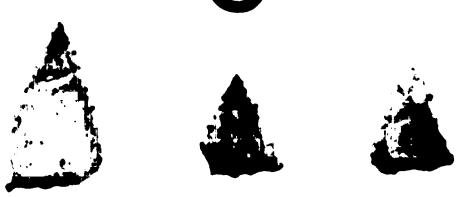

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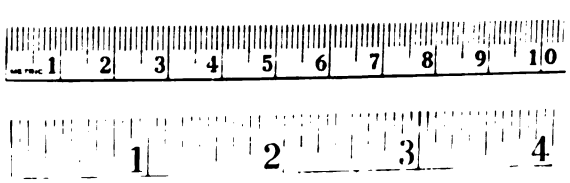

in cross section, while the remaining five are worked only on one side and thus exhibit a plano-convex cross section. Secondary retouch consists of fine to medium pressure flaking along the lateral edges, with three of the specimens exhibiting uniform serrations on both lateral edges. Nine of the points were manufactured from a coarse grain chert ranging in color from white to grey, while the remaining two are made from milky white quartz.

Sub-type two: This sub-type is represented by nine triangular points with sub-concave bases. The specimens are symmetrical and isosceles in outline and display retouching along their lateral edges. Two of the points exhibit unifacial flaking and are plano-convex in cross section, while the remaining seven points are bifacially worked and biconvex in cross section. Lithic material within the sub-type ranges from relatively good to extremely low grade chert which is coarse and contains numerous irregularities. Color variation extends from white to slate grey with one specimen exhibiting a reddish cast.

Sub-type three: Four triangular points with convex bases are included in this sub-type. The points are symmetrical and isosceles in outline. Three of the points are bifacially flaked while one specimen is only unifacially worked. Two of the points display biconvex profiles, while the other two are plano-convex in cross section. All of the points exhibit secondary retouching consisting of relatively large pressure flaking on both lateral edges and, in one instance, on the basal portion of one point. Chert used in the manufacture of these points is white to grey in color.

Expanding Stemmed Points

Twenty specimens, eight of which are complete, are included in this category. Metric data for these specimens may be found in Table A-1. The single common attribute of these points is the presence of an expanding stem or tang element. Shape of the tang element bases vary with twelve specimens exhibiting straight bases, five specimens exhibiting sub-convex bases and two specimens exhibiting convex bases. One incomplete specimen is broken across the basal portion of the stem, thus rendering identification of its basal shape impossible.

All of the points are symmetrical and display marked lateral convexity of outline. Eighteen of the points are bifacially flaked, while the remaining two are unifacially worked. Biconvex cross-sections are displayed by seventeen points, while the remaining three are plano-convex in cross-section. All of the points display secondary retouch on both sides of their lateral edges and, in five cases, on both sides of the basal edge.

The materials used in the manufacture of sixteen of the points are cherts of widely varying color and quality. The range of variation extends from a fine grained black to a coarse, almost chalky white. The remaining four points were manufactured from an opaque quartz and are of rather poor workmanship. While the rough appearance of these points may be attributable to the characteristic fracture properties of quartz, it should be noted that none of the specimens in this category exhibits a very high degree of lithic skill. Several of these points are pictured in Figure A-8.

Figure A-8. Riverside II Lithics: (A) Side Notched Projectile Points and Projectile Point Fragments, (B) Expanding Stemmed Projectile Points.



A



B



Straight Stemmed Points

Five complete points and one broken point are included in this category. All six specimens share the common attribute of a straight sided basal stem. Four of these points are pictured in Figure A-9. In addition, all of the points are symmetrical and laterally convex in outline with biconvex cross sections. Five of the specimens are bifacially worked, while the sixth is only unifacially flaked. Pressure flaking scars along the lateral edges indicate the removal of generally large flakes.

Stem length ranges from 4.5 mm. to 8.1 mm. with a mean length of 5.6 mm. Additional metric data may be found in Table A-1. Basal treatment of the stems is straight in four cases and convex in one case. The remaining point has been broken along its basal edge and its basal shape is therefore unknown.

Four of the specimens were manufactured from a relatively good grade of chert, ranging in color from cream to white and displaying a slight reddish cast. The remaining two points have been rather crudely worked from a smokey grey quartz.

Side Notched Points

This category consists of seven projectile points, all of which display distinctive side notching. Only two of the specimens are complete, while the remaining five are fragmented. The two complete specimens and three fragments are pictured in Figure A-8. The two complete points are symmetrical and laterally convex in outline. All of the points are bifacially flaked and biconvex in cross section. Secondary retouch consists of generally fine pressure flaking on both sides of



A



B

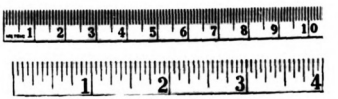

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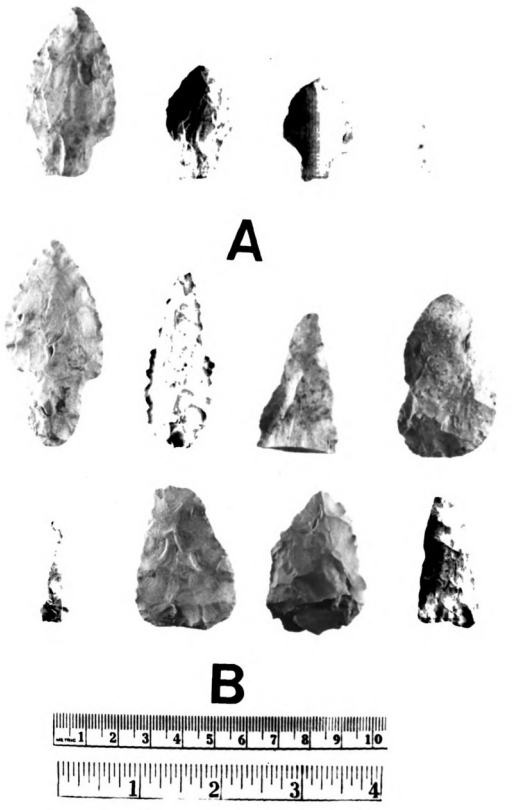
Figure A-9. Riverside II Lithics; (A) Straight Stemmed Projectile Points, (B) Knives.


A
B
1 2 3 4 5 6 7 8 9 10
1 2 3 4

the lateral edges. The notches range in width from 2.9 mm. to 4.8 mm. with a mean width of 4.2 mm. Additional metric data may be found in Table A-1. Basal treatment is straight in two cases, sub-convex in three cases, and sub-concave in two cases.

Chert of widely varying quality was used in the manufacture of the points. Color variation extends from cream to dark grey.

Scrapers

Sixteen chipped stone artifacts exhibit the steeply beveled edge typical of scraping tools. All of the specimens have been manufactured from locally available cherts of medium quality with color variation extending from white to dark grey.

Three distinct types of scraping tools are recognized within the general category. These are: end scrapers, scraping tools on which the beveled edge has been placed opposite the bulb of percussion; side scrapers, scraping tools with beveled edges placed to either side of the bulb of percussion; and side and end scrapers, scraping tools with a beveled edge located opposite the bulb of percussion and one or more beveled edges located to either side of the bulb of percussion.

End Scrapers

This type is represented by three specimens ranging in length from 16.1 mm. to 28.9 mm. Width varies between 14.5 mm. and 24.1 mm. with a thickness range of 2.9 mm. to 7.1 mm. One of the specimens is triangular in outline, one is rectangular and the third is oval in shape. The scrapers are all unifacial in workmanship and plano-convex

in cross-section with secondary retouch applied to the distal end of the tool.

Side Scrapers

Five specimens are included in this category and range in length from 17.8 mm. to 28.0 mm. Width ranges from 10.5 mm. to 18.9 mm. with thickness ranging from 2.9 mm. to 8.5 mm. Outlines vary, with two specimens exhibiting ovoid shapes, two specimens exhibiting triangular shapes, and one specimen exhibiting a rectangular shape. The scrapers are essentially unifacial flakes, unmodified except for steeply beveled retouch applied along a lateral edge. None of the specimens exhibits evidence of a hafting element and it is assumed they were utilized while being held between the thumb and forefinger.

Side and End Scrapers

This type consists of eight specimens, each of which exhibits retouching along one or both of the lateral edges and on the end opposite the bulb of percussion. The specimens range in length from 17.1 mm. to 24.1 mm. and vary in width from 8.4 mm. to 21.0 mm. Thickness ranges from 3.2 mm. to 9.5 mm. The entire series is generally rectangular in outline and all specimens are unifacially flaked. In two instances, retouch has been applied only to one lateral edge and the distal end of the tool. The remaining six specimens exhibit retouch on the entire perimeter of the tool except for the bulb of percussion itself.

Miscellaneous Scrapers

Five additional specimens are morphologically typical of scraping tools, but lack an identifiable bulb of percussion. The specimens are generally ovoid in outline and vary in length from 20.1 mm. to 46.1 mm. Width ranges from 15.1 to 28.1 mm. with a thickness range of 2.9 mm. to 6.1 mm. The artifacts are unifacial in workmanship with retouch occurring along one or more edges. Cherts used in the manufacture of these specimens is generally fine grain with a coloration of white to light grey.

The above categories are intended only as a convenient taxonomic framework and are not meant to imply functional differences.

Drills

The Riverside II site produced only four chipped stone fragments classifiable as drills. Classification was made on the basis of diamond shaped cross-sections and high length to width ratios. The four specimens include one distal fragment, one basal fragment and two proximal fragments.

All of the drills are bifacially flaked with pressure retouch occurring on both sides of the lateral edges.

All of the specimens were manufactured from good quality chert ranging in color from white to dark grey. Metric data may be found in Table A-2.

Knives

Ten complete specimens, and two incomplete specimens missing a portion of their lateral and basal edges, have been classified as

Table A-2.--Summary Statistics on Drills and Knives.

Attribute	Drills				Knives			
	Range	x	2	n	Range	x	s	n
Length	-	-	-	-	24.0-62.1	41.11	11.62	10
Width	7.0-17.6	14.10	4.80	4	12.5-31.0	24.60	5.85	10
Thickness	3.2-8.0	5.80	1.97	4	5.0-18.7	9.14	3.74	12
Weight	.5-2.0	1.38	.75	4	1.0-15.0	7.00	4.45	12

	Whole		Broken		Whole		Broken	
Condition	-		4		11		1	
	ST	SC	CV	n	ST	SC	CV	n
Base[a]	1	-	-	1	5	4	1	10
Unifacial	-	-	-	-	1	-	-	1
Bifacial	1	-	-	1	4	4	1	9

[a]ST = Straight base
SC = Sub-concave base
CV = Convex base

knives. Several of the knives recovered from the Riverside II site are pictured in Figure A-9. The twelve specimens have been identified on the basis of three shared characteristics: the specimens are all asymmetrical and thus were probably not intended for use as projectile points; additionally, the specimens exhibit a characteristic saw-like edge produced by the removal of flakes from alternating faces of the tool; and in many cases, the lateral edge or edges appear dulled through extensive use.

All of the specimens are bifacially flaked and biconvex in cross-section. Basal treatment is straight in five cases, concave in four cases, and convex in one case. Two incomplete specimens are lacking the basal portion due to breakage. A single specimen exhibits a stem 22.5 mm. in length, ending in a convex base. Outlines generally display marked lateral convexity, however, two partial specimens are triangular in outline. Metric data pertaining to this classification may be found in Table A-2.

Chert used in the manufacture of the knives exhibits a coarse texture and ranges in color from white to light grey.

Distal Fragments

Fourteen chipped stone fragments representing the distal elements of projectile points or knives are included in this category. Individual functional analysis of the fragments is not possible due to the nature and extent of the fractures involved.

Thirteen of the specimens are bifacially flaked, while the remaining fragment is unifacial. Biconvex cross-sections are exhibited

by ten of the specimens, while the remaining four are plano-convex in cross-section.

The fragments range in length from 7.8 mm. to 27.5 mm. with a mean length of 21.9 mm. Width of the fragments ranges from 12.4 mm. to 25.0 mm. at the widest point. Thickness of the specimens ranges from 2.9 mm. to 10.0 mm. with a mean of 7.1 mm.

Chert used in the manufacture of the original artifacts generally exhibits a coarse texture and varies in color from a chalky white to a grey-brown.

Perforaters

Four artifacts of chipped stone exhibit sharply pointed tips produced by fine pressure flaking. These four tools are pictured in Figure A-10. Three of the specimens are unifacial flakes while the fourth is bifacial and may be the modified distal end of a projectile point. The artifacts vary in length from 11.9 mm. to 2.9 mm. Width ranges from 11.2 mm. to 16.1 mm., while thickness varies from 2.5 mm. to 8.4 mm. All four artifacts were manufactured from a grey chert of a coarse texture.

Minute striations are apparent on the tips of all four artifacts, while there is no evidence of wear on any other surface or edge, suggesting that the artifacts were used primarily as perforaters, gravers or etching tools.

Wedges

This functionally descriptive category consists of twelve small, bifacially worked artifacts. The specimens range in length from

Figure A-10. Riverside II Lithics; (A) Celt, (B) Gravers or Perforaters, (C) Pestle Fragment, (D) Spokeshave, (E) Tool used to apply dentate rocker stamping to ceramics.



A



B



C



D



E



14.1 mm. to 23.2 mm. and vary in width from 12.9 mm. to 21.9 mm. Thickness ranges from 4.1 mm. to 10.3 mm. Raw material consists of fine grained chert ranging in color from white to dark grey. Ten of the twelve specimens recovered from the site are shown in Figure A-11.

All of the specimens exhibit the classic wedge shaped lateral profile with evidence of heavy battering on the proximal end of the tool. Distal ends reveal minute striations, probably the result of being driven through wood or bone.

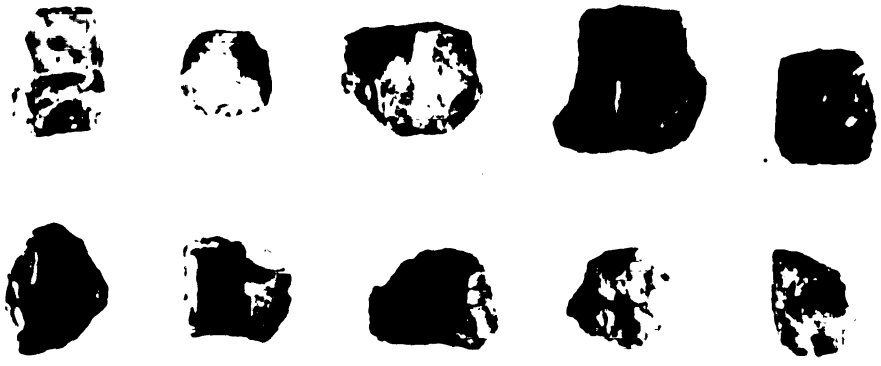
Bifacial Implements

This category is provisional in that it includes thirty-four objects of unknown or uncertain function. The specimens range in length from 3.5 mm. to 46.0 mm. Width varies from 17.5 mm. to 37.7 mm., while thickness ranges from 6.9 mm. to 15.5 mm.

The artifacts are all crudely bifacially flaked and were, with three exceptions, manufactured from coarse grained cherts with poor fracture properties. The three non-chert specimens were produced from a smokey quartz. With two possible exceptions, all of the artifacts are broken, thus preventing satisfactory identification of finished shape. There are, however, enough distal and basal elements represented to suggest a roughly oval shape for the completed product.

Eighteen of the specimens exhibit some evidence of utilization ranging from small striations to heavy battering or dulled edges. The utilized specimens include both distal and basal elements along with what may be medial fragments. Since more than half of the artifacts appear to have been used in their present crude form, it is probable that the remainder represent unused portions of similar tools.

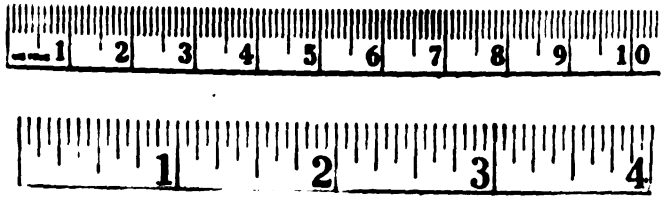
Figure A-11. Riverside II Lithics; (A) Wedges, (B) Bipolar Core.



A



B



Comparable artifacts have been recovered from a number of sites in the upper Great Lakes region and have been variously interpreted as blanks (Mason, 1966) and bifacial ovates (McPherron, 1967). Although these artifacts may represent some intermediate stage in the production of a bifacial tool, the extremely poor workmanship and apparent choice of whatever raw materials were at hand, suggest that many were finished tools. It is probable that these were tools of expediency, hastily made to perform a specific task at hand and discarded after use.

Battered Bifacial Implements

This provisional category includes twenty-seven bifacially flaked artifacts of widely varying size and shape. The specimens range in length from 15.7 mm. to 38.5 mm., while width varies from 12.1 mm. to 35.0 mm. Thickness ranges from 2.6 mm. to 22.0 mm. Raw material varies from a fine grained grey chert to a coarse white chert. A single specimen has been manufactured from a smokey quartz.

All of the artifacts display excessively battered or crushed edges. Although the battering is generally bipolar in occurrence, three of the specimens exhibit continuous battering along their entire perimeters.

While some of the smaller specimens could conceivably have been used as wedges, the larger artifacts are clearly dysfunctional in that capacity. The relatively uncontrolled nature of the primary flaking and random utilization of lateral edges suggests a multi-purpose utilization of these tools based on expediency.

Blades

Sixteen lithic fragments are included in this category. The specimens are all parallel sided and at least twice as long as they are wide. Fourteen of the blades are triangular in cross-section while the remaining two are trapezoidal. All of the specimens exhibit flake scars located parallel to the longitudinal axis of the blade. The artifacts range in length from 27.0 mm. to 52.8 mm. Width ranges from 12.5 mm. to 20.1 mm. with a thickness range of 5.9 mm. to 11.2 mm.

Chert used in the manufacture of these specimens is generally whitish in color and exhibits a coarse texture.

Bladelets

This category contains eleven chipped stone artifacts, morphologically similar to blades but generally smaller. The specimens all display multiple parallel flake scars on their dorsal surfaces. Ventral surfaces are smooth and flat or slightly convex. The artifacts range in length from 16.1 mm. to 32.8 mm. Width ranges from 7.1 mm. to 14.2 mm., while thickness varies between 2.3 mm. and 4.5 mm.

All of the bladelets appear to have been struck from bipolar cores, ten of which were manufactured from chert and one of which was manufactured from quartz. Cherts used range in color from white to tan and are relatively close grained.

Cores

Blade Core Fragments

Included in this category are seven lithic fragments, all of which exhibit uniformly rectangular cross-sections. Although the

specimens resemble bipolar cores, they lack the battered ends typical of that artifact. The specimens vary in length between 14.5 mm. and 20.1 mm., while width ranges from 10.3 mm. to 13.9 mm. Thickness ranges from 7.0 mm. to 12.5 mm. All of the specimens consist of coarsely grained cherts, ranging in color from white to light grey.

The absence of battering on these artifacts suggests that they are fragments of blade cores that fractured during the process of blade removal and were subsequently discarded.

Block Cores

Twenty-seven large chert and quartz artifacts are included in this category. The specimens are generally irregular in outline, but may be loosely characterized as rectangular.

Twenty-five of the specimens were manufactured from coarse grained cherts varying in color from white to dark grey. The remaining two specimens were manufactured from a smokey quartz. These artifacts range in length from 29.2 mm. to 75.6 mm. and vary in width from 17.2 mm. to 40.0 mm. Thickness ranges from 14.3 mm. to 25.3 mm.

Bipolar Cores

A total of twenty bipolar cores were recovered from the Riverside II site. Six types of bipolar cores have been described from the Northern Great Lakes region by Binford and Quimby (1963:287-96). These categories, however, have not been used since, it is my impression, the cores more closely parallel those described by McPherron (1967:135-42). Thus the bipolar cores from the Riverside II site have been divided into two fundamental kinds of cores: polyhedral and flat. Ten of the twenty

specimens are of the polyhedral type, while the remaining ten are flat. Both types are shown in Figure A-11.

All of the cores in the polyhedral group exhibit parallel flake scars extending the entire longitudinal axis of the artifact. Battering is exhibited on both ends, but tends to be heavier on one end than the other. The end which displays the heaviest battering was probably placed on an anvil during the flake removal process. This would subject it to repeated rebounding when the opposite end was struck. The specimens range in length from 14.8 mm. to 31.0 mm. Width varies from 8.1 mm. to 18.2 mm., while thickness ranges from 6.2 mm. to 10.3 mm.

The remaining ten bipolar cores are of the flat variety and exhibit opposed parallel ridges on the side opposite the flat surface, producing a convex cross-section. All of the specimens exhibit bipolar battering with one end assuming a somewhat pointed shape. In some cases, small striations occur on the pointed end, suggesting possible utilization of these cores as wedges for splitting bone or other material. Length of the artifacts ranges from 20.1 mm. to 28.0 mm. Width varies from 11.1 mm. to 19.8 mm., while thickness ranges from 3.6 mm. to 10.5 mm.

Choppers

Ten large and relatively massive artifacts of chipped stone are included in this category. The specimens vary in length from 27.5 mm. to 55.1 mm. Width varies from 16.9 mm. to 28.0 mm., with thickness ranging from 11.1 mm. to 20.2 mm. Eight of the specimens were manufactured from various cherts of generally coarse texture and white to

tan coloration. The remaining two specimens were knapped from a smokey quartz.

All of the artifacts are roughly oval in outline. Seven choppers exhibit unmodified proximal ends, with a portion of the cortex still existing. The remaining three specimens have been entirely decorticated.

In six cases, secondary retouch in the form of resolve flaking appears on the distal ends of the tools, while in the other four cases, this type of retouch has been applied only to a lateral edge. Additionally, the retouched areas exhibit evidence of heavy battering as through use. This suggests that the artifacts were probably held between the thumb and forefinger, with the proximal end resting against the palm. In six cases, this would involve resting the proximal end on the first knuckle of the index finger at the juncture of finger and palm. Utilization of the remaining four would involve resting the proximal end closer to the thumb. This would allow a lateral edge to be used in the chopping process.

Spokeshaves

Two lithic fragments exhibiting laterally located concave indentations are included in this category. Both tools are illustrated in Figure A-10. Secondary retouch is very fine and occurs only on the concave portion of the lateral edge. The presence of concave cutting edges suggests the utilization of these artifacts as shaping tools for use in the manufacturing of cylindrical objects such as arrow shafts or bone implements.

The larger of the two specimens is 31.2 mm. long, 17.9 mm. wide and 5.2 mm. thick. The remaining specimen is 26.9 mm. long, 11.1 mm. wide and 7.9 mm. thick. Both of the artifacts were manufactured from a relatively close grained chert of whitish color.

Unclassified Chipped Stone

Two artifacts of chipped stone are sufficiently unique to prevent classification in any of the preceding categories.

One specimen is a bifacially chipped flake of coarse grained grey chert and is generally amorphous in outline. The artifact exhibits unifacial retouching only on its distal end and is 22.8 mm. long, 19.1 mm. wide and 7.4 mm. thick.

The remaining artifact is a unifacially worked flake of coarse grained white chert and is roughly triangular in shape. The convex basal portion of the specimen exhibits a serrated edge produced by unifacially applied retouching. No attempt has been made to trim or modify the lateral edges or the distal end. This suggests the use of the artifact in applying dentate rocker stamping to pottery. Investigation of this point reveals that the serrated edge of the specimen corresponds nicely to dentate rocker stamp impressions previously described on sherds recovered from the Riverside II site. The artifact is 25.0 mm. long, 14.5 mm. wide and 5.7 mm. thick.

Unifacially Retouched Flakes

Forty-nine flakes exhibit secondary retouch on one or more localized areas on the dorsal or ventral surface. The majority of the worked flakes were made from locally available chert, ranging in quality

from a chalky white to a fine grained brown with a single flake of quartz and a single flake of gold flint.

Although only eight of the flakes exhibit perimeters roughened as through usage, it is probable that all of the worked flakes were utilized in a variety of cutting and scraping tasks.

Utilized Flakes

Thirty-nine unretouched flakes exhibit one or more worn edges indicating the flake was used as either a cutting or scraping tool. Raw material used in the manufacture of the flakes is chert of generally coarse quality ranging in color from chalky white to light grey. A single flake is made from an opaque quartz.

Ground and Pecked Stone

Twenty-one pieces of ground and/or pecked stone were recovered from the Riverside II site. The raw material used in the manufacture of these specimens is a dark igneous rock and is readily available in the glacially derived gravels of the area.

Hammerstones

Twelve rather massive, generally rounded artifacts are included in this category. The specimens all exhibit smooth surfaces with areas of localized battering. Length varies from 44.2 mm. to 115.3 mm., while width ranges from 40.1 mm. to 89.8 mm. Thickness varies between 24.9 mm. and 60.1 mm.

Although some surface smoothing may be the result of natural weathering, in at least six cases it is clearly the result of artificial modification.

Axes

Two ground stone axes exhibiting pecked grooves were recovered from the Riverside II site. The larger of the two is 165.0 mm. long, 86.1 mm. wide and 68.3 mm. thick. The remaining specimen is 75.0 mm. long, 35.2 mm. wide and 22.2 mm. thick.

The larger specimen is asymmetrical in outline and displays a rectangular cross-section with convex dorsal and ventral surfaces. A pecked groove, 28.5 mm. wide, encircles the entire proximal end of the tool.

The smaller axe is asymmetrical in outline and plano-convex in cross-section. A pecked groove, 16.0 mm. wide, encircles approximately three-fourths of the proximal end.

The proximal end on both specimens is relatively oval in cross-section. Both axes are shown in Figure A-12.

Celt

One small, grooveless artifact of ground stone has been classified as a celt. The specimen is symmetrical in outline and roughly oval in cross-section. Dorsal and ventral surfaces are flat and converge at the distal end to form a sharp edge. Both ends of the tool have been heavily battered, resulting in chipped and blunted edges. The specimen is 65.4 mm. long, 34.0 mm. wide, and 15.2 mm. thick. This specimen is pictured in Figure A-10.

Pestle

This category consists of a single cylindrical artifact of ground stone. The specimen is oval in cross-section and exhibits a

Figure A-12. Riverside II Lithics; Axes.



blunt, heavily battered end. The artifact is 53.9 mm. long, 28.1 mm. wide, and 20.1 mm. thick. The pestle is shown in Figure A-10.

Anvil

One oval shaped artifact with two opposing flat parallel surfaces was recovered from the Riverside II side. The artifact measures 117.3 mm. in length and is 92.1 mm. wide with a thickness of 46.5 mm.

Unclassified Groundstone

This category consists of three artifacts, two of which are fragments, while the remaining specimen is a smooth rounded beach pebble. The larger of the two fragments represents the distal portion of a tool and is smooth with no evidence of battering or pecking. This suggests that the fracture occurred during the manufacturing process, before the tool could be utilized.

The second fragment virtually defies meaningful description due to the extent of the multiple fractures it has sustained. The specimen was manufactured from a sedimentary type rock that has fractured in successive layers until only the cortex is left. One end of the specimen exhibits evidence of battering and is generally rounded.

The beach pebble is included as an artifact only because it was recovered from a feature and cannot be explained as intrusive. Surface finish of the pebble is uniformly smooth with no indication as to whether or not the smoothness is artificial or natural.

Copper

Thirty-seven pieces of copper, weighing a total of 130.2 grams, were recovered from the Riverside II site. Of these, eighteen are

complete artifacts and three are fractured portions of completed specimens. The remaining sixteen pieces of copper include fragmentary copper sheets, hammered fragments, and unaltered copper scrap. In all cases, heavy oxidation prevented any meaningful analysis of wear patterns. Measurements of length, width, thickness, and weight for the copper artifacts and fragments are summarized in Table A-3. In addition, many of the copper artifacts are illustrated in Figure A-13.

Prehistoric manufacturing methods involve two basic techniques either (1) the hammering into the desired shape a single lump or nugget of copper; or (2) the folding over of several thin sheets upon themselves and hammering the final lump into shape. Examples of both techniques are represented in the sample recovered from the Riverside II site.

Conical Points

Four complete points and two distal ends have been identified as conical points. The specimens are symmetrical and conical in outline and appear to have been formed by folding the lateral edges of a flattened piece of copper around a shaft.

Toggle Harpoon Head

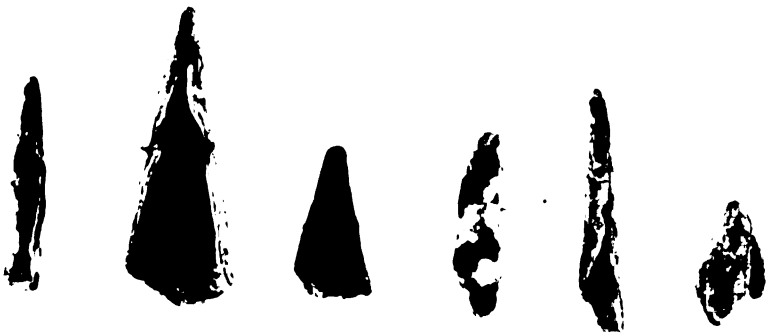
One artifact, shown in Figure A-13, has been classified as a toggle harpoon head. The specimen has been manufactured from copper, pounded into a flat diamond shape piece approximately 33 mm. wide, 3.5 mm. thick, and 81.5 mm. long. The lateral edges of this prepared copper were then folded around a shaft, producing a point larger but similar to the conical points previously described. A small circular

Table A-3.--Copper.[a]

Artifact	Length	Width	Thickness	Weight
Conical Point	50.9	18.2	8.8	10.0
Conical Point	40.8	7.8	5.2	2.4
Conical Point	32.3	9.1	5.6	2.5
Conical Point	35.1	6.2	2.2	1.9
Broken Conical Point	--	11.9	6.3	5.0
Broken Conical Point	--	12.1	4.9	6.2
Tanged Point	46.2	18.9	3.4	5.7
Toggle-Head Harpoon Point	81.5	16.1	8.9	28.2
Triangular Point	18.6	12.2	1.1	0.8
Triangular Point	14.1	10.1	1.2	0.7
Triangular Point	12.5	9.8	1.4	0.7
Knife	52.1	15.1	4.1	18.7
Knife	42.1	10.2	1.7	2.9
Knife	40.5	8.3	3.2	6.1
Knife	36.2	7.1	3.1	3.4
Knife	28.1	9.8	1.9	2.1
Awl	47.1	4.9	4.3	2.7
Awl	40.4	5.1	3.2	2.3
Awl	29.3	8.1	3.1	2.4
Unidentified Copper Tool	124.1			2.4
Broken Fishhook	--			0.9
Copper Sheets	26.8mean	11.2mean	0.9mean	15.1T
Hammered Fragments	17.2mean	13.3mean	3.2mean	21.7T
Unhammered Fragment	32.3	17.1	4.8	9.8

[a]Measurements in millimeters, weights in grams.

Figure A-13. Riverside II Copper Artifacts; (A) Copper Conical Points, (B) Toggle Head Harpoon, (C) Awls, (D) Tanged Projectile Point, (E) Unidentified Copper Tool.



A



B

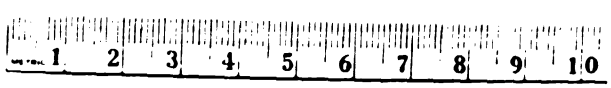


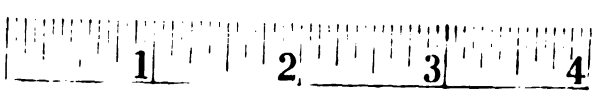


C D



E





hole, 3.2 mm. in diameter, has been drilled to the left of the longitudinal axis 39.9 mm. from the distal end.

Tanged Projectile Point

A single artifact has been classified as a tanged projectile point. The artifact measures 46.2 mm. in length and the tanged portion accounts for 25.1 mm. of the total length. Artifact width varies from 18.9 mm. at the shoulder, tapering to 5.1 mm. at the base of the tang. The specimen measures 3.4 mm. in thickness.

Triangular Projectile Points

Three small copper artifacts have been classified as triangular projectile points. The three specimens are symmetrical in shape and isosceles in outline. The specimens vary in maximum length from 12.5 mm. to 18.6 mm. and in maximum width from 9.8 mm. to 12.2 mm. The specimens are thin and flat, measuring between 1.1 mm. to 1.4 mm. in maximum thickness. Evidence of hafting elements such as tangs and notches is absent.

Knives

Four asymmetrically shaped artifacts have been classified as knives. Although probably Late Woodland in affiliation, they resemble the Old Copper "butter knives" described by Wittry (1957). Each specimen is uniform in thickness with no appreciable variation between proximal and distal ends. Evidence of hafting elements such as tangs or notches is absent. The specimens vary in maximum length from 28.1 mm. to 52.1 mm. and in maximum width from 7.1 mm. to 15.1 mm. Maximum range in thickness for the specimens varies from 1.7 mm. to 4.1 mm.

Awls

Three slender, tapered artifacts have been classified as awls on the basis of having at least one pointed end. Two of the awls exhibit distal ends which taper to a sharp point while the proximal ends are rounded. The remaining awl tapers to a point on both ends. The specimens range in maximum length from 29.3 mm. to 47.1 mm. and in maximum width from 4.9 mm. to 8.1 mm. The awls vary in maximum thickness from 3.1 mm. to 4.3 mm. The tools were probably employed in either a punch or drill-like manner. Heavy oxidation prevented accurate identification of their cross-sectional shape.

Copper Gaff

One artifact 124.1 mm. in length and 2.3 mm. in diameter has been identified as a gaff or hook. The distal end of the tool has been bent nearly perpendicular to the shaft. The bent segment of the artifact measures 9.8 mm. in length. The proximal end is slightly flattened and convex, indicative of a gouge. This tool is illustrated in Figure A-13.

Fishhook Fragment

One broken artifact, thin and round in cross-section, exhibits the curvature indicative of a fishhook. The tool has been fractured across the shaft of the specimen. Wear patterns have been eradicated by excessive oxidation. The fishhook measures 2.5 mm. in diameter and weighs 0.9 grams.

Hammered Copper Fragments

Sixteen copper fragments exhibit varying degrees of hammering. Nine specimens exhibit only minor alteration from the scrap form, while the remaining seven specimens have been pounded into thin sheets. The thin copper sheets have a 0.9 mm. mean thickness, while the slightly hammered fragments have a 3.2 mm. average thickness.

Unhammered Fragment

One piece of copper, exhibiting a minimum of oxidation, is devoid of any evidences of hammering. The specimen is extremely irregular and rough but measures approximately 32.1 mm. in length and 17.9 mm. in width. The fragment measures 4.8 mm. in thickness. The small copper nugget represents the initial stage in the manufacturing of tools for either the fold-and-hammer technique or the single nugget technique.

Features

Thirteen features were identified and excavated at the Riverside II site. Features were identified by a discoloration and variation of texture in the soil. The soil associated with the features was black to very dark brown and was marked in contrast to the gold to light brown matrix.

Concentrations of cultural material such as sherds or lithic debris were not assigned feature numbers unless they could be delineated from the adjacent areas on the basis of soil color and texture.

Features were excavated in the following manner. As soon as soil discoloration was recognized, the area was troweled until the shape and extent of the feature could be delineated, mapped, and

photographed. Each feature was then cross-sectioned or pedestalled. The profile was drawn and photographed before the remaining portion of the feature was excavated. Depending on the size of the feature, one quarter to one half of the soil from each feature was saved for flotation and analysis.

Bone recovered from the features was highly decomposed, necessitating quantitative measurement by weight. In some instances, when possible, numerical totals are listed. Each of the thirteen features is described and its contents listed below.

Feature 1: A circular stain located in the north central quarter of test pit #8 was interpreted as a refuse pit. The pit, which had a diameter of 72 cm., had ensloping sides and a round bottom. The feature was recognized at 30 cm. below surface and extended 43 cm. to a depth of 73 cm. below surface. The soil within the pit consisted of black organically stained sand. Contents of the feature included 7 chert flakes and 45 unidentified bone fragments.

Feature 5: A circular stain, located in the northcentral half of pit N102/W120 was designated as feature 5. The feature, which has been interpreted as a refuse pit, had rounding sides and a flat bottom. The feature was recognized at 72 cm. below surface and extended 55 cm. to a depth of 127 cm. below surface. The soil within the pit consisted of a black organically stained sand. Contents of the feature included: 5 grit tempered cord-marked undecorated body sherds; 16 grit tempered smooth undecorated body sherds; 5 grit tempered smooth decorated body sherds; 1 grit tempered smooth decorated rimsherd; 17 shell tempered smooth undecorated body sherds; 1 shell tempered smooth undecorated

rimsherd; 1 shell tempered smooth decorated rimsherd; 67 chert flakes; and 45 unidentified bone fragments.

Feature 8: An elliptical stain located in the north central quarter of test pit N108/W130 was interpreted as a refuse pit. The pit, which had a diameter of 138 cm., had straight sides and a round bottom. The feature was recognized and defined at 62 cm. below surface and extended 66 cm. to a depth of 126 cm. below surface. The soil within the pit consisted of a black organically stained sand. Contents of the feature included: 59 chert flakes and 22 unidentified bone fragments.

Feature 10: A semi-circular stain extending from the east wall at the southeast corner of pit N106/W130 was interpreted as a refuse pit. The pit, which extended 60 cm. from the wall, was slightly oval to round in cross-section. The feature was recognized at 86 cm. below surface and extended 14 cm. to a depth of 100 cm. below surface. The soil within the pit consisted of a black organically stained sand. Contents of the feature included 1 copper fishhook fragment, 1 grit tempered smooth body sherd, 1 chert flake, and 9.2 grams of unidentified bone fragments.

Feature 11: A circular stain located in the northeast quarter of pit N104/W126 was interpreted as a refuse pit. The pit, which had a diameter of 67 cm., had ensloping sides and a round bottom. The feature was recognized and defined at 64 cm. below surface and extended 45 cm. to a depth of 109 cm. below surface. The soil within the pit consisted of a black organically stained sand. Contents of the feature included 5 chert flakes and 2 unidentified bone fragments.

Feature 19: A concentration of pottery immediately adjacent to the east wall of N116/W154 was the central focus of this feature. The pottery was surrounded by an amorphous dark brown soil stain. The pottery concentration was initially observed at 64 cm. below the surface and was pedestalled to a depth of 76 cm. below the surface. A total of 79 grit tempered cord-marked body sherds and 9 grit tempered cord-marked rimsherds were recovered from the feature. A single vessel, previously described and identified as Madison Cord-impressed, was partially reconstructed from 9 rimsherds and 11 body sherds recovered from this feature.

Feature 22: A semi-circular stain located on the west wall and extending to the southeast corner of pit N116/W154 was interpreted as a refuse pit. The pit, which extended 121 cm. from the wall, had round sides and a flat bottom. The feature was encountered at 81 cm. below surface and extended 27 cm. to a depth of 109 cm. below surface. Soil within the feature consisted of a black sand. Contents of the feature included: 35 grit tempered cord-marked body sherds; 1 grit tempered cord-marked decorated rimsherd; 2 grit tempered rimsherds; 14 grit tempered smooth body sherds; 13 chert flakes; 3 quartzite flakes; 17 unidentified bone fragments; and 9 small pieces of charcoal.

Feature 23: A semi-circular dark stain, appearing on the east wall and extending into the southeast corner of pit N116/W154 has been interpreted as a hearth. The feature, which extended 57 cm. from the wall, was generally basin shaped with slightly ensloping sides and a rounded bottom. The hearth was encountered at 73 cm. below surface and extended 30 cm. to a depth 103 cm. below surface. The soil within the pit consisted of a black stained sand. Approximately 84 cm. below

surface, a small concentration of grey clay was found. Since clay does not occur naturally in this area, the concentration was excavated and saved for laboratory analysis. Contents of the features included 8 small fire-cracked rocks, 4 grit tempered smooth body sherds, 2 chert flakes, and minute flecks of charcoal.

Feature 24: A circular stain located in the center of pit N116/W156 has been interpreted as a refuse pit. The pit, which had a diameter of 130 cm., had straight sides and a round bottom. The feature was recognized at 78 cm. below surface and extended 41 cm. to a depth of 119 cm. below surface. Soil within the feature consists of a black organically stained sand. Contents of the feature included 1 grit tempered smooth body sherd, 1 retouched chert flake, and small fragments of charred wood.

Feature 35: A semi-circular stain extending from the center of the west wall of pit N122/W164 was interpreted as a refuse pit. The pit measures 38 cm. from the southwest corner bulk and 39 cm. from the northwest corner bulk. The feature is 93 cm. long and extends out 22 cm. from the wall. The pit exhibits slightly rounded sides and a round bottom. The feature was defined at 45 cm. below surface and extended 28 cm. to a depth of 73 cm. below surface. The soil within the pit consisted of a black sand. Contents of the feature included 1 copper fragment, 1 chert flake, 1 piece of charcoal, and 168 grams of unidentified bone fragments.

Feature 36: A circular stain located 5 cm. away from the west wall and equidistant between the northwest and southwest corners of pit N126/W170 was designated as feature 36. The feature has been interpreted as a refuse pit. The pit, 123 cm. in diameter, had rounding

sides and a round bottom. The feature was recognized at 66 cm. below surface and extended 19 cm. to a depth of 85 cm. below surface. The soil within the pit consists of a black organically stained sand. Contents of the feature included 1 chert flake and 1 unidentified bone fragment.

Feature 43: A semi-circular pit was located adjacent to the north wall of N126/W170 and extended into the unexcavated area beyond. The pit, which had incurving sides and a rounded bottom, was 50 cm. in diameter. The feature was recognized and defined at 46 cm. below surface and extended 31 cm. to a depth of 77 cm. below the surface. The soil within the pit consisted of black, organically stained sand and contained less than half of a gram of unidentified bone fragments and minute particles of charcoal.

Feature 67: An elliptical pit located in the southwest quarter of N118/W152 and extending into the northwest quarter of N116/W152. The pit, which was semi-circular in cross-section, measured 106 cm. across its major axis. The feature was recognized and defined at 61 cm. below surface and extended 45 cm. to a depth of 106 cm. below surface. The soil within the pit was composed of dark brown organically stained sand which was heavily mottled with black. Contents of the feature included: 1 grit tempered rimsherd identified as Carcajou Plain; 13 grit tempered body sherds; 7 shell tempered body sherds; 35 pieces of chipped stone; 20 mammal bone fragments; 39 fragments of fish bone; and numerous fragments of charcoal.

Conclusions and Summary

The Riverside II site is a multi-component site with a single unstratified midden approximately 40 cm. below the present surface. Cultural material was concentrated in the upper three stratigraphic zones. The first two zones are a result of land leveling activities at the site and contain an unstratified mixture of modern debris and prehistoric artifacts. Unfortunately, zone 3, which was the midden zone, was the only level from which cultural materials were recovered in an undisturbed context.

The majority of the recovered cultural material consisted of lithic debitage. However, this material was not sufficiently diagnostic to aid in identification of the various cultural components at the site. As a result, the recognition of separate cultural components at the site was accomplished through identification of eleven previously established Middle Woodland, Late Woodland, and Oneota ceramic types.

The earliest occupation of the site is ascribed to a Middle Woodland component. The ceramic sample indicative of this component includes Pseudo Scalloped Shell, Rocker Stamped, and Dane Incised. The Early to Middle Woodland Dane Incised variety is found in association with the North Bay assemblage at the Mero site (Mason, 1966). However, other ceramics associated with the North Bay ceramic assemblage are absent in the Riverside II site. The Middle Woodland ceramics were widely distributed throughout the Riverside II site, but lacked a concentration indicative of a major occupation. Due to the lack of other ceramic types to corroborate the evidence for a Middle Woodland component, it is tenable to consider this component a short-term

occupation by a small number of people. This would account for the limited ceramic sample recovered.

A Late Woodland component is represented by Heins Creek and Madison at the Riverside II site. Although Mason suggests that Heins Creek and Madison Ware represent two successive cultural complexes, stratigraphic evidence to support this is lacking at the Riverside II site. Both Heins Creek and Madison Ware ceramics are evenly distributed throughout the site and were often recovered together.

Sherds from the latest occupation at this site exhibit a series of traits which are indicative of the Oneota Aspect of the Upper Mississippian in Wisconsin, Minnesota, Illinois, and Iowa. A total of 2,698 sherds are considered indicative of this aspect. Of the sherds identified as Oneota, 1,259 are shell tempered, while the remaining 1,444 sherds are grit tempered. Although grit tempered, these sherds exhibit a smooth, non-cord-marked exterior surface finish and a paste structure which is similar to the shell tempered sherds. Decorations, which are infrequent, were identical on both the grit and the shell tempered sherds.

Cord-marked surfaces are rare among Oneota ceramics. Only two shell tempered cord-marked sherds were recovered and must be considered as anomalies within the otherwise typical Oneota assemblage. This high incidence of grit tempering is a characteristic that the Oneota ceramics at the Riverside II site share with the Mero complex on the Door Peninsula of Wisconsin (Mason, 1966).

The majority of the refuse pits appear to be associated with the Oneota component. The pits excavated are relatively large, flat bottomed, vertical sided pits. Although these pits contained some

grit tempered cord-marked sherds, the majority of the cultural material recovered from the pits was distinctly Oneota. Classifiable rimsherds and body sherds were identified as Carcajou Plain, Grand River Plain, or Grand River Trailed.

Except for the presence of refuse pits, the similarities between the Oneota component at the Riverside II site and the Mero complex exhibit a close affinity. Mason believes the Mero complex to be a regional expression of the Grand River Focus and suggests that the Mero complex dates sometime between A.D. 1200 and 1400. Mason has interpreted the absence of refuse pits at the Mero site as an indication that the site was a seasonal camp used for the catching and processing of fish rather than a permanent Oneota village. If Mason is correct, the presence of the relatively large refuse pits is not chronologically significant, but rather a reflection of a more sedentary Oneota settlement for the Riverside II site.

In summary, the Riverside II site is a multi-component site located within the Riverside Cemetery in the City of Menominee, Michigan. The site was first briefly occupied by a small group during a late phase of the Middle Woodland period. A second, more intense occupation occurred during the Late Woodland period. The Late Woodland cultures at the Riverside II site appear to derive most heavily from Wisconsin. The latest occupation of the site is ascribed to an Upper Mississippian culture, bearing a strong affinity to a similar occupation reported by Mason as occurring at the Mero site on the Door Peninsula of Wisconsin.

APPENDIX B

THE REINDLE SITE

APPENDIX B

THE REINDLE SITE

Introduction

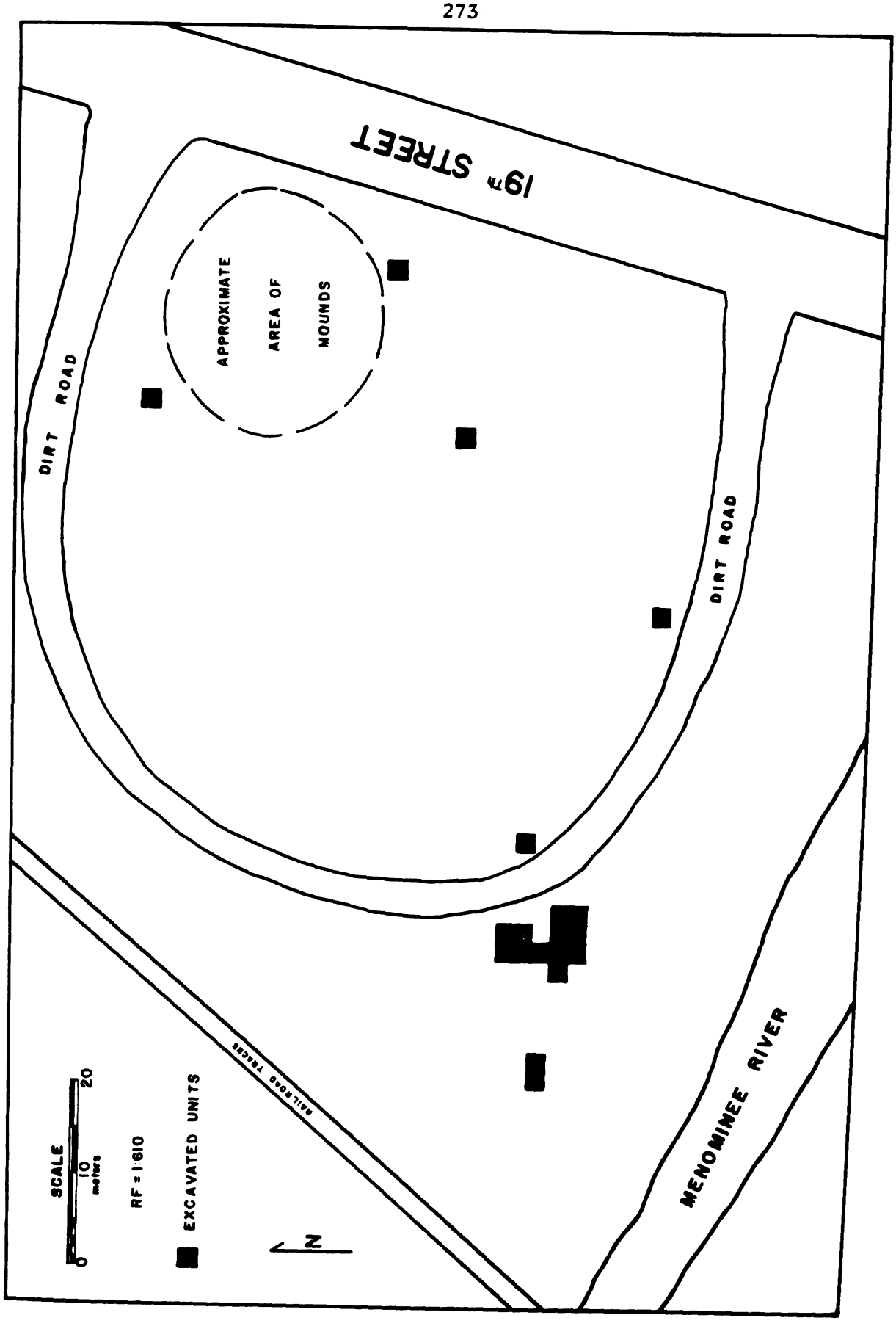
The Reindle site is located in section 3 (5.31N., R.27W.), in the City of Menominee, Menominee County, Michigan. The site is a small area situated along the north bank of the Menominee River, approximately two and one fourth miles from the mouth of the river, which empties into Lake Michigan and separates the cities of Menominee, Michigan and Marinette, Wisconsin. Both professional archaeologists and local amateurs have known about prehistoric sites along the banks of the Menominee in this region for many years. Conversations with local collectors, property owners, and long-time residents of the city suggest that the banks of the Menominee from the mouth of the river to the city cemetery, a distance of approximately four miles, was an area of intense prehistoric activity. Many local amateurs have collections from this area. The collections, however, have little archaeological value, since many of the individuals have engaged in buying, selling, and consolidating their collections without regard to the original location or the circumstances by which the objects were acquired. It is extremely unfortunate that this area is now an almost continuous belt of industrial, commercial, residential, and recreational development which has destroyed most of the area's prehistory. The Reindle site is

one of only two areas within this developmental zone, located during Northern Michigan University's 1973 archaeological survey of the Menominee Watershed, in which archaeological deposits have not been completely destroyed.

The site is situated on a sandy bank of the river, in a vacant parcel of land just east of the railroad trestle and slightly west of the U.S. 41 interstate bridge which connects Menominee and Marinette. The railroad grade forms the western boundary of the site, and at present, the site does not extend eastward past 19th Street. However, it is entirely possible that the Reindle site may be only a remnant of a much larger area of prehistoric activity now destroyed by the construction of the railroad grade, street, and adjacent apartment complexes. Even this area has not entirely avoided the destructive force of modern urban construction and development. The area had been bulldozed in the 1950s to provide a level playing surface to be used as a baseball diamond by local children. The baseball field has now been abandoned. Presently, a dirt road circles the parcel of land on which the site is located and serves as an informal access site to the river for fishermen and sightseers.

Several area residents remember the area prior to its use as a ball field, and describe a small circular mound which was bulldozed and used for fill in the southern portion of the site, where the land begins a rather steep downward slope to the river. Accounts of the exact size and location of the mound vary. No one, however, disputes its former existence. A dotted line on the site map, Figure B-1, outlines the general area which most individuals designate as the original location of the mound.

Figure B-1. Map of the Reindle Site.


19th STREET
APPROXIMATE AREA OF MOUNDS
DIRT ROAD
DIRT ROAD
RAILROAD TRACKS
MENOMINEE RIVER
SCALE
0
10 meters
20
RF = 1:610
EXCAVATED UNITS
N

During the summer of 1973, Northern Michigan University's survey team visited the Reindle site and excavated nine 2 x 2 meter test pits. A system of stratified unaligned sampling was used to locate six 2 x 2 meter test pits. The area between 19th Street and the railroad grade was divided into 60 x 60 meter sample units. Only three of these sample units fell entirely within the arbitrary boundaries of the site. Each sample unit was then divided into a series of 2 x 2 meter units which were then numbered. A table of random numbers was used to select two of these 2 x 2 meter units as test pits within each sample unit. Unfortunately, several of the sample units were only partially located within the boundaries established by the surrounding construction and, in each of these sample units, the randomly located test pits were not located within these boundaries. As a result, only six test pits were located and excavated on the site using the system of stratified unaligned sampling.

Although all of the six test pits contained prehistoric cultural material, only test pit 4 provided data from an undisturbed context. The remaining five test pits produced modern debris such as bottle caps, glass, nails, and bits and pieces of unidentified iron objects in all of the cultural bearing levels. This mixture of contemporary and prehistoric material is undoubtedly a result of the bulldozing and leveling activities which occurred on the site.

The lower levels of test pit 4 located in the southwestern section of the site were the only undisturbed portions of the site located by the sampling procedure. An additional three test pits were excavated, therefore, adjacent to test pit 4. The excavations proved

encouraging and, as a result of the data obtained in test pits 4, 7, 8, and 9, subsequent excavations were planned.

In 1975, a second team of Northern Michigan University students returned to the site and excavated an additional nine 2 x 2 meter units in the southwestern portion of the site, in the vicinity of the original test pits.

A total of nineteen 2 x 2 meter units were excavated at the Reindle site. The initial test pits had been identified by test pit numbers. A coordinate system was established to identify the units excavated during the summer of 1975. A coordinate system of magnetic north-south and east-west lines was established using a transit and 100 foot tape. Surveyor stakes were placed at four meter intervals along the N100 and W100 coordinates. Excavation units were then laid out from these points with the aid of a transit set over one of these survey stakes. The excavation units were identified by reference to the coordinates of their southeast corner.

Excavation plans were to dig the initial test pits in 10 centimeter levels until sterile sand was reached. However, a heavy concentration of modern debris in the upper 20 centimeters of test pits 1, 2, and 3 suggested an alteration in excavation procedure. Levels 1 and 2 were combined into a single 20 centimeter level in test pits 4 through 9. After the first 20 centimeters of soil and cultural debris were removed, each test pit was excavated in 10 centimeter levels as originally planned. Wall profiles in these test pits failed to indicate any change in soil color or texture associated with a new stratum. As a result, it was impossible to excavate the site in stratigraphic levels,

thus the same modified excavation procedures used for test pits 4 through 9 were followed in 1975.

All units were excavated to a minimum depth of 50 centimeters to reach sterile sand. Except for several large and relatively deep features, cultural material usually did not extend more than 40 centimeters below the surface. An additional three 10 centimeter levels were excavated in those units where features were located. As a result, specific excavation units reached a depth of 80 centimeters. Except for a very thin A soil horizon, there were no noticeable soil differences in any of the excavated units. The soil was consistently a light golden brown mixture of sand and silt. All excavated material was sifted through half inch hardware cloth. All cultural material was saved from each level, and a square sheet drawn before a new provenience unit was begun. After each 2 x 2 meter unit had been excavated to sterile sand, the walls were troweled and profile drawings were made whenever walls cut through features, postmolds, or there was evidence of modern disturbance.

All features and concentrations of bone, chippage, or sherds were given individual provenience designations. Features were cross-sectioned and the profiles were drawn and photographed. Soil from the features was saved and, during the following fall, subjected to flotation in the laboratory, where a large garbage can and a 2-1/2 gallon bucket with a bottom of three sixty-fourths inch screening were used to separate soil and organic material. All organic material was saved for microscopic analysis.

Cultural material and field records relating to the 1973 and 1975 field seasons at the Reindle site are housed at Northern Michigan

University's Birdseye Building. The cultural material has been catalogued in Northern Michigan University's numerical coding system between 2.0.0 and 2.18.5.

We are extremely grateful to Mr. John Reindle for his permission to excavate the original test pits and to return to the site for further excavation in 1975. His cooperation and friendship is greatly appreciated by me and all of the students involved in the excavation.

