

The Camp Rayner Site (EgNr-2):

**Archaeological Investigations of a Multi-Component Site
in South-Central Saskatchewan**

**A Thesis Submitted to the
College of Graduate Studies and Research
in Partial Fulfillment of the Requirements
for the Degree of Master of Arts
in the Department of Archaeology and Anthropology
University of Saskatchewan
Saskatoon**

By

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Abstract

The Camp Rayner site (EgNr-2) is a multicomponent site located approximately 135km south of Saskatoon, Saskatchewan and is situated along the northern shoreline of Lake Diefenbaker and the western shoreline of Hitchcock Bay. The Saskatchewan Archaeological Society conducted field school excavations at Camp Rayner between the years of 1987 and 1995 as part of a salvage/rescue program for reasons of potential heritage displacement and site destruction. In total, 53 1x1m² units were opened and revealed 7 occupation levels that span the Terminal Late Paleoindian to the Late Precontact period. Two radiocarbon dates were obtained which corroborates with both the Terminal Late Paleoindian and Early Middle Period. Research included an analysis of the entire cultural assemblage to reconstruct the cultural sequence of the site.

This site offers a unique opportunity to study a number of archaeological cultures on the Northern Plains. The presence of an *in situ* Terminal Late Paleoindian and Early Middle Period occupation with correlating radiocarbon dates are of considerable significance due to their rarity on the northern grasslands. The recovery of Sandy Creek points and other Late Middle Period projectile points are also regarded as especially significant due to an increase in cultural complexity during the Late Middle and Late Precontact periods.

The Camp Rayner site is one of the most significant sites in Saskatchewan. Cultural material at this site represents the last 9,000 years of human occupation with *in situ* deposits spanning approximately 7,000 years ago. The continuous investigation and monitoring of the archaeological record recovered at this site is the key to maintaining these non-renewable resources. The information gathered from this research will supplement research on archaeological occupations of the Northern Plains and will initiate a resource management plan for future excavations and site preservation.

Acknowledgements

First and foremost I would like to thank my advisor Dr. Ernie Walker and the members of my committee, Dr. David Meyer and Dr. Margaret Kennedy for their guidance, encouragement and insightful comments.

I would like to express thanks to my fellow graduate colleagues and faculty for their encouragement and support throughout this process. I would particularly like to thank Lauren Stead, Ian Larsen, Brent Kevinsen, Loni Williams, Denise Huynh, Karin Steuber, Candice Koblun and Dr. Liz Robertson for their additional advice and insights. I would also like to thank my many friends at the University of Manitoba who have encouraged me throughout my undergraduate degree and who have motivated me to pursue graduate studies.

Special thanks goes out to Talina Cyr-Steenkamp, Belinda Riehl-Fitzsimmons and the numerous volunteers of the SAS who participated in the 1987-1995 field excavations.

Finally, I would like to acknowledge my parents and family for their love and support throughout the years.

“I can no other answer make, but, thanks, and thanks”

~ William Shakespeare

Financial support was provided by: the University of Saskatchewan, the Saskatchewan Heritage Foundation and the Saskatchewan Archaeological Society, with funding from Saskatchewan Lotteries.

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Chapter 1

Introduction

1.1 Introduction

Archaeological investigations were conducted at the Camp Rayner site (EgNr-2) over eight field seasons from 1987 to 1995. Primarily operating as a field school, it served the purpose of educating members of the Saskatchewan Archaeological Society on excavation methodology and on the subject of Saskatchewan's prehistory. The field school also aimed to provide new archaeological data for south-central Saskatchewan and yielded cultural material that suggests as many as 8,000 years of human occupation. Despite these exceptional finds, until recently, no attempts have been made at producing a detailed analytical report of the findings at the site. This thesis is the first attempt to look at the general occupation of this site.

Camp Rayner (EgNr-2) is a multi-component site that spans the Terminal/Late Paleoindian to the Late Precontact. In total, 54 1x1m units were opened and excavated by arbitrary 5 or 10cm levels. Due to the large amount of material recovered, this thesis provides an analysis of the flaked tools recovered, with the primary goal of reconstructing the cultural sequence of this site.

1.2 Thesis Objectives

This thesis focuses on a number of objectives outlined during the 2011 to 2012 analysis of the artifacts recovered during the 1987 to 1995 excavations.

- 1) To reconstruct the cultural sequence of the site through an analysis of both lithic tools and ceramic artifacts
- 2) To analyze and describe the worked tools present in each level
- 3) To determine the number and type of faunal taxa present in each associated level
- 4) To examine the cultural zones to provide an account of zones of cultural specialization
- 5) To initiate a proposal for future excavations and site preservation

This thesis will supplement the larger research on archaeological occupations of the Northern Plains especially with regards to the Terminal/Late-Paleoindian and the Middle Middle Precontact periods. The thesis will also be utilized as a comparative framework for further

research in the area as well as initiate a resource management plan for future excavations and site preservation of the Camp Rayner area.

1.3 Thesis Organization

This thesis contains 14 chapters including this overview. Chapter 2 presents a summary of the biophysical environment of Camp Rayner including a short description of the regional setting, hydrology, sand dune landscapes, climate and floral and faunal resources. Chapter 3 provides an overview of the cultural chronology of the Northern Plains from the Early Precontact to the end of the Late Precontact period prior to European contact. Chapter 4 describes the initial site discovery and summarizes the 1987 to 1995 excavation methodologies. This is followed by a discussion of the 2011 to 2012 methodology including laboratory methods and analysis of artifacts.

Chapters 5 to 12 present an overview of Cultural Zones 1 to 7, as well as the sod level. Each chapter begins with a summary of the associated cultural affiliation, radiocarbon dates (if available), and a figure illustrating the distribution of worked tools according to the site plan. This is followed by a detailed description of the lithic tool assemblage. These chapters also include a short description of the faunal assemblage with a discussion of identified and unidentified specimens and discussion of identified species. A short discussion of ceramics is included in the cultural zone summaries in which these artifacts have been identified.

Chapter 13 will provide a general summary of the cultural sequence with a description of the limitations encountered during this research. This will be followed by a resource management plan which will include a discussion of future land use, excavations, and preservation of the identified burial. Chapter 14 includes a summary of the Camp Rayner site and provides a proposal for future excavations and research.

Chapter 2

The Biophysical Environment of the Camp Rayner Site

2.1 Introduction

The Camp Rayner site, EgNr-2, is located in south-central Saskatchewan adjacent to the northern shoreline of Lake Diefenbaker as well as the western shoreline of Hitchcock Bay. The site is approximately 135 km south of Saskatoon, Saskatchewan (Figures 2.1, 2.2 and 2.3). The intention of this chapter is to provide the reader with an overview of the area's biophysical environment as this is the first substantial report pertaining to the archaeological findings at the Camp Rayner site. Of particular importance is section 2.2 as it provides a description of the soils of the immediate Camp Rayner area.

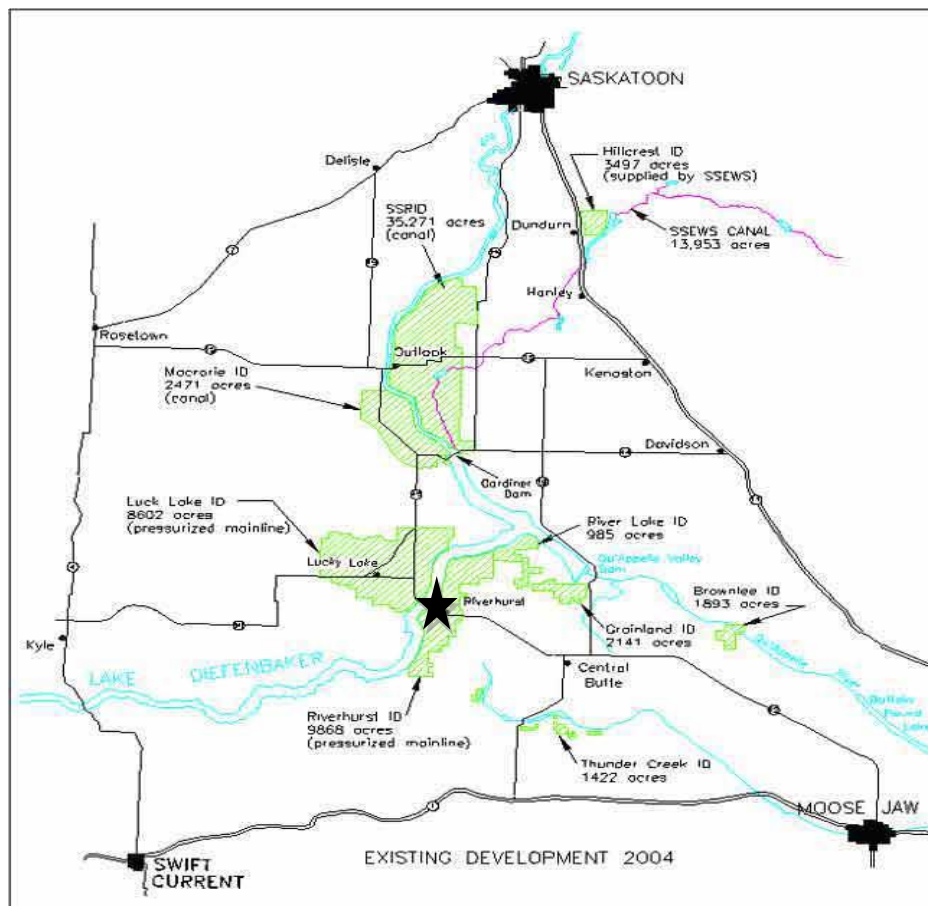


Figure 2.1: Location of Camp Rayner (EgNr-2) (Government of Saskatchewan, 2008; agriculture.gov.sk.ca)



Figure 2.2: Site in relation to Saskatoon and Ecological Boundaries (Google Earth)

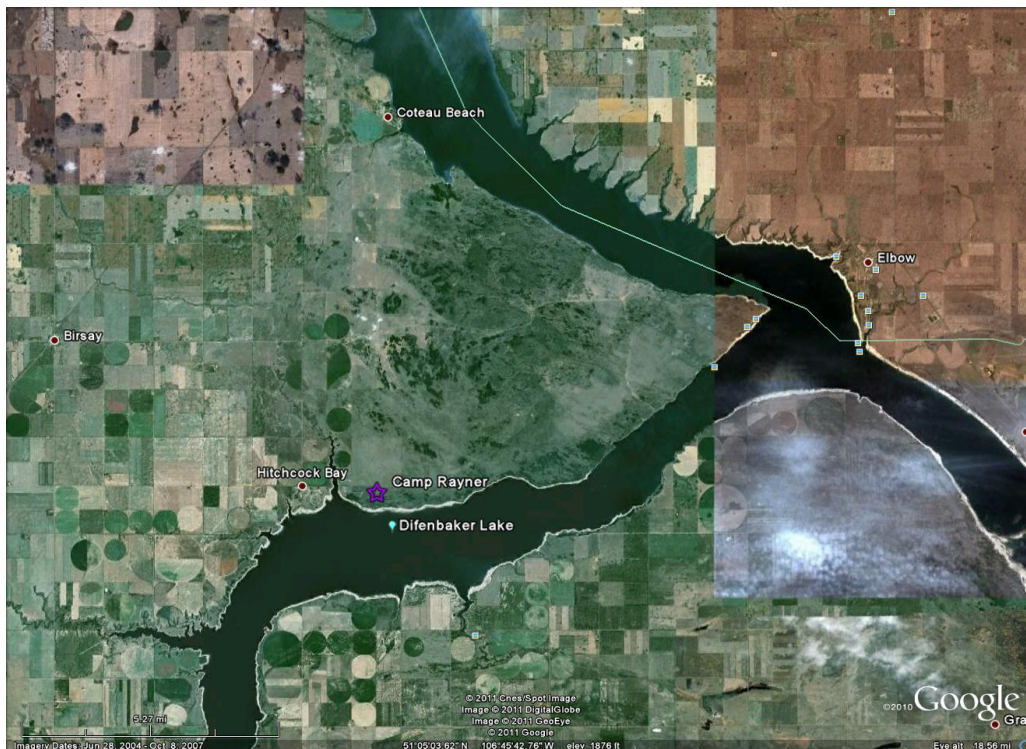


Figure 2.3: Aerial view of Site Location (Google Earth)

2.2 Regional Setting

The study area is primarily restricted to the Saskatchewan Plains physiographic region with some expansion along the eastern edge of the Alberta Plateau. Ground and hummocky moraine deposits constitute the basic components of the region. Each of these deposits is underlain by a layer of Cretaceous rock which influences the general layout of the landscape. Specific to this area is bedrock belonging to the Bear Paw Formation which consists of both shale and sandstone sources (Bryes, Caldwell and Kupsch 1969). The landscape is shaped by a relatively rough terrain with moderate rolling to hilly slopes as well as a relief reaching roughly 1,800 feet above sea level. Dominant soils in the area are categorized as brown clayey grassland soils with some presence of valley complex regosolic soils (Moss and Clayton 1969).

2.2.1 Hydrology

The Canadian Plains landscape took form after the onset of glacial retreat at the end of the Pleistocene epoch. Significant episodes of deposition, erosion, draining and flooding gave way to numerous proglacial lakes and meltwater spillways designed. Of particular importance to this research was the formation of Glacial Lake Saskatchewan which borders the northern periphery of the study area and drained in part through the South Saskatchewan Spillway. This spillway, in connection with the Qu'Appelle Spillway, comprises the basis for the major river drainages of the post-glacial era in this part of Saskatchewan (Christiansen 1995:81; Himour 1997:10). Present day drainage systems include two impoundment reservoirs; the Gardiner Dam to the north and the Qu'Appelle Dam to the south.

Lake Diefenbaker is an impoundment developed as a result of the construction of the Gardiner and Qu'Appelle Dams in order to manage the flow of the South Saskatchewan River. To date, it is the largest body of water in southern Saskatchewan. Figures 2.4 and 2.5 represent maps depicting the outer extremities of Lake Diefenbaker. Figure 2.4 represents the lake and surrounding landscapes in pre- reservoir times while Figure 2.5 represents the shift in landscape perimeters post-reservoir construction.

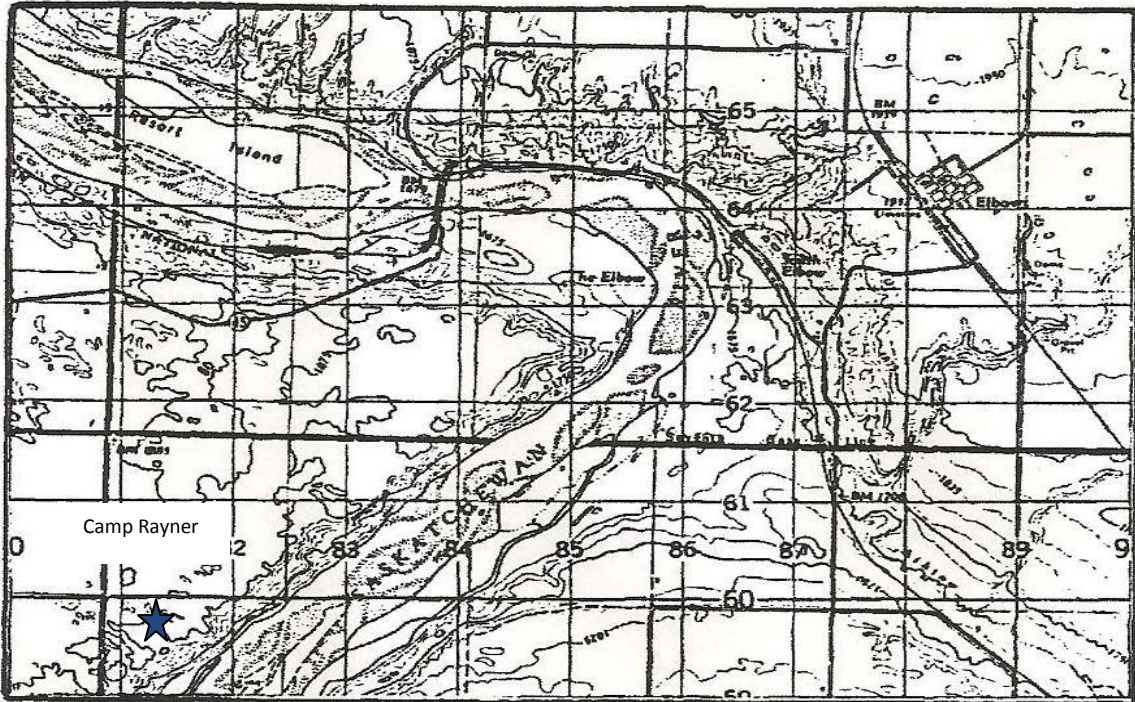


Figure 2.4: South Saskatchewan River in relation to Camp Rayner ★ prior to the construction of Diefenbaker Reservoir (Copied from the 1:50 000 map Elbow 72 O/2 East, Surveys and Mapping Branch, Department of Energy, Mines and Technical Surveys, 1959)

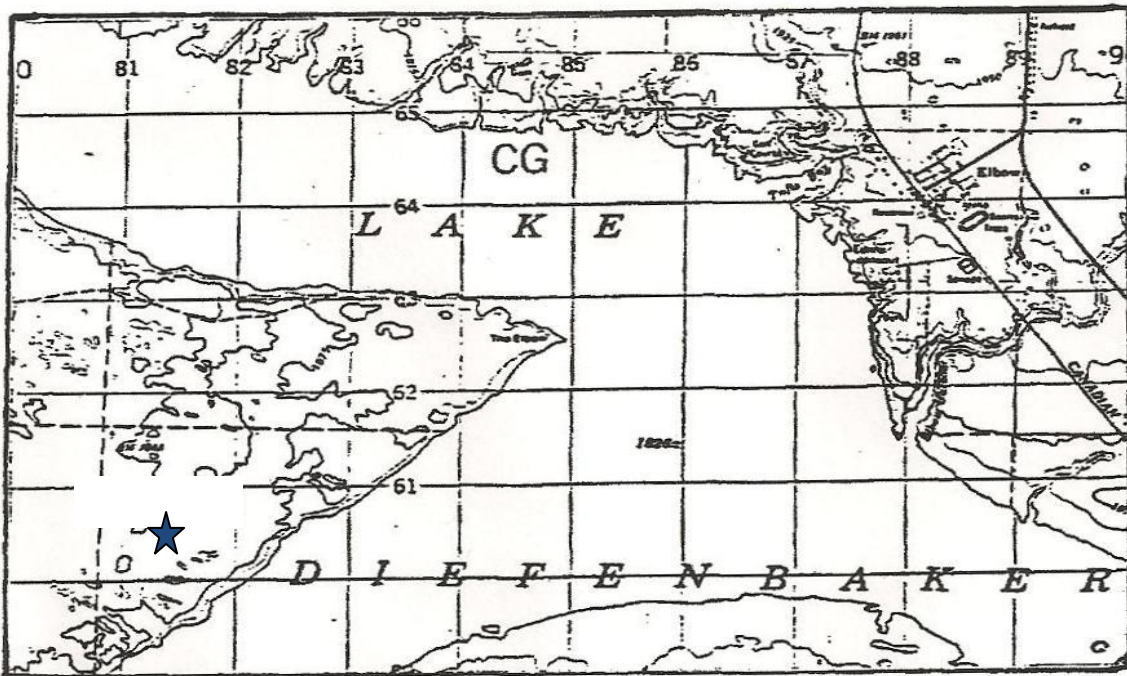


Figure 2.5: Outer limits of Lake Diefenbaker Post Reservoir in Relation to Camp Rayner ★ (Copied from the 1:50 000 map Elbow 72 O/2 East, Surveys and Mapping Branch, Department of Energy, Mines and Technical Surveys, 1959)

2.2.2 Sand Dune Landscapes

Sand dunes are a key component to this study area as they represent a rather unique geomorphic feature on the landscape. Dunes within the outer limits of Camp Rayner (EgNr-2) are located in the lower portion of Lake Diefenbaker within the southwestern outer most boundaries of the Douglas Park Sandhills. The process of dune development in this area took place when proglacial meltwater channels formed deltas in glacial Lake Regina and Glacial Lake Saskatchewan (Christiansen 1979). Further development of dunes areas occurred when sands deposited as deltas became reworked by aeolian activities.

For the most part sand dunes are described as active landforms due to their ability to be continuously altered by wind action. This alteration is the product of fluctuating moisture levels and soil development which reflect varying degrees of sediment saturation. The inability for water to accumulate on surface levels creates a support system of stable underground aquifers or stable islands which help sustain varied resources and vegetation cover indicative of arid sandy, moister wetland, parkland and uniquely sandhill ecozones (Neal 2006:151; Towney-Smith 1980a). In other words, sandhills form stable ‘islands’ which contain unique resources that supplement those already found in the grassland ecosystems (Neal 2006:145). Their stability has in turn provided for a well preserved record of glacial deposition. According to Waters (1992:913), dune landforms become stabilized once erosion and expansion of the depression is inhibited through renewed plant growth or vegetation cover. Further deposition of soils will form variable layers or strata which provide “a profile-like appearance to the soil, but ...represent different types of ...materials laid down by the stream at different periods of time” (Mitchell, Moss and Clayton 1944:175). These layers, referred to as paleosols or horizons, represent soils preserved by buried intact alluvium or loess sediments. Archaeological deposits are often found at the height of these horizons within the first few centimeters.

On the downside, this process can also generate relatively weakly developed profiles when soil development is rather minimal due to initial rapid deposition of soil particles. This rapid deposition process inhibits vegetation growth and thus prevents the development of an enriched organic horizon resulting in horizons that take on the same appearance as their parent material. In addition, later soil deposition has been noted to have occurred more slowly which accounts for the presence of an organically enriched thin dark-colored surface horizons (Stushnoff and Stushnoff 1997). This results in the lack of distinction between horizons and

often exposes a more compressed profile which can obliterate natural distinctions in the stratigraphic column. The detailed recognition of occupations associated with these weakly developed soil horizons is often impeded as a result.

2.3 Modern Climate

The climatic makeup of south-central Saskatchewan is classified as a semi-arid cold steppe. Marked seasonal variation exists within this prairie zone and is influenced by both continental and maritime Arctic fronts as well as maritime Polar air masses. This is characterized by short warm summers and long cold winters. Annual extremes for this region vary from a minimum of -48°C in winter months to a maximum of 40°C in the summer months. Precipitation is considered to be the lowest in this climate type and shows marked variability. Mean annual precipitation is recorded as approximately 304.8mm of rain and 762mm of snow. The combination of the latter with the characteristics of the surrounding soils results in a high moisture holding capacity for the area (Chakravarti 1969:52-60).

2.4 Floral and Faunal Resources

The natural vegetation of the Lake Diefenbaker region contains two of the three grassland communities in the Northern Plains; the mid and short grasses. The dominant of these two are the mid-grass communities in which four species are known to dominate the area. These species are; *Agropyron dasystachyum* (Wheat Grass), *Koeleria cristata* (June Grass), *Stipa spp.*, (Spear Grass) and *Festuca scabrella*, (Fescue), and the short grass *Bouteloua gracilis* commonly known as Blue Grama Grass (Coupeland and Rowe 1969:73-78).

Precontact use of mammalian resources would have included larger ungulates such as Bison (*Bison bison*), Pronghorn (*Antilocapra americana*), Mule deer (*Odocoileus heminous*) and White-tailed deer (*Odocoileus virginianus*). While these populations reflect staple dietary items typical of a hunter-gatherer lifestyle, one must keep in mind that other mammalian species were also present such as: the coyote (*Canis latrans*), swift fox (*Vulpes velox*), long-tailed weasel (*Mustela frenata*) and a variety of voles, mice, bats, shrews, ground squirrels and rabbits/hares (Wapple 1999:139-141).

With regard to the fish, amphibian and reptile populations, common species found in the South Saskatchewan River are Sturgeon (*Acipenser*), Goldeye (*Hiodon alosoides*), Burbot (*Lota*

lota), Northern Pike (*Esox lucius*), Suckers (*Catostomidae*), Walleye (*Sander vitreus*) and Yellow Perch (*Perca flavescens*) as well as numerous varieties of the order Anura (Frogs and Toads), and the order Squamata (Snakes) (Atton 1969:84-85). Avian populations have been noted in the hundreds with a wide range of both nocturnal and diurnal species. Examples of these are the American Bittern (*Botaurus lentiginosus*), Black-capped chickadee (*Poecile atricapillus*), Marbled Godwit (*Limosa fedoa*), Red-tailed Hawk (*Buteo jamaicensis*) and Snowy Owl (*Bubo scandiacus*) (Didiuk and Gollop 1999:143-149).

Chapter 3: Culture Chronology

An Overview of the Northern Plains Precontact Periods

3.1 Introduction

The archaeological record of the Northern Plains provides information in reference to hunting techniques, subsistence procurement, informal and formal trade networks as well as internal and external social complexities. Archaeologists have long been concerned with recreating the culture history of this record based on both temporal and spatial aspects of prehistoric human occupations (Frison 1978:15). That being said, the development of chronological sequences has emerged as a framework for time-space charts through the use of radiocarbon dating, typology and stratigraphy.

The first cultural sequence for the Plains was established in 1958 by William Mulloy. Ian Dyck (1983:63-139) proposed the first cultural chronology of the Saskatchewan Plains based on an organization of all archaeological materials with a predominant focus on projectile points. With the discoveries of new sites and archaeological materials, this chronology has since been updated (Walker 1992:120) and this current sequence divides the Northern Plains into three precontact periods. The first is the Early Precontact or Paleoindian period (12,000 to 7,500 years B.P.), including the Terminal/Late Paleoindian period. This is followed by the Middle Precontact period (7,500 to 2,000 years B.P.) which is further divided into three segments; Early (7,500 to 5,000 years B.P.), Middle (5,000 to 3,000 years B.P.) and Late (3,000 to 2,000 years B.P.). Finally, there is the Late Precontact Period (2,000 to 300 years B.P.) which covers the remaining complexes prior to the arrival of Europeans (Figure 3.1).

Each of these three precontact periods corresponds with a major transition in dominant projectile point technology; the spear (Early period), atlatl darts (Middle period) and the bow and arrow (Late period). The Late Precontact period is also marked by the introduction of pottery. An analysis of the projectile points recovered at the Camp Rayner site (EgNr-2), in conjunction with their stratigraphic depth has revealed a representative sample of this culture chronology on the Northern Plains dating as early as the Terminal/Late Paleoindian Period up until the Late Precontact Period

Years(B.P.)	Mulloy 1958	Frison 1978	Dyck 1983	Walker 1992	Cyr 2006
—200	Historic	Historic	Historic	Historic	Contact
—300	Late Prehistoric	Late Prehistoric	Late Plains Indian	Late Prehistoric	Protocontact
2,000					Late Precontact
3,000	Middle Pre-historic	Plains Archaic	Middle Plains Indian	Middle Pre-historic	Middle Pre-contact
5,000					
	Early	Middle	Middle	Middle	Middle
7,500	Hiatus		Early	Early	Early
10,500	Early Prehistoric	Paleo-Indian	Early Plains Indian	Paleo-Indian	Early Precontact (Paleo-Indian)
12,000			Pleistocene Hunters		

Figure: 3.1: Cultural Chronology of the Northern Plains (Copied from Walker 1992:120)

3.2 Terminology

One must consider that archaeological cultures are defined by the presence of material remains which are related either spatially, temporally or within a defined geographic area. The following is a list of terminology used to define such cultures. These definitions are derived from Willey and Phillips 1953 and 1958, Dyck 1983 and Renfrew and Bahn 2004.

- *Archaeological Culture: An arbitrary division of the space-time-cultural continuum defined by reference to a similar assemblage of artifacts and features within a specific time frame and geographical area (Renfrew and Bahn 2004:579 and Willey and Phillips 1953:617)*
- *Component: A single occupation within a site, the smallest taxonomic unit (McKern 1939 and Willey and Phillips 1958)*

- *Complex: Describes an assemblage of interconnected sites, artifact types, and cultural traits that are tied together by similarities in form, functional traits, technology and subsistence-settlements. This assemblage is found with a common geographic distribution and segment of time (Dyck 1983:69) and its relationship is unclear between the sequential assemblages (Peck 2011: 6)*
- *Horizon: A wide distribution of a recognizable art style that occupies a great deal of space but very little time (Willey and Phillips 1953:625)*
- *Period: A series of cultural formations, like a phase, but with amplified space and time dimensions (Willey and Phillips 1953:624)*
- *Phase: A group of artifacts possessing similar traits and attributes that do not necessarily correlate to a locality or region; it can change through time, and may be found in two or more environmentally distinct regions (Peck 2011:6)*
- *Series: A sequence of archaeological components sharing a common space, but belonging within separate segments of time. It is a crude unit of archaeological analysis used for convenience before sites, features, and artifacts are ready for classification into complexes and traditions (Dyck 1983:69)*
- *Tradition: Continuation of a technology or cultural traits occurring within sequential complexes (Dyck 1983:69)*

3.3 Early Precontact Period (12,000 to 7,500 B.P.)

The oldest artifacts found on the Northern Plains belong to the Clovis Complex (11,200 to 10,900 B.P.) and these stone tools reflect large game subsistence practices of the Terminal Pleistocene. The Clovis complex is recognized by a large, robust fluted lanceolate point. Contemporaneous to Clovis is the Goshen-Plainview complex (13,000 to 11,000 B.P.). This complex refers to an unfluted lanceolate with parallel to slightly convex or concave basal corners. Both Clovis and Goshen-Plainview points exhibit a concave basal edge which displays evidence of thinning and grinding.

The Folsom-Midland complex (11,000-10,500 B.P.) is a succeeding culture that represents an adaptation in subsistence procurement focusing on bison (Walker 1999). The Folsom point stylistically resembles Clovis, but is smaller in size and the flute extends almost the entire length of the body. Midland points are similar to Folsom but they are not fluted. Excavated Clovis, Goshen-Plainview and Folsom-Midland sites are located in the United States while in Saskatchewan recoveries have been limited to surface finds.

Agate Basin (10,500 to 9,500 B.P.) and Hell Gap (10,000 to 9,500 B.P.) are two contemporaneous complexes that are stylistically and morphologically similar. Both have points with a constricted base representing a distinct early hafting technique (Walker 1999). The only difference between the two is that Hell Gap points have a distinct shoulder separating the body and stem. Surface collections have been recovered in both central and southern Saskatchewan.

Following Hell Gap, there is a continuing trend of stemmed projectile points, which are represented in the Alberta, Alberta-Cody and Cody complexes (Walker 1999). Alberta points (9,500-9,000B.P.) are recognized by their short stem and abrupt shoulders. Scottsbluff and Eden points (8,800-8,400 B.P.), typically affiliated with the Cody complex, the former triangular in outline, the latter with a diamond shaped cross section and square base. These two point types reflect essentially identical technologies except that Eden points are narrower. Also part of the Cody complex is an asymmetrical cutting tool, referred to as the Cody Knife. Cody assemblages have been excavated at the Niska site (DkNu-3) (Meyer 1985) and the Heron-Eden site (EcNx-2) (Corbeil 1995).

The Terminal/Late Paleoindian Period is poorly understood in the archaeological record and in Saskatchewan finds have been limited to surface discoveries (Walker 1999:25). What is known about this period is that they are a highly mobile people with an economy focused on a more varied subsistence base. These groups followed a northern expansion into the plains with cultural influences emerging from the foothills and mountain areas. The lithic tool kit is distinguished by an array of medium to large lanceolate tool technologies.

The Terminal/Late Paleoindian period is divided into two main cultural complexes; Plains/Mountain and Lusk. The Plains/Mountain complex is defined by both Lovell Constricted and Pryor Stemmed points whereas the Lusk complex is characterized by Angostura, James Allen and Frederick points. These points stylistically relate to one another with slight

morphological differences occurring within the degree of basal concaveness and control over flaking (Peck 2011:108).

3.4 Middle Precontact Period (7,700-1,850 B.P)

The Middle Precontact Period corresponds with changes in climate. At the onset of this period changes in the environment are referred to the mid-Holocene climatic optimum or Hypsithermal, which is distinguished by a sudden increase in temperature and aridity. Due to these climatic changes, this period also represents a shift towards broader based subsistence patterns (Frison 1978; Dyck 1983). Earlier hunter/gatherers were considered to be more specialists, predominantly focusing on large game. While large game is still believed to have been a dietary staple throughout the Middle Precontact Period, subsistence strategies reflect a more generalist approach. This change in subsistence strategy is reflected in a diversity of technology, an increase in population and population movements, and, as well in cultural differentiation (Walker 1999). While similar tool kits common to all bison hunting techniques remained consistent, there is a distinct reduction in projectile point size and changes in hafting techniques. These traits suggest an evolution from spear technology to the atlatl with a focus on dart tips and side-notched points.

3.4.1 Early Middle Precontact Period: Mummy Cave Series (7,700-4,700 B.P)

There are relatively few Early Middle Precontact sites located on the Northern Plains. Initially the general consensus was that the Northern Plains was abandoned during the Alithermal (Mulloy 1958) which accounted for this lack of sites. This was then disputed by proponents of the refugia model (Hurt 1966) and/or attributed to sampling deficiencies and geomorphic processes (Reeves 1973). It seems that cultural response to sporadic warmer and drier climate led to an expansion and diversity in subsistence (Sheehan 1995) as well as an increase in population (Walker 1999). This population increase is reflected through the recovery of a wide range of projectile point morphologies.

The Mummy Cave series includes at least five projectile point styles; Mount Albion Corner-Notched, Gowen Side-Notched, Bitterroot Side-Notched, Hawken Side-Notched, and Blackwater Side-Notched (Walker 1992:133) In terms of design, the majority of the series reflect diversity in style, but, almost all projectile points are side-notched with straight, convex or

concave bases. Excavated sites include the Gowen 1& 2 site (Walker 1992), the Norby site (FbNp-56) (Zurburg 1991) and the Dog Child site (FbNp-24) (Cyr 2006) (Pletz 2010). Identification of the Mummy Cave series has been a problem. Often the recovery of these materials has been in eroded sites, in disturbed contexts, uncovered as surface finds or in deeply buried sites (Dyck 1983:92). As such, access to a well preserved Mummy Cave site is relatively uncommon in the Northern Plains. Point misidentification has also been attributed as a reason for the lack of sites, as the Mummy Cave series points are often indistinguishable from later side-notched points.

3.4.2 Middle Middle Precontact Period: Oxbow Complex and McKean Series (4,700-3,100 B.P)

By the Middle Middle Precontact period, the climate was much cooler and moist, approaching present day conditions. An increase in our understanding of this period, both environmental and cultural, is due to an increase in recovered habitation sites, kill sites, and burials which dominate the southern half of Saskatchewan. The two predominant cultural groups that appear during this period produced the Oxbow complex and McKean series.

The Oxbow complex dominates the southern portion of Saskatchewan and is predominantly a nomadic culture with a reliance on bison. Oxbow projectile points are characterized by a distinctive side-notched concave base giving it a rather pronounced eared appearance. This complex was first identified in 1958 at the Oxbow Dam site (DhMn-1) (Nero & McCorquodale 1958), and is associated with deposits recovered at the Harder site (FbNs-1) (Dyck 1977) and Amisk site (FbNp-17) (Amundson 1986). Despite these finds, it remains one of the few complexes in which its relationship to preceding and later contemporaries have yet to be worked out (Dyck 1983:96).

The McKean overlaps in time with the Oxbow complex. It includes three distinct point styles; McKean, Duncan and Hanna and overlaps in time with the Oxbow complex. These are small to mid-size lanceolate forms with indented bases that stylistically range from no shouldering/no side-notches to tanged/ broad side-notches. McKean sites are not particularly common on the Northern Plains and may in fact represent an intrusive population from the mountains or are an indigenous culture that became highly enculturated by its neighbors (Reeves 1969; Peck 2010:201) Excavated sites include the McKean type site (48CK7), the Cactus Flower

site (EbOp-16) (Brumley 1975), Redtail (FbNp-10) (Ramsay 1993) and Thundercloud (FbNp-25) (Mack 2000).

3.4.3 Late Middle Precontact Period: Pelican Lake/Un-named/Sandy Creek (3,300-1,850 B.P)

During this time, Pelican Lake materials dominated the Late Middle Precontact Period. Pelican Lake was a wide-spread technology that extended outside the boundaries of the Northern Plains. There is evidence of a more complex culture history involving groups such as Sandy Creek. While poorly understood, these complexes shed new light regarding the transition between the Late Middle and Late Precontact period.

Roughly around the time that the Oxbow and McKean complexes disappeared from the archaeological record, a new variety of corner-notched as opposed to side-notched points appeared on the scene. Pelican Lake materials (3,275-2,090 B.P) are not well known in Saskatchewan, and, to date focus remains on the identification and analysis of projectile points (Dyck 1983:106). The earliest known Pelican Lake point is defined by its narrow base and large corner notches outlining a stemmed appearance. Over time this type changed to a straight base with straight lateral margins and tanged corner notches. By the end of this sequence, this type had further evolved into a wide basal edge with narrow deep notches. The origins of this complex are still debatable as this style of point was wide-spread across the Northern Plains (Dyck 1983:107).

Contemporaneous with the Pelican Lake is the Un-named complex. This complex is identified by the appearance of poorly understood side-notched points which have been radiocarbon dated to roughly 2,500 B.P. Several sites such as the Sjøvold site (EigNs-4) (Dyck and Morlan 1995) in Saskatchewan and Head-Smashed-In Buffalo Jump (Reeves 1978) in Alberta have yielded a series of points which are characterized by a medium lanceolate form and a straight to slightly concave base with side-notches. Reeves (1978) has suggested that these are an earlier form of the Besant complex, while others have argued that they are influenced from the earlier Woodland complexes in the east (Johnson 1969).

Another poorly understood side-notch series also appears on the Northern Plains at this time. The Sandy Creek complex (2,450-1,950 B.P) is distinguished by a basally indented side notched point. In Saskatchewan, this projectile point was first defined at the Mortlach site (EcNI-

1) (Wettlaufer 1995) and further discoveries were made at the Sjøvold site (EiNs-4) (Dyck and Morlan 1995) and the Camp Rayner site (EgNr-2). Researchers have suggested that the Sandy Creek points be considered an archaeological complex contemporaneous to Pelican Lake acting as an intermediate between the Middle Middle and Late Precontact Periods (Dyck 1983) while others have argued that this point style belong to the Besant series (Dyck and Morlan 1995:435).

3.5 Late Precontact Period: Besant Complex, Avonlea Complex and Prairie/Plains side-notched (2,000 – 170 B.P)

Environmental conditions during the Late Precontact period resembled present-day temperatures. The climate fluctuated between warm/dry and cool/moist (Walker 1999:26). This period also coincided with the introduction of two technological innovations; the bow and arrow and pottery. These innovations provide insights into changing subsistence patterns and practices as well as social movements. Suggestions of long distance trade networks have long been incorporated in archaeological analyses of lithic and faunal assemblages. These ideas can be further refined through an analysis of pottery assemblages while providing new information with regard to the relationship between cultural groups.

The Besant Complex (2,000-1,150 B.P.) is the first cultural unit to appear during this period. Besant people are well known for their utilization of bison jumps and exotic materials. The organizational complexity of this hunting strategy and long distance trade networks suggests a complex social structure along with an increase in population. Besant people used lanceolate shaped side-notched points with basal edge that ranged from slightly convex to slightly concave. The notches are twice as deep as they are wide and are often found slightly above or touching the basal edge (Dyck 1983:115). The Besant people were also the first to utilize pottery technology. These rudimentary vessels were conical in shape, coarsely made and undecorated. The Besant complex was first defined at the Mortlach site and later identified at the Sjøvold site (EiNs-4) (Dyck and Morlan 1995), the Tschetter bison trap (FbNr-1) (Linnamae 1981; Prentices 1983), and the Walter Felt site (EcNm-3). The Sonota complex is a variant of Besant with the main difference being the presence of burial mounds in North and South Dakota, and as such is considered a mortuary complex.

While some archaeologists propose that the Avonlea complex (1,750-1,150 B.P.) is contemporaneous with Besant, there was no contact between the two groups and Avonlea post

dates Besant within the chronological sequence (Cloutier 2004). The Avonlea point is triangular in shape with small shallow side-notches that are very close to the slightly concave base (Dyck 1983:122). The points are very thin and demonstrate carefully controlled pressure flaking and mark the first shift from the atlatl to an exclusive bow and arrow technology (Vickers 1994:14). Pottery associated with the Avonlea complex is conical or globular in shape with a variety of exterior finishes and styles. Four Avonlea ceramic wares have been identified; Rock Lake Net/Fabric Impressed, Truman parallel grooved, Ethridge Cord-Roughened and Avonlea Plain ware (Meyer and Walde 2009). Other decorations that differentiate Avonlea wares are rows of punctates or bosses, finger pinches and tool impressions.

The Late Side-Notched points Prairie (1,200 to 500 B.P.) and Plains (550 to 170 B.P.) are the last point technology representative of bison subsistence strategies on the Northern Plains, prior to the arrival of Europeans. In comparison to earlier periods both Late Side-Notched types are smaller in width, length and thickness. Prairie side-notched points are triangular in shape with irregular notches set close to the basal edge (Dyck 1983). The associated pottery ware is identified as Ethridge, generally affiliated with the Old Women's Phase (Meyer and Walde 2009). These vessels are thick and globular in shape with angular shoulders, constricted necks, straight or slightly everted rims and round or flat base (Kehoe 1959). Decoration is generally restricted to the lip/rim and neck and varies from punctates to cord-wrapped tool impressions (Bryne 1973). Excavated components include those at the Tschetter bison trap (FbNr-1) (Linnamae 1981; Prentices 1983), the Sjøvold site (EiNs-4) (Dyck and Morlan 1995) and the Walter Felt site (EcNm-3).

The Plains Side-Notched point is also triangular in shape with notches set slightly higher above the base than the Prairie Side-Notched point. This projectile point is predominantly associated with the Mortlach complex in Saskatchewan. Mortlach assemblages were first recovered at the Mortlach site, the Lake Midden Site (EfNg-1), the Stony Beach site and the Broadway site. The ceramic assemblage is rather heterogeneous in terms of decorative styles (Meyer and Walde 2009). Mortlach rim profiles are either vertical, S-rim, angled or wedge with thin to thick compact walls, while the most common exterior finishes are simple-stamped and fabric-impressed, although checked-stamped and plain finishes also occur. Decorative tools vary from dentate stamps, "cord and/or fabric wrapped paddles, quills, solid tools, pointed tools, notched tools or fingers" (Walde 1994:101). Mortlach sites are centered in southwestern Alberta

and southern Saskatchewan but are also located in southern Manitoba, northeastern Montana and northern North Dakota (Walde 2004). Mortlach communities traded amongst mobile hunting societies and the semi-sedentary horticultural populations on the Northern Plains (Binnema 2004). Pottery types found in Mortlach assemblages that resemble wares of neighboring populations have been interpreted as a consequence of these trading networks and demonstrate ethnic diversity.

3.6 Contact Period

The Contact period is enhanced by written and oral accounts obtained from both Canadian and European archival records. This period refers to the arrival of European traders, explorers, artists and missionaries who brought with them commodities distinct to the archaeological record including metal pots, horses, weaponry, glass beads, knives and other European goods. This time period also involves profound changes in traditional Native lifeways influenced by European ideologies and farming techniques, as well as trade networks. Changes included an evolution in pottery styles which had become much more complex in terms of manufacturing techniques and exterior finishes. The use and appearance of flaked tools in the archaeological record also diminished during this period and was eventually replaced by European tools and hunting techniques.

Chapter 4

Site Discovery/Methodology

4.1 Site Discovery and Assessment: The South Saskatchewan River Project

The South Saskatchewan River Project (SSRP) was a three year project that was initiated in 1958. This project was established as a mitigation effort related to the construction of the Lake Diefenbaker reservoir. The initial scope of this project involved surveying many kilometers of riverbank as well as all exposed sections of land in the valley bottom for signs of prehistoric occupation along the impoundment area that were to be flooded. One must keep in mind that, while this project was the first systematic survey in the area, 51% of the area had already been disturbed by means of previous construction and cultivation. That being said, this project was designed to “ensure appropriate considerations of heritage sites” in future developments and water management practices (Germann 1989:ii).

The main goal of the SSRP was to attempt to determine whether or not the construction of the reservoir would cause any further significant adverse impacts, either direct or indirect, on heritage sites. In the first year of this project, the goal was to simply record any sites that would be affected by seasonal flooding and fluctuating water levels. “Sensitive zones”, as deemed by the SSRP, were to be recorded in an attempt to develop models to predict settlement patterns and localities along the Saskatchewan River Basin (Germann 1989). By defining and mapping these areas, the SSRP further hoped that this information would be utilized in an attempt to ensure that appropriate consideration was taken during the early stages of reservoir development. At the end of this three year project, roughly 240 sites were recorded. The following two decades were used to further the goals of the SSRP by continuing to identify archaeological and paleontological sites that would be expected to be exposed through erosion or affected by reservoir activities. By the late 1980s that number had risen to roughly 1,872 sites (Richards et.al 1989:46).

4.1.1 Excavation Methodology: Camp Rayner (EgNr-2)

While surveys along the South Saskatchewan River Basin have been primarily limited to surface examination, few areas have been subjected to more extensive subsurface analysis and excavation. Camp Rayner (EgNr-2) was surveyed as part of a salvage/rescue archaeology project for reasons of potential heritage displacement and site destruction. Excavations extended over a

period of 9 field seasons, 8 days long, as part of the Saskatchewan Archaeological Society's (SAS) educational field school program during the years of 1987 to 1995. Under the direction of Tim Jones, the primary goal of the field school was to determine the depth and nature of cultural occupation as well as the boundaries of this site. Realization of this goal was to be facilitated through a reconstruction of past archaeological and environmental conditions as well as by radiocarbon dating the various occupation levels (Jones and McCann 1996:4).

Standard methods and excavation techniques were in use throughout the extent of this project. In total, 53 1x1m units were opened and excavated by arbitrary 5 or 10 cm levels and screened using a ¼ inch mesh. In many cases excavators used both 5 and 10cm increments within a single unit, as such the use of level categories was not consistent throughout the field seasons. Referrals to these levels are included in the analysis to provide artifact location, however it is the recorded depths that are used to determine the relationship between artifacts. Arbitrary levels were selected in lieu of natural or cultural levels in order to determine comparable or equivalent horizons when attempting to link excavated blocks positioned meters apart. While many argue against using arbitrary levels due to the fact that analysis may overlook specific occupation layers, this concern was dismissed due to the fact that all material would have been measured and mapped by quadrant or by exact provenience (Jones and McCann 1990:19). Additionally, wall profiles and level floor plans were documented for every 1x1m unit.

4.1.2 Artifact Analysis

In terms of what has been done with the Camp Rayner collection, basic classification and analytical description of the artifacts was completed at the end of each field season. Further analysis was accomplished by determining artifact densities and distribution through computer graphs generated by variables such as weight, color etc. By the end of the ninth field season over 39,713 artifacts had been catalogued and stored at the SAS office.

The extent of the analysis of the Camp Rayner collection has not yet achieved the objectives set out by project leader Tim Jones. First and foremost, these aims were simply too far-reaching with regards to the SAS budget and outside funding sources (Jones and McCann 1996:9). The lack of funding eliminated the chance for any scientific-based analysis of the faunal resources or radiocarbon dating and the lack of clear or obvious stratigraphy between any two portions of the site has been a problem.

4.2 Current Research

Analysis and interpretation conducted as part of this thesis will in part cover some of the goals set forth by Tim Jones with regards to determining the constituent cultural components. Due to the scattered nature of the excavation units, analysis will focus primarily on reconstructing the cultural sequence of this site through study of the lithic tools. Projectile point typology can be seen as an indication of technological evolution. Manufacturing techniques and stylistic variability are often dependent on subsistence strategies, so changes in environments and subsistence patterns can thus be deduced through an analysis of weaponry and retouch patterns (Frison 1978). Samples for radiocarbon dating have been acquired from cultural zones identified on the basis of point typology. These data were then used to further confirm or dispute the time periods determined by quantitative and qualitative analysis of the projectile points as well as associated tools and or ceramics.

4.3 Laboratory Methodology

All of the materials initially collected and stored at the Saskatchewan Archaeological Society office in Saskatoon were transferred to the Department of Archaeology and Anthropology at the University of Saskatchewan. Additional information provided to the author was stored in cardboard file boxes with index cards associated with each artifact. These index cards contained the artifacts catalogue number, unit, level, depth, artifact description and weight. Also located in these boxes were charcoal and wood samples.

During the initial stage of the analysis, the master catalogue for this site created by SAS volunteers, archaeologists and avocational archaeologists was doubled checked and the information updated accordingly. Corrections included separating lithics by material types, burned from non-burned bone fragments, bison from non-bison remains, types of debitage and the odd tool identification. The initial catalogue was recorded using *Microsoft Office Access*; however, the information was exported into *Microsoft Excel 2007* to create new sub-catalogues, categories and tables. Classification for all archaeological material is now divided and further subdivided by lithics, faunal, ceramic, metal and organic categories. New index cards have been added to each artifact bag which corresponds to the catalogue used in this thesis.

4.3.1 Soil Stratigraphy Analysis

Initially a reconstruction of the stratigraphic profile was considered as a means to determine the presence and or absence of occupation levels. An occupational level refers to the layer of remains left by a single culture. Due to the scattered nature of the excavation units along with the lack of trenching, intermittent block excavations and consistency in recorded profiles, a reconstruction of the stratigraphic profile was not possible (Fig 4.1 and 4.2). Varied topographic layers shape the landscape and, in combination with sand dune landforms, have created an uneven distribution and compression of profiles. Difficulty in determining occupation levels has made the linkage of the multiple components from one area to another very difficult as there was no clear or obvious stratigraphic similarity between any two portions of this site.

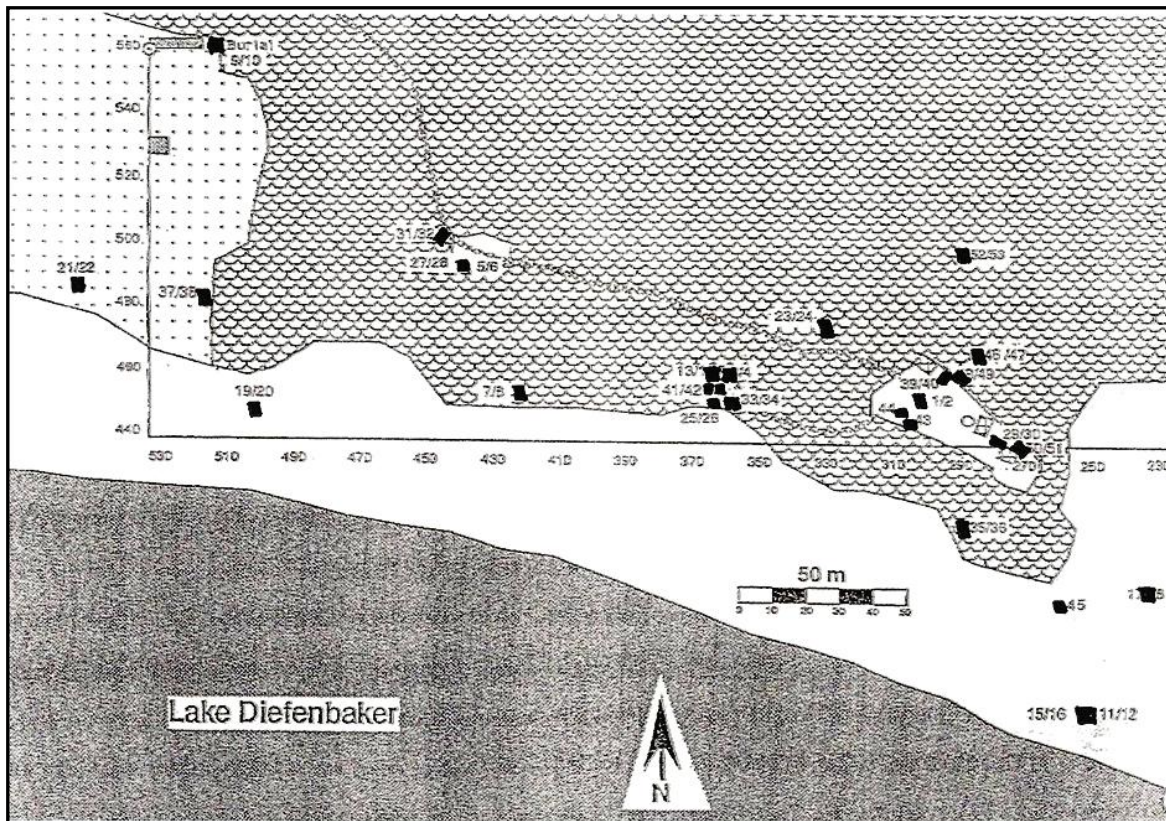


Figure 4.1: Original Site Map Showing Excavation Blocks

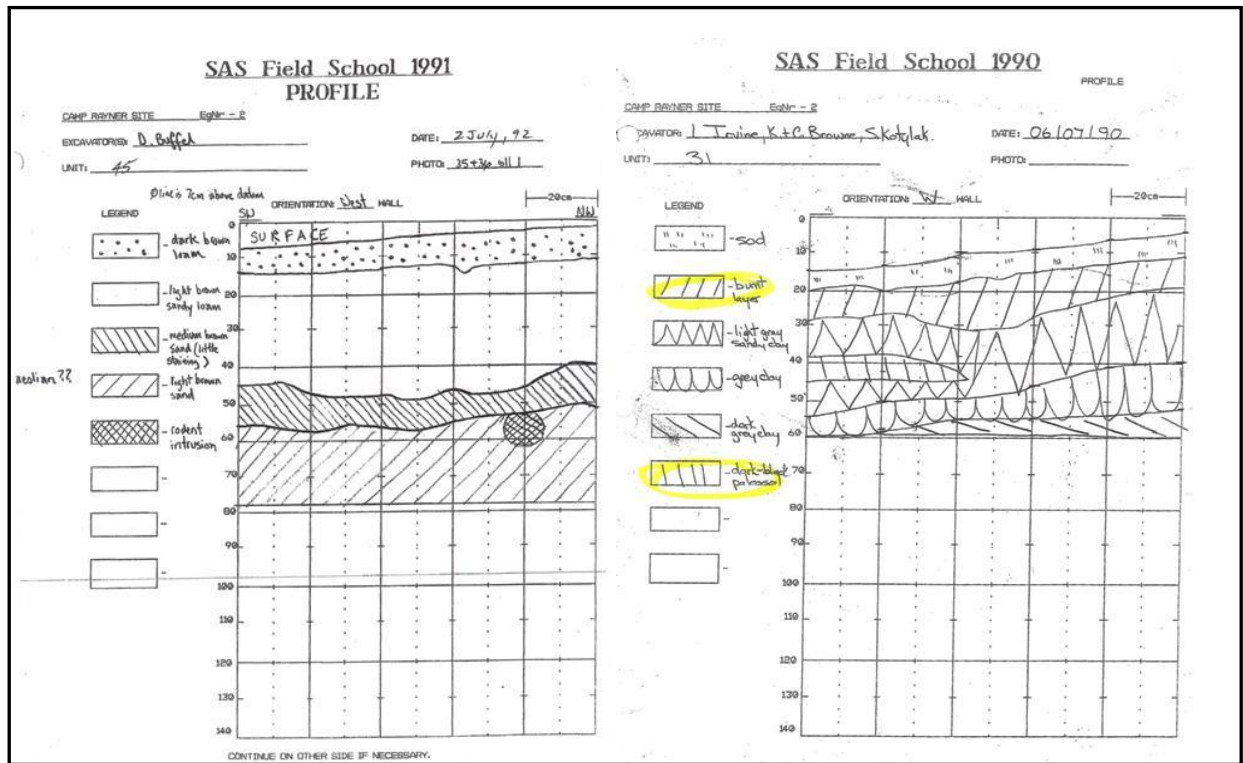


Figure 4.2: Examples of Stratigraphic Profiles

After a consideration of both geological factors and previous excavation methodologies, it was decided that a reconstruction of the stratigraphic profile could not be justified as a reliable method of analysis. As an alternative, occupation levels were to be determined through an analysis of the recovered projectile points in relation to their recorded depth. The stratigraphic profiles were used in conjunction with projectile point typology to determine the accuracy of tool depth and eliminate any discrepancies and disturbances.

The projectile points recovered at this site represent seven distinct cultural groups which correspond to the cultural chronology of the northern plains. The earliest point style represented is Plains Mountain and Lusk while the latest is Prairie side notched. Through a detailed analysis of stylistic attributes it was noted that there seemed to be substantial cultural mixing between the depths of 15 and 60cm. As such, the transition between cultures could not be discussed in terms of occupation levels. The term cultural zone was adopted to refer to each major transition in projectile point style. Only materials found 5 to 10 cm above or below these cultural zones were discussed as representative samples of the tool kits associated with these projectile points.

Cultural Zone	Depth Below Surface	Cultural Affiliation	Precontact Period	~ Years B.P	Measured Radiocarbon Age
Sod	0-15cm	Disturbed	Late/Middle Precontact	-	-
1	15-30cm	Prairie Side-Notched	Late Precontact	1,750-1,150	-
2	30-40cm	Pelican Lake	Late Middle Precontact	3,300-1,850	-
3	40-50cm	Sandy Creek/McKean	Middle Middle/Late Middle Precontact	2,500	-
4	50-60cm	Sandy Creek	Late Middle Precontact	3,300-1,850	-
5	60-75cm	Undetermined/Possible McKean	Middle Middle Precontact	4,700-3,100	-
6	75-90cm	Mummy Cave	Early Middle Precontact	7,700-4,700	6810 +/- 40 BP
7	90-115cm	Plains Mountain/Lusk	Terminal/Late Paleoindian	8,800-7,500	7760 +/- 40 BP

Figure 4.3: Cultural Zones at the Camp Rayner Site (EgNr-2)

4.3.2 Lithic Analysis

The master catalogue contains a record of the initial analysis of lithics based on form and function. Lithics were recorded based on their identification as debitage, FCR (fire-cracked rock), core/core fragments, ground and pecked tools and flaked tools. Debitage was further subdivided into the following classifications, shatter, primary and secondary decortification flakes, primary, secondary, and thinning/sharpening flakes. No discussion of the lithic debitage is included in the analysis. Further information regarding material, heat treatment or mineralization processes as well as measurements and weights were recorded. The identification of material type was based on the comparative collection housed at the Department of Archaeology and Anthropology, University of Saskatchewan. Qualitative and quantitative analysis of flaked tools, which included projectile points, unifaces, bifaces and retouched flakes were undertaken in an attempt to reconstruct the cultural sequence of this site. Quantitative (metric) measurements as well as qualitative analyses were conducted on both projectile points and the remaining flaked

tools. Projectile points were measured for length, width, thickness, body and base measurements, and notch measurements. Qualitative analysis included the documentation of missing portions, cultural affiliations, material, longitudinal and transverse cross sections, symmetry, basal corner shape, basal margin shape and modifications.

Unifaces, bifaces, and retouched flakes all demonstrate retouch patterns reflective of specific functions. Unifaces are primarily found in the form of scrapers which included end/sidescrapers, graters and spokeshaves. In cases when unifacial modification gave no indication of scraper-like attributes, uniface or uniface fragment was recorded as the tool type. Bifaces refer to stone tools modified on both faces and are commonly referred to as knives. Retouched flakes are flakes modified for intentional use. In general they demonstrate bifacial or unifacial modifications such as; the removal of microflakes, serrated edges or worn/rough working edges. These flaked tools were also qualitatively analyzed by inferring material and tool types, modifications, tool shape, the location of primary and secondary working edges, and longitudinal and transverse cross sections. Quantitative measurements were confined to tool length, width and thickness. Tables 1-32 in Appendix B were created based on the above information.

4.3.3 Pottery Analysis

A total of 83% of the pottery assemblage is limited to the top levels of units 3/4, 13/14, 33/34 and 41/42 with the remaining 17% scattered in the SE area of the site (Fig; 4.4). The earliest ceramic tradition found on the Plains was introduced with the Besant phase approximately 2000 years ago. These rudimentary forms were coarsely made and rarely decorated. Ceramic technology evolved over time and reflects a general progression from thick, heavy, and simple to thin and elaborate forms. The utilization of ceramic technology on the plains has its applications in interpreting subsistence and economic practices as well as determining ethnic affiliations. Extensive exchange networks can be inferred through an analysis of ceramic decorative attributes as well as through a more scientific analysis of the particulates found within vessel temper and paste. While the cultural chronology of this site was primarily discerned through an analysis of lithic typology and radiocarbon dating, analysis of these sherds has helped solidify a more precise cultural affiliation during the Late Precontact period.

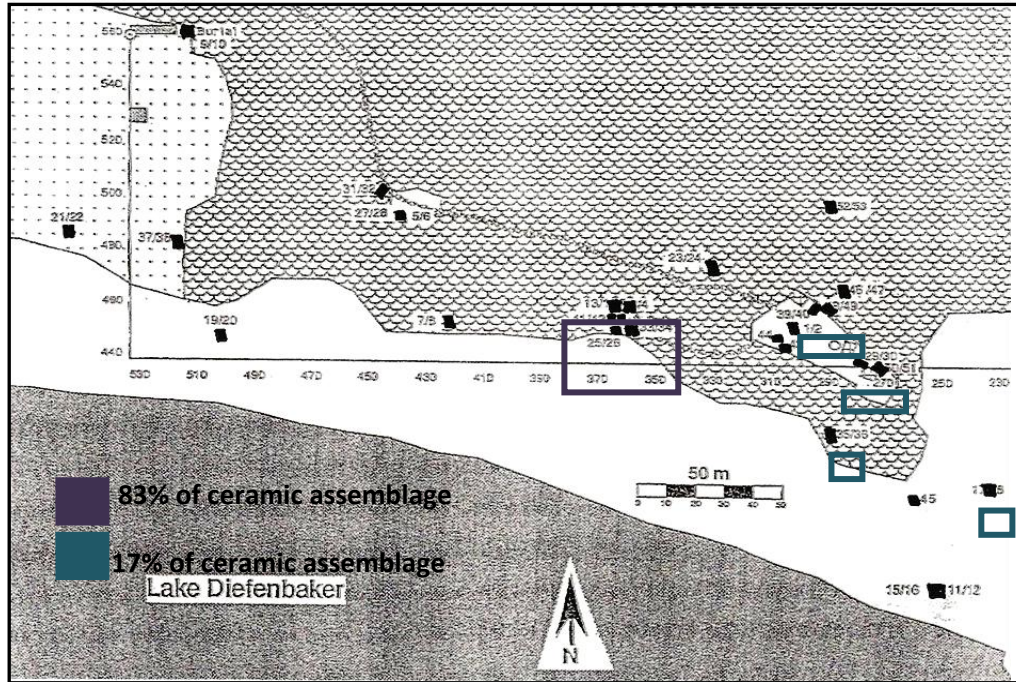


Figure 4.4: Location of Recovered Pottery Assemblage

A ceramic vessel can be subdivided into three main parts, the lip/rim, neck/shoulder and body. The minimum number of vessels can only be identified through the presence of lip/rim portions. Analysis of these sherds will focus on quantitative measurements, wall thickness, and, qualitative attributes, lip shape, rim profile and exterior and interior finish (Refer to figure 4.5). Neck/Shoulder and body sherds were qualitatively analyzed solely on exterior and interior finish and quantitative measurements will be restricted solely to wall thickness. All sherds provided further qualitative analysis based on quality of temper and paste thickness.

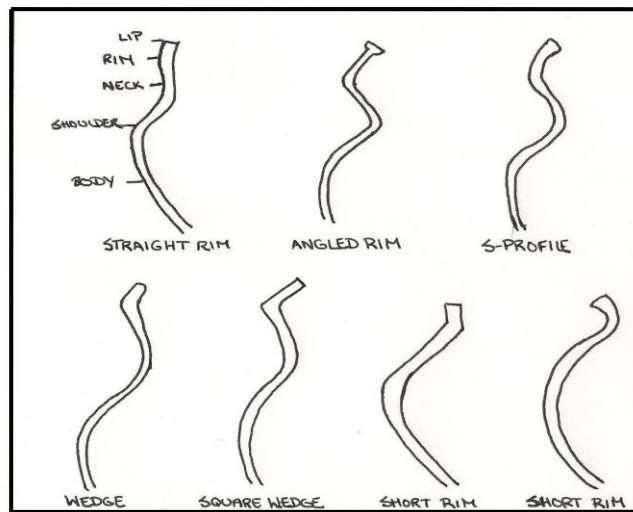


Figure 4.5: Profiles with Vessel Area: Adapted from Malainey (1995:199)

4.3.4 Faunal Analysis

Faunal analysis was based on determining type of bone and number of species. A faunal catalogue was created to record basic information which included bone element, side, weathering, cut, butchering and gnaw marks, burned versus non-burned bone, weight and species represented. Analysis of this material was conducted under the guidance of Dr. Ernest Walker via personal communication. When applicable, quantitative measurements such as length, width and thickness were recorded. Analysis of the faunal remains will be conducted on elements recovered in association with each cultural zone to determine Taxon, NISP (Number of Individual Specimens) and MNI (Minimum Number of Individuals). One should note that the NISP was calculated based on the quantities recorded during the initial analysis of 1987-1995. Fragments bags containing more than 100 pieces of bones were not recounted due to time constraints, as such recorded quantities were taken at face value. The measurements collected were used to create tables and graphs based on distribution of weight, percent unidentifiable versus identifiable and, percent burned and calcined versus percent non burned. Further analysis will be conducted to infer seasonality through bison dentition as well as juvenile remains. The analysis of tooth morphology, including dental eruption and wear patterns, can infer physical data related to the individual's season of mortality, age and other biometric data (Larson et.al 2001:26-30). Depending on the accuracy of the information acquired, reconstruction and assignment of seasonal occupation is provided for each cultural zone.