Stratigraphy

Surface investigation of the Reindle site suggested that the triangular parcel of land on which the site was located might be one of the last areas of undisturbed prehistoric activity within what was once a continuous strip of cultural deposit along the banks of the lower Menominee. Test excavations, however, indicated that the entire area which we had hoped would provide an undisturbed cultural deposit and stratigraphic profile had been disturbed and significantly altered. This alteration is a direct result of the bulldozing and land filling activities associated with the construction of a baseball field which once existed on the site. Although all surface indications of the ball field have vanished since the field was abandoned, the excavation of randomly located test pits in the vacant parcel of land exposed the destruction of archaeological data resulting from this activity. Except for a small section in the southeast portion of the tested area, the land leveling activities had completely altered the stratigraphic profile and destroyed the archaeological context of the recovered artifacts. Prehistoric artifacts were recovered from all of

the test pits, however, modern debris such as bottle caps, glass, nails, and aluminum foil was also recovered in association with the prehistoric cultural material throughout most of the site. Wall profiles and square sheets for each level indicated the recovery of modern debris was not the result of more contemporary pits intruding into an older cultural midden, but the result of a much more massive land dislocation and soil mixture which had destroyed existing stratigraphic data.

Only in the southeast corner of the tested area was the midden undisturbed. In this area of the site, the land dips rather abruptly down to the river bank. The leveling activity, so destructive to the rest of the site, preserved the midden in this area by depositing approximately 50 cm. of fill over the culture bearing strata. Unfortunately, most, if not all, of the soil used as fill was taken from the higher surrounding areas of the sites and contained cultural material from those areas.

Excavations in the southeastern portion of the site revealed five distinct stratigraphic levels. The upper zone, or Zone I, varied in depth from 12 cm. to 16 cm.: the soil was sandy and medium to dark brown in color. Except for an occasional chert flake or small potsherd, this zone was sterile. This zone was relatively recent in origin, being the direct result of an accumulation of soil washed into the area from the dirt road which followed the edge of the bank immediately adjacent to and above the excavated area. During rainstorms, the sandy soil was easily eroded from the roadway, which lacked sod and had a slight southern slope and deposited in the grassy area south of the road.

Zone II was a thin layer varying from 1 to 4 cm. in depth of dark brown to black sand. The frequent occurrence of bottle caps, coins and small metal fragments within this zone suggested it was probably the surface at the time the area was being used as a ballfield.

Zone III began between 14 and 20 cm. below the surface and extended to a maximum depth of 60 cm. below the surface. The zone, which varied in width from 20 to 40 cm., consisted of mottled shades of brown, black, and gold sand. The mottling, in association with a mixture of North Bay, Heins Creek, and Oneota ceramics, suggests the zone was formed by the land leveling activities at the site, which pushed soil from other areas of the site into this area as fill.

Immediately below Zone III was an undisturbed prehistoric midden. Organically stained black soil, in association with high artifact density, identified this aboriginal occupation. The midden varied in depth from 4 to 16 cm. with an average depth of 12 cm.

The midden was underlain by sterile gold sand. Features and postmolds which began in the midden extended into the gold sand. The dark brown to black soil associated with the features and postmolds at the Reindle site then was easily discernible in this zone.

Pottery

Introduction

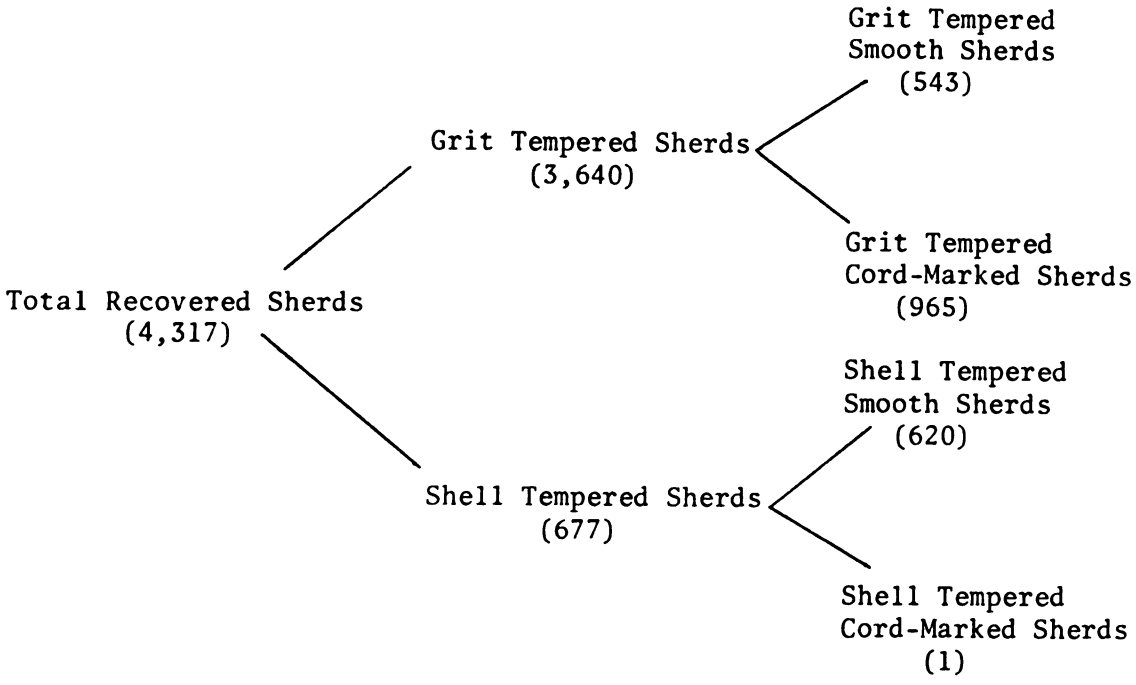
The majority of cultural material recovered from the site during the 1973 and 1975 field seasons consisted of potsherds. All sherds collected in the half-inch hardware cloth used for screening at the site were retrieved, washed, counted, and catalogued. As a result, many of the 4,317 catalogued sherds are small. All catalogued

sherds, however, were subjected to at least preliminary sorting according to temper and exterior surface treatment.

Initially, body sherds were sorted according to the type of material used as a tempering agent. Shell and grit were the two materials identified as temper in the sherds from the Reindle site. Sixteen percent, or approximately 700 sherds, had fine to coarsely crushed shell used as the exclusive tempering agent. Anorthosite, gabbro, feldspar, horneblende, and quartzite have been specifically identified in the grit tempered sherds. However, it was difficult to identify specific rock types used as temper, and those identified do not represent the entire range of rock used as a tempering agent. In many of the following ceramic descriptions, the grit temper could only be identified as crushed granite rock. The grit varied in size from small, finely crushed particles to large, angular fragments which sometimes measure 8 mm. to 10 mm. in length. Although some shell tempered sherds did have minimal amounts of finely crushed rock included in the clay body, there did not appear to be a deliberate attempt on the part of the prehistoric potters to mix the two tempering agents. When finely crushed grit was visible in the shell tempered sherds, shell was always the dominant tempering agent. None of the grit tempered sherds contained any visible or leached shell temper particles. Consequently, the presence of fine particles of grit in the shell tempered sherds was considered to be a result of the nature of the natural clay deposit or an accidental inclusion during the manufacturing process.

Exterior surface treatment was the second factor considered in the preliminary sorting of the Reindle ceramics. Both shell and grit tempered sherds were sorted according to smooth exterior (no

visible evidence of cord-marking) or cord-marked exterior. Thus, prior to cataloguing, the body sherds were sorted into four initial categories: smooth shell tempered sherds; cord-marked shell tempered sherds; smooth grit tempered sherds; and cord-marked grit tempered sherds. The following diagram represents the sorting procedure and the total number of sherds in each category.



Many sherds were split or exfoliated and could not be sorted according to exterior surface treatment. In addition, many small sherds were frequently broken in such a manner as to leave only a fragment of the exterior surface visible for identification. In both cases, these sherds have been included in the chart according to temper, but could not be included in the secondary sorting process. Exterior surface treatment could not be determined for approximately 50 percent of the recovered sherds. Surface treatment, however, was identified accurately on 2,129 body sherds of which 965, or 45 percent, were grit tempered

cord-marked sherds, 543, or 25 percent, were grit tempered smooth sherds and 620, or 29 percent, were shell tempered smooth sherds. During this system of sorting, smoothed over cord-marked body sherds were not separated from other cord-marked sherds, however, 36 percent, or approximately 350 of the grit tempered cord-marked body sherds, exhibited some secondary smoothing.

Measurements of sherd thickness in each of the four categories indicated insignificant variation in sherd thickness between the categories of grit tempered sherds. Grit tempered cord-marked sherds ranged from 4.0 mm. to 14.0 mm. in thickness with a mean of 7.3 mm. Grit tempered smooth sherds ranged from 4.0 mm. to 12.0 mm. in thickness with a mean of 7.5 mm. Shell tempered smoothed surface sherds and the single shell tempered cord-marked sherd had a much smaller range in variation of thickness and were significantly thinner. Shell tempered sherds varied from 2.5 mm. to 6.0 mm. in thickness with a mean of 4.4 mm. The average thickness of shell tempered sherds was approximately 3.0 mm. thinner than the average thickness of the grit tempered ceramics at the Reindle site.

Rimsherds and decorated neck and body sherds were also initially sorted, by temper and exterior surface finish, into the four major categories used to describe the body sherds. These 121 rimsherds and 332 decorated neck and body sherds, or these 453 sherds, were then sorted according to the decorative techniques applied to the lip and interior and exterior surfaces of the vessel. The principle decorative techniques by which these sherds were sorted include: cord impression; cord-wrapped stick or cord impression; dentate stamping; pseudo-scallop shell; punctation; incising; and trailing. The separation or

differentiation between incising and trailing was difficult and somewhat arbitrary. However, for the purpose of identification, incising was considered to be a line which had been cut into the clay surface producing a sharp line with well defined edges. Trailing was considered to be a technique of clay displacement rather than cutting. This displacement was the result of dragging a dull, rounded, or blunt instrument across the clay rather than of cutting with a sharper and/or more angular tool used for incising.

After the rimsherds and decorated neck and body sherds had been sorted into groups of sherds exhibiting similar decorative techniques, each of these groups was then studied for similarities in decorative motif. During this third and final sorting, sherds exhibiting similarity in the arrangement, location, and/or combination of decorative techniques were then compared to established or known ceramic types from Wisconsin, Minnesota, and Michigan. Whenever possible, the established ceramic types have been used to identify and describe the Reindle pottery. Recognition of established ceramic types among the Reindle pottery is particularly important in order to document cultural and chronological association with previously excavated sites where dating has been well established through stratigraphy and carbon-14 analysis.

Several groups of sherds recovered at the site exhibited distinctive decorative motifs which could not be identified as being within the range of variability of any previously existing ceramic type. Other groups of sherds were small or broken in a manner which distorted or eliminated the characteristic attributes necessary to identify them as belonging to a particular ceramic type. These sherds

have been grouped under descriptive names such as: unclassified smooth punctated sherds; unclassified cord-marked punctated sherds; etc. These descriptions are located at the end of the ceramics descriptions.

It is important to note that several attributes frequently considered in a ceramic analysis have not been included in the description of the Reindle pottery. Hardness, measured with mineral crayons on the Mohs scale, is often considered as a variable in ceramic description My personal experience with ceramics indicates that hardness is most directly related to the temperature at which the vessel was fired. Even in modern day kilns, it is difficult for the entire vessel to be fired to a uniform temperature since the manner in which the kiln is stacked will alter air currents and temperatures within the kiln. The conditions under which prehistoric pottery was fired was far less controlled and temperatures varied greatly from one side of the vessel to the other depending on its location among the vessels being fired, the nature of the fire, and air currents or drafts. It is therefore possible that a single vessel may exhibit a greater range of variability in hardness than that reported for an entire ceramic type.

Color is another variable frequently listed as a characteristic of a given ceramic type but I have eliminated it from the ceramic descriptions at the Reindle site. Color is extremely variable and is obviously the product of a number of factors. The clay body, firing conditions, the nature of the soil from which the sherd is recovered, and the amount of leaching which has occurred while the sherd has lain buried, are among the variables affecting the color of a particular sherd. It is not unusual for two sherds which belong to the same vessel and actually fit together to be extremely different in color.

In addition, unless a specific color key is used, a description which states that the ceramics range from red-brown to grey is open to a great deal of individual interpretation in determining the exact range of colors represented. Consequently, color has not been considered as a descriptive attribute in the following ceramic descriptions.

The method of manufacture of vessels can be a useful factor for separating Middle Woodland and Late Woodland vessels. Since both Middle and Late Woodland ceramics were recovered from the Reindle site, the presence of coil breaks would have contributed to the ceramic analysis and aided in sorting the Late Woodland and Middle Woodland sherds. However, none of the recovered sherds exhibited coil breaks; all of the sherds had irregular breaks providing no evidence of the method of manufacturing employed.

Although Oneota sherds represented approximately 20 percent of the ceramics at the site, no appendages were found. In addition, none of the sherds associated with the Oneota wares showed evidence of having had a handle or similar appendage attached to it. Thirteen of the shell tempered Oneota sherds and two grit tempered cord-marked sherds, however, did have perforations which were probably used for vessel suspension.

Except for the presence of cord-marking on approximately 50 percent of the sherds, no evidence of manufacturing methods was discovered. Those vessels exhibiting cord-marked surfaces were manufactured and finished using a cord-wrapped paddle pressed or, more likely, tapped against the exterior of the vessel while a free hand supported the vessel wall from the interior.

Early Woodland/Middle Woodland Transitional Ceramics

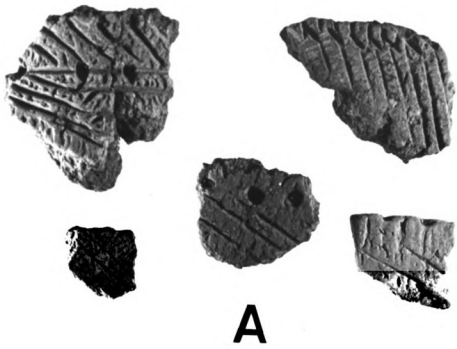
Dane Incised

This Early to Middle Woodland ceramic type is represented by two rimsherds and twelve body sherds. These fourteen sherds belong to a minimum of eight vessels. Examples of this ceramic type are pictured in Figure B-2. All of the sherds are grit tempered with medium to coarse crushed rock and cord-marked. Seven of the body sherds and both rimsherds show signs of partial smoothing. Fine horizontal striations are visible on the sherds as a result of the smoothing process.

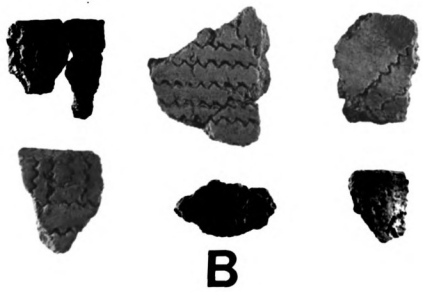
The body sherds vary in thickness from 5.0 mm. to 12.0 mm. Decoration consists of incising or incising and circular punctates. The incised lines vary from extremely shallow to deep and bold and are between 1.0 mm. and 1.5 mm. in width. The incised lines are arranged in groups of oblique parallel lines bordered by similar groups which are frequently separated from each other by areas of cord-marked surface 3.0 mm. to 10.0 mm. wide. On some of the sherds these groups of incised lines are separated from each other by a single row of circular punctates. The punctates are deep, but have not produced any evidence of bossing on the interior of the vessel. The body sherds indicate the original vessels were relatively large and had a slight shoulder.

The rimsherd fragments from two different vessels are 5.0 mm. and 7.0 mm. thick. The first has a flattened lip 8.0 mm. wide, which is beveled towards the exterior of the vessel. The lip is decorated with thin, shallow, incised lines which are arranged transversely across

Figure B-2. Reindle Ceramics; (A) Dane Incised, (B) Pseudo-scallop Shell.



A



B



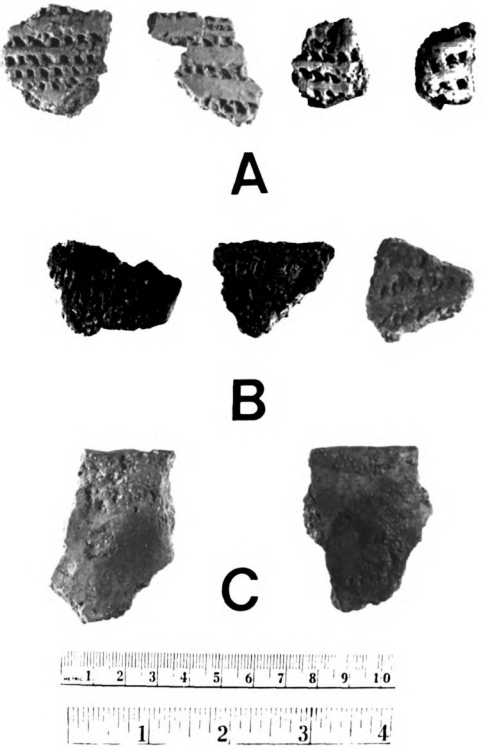
the lip at 5.0 mm. intervals. The rim is slightly everted in profile. Both the interior and exterior of the rim have vertical cord-marked surfaces. Shallow diagonal lines incised over the cord-marked surface decorate the exterior of the vessel. The second vessel has a slightly rounded lip which is decorated with cord-wrapped stick imprints which are impressed transversely across the lip at 8.0 mm. to 12.0 mm. intervals. The interior of the vessel is smooth and decorated with a double row of punctates formed by impressing a blunt end stick or similar object into the clay at an obtuse angle. The exterior of the vessel is decorated with shallow parallel incised lines arranged diagonally to the lip.

Middle Woodland Ceramics

North Bay Plain

This ceramic type as well as the North Bay ceramic types discussed below have been defined and described previously by Mason (1966, 1967). Seven rimsherds representing seven different vessels from the Reindle site are included in this category. Examples of this ceramic type are presented in Figure B-3. Except for one sherd which has a smoothed-over cord-marked surface, all of the vessels have plain, uneven interior and exterior surfaces. The vessels are tempered with fine to large fragments of crushed granitic material. Fragments of crushed rock as large as 18.0 mm. in length were included as temper in the clay body. The sherds range in thickness from 6.0 mm. to 9.0 mm. with a mean of 7.8 mm. The rims are generally straight, although two vessels have slightly everted profiles. The lips are flat to rounded and range in width from 5.0 mm. to 7.0 mm. with a mean of 6.1 mm.

Figure B-3. Reindle Ceramics; (A) North Bay Dentate, (B) North Bay Cord-wrapped Stick, (C) North Bay Plain.


A
B
C
1 2 3 4 5 6 7 8 9 10
1 2 3 4

Three vessels lack any form of decoration, having plain interior and exterior surfaces and a plain smooth lip. Decoration on the remaining four vessels is limited to a single row of transverse notches impressed across the lip of the vessel. One sherd has a variation of this decorative technique, having two rows of notches impressed into the lip of the vessel: one row of notches is impressed into the lip from the exterior of the vessel; the second row is impressed in a similar manner from the interior.

North Bay Cord-Wrapped Stick

Fourteen sherds have been identified as belonging to this ceramic type. Several examples of this ceramic type are illustrated in Figure B-3. Of these, thirteen are body sherds, and one is a rimsherd. They represent a minimum of five vessels. The sherds are thick when compared to the other ceramics recovered from the site, ranging in thickness from 7.0 mm. to 12.5 mm. with a mean of 10.3 mm. The sherds are tempered with liberal amounts of fine to coarse crushed granite material. The temper frequently protrudes through the interior surface of the vessel, producing an interior surface with a texture much like coarse grain sandpaper.

The sole decorative technique used consists of continuous parallel bands of cord-wrapped stick or cord-wrapped paddle edge impressions. The impressions created by the cord-wrapped objects vary in width from 1.5 mm. to 5.0 mm. The bands of impressions are separated from each other by widths which vary from .2 mm. to 6.0 mm.

The single rimsherd belonging to this type tapers from an average thickness of 9.0 mm. to 6.0 mm. at the lip. The lip is smooth,

plain, and slightly rounded. Decoration is confined to the exterior of the vessel and consists of parallel diagonal rows of cord-wrapped stick impressions. These impressions begin at the juncture of the lip and exterior surface and continue a minimum of 39.0 mm. to the broken edge of the sherd.

North Bay Linear Stamped

Four rimsherds representing three vessels exhibit linear stamping as the sole decorative technique. The sherds have a smooth plain interior and smooth exterior, and are tempered with liberal amounts of fine to medium crushed granitic material. The sherds range in thickness from 6.0 mm. to 8.5 mm. The rims are straight, with a flat to slightly rounded lip, which is somewhat thinner than the vessel walls varying between 4.0 mm. and 6.0 mm. in thickness. The lips on the three represented vessels are plain.

The vertical stamped impressions on the sherds are arranged in horizontal bands. The stamps used are generally rough with uneven sides, suggesting a broken bone or wooden fragment was used as the stamping tool. The stamps vary in length from 7.0 mm. to 10.0 mm. and are placed at 4.0 mm. or 5.0 mm. intervals around the vessel. Three of the rimsherds were broken below the first row of stamped impressions. However, decoration on the fourth rimsherd consists of several horizontal rows of linear stamps separated by intervals of approximately 5.0 mm.

North Bay Dentate

Eleven body sherds and three rimsherds are decorated with dentate stamping. A minimum of three vessels are represented. All

of the sherds are grit tempered with fine to medium crushed granite rock. The sherds vary in thickness from 5.5 mm. to 10.0 mm. with a mean of 8.4 mm. The dentate impressions are rectilinear to square and appear to have been formed by a continuous segmented linear stamp applied to a smooth exterior vessel surface. The stamping which occurs in parallel rows was applied somewhat haphazardly, often overlapping or crossing the ends of other stamped impressions. The intervals between the rows of stamped impressions vary from .5 mm. to 10.0 mm. in width. Examples of this ceramic type are illustrated in Figure B-3.

The three rimsherds belong to a single vessel. The lip of the vessel is flat with a slight outward bevel. The vessel is decorated with a single horizontal row of vertical dentate stamps 17.0 mm. wide. The vertical stamps begin at the juncture of the lip and the exterior of the vessel frequently intrudes into the lip of the vessel. As a result of exfoliation, the presence or absence of interior decoration could not be determined on the vessel. No interior decoration was present on the body sherds.

Becker Punctate

This Middle Woodland ceramic type is represented at the Reindle site by a single rimsherd and three body sherds. The sherds are tempered with finely crushed grit and have smooth interior and exterior surfaces. The sherds range in thickness from 4.0 mm. to 6.0 mm. with a mean of 5.5 mm. The single rimsherd has a flat plain lip with a slightly everted profile. The lip is 6.0 mm. wide. Decoration is confined to the exterior of the sherds, and consists of parallel horizontal rows of discrete rectangular tool impressions placed obliquely.

The rows of impressions are closely spaced, being less than .5 mm. apart. The impressions are short (4.0 mm.) and narrow (1.0 mm.).

Although described as Becker Punctate, the sherds are similar to those described as Summer Island Banked Stamp; Plain tool variety (oblique group) (Brose, 1970:55-58).

Pseudo Scallop Shell

Four rimsherds and nine body sherds exhibit pseudo scallop shell impressions. Examples of this ceramic type are shown in Figure B-2. The thirteen sherds represent a minimum of two vessels. All of the sherds are grit tempered with smooth exteriors and are decorated with parallel rows of pseudo scallop shell impressions. The sherds range in thickness from 6.0 mm. to 8.5 mm. with a mean of 7.5. The lip of the four rimsherds is flat with an exterior level.

One vessel represented by three rimsherds is decorated with a horizontal row of vertical pseudo scallop shell impressions. These impressions commence at the juncture of the lip and rim and extend down the exterior of the vessel 13.0 mm. The vertical scallop impressions are spaced at irregular intervals of 3.0 mm. to 7.0 mm. Immediately below these impressions is a horizontal band of single pseudo scallop shell impressions, placed end to end to form a continuous band which encircles the vessel. A second horizontal band of end to end impressions is located 8.0 mm. below the first or 21.0 mm. below the lip of the vessel. The lip of this vessel is decorated with pseudo scallop shell impressions arranged transversely across the lip. The lip was partially smoothed after the pseudo scallop shell stamp

was applied, partly obscuring the impressions. The interior of the vessel is smooth and plain.

The second vessel has a single row of oblique pseudo scallop shell impressions arranged in a horizontal row immediately below the lip. The single rimsherd from this vessel is broken immediately below this row of impressions, preventing further description of the exterior decorative motif. The lip of the vessel is smooth and flat and lacks any decoration as does the interior of the vessel.

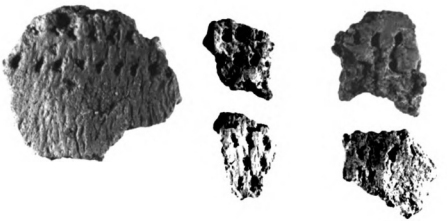
Late Woodland Ceramics

Madison Plain

Nine rimsherds, representing seven vessels, belong to this ceramic type. They are tempered with fine to medium crushed granite rock particles and have either a cord-marked or smoothed-over cord exterior surface. The interior surfaces are smooth, showing no evidence of cord-marking. The sherds vary in thickness from 5.0 mm. to 8.0 mm. with an average of 7.0 mm. Eight of the rimsherds are from vessels with vertical to slightly ensloping profiles. The remaining rim is everted. The vessel lips are generally flattened, with either an interior or exterior bevel. Two rimsherds have a rounded to pointed lip. Most of the vessel lips have been finished so as to push a little excess clay over the top of the vessel. The lips of the vessels average 8.2 mm. in thickness. Several examples of this ceramic type are shown in Figure B-4.

Except for the cord-marked or smoothed-over cord exteriors, decoration is confined to the lip or interior of the vessel immediately below the lip. The lips of five vessels are decorated with

Figure B-4. Reindle Ceramics; (A) Madison Punctate, (B) Madison Cord-impressed; (C) Madison Plain.



A



B



C



diagonal transverse cord impressions, spaced at intervals which vary from 2.0 mm. to 4.0 mm. One of these vessels has a series of fine incised lines associated with the cord-impressions. These incised lines begin at the juncture of the lip and interior vessel wall and continue to the midpoint of the lip surface, where they meet the cord impressions. The sixth vessel has a lip decorated with punctations formed by impressing a knotted cord into the center of a flattened lip. The seventh vessel is decorated with conical punctations arranged around the lip at varying intervals, with a row of short vertical cord impressions immediately below the lip on the interior of the vessel.

Two additional vessels, which lack any decoration except for that confined to the lip, have been included in this type, although they are somewhat unusual. The first of these vessels has a single line 2.0 mm. wide and 1.5 mm. deep incised into the center of the lip. The incising follows the lip and encircles the vessel. The second vessel has an everted rim profile and an almost pointed lip, which is decorated with two rows of fingernail punctates. The first row extends from the juncture of the lip and vessel exterior to the center or crest of the lip. The second row extends from the juncture of the lip and interior of the vessel to the center of the lip.

Madison Punctate

Two rimsherds and seven body sherds have been classified as Madison Punctate. A minimum of six vessels is represented. All of the sherds are tempered with fine to coarse granitic rock particles. The exterior of the vessels are cord-marked or smoothed-over cord. The vessel interiors are smooth and plain. Vessel thickness varies

from 6.0 mm. to 10.0 mm. with a mean of 8.0 mm. The lips of the two rimsherds are flat and measure 3.0 mm. and 7.0 mm. in thickness.

Vessel decoration consists of horizontal or vertical rows of punctations on the cord-marked or smoothed-over cord exterior surfaces. The punctations, formed by a stick, reed, or bone, range in diameter from 2.0 mm. to 4.5 mm., with an average of 3.3 mm. The depth of the punctations varies from 1.0 mm. to 7.0 mm., with a mean of 2.9 mm. Within a row, the punctations are separated by distances ranging from 3.0 mm. to 5.1 mm. The separation between rows varies from 4.0 mm. to 7.0 mm. None of the punctations was deep or large enough to produce nodes on the interior of the vessel. Several of these sherds are pictured in Figure B-4.

One vessel represented by a single rimsherd was decorated with a series of closely spaced punctations which circle the lip of the vessel. The second rimsherd had a narrow and somewhat sinuous lip, the result of a single horizontal row of knotted cord impressions arranged in alternating fashion around the interior and exterior of the vessel, immediately below the lip. A second horizontal band of punctations was visible 5.0 mm. below the knotted cord impressions on the exterior of the vessel.

Madison Cord Impressed

Madison Cord Impressed ceramics from the Reindle site consist of ten body sherds and a single small rimsherd. All of the sherds are grit tempered with fine to medium size granitic rock fragments. A maximum of six vessels is represented by these eleven sherds. The

exterior surfaces are cord-marked or smoothed-over cord. The sherds vary in thickness from 6.0 mm. to 10.0 mm. with a mean of 7.2 mm.

All of the body sherds exhibit single or multiple imprints of twisted cord. Several examples of this ceramic type are shown in Figure B-4. Six of the specimens have multiple, parallel rows of single twisted cord impressions. The remaining four body sherds are decorated with multiple, parallel rows of double twisted cord impressions. On three of these specimens there appears to have been some secondary smoothing which has partly obscured the cord impressions.

The single rimsherd has a rounded to almost pointed lip, 6.0 mm. in width. The sherd is small and is broken immediately below two horizontal bands of single twisted cord impressions which decorate the exterior of the vessel. The lip is decorated with transverse cord-impressions, spaced at approximately 6.0 mm. intervals. The interior of the rimsherd is smooth and plain.

Point Sauble Collared

Only three rimsherds, representing as many vessels, can be classified as Point Sauble Collared. All three of the sherds are small and broken immediately below the collar, so that nothing can be said regarding the size, shape, or decoration below the rim for this ceramic type at the Reindle site.

Each of the rimsherds has a small collar on the upper rim. Two of the collars appear to have been formed by the folding over of clay from the upper rim and lip rather than by the addition of a small strip of clay. All of the vessels have rounded, almost pointed lips. The maximum thickness of the rimsherds ranges from 6.5 mm. to 9.0 mm.

The rim tapers to a lip which ranges from 2.0 mm. to 4.0 mm. in thickness. Two of the vessels are decorated with two horizontal bands of twisted cords impressed on the upper portion of the collar. One of these two vessels has short twisted cord impressions arranged diagonally in a single row on the interior of the vessel at the juncture of the rim and lip. The interior of the second vessel is entirely plain. The third vessel has a series of single twisted cords impressed in oblique rows on the upper part of the collar. Knotted cord punctates are arranged in a single row immediately below these cord impressions. The lip of this vessel is decorated with transverse cord impressions arranged at 2.0 mm. to 3.0 mm. intervals. The vessel interior has a single twisted cord impressed horizontally around the vessel, immediately below the lip.

Heins Creek Cord-marked

A minimum of eleven vessels is represented by fourteen rimsherds, classified as Heins Creek Cord-marked. The sherds are tempered with medium to coarse crushed granitic rock. The exterior surfaces are cord-marked, with the cord-marking commencing immediately below the lip. The cord-marking on three of the vessels is partially smoothed over. In all cases, the cord-marking is perpendicular to the lip being vertically impressed on the vessel. Seven of the eleven vessels have straight rim profiles. The remaining four vessels have slightly everted rim profiles. The rimsherds range in thickness from 5.0 mm. to 10.0 mm., with a mean of 7.5 mm. Seven of the vessels have plain rounded lips. Four vessels have flat lips. Lips vary in thickness from 4.5 mm. to 12.0 mm., with a mean of 7.8 mm. On several rimsherds

excess clay at the lip has been pushed over the top of the rim, forming a small ridge of clay at the juncture of the lip and the exterior of the vessel. The lip is generally plain and smooth; however, one vessel represented by a single sherd has a flattened lip with cord-marking diagonally impressed across the entire surface of the lip. Except for this single sherd, none of the vessels exhibit interior, exterior, or lip decoration. Examples of this ceramic type are pictured in Figure B-5.

Heins Creek Corded-Stamped

This ceramic type is represented at the Reindle site by a total of fifteen sherds, twelve of which are rimsherds. A minimum of eleven vessels are represented by these fifteen sherds. Several examples of this ceramic type are presented in Figure B-5. All of the sherds are grit tempered with fine to coarse crushed granitic rock particles. The rimsherds vary from 5.0 mm. to 10.5 mm. in thickness with a mean of 7.8 mm. The three body sherds are 8.0 mm., 10.5 mm., and 13.5 mm. thick. All of the sherds are cord-marked. The rimsherds have straight to slightly everted rim profiles. The lip on six of the vessels has been flattened. The remaining five vessels have rounded to almost pointed lips. The lips vary in thickness from 5.0 mm. to 10.0 mm.

The only decorative technique is cord-wrapped stick impressions. The stick or similar tool has been closely wound with cord in such a manner that the impressions form dentate-like imprints in the clay. These impressions vary in length from 5.0 mm. to 17.0 mm. and are between 2.0 mm. and 7.5 mm. wide. Most of the impressions are deeper

Figure B-5. Reindle Ceramics; (A) Heins Creek Cord-marked; (B) Heins Creek Corded-stamped; (C) Heins Creek Cord-wrapped Stick.



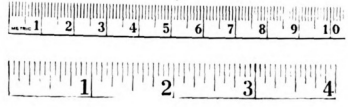
A



B



C



at one end than the other, suggesting that the tool was impressed at a slight angle.

The rimsherds are decorated in a variety of ways with the cord-wrapped stick impressions. The most common arrangement is a row of corded-stamped impressions placed transversely and somewhat diagonally across the lip. Three vessels have been decorated with a single row of vertical corded-stamped impressions on the interior of the vessel. These impressions are immediately contiguous to the lip and, in several cases, impinge on the lip area. One vessel has the corded-stamped impressions arranged in a single diagonal row on the exterior of the vessel at the juncture of the lip and vessel wall. The corded-stamped impressions are located in a single row on both the interior and exterior of another vessel. On both the interior and exterior, the corded-stamp is applied directly at the juncture of the lip and rim and is staggered so as to create a sinuous lip. On two vessels the corded-stamp is placed in a single diagonal row on the interior and exterior of the vessels. In both cases, the stamp is applied at the juncture of the lip and rim from both sides of the vessel, meeting in the center of the lip.

The body sherds exhibit a single row of vertical corded-stamp impressions. These impressions have been applied over a partially smoothed surface.

Heins Creek Cord-Wrapped Stick

A minimum of five vessels represented by seven rimsherds and five body sherds belong to this type. Examples of this ceramic type are shown in Figure B-5. All of the sherds are grit tempered with

medium to coarse crushed granitic rock particles. The sherds have cord-marked or smoothed-over cord exterior surfaces. The sherds range in thickness from 6.5 mm. to 9.0 mm., with a mean of 7.8 mm. All of the vessels have flattened lips which vary from 7.0 mm. to 8.5 mm. in width. In cross section, the rims are either straight or slightly everted.

Continuous horizontal bands of cord-wrapped stick impressions encircling the neck of the vessel identify this type. These horizontal bands are formed by the application of a cord-wrapped stick or similar object placed end to end to form a continuous line. The banding formed in this manner begins between 23.0 mm. and 35.0 mm. below the lip of the vessel. The bands are between 3.0 mm. and 5.0 mm. in width and are separated from each other by undecorated zones 3.0 mm. to 6.0 mm. wide. Unfortunately, the complete rim and neck area is not preserved on any of the sherds. The fragmented sherds indicated, however, that a minimum of four bands encircled the neck of these vessels.

If present, decoration on the upper rim and lip consists of a single row of vertical corded-stamped impressions. On one vessel these impressions impinge onto the lip, forming indentations at the juncture of the lip and rim at 9.0 mm. intervals. The interior of this vessel has a single row of vertical linear punctates 6.0 mm. long and 1.0 mm. wide immediately below the lip. Vertical corded-stamped impressions form a single horizontal row which encircles the exterior of another vessel 7.0 mm. below the lip. Except for the horizontal bands of cord-wrapped stick impressions below the corded-stamp impressions, the rest of the vessel is undecorated. The remaining vessels have plain lips and interior surfaces.

Oneota Ceramics

Carcajou Plain

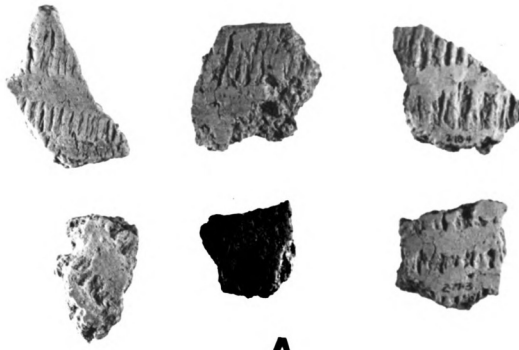
Ten rimsherds have been identified as belonging to the Carcajou Plain type category. The ten rimsherds represent a minimum of three vessels. All of the vessels exhibit a smooth, lusterless surface finish and are tempered with a liberal amount of fine to medium crushed shell. The sherds are flakey in appearance and have a tendency to vertically split or exfoliate. Measurements of thickness on those sherds which were not exfoliated exhibit a range from 6.0 mm. to 7.0 mm., with a mean of 6.2 mm. The lips of the vessels exhibit a similar range in thickness, with a mean or average of 6.1 mm. The rimsherds are straight to everted in profile. One vessel has a rounded shoulder beginning approximately 35.0 mm. below the vessel lip.

The vessels lack any interior or exterior body decoration. Decoration is confined solely to the lip. Notching, the sole decorative technique, is confined to the upper or outer lip surface. Notching on two of the vessels is very narrow and shallow on the upper lip surface. The third vessel has had its lip modified in a much more pronounced fashion. The notching consists of well-defined indentations formed with either the finger tip or a smooth tool.

Grand River Plain

Excavations at the Reindle site recovered twenty-three rimsherds belonging to the Grand River Plain ceramic type category. These twenty-three rimsherds represent approximately fourteen vessels. Four Grand River Plain rimsherds are pictured in Figure B-6. All of the sherds have smooth interior and exterior surfaces. Seventeen of the rimsherds

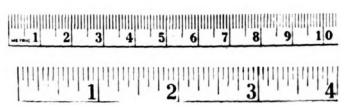
Figure B-6. Reindle Ceramics; (A) Unclassified Cord-marked Finger Smoothed, (B) Grand River Plain.



A



B



have fine to medium crushed shell tempering. The remaining six sherds are tempered with fine to medium grit. In profile, the rims are insloping, or insloping then vertical, and range in thickness from 4.0 mm. to 9.0 mm., with a mean of 5.6 mm. The lips are rounded or flattened with or without an exterior bevel. The lips frequently have a slight foldover of excess clay on the exterior of the vessel. The lips range in thickness from 3.5 mm. to 10.00 mm., with the average being 5.2 mm.

Hall (1962:68) defines these ceramics as lacking both lip or body decoration. All of these sherds conform to the type specimens in this regard. Tool marks and other surface imperfections are quite common on both the interior and exterior surfaces. Such marks are also typical of the type specimens.

No handles were recovered during the excavations at the Reindle site, nor do any of the rimsherds exhibit areas where handles may once have been attached. Although handles are associated with this particular ceramic type, they are uncommon to rare, and it is not surprising that evidence of appendages was not recovered from the Reindle site. One rimsherd which has been typologically assigned to this ceramic category has been excluded from the preceding measurements and description because of its extreme massiveness. The vessel has a smooth interior and exterior surface, an insloping rim, an outwardly beveled flattened lip, and conforms to the characteristics of the type specimens except in thickness and coarseness of its grit temper. The sherd is 17.0 mm. thick, and the lip is 12.0 mm. wide. Both of these measurements are outside the range of variation typically associated with this ceramic type. The vessel is liberally tempered with medium to coarse crushed granitic and quartzite material. The vessel is somewhat unusual and

its measurements of thickness have not been excluded in determining the mean width associated with this type.

Grand River Trailed

Included within this ceramic type are thirty-seven body sherds and six rimsherds. Eight of these sherds are shown in Figure B-7. Four rimsherds and twenty-five body sherds are tempered with fine to coarsely crushed shell. The remaining two rimsherds and eleven body sherds are tempered with fine to medium crushed granite rock particles. The sherds have smooth, lusterless surfaces. The sherds range in thickness from 4.0 mm. to 7.0 mm. Although the shell and grit tempered sherds exhibit the same range of variation in thickness, the average thickness of the shell tempered sherds is 5.6 mm., while the grit tempered sherds are somewhat thicker, averaging 6.2 mm. in width. The lips of the six rimsherds are flat to rounded. All of the lips were 7.0 mm. wide. A minimum of eight shell tempered vessels and six grit tempered vessels are represented in this typological category.

Although medium to broad trailing is characteristic of Grand River Trailed ceramics (Hall, 1962:66), many of the specimens recovered from the Reindle site exhibited much finer lines, with slightly more than one-half the sample having lines only 1.0 mm. wide. Trailing varied in width, however, from 1.0 mm. to 6.5 mm., with an average of 2.3 mm. There was some variation in trailed line width between the shell tempered and grit tempered sherds. Trailed lines on the shell tempered shells averaged 2.6 mm. in width, while trailing on the grit tempered sherds was somewhat narrower, averaging only 1.5 mm.

Figure B-7. Reindle Ceramics; (A) Grand River Trailed.



Body sherds suggested that a majority of the vessels were relatively deep and globular in form. The rimsherds exhibited straight, slightly insloping, and outcurving rim profiles, reflecting the range of variation associated with this type. There was no evidence to indicate the presence of handles on any of the vessels. A single sherd had a perforation 5.0 mm. in diameter, which was probably used for suspension of the vessel.

Decorative motifs consisted primarily of vertical or diagonal elements arranged around the shoulder of the vessel. Two vessels were decorated with trailing, arranged in a curvilinear pattern. A third vessel was decorated with a single row of chevrons which circled the vessel just above the shoulder of the vessel. Punctation was rare, but did occur on three vessels. On one specimen small conical punctations 0.5 mm. in diameter were arranged in a single row between and parallel to two incised lined. The punctations on the remaining two vessels were outside the trailed lines but immediately adjacent to these decorative elements. The punctations were formed by a smooth round tool which left conical punctations 2.0 mm. in diameter. On one vessel these punctations were arranged in two parallel rows which ran perpendicular to the trailing.

Perrot Punctate

A single body sherd was recovered, probably belonging to the type category Perrot Punctate. The sherd is smooth and tempered with a fine to medium crushed granite rock. The sherd measures 6.0 mm. in thickness. It is decorated with a series of vertical and diagonally trailed areas which are arranged adjacently around the shoulder of the

vessel. These trailed areas are interspersed with plain areas outlined by linear punctates.

Unclassified Ceramics

Unclassified Cord-marked Punctated Sherds

Two body sherds and one rimsherd representing two vessels were decorated with fingernail punctations. One vessel has a flat lip with at least one band of large, deep vertical fingernail punctations arranged in a horizontal row, encircling the vessel immediately below the lip of the vessel. The interior and lip of the vessel are undecorated. The lip is flat, with a slight outward bevel. The remaining vessel is decorated with two horizontal rows of fingernail punctations. Both vessels are tempered with medium to coarse crushed granitic material. The vessels are 8.5 mm. and 11.0 mm. thick.

One sherd is decorated with lineal punctations 13.0 mm. in length and 3.0 mm. wide. The punctations are perpendicular to the cord-marking on the exterior of the vessel. The vessel is tempered with a liberal amount of medium to coarse crushed granitic rock and is 9.0 mm. thick.

An additional vessel is represented by a single rimsherd. The vessel is cord-marked and 7.0 mm. thick. The lip is plain and rounded and varies in thickness from 4.0 mm. to 5.7 mm. The interior of the vessel is smooth and plain. Decoration consists of a series of rectanguloid to square punctations irregularly applied over the cord-marked exterior surface immediately below the lip of the vessel.

A single vessel is represented by five rimsherds. All of the sherds exhibit a smoothed-over cord exterior and a smooth plain interior. The sherds range in thickness from 6.0 mm. to 7.0 mm. The lip which is round varies between 5.0 mm. and 6.0 mm. in thickness. The vessel is tempered with fine to medium crushed granitic material and has a slightly everted rim profile. Decoration consists solely of circular punctates, 2.0 mm. in diameter, arranged in a single row around the lip of the vessel. The punctates which are between 2.0 mm. and 3.0 mm. deep are arranged at intervals which vary from 3.5 mm. to 6.0 mm.

Eight body sherds appear to have been decorated with the same or similar tool. These eight sherds represent three vessels which have a smoothed-over cord exterior surface and a plain smooth interior. The sherds are tempered with a fine to medium crushed granitic material and vary in thickness from 5.0 mm. to 6.0 mm. Seven of the eight sherds exhibit a similar decorative motif consisting of parallel rows of small circular to ovoid punctates. The punctates range in diameter from 1.0 mm. to 2.0 mm. Within a single row, the punctates are spaced at intervals of 3.0 mm. and 4.0 mm. The punctates are between 2.0 mm. and 3.0 mm. deep. Intervals between the rows range from 4.0 mm. to 8.0 mm. The rows of punctates are arranged parallel or diagonal to the smoothed-over cord marks on the vessel exterior.

The remaining sherd is decorated with similar small circular punctations. However, the punctations are very shallow and no pattern could be detected in their arrangement on the vessel. The punctations are located on a completely smooth surface extending 17.0 mm. below the random punctations to a smoothed-over cord surface. The sherd varies in thickness from 9.0 mm. to 12.0 mm. Although no rimsherds are

clearly associated with these body sherds, the similarity in the tool used to produce the punctates on the previously described rimsherds suggests an association. Several examples of the sherds described only as unclassified punctated are shown in Figure B-8.

Unclassified Trailed Cord-marked Sherds

A minimum of three vessels, represented by nine body sherds and three rimsherds decorated with trailing, could not be satisfactorily classified with existing ceramic types. Several of these sherds are pictured in Figure B-8. The sherds exhibit cord-marking from a paddle wrapped with a fine, closely wound cord. The sherds are tempered with a fine to coarse crushed granitic rock. They range in thickness from 6.0 mm. to 11.0 mm., with a mean of 8.0 mm. The rims are somewhat more massive, averaging 9.8 mm. in thickness. The lips, which are flat with a slight outward bevel, are 6.0 mm., 10.0 mm., and 9.0 mm. thick. The vessels have straight to slightly everted rim profiles.

The sherds' primary decorative element is a series of diagonally trailed lines over a cord-marked surface, forming a horizontal band which encircles the exterior of the upper rim of the vessel. The trailing exhibits little variation in width, measuring 4.0 mm. on all of the specimens except one, which was only 2.5 mm. wide. The trailing begins from 3.0 mm. to 5.0 mm. beneath the lip of each vessel and extends 35.0 mm. down the rim.

In addition to the trailing, the decorative motif includes a single row of vertical fingernail punctates arranged around either the exterior or interior of the vessel, immediately below the lip. One vessel, which lacks the fingernail impressions, has an interior surface

Figure B-8. Reindle Ceramics; (A) Unclassified Cord-marked Punctated, (B) Unclassified Trailed Cord-marked.



A



B



decoration which consists of an additional band of diagonal trailed lines similar to the exterior trailing.

The lip on all three rimsherds is decorated. Lip decoration consists of oblique cord-markings applied with the same finely wound paddle used on the exterior of the vessels and on one lip. The second vessel has a lip decorated with transverse cord-wrapped stick impressions and the third vessel has a twisted cord impressed transversely across the lip.

Unclassified Cord-Marked Finger Smoothed Sherds

This type of decorated pottery is represented by one rimsherd and fifteen body sherds. These sixteen sherds belong to a minimum of four vessels. All of the sherds have coarse cord-marked exterior surfaces and are tempered with fine to medium fragments of crushed granitic rock which frequently protrudes through the clay on the interior of the vessels. The sherds are relatively thick, varying from 7.0 mm. to 10.0 mm. in thickness, with a mean of 9.0 mm. Examples of this category are pictured in Figure B-6.

The decoration consists solely of finger smoothing, arranged in bands which run perpendicular to the cord-marking. The most predominant motif consists of alternating rows of finger smoothed bands formed by dragging or trailing a single finger across the wet pliable clay at approximately 10.0 mm. intervals. Two variations exist, however. The finger smoothed bands which appear on one specimen consist of drawing two fingers held tightly together across the vessel, leaving only a small narrow ridge of excess clay separating the two adjacent finger smoothed bands. The second variety is represented on two

specimens and consists of parallel bands of finger smoothing separated by cord-marked areas only 2.0 mm. wide.

The single rimsherd decorated with these finger smoothed bands tapers from a maximum width of 10.0 mm., approximately 30.0 mm. below the lip, to 7.0 mm. at the lip. The sherd has a straight to slightly everted rim profile. The lip is smooth and flattened with a slight outward bevel. Cord-marking commences at the juncture of the lip and the exterior of the vessel. A horizontal band of finger smoothing circles the vessel 17.0 mm. below the lip. A second band of finger smoothing is immediately adjacent to the first, forming a smoothed area 17.0 mm. wide. This rimsherd, in association with the finger smoothed or trailed areas on the body sherds which is always arranged perpendicular to the cord-marking, suggests that the vessels were decorated with alternating horizontal bands of cord-marking and finger smoothing, which encircled the vessel.

Unclassified Smooth Punctated Sherds

Two vessels, each represented by a single sherd, are decorated with a double row of horizontal punctates. Both vessels are tempered with fine to medium crushed granitic rock. The interior and exterior surfaces on both sherds are smooth, showing no evidence of cord-marking. One vessel is 5.0 mm. thick; the other is 8.0 mm. thick. Both sherds have a straight rim profile, with flat to slightly rounded lips which are 4.0 mm. to 6.0 mm. wide. The lip and interior of the vessels are plain. The sole decorative technique was created by impressing a stick or similar tool into the vessel wall at an acute angle so that the upper end of the punctate is deeper and somewhat wider than the lower

portion of the punctate. The punctates are arranged in two horizontal rows which begin between 6.0 mm. and 9.0 mm. below the lip. The punctates are separated by intervals of 2.0 mm. to 4.0 mm. The rows of punctates which encircle the vessel are closely spaced at intervals of 2.0 mm. and 3.0 mm.

Three rimsherds belonging to the same vessel are decorated with shallow circular punctates. The vessel is 4.5 mm. thick and grit tempered. The lip, which is flat, has had excess clay folded over the exterior of the vessel. The vessel is decorated with a series of small punctates, 2.0 mm. in diameter, arranged in two rows which encircle the vessel on the lip. A third row of similar punctates decorates the exterior of the vessel immediately below the lip. The punctates are applied somewhat haphazardly. The rows are uneven and the punctates irregularly spaced in all three of the decorative rows on all of the sherds.

Four body sherds which belong to two vessels resemble Sister Creeks Punctated sherds. However, the sample was too small and the sherds too fragmented for positive identification. All four specimens are tempered with medium to coarse grit and have smooth exterior and interior surfaces. The four sherds range in thickness from 5.0 mm. to 6.0 mm. The large punctations, which appear to have been produced by a hollow bone or reed pressed at right angles to the surface of the vessel, are a distinctive decorative attribute of these specimens. On the Reindle specimens, the punctations vary in diameter from 4.0 mm. on one vessel to 7.0 mm. on the second. Careful inspection of the three sherds from a single vessel indicates that the punctations were formed by impressing a single, narrow, slightly curved tool in a

continuous circular arrangement. The punctates on the fourth sherd and presumably a second vessel were formed by impressing a single hollow tool.

Unclassified Smooth Cord-impressed Sherds

Five rimsherds and seventeen body sherds are tempered with a finely crushed granitic rock but show no evidence of cord-marking. Approximately four vessels are represented by these sherds, which vary in thickness from 4.0 mm. to 5.5 mm., with a mean of 4.8 mm. The lip of all the rimsherds is flat and averages 5.7 mm. in width, varying between 5.0 mm. and 6.0 mm. During the process of forming the lip, excess clay has been allowed to collect at the juncture of the lip and exterior vessel wall on four of the rims. This excess clay has been smoothed downward and somewhat resembles a folded lip on some of the specimens. The vessels have straight to slightly everted rim profiles. The interiors of all the vessels are smooth and plain.

The rims are decorated with vertical rows of cord impressions which begin 2.0 mm. to 5.0 mm. below the lip of the vessel. The rows are spaced at intervals of 3.5 mm. to 5.0 mm. The lip on all of the rimsherds is decorated with a single continuous cord impression which encircles the lip of the vessel.

The body sherds are decorated with parallel rows of cord impressions. The rows are separated by intervals varying between 4.0 mm. and 6.0 mm., with a mean of 5.2 mm. The cord has been lightly impressed and/or secondarily smoothed on both the rimsherds and body sherds, producing an effect which resembles dentate stamping. However, failure to recognize duplication in the pattern such as a stamp would produce, and

careful examination of plastic impressions indicate the dentate-like pattern is the result of cord impressions.

Unclassified Smooth Cord-wrapped Stick Impressed Sherds

One rimsherd and two body sherds are decorated with bands of cord-wrapped stick or cord impressions. The sherds are tempered with a finely crushed granitic material and show no evidence of cord-marking. The sherds, which represent three vessels, are 6.0 mm. thick. The rimsherd which is slightly everted has a plain rounded lip. The lip tapers to a width of 3.0 mm. Two horizontal bands of cord-wrapped stick impressions decorate the rim of the vessel. The cord-wrapped stick is impressed diagonally to the lip, and a series of these impressions forms a horizontal band which circles the vessel approximately 10.0 mm. below the lip.

One body sherd is extremely small and, except for a single line of cord-wrapped stick impressions, nothing can be said regarding the decorative motif. The second body sherd has a double row of cord-wrapped stick impressions arranged in a chevron design.

Unclassified Smooth Corded-stamped Sherds

Eleven sherds exhibit a variety of cord-wrapped stick impressions which are somewhat similar in appearance to dentate stamping. Mason (1962:17) has suggested the term corded-stamped to distinguish this stylistic treatment from that usually associated with cord-wrapped stick impressions. Although Mason has defined this decorative technique in his analysis of the cord-marked Heins Creek ceramics, this technique occurs on eight smooth rimsherds and three smooth body sherds

at the Reindle site. None of the eight sherds show any evidence of cord-marking.

The rimsherds, representing a minimum of seven vessels, range in thickness from 4.0 mm. to 9.0 mm., with a mean of 6.2 mm. The lips of the seven vessels vary from 5.0 mm. to 8.0 mm. in thickness, with a mean of 6.6 mm. The lips are flat to slightly rounded. The corded-stamped impressions are arranged on the upper rim and lip in a variety of motifs. Four of the vessels have corded-stamped impressions arranged transversely across the flattened lip of the vessel at intervals of 4.0 mm. to 7.0 mm. One of these vessels has an additional horizontal band of vertical corded-stamped impressions located immediately below the lip on the exterior of the vessel. A fifth vessel, which lacks lip decoration, has a similar horizontal band of diagonal corded-stamped impressions surrounding the exterior of the vessel. The sixth rimsherd has a smooth exterior with the corded-stamped impressions arranged around the interior of the vessel, beginning 5.0 mm. below the juncture of the lip and vessel wall and extending to the mid-point of the lip. The two remaining rimsherds have corded stamped impressions on both the exterior and interior of the vessels. One of the vessels has the interior and exterior impressions arranged in alternating fashion, forming a wavy lip.

Unfortunately, all of the rimsherds are small, extending no more than 20.0 mm. below the lip of the vessels so nothing can be said regarding the decoration of the lower rim or body of the vessels.

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Unclassified Smooth Decorated Lip Sherds

Two vessels represented by three rimsherds could not be clearly associated with any previously established ceramic type. The first vessel is tempered with fine to medium crushed shell and has an everted rim profile. The surface is smooth and lusterless. The vessel is 8.0 mm. thick. The lip is round and decorated with a series of plain transverse notches. The notches extend across the entire lip at 2.0 mm. to 3.0 mm. intervals. A single row of rectanguloid punctates circles the exterior of the vessel 12.0 mm. below the lip. These shallow punctates measure 3.0 mm. wide and 5.0 mm. long and were formed by a smooth rectangular tool.

The second vessel has a slightly everted rim profile with a wide flaring lip. The vessel is tempered with finely crushed shell and is 4.5 mm. thick. The lip is smooth and 10.0 mm. wide. A very finely incised double line zig zag design on the lip of the vessel is the only visible decoration. The rest of the vessel is smooth and lusterless.

Lithic Description

Introduction

Lithic debris from the Reindle site consists of 2,904 fragments of worked and unworked chert, flint, and quartz. Most of the debris consists of chert waste flakes. A large assortment of chert varieties were utilized during the various occupations at the site. Most of the chert from the site is of poor quality, being coarse in texture with poor conchoidal fracture properties. A majority of the utilized chert

was probably derived from nearby outcroppings south and southwest of the site and from glacial gravels and beach pebbles. Approximately 70 percent of the chert was derived from these various sources, accounting for the diversity in color, texture, and fracture properties of the recovered sample. In addition to these local raw materials, two non-local cherts were also present. These two cherts are Bois Blanc Chert, a coarse, dull, opaque white to bluish grey chert with poor fracture properties, and Eastport Chert, a grey to tan banded chert found primarily in Antrim County, Michigan. Approximately 20 percent of the lithic material is recognizable as Bois Blanc Chert. Slightly less than 10 percent of the chert is Eastport Chert. Quartz, quartzite, and a dark grey-brown flint were also utilized and made up approximately 5 percent of the raw materials utilized in the manufacturing of lithic tools. Quartz and quartzite are locally available and occur throughout the Menominee area, however, no local source of flint was discovered. Flint, which accounts for 4 percent of the lithic tools and debris, must have been obtained either directly or indirectly from non-local sources.

Only 120 specimens, or 4.0 percent of the total recovered lithic debris, could be classified according to the following twelve descriptive categories: projectile points (17 examples); scrapers (8 examples); knives (6 examples); drills (2 examples); blades (5 examples); bladelets (2 examples); bifaces (23 examples); cores (23 examples); worked flakes (13 examples); celt (1 example); hammerstone (1 example). Except for the last two categories, each consisting of a single specimen, all the lithic debris was a product or a byproduct of chipping activity. Unfortunately, all of the stone tool categories

are poorly represented and most of them are not sufficiently diagnostic nor do they have distinctive enough formal properties to permit their identification and assignment to particular cultural complexities.

Chipped Stone

Projectile Points

Triangular Projectile Points

The Reindle site yielded ten triangular projectile points. Included in this category are seven complete specimens, two basal fragments, and one specimen from which a portion of the base and one lateral edge are missing. Several of these points are pictured in Figure B-9. The morphological characteristics of these points allow them to be easily separated into three descriptive types.

Type 1: Seven triangular points are biconvex in cross-section. All of the specimens are bifacial, exhibiting fine to medium flaking across each face. The lateral edges of each specimen are finely and evenly retouched. The seven specimens vary in length from 13.0 mm. to 29.0 mm., with an average length of 25.6 mm. Basal width varies from 10.0 mm. to 19.0 mm., with an average width of 15.9 mm. These seven specimens average 4.0 mm. in thickness, varying between 3.6 mm. and 4.7 mm. All of the specimens are symmetrical. Six of the seven points have an isosceles outline, while the seventh is equilateral in outline. Three of the bases are concave, one biconvex, and two are straight. Basal shape could not be accurately determined on the last specimen. All of the points are chert, which varies in color from white to slate grey.

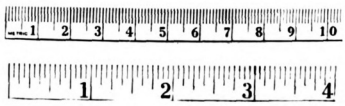
Figure B-9. Reindle Lithics; (A) Triangular Projectile Points, (B) Stemmed Projectile Points.



A



B



Type 2: This type includes a single specimen which is plano-convex in cross-section. The specimen is unifacially retouched along one lateral edge and the upper one-third of the other lateral edge. The specimen is 21.0 mm. long, 16.0 mm. wide and 4.0 mm. thick. The specimen has a straight base which has been thinned by the removal of one flake from the basal edge. The point is manufactured from brown-grey chert and has an isosceles outline.

Type 3: Two projectile points belong within this category. Both specimens are biconvex in cross-section and, except for a single serrated lateral edge on each point, exhibit minimal surface modification. The points measure 22.0 mm. and 20.5 mm. in length, 14.0 mm. and 13.0 mm. in width, and 4.5 mm. and 4.0 mm. in thickness. The larger of the two specimens has a convex base. The base of the other specimen is concave. The points have an isosceles outline. The specimens are of grey-brown and grey chert.

Corner Notched Projectile Points

Two specimens have been notched to form a hafting element. Both specimens are biconvex in cross-section. The first specimen is made from grey chert and has a total length of 31.0 mm. This specimen is 19.0 mm. wide at the shoulder and 5.5 mm. thick. The hafting element is 6.0 mm. in length and 9.0 mm. wide at the base, which is straight. The shoulders and blade edges are also straight. The blade is an isosceles triangle in outline. The second specimen is more crudely manufactured from a poor quality cream colored chert. This specimen is 33.0 mm. in length. The point is 5.0 mm. thick and the hafting element is 7.5 mm. long. The projectile point is broken and a

portion of one lateral edge is missing, prohibiting accurate measurements for the width of the point at the shoulder and base. The base is straight. The lateral edges are slightly convex.

Stemmed Points

Two complete points and three basal fragments are stemmed. These points and point fragments are described below by types and are shown in Figure B-9.

Type 1: This type consists of a single basal fragment with an expanding stem. The point was 20.0 mm. wide at the shoulder and had convex blade edges. Maximum thickness of the fragment is 10.0 mm. The stem is 12.5 mm. in length and 17.0 mm. wide. The base of the stem is straight. The fragment is made of cream/grey chert.

Type 2: One complete specimen and two basal fragments belong to this straight stem type. The single complete specimen is 49.5 mm. long, 31.5 mm. wide at the shoulder and 6.0 mm. thick. The stem is straight, 12.5 mm. wide, and 13.0 mm. long. The blade has straight edges and has an isosceles outline. The shoulders are straight, forming a 90 degree angle with the stem. There is medium to fine retouching along both edges of this bifacially flaked point. The point is biconvex in cross-section. Although only the stem and a very small portion of the blade are available for analysis from the other two specimens within this type, they appear to have been similar in size and shape. Stem width on the two fragments is 13.0 mm. and 15.0 mm. Stem length is 10.0 mm. and 11.0 mm. The stem on both fragments has a straight base and forms a right angle with the blade shoulder. The

two fragments are manufactured from a fine grain dark grey chert. The complete specimen of this type is made of dark grey/black flint.

Type 3: A single, small, crudely flaked quartzite point is the only specimen belonging to this third type of stemmed point. The point is plano-convex in cross-section and has slightly convex blade edges. The point is 25.5 mm. long, 14.0 mm. wide at the shoulder and has a maximum thickness of 6.0 mm. The stem, which is straight to expanding, has a slightly convex base. The left side of each blade face has been unifacially retouched.

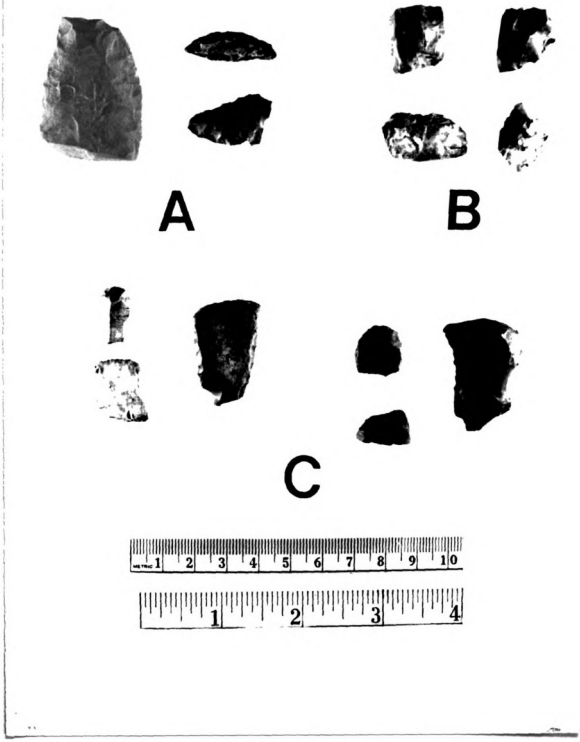
Scrapers

Eight specimens recovered from the Reindle site exhibit the steeply beveled edge typical of scraping tools. Six of these eight specimens are shown in Figure B-10. All of the scraping tools except one are made from chert available from glacial till or rock outcroppings within or near the local area. The remaining scraper is made from grey-brown flint, a raw material unavailable in the western Upper Peninsula.

Two distinct classes of scrapers are represented by these eight specimens. Six of the specimens are flake scrapers, which have an unmodified dorsal surface. This surface is the original smooth flake facet originally sheared from the core. The remaining two specimens have been bifacially worked prior to retouching one or more edges to form a scraping tool.

Except for the unmodified undersurface of each flake scraper, they exhibit little similarity to each other. They vary in outline and include rectangular, square, oval, and irregular shapes. In length, the

Figure B-10. Reindle Lithics; (A) Knives, (B) Wedges, (C) Scrapers.


A
B
C

specimens vary from 17.0 mm. to 31.0 mm. Maximum width varies from 11.0 mm. to 26.5 mm. and maximum thickness varies between 3.0 mm. and 5.0 mm. The amount of retouch each specimen exhibits also shows marked variation from a few minimal flakes being removed from the distal end of one specimen to the alteration of the entire edge surface on other specimens. None of the scrapers within this class have been altered for hafting and they were probably utilized while being held between the thumb and forefinger.

The two bifacially worked scrapers are dissimilar in many respects and are described independently below. The first specimen is 35.0 mm. in length, 25.5 mm. wide at the distal end, and 18.0 mm. wide at the proximal end. The specimen measures 9.0 mm. in thickness at the distal end, but tapers to 1.0 mm. at the proximal end. The scraper is concave-convex in cross-section and has a series of flakes removed from the distal end to form a steeply beveled scraping edge. The second specimen is smaller, being 20.0 mm. long and 6.0 mm. thick. The specimen is broken, preventing a measurement of width. One end of the tool has been retouched to form a scraping edge, which is well worn. In addition, the scraper has been battered as if it may have been used also as a wedge.

Knives

This functionally descriptive category included six specimens. All of the specimens are made from materials locally available. Three criteria were used to distinguish these six bifacial knives from the previously described projectile points and scrapers. The six specimens classified as knives are asymmetrical in outline, having one straight

lateral edge and one convex lateral edge, while tools described as projectile points tended to be symmetrical. Generally, the specimens described as knives were fashioned by removing a series of alternate flakes from opposite faces of the tool, thus producing a sinuous or saw-like edge. In addition, several specimens had edges which were dulled through extensive use or showed differential wear patterns on the two lateral edges of the tool.

Three of the six specimens are complete; accurate measurements of length, maximum width, and thickness were obtained for these three specimens. The specimens vary in length from 22.0 mm. to 28.0 mm., with an average of 26.0 mm.; in width, the specimens vary from 11.0 mm. to 14.0 mm., with an average of 13.0 mm.; in thickness, the specimens vary from 3.0 mm. to 5.0 mm., with an average of 4.0 mm. The remaining specimens are the distal fragments of three knives. All of the fragments appear to have come from cutting tools larger than any of the complete specimens. The fragments vary in length from 22.0 mm. to 43.5 mm., in width from 17.0 mm. to 30.0 mm. and in thickness from 5.0 mm. to 8.0 mm.

No claim is made that this category of knives includes all of the implements used for cutting purposes at the Reindle site. It is entirely possible that many if not most cutting activities were performed with the numerous sharp edge flakes found throughout the deposit at the Reindle site. Two categories of modified flakes, unifacially retouched flakes and utilized flakes, have been identified in this analysis and are described in latter sections of this report. Flakes in both of these categories may have been used as cutting tools. However, unless modified in some manner for use as a cutting tool or

altered as a result of that use, flakes employed as cutting tools would be extremely difficult to identify among the collection of poor quality chert flakes recovered from the site.

Drills

Two specimens from the Reindle site are classified as drills. The first of these two specimens is a drill manufactured from a grey chert flake. The drill is small, measuring 20.0 mm. in length. The implement has been retouched from the distal tip, approximately 15.0 mm. along both edges of the tool. The remaining 5.0 mm. has not been altered and forms the base of the tool. The base is 8.0 mm. wide and 1.0 mm. thick.

The second specimen is only a fragment of a drill tip. The drill was manufactured from white chert and has been bifacially flaked and retouched. The fragment is 20.0 mm. long, with a maximum width of 9.5 mm. and a maximum thickness of 6.0 mm. The fragment is diamond shaped in cross-section.

Bifaces

Twenty-four whole and broken bifacial implements of unknown or questionable function were recovered from the Reindle site. Included within this category are several specimens which are almost certainly blanks or unfinished forms shaped only by primary flaking and intended for later finishing. This category, however, also includes implements which probably served as knives, scrapers, and wedges. Only three of the twenty-four specimens were complete, prohibiting any attempt to classify and describe these implements according to function. The remaining twenty-one specimens consist of eighteen bases, two pointed

distal ends, and one biface from which a portion of a lateral edge is missing. The artifacts vary in the quality and extent of primary chipping and the degree of edge trimming. Eight of the specimens are roughly finished bifaces; five of the specimens exhibit finely trimmed edges; the remaining eleven specimens form a group of artifacts exhibiting an intermediate quality and quantity of flaking and edge finishing.

It was possible to obtain measurements in length on only four specimens. These measurements were 27.0 mm., 37.0 mm., 45.0 mm., and 48.0 mm. Measurements of basal width were obtained from eleven specimens and ranged from 17.0 mm. to 27.0 mm., with a mean of 22.5 mm. The specimens have convex to straight edges and were ovate to triangular in outline. Five of the specimens had straight bases; the remaining specimens had convex bases. In cross-section, the specimens are biconvex to plano-convex.

Several of the basal fragments exhibit numerous hinge fractures as well as evidence of shattering along one or more edges from percussion blows directed to the opposite side of the fragment. These shattered edges may have been the result of utilizing the basal fragments of bifaces as a wedge-like tool for splitting bone and/or wood. Four of these specimens are pictured in Figure B-10.

Cores

Twenty-two cores were recovered and identified from the excavations at the Reindle site. These cores have been divided into three types for this analysis and are described below as pebble cores, block cores, and bipolar cores.

Pebble cores are simply defined as small to medium size chert nodules from which two or more flakes have been removed in such a manner as to retain a large portion of the cortex. Three cores at the Reindle site exhibit these characteristics. They are 23.5 mm. to 26.0 mm. wide, 25.0 mm. to 40.0 mm. long, and 13.0 mm. to 26.0 mm. thick.

Block cores are irregularly angular chert nodules which retain no cortex. These cores have numerous, relatively flat, straight faces from which flakes have been removed. Flake removal occurred in somewhat random fashion, utilizing previous flake scars as striking platforms. Six cores have been identified as block cores. These cores measure 19.5 mm. to 50.0 mm. in length, 13.0 mm. to 31.5 mm. in width, and 12.0 mm. to 21.0 mm. in thickness.

Bipolar cores are represented by thirteen chert or flint specimens. All of these cores are small and show clear evidence of having been produced by a hammer and anvil technique, exhibiting basal shattering, a result of the rebound of the core on the anvil when a percussion blow is directed at the top of a core placed on an anvil. This basal shattering can then serve as a prepared striking platform for driving additional flakes off a bipolar core. The bipolar cores vary in length from 18.0 mm. to 42.0 mm., with a mean of 24.4 mm. Measurements of width vary from 11.0 mm. to 21.0 mm. The mean width for the thirteen cores is 15.5 mm. The bipolar cores vary from 6.0 mm. to 13.0 mm. in thickness, with a mean of 9.7 mm.

A number of the bipolar cores had chisel-like edges which would have been used as bone or wood splitting implements. It was impossible, however, to determine if this edge was intentionally formed as

a working edge, derived as a by-product of flake removal, or was part of a prepared striking platform.

Blades

Five specimens are classed as blades as they are at least twice as long as they are wide and have parallel sides. Three of the specimens are triangular in cross-section. Two of these three specimens have transverse flaking across one of the dorsal surfaces. These specimens range in length from 39.0 mm. to 42.5 mm.; in width from 11.0 mm. to 12.0 mm.; and in thickness from 5.0 mm. to 7.0 mm. The remaining two specimens are trapezoidal in cross-section. Both trapezoidal specimens have a well defined longitudinal concave flute, resulting from previous blade detachment. These blades are 37.0 mm. and 35.0 mm. long; 10.0 mm. and 15.0 mm. wide; and 5.0 mm. and 11.0 mm. thick.

Bladelets

Bladelets are small, parallel sided flakes the lengths of which are at least twice their width. Two bladelets were recovered at the Reindle site. They display multiple parallel flake scars on their dorsal surface and have a smooth, relatively flat or slightly convex ventral surface. The bladelets measure 23.0 mm. and 21.0 mm. in length, 10.0 mm. and 12.0 mm. in width, and 4.0 mm. and 3.0 mm. in thickness. One specimen was struck from a core of light grey chert. The second specimen is made of dark grey flint. These bladelets were undoubtedly struck from a bipolar core. Although bipolar cores represent approximately 60 percent of the recovered cores from the site, bladelets account for less than 0.5 percent of the recovered chippage. This

discrepancy may be, in part, a result of the recovery techniques employed at the Reindle site rather than an accurate reflection of the cultural assemblage. The half-inch hardware cloth used for screening at the site may have permitted a number of bladelets to escape recovery during the excavation of the site.

Retouched Flakes

Numerous flakes exhibited secondary retouch along one or more localized areas on the ventral and/or dorsal surfaces. The flakes were generally irregular in outline and plano-convex to concave-convex in cross-section. Except for a single flake of grey brown flint, all of the worked flakes were made of locally available chert which ranged from rose to white to dark grey in color. Seventeen flakes from the Reindle site were recognized and designated as worked flakes. Twelve of these flakes exhibited secondary retouch on a single localized area or edge of the flake. Three additional unifacial flakes have two or more areas of secondary retouch. Two flakes are bifacial. One of these flakes has an entire edge, or approximately one-third of the flake edge, bifacially retouched. The second flake has only a small area along one edge retouched. These worked flakes probably served a multitude of cutting and scraping functions.

Utilized Flakes

Fifteen unretouched flakes exhibit irregular hinge fractures along one or more localized edge areas. These irregular hinge fractures were regarded as evidence that the unmodified flake had been used for either cutting and/or scraping activities. No regular

pattern in shape or size of these utilized flakes could be discerned. The flakes were made from brown, white, and grey cherts.

Ground and Pecked Stone

Celt

A single celt or grooveless axe is the only example of ground stone tools from the Reindle site. The specimen is unbroken and measures 122.0 mm. long, 53.0 mm. wide at the distal end, 24.5 mm. wide at the proximal end, and 36.5 mm. thick. The bit is convex and battered.

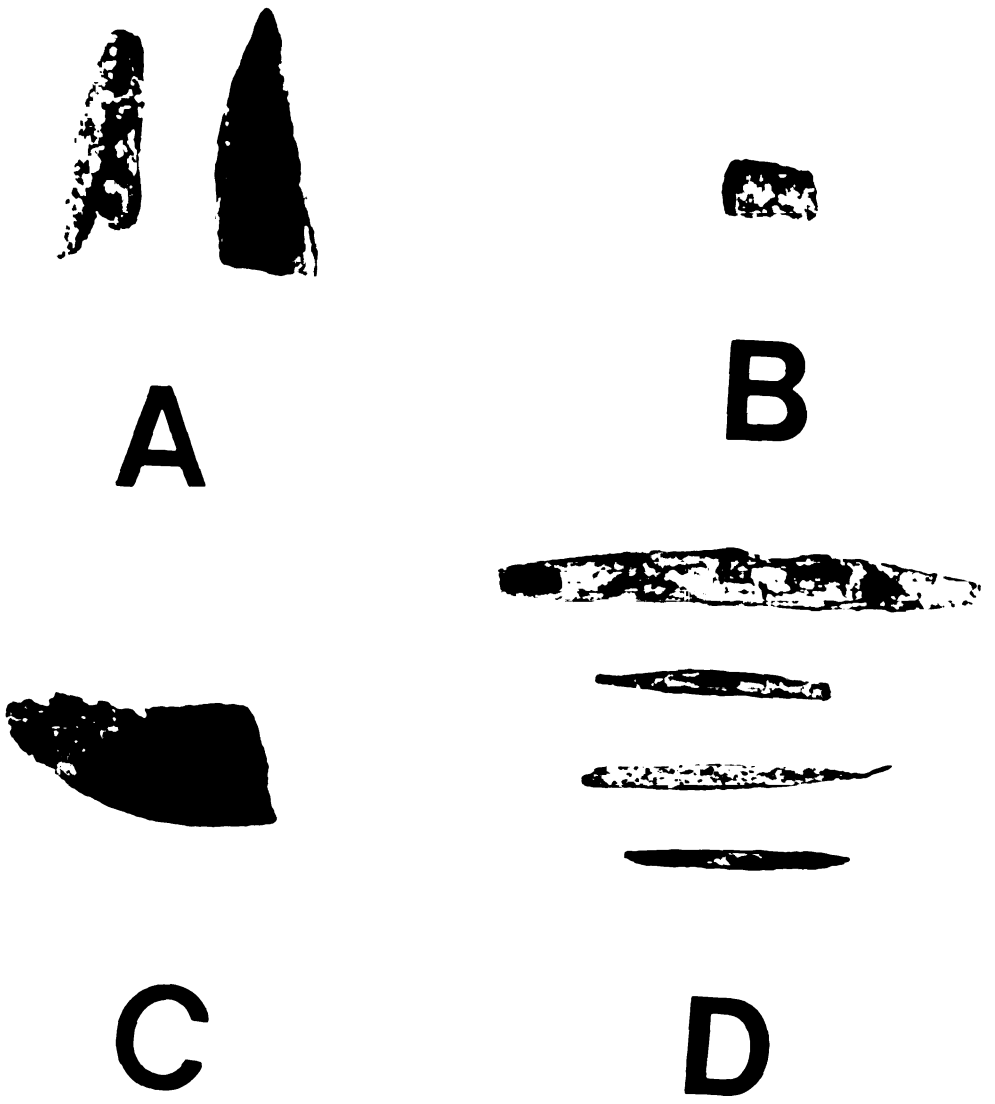
Hammerstone

Only one hammerstone was recovered during the excavations. It is an oblong beach pebble measuring 84.0 mm. in length, 46.0 mm. in width, and is 20.0 mm. thick. There is evidence of battering on one end as well as on both faces of the stone.

Copper

Eight copper artifacts pictured in Figure B-11 were recovered during the 1973 and 1975 excavations at the Reindle site. These artifacts can be grouped into four categories. The first category consists of two copper conical points. The first specimen is 32.0 mm. long, 12.5 mm. wide at the base, and 7.0 mm. thick. The second specimen is 29.0 mm., 10.0 mm. wide at the base, and 6.0 mm. thick. Both points appear to have been formed by folding a flattened piece of copper around a shaft. A single copper bead constitutes the second category. The bead was made by wrapping a flattened copper strip around a cylindrical object. The bead is 10.0 mm. long and 6.5 mm. in diameter.

Figure B-11. Reindle Copper; (A) Conical Projectile Points, (B) Bead, (C) Knife, (D) Awls.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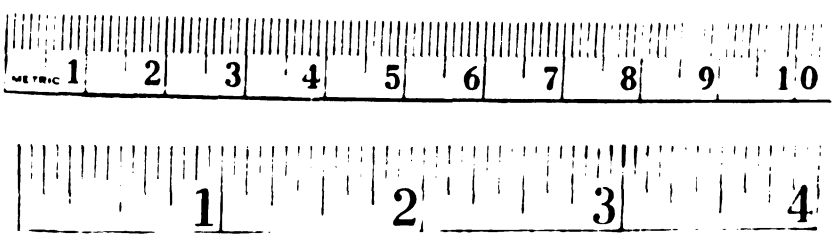
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The third copper artifact category is represented by a copper knife. The knife probably resembled contemporary "butter knives" originally; however, only a fragment of the distal end of the knife was recovered. This fragment is 34.0 mm. long with a maximum width of 16.0 mm. The fourth copper artifact category, copper awls, is represented by four specimens. The specimens range in length from 28.5 mm. to 61.5 mm. Three of the four specimens are less than 38.0 mm. in length. These three specimens are smaller specimens and vary in maximum width between 2.0 m. and 3.5 mm. The fourth and largest specimen is 7.0 m. wide and 4.0 mm. thick. The awls are rectanguloid to circular in cross-section. Two of the four specimens are bipointed. The remaining two specimens are flattened or broken at one end.

Four small fragments of copper, hammered into thin sheets, were also recovered. All of the fragments are irregular in shape and are less than .4 mm. thick. A single, unworked and irregular fragment of native copper was also recovered from the site.

Features

Five features were identified and excavated at the Reindle site. Features were identified by a discoloration and a variation of texture in the soil. Generally, the soil associated with the features was black to very dark brown and was marked in contrast to the gold to light brown matrix. This contrast allowed for easy detection of features during the excavation at the site.

Concentrations of cultural material such as sherds or lithic debris were not assigned feature numbers unless they could be delineated from the adjacent areas on the basis of soil color and texture.

Although not recorded as features, these concentrations were noted in the field records and the cultural material was given separate and special attention.

The five areas designated as features at the Reindle site were considered to be refuse pits. The term refuse pit is somewhat misleading, since it is unlikely any of the refuse filled pits were originally intended primarily for refuse disposal. It is more likely the pits were originally intended for food storage. Such food caches are mentioned in the early French records and appear to have been in general use in Wisconsin as late as the mid-1800s (Kinietz, 1965).

Features were excavated in the following manner. As soon as soil discoloration was recognized, the area was troweled until the shape and extent of the feature could be delineated, mapped, and photographed. Each feature was then cross-sectioned. The profile was drawn and photographed before the remaining half of the feature was excavated. All the soil from each of the features was screened, using one-fourth-inch hardware cloth. Approximately one-quarter of the soil from each feature was saved for flotation and analysis in the laboratory.

Each of the five features is described and its contents listed below.

Feature 1: A circular pit located in the southwest one-quarter of test pit 4 and the northwest corner of test pit 7 was designated as feature 1. The pit, which had a diameter of 80 cm., had straight sides and a flat bottom. The feature was recognized and defined at 55 cm. below surface and extended 22 cm., to a depth of 77 cm. below surface. The soil within the pit consisted of a black,

organically stained sand. Contents of the feature included 1 grit tempered smooth body sherd, 1 chert flake and 6 mammal bone fragments.

Feature 2: A smaller circular stain in the vicinity of feature 1 was identified and labeled feature 2. The pit, 60 cm. in diameter, was located at the southern edge of test pit 4 and the northern edge of test pit 7. The feature was originally recognized and defined 55 cm. below the surface. The stained soil continued to a maximum depth of 73 cm. below the surface. The basin shaped pit had slightly ensloping sides and a rounded bottom. The soil within the feature was black to dark brown. Contents of the feature included 3 burned unidentified mammal bone fragments and a single grit tempered body sherd. A post mold was located at the southern edge of the feature. Except for its close geographic proximity, there did not appear to be a direct association between the post mold and the feature.

Feature 3: This was the largest of the five features identified at the Reindle site. Except for a small section of the eastern edge of the feature which extended into N86/W94, the feature was located in the southwest corner of N86/W92. The feature was a slightly oblate oval to round pit with a maximum diameter of 120 cm. and a minimum diameter of 97 cm. It was first defined 35 cm. below the surface and continued to a depth of 100 cm. below the surface. The feature had straight sides and a flat bottom. The soil was black from heavy organic staining and contained small flecks of charcoal. Contents of the feature included: 28 fist-size beach pebbles which were scattered throughout the lower portion of the pit; 51 chert and flint flakes; 1 triangular point; 3 hammered copper fragments; 48 mammal bone fragments; 1 shell (Crassotrea virginica); 154 body sherds; and 11

rimsherds. Ninety percent or 149 of these sherds had a smooth, undecorated exterior surface with either grit or shell temper. The remaining sixteen sherds were grit tempered cord-marked sherds. Specific ceramic types were identified for the eleven rimsherds. These types include: Carcajou Plain (2 rimsherds); Grand River Plain (2 rimsherds); and Grand River Trailed (7 rimsherds).

Feature 4: This feature, located in the southeast portion of N86/W92 and the northeast quarter of N84/W92, was very similar to feature 3. The feature is a round to slightly oblate pit with straight sides and a flat bottom. The soil discoloration was first recognized 40 cm. below the surface and extended downward 61 cm., to a maximum depth of 101 cm. below surface. The feature had a maximum diameter of 110 cm. and a minimum diameter of 97 cm. Contents of the feature included: 47 grit tempered smooth sherds; 18 shell tempered smooth sherds; 15 grit tempered cord-mark sherds; 42 chert and flint chips; 5 unidentified mammal bone fragments. Approximately 80 percent of the sherds associated with the feature had a smooth exterior surface. Only two specific ceramic types could be identified. These types were Dane Incised and Grand River Trailed. Both of these identified ceramic types were represented by a single sherd. Although not visible in the organically stained soil associated with the feature, two post molds extended beyond the blackened soil of the feature into sterile gold sand. Surrounded by a light gold sand, both post molds were extremely prominent and easily identified. The post molds measured 10 cm. and 12 cm. in diameter and extended an additional 15 cm. and 17 cm. beneath the bottom of the refuse pit. One of the post molds was located along the southern edge of the pit. The second post mold

was more centrally located in the southern half of the feature. Both post molds were cross-sectioned, drawn, and photographed. In cross-section, the pointed base of each post mold was easily recorded.

Feature 5: The northern portion of feature 5 was exposed in the southeast quarter of N86/W94 only two days prior to the close of the field season. Time did not permit the excavation of the adjacent unit; as a result, this feature was only partly excavated. The feature appeared to be a round to oblate pit similar to features 1 and 2. It was first identified 20 cm. below the surface and extended 33 cm. to a maximum depth of 53 cm. below the surface. The exposed portion of the feature had a maximum diameter of 35 cm. Since only the portion of the feature located along the south wall of N86/W94 was excavated, these measurements may not accurately reflect the diameter and depth of the entire feature. Recovered from the excavated portion of the feature were: numerous fist size rocks; 12 grit tempered, smooth exterior sherds; 4 shell tempered smooth sherds; 9 grit tempered, cord-marked sherds; 1 scraper; 7 chert and flint flakes; and 1 unidentified mammal bone fragment. Three of the shell tempered sherds could be specifically identified as Grand River Trailed ceramics.

Post Molds

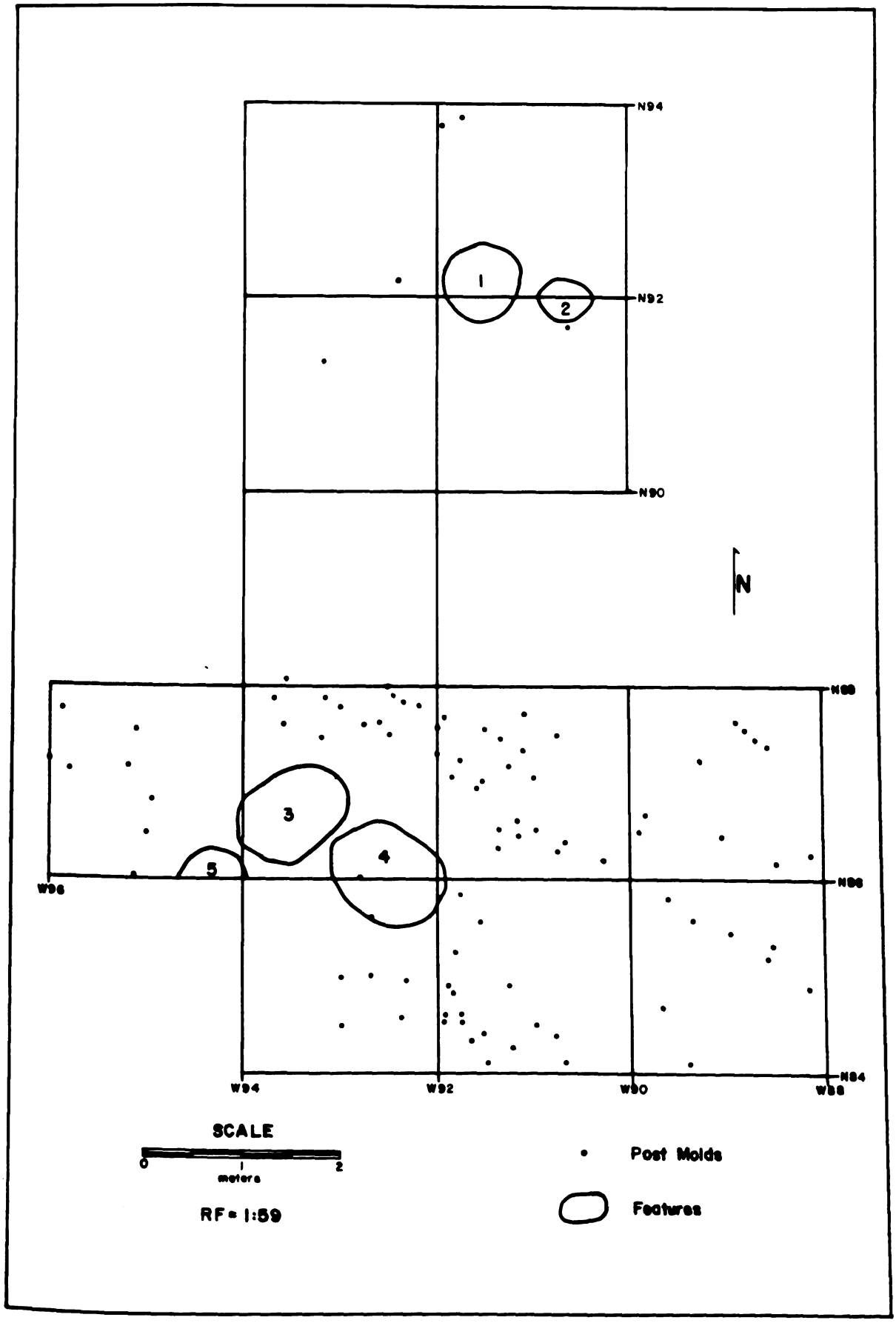
A total of 82 post molds was encountered during the excavation of the midden in the southeastern portion of the site. The post molds were first observed immediately below Zone III in the upper level of the midden and extended through the midden, into the sterile zone of gold sand directly below the midden, where they were exceptionally distinct. The contrast between the dark brown to black soil of the post

molds and the gold sand created well defined cross-sectional profiles which clearly indicated the pointed or sharpened ends of the posts. The well defined profiles permitted exceptionally accurate measurements of depth and diameter. The post molds varied in depth from 21 cm. to 33 cm. Post mold diameter varied from 7 cm. to 15 cm., with 90 percent or 73 of the post molds measuring 8 cm. to 11 cm. in diameter. The remaining 10 percent, or 9 post molds, included 5 which measured 13 cm. to 15 cm. and 4 which were only 7 cm. in diameter.

An additional 16 stains of similar shape and size were tentatively identified as post molds. However, because their outline could not be clearly distinguished, they have not been included in the preceding description.

The locations of features and post molds were compiled from the square sheets and feature sheets and placed on a map shown in Figure B-12. Several attempts were made to identify an interpretable post mold pattern using this distributional data. Variations in post mold diameter and depth were considered in the analysis when a pattern was not evident from the distributional data on the site map. However, no pattern emerged from the selective plotting of post molds by depth or diameter. Although no obvious structural pattern is discernible from the post mold distribution, it is apparent that they are not evenly distributed throughout the site. There are greater densities of post molds in N86/W90, N84/W90, and N86/W92. These excavation units are immediately north and east of features 3, 4, and 5. Although there may be a direct association between greater post mold density and storage or refuse pits in these excavation units, a similar association is not present in the vicinity of features 1 and 2.

Figure B-12. Map of Features and Post Molds at the Reindle Site.


N94
N92
N90
N
1
2
3
4
5
W96
W94
W92
W90
SCALE
0
2
meters
RF = 1:59
Post Molds
Features

The distributional data also suggests a northwest-southeast linear arrangement of post molds extending through N86/W92, N86/W90, and N84/W88. This linear pattern is somewhat suggestive of the multi-family structures associated with Oneota sites in Wisconsin, Illinois, and Iowa. These multi-family dwellings are often immense, measuring 60 to 90 feet in length and 25 feet in width. These structures often have post molds which indicate pointed posts, with diameters of 0.3 to 0.7 foot where used in construction. The posts were spaced at 1.5 to 2.0 foot intervals in the outer wall of the structure (McKusick, 1973). The linear arrangement of post molds at the Reindle site is consistent with these characteristics.

Summary and Conclusions

Development of commercial, industrial, residential, and recreational facilities has essentially destroyed the vast prehistoric record left by the prehistoric inhabitants along the banks of the lower Menominee River. A small portion of this prehistoric record has been preserved at the Reindle site. Although much of the site has been disturbed, test excavations revealed an undisturbed midden in the southwest portion of the site. Excavations during the 1973 and 1975 field seasons were concentrated in this area. The construction of a city street, railroad trestle, and apartment complexes immediately adjacent to the excavated areas makes it impossible to determine the original extent of the site. However, conversations with local collectors and area residents suggest the Reindle site is a small remnant of once extensive archaeological deposits which extended four to six

miles upstream in a continuous deposit from the mouth of the Menominee River.

The Reindle site is a multi-component site with a single, unstratified midden approximately 40 cm. below the present surface. Cultural material was concentrated in the upper four stratigraphic zones. The first three zones, however, are a result of recent land leveling activities and erosion at the site. As a result, the artifacts recovered from these three upper zones are in a disturbed stratigraphic context. Only in zone four or the midden were cultural materials recovered in an undisturbed context.

The majority of the recovered cultural material consisted of undecorated smooth and cord-marked sherds. Lithic debris was minimal and, except for occasional artifacts, undiagnostic. As a result, the identification of the various cultural components of the site was accomplished by the recognition of seventeen previously established Middle Woodland, Late Woodland, and Oneota ceramic types among the 144 rimsherds and 167 decorated body sherds.

The earliest occupation at the site appears to have been a Middle Woodland component. The ceramics from this component are most closely related to the Middle Woodland ceramics of Wisconsin, Illinois, and their neighboring states. Except for the Winter site (Bianchi, n.d.), a Middle Woodland site along the western edge of the Garden Peninsula with a somewhat similar ceramics, the Reindle site lacks any significant ties with other Middle Woodland sites in northern Michigan. The Middle Woodland ceramics at the Reindle site are most closely related to those of the North Bay culture Mason (1966, 1967) has defined in the Door Peninsula of northeastern Wisconsin. These ceramics

exhibit a paste and temper similar to those Mason has described as characteristic of the North Bay II complex. Vessel form and decorative techniques are also similar to those described as characteristic of North Bay II complex. Further strengthening the resemblance is the presence of Dane Incised vessels at the Reindle site and in the North Bay assemblage. While typically associated with the North Bay Middle Woodland assemblage, Dane Incised vessels have not been found in other Middle Woodland sites in Michigan.

Mason (1967) has obtained a C-14 date of A.D. 160 (I-888) or 1790 $\pm$ 100 on encrustations of food residue from North Bay ceramic vessels. The occurrence of similar ceramic types at the Reindle site suggests the site was probably occupied within a few decades of A.D. 160.

A Late Woodland component represented by Heins Creek and Madison Wares is also present at the Reindle site. Mason (1966) believes these two wares represent two successive cultural complexes. The corded-stamped and cord-wrapped stick decorated vessels typical of Heins Creek Ware appear to be evidence of the earliest post North Bay culture on the Door Peninsula. Mason has obtained a C-14 date on the encrustations of burned food residue scraped from Heins Creek ceramics of A.D. 720 (I-678) or 1230 $\pm$ 150. These ceramics appear to have been gradually replaced by Madison Ware, which Mason believes are the latest Woodland ceramics in Northeastern Wisconsin. Hurley (1975) indicates this succession of cultures did not occur in southern Wisconsin. Although Hurley has expanded the definition of Madison Ware to include Heins Creek corded-stamped, he suggests there was a northern Late Woodland culture represented by Heins Creek ceramics and separate but coeval

southern Effigy Mound cultures associated with Madison Ware, indicating that the single Heins Creek radio-carbon date does not sufficiently reflect the entire temporal range during which Heins Creek and Madison Ware cultures coexisted in Wisconsin.

Lacking both stratigraphic data and radio-carbon dates, the Reindle site can neither support nor negate a chronological interpretation of Heins Creek and Madison Ware ceramics in northeastern Wisconsin and the adjacent areas of Michigan. The concept of a Heins Creek northern Late Woodland culture and a southern Late Woodland culture represented by Madison Ware does not seem to be supported by the archaeological data available at the Reindle site. If Hurley's concept of separate but interacting northern and southern Late Woodland cultures is accurate, the recovered ceramic inventory should contain a significantly greater number of Heins Creek vessels, and Madison Ware vessels should be represented as the minority Late Woodland Ware. A one sample, chi square test of the observed frequency of twenty-two Madison Ware vessels (Madison Plain, Madison Punctate, Madison Cord-impressed, and Point Sauble Collared) and twenty-seven Heins Creek Cord-marked, Heins Creek Cord-wrapped Stick, and Heins Creek Corded-stamped vessels, indicated there was no significance in the frequency of these ceramic types at the .05 level. Hurley has tentatively expanded Madison Ware to include Heins Creek Corded-stamped. A second one sample chi square test with the eleven Heins Creek Corded-stamped vessels included as Madison Ware does indicate a significant difference at the .05 level in the observed frequencies of Madison Ware and the remaining Heins Creek ceramics. The number of Madison Ware vessels, however, is significantly greater at the Reindle site;

a reversal of the frequencies expected of Heins Creek ceramics is associated with a northern Late Woodland culture, and Madison Ware is associated with a southern Late Woodland culture. The data suggests that the inhabitants of the Reindle site were not participants of a northern Late Woodland culture, which existed from the disappearance of Middle Woodland North Bay ceramics to the appearance of Upper Mississippian ceramics almost 1000 years later, as Hurley has suggested.

Sherds from the latest occupation at the site exhibit a series of traits which are shared with the ceramics from sites of the Oneota Aspect of the Upper Mississippian in Wisconsin, Minnesota, Illinois, and Iowa. A total of 1,220 sherds, or 57 percent of the sherds which could be accurately identified as to temper and surface treatment are considered to belong to this aspect. Of the sherds identified as Oneota, 55 percent are shell tempered. However, 543 or 45 percent of the sherds considered to be Oneota are grit tempered. Although grit tempered, these sherds exhibit a smooth, non-cord-marked exterior surface finish and a paste structure which is similar to the shell tempered sherds. Decoration, although infrequent, was identical on both the grit and the shell tempered sherds.

Cord-marked surfaces are rare among Oneota ceramics. Only one shell tempered cord-marked sherd was recovered during the excavations at the Reindle site. However, it is possible that Oneota sherds have been included among the 965 grit tempered, cord-marked sherds generally considered to be Early and Late Woodland at the Reindle site.

The two most striking characteristics of the Oneota ceramics from the Reindle site are the unusually high incidence of grit tempering and the infrequent occurrence of any form of decoration on both

the rimsherds and body sherds. Only .04 percent of the grit and shell tempered Oneota sherds exhibit any form of decoration. When present, decoration is generally confined to the lip, neck, and shoulder regions of the vessel. Although the majority of the Oneota vessels are plain, 26 percent have lips embellished by scalloping or notching. Except for lip modification, vessel decoration consisted of trailing, incising, and trailing or incising in combination with punctation.

The extremely low incidence of decoration and high incidence of grit tempering are distinguishing characteristics, the Oneota ceramics at the Reindle site share with the Mero complex on Wisconsin's Door Peninsula. Mason (1966) has noted that the Mero complex lacks numerous trait characteristics typical of Oneota components elsewhere in Wisconsin, Minnesota, and Iowa. The absence of parallel-sided flakes and tools made from them, shell ornaments and implements, "arrowshaft" straighteners, pipes, cut-sherd disks, and ceramic handles are characteristic of the Oneota component at the Reindle site and the Mero complex. Also, atypical of Oneota but characteristic of both the Reindle site and the Mero complex is the occurrence of copper tools and end scrapers.

Unlike the Mero complex, however, refuse and/or storage pits appear to be associated with the Oneota component. The five features excavated at the Reindle site are relatively large, flat bottom, vertical sided pits. Although several of these pits contained grit tempered cord-marked sherds, the majority of the cultural debris recovered from the pits was distinctively Oneota. Between 80 and 100 percent of the cultural debris associated with each of these features consisted of shell or grit tempered, smooth, plain Oneota body sherds. Except for a single sherd recovered from features identified as Dane

Incised, all of the classifiable rimsherds and decorated body sherds were identified as Carcajou Plain, Grand River Plain or Grand River Trailed. Non-ceramic debris, consisting of a small triangular point, fragments of sheet copper, and end scraper, and a bi-valve shell also suggest these large refuse or storage pits are associated with the Oneota component at the Reindle site. The remaining debris recovered from the features consisted of mammal bone, seeds, and lithic detritus, and is not diagnostic of any one of the cultural components at the site.

Except for the presence of refuse pits, the similarities between the Oneota component at the Reindle site and the Mero complex are striking. Mason believes the Mero complex to be a regional expression of the Grand River Focus. Hall (1962) has argued for a relatively early temporal position for the Grand River Focus, in the Oneota tradition. Adopting Hall's chronology, Mason believes the Mero complex dates sometime between A.D. 1200 and 1400. Mason has interpreted the absence of certain typical Oneota traits, such as pits at the Mero site, as indications that the site was a seasonal camp used for the catching and processing of fish rather than a permanent Oneota village. If Mason is correct, the presence of several large storage or refuse pits and the post molds previously described is probably not chronologically significant, but rather a reflection of a more permanent regional Oneota settlement.

In summary, the Reindle site is a multi-component site, located within the city of Menominee, Michigan. The site was first occupied approximately A.D. 100-200, during a late phase of the Middle Woodland period. A second, but small occupation, is indicated by the presence of Heins Creek Ware. Although the relationship between Heins Creek

Ware and Madison Ware, a second Late Woodland ceramic category found at the Reindle site, needs further definition, there is some evidence to indicate that Madison Ware may fill the "gap" between the early Late Woodland occupation and the last occupation at the Reindle site, an early Upper Mississippian culture. This succession of Middle Woodland, Late Woodland, and Mississippian cultures at the Reindle site is most closely allied to the cultural sequence established by Mason (1966) on the Door Peninsula in northeastern Wisconsin.

APPENDIX C

THE LITTLE CEDAR RIVER SITE

APPENDIX C

THE LITTLE CEDAR RIVER SITE

Introduction

The Little Cedar River site is located in Section 9 (T.34N, R.27), in Mellon Township, Menominee County, Michigan. The site is situated at the junction of the Menominee and Little Cedar Rivers. The site, located on the east bank of the Menominee River and the south bank of the Little Cedar River, is directly downstream from the Grand Rapids site, another area of prehistoric occupation located and tested as part of the site survey of the Menominee Watershed.

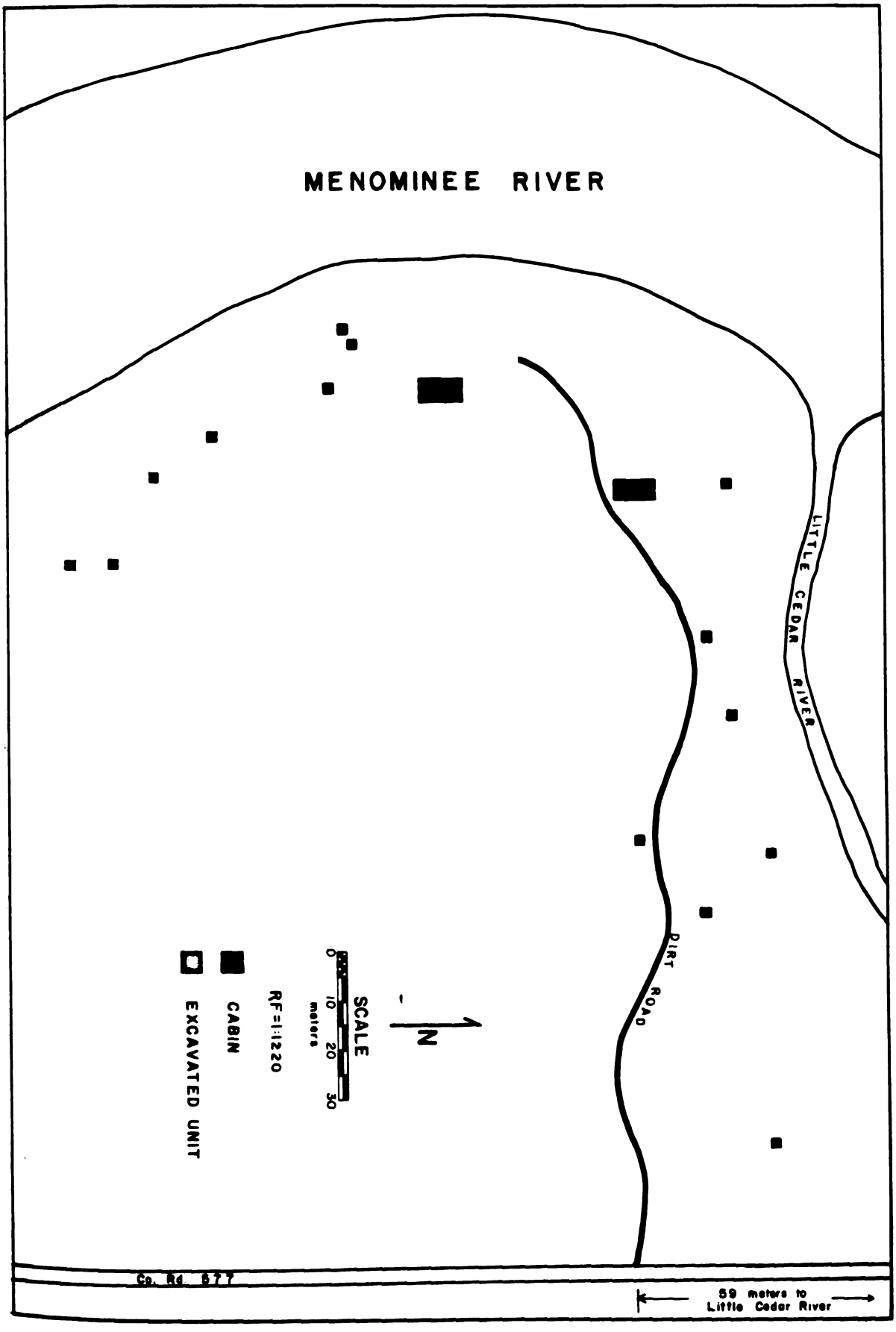
The site extends approximately 150 meters along the Menominee River and 50 meters upstream along the Little Cedar River. The land on which the Little Cedar River site is located is owned by several families who have constructed or purchased summer homes and/or hunting camps along the Menominee River. The Allegeyer family had recently purchased one of these seasonal homes and graciously allowed us to excavate. Curtis Allegeyer also serves as caretaker for the adjacent property and arranged for us to locate test pits throughout the area. The Allegeyer family was extremely helpful and gracious during our entire stay in this area of the Menominee Watershed and deserve our deep appreciation.

The land on which the site is located has been partially cleared. This clearing is related to the construction of the several small homes or camps which have been built on the site. In several cases the owners have planted grass or sodded the area between their home and the river bank. The remaining land, however, has been left relatively undisturbed and is presently forested with a young and dense second growth forest of maple, birch, and poplar. Several larger deciduous trees still exist on the site. However, several years ago a severe windstorm toppled most of these large trees. As a result, most of the site is covered by a dense tangle of large, fallen trees, young trees, and brush.

During the summer of 1973, a field team from Northern Michigan University excavated eighteen 2 x 2 meter test pits. A map of this site showing a majority of these test pits is provided in Figure C-1. The test pits were located throughout the site using a system of stratified unaligned sampling. Using this procedure, the site was first divided into 30 x 30 meter units. These units were then sub-divided into 2 x 2 meter potential test pits which were then numbered. A table of random numbers was employed to select two test pits within each major unit for excavation. In 1975 a second field team from Northern Michigan University returned to the site and excavated an additional eighteen 2 x 2 meter units adjacent to the Menominee River in an attempt to acquire additional data to supplement the data from the random sample.

A total of thirty-six 2 x 2 meters were excavated during the 1973 and 1975 field seasons. Each unit was excavated in 10 cm. levels until sterile sand was reached. Except for several large and relatively

Figure C-1. Map of the Little Cedar River site.


MENOMINEE RIVER
LITTLE CEDAR RIVER
DIRT ROAD
Co. Rd. 577
59 meters to Little Cedar River
N
SCALE
0 10 20 30
meters
RF=1:1220
CABIN
EXCAVATED UNIT

deep features, cultural material usually did not extend more than 30 centimeters below the surface. All excavated soil was screened using one-half inch hardware cloth. All cultural material recovered during the screening process was saved, washed, counted and catalogued. This material and all field records relating to the 1973 and 1975 excavations at the Little Cedar River site are housed in the archaeological laboratory on the campus of Northern Michigan University.

Although several occupations are represented in the ceramic assemblage from the site, excavation of the site revealed no visible strategraphy. A thin "A" horizon of organically stained soil overlaid a light yellow brown "B" horizon throughout the entire site. Nowhere was there evidence of a midden or successive occupations. Instead, cultural debris appeared to be rather uniformly distributed throughout the upper 20 cm. of the site. Early Woodland, Middle Woodland, Late Woodland, and shell tempered Onepta wares appeared in a mixed context throughout the site.

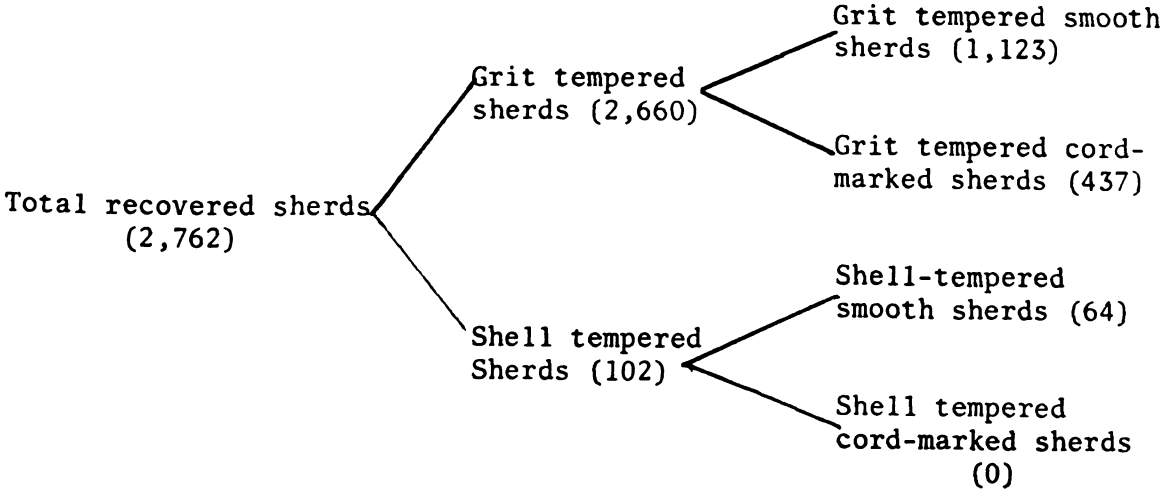
Pottery

Introduction

A total of 2,762 sherds was collected during the excavations at the Little Cedar River site during the 1973 and 1975 field seasons. All sherds collected in the 1/2 inch hardware cloth used for screening at the site were retrieved, washed, counted, and catalogued. As a result, many of the 2,762 sherds are small and/or exfoliated. All sherds, however, were subjected to at least preliminary sorting according to temper and exterior surface treatment.

Initially, the sherds were sorted according to the type of material used as a tempering agent. Grit and shell were the only two materials identified as a tempering agent in the ceramic assemblage from the Little Cedar River site. Approximately 25 percent, or 2,660 sherds, are tempered with fine to medium size particles of crushed granitic material. The remaining 102 sherds are tempered with small shell fragments. The shell, used as the tempering agent, has frequently been leached from the ceramic body, leaving only small thin impressions on the surface of the sherd.

After initially sorting the sherds by temper, both shell and grit tempered sherds were sorted according to smooth exterior (no visible evidence of cord-making) or cord-marked exterior. Thus, sherds were sorted into four initial categories: grit tempered smooth sherds; grit tempered cord-marked sherds; shell tempered cord-marked sherds; and shell tempered smooth sherds. The following diagram represents these preliminary sorting procedures and lists the total number of sherds in each of the four categories.



Many sherds were split or exfoliated and could not be sorted according to exterior surface treatment. In addition, many small sherds were frequently broken in such a manner as to leave only a fragment of the exterior surface for identification. These sherds have been included in the chart according to temper, but could not be included in the totals for each of the four categories created when the sherds were sorted by the exterior surface treatment. It was not possible to accurately determine the surface treatment for 1,624 sherds, or approximately 41 percent of the ceramic assemblage. Surface treatment, however, was accurately identified on 1,624 sherds, of which 1,123 are grit tempered smooth sherds, 437 are grit tempered cord-marked sherds, and 64 are shell tempered smooth sherds. No shell tempered cord-marked sherds occurred in the Little Cedar River ceramic assemblage.