4.4 AMS DATING

A bison bone sample and a charcoal sample were submitted to Beta Analytic for standard AMS radiocarbon dating. These samples were obtained from cultural zones 6 and 7, and were chosen based on quality and recovered depth. These dates will be discussed in Chapters 11, 12 and 13. Refer to Appendix A for AMS radiocarbon dating results.

Chapter 5

Sod Level

5.1 Introduction

The sod level was located between 0 and 15cm. In many units, the stratigraphic profiles demonstrated that within this depth range the surface was not leveled or indicated top soils. This includes the units in which two of the three identified projectile points were recovered. This chapter will provide a general description of the worked tools and faunal assemblage located in this level.

5.2 Lithic Tool Assemblage

Thirty-one flaked tools, including four projectile points, were recovered from the Sod Level (Appendix B; Table B1-B4). All three projectile points display characteristics of either the Late Middle or Late Precontact period. The raw material is distributed as follows; SRC (30%), Chalcedony (26.7%), Silicified peat (13.3%), KRF (10%), Chert (6.7%), Jasper (3.3%), Agatized wood (3.3%) and Shale (3.3%).

5.2.1 Projectile Points (n=4)

A projectile point constructed out of SRC was located in Unit 43 Level 3 between the depths of 12 and 20cm (Fig 5.1; Cat. #4695; A). An analysis of the stratigraphic profile indicated that this point was recovered in disturbed soil. This is a partially complete projectile point with a missing tip. The basal edge is straight with deep angular corner notches. Retouch is noted on the margins which are predominantly dulled. Calcium carbonate deposits are present along the base and neck portions.

A second projectile point was recovered on the beach in Unit 12 Level 1 between 0 and 10cm (Fig 5.1; Cat.#1416; B). Stylistically this partially complete projectile point shares the

same characteristics as artifact #4695. Slight basal grinding is noted with retouch along the margins.

A third projectile point constructed out of silicified peat was located in Unit 40 Level 1 between 0 and 10cm (Fig 5.1; Cat.#4377; D). This fragment is the base of a projectile point with only a single corner notch present. The basal edge is convex and displays both bifacial retouch and retouch. Large flakes have been removed from both surfaces.

A fourth projectile point, located in Unit 39 Level 2 between 10 and 20cm, is constructed out of silicified peat (Fig 5.1; Cat. #4201; C). This point fragment has a slightly convex basal edge with two corner notches. Flaking scars are visible on both surfaces and the ventral face appears to have been purposely thinned.



Figure 5.1: Projectile Points Sod Level (A = Cat. #4695; B = Cat. #1416; C = Cat. #4201, D = Cat. #4377)

5.2.2 Bifaces and Biface fragments (n=8)

5.2.2.1 Knife fragment (n=1)

A biface tip fragment constructed out of SRC was located in Unit 33 Level 1 between 0 and 20cm (Fig 5.2; Cat. #3384). This biface is the distal end of a knife.

5.2.2.2 Complete Biface (n=1)

A complete biface constructed out of pink quartzite was located in Unit 12 Level 2 between 10 and 20cm (Fig 5.2; Cat. #1436; A). Calcium carbonate is noted on the ventral surface. Dorsally, large flakes have been removed leaving behind a slight hinge in one case.

5.2.2.3 Incomplete Biface (n=1)

A broken biface, triangular in outline, was found in Unit 30 Level 2 between 10 and 20cm (Fig 5.2; Cat. #3240; E). This fragment is missing the tip portion and is extremely thin. Bifacial flaking and retouch is noted and no retouch or grinding is exhibited. This fragment is constructed out of fused shale.

5.2.2.4 Biface fragments (n=5)

A biface fragment constructed out of chalcedony was recovered in Unit 16, Level 1, between 0 and 10cm (Fig 5.2; Cat. #1720; C). This biface fragment has been split along a longitudinal plane exposing a biconvex cross section. Bifacial retouch and retouch is noted along the convex edge. Patination exposed over roughly 75% of the surfaces. A second biface fragment, uncovered in Unit 47, Levels 1&2, was constructed out of silicified peat (Fig 5.2; Cat. #5531; F). The biface fragment is poorly constructed yet retouch and retouch is evident. Dorsally, large flakes have been removed and the base has been reworked into a concave edge. The left lateral margin shows signs of hafting. Calcium carbonate deposits are noted. A third biface fragment constructed out of SRC was found in Unit 43 Level 3 between 12 and 20cm (Fig 5.2; Cat. #4696; G). This fragment is broken along the midsection leaving behind the base portion of the biface. The edges are dulled. A fourth biface fragment is split and was found in Unit 45 Level 2 at a depth of 14.5cm (Fig 5.2 Cat. #5406; B). Bifacial retouch and thinning of the margin is evident. A substantial amount of calcium carbonate build-up is noted on the ventral surface. This biface is constructed out of SRC. A fifth and final biface fragment constructed out of silicified peat was uncovered in Unit 16 Level 1 between 0 and 10cm (Fig 5.2; Cat. #1713; H).

This midsection fragment is broken obliquely along both proximal and distal ends. The fragment is relatively small and modification is exhibited on both margins.

All bifaces and biface fragments are shown in Figure 5.2

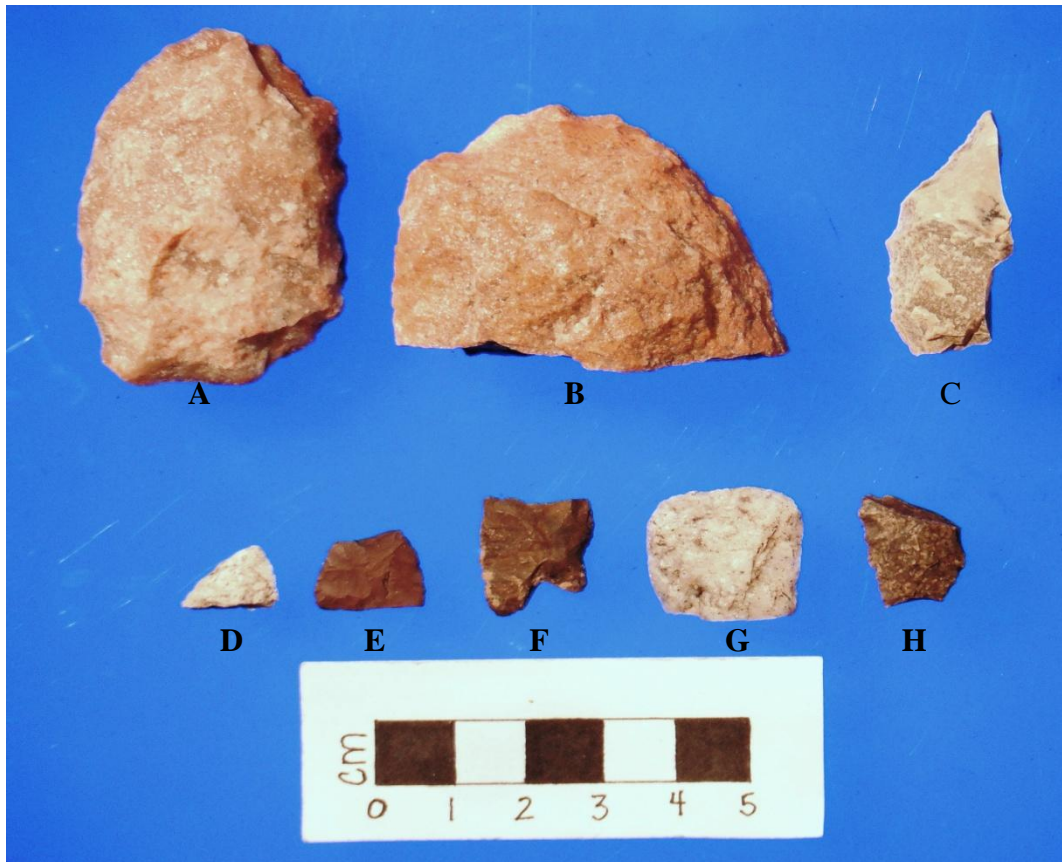


Figure 5.2: Bifaces and Biface fragments from Sod Level (A = Cat. #1436; B = Cat. #5406; C = Cat. #1720; D = Cat. #3384; E = #3240; F = Cat. #5531; G = 4696 Cat. ; H = Cat. #1713

5.2.3. Unifaced Tools (n=10)

5.2.3.1 Endscrapers (n=3)

An endscraper constructed out of SRC was recovered in Unit 12 Level 2 between 10 and 20cm (Fig 5.3; Cat. #1435). The working edges are slightly dulled. This is a well constructed tool fragment and flaking scars are noted on the distal surface. The working angle for this endscraper is 60°. A second endscraper constructed out of Jasper was located in Unit 49 Level 2 at a depth of 5 to 10cm (Fig 5.3; Cat. #6211). This endscraper has a working angle of 60° and

exhibits retouch and a distal edge which is predominantly dulled. A striking platform and cortex is present. A third endscraper constructed out of SRC was located in Unit 1 Level 2 at a depth of 5 to 10cm (Fig 5.3; Cat. #44). This tool appears to be incomplete with irregular flaking patterns along the working edges. Large flakes have been removed from both surfaces causing an indentation on either side. Ventrally, ripples are noted. Chipping is evident however, the edges are predominantly dulled. The working angle for this endscraper is 60° .

5.2.3.2 Side/endscrapers (n=4)

A first side/endscraper, found in Unit 2 Level 2 between 10 and 20cm, is constructed out of chert (Fig 5.3; Cat. #387; D). The edges of this tool are dulled and retouch is evident. The working edges are steep with an angle of 70° . This is a well constructed tool with regular flaking patterns. Calcium carbonate build up is exposed over approximately 30% of the dorsal surface. A second side/endscraper constructed out of chert was found in Unit 46 Level 2 at a depth of 5 to 10cm (Fig 5.3; Cat. #46; F). This side/endscraper is longitudinally split displaying its left lateral margin. The working angle is steep at 70° . Flaking scars are visible on the dorsal surface. A third fragment is an incomplete side/endscraper constructed out of silicified peat. This incomplete scraper was uncovered in Unit 39 Level 2 (Fig 5.3; Cat. #8176; G). This is a poorly constructed fragment that has been split longitudinally. Slight retouch is exhibited on the distal and right lateral working edges. The working angle of this tool is 55° . A fourth and final side/endscraper is a preform recovered in Unit 1 Level 2 at a depth of 5 to 10cm (Fig 5.3; Cat. #45; H). Large flakes have been removed from both dorsal and ventral surfaces. No retouch or chipping is noted. This preform is constructed out of SRC.

5.2.3.3 Uniface fragments (n=2)

A first uniface fragment constructed out of chalcedony was uncovered in Unit 39 Level 2 at a depth of 13cm (Fig 5.3; Cat. #4202; I). This uniface has been retouched along the right margin of the ventral surface. A second uniface fragment, uncovered in Unit 40 Level 2 at a depth of 14cm, is constructed out of a white chalcedony (Fig 5.3; Cat. #4431; J). This fragment is split exposing a plano-convex cross section. Chipping is exhibited on the margins and flaking scars are seen on the dorsal surface. Retouching is evident on the ventral surface.

5.2.3.4 Incomplete scraper (n=1)

An incomplete scraper constructed out of agatized wood was located in Unit 39 Level 2 at a depth of 13cm (Fig 5.3; Cat. #4197; E). This incomplete scraper is bifacially flaked with two working edges. Both edges demonstrate retouch and chipping. Ventrally, ripples are visible. Cortex is present on the dorsal surface.

All unifacial tools are shown in Figure 5.3



Figure 5.3: Unifacial Tools from Sod Level (A = Cat. #1435; B = Cat. #6211; C = Cat. #44; D = Cat. #387; E = Cat. #4197; F = Cat. #46; G = Cat. #8176; H = Cat. #45; I = Cat. #4202; J = Cat. #4431)

5.2.4 Retouched flakes (n=9)

A retouched flake constructed out of chalcedony was located in Unit 15 Level 2 between 10 and 20cm (Fig 5.4; Cat. #2193; B). This secondary flake exhibits retouch along the margins. Large flakes have been removed from both surfaces and conchoidal ripples are noted ventrally.

A second retouched flake, recovered in Unit 39 Level 2 between 10 and 20cm, is constructed out of chalcedony (Fig 5.4; Cat. #4203; C). Retouch is evident on margins. Patination is present on both surfaces. A third retouched flake constructed out of SRC was found in Unit 30 Level 2 between 10 and 20cm (Fig 5.4; Cat. #3227a; D). The appearance of this flake suggests that it may have been utilized as a side scraper; however, it is poorly constructed. Both surfaces are unfinished and irregular flaking patterns are noted on the dorsal side. A fourth retouched flake constructed out of chalcedony was uncovered in Unit 39 Level 2 at a depth of 10 to 20cm (Fig 5.4; Cat. #4200; E). Retouch and chipping, is displayed. Slight patination has occurred. A fifth retouched flake is located in Unit 39 Level 2 at a depth of 13cm (Fig 5.4; Cat. #4196; F). This is a secondary flake with retouch located along the margin. Dorsally, large flakes have been removed and a notch has also been shaped.

A secondary flake constructed out of chalcedony was recovered in Unit 39 Level 2 between 10 and 20cm (Fig 5.4; Cat. #4206; A). This flake has been bifacially retouched with the removal of both large and smaller flakes. A seventh fragment, retouched primary KRF flake was found in Unit 39 Level 2 between 10 and 20cm (Fig 5.4; Cat. #4224; G). Slight retouch is evident on the lateral margin. The ventral surface is clear of flaking scars and cortex is visible over 25% of the dorsal surface. The appearance of this retouched flake suggests that it may have been utilized as a side scraper. An eighth secondary flake constructed out of KRF was found in Unit 40 Level 2 at a depth of 12cm (Fig 5.4; Cat. #4432; H). Irregular flaking patterns are noted on the dorsal surface of this flake. Ventrally, a large flake shatter is evident. Retouch is exhibited on the lateral margin. The final retouched flake is a chalcedony fragment that was recovered in Unit 39 Level 2 between 10 and 20cm (Fig 5.4; Cat. #4198; I). Retouch and grinding are displayed on one of the lateral margin. Cortex is present.

All retouched flakes are shown in Figure 5.4.

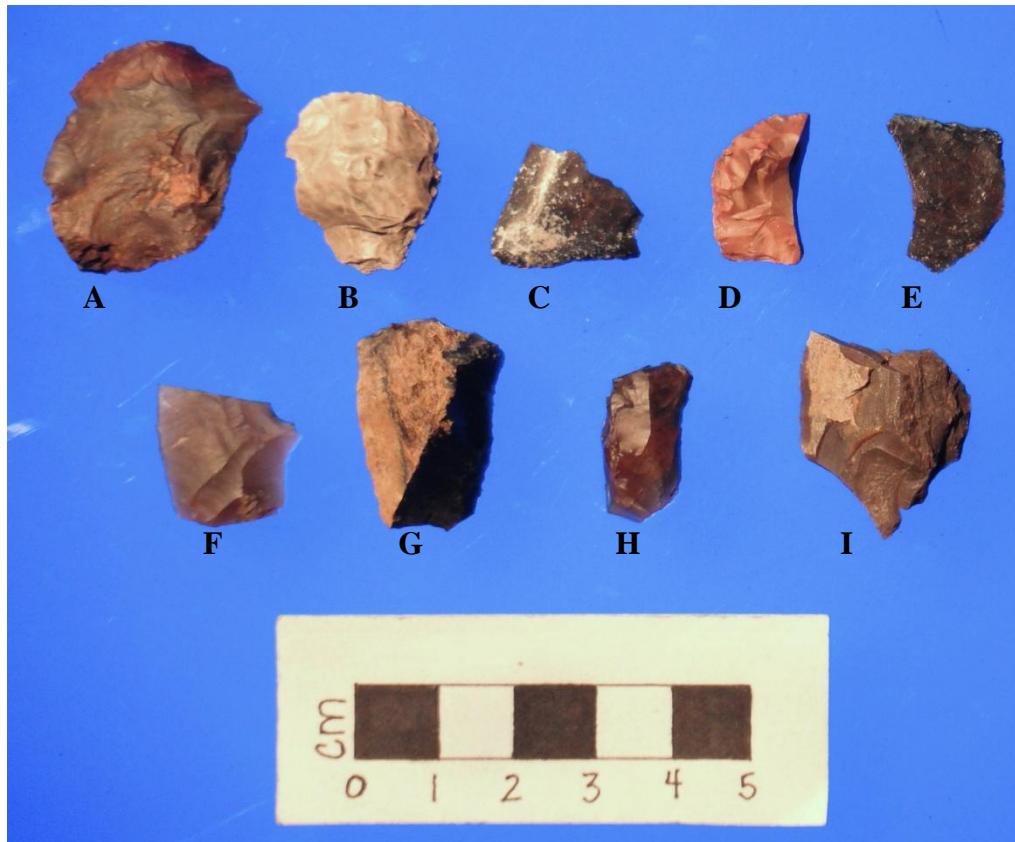


Figure 5.4: Retouched Flakes from Sod Level (A = Cat. #4206; B = Cat. #2193; C = Cat. #4203; D = Cat. #3227a; E = Cat. #4200; F = Cat. #4196; G = Cat. #4224; H = Cat. #4432; I = Cat. #4198)

5.3 Faunal Assemblage

A total of 4,591 complete and incomplete elements were located in the Sod Level. Of these, 89.7% (4,116) were unidentifiable. Of the latter 90.2% displayed varying degrees of burning (Table 5.1 and 5.2). Only two specimens, identified as *Bison bison* and *Canis sp.*, are considered to be non-intrusive. The remaining species, *Aves sp.* (Bird) *Ondatra zibethicus* (Muskrat), *Microtus pennsylvanius* (Meadow Vole), *Cricetidae sp.* (Mouse or Vole) and *Spermophilus richardsonii* (Richardson's ground squirrel) are considered intrusive to the archaeological record and/or represent modern remains. This is based on the following criteria; bone coloring, preservation, weathering and the lack of cultural modification.

Table 5.1: Summary of Sod Level Faunal Counts

Faunal Type	Element	(g)	Specimens	(g)	Unidentified	(g)
Unburned Bone	178	1,136.70			391	202.44
Burned Bone	152	332.92			2,988	1,349.30
Calcined Bone	5	15.90			348	104.10
Burned/Calcined Bone	-	-	-	-	368	101.80
Charred Bone	-	-	-	-	7	2.80
Charred/Calcined Bone	-	-	-	-	-	-
Burned Tooth Enamel	40	18.10	-	-	-	-
Unburned Tooth Enamel	132	56.82			-	-
Unburned Shell	13	3.45	-	-	14	3.09
Total	520	1,563.89			4,116	1,763.53

Table 5.2: Summary of Sod Level faunal remains by taxa

Common Name	Taxon	NISP	MNI
Mammals			
Bison	<i>Bison bison</i>	43	1
	<i>Canis Sp.</i>	1	1
	<i>Aves Sp.</i>	5	2
Muskrat	<i>Ondatra zibethicus</i>	1	1
Meadow Vole	<i>Microtus pennsylvanius</i>	1	1
	<i>Cricetidae sp.</i>	1	1
Gopher	<i>Spermophilus richardsonii</i>	1	1
Miscellaneous			
Large Mammals		287	-
Medium Mammal		113	-
Small		28	-
Misc. Mammal		4050	-
Misc. Osteocytes		3	-

5.3.1 Order Artiodactyla

Bison bison

Specimens identified: NISP = 43; see Table 5.3 for a summary (excludes cranial elements)

Discussion: A total of 42 specimens have been identified as *Bison bison*. A minimum of one adult bison is represented in this assemblage. The approximate age of this individual was estimated based on the presence of a left side mandibular segment with both M₂ and M₃ (Cat. #3252). The M₂ is in full wear, markedly cupped and fossettes nearly obliterated. The exostylid is nearly obliterated as well. The M₃ is also in full wear, including the hypoconulid and the metaconid height of M₃ is 21mm. This wear indicates that the individual was likely 8 years old or older (Per com. Dr. Ernest Walker). Only 7.9% (3) of the elements show signs of burning, all of which belong to the appendicular skeleton. Butchering marks are noted on a distal femur fragment (Cat. #520). No weathering or cultural modification is noted.

Table 5.3 : Summary of *Bison bison* elements from Sod Level

	NISP	MNI	MNE	MAU	%MAU
Forelimb					
Metacarpal	2	1	2	1	1
Radial carpal	1	1	1	0.5	0.5
Scapula	1	1	1	0.5	0.5
Hindlimb					
Femur	1	1	1	0.5	0.5
Tibia	1	1	1	0.5	0.5
Metatarsal	2	1	2	1	1
Os Coxae	7	1	1	0.5	0.5
Other Elements					
First Phalanx	2	1	2	0.5	0.5
Second Phalanx	2	1	2	0.5	0.5
Third Phalanx	2	1	2	0.5	0.5
Distal Sesamoid	2	1	2	1	1
Misc. Metapodial	1	-	-	-	-
Misc. L.Bone	16	-	-	-	-

5.3.2 Order Carnivora

Canis Sp.

Specimen identified: NISP = 1, Right innominate fragment (Cat. #3811)

Discussion: A single *Canis sp.* specimen has been identified in this level. Bone coloring and a state of preservation suggest that this element was found out of context.

5.3.3 Order Passeriformes

Aves Indeterminate

Specimen identified: NISP = 5, synsacrum fragment (Cat. #740); left coracoid (Cat. #741); right proximal tibiotarsus (Cat. #742); immature left tarsalmetatarsus (Cat. #2278); proximal left femur (Cat. #6428a)

Discussion: A single adult avian specimen and a single immature avian specimen have been identified in this assemblage. Similar bone coloration and preservation on the 4 adult elements (Cat. #740, #741, #742 and #2278) suggests that these are the bones of one individual. It is also likely that this specimen is modern.

5.3.4 Order Rodentia

Ondatra zibethicus

Specimen identified: NISP = 1, left femur (Cat. #6238)

Discussion: A single muskrat specimen was recovered in this level. There were no cultural modifications present on the bone and it is considered an intrusive to the archaeological record.

Microtus pennsylvanius

Specimen identified: NISP = 1, incomplete skull with left mandible (Cat. #5534)

Discussion: This incomplete skull represents a single Meadow Vole. This specimen does not display any cultural modifications or burned markers suggesting that it is intrusive.

Cricetidae sp.

Specimens: NISP = 1, left mandible (Cat. #6193)

Discussion: A species could not be determined because there was a lack of identifying characteristics as the teeth were highly worn. This specimen is also considered to be intrusive due to the lack of cultural modification.

Spermophilus richardsonii

Specimens: NISP = 1, Right distal humerus (Cat. #4395a)

Discussion: This specimen is comparable to that of a ground squirrel. There were no cultural modifications or evidence of burning and it is very likely that this specimen is also intrusive in the archaeological record

5.3.5 Miscellaneous Specimens

Summary: NISP = 4,478; see Table 5.4 for a summary

Discussion: 4,478 elements are classified as mammal. Varying degrees of burning are exhibited on approximately 76.4% of the assemblage and 2% displays evidence of cultural modifications. No weathering has been noted.

Table 5.4: Summary of Sod Level miscellaneous specimens by size category

Size Class	NISP	Elements Represented
Large Mammals	287	Ribs, Long Bones, Enamel, Sesamoid
Medium Mammal	113	Vertebra fragments, Long Bones, Flat bones
Small Mammal	28	Long bone, Vertebra and enamel fragments
Misc. Mammal	4050	Ribs, Long Bones, Enamel fragments
Misc. Osteocytes	3	Branchial Rays, scales

5.4 Discussion

Archaeological remains recovered in this area are not discussed in terms of occupations as the sod level represents surface and top soils or were partially eroded by slope processes. Two projectile points shown in Figure 5.1 clearly resemble Late Middle Precontact points which are represented in the deeper zones. There is also the presence of discarded modern avian specimens in this level. This indicates that this level is represented by a mix of both archaeological and recent historic remains.

Chapter 6

Cultural Zone 1

6.1 Introduction

Cultural zone 1 is found at 15 to 30cm below surface. The projectile point morphology reflects characteristics of Prairie side notched points. These points are generally very small and triangular in shape. Cultural zone 1 is assigned to the Late Precontact period which appeared on the Plains roughly between 2000 and 170 B.P. Two anomalies occur in this level indicating the presence of both Late Middle and Early Middle period point styles. The presence of these items is probably the result of disturbance via bioturbation. The majority of all worked tools appear to be concentrated in the NE portion of this site (Refer to Figure 6.1).

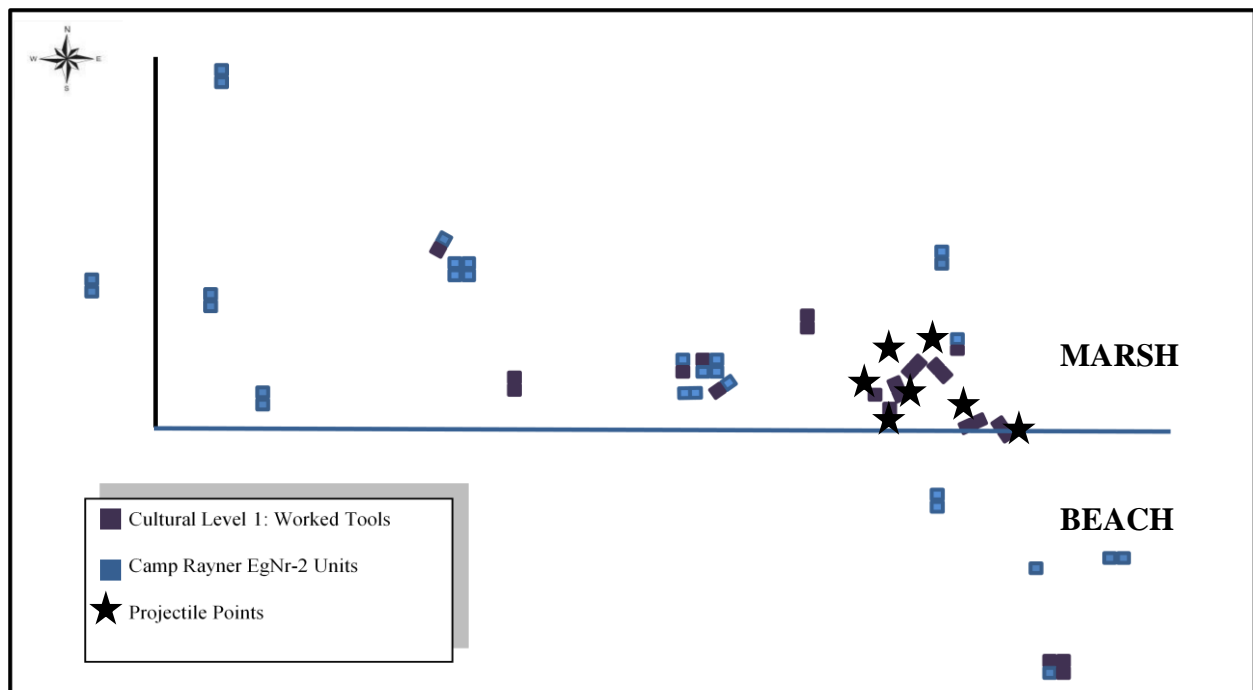


Figure 6.1: Distribution of diagnostic artifacts Cultural Zone 1

6.2 Cultural Zone 1: Lithic Tool Assemblage

Fifty-nine worked tools have been recovered in cultural zone 1 (Appendix B; B5-B8). Variety in both type of worked tool and raw material is noted in this zone. Materials of the chert and chalcedony families remain abundant in this zone. Raw material distribution is as follows; SRC (29%), Chert (18%), Silicified peat (13%), KRF (13%), Silicified shale (7%), Quartzite (5%), chalcedony (4%), crystal quartz (4%), Agate (2%), Silicified wood (2%), Agatized wood (2%), Gronlid siltstone (2%), Jasper (2%).

6.2.1. Projectile Points (n=12)

Twelve projectile points are located in cultural zone 1, three of which are considered anomalies. In a few of the levels, one notes projectile points characteristic of earlier cultural periods. Despite their recovery in these levels their presence may be attributed to geomorphologic processes as previously noted.

One projectile point was located in Unit 2 Level 4 between 20 and 30cm (Fig 6.2; Cat. #418; D). This is a basal fragment only. The basal edge is straight and has been thinned with wide convex basal corners. Basal grinding is evident.

A second chert projectile point is represented by a base fragment (Fig 6.2; Cat. #4759; A). This fragment was recovered in Unit 44, Level 3, at a depth of 20cm. This point is poorly constructed with a crudely shaped basal edge and corners. The basal edge is straight and thinned with some retouch noted. Ventrally a large flake has been removed.

A third projectile point, found in Unit 51, Level 4, at a depth of 19.5cm, is constructed out of KRF (Fig 6.2; Cat. #6516; B). This point is relatively small in both length and width and is corner-notched. The basal edge is convex and the right basal corner has been chipped. On the dorsal surface retouch is noted along the right lateral margin. Minimal patination is observed on the ventral surface.

The fourth projectile point located in cultural zone 1 is of quartz and is triangular in outline with no notches (Fig 6.2; Cat. #3166; D). Slight breaks have occurred along the tip, basal edge and corners. This projectile point is poorly constructed and the quality of raw material has obscured many markings along the margins. This point was uncovered in Unit 29, Level 3.

A fifth projectile point constructed out of silicified peat was found in Unit 50, Level 5, between 20 and 25cm (Fig 6.2; Cat. #7219; F). This partial point is missing its tip. Both corner notches are wide and angular in outline with a break noted on the left side. Retouching and the removal of larger flakes are evident on the right lateral margin.

A complete projectile point constructed out of jasper was recovered in Unit 39, Level 3, at a depth of 21.5cm (Fig 6.2; Cat. #4243; C). This is a well made point with prominent regular flaking patterns. The basal edge is slightly convex with two wide corner notches. Grinding is evident along the lateral margins.

A second complete projectile point constructed out of KRF was located in Unit 30, Level 4, at a depth of 27.5cm (Fig 6.2; Cat. #3303; G). This is a petite point with both a deep tang as well as a slightly rounded corner notch. The basal edge is straight and retouch and chipping are exhibited on the left and right lateral margins. Regular flaking scars are present. Patination is noted on the ventral surface.

A third complete projectile point constructed out of KRF is heavily patinated over 95% of both ventral and dorsal surfaces. This asymmetrical point is characterized by small side notches and a concave basal edge. Grinding and retouch is noted on the basal edge and margins however, patination has dulled their presence. This point was located in Unit 1, Level 4, between 20 and 30cm (Fig 6.2; Cat. #187; H)

An incomplete point was located in Unit 7, Level 3, between 20 and 30cm (Fig 6.2; Cat. #580; J). This point with an elongated lanceolate body and missing base. Retouch is displayed on the lateral margins. There is no clear flaking pattern on either surface. This point is constructed out of SRC.

A partial projectile point constructed out of chalcedony is located in Unit 30, Level 4, (Fig 6.2; Cat. #3634; K). A main break has occurred along the midsection of the point in which only the base was recovered. Both left and right lateral margins are straight in outline and there appears to be no signs of hafting. Patination is evident on the ventral surface.

One anomaly recovered in cultural zone 1 is a McKean projectile point (Fig 6.2; Cat. #4242; E). This broken point constructed out of fused shale was recovered in Unit 39, Level 3, at a depth of 26.5cm. The body of this point is elongated with a deep concave basal edge. An oblique break has occurred along the body near the distal end of this point as well as along the left basal corner as illustrated. This is a relatively well made point with an irregular flaking pattern. Grinding is evident on both left and right lateral margins.

The second anomaly displays characteristics of a Sandy Creek type point (Fig 6.2; Cat. #6026; L). This complete point has an elongated body with deep, angular corner notches and a slightly concave basal edge. Chipping and grinding is exhibited along the entire length of the margins. This point constructed out of silicified peat was located in Unit 48, Level 4, at a depth of 20cm.

All projectile points are shown in Figure 6.2.



Figure 6.2: Projectile points found in Cultural Zone 1 (A = Cat. #4759; B = Cat. #6516; C = Cat. #4243; D = Cat. #3166; E = Cat. #4242; F = 7219; G = Cat. #3303; H = Cat. #187; I = Cat. #418; J = Cat. #580; K = Cat. #3634; L = Cat. #6026)

6.2.2 Bifaces and Biface fragments (n=16)

Sixteen bifaces and biface fragments were recovered in cultural zone 1. These fragments are predominantly incomplete bifaces or midsection fragments.