After this preliminary sorting, rimsherds and decorated neck and body sherds were then sorted according to the decorative techniques applied to the lip and interior and the exterior surfaces. The principle decorative techniques by which these sherds were sorted included: cord impression, cord-wrapped stick impression, rocker stamping, punctation, incising and trailing. The differentiation between incising and trailing was difficult and somewhat arbitrary. However, for the purpose of identification, incising was considered to be a line which had been cut into the clay surface producing a sharp line with well-defined edges. Trailing was considered to be a technique of clay displacement rather than cutting. This displacement was the result of dragging a dull, rounded, or blunt instrument across the clay rather than the shaper tool used for incising.

After the rimsherds and decorated neck and body sherds had been sorted into groups of sherds exhibiting similar decorative techniques, each of these groups was then studied for similarities in decorative motif. During this third and final sorting, sherds exhibiting similarity in the arrangement, location and/or combination of decorative techniques were then compared to established or known ceramic types from Wisconsin, Michigan, and Minnesota. Whenever possible, the established ceramic types have been used to identify and describe the Little Cedar River pottery.

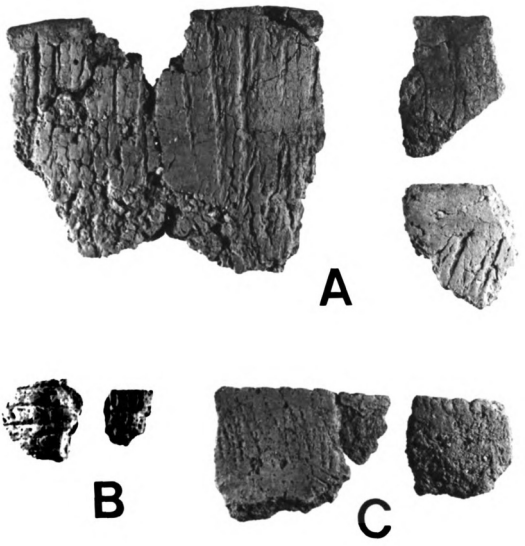
Several groups of sherds recovered at the site exhibited distinctive decorative motifs which could not be identified as being within the range of variability of any previously existing ceramic type. Other groups of sherds were small or broken in a manner which distorted or eliminated the characteristic attributes necessary to identify them as belonging to a particular ceramic type. These sherds have been grouped and described under unclassified ceramics. These descriptions are located at the end of the ceramic description.

Early Woodland/Middle Woodland Transitional Ceramics

Dane Incised

Ten body sherds exhibit the characteristic incising over a cord-marked surface of Dane Incised ceramics. The sherds are rather fiable and most are exfoliated. The temper particles are medium sized to larger fragments of crushed granitic material. The sherds are thick; the specimens measure between 7.0 mm. and 13.0 mm. with a mean of 9.3 mm. Two examples of this ceramic type are shown in Figure C-2.

Figure C-2. Little Cedar River Ceramics; (A) North Bay Cord-marked, (B) Dane Incised, (C) Rocker Stamped.


A
B
C
1 2 3 4 5 6 7 8 9 10
1 2 3 4

Middle Woodland Ceramics

North Bay Cord-marked

A total of twenty sherds, representing at least three vessels, belong in this category. This Middle Woodland ceramic classification has been previously described by Mason (1966). All the sherds are extremely thick, ranging from 8.5 to 11.3 mm. with a mean thickness of 10.3 mm. The ware is extremely friable, and several sherds are at least partially exfoliated.

All of the sherds are tempered by the addition to the paste of large, crushed granitic material and beach sand. A combination of this type of granitic material and beach sand is available in many locations along the banks of the Little Cedar River. The rather large size of the grit suggests that little effort was made to crush the resource before utilization.

Exterior surface treatment consists of frequently overlapping and usually coarse imprints from the application of a cord-wrapped paddle. Individual cord imprints are from 1.0 to 2.0 mm. wide and 1.0 to 1.5 mm. deep. On some specimens the imprints are contiguous, but the majority exhibit interval spacing ranging from 1.0 to 5.0 mm. Seventy-five percent of the samples exhibit secondary smoothing.

Rimsherds which account for half the total number of sherds in this category display flattened lips which are slightly everted. A single specimen displays a slightly everted rounded lip profile. All of the rimsherds exhibit oblique notches at the juncture of the lip and the interior rim. Except for the slightly everted lips, the

vessels are straight sided. Sherds representing three North Bay Cord-marked vessels are pictured in Figure C-2.

Banked Punctate

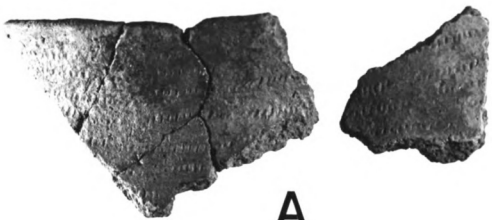
Three rimsherds and seven body sherds represent this Middle Woodland type. The sherds are tempered by the addition of crushed granitic material to a compacted paste. Sherd thickness, ranges from 4.6 mm. to 10.0 mm. with a mean of 8.2 mm. Smooth on the interior surface, the exterior of the sherds have been smoothed subsequent to cord-marking. The sherds are decorated with multiple, horizontal and parallel rows of banked punctates. The rows are generally spaced at intervals of 4.0 mm. to 6.0 mm., but in some instances the rows are contiguous. The punctate bands start just below the lip and continue down the vessel to an undetermined distance. The lips of the three rimsherds are flat and smooth. The rim is thin and has a lightly excurvate profile. There is no evidence of a constricted neck or shoulder. One of the body sherds displays a small perforation probably used for vessel suspension. Examples of this ceramic type are pictured in Figure C-3.

Rocker Stamped

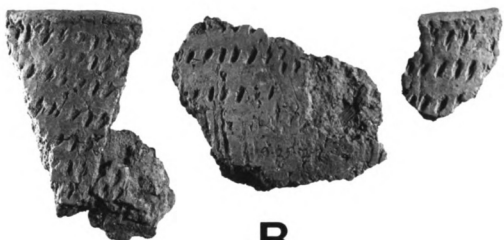
Twelve sherds have been included in this category. The three body sherds and nine rimsherds are probably from a single vessel. The sherds are tempered by the addition of crushed granitic material to the paste. Sherd thickness ranges from 6.0 to 8.0 mm. with a mean thickness of 7.2 mm.

The lip of the vessel is flat and decorated with punctates. The punctates are arranged in a single row of contiguous pairs, with

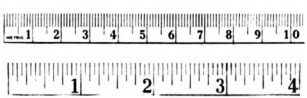
Figure C-3. Little Cedar River Ceramics; (A) Pine River Ware, (B) Banded Punctate.



A



B



the pairs placed at right angles across the lip. The paired punctates are separated by a thin ridge of clay, apparently produced by the application of a two-tined implement. The punctates occur at intervals of 3.0 mm.

Five of the sherds exhibit rocker stamping on their exterior surfaces. This decorative motif was produced by a convex notched or serrated tool, applied to the vessel surface with a rocking motion. The stamping produced in this manner can be seen on several of the sherds in Figure C-2. The exteriors of the remaining sherds are either exfoliated or severely weathered, but have been included in this category due to paste, grit, metric qualities, and lip treatment which is identical to that on the sherds displaying Rocker stamping.

One body sherd exhibits a small perforation, probably used for vessel suspension.

Pine River Ware

Three rimsherds and two body sherds, probably representing a single vessel, have been identified as Pine River Ware (personal communication William Lovis, 1977). The paste is very compact, and the grit tempering is finely crushed. The sherds are smooth on the interior and exterior surfaces with no evidence of cordmarking. Sherd thickness varies from 4.1 mm. to 5.8 mm. along the upper rim and lip and from 8.0 mm. to 10.1 mm. along the lower rim and body. Decoration consists of horizontal bands of small, cord wrapped stick impressions. The bands are approximately 1.5 mm. wide and are placed at intervals of 4.0 mm. to 6.0 mm. These five sherds are pictured in Figure C-3.

Late Woodland Ceramics

Heins Creek Cord-wrapped Stick

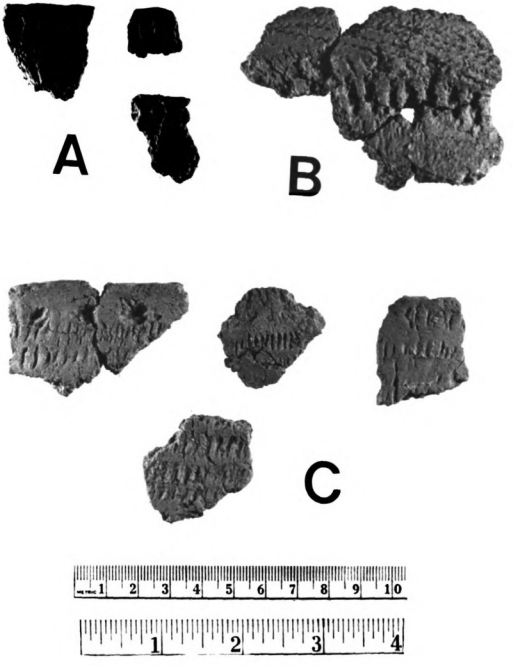
Nine rimsherds and twenty-seven body sherds, representing at least four vessels, exhibit the characteristic cord-wrapped stick impressions of Heins Creek Cord-wrapped Stick, described by Mason (1966). The sherds are tempered with angular fragments of crushed granitic rock. The sherds range in thickness from 4.2 to 9.0 mm. with a mean thickness of 6.4 mm.

Decoration consists of horizontal bands of cord-wrapped stick impressions. The impressions are spaced at intervals of 0 to 7.0 mm. Each impression is from 2.0 to 5.9 mm. in width. One specimen exhibits a row of knotted cord impressions placed just above the uppermost band of cord-wrapped stick impressions. In all instances, the decorations are applied to a smoothed-over cord-marked surface. The lips are slightly rounded to flattened. Cord-wrapped stick impressions have been stamped diagonally across the lip of the rim-sherds. The rims are straight to slightly everted. All of the sherds exhibit a smooth interior surface. Several examples of this ceramic type are shown in Figure C-4.

Heins Creek Corded-stamped

Ten rimsherds and eighteen body sherds, representing at least five vessels exhibit the characteristics of Heins Creek Corded-stamped ceramics described by Mason (1966). The sherds are tempered with medium sized, angular fragments of crushed granitic rock. The sherds range in thickness from 4.2 mm. to 9.0 mm. with a mean thickness of 6.4 mm.

Figure C-4. Little Cedar River Ceramics: (A) Heins Creek Corded-stamped, (B) Point Sauble Collared, (C) Heins Creek Cord-wrapped Stick.


A
B
C
1 2 3 4 5 6 7 8 9 10
1 2 3 4

Decoration consists of cord-wrapped implement impressions stamped either vertically or obliquely on the exterior of the sherds. Three of the rimsherds have impressions on the lip surface. The limited size of the sherds in this sample prevents further identification and description of the arrangement of the decorative stamping.

The lip surfaces are flat to slightly rounded. The rims are straight or minimally everted. All of the sherds have smooth interior surfaces. One of the sherds displays a perforation probably used for vessel suspension. Three examples of Heins Creek Corded-stamped sherds are pictured in Figure C-4.

Point Sable Collard

Three rimsherds and three body sherds representing two vessels have been classified as Point Sable Collard. The sherds are tempered by the addition of crushed granitic material to a sandy paste. Four sherds, two body sherds and two rims, have been reconstructed to form a single ceramic unit which is shown in Figure C-4. The reconstructed unit and the remaining body sherd appear to belong to the same vessel. The collar displayed on the reconstructed vessel segment is 28.0 mm. wide and has a maximum thickness of 15.1 mm. The collar of the second vessel is 18.0 mm. wide with a maximum thickness of 10.8 mm. The collars on both vessels seem to have been effected by the folding over of clay from the upper rim and lip. Collar decoration consists of twisted cord impressions arranged in horizontal or oblique rows. The interior surfaces of both rims exhibit vertical knotted cord impressions just below the lip. The impressions are 1.0 mm. wide, 3.0 mm. long, and spaced at intervals of 2.0 mm. The reconstructed vessel

is further decorated with knotted cord impressions on the exterior of the rim, just below the collar. In some cases the impressions impinge on the bottom of the collar. Deep circular punctates are also placed at the base of this collar. These have produced prominent interior nodes. The vessel lip is flat. The remaining rim displays a pointed lip.

Unclassified Ceramics

Grit Tempered Smooth Rimsherds

Twenty-eight rimsherds, representing an undetermined number of vessels, are smooth on both surfaces. The sherds range in thickness from 4.0 to 7.3 mm. with a mean thickness of 6.0 mm. Temper consists of crushed granitic material. Lips range from rounded or pointed to flat. Two of the pointed lips display narrow notches spaced at intervals of 6.3 mm. One of the flat lipped sherds has light striations placed diagonally on the lip.

Grit Tempered Cord-marked Rimsherds

Ten grit tempered rimsherds display cord-marked exterior surfaces. The impressions are the result of malleanation with a cord-wrapped paddle. One sherd exhibits a pair of twisted cord impressions on the upper rim. The sherds range in thickness from 3.9 to 8.0 mm. with a mean thickness of 4.9 mm. With one exception the rims are plain and are round to flat. A single rimsherd exhibits a pointed lip.

Grit Tempered Body Sherds

Thirteen body sherds, representing an undetermined number of vessels, exhibit parallel cord impressions on the exterior surface of the vessel. Unfortunately, all of the sherds are rather small and all but one are exfoliated. The sherds are tempered by the addition of crushed granitic material to the paste. The bold twisted cord impressions are spaced at varying intervals ranging from less than 1.0 mm. to 6.0 mm. Individual cord impression widths range from 1.0 to 3.0 mm.

Another unclassified grit tempered sherd, 6.5 mm. thick, displays a single decorative trailed line on the exterior of the sherd. The trailed impression is 5.0 mm. wide, and 1.5 mm. deep. Except for the trailing, the interior and exterior sherd surfaces are smooth.

A single sherd, 6.0 mm. thick exhibits fabric impressions. The sherd is tempered with crushed granitic material. The sherd is covered with what appear to be net or fabric impressions. Subsequent to the application of these impressions the sherd has been partly smoothed. However, enough of the impression remains to indicate they are not the result of simple malleanation with a cord-wrapped paddle.

An additional unclassified body sherd exhibits a row of linear punctates on the exterior surface. The sherd is tempered with grit, and ranges in thickness from 7.0 to 10.0 mm. Both the interior and exterior surfaces are smooth. The impressions are approximately 8.0 mm. long. The punctates, which are arranged in a single horizontal or vertical band are spaced at 3.0 to 4.0 mm. intervals.

Shell Tempered Sherds

Five sherds, representing two vessels, can be identified only as having an Upper Mississippian affiliation. Three rimsherds and one body sherd are tempered by a combination of shell and grit. The remaining body sherd is tempered with shell. The lips of these two vessels are sinuous. Decoration is limited to the grit and shell tempered sherds. This decoration consists of a series of horizontal trailed lines on the exterior surface. The remaining sherd is plain except for a small perforation probably used for vessel suspension.

Lithic Description

Introduction

Lithic debris from the Little Cedar River site consists of 6,289 fragments of worked and unworked chert, quartz, and quartzite. Although quartz and quartzite fragments are present in the lithic assemblage from the site, chert is the most extensively utilized raw material accounting from 95 percent of the total debitage. Most of the chert is of poor quality being coarse in texture with poor conchoidal fracture properties. Chert utilized at the site was probably obtained from glacial gravels which accounts for the diversity in the color, texture and fracture properties of the recovered sample.

A total of 230 chipped stone artifacts representing slightly less than 4 percent of the lithic debris, was classified as follows: projectile points (60 examples); scrapers (22 examples); knives (11 examples; bifacial implements (22 examples); battered wedges (12 examples); blades (8 examples); bladelets (3 examples); block cores (23 examples); bipolar cores (14 examples); retouched flakes

(29 examples). In addition to the preceding chipped stone artifacts, the lithic assemblage also contained six hammerstones. Each of these artifact categories is described below.

Chipped Stone

Projectile Points

Sixty projectile points and point fragments were recovered during the excavations at the Little Cedar River site. Only seventeen of the sixty-one specimens are complete. The remainder of the sample consists of twenty-two basal fragments, twenty distal fragments, and one mid-section. All of the points were manufactured from chert or quartzite. All of the complete projectile points, as well as the point fragments, whenever possible have been classified and described using the following categories: triangular points, stemmed points, side-notched points, and corner notched points. The twenty distal fragments, however, could not be classified using these categories. A brief description of these distal fragments has been included at the end of this descriptive section.

Triangular Points

Excavations at the Little Cedar River Site recovered only four triangular projectile points. Three of the specimens are complete. The distal end is missing from the fourth specimen. Three of the specimens were manufactured from light or dark gray chert and are biconvex in cross-section. These artifacts have been bifacially flaked and retouched. The basal widths of these complete specimens vary from 21.6 mm. to 26.5 mm. Thickness of these specimens range from 6.0 mm.

to 6.6 mm. The specimens measure 33.5 mm. to 34.8 mm. in length. The points are isosceles in outline. The bases are slightly convex.

The fourth example is dissimilar to the others, being plano-convex in cross section, equilateral in outline, and manufactured from rose colored quartzite. The specimen is unifacially flaked and retouched. The point is 18.0 mm. long, 16.8 mm. wide, and 3.1 mm. thick. The specimen has a convex base, as do the other three triangular points from this site.

Stemmed Points

Twenty projectile points and point fragments are stemmed. These specimens are described below by types, according to the morphological type characteristics of the hafting element. Some of these points are pictured in Figure C-5.

Ten points and basal fragments have expanding stems. These complete specimens range in length from 44.0 mm. to 23.0 mm. with a mean length of 31.0 mm. Shoulder widths of the specimens range from 27.1 mm. to 13.9 mm. with a mean width of 19.9 mm. Blade thickness ranges from 7.7 mm. to 3.4 mm. with a mean thickness of 6.3 mm. The blades are isosceles in outline, and all but one of the specimens have straight lateral edges. The exception is a small point with convex lateral edges. Six of the specimens are biconvex in cross section, four are plano-convex. The length of the hafting element varies from 11.5 mm. to 6.0 mm. with a mean length of the 9.3 mm. The width of the hafting element ranges from 19.0 mm. to 10.3 mm. with a mean width of 13.2 mm. The base of the hafting elements are straight to sub-convex. Five of the points are made from chert that ranges in color

Figure C-5. Little Cedar River Lithics; (A) Side Notched Projectile Point, (B) Stemmed Projectile Point and Projectile Point Fragment.


A
B
1 2 3 4 5 6 7 8 9 10
1 2 3 4

from cream to dark gray. The remaining points are manufactured from white or brown quartzite.

Four complete points and five basal fragments have straight stems. The lengths of the complete specimens range from 26.5 mm. to 50.0 mm. with a mean length of 38.7 mm. Shoulder width varies from 12.0 mm. to 34.5 mm. with a mean width of 26.3 mm. The blades are isosceles in outline with straight lateral edges. Six of the specimens are biconvex in cross section, two others are plano-convex, and the cross sections of the remaining fragment could not be ascertained. The stems range in length from 6.0 mm. to 17.0 mm. with a mean length of 11.2 mm. Stem width ranges from 10.0 mm. to 26.0 mm. with a mean width of 15.6 mm. Eight of the specimens are made of chert, which ranges in color from light gray and white to black. The sixth specimen has been manufactured from a white quartzite.

A single specimen, from which a portion of the blade is missing, has a contracting stem. The blade is biconvex in cross section and 28.5 mm. wide at the shoulder. The stem is 14.1 mm. wide at its juncture with the shoulder and then tapers to form a rounded base. The specimen was manufactured from dark gray chert.

Side Notched Points

Eight of the projectile points recovered from the Little Cedar River site were side-notched to form the hafting element. Five of the specimens have an ascertainable length; the remaining specimens are lacking the distal end. Lengths of the complete specimens range from 28.3 mm. to 48.5 mm. with a mean length of 38.8. Widths vary from 12.5 mm. to 31.3 mm. with a mean width of 19.9 mm. Thickness

of the complete specimens varies between 3.5 and 8.4 mm. with a mean of 6.2 mm. The hafting elements measure from 5.0 mm. to 13.0 mm. in length with a mean of 9.9 mm. In cross section, seven points are biconvex and one point is plano-convex. Four of these specimens have straight lateral edges. The remaining four specimens have convex lateral edges. These points were manufactured from cherts which range in color from cream to dark brown and dark gray.

Corner Notched Points

Three corner notched projectile points were recovered during the excavations at the Little Cedar River site. Only one of the specimens is complete. This specimen measures 41.7 mm. in length. The three points range in width from 16.0 mm. to 29.3 mm. and vary from 3.5 mm. to 9.0 mm. in thickness. The specimens are bi-convex in cross-section. The lateral edges of the single complete specimen and the two fragments appear to be straight. The specimens are bi-facially flaked with fine retouching applied to the lateral edges. The corner notched points were manufactured from medium grained chert that varies in color from banded light and dark gray to black.

Distal Fragments

Twenty distal fragments were recovered from the Little Cedar River site. Eighteen of the specimens are bifacially flaked and have bi-convex cross sections. The remaining two specimens are plano-convex in cross section. Two of the distal fragments appear to have convex lateral edges. The remaining specimens are too incomplete to allow accurate identification of their edge characteristics. All but two of the distal fragments have been chipped from gray cherts

which range in color from a light chalking gray to a dark almost black shade of gray. One of the remaining specimens was manufactured from a pink or rose-colored chert. The last specimen was chipped from an opaque white quartzite.

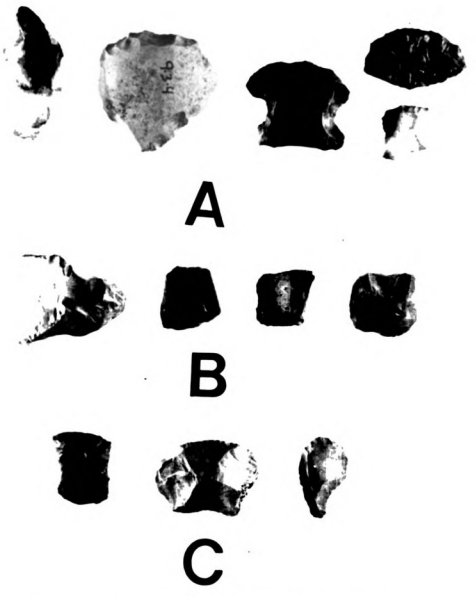
Scrapers

Twenty-two chipped stone artifacts exhibit the steeply beveled edge typical of scraping tools. Several of these scraping tools are shown in Figure C-6. All of the specimens have been manufactured from locally available chert or quartzite. Three distinct types of scraping tools are recognized within the general category; however, the following classifications are intended only as a convenient taxonomic framework and are not meant to imply functional differences.

The first type consists of scraping tools which exhibit the scraping edge opposite the bulb of percussion, or at the bulbar end of the flake. These end scrapers are represented by eight specimens ranging in length from 31.5 mm. to 13.5 mm. Width varies from 25.0 mm. to 11.0 mm. with a thickness range from 3.0 mm. to 10.0 mm. One of the specimens is oval in outline; the remainder are triangular or rectangular in outline. The tools are plano-convex in cross section and unifacially retouched.

The second type consists of tools which exhibit the scraping edge along a lateral edge of the flake. Six specimens are included in this cateory. These specimens range in length from 23.0 mm. to 38.0 mm. Width of the scraping tool varies from 21.7 mm. to 33.0 mm. with thickness ranging from 5.7 mm. to 9.0 mm. All of the specimens exhibit generally oval outlines. The artifacts within this category are flakes, unmodified except for the steeply beveled lateral edge.

Figure C-6. Little Cedar River Lithics; (A) End Scrapers, (B) Side Scrapers, (C) Side and End Scrapers.


A
B
C
1 2 3 4 5 6 7 8 9 10
1 2 3 4

The third category consists of six side and end scrapers. These artifacts exhibit retouching along one of the lateral edges and on the end opposite the bulb of percussion. The specimens range in length from 19.0 mm. to 39.0 mm. and vary in width from 12.0 mm. to 36.0 mm. Thickness ranges from 5.0 mm. to 7.3 mm. Four of the specimens are generally rectangular in outline while the remaining one is oval.

One additional artifact exhibits the steeply beveled edge of a scraping tool but lacks an identifiable bulb of percussion. The specimen is 24.0 mm. long, 29.0 mm. wide, and 6.9 mm. thick. The artifact is rather unusual, displaying a notched hafting element with a sub-convex base. The specimen is bifacially worked with the retouching occurring on the distal end. The general shape and features of the specimen suggest that it was manufactured from a broken or unfinished projectile point.

Knives

Eleven chipped stone artifacts have been classified as knives. The specimens have been identified on the basis of three shared characteristics: the specimens are all asymetrical, all exhibit a characteristic saw-like edge produced by the removal of flakes from alternating faces of the tool; and the lateral edge or edges appear to be dulled through extensive usage.

Ten of the eleven artifacts in this category are bi-convex in cross-section. A single knife is plano-convex in cross section. Basal treatment is convex in six cases and straight in the remaining five cases. Outlines display a rather marked convexity; however, two of the specimens are triangular in outline.

Chert used in the manufacture of the knives exhibits a course texture and ranges in color from white to dark gray. The knives range in length from 85.0 mm. to 40.0 mm., and width varies from 43.9 mm. to 16.0 mm.

Bifacial Implements

This category is provisional in that it includes fourteen complete or almost complete specimens and eight small bifacial fragments. The artifacts are all manufactured from coarse grained cherts with poor fracture properties. With three exceptions, all of the artifacts are broken, thus preventing satisfactory identification of their finished shape. There are, however, enough basal and distal fragments to suggest a roughly oval shape for the completed product. The complete specimens range in length from 19.0 mm. to 56.0 mm. Width varies from 16.0 mm. to 38.8 mm., while thickness ranges between 4.5 mm. and 18.0 mm.

Eight of the specimens exhibit some evidence of utilization ranging from small striations to heavy battering and dulled edges. The remaining fragments probably represent unused portions of similar tools.

Comparable artifacts have been recovered from the numerous sites in the Upper Great Lakes Region and have been variously interpreted as blanks (Mason, 1966) and bifacial ovates (McPherron, 1967). Although these artifacts may represent some intermediate stage in the production of bifacial tools, the poor workmanship and apparent indiscriminate choice of raw materials suggests that many were finished tools. It may be that these were tools of expediency, hastily formed to perform a specific task and discarded after use.

Wedges

This functionally descriptive category consists of twelve small, bifacially worked artifacts. The specimens range in length from 14.8 to 31.2 mm. and vary in width from 13.0 mm. to 30.0 mm. Thickness ranges from 5.9 mm. to 16.9 mm. Raw material consists of coarse to medium grained chert, ranging in color from white to dark gray or white quartzite.

All of the specimens exhibit the classic wedge shaped lateral profile, with evidence of heavy battering occurring on the proximal end of the tool. Distal ends display minute striations and flake scars, probably the result of being driven through materials such as wood or bone.

Blades

Eight specimens are classed as blades as they are at least twice as long as they are wide and have parallel sides. Four of the specimens are triangular in cross section, and the other two examples are trapezoidal in cross section. The blades vary in length from 3.0 mm. to 49.5 mm. Widths of the samples range from 9.0 mm. to 21.0 mm., and blade thickness is 4.0 mm. to 9.0 mm.

Bladelets

Bladelets are small parallel sided flakes the lengths of which are least twice its width. Three bladelets were recovered from the Little Cedar River site. They display multiple parallel flake scars on the dorsal surface and have a smooth rather flat or slightly convex ventral surface. One of the specimens has been retouched along a lateral edge. The bladelets measure 24.5 mm. to 29.5 mm. in length, 6.4 mm. to

12.0 mm. in width, and 2.3 mm. to 2.9 mm. in thickness. All the specimens were struck from light gray chert.

Cores

Thirty-seven cores were recovered and identified from the excavations at the Little Cedar River site. These cores have been divided into two types for analysis and description.

Block Cores

Block cores are defined as irregularly angular chert nodules which retain little or no cortex. These cores have numerous relatively flat straight faces from which flakes have been removed. Flake removal occurred in somewhat random fashion utilizing previous flake scars as striking platforms. Twenty-three cores have been identified as block cores. These cores are 18.8 mm. to 60.0 mm. long, 12.7 mm. to 47.5 mm. wide, and 11.2 mm. to 32.4 mm. thick.

One of the block cores exhibits unifacial retouching along one of the edges.

Bipolar Cores

Bipolar cores are represented by fourteen chert or quartzite specimens. All of the cores are small and show clear evidence of having been produced by a hammer and anvil technique. A percussion blow directed at the top of the core placed on an anvil produces basal shattering on the core as a result of the rebound of the core on the anvil. The basal shattering then served as a prepared striking platform for driving additional flakes off the core. The bipoplar cores at the Little Cedar River site vary in length from 16.2 mm. to 42.3 mm.

The cores measure 10.7 mm. to 32.0 mm. in width and 5.3 mm. to 22.5 mm. in thickness.

Several of the bipolar cores had chisel-like edges which could have been used as splitting implements for bone or wood. It was impossible to determine if this edge was intentionally formed as a working edge, or derived as a by-product of flake manufacture.

Retouched Flakes

Twenty-four flakes exhibit secondary retouching on one or more localized areas on the dorsal surface. The majority of the worked flakes were made from a variety of cherts that ranges in color and quality from a coarse tan to a fine grained dark gray.

Utilized Flakes

Twenty-nine flakes exhibit one or more worn edges, indicating the flakes were probably used as a cutting or scraping tool. Raw material used in the manufacture of the flakes is chert, which is coarse grained and varies in color from chalky white to medium brown and dark gray.

Ground and Pecked Stone

Gorget

A single fragment from what appears to have been a gorget was recovered from the Little Cedar River site. The gorget, which exhibits both chipped and ground surfaces, was manufactured from a reddish stone of undetermined type. One face of the fragment has been ground; however, the slightly convex lateral edge has been formed by chipping. The fragment exhibits a single perforation which was drilled from one

side of the object. The edge of the fragment nearest the perforation has been ground to form a straight and smooth edge. The fragment measures 48.1 mm. in length, 28.8 mm. in width and is 3.6 mm. thick.

Hammerstones

Six rather massive, and generally round artifacts are included in this category. The specimens all exhibit areas of localized battering. Length varies from 67 mm. to 125 mm. and width ranges from 48.5 mm. to 70 mm. Thickness varies between 26.5 mm. and 52.0 mm.

Copper

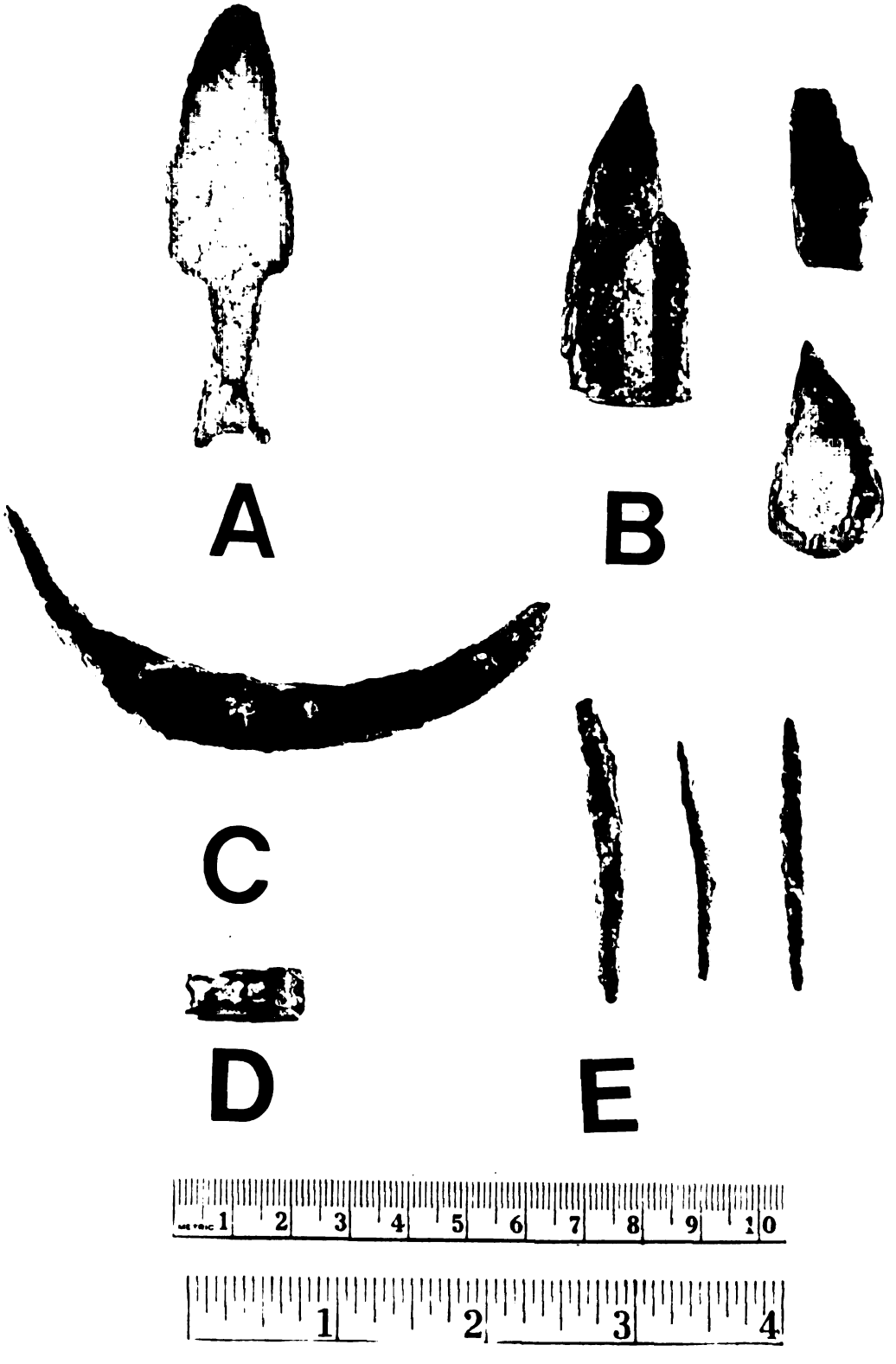
Introduction

Twenty pieces of native copper weighing 170.1 grams were recovered during the excavation at the Little Cedar River site. Eleven of these specimens appear to have been finished artifacts. The remaining ten pieces are fragments of hammered copper.

Stemmed Point

A stemmed point, pictured in Figure C-7, has been constructed from a single copper nugget. The blade of the projectile point is 46.5 mm. long and measures 21.3 mm. in width. The blade is plano-convex in cross section, having a longitudinal ridge 3.9 mm. thick centrally located on one face of the blade. The blade has slightly convex edges. The hafting element measures 28.5 mm. in length and is approximately 7.0 mm. wide, but widens to 12.5 mm. at the proximal end. The base of the tang is concave.

Figure C-7. Little Cedar River Copper; (A) Stemmed Projectile Point, (B) Triangular Copper Implements, (C) Knife, (D) Bead, (E) Awls.


A
B
C
D
E
METRIC 1 2 3 4 5 6 7 8 9 10
1 2 3 4

Knife

A single artifact has been designated as a copper knife. The knife is shown in Figure C-7. The artifact, hammered from a single nugget of copper, is crescent shaped. The blade measured 89.3 mm. in length and has a tang element which extends an additional 34.9 mm. The blade is plano-convex, having a slight longitudinal central ridge 2.9 mm. thick on one surface which tapers toward both the outer and inner blade edges. The tang, which is rectangular in cross section, tapers to a point. Striations, if present, could not be detected on the highly oxidized surface of the knife.

Bead

A single rolled copper bead, pictured in Figure C-7, has been manufactured by rolling a rectangular strip of thin hammered copper. The bead, which is weathered and broken, is approximately 21.0 mm. long and varies from 8.4 mm. to 9.3 mm. in diameter.

Awls

Five specimens have been classified as copper awls. Three of these specimens are shown in Figure C-7. The awls have square to rectangular cross sections. A single end has been pointed on three of the specimens, with the unpointed end being flat to slightly rounded. The remaining two awls exhibit conical points at each end. Four of the specimens have been manufactured from a single nugget. The fifth specimen has been constructed by folding several thinner sheets of copper upon one another and then hammering them together. The awls vary in length and width from 38.5 mm. to 52.0 mm., and 3.0 mm. to 7.6 mm., respectively. Maximum thickness varies between 2.1 mm. and 5.0 mm.

Triangular Copper Implements

Three specimens are triangular in outline with at least one convex lateral edge. The implements, which are relatively thick, taper to form a thin, sometimes sharp point at the distal end. The lateral edges and base of the implements do not taper but form thick blunt edges. Two of the implements have straight bases. The remaining specimen has a convex base. At least two of the implements have been manufactured by hammering several thinner sheets of copper together. The third specimen is highly oxidized and evidence of construction has been obscured by the heavy corrosion. Measurements of the three artifacts are given below. Specimen 1 is 54.3 mm. long, 22.8 mm. wide and 7.2 mm. thick. The second specimen is 32.3 mm. long, 20.0 mm. wide and 4.5 mm. thick. The third specimen, which has a broken tip, is 31.2 mm. long, 13.5 mm. wide and 6.0 mm. thick. These three implements are shown in Figure C-7.

Hammered Copper Fragments

Eleven copper fragments weighing only 28.4 grams exhibit varying degrees of hammering. Three fragments exhibit only minor alterations. The eight remaining specimens have been modified to a greater degree. The specimens vary in thickness from 1.5 mm. to 6.0 mm. Most have irregular outlines. Three specimens, however, are somewhat similar in size and shape. These three specimens are somewhat triangular in outline, with round to blunt distal ends. The specimens measure 25.7 mm., 27.2 mm., and 23.7 mm. in length and are 7.0 mm., 7.2 mm., and 7.5 mm. wide. One of these specimens has a small perforation, 1.7 mm. in diameter, centrally located 5.3 mm. from the basal end.

Features

Six features were identified and excavated at the Little Cedar River site. Features were identified by a discoloration and a texture variation in the soil. Generally, the soil associated with the features was black to dark brown and was in marked contrast to the lighter surrounding soil. Concentrations of cultural material such as sherds or lithic debris were not assigned feature numbers unless they could be delineated from the adjacent areas on the basis of soil, color and texture. Although not recorded as features, these concentrations were noted in the field records and the cultural material was given separate and special attention.

Features were excavated in the following manner: As soon as soil discoloration was recognized, the area was troweled until the shape and extent of the feature could be delineated. The feature was then mapped and photographed. Each feature was then cross-sectioned. The profile was drawn and photographed before the remaining half of the feature was excavated. All soil from each of the features was screened using one-quarter inch hardware cloth. Approximately one-quarter of the soil from each feature was saved for flotation and laboratory analysis.

Each of the six features is described and its contents listed below.

Feature 1: A roughly triangular stain extending from the east wall of test pit #8 was interpreted as a hearth. The stain measured 28 cm. along the wall and tapered to a point 44 cm. west of the wall. The hearth has slightly insloping sides and a slightly rounded bottom. The feature was recognized 16 cm. below surface and extended only

10 cm. to 26 cm. below surface. The soil within the pit consisted of black stained sand. Contents of the feature included 24 chert flakes, 4 bone fragments, fire-cracked rocks, and charcoal.

Feature 2: An amorphous black soil stain was located in the southeast section of test pit #5. The feature measured 96 cm. in length by 50 cm. width and was 48 cm. deep. The stain, which was encountered 40 cm. below surface, had an irregular bottom and sides. The feature consisted of black, organically stained sand and flecks of charcoal. Contents of the feature included 11 grit tempered body sherds, 8 chert flakes, and 56 fragments of bone. This bone was subsequently identified by Elizabeth Cardinal as canine. The bone which was partially articulated was located at the bottom of this large feature. The evidence suggests this was a canine burial.

Feature 3: An irregular and shallow stain in the southeast corner of test pit #5 was designated Feature 3. The feature, which was only 10 cm. deep, measured 107 cm. by 95 cm. The stain was encountered 35 cm. below the surface. Soil within the feature was slightly darker than the surrounding yellow sand. The feature contained 395 chert flakes and 7 quartzite flakes.

Feature 4: A concentration of pottery immediately adjacent to the east wall of test pit #16 was designated feature 4. The pottery was surrounded by an irregular, dark brown soil stain. There were several large concentrations of decaying granite at the periphery of the stain. The feature was first encountered 20 cm. below surface and extended 50 cm. below the surface. The sides of the feature were insloping and the bottom was basin-shaped. Contents of the feature include: 615 grit

tempered smooth body sherds; 176 grit tempered cordmarked body sherds; 15 Heins Creek rimsherds; and 10 shell tempered body sherds; 51 chert flakes; and 2 mammal bone fragments.

Feature 5: A rectangular brown stain in the southeast corner of test pit #9 was interpreted as a refuse pit. The pit, which measured 50 cm. by 40 cm., had insloping sides and a rounded bottom. The stain was first defined 30 cm. below the surface. It extended to 50 cm. below the surface.

Feature 6: A portion of another large, mottled stain in the northwest corner of test pit 18 was interpreted as a refuse pit. The stain was encountered 36 cm. below the surface and continued to a depth of 75 cm. below surface. The feature had insloping sides and a rounded bottom. Soil within the feature consisted of areas of grey, brown, and gold sand which was layered with a rose colored ash. The feature contained prehistoric as well as historic material. Objects recovered from the feature included: 24 sherds identified as Heins Creek Ware; 19 kaolin pipe fragments; 108 unidentified fragments of metal; 82 fragments of window glass; 2 belt buckles; 53 nails; and 138 bone fragments. The fauna consisted of dog, longtail weasel, deer, duck, passenger pigeon, ruffed grouse, sturgeon, unidentified mammal, bird, fish, and shell.

Historic Component

Excavations at the Little Cedar River site also revealed an historic component. Historic material, consisting of kaolin pipe fragments, buttons, wooden bead, various metal fragments, nails, and historic ceramics were recovered from only a small and restricted area of the site. This material is not related to the Woodland occupation

of the site and will not be included in the analysis and description of the site. The material has been catalogued, however, and is stored with the other materials from the site.

Summary

The Little Cedar River site is a multi-component site located on the south and east bank of the confluence of the Menominee and Little Cedar Rivers. Several cultural components were identified in the ceramic assemblage at the site. A wide variety of ceramic types and decorative techniques are included in this assemblage. Dane Incised and Early Woodland/Middle Woodland ceramic types represent the initial occupation of the site. Many of the rimsherds and decorated sherds can be identified as Middle Woodland. Middle Woodland ceramic types represented at the Little Cedar River site include North Bay Cord-marked, Banked Punctate, Pine River Ware, and Rocker Stamped wares. Heins Creek wares dominate the Late Woodland ceramic assemblage. Although only minimally represented, Oneota wares also occur in the ceramic inventory.

Lithic debris from the site was typical of Middle Woodland and Late Woodland sites in the Northern Great Lakes Region, but was not sufficiently diagnostic to aid in further defining the cultural components at the Little Cedar River site.

The wide variety of ceramic types represented in the site's cultural assemblage suggests the site was not used extensively during any one occupation, but is instead primarily the result of the accumulation of cultural debris from numerous and intermittent occupations by various peoples throughout the entire Woodland period.

The site is interesting in that it is one of the six sites located along a ten-mile portion of the Menominee River. This is an area of extremely high density in this northern woodland environment. Further exploration and excavation would undoubtedly provide worthwhile insights into the prehistory of this region.

APPENDIX D

THE BACKLUND VILLAGE SITE

APPENDIX D

THE BACKLUND VILLAGE SITE

Introduction

The Backlund Village site is located on Government Lot 3, Section 6, Lake Township, Menominee County, Michigan. The site occupies a broad point of land, approximately 250 feet in width, along the east bank of the Menominee River. This broad point is bounded on its north and west sides by the Menominee River which, at this point, contains a large island group commonly called Sixty Islands. A county road forms the southern and eastern borders of the site.

The land on which the site is located is owned by the Backlund family. A small cottage has been constructed in the southwestern corner of the site and is used as a summer home by the family. The remainder of the area has been cleared of its natural vegetation and is part of the Backlund pine plantation. The site is situated in a grassy area between the river bank and the first row of pines.

In August of 1973, a Northern Michigan University field crew under the direction of John Franzen visited and tested the site. If these original test excavations proved encouraging, plans called for more extensive archaeological work at a later time. Unfortunately, Mr. Backlund was unfavorably disposed toward further excavation of the site in subsequent seasons. However, Northern Michigan University's

archaeological program is grateful to Mr. Blacklund for permission to make the original test excavations. The test excavation in 1973 was supported by a Northern Michigan University Faculty Research Grant administered by Marla Buckmaster, Department of Sociology and Anthropology, Northern Michigan University.

During the first two weeks of August, fifteen 2 x 2 meter test pits were excavated at the site. The test pits were located through the site, using a system of stratified unaligned sampling. Using this procedure, the site was first divided into 30 x 30 meter units. These units were then subdivided into 2 x 2 meter potential test pits which were then numbered. A table of random numbers was employed to randomly locate two 2 x 2 meter test pits within each 30 x 30 meter unit, thus ensuring that any recovered materials would be representative of the entire site. Several of the 30 x 30 meter units could not be entirely located within the boundaries of the site, and theoretically extended into the Menominee River. Test pits, which would have been located in this theoretical area, were not excavated, accounting for the odd number of excavated units.

Each test pit was excavated in 10 cm. levels to a maximum depth of 60 cm. below surface. The excavations revealed the dark, sandy soil on which the site was located. Above this horizon was a "plow-zone" varying in depth from 15 to 20 cm. A very thin layer of humus, the result of approximately 30 to 35 years of accumulated organic debris, topped the plow zone. Except for the thin layer of humus and the plow zone, there was no visible stratigraphic data.

All excavated material was sifted through half-inch hardware cloth. All cultural debris recovered in the screens was saved and

sorted according to test pit and level. A square sheet was drawn and a photograph taken at each 10 cm. level. After each test pit had been excavated to sterile sand, the walls of the excavation unit were troweled and wall profiles were drawn whenever walls cut through features or post molds or when modern soil disturbance was evident. All features were given individual provenience designations. Features were cross sectional, and the profiles were drawn and photographed. A soil sample from each of the features was saved and flotated in the archaeological lab the following fall, using a large garbage can and a two and a half gallon bucket with a three-sixty-fourths inch screen bottom. All organic material was saved for microscopic analysis.

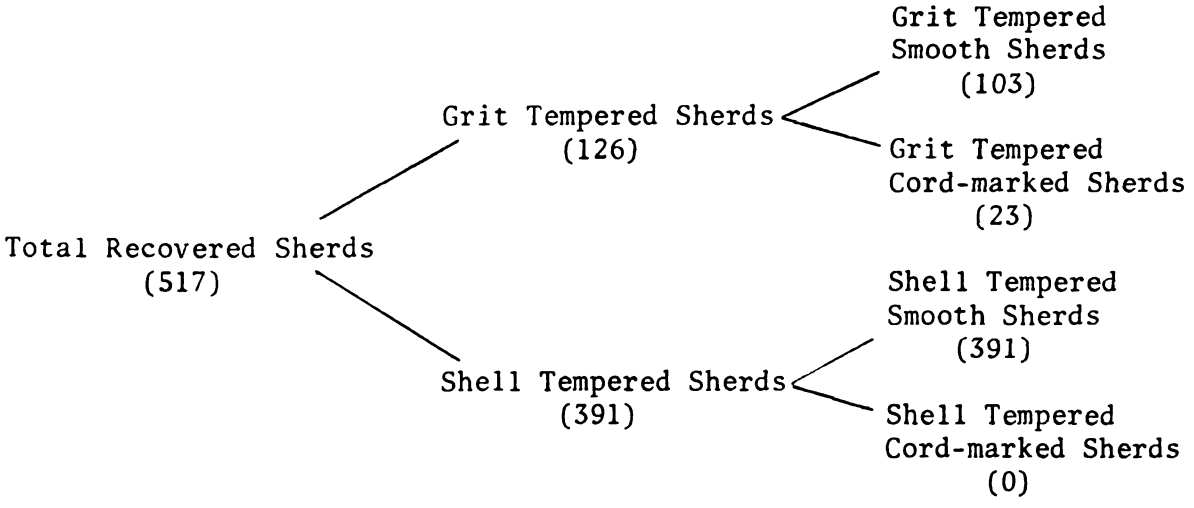
Recovered cultural material, field notes, square sheets, wall profiles, and photographs are housed in the archaeological laboratory in the Birdseye Building on the campus of Northern Michigan University in Marquette, Michigan and are catalogued in the archaeological laboratory's coding system between 14.0.0 and 14.15.6.

Pottery

Introduction

The majority of artifacts recovered from the Backlund Village site during the 1973 field season consisted of potsherds. A total of 517 sherds was counted, washed, and initially sorted according to temper and exterior surface treatment. The two tempering agents identified in the ceramic material were shell and grit. A total of 391 sherds, or approximately 75 percent of the recovered sherds was shell tempered. The remaining 126 sherds were tempered with small to medium particles of crushed granitic rock. Both the shell and grit

tempered sherds were then sorted according to smooth or cord-marked exterior surfaces, creating four ceramic categories. The four categories are smooth shell tempered, cord-marked shell tempered, smooth grit tempered, and cord-marked grit tempered. The distribution of sherds in each of the four categories is shown in the following diagram.



The sherds varied in thickness from 4.5 mm. to 10.0 mm. Shell tempered sherds varied from 4.5 mm. to 6.5 mm. in thickness with a mean thickness of 5.7 mm. Grit tempered sherds varied from 5.0 mm. to 10.0 mm. in thickness with a mean thickness of 7.5 mm. The mean thickness of the shell tempered sherds was approximately 1.8 mm. thinner than the mean thickness of the grit tempered sherds at the Backlund site.

Rimsherds and decorated neck and body sherds were also initially sorted by temper and by exterior surface finish into the four major categories previously described. The 30 rimsherds and 26 body sherds were then sorted according to the decorative techniques applied to the lip, the interior, and the exterior of the vessel. The four

principal decorative techniques include twisted-cord impressions, cord-wrapped stick impressions, trailing, and punctation. The rimsherds and the decorated neck and body sherds were sorted into groups on the basis of similar decorative techniques. Each of the groups was then studied for similarities in decorative motif. Sherds which exhibited similarities in arrangement, location, and/or a combination of decorative techniques were then compared to established ceramic types from Michigan and Wisconsin.

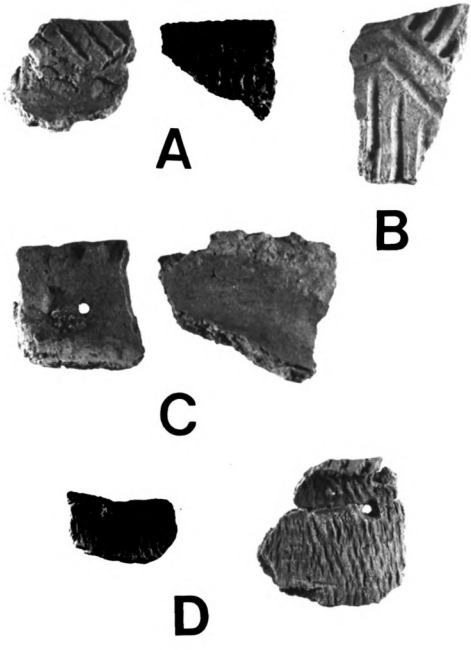
Several rimsherds and decorated body sherds recovered at the site could not be identified with previously described ceramic types. In many cases, sample size and/or sherd size were too small to permit accurate identification with existing ceramic types, or to establish new ceramic types. Therefore, these sherds have been described at the end of the ceramic description under the heading of Unclassified Ceramics.

Late Woodland Ceramics

Point Sauble Collared

Two rimsherds pictured in Figure D-1 represent two vessels and have been classified as Point Sauble Collared. Both sherds are tempered with fine to medium grit. The first vessel has a small collar formed by the folding over of clay from the upper rim rather than by the addition of a clay strip. The vessel has a slightly inverted rim profile. The lip, which is 5.0 mm. thick, is round and decorated with two rows of twisted cord impressions applied at the juncture of the lip and vessel exterior. The collar is decorated with parallel horizontal rows of twisted cord-impressions, applied to the

Figure D-1. Backlund Ceramics; (A) Point Sauble Collared, (B) Grand River Trailed, (C) Unclassified Shell Tempered Ceramics, (D) Unclassified Grit Tempered Ceramics.


A
B
C
D
1 2 3 4 5 6 7 8 9 10
1 2 3 4

exterior of the vessel between the lip and apex of the collar, 5.0 mm. below the lip and the exterior of the vessel. The cords are 1.0 mm. wide and are applied at 1.0 mm. intervals. Two horizontal rows of vertical cord impressions 4.0 mm. long are located immediately below the collar apex on the exterior of the vessel. The previously described horizontal cord impressions commence below these two rows of vertical impressions.

The second vessel has a collar formed by the addition of a strip of clay immediately below the lip of the vessel. The collar is quite pronounced and is approximately 20.0 cm. in width and 13.0 cm. thick. The collar exhibits parallel twisted cord-impressions, placed diagonally at 4.0 mm. intervals between the lip and the apex of the collar. The exterior of the vessel, below the collar, and the interior of the vessel are smooth and plain. The lip is pointed with a slight internal bevel. The rim profile is slightly everted. The sherd is 6.0 mm. thick below the collar.

Oneota Ceramics

Carcajou Plain

A minimum of two vessels is represented by seven rimsherds which are classified as Carcajou Plain. Each sherd is tempered with finely crushed shell. The sherds exhibit a relatively uniform thickness of 6.0 mm. One vessel has an extremely everted rim profile and exhibits shallow, sinuous impressions which are confined to the surface of the outer lip. The rim profile of the second vessel is slightly flared. The sinuous impressions which decorate it are narrow and

shallow on the upper lip of the vessel. Neither vessel exhibits interior or exterior body decoration.

Grand River Plain

Included within this ceramic type are twelve shell tempered rimsherds, representing a minimum of four vessels. In profile, the rims are vertical to slightly everted and range in thickness from 5.0 mm. to 8.0 mm., with a mean of 6.5 mm. The lips are plain having round to flattened surfaces. The lips frequently exhibit a slight fold of excess clay on the exterior of the vessel. The lips average 5.5 mm. thick, while the sherds are slightly thicker, averaging 6.0 mm. All of the sherds have smooth, undecorated interior and exterior surfaces.

Grand River Trailed

Nine body sherds, representing a minimum of three vessels, are classified as Grand River Trailed. Each sherd is tempered with fine to medium particles of crushed shell. The sherds range in thickness from 3.0 mm. to 6.0 mm., with a mean of 4.5 mm. Trailing, the sole decorative technique exhibited on these sherds, varied from 1.0 mm. to 5.5 mm. in width. The decorative motifs consisted of sets of two to four parallel trailed lines arranged in a chevron design around the neck and shoulder of the vessel. A single Grand River Trailed sherd is pictured in Figure D-1.

Unclassified Ceramics

Unclassified Shell Tempered Ceramics

Seventeen body sherds appear to belong to a single vessel which was tempered with fine shell particles. The sherds exhibit a

uniform thickness of 4.0 mm. All of the sherds exhibit a cord-marked exterior and a smooth interior. No decoration is visible on any of the sherds. Sherds representative of this category are shown in Figure D-1.

A second vessel is represented by a single sherd. The vessel was tempered with small shell particles which have been leached from the exposed surfaces of the sherd. The sherd is 6.0 mm. thick, with a flattened lip measuring 4.0 mm. in width. A series of small, rectanguloid punctates measuring 5.0 mm. by 4.0 mm. are arranged around the rim of the vessel at 5.0 mm. intervals, immediately below the juncture of the lip and exterior vessel surface. Except for this single horizontal row of punctates, both the interior and exterior surfaces of the vessel are smooth and plain. A single perforation, 4.0 mm. in diameter, is located 18.0 mm. below the lip, and was probably used for vessel suspension. The sherd exhibits a straight rim profile with indications that the vessel had a slight shoulder 4.0 cm. below the lip.

Unclassified Grit Tempered Ceramics

A single rimsherd represents the first unclassified grit tempered vessel. The sherd, tempered with fine to medium grit particles, has a smooth interior and exterior surface. The sherd is approximately 8.0 mm. thick. The vessel has a straight rim profile with a pronounced shoulder 33 mm. below the lip. The rim tapers from a maximum width of 8.0 mm. at the shoulder to form a pointed lip.

A second vessel, represented by three rimsherds, has a cord-marked exterior and a smooth interior. The vessel is approximately 5.0 mm. thick. The paste is compact and tempered with small particles of

crushed granitic rock. The rim, which is slightly everted, has a flat lip and exhibits incipient castellations. The lip is decorated with a single row of knotted cord punctates placed at 4.0 mm. intervals around the vessel. There is a single perforation measuring 3.0 mm. in diameter, 15.0 mm. below the lip on one of the three sherds. The interior is smooth and plain.