6.2.2.1 Biface tip fragments (n=2)

A biface, uncovered in Unit 29, Level 2, between 20 and 30cm, is a tip fragment (Fig 6.3; Cat. #3143; K). This fragment is relatively small in size with few flaking scars present on the surfaces. The lateral margins exhibit some form of chipping. A second bifacial tip fragment constructed out of silicified peat was found in Unit 8, Level 4, between 20 and 30cm (Fig 6.3; Cat. #633; L). Flaking scars are noted on both surfaces. These fragments are likely projectile point tips.

6.2.2.2 Biface fragments (n=9)

A biface fragment, recovered in Unit 48, Level 3, at a depth of 15cm, is constructed out of agate (Fig 6.3; Cat. #6015; A). This biface fragment exhibits chipping along its lateral margin. Two notches are noted on the distal edge. Flaking scars are visible on both surfaces. A second biface constructed out of SRC was located in Unit 48, Level 4, at a depth of 19cm (Fig 6.3; Cat. #10361; B). This fragment is poorly flaked with chipping and retouch evident on the working edges. A third biface fragment constructed out of silicified peat was located in Unit 12, Level 3, between 20 and 30cm (Fig 6.3; Cat. #1458; C). This fragment displays a convex working edge with noted chipping. Two main breaks have occurred exposing both longitudinal and transverse cross sections. Flaking scars are only visible along the working edge and calcium carbonate build up is noted on the longitudinal cross section. A fourth biface constructed out of chert was found in Unit 39, Level 2, at a depth of 16cm (Fig 6.3; Cat. #4204; D). Major breaks are evident along this fragment and the proximal end has been retouched and thinned. Irregular flaking patterns are visible on both surfaces.

A fifth biface fragment, recovered in Unit 49, Level 6, between 25 and 30cm, was constructed out of chert (Fig 6.3; Cat. #6311; E). Multiple breaks have occurred along the margins and surfaces of this fragment which have been utilized as further platforms for flaking. One convex working edge remains which displays evidence of retouching. A sixth biface

fragment constructed out of quartz crystal was found in Unit 39, Level 2, at a depth of 17cm (Fig 6.3; Cat. #4205; F). This fragment is broken along the margins and retouch is evident. The poor quality of this construction material obscures many modification features.

A biface fragment was located in Unit 40, Level 2, at a depth of 15cm (Fig 6.3; Cat. #4425; N). This biface is constructed from a heat-treated SRC. This biface appears to display a hafted notch on the left lateral margin; however, this is simply the result of a break that has been reworked. Chipping is noted on the lateral margins. Large flakes have been removed from both the dorsal and ventral surfaces. An eight biface constructed out of SRC was recovered in Unit 1, Level 4, between 20 and 30cm (Fig 6.3; Cat. #134; O). Two main breaks have occurred transversely and longitudinally. The transverse break has been reworked to form a scraper-like edge which exhibits some retouch. A final incomplete biface was recovered in Unit 54, Level 5, at a depth of 21.5cm (Fig 6.3; Cat. #10692; P). Evidence of thinning and chipping is noted along the edges. Bifacial retouch and large flakes have been removed from both surfaces

6.2.2.3 Biface midsections (n=4)

A biface midsection fragment constructed out of SRC was found in Unit 40, Level 2, at a depth of 17cm (Fig 6.3; Cat. #4424; G). This fragment is broken obliquely along the distal and proximal ends as well as longitudinally along the right lateral margin. The working edge is slightly concave and convex and displays evidence of retouch. Large flakes have been removed from both the ventral and dorsal surfaces. A second midsection fragment constructed out of chert was recovered in Unit 51, Level 5, at a depth of 17.5cm (Fig 6.3; Cat. #6533; H). This fragment is broken along both transverse planes and along the lateral margin. This fragment is irregularly flaked with no clear orientation. The third midsection fragment exhibits two main transverse breaks. This fragment constructed out of SRC was located in Unit 29, Level 3, at a depth of 21.5cm (Fig 6.3; Cat. #3167; I). Chipping is noted on the lateral margins. The fourth and final fragment constructed out of fused shale was found in Unit 54, Level 5, between 20 and 25cm (Fig 6.3; Cat. #8494; J). Bilateral thinning is noted on the margins. Irregular flaking patterns are evident on both surfaces.

6.2.2.4 Knife fragments (n=1)

A biface tip fragment was recovered in Unit 54, Level 6, at a depth of 28cm (Fig 6.3; Cat. #10718; M). Bifacial retouching and thinning is noted on both lateral margins. Both dorsal and ventral surfaces are unfinished. The construction material of this biface is silicified wood.

Biface and biface fragments are shown in Figure 6.3



Figure 6.3: Biface and biface fragments Cultural Zone 1 (A = Cat. #6015; B = Cat. #10361; C = Cat. #1458; D = Cat. #4204; E = Cat. #6311; F = Cat. #4205; G = Cat. #4424; H = Cat. #6533; I = Cat. #3167; J = Cat. #8494; K = Cat. #3143; L = Cat. #633; M = Cat. #10718; N = Cat. #4425; O = Cat. #134; P = Cat. #10692)

6.2.3 Uniface and Uniface fragments (n=21)

6.2.3.1 Endscrapers (n=4)

An end scraper constructed out of KRF was recovered in Unit 49, Level 4, between 15 and 20cm (Fig 6.4; Cat. #6249; B). This complete scraper has a steep working angle of 70°. The distal working end is slightly dulled. Irregular flaking patterns are noted on the dorsal surface and areas along the ventral surface have been retouched. A chert endscraper fragment thumbnail

in size was found in Unit 51, Level 5, at a depth of 23.5cm (Fig 6.4; Cat. #6534; C). It has a working angle of 60°. This scraper is poorly flaked with cortex covering over 50% of the dorsal surface. Retouching is present along the lateral margins. A third endscraper constructed out of SRC, was recovered in Unit 23, Level 3, between 20 and 30cm (Fig 6.4; Cat. #2525; D). Slight retouching is displayed on the convex distal working edge. The working angle is between 45 and 50°. There are calcium carbonate deposits on the dorsal surface.

A fourth endscraper was located in Unit 50, Level 4, at a depth of 19.5cm (Fig 6.4; Cat. #6457; E). The working angle of this chert endscraper is extremely steep, between 80 and 85°, and the edge exhibits chipping. The lateral margins are angled and irregular flaking patterns are noted on the dorsal surface. Cortex is present on the proximal end.

6.2.3.2 Side scrapers (n=2)

A SRC side scraper was located in Unit 2, Level 4, between 20 and 30cm (Fig 6.4; Cat. #392; F). This uniface tool has retouch on one lateral working edge. Large flakes have been removed from the dorsal surface and a bulb of force is noted on the ventral surface. Cortex is present along the right lateral margin. A second side scraper constructed out of silicified peat was found in Unit 24, Level 3, between 20 and 30cm (Fig 6.4; Cat. #2523; G). The working edge exhibits retouch and unifacial retouch. Cortex is present over 50% of the dorsal surface and 25% of the ventral surface. Calcium carbonate build up is also noted on the ventral surface.

6.2.3.3 Side/endscraper fragments (n=3)

An incomplete side/endscraper was located in Unit 50, Level 6, at a depth of 28cm (Fig 6.4; Cat. #7240; H). Large flakes have been removed from both ventral and dorsal surfaces and cortex is noted dorsally. A second side/endscraper constructed out of fused shale was located in Unit 40, Level 3, between 20 and 30cm (Fig 6.4; Cat. #4452; I). This side/endscraper is thumbnail in size with a steep working edge angle at 70°. An incomplete third side/endscraper fragment constructed out of KRF was found in Unit 39, Level 3, between 20 and 30cm (Fig 6.4; Cat. #8179; J). Two working edges are present, each displaying unifacial retouching. The working edge angle is 75°. Dorsally, large flakes have been removed and ripples and a bulb of force are noted on the ventral surface. Slight patination is evident on both surfaces.

6.2.3.4 Scraper fragments (n=3)

A scraper fragment constructed out of agatized wood was found in Unit 29, Level 2, at a depth of 20cm (Fig 6.4; Cat. #8125; K). This fragment is relatively small with breaks occurring along the right lateral margin and distal and proximal ends. The distal end has been retouched. The working edge displays some retouching. Ventrally, the surface is battered and some flake scars are noted on the distal surface. A second scraper fragment constructed out of quartz was recovered in Unit 43, Level 4, between 20 and 25cm (Fig 6.4; Cat. #823; A). The convex working edge exhibits slight retouch. Two main breaks have occurred on the distal end and right lateral margin. A third incomplete scraper fragment constructed out of silicified peat was recovered in Unit 8, Level 3, between 20 and 30cm. Retouch is noted along the margins. A third incomplete scraper is constructed out of a secondary decortification SRC flake (Fig 6.4; Cat. #593; L). Retouch is displayed on both the straight lateral margin and convex distal end. Ventrally and dorsally large flakes have been removed. The working edge angle is 60°. This scraper was recovered in Unit 7, Level 4, between 20 and 30cm.

All endscrapers and side scrapers are shown in Figure 6.4

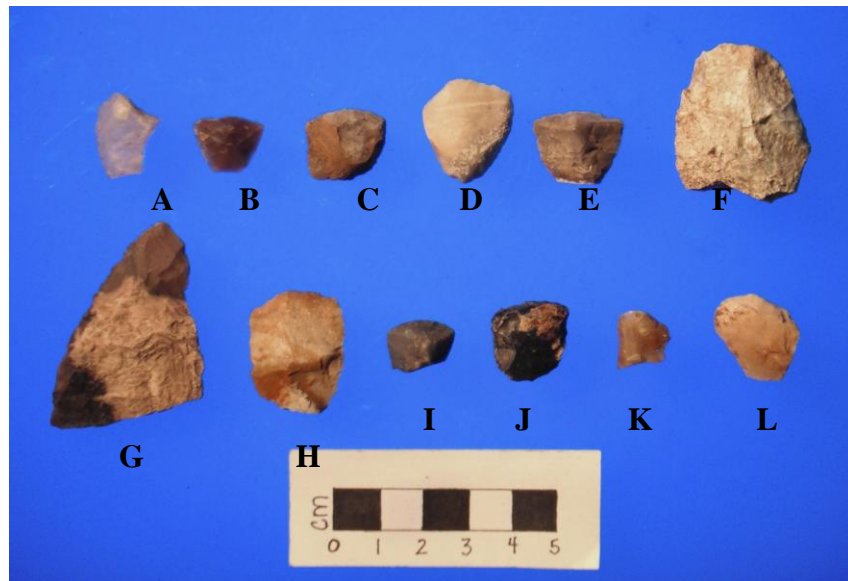


Figure 6.4: Endscrapers and sidescrapers from Cultural Zone 1 (A = Cat. #8231; B = Cat. #6249; C = Cat. #6534; D = Cat. #2525; E = Cat. #6457; F = Cat. #392; G = Cat. #2523; H = Cat. #7240; I = Cat. #4452; J = Cat. #8179; K = Cat. #8125; L = Cat. #593)

6.2.3.5 Spokeshave (n=1)

A single spokeshave constructed out of SRC was located in Unit 29, Level 4, at a depth of 29cm (Fig 6.5; Cat. #3195; B). This spokeshave is broken transversely on the proximal end and longitudinally at the left lateral margin. The working edge is concave. The proximal end has been retouched along the left side of the break.

6.2.3.6 Scraper/spokeshaves/gravers (n=4)

An incomplete scraper/spokeshave fragment, recovered in Unit 49, Level 4, at a depth of 18cm, is constructed out of a white chalcedony (Fig 6.5; Cat. #6250; C). This unifaced tool fragment exhibits unifacial retouch on both concave and convex working edges. Breaks have occurred along the proximal edge and right and left lateral margins. On the ventral surface retouch is visible at both the proximal and distal ends. Slight patination is noted along the right lateral margin. A second incomplete scraper/spokeshave, uncovered in Unit 40, Level 3, at a depth of 25cm, is constructed out of SRC (Fig 6.5; Cat. #4450; H). This scraper/spokeshave is a refitted fragment that is missing a small segment along the break. This incomplete tool has a straight and a concave working edge which have been modified through chipping and retouch. Two large flakes have been removed from the dorsal surface creating rather steep angled edges. The distal end is notched and a bulb of force is noted on the ventral surface. A third incomplete scraper/spokeshave constructed out of silicified peat was found in Unit 12, Level 3, between 20 and 30cm (Fig 6.5; Cat. #1459; D). This fragment has been retouched along the margins to form two concave working edges. Cortex, calcium carbonate build up and patination is noted on both surfaces. A fourth scraper/spokeshave/graver fragment constructed out of chert was recovered in Unit 39, Level 3, between 20 and 30cm (Fig 6.5; Cat. #8180; E). Two concave working edges are present on the right lateral margin, as illustrated. On the dorsal surface flaking scars are noted and ventrally a large flake has been removed resulting in the formation of a notch on the left lateral margin. Slight calcium carbonate build up is present.

6.2.3.7 Incomplete unifaces (n=2)

An incomplete uniface constructed out of quartzite was recovered in Unit 40, Level 2, at a depth of 20cm (Fig 6.5; Cat. #4412; A). Retouch and thinning is noted on the edges. Large flakes have been removed from the surfaces. A second incomplete uniface constructed out of quartzite was recovered in Unit 51, Level 5, at a depth of 21cm (Fig 6.5 Cat. #6532; F). Breaks

have occurred on both the proximal and distal ends and flaking scars are visible on the ventral surface.

6.2.3.8 Uniface Knife (n=1)

A single uniface is the distal end of a knife fragment (Fig 6.5; Cat. #4451; G). This uniface constructed out of silicified shale was uncovered in Unit 40, Level 3, between 20 and 30cm. Both working edges are slightly angled, with noted retouching. Dorsally, large flakes have been removed and a bulb of force is noted on the ventral surface.

All other unifacially retouched tools are shown in Figure 6.5



Figure 6.5: Unifacially retouched tools from Cultural Zone 1 (A = Cat. #4412; B = Cat. #3195; C = Cat. #6250; D = Cat. #1459; E = Cat. #8180; F = Cat. #6532; G = Cat. #4451; H = Cat. #4450)

6.2.4 Retouched Flakes (n=10)

A retouched flake constructed out of SRC was located in Unit 2, Level 5, between 20 and 30cm (Cat.#6935). Dorsally, three large flakes have been removed and a bulb of force is noted

on the ventral surface. A retouched flake constructed out of a secondary SRC flake was found in Unit 2, Level 4, between 20 and 30cm (Fig 6.6; Cat. #419; A). A large flake has been removed dorsally, which has thinned the working edge. Chipping is present on this edge. A bulb of force is present on the ventral surface. A SRC secondary flake was located in Unit 47, Level 3, between 20 and 30cm (Fig 6.6; Cat. #8330; B). This flake has been retouched along the edges and displays evidence of chipping along the edges. A split pebble constructed out of silicified wood was recovered in Unit 44, Level 4, at a depth of 23.5cm (Fig 6.6; Cat. #10121; C). Retouch is displayed along the edges. Ventrally, three large flakes have been removed. A secondary SRC flake was located in Unit 33, Level 2, at a depth of 20cm (Fig 6.6; Cat. #3385; D). Retouch is evident along the distal margin. Dorsally, large flakes have been removed from the surface. A slight hinge is noted on the ventral surface.

A secondary flake constructed out of grey chert was found in Unit 31, Level 3, at a depth of 27cm (Fig 6.6; Cat. #3323; E). Retouch is noted on both dorsal and ventral surfaces. Large flakes have been removed from the dorsal surface. A bulb of force and flaking pattern is present on the ventral surface as well as calcium carbonate deposits. A secondary flake constructed out of KRF was uncovered in Unit 50, Level 6, at a depth of 28.5cm (Fig 6.6; Cat. #7241; F). Retouch is exhibited on the margins of this flake. A flaking platform is noted. A retouched flake displaying characteristics of a scraper/spokeshave was uncovered in Unit 48, Level 4, at a depth of 20cm (Fig 6.6; Cat. #6027; G). This secondary flake displays retouch along one straight and one slightly concave working edge. Cortex is present on the dorsal surface and flakes have been removed near the distal end. A striking platform is noted on the ventral surface. A secondary SRC flake was located in Unit 49, Level 6, between 25 and 30cm (Fig 6.6; Cat. #6304; H). The edges have been thinned and are slightly worn. A last retouched flake is a secondary flake located in Unit 30, Level 3, at a depth of 25cm (Fig 6.6; Cat. #3610; I). Bifacial retouch is evident as well as the removal of large flakes on both surfaces. This flake is constructed out of silicified shale.

All retouched flakes are depicted in Figure 6.6

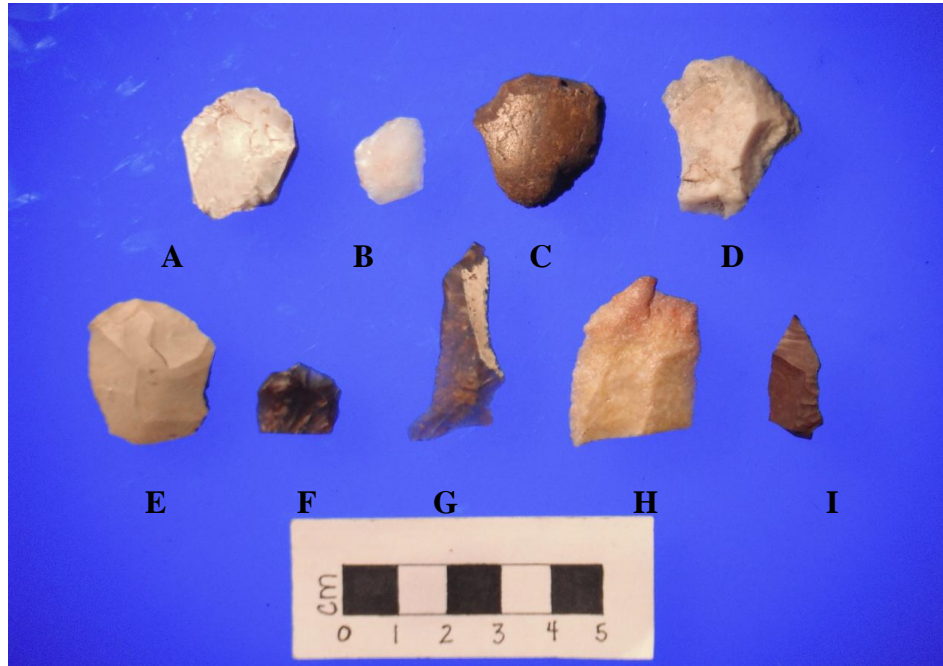


Figure 6.6: Retouched Flakes from Cultural Zone 1 (A = Cat. #419; B = Cat. #8330; C = Cat. #10121; D = Cat. #3385; E = Cat. #3323; F = Cat. #7241; G = Cat. #6027; H = Cat. #6304; I = Cat. #3610)

6.3 Pottery Assemblage

6.3.1. Vessel (n=3)

Excavation at the Camp Rayner site produced one identifiable vessel. This classification is based solely on the presence of one rim sherd. Vessel #1 has no decorative attributes other than noticeable brushing, paddling and incised lines on the exterior surface (Fig. 6.7; Cat. #4535). Rim profile is of an S-Shape with beveling occurring at the lip. The sherds of this vessel are quite thin and compact with crushed granite and sand temper. Certain areas of the vessel's exterior are grayed indicative of firing processes with the interior marked by blackened residues. Preliminary analysis leads one to further suggest that based on this artifact's provenience, style and depth, this vessel may be linked with a refitted neck/shoulder sherd. These neck/shoulder sherds demonstrate the same brushing or paddling strokes on the neck portions as well as blackened residue on the upper half of the interior (Fig 6.7; Cat. #4538 and #3433). The shoulder portions appear to possess impressions similar to a cord-roughened finish; however, varying degrees of exfoliation have obliterated this feature.

The location of Vessel #1 is Unit 41, Level 2&3 at a depth of 27cm. The concentration of the lip/rim sherd and two neck/shoulder sherds are within a 0-18N x 0-18E block in the lower portion of the southwest quadrant. Fourteen body sherds are also in association with this vessel which expands this distribution to roughly 0-25N x 0-26E with one concentration located at 62N and 29E. These body sherds display the same cord-roughened finish as noted on the shoulder portion of this vessel.

Through an analysis of artifact distribution, no lithic tools are considered to be in association with this vessel. Two tools were exposed in unit 41, but these artifacts are well over 15cm below the ceramic assemblage. The first was an anvil located at 45cm D.B.S in the upper portion of the northwestern quadrant. The second, a retouched KRF flake, was exposed at approximately 57-67cm D.B.S in the same northwestern quadrant. Without radiocarbon analysis, it is assumed that due to depth, these artifacts are most likely not related to the later components. In similar fashion, while worked and utilized bone fragments have been excavated in this area, only one fragment is in association with Vessel #1 based on the criteria used for lithics. Artifact #4550 represents a bison terminal phalange.

A total of 117 burned and non-burned unidentifiable and undetermined bone fragments were also located near this vessel. The presence of burned bone in association with vessels often plays an important part in uncovering evidence of food preparation and consumption at archaeological sites. Analysis of vessel residue can support and confirm various hypotheses regarding type of food preparation as well as a preference over specific species. Without radiocarbon analysis and the disintegrated nature of these fragments, however, one can only speculate as to the relationship between these faunal remains and the associated vessel.

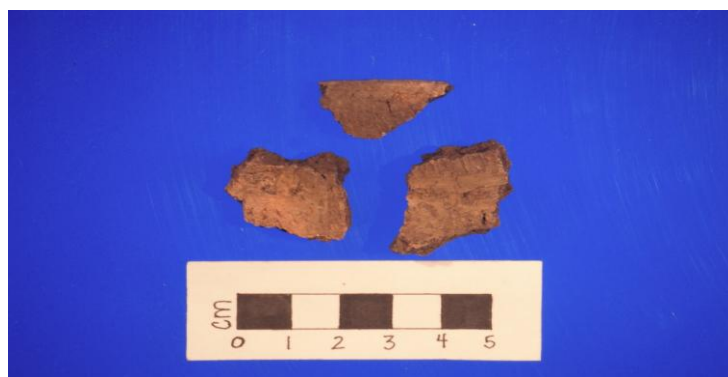



Figure 6.7: Vessel #1 from Cultural Zone 1 (Cat. #4535 and 4538)

Table 6.1: Vessel Characteristics Cultural Zone 1

Catalogue#	Provenience	Description	Wall Thickness (mm)	Rim Profile
4535 (lip/rim)	Unit 41, Level 2&3	Lip – Beveled Rim Profile - S-Shaped	5.16	
4538 (neck/shoulder)	Unit 41, Level 2&3	Exterior- cord-wrapped paddled	7.48	

6.3.2 Neck Sherds (n=1)

A single neck sherd displaying differing characteristics than those of Vessel #1 was also recovered in this level. Artifact catalogued # 3433 was recovered in Unit 33, Level 3 between 20 and 30cm. See Figure 6.8 and Table 6.2



Figure 6.8: Neck Sherd from Cultural Zone 1

Table 6.2: Neck Sherd Characteristics Cultural Zone 1

Catalogue#	Provenience	Description	Wall Thickness (mm)
3433	SE	Exterior Finish - smooth Exterior Decoration – horizontal incised groove	7.16

6.3.3 Body Sherds (n=99)

Body sherds are abundant and comprise 95% (180 out of 189) of the entire assemblage from cultural zones 1 through 4. Ninety-nine body sherds were recovered in cultural zone 1. Out of this smoothed exteriors dominated the assemblage (n=45), this is followed by fabric impressed (n=26), cord-wrapped paddle (n=27).

6.4 Cultural Zone 1 Faunal Assemblage

A total of 17,720 complete/incomplete elements as well as unidentified fragments have been recovered in cultural zone 1 and 92.3% (16,348) fragments have been classified as unidentifiable of which 92.7% (15,148) demonstrated varying stages of burning (Table 6.3 and 6.4). *Bison*, *Canis sp.* and *Lepus sp.* specimens have been identified and comprise 1.7% of the assemblage.

Table 6.3: Summary of Cultural Zone 1 Faunal Counts

Faunal Type	Element	(g)	Specimens	(g)	Unidentified	(g)
Unburned Bone	845	6,098.84	258	4,693.15	1,200	682.36
Burned Bone	210	636.20	48	311.40	10,542	3,333.25
Calcined Bone	18	21.50	2	16.80	878	299.00
Burned/Calcined Bone	-	-	-	-	3,608	532.00
Charred Bone	5	20.90	-	-	120	8.20
Charred/Calcined	-	-	-	-	-	-
Burned Tooth Enamel	72	161.80	36	115.10	-	-
Unburned Tooth	223	889.47	102	794.40	-	-
Unburned Shell	24	7.74	-	-	-	-
Total	1,397	7,836.45	446	5,930.85	16,348	4,854.81

Table 6.4: Summary of Cultural Zone 1 faunal remains by taxa

Common Name	Taxon	NISP	MNI
Mammals			
Bison	<i>Bison bison</i>	288	4
	<i>Canis Sp.</i>	15	1
	<i>Lepus Sp.</i>	3	1

Miscellaneous			
Large Mammals		1790	-
Medium Mammal		15	-
Small		61	-
Misc. Mammal		15502	-
Misc. Osteocytes		26	-

6.4.1 Order Artiodactyla

Bison bison

Specimens identified: NISP = 288; see Table 6.5 for a summary

Discussions: A total of 288 specimens have been classified as *Bison bison*. At least two adults are represented along with an immature specimen. The main identifier of this immature specimen was the identification of deciduous teeth. Varying stages of burning have occurred on approximately 17.6% and cultural modification markers are exhibited on 11.5% of the remains. No weathering is evident.

Table 6.5: Summary of *Bison bison* elements from Cultural Zone 1

	NISP	MNI	MNE	MAU	%MAU
Axial					
Rib	20	1	11	0.42	0.12
Sacrum	1	1	1	1	0.29
Caudal	1	1	1	0.2	0.06
Forelimb					
Ulna	3	1	3	1.5	0.43
Radius	2	1	2	1	0.29
Metacarpal	11	3	7	3.5	1
Intermediate	1	1	1	0.5	0.14
Intermediate/Ulnar fused	1	1	1	0.5	0.14
Radial carpal	1	1	1	0.5	0.14
Lateral Malleolus	1	1	1	0.5	0.14
Scapula	15	1	4	2	0.57

	NISP	MNI	MNE	MAU	%MAU
Hindlimb					
Femur	1	1	1	0.5	0.14
Tibia	7	2	6	3	0.86
Astragalus	4	2	4	2	0.57
Fused Second and Third tarsal	3	2	3	1.5	0.43
Calcaneus	3	2	3	1.5	0.43
Os Coxae	4	1	4	2	0.57
Patella	1	1	1	1	0.29
Other Elements					
First Phalanx	2	1	2	0.5	0.14
Second Phalanx	2	1	2	0.5	0.14
Third Phalanx	5	2	5	1.25	0.36
Proximal sesamoid	1	1	1	0.25	0.07
Distal Sesamoid	5	1	2	0.5	0.14
Misc. Sesamoid	1	-	-	-	-
Misc. Carpal/Tarsal	1	-	-	-	-
Misc. Tarsal	1	-	-	-	-
Misc. L.Bone	21	-	-	-	-

6.4.2 Order Carnivora

Canis sp.

Specimens identified: NISP = 15; Left M₃ and incisor (Cat. #3453), Left M₁ and M₂ (Cat. #3477), Left P1 (Cat. #3839), Right scapula with glenoid fossa (Cat. #3859), premolar (Cat.#4481)

Discussions: A minimum of one *Canis sp.* is represented in this assemblage. No weathering, burning or cultural markers are exhibited on these elements.

6.4.3 Order Lagomorpha

Lepus sp.

Specimens identified: NISP = 3; Incisor (Cat. #6256), Distal femur (Cat. #7278)

Discussions: One *Lepus* sp. specimen was identified in this assemblage. No weathering, burning or cultural modifications are evident.

6.4.4 Miscellaneous Specimens

Summary: NISP = 17,394; see Table 6.6 for a summary

Discussions: A total of 17, 394 identified and unidentified elements and fragments could only be categorized by their size class. These elements include vertebra, enamel, long bone fragments and a left astragalus. Of these elements, 88.5% (15,402) exhibit varying stages of burning and cultural modification is evident on 1.2% (213 fragments).

Table 6.6: Summary of Cultural Zone 1 miscellaneous specimens by size category

Size Class	NISP	Elements Represented
Large Mammals	1790	Ribs, Long Bones, Enamel fragments
Medium Mammal	15	Rib, Long Bones, Flat bones
Small Mammal	61	Long bone, Vertebra and enamel fragments
Misc. Mammal	15502	Ribs, Long Bones, Enamel fragments
Misc. Osteocytes	26	Branchial Rays, scales

6.5 Discussion

Cultural zone 1 represents the Late Precontact period. As indicated in Figure 6.1, the dominant projectile point style is Prairie Side-Notched, however, there is the presence of both late and Early Middle Precontact points. There is an increase in variety of lithic tool types in this zone which indicate later stage bison processing such as the representation of hide scraper tools, drills and knives. These tools indicate that this zone could perhaps indicate a campsite occupation with areas of specialized activities.

This idea of areas of specialized activities is supported by the presence of a single pottery vessel and associated neck and body sherds. This particular vessel is removed from the main concentration of flaked tools and projectile points recovered in this zone. The exterior of this vessel has been decorated with parallel, incised lines which are indicative of Mortlach vessels. Decoration with parallel lines is common in Mortlach pottery, but is usually done with a cord-wrapped or a dentate tool. Mortlach components are associated with the Late Precontact period and sites are common in southern Saskatchewan.

The first recognized Mortlach occupation was recorded in 1954 along the base of Besant Valley approximately 5km east of Mortlach, Saskatchewan. It was the first known stratified Mortlach occupation that provided researchers with a clearly defined time span for this occupation. Rough estimates confirmed by radiocarbon dating suggest that this culture appeared around A.D 1200 and disappeared at the onset of A.D 1800 (Walde 2009) and is affiliated with Plains side-notched projectile points. They are regarded as the last precontact communal bison hunters on the Northern Plains in Southern Saskatchewan.

Chapter 7

Cultural Zone 2

7.1 Introduction

Cultural zone 2 is found between 30 and 40cm below surface. Eleven projectile points were analyzed and predominantly identified as Pelican Lake with the presence of Sandy Creek and a single McKean point. Cultural zone 2 has been assigned to the Late Middle Precontact Period (~3,330 -1,150 B.P). A total of 42% of the lithic tool kit have been recovered in nine out of the ten units containing projectile points (Refer to Figure 7.1).

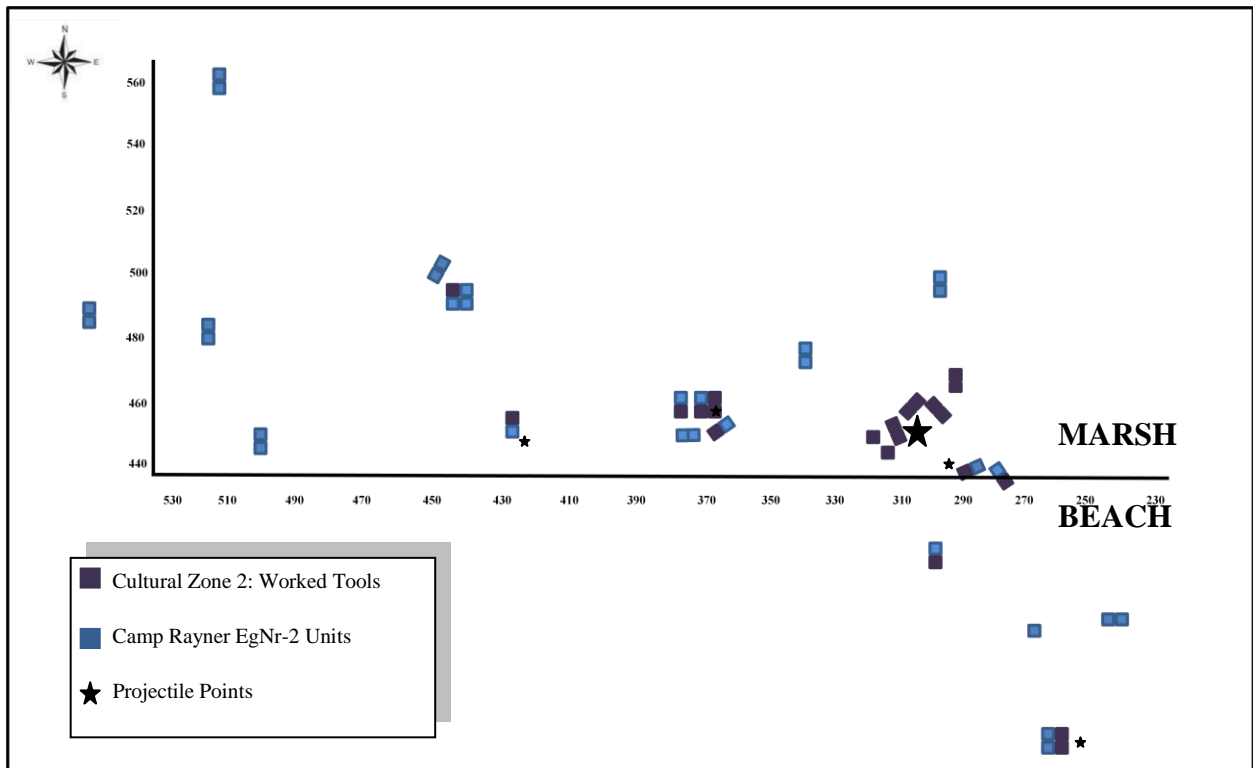


Figure 7.1: Distribution of diagnostic artifacts Cultural Zone 2

7.2 Cultural Zone 2: Lithic Tool Assemblage

A total of fifty-seven worked tools and 11 projectile points have been assigned to cultural zone 2 (Appendix B; B9-B12). Raw materials of the chert and chalcedony families are in abundance in this tool assemblage. The distribution of raw material is as follow; SRC (19%), chert (16%), KRF (12%), silicified peat (14%), silicified wood (3%), agatized wood (2%), chalcedony (2%), quartzite (9%), fused shale (4%), jasper (2%), gronlid siltstone (2%).