Four vessels are grit tempered and cord-marked. The sherds measure 4.5 to 5.0 mm. in thickness and are small and partly exfoliated. The rim profiles are straight to slightly everted. Two of the sherds are decorated with a series of vertical cord impressions 12.0 mm. to 14.0 mm. in length, arranged in a horizontal row around the exterior of the vessel, immediately below the flattened lip. A third sherd has a series of vertical cord-wrapped stick impressions 14.0 mm. in length, arranged in a horizontal row immediately below the flattened lip of the interior of the vessel. The fourth sherd has a lip which is decorated with a series of cord-wrapped stick impressions. The cord-wrapped stick was impressed at the juncture of the lip and vessel exterior and lip and vessel interior to form alternating impressions, creating a sinuous lip. No other decoration is visible on the sherd. All of the sherds have smooth interior surfaces. Several of these unclassified grit tempered, cord-marked sherds are shown in Figure D-1.

Lithic Description

Introduction

The lithic assemblage recovered during the 1973 test excavations at the Backlund Village site totaled 259 pieces of chert, quartz, and quartzite. Included within this total are 248 unmodified flakes,

3 utilized flakes, 3 scrapers, 1 projectile point, and 4 cores from which blades have been struck. Approximately 60 percent of the debitage, or 149 lithic fragments, was quartzite and quartz. The remaining 40 percent is composed of a wide variety of white, rose, and dark grey coarse grain cherts, all of which exhibit poor fracture properties. "Exotic" debitage is entirely lacking in the recovered lithic sample from the site. It appears that the inhabitants of the Backlund site were selecting raw materials for their manufacture of lithic tools entirely from locally available materials in the glacial till which lack the fracture properties of flint and good quality chert available in other areas.

Chipped Stone

Projectile Point

Only one specimen could be identified as a projectile point in the Backlund lithic assemblage. This specimen was a fragment of a triangular point from which the tip and portion of one lateral edge were missing. The point was biconvex in cross-section and exhibited a concave base. The fragment measured 19.5 mm. in length, 14.5 mm. in width and was 5.0 mm. thick. It was manufactured from a light grey chert.

Scrapers

Three specimens exhibiting the steeply beveled edge typical of a scraping tool were recovered from the Backlund Village site. Two of the specimens are end scrapers, with the beveled edge located opposite the bulb of percussion. The first specimen, made from a dark rust

colored chert, measures 29.0 mm. in length, 16.0 mm. in width, and is 6.5 mm. thick. The second specimen, manufactured on a medium grey chert flake, measures 16.0 mm. in length, 19.0 mm. in width and is 6.0 mm. thick. A third specimen has been steeply retouched along the lateral edge of a trianguloid-shaped flake. The flake measures 23.0 mm. in length, 16.0 mm. in width, and is 5.0 mm. thick.

Cores

Four polyhedral cores were recovered during the 1973 test excavations at the site. All of the cores exhibit multiple long, narrow, parallel flake scars which encircle the periphery of the core. The cores, however, are unusual in that they do not exhibit bulbar complexes, ripples or battering, typically associated with the knapping process. Three of the specimens were manufactured from a white to light grey chert. The fourth specimen was manufactured from a white to The specimens vary in length from 25.0 mm. to 49.0 mm. and in width and/or thickness from 8.0 mm. to 15.0 mm.

Utilized Flakes

Three chert flakes appear to have been extensively utilized as a cutting and/or scraping tools. One or more areas on each of the flakes have an irregularly fractured edge, exhibiting numerous small striations. The flakes vary in length from 15.0 mm. to 34.0 mm.

Features

Nine features were identified and excavated at the Backlund Village site during the 1973 test excavations. Features were identified by soil discoloration and variation in the texture of the soil.

The soil generally associated with the features ranged in color from black to very dark brown, and was somewhat more compact than the surrounding soil. This contrast in soil color and texture allowed for easy detection of the features. Concentrations of cultural material such as sherds or lithic debris were not assigned feature numbers unless they could be delineated from adjacent areas on the basis of soil color and texture.

Only five of the nine recorded features (features 2, 3, 4, 8 and 9) are large enough, with a distinct and regular outline, to be considered as possible storage and/or refuse pits. The remaining four features appear to have been casually dug depressions for miscellaneous and unspecified functions, having amorphous shapes and mottled soil matrices.

Feature 1: A small, circular stain located in the northwest corner of test pit 4 was designated as feature 1. The pit had a diameter of 20 cm. and was 8 cm. in depth. The feature had gently sloping sides and a rounded bottom. The organically stained black sand contained charcoal flecks.

Feature 2: This feature was located in the center of the northern half of test pit 9. The circular feature, which had a diameter of 71 cm., had slightly sloping sides and an irregular bottom. The feature ranged from 22 cm. to 30 cm. in depth. The darkly stained sand was surrounded by a matrix of lighter sandy soil. Contents of the feature included 1 Grand River Plain rimsherd, 2 Carcajou Plain rimsherds, 2 unclassified Oneota rimsherds, 31 shell tempered smooth undecorated body sherds, 4 grit tempered cord-marked body sherds, 1 chert flake, and 10 bone fragments.

Feature 3: A circular stain similar to feature 1 was located in the center of the southern half of test pit 10. This feature, which had a mean diameter of 38 cm. was recognized at 35 cm. below the surface. The feature had vertical to gently sloping sides and a flat bottom. The darkly stained sand contained 9 shell tempered smooth undecorated body sherds, 10 grit tempered smooth undecorated body sherds, 1 quartz chip, and charcoal flakes.

Feature 4: This feature was located in the northeast corner of test pit 11. The black sandy stain was circular in shape and had a mean diameter of 40 cm. The feature was recognized and defined at 10 cm. below the surface and extended 12 cm. to a depth of 22 cm. below the surface. The contents included: 6 unclassified Oneota body sherds, 4 shell smooth undecorated body sherds, 3 flint chips, 12 bone fragments, and fragments of fire-cracked rock.

Feature 5: This feature, also found in test pit 11, was located in the northwest corner of the test pit. The black, sandy, circular stain was 28 cm. in diameter. It was first defined at 10 cm. below the surface and extended 10 cm. to a maximum depth of 20 cm. below the surface. Contents consisted of: 1 flint clip and several fragments of fire-cracked rock.

Feature 6: This unusual feature was the largest of the nine features identified at the Backlund Village site. It was located in the central portion of the western half of the test pit 11. The feature was amorphous in shape with a maximum diameter of 96 cm. and a minimum diameter of 40 cm. It was first defined 13 cm. below the surface and continued to a depth of 27 cm. below the surface. Soil

within the feature included grey clay and red, brown, and black stained sand mottled in a dark brown sandy matrix.

Feature 7: An elongated, irregular feature was located in the eastern half of the northeast quarter of test pit 11. The black, sandy stain was surrounded by a red to reddish colored sand matrix, and measured 50 cm. in length and 20 cm. in width. It was first defined at 37 cm. below the surface and extended from 38 cm. to 45 cm. below the surface. Its sides are straight to slightly insloping and the bottom is amorphous in shape. Contents of the feature include 14 shell tempered smooth undecorated body sherds, 1 grit tempered smooth undecorated body sherd, and several fragments of fire-cracked rock.

Feature 8: A small, circular stain located in the central portion of the northeast quarter of test pit 11 was designated as feature 8. This feature was oval in shape and had a diameter which varied from 24 to 36 cm. It was recognized at 36 cm. below the surface and extended for 32 cm. to a depth of 59 cm. below the surface. The feature had steep, straight sides with a flat to slightly round bottom. A red gold sand matrix encompassed the brown, sandy pit. This feature contained several small bone fragments.

Feature 9: This feature was located in the center of test pit 11. It is irregular in shape with a maximum diameter of 92 cm. and a minimum diameter of 40 cm. It was first defined at 38 cm. below the surface, and extended for 21 cm. to 59 cm. below the surface. The sides were slightly sloping and the bottom was somewhat amorphous, but generally rounded. A red gold sand matrix surrounds the feature. It contained one rimsherd identified as Grand River Plain, 3 shell

tempered smooth undecorated body sherds, 2 chert flakes, and several bone fragments.

Summary and Conclusions

Excavation of fifteen 2 x 2 meter test pits randomly located through the village area produced 517 sherds, 248 chert, quartz, and quartzite flakes, and 11 chipped stone tools. The lithic assemblage from the site is scanty and, except for a single small triangular projectile point, undiagnostic in temporal or cultural affiliation. The ceramics, however, are clearly associated with pottery of the Oneota Aspect of the Upper Mississippian phase in Wisconsin and its neighboring states. Approximately 75 percent of the recovered ceramics, or 391 sherds, is shell tempered, and thus almost certainly represents Oneota ceramics. Perhaps half of the remaining 126 grit tempered sherds exhibit the fine, compact paste characteristic of Oneota ceramics and probably should be considered a grit tempered variant of the shell tempered Oneota ware.

In addition to shell tempering, the Oneota ceramics at the Backlund Village site, exhibit several basic traits typical of Oneota ceramics. The vessels appear to have been globular, with rounded shoulders and everted to outcurving rims. Decoration, consisting of lip notching and trailing, is also Oneota in character. However, in many other aspects, the ceramic assemblage from the site is atypical of the ceramics recovered from other Oneota sites. There is a high incidence of grit tempering. No handles or other ceramic appendages were recovered during the excavation. Decoration, although present, is relatively infrequent. Trailing occurs on only nine of the recovered

body sherds and lip notching, the only other typical Oneota decorative technique occurs on only six rimsherds. A single shell tempered vessel has been decorated with parallel rows of cord impressions.

Several non-ceramic traits typical of Oneota sites elsewhere do not occur at the Backlund Village site. Such items as cut-sherd disks, copper tools, shell implements, pipes, and "arrowshaft" straighteners are conspicuously absent from the recovered materials. The absence of these traits and the ceramic characteristics typical of many Oneota occupations suggest that the Backlund Village site is most closely related to the Mero complex on the Door Peninsula in northeastern Wisconsin. Mason (1966) believes the Mero complex to be most closely related to the Grand River Focus, and less specifically to the Koshkonong Focus in south central Wisconsin. Using Hall's chronology for the development of the Oneota Aspect (1962), Mason has dated the Mero complex sometime between A.D. 1200 and 1400.

In addition to the Upper Mississippian ceramics, a minimum of six Late Woodland vessels are represented by nine rimsherds, sixteen cord-marked body sherds, and numerous smooth grit tempered body sherds. These vessels are related to such types as Madison Plain and Heins Creek Corded-stamped. Mason (1966) has obtained a C-14 date of A.D. 720 for Heins Creek ceramics and believes they precede the later Madison Wares. Wittry (1959), however, reports a date of A.D. 1208 $\pm$ 200 at Wakanda Park, where Madison Wares and Mississippian ceramics were associated in low conical mounds.

Eight low conical mounds were originally situated between the village midden and the county road. Three of these mounds were excavated in 1956 by a University of Michigan Museum of Anthropology field

crew under the direction of Dr. Albert Spaulding. The excavation and the recovered burials and artifacts have been described by David S. Brose (1968). Ceramics from the mound fill are clearly similar to those recovered from the village debris in 1973. However, excavation of the village area produced evidence of collared wares lacking in the mound fill, and indicates that the incidence of Late Woodland vessels in the mound fill is not an accurate reflection of their significance in the village deposit, where Late Woodland sherds account for less than 10 percent of the ceramic inventory.

The Backlund Village appears to have been an occupation of somewhat limited size and duration. Thinly scattered village debris was recovered over a large area, measuring approximately 90 meters by 70 meters. Although several features identified as storage and/or refuse pits were encountered during the test excavations, there was no indication of a midden or structures built with any degree of permanency. It seems most likely that the site was occupied seasonally, during the more temperate periods of the year, sometime between A.D. 1100 to 1300.

APPENDIX E

THE PEMENE FALLS SITE

APPENDIX E

THE PEMENE FALLS SITE

Introduction

The Pemene Falls site is located on Government Lot 2, Section 21 (T.37N,R.28W) in Menominee County, Michigan. The site is situated along the east bank of the Menominee River, extending approximately 0.6 kilometers downstream from Pemene Falls to just north of Pemene Creek. Cultural materials were recovered from three separate areas within this 0.6 kilometer stretch.

Although this area is in close geographic proximity to the Pemene Creek site, it has been treated autonomously, since it occupies a much different ecozone. Pemene Creek is a secondary stream and flows through a lowland zone with predominately coniferous vegetation south of the falls area. The Pemene Falls site is situated on a high ridge which parallels and overlooks the Menominee River. Vegetation on the ridge is predominately deciduous.

The land on which the site is located is presently owned by Wisconsin Michigan Power Company and has remained largely undisturbed. Access to the site is gained via a two-track dirt road used primarily by fishermen and sightseers. The Northern Michigan University Archaeological Field Program is grateful to the Wisconsin Michigan Power

Company for permission to excavate at the site and to camp in the facilities the company provides as a service to the public.

The Pemene Falls site was archaeologically tested and surveyed in 1973 by a Northern Michigan University field crew. A system of stratified unaligned sampling was used to locate fourteen 2 x 2 meter test pits. The test pits were dug to an average depth of 30 cm. and all earth removed was sifted through screens of half-inch hardware cloth. A variety of historic and prehistoric artifacts was recovered from several undisturbed cultural deposits. All test pits were back-filled at the end of the field season and further excavations were planned.

The latter half of Northern Michigan University's 1976 field season was utilized to further test the Pemene Falls site. Under the direction of John Franzen, four additional 2 x 2 meter test pits were excavated. Once located, the four test pits were dug to a depth of 30 cm. and all excavated material was sifted through half-inch hardware cloth. Depth of individual test pit levels was determined by changes in soil color and artifact density. Each level was recorded on a separate square sheet. Cultural concentrations were assigned separate prevenience designations and photographed in situ. Soil from cultural concentrations was flotated at the site, using three-sixty-fourths inch screen mesh and all organic material was preserved for future analysis. All test pits were backfilled at the end of the field season.

Field notes, photographs, and square sheets relating to the 1973 and 1976 excavations at Pemene Falls are housed in the archaeological laboratory on the campus of Northern Michigan University.

Cultural material has been placed on permanent loan in the Iron Range Historical Society in Iron Mountain, Michigan.

Pottery

Introduction

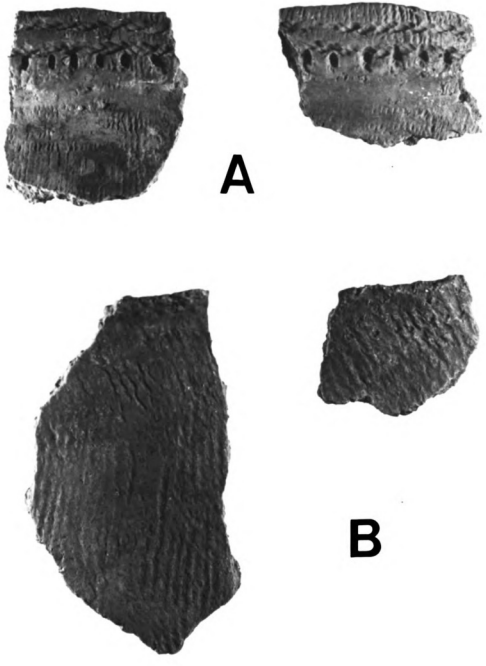
The 1973 and 1976 field seasons at the Pemene Falls site produced a limited variety of ceramic material. A total of 243 sherds were recovered during the two field seasons. This total includes 129 grit tempered sherds and 114 shell tempered sherds. The 129 grit tempered sherds are represented by seventy-six grit tempered cord-marked body sherds, seven grit tempered cord-marked rimsherds, forty-four grit tempered smooth body sherds, and two grit tempered smooth rimsherds. The shell tempered sherds include one hundred and nine shell tempered smooth body sherds and five shell tempered rimsherds. The rimsherds and decorated sherds from the Pemene Falls site are described below, using previously established ceramic types from the Upper Great Lakes whenever possible. Several sherds, however, did not conform to these established types and have not been classified. These sherds have been described under the headings, Unclassified Cord-marked Sherds and Unclassified Smooth Sherds at the end of ceramic descriptions.

Late Woodland Ceramics

Point Sauble Collared

Two rimsherds from the Pemene Falls site, representing a single vessel, have been identified as Point Sauble Collared. Both sherds are pictured in Figure E-1. The vessel, which is grit tempered, exhibits a cord-marked exterior and a smooth plain interior. The vessel, which

Figure E-1. Pemene Falls Ceramics; (A) Point Sauble Collared, (B) Unclassified Cord-marked.


A
B
1 2 3 4 5 6 7 8 9 10
1 2 3 4

measures 7.0 mm. thick, has a straight rim profile and a slight shoulder, which begins approximately 45.0 cm. below the lip.

The sherds exhibit a wide collar, formed by either the folding over of clay at the top of the vessel or by the addition of a clay strip to the rim of the vessel. This collar is decorated with two horizontal rows of thick, twisted cord impressions below the lip. The impressions begin approximately 7.0 mm. below the lip and are separated by a cord-marked interval of 3.5 mm. A single irregular row of punctates made with the same thick cord, impressed on the upper collar, lies just above the apex of the collar, which is 12.0 to 14.0 mm. thick.

The lip of the vessel is flat and measures 7.0 mm. in thickness. The lip is decorated with corded-stamped impressions which diagonally traverse the lip.

Madison Plain

One grit tempered rimsherd has been identified as Madison Plain. The exterior surface of the vessel is cord-marked, and the interior is smooth. The rimsherd measures 7.1 mm. in thickness. The lip, which is 5.0 mm. thick, is flat and slightly beveled to the exterior of the vessel. The rimsherd is decorated with punctates, placed on the lip at intervals of approximately 3.1 mm. There is no evidence of any other decoration on either the interior or exterior surfaces.

Oneota Ceramics

Grand River Plain

This ceramic type is represented at the site by a single shell tempered rimsherd. The sherd exhibits a plain interior and exterior surface and a plain flat to slightly round lip 4.7 mm. thick. The rather small rimsherd appears to have a slightly excurvate rim profile.

Carcajou Plain

Two rimsherds recovered from the Pemene Falls site have been classified as Carcajou Plain. The rimsherds represent a minimum of one vessel, which has been tempered with finely crushed shell particles. The rimsherds are smooth on both the interior and exterior surfaces, and range in thickness from 4.9 mm. to 7.9 mm. The sherds exhibit a straight rim profile. The lip of the vessel tapers to a maximum thickness of 1.5 mm. The lip exhibits shallow notching on both the interior and exterior of the vessel. The notching was applied to both surfaces of the vessel, in alternating fashion, to form a slightly sinuous lip.

Grand River Trailed

Two rimsherds and six body sherds recovered from the Pemene Falls site have been classified as Grand River Trailed. The sherds are tempered with fine to medium sized particles of crushed shell. The sample represents a minimum of two vessels. The sole decorative treatment consists of shallow trailed lines applied to the exterior surface of the vessel. These lines vary in width from 0.9 mm. to 7.0 mm.

Trailing on the one rimsherd consists of horizontal lines, placed parallel to the lip. The lines are 1.6 mm. wide and are spaced at intervals of 2.3 mm. The lip is flat and slightly everted, measuring 5.2 mm. in maximum thickness. The second rimsherd has been decorated with a series of vertically trailed lines, 7.0 mm. in width, arranged around the vessel just below the lip.

Unclassified Ceramics

Unclassified Cord-marked Sherds

Two large rimsherds from a single vessel are tempered with medium size particles of crushed granitic rock. These sherds are pictured in Figure E-1. The exterior of the vessel is cord-marked. The interior of the vessel is smooth. The vessel, which is approximately 9.0 mm. thick, is straight sided with an everted lip. A single row of small, shallow, knotted cord punctates decorated the cord-marked exterior 15.0 mm. below the lip of the vessel. A series of shallow, vertical cord impressions have been arranged in a horizontal band, 12.0 mm. deep, around the interior of the vessel. The vessel tapers to form a pointed lip with a maximum thickness of 2.5 mm.

A second vessel, represented by a single small rimsherd, is also grit tempered with a cord-marked exterior surface. The vessel has an inverted rim profile. The vessel, which is 7.0 mm. thick, tapers to form a pointed lip 2.9 mm. thick. Directly below the lip on the interior surface is a row of small, rectanguloid punctates arranged at intervals of 1.9 mm. No other decoration is visible.

A third unclassified grit tempered, cord-marked vessel is represented by a single rimsherd. The rimsherd is 7.1 mm. thick and

has a straight rim profile. The lip, which is slightly rounded, is smooth and plain, measuring 5.0 mm. in thickness. The interior of the vessel is also smooth and plain. No decoration was visible on this small ceramic fragment.

Unclassified Smooth Sherds

Two rimsherds are heavily tempered with various sized particles of crushed granitic rock but exhibit no cord-marking. Exterior and interior surfaces are smooth with no evidence of cord-marking. The sherds are irregular but average 6.5 mm. in thickness.

The rimsherds are small but display corded-stamped impressions at the top of a rounded lip. One rimsherd is straight in profile. The second rimsherd is slightly everted.

Lithic Description

Introduction

A total of 1,916 fragments of quartzite, chert, and basalt were recovered during the 1973 and 1976 excavations at the Pemene Falls site. Quartzite is the most extensively utilized raw material, accounting for 819 fragments or 43 percent of the recovered lithic debris. Chert, the second most abundant raw material, is represented by 675 specimens. A total of 422 fragments of basalt were also recovered during the excavations. Although basalt does not possess good fracture properties for knapping, the flakes recovered from the Pemene Falls site exhibit striking platforms and pronounced bulbs of percussion. None of the raw materials utilized in the production of lithic implements at the site exhibit the fine grain texture generally considered

suitable for knapping. Instead, the inhabitants of the site appear to have concentrated on using local materials, no matter how poor the quality of the available material, thus accounting for the generally haphazard workmanship which characterizes the lithic assemblage at the site. There appears to have been no attempt to procure better quality raw materials. "Exotic" material is noticeable only by its total absence in the lithic assemblage.

A total of eighty-six artifacts representing approximately 5 percent of the total recovered lithic debris was classified as follows: triangular points (8 examples); stemmed points (3 examples); side notched points (3 examples); knives (4 examples); scrapers (14 examples); spokeshaves (2 examples); wedges (10 examples); bifacial implements (6 examples); unifacially retouched implements (4 examples); unifacially retouched flakes (7 examples); blades (4 examples); block cores (5 examples); bipolar cores (5 examples); utilized flakes (4 examples); ground stone (1 example); and hammerstones (6 examples).

Chipped Stone

Projectile Points

Triangular Points

Eight triangular points, similar to the Late Woodland Juntunen triangular points recovered by McPherron (1967), were recovered from the Pemene Falls site. Included in this category are six complete specimens, one lateral fragment, and one specimen from which a portion of the base and lateral edge is missing.

Morphological variation within the general type facilitated further sub-division into three sub-types according to basal shape. The sub-types identified are sub-type one: points with straight bases; sub-type two: points with sub-concave bases; and sub-type three: a point with a convex base.

Sub-type one: This sub-type consists of four triangular points. The points are symmetrical and isosceles in outline. Three of the points are bifacially flaked and biconvex in cross-section, while the remaining specimen is unifacially retouched and thus exhibits a plano-convex cross-section. Secondary retouching consisted of fine to medium pressure flaking along the lateral edges with one of the specimens exhibiting uniform serration on both lateral edges. The specimens vary in length from 15.1 mm. to 28.2 mm. and range in basal width from 10.9 mm. to 20.1 mm. Maximum thickness varies between 2.1 mm. and 5.8 mm. Two of the specimens were manufactured from white chert, while the remaining two specimens were made from quartzite.

Sub-type two: This sub-type, pictured in Figure E-2, is represented by three triangular points with sub-concave bases. The specimens are symmetrical and isosceles in outline and display fine and even retouching along their lateral edges. The specimens have been bifacially flaked, exhibiting a biconvex cross-section. The specimens vary in length from 16.1 mm. to 23.2 mm. and range in width from 5.9 mm. to 14.1 mm. Maximum thickness varies from 2.4 mm. to 5.6 mm. The specimens have been manufactured from chert with a color variation of white to slate grey.

Sub-type three: One triangular point exhibits a convex base. The point is symmetrical and isosceles in outline. The specimen had

Figure E-2. Pemene Falls Lithics; (A) Projectile Points, (B) Bifacial Implements.



A



B



been bifacially flaked and displays a biconvex cross-section. The point exhibits secondary retouch, consisting of fine pressure flaking along both the lateral edges. The specimen measures 30.1 mm. in length and 21.9 mm. in width. Maximum thickness of the specimen is 3.9 mm. This point was manufactured from white chert.

Straight Stemmed Points

One complete specimen and two basal fragments are included in this category. All three specimens share the common attribute of a straight sided basal stem. In addition, all of the points are symmetrical and laterally convex in outline with biconvex cross-sections. All of the specimens are bifacially worked, exhibiting flaking scars along their lateral edges. The single complete specimen measures 52.1 mm. in length. Shoulder width of the three specimens varies from 17.1 mm. to 29.5 mm. Maximum thickness ranges from 5.9 mm. to 9.8 mm. Stem length varies from 8.3 mm. to 14.8 mm. Two of the stems have straight bases. The remaining stem has a convex base. Two of the specimens were manufactured from grey white chert. The remaining specimen has been made from quartzite.

Side Notched Points

This category consists of three projectile points, all of which display distinctive side notching. Two of the specimens are complete, while the remaining specimen is missing a portion of the base and lateral edge. The three points are symmetrical in outline. Two of the specimens are bifacially flaked and biconvex in cross-section, while the remaining specimen is unifacially flaked and plano-convex in cross-section. Secondary retouch consists of generally fine pressure

suitable for knapping. Instead, the inhabitants of the site appear to have concentrated on using local materials, no matter how poor the quality of the available material, thus accounting for the generally haphazard workmanship which characterizes the lithic assemblage at the site. There appears to have been no attempt to procure better quality raw materials. "Exotic" material is noticeable only by its total absence in the lithic assemblage.

A total of eighty-six artifacts representing approximately 5 percent of the total recovered lithic debris was classified as follows: triangular points (8 examples); stemmed points (3 examples); side notched points (3 examples); knives (4 examples); scrapers (14 examples); spokeshaves (2 examples); wedges (10 examples); bifacial implements (6 examples); unifacially retouched implements (4 examples); unifacially retouched flakes (7 examples); blades (4 examples); block cores (5 examples); bipolar cores (5 examples); utilized flakes (4 examples); ground stone (1 example); and hammerstones (6 examples).

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Sub-type two: This sub-type, pictured in Figure E-2, is represented by three triangular points with sub-concave bases. The specimens are symmetrical and isosceles in outline and display fine and even retouching along their lateral edges. The specimens have been bifacially flaked, exhibiting a biconvex cross-section. The specimens vary in length from 16.1 mm. to 23.2 mm. and range in width from 5.9 mm. to 14.1 mm. Maximum thickness varies from 2.4 mm. to 5.6 mm. The specimens have been manufactured from chert with a color variation of white to slate grey.

Sub-type three: One triangular point exhibits a convex base. The point is symmetrical and isosceles in outline. The specimen had

Figure E-2. Pemene Falls Lithics; (A) Projectile Points, (B) Bifacial Implements.



A



B



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Straight Stemmed Points

One complete specimen and two basal fragments are included in this category. All three specimens share the common attribute of a straight sided basal stem. In addition, all of the points are symmetrical and laterally convex in outline with biconvex cross-sections. All of the specimens are bifacially worked, exhibiting flaking scars along their lateral edges. The single complete specimen measures 52.1 mm. in length. Shoulder width of the three specimens varies from 17.1 mm. to 29.5 mm. Maximum thickness ranges from 5.9 mm. to 9.8 mm. Stem length varies from 8.3 mm. to 14.8 mm. Two of the stems have straight bases. The remaining stem has a convex base. Two of the specimens were manufactured from grey white chert. The remaining specimen has been made from quartzite.

Side Notched Points

This category consists of three projectile points, all of which display distinctive side notching. Two of the specimens are complete, while the remaining specimen is missing a portion of the base and lateral edge. The three points are symmetrical in outline. Two of the specimens are bifacially flaked and biconvex in cross-section, while the remaining specimen is unifacially flaked and plano-convex in cross-section. Secondary retouch consists of generally fine pressure

flaking on both sides of the lateral edges. The notches range in maximum width from 2.1 mm. to 4.3 mm. Basal treatment is sub-convex for two of the specimens, while the remaining specimen has a straight base.

The specimens vary in length from 20.1 mm. to 30.4 mm. and range in width from 15.2 mm. to 20.9 mm. Maximum thickness varies from 4.1 mm. to 6.3 mm. Two of the specimens were manufactured from white and grey cherts, while the remaining specimen was made from a milky quartzite.

Knives

Two complete specimens and two incomplete specimens, which are missing portions of their basal edges, have been classified as knives. The four specimens have been identified on the basis of three shared characteristics: the specimens are all asymmetrical and thus were probably not intended for use as projectile points; the specimens exhibit a characteristic saw-like edge produced by the removal of flakes from alternating faces of the tool; and the lateral edge or edges appear dulled through extensive use.

Three of the specimens are bifacially flaked and biconvex in cross-section, while the remaining specimen is plano-convex in cross-section.

The specimens vary in maximum length from 36.1 mm. to 63.9 mm. and range in maximum width from 16.1 mm. to 32.5 mm. Thickness varies from 7.3 mm. to 11.1 mm. Two of the specimens were made from brown and grey cherts, while the remaining two specimens were made from a tannish quartzite and a grey basalt.

Scrapers

Fourteen chipped stone artifacts exhibit the steeply beveled edge typical of scraping tools. All of the specimens have been manufactured from locally available coarse grain cherts with color variation extending from white to dark grey.

Three distinct types of scraping tools are recognized within the general category. These are: end scrapers, scraping tools on which the beveled edge has been placed opposite the bulb-of-percussion; side scrapers, scraping tools with beveled edges placed to either side of the bulb-of-percussion; and side and end scrapers, scraping tools with a beveled edge located opposite the bulb-of-percussion and one or more beveled edges located to either side of the bulb-of-percussion.

End Scrapers

This type is represented by five specimens ranging in maximum length from 23.1 mm. to 48.5 mm. Maximum width varies between 13.9 mm. and 26.1 mm. with a maximum thickness range of 2.8 mm. to 8.1 mm. Three of the specimens are rectangular in outline, while the remaining two specimens are generally elliptical in shape. The scrapers are all unifacial in workmanship and plano-convex in cross-section, with secondary retouch applied to the distal end of the tools.

Side Scrapers

Five specimens were identified as side scrapers. These scrapers range in maximum length from 14.1 mm. to 28.2 mm. Maximum width varies from 11.9 mm. to 22.9 mm. with a maximum thickness of 4.2 mm. to 7.9 mm. Three of the specimens exhibit oval outlines, while the remaining two specimens display rectangular shapes. The scrapers are

essentially flakes, unmodified except for steeply beveled retouch applied along a lateral edge.

Side and End Scrapers

This category consists of four specimens, each of which exhibits retouching along one or both of the lateral edges and on the end opposite the bulb-of-percussion. The specimens range in maximum length from 14.7 mm. to 31.2 mm. and vary in maximum width from 13.9 mm. to 21.2 mm. Maximum thickness ranges from 3.9 mm. to 8.5 mm. All of the scrapers are generally oval in outline. The specimens exhibit retouch along the entire perimeter of the tool, except for the area immediately adjacent to the bulb-of-percussion.

Spokeshaves

Two lithic fragments exhibiting laterally located concave indentations are included in this category. Secondary retouch is very fine and occurs on the concave portion of the lateral edge. The presence of concave cutting edges suggests the utilization of these artifacts as shaping tools for use in the manufacturing of cylindrical objects such as arrow shafts or bone implements.

The larger of the two artifacts is 37.1 mm. in maximum length, 20.9 mm. in maximum width, and 9.8 mm. in maximum thickness. The remaining specimen is 25.9 mm. in maximum length, 12.1 mm. in maximum width, and 3.7 mm. in maximum thickness. The largest artifact was manufactured from white chert, while the remaining specimen was made from grey chert.

Wedges

This functionally descriptive category consists of ten small, bifacially worked artifacts. The somewhat irregular specimens range in maximum length from 15.6 mm. to 39.5 mm. and vary in maximum width from 13.5 mm. to 27.2 mm. Maximum thickness ranges from 4.5 mm. to 12.7 mm. Eight of the specimens were manufactured from chert ranging in color from white to dark grey. The remaining two specimens were made from milky quartzite.

All of the specimens exhibit the classic wedge shaped lateral profile, with evidence of heavy battering occurring on the proximal end of the tool. The distal ends reveal minute striations, suggesting that they were used in the process of manufacturing bone or wooden implements.

Bifacial Implements

This category includes six tools of uncertain function. Three of these specimens are shown in Figure E-2. The artifacts are all crudely flaked and were, with one exception, manufactured from coarse grained cherts with poor fracture properties. The one non-chert specimen was produced from quartzite. Four of the artifacts are broken, thus preventing satisfactory identification of their completed shapes. The two complete specimens and the distal and proximal fragments, however, suggest that all of the specimens were roughly oval or elliptical in outline.

The two completed specimens range in length from 30.7 mm. to 40.5 mm. and vary in width from 14.6 mm. to 32.2 mm. Maximum width for the six specimens varies from 4.3 mm. to 16.9 mm.

Comparable artifacts have been recovered from a number of sites in the upper Great Lakes region and have been variously interpreted as blanks (Mason, 1966) and bifacial ovates (McPherron, 1967). Although these artifacts may represent some intermediate stage in the production of a bifacial tool, the extremely poor workmanship and apparent choice of whatever raw materials were at hand suggest that they were finished tools. It is probable that these were tools of expediency, hastily made to perform a specific task at hand and discarded after use.

Unifacially Retouched Implements

Four large and relatively massive artifacts of chipped stone are included in this category. Three of these implements are illustrated in Figure E-3. In all cases, unifacial secondary retouch appears on the distal ends of the tools. Additionally, the retouched area exhibits evidence of heavy battering, as through use. Three of the specimens are roughly oval in outline, while the remaining specimen displays a rectangular shape. The specimens vary in length from 46.1 mm. to 82.9 mm. Maximum width varies from 24.1 mm. to 70.9 mm., with a maximum thickness range of 13.9 mm. to 23.8 mm. Two of the specimens were manufactured from a grey basalt, while the remaining two specimens were made from brown chert and grey quartzite.

Unifacially Retouched Flakes

Seven flakes exhibit secondary retouch on one or more localized areas on the dorsal or ventral surfaces. Four of the specimens were made from locally available chert, ranging in color from white to slate grey. The remaining three specimens were made from a greyish basaltic material.

Figure E-3. Pemene Falls Lithics; Unifacially Retouched Implements.


1 2 3 4 5 6 7 8 9 10
1 2 3 4

Blades

Four lithic fragments are included in this category. The specimens are all parallel sided and at least twice as long as they are wide. Two of the specimens are triangular in cross-section, while the remaining two specimens are trapezoidal. All of the specimens exhibit flake scars, located parallel to the longitudinal axis of the blade. The artifacts range in maximum length from 24.9 mm. to 45.8 mm. Maximum width ranges from 11.2 mm. to 20.2 mm.

Block Cores

Five large cores are included in this category. The specimens are generally irregular in outline, but may be loosely characterized as rectangular. Four of the specimens were manufactured from whitish-tan quartzite, while the remaining specimen was made from grey quartzite. These artifacts range in length from 36.1 mm. to 71.2 mm. and vary in maximum width from 25.8 mm. to 43.5 mm. Maximum thickness varies from 21.3 mm. to 30.2 mm.

Bipolar Cores

A total of five bipolar cores were recovered from the Pemene Falls site. Four of the specimens are of the polyhedral type, while the remaining specimen is somewhat flat. Three of the artifacts were manufactured from milky quartzite, while the remaining two specimens were made from grey chert.

All of the cores in the polyhedral group exhibit parallel flake scars, extending the entire longitudinal axis of the artifact. Battering is exhibited on both ends, but tends to be heavier on one end than the other. The end which displays the heaviest battering was

probably placed on an anvil during the flake removal process. This would subject it to repeated rebounding when the opposite end was struck. The polyhedral specimens range in maximum length from 24.9 mm. to 27.2 mm. Maximum width varies from 9.1 mm. to 15.2 mm., while the maximum thickness ranges from 7.4 mm. to 9.1 mm.

The remaining bipolar core exhibits opposed parallel ridges on the side opposite the flat surface, producing a plano-convex cross-section. The specimen exhibits bipolar battering, with one end assuming a somewhat pointed shape. Maximum length of the artifact is 18.9 mm., while the maximum width is 14.9 mm. The maximum thickness is 3.8 mm.

Utilized Flakes

Four unretouched flakes exhibit one or more worn edges, indicating the flake was used as either a cutting or scraping tool. Two of the specimens were manufactured from white quartzite, while the remaining two specimens were made from brown and grey cherts.

Ground and Pecked Stone

Axe

This category consists of one groundstone artifact, representing the distal portion of an axe or similar tool. The specimen exhibits smooth dorsal and ventral surfaces, converging at the distal end to form a sharp edge. The specimen is 56.8 mm. in length, 67.1 mm. in width, and 16.9 mm. thick.

Hammerstones

Six rather massive, generally rounded artifacts are included in this category. The specimens display smooth surfaces with areas of

localized battering. Maximum length varies from 67.1 mm. to 93.2 mm. while the maximum width ranges from 44.6 mm. to 74.9 mm. Maximum thickness varies between 36.3 mm. and 46.1 mm.

Although some surface smoothing may be the result of natural weathering, in at least three cases, it is clearly the result of artificial modification.

Copper

Eight pieces of copper, weighing a total of 49.8 grams, were recovered from the Pemene Falls site. Of these, four specimens are complete artifacts, while the remaining four specimens are hammered copper fragments varying in their degree of workmanship.

Socketed Point

One symmetrically shaped artifact has been classified as a socketed point. The socket has been formed by folding the lateral edges of a flattened piece of copper over a shaft. The distal portion of the point exhibits flat dorsal and ventral surfaces with rounded lateral edges. The artifact is 64.2 mm. in length, 12.5 mm. in width, and 6.9 mm. thick.

Toggle Harpoon Head

One artifact has been classified as a toggle harpoon head. The specimen has been manufactured from copper pounded into a flat diamond shape piece approximately 43.9 mm. long, 23.0 mm. wide, and 2.1 mm. thick. The lateral edges of this prepared copper were then folded around a shaft producing a point symmetrical and conical in shape. Two small circular holes, 3.3 mm. and 2.7 mm. in diameter,

have been drilled through the specimen. The largest hole has been drilled through the right lateral edge, 17.9 mm. from the distal end, while the smaller hole has been drilled to the left of the longitudinal axis, 17.8 mm. from the distal end.

Knife

One asymmetrically shaped artifact has been classified as a knife. The specimen exhibits a crescent shape and flat lateral edges. The specimen is uniform in thickness, with no appreciable variation between proximal and distal ends. Evidence of a hafting element such as a tang or notch is absent. The artifact is 27.5 mm. in length, 10.9 mm. in width, and 3.7 mm. thick.

Pendant

One oval shaped artifact has been identified as a pendant. The specimen has been manufactured from copper, pounded into a flat, roughly rectangular shaped piece approximately 52.7 mm. long and 1.9 mm. thick. The piece has a maximum width of 9.8 mm. but tapers to 4.5 mm. The tapering ends of this prepared copper were then bent down and inward, joining at the vertical mid-axis of the fragment. This technique has produced a pendant with a hiatus 14.4 mm. wide and 3.4 mm. high in the interior of completed artifact.

Hammered Copper Fragments

Four copper specimens exhibit varying degrees of hammering. Two of the specimens exhibit only minor alteration and display irregular outlines. These two fragments weigh 5.1 and 2.3 grams respectively.

The remaining two specimens have been hammered into a definitive shape, but lack the further workmanship required of completed artifacts. One of the specimens is triangular in shape, exhibiting a smooth dorsal surface and an irregular ventral surface. The lateral edges exhibit a fractured contour, indicative of breakage during the production of conical points. The specimen measures 37.8 mm. in maximum length, 12.9 mm. in maximum width, and 4.5 mm. in maximum thickness. The remaining specimen is crescent shape in outline. One end of the specimen is straight, while the other end is somewhat rounded. The specimen is 32.1 mm. in length, 10.5 mm. in width, and 4.6 mm. thick.

Features

One feature was identified and excavated at the Pemene Falls site. The feature was located in test pit 10, excavated during the 1973 field season. The circular stain identified as feature 1 was located in the southwest quarter of test pit #10, and has been interpreted as a hearth. The stain, which had a diameter of 68 cm., was encountered at 24 cm. below surface and extended 16 cm. to a depth of 50 cm. below surface. Soil within the feature consists of black organically stained sand. Contents of the feature included six chert flakes, fire cracked rock, and charcoal.

Conclusions

Cultural material at the Pemene Falls site was distributed in a shallow, scattered deposit along a high ridge which parallels the Menominee River at the base of the falls. The majority of the recovered cultural material consists of lithic debitage, most of which is not sufficiently diagnostic to aid in identification of the cultural

components at the site. The sherds recovered from the Pemene Falls site exhibit traits indicative of Late Woodland in the upper Great Lakes area, and the Oneota aspect of the Upper Mississippian phase in Wisconsin and adjacent states. The Late Woodland component is represented by 83 grit tempered cord-marked sherds and several grit tempered sherds with smooth exterior surfaces. Rimsherds associated with this Late Woodland component exhibit traits similar to Madison Ware and the Heins Creek ceramics of the Door Peninsula in Wisconsin. The Oneota aspect is represented at the site by 144 shell tempered sherds and 46 grit tempered sherds which exhibit a smooth exterior finish and a paste structure, which is markedly similar to the shell tempered sherds. Classifiable Oneota sherds include Carcajou Plain, Grand River Plain, and Grand River Trailed.

The Late Woodland ceramics were recovered in direct association with Oneota material, suggesting the co-existence of two spheres of influence at the Pemene Falls site, Woodland and Upper Mississippian. However, cultural interaction between the emergent Oneota and Late Woodland in the northern Lake Michigan area is not well understood at this time, and cultural material recovered from the Pemene Falls site is too limited to permit meaningful discussion of the cultural dynamics involved.

Assigning a relative date to this site is tentative due to the restricted extent of the cultural material recovered, but with the occurrence of Madison Ware and Carcajou Plain, Grand River Plain, and Grand River Trailed, a date of A.D. 1000 to A.D. 1300 is suggested.

Cultural material was thinly scattered along half a mile of riverbank at the Pemene Falls site. Nowhere was there evidence of a

midden or storage and refuse pits, indicative of a relatively large settled population. Instead, the thin, shallow deposit and, except for a single hearth, the lack of features, suggests the site was utilized on a seasonal basis by a restricted population which may have regularly returned to the general area of the falls for a short period of time.

APPENDIX F

THE PEMENE CREEK SITE

APPENDIX F

THE PEMENE CREEK SITE

Introduction

The Pemene Creek site is located on Government Lot 2, Section 21 (T.37N,R.28W) in Menominee County, Michigan. The site is situated along the north bank of Pemene Creek, approximately 100 meters upstream from the point at which Pemene Creek empties into the Menominee River. The area from which cultural material was recovered extends approximately 0.6 km. along the bank of the creek and is bounded on the north by a high ridge. Thus the site is actually situated in a lowland ecozone which differs markedly from that of the nearby Menominee River.

The area in which the site is located is presently the property of Wisconsin Michigan Power Company, and is largely undeveloped, with the exception of a Michigan Department of Natural Resources access site and a minimal facilities campground. The site proper is thus relatively undisturbed and, hopefully, will remain so for the near future.

The Pemene Creek site was archaeologically tested in 1973 by a Northern Michigan University field crew. A system of stratified unaligned sampling was used to randomly locate six 2 x 2 meter test pits within an area of 2,700 square meters. The test pits were dug to an average depth of 30 cm. and all earth removed from the test pits was sifted through screens of half-inch hardware cloth. Materials

recovered included a variety of historic and prehistoric artifacts. All test pits were backfilled at the end of the field season, and further excavations were planned.

The site was not revisited until the latter half of Northern Michigan University's 1976 field season. At this time, a second crew of students, under the direction of John Franzen, excavated an additional three 2 x 2 meter test pits. The site was relocated, using guidelines proposed by the 1975 Conference on Surveying Woodland Environments. These guidelines are, in effect, a standardized set of procedures particularly suitable for accurately surveying the heavily forested areas typical of the upper Great Lakes region. The system is somewhat reminiscent of the military procedure used for cleaning parade grounds, known as "policing the area." Briefly, the system involves orienting crew members on a baseline at intervals of 15 meters. The entire line then advances, at right angles, to the base line in increments of 15 meters. At each 15 meter interval, a small shovel test pit is dug and studied for evidence of prehistoric occupation. Any size area can thus be effectively gridded, and coordinates of shovel tests producing cultural material can be easily plotted. Three test pits were then located in the areas of highest artifact concentration.

An interesting aspect of the two seasons of field work at Pemene Creek involves the results obtained from the different sampling procedures used in 1973 and 1976. Results suggest that random sampling techniques, while useful in dealing with a known site, maybe somewhat inappropriate when attempting to locate or define the extent of poorly understood sites. This is particularly evident in a heavily forested woodland environment like that of the Pemene Creek area.

The 1973 tests at Pemene Creek indicated a very sparse and localized prehistoric occupation of questionable archaeological value. However, when woodland surveying techniques were employed in 1976, much different picture emerged. Results of the survey suggested that although cultural materials were sparsely deposited, the site itself occupied a much larger total area than was previously believed. Additionally, several previously undiscovered concentrations of cultural material were located.

Comparisons of the two systems strongly suggest that the Woodland surveying technique is far superior in the heavily forested areas of the upper Great Lakes region.

Once located, these three test pits were dug to an average depth of 30 cm. and all excavated material was sifted and screened through half-inch hardware cloth. Test pit levels were excavated in depths determined by changes in soil color and artifact density. Each level, regardless of its depth, was recorded on a square sheet. Cultural concentrations were assigned separate provenience designations and photographed in situ. Soil from cultural concentrations was flotated at the site, using three sixty-fourths inch screen mesh, and all organic material was preserved for future analysis. All test pits were backfilled and raked clean at the end of the field season.

Cultural material and field records relating to the 1973 and 1976 excavations at Pemene Creek are housed in Northern Michigan University's Birdseye Building.

I would like to take this opportunity to extend my gratitude to the Iron Range Historical Society for their initial interest in and support of the 1973 archaeological field season. Without their

cooperation, the initial archaeological field work would have been infinitely more difficult. The entire 1973 field crew will remember the friendship and warmth shown us by Mr. Dean Turner and Dr. Newkirk, former members of the Historical Society. I am also grateful to the Wisconsin Michigan Power Company for permission to excavate on the corporate land at Pemene Creek and for use of the campsite facilities the company maintains at Chalk Hill.

Pottery

The 1973 and 1976 field seasons at the Pemene Creek site produced a limited sample of ceramic material. A total of forty-three sherds was recovered during the two field seasons. This total includes twenty-nine grit tempered and fourteen shell tempered sherds. The twenty-nine grit tempered sherds are represented by nineteen grit tempered cord-marked body sherds, nine grit tempered smooth body sherds, and one decorated grit tempered smooth rimsherd. The fourteen shell tempered sherds include ten shell tempered smooth body sherds, three shell tempered smooth rimsherds, and one shell tempered cord-marked rimsherd.

A total of five rimsherds was recovered, only three of which exhibited attributes which were similar to previously established Wisconsin and Michigan ceramic types. These three rimsherds, classified as Grand River Plain, represent a single vessel. These sherds are shell tempered and display smooth, undecorated exterior and interior surfaces. The sherds measure 6.5 mm. in thickness and have a slightly everted rim profile, with a pronounced shoulder beginning 11.4 mm. below the lip. The lip of the vessel is smooth, round and undecorated.

One rimsherd, identified only as unclassified smooth cord-wrapped stick impressed, is grit tempered by the addition to the paste of fine to medium sized particles of crushed granitic material. The interior and exterior surfaces are smooth and plain. The sherd is 5.1 mm. thick. The rimsherd is decorated with parallel rows of cord-wrapped stick impressions, placed perpendicular to the lip on the exterior surface. The lip, which is 4.9 mm. wide, is smooth and rounded. The rim has a straight profile. There are no other decorations on either the interior or exterior surfaces of the sherd.

The remaining rimsherd has been categorized as unclassified Oneota. The rimsherd is shell tempered by the addition to the paste of fine to medium sized particles of crushed shell. The exterior surface is cord-marked. The interior surface is smooth and plain. The sherd measures 5.2 mm. in thickness. The lip exhibits the notching characteristic of Carcajou Plain ceramics. The notching has been applied directly on the top of the lip, with the impressions measuring 7.4 mm. in width. The lip measures 4.8 mm. in thickness.

Lithic Description

Introduction

The single largest category of cultural material recovered from the Pemene Creek site consists of lithic debris. A total of 1,192 fragments of worked and unworked basalt, chert, and quartzite materials is included in the sample. Basalt is the most extensively utilized raw material, with 665 fragments exhibiting striking platforms and bulbs-of-percussion. Chert is represented by 336 specimens of worked

and unworked material. Quartzite accounts for 191 specimens of the total lithic material recovered.

A total of forty-two artifacts, representing approximately 4 percent of the total lithic debris, was classified as follows: triangular points (6 specimens); distal projectile point fragments (1 specimen); blades (3 specimens); side scrapers (3 specimens); end scrapers (6 specimens); side and end scraper (1 specimen); spokeshave (1 specimen); wedges (5 specimens); bifacially retouched flakes (3 specimens); unifacially retouched flakes (2 specimens); utilized flakes (6 specimens); and block cores (2 specimens). Ground and pecked stone tools are represented by two hammerstones and one anvil. Several of these artifacts are pictured in Figure F-1.

The material utilized is of a poor quality, which accounts for the haphazard workmanship characteristic of the lithic industries at the Pemene Creek site. There is no evidence of any attempt to procure higher quality raw materials.

Chipped Stone

Projectile Points

Triangular Points

Six triangular points were recovered from the Pemene Creek site. This category consists of four complete specimens, one basal fragment, and one entire lateral edge. These points are similar to those recovered at the Juntunen site by McPherron (1967).

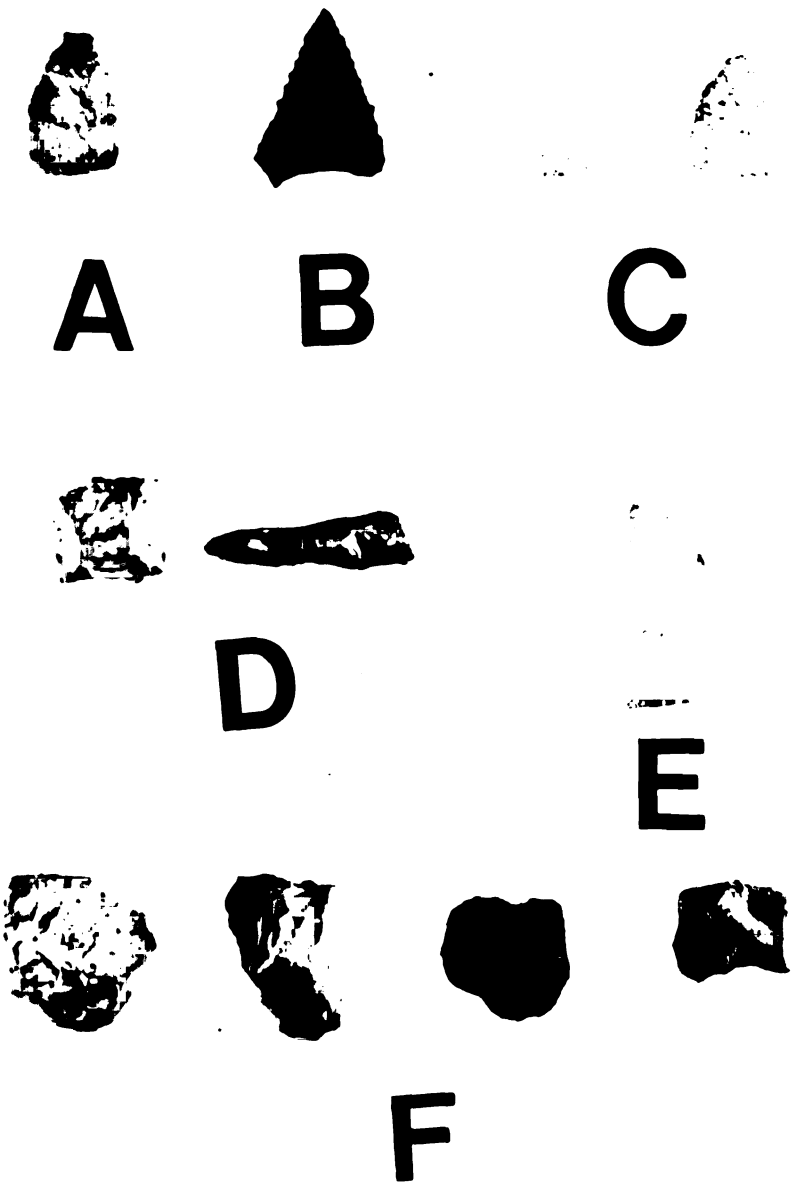
Morphological variation within the general type suggested further sub-division into three sub-types according to basal shape.

The sub-types identified are: sub-type 1, points with straight bases; sub-type 2, points with sub-concave bases; and sub-type 3, points with convex bases.

Sub-type 1: This sub-type consists of four points, all of which are symmetrical and isosceles in outline. Two of the specimens are bifacially worked and are biconvex in cross-section, while the remaining two are unifacially flaked and thus exhibit a plano-convex cross-section. Secondary retouch consists of fine to medium pressure flaking along the lateral edges. The points range in length from 28.0 mm. to 17.0 mm., while width varies from 16.2 mm. to 11.5 m. The specimens range in thickness from 2.7 mm. to 6.2 mm. Two of the points were manufactured from a coarse grained white chert, while the remaining two specimens were knapped from a milky white quartzite.

Sub-type 2: This sub-type is represented by one triangular point with a sub-concave base. The specimen is symmetrical and isosceles in outline and displays fine and even retouching along both lateral edges. The point is bifacially flaked and biconvex in cross-section. The specimen measures 22.0 mm. in length, 17.6 mm. in width, and is 4.0 mm. thick. The specimen was manufactured from a coarse grained chert of slate grey color.

Sub-type 3: This sub-type consists of one triangular point with a convex base. The point is symmetrical and isosceles in outline. The specimen exhibits unifacial workmanship and is plano-convex in cross-section. The point is 19.3 mm. long, 13.0 mm. wide, and 2.0 mm. thick. Raw material used in the manufacture of the specimen is a cream colored fine grained chert.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1 2 3 4

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Distal Fragment

This category consists of one chipped stone fragment, senting the distal element of a projectile point. The specimen has been unifacially flaked, with fine bifacial retouching occurring along both of its lateral edges. The distal fragment is plano-convex in cross-section and measures 36.5 mm. in maximum length and 16.1 mm. in maximum width. Maximum thickness of the specimen is 5.1 mm. A light brown quartzite was used in the manufacturing of the artifact.

Scrapers

Ten chipped stone artifacts exhibit the steeply beveled edge typical of scraping tools. Nine of the specimens have been manufactured from locally available chert, with color variation extending from white to dark grey. The remaining specimen has been manufactured from a milky white quartzite.

Three distinct types of scraping tools are recognized within the general category. These are: end scrapers, scraping tools on which the beveled scraping edge has been placed opposite the bulb-of-percussion; side scrapers, scraping tools with the beveled scraping edge placed to either side of the bulb-of-percussion; and side and end scrapers, scraping tools with a beveled scraping edge located opposite the bulb-of-percussion and on one or more lateral sides of the tool.

End Scrapers

This type is represented by six specimens, ranging in maximum length from 17.5 mm. to 36.7 mm. Maximum width ranges from 13.7 mm. to 24.9 mm. with maximum thickness ranging from 2.7 mm. to 9.2 mm. Four of the specimens are oval to elongated in outline, while the

remaining two specimens are rectangular in shape. The scrapers are unifacial in workmanship and plano-convex in cross-section, with secondary retouch applied to the distal end of the tools.

Side Scrapers

Three specimens are included in this category. They range in maximum length from 26.4 mm. to 29.5 mm. Maximum width ranges from 9.8 mm. to 15.5 mm. with a maximum thickness of 2.6 mm. to 7.8 mm. All of the specimens are rectangular in outline. The scrapers are essentially flakes, unmodified except for steeply beveled retouch applied along a lateral edge.

Side and End Scrapers

One specimen exhibits retouching along both of the lateral edges and on the end opposite the bulb-of-percussion. The specimen measures 16.2 mm. in length and 15.1 mm. in width. Maximum thickness of the specimen is 6.1 mm. The specimen is generally oval in outline and plano-convex in cross-section.

Blades

Three lithic fragments are included in this category. The specimens are all parallel sided and are at least twice as long as they are wide. Two of the specimens are trapezoidal in cross-section, while the remaining specimen is triangular in cross-section. All of the specimens exhibit flake scars located parallel to the longitudinal axis of the blade. The artifacts range in length from 27.0 mm. to 54.8 mm. Maximum width of the specimens varies from 10.5 mm. to 19.9 mm. while maximum thickness varies from 3.1 mm. to 11.5 mm.

Two of the specimens were manufactured from a fine grained grey chert, while the remaining specimen was knapped from dark grey basalt.

Wedges

This functionally descriptive category consists of five small, bifacially worked artifacts. The specimens range in maximum length from 15.1 mm. to 32.3 mm. and vary in maximum width from 12.2 mm. to 23.5 mm. Maximum thickness ranges from 5.5 mm. to 9.8 mm. Four of the specimens have been manufactured from a fine grained chert, ranging in color from white to dark grey. The remaining specimen has been manufactured from a grey white quartzite.

All of the specimens exhibit a wedge shaped lateral profile with evidence of heavy battering occurring on the proximal end of the tools. Distal ends reveal minute striations as a result of being driven through wood or bone.

Spokeshave

One lithic fragment exhibiting a laterally located concave indentation has been interpreted as a spokeshave. Secondary retouch is very fine and occurs only on the concave portion of the lateral edge, suggesting the utilization of this artifact as a shaping tool used in the manufacturing of cylindrical objects such as arrow shafts or bone implements.

The specimen measures 34.5 mm. in maximum length and 14.9 mm. in maximum width. Maximum thickness is 5.2 mm. The artifact was manufactured from a fine grained chert of whitish color.

Block Cores

Two relatively large cores have been included in this category. The specimens are irregular in outline but may be loosely categorized as rectangular.

Striking platforms and large flake scars are evident on both specimens. In addition, each core retains a portion of the original cortex. These artifacts were probably the result of a preliminary process in the production of flake tools and were discarded when flakes of suitable size and shape could no longer be driven off.

The larger of the two specimens is white quartzite and measures 41.2 mm. in length and 33.9 mm. in width. Maximum thickness is 25.8 mm. The remaining specimen is 27.5 mm. long, 16.2 mm. wide, 12.3 mm. thick, and is a fine grained grey chert.

Unifacially Chipped Stone Tools

Two large artifacts exhibit unifacial retouching along one of their lateral edges. One artifact is oval in shape, while the other is roughly triangular in outline. The artifacts were probably utilized as chopping or cutting tools. The larger of the two specimens is 81.1 mm. long and 63.9 mm. wide with a maximum thickness of 26.5 mm. The remaining specimen is 47.5 mm. long, 36.2 mm. wide and 18.1 mm. thick. One specimen was manufactured from quartzite while the other specimen is of dark grey basaltic material.

Retouched Flakes

Three flakes exhibit bifacial retouching along two or more edges. The specimens range in length from 18.9 mm. to 33.1 mm. and in width from 12.8 mm. to 28.9 mm. The specimens vary between 2.2 mm. and

10.9 mm. in thickness. Two of the specimens have been manufactured from a grey chert. The remaining specimen has been made from a dark grey basaltic material. The flakes were probably utilized in a variety of cutting and scraping tasks.

Utilized Flakes

Six flakes exhibit one or more worn edges with small irregular flake scars and striations, indicating these flakes were used as either cutting or scraping tools. Three of the specimens were manufactured from a dark grey basaltic material. Two of the specimens were made from a white quartzite material, while the remaining flake was struck from a grey chert core.

Ground and Pecked Stone

Hammerstones

Two large, generally rounded artifacts are included in this category. The specimens exhibit smooth surfaces with areas of localized battering. Both specimens are simply utilized igneous pebbles, the surfaces of which have been smoothed by natural weathering.

The larger hammerstone measures 97.1 mm. in length, 76.8 mm. in width, and is 63.1 mm. thick. The remaining specimen is 49.5 mm. long, 34.0 mm. wide, and 26.5 mm. thick.

Anvil

A single artifact has been identified as an anvil. This specimen is semi-hemispherical in shape, exhibiting a concave working surface which is scarred and pitted from use. No modifications other than

those sustained through use are present on the anvil. The anvil is 117.2 mm. long, 108.0 mm. wide, and 48.0 mm. thick.

Copper

Three copper fragments were recovered from the Pemene Creek site. Two of the fragments are small nodules of hammered copper. The specimens are ovoid in shape, exhibiting highly oxidized surfaces. The longest of the two specimens measures 91 mm. in maximum length, 5.2 mm. in maximum width, and 4.1 mm. in maximum thickness. The other nodule is 8.2 mm. long, 7.1 mm. wide, and 3.5 mm. thick.

The remaining copper fragment exhibits a wedge-shaped lateral cross-section and displays heavy battering on the proximal end of the specimen. In addition, the distal end of the specimen displays minute striations, suggesting that the artifact may have been utilized as a wedge for splitting bone or wood. The artifact has been hammered into a rectangular shape, and measures 26.1 mm. in maximum length. Maximum width of the artifact is 12.3 mm., while the maximum thickness is 7.4 mm.

Conclusions and Summary

The Pemene Creek site produced cultural material which was thinly and unevenly distributed from the surface to approximately 15 cm. below surface. The shallowness of the cultural deposits and lack of a well defined midden layer suggest that the site reflects a short term occupation.

The majority of the recovered cultural material consists of lithic debitage. Unfortunately, this material was not sufficiently diagnostic to aid in identification of the cultural component at the

site. As a result, recognition of the cultural component was accomplished through identification of the recovered ceramic material.

The sherds recovered from the Pemene Creek site constitute a limited ceramic sample. Only three rimsherds and 21 body sherds exhibited traits indicative of previously established Michigan and Wisconsin ceramic types. These 24 sherds display a series of traits indicative of the Oneota aspect of the Upper Mississippian phase in Wisconsin, Minnesota, Illinois, and Iowa. Of the sherds identified as Oneota, 14 are shell tempered and 10 are grit tempered. Although grit tempered, these 10 sherds exhibit a smooth exterior surface finish and paste structure, which is markedly similar to the shell tempered sherds.

One shell tempered cord-marked rimsherd was recovered from the Pemene Creek site. Cord-marked surfaces are rare among reported collections of Oneota ceramics, but their occurrence has been reported in the northern Lake Michigan area.

The Late Woodland ceramics were recovered in direct association with Oneota material. However, cultural interaction between the emergent Oneota and resident Late Woodland cultures in the northern Lake Michigan area is not well understood at this time, and cultural material recovered from the Pemene Creek site is too limited to permit meaningful discussion of the cultural dynamics involved.

Assignment of a relative date to this site is tentative due to the restricted extent of the cultural material recovered, but with the occurrence of Grand River Plain and the relative frequency of triangular points and end scrapers, a date of A.D. 1000 to 1300 is suggested.

APPENDIX G

THE GRAND RAPIDS SITE

APPENDIX G

THE GRAND RAPIDS SITE

Introduction

The Grand Rapids site is located in Section 9 (T.34N, R.27W) in Mellon Township, Menominee County, Michigan. The site is situated at the junction of the Menominee and Little Cedar Rivers. The area is on the east bank of the Menominee River and the north bank of the Little Cedar River. The land is owned by Wisconsin Public Service, which has cleared the land and constructed a boat landing and public access area. A dirt road from the power station provides access to the site, terminating in a teardrop turnaround on the site proper. Beyond the cleared grassy area is a second growth deciduous forest. Several former house foundations are located in this forested area.

Upstream from the site, on the Menominee River, is a rapids and, above that, a man-made dam. A channel constructed by Wisconsin Public Service connects the reservoir from the dam with the Menominee River approximately 1,500 feet north of the site.

In the summer of 1973, a field crew under the direction of Marla Buckmaster excavated fourteen 2 x 2 meter test pits. The test pits were located throughout the site, using a system of stratified unaligned sampling. Using this procedure, the site was first divided into 30 x 30 meter units. These units were then subdivided into 2 x 2

meter potential test pits which were then numbered. A table of random numbers was employed to locate two test pits within each 30 x 30 meter unit, thus ensuring that any recoverable materials would be representative of the entire site.

Because of the presence of numerous post molds in the test pits situated adjacent to the river bed in the 1973 excavations, an additional five 2 x 2 meter excavation units were excavated during the summer of 1975. All five of these units were located on the ridge immediately adjacent to the river bed.

All of the 2 x 2 meter units were excavated in 10 cm. levels to a depth of 60 cm. below surface. Levels one and two were sometimes combined in order to remove the thick, dense sod which covered portions of the site. The excavations revealed a homogeneous medium brown sand below a plow zone throughout most of the site. Along the riverbank, however, several thin lenses of organically stained soil appeared in the wall profiles.

Excavated material was sifted through half-inch hardware cloth. All cultural material recovered in the screens was saved. Square sheets were drawn for each 10 cm. level. When each test pit was excavated to sterile sand, the walls were troweled and profiles drawn whenever features, post molds, or disturbance were noted. All features were assigned individual feature designations. Features were cross-sectioned and the profiles drawn. A soil sample was taken from each feature and saved. This was flotated in the archaeological lab the following fall. All organic material was saved for microscopic analysis.

Cultural materials, field notes, square sheets, wall profiles, and photographs from the Grand Rapids site are housed in the

archaeological laboratory in the Birdseye Building on the campus of Northern Michigan University in Marquette, Michigan, and are catalogued in the archaeological laboratory's coding system between 8.0.0 and 8.15.5.

We are grateful to Wisconsin Public Service Company for permission to excavate on their land. Special thanks is extended to Mr. Curtis Allgeyer, Superintendent of the Grand Rapids Power Station, for his cooperation.

Pottery

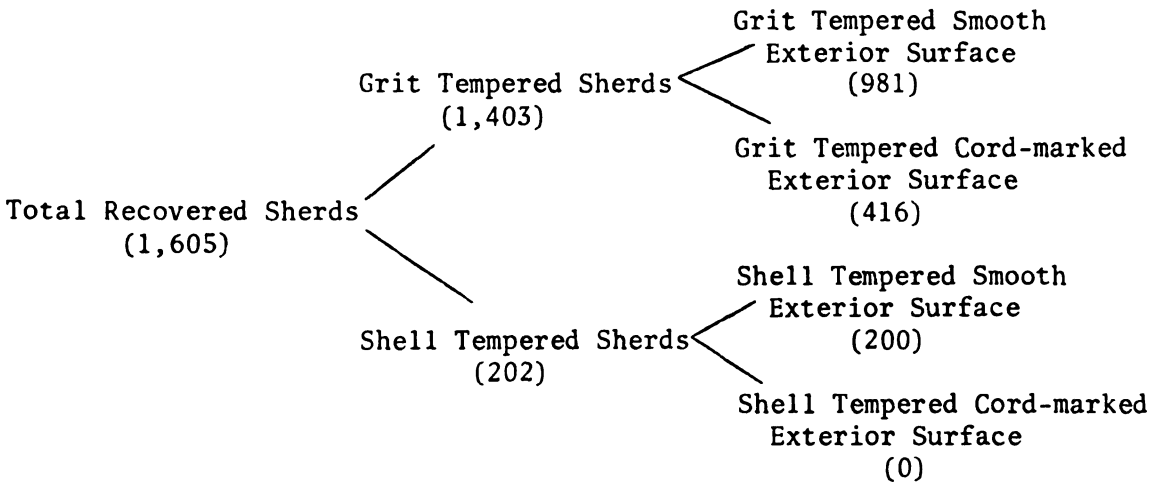
Introduction

A total of 1,605 sherds was collected in the half-inch hardware cloth, washed, counted, and catalogued. Many of these sherds were small and/or exfoliated, but all of the sherds were initially sorted by the tempering agent and secondarily, if possible, according to exterior surface treatment.

Approximately 87 percent or 1,403 sherds were grit tempered in the Grand Rapids ceramic assemblage. The grit was generally fine to medium sized particles of crushed granitic rock. Quartzite fragments were often included as a tempering agent. The remaining 202 sherds were shell tempered.

After the initial sorting by temper, the sherds were sorted according to smooth or cord-marked exterior surfaces, thus creating four ceramic categories. Sherd frequencies in each of the four categories, grit tempered smooth exterior surface, grit tempered cord-marked exterior surface, shell tempered smooth exterior surface, and

shell tempered cord-marked exterior surface, are listed in the diagram below.



After the initial sorting, rimsherds and decorated body sherds were sorted according to decorative techniques applied to the lip, interior surface, and exterior surface, and grouped on the basis of similar decorative motifs. Groups of sherds exhibiting similar arrangement and combination of decorative techniques were then compared to established ceramic types from the upper Great Lakes region. Many rimsherds and decorated body sherds could not be identified with previously established ceramic types. Sherd and/or sample size often limited this identification as well as the possibility of defining new ceramic types; therefore, these sherds are briefly described at the end of the ceramic descriptions, under unclassified sherds.

Middle Woodland Ceramics

Pseudo-Scallop Shell

There are six sherds, one rimsherd and five body sherds, decorated with pseudo-scallop shell impressions from the Grand Rapids site.

The sherds vary in thickness from 5.0 mm. to 9.0 mm. and are tempered with fine to medium sized particles of crushed granitic rock. The body sherds are decorated with parallel rows of pseudo-scallop shell impressions applied over a smooth exterior surface. The interior surfaces are smooth and plain.

The single rimsherd is decorated with vertical rows of oblique scallop impressions, arranged in a horizontal band immediately below the lip. The interior and exterior are smooth and the lip is flattened and plain.

Rocker Stamped Sherds

Two body sherds found at the Grand Rapids site exhibit rocker stamping over a smooth surface. Both are grit tempered and both are 6 mm. thick.

Late Woodland Ceramics

Heins Creek Corded-stamped

Three rimsherds representing two vessels have been identified as Heins Creek Corded-stamped. These rimsherds are tempered with crushed granitic rock. The exterior of the first vessel exhibits a smoothed over cord-marked surface. The two rimsherds which represent this vessel are decorated with corded-stamped impressions placed on a rounded lip. Corded-stamped impressions also decorated the interior surface. The interior impressions are vertical, measuring 6 mm. in length and are spaced at 5 mm. intervals immediately below the lip. The rim which has a slightly everted profile, is 4 mm. thick.

The second Heins Creek vessel, represented by a single sherd, has a slightly everted lip which is flat with oblique corded-stamped impressions 5 mm. deep and 5 mm. wide. The exterior surface is cord-marked. A row of vertical cord-wrapped stick impressions arranged at 8.00 mm. intervals decorates the exterior of the vessel below the lip.

Point Sauble Collared

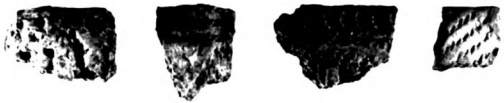
Four rimsherds, representing four vessels, have been classified as Point Sauble Collared. These sherds are pictured in Figure G-1. All examples are broken close to the collar, thus rendering identification of vessel shape and body decoration impossible.

The rimsherds have collars formed by intentionally thickening the upper rim. The collars vary from 15.0 mm. to 20.0 mm. in width, and are 6.5 mm. to 10.0 mm. thick. The lips of these rimsherds are rounded and measure between 5.0 mm. to 6.0 mm. thick.

The decorations are similar but individually distinct. One rimsherd has vertical cord-wrapped stick impressions 9.0 mm. in length and spaced at intervals of 6.5 mm. on the exterior of the collar. The apex of the collar has two parallel rows of twisted cord impressions. Below the collar there are impressions made by a cord-wrapped, curved implement which left sheperd's crook shaped designs at 6.5 mm. intervals. Unfortunately, the sherd is broken so that the total length of the impressions cannot be determined.

A second Point Sauble Collared rimsherd has oblique rows of twisted cord impressions spaced 4.0 mm. apart. The break, at the collar line, is along a horizontal, twisted cord impression.

Figure G-1. Grand Rapids Ceramics; (A) Point Sauble Collared, (B) Unidentified Collared Rimsherds, (C) Carcajou Plain.



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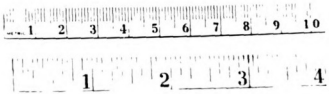


A third Point Sauble Collared rimsherd has horizontal bands of twisted cord impressions made of very fine cord. Over these impressions are knot impressions spaced at 7 mm. intervals. The interior side of the collar has deep cord-wrapped impressions spaced at 9 to 10 mm. intervals.

The fourth Point Sauble Collared rimsherd is exfoliated at both the lip and neck areas, but does show two parallel rows of twisted cord impressions at the apex of the collar.

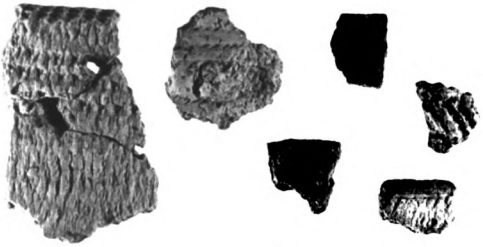
Madison Plain

There are eleven examples of Madison Plain sherds from the Grand Rapids site. The exteriors are cord-marked but undecorated. The interiors are smooth and plain. The rimsherds vary in thickness from 6.0 mm. to 9.1 mm. Of the eleven rimsherds, four have plain, flat to slightly rounded lips. The remaining six have lips decorated with transverse cord impressions arranged either perpendicular or obliquely to the lip.

Madison Cord-impressed

There are nine rimsherds and nine body sherds representing a minimum of four vessels, classified as Madison Cord-impressed, from the Grand Rapids site. Six of these rimsherds are pictured in Figure G-2. The sherds are tempered with fine to medium particles of quartz and/or granitic rock. The exterior surfaces are cord-marked and exhibit secondary smoothing in some cases. All of the vessels are decorated with cord impressions; however, cord-wrapped stick impressions and punctates occur as secondary decorative techniques on some of the sherds. The rimsherds from Grand Rapids site range from 4.0 mm. to

Figure G-2. Grand Rapids Ceramics; (A) Madison Cord-impressed, (B) Cord-wrapped Stick Impressed, (C) Linear Punctate.



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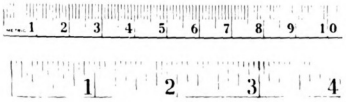


9.0 mm. in thickness. The lips are flattened to slightly rounded and are somewhat thickened.

One vessel, represented by three rimsherds, is decorated with horizontal rows of cord impressions arranged around the interior and exterior of the vessel at 5 mm. intervals. The lip is decorated with transverse cord-wrapped stick impressions.

The remaining rimsherds are decorated with parallel rows of cord impressions, arranged either horizontally or obliquely on the exterior of the vessel. On one vessel horizontal and oblique cord impressions appear in combination. A second vessel is decorated with a combination of lineal cord impressions and cord-wrapped stick impressions. Interior surfaces are plain on three of the sherds. The remaining sherds have vertical cord-wrapped stick impressions arranged in a horizontal row around the interior of the vessel, immediately below the lip.

The nine body sherds have parallel rows of cord impressions spaced at intervals which vary from 1 to 7 mm. in width. The decorations vary from deep and bold to very shallow cord impressions.

Oneota Ceramics

Grand River Plain

There are twelve rimsherds which have been classified as Grand River Plain. All of these are tempered with fine to medium sized particles of crushed shell. The rimsherds range from 4.0 mm. to 8.0 mm. thick with a mean of 5.3.

Three rims have rounded lips, two have squared lips, and two have rounded-square lips. Two rimsherds have a slight lip eversion

or fold of excess clay on the exterior surface. Three of the rimsherds are moderately flared. The remaining rimsherds are too small to provide an accurate description of the rim profiles.

There is no evidence of decorative treatment on the twelve rimsherds; however, tool marks and surface imperfections are apparent. These marks are diagnostic of this ceramic type as defined by Hall (1962). There is no evidence of handles on these sherds.

Carcajou Plain

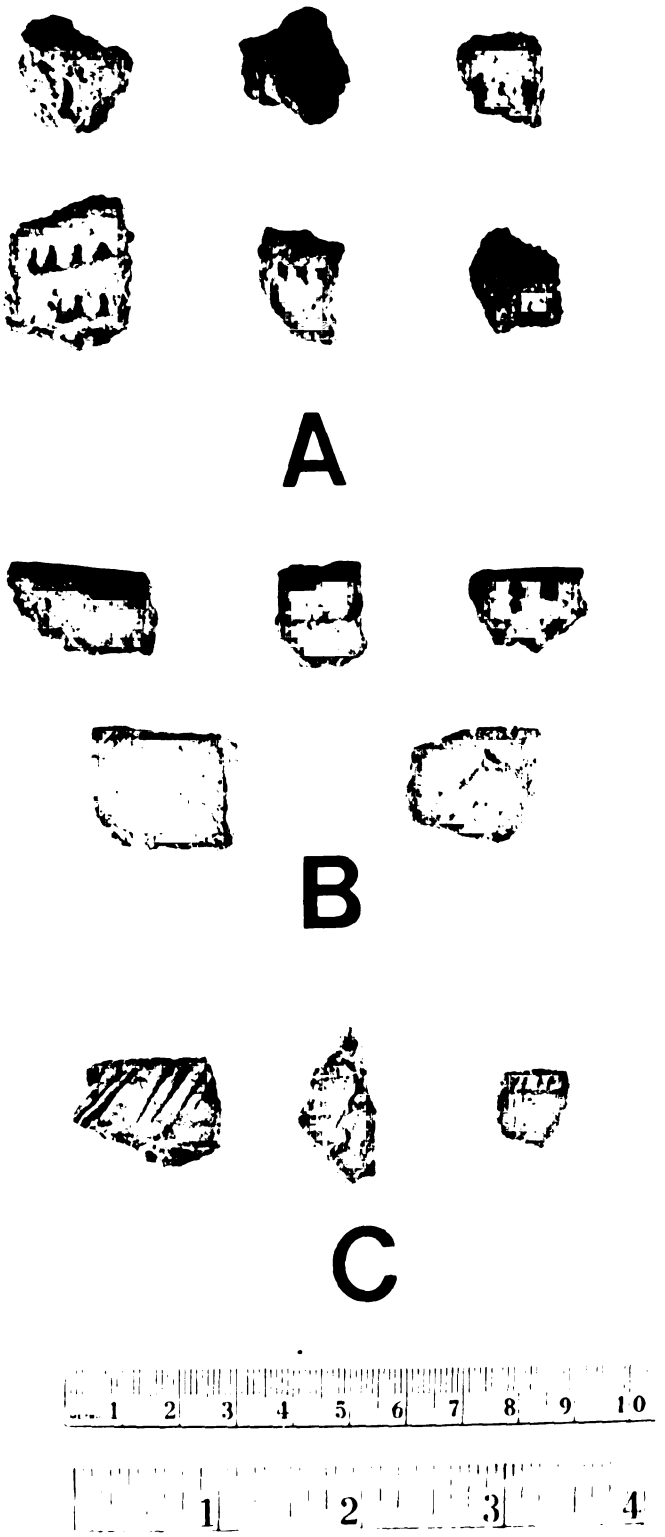
Five rimsherds are classified as Carcajou Plain, each representing a separate vessel. Several of these sherds are shown in Figure G-1. All examples are tempered with fine to medium crushed shell particles. All have smooth interior and exterior surfaces, and all have notched lips.

These sherds range in thickness from 4.0 mm. to 6.0 mm. with lip thickness varying between 5.0 mm. and 6.0 mm. The sole decorative technique exhibited is notching of the lip, located on either the apex or exterior and interior edges of the lip. One example is notched with a thin, sharp object, a second with a blunt or round object leaving a 3 mm. wide depression, and three are notched by the finger-pinch or rounded stick method, creating a sinuous rim circumference.

Grit Tempered Oneota

There are six examples of grit tempered Oneota pottery from the Grand Rapids site. Five of these sherds are pictured in Figure G-3. The sherds exhibit smooth, plain exterior and interior surfaces, and a paste which is similar, except for fine grit particles used as a tempering agent, to the Grand River Plain and Carcajou Plain ceramics.

Figure G-3. Grand Rapids Ceramics; (A) Punctated Sherds, (B) Grit Tempered Oneota Sherds, (C) Unclassified Incised Rimsherd.


A
B
C
1 2 3 4 5 6 7 8 9 10
1 2 3 4

One rimsherd is 7.0 mm. thick, slightly everted, and has an incised line which encircles the vessel on the rounded lip. A second rimsherd is 4.0 mm. thick and punctated immediately below the rim with 2.0 mm. round punctates spaced at 5.0 mm. intervals. A third rimsherd is 8 mm. thick, slightly everted, and incised obliquely on the outer edge of the squared lip. A fourth rimsherd has oblique cord-wrapped markings across the lip. The sixth rimsherd classified as grit tempered Oneota has a smooth undecorated interior and exterior surface and is 4.0 mm. thick. The lip is smooth, plain, and slightly rounded measuring 5.0 mm. in thickness.

In addition to the rimsherds, there is one grit tempered body sherd which has trailed markings on the exterior surface. The inner surface is exfoliated.

Unclassified Sherds

Four collared rimsherds representing three distinct vessels were not classified, but are briefly described below. Sherds representing these vessels are shown in Figure G-1. The first vessel, represented by two rimsherds, is extremely well made from a fine grit tempered paste. The vessel has a smooth interior and exterior surface. The collar is 20.0 mm. wide and 15.0 mm. thick. The exterior of the collar is decorated with vertical cord-wrapped stick impressions 15 to 16 mm. in length and 4 mm. wide. These impressions are carefully spaced at 8.5 mm. intervals. The same cord-wrapped tool was used to form similar vertical impressions arranged in a horizontal row around the upper interior rim. These impressions are the same size as the impressions on the collar, but are spaced at 10.0 cm. intervals. There

is a large, single round cylindrical punctation on the exterior of the sherd, immediately below the collar, which has produced a large node on the interior of the vessel. The projected curve of the vessel's rim indicates the vessel was large with a minimum diameter of 40 cm. The vessel is distinct in the quality of workmanship it exhibits. The exterior and interior surfaces have been carefully smoothed and the decorative impressions precisely and neatly placed. A second grit tempered collared vessel has a slightly everted lip with a small concave collar. The collar, which is 16.1 mm. wide and 8 mm. thick, is marked with a single row of oblique fingernail impressions. Both the interior and exterior of the vessel appear to have been smooth. A third vessel has a smoothed interior surface, a cord-marked exterior surface, and a grit tempered paste. The collar is 28.1 mm. wide and is 6.3 mm. thick at the lip, and 11.3 mm. thick at the apex. The lip is plain and beveled to the interior, and is decorated with cord impressions.

Nine plain, smooth grit tempered sherds were recovered during the excavations at the Grand Rapids site. Except for their plainness, the sherds exhibit no particular identifying characteristics. They vary from 4.5 m. to 7.3 mm. in thickness and have flat to slightly rounded lips. The rim profiles are straight to slightly everted.

Three small and fragmented grit tempered rimsherds exhibit incising as the only decorative technique. Examples of these incised sherds are shown in Figure G-3. One rimsherd has small, fine, incised lines arranged transversely along the upper surface of an everted lip. Two of the rimsherds are decorated with a horizontal row of oblique

incised lines immediately below the lip of the vessel. One of these sherds has an additional band of horizontal incising below the oblique lines.

Forty-two decorated body sherds were recovered from the Grand Rapids site. Most of the sherds were small and frequently exfoliated. All of these sherds were grit tempered and exhibited a variety of decorative techniques which included cord-wrapped stick impressions, incising, trailing, linear punctates, fingernail punctates, and a variety of stick or knotted cord punctates. A single sherd was decorated with a tool which formed a half-moon shaped impression. Several of these sherds are pictured in Figures G-2 and G-3.

A single small, plain grit tempered sherd is broken along the juncture of two coils. The coil break is clearly visible. The sherd varies in thickness from 3.5 to 5.0 mm. and is decorated with fine dentate stamping.

Lithic Description

Introduction

The largest category of cultural material recovered from Grand Rapids site consists of lithic debris. There are 2,285 pieces of worked and unworked chert, quartzite and quartz in the sample. Chert is the most extensively utilized raw material, accounting for roughly two-thirds of the total debitage.

A total of 106 artifacts, representing .4 percent of the total lithic debris, were classified as follows: 17 projectile points; 4 scrapers; 4 knives; 3 bifaces; 2 gravers; 7 wedges; 3 bladelets; 5

pebble cores; 4 bipolar cores; 3 blade cores; 7 retouched flakes; 22 utilized flakes; and 2 hammerstones.

Chipped Stone

Projectile Points

Triangular Projectile Points

The Grand Rapids site yielded seven triangular projectile points; one complete specimen and six fragments were missing either a portion of the base or distal end. Five specimens are shown in Figure G-4. All are bifacially worked, biconvex in cross-section, and manufactured of chert. Only five of the points are complete enough to determine their outline. Four of these are isosceles in outline and one is equilateral.

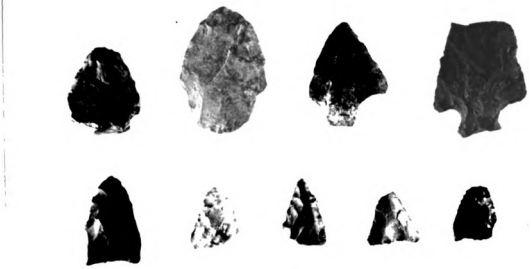
The complete specimen is of dark brown chert, 28 mm. long, 18 mm. wide, and 6 mm. thick. It is bifacially flaked, has convex sides, and a slightly concave base.

A second triangular projectile point is dark grey chert and is 4.0 mm. thick. It has a concave base with convex lateral edges. Small portions are missing from the distal tip and the base.

The equilateral triangular projectile point is 17 mm. at the base, has straight sides, and a slightly concave base. A small portion is broken from the tip. It is 4 mm. thick.

The fourth triangular projectile point was manufactured from grey chert and has convex lateral edges. It has a broken basal portion. It is 22 m. long, and 5 mm. thick.

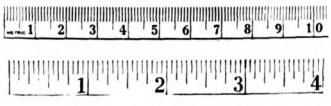
Figure G-4. Grand Rapids Lithics; (A) Projectile Points, (B) Knives.



A



B



A slightly asymmetric example was manufactured from a white chert and has a broken basal portion. It is 21 mm. along the complete side, and is 5 mm. thick.

The two basal fragments of triangular projectile points are very similar. Both are dark grey chert, and are 18.5 mm. wide at the base. One is 6 mm. thick; the other is 7 mm. thick.

Stemmed Projectile Points

The Grand Rapids site produced four stemmed projectile points which are shown in Figure G-4. They are corner notched and biconvex. All are bifacially worked. Two have contracting stems, one an expanding stem, and one a straight stem. Three are made of chert. The fourth point is manufactured from quartz.

The quartz point measures 34.0 mm. in length, 25.1 mm. at the shoulder, 9.1 mm. in thickness, and has a stem which measures 9 mm. in length.

One chert point is broken at the distal end. The point is 30 mm. wide at the shoulder, and 11 mm. thick. The stem is 9 mm. long and 14 mm. wide.

The third point is 41 mm. long, 28 mm. wide at the shoulder, and is 9 mm. thick. Its contracting stem is 12 mm. long.

The fourth stemmed projectile point was manufactured from a grey chert, and has a straight stem. It measures 28.2 mm. in length. It is 23.4 mm. wide at the shoulder and is 7.1 mm. thick. The stem is 4.2 mm. long.

Point Fragments

In addition to the eleven complete or almost complete points from the Grand Rapids site, six distal fragments were recovered. All of the distal fragments are manufactured from white chert. Five of the fragments are bifacially flaked. The sixth fragment is unifacially flaked.

There are, in addition to the above, two mid-sections of projectile points which are biconvex in cross-section and bifacially worked.

Scrapers

Four scrapers were recovered from the excavations at the Grand Rapids site. Three of these tools are manufactured from chert. The fourth specimen is manufactured from quartzite. All of the scrapers exhibit a steeply beveled edge, typical of scraping tools.

Two of the scrapers have the beveled working edge located opposite the bulbar end of the flake. One of these is a snub nosed end scraper that is quadrangular in shape. It has a well prepared convex working edge with minimal trimming elsewhere. The scraper is 41.0 mm. long, 30.1 mm. wide, and 12.7 mm. thick. The under surface is the smooth flake facet. A second end scraper is ovate in outline, measuring 27.3 mm. in length, 21.8 mm. wide, and 6.1 mm. thick. It is steeply beveled along the entire convex edge opposite the bulb-of-percussion.

The remaining two specimens are side scrapers. One of these is a simple flake scraper which has an irregular shape, but has been unifacially worked to form a scraping edge along a convex edge. The

scraper measures 22.9 mm. in length, 18.1 mm. in width, and is 7.8 mm. thick. The last specimen is ovate in outline and is bifacially worked, but only minimally on the under surface. It is steeply beveled along one lateral edge and portions of the distal and proximal ends of the tool. It measures 30.7 mm. in length, 24.9 mm. in width, and is 6.0 mm. thick.

Knives

Four specimens recovered from the Grand Rapids site have been functionally classified as knives or cutting tools. These tools are shown in Figure G-4. All four of the implements exhibit a sinuous edge, produced by removing adjacent flakes from alternate sides of the tool. These sinuous edges are dulled and exhibit minute striations. Two of these tools are large bifacially flaked objects with a single slightly convex cutting edge. These tools measure 82.0 mm. and 74.0 mm. in length, 65.1 mm. and 32.3 mm. in width, and are 23.9 mm. and 23.1 mm. thick. Both specimens exhibit rather crude workmanship.

The remaining two cutting tools are well made, asymmetrical stemmed knives. Each of these tools has a straight and slightly convex lateral edge. The convex edge has been worked to form the sinuous cutting edge, characteristic of the other two specimens. One of these specimens is made of quartz and measures 42.0 mm. in length, 35.1 mm. in width, and is 13.0 mm. thick. The other specimen, from which the distal tip is missing, is 35.5 mm. wide, and 10.6 mm. thick.

Bifacial Fragments

There is one bifacially worked fragment which has been heavily utilized. It shows no evidence of secondary retouching. It is grey chert and measures 22 mm. in length, is 16.5 mm. wide, and 6.5 mm. thick.

There are two examples of bifacial bases from the Grand Rapids site. Both specimens have been manufactured from chert. Neither specimen shows evidence of secondary retouching.

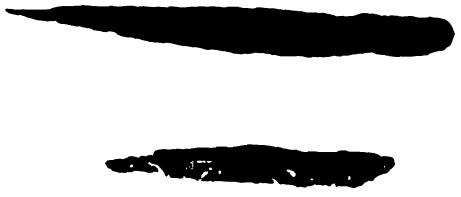
Gravers/Perforators

There are two gravers or perforators from the Grand Rapids site. Both tools are manufactured from a light colored chert and are remarkably similar. Both are triangular in cross-section and measure 24 mm. in length. They measure 12.1 and 13.9 mm. in width, and are 4.1 and 6.2 mm. thick. Both gravers exhibit minute striations at the distal tip. Both tools are pictured in Figure G-5.

Wedges

There are seven specimens in this descriptive category from the Grand Rapids site. They are all bifacially worked and manufactured from chert which ranges in color from white to light grey. All seven specimens are classic wedge-shaped pieces with evidence of heavy battering occurring on the proximal end of the tools. The distal ends reveal minute striations, probably the result of being driven through wood or bone. The lengths range from 30 mm. to 19 mm., the widths from 22 mm. to 16 mm., and the thicknesses from 9 mm. to 5 mm.

Figure G-5. Miscellaneous Artifacts from Grand Rapids Site; (A) Copper Awls, (B) Unidentified Copper Implement, (C) Gravers, (D) Bipolar Cores.



A



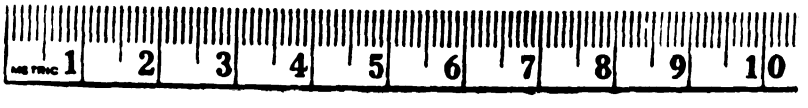
B



C



D





Bladelets

There are three bladelets from the Grand Rapids site. They are all small flakes which are more than twice as long as they are wide. They vary in length from 20.1 m. to 29.9 mm., and in width from 6.5 mm. to 9.8 mm., and are 2.0 to 5.1 mm. thick. They are made from buff, grey, and tan chert. There has been no retouching on any of these bladelets; however, two have indications of having been utilized.

Pebble Cores

There are five pebble core fragments from the Grand Rapids site. They range in length from 45 mm. to 21 mm., in width from 38 mm. to 16 mm., and in thickness from 29 mm. to 10 mm. These are nodules from which two or more flakes have been removed. Four of the cores are grey to tan chert. The fifth core is quartz.

Bipolar Cores

There are four bipolar cores from the Grand Rapids site. Three are white to light grey chert, one is tan chert. All are small and have evidence of battering on both the distal and proximal ends. They vary from 26 mm. to 22 mm. in length, 24 mm. to 18 mm. in width, and 9 mm. to 6 mm. in thickness. Three of these cores are pictured in Figure G-5.

Blade Cores

There are eleven blade cores from the Grand Rapids site. The color of these chert cores ranges from white to dark grey. All of the blade cores have three or more longitudinal flakes removed from the

core. The cores range in length from 48 mm. to 29 mm., in width from 18 mm. to 7 mm., and in thickness from 15 mm. to 5 mm.

Retouched Flakes

Seven unifacially retouched flakes were recovered from the Grand Rapids site. They exhibit a variety of irregular shapes and vary in length from 20.0 to 51.5 mm. and in thickness from 3.0 mm. to 6.9 mm. One or more convex or straight edges on each of the flakes exhibits numerous regular, small flake scars.

Utilized Flakes

The Grand Rapids site produced 22 utilized flakes. All were of chert which ranged in color from white to dark grey and buff to tan. The largest specimen was 42 mm. long, 34 mm. wide, and 6 mm. thick. The smallest specimen was 6 mm. long, 5 mm. wide, and 2 mm. thick. The shapes included a variety of geometric forms as well as extremely irregular outlines. This amorphous group produced 17 flakes which had been utilized on two or more sides and 5 flakes with only one utilized edge area.

Pecked Stone

Hammerstones

Of the two hammerstones found at the Grand Rapids site, the largest weighs 360 grams, is 75 mm. long, 69 mm. wide, and 42 mm. thick. It is battered around most of the perimeter and on one flat surface. The smaller of the two weights, 110 grams, is 60 mm. long and has a diameter of 36 mm. It exhibits battering only on one area of the tool.

Copper

There were five copper tools, three fragments of hammered copper, and one unaltered copper nugget found at the Grand Rapids site.

Awls

Two copper awls were recovered from the excavations. The first awl measures 57 mm. in length, 6 mm. in maximum width, and is 3 mm. thick. The awl has a square to rectangular cross-section. The needle-like tip, however, is conical. The second copper awl is badly corroded. It measures 37 mm. in length, 5 mm. in maximum width, and is 5 mm. thick. Both awls are shown in Figure G-5.

Bead

A rolled copper bead, 11.5 mm. in length and 3.0 mm. in diameter, is made of hammered copper which appears to have been rolled, with overlapping edges, around a cylindrical object.

Unidentified Notched Tool

There are two pieces of hammered copper which exhibit small V-shaped notches. One fragment is 22.0 mm. long, 13.1 mm. wide, and 1.5 mm. thick. It is notched on one side with a single V-shaped notch 2.1 mm. deep and 3.3 mm. wide at the outer edge. The second notched fragment is 20.9 mm. long, 19.1 mm. wide, and 3.1 mm. thick. It is notched twice on each edge. The notches vary in depth from 2.1 mm. to 3.0 mm. and in width from 4.0 mm. to 5.9 mm. One of these specimens is pictured in Figure G-5.

Hammered Copper

Three fragments of hammered copper were recovered from the excavations. The fragments vary in length from 24.0 mm. to 12.0 mm. and in thickness from 0.5 mm. to 2.0 mm. None of the fragments weighs more than 0.5 grams.

Copper Nugget

The final piece of copper is an unaltered fragment of native copper which weighs 0.5 grams, and measures 20.0 mm. in length, 14.1 mm. in width and is 5.0 mm. thick.

Hematite

One small fragment of red ocher (hematite) was found at the Grand Rapids site. It measures 14.0 mm. in length, 11.1 mm. in width and is 6.1 mm. thick.

Features

Eleven features were identified and excavated during the 1973 and 1975 excavations at the Grand Rapids site. Features were identified by soil discoloration and variation in the texture of the soil. The soil associated with the features generally varied from black and grey to dark brown in color and was frequently somewhat more compact than the surrounding soil. Concentrations of cultural material were not assigned feature numbers unless they could be delineated from the adjacent areas on the basis of soil color and texture.

Most of the features were small, circular to oval pits which varied between 30 cm. and 60 cm. in diameter and were generally 10 to 20 cm. in depth. Only one of these features contained sufficient

charcoal and charred bone to be considered a hearth. The function that the other small stains served remains unknown. They do not appear to have been deep enough to have been used as storage pits, nor do they contain sufficient debris to be considered refuse pits.

The function of the one extremely large feature (feature 5) also remains in doubt. Initially, we had thought the feature may have been a result of more modern activity and was associated with one of the old house foundations adjacent to the site. However, no modern or historic materials were recovered in association with the feature. Time did not permit further excavation of the feature, which may have clarified its function. As a result, its purpose or function remains a mystery.

Feature 1: A small black to dark brown circular stain centrally located in test pit 1 was designated feature 1. The stain appeared 35 cm. below the present surface and extended 40 cm. to a maximum depth of 75 cm. below surface. The pit contained numerous small flecks and pieces of charcoal as well as 23 flakes, 2 shell tempered sherds, and 13 grit tempered cord-marked sherds.

Feature 2: This feature was also centrally located and visible 35 cm. below the surface in test pit 1. It cut through the southeastern portion of feature 1. The feature was a small oval pit which varied between 40 cm. and 48 cm. in diameter and was 18 cm. deep. The sandy soil within the feature was stained gray to black and contained flecks of charcoal. The feature also contained 8 flakes, 9 grit tempered cord-marked sherds, and 4 fragments of unidentified mammal and bird bone.

Feature 3: A third oval to circular grey black sandy stain located in test pit 1 was designated feature 3. The feature measured 42 cm. and 68 cm. in diameter, and had a rounded bottom which was 16 cm. deep. The feature was first visible 35 cm. below the surface. No artifacts were recovered from this feature.

Feature 4: A small, shallow, circular stain in test pit 2 was visible 45 cm. below the surface. The stain measured 40 cm. in diameter and was 10 cm. deep. No cultural material was recovered from this feature.

Feature 5: Slightly less than one quarter of this large, circular feature, partially located in test pit 10, was excavated during the 1973 field season. The feature appeared to be a very large, circular pit. The projected arch of the excavated portion of this feature suggests the pit was 3.5 to 4 meters in diameter. The feature reached a maximum depth of 1 meter in test pit 10. Soil within the feature was a dark brown sand. Beneath this dark soil was a layer of gold and black mottled sand which varied in depth from 20 to 40 cm. The lowest layer of soil within the feature was a very black sand. The lower portions of the feature contained eight large rocks varying in diameter from 30 cm. to 65 cm. A band of mottled tan, red, black, and grey sand approximately 30 cm. in width circled the upper half of this large feature. Contents of the feature included 77 chert and quartz flakes, 1 quartz core, 13 shell tempered sherds, 55 grit tempered sherds with smooth exteriors, and 12 grit tempered cord-marked sherds. Two of the sherds were classified as Madison Cord-impressed and a third rimsherd was a smoothed grit tempered rimsherd with a plain lip and a row of

vertical cord-wrapped stick impressions encircling the inner rim of the vessel.

Feature 6: This was a circular stain located in test pit 11, 45 cm. in diameter, which appears to have been a hearth. The feature, which contained numerous flecks of charcoal and very small burned bone fragments, was 15 cm. deep and had a round, smooth bottom. A single chert flake was recovered from the hearth.

Feature 7: A circular black stain 40 cm. in diameter and 18 cm. deep was located in test pit 14, 30 cm. below the surface. The pit had a smooth, round bottom. A small grit tempered sherd was recovered during the excavation of this feature.

Feature 8: A black stain located in N96/W84 appeared 40 cm. below the surface during the 1975 excavation. The feature had a round bottom which was bowl shaped and extended to a depth of 54 cm. below the surface. Several small grit tempered potsherds, 9 chert flakes, and a few bone fragments were recovered while excavating the feature.

Feature 9: A small, shallow, oval black stain which measures 40 cm. by 55 cm. was identified in N104/W78 and designated feature 9. The feature, which was first visible 38 cm. below the surface, had a round bottom and was 12 cm. deep. No artifacts were found in this feature.

Feature 10: A dark stain in the northwest corner of N104/W78 measured 40 cm. in diameter. The feature was first visible 41 cm. below the surface. The feature had an uneven bottom and was 15 cm. deep. No artifacts were associated with this feature.

Feature 11: A third small, circular stain in N104/W78 measured 40 cm. in diameter. The feature was identified 40 cm. below the

surface. The bottom was rounded and extended to a depth of 52 cm. below the surface. No artifacts were recovered from the stained soil.

Post Molds

A total of nineteen post molds were recorded, cross-sectioned, and drawn during the excavations at the Grand Rapids site. An additional eight stains were considered to be possible post molds, exhibiting slightly irregular vertical outlines.

The nineteen post molds occurred in the test pits and excavation units located on the edge of the river bank. No post molds were recorded in any of the test pits more than 25 meters from the river bank. The post molds were first visible in the excavation units between 38 cm. and 41 cm. below the surface. The post molds varied between 6 cm. and 12 cm. in diameter with a mean diameter of 9 cm. Recorded depths of the post molds varied from 10 cm. to 27 cm. All of the post molds had straight vertical edges which were easily seen in cross-section. Fifteen of the post molds had slightly rounded bottoms. The four remaining post molds appear to have been formed by a pointed post or pole.

No pattern could be detected in the arrangement of the post molds at the Grand Rapids site.

Summary and Conclusions

The Grand Rapids site is a multi-component site located on the banks of the Menominee River, slightly upstream from the confluence of the Menominee and Little Cedar Rivers. Although it is presently a grassy area maintained as a public access site by the Wisconsin Public Service, the area was once a farmstead. As a result, excavation of the

upper 30 cm. of soil produced a combination of modern and historic debris mixed with the prehistoric artifacts described in this report. The plow zone has destroyed any evidence of stratigraphy throughout most of the site. Only along a narrow stretch at the edge of the river channel is there an undisturbed soil profile.

Several cultural components were identified in the ceramic assemblage at the site. A wide variety of ceramic types and decorative techniques are included in the ceramic assemblage from the site. Although the predominant ceramics are grit tempered Late Woodland wares, none of the decorative techniques or ceramic types occurs with frequency, suggesting the site was probably inhabited for short periods of time by numerous peoples.

A few sherds of pseudo scallop shell and rocker stamped ceramics can be ascribed to a Middle Woodland phase. There were no North Bay wares, although these are found in many sites in the Menominee Watershed and northeastern Wisconsin. With so little evidence of Middle Woodland ceramic types, an occupation by few people and only for a brief time period would have to be assumed.

Late Woodland is represented by Heins Creek ceramics, Madison Ware, and numerous grit tempered smooth surface sherds. Again, a short term occupation by small groups is suggested by the relatively limited ceramic assemblage.

Upper Mississippian culture is represented by a variety of shell tempered ceramic types. These types include Grand River Plain, Carcajou Plain, and Grand River Trailed. Again, the limited number of shell tempered sherds suggests a short term occupation.

APPENDIX H

THE GRAND RAPIDS DAM SITE

APPENDIX H

THE GRAND RAPIDS DAM SITE

Introduction

The Grand Rapids Dam site is located in Section 9 (T.34N, R.27W) in Mellon Township, Menominee County, Michigan. The site is situated on a high bank overlooking the former channel of the Menominee River. The land on which the site is located is owned by Wisconsin Public Service. Although the power company has done little to disturb the site, the surrounding area has been greatly altered by the construction of the Grand Rapids power dam. The dam, which is located approximately 30 meters north of the site, has created a large reservoir and modified the drainage system. Prior to the construction of the dam, the Menominee River flowed along the western edge of the site through a long stretch of rapids and small falls. The dam now diverts this water into a channel which connects this upper portion of the Menominee River with an area approximately one mile downstream and has created an island on which the site is located. The former river bed is dry, except when melting snow or rain cause the reservoir to swell and spill over the dam. As summer progresses, even the small pockets of water trapped in the uneven river bed begin to dry up.

Although much construction and land moving has taken place adjacent to the site, the high, grassy bank on which the site is located

appears to have been left relatively undisturbed. Most of the original vegetation has been cleared and replaced with numerous small white pines. A two-track dirt road runs north and south, paralleling the edge of the bank and the former river bed; however, the road was neither graded or filled and appears to have had no effect on the site. The dirt road provides access to the site, but Wisconsin Public Service has constructed a gate at the only bridge over the channel, effectively limiting access to the island and the site. Except for the clearing and the compacted soil under the road, the site remains undamaged by contemporary human activity.

The site was located during the summer of 1973 when an archaeological crew from Northern Michigan University visited the area. At that time, cultural material was slowly eroding from the edge of the bank just under the sod zone. Nine 2 x 2 meter test pits were excavated that summer, and an additional five test pits were excavated in 1975 when a second archaeological crew completed the test excavations at the site. A system of stratified unaligned sampling was used to locate all fourteen test pits. The area on top of the bank was divided into seven 30 x 30 meter sample units. Each sample unit was then divided into a series of 2 x 2 meter units and a table of random numbers was used to select two of these 2 x 2 meter units for excavation within each 30 x 30 meter sample unit.

The test pits were excavated in 10 cm. levels. Each test pit was excavated to a minimum depth of 40 cm. below surface. All excavated material was sifted through half-inch hardware cloth. Cultural material was collected, washed, and catalogued, and is presently stored along with the 1973 and 1975 field records in the archaeological

laboratory on the campus of Northern Michigan University in Marquette, Michigan. Cultural material has been catalogued in the archaeological laboratory's numerical coding system between 7.1.1 and 7.14.3.

Excavations at the site revealed a light brown sandy soil immediately below the sod. This sandy soil continued uninterrupted to an average depth of 110 cm. below surface. Glacial gravel could be seen in the exposed bank beneath the sand. No noticeable soil change was associated with the concentration of cultural material in the upper 30 cm. of soil at the site. Although concentrations of pottery and lithic debris occurred, none were associated with a change in soil color or texture, and thus were not assigned feature numbers.

I would like to extend my appreciation to Wisconsin Public Service for permitting the excavations at the Grand Rapids Dam site, and for allowing us to camp on the land adjacent to the site. Special recognition should be given Mr. Curtis Allgeyer, Supervisor of the Grand Rapids power Facility, for his cooperation and friendship.

Pottery

Introduction

The ceramic sample recovered from the Grand Rapids Dam site includes 645 body sherds and 11 rimsherds for a total of 656 sherds. This small sample represents a single relatively homogeneous ceramic assemblage which appears to be identical to the North Bay ceramics from the Door Peninsula (Mason, 1966, 1967). All of the sherds in the recovered sample exhibit characteristics which are typical of this ware. The sherds are thick, heavy, extremely gritty and usually poorly made. Sherds from the Grand Rapids Dam site vary in the thickness from

5.4 mm. to 14.5 with a mean of 8.3 mm. These sherds are heavily tempered with crushed rock which is predominantly feldspar. The crushed feldspar exists in the clay body as angular fragments which vary in size from small, almost microscopic fragments to fragments which measure up to 10 mm. in length. These larger fragments are liberally represented in the ceramic assemblage, often protruding through both the exterior and interior surfaces of the sherd. The surfaces of the sherds are frequently interrupted with small, irregular fractures radiating outward from these large angular pieces of temper. Often other fracture lines run parallel to the surface of the sherd, causing many of the sherds to have all or sections of their surfaces sloughed off.

Of the 645 sherds recovered from the site, 404 were either exfoliated, thus preventing determination of their exterior surface, or too small to exhibit a large enough surface area to accurately determine the nature of the vessel surface. Exterior surface treatment could be determined for only 241 sherds; of these, 184, or 76 percent, exhibit plain exterior surfaces. The remaining 57 sherds, or 24 percent, exhibited cord-marked exterior surfaces which sometimes showed evidence of partial smoothing. Interior surfaces were, in all cases, plain. Frequently, interior surfaces were quite irregular, being lumpy and contorted. Although Mason has described North Bay vessels as frequently retaining carbonized encrustations of food residue, none of the sherds recovered from the Grand Rapids Dam site exhibited any carbonized encrustations.

North Bay Cord-marked

At the Grand Rapids Dam site six rimsherds from two vessels belong to this ceramic type. One vessel, represented by a single rimsherd, is 6.2 mm. thick and has a vertical rim profile. The lip is plain and flat and has pushed out and over the exterior of the vessel rim. Although partly obscured by exfoliation, the interior of the vessel appears to have been decorated with a series of vertical cord-wrapped stick impressions, arranged in a horizontal row approximately 6 mm. below the lip.

The second vessel has a slightly everted rim and a plain, flat lip. Both the vessel and the lip measure 6.0 mm. in thickness. The lip and interior of the vessel are embellished with a series of vertical corded-stamped impressions, applied at the juncture of the lip and vessel interior at intervals of 3 to 4 mm. The corded-stamped impressions measure 7 mm. in length and 5 mm. in width.

In addition to the six rimsherds, 184 cord-marked body sherds lacking any decoration are included within this ceramic type. However, many of these sherds must belong to the cord-marked portions of decorated vessels.

North Bay Plain

Fifty-seven plain, undecorated body sherds from the Grand Rapids Dam site belong to this ceramic type. North Bay Plain rimsherds were not recovered from the site, suggesting that most if not all of these sherds are from basal and other undecorated areas of decorated vessels described under other ceramic type descriptions. All of the body sherds are relatively thick and conform to the general description for the

North Bay ceramic assemblage, described earlier in this report. Several North Bay ceramic types are illustrated in Figure H-1.

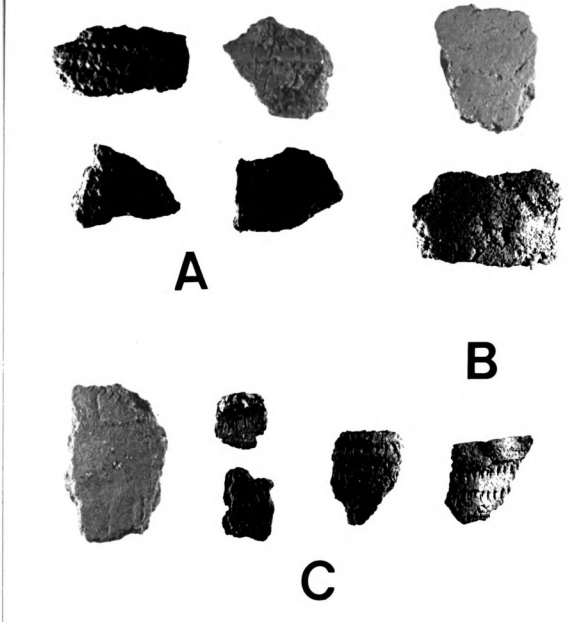
North Bay Dentate

This ceramic type is represented by eleven body sherds from an undetermined number of vessels. The sherds vary in thickness from 7.0 mm. to 9.8 mm. with a mean of 8.2. The dentate stamping has been applied to a partially smoothed cord-marked surface. The stamping was accomplished by impressing a segmented tool onto the exterior of the vessel. The stamp has been applied end to end to create a continuous decorative row of stamped impressions. These rows are arranged in parallel rows of vertical, horizontal, or diagonal stamps separated by undecorated zones. Dentate stamping is the only visible form of decoration on these sherds. Four examples of this ceramic category are shown in Figure H-1.

North Bay Cord-wrapped Stick

Five rimsherds and nine body sherds representing a minimum of three vessels were recovered from the Grand Rapids Dam site. The sherds vary in thickness from 5.5 mm. to 8.5 mm. with a mean of 7.1 mm. Vessel lips are somewhat thicker, measuring 8.1 mm., 8.3 mm., and 9.0 mm. The cord-wrapped stick impressions have been applied to a plain, smooth surface. These impressions are arranged in parallel rows separated by undecorated zones of approximately 4 mm. in width. These rows of cord-wrapped stick impressions are arranged horizontally on the three vessels. The lips of these vessels are smooth and flat, and are decorated with oblique cord-wrapped stick impressions at the juncture of

Figure H-1. Grand Rapids Dam Ceramics; (A) North Bay Dentate, (B) North Bay Plain, (C) North Bay Cord-wrapped Stick.


A
B
C

the lip and inner vessel wall. A small fold of clay has been pushed over the lip onto the exterior of one vessel forming a small pseudo collar.