7.2.1 Projectile Points (n=11)

Eleven projectile points have been recovered in cultural zone 2 only five of which are complete or almost complete. Out of these eleven, ten are identified Sandy Creek and Pelican Lake while one is considered to be an anomaly and assigned to the McKean series.

A nearly complete Pelican Lake point constructed out of a creamy chert was located in Unit 49, Level 7, at a depth of 32.5cm (Fig 7.2; Cat. #6329; J). The midsection lacks any clear flaking patterns with an indentation on the dorsal surface. The lateral margins have been retouched. This point is triangular in outline with deep, wide set corner notched tangs. The base is slightly concave and the left tang is broken. The neck is narrow compared to the body and base.

A second nearly complete Sandy Creek point was located in Unit 39, Level 4, at a depth of 34cm (Fig 7.2; Cat. #4309; D). The basal edge of this point is concave and the basal corners are slightly eared. The lateral margins display evidence of bifacial retouch and chipping while the basal edge is slightly dulled. A break has occurred on the left basal corner. Ventrally, a large indentation is noted along the body and the point is covered with minimal calcium carbonate. This point was constructed out of pink chert.

Another partial Sandy Creek point, uncovered in Unit 39, Level 4, between 30 and 40cm, is constructed from shale (Fig 7.2 Cat. #4310; B). This is a poorly constructed point with irregular flaking patterns. The main body is wide and round with irregularly shaped edges. The right notch is slightly wider than the left and the basal edge is concave. Grinding is evident on the lateral margins while the basal edge exhibits thinning and is slightly dulled. The tip of this

projectile point is broken and slight retouching has occurred in the area. Small perforations are noted on both the ventral and dorsal surfaces.

A complete SRC point was found in Unit 1, Level 5, between 30 and 40cm (Fig 7.2; Cat. #245; I). This point is triangular in outline with a straight basal edge and lacks basal corners. Retouch and grinding is present on the lateral margins, and the base has been thinned. This point is nicely shaped and well-made with clear flaking patterns.

Another complete projectile point, recovered in Unit 1, Level 5, between 30 and 40cm, is constructed from fused shale (Fig 7.2; Cat. #268; A). It appears that the right lateral edge of this point had been broken and then reworked to form a new margin. The basal edge is slightly convex and the side notches are wide and shallow. Flaking scars are visible, but, there is no clear pattern in the orientation. Retouch is present along the left margin. Dorsally, an indentation is noted along the basal edge.

A well-made Pelican Lake point, located in Unit 8, Level 4, has been split longitudinally (Fig 7.2; Cat. #1263; H). The basal edge is slightly concave and the right corner notch is tanged. Noted chipping and retouch are present on the lateral edges. The base of this point exhibits both basal thinning and grinding. Ventrally, an indentation is noted on the main body. This point was constructed out of silicified peat.

The base of a white quartzite point was found in Unit 4, Level 4, between 30 and 40cm (Fig 7.2; Cat. #701; G). The base is straight with a slightly dulled edge and convex basal corners.

An incomplete Gronlid Siltstone point was located in Unit 2, Level 3, at a depth of 33cm (Fig 7.2; Cat. #824; F). This point has been broken transversely and the tip has snapped off leaving behind a slight notch. Bifacial chipping and grinding is observed on the lateral margins. On the ventral surface a segment of the left margin has been flaked. Dorsally, flake scars are visible.

Another incomplete Pelican Lake point was recovered in Unit 1, Level 5, between 30 and 40cm (Fig 7.2 Cat. #246; E). The point is broken diagonally above the right notch and is angled toward the neck of the left margin. The right notch is tanged and a large flake has been removed. The basal edge is slightly concave and thinned and is noticeably chipped. This point is crudely

constructed while large flakes have been removed along the ventral surface offsetting the balance of this point. This point was constructed out of chert

The base of a chalcedony point was uncovered in Unit 12, Level 4, between 30 and 40cm (Fig 7.2; Cat. #1471; C). The base is thick and poorly constructed. The basal edge is slightly convex and basal grinding is noted. Slight patination is present on all surfaces, predominantly on the margins.

One anomaly is located within cultural zone 2. An incomplete pink SRC point, located in Unit 29, Level 4, at a depth of 37cm, is assigned to the McKean series (Fig 7.2; Cat. #3503; K). This point is broken transversely leaving only part of the body and base. The basal edge is deeply concave and there is little to no shouldering. The body of this point slightly tapers towards the base. Marginal and basal grinding is evident.

All projectile points from level 2 are shown in Figure 7.2

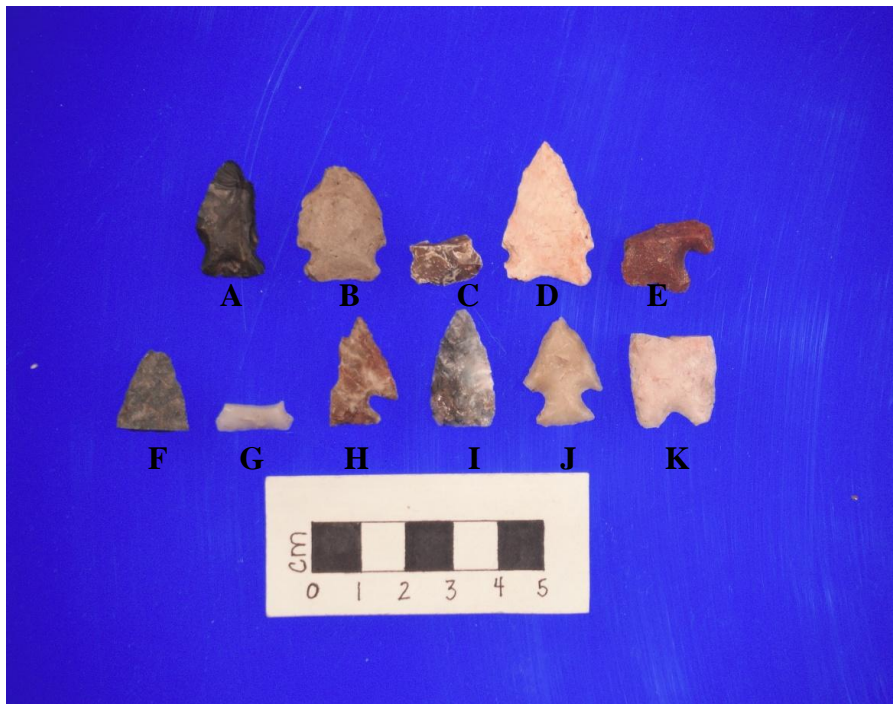


Figure 7.2: Projectile Points from Cultural Zone 2 (A = Cat. #268; B = Cat. #4310; C = Cat. #1471; D = Cat. #4309; E = Cat. #246; F = Cat. #824; G = Cat. #701; H = Cat. #1263; I = Cat. #245; J = Cat. #6329; K = Cat. #3503)

7.2.2 Bifaces and biface fragments (n=15)

Fifteen biface and biface fragments are assigned to cultural zone 2. Out of these fourteen tools, two are classified as bifacial tip fragments, three are knife fragments, six are midsection fragments, one is a hafted biface element and two are preforms and one is a complete biface.

7.2.2.1 Biface tip fragments (n=2)

A biface tip fragment constructed out of a white creamy chert was located in Unit 14, Level 4, at a depth of 35cm (Fig 7.3; Cat. #1623; C). Both primary and secondary straight lateral working edges display evidence of grinding. There is very little retouch present on the working edges, most of it appearing to occur unifacially on the dorsal right lateral margin. A second biface tip fragment has been broken transversely (Fig 7.3; Cat. #4486; E). A large flake has been removed from the ventral surface and the dorsal surface is covered by deposits of calcium carbonate. This fragment was uncovered in Unit 40, Level 4, at a depth of 36cm.

7.2.2.1 Knife fragments (n=3)

Three recovered bifacial tools are distal portions of knife fragments. A biface fragment, recovered in Unit 27, Level 4, at a depth of 38cm, is constructed out of chert (Fig 7.3; Cat. #3041; A). This biface is the distal end of a knife fragment that has been broken transversely. A small amount of bifacial retouch is present along the distal 5% of the working edges. A biface fragment, uncovered in Unit 29 Level 5 between 30 and 40cm, is constructed out of SRC (Fig 7.3; Cat. #3556; B). Large flakes have been removed from the dorsal surface. A biface fragment, recovered in Unit 49, Level 8, at a depth of 38cm, is constructed out of silicified peat (Fig 7.3; Cat. #6344; D). This fragment is rough in appearance and exhibits varying degrees of chipping along the working edges.

7.2.2.2 Midsection fragments (n=6)

A bifacial midsection fragment, recovered in Unit 4, Level 4, between 30 and 40cm, is constructed out of quartzite (Fig 7.3; Cat. #691; F). This fragment has been broken transversely along both distal and proximal ends. A break has also occurred on the ventral surface and along the right lateral margin. No retouch is present along either break. Modification in the form of chipping is evident on the left lateral working edge. A second biface fragment, uncovered in Unit

2, Level 5, between 30 and 40cm, exhibits one working edge (Fig 7.3; Cat. #8029; G). Retouch is apparent on the working edge. This is a poorly flaked biface and exhibits multiple breaks on both dorsal and ventral surfaces. A third biface fragment is constructed out of silicified peat and recovered in Unit 47, Level 4, between 30 and 40cm (Fig 7.3; Cat. #2913; H). Multiple breaks have occurred obliquely and transversely on the fragment in which only the left lateral margin is left intact. No retouch or grinding is evident, but, a small notch is present on the margin. A fourth bifacial midsection fragment, uncovered in Unit 39, Level 4, at a depth of 36cm, has been broken obliquely along the all edges apart from the left lateral margin (Fig 7.3; Cat. #8189; J). This is a poorly flaked biface that exhibits a small amount of retouch along the working edge. This biface is constructed out of silicified wood. A fifth biface midsection fragment has been broken obliquely on all edges (Fig 7.3; Cat.#6343; I). Dorsally, a large flake has been removed and retouch is noted on the lateral edge. A sixth biface fragment, recovered in Unit 36 Level 4 between 30 and 40cm below surface, is constructed out of chalcedony (Fig 7.3; Cat. #4062; N). A break has occurred along the right lateral margin as well as along the midsection of the fragment exposing a biconvex cross section. Retouching is noted along the left lateral working edge.

7.2.2.3 Complete bifaces (n=1)

A biface (Fig 7.3; Cat #3779; L) is slightly asymmetrical in outline with a convex proximal end. This biface has been broken along the left lateral margin and has been thinned and reworked. Retouch and chipping is apparent on all margins and a small amount of cortex is visible on the dorsal surface. This biface was recovered in Unit 33, Level 4 at a depth of 38cm and is constructed out of silicified peat

7.2.2.4 Hafted biface fragment (n=1)

A hafted biface fragment, uncovered in Unit 44 Level 7 at a depth of 35 to 40cm, is constructed out of silicified peat (Fig 7.3; Cat. #8629; M). This fragment is broken transversely along the body and obliquely along the margins. The basal edge is slightly concave with convex basal corners. One corner notch is noted with some grinding present.

7.2.2.5 Preforms (n=2)

A biface constructed out of silicified peat was found in Unit 1 Level 5 between 30 and 40cm (Fig 7.3; Cat.#225; O). This incomplete biface is asymmetrical in outline with both a straight and convex lateral margin. The margins have been thinned and chipping is evident. Irregular flaking patterns are noted on both dorsal and ventral surfaces. Slight patination is visible on the proximal end of the dorsal surface. A second KRF biface was recovered in Unit 2, Level 3, at a depth of 35cm (Fig 7.3 Cat #826; K). This biface is poorly flaked and is a preform. The working edge displays evidence of chipping creating a jagged and roughed edge.

Biface and biface fragments are shown in Figure 7.3

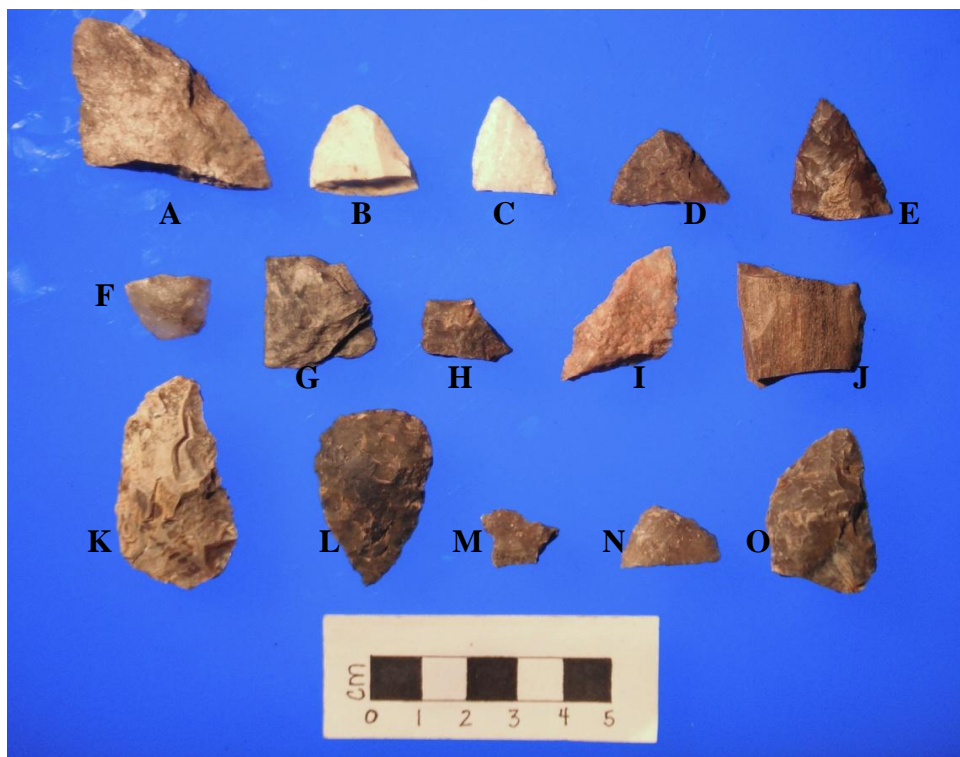


Figure 7.3: Biface and biface fragments from Cultural Zone 2 (A = Cat. #3041; B = Cat. #3556; C = Cat. #1623; D = Cat. #6344; E = Cat. #4486; F = Cat. #691; G = Cat. #8029; H = Cat. #2913; I = Cat. #6343; J = Cat. #8189; K = Cat. #826; L = Cat. #3779; M = Cat. #8829; N = Cat. #4062; O = Cat. #225)

7.2.3 Uniface and Uniface fragments (n=27)

The majority of uniface tools located in this level have been categorized as various scrapers. A single reverse uniface has also been recovered in this level.

7.2.3.1 Endscrapers (n=5)

Five of the unifacial tools are classified as endscrapers each displaying a distal (convex) working edge and straight lateral margins. An endscraper fragment, recovered in Unit 46, Level 4, between 38 and 40cm, is rectangular/square in shape (Fig 7.4; Cat. #5434; A). The distal working edge is convex and both lateral margins are straight. The working edge is slightly steep with an angle of 60°. This fragment is obliquely broken along the left and right lateral margins and minimal retouch is exhibited on the right side. The main body of this scraper has been thinned and a large flake has been removed from the ventral surface. A second endscraper was located in Unit 51, Level 6, at a depth of 30cm (Fig 7.4; Cat. #7283; B). This scraper is poorly constructed and a major break has occurred longitudinally along the right lateral margin. The working angle of this endscraper is 50°. A third endscraper, thumbnail in size, was located in Unit 2, Level 3, at a depth of 35cm (Fig 7.4; Cat. #825; C). This partially complete scraper is triangular in shape and constructed from KRF. The working edges are slightly dulled with a steep working angle of 70°. Patination is present on all surfaces. A striking platform is noted on the ventral surface. A fourth endscraper constructed out of KRF was located in Unit 48, Level 8, between 35 and 40cm (Fig 7.4; Cat. #6099; D). This complete scraper is triangular in outline with a working angle of 60°. Grinding is noted on the working edges. The dorsal surface is poorly flaked. The final endscraper constructed out of jasper, was recovered in Unit 2, Level 5, between 30 and 35cm (Fig 7.4; Cat. #839; E). This fragment has been split longitudinally and obliquely along the right lateral margin. Dorsally, this endscraper is quite battered and large flakes have been removed from the surface. Ventrally, ripples are present and the surface is concaved. Chipping and retouching is displayed on the distal convex working edge with a working angle of 60°. Calcium carbonate deposits are noted on the dorsal surface.

7.2.3.2 Side/endscrapers (n=4)

Four uniface fragments are side/endscrapers. The distal edges are predominantly convex with straight lateral margins. A first side/endscraper is a preform located in Unit 3, Level 4, between 30 and 40cm (Fig 7.4; Cat. #547; F). A break has occurred longitudinally down the middle which has since been reworked and thinned to form a new left lateral working edge. A second side/endscraper constructed out of white chert was recovered in Unit 4, Level 4, between 30 and 40cm (Fig 7.4; Cat. #712; G). Retouch is evident on both working edges. Signs of hafting have been identified by the presence of a notch located on the left lateral margin. The working

angle of this side/endscraper is 60°. A third scraper fragment, thumbnail in size, has been located in Unit 48, Level 8, between 35 and 40cm (Fig 7.4; Cat. #6103; H). This side/endscraper has been split longitudinally and only the ride side has been recovered. The working angle of this fragment is 70° and grinding is exhibited on the working edges. A last side/endscraper, thumbnail in size, was recovered in Unit 30, Level 4, at a depth of 37cm (Fig 7.4; Cat.#3635; I). Wear is displayed on the distal working edge; however this edge is predominantly dulled. Two longitudinal flakes have been removed on the dorsal and a bulb of force is noted on the ventral surface. Patination is present over almost all of the tool's surfaces.

7.2.3.3 Side scrapers (n=2)

Two unifacial fragments are side scrapers that are triangular in outline. A first side scraper constructed out of grey chert was recovered in Unit 43, Level 6, at a depth of 32.5cm (Fig 7.4; Cat. #10434; J). A break has occurred on the right lateral margin as well as the proximal end. The left lateral working edge is convex and displays retouch and grinding. A second side scraper constructed out of SRC was located in Unit 11, Level 4, at a depth of 35cm (Fig 7.4; Cat. #1401; K). The working edge is convex and displays evidence of retouch and grinding. A striking platform is noted on the ventral surface.

7.2.3.4 Scraper/spokeshave (n=5)

Five uniface fragments are a combination of scrapers and spokeshaves. A first scraper/spokeshave is located in Unit 49, Level 7, at a depth of 31.4cm (Fig 7.4; Cat. #6330; L). The distal primary working edge is convex and is slightly dulled. A segment of the right lateral margin has been reworked into a semi-circle which displays evidence of utilization. Cortex is evident over almost half of the dorsal surface. The second scraper/spokeshave constructed out of quartzite was recovered in Unit 11, Level 4, at a depth of 38cm (Fig 7.4; Cat. #1402; M). The left lateral working edge is on a slight angle and exhibits grinding and chipping. A concave semi-circular edge is displayed on the right lateral margin. Thinning, chipping and retouching are noted along this edge. An endscraper/spokeshave constructed out of SRC was located in Unit 30, Level 4, at a depth of 33cm (Fig 7.4; Cat. #3645; N). Both a steep scraper-like edge and a semi-circular edge are present on either lateral margin. Slight unifacial retouching is displayed on the working edges. No flaking scars are visible on either surface. A fourth endscraper/spokeshave

constructed out of jasper was found in Unit 1, Level 5, between 30 and 40cm (Fig 7.4; Cat. #4311; O). Both lateral margins are concave in outline with retouch present along the edges. Wear is noted on the distal working edge, yet the edge is predominantly dulled. The working angle is a steep 75°. Dorsally, large flakes have been removed from the surface. A last complete scraper/spokeshave, recovered in Unit 1, Level 5, between 30 and 40cm is a refit (Fig 7.4; Cat. #220; P). Cortex is present on the dorsal surface covering the entire left side. The right lateral margin is angled and exhibits unifacial retouch and chipping. A small concave notch is noted on the left lateral margin nearing the proximal end and slight retouch is exhibited. A tiny notch in located on the proximal end.

Scrapers and spokeshaves/gravers are shown in Figure 7.4.



Figure 7.4: Scrapers and spokeshaves/gravers from Cultural Zone 2 (A = Cat. #5434; B = Cat. #7283; C = Cat. #825; D = Cat. #6099; E = Cat. #839; F = Cat. #547; G = Cat. #712; H = Cat. #6103; I = Cat. #3635; J = Cat. #10434; K = Cat. #1401; L = Cat. #6330; M = Cat. #1402; N = Cat. #3645; O = Cat. #4311; P = Cat. #220)

7.2.3.5 Uniface fragments (n=6)

There are five uniface fragments assigned to cultural zone 2. One uniface fragment that was excavated in Unit 40, Level 4, at a depth of 39cm is lunar in shape (Fig 7.5; Cat. #4490; G).

A break has occurred on the proximal end of this fragment which has been reworked to form a secondary working edge. Wear and grinding is present on all working edges. This uniface fragment is constructed out of quartzite. A second uniface fragment constructed out of KRF was located in Unit 40, Level 4, at a depth of 40cm (Fig 7.5; Cat. #4491; D). This fragment has been retouched along the lateral margin creating a straight scraper-like edge. Numerous large flakes have been removed from the dorsal surface. A third uniface fragment, recovered in Unit 39, Level 4, between 30 and 40cm, has been split transversely exposing a plano-convex mid-section (Fig 7.5; Cat. #8187; H). The fourth uniface fragment constructed out of quartzite was recovered in Unit 49 Level 8 at a depth of 38cm (Fig 7.5; Cat. #6345; F). The straight left lateral margin and convex distal edge are slightly dulled and form a continuous working edge. Breaks have occurred along both margins and the proximal end. Two large flakes have been removed from the dorsal surface. A fifth uniface fragment, uncovered in Unit 2 Level 3 at a depth of 35cm, is constructed out of SRC (Fig 7.5; Cat. #823; E). This fragment has been broken transversely. Retouch is evident on the lateral working edge and a bulb of force is noted on the ventral surface. A last uniface fragment constructed out of silicified wood was located in Unit 39 Level 4 between 30 and 40cm (Fig 7.5; Cat. #8185; B). The working edge is convex with noted wear.

7.2.3.6 Incomplete unifaces (n=2)

There are two incomplete unifaces in cultural zone 2. The first uniface is constructed out of KRF and recovered in Unit 1, Level 5, between 30 and 40cm (Fig 7.5; Cat. #201; C). The edges of this uniface have been retouched. Both ventral and dorsal surfaces are poorly flaked. Patination occurs over almost all surfaces. The second incomplete uniface constructed out of SRC and was uncovered in Unit 40, Level 4, at a depth of 38cm (Fig 7.5; Cat. #4493; A). This uniface is triangular in shape and the edges show evidence of retouch and grinding.

7.2.3.7 Reverse uniface (n=1)

A single reverse uniface is assigned to cultural zone 2. This reverse uniface constructed out of quartzite was located in Unit 1, Level 5, between 30 and 40cm (Fig 7.5; Cat. #267; I). Dorsally, the surface is polished with slight calcium carbonate deposits. Ventrally, the distal and lateral margins are steep with a working angle between 70 and 75°. Wear is noted.

Unifacial tools are shown in Figure 7.5.

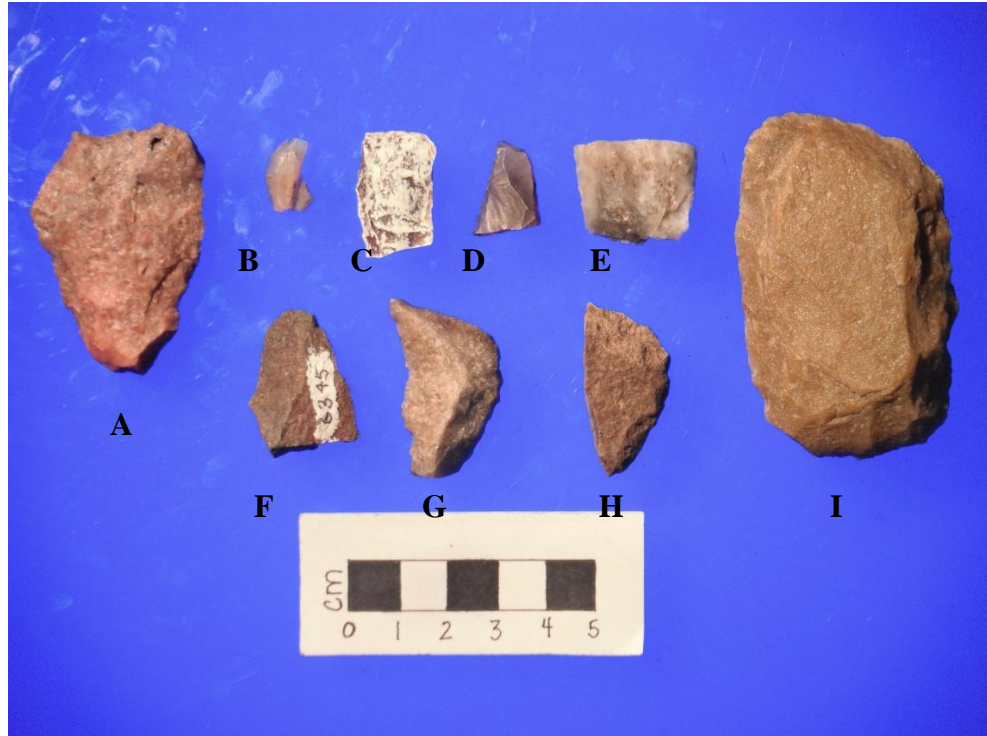


Figure 7.5: Unifacial tools from Cultural Zone 2 (A = Cat. #4493; B = Cat. #8185; C = Cat. #201; D = Cat. #4491; E = Cat. #823; F = Cat. #6345; G = Cat. #4490; H = Cat. 8187; I = Cat. #267)

7.2.4 Retouched Flakes (n=17)

Two retouched flakes display similar flaking patterns. Both flakes are no longer than 17mm and display a convex distal end and two straight lateral margins. Dorsally, three longitudinal flakes have been removed from the surface. The first retouched flake is constructed out of silicified shale was located in Unit 48, Level 8, between 35 and 40cm (Cat. #6101). Retouch and grinding are present on all working edges. The second is constructed out of chert was recovered in Unit 39, Level 4, between 30 and 40cm (Cat. #8184). No retouch is present. A retouched flake constructed out of a SRC was located in Unit 12, Level 4, between 30 and 40cm (Fig 7.6; Cat. #1472; A). Varying degrees of retouch and chipping is evident along the margins. A decortification limestone chert flake has also been retouched to form a tool (Fig 7.6; Cat. #1161; B). Retouching is present along approximately 45% of the working edge. This flake was recovered in Unit 7, Level 4, between 30 and 40cm. A third retouched flake is a secondary flake which exhibits bifacial modifications along both lateral margins and distal end (Fig 7.6; Cat. #3517; C). A bulb of force is noted on the ventral surface and a natural occurring indentation is

present on the dorsal surface. This flake was located in Unit 29, Level 4, between 30 and 40cm. A fourth retouched flake is bifacially modified and appears to be an incomplete spokeshave (Fig 7.6; Cat. #864; D). Retouch and chipping is displayed along the working edge and a semi-circular edge is present on the opposing margin. No retouch is apparent on the concave edge. A fifth retouched flake is formed on a piece of chert shatter located in Unit 43, Level 7, between 35 and 40cm (Fig 7.6; Cat. #10570c; E). Retouch is present on the dorsal side of the right lateral margin. A flaking platform is noted on the ventral surface.

A sixth retouched flake is constructed out of a secondary SRC flake (Fig 7.6: Cat. #4631; F). This flake has been reworked to create two working edges. A first working edge is concave with slight retouching. The second working edge is located on the left lateral margin and displays evidence of wear. The ventral surface has been poorly flaked and calcium carbonate has been deposited on the right lateral margin. This secondary flake was recovered in Unit 42, Level 4, at a depth of 37 to 46cm. A seventh tool is a piece of retouched flake constructed out of silicified wood was uncovered in Unit 40, Level 4, at a depth of 33-34cm (Fig 7.6; Cat. #4487; G). Retouch has occurred over four areas creating distinct working edges. Two of these edges are concave, one is convex and one is straight. Grinding is evident on the straight working edge while the other three are predominantly polished. The eighth retouched flake, located in Unit 48, Level 8, between 35 and 40cm, is reworked from a secondary flake (Fig 7.6; Cat. #6104; H). Retouch is present along both a left (straight) and right (convex) lateral margin. A ninth retouched flake is a utilized flake shatter (Fig 7.6; Cat. #4316; J). Each lateral margin exhibits both a concave and convex working edge. Retouch and wear is noted.

A tenth retouched flake, uncovered in Unit 39, Level 4, at a depth of 36cm, is constructed out of a secondary flake of agatized wood (Fig 7.6; Cat. #4313; I). Modification in the form of retouch is exhibited on the margins. A retouched flake constructed out of KRF was located in Unit 48, Level 8, between 35 and 40cm (Fig 7.6; Cat. #6100; K). The margin has been thinned and also displays retouch and grinding which gives this flake a scraper-like appearance. Cortex is present on approximately 25% of the dorsal surface. The twelfth retouched flake constructed out of a secondary chert flake is located in Unit 4, Level 4, between 30 and 40cm (Fig 7.6; Cat. #703; L). Retouch is present along the right lateral margin with two small notches located directly above and below this working edge. A bulb of force is noted on the ventral surface. A

thirteenth retouched flake composed from a SRC shatter was recovered in Unit 7, Level 4, between 30 and 40cm (Fig 7.6; Cat. #8043; M). This flake has been utilized along its lateral margin. A secondary chert flake was located in cultural zone 2 (Fig 7.6 Cat. #226; N). Retouch and grinding is noted and the proximal end is broken. This flake was uncovered in Unit 1 Level 5 between 30 and 40cm. The last retouched flake, found in Unit 2, Level 5, between 30 and 40 cm, is constructed out of a piece of silicified peat shatter (Fig 7.6; Cat. #8031; O). This tool is bifacially retouched along the lateral margin. A concave edge is also present.

Retouched flakes and shatter are shown in Figure 7.6

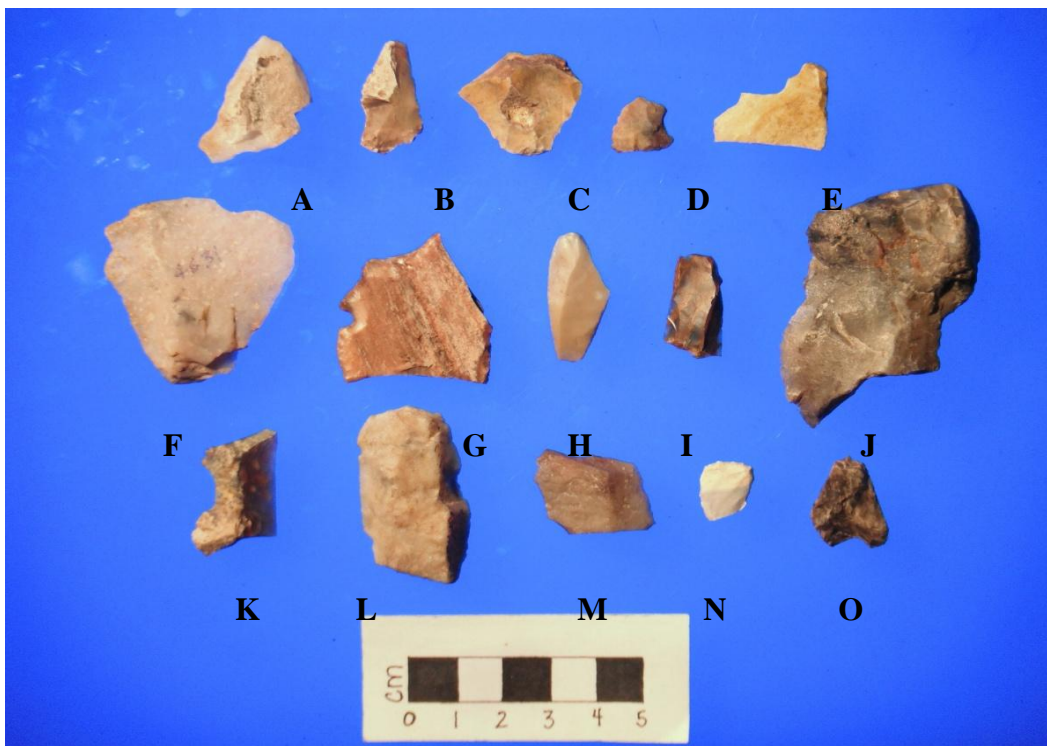


Figure 7.6: Retouched Flakes from Cultural Zone 2 (A = Cat. #1472; B = Cat. #1161; C = Cat. #3517; D = Cat. #864; E = Cat. #10570c; F = Cat. #4631; G = Cat. #4487; H = Cat. #6104; I = Cat. #4313; J = Cat. #4316; K = Cat, #6100; L = Cat. #703; M = Cat. #8043; N = Cat. #226; O = Cat. #8031)

7.3 Pottery Assemblage

7.3.1 Neck Sherds (n=2)

Two neck sherds are located in cultural zone 2 (Fig 7.7; Cat. #3985; B and Cat. #1643; A). See Table 7.1 for a summary. It is likely that these sherds belong to one of two distinct

vessels and that their recovery is the result of bioturbation. Pottery does not appear prior to the Late Precontact period on the Northern Plains.

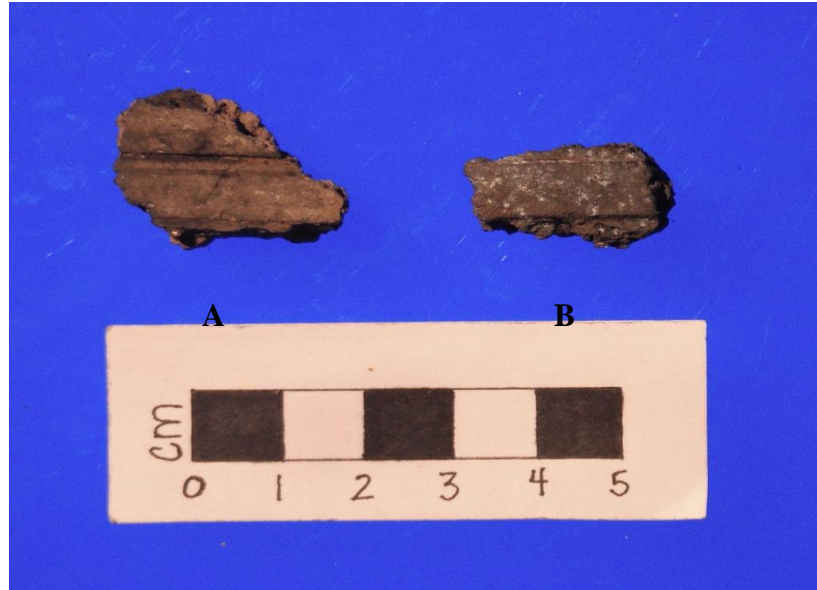


Figure 7.7: Neck sherds from Cultural Zone 2 (A = Cat. #1643; B = Cat. #3985)

Table 7.1: Neck sherd characteristics Cultural Zone 2

Catalogue#	Provenience	Description	Wall Thickness (mm)
1643	SE	Exterior Finish - smooth; Exterior Decoration - horizontal incised groove	6.50
3985	16N 81W	Exterior Finish – smooth, plain	8.76

7.3.2 Body Sherds (n=15)

A smooth exterior finish is noted on all fifteen body sherds. Thickness varies from 3 to 10mm and average 7.2mm.

7.4 Cultural Zone 2 Faunal Assemblage

A total of 22,112 complete and incomplete elements as well as unidentified fragments have been recovered in this level and 96.4% (21,324) are unidentifiable of which 88% (18,813) exhibit varying amounts of burning (Table 7.2 and 7.3). Bison (*Bison bison*), Canid (*Canis sp.*) and an unidentified rodent specimen have been identified in this assemblage.

Table 7.2: Summary of Cultural Zone 2 Faunal Counts

Faunal Type	Element	(g)	Specimens	(g)	Unidentified	(g)
Unburned Bone	449	3,018.01	82	1,545.92	2,511	827.80
Burned Bone	213	711.22	23	258.62	16,057	4,240.15
Calcined Bone	51	12.90	-	-	496	205.70
Burned/Calcined Bone	67	38.0	-	-	2,220	306.30
Charred Bone	8	73.5	-	-	40	47.27
Charred/Calcined Bone	1	14.7	-	-	-	-
Burned Tooth Enamel	9	6.1	-	-	-	-
Unburned Tooth Enamel	75	149.05	11	53.40	-	-
Unburned Shell	7	0.8	-	-	-	-
Total	880	4,024.28	116	1,857.94	21,324	5,627.22

Table 7.3: Summary of Cultural Zone 2 faunal remains by taxa

Common Name	Taxon	NISP	MNI
Mammals			
Bison	<i>Bison bison</i>	88	3
	<i>Canis Sp.</i>	13	1
	<i>Rodentia sp.</i>	2	1
Miscellaneous			
Large Mammals		634	-
Medium Mammal		24	-
Small		33	-
Misc. Mammal		21,315	-

7.4.1 Order Artiodactyla

Bison bison

Specimens identified: NISP = 88; See table for a summary

Discussions: A total of 88 specimens have been catalogued as *Bison bison*. At least two adult bison are represented in this assemblage. A single immature bison has also been identified in this level based on the presence of one unfused proximal humerus (Cat. #4352). No weathering is evident, while 14.8% of the bison assemblage exhibit slight burning. Evidence of cultural modification has been noted on five fore and hindlimb fragments.

Table 7.4: Summary of *Bison bison* elements from Cultural Zone 2

	NISP	MNI	MNE	MAU	%MAU
Axial					
Rib	14	1	9	0.35	0.14
Forelimb					
Humerus	1	1	1	0.5	0.20
Ulna	2	1	2	1	0.4
Metacarpal	3	1	3	1.5	0.6
Radial carpal	1	1	1	0.5	0.20
Accessory carpal	2	1	2	0.5	0.20
Scapula	7	1	5	2.5	1.00
Hindlimb					
Femur	3	1	3	1.5	0.60
Tibia	3	1	3	1.5	0.60
Tibia/Fibula	1	1	1	0.5	0.20
Astragalus	1	1	1	0.5	0.20
1 st Tarsal	1	1	1	0.5	0.20
Fused Second and Third tarsal	4	2	4	2	0.80
Metatarsal	4	1	3	1.5	0.60
Calcaneus	1	1	1	0.5	0.20
Os Coxae	1	1	1	0.5	0.20

	NISP	MNI	MNE	MAU	%MAU
Other Elements					
First Phalanx	5	1	1	0.83	0.33
Second Phalanx	1	1	1	0.17	0.07
Third Phalanx	1	1	1	0.17	0.07
Proximal sesamoid	1	1	3	0.25	0.10
Distal Sesamoid	2	1	5	0.5	0.20
Misc. Sesamoid	1	-	-	-	-
Misc. Phalanx	26	-	-	-	-
Misc. Carpal	6	-	-	-	-
Misc. Metapodial	1	-	-	-	-
Misc. Tarsal	1	-	-	-	-
Misc. L.Bone	7	-	-	-	-

7.4.2 Order Carnivora

Canis sp.

Specimens identified: NISP = 13, 1 Left M² (Cat. #565), second phalanx (Cat. #696), right proximal femur (Cat. #10435), proximal tibia (Cat. #6095), first phalanx (Cat. #7265) and fourth metatarsal (Cat. #7321)

Discussion: These 14 specimens indicate the presence of a minimum of one adult *Canis sp.* Both the second phalanx and fourth metatarsal have been burned. No cultural modification or butchering markers have been identified.

7.4.3 Order Sciuridae

Sciuris sp.

Specimens identified: NISP = 2, Calcaneus (Cat. #769), Right distal humerus (Cat. #5556)

Discussions: These two specimens represent one adult rodent specimen. No cultural modification or butchering markers have been identified indicating that this is an intrusive specimen to the archaeological record.

7.4.4 Miscellaneous Specimens

Summary: NISP = 22,006; See table 7.5 for a summary

Discussions: 22,006 identified and unidentified element fragments have been identified based on their class size. These elements include vertebral, enamel, and long bone fragments. Varying degrees of burning is exhibited on 86.8% (19,101) of the miscellaneous assemblage. Cultural modification is evident on less than 1% (36 fragments).

Table 7.5: Summary of Cultural Zone 2 miscellaneous specimens by size category

Size Class	NISP	Elements Represented
Large Mammals	634	Ribs, Long Bones, Enamel fragments
Medium Mammal	24	Rib, Long Bones, Enamel fragments
Small Mammal	33	Vertebra and Mandible fragments
Misc. Mammal	21315	Ribs, Long Bones, Enamel fragments

7.5 Discussion

The high percentage of burned, calcined and bone fragments coupled with the variety of lithic tool types indicates that this area was likely a campsite used for later stage bison processing and daily activities. Two neck sherds shown in Fig 7.7 resemble those recovered in cultural zone 1 which indicates the probability that these sherds belong to the same vessel. The projectile point styles predominantly resemble Pelican Lake, yet there is the presence of both Sandy Creek and McKean.

This cultural zone is represented by a number of cultural assemblages. The McKean points recovered can be explained by bioturbation. It is unclear, however, if the presence of both Pelican Lake and Sandy Creek points indicate that two groups were utilizing this area within a

similar time frame, or, if this zone represents two separate occupation levels. Further analysis of the stratigraphic profile and radiocarbon dating needs to be completed.

Chapter 8

Cultural Zone 3

8.1 Introduction

Cultural Zone 3 lies 40 to 50 cm below surface. Twelve projectile points are assigned to this zone that display stylistic characteristics of the McKean series (Middle Middle) and Sandy Creek (Late Middle) complexes. The two projectile points assigned to the Middle Middle Precontact period are considered to be anomalies in this level and their presence attributed to geomorphic processes. Worked tools are located in over 60% of the units containing projectile points and the highest concentration of tools is found in units 40, 48 and 49 (Refer to Figure 8.1).

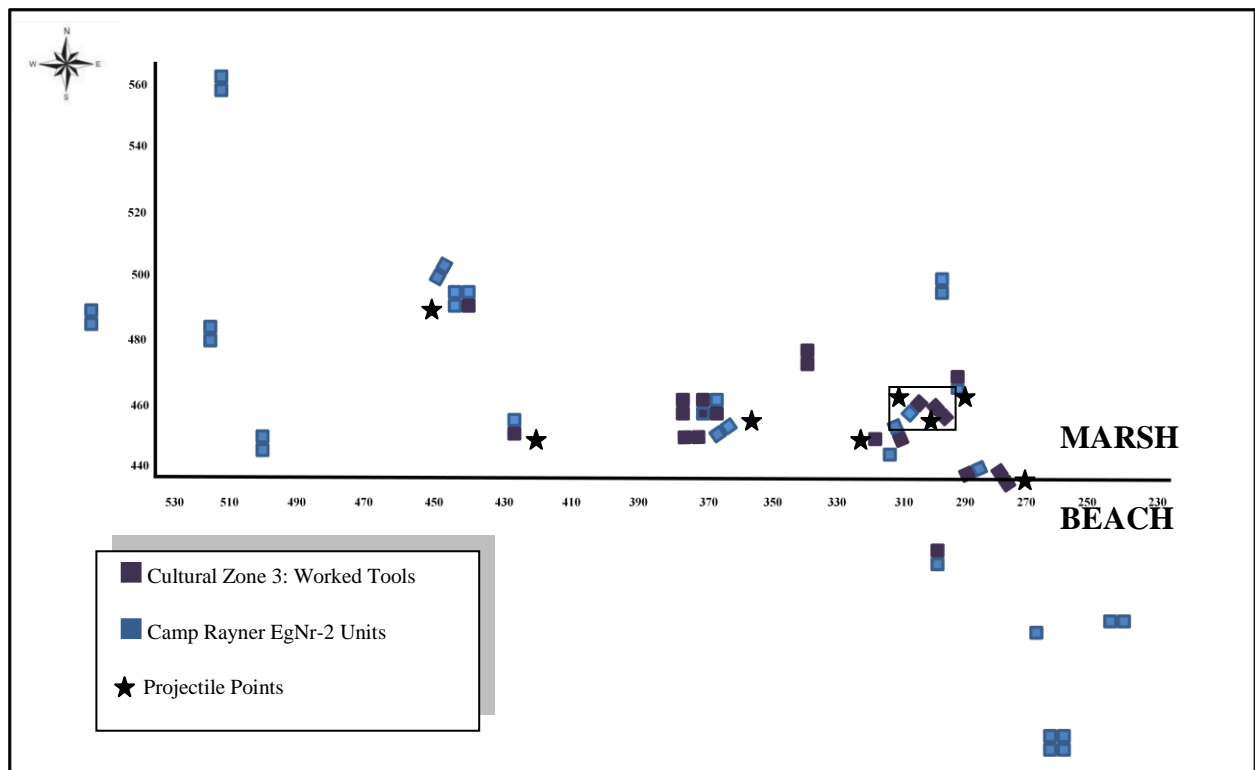


Figure 8.1: Distribution of diagnostic artifacts Cultural Zone 3

8.2 Cultural Zone 3: Lithic Tool Assemblage

Forty-five worked tools and ten projectile points have been assigned to cultural zone 3 (Appendix B; B13-B16). These tools fall into varying categories including complete and incomplete bifaces and uniface fragments, end/side scrapers, spokeshaves and retouched flakes. The most dominant material type in this assemblage is silicified peat (24%) followed by SRC (19%). The remaining materials are distributed as follows; Quartzite (12.7%), KRF (10%), Chert (8%), Fused shale (6%), Agatized wood (5%), Gronlid siltstone (3%), Chalcedony (3%), Agate (3%), Jasper (2%), Silicified wood (2%), Basalt (1%).

8.2.1 Projectile Points (n=10)

The base of a white chert projectile point, recovered in Unit 44, Level 9, at a depth of 48cm, (Fig 8.2; Cat. #10122; D). The basal edge is straight, and there are two deep wide set corner notches. Flaking scars are visible on this fragment.

A second gronlid siltstone projectile point, uncovered in Unit 54, Level 10, at a depth of 47cm, is a complete point constructed out of Gronlid siltstone (Fig 8.2; Cat. #10758; E). This point is asymmetrical in outline with an elongated body. The basal edge is straight and exhibits thinning. The right corner notch is wide and angular whereas the left notch is shallower and circular in outline. Ventrally, a large flake has been removed longitudinally which spans from the base to mid-body.

A third nearly complete fused shale projectile point, located in Unit 40, Level 6, at a depth of 45.5cm, is also asymmetrical in outline with an elongated body (Fig 8.2; Cat. #5310; F). Both basal corners are tanged and the basal edge is slightly convex. Dorsally, evidence of bifacial retouching and micro chipping is noted on the basal edge. A break is noted on the right basal corner, which has since been retouched. The raw material used in the construction of this point is shale.

A fourth silicified peat projectile point was recovered in Unit 40, Level 5, between 43.5 and 49.5cm (Fig 8.2; Cat. #6861; G). This point base is poorly constructed with crudely made shallow corner notches. Numerous breaks and chipping have occurred along the base, basal corners, and margins. Calcium carbonate deposits are evident on the dorsal surface.

A fifth partially complete projectile point exhibits angular deep set corner notches (Fig 8.2; Cat. #6988; H). The basal edge is slightly convex and the basal corners have been chipped off. This projectile point is asymmetrical in outline with an elongated body. Grinding is noted on the margins. Dorsally, irregular flaking with no clear orientation dorsal is present on the surface. This point was located in Unit 49, Level 10, at a depth of 47.5cm.

A sixth SRC projectile point recovered in Unit 34, Level 4, at a depth of 49cm demonstrates the same morphological characteristics as the previous point (Fig 8.2; Cat. #5705; L). Modifications include retouching and thinning of the basal edge. The seventh projectile point is partially complete and was recovered in Unit 40, Level 4, at a depth of 40cm (Fig 8.2; Cat. #4484; C). This point is fairly thin with a wide left concave corner notch and an opposing right deep angular corner notch. The basal edge is straight with evidence of thinning while bifacial retouch is displayed on the left lateral margin. Vertical striations have been noted on both ventral and dorsal surfaces. This point is constructed out of agatized wood.

An eighth projectile point demonstrates characteristics of both Pelican Lake and Sandy Creek points as it displays both a tanged right corner notch and a rounded left corner notch (Fig 8.2; Cat. #6145; B). The basal edge is concave and appears to have been reworked. The basal edge is poorly constructed through extensive chipping and flaking. This point was recovered in Unit 48, Level 9, between 40 and 42cm and is constructed out of basalt.

The recovery of projectile points in cultural zone 3 has revealed two anomalies. The first of these anomalies is an incomplete SRC point recovered in Unit 51, Level 9, at a depth of 46cm (Fig 8.2; Cat. #7830; I). This point has been identified as a McKean point. The basal edge is deeply concave and there is no presence of a neck or shoulder. There is also a substantial amount of calcium carbonate build up along the basal edge. No marginal or basal modification is present.

The second anomaly bears resemblance to a McKean point as well as an Oxbow point (Fig 8.2; Cat. # 1320; L). The basal corners are slightly eared with a deep concave basal edge. Flaking ripples are noted along the dorsal surface of the base. Dorsally, a break has occurred along the right basal corner. This point is poorly constructed with no clear flaking patterns. This point was found in Unit 8, Level 6 at a depth of 48cm and is constructed out of silicified peat.

All projectile points from level 3 are shown in Figure 8.2



Figure 8.2: Projectile points from Cultural Zone 3 (A = Cat. #5176; B = Cat. #6145; C = Cat. #4484; D = Cat. #10122; E = Cat. #10758; F = Cat. #5310; G = Cat. #6861; H = Cat. #5563; I = Cat. #7830; J = Cat. #6988; K = Cat. #5705; L = Cat. #1320)

8.2.2 Biface and Biface fragments (n=19)

Nineteen complete and incomplete bifaces have been assigned to cultural zone 3. The highest concentrations of biface tools (n=11) are located in Unit 39, Level 9, Unit 40, Level 10, Unit 48, Level 4, and Unit 49, Level 5.

8.2.2.1. Complete Bifaces (n=2)

A complete biface constructed out of quartzite was recovered in Unit 40 at a depth of 48.5 to 55.5 cm (Fig 8.3; Cat. #5327; A). This biface is ovoid in shape and the edges have been sharpened. A partially complete biface constructed out of silicified peat was located in Unit 48, Level 9, at a depth of 41cm (Fig 8.3; Cat. #6146; B). This fragment is a rounded polygon with battered and worn edges. Bifacial retouching is also displayed on the margins. Ventrally, heat spalls are noted as well as calcium carbonate deposits.

8.2.2.2 Biface fragments (n=10)

Four biface fragments were recovered in Unit 39. One biface fragment constructed out of KRF was recovered at a depth of 40cm (Fig 8.3; Cat. #4312; C). A primary (left) lateral working edge is present which displays wear and grinding. The right margin is convex and retouch is evident. Patination is present along the right lateral margin. A second biface fragment, constructed out of silicified peat, was recovered between 40 and 45cm (Fig 8.3; Cat. #5177; D). This incomplete biface is asymmetrical with a biconvex cross section. It is broken obliquely near the proximal end. Both working edges are present, each displaying extensive wear and retouch. Ventrally, a heat spall is noted with slight patination occurring directly above the spall. The third fragmentary biface constructed out of KRF is broken obliquely along a lateral margin (Fig 8.3; Cat. #8246; E). The working edge is convex in shape and displays evidence of retouch. Flaking scars are noted on the ventral surface and slight patination has occurred dorsally. This flake was found between 40 and 47cm. A fourth biface piece constructed out of agate was located between 40 and 47cm (Fig 8.3; Cat. #8247; F). This biface is relatively battered with worn edges. The lateral edge is slightly concave and exhibits evidence of thinning. Irregular flaking patterns are noted on the ventral and dorsal surface. A fifth incomplete biface constructed out of silicified peat was recovered in Unit 40 at a depth of 40cm (Fig 8.3; Cat. #4485; G). This biface is relatively thin and displays bifacial retouch along the lateral margins. No flaking scars are visible on either dorsal or ventral surface. A sixth biface section was uncovered in Unit 48 at depth of 49cm (Fig 8.3; Cat. #6989; H). This biface is ovoid and has been split. Chipping and grinding are evident on the working edge.

An incomplete biface constructed from SRC was recovered in Unit 46, Level 5, between 49 and 50cm (Fig 8.4; Cat. #5445; A). The edges are thinned and calcium carbonate deposits are evident. A seventh biface is an incomplete projectile point that has been retouched to form an expedient tool (Fig 8.4; Cat. # 5004; B). This tool is triangular in outline with what appears to be the primary stages of a concave basal edge. Retouching is visible on the left lateral margin. This tool was located in Unit 26 Level 5. An eighth biface fragment, recovered in Unit 42, Level 4, at a depth of 46cm, displays both working edges (Fig 8.4; Cat. #4630; C). Evidence of grinding is present over half of the left lateral margin. The right lateral margin is convex contracting towards the proximal end and exhibits wear. Dorsally, large flakes have been removed in irregular patterns. The last incomplete biface, recovered in Unit 8, Level 5, at a depth of 40-50cm, has

been split along its midsection displaying a biconvex cross section (Fig 8.4 Cat. #1540; D). Bifacial retouch, thinning and slight grinding is evident on the working edge.

8.2.2.3 Biface tip fragments (n=3)

One biface tip fragment located in Unit 39, between 40, and 48cm is constructed out of silicified peat (Fig 8.3; Cat. #8256; I). This fragment is the distal end of a knife and is asymmetrical in outline. Both lateral edges have been bifacially retouched. A second biface tip fragment constructed out of fused shale was uncovered in Unit 48 at a depth of 43cm (Fig 8.3; Cat. #6959; J). This knife fragment has been broken transversely along the proximal end and tip. Grinding is noted along both convex and straight lateral margins. A final biface tip fragment constructed out of silicified peat was located in Unit 40, Level 5, between 40 and 45cm (Fig 8.3; Cat. #8304; K). This biface fragment is an asymmetrical triangle in outline with both a primary (straight) and secondary (convex) working edge. Bifacial retouch is displayed on both edges. Dorsally, a large flake has been removed with retouching occurring along the margins. Irregular flaking scars are noted on both surfaces.

8.2.2.4 Biface midsection fragments (n=4)

A midsection of a biface tool constructed from a dark chalcedony was uncovered in Unit 25, Level 5, between 40 and 50cm (Fig 8.4; Cat. #4804; E). The lateral margins have been reworked and thinned. No retouch or wear is evident. A second fragment, rectangular in shape, was recovered in Unit 51, Level 10, at a depth of 56.5cm (Fig 8.4; Cat. #7856; F). This fragment is constructed out of agatized wood and a slight amount of patination is exhibited on all exposed surfaces. Retouch is present on both lateral working edges and it is predominantly patinated. A third biface midsection constructed from heat treated SRC was located in Unit 29 Level 5 at a depth of 42cm fragment (Fig 8.4; Cat. #3549; G). Both convex and lateral working edges are present with bifacial retouch present along the margins. Irregular flaking patterns with no clear orientation are noted on both ventral and dorsal surfaces. The fourth and last biface midsection fragment constructed out of silicified peat was recovered in Unit 23 Level 5 between 40 and 50cm (Fig 8.4; Cat. #8111; H). This fragment is rectangular in shape and the margins have been thinned. Retouch is present on both lateral margins.

All bifaces and biface fragments are shown in Figure 8.3 and 8.4

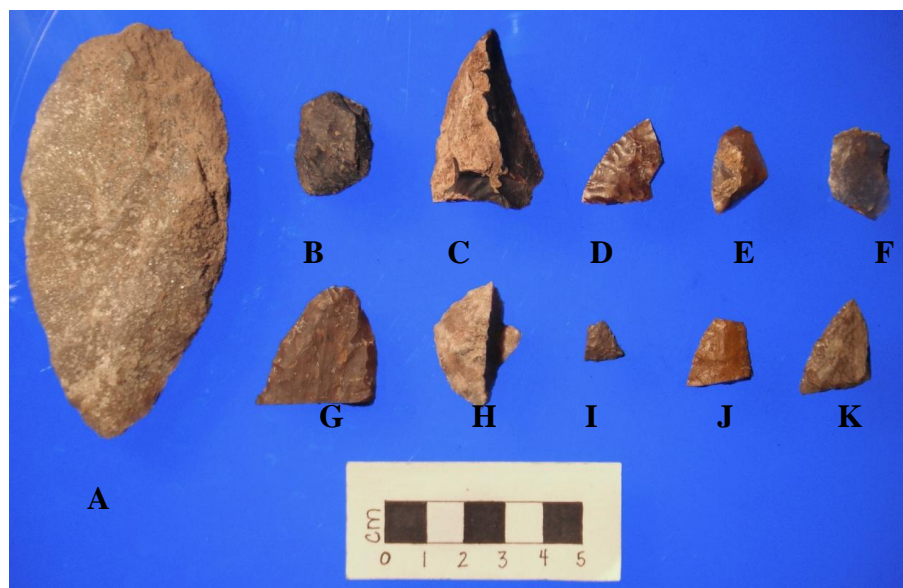


Figure 8.3: Biface and biface fragments from Cultural Zone 3 (A = Cat. #5327; B = Cat. #6146; C = Cat. #4312; D = Cat. #5177; E = Cat. #8246; F = Cat. #8247; G = Cat. #4485; H = Cat. #6989; I = Cat. #8256; J = Cat. #6959; K = Cat. #8304)



Figure 8.4: Biface and biface fragments from Cultural Zone 3 (A = Cat. #5445; B = Cat. #5004; C = Cat. #4630; D = Cat. #1540; E = Cat. #4804; F = Cat. 7856; G = Cat. #3549; H = Cat. #8111)

8.2.3 Uniface and Uniface fragments (n=17)

Seventeen unifacial tools are assigned to Cultural Zone 3. The vast majority of these worked tools are identified as scrapers.

8.2.3.1 Endscrapers (n=2)

One end scraper was uncovered in Unit 40, Level 5, at a depth of 41.5cm (Fig 8.5; Cat. #5272; A). This fragment is thumbnail in size and constructed out of KRF. Both working edges are present while retouch is present along the distal edge. The working edge angle is 70°. A flaking platform and bulb of force is visible on the ventral surface with some retouching noted on the bulb. The second end scraper fragment, recovered in Unit 44, Level 9, at a depth of 48cm, is constructed out of a white SRC (Fig 8.5; Cat. #10287; B). This fragment is broken along both lateral margins and calcium carbonate deposits are noted on the break. The distal working edge is convex, while the working angle is 70°. Retouch is present on this edge.

8.2.3.2 Side/endscrapers (n=8)

One side/endscraper, recovered in Unit 39, Level 5, at a depth of 43.5cm, is an incomplete scraper fragment constructed out of silicified peat (Fig 8.5; Cat. #5180; C). Both distal (convex) and the left (lateral) edges display retouching while the right lateral margin is unfinished. The working angle is quite steep at 75-80°. The proximal edge is broken on a horizontal plane and grinding is noted along the break. The dorsal surface of this tool is slightly raised. The second scraper fragment, located in Unit 50, Level 9, at a depth of 44.5cm, has chipping patterns on both working edges with a working edge angle of 60° (Fig 8.5; Cat. #7785; D). The dorsal surface is slightly raised with larger flakes removed and some calcium carbonate built up. Noted on the ventral surface is a bulb of force and flaking scars.

A third scraper, uncovered in Unit 40, Level 5, between 40 and 45cm, is thumbnail in size (Fig 8.5; Cat. 5273; E). Both lateral and distal working edges are present with varying degrees of chipping and retouching. The working edge angle is 60°. A fourth scraper fragment, located in Unit 29, Level 4, at a depth of 40cm, is also a thumbnail in size and the margins have been shaped to fit into a shaft (Fig 8.5; Cat. #3504; F). A break is noted on the proximal end which exhibits slight retouching. This scraper is constructed out of patinated KRF. The fifth scraper fragment, uncovered in Unit 39, Level 5, at a depth of 44cm, is poorly constructed and incomplete (Fig 8.5; Cat. #5179; G). Retouching has occurred along the left (lateral) margin and grinding is noted along the distal (convex) working edge with an angle of 60°. A flaking platform is noted on the ventral surface.

The sixth end/side scraper fragment, uncovered in Unit 48, Level 9, between 40 and 45cm, is constructed out of a heat treated silicified peat (Fig 8.5; Cat. #8403; H). Modifications are noted along the lateral and distal working edges. Slight patination has occurred along the dorsal surface. A seventh scraper fragment, located in Unit 14, Level 5, between 40 and 50cm, has been split longitudinally with only the right lateral margin and partial distal edge present (Fig 8.5; Cat. #1648; I). The distal edge is convex with a working angle of 70°. Slight calcium carbonate built up has occurred along the edges of the margin. A end/side scraper fragment, located in Unit 48, Level 9, between 40 and 45cm, is constructed out of black jasper (Fig 8.6; Cat. #6960; J). This fragment is highly polished with slight grinding present along the edges. Large flakes have been removed from the ventral surface resulting in indentations on the surface. Flaking ripples are also visible on this surface. This scraper had been longitudinally split and was refitted during analysis.

An eight side/endscraper constructed out of KRF was located in Unit 2, Level 6, between 40 and 50cm (Fig 8.6; Cat. #903; A). Retouch is noted on the margins; however, the margins are predominantly dulled. Both ventral and dorsal surfaces are smoothed and patination is evident. The working angle of this side/endscraper is 55°. The last side/endscraper was found in Unit 49, Level 9, at a depth of 41cm and is constructed out of fused shale (Fig 8.6; Cat. #6377; B). This side/endscraper is triangular in outline with both a straight (lateral) and convex (distal) working edge. Retouch is present on both working edges. Dorsally, flaking scars are visible but there is no regular flaking pattern. The working edge angle is 70°.

8.2.3.3 Side scrapers (n=1)

A side scraper fragment, located in Unit 39, Level 5, at a depth of 45.5cm, is constructed out of grey chert (Fig 8.6; Cat. #5178; C). This fragment is triangular in outline and the distal end has been flaked into a point. Retouching and grinding is exhibited along both margins. Dorsally, small flakes have been removed along the proximal end.

8.2.3.4 Scraper/Spokeshave (n=3)

One scraper/spokeshave fragment constructed out of quartzite was located in Unit 42, Level 5, at a depth of 48cm (Fig 8.6; Cat. #4660; D). This fragment displays a semi-circular concave working edge. Opposing this concave edge are two smaller semi-circular concave

notches. Grinding is evident. A flaking platform is noted on the ventral surface. A second scraper/spokeshave, recovered in Unit 35, Level 5, at a depth of 49cm, is constructed out of SRC (Fig 8.6; Cat. #3989; I). The right lateral margin is semi-circular in shape and displays chipping and retouching. The distal edge is convex in outline and chipping is evident. Dorsally, three large flakes have been removed and a bulb of force is visible on the ventral surface. A final scraper/spokeshave fragment was located in Unit 46, Level 5, at a depth of 47cm (Fig 8.6; Cat. #5446; E). The distal working edge is convex with a working edge angle of 60°. A concave semi circle is located near the distal edge on the left lateral margin. Three longitudinal flakes have been removed from the dorsal surface.

8.2.3.5 Uniface fragments (n=3)

A uniface fragment, uncovered in Unit 4 Level 5 between 40 and 50cm, is asymmetrical in outline (Fig 8.6; Cat. #723; F). This fragment is constructed out of KRF and is heavily patinated on both ventral and dorsal surfaces. Both left and right lateral margins have been unifacially retouched and exhibit varying degrees of chipping. A large flake has been removed along the right lateral margin which appears to have been further retouched. A second uniface fragment, recovered in Unit 40, Level 4, at a depth of 40cm, displays two working edges (Fig 8.6; Cat. #4501; G). A left lateral working edge is convex in outline and has been unifacially retouched and exhibits some wear. A straight right lateral working edge has also been unifacially retouched along the margin. This fragment is an incomplete tool that has been abandoned during construction but utilized as a side scraper. The raw material used for construction of this artifact is silicified wood. A third uniface fragment is broken transversely along both proximal and distal portions (Fig 8.6; Cat. #8301; H). Both straight lateral margins exhibit unifacial retouch. This fragment was found in Unit 40 Level 5 and is constructed out of SRC.