Lithic Description

Introduction

The lithic assemblage recovered from the Grand Rapids Dam site consists of 2,695 pieces of chert, quartzite, and a single battered igneous rock. Included within this total are 2,626 unmodified flakes, 5 projectile points or point fragments, 8 scrapers, 6 knives, 1 spokeshave, 10 bifaces, 14 cores, 8 blades, 3 bladelets, 6 retouched flakes, and 8 utilized flakes. Approximately 96 percent of the debitage was composed of a locally available tan and white coarse grained chert which contains numerous defects and irregularities. This raw material is readily available along the banks of the Menominee River in this area. The remaining 4 percent of the lithic debitage consisted primarily of a smoky white quartzite which is also available in the immediate vicinity of the site. A few fragments of a dark to light grey and rose colored chert were also recovered. Such material does not appear as frequently as the tan and white chert along the banks of the Menominee River, however, such cherts are present in the glacial till throughout the central Upper Peninsula and therefore, easily available to the prehistoric inhabitants of the site. There appears to have been no attempt to obtain "exotic" raw materials with fracture properties more suitable for knapping. However, the lithic tools and implements recovered from the Grand Rapids Dam site are frequently made from the

grey and rose colored cherts which represent only a small fraction of the lithic debitage at the site.

Projectile Points

A single dark grey chert flake has been retouched into a small projectile point which is lanceolate in outline. The point measures 23.8 mm. in length, and is 13.0 mm. wide at the base and shoulder where it tapers assymetrically to a point. The base is concave. No other complete projectile points were recovered during the excavation of the Grand Rapids Dam site, however, four fragments appear to be the distal ends of projectile points. The four fragments vary in length from 15.0 mm. to 24.0 mm. and from 14.0 mm. to 24.0 mm. in width. Two of the distal fragments are manufactured from coarse grained white and tan chert. The remaining specimens are made from fine grained rose colored chert. The single complete projectile point and the four distal fragments are shown in Figure H-2.

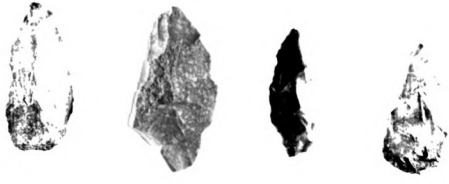
Scrapers

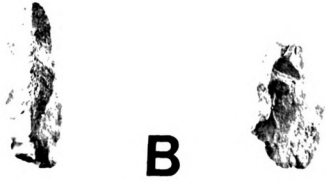
Five complete specimens and three fragments exhibit the steeply beveled edge typical of scraping tools. Six of the scraping tools are made from chert which varies in color from white to sandy brown. The remaining scraper is made of quartzite. Three scrapers and one scraper fragment have the retouched scraping edge located opposite the bulb-of-percussion. These end scrapers vary in length from 16.0 mm. to 31.0 mm., in width from 14.0 mm. to 16.5 mm., and in maximum thickness from 2.8 mm. to 6.5 mm. A single small fragment has the scraping edge located along a lateral edge of the flake. This side scraper fragment measures 16.5 mm. in length, 16.1 mm. in width, and 7.0 mm. in maximum thickness.

Figure H-2. Grand Rapids Dam Lithics; (A) Projectile Points, (B) Knives.



A





B



The scraping edge on the three remaining specimens extends along two or more edges of the flake. The ends, exhibiting the bulb-of-percussion as well as one or more lateral edges of the flake, have been steeply retouched on all three scrapers. These scrapers range in length from 20.5 mm. to 22.0 mm., in width from 22.0 mm. to 24.1 mm., and vary in thickness from 3.1 mm. to 6.5 mm.

Knives

Six specimens, shown in Figure H-2, have been included within this functionally descriptive category. All of the specimens have an assymmetrical outline, exhibiting one straight lateral edge and one convex lateral edge. Generally, the convex lateral edge has been fashioned by the removal of adjacent flakes from alternate faces of the tool, producing a sinuous or saw-like edge. On several of the specimens, this sinuous edge has been dulled and exhibits small striations.

Five of the six specimens are manufactured from the locally available coarse grain chert. The sixth specimen is made from a rose-grey chert. Five of the six specimens are complete. These five specimens vary in length from 39.0 mm. to 50.0 mm., with an average of 44.5 mm. The sixth specimen, from which a small portion of the proximal end is missing, measures 31.5 mm. Maximum width for the six specimens varies from 15.0 mm. to 25 mm., with an average width of 20.0 mm. Maximum thickness varies between 8.0 mm. and 13.0 mm.

Although these six specimens are classified as knives, it is doubtful if they and similar bifacial specimens would include all of the implements used as cutting tools at the Grand Rapids Dam site. It is extremely likely that much, if not most, of the cutting performed

at the site was accomplished by using the numerous sharp edge flakes found throughout the site. However, unless modified by retouching or extensive utilization, it is impossible to identify those flakes which may have served as a cutting tool.

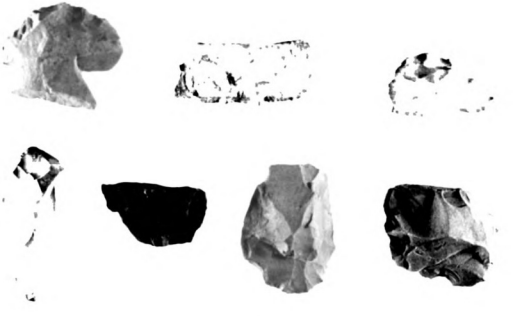
Spokeshave

A single flake exhibits a concave lateral indentation which appears to have been used as a spokeshave. Fine secondary retouch occurs only on the concave portion of the lateral edge. Except for the concave area, the flake is unmodified. The flake measures 25.0 mm. in length, 27.0 mm. in width, and is 7.0 mm. thick. The concave identation is 9.3 mm. wide and 2.8 mm. deep.

Bifaces

Ten broken bifacial implements of unknown or questionable function were recovered from the Grand Rapids Dam site. Six of these implements are shown in Figure H-3. Included within this category are several specimens which are probably blanks, shaped only by primary flaking and intended for finishing at a later date. This category, however, probably also includes implements which served as knives and scrapers. All of the specimens are the basal segment of the tool or implement. Projections of the lateral edges from the basal fragments suggest all but two of the implements were ovate in shape. The remaining two implements appear to have been triangular in outline. Although no measurement of length could be obtained, the implements varied considerably in size, ranging from 20.0 mm. to 42.0 mm. in basal width and from 4.0 mm. to 9.2 mm. in thickness. The bifacial implements vary considerably, in the quality and extent of primary chipping,

Figure H-3. Grand Rapids Dam Lithics and Copper; (A) Bifacial Implement Fragments, (B) Bladelets, (C) Copper Conical Point and Awl.



A



B C



and the degree of edge trimming which is evident along the base of the tool. Three of the specimens are roughly finished, while two of the specimens exhibit finely trimmed edges. The remaining five implements exhibit an intermediate quality and quantity of primary flaking and edge finishing.

Pebble Cores

Twelve cores recovered from the Grand Rapids Dam site have been classified as pebble cores. These cores are small to medium size nodules from which two or more flakes have been removed. All of the cores retain a portion of the cortex. Flakes have been removed in random fashion, frequently utilizing previous flake scars as striking platforms. The cores vary in length from 32.0 mm. to 62.0 mm. and in width from 22.0 mm. to 47.0 mm. Nine of the cores are cream colored coarse grained chert. The remaining three cores are also coarse grained chert with poor fracture properties, but range in color from dark grey to rose.

Bipolar Cores

Two cores show evidence of having been produced by hammer and anvil technique, exhibiting shattering on both ends of the core. Both cores are small, measuring 27.0 mm. and 34.8 mm. in length, and are polyhderal in shape. The smaller core is produced from a cream colored chert and exhibits a part of the cortex along one portion of the lateral edge. The second core is quartzite.

Blades

Eight specimens are classified as blades, being at least twice as long as they are wide and having parallel sides. Six of the specimens are triangular in cross-section. The remaining two specimens are trapezoidal in cross-section, exhibiting well defined longitudinal flutes, the result of previous blade detachment. The blades are 34.0 mm. to 48.0 mm. long, 11.0 mm. to 19.0 mm. wide, and 2.0 to 11.0 mm. thick. The blades are made from a variety of chert which varies in color from dark grey to white to tan.

Bladelets

Three specimens shown in Figure H-3 have been classified as bladelets. The three specimens are at least twice as long as they are wide, have parallel sides, and are less than 30.0 mm. in length. All of the bladelets are triangular in cross-section and are manufactured from tan or white chert. A single specimen has been retouched along the distal end and may have been used as a scraping tool. The same tool exhibits numerous irregular fractures along a slightly concave lateral edge, suggesting it may also have been used as a cutting tool. The specimens range from 25.0 mm. to 29.0 mm. in length and 9.0 mm. to 10.0 mm. in width, and are 2.0 mm. to 4.0 mm. thick.

Retouched Flakes

Six flakes exhibit retouching along one or more localized areas. The flakes are irregular in size and shape. Five of the flakes have been struck from chert cores which were white, rose, or grey in color. The remaining flake was struck from a dark grey flint core. Four of the flakes exhibit retouching along a single convex

lateral edge. The remaining two flakes have been retouched along two or more edges.

Utilized Flakes

Eight flakes are essentially unmodified except for irregular fractures along one or more localized areas along the edge of the flake. The flakes are irregular in shape and vary in length from 18.5 mm. to 35.5 mm., and in width from 12.5 mm. to 18.0 mm. The flakes have been struck from cores of white, grey, and tan chert.

Hammerstone

One hammerstone was recovered during the excavations at the Grand Rapids Dam site. It is an oblong stone with a flat bottom and a rounded top. Battering is evident around the entire parameter of the stone. Parallel striations are evident on one side of the stone. The specimen measures 86.0 mm. in length, 66.0 mm. in width, and is 31.0 mm. thick.

Copper

Seven pieces of copper, weighing a total of 28.1 grams, were recovered during the excavation of the Grand Rapids Dam site. Of these, only two specimens could be identified as to function. The remaining pieces of copper are small fragments of hammered copper. All of the copper is highly oxidized, obscuring evidence of manufacturing techniques and wear patterns.

Conical Point

One complete copper point, pictured in Figure H-3, was recovered from test pit fourteen. The point is symmetrical and was formed by

folding the lateral edges of a flattened triangular piece of copper around a shaft. The point measures 44.2 mm. in length, 8.5 mm. in width, and is 6.0 mm. thick. A small perforation measuring 0.7 mm. in diameter is centrally located 3.4 mm. from the base on the upper surface of the point.

Awl

A single small tapering copper fragment, shown in Figure H-3, has been identified as an awl. The artifact measures 22.5 mm. in length, is 5.0 mm. wide at the base, and 1.8 mm. thick. The base appears to have been rectangular in cross-section, while the distal end tapers to form a conical point.

Hammered Copper Fragments

Five copper fragments exhibit varying degrees of hammering. Three of the fragments have been pounded into copper sheets with a thickness of 1.7 mm. A fourth fragment is an elliptical fragment measuring 20.0 mm. in length, 6.1 mm. in width, and is 2.5 mm. thick. The fifth piece of copper is a large, heavy fragment 6.0 mm. thick, 26.0 mm. long, and 9.5 mm. wide.

Summary and Conclusions

Analysis of the material recovered from the test excavations at the Grand Rapids Dam site indicate the site is a single Middle Woodland occupation which shares general traits with several north central and northeastern Middle Woodland ceramic traditions. These include Point Peninsula in eastern Ontario and New York State, Laurel in northern Minnesota and western Ontario, and Hopewell in Illinois and its

neighboring states. Similarities also exist between the site and the Saugeen Focus, a regional Middle Woodland cultural complex in southern Ontario. The Grand Rapids Dam site, however, has its greatest affinities with the North Bay component in northeastern Wisconsin. Mason (1966, 1967) has defined this Middlewood component at the Mero site and the Porte des Morts site on the Door Peninsula. North Bay ceramics have also been recovered from other sites within the southern portion of the Menominee Watershed in the Upper Peninsula of Michigan. Mason has tentatively proposed a developmental trend for the North Bay ceramics on the Door Peninsula away from cord-marked surfaces, with a corresponding increase in the popularity of plain surface vessels, suggesting that North Bay I and North Bay II, with 60 percent and 54 percent plain surface sherds, are somewhat earlier than the North Bay component at the Porte des Morts site, where 78 percent of the recovered sherds have plain surfaces.

Within this developmental sequence, the ceramics from the Grand Rapids Dam site are most closely related to the Porte des Morts, with 76 percent of the sherds, which were complete enough to allow identification of their surface finish, being plain. In addition to the high incidence of plain surfaced sherds, two ceramic types, North Bay Dentate and North Bay Cord-wrapped Stick, found at the Porte des Morts site but not the Mero site, are represented in the ceramic assemblage from Grand Rapids Dam site. Mason has obtained a carbon-14 date of 1,790 ± 100 years B.P., or A.D. 160, on charred food encrustations scraped from the interior of North Bay sherds recovered from the Porte des Morts site. Although several ceramic types, including North Bay Scallop, Linear Stamp, and Stab and Drag, found at the Porte des Morts site do

not occur in the Grand Rapids Dam ceramic assemblage, I believe the ceramic affinities are distinct enough to accept a similar date for the Grand Rapids Dam site.

The thinly scattered cultural debris suggests the site was utilized as a small, seasonal encampment by local hunters and gatherers. Features are entirely absent. Post molds, if present, were so inconspicuous that they escaped detection, suggesting that houses and storage racks, as well as all the other structural facilities generally associated with a more permanent settlement, were either totally lacking or constructed to leave no trace in the prehistoric record. Such sites are typical of northern Middle Woodland sites in the eastern United States and Canada.

APPENDIX I

THE PEMEBONWON SITE

APPENDIX I

THE PEMEBONWON SITE

Introduction

The Pemebonwon site is a Late Woodland site located on Government Lot 3, Section 6 (T.37N, R.28W) in Faithorn Township, Menominee County, Michigan. The site is found along the east bank of the Menominee River, directly across from the mouth of the Pemebonwon River, a major tributary of the Menominee River. The site is located approximately three and one half miles upstream from Pemene Falls and sixty miles upstream from the mouth of the Menominee River. Cultural material was recovered from an area that extends one hundred and fifty meters along the river. The site which begins approximately twenty meters from the water's edge extends eastward fifty meters.

The land on which the site is located is presently owned by the Wisconsin Public Service Company. Company officials graciously extended permission to survey and test the relatively large section of land owned by the company in this area of the Watershed.

Access to the site was limited to an overgrown logging trail which abruptly ends several miles downstream of the site. Animal trails provided a path over which personnel and equipment traveled the remaining distance to the site.

A light, sandy soil overlies the Precambrian Keweenawan bedrock and supports a mixed forest of conifers and hardwoods, in this portion of the Menominee Watershed. The most prevalent species in this area are norway pine, white pine, maple, hemlock, beech, basswood and yellow birch. This mixed forest of boreal conifers and deciduous vegetation has replaced a forest once dominated by white and norway pine throughout most of the western half of the Upper Peninsula.

The site was located in 1973 when an archaeological field crew from Northern Michigan University surveyed the lower one third of the Menominee Watershed. During the latter portion of the field season the crew tested the site, excavating thirteen 2 x 2 meter test pits. The location of each test pit was established by using a system of stratified unaligned sampling. The test pits were excavated in 10 cm. levels to a maximum depth of 90 cm. below surface. All of the excavated soil was screened, using half-inch hardware cloth. All of the test pits were backfilled at the end of the field season. All field notes, photographs, and square sheets pertaining to the test excavations at the Pemebonwon site are housed in the archaeological laboratory on the campus of Northern Michigan University.

Pottery

The test excavations at the Pemebonwon site produced a limited sample of ceramic material. A total of seventy-seven sherds was recovered. This total is composed of seventy-four body sherds and three small rimsherds. All of the sherds are tempered with fine to medium sized particles of crushed granitic rock. Approximately 55 percent or 43 of the sherds exhibited cord-marked exterior surfaces. The remaining

34 sherds had smooth, plain exterior surfaces. The interior surfaces of the body sherds were plain and smooth. The sherds varied in thickness from 4.5 mm. to 8.0 mm., with a mean thickness of 5.7 mm.

Five of the body sherds and the three rimsherds have been tentatively identified as Madison Cord-impressed. Two of the rimsherds have flat lips, which are 6.0 and 6.4 mm. thick. The lip of one vessel is plain, while the lip of the remaining vessel is decorated with three parallel rows of fine cord impressions. Both of these rims are broken between 15 and 20 mm. below the lip and are exfoliated. The remaining rimsherd has a slightly rounded lip which is 5.3 mm. thick. The lip is decorated with transverse cord impressions. The interior of the vessel is decorated with a horizontal row of vertical twisted cord impressions. The rimsherd, which is broken 12.1 mm. below the lip, exhibits a single knotted cord punctate on the exterior surface.

The five decorated body sherds are embellished with horizontal rows of vertical or slightly oblique, short parallel twisted cord impressions. The horizontal rows of impressions are separated by undecorated bands of the vessel wall, 15 to 20 mm. wide.

Lithic Description

Introduction

A total of 262 fragments of chipped stone was recovered during the test excavations at the Pemebonwon site. This total includes 251 unmodified flakes, 4 projectile points, 3 scrapers, 1 drill, 2 retouched flakes, and 1 utilized flake. Chert and quartz are almost equally represented in the lithic debitage, with chert fragments accounting for 51 percent or 126 fragments of the debitage, while quartz is represented

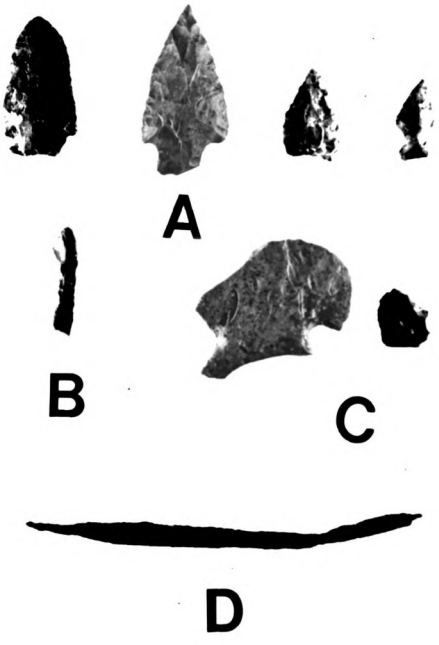
by 123 fragments. Although equally represented in the debitage, chert appears to have been more satisfactory as a raw material for chipped stone tools. Ten of the eleven lithic tools recovered from the site have been manufactured from chert flakes and cores, while only one quartz tool was recovered.

The high percentage of quartz fragments in the lithic debitage and the diversity of color, texture, and pattern found in the chert sample suggests that the inhabitants of the site did not seek out any particular rock outcropping as a raw material, but relied instead on nodules of chert and quartz readily available in the glacial till. Many of these nodules were coarsely grained and contain numerous impurities. The poor quality of the raw material utilized by the Pemebonwon inhabitants is reflected in the quality of their lithic workmanship, which is generally poor.

Projectile Points

Each of the four projectile points recovered from the site is distinctive and has been described separately. All four points are shown in Figure I-1. The first projectile point is a small stemmed point. The blade of the point is 16.8 mm. long and 11.0 mm. wide. The blade has straight sides and is triangular in shape. The stem is expanding and has a slightly concave base. The stem is 6.2 mm. long and is 9.8 mm. wide at the base. In cross-section, the point is biconvex. The point has been manufactured from a tan and white chert. The second projectile point is also stemmed with a triangular blade. The point is 58.7 mm. long and 20.5 mm. wide. The blade has straight sides and is 40.2 mm. long. The stem is straight and has a straight base which is

Figure I-1. Pemebonwon; (A) Projectile Points, (B) Drill Fragment, (C) Scrapers, (D) Copper Awl.


A
B
C
D
1 2 3 4 5 6 7 8 9 10
1 2 3 4

12.2 mm. wide. In cross-section, the point is plano-convex. The point has been manufactured from medium brown chert. The third projectile point is a side notched point. The point measures 40.0 mm. in length and is 21.2 mm. wide. The base of the point has slightly convex edges. Small notches form a hafting element 5.6 mm. in length and 10.8 mm. wide. The base of the point is straight. The point, which is biconvex in cross-section, has been manufactured from tan chert. The fourth projectile recovered from Pemebonwon is a triangular point, measuring 25.1 mm. in length and 16.7 mm. in width. The lateral edges are convex and the base is concave. In cross-section, the point is plano-convex. The point is manufactured from a grey and white mottled chert.

Scrapers

Three chipped stone artifacts exhibit the steeply retouched edge typical of scraping tools. Except for the steeply beveled scraping edge, each of the three tools is distinctive. Each tool has, therefore, been described separately in this report. The first scraper is a small thumbnail scraper manufactured from a dark grey brown chert. The tool has been retouched to form scraping surfaces on the three of the four edges. The scraper is 11.4 mm. long, 11.7 mm. wide and is 4.2 mm. thick. The second scraping tool has been manufactured on a quartz flake which measures 28.6 mm. in length, 19.8 mm. in width and is 4.2 mm. thick. The flake has been retouched along one entire lateral surface to form the scraping edge. The remaining scraper is somewhat unique, having been manufactured from what appears to have been a large Snyder-like projectile point. The tool has been manufactured from a grey, brown and rose colored chert, a chert variety not typical of the

Menominee Watershed area. The point has been fractured several times, removing the corner of the tang element, a portion of one lateral notch, and the distal end of the projectile point. The fracture line which resulted in the removal of the distal portion of the point has been retouched to form a scraping edge along a portion of this fracture line. Two of these scraping tools are shown in Figure I-1.

Drill

A single fragment, pictured in Figure I-1, has been identified as the distal end of a drill. The fragment, which is 29.8 mm. long, 9.8 mm. wide and 6.0 mm. thick, has been manufactured from a light grey chert.

Retouched Flakes

Two flakes exhibit unifacial retouching along portions of their perimeters. On both artifacts, the retouching occurs along a convex portion of the perimeter. The flakes have been struck from a mottled grey chert core and a tan chert core.

Utilized Flake

A single white and grey mottled flake exhibits the irregular edge, suggesting the flake was used either as a cutting and/or scraping tool.

Copper

A copper awl, two fragments of hammered copper, and an unmodified copper nugget were recovered during the test excavations at Pemebonwon. The copper awl, pictured in Figure I-1, is slightly bent. It measures 115.7 mm. in length. The awl is circular in cross-section

with a maximum diameter of 5.5 mm. Both ends of the awl taper to form conical points. The two hammered fragments of copper are small, having a combined weight of 224.5 grams. The fragments are 3.8 and 2.0 mm. thick. The single unmodified nugget weighs 311.5 grams.

Post Molds

Three post molds were identified during the test excavations at the site. All of the post molds were located in test pit 10. The stains were dark, almost black in color. Each had a diameter of approximately 16 cm. The stains were encountered approximately 15 cm. below the surface and continued to a depth of 20 cm.

Fauna

Probably the most significant aspect of the Pemebonwon site is the unusual amount of bone recovered from the test excavations. A total of 939 bone fragments was recovered. This total is approximately 70 percent of the entire cultural debris recovered from the site. The bone fragments were not evenly distributed within the site, thus many test pits produced no faunal evidence while others appear to contain almost a solid layer of bone. The fauna from this site was sent to Elizabeth A. Cardinal for identification and analysis. Her report has been summarized and included elsewhere in this document.

Conclusions

The cultural material was recovered from an area which extends 150 meters along the Menominee River. Except for the faunal remains, the cultural material was thinly scattered throughout this area. The test excavations produced no evidence of hearths, storage and/or

refuse pits, and except for the random post molds, evidence of structures is also missing, yet faunal remains are abundant. Pemebonwon was obviously not the site of a large settled population, and the lack of hearths suggests that it may not have been the home of even a small seasonal population. It is possible Pemebonwon may have been a locality selected by the prehistoric inhabitants of the Menominee Watershed to be used for primary processing of the game they hunted. Its location, 60 miles upstream from the mouth of the Menominee River across from the Pemebonwon River, makes it ideally suited for a processing station for game hunted in the interior portions of the Upper Peninsula and then carried to Pemebonwon for butchering before being taken further downstream via canoe to the more densely populated areas of the Menominee River Watershed.

APPENDIX J

THE PENN BROOK SITE

APPENDIX J

THE PENN BROOK SITE

Introduction

The Penn Brook site is located in the NW 1/4 of the SW 1/4 of Section 9 (T.37N, R.28W), Menominee County, Michigan. The site is situated just downstream from the confluence of a small stream and the Menominee River. The stream is variously identified on county, state and federal maps as Penn Brook, Peme Brook, and Pemm Brook. This stream drains a small area east of the Menominee River, approximately one and one half miles upstream from Pemene Falls, between Spies Creek and Kading Creek.

The site occupies a restricted area between the banks of the Menominee River and a two lane gravel and dirt road. The land on which the site is located is presently owned by Wisconsin Michigan Power Company. Although a small turn-off provides access to the site proper for local fishermen and campers, the area is relatively undisturbed.

The light brown sandy soil currently supports a mixed vegetation of wild grasses, bushes, maple, birch, poplar, and balsam. This vegetation, however, is the result of massive lumbering activities which removed the large white and norway pines which once forested most of the western Upper Peninsula.

The Penn Brook site was located and archaeologically tested in 1973 by a Northern Michigan University field crew. A system of stratified unaligned sampling was used to randomly locate six 2 x 2 meter test pits. These test pits were dug in 10 cm. levels to an average depth of 40 cm. below surface. All of the soil removed during excavation of the test pits was screened using half-inch hardware cloth. All prehistoric material recovered in the screens was saved, washed, counted, and catalogued and is presently stored in the archaeological laboratory on the campus of Northern Michigan University. All test pits were backfilled at the end of the excavation.

Ceramic Description

A single small grit tempered cord-marked sherd was the only ceramic evidence recovered from any of the test excavations at the Penn Brook site. The sherd is tempered with medium to large particles of crushed granitic material and is 7.3 mm. thick.

Lithic Description

Introduction

A total of 130 fragments of worked and unworked chert and quartzite was recovered from the Penn Brook site. One hundred and fifteen fragments or 87 percent of the lithic debris consists of unmodified chert and quartzite chips. Although quartzite is important in this small sample of debitage, a majority, or 55 percent of the sample consists of white, grey and tan cherts. All of these materials are readily available in the glacial gravels throughout the Menominee Watershed. Also included in the lithic material recovered from the

site were: 2 projectile points; 5 scrapers; 2 biface fragments; 1 bipolar core; 2 retouched flakes; and 3 utilized flakes.

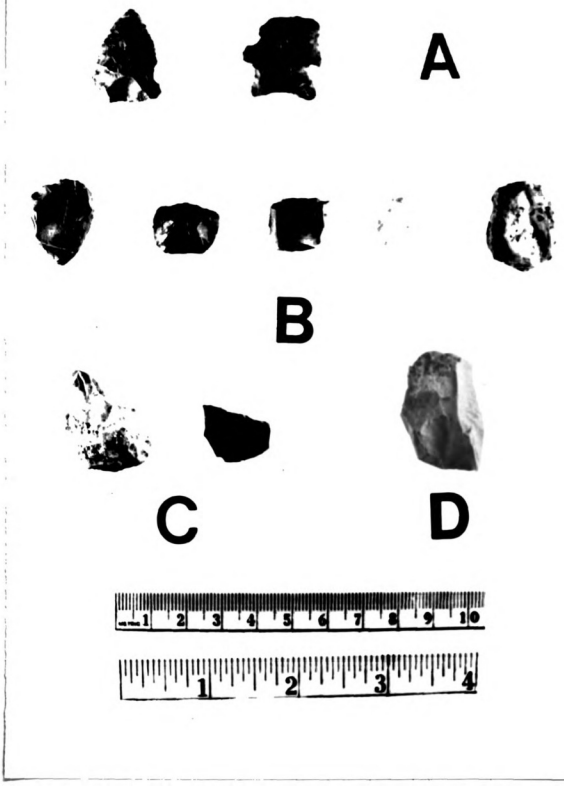
Projectile Points

One complete projectile point and one basal fragment were recovered from the test excavations at the Penn Brook site. Both specimens were manufactured from light and dark grey mottled chert. The complete specimen is a small triangular point which measures 26.0 mm. in length, 19.8 mm. in width and is 5.5 mm. thick. The point has slightly convex lateral edges and a straight base. The point is biconvex in cross-section, having a pronounced medial ridge on one side. The base of the point has been thinned by the removal of several flakes from either side of the base. The basal fragment is corner notched to form a stem 9.3 mm. in length and 8.3 mm. wide. The expanding stem has a slightly concave base. The fragment is 21.9 mm. wide at the shoulders and is 6.4 mm. thick. The point was biconvex in cross-section. Both of these specimens are illustrated in Figure J-1.

Scrapers

Five specimens recovered from the test excavations exhibit the steeply beveled edge typically associated with scraping tools. Four of the specimens are manufactured from either dark grey, light grey, or tan and grey mottled chert. The remaining tool is made from an opaque white quartzite. All of the scraping tools have been manufactured from flakes, exhibiting an unmodified dorsal surface. Three of the specimens are end scrapers. The remaining two specimens have been modified to form scraping edges along most of their perimeters. The end scrapers measure 13.9 mm., 16.4 mm. and 19.5 mm. in length. Measurements of

Figure J-1. Penn Brook Lithics; (A) Projectile Points, (B) Scrapers, (C) Biface Fragments, (D) Bipolar Core.


A
B
C
D
1 2 3 4 5 6 7 8 9 10
1 2 3 4

width for the same specimens are 18.5 mm., 18.1 mm., and 19.4 mm. Thickness of the scraping edge on the three specimens ranges from 3.3 mm. to 6.9 mm. The remaining two specimens measure 22.8 mm. and 17.1 mm. in length and 21.8 mm. and 14.5 mm. in width. These last two specimens are 5.3 mm. and 4.3 mm. thick. All of these tools are shown in Figure J-1.

Biface Fragments

Two broken bifacial implements of unknown or questionable function were included in the lithic debris from the site. These fragments may have served as knives or scraping tools. It is also possible to consider them as blanks or preforms intended for later finishing. One medium gray fragment appears to have been a portion of the convex lateral edge of the original tool. This fragment is 4.9 mm. thick and exhibits excellent workmanship. The second fragment has been more crudely manufactured from a coarse tan chert which contains numerous impurities. This fragment is the basal portion of what appears to have been a rather straight to slightly convex sided tool. The base, which is convex, measures 24.1 mm. in width and is 9.8 mm. thick. Both fragments are pictured in Figure J-1.

Bipolar Core

A single core was recovered from the Penn Brook site. The slate grey chert core is small, measuring 32.3 mm. in length, 22.9 mm. in width, and is 7.7 mm. thick. The core exhibits numerous long, thin flake scars. This core is also illustrated in Figure J-1.

Retouched Flakes

Two flakes exhibit unifacial retouching along a small portion of their perimeters. One flake, which is 3.0 mm. thick, has a slightly concave retouched edge approximately 18 mm. in length. The remaining flake is 9.1 mm. thick and has been retouched along a slightly convex portion of its lateral edge. The flake is broken, preventing an accurate measurement of the extent of the retouching.

Utilized Flakes

Three flakes are unmodified except for the numerous small hinge fractures clustered along one or more localized edge areas. These irregular edge surfaces were regarded as evidence that the flake had been used in its unmodified state for cutting and/or scraping activities. The flakes vary in length from 21.3 mm. to 48.9 mm. Two of the flakes are grey chert. The third flake is a light grey quartzite.

Summary

Six test pits were excavated at the Penn Brook site. A limited quantity of prehistoric material was recovered from these test excavations. Except for a single small grit tempered sherd, the recovered material was limited to lithic debris. Included within this debris were projectile points, scraping tools, bifacial implements, a core, and flakes used for scraping and cutting activities. These tools, associated with the lack of ceramic material, features, post molds and the relatively restricted size of the site, suggest the possibility that the site was used principally by the male members of the prehistoric population as a hunting camp.

Little of the cultural material recovered from the Penn Brook site can be associated with a particular temporal period. However, Binford and Quimby (1963) indicate bipolar cores are associated with the Late Woodland period. The presence of a bipolar core and a single grit tempered sherd suggests a Late Woodland affiliation for the Penn Brook site.

APPENDIX K

BRULEE' TRESTLE SITE

APPENDIX K

BRULEE' TRESTLE SITE

Introduction

The Brulee' Trestle site is located in the NW 1/4 of the NE 1/4 of Section 29, Stambaugh Township, Iron County, Michigan. It is situated on the north bank of the Iron River at the confluence of the Iron and Brule Rivers. At this point, the Iron River makes a large U-shaped bend, creating a broad point of land. The Brulee' Trestle site is centrally located within this peninsula. The site is easily located, lying between an abandoned railroad trestle which crosses the Iron River immediately to the east and the mouth of the Brule River immediately to the west.

The site is located on land owned by William Olsen of Scott Lake, Michigan. The area is part of a large parcel of land owned by the Olsen family. Farmland surrounds the wooded tract of land on which the site is located. The nearest county road is approximately a mile northeast of the site, prohibiting easy access to the site. Access to the site is limited to canoeing the Brule or Iron Rivers, which are frequently low and very rocky, making them difficult to use for transportation, or following the abandoned spur of the Chicago and Northwestern Railroad south of Scott Lake to the Iron River, then walking upstream to the site.

The site is small, covering no more than a 50 x 50 meter area. This area is surrounded by second growth vegetation, consisting primarily of birch, poplar, and maple. The site has been cleared of this wooded vegetation and is now a grassy area which has been frequently used as a campsite by area hunters and fishermen.

The site was located by Jerry Galm and Sally McBeth Galm during the 1974 archaeological survey of the Menominee River Watershed. A surface collection recovered numerous small sherds and flakes and suggested the site may be a large Late Woodland village. During the latter portion of the 1974 field season, the site was tested using a system of stratified unaligned sampling. At that time, five 2 x 2 meter test pits were excavated. The test pits were excavated in 10 cm. levels to a depth of 40 cm. below surface. All of the excavated soil was screened, using half-inch hardware cloth. Two of these test pits were sterile; the remaining three test pits produced only limited cultural material. Testing of the site provided additional data concerning the extent of the site and indicated the site was much smaller than suggested by the initial surface collection.

Pottery

The ceramic sample from the site was both small and homogeneous. Only 198 sherds were recovered. Approximately 90 percent, or 180 of these sherds, was recovered from the upper level of a single test pit. It is therefore possible that the total ceramic sample may represent only two vessels. The sherds are tempered with fine particles of crushed grit and exhibit a fine compact paste. The sherds vary in thickness from 3 to 7 mm., with an average thickness of 4.4 mm. More

than 90 percent of the sherds exhibit fine to medium cord-wrapped paddle impressions. The remaining 20 sherds have smooth exterior surfaces.

There were eleven rimsherds among the 198 sherds from the site. These eleven sherds are pictured in Figure K-1. All of the rimsherds have a flat or slightly rounded lip. The lip measures between 5.0 and 7.0 mm. in thickness, tending to be slightly thicker than the vessel wall due to an excess of clay which has been pushed forward at the juncture of the lip and exterior vessel wall. Except for the presence of cord-marking, the rims are undecorated. Cord-marking is also present on the lip of the vessels. The vessels, although represented by only fragmentary sherds, appear to have been essentially straight sided.

The rimsherds and body sherds from the Brulee' Trestle site appear to be similar to the type description of Madison Plain as defined by Keslin (1958:254). Although the ceramic sample from the site is extremely small, they have been provisionally classified with this ceramic category.

Lithic Description

The lithic assemblage consists of 118 chipped stone fragments of chert and quartzite and one hammerstone. With the exception of one retouched flake and two cores, the chipped stone assemblage consists of unmodified flakes. A total of 116 flakes was recovered. One hundred, or slightly less than 87 percent of the flakes, had been struck from a quartzite core. The remaining 16 flakes were chert, varying in color from white to tan to light grey. Except for a single small quartzite flake which had been retouched, all of the flakes were unmodified,

Figure K-1. Brulee' Trestle Ceramics.



exhibiting no evidence of retouching or utilization. The single retouched flake is small, measuring 31 mm. in length and 12.7 mm. in width. The flake exhibits a triangular cross-section and is 9.3 mm. thick. The flake has been unifacially retouched along the major portion of one slightly convex lateral edge.

The two cores recovered from the site are small block cores. Both cores are quartzite and have had a minimum of four flakes removed from their outer surfaces. A portion of the cortex is still visible on the smaller of the two cores.

A small ovoid rock has been extensively used as a hammerstone. The extremely weathered surface exhibits excessive battering along the slightly tapered end of the tool.

Summary

The Brulee' Trestle site, like the majority of the other sites within the Menominee River Watershed, is of limited size. This site, however, unlike the other small sites which were probably utilized as campsites in this region of the Upper Peninsula, produced a small assemblage of Late Woodland ceramics.

APPENDIX L

CHALK HILLS SITE

APPENDIX L

CHALK HILLS SITE

Introduction

The Chalk Hills site is located in the SE 1/4 of the SE 1/4 of Section 6 (T.36N, R.28W), Holmes Township, Menominee County, Michigan. The site is situated on the east bank of the Menominee River, approximately two miles upstream from the Chalk Hill Dam and power facility. Goodman Brook, which drains Dawn and Sunset Lakes, and is located two miles east of the Chalk Hills site, and empties into the Menominee River just north of the site.

Access to the site is provided by a well traveled gravel and dirt road which continues north from County Road 356. The land is owned by the Wisconsin Michigan Power Company. The area on which the site is located is designated as campground 4 and has been developed by Wisconsin Michigan Power as a camping facility and access site for area fishermen and other outdoor enthusiasts.

Location of the site within the campground hindered investigation of the prehistoric component. The Wisconsin Michigan Power Company was reluctant to authorize the excavation of test pits in the camping area during the summer, when the area is heavily used by recreationalists. As a result, data concerning the Chalk Hills site is limited to prehistoric material which was collected during two visits

to the site during which the area was surface collected. Material from the site was originally collected by Jerry Galm and Sally McBeth Galm in August, 1974. Two years later, the site was again visited. During this visit, the surface of the site was carefully collected by several members of Northern Michigan University's archaeological field school. Material collected in 1974 and 1976 consists of 415 waste flakes, 1 scraper, 1 utilized flake, 1 unifacially flaked implement, and 60 sherds.

Ceramics

The ceramic assemblage from the Chalk Hills site includes 2 rimsherds and 58 body sherds. All of the sherds are tempered with fine to medium sized particles of crushed granitic material. The sherds range in thickness from 6.1 mm. to 11.8 mm., and with an average thickness of 9.1 mm. Exterior surfaces were either cord-marked or smooth. Cord-marking, which was present on 30 of the sherds, was the most popular exterior surface treatment. Fifteen sherds exhibited smooth exterior surfaces. The remaining fifteen sherds were split or exfoliated and it was not possible to determine the exterior surface finish.

Except for three sherds, none of the body sherds exhibited any decoration. These three sherds displayed incised lines on smooth exterior surfaces. The incised lines varied from .1 mm. to .6 mm. in width. The incising was arranged in a parallel line motif on two of the sherds. Further definition of the decorative motif was impossible due to the limited size of the sherds.

Two vessels are represented by the two rimsherds from the Chalk Hills site. Both vessels had smooth exterior surfaces and a flat lip. The vessel lips measure 6.6 mm. and 7.7 mm. in thickness. The first vessel exhibits a straight rim. The second vessel has a slightly outsloping rim. Both vessels were decorated with relatively deep linear punctates. The punctates are placed at the juncture of the lip and exterior vessel wall on the first vessel. The punctates are spaced at 7 mm. intervals. The second vessel was decorated with a row of vertical linear punctates arranged in a horizontal row which encircles the vessel 3.1 mm. below the lip. Diagonal incising is visible directly below the punctates on this vessel.

Although the ceramic sample is too small to allow a completely accurate identification of the cultural component represented by the ceramic assemblage, the linear punctates, flat lip, and incising are decorative techniques associated with Middle Woodland ceramics at Summer Island (Brose, 1970). Summer Island is geographically the closest large Middle Woodland site, and it is reasonable to expect similar decorative characteristics at the Chalk Hills site during the same cultural period.

Lithic Description

Chipping debris collected at the Chalk Hills site totaled 415 flakes. Included in this total are 76 chert flakes and 71 quartz or quartzite chips. The majority of the debitage, however, consisted of relatively large and massive flakes of an unidentified raw material. This material is an igneous rock which is grey brown in color and has been tentatively identified as either a diorite or a diabase. It

exhibits a texture similar to schist, but lacks the wavy or undulating consistency characteristic of this material. The large flat fracture planes visible on the raw material suggest it is also similar to calsarcaeous limestone, a limestone formed from chemical precipitates.

Included in the lithic assemblage collected from the site were scraper, a unifacial implement, a core, and a utilized flake. The single bifacially flaked tool recovered from the site was a scraper. The artifact, originally a large stemmed point, has had one edge retouched to form a scraping tool. The scraping edge has been formed on the basal portion of the point along the fracture line which separated the basal and distal portions of the point. The tool is 34.8 mm. wide at the shoulders. The original point was probably 55 to 60 mm. in length, a measurement which was obtained by projecting the lateral edges of the tool. The stem which has been broken just below the shoulder is 16.3 mm. wide.

A large unifacial tool chipped from the unidentified igneous material described early in this report was recovered during the surface collection. The tool measures 15.8 cm. in length and 51.1 mm. in maximum width. The tool, which is massive and crudely formed exhibits a pointed distal end and a flat chisel-like proximal end which measures 34.8 mm. in width.

A small chert core was also recovered during the surface collection. Several small bladelets have been struck from the core. These scars encircle the proximal end of the core, which still exhibits the cortex.

Only one of the 415 flakes recovered from the site exhibits any evidence of utilization. This flake is a small grey flake which

exhibits an irregular edge, the result of numerous small hinge fractures around most of its perimeter.

Summary

The rather small and incomplete ceramic and lithic assemblages recovered from the site limit the accuracy with which the cultural component represented at the site can be identified. Several decorated sherds show some similarity to Middle Woodland materials recovered in adjacent portions of the Upper Peninsula of Michigan. These sherds, in association with a large bifacial point, although retouched into a scraping tool, and a small core from which several small bladelets have been struck, tentatively suggest the site was occupied sometime between A.D. 100 to A.D. 400.

APPENDIX M

THE QUARTZ WORKSHOP

APPENDIX M

THE QUARTZ WORKSHOP

Introduction

Near the western boundary of Marquette County, the Wisconsin Michigan Power Company has constructed a dam across the Michigamme River. This dam, known as the Michigamme Falls Dam and Power Plant, creates Michigamme Lake or Reservoir, the largest lake within the Menominee Watershed. Approximately an eighth of a mile south of the dam, the Michigamme River joins the Brule, creating the Menominee River. The small site is designated as the Michigamme Falls site is situated on the south bank of the Menominee River across from the mouth of the Michigamme River. The Quartz Workshop site is located directly across from this site on the north bank of the Menominee River and east bank of the Michigamme River in the NE 1/4 of the NE 1/4 of Section 16 (T.41N, R.31W), Mastodon Township, Iron County, Michigan.

The land on which the site is located is owned by the Wisconsin Michigan Power Company. The site is situated on the low, rocky ridge which is immediately adjacent to the Michigamme River. The surrounding vegetation primarily consists of small deciduous trees such as maple and birch, interspersed with open areas of wild grasses and brush. The vegetation and land formation have been substantially altered by the construction of the Michigamme Falls Dam. It appears the construction

of the dam and the associated water management have destroyed at least a portion of the site and seriously threaten what remains. The site is gradually being eroded away by the thousands of gallons of water which are released from Lake Michigamme. It is difficult to say how much of the site has been destroyed and to evaluate the damage caused by water erosion to the remaining deposit.

The site was discovered in 1974 while Jerry Galm and Sally McBeth Galm were surveying the upper portion of the Menominee Watershed. At that time numerous quartz and quartzite flakes, anvil stones and hammerstones were exposed along the narrow ridge of bedrock which parallels the Michigamme River. Using a system of stratified unaligned sampling, a single 2 x 2 meter test pit was excavated to a depth of 12 cm. below surface before reaching bedrock. The cultural assemblage, recovered through surface collecting and the excavation of a single test pit, consists solely of lithic debris.

Lithic Description

Introduction

Chipped stone debris dominates the lithic assemblage at the site. A total of 201 flakes were recovered. A majority of the flakes were struck from white opaque quartz cores. However, rose, tan and grey quartz and quartzite flakes were also represented. The flakes exhibit a wide variation in size, measuring from 78.9 mm. to 4.3 mm. in length.

Scraper

A single flake had been retouched along its lateral edge to create a steeply beveled edge, typical of scraping tools. The tool measured 32.7 mm. in length, 16.9 mm. in width and was 4.5 mm. thick. The retouching extended along the entire lateral edge, creating a small side scraper. The tool had been manufactured from a white and tan quartzite flake.

Retouched Flakes

Two large and massive flakes struck from a mottled white and rose colored quartz core showed evidence of bifacial retouching along a portion of their perimeters. The retouching was rough and irregular and difficult to detect. The retouching created a somewhat sinuous edge which may have been used as a cutting tool. The flakes measured 67.3 mm. and 53.8 mm. in length, 39.88 mm. and 37.5 mm. in width and were 22.8 mm. and 20.9 mm. thick.

Cores

Five cores were also recovered from the site. The cores vary considerably in size and shape, exhibiting irregular surfaces. Cores of similar size and shape have frequently been termed block cores. All five of the cores are quartz, varying in color from mottled white and rose, grey and white to tan.

Hammerstones

Included in the lithic debris from the Quartz Workshop site were two hammerstones. The first hammerstone is a river cobble. The cobble which was recovered from the test pit is egg-shaped and large

enough to fit comfortably in a large hand. The smooth exterior of the surface shows evidence of extensive battering on both ends and on one area of the circumference. The second hammerstone is approximately similar in size. The tool, however, is a portion of a much larger rock, and exhibits one unweathered fractured surface. The edge created by the intersection of the weathered and unweathered surfaces of the stone exhibits extensive battering.

Anvils

Three larger rocks have been classified as anvils, although one is of intermediate size and may have been used as a hammerstone. Each of these three stones shows evidence of extensive localized battering. This battering has created a shallow depression, approximately 70 mm. in diameter and 15 to 20 mm. deep, on one of the three anvils. The remaining two anvils do not exhibit modification of this extent but have had substantial portions of their surfaces removed as a result of the batterings.

Summary

The Quartz Workshop site produced an unusual assemblage of cultural materials. Except for a single scraper, utilitarian artifacts such as projectile points, drills, pottery, knives, and bifaces were absent in the assemblage. Animal bone, a reflection of food refuse, hearths and storage pits were also absent at the site. The cultural assemblage consists primarily of quartz and quartzite flakes, cores, hammerstones, and anvils. The occurrence of these items without any of the more utilitarian objects used in the day-to-day life of prehistoric peoples suggest the site was used primarily as a knapping

station or lithic workshop. Tools typical of a habitation site would be manufactured and carried off to be utilized at camps and villages in other areas of the watershed.

The cultural assemblage from the site is not readily dated. The single complete artifact is not diagnostic of any particular cultural period and quartz and quartzite have been used as a raw material in the Upper Peninsula since the Archaic. The location of the site on a lower bank of the Michigamme River, however, suggests the site was used by Woodland rather than Archaic peoples.

APPENDIX N

THE ALLGEYER SITE

APPENDIX N

THE ALLGEYER SITE

Introduction

The Allgeyer site is located in Section 9 (T.34N, R.37W), Mellon Township, Menominee County, Michigan. It is situated on the first terrace of the Little Cedar River, a tributary of the Menominee River. The site is approximately 1,000 feet upstream from the junction of the Little Cedar and the Menominee Rivers. At this point, the Little Cedar River flows westward, draining an area east and north of the Menominee River from Daggett, Michigan to slightly north of Wallace, Michigan.

During the month of July, 1973 an archaeological crew from Northern Michigan University surveyed the banks of the Little Cedar River and tested several sites along the Menominee River in Mellon Township. Mr. Curtis Allgeyer, Superintendent of the Wisconsin Public Service, Grand Rapids Power Station, aware of our search for prehistoric materials, approached the crew with several sherds he had found while bulldozing in a wooded area adjacent to his yard. The bulldozer had cut a trench approximately 1.6 meters wide and 2.2 meters long, perpendicular to a low, sandy ridge at the edge of the river terrace, exposing several features as well as numerous sherds. The cut varied from 45 to 50 cm. deep along the northern edge and tapered upward to 15 to 20

cm. at the southern end of the exposed area. Evidence of features was generally confined to the southern half of the cut, where the cut was shallower. The exposed area was initially cleared of loose soil and debris, photographed and drawn. The features were then excavated, after which the entire area was excavated in 10 cm. levels to sterile soil.

Five additional 2 x 2 meter test pits were located, using a system of stratified unaligned sampling, in the area surrounding the bulldozed cut. Test pits, however, were restricted to the wooded or unimproved portions of the property to avoid disturbing the large, well manicured yard which surrounds the Allgeyer home. The test pits were excavated in 10 cm. levels after removing the thick brush, the decaying forest mat and the surface. All of the test pits proved to be sterile. Data from the Allgeyer site is therefore limited to the artifacts and information recovered from the bulldozed area along the terrace ridge.

Mr. and Mrs. Curtis Allgeyer were extremely gracious to the field crew, and we are grateful for the opportunity to excavate near their home, and for their hospitality while excavating sites in the surrounding area.

Ceramics

The ceramic sample from the site is both small and very uniform. In all, 78 sherds, including three rimsherds and three decorated body sherds, were recovered, representing a maximum of six vessels. All of the sherds have a very uniform hard paste with small particles of grit temper. The sherds are relatively thick, measuring 6.9 mm. to 9.0 mm. in thickness with a mean of 7.9 mm. The vessels appear to have been relatively plain with smooth surfaces which frequently show evidence of

having been brushed. Many of the sherds which do not exhibit the striations characteristic of brushing appear to have been washed or flushed with water prior to the firing process, thus removing a thin layer of clay and exposing numerous fine grit particles on the surface of the sherd.

The three rimsherds, representing three vessels, have flat to slightly rounded lips which are 5.5 mm., 6.5 mm., and 7.0 mm. thick. Two of the rimsherds are entirely plain. One of these rims has a flat lip which is slightly beveled to the exterior of the vessels and has a straight rim profile. The second lip is somewhat rounded. The rim profile of the vessel is slightly everted. The third rimsherd is also somewhat everted. The lip, of which only a fragment remains, appears to be slightly rounded. The interior of the sherd is plain and smooth. The exterior is decorated with three horizontal rows of cord-wrapped stick impressions. The impressions begin approximately 8 mm. below the lip and are separated by plain intermediate zones, varying from 3.0 mm. to 6.0 mm. in width.

Two of the three decorated body sherds have shallow cord-wrapped stick impressions arranged in parallel bands on the exterior of the sherd. These impressions are separated by plain intermediate zones of 3.0 mm. to 7.0 mm. in width. A third sherd has a plain exterior surface; however, the interior surface of the sherd has been decorated with a slightly curving trailed line 5.0 mm. wide. The trailing did not occur until the vessel reached the 'leather hard' stage while drying during the manufacturing process. As a result, the trailing is uneven and numerous grit fragments protrude through the uneven trailed surface.

Lithic Description

The lithic assemblage from the site consists of one scraper and 46 unmodified flakes. All of the lithic debris is light to medium grey chert, much of which is banded resembling Norwood Chert.

The single lithic artifact is a small triangular scraper 27.0 mm. long and 23.5 mm. wide, and 5.8 mm. thick. The scraper has been unifacially retouched to form a steeply beveled scraping edge along the distal end and one lateral edge of the tool. The remaining edge exhibits numerous small hinge fractures as if the artifact had been battered along this edge.

Features

Six features had been exposed and partially excavated by the bulldozing in the southern and more shallow portion of the exposed area. Each of these six features is described below.

Feature 1: This was an oval area 80 cm. long and 60 cm. wide, of burned or fired clay. The bulldozer had removed approximately the upper 5 cm. of the clay leaving 10 to 15 cm. of clay, in situ. This was carefully chipped away in 5 cm. levels. No cultural material such as sherds, lithic debitage or bone was uncovered during the excavation of the clay. The edges and bottom of the clay area were irregular. The sand beneath the clay was reddened from intense heat.

Feature 2: A sandy area immediately adjacent to the western and southern edge of feature 1 was designated feature 2. The medium brown sand contained a heavy concentration of very small burned bone fragments. The bone fragments were clustered in an area approximately 80 cm. long and 25 to 30 cm. wide which curved around the burned clay.

The burned bone fragments were saved, but were too small to be identified more specifically than mammal bone. In addition to the bone, several fragments of fire cracked rock were also recovered from this area.

Feature 3: This was a small circular area of grey black sand which contained numerous flecks of charcoal. The stained soil, which measured 20 cm. in diameter and was 15 cm. deep, was located 50 cm. south of feature 1. The feature was originally somewhat larger, since the bulldozer had removed the upper 15 to 20 cm. of soil. How much of the feature was removed with this soil could not be determined. There was no cultural material recovered from the stained area.

Feature 4: This feature, located 55 cm. southwest of feature 1 and 20 cm. northwest of feature 3, was similar to feature 3. It was also a small circular stain of grey black sand containing numerous charcoal flecks. The stain varied from 25 to 30 cm. in diameter. Depth from the exposed surface to the round bottom was 11 cm.

Feature 5: This was a third small, grey black sandy stain south of feature 1 and slightly southeast of feature 3. The feature was oval in outline, varying in diameter from 40 to 20 cm., with a depth of 16 cm. below the exposed surface of the cut. No artifacts were directly associated with the feature.

Feature 6: A long, narrow trench was designated as feature 6. The trench, which measured 180 cm. in length and 15 cm. in width, was filled with a mottled black and gold sand which was highly visible in the surrounding brown sandy soil. The trench, or mottled scare, ran northeast/southwest, terminating at the northern edge of feature 2. The trench measured 49 cm. in depth below the exposed surface at the

southern end of the bulldozer cut. No artifacts were recovered from the soil removed during the excavation of the trench.

Summary and Conclusions

A small bulldozer cut provides the only glimpse of the behavior of the prehistoric inhabitants of the Allgeyer site. A system of stratified unaligned sampling was employed in an attempt to obtain additional archaeological data. The test pits were sterile, however, suggesting the prehistoric activity at the site was limited to a small area along the river terrace. The small, exposed area along the ridge, however, appears to have been intensely utilized.

Much of the data from this area has been destroyed. The northern half of the cut was excavated by the bulldozer to a depth of 45 cm. below the surface, effectively removing evidence of features which may have existed in this upper zone. Although the cut was shallower in the southern part of the exposed area, none of the features were entirely undisturbed. All of them appeared to have had a minimum of 5 cm. scraped from their upper surfaces, and in some cases, this could have been as much as 10 to 15 cm. In addition, most of the sherds associated with the site were not found in situ, but while clearing the loose soil and debris to more fully expose the surface. Many more sherds as well as lithic debitage from the area must have been crushed and/or removed from the ridge and deposited in a heap at the end of the trench. This soil was not sifted, and no other attempt was made to recover any of the cultural material which it may have contained.

The limited size of the Allgeyer site, as well as the density of features and sherds within the confines of the bulldozer cut, suggest the site may best be interpreted as a functionally specific activity area related to one of the three nearby prehistoric villages or encampments on the Menominee River (Grand Rapids Dam, Grand Rapids, Little Cedar River sites). Any attempt to interpret the area is extremely speculative with such limited data; however, an activity which involved ritualized and/or communal food preparation seems to offer the best explanation for the recovered data. The burned clay, designated as feature 1, could then be interpreted as a prepared clay hearth or cooking platform. The several charcoal stained areas south of feature 1 appear to be deposits of ash and charcoal from the nearby hearth. The concentration of burned mammal bone, along with the prevalence of sherds, is consistent with food preparation. Only feature 6, a long narrow trench, remains unexplained.

Dating the site is even more precarious. Charcoal, although present in features 3, 4, and 5, was not plentiful enough to collect for a carbon-14 sample. The sherds are plain, except for some very shallow cord-wrapped stick impressions and brushing, lacking distinctive decorative techniques which allow for easy identification and association with other ceramic assemblages. The uniform, hard, compact paste with fine grit temper and smooth brushed surfaces associated with the Allgeyer ceramics are not characteristic of Late Woodland ceramic assemblages, suggesting the site may be Middle Woodland. Other Middle Woodland sites within the Menominee Watershed, however, have their closest affinities with the North Bay ceramics on the Door Peninsula in northeastern Wisconsin. The Allgeyer ceramics do not exhibit any of

the paste or decorative techniques of the North Bay assemblage, suggesting they may be somewhat later in temporal affiliation and more closely related to the Middle Woodland wares found in the northern half of the Lower Peninsula of Michigan.