All unifacially retouched tools including endscrapers, side scrapers, and spokeshaves are depicted in Figure 8.5 and 8.6



Figure 8.5: Unifacially retouched tools from Cultural Zone 3 (A = Cat. #5272; B = Cat. #10287; C = Cat. #5180; D = Cat. #7785; E = Cat. #5273; F = Cat. #3504; G = Cat. #5179; H = Cat. #8403; I = Cat. #1648; J = Cat. #6960)

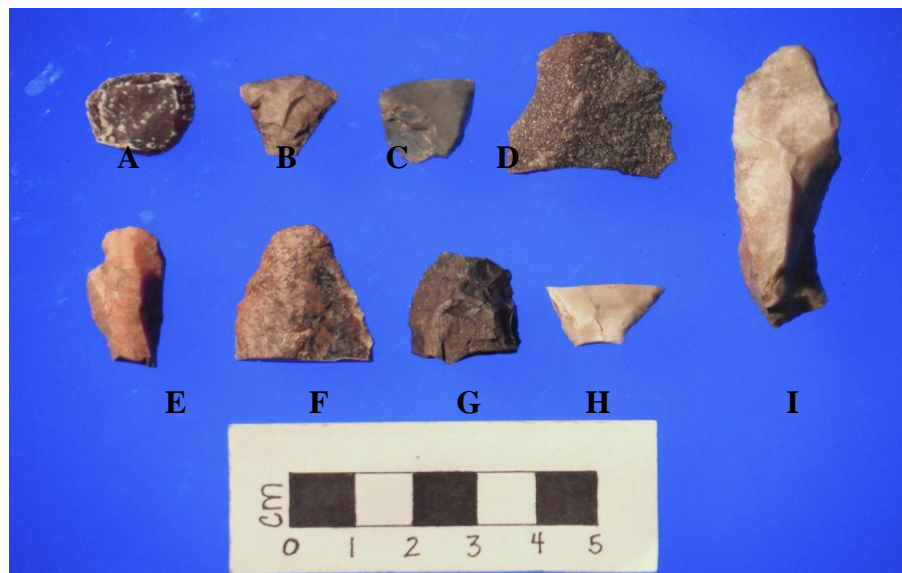


Figure 8.6: Unifacially retouched tools from Cultural Zone 3 (A = Cat. #903; B = Cat. #6377; C = Cat. #5178; D = Cat. #4660; E = Cat. #5446; F = Cat. #723; G = Cat. #4501; H = Cat. #8301; I = Cat. #3989)

8.2.4 Retouched flakes (n=7)

Three retouched flakes, all constructed from secondary silicified peat flakes, were uncovered in Unit 23, Level 5, between 40 and 50cm. One of these flakes has been reworked into

a concave working edge that is slightly worn and dulled (Fig. 8.7; Cat. #8112; A). The second flake has been retouched to form one primary working edge and two potential secondary working edges (Fig 8.7; Cat. #8113; B). The primary working edge is straight, which displays evidence of retouching and wear. Two areas of this flake are concave and exhibit slight retouching and moderate chipping. The last flake from this unit has a substantial amount of calcium carbonate build up on one of its surfaces concealing many features (Fig 8.7; Cat. #8114; D). Despite this, retouching and chipping is evident along the convex edge.

A silicified peat flake, located in Unit 5, Level 5, at a depth of 40-50cm below surface, has been retouched along its straight lateral edge (Fig 8.7; Cat. #1077; F). The outline of this flake is an asymmetrical square which leads one to postulate that this flake is from a biface fragment that has been split longitudinally. Recovered in Unit 48, Level 9 is a retouched piece of agatized wood (Fig 8.7; Cat. #6388; E). Chipping is observed along the margin forming a serrated convex edge. Also located in Unit 48 Level 9, between 40 and 50cm is a secondary flake that has been unifacially thinned and reworked along all edges (Fig 8.7; Cat #8401; C). Bifacial retouching and grinding is present. Artifact #5210 is a piece of silicified peat shatter that was uncovered in Unit 39, Level 5, at a depth of 45.5.cm (Fig 8.7; Cat. #5210; G). This shatter displays one convex edge that appears to have been modified through slight retouching and chipping.

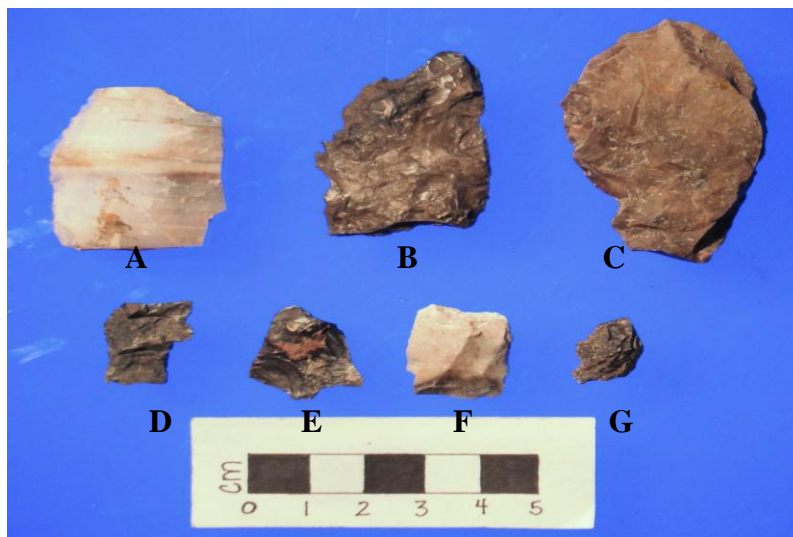


Figure 8.7: Retouched Flakes from Cultural Zone 3 (A = Cat. #8112; B = Cat. #8113; C = Cat. #8401; D = Cat. #8114; E = Cat. #6388; F = Cat. #1077; G = Cat. #5210)

8.2.5 Hammerstones (n=2)

One quartzite hammerstone was excavated in Unit 41, Level 4&5, at a depth of 45cm (Fig 8.8; Cat. #4555; B). This expedient tool displays pecking marks on the distal end and large pits are seen on the dorsal and ventral surfaces. This tool weighs 471g. A second hammerstone was recovered in Unit 24 Level 5 between 41 and 59cm (Fig 8.8; Cat. #7423; A). Impact scars are displayed on both distal and proximal ends as well as dorsal surface. A large flake has been removed from the surface. Calcium carbonate build up is noted on all surfaces. This tool weighs 944.8g.



Figure 8.8: Expedient tools from Cultural Zone 3 (A = Cat. #7423; B = Cat. #4555)

8.3 Pottery Assemblage

8.3.1 Neck Sherd (n=1); See Figure 8.9 and Table 8.1 for a summary

A single neck sherd was recovered in cultural zone 3. This neck sherd resembles that of those recovered in the previous zones. For this reason it is considered to be out of its original context.

Table 8.1: Neck sherd characteristics Cultural Zone 3

Catalogue#	Provenience	Description	Wall Thickness (mm)
1668	9.8N 7W	Exterior Finish - smooth Exterior Decoration – horizontal incised groove	7.16



Figure 8.9: Neck sherd from Cultural Zone 3

8.3.2 Body Sherds (n=4)

Fabric impression is noted on the exterior of two of the four body sherds. The exterior of the two remaining sherds is smooth. The presence of blackened residue on the interior surface of artifact #1669 is also noted. Thickness varies between 6 and 7mm and averages 6.49mm

8.4 Cultural Zone 3 Faunal Assemblage

A total of 36,433 (10,622.36g) identified and unidentified faunal specimens was recovered in this level. Out of this 98.4% (35,855) are unidentified fragments, of which 97% (34,696) display varying degrees of burning (Table 8.2 and 8.3). These unidentified fragments have been further classified into class sizes. Three species and one genera have been identified in this assemblage, *Bison bison*, *Canis sp.*, *Lepus americanus* and *Ondatra zibethicus*.

Table 8.2: Summary of Cultural Zone 3 Faunal Counts

Faunal Type	Element	(g)	Specimens	(g)	Unidentified	(g)
Unburned Bone	288	3084.24	98	1,822.27	1,159	1045.56
Burned Bone	133	412.50	22	22.50	32,189	5161.50
Calcined Bone	7	2.53	-	-	586	270.50
Burned/Calcined Bone	6	66.90	-	-	1,919	426.30
Charred Bone	9	37.50	-	-	2	1.20
Charred/Calcined Bone	-	-	-	-	-	-
Burned Tooth Enamel	10	6.5	16	11.2	-	-
Unburned Tooth Enamel	71	60.3	13	74.92	-	-
Unburned Shell	36	0.8	-	-	-	-
Total	560	3671.27	149	1930.89	35855	6905.06

Table 8.3: Summary of Cultural Zone 3 faunal remains by taxa

Common Name	Taxon	NISP	MNI
Mammals			
Bison	<i>Bison bison</i>	113	3
	<i>Canis Sp.</i>	5	1
Snowshoe Hare	<i>Lepus Sp.</i>	1	1
Muskrat	<i>Ondatra Sp.</i>	1	1
Miscellaneous			
Large Mammals		987	-
Medium Mammal		82	-
Small		26	-
Misc. Ungulate		4	
Misc. Mammal		35,124	-
Misc. Osteocytes		55	-

8.4.1 Order Artiodactyla

Bison bison

Specimens identified: NISP = 113; see Table 8.4 for a summary (excludes cranial elements)

Discussion: One hundred and thirteen complete and incomplete elements have been identified as *Bison bison*, which is less than 0.05% of the total assemblage. A minimum of two adult bison have been identified in this assemblage along with one immature bison specimen. The immature specimen has been identified through the recognition of a single right incisor (Cat. # 5463). 19.5% of these remains have been burned while no weathering is noted. A single long bone fragment is slightly polished.

Table 8.4: Summary of *Bison bison* elements from Cultural Zone 3

	NISP	MNI	MNE	MAU	%MAU
Axial					
Caudal	3	1	3	0.6	0.3
Thoracic	2	1	2	0.17	0.09
Forelimb					
Humerus	2	1	2	1	0.5
Radius	1	1	1	0.5	0.25
Scapula	4	1	2	1	0.5
Ulna	1	1	1	0.5	0.25
Ulnar Carpal	3	2	3	1.5	0.75
Intermediate	1	1	1	0.5	0.25
Internal Carpal	2	1	2	1	0.5
Unciform	7	1	2	0.5	0.25
Metacarpal	8	1	1	0.5	0.25
Radial Carpal	1	1	1	0.5	0.25
Hindlimb					
Femur	2	1	1	0.5	0.25
Metatarsal	2	1	1	0.5	0.25
Os Coxae	1	1	1	0.5	0.25
Other Elements					
First Phalanx	1	1	1	0.17	0.09
Second Phalanx	3	1	3	2	1

	NISP	MNI	MNE	MAU	%MAU
Other Elements					
Third Phalanx	1	1	1	0.17	0.09
Distal Sesamoid	7	1	3	0.75	0.38
Proximal Sesamoid	2	1	2	0.25	0.13
Misc. Phalanx	1	-	-	-	-
Misc. Carpal	1	-	-	-	-
Misc. Tarsal	8	-	-	-	-
Misc. Metapodial	1	-	-	-	-
Misc. Sesamoid	1	-	-	-	-
Misc. L.Bone	5	-	-	-	-

8.4.2 Order Carnivora

Canis sp.

Specimens identified: NISP = 3, 1 proximal metatarsal fragment (Cat. #2482), 1 first phalanx (Cat. #7148) and 1 second phalanx (Cat. #7879)

Discussions: The three specimens recovered in the level represent a minimum of one adult *Canis.sp.* No cultural modification, weathering or burning is observed on these specimens.

8.4.3 Order Lagomorpha

Lepus americanus

Specimens identified: NISP = 1, 1 astragalus (Cat. #587c)

Discussions: A single adult snowshoe hare is represented in this assemblage. No cultural modification, weathering or burning is observed on this specimen.

8.4.4 Order Rodentia

Ondatra zibethicus

Specimens identified: NISP = 1, 1 femur with epiphysis (Cat. #4090)

Discussions: A single immature muskrat has been identified in this level base on the presence of one unfused femur epiphysis. No cultural modification, weathering or burning was observed on this specimen. For these reasons it is believed that this specimen is intrusive to the archaeological record.

8.4.5 Miscellaneous Specimens

Summary: NISP = 36,278; see Table 8.5 for a summary

Discussions: 36, 278 identified and unidentified element fragments could not be identified further than their class. These elements include vertebra, enamel, and long bone fragments. Over 96% of these specimens display various degrees of burning. Cultural modification and butchering markers are evident on 132 (<1%) fragments.

Table 8.5: Summary of Cultural Zone 3 miscellaneous specimens by size category

Size Class	NISP	Elements Represented
Large Mammals	987	Ribs, Long Bones, Enamel fragments
Medium Mammal	82	Rib, Long Bones, Enamel fragments
Small Mammal	26	Vertebra and enamel fragments
Misc. Ungulate	4	Enamel fragments
Misc. Mammal	35,124	Rib and Enamel fragments
Misc. Osteocytes	55	Branchial Rays

8.5 Discussion

The worked tool and faunal assemblage characterized in cultural zone 3 is similar to that of cultural zone 2 with the exception of an added presence of hammerstones. The recovery of these expedient tools shown in Fig 8.8 suggest that this area was not only utilized as a campsite

for later bison processing, but as an area to repair and form stone tools. Cultural mixing is also apparent in this assemblage. Projectile point styles include both McKean and Sandy Creek types and there is the presence of a single neck sherd that matches the description of those recovered in the previous zones. Without an adequate analysis of the stratigraphic profile or radiocarbon dating it is difficult to assess whether or not this mixing can be explained through bioturbation or if there are any indications of a natural separation between these cultures.

9.2 Cultural Zone 4: Lithic Tool Assemblage

A total of 38 worked tools have been recognized in cultural zone 4 (Appendix B; B17-B20). A wide range of raw material was utilized in the production of these tools. Quartzite and SRC each represent 15.8% of this assemblage followed by chert which makes up 13.2%. The remaining tools are constructed from silicified peat (10.5%), basalt (10.5%), shale (8%), KRF (6%), Gronlid Siltstone (5%), KRF (5%), Agate (5%), feldspathic siltstone (3%), chalcedony (3%), silicified wood (3%) and siltstone pebble (3%).

9.2.1 Projectile points (n=5)

One projectile point is an incomplete point found in zone 4 bears some resemblance to a Pelican Lake point (Fig 9.2; Cat. #10169; A). Both corner notches are deep and wide with breaks occurring along the base of the notches. Wear is exhibited on both lateral margins and the left margin has been retouched along the break. The basal shape of this point is convex with bifacial modifications in the form of grinding. This point, located in Unit 44, Level 10, at a depth of 55cm, is constructed out of silicified peat.

A second projectile point, recovered in Unit 44, Level 6, at a depth of 50-60cm, is crudely constructed with only the basal portion and part of the body present (Fig 9.2; Cat. #10236; B). A petite corner notch is noted at the base of the right lateral margin. Modifications have been noted along the margins and basal edge. That being said, the poor construction of this point and the presence of calcium deposits have obscured the nature of these modifications.

A third projectile point, recovered in Unit 51, Level 11&12, at a depth of 55cm, is the base of a pink quartzite point (Fig 9.2; Cat. #7879; D). Partially due to the poor quality of raw material this point is poorly constructed with crude side notches. Bifacial thinning is noted along the margins and basal edge.

A fourth projectile point, uncovered in Unit 22, Level 6, at a depth of 51cm, is constructed from a white SRC (Fig 9.2; Cat. #2394; E). This point is missing its tip and an oblique break has occurred along the right basal edge. The body of this point is square in shape

with a straight basal edge and deep, wide corner notches. Thinning and grinding is exhibited along the edge of the left lateral margin and a large flake has been removed this same surface.

A final projectile point is a partially complete point which resembles points assigned to the Middle Middle Precontact period (Fig 9.2; Cat. #914; C). The basal corners are slightly eared. The basal edge is slightly concave and grinding is present on the basal edge. This point is asymmetrical with both a straight and slightly convex lateral margin and it is broken at the tip. This point was recovered in Unit 2, Level 7, at a depth of 51cm and is constructed from KRF. Patination is present on this point.

Projectile points from level 4 are shown in Figure 9.2.



Figure 9.2: Projectile points from Cultural Zone 4 (A = Cat. #10169; B = 10236; C = Cat. #914; D = Cat. #7879; E = Cat. #2394)

9.2.2 Bifaces (n=11)

9.2.2.1 Biface tip fragment (n=2)

A biface tip fragment was excavated in Unit 40, Level 8, between 50 and 60cm below surface (Fig 9.3; Cat. #5796; B). A break has occurred obliquely along the midsection of this

section in which only the tip of the knife remains. This biface fragment is an asymmetrical triangle in outline with both a straight (lateral) and convex (lateral) working edge. These edges are chipped and grinding is noted along the margins which suggest that this fragment has been subjected for some form of utilization. The raw material used for construction of this tool is silicified shale. A second biface tip fragment, recovered in Unit 6, Level 6, at approximately 50-60cm, is constructed out of silicified peat (Fig 9.3; Cat. #1127; C). This fragment is poorly constructed and is obliquely broken along the proximal end. Both ventral and dorsal surfaces lack visible flaking scars and large flakes have been removed creating indentations on both surfaces. The left lateral margin also does not appear to be worked for a specific function. Retouching and thinning along the right lateral (straight) margin has created a working edge with visible wear.

9.2.2.2 Knife fragment (n=1)

A knife fragment, located in Unit 24, Level 6, at 56cm below surface, is a distal fragment constructed out of basalt (Fig 9.3; Cat. #2649; D). This fragment is relatively narrow and thin and is extensively reworked. This leads one to suggest that it was perhaps the exhausted remnant of a much larger tool. Extensive chipping is exhibited on the lateral margins. Large flakes have been removed from both dorsal and ventral surfaces.

9.2.2.3 Hafted Biface (n=1)

A hafted triangular biface, recovered in Unit 39, Level 7, at a depth of 54.5cm, is constructed out of fused shale (Fig 9.3; Cat. #5255; E). This nearly complete biface is asymmetrical in outline with deep wide corner notches. Dorsally, flaking scars are visible whereas the ventral surface is unmodified. Wear is noted of the right lateral margin and there is evidence of basal grinding. A break has occurred along the left lateral margin as well as the tip of this fragment. Retouch is evident on both breaks. Slight calcium carbonate deposits are noted along the right margin, basal edge, and side notches.

9.2.2.4 Biface fragments (n=5)

A biface fragment, recovered in Unit 13, Level 6, at a depth of 50-60cm, is constructed out of a cream colored chert (Fig 9.3; Cat. #1563; F). This fragment is split and displayed a

biconvex cross section. Chipping is present on the straight (lateral) margins; however, its visibility to the naked eye is partially obscured due to the poor quality of raw material. A second fragment was uncovered in Unit 50, Level 12, between 50 and 60cm below surface and is constructed out of Gronlid Siltstone (Fig 9.3; Cat. # 7811; G). Both right and left lateral margins as well as the distal end of this fragment exhibit evidence of retouch. An angular break has occurred on the left lateral margin towards the midsection. The appearance of this fragment suggests that this biface was worked as a side/end scraper despite the lack of a distal working angle. A fragment of a third biface fragment is quite small and the function cannot be determined. This fragment, recovered in Unit 44, Level 10, at a depth of 50-55cm, is constructed out of silicified wood (Fig 9.3; Cat. #4867; H). The outline of this tool is an asymmetrical triangle and is broken transversely below the tip and above the proximal end. Retouching and grinding is noted along the edges of this biface fragment. A fourth fragment is the midsection of a biface tool (Fig 9.3; Cat. #7031; I). This midsection is rectangular in shape with both lateral margins exhibiting extensive wear and retouch. Multiple breaks have occurred along the edges of this fragment and large flakes have been removed from the ventral surface. Overall this fragment appears to have been poorly constructed or discarded and reworked for other utilitarian purposes. The raw material used is agate. A fifth biface fragment, recovered in Unit 51, Level 12, at a depth of 55cm, is constructed out of silicified peat (Fig 9.3; Cat. #7873; J). Both convex and lateral straight working edges are present on this fragment each exhibiting some degree of retouching.

9.2.2.5 Incomplete Biface (n=2)

An incomplete biface constructed out of SRC was recovered in Unit 40, Level 8, at 55.5cm below surface (Fig 9.3; Cat. # 5795; K). This biface is asymmetrical in outline with both a convex and straight (lateral) working edge. Evidence of wear is predominantly noted along areas which have been thinned and reworked to create concave curves. A small amount of calcium carbonate build up is present on the dorsal surface of this artifact. A second incomplete biface constructed out of SRC was located in Unit 42, Level 5, at a depth of 51cm (Fig 9.3; Cat.#4644; A). Bifacial thinning and chipping is noted along the margins. Slight calcium carbonate deposits are noted.

Bifacial tools from level 4 are shown in Figure 9.3

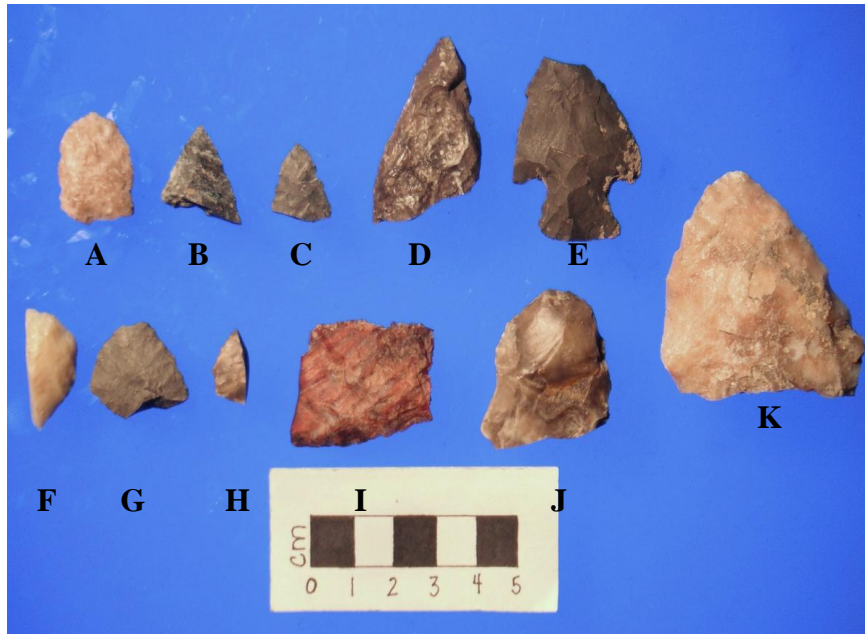


Figure 9.3: Biface and biface fragments from Cultural Zone 4 (A = Cat. #4464; B = Cat. #5796; C = Cat. #1127; D = Cat. #2649; E = Cat. #5255; F = Cat. #1563; G = Cat. #7811; H = Cat. #4867; I = Cat. #7031; J = Cat. #7873; K = Cat. #5799)

9.2.3 Uniface and Uniface fragments (n=11)

Eleven fragmentary uniface tools are recovered in cultural zone 4. These tools are predominantly identified as graters, spokeshaves and scrapers. One reverse uniface was also located in this level.

9.2.3.1 Incomplete Uniface (n=1)

An incomplete uniface constructed out of SRC was located in Unit 25 Level 5 between 40 and 50cm (Fig 9.4; Cat. #4803; A). This uniface is an inverted triangle in shape with chipping occurring along the edges. This is a poorly constructed uniface with no clear flaking patterns and a dorsal surface that has been partially flaked.

9.2.3.2 Graver (n=1)

A biface fragment, located in Unit 34, Level 7, between 55 and 60 cm below surface, appears to have been reworked into a graver (Fig 9.4; Cat. #6585; B). This tool is a split fragment, ovoid in shape, with a pointed tip. The edge along the break appears to have been

reworked and thinned. A small semi-circular notch is located along the primary (lateral) working edge.

9.2.3.3 Spokeshave (n=2)

A spokeshave has been recovered in cultural zone 4. This spokeshave, located in Unit 26, Level 6, between 50 and 60cm, is constructed out of a siltstone pebble (Fig 9.4; Cat. #5036; D). A wide semi-circular notch is located along the right lateral (primary) working edge. Extensive reworking has taken place along the width of this notch and wear is exhibited along the entire length of the right margin. Wear is also noted along the distal (convex) edge contracting towards the left (lateral) margin. A second incomplete spokeshave was located in Unit 24, Level 6, between 50 and 50cm (Fig 9.4; Cat. #2635; C). A single concave working edge is present, which exhibits retouch. Bifacial flaking is noted on the straight lateral edge. Calcium carbonate build up is present.

9.2.3.4 Endscraper (n=2)

One end scrapers was recovered from cultural zone 4 in Unit 48, Level 11, at a depth of 51cm (Fig 9.4; Cat. #7033; F). This scraper fragment is constructed out of silicified peat and displays a convex working edge. This working edge does not demonstrate retouching, wear or grinding and has a working angle of 75°. Varying degrees of breakage have occurred along the left and right margins as well as along the proximal end of this tool. A second end scraper was uncovered in Unit 48, Level 11, at a depth of 53cm (Fig 9.4; Cat. #7032; E). The working edge angle is 60°. Both of these edges have been reworked to form a continuous angled edge marked by varying degrees of chipping. This uniface has also been thinned along the left lateral margin and proximal edge. Attempts have been made to clear the ventral surface, however, it remains incomplete. The raw material used for construction of this end scraper is basalt.

9.2.3.5 Uniface fragments (n=2)

A first uniface fragment, constructed out of basalt, was recovered in Unit 49, Level 11, at a depth of 50cm (Fig 9.4; Cat. #7170; G). Both right and left lateral margins exhibit unifacial retouching along their length and the left lateral margin also displays evidence of wear. Also noted on this artifact is a small concave notch on the proximal edge. This concave notch has been

thinned and wear patterns suggest that it was perhaps utilized as a spokeshave. A bulb of force has been noted on the distal edge of the ventral surface of this tool. A second uniface fragment was uncovered in Unit 40, Level 7, at a depth of 50-55cm (Fig 9.4; Cat. #8309; H). This uniface is a split fragment. The edge does not display any evidence of retouch, chipping or grinding.

9.2.3.6 Reverse Uniface (n=1)

A single reverse uniface is assigned to cultural zone 4. This reverse uniface, recovered in Unit 25, Level 5, at a depth of 50-60cm, is constructed out of a grey chert (Fig 9.4; Cat. #4819; I). The ventral surface is polished and exhibits a working edge that has been reworked along its margin.

Unifacially retouched tools from level 4 are shown in Figure 9.4

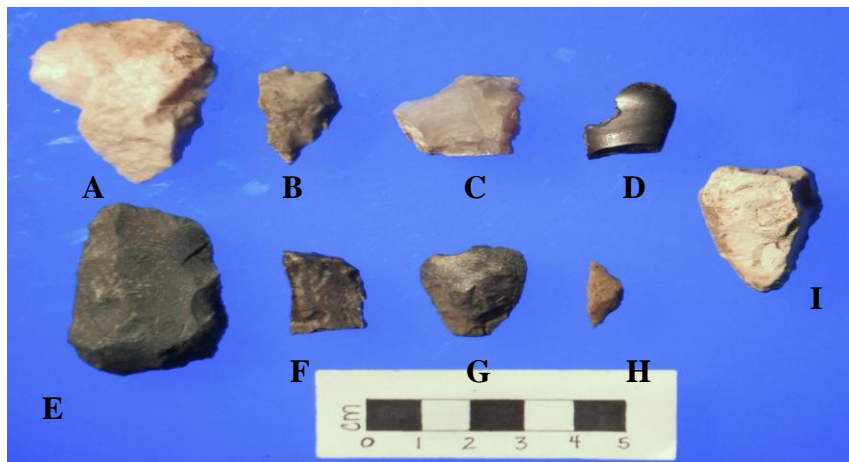


Figure 9.4: Unifacially retouched tools from Cultural Zone 4 (A = Cat. #4803; B = Cat. #6585); C = Cat. #2635; D = Cat. #5036; E = Cat. #7032; F = Cat. #7033; G = Cat. #7170; H = Cat. #8309; I = Cat. #4819)

9.2.4 Retouched Flakes (n=7)

A retouched flake, recovered in Unit 50, Level 11, at a depth of 50-55cm, is constructed out of Gronlid Siltstone (Fig 9.5; Cat. #7800; A). This fragment exhibits one convex working edge along the right lateral margin of what appears to be a secondary flake. Grinding is present. A second retouched flake was formed from a blue grey, secondary, SRC flake (Fig 9.5; Cat. #5719; B). Thinning of the left lateral margin, and, the presence of a semi circular concave edge along the right lateral margin, leads one to suggest that perhaps there was an attempt to develop a

spokeshave out of this flake. The crudeness of the edges as well as the lack of flaking scars and retouch indicates that this attempt failed. This flake was found in Unit 34, Level 6, at a depth of 56cm. A third retouched flake constructed out of KRF was recovered in Unit 41, Level 6&7, between 57 and 67cm (Fig 9.5; Cat. #8222; C). Thinning of the lateral margin formed a scraper-like edge which was reworked. Slight patination is noted on both ventral and dorsal surfaces.

The fourth retouched flake is a white, secondary, SRC flake (Fig 9.5; Cat. #7118; D). This flake was uncovered in Unit 49, Level 10, at a depth of 50-55cm and exhibits two working edges. Both edges have been reworked and thinned creating a slight angle on both lateral margins. A secondary decortification flake, recovered in Unit 34, Level 7, at a depth of 58cm, displays similar construction techniques present on cat. #7718 (Fig 9.5; Cat. #6580; E). This feldspathic siltstone flake is thinned and exhibits wear along the margins. A white chalcedony secondary flake was located in Unit 49 Level 12 (Fig 9.5; Cat. #7634; F). Both lateral margins exhibit retouch over roughly one third of their length. Ventrally, a striking platform is noted. A last flake displays retouching along the left lateral margin near the proximal edge (Fig 9.5; Cat. #7810; G). This flake is constructed out of a secondary flake of fused shale. A flaking bulb is present on the ventral surface and a large flake has been removed from the proximal edge of the dorsal surface. This flake was located in Unit 50, Level 12, between 55 and 60cm.

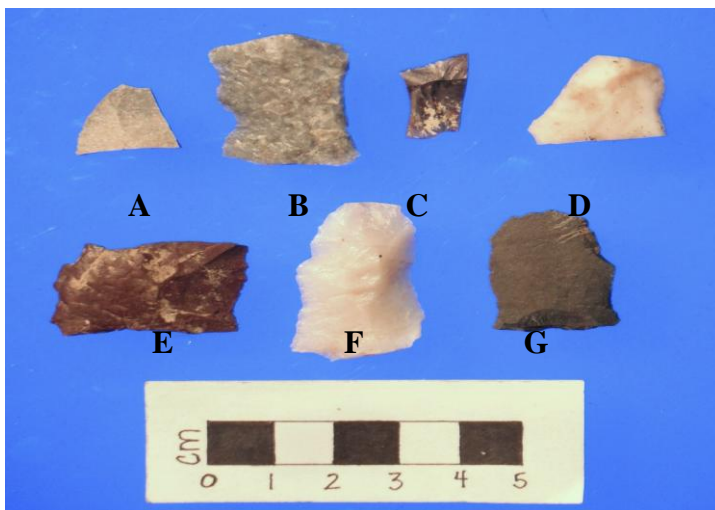


Figure 9.5: Retouched flakes from Cultural Zone 4 (A = Cat. #7800; B = Cat. #5719; C = Cat. #8222; D = Cat. #7118; E = Cat. #6580; F = Cat. #7634; G = Cat. #7810)

9.2.5 Hammerstone (n=1)

An ovoid quartzite cobble was utilized for this expedient tool (Fig 9.6; Cat. #6992; A). Impact scars are visible on both surfaces and well as on the distal and proximal faces.

9.2.6 Chopper (n=3)

One hand chopper assigned to cultural zone 4 is constructed out of basalt (Fig 9.6; Cat. #7117; C). This chopper is a split ovoid cobble which exhibits extensive wear along both lateral and distal edges. It weighs 239.26 grams and was recovered in Unit 49, Level 10, at a depth of 52cm. A second chopper constructed out of quartzite is also a split ovoid and it exhibits retouch along the outer limits of the break (Fig 9.6; Cat. #5734; B). It weighs 203.5g and was recovered in Unit 39, Level 8, at 59cm below surface. A third chopper is constructed out of quartzite and located in Unit 13, Level 6, at a depth of 55cm (Fig 9.6; Cat. #1561; D). This chopper is triangular in shape, with a distal edge that has been thinned. Wear is evident on the working edge. Calcium carbonate build up is noted on the dorsal surface. This chopper weighs 82.5cm.

9.2.7 Core (n=1)

One core fragment was uncovered in Unit 4, Level 6, at a depth of 51cm (Fig 9.6; Cat. #992; E). This fragment is of SRC and is of a rounded polygon shape. This core weighs approximately 153.6g and exhibits varying degrees of chipping and retouch along its outer edges.