APPENDIX O

THE RIVER PARK SITE

APPENDIX O

THE RIVER PARK SITE

Introduction

River Park is a county owned park located in Government Lot 1, Section 13 (T.33N, R.27W), Menominee County, Michigan. The county has constructed a small pavilion and restrooms, dug a well and placed picnic tables near the pavilion and well. Most of the park area, however, has been left undeveloped. This undeveloped area supports a mixed deciduous and coniferous forest. Birch, maple, poplar, balsam and white pine dominate in this dense, second growth forest. The forest floor and surrounding ground are thickly covered with ferns, blueberries, raspberries, blackberries, numerous mushrooms, and poison ivy. Access to the park, which is situated between River Road and the Menominee River, is provided by a narrow dirt road which enters the southeast corner of the park and winds its way along the river bank and through the forested portion of the park.

Prehistoric material was thinly and intermittently scattered in the area between the road and the river bank. This area was tested in August, 1973, by the archaeological field school from Northern Michigan University.

A total of ten 2 x 2 meter test pits were randomly located along the river bank, using a system of stratified unaligned sampling.

Each test pit was excavated in 10 cm. levels to a maximum depth of 40 cm. below surface. All excavated soil was screened, using half-inch hardware cloth. Cultural debris, square sheets, field notes and photographs associated with the test excavation at the River Park site are stored in the archaeological laboratory on the campus of Northern Michigan University.

The test excavations would not have been possible without the consent and cooperation of Menominee County officials. We are particularly grateful to the Menominee Road Commission for granting us permission to excavate within the park.

Ceramic Description

The ceramic sample from the River Park site consists of eight sherds. The sherds are tempered with fine to medium sized particles of crushed granitic material and exhibit cord-marking on their exterior surfaces. The interior surfaces are plain and smooth. The sherds vary in thickness from 6.3 mm. to 8.1 mm.

Three of the sherds are rimsherds. These three sherds appear to have formed a small section of the rim of a single vessel. The rimsherds have a smooth and round lip which is 7.1 mm. thick. The vessel is decorated with diagonal cord impressions arranged around the top of the lip. These cord impressions are spaced at intervals which vary in width from 3.8 mm. to 7.1 mm.

The ceramic sample from the site is extremely small but appears to be typical of Late Woodland wares throughout the northern Great Lakes region.

Lithic Description

Only forty-four lithic fragments were recovered during the test excavation at the River Park site. Forty-three of these fragments are chert flakes. These flakes are small and vary in color from mottled white and tan to grey. None of the flakes exhibit any evidence of retouching or utilization.

The remaining lithic fragment is a small triangular projectile point. The point is 18.1 mm. long, 16.9 mm. wide and measures 4.3 mm. in thickness. The point has been broken approximately 7 mm. from the distal end of the tool. This fractured edge has been bifacially retouched. The point has slightly convex lateral edges and a slightly concave base. The point has been crudely manufactured from a dark grey and white chert.

Summary

Although cultural material was scattered along several hundred feet of the river bank, the test excavations did not locate any evidence of a midden, storage pits, hearths or areas of high artifact density. Cultural material appears to be thinly scattered throughout a large portion of the park area, which borders on the Menominee River. The recovery of a small triangular point and a few grit tempered, cord-marked potsherds, suggests that the site was utilized as a temporary overnight camp by Late Woodland peoples.

APPENDIX P

THE CHAPPEE RAPIDS SITE

APPENDIX P

THE CHAPPEE RAPIDS SITE

Introduction

The Chappee Rapids site is located in Government Lot 1, Section 19 (T.32N, R.27W), Menominee County, Michigan. Ownership of the land on which the site was located was in transition at the time the site was tested. At that time, Peter Weber of Marinette, Wisconsin was the legal owner of the parcel; however, Mr. Weber had already erected an historical marker and monument on the land and was in the process of donating the land to the Menominee County Historical Society. Shortly after finishing the test excavations at the site, the title transfer was completed and the land is now owned and maintained as an historical site by the Menominee County Historical Society.

I would like to express appreciation to Mr. Weber for permission to test the area. Without his cooperation, much of our work in the Menominee area would not have been possible.

The area, which is located between the east bank of the Menominee River and River Road, approximately 10 miles upstream from the mouth of the river and a mile downstream from the Chappee Rapids, is easily identified by an historical plaque placed along the roadside. Closer to the river, a monument in the form of a large tombstone has been erected for Chappee, the first fur trader to establish a trading post in the lower

Menominee River Watershed. Local tradition places the site of the trading post and the trader's grave in this vicinity. Our test excavations, however, located no data to substantiate this popular belief.

The area, which was once cleared for farming, is now an abandoned meadow. Numerous small trees have begun to reestablish forest vegetation in the former fields. Unfortunately, the thick grasses prevented an effective surface collection of the area. Although no evidence of a prehistoric occupation could be obtained through surface collecting, the area was tested. The decision to test the area was reached after consulting several local collectors who claimed to have acquired substantial portions of their rather large collections from this area when it was still being farmed.

The area was tested by excavating ten 2 x 2 meter test pits. Test pit locations were determined by using a system of stratified unaligned sampling. Each test pit was excavated in 10 cm. levels to a depth of 40 cm. below surface. All excavated soil was screened, using half-inch hardware cloth.

Although our test excavations produced evidence of thinly scattered prehistoric debris, there was no indication of an occupation of the magnitude described by area collectors. Only half of the ten test pits contained any cultural debris and this was limited to 42 unmodified flakes, 2 projectile points, 1 biface fragment, 1 spokeshave, 1 retouched flake, 1 utilized flake, 12 potsherds and 1 copper nugget.

Ceramics

Only twelve potsherds were recovered from the site. The twelve sherds are tempered with fine to medium sized particles of grit. The

sherds vary in thickness from 5.7 mm. to 8.3 mm. Seven of the sherds are cord-marked, while the remaining five sherds have smooth exterior surfaces. Three sherds, representing three vessels, are decorated with linear impressions are made by impressing a paddle edge or similar implement diagonally into the moist clay. These linear impressions are at least 16 mm. in length and vary from 1.0 mm. to 2.9 mm. in width. These impressions are arranged in decorative bands. The impressions are spaced at intervals of 4.4, 5.7 and 5.9 mm. on the three sherds. The sherds are fragmented and little can be said regarding their cultural affiliation except that they exhibit characteristics of Late Woodland wares found throughout the northern Wisconsin and Upper Michigan area.

Lithic Description

Thirty-six of the 42 fragments of lithic debitage have been struck from a variety of white, tan, brown and grey chert cores. The remaining six fragments have been struck from either a clear or milky white quartz core. None of these fragments exhibits retouching or evidence of having been utilized as a cutting or scraping tool.

Both of the projectile points recovered from the test excavations are triangular. The first point is a small, rather thin tool with serrated edges. Although a small portion of the distal end is missing, the point was probably no more than 25 mm. in length. The point measures 18.2 mm. in width and is 3.1 mm. thick. The point has straight lateral edges and a straight base. The point is biconvex in cross-section and has been manufactured from a tan and white mottled chert. The second point is also isosceles in outline. This point measures 37.3 mm. in length, 20.2 mm. in width and is 7.8 mm. thick. The point has slightly

convex lateral edges and a straight base. The tool is biconvex in cross-section and has been manufactured from a coarse grained grey chert.

The mid-section of the bifacial implement was recovered from test pit 7 at the Chappee Rapids site. The fragment is 32.3 mm. wide and exhibits extensive battering along one of the fracture lines. The tool was chipped from a brown and white mottled chert nodule.

A single light grey chert flake appears to have been used as a spokeshave. The flake, which measures 40.0 mm. in length and 20.8 mm. in width, has been retouched along a portion of one lateral edge. The retouching has created a small notch or concave segment 9.8 mm. wide and approximately 3.8 mm. deep.

One chert flake has been retouched. The retouching extends approximately 18 mm. along the convex distal edge of the flake. The flake, which measures 33.0 mm. in length, 28.1 mm. in width and is 12.9 mm. thick, may have been used as a scraping tool.

Only one small flake exhibits evidence of having been utilized. The flake is small, measuring 28.7 mm. in length, 17.0 mm. in width and is 7.4 mm. thick. The entire perimeter of the flake exhibits an irregular edge, characteristic of extensive utilization.

Copper

A small copper nugget was recovered from the test excavations at the site. The nugget is small, weighing 5 ounces. The nugget is heavily corroded and it is impossible to tell if it has been modified.

Conclusions

The test excavations at the Chappee Rapids site suggest that the site was used only as an intermittent campsite and is not a large prehistoric village, as local collectors indicate. Cultural debris is thinly scattered along approximately 70 meters of the Menominee River bank. Test excavations produced only a limited sample of cultural material. Little can be said regarding this material, except that it is typical of a generalized Late Woodland period in the northern Great Lakes region.

APPENDIX Q

LATE WOODLAND CAMP SITES

Introduction

The archaeological survey of the Menominee River Watershed located four sites which appear to have similar characteristics and have been grouped and described consecutively in this section. The four sites are: the Cook site; the Rye site; the Abolins Farm site; and the Michigamme Falls site. These four sites share the following characteristics. The sites are located along the banks of the Menominee River. All of the sites are small, with the largest being no more than 30 square meters in horizontal extent. Each site is represented by a minimal amount of cultural material, consisting primarily of lithic debris. This debris includes waste flakes, scrapers, and projectile points, an assemblage typically associated with male hunting activities.

The sites are considered to be Late Woodland in temporal affiliation. This Late Woodland cultural association is tentative but is suggested by the presence of grit tempered sherds at the Rye site. Small triangular points recovered from the Abolins Farm site and the Rye site further substantiate the Late Woodland affiliation.

The Cook Site

The Cook site is located at the confluence of Twin Falls Creek and the Menominee River in the NW 1/4 of the SW 1/4 of the SE 1/4 of Section 12 (T.40N, R.31W), Dickinson County, Michigan. The land on which the site is located is adjacent to Dickinson County Road 607, approximately 0.4 mile north of U.S. 2, and is owned by Dr. and Mrs. James Cook.

The Cook family has built a home at the edge of the second terrace along the Menominee River. The site is situated on the first terrace of the Menominee River in the front yard of the Cook home. The land has been cleared of the original vegetation and the family has planted grass. The light brown sandy soil which forms the river terrace, however, supports only scattered patches of intermittent clumps of grass. The vegetation of surrounding the cleared area consists of a mixed deciduous and coniferous forest in which maple and birch are the dominant species.

The site was discovered during the 1974 archaeological survey of the northern two-thirds of the Menominee Watershed, after Dr. and Mrs. Cook contacted the field crew. The Cooks had found a large Osceola point in the family garden, which is located behind their home on a small hill or bluff overlooking both the Menominee River and Twin Falls Creek. A surface collection, however, of the garden and surrounding area failed to locate any additional evidence of an archaic occupation in this area. The Cook site was discovered when the search for an archaic occupation radiated outward from the garden and included a small portion of the first terrace of the Menominee River. Several small quartz and quartzite flakes were recovered from the first terrace,

approximately 12 meters from the water's edge. Although the material was not related to the Osceola point recovered from the higher areas of the Cook property, the attention of the survey crew was shifted to this location.

Using a system of stratified unaligned sampling, three 2 x 2 meter test pits were located in the area surrounding the surface debris. Each test pit was excavated in 10 cm. levels to a maximum depth of 30 cm. Two of the test pits were sterile. Only the first level of the third test pit produced any sub-surface evidence of the prehistoric occupation at the Cook site.

All of the prehistoric material from the site was recovered from a relatively small area, which measured 10 x 3 meters. The entire assemblage includes 21 fragments of quartz and quartzite debitage, 1 retouched quartz flake, a large quartzite nodule from which a flake has been struck, a single utilized chert flake, a projectile point tip, and several fragments of bone.

Eighteen fragments of the quartz and quartzite debitage, including the one retouched fragment, were surface finds. The remaining four fragments were recovered from the upper 5 cm. of level one in the single productive test pit at the site. All of the fragments are small, varying in length from 11 cm. to 29.8 cm. The retouched fragment is a triangular shaped piece of quartz which measures 13.6 cm. in length and is 10 cm. wide. The fragment has been retouched along one lateral edge. In addition to the quartz and quartzite flakes, a large quartzite nodule was also recovered from the Cook site. The nodule, recovered during the excavation of the test pit, measures 48.7

in length, 32.9 mm. in width, and is 18.5 mm. thick. A single longitudinal flake has been removed along one lateral edge of the nodule.

Only two chert fragments were recovered from the site. Both fragments were sub-surface finds, recovered from the excavation of the test pit. The first of the two fragments is a small flake which has been extensively utilized. The flake measures 20.5 mm. in length, and 16.8 mm. in width. The only other chert fragment recovered from the Cook site was the distal end of a bifacially flaked point. The point fragment measures 14.3 mm. in length, 13.8 mm. in width, and is 3.3 mm. thick. Both fragments are a coarse grained grey chert which contains numerous irregularities or impurities.

Seven small fragments of bone were recovered during the excavation of the test pits. Six of these fragments have been burned or charred. Although none of the fragments could be identified by species, all of the fragments appear to have been mammal bones.

Further surface collecting and conversations with the Cook family and their neighbors failed to provide any evidence of either an archaic occupation associated with the Osceola point or a larger Woodland occupation. The Cook site appears to be a small campsite utilized seasonally or during overnight hunting trips.

The Rye Site

The 1973 site survey of the lower one-third of the Menominee Watershed located a small site on the east bank of the Menominee River. The site, located in Government Lot 3, Section 16 (T.34N, R.27W), Mellon Township, Menominee County, Michigan, is situated approximately 23 miles upstream from the mouth of the Menominee River in the twin

cities of Menominee, Michigan and Marinette, Wisconsin. The site is situated between the Menominee River and County Road 577. The land on which the site is located is owned by Buck Rye.

Mr. Rye and his family have built a home immedimately adjacent to the area from which they had been collecting prehistoric material. The Rye family had, in their possession, a small collection of grit tempered cord-marked sherds, copper fragments, and chipped stone tools which they had been collecting from their side yard since moving to this location several years ago. The Rye family was aided in their search for evidence of the prehistoric occupation by Tom Nixon, their neighbor and a close friend and associate of Robert Hruska, Director of the Oshkosh Public Museum in Oshkosh, Wisconsin.

Mr. Rye willingly permitted us to view his collection and consented to allow us to excavate several test pits in an area immediately south of his house. This is the area which he claimed had produced the material he had been collecting. We are grateful to Mr. Rye and his family for allowing us to view the collection and for granting us permission to excavate.

Although the grass and low lying brush which hampered our surface collections in other areas that had been worn away by the feet of many playing children and family dogs, a surface collection of this area failed to produce any prehistoric cultural material. To test the area after conducting the unsuccessful surface collection, three 2 x 2 meter test pits were excavated between the Rye family home and the Rye/Nixon property line. Each pit was located, using a system of stratified unaligned sampling. Each of the test pits was excavated in 10 cm. levels to a depth of 40 cm. below surface. All excavated soil was

screened, using half-inch hardware cloth. The limited material recovered from the test excavations was washed, counted, and catalogued and is housed in the archaeological laboratory on the campus of Northern Michigan University.

Only two grit tempered sherds were recovered from the Rye site. The sherds are tempered with fine to medium sized particles of crushed granitic material. Both sherds exhibit a cord-marked exterior and a smooth interior surface. The sherds measure 6.3 mm. and 6.1 mm. in thickness. Little can be said about their cultural affiliation except that they resemble Late Woodland wares found throughout Northern Wisconsin and Upper Michigan.

The limited lithic assemblage from the Rye site consists of 8 flakes, 1 projectile point, and a small core.

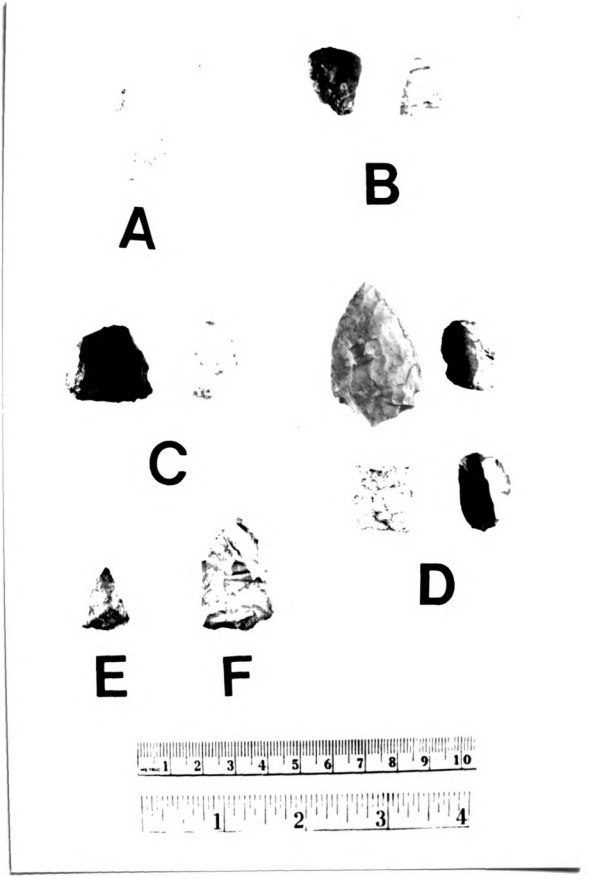
The eight flakes have been struck from white to grey chert cores. The flakes are unmodified, exhibiting no evidence of retouching or utilization on any of their edges.

The single projectile point is a triangular point. The point, pictured in Figure Q-1, has been crudely manufactured from a light grey chert. The projectile is isosceles in outline, with a straight base and slightly convex lateral edges. The lateral edges exhibit irregular unifacial retouching. In cross-section, the point is plano-convex. The point measures 33.9 mm. in length. The base of the point is 22.8 mm. wide and the point is 4.8 mm. thick.

A small core of light and dark grey banded chert was also recovered. The core has had several flakes struck from its outer surface, but still exhibits a substantial portion of the cortex. The core has an irregular shape.

Figure Q-1. Miscellaneous Lithics; (A) Projectile Point from Michigamme Falls Site, (B) Projectile Point and Scraper from Abolins Farm Site, (C) Scrapers from Van Riper Site, (D) Projectile Point Base and Scraper from Shakey Lake Site, (E) Projectile Point from Casey Lake North Site, (F) Projectile Point from Rye Site.

Figure Q-1. Miscellaneous Lithics; (A) Projectile Point from Michigamme Falls Site, (B) Projectile Point and Scraper from Abolins Farm Site, (C) Scrapers from Van Riper Site, (D) Projectile Point Base and Scraper from Shakey Lake Site, (E) Projectile Point from Casey Lake North Site, (F) Projectile Point from Rye Site.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The limited amount of cultural material recovered from the test excavations suggest, either the site was exceptionally small and the Rye family has, over the years, collected most of what was deposited by the prehistoric occupation, or the main portion of the site is situated in adjacent areas of the yard where we were not given permission to excavate. The lack of diagnostic tools or ceramic fragments recovered from the site effectively limits any interpretation or association with nearby sites. In summary, it can be said that it appears the Rye site was occupied by a small group of Late Woodland inhabitants for a very brief period of time.

Abolins Farm Site

The Abolins Farm site is located on the west bank of the Menominee River in the NE 1/4 of Secton 30 (T.34N, R.27W), Marinette County, Wisconsin. The Abolin Farm is located on the east side of Burette Road, approximately two miles from the McAllaster Bridge on County Road JJ. The site is picturesquely situated on a small, sandy ridge, 85 meters northwest of the Menominee River. The site lies in a small, cultivated field which, at the time of the survey, was planted in hay.

The site was discovered by Jerry Galm and Sally McBeth Galm during the 1974 archaeological survey of the Menominee Watershed. As part of the survey, the cultivated fields on the Abolins' farm were searched for evidence of prehistoric material which may have been exposed by the successive plowing of the farmland. Prehistoric material was located in only one area of this plowed farmland. This area was small, covering no more than nine square meters. Two 2 x 2 meter test

pits were randomly located in the region immediately surrounding the area from which surface materials were collected. The test pits were excavated in 10 cm. levels. All of the excavated soil was screened, using one-half inch hardware cloth. Neither of the two test pits produced additional prehistoric material. As a result, the cultural material from the Abolins Farm site consisted entirely of lithic debitage and chipped stone artifacts collected from the surface of the field.

Cultural material recovered from the site includes eight waste flakes, a small end scraper, and a triangular projectile point. In addition to the lithic debris, several fragments of weathered mammal bone and a fragment of a kaolin pipe were also collected. Historic materials and animal bone, however, were thinly scattered throughout the farm fields, suggesting that these materials may not be associated with the small lithic assemblage collected from the Abolins Farm site.

The eight flakes consist of five dark grey to light tan chert flakes and three milky white quartzite flakes. The flakes vary in length from 10.1 mm. to 72.4 mm. Except for a single, extremely large flake, none of the lithic debitage exhibits evidence of retouching or utilization. The single dark grey chert flake which exhibits retouching measures 72.4 mm. in length, 32.5 mm. in width, and has a maximum thickness of 17.4 mm. The flake is rectanguloid in outline and has a triangular cross-section. Fine unifacial retouching is present along the entire surface of one lateral edge.

The small triangular end scraper collected from the site measures 21.4 mm. in length, 17.7 mm. in width, and is 2.9 mm. thick. The scraper is made of a fine grain tan and grey mottled chert. The

bulbar end of the scraper still exhibits portions of the cortex. The distal end and a single lateral edge of the tool exhibit the steeply retouched edge typical of scraping tools.

A single projectile point, shown in Figure Q-1, made from a coarse white chert, was recovered from the surface area of the site. The projectile is a unifacially flaked triangular point. Although somewhat asymmetrical in shape, the point is essentially isosceles in outline. The base of the point is concave. The projectile point measures 16.7 mm. in length, 15.2 mm. in basal width, and is 2.9 mm. thick.

The Abolins Farm site appears to be a small campsite similar to those located throughout the Menominee River Watershed.

Michigamme Falls Site

The Michigamme Falls site is located in the NE 1/4 of the NW 1/4 of Section 12 (T.41N, R.31W), Florence County, Wisconsin. It is situated on the south bank of the Menominee River, immediately below the confluence of the Brule and Michigamme Rivers, the point at which the Menominee River originates. The southeast bank of the Menominee and Brule Rivers curves north and then south, forming a point which overlooks the Michigamme Falls and the mouth of the Michigamme River. This scenic view is partially obscured by the Michigamme Falls Hydro-electric Plant, a large power plant located just upstream from the mouth of the Michigamme River. The power plant and the land surrounding the junction of the Michigamme, Brule, and Menominee Rivers is owned by the Wisconsin Michigan Power Company.

Access to the site is provided by a gravel road which terminates in a small parking area and is used by local recreationists for fishing.

boating, and swimming in the confluence area. The site is located just to the east of this parking area. The area supports a dense deciduous forest dominated by birch and maple.

Appreciation is extended to officials of the Wisconsin Michigan Power Company for permission to survey and test not only the Michigamme Falls area, but the large company land holdings throughout the Menominee River Watershed. In addition, we are grateful to the Wisconsin Michigan Power Company for their cooperation in providing camping facilities for the archaeological field crews while we surveyed the Menominee Watershed. Our work within the Watershed was greatly facilitated by effective and efficient company policies which established numerous access sites and camping facilities for the public along the banks of the Menominee River.

The Michigamme Falls site was recorded during the 1974 archaeological survey of the upper Menominee River Watershed by Jerry Galm and Sally McBeth Galm and subsequently tested by a small field crew from Northern Michigan University. Three 2 x 2 meter test pits were excavated. Each of the three test pits was excavated in 10 cm. levels to a depth of 50 cm. All of the excavated soil was screened, using half-inch hardware cloth.

Two of the three test pits were sterile. The third test pit produced the distal end of a large quartz point, 3 quartz chips, 1 chert flake, and numerous bone fragments. All of the material was recovered from the upper 20 cm. with a majority of the bone and all the lithic material being located in the first 10 cm. level of the test pit.

The distal end of a relatively large quartz point was the only tool recovered from the site. The point fragment, which is shown in

Figure Q-1, is bifacially flaked and exhibits excellent workmanship. The fragment has straight lateral edges and measures 44.8 mm. in length, 27.0 mm. in width and is 8.1 mm. thick. The lateral edges of the point appear to be slightly indented just above the fracture line, suggesting the point was originally side notched. Lithic debitage is represented by only four fragments, 3 quartz and 1 chert flakes. All of the flakes are small, measuring no more than 23 cm. in length and 8 mm. in width. None of the flakes exhibits evidence of retouching or utilization.

Bone represented the most numerous item recovered from the test excavations at the Michigamme Falls site. Thirty-seven fragments of mammal bone were recovered. Fifteen of the bone fragments show evidence of having been charred or burned.

The Michigamme Falls site appears to be a small, specialized or seasonal camp. The site is represented by cultural material from a single test pit. Surface collecting, shovel testing, and excavation of two additional test pits produced no further evidence of prehistoric activity.

APPENDIX R

LAKE SHORE SITES IN THE MENOMINEE RIVER WATERSHED

APPENDIX R

LAKE SHORE SITES IN THE MENOMINEE RIVER WATERSHED

Introduction

Twenty of the twenty-six sites located during the four years of archaeological field work in the Menominee River Watershed were located along the banks of the Menominee River or its major tributaries. The remaining six sites were located along the shores of inland lakes. Four of these sites, Casey Lake North, Casey Lake South, Martells Lake, and Porterfield Lake, were situated along the shores of small inland lakes in western Marquette County. The remaining two sites, Van Riper and Shakey Lakes Park, were located adjacent to Lake Michigamme and Bakers and Bass Lakes, large inland lakes.

In addition to sharing a lake side location, these six sites exhibit other similarities, which suggested including them in a single section. All of the sites are small. The surface collections and limited testing suggest the sites are no more than 50 square meters in size. Except for the Shakey Lakes Park site, where testing produced a minimal amount of cultural material, the sites are entirely represented by small surface collections. The surface collections consist entirely of lithic debris and occasionally a few small fragments of bone and/or the remains of a hearth.

There are few clues among the lithic debris collected at these sites to indicate their cultural association. However, the small triangular point recovered from the Casey Lake North site suggests a Late Woodland affiliation. This temporal association is also suggested by the location of hearths on or very near the surface at the Martells Lake and Porterfield Lake sites.

The Casey Lake North Site

The Casey Lake North site is located on the SW 1/4 of the SW 1/4 of the SE 1.4 of Section 15 (T.45N, R.29W), Marquette County, Michigan. The site is situated approximately sixty feet from the water's edge, along the north shore of Casey Lake, directly behind a small cabin owned by the Juidici family.

Casey Lake and the surrounding area are located in the southwest corner of Marquette County. This portion of Marquette County is dotted with numerous small lakes and streams, a topography typical of an undeveloped drainage system in an area only recently unglaciated. Casey Lake is similar to the many other small neighboring lakes scattered throughout the area. More specifically, Casey Lake is an oblong, relatively shallow lake. The lake is approximately one-half mile in length with a maximum width of slightly less than a quarter of a mile. The surrounding yellow grey sandy soil supports an underdeveloped second growth forest of conifers and hardwoods.

The site was located during Northern Michigan University's 1974 archaeological survey of the northern portion of the Menominee Watershed. At that time, survey personnel collected lithic debris in the roadway leading to the Juidici cabin. During a subsequent visit

to the site, two 2 x 2 meter test pits were excavated on either side of the drive. Although all of the excavated soil was carefully screened using half-inch hardware cloth, no additional prehistoric material was recovered.

The surface collection consists of a single projectile point, a bifacial ovate, a fragment of a grinding stone, and twenty-five chert and quartz flakes. Twenty-four of these flakes had been struck from quartz cores. The remaining flake was a small grey chert flake. The flakes were generally small and exhibited no evidence of retouching or utilization. The projectile point, pictured in Figure Q-1, is a small triangular point, crudely fashioned from the cortex of a light grey chert nodule. The bifacially flaked point is isosceles in outline with a slightly convex base. The point measures 19.1 mm. in length, 14.3 mm. in width, and is 3.0 mm. thick. The only other chipped stone tool represented in the surface collection was a small bifacially flake ovate. The ovate is manufactured from a coarse grained black basalt-like material. The tool has been retouched and extensively utilized along one lateral edge. The other lateral edge and distal end of the ovate also exhibit evidence of extensive utilization. The ovate measures 46.7 mm. in length, 35.2 mm. in width, and is 15.5 mm. thick. The grinding stone was formed from a granitic material. Although only a fragment of the grinding stone was recovered, a shallow depression or slightly concave surface is visible on one surface of the stone. Numerous striations on this concave surface are visible with a microscope.

The Casey Lake North site is represented by a surface collection consisting of twenty-eight lithic fragments. All of the debris was

collected from a small area at the edge of the Juidici drive. The entire area from which the material was collected was no larger than forty square meters.

The Casey Lake South Site

Another small site was located near the southern end of Casey Lake, approximately one-half mile south of the Casey Lake North site. The Casey Lake South site is situated in the roadway which runs along the eastern side of the lake, approximately 100 feet inland from the southeast corner of Casey Lake. The land on which the site is located is owned by Pankri Bengry. The Bengry land is immediately north of the Michigamme State Forest in the NE 1/4 of the SE 1/4 of the NW 1/4 of Section 22, Marquette County, Michigan.

The sandy soil, on which the site is located, supports an undeveloped secondary growth of poplar, birch, and maple. The Bengry family has cleared portions of this vegetation to plant a lawn which surrounds their home. The Casey Lake South site is located in the roadway just west of the Bengry home and may have extended into the Bengry yard. The thick grass which forms the Bengry lawn hampered the surface collection, however, and permission to test in the lawn area of the Bengry family land was not obtained.

Test excavation at the site was limited to two 2 x 2 meter test pits located in the area of secondary scrub vegetation which surrounds three sides of the site. The test pits were excavated in 10 cm. levels to a depth of 30 cm. below surface. All of the excavated soil was screened, using half-inch hardware cloth. Both test pits, however, proved to be sterile. As a result, the only material available for

description and analysis from the Casey Lake South site consists of a small surface collection obtained from the roadway and the areas immediately adjacent to the road.

The surface collection consists of ten chert and quartz flakes and numerous small fragments of burned mammal bone. Nine of the chert and quartzite flakes are small, varying in length from 8.1 mm. to 32.3 mm. None of these flakes exhibits any evidence of retouching or utilization. The remaining flake is a large quartzite flake which measures 62.5 mm. in length and 39.6 mm. in width. This large flake exhibits several consecutive flake scars along its distal end. The edge, resulting from the removal of these small flakes, however, does not appear to have been suitable for scraping activities, nor does it appear that it would have been more efficient as a cutting edge than the unmodified flake edge.

The limited surface collection and lack of any sub-surface material suggests the site is small and similar to the Casey Lake North site. It is possible, however, that a portion of the site lay beneath the Bengry yard and was not investigated by the survey team.

The Martells Lake Site

The 1974 archaeological survey of the upper two-thirds of the Menominee Watershed identified a small site at the extreme western end of Martells Lake. Martells Lake is located in the SW 1/4 of the NW 1/4 of the SW 1/4 of Section 22, Marquette County, Michigan. The lake and surrounding land are owned by the State of Michigan and are part of the Michigamme State Forest. Martells Lake is approximately half a mile south of Casey Lake and, like Casey Lake, is one of many small lakes

left by the receding glacier. These small, post glacial lakes are scattered throughout the northern portion of the Menominee River Watershed and are particularly prominent in the southwest portion of Marquette County.

The Martells Lake site is situated in the roadway leading into Martells Lake. A surface collection of the roadway recovered lithic debitage and burned bone fragments. Upon completing the surface collection, two 2 x 2 meter test pits were excavated in 10 cm. levels on either side of the roadway, and all of the excavated soil was carefully screened, using half-inch hardware cloth. Both test pits proved to be sterile and provided no additional evidence of the prehistoric occupation at the site.

A small stain at the edge of the road cut approximately 5 cm. below the surface suggested there may have been a hearth associated with the recovered chippage and bone. The road cut, however, had removed a substantial portion of the stain and erosion of the roadbed had further damaged the area immediately surrounding the stain. All that remained was a small, thin amorphous stain which contained some small charcoal flecks. The stain appeared to have been all that remained of a hearth. Several fragments of burned bone were recovered from the area immediately adjacent to this dark stain.

The surface collection from the roadway recovered quartz and chert waste flakes and several small fragments of burned mammal bone. The recovered chippage consists of nine quartz flakes which vary in length from 4 to 27 mm. and three chert flakes which are 6.5 mm., 11.1 mm., and 18.4 mm. in length. The largest of the three chert flakes

appears to have been extensively utilized along three of its four edges.

All the evidence of the prehistoric occupation at the Martells Lake site was recovered from a 3 meter section of a narrow road cut. A thick forest mat prevented recovery of any material which may have been adjacent to the road cut; two test pits located in the area adjacent to the roadway were sterile. The site appears to have been one of several small camp sites scattered along the inland lake shores throughout the central portion of the Upper Peninsula.

The Porterfield Lake Site

Porterfield Lake is a small lake located just north of the southern boundary of Marquette County, in the southwest corner of the county. The lake is one of many small lakes which dot the countryside in this area of the Upper Peninsula. Porterfield Lake is approximately half a mile long and varies from 200 to 800 feet in width.

The Porterfield Lake site is situated along the east shore of the lake on a broad point of land which effectively divides Porterfield Lake into eastern and western segments. The site is located in the roadway which provides the only access route to Porterfield Lake. The roadway and surrounding land are owned by the State of Michigan. The area, which is located in the NW 1/4 of the SW 1/4 of Section 22, Marquette County, Michigan, is part of the Michigamme State Forest. The area supports a mixed secondary forest of mixed conifers and hardwoods. The surrounding soil is sandy and varies from grey to pale yellow in color. The ground is covered with a thick growth of moss, ferns, and ground pine.

The site was discovered during the 1974 archaeological survey of the Menominee River Watershed. A surface collection of a 5 meter section of the roadway and the excavation of a small hearth partially exposed in the roadway by the survey team produced a total of 117 fragments of lithic debitage. Following the survey team's investigation of the site, two 2 x 2 meter test pits were excavated in the forested area on either side of the roadway. The test pits were excavated in 10 cm. levels to a depth of 30 cm. below surface. All of the excavated soil was screened, using half-inch hardware cloth. The test pits, however, yielded no further evidence of prehistoric activity in the area surrounding the roadway.

The surface collection produced a total of 66 light to dark grey chert flakes and a single fragment of quartz. The chert flakes vary in length from 4 mm. to 63.9 mm. The chert shows evidence of having been heat treated, with approximately one-half the flakes exhibiting small "pot lid" scars. None of the chert flakes have been retouched or exhibit evidence of having been utilized as cutting or scraping tools. The single quartz fragment measures 19.4 mm. in length and is 5.0 mm. thick. A longitudinal fracture prevented obtaining any measurement of width. The fragment has been retouched along the single convex edge to form a steeply beveled edge typical of scraping tools.

A small dark stain which appears to have been a hearth was centrally located in the roadway. The stain had been exposed by the shallow road cut and had been partially destroyed by natural erosion and vehicle use. Careful excavation, however, revealed a small oval basin which contains small flecks of charcoal and tiny fragments of burned bone. Although exposure and erosion had somewhat obscured the

upper edges of the hearth, the remaining basin was slightly oval, measuring 34 cm. in length, and 27 cm. in width. All of the soil from the hearth was removed, using a trowel, and then screened, using one-quarter-inch hardware cloth. In addition to numerous charcoal flecks and burned bone fragments, the hearth also contained 22 grey chert flakes and 28 fragments of quartz. "Pot lid" fractures, indicative of heat treating, were visible on many of the chert flakes. None of the lithic debitage recovered from the hearth exhibits, any evidence of retouching or utilization.

The Porterfield Lake site, like the sites at Casey Lake and Martells Lake, is a small campsite with a single short term occupation. The occurrence of several small campsites along the shores of these small inland lakes suggests the possibility that these inland lakes and the surrounding area may have provided a seasonal hunting area or may have been extensively utilized as overnight camps as individuals moved through the area for hunting or trading purposes.

The Van Riper Site

The Van Riper site is located on a high, sandy ridge at the eastern tip of Lake Michigamme. Lake Michigamme is a large T-shaped lake, the east/west axis of which is approximately six miles long. The lake varies from slightly less than one-half mile in width to slightly more than three miles in a centrally located southern extension of the basin. The lake, which is fed by the Peshekee River as well as numerous small streams, empties into the Michigamme River, a major tributary of the Menominee River. A dam constructed at the outlet of

the lake maintains an artificially high water level within the contemporary basin.

The site is located in the SE 1/4 of the SW 1/4 of the SE 1/4 of section 25, Marquette County, Michigan. The land is owned by the State of Michigan and is part of the Van Riper State Park. A campground and campstore-pavilion facility have been constructed on either side of the site. Although the park and its beach are heavily utilized during the summer months by campers and/or swimmers, the site appears to have suffered minimally from its utilization as a recreation area. The heavy foot traffic has destroyed the grass, resulting in some erosion of the ridge on which the site is located. However, the root systems of numerous large pines located at the edge of the ridge have prevented further erosion.

A survey of the eroded edge of the ridge located an area of prehistoric activity. A surface collection of the area produced 69 lithic fragments which were recovered from an area approximately 15 x 10 meters. The lithic debitage consists of 61 quartzite chips, 6 chert flakes which vary in size from extremely small fragments no more than 5 mm. in length to quartzite fragments which measure between 40 and 50 mm. in length. None of these flakes exhibits evidence of retouching or utilization as a cutting tool. A single fragment of dark grey chert exhibits the steeply retouched edge of a scraping tool. The tool, which has a trapezoidal outline, has been retouched along its entire perimeter. The tool has a maximum length of 26.9 mm., a maximum width of 22.8 mm., and is 11.2 mm. thick. A second chipped stone tool is a small quartzite biface. The biface measures 24.5 mm. in length and 20.0 mm. in width, and is 10.6 mm. thick. The bulbar end of the tool and one

lateral edge exhibit a sinuous edge formed by the removal of adjacent flakes from alternating sides of the tool.

State park officials were reluctant to authorize the excavation of test pits in the area between the campstore and campgrounds. As a result, additional information regarding the depth, size, and nature of the cultural component at the Van Riper site is unavailable.

Shakey Lakes Park Site

The Menominee River, which forms the western boundary of Menominee County and a portion of the state line separating the states of Michigan and Wisconsin, makes a large U-shaped bend approximately twenty-five miles upstream from its mouth in Menominee/Marinette. Located within the northern half of this bend is a cluster of interconnected lakes known as Shakey Lakes. Shakey Lakes includes Becker, East, Resort, Long, Bakers, and Bass Lakes. All of the lakes are part of the Shakey River drainage system, which drains between fifty and sixty square miles of land east of the area known as Sixty Islands.

Situated between Bass and Bakers Lakes and Long, Resort, East, and Beckers Lakes is Shakey Lakes Park. The land is owned by Menominee County and the county has developed picnic, swimming, and camping facilities along the lake shores. The Shakey Lakes Park site is located in the SE 1/4 of the SW 1/4 of Section 19 (T.35N, R.28W) of Lake Township, Menominee County, Michigan.

Although portions of the park have been cleared to create beach and picnic areas and a pavilion and restrooms have been constructed, much of the park remains relatively undisturbed, supporting a mixed deciduous forest. A narrow, unimproved roadway encircles the forested

portions of the park. This roadway, which parallels the shores of Bass and Bakers Lakes, provides direct access to the site.

The site was discovered in 1973 when two small flakes and a small scraper were collected from the roadway. Although the Northern Michigan archaeological field team was testing the Backlund Village site only a few miles away, time did not permit further exploration of the Shakey Lakes area during the 1973 summer field school program. The area, however, was further explored and tested the following fall when a small group of students, under the direction of Marla Buckmaster, visited the site. At that time, a more systematic surface collection was undertaken and four 2 x 2 meter test pits were excavated. The test pits were excavated in 10 cm. levels to a depth of 30 cm. below the surface. Although the excavated soil was screened using one-half inch hardware cloth, the only items of cultural significance recovered from the four test pits were two small flakes and a quartz core. The majority of the cultural material from the site was recovered while surface collecting an area measuring approximately 15 x 5 meters.

The cultural assemblage from the Shakey Lakes Park site is small and consisted entirely of lithic debris. The assemblage includes 18 chert flakes, 16 quartz and quartzite fragments, a single projectile point, a biface fragment, 2 scrapers, a retouched flake, and a quartz core.

All of the thirty-four chert, quartz, and quartzite waste flakes are small. A majority of the flakes are less than 10 mm. in length and none of the flakes is longer than 28 mm. A variety of raw materials are reflected in this rather small collection of lithic debitage. The chert flakes vary in color, being white, tan, and dark

grey, and include plain, banded and mottled specimens. The quartz and quartzite fragments are translucent, white, rose, tan, and grey. The variety exhibited in the raw materials suggests that any available nodule in the glacial deposits throughout the area was considered a source of raw material for the manufacture of lithic tools.

The single projectile point, pictured in Figure Q-1, is manufactured from a light grey and white mottled chert. The point is bifacially flaked, exhibiting a biconvex cross-section. The point appears to have been side notched; however, the specimen is broken and the entire hafting element is missing. The blade, which measures 34.5 mm. in length and 27.4 mm. in width, exhibits convex lateral edges.

A small quartzite basal fragment is the only other bifacial tool recovered from the site. The fragment has a convex base and appears to exhibit straight parallel sides. The fragment is 18.6 mm. wide.

Two small scrapers were recovered from the Shakey Lakes Park site. Both specimens have been manufactured from light and medium grey chert flakes. Both are end scrapers, exhibiting a steeply retouched scraping edge along the distal end of the flake. The scrapers measure 22.2 mm. and 21.0 mm. in length, 16.7 mm. and 16.1 mm. in width, and are 3.9 mm. and 5.0 mm. thick.

Except for a single chert fragment, none of the flakes recovered from the site was retouched or exhibited any evidence of utilization. The single retouched flake is triangular in outline and has been unifacially retouched along a convex lateral edge. The remaining lateral edge has been removed, either intentionally or accidentally, creating a

wider, blunt back by which the flake can be conveniently held. The flake measures 29.2 mm. in length and is 2.3 mm. thick.

One quartzite fragment has been classified as a block core. The core exhibits a relatively flat cortex surface at the proximal end, which appears to have been used as a striking platform. A series of irregular flakes has been struck from the perimeter of the core.

The Shakey Lake Park site, like many of the other sites in the Menominee River Watershed, is small and was probably utilized as a camp by Woodland peoples whose larger villages were located in the lower portions of the watershed.

APPENDIX S

VARIABLES USED IN THE ANALYSIS

APPENDIX S

VARIABLES USED IN THE ANALYSIS

Variables identified and used in the Sub-program factor available in the Statistical Package for the Social Sciences and the variables employed in the numerical taxonomic analysis of the environments which were utilized in the analysis of the Menominee River Watershed data are listed below.

Variables Employed in SPSS Sub-program FACTOR

Environmental Variables

A series of twenty-five variables was employed in this program. These variables are:

(1) Distance to nearest water body[1]
(2) Distance to second nearest water body
(3) Total stream length within a one mile radius of the site location[2]

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[1]Values for the variables related to hydrographic situation within the catchment zone of each site were obtained from data recorded in the archaeological field notes and United States Geological Survey Topographic maps. If available, the 15-minute series topographic maps were used. Fifteen minute series maps, however, were unavailable for some areas within the Menominee River Watershed and it was therefore necessary to use 7.5-minute series topographic maps in these instances.

[2]Total stream length refers to third, fourth, fifth and sixth order streams. First and second order streams were not included for two reasons: First and second order streams are small and usually only contain water during a very limited portion of the year or after

(4) Total stream length within the area lying between the one mile and two mile radii of the site location
(5) Total stream length within the area lying between the two and three mile radii of the site location
(6) Total inland lake interface within a one mile radius of the site location
(7) Total inland lake interface within the area lying between the one and two mile radii of the site location
(8) Total inland lake interface within the area lying between the two and three mile radii of the site location
(9) Surface area of inland lakes within a one mile radius of the site location
(10) Surface area of inland lakes within the area lying between the one mile and two mile radii of the site location
(11) Surface area of inland lakes within the area lying between the two and three mile radii of the site
(12) Normal annual precipitation[3]
(13) Average seasonal snowfall
(14) Average annual consecutive frost free days
(15) Density of vegetation classes. Values for this variable, which measured the degree of vegetative diversity within the catchment zone, were determined by counting the number of presettlement vegetation classes within the catchment zone identified on Veatch's map "Presettlement Forest in Michigan" (1959) and dividing by the total land mass lying within the portion of the catchment zone in Michigan
(16) Percentage of the catchment zone area forested the presettlement vegetation type within which the site is situated
(17) Percentage of the catchment zone area forested by the dominant vegetation type within the catchment zone

The following four variables evaluated the extent to which sites tend to co-occur with the four major vegetation classes

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particularly violent rainstorms. Secondly, while doing the field work for this project, it became very apparent that first and second order streams were not accurately represented on the United States Geological Survey topographic maps. This inaccuracy occurred frequently and was sufficient to make any attempt to evaluate first and second order streams invalid. As a result, total stream length refers only to third, fourth, fifth and sixth order streams through this study.

[3]The source for the climate data was the climatic data maps in Michigan's Upper Peninsula: A Resource, Conservation and Development Project Plan, which was prepared by the Upper Peninsula Resource Conservation and Development Council with the aid of the U.S. Department of Agriculture and other cooperating agencies.

identified on Veatch's map "Presettlement Forest in Michigan" (1959).

(18) Percentage of catchment zone area forested by deciduous-coniferous forests
(19) Percentage of catchment zone area forested by pine forests
(20) Percentage of catchment zone area forested by coniferous-deciduous forests
(21) Percentage of catchment zone area forested by coniferous forests
(22) Density of surface geological formation. Values for this variable, which measured the degree of geological diversity within the catchment zone, were determined by counting the number of geological formations within the catchment identified on Martin's map "Map of the Surface Geological Formations of Northern Michigan" (1957) and dividing by the total land mass lying within the portion of the catchment zone in Michigan.
(23) Percentage of the catchment zone area accounted for by the surface geological formation upon which the site is situated.
(24) Percentage of the catchment zone area accounted for by the most areal extensive surface geological formation within the three mile radius defining the catchment zone.
(25) Elevation of site location above sea level.

Structural Variables

A second series of twenty-five variables was employed in the program which evaluated the variability in data recovered during the excavation of the test pits which were part of the stratified unaligned sample obtained from the sites located by the Menominee River Watershed survey. These variables are:

(1) Site size.
(2) Total number of recovered potsherds.
(3) Total number of unmodified or waste flakes.
(4) Total number of bifacially and unifacially flaked tools.
(5) Number of chipped stone tools identified as projectile points or point fragments.
(6) Number of chipped stone tools identified as scrapers.
(7) Number of chipped stone tools identified as drills.
(8) Number of chipped stone tools identified as wedges.
(9) Number of chipped stone tools identified as knives or bifaces.
(10) Number of flakes which exhibit retouching.
(11) Number of chipped stone tools identified as spokeshaves or gravers.
(12) Total number of cores.

(13) Total number of ground or picked stone tools.
(14) Total number of soil stains identified and recorded as post molds.
(15) Total number of features identified as storage and/or refuse pits.
(16) Total number of features identified as hearths.
(17) Total number of features not identified as storage and/or refuse pits and hearths. This variable primarily included unidentified features and burials.
(18) Total number of copper tools.
(19) Total number of copper fragments.
(20) Total number of faunal fragments.
(21) Total number of mammal bone or bone fragments.
(22) Total number of fish bone or bone fragments.
(23) Total number of bird bone or bone fragments.
(24) Total number of amphibian bone or bone fragments.
(25) Total number of shells or shell fragments.

Variables Employed in the Numerical Taxonomic Analysis

A series of two hundred and thirty variables in thirty-three categories which described the environmental characteristics of the catchment zones was employed in this analysis. These included nominal, ordinal and interval scale variables as follows:

(1) Distance to nearest water body. Two class intervals of 100 feet were used for coding. These class intervals were 0-99.9 feet and 100-199.9 feet.
(2) Type of nearest water body. Eight categories of water body were identified: first order stream; second order stream; third order stream; fourth order stream; fifth order stream; sixth order stream; small inland lake; great lake.
(3) Distance to second nearest water body. Nine categories were used for coding. These categories were: 0-.249; .25-.499; .50-.749; .75-.999; 1.0-1.249; 1.25-1.499; 1.50-1.749; 1.75-1.999; 2.0 or more miles.
(4) Type of second nearest water body. Eight categories of water body were identified: first order stream; second order stream; third order stream; fourth order stream; fifth order stream; sixth order stream; small inland lake; great lake.
(5) Total stream length within a one mile radius of the site location. Seven categories were used for coding: 0-.99; 1-1.99; 2-2.99; 3-3.99; 4-4.99; 5-5.99; 6 or more miles.
(6) Total stream length within the area lying between the one mile and two mile radii of the site location. Seven categories were used for coding: 0-.99; 1-1.99; 2-2.99; 3-3.99; 4-4.99; 5-5.99; 6 or more miles.

(7) Total stream length within the area lying between the two mile and three mile radii of the site location. Seven categories were used for coding: 0-.99; 1-1.99; 2-2.99; 3-3.99; 4-4.99; 5-5.99; 6 or more miles.

(8) Total inland lake interface within a one mile radius of the site location. Eleven categories were used for coding: 0-.99; 1-1.99; 2-2.99; 3-3.99; 4-4.99; 5-5.99; 6-6.99; 7-7.99; 8-8.99; 9-9.99; 10 or more miles.

(9) Total inland lake interface within the area lying between the one mile and two mile radii of the site location. Eleven categories were used for coding: 0-.99; 1-1.99; 2-2.99; 3-3.99; 4-4.99; 5-5.99; 6-6.99; 7-7.99; 8-8.99; 9-9.99; 10 or more square miles.

(10) Total inland lake interface within the area lying between the two mile and three mile radii of the site location. Eleven categories were used for coding: 0-.99; 1-1.99; 2-2.99; 3-3.99; 4-4.99; 5-5.99; 6-6.99; 7-7.99; 8-8.99; 9-9.99; 10 or more miles.

(11) Surface area of inland lakes within a one mile radius of the site location. Six categories were used for coding: 0-.99; 1-1.99; 2-2.99; 3-3.99; 4-4.99; 5 or more square miles.

(12) Surface area of inland lakes lying between the one mile and two mile radii of the site location. Six categories were used for coding: 0-.99; 1-1.99; 2-2.99; 3-3.99; 4-4.99; 5 or more square miles.

(13) Surface area of inland lakes lying between the two mile and three mile radii of the site location. Six categories were used for coding: 9-.99; 1-1.99; 2-2.99; 3-3.99; 4-4.99; 5 or more square miles.

(14) Normal annual precipitation. Five categories were used for coding: 28-30; 30-32; 32-34; 34-36; 36 or more inches.

(15) Average seasonal snowfall. Eleven categories were used for coding: 40-49.9; 50-59.9; 60-69.9; 70-79.9; 80-89.9; 90-99.9; 100-109.9; 110-119.9; 120-129.9; 130-139.9; 140 or more inches.

(16) Average annual consecutive frost free days. Seven categories were used for coding: 140-131; 130-121; 120-111; 110-101; 100-91; 90-81; 80 or fewer days.

(17) Average date of first freezing temperature in the fall. Five class intervals of ten days, ranging from September 30-October 10 to August 21-August 31, were used for coding.

(18) Average date of last freezing temperature in the spring. Three class intervals of ten days, ranging from May 20-May 30 to June 9-19, were used for coding.

(19) Soil type at site location.[4] Soils were identified and ranked by assignment to one of the following seven drainage classes: excessively drained; somewhat excessively drained; well drained; moderately well drained; somewhat poorly drained; poorly drained; very poorly drained.

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[4]Specific soil types were identified using the "Natural Land Type Map: Marquette County," published in 1939 and 1940 by the

(20) Dominant soil association within the catchment zone.[5] Soil associations were identified and ranked by assignment to one of the following seven drainage classes: excessively drained; somewhat excessively drained; well drained; moderately well drained; somewhat poorly drained; poorly drained; very poorly drained.

(21) Density of vegetation classes. The amount of vegetative diversity within the catchment zone was measured by counting the number of presettlement vegetation classes identified on Veatch's map "Presettlement Forest in Michigan" (1959) and dividing by the total land mass lying within the portion of the catchment zone in Michigan. The resulting number was rounded to the nearest tenth and coded using the following six categories: 0-.9; 1.0-1.9; 2.0-2.9; 3.0-3.9; 4.0-4.9; 5 or more.

(22) Percentage of the catchment zone area forested by the presettlement vegetation type within which the site is located. Ten class intervals were used for coding: 1-10; 11-20; 21-30; 31-40; 41-50; 51-60; 61-70; 71-80; 81-90; 91-100 percent.

(23) Percentage of the catchment zone area forested by the dominant vegetation type within the catchment zone. Ten class intervals were used for coding: 1-10; 11-20; 21-30; 31-40; 41-50; 51-60; 61-70; 71-80; 81-90; 91-100 percent.

(24) Percentage of the catchment zone area forested by deciduous-coniferous forest.[6] Four class intervals were used for coding: 0-25; 26-50; 51-75; 76-100 percent.

Agricultural Experiment Station, Michigan State College of Agriculture and Applied Science, Conservation Institute and Soils Section; the "Natural Land Type Map: Dickinson County," published in 1938 by Michigan State College of Agriculture and Applied Science, Agricultural Experiment Station; Conservation Institute and Soils Section; and the "1925 Soil and Lay of the Land Maps of Menominee County" compiled by the Michigan Department of Conservation, Land Economic Survey. Each soil type was then assigned to one of seven soil drainage classes. This assignment was accomplished with the cooperation and aid of Mr. Loren Berndt, soil scientist with the U.S. Department of Agriculture Soil Conservation Service, Marquette office.

[5]Soil associations were obtained from the U.S. Department of Agriculture Soil Conservation Service General Soil Maps of Dickinson, Iron, Marquette, and Menominee counties. Each soil association was then assigned to one of seven soil drainage classes, with the aid of Mr. Loren Berndt, soil scientist with the U.S. Department of Agriculture Soil Conservation Service, Marquette Office.

[6]Categories 24, 25, 26, and 27 evaluate the extent to which sites tend to co-occur with the four major vegetation classes Veatch identifies for the Upper Peninsula of Michigan on his map, "Presettlement Forest in Michigan" (1959).

(25) Percentage of the catchment zone area forested by pine forest. Four class intervals were used for coding: 0-25; 26-50; 51-75; 76-100 percent.

(26) Percentage of the catchment zone area forested by coniferous-deciduous forest. Four class intervals were used for coding: 0-25; 26-50; 51-75; 76-100 percent.

(27) Percentage of the catchment zone area forested by coniferous forest. Four class intervals were used for coding: 0-25; 26-50; 51-75; 76-100 percent.

(28) Density of surface geological formations. The degree of geological diversity within the catchment zone was measured by counting the number of geological formations identified on Martin's map, "Map of the Surface Geological Formations of Northern Michigan" (1957), and dividing by the total land mass lying within the portion of the catchment zone in Michigan. The resulting number was rounded to the nearest tenth and coded, using the following six categories: 0-.9; 1.0-1.9; 2.0-2.9; 3.0-3.9; 4.0-4.9; 5 or more.

(29) Percentage of the catchment zone area accounted for by the surface geological formation upon which the site is situated. Ten class intervals were used for coding: 1-10; 11-20; 21-30; 31-40; 41-50; 51-60; 61-70; 71-80; 81-90; 91-100 percent.

(30) Percentage of the catchment zone area accounted for by the most areal extensive surface geological formation. Ten class intervals were used for coding: 1-10; 11-20; 21-30; 31-40; 41-50; 51-60; 61-70; 71-80; 81-90; 91-100 percent.

(31) Elevation of site location above sea level. Ten class intervals were used for coding: 600-699; 700-799; 800-899; 900-999; 1000-1099; 1100-1199; 1200-1299; 1300-1399; 1400-1499; 1500 or more.

(32) Nature of the water associated with nearest water body. Four categories were used for coding: non-flowing water; gently flowing water; rapidly flowing water; falling water.

(33) General site location within the Watershed. Three categories were used for coding: lower one third of the Watershed, central one third of the Watershed, upper one third of the Watershed.[7]

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[7]For the purposes of this study, the area located downstream from the confluence of the Pike and Menominee Rivers was considered to be the lower one third of the Watershed. The area lying between the confluence of the Brule and Michigamme Rivers and the confluence of the Pike and Menominee Rivers was considered to be the central one third of the Watershed, while the area upstream from the confluence of the Brule and Michigamme Rivers was considered to be the upper one third of the Menominee River Watershed.

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