Figure 9.6: Miscellaneous tools from Cultural Zone 4 (A = Cat. #6992; B = Cat. #5734; C = Cat. #7117; D = Cat. #1561; E = Cat. #992)

9.3 Pottery Assemblage

9.3.1 Neck Sherds (n=2); See Figure 9.7 and Table 9.1 for a summary

Two incised neck sherds were recovered in this cultural zone. The exterior decoration indicates that these sherds likely belong to the vessel recovered in cultural zone 1. For this reason, these sherds are also considered to be out of their original context.

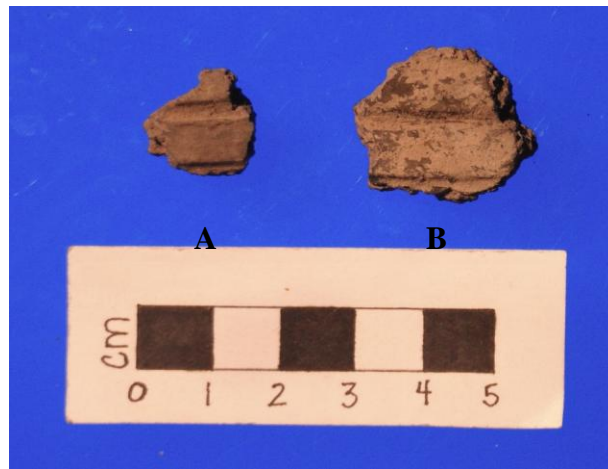


Figure 9.7: Neck sherds from Cultural Zone 4 (A = Cat. #3025a; B = Cat. #1007)

Table 9.1: Neck sherd characteristics Cultural Zone 4

Catalogue#	Provenience	Description	Wall Thickness (mm)
3025a	SW	Exterior Finish - smooth Exterior Decoration - horizontal incised groove	6.35
1007	SW	Exterior Finish – smooth Exterior Decoration - horizontal incised groove	6.49

9.3.2 Body Sherds (n=1)

A single textile impressed body sherd was recovered in Cultural Zone 4

9.4 Cultural Zone 4 Faunal Assemblage

A total of 48,982 complete and incomplete elements were recovered in this level. Ninety eight percent (41,144) of these elements are indeterminate, of which less than 2% are unburned (Table 9.2). Specimens identified as *Bison bison*, *Ondatra zibethicus* (Muskrat) and *Thomomys talpoides* (Northern Pocket Gopher) are represented in this assemblage (Table and 9.3).

Table 9.2: Summary of Cultural Zone 4 Faunal Counts

Faunal Type	Element	(g)	Specimens	(g)	Unidentified	(g)
Unburned Bone	535	5,075.33	161	3,411.09	593	1,023.99
Burned Bone	215	643.67	29	260.47	41,144	7,286.70
Calcined Bone	7	17.20	-	-	336	160.80
Burned/Calcined Bone	-	-	-	-	5,879	1,180.90
Charred Bone	8	73.5	1	15.60	40	8.60
Charred/Calcined Bone	-	-	-	-	41	5.90
Burned Tooth Enamel	17	7.2	-	-	-	-
Unburned Tooth Enamel	164	128.4	7	84.53	-	-
Unburned Shell	55	20.15	-	-	-	-
Total	1001	5,965.45	198	3,771.69	48,033	9,666.89

Table 9.3: Summary of Cultural Zone 4 faunal remains by taxa

Common Name	Taxon	NISP	MNI
Mammals			
Bison	<i>Bison bison</i>	200	1
Muskrat	<i>Ondatra zibethicus</i>	1	1
Northern Pocket Gopher	<i>Thomomys talpoides</i>	3	1
Miscellaneous			
Large Mammals		885	-
Medium Mammal		14	-
Small		21	-
Misc. Mammal		47,775	-
Misc. Osteocytes		9	-

9.4.1 Order Artiodactyla

Bison bison

Specimens identified: NISP = 200; See Table 9.4 for a summary (excludes cranial elements)

Discussions: A total of 196 complete and incomplete fragments are categorized as *Bison bison*. A minimum of two adult bison and one immature bison have been identified in this assemblage. The presence of an immature bison was determined on the basis of a single unfused metatarsal (Cat. #5589) and a single first phalanx (Cat. #935). A total of 15.3% of the assemblage exhibits slight to moderate burning while mineralization is evident on a single long bone fragment. Butchering marks are present on nine fragments, three of which are burned.

Table 9.4: Summary of *Bison bison* elements from cultural zone 4

	NISP	MNI	MNE	MAU	%MAU
Axial					
Caudal	3	1	3	0.43	0.11
Cervical	2	1	2	0.14	0.04
Lumbar	4	1	3	0.6	0.15
Forelimb					
Humerus	9	1	3	1.5	0.04
Ulna	2	1	2	1	0.25
Ulnar Carpal	2	1	2	1	0.25
Unciform	3	2	3	1.5	0.04
Metacarpal	11	2	8	4	1
Radial carpal	2	1	2	1	0.25
Intermediate carpal	1	1	1	0.5	0.13
Accessory carpal	2	1	2	1	0.25
Scapula	27	1	3	1.5	0.04
Hindlimb					
Femur	1	1	1	0.5	0.13
Astragalus	3	2	3	1.5	0.04
Fused Central and Fourth tarsal	2	1	2	1	0.25
Fused Second and Third tarsal	5	2	5	2.5	0.63
Metatarsal	11	2	8	4	1

	NISP	MNI	MNE	MAU	%MAU
Hindlimb					
Tibia	5	1	5	2.5	0.63
Calcaneus	2	1	2	1	0.25
Os Coxae	2	1	2	1	0.25
Other Elements					
First Phalanx	7	2	7	1.17	0.29
Second Phalanx	7	2	7	1.17	0.29
Third Phalanx	4	1	4	0.67	0.17
Proximal sesamoid	3	1	3	0.38	0.10
Distal Sesamoid	5	2	5	1.25	0.31
Misc. Sesamoid	2	-	-	-	-
Misc. Phalanx	26	-	-	-	-
Misc. Metapodial	13	-	-	-	-
Misc. Carpal/Tarsal	8	-	-	-	-
Misc. Tarsal	1	-	-	-	-
Misc. L.Bone	1	-	-	-	-

9.4.2 Order Rodentia

Ondatra zibethicus

Specimens identified: NISP = 1, immature left femur (Cat. #4116)

Discussion: One immature muskrat specimen was identified in this assemblage. Due to the lack of cultural modifications, burning marks, or weathering it is believed that this specimen is intrusive to the archaeological record.

Thomomys talpoides

Specimens identified: NISP = 1, partial cranium with left and right mandibles (Cat. #4667)

Discussion: One adult Northern Pocket Gopher has been identified based on the recovery of a partially complete cranium. No cultural modification, weathering or burning is present on these specimens. As such, it is believed that this specimen is also intrusive to the record.

9.4.3 Miscellaneous Specimens

Summary: NISP = 48,704; see Table 9.5 for a summary

Discussion: The bone fragments presented in Table 9.5 have been identified based on size class. These elements include mammalian vertebra, long bone and enamel fragments. Of this total, 97.9% (47,657 elements) exhibit varying degrees of burning, while less than 1% (33 elements) displays signs of cultural modification.

Table 9.5: Summary of Cultural Zone 3 miscellaneous specimens by size category

Size Class	NISP	Elements Represented
Large Mammals	885	Ribs, Long Bones, Enamel fragments
Medium Mammal	14	Rib, Long Bones, Enamel fragments
Small Mammal	21	Rib, Long Bones, Enamel fragments
Misc. Mammal	47,775	Rib, Long Bones, Enamel fragments
Misc. Osteocytes	9	Scales

9.5 Discussion

Projectile point styles in this zone exhibit characteristic of Sandy Creek which indicates that they are of the Late Middle Precontact period. The lithic tool assemblage discuss along these points support the arguments set forth in zones 2 through 3 which state that this area was most likely regarded as a campsite for daily activities and secondary bison processing. There is an increase in expedient tools recovered which indicates that activities other than bison processing occurred at this site. Local raw materials were also heavily utilized as opposed to exotic materials such as KRF.

There is the presence of two incised neck sherds in this zone that resemble the neck sherds in cultural zones 1 through 3. Pottery does not appear in the archaeological record prior to the Late Precontact period which indicates that these sherds are out of their original context as a result of bioturbation. The presence of intrusive specimens such as the muskrat and the northern pocket gopher further supports this idea. Cultural mixing is apparent in cultural zones 1 to 4, and it is becoming clear that there are multiple occupation levels compressed between 30 and 60cm.

10.2 Cultural Zone 5: Lithic Tool Assemblage

Twenty-three worked tools belong to the tool kit associated with the single projectile point recovered in cultural zone 5 (Appendix B; B21-B24). These tools range from expedient tools to biface fragments. The dominant material type in this level is SRC at 33.3% of the total tool kit of which 37.5% is heat treated. Chert is the second most common material at 16.7%. Silicified peat represents 12.5% of the total assemblage of which 33% is heat treated. The remaining material types occurred at the following rates, fused shale (9%), KRF (9%) agatized wood (5%), quartzite (5%), silicified wood (5%), basalt (5%) and dolomite (5%).

10.2.1 Projectile Points (n=1)

The single Pelican Lake projectile point is constructed from KRF and displays a small amount of patination build-up (Figure 10.2; Cat. #7559). This point was recovered from Unit 48, Level 14 at a depth of 65- 70cm below surface. The base of this point is straight with deep basal corners and it is broken at the tip. Modification such as thinning of the basal margin and retouching of the lateral margin is apparent. The petite size and construction of this point suggests that it was perhaps utilized as a toy, a practice tool, or was exhausted from continuous use and repair.

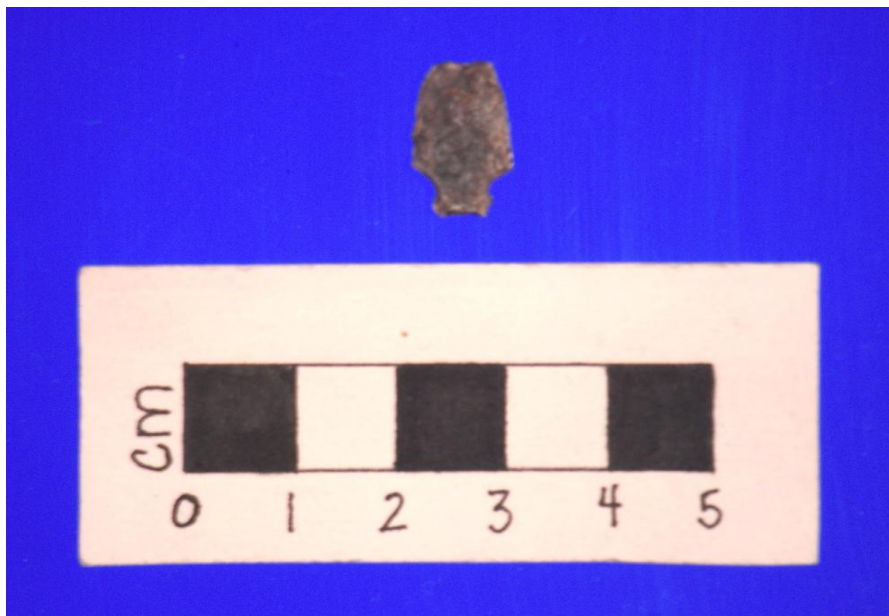


Figure 10.2: Projectile point from Cultural Zone 5 (Cat. #7559)

10.2.2 Bifaces (n=7)

Seven biface and bifaces fragments were found in cultural zone 5 of which one is a complete biface. The complete biface was recovered at a depth of 71.5cm in Unit 52, Level 8. Both right and left (straight) lateral margins exhibit chipping (Fig 10.3; Cat. #7366; A). On the dorsal surface a large flake appears to have been removed along the proximal end. This edge appears to have been further thinned and rounded. An indentation is visible on the ventral surface ensuing from the removal of a flake from the left lateral margin. The material type for this biface is fused shale.

Two biface fragments were excavated from Unit 14, Level 7, between 60 and 75cm below surface. The first biface fragment is asymmetrical in outline and is presumed to be an unfinished knife or spokeshave (Fig 10.3; Cat. #1689; B). The right lateral margin is straight in outline and rounds out towards the distal edge. Both working edges exhibit evidence of retouch. A semi-circular notch is noted on the right lateral margin. This biface is broken along the proximal end, leaving a slight hinge along the break. Dorsally, three longitudinal flakes have been removed. The biface is constructed from silicified peat and is broken in two areas fragment (Fig 10.3: Cat. #2119; C). The first is a clean angular break about midway through the left lateral margin to the tip of the biface. The second break occurs obliquely along the proximal end and then angles towards the edge of the lateral margin. Reworking is evident on the right lateral margin. Further flaking of a large longitudinal flake is also apparent and there is visible thinning along the margin.

A biface fragment, recovered from Unit 42, Level 7, at a depth of 74cm below surface, is constructed from a pink SRC (Fig 10.3; Cat. #5378; D). Only the midsection of this biface is present as transversal breaks occur on both dorsal and proximal ends. The right lateral margin is convex and the left lateral margin is straight with thinning occurring on both edges. Bifacial retouching is observed on the right lateral margin. Two biface fragments were excavated from Unit 47, Level 7, between 60 and 75cm below surface (Fig 10.3; Cat #5597 and #5598). One fragment is asymmetrical in outline and is constructed from a heat-treated SRC (Fig 10.3; Cat. #5597; E). Angular breaks occur on both left and right margins near the proximal end. The working edges are straight with retouch in the form of a sharp serrated edge. It is evident that there is a substantial amount of calcium carbonate build-up along the dorsal surface of this

fragment, but flaking patterns can still be observed on both ventral and dorsal faces. A second fragment, found between 60 and 70cm in Unit 47, Level 7, is substantially smaller than the other bifaces (Fig 10.3; Cat. #5598; F). It is a bifacial knife constructed out of fused shale with smoothed dorsal and ventral surfaces. It is asymmetrical in outline and exhibits both a primary and secondary working edge with small amounts of retouching evident. A bulb of force is apparent on the ventral surface directly below the striking platform.

A final biface fragment was uncovered at a depth of 74.5cm in Unit 48, Level 15(Fig 10.3; Cat. # 10314; G). The proximal end is broken off leaving behind a concave break. Wear is evident on both lateral margins. It is possible that this biface was further reused as a core as there are large flakes removed from the ventral surface which serve no utilitarian purpose. The material is a grey SRC.

Bifacial tools and tool fragments are shown in Figure 10.3



Figure 10.3: Bifaces and biface fragments from Cultural Zone 5 (A = Cat. #7366; B = Cat. #1689; C = Cat. #2119; D = Cat. #5378; E = Cat. #5597; F = Cat. #5598; G = Cat. #10314)

10.2.3 Side/endscrapers (n=2)

An end/side scraper (Fig 10.4; Cat. #1577; A) was recovered from Unit 13, Level 7, at a depth of 65cm. This scraper is constructed out of KRF and displays substantial patination on the lateral edges. The distal (primary) working edge is convex and has a working angle of 60° while both left and right (secondary) lateral margins are straight. This scraper is thumbnail in size and is relatively small suggesting that it was reworked along all edges. Further evidence which suggest unifacial retouching is exhibited on the left lateral margin where a new working edge had been flaked. The proximal edge is broken transversely and exhibits thinning and grinding. A second end/side scraper (Fig 10.4; Cat. #10027; B) was uncovered at a depth of 60-65cm in Unit 34, Level 8. This scraper is relatively thin. Both primary and secondary working edges are present with a working angle of 55°. Patination is evident on the dorsal surface.

10.2.4 Uniface fragments (n=2)

One uniface fragment constructed out of chert was recovered at a depth of 67cm in Unit 46, Level 7 (Fig 10.4; Cat. #5486; C). Both lateral (primary) working edges are unifacially retouched and concave in shape. It is possible that this uniface was hafted as there are two notches located at equal distance, longitudinally and transversally, on both lateral margins. This uniface exhibits no wear, grinding, and chipping on any of the margins.

A second uniface fragment, uncovered in Unit 39, Level 8, at a depth of 60-70cm, is a scraper preform constructed out of SRC (Fig 10.4; Cat. #8346; D). Large flakes have been removed from both ventral and dorsal surfaces and the right lateral margin is incomplete. Unifacial retouching and thinning is visible on both primary (distal) and secondary (left lateral) working edges with a steep working angle of 70°. A significant amount of calcium carbonate build-up is visible along the proximal edge.

10.2.5 Reverse Unifaces (n=2)

Two reverse unifaces were uncovered in cultural zone 5. The first of these reverse unifaces was excavated at a depth of 66cm in Unit 7, Level 7. This uniface is constructed out of quartzite and is highly polished on the dorsal surface (Fig 10.4; Cat. # 1960; E). This uniface also exhibits a steep (convex) working edge. A second reverse uniface was recovered in Unit 46,

Level 8 between depths of 70-80cm below surface (Fig 10.4; Cat. #8368; F). The material type is of a heat-treated SRC and exhibits the same morphological and stylistic characteristics at Cat. #1960. On this particular uniface retouch and retouching is visible along the working edge.

Unifacial tools from level 5 are shown in Figure 10.4.

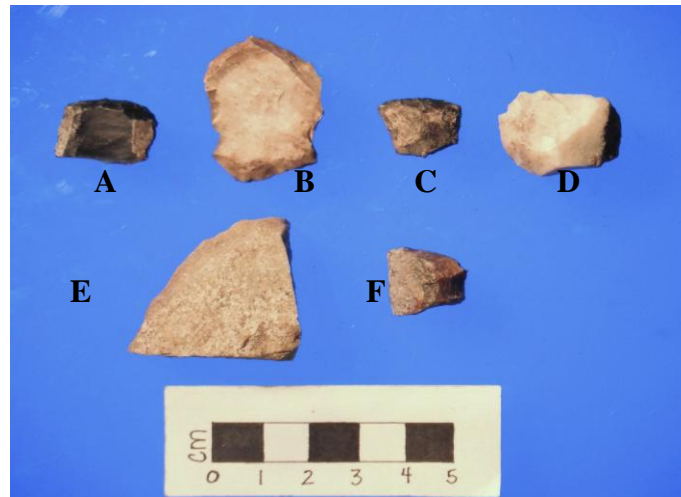


Figure 10.4: Unifacial tools from Cultural Zone 5 (A = Cat. #1577; B = Cat. #10027; C = Cat. #5486; D = Cat. #8346; E = Cat. #1960; F = Cat. #8368)

10.2.6 Retouched Flakes (n=8)

An examination of cultural zone 5 specimens led to the identification of seven retouched flakes. One retouched flake was created from a secondary decortification flake and displays a primary working edge with retouching occurring over 75% of the lateral margin (Fig 10.5; Cat. #946; A). This flake, found at a depth of 60-70cm in Unit 3, Level 7, is constructed from agatized wood. A second retouched flake, recovered in Unit 34, Level 10, at 70-75cm below surface, was also formed from a secondary decortification flake (Fig 10.5; Cat. #4233; B). A primary working edge is displayed on the straight lateral edge with retouching present along its length. A third retouched flake, formed from a secondary flake, is composed out of white SRC (Fig 10.5; Cat. #4023; C). This flake exhibits a primary (convex) working edge on the left lateral margin with unifacial thinning and retouching displayed over approximately 25% of this edge. A striking platform and remnant of a bulb of force is present near the distal end of the ventral surface of this flake. This artifact was excavated in Unit 35, Level 7, at a depth of 60-70cm.

A fourth retouched flake was uncovered in Unit 50, Level 13, at a depth of 64.5cm (Fig 10.5; Cat. #10088; D). This tool fragment was constructed from a secondary SRC flake. Unifacial retouch and grinding are noted on both convex and straight edges. In Unit 48, Level 13 a fifth retouched flake was recovered at 60-65cm below surface. This artifact is constructed from a secondary, white SRC flake (Fig 10.5; Cat. #7525; E). The working edge has been thinned. A small natural vug is noted on the proximal end.

Two retouched flakes were excavated from Unit 39, Level 8 and 10 respectively (Fig 10.5; Cat. #5733 and #6611). One of these (Cat. #5733; F), constructed from a secondary decortification flake, displays both primary (straight) and secondary (concave) working edges. Slight bifacial retouching is displayed on the lateral margins. Stylistically, this fragment resembles a spokeshave. A second retouched flake (Cat. #6611; G) is constructed from pebble chert and both working edges are apparent on the lateral and distal margins. The last retouched flake is a secondary decortification shatter located in Unit 5 Level 7 between 70 and 80cm (Fig 10.5; Cat. #1108; H). This shatter is constructed out of SRC and displays bifacial retouching.

Retouched flakes from level 5 are shown in Figure 10.5



Figure 10.5: Retouched flakes from Cultural Zone 5 (A = Cat. #946; B = Cat. #4233; C = Cat. #4023; D = Cat. #10088; E = Cat. #7525; F = Cat. #5733; G = Cat. #6611; H = Cat. #1108)

10.2.7 Hammerstone (n=2)

This expedient tool was constructed out of an ovoid dolomite cobble (Fig 10.6; Cat. #5043; A). Pitting is apparent on the dorsal surface and the proximal end has impact scars. Calcium carbonate deposits are noted along the ventral surface. A second hammerstone weighs 329.8g and is an elongated ovoid (Fig 10.6; Cat. #7902; B). Impact scars are visible on both the distal and proximal ends while pitting is evident on the illustrated surface.



Figure 10.6: Hammerstones from Cultural Zone 5 (A = Cat. #5043; B = Cat. #7902)

10.3 Cultural Zone 5 Faunal Assemblage

The associated faunal assemblage identified as affiliated to cultural zone 5 spans the depths of 60-75cm below surface and totalled 181,357 complete and incomplete elements and fragments weighing 36,717.71g. A total of 179,905 fragments (23,352.42g) have been classified as unidentifiable bone fragments. Out of this 58.4% (13965.56g) are unidentified burned fragments and 39.8% (7481.00g) are classified as calcined/burned/charred (Table 10.1 and 10.2).

Table 10.1 Summary of Cultural Zone 5 Faunal Counts

Faunal Type	Element	(g)	Specimens	(g)	Unidentified	(g)
Unburned Bone	874	11327.74	367	8215.54	2008	1602.61
Burned Bone	252	1160.95	67	417.52	105002	13965.56
Calcined Bone	3	5.40	-	-	1167	286.20
Calcined/Burned	-	-	-	-	71677	7481.00
Calcined/Charred	-	-	-	-	21	10.10
Charred	14	379.89	6	187.60	30	6.95
Burned Tooth Enamel	28	35.30	7	34.82	-	-
Unburned Tooth Enamel	128	104.82	66	297.16	-	-
Unburned Shell	178	3.78	178	3.78	-	-
Total	1477	13017.88	513	9152.64	179905	23352.42

Table 10.2: Summary of Cultural Zone 5 faunal remains by taxa

Common Name	Taxon	NISP	MNI
Mammals			
Bison	<i>Bison bison</i>	414	6
Dog	<i>Canis familiaris</i>	1	1
	<i>Canis sp</i>	7	1
Richardson's Ground Squirrel	<i>Spermophilis richardsonii</i>	1	1
Miscellaneous			
Large Mammals		934	-
Medium Mammal		33	-
Small		67	-
Misc. Mammal		179,585	-
Misc. Ungulate		14	-
Misc. Osteocytes		8	-

10.3.1 Order Artiodactyla

Bison bison

Specimens identified: NISP = 414; see Table 9.3 for a summary (excludes cranial elements)

Discussion: Due to the high occurrence of unidentifiable bone fragments in this assemblage only 0.23% is considered to be *Bison*. In comparison to partially and complete elements this *Bison* bones consist of 30.6% of the assemblage. Approximately 6 adult individuals have been identified in this sample based on the occurrence of carpal, tarsal and metapodial elements. An immature bison specimen is also represented based on the presence of a left deciduous maxillary premolar (Cat. #8601). Two fetal long bone elements have also been recovered in this level (Cat. #5825 and #5631). Of these specimens 17.4% exhibit slight to moderate burning, predominantly on the fore and hindlimbs. Nine specimens displays evidence of butchering practices, while a single *Bison* femur has been both butchered and burned (Cat. #1982). Weathering in the form of water wear is exhibit on a single unciform element (Cat. #6645)

Table 10.3: Summary of *Bison bison* elements from Cultural Zone 5

	NISP	MNI	MNE	MAU	%MAU
Axial					
Cervical	10	2	8	1.14	0.152
Thoracic	6	1	6	0.5	0.07
Lumbar	9	2	5	1	0.13
Caudal	3	1	2	0.4	0.05
Rib	12	1	5	0.19	0.03
Sacrum	1	1	1	1	0.13
Forelimb					
Humerus	16	1	3	1.5	0.20
Radius	4	1	3	1.5	0.20
Ulna	6	3	5	2.5	0.22
Fused Radius/Ulna	5	1	1	0.5	0.07
Scapula	5	1	3	3.5	0.37

	NISP	MNI	MNE	MAU	%MAU
Forelimb					
Metacarpal	18	6	15	7.5	1
Accessory Carpal	5	3	5	2.5	0.26
Radial Carpal	7	3	7	3.5	0.47
Ulnar Carpal	1	1	1	0.5	0.07
Unciform	4	2	4	2	0.27
Fourth Carpal	1	1	1	0.5	0.07
Intermediate Carpal	1	1	1	0.5	0.07
Internal Carpal	1	1	1	0.5	0.07
Hindlimb					
Femur	5	2	5	2.5	0.26
Os Coxae	2	1	2	1	0.13
Tibia	8	2	7	3.5	0.37
Astragalus	5	3	5	2	0.27
Calcaneus	6	3	6	3	0.40
Fused 2 nd and 3 rd Tarsal	11	6	11	5.5	0.73
Fused Central and 4 th	7	4	7	3.5	0.47
Metatarsal	10	3	9	4.5	0.60
Patella	2	1	2	1	0.13
Distal Sesamoid	10	4	7	3.5	0.37
Lateral Malleolus	1	1	1	0.5	0.07
Other					
Misc. Carpal	15	-	-	-	-
Misc. Tarsal	1	-	-	-	-
Misc. Carpal/Tarsal	2	-	-	-	-
Misc. Long Bone	5	-	-	-	-
1 st Phalanx	10	2	10	1.67	0.22
2 nd Phalanx	17	3	17	2.83	0.38
3 rd Phalanx	7	2	7	1.17	0.16
Misc. Phalanx	2	-	-	-	-
Misc. Sesamoid	6	-	-	-	-
Misc. Metapodial	1	-	-	-	-
Misc. Vertebrae	3	-	-	-	-

10.3.2 Order Carnivora

Canis sp.

Specimens: NISP = 1; 1 left femur (Cat. #5506)

Discussion: A single specimen located in this level represents the left hindlimb of an adult dog. The specimen recovered exhibits no weathering and displays no signs of cultural modifications.

Canis sp.

Specimens: NISP = 5; 2 Third phalanx (Cat. #949 and #5578), 1 calcaneus fragment (Cat. #5846), 1 right incisor fragment (Cat. #5633) and 1 right premolar fragment (Cat. #5633a)

Discussion: These five specimens represent the remains of a minimum of one adult individual. No cultural modifications or weathering are indicated on these specimens.

10.3.3 Order Sciuridae

Spermophilis richardsonii

Specimens: NISP = 1; 1 mandible fragment with M₁, M₂ and M₃ (Cat. #5577)

Discussion: A single adult Richardson's ground squirrel is represented in this assemblage. The specimen exhibits no weathering and displays no signs of cultural modifications. It is likely an intrusive specimen

10.3.4 Miscellaneous Specimens

Summary: NISP = 180,641; see Table 10.4.

Discussion: A total of 180,641 element fragments could only be identified based on size classifications. Over 98% of these unidentified fragments have been burned. Weathering is apparent on 35 unidentified fragments and classified as water worn, mineralized or silicified. Slight discoloration is noted on 0.6% of this assemblage, most likely the result of prolong

exposure to the sun. Three hundred and twenty five (<1%) element fragments show indications of butchering and cultural modification markers.

Table 10.4: Summary of Cultural Zone 5 miscellaneous specimens by size category

Size Class	NISP	Elements Represented
Large Mammals	934	Long bone, cranial and vertebrae Fragments
Medium Mammals	33	Long bone, mandible, rib and carpal/tarsal fragments
Small	67	Long bone, rib and mandible fragments
Misc. Mammals	179585	Long bone, mandible, vertebra fragments
Misc. Ungulate	14	Tarsal, Phalanx and mandible fragments
Misc. Osteocytes	8	Branchial Rays

10.4 Discussion

The lithic tool assemblage recovered in this zone is relatively smaller than that of those observed in the upper zones. These artifacts range from expedient to secondary processing tools, which stay in line with the idea that this area was utilized as a campsite. There is also the presence of Canid specimens in this level. Canids are scavengers and would have gathered towards areas of high refuse concentrations.

The single projectile point shown in Fig 10.2 suggests a Late Middle Precontact (Pelican Lake) affiliation due to the wide angular corner notches. Due to the size of this point this affiliation is speculative, as this point may have been heavily reworked or it may represent a practice tool or a toy. There is also the possibility that this zone covers a Middle Middle Precontact level due to its depth and the occurrence of McKean points at this site, albeit their recovery in earlier zones.

Chapter 11

Cultural Zone 6

11.1 Introduction

Cultural Zone 6 is located between 75 and 85cm below surface. Two projectile points from this level and are affiliated with the Early Middle Precontact Period and the Mummy Cave series (7,700-4,700 years B.P). No worked tools are in direct association with these projectile points. The tools that will be identified and analyzed as a component of cultural zone 6 are located within a 2x2m block in the central portion of the site (Refer to Figure 11.1). A single radiocarbon date has been obtained for this level. This date was obtained from a charcoal sample (Cat. #1997) collected in Unit 13 Level 9 at a depth of 80cm which yielded a conventional age of 6850 +/- 40 BP. (Appendix A; Table A.1). This date falls within the age range associated with the Early Middle Period.

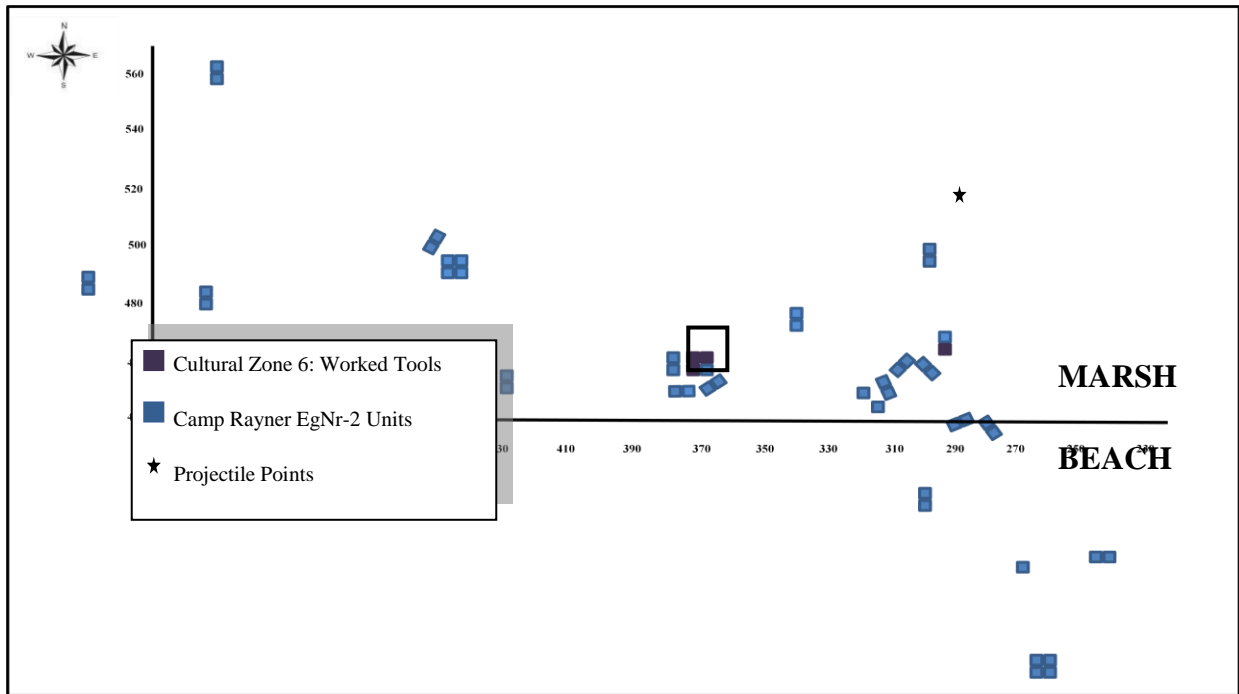


Figure 11.1: Distribution of diagnostic artifacts Cultural Zone 6

11.2 Cultural Zone 6: Lithic Tool Assemblage

A total of five worked tools including projectile points were assigned to cultural zone 6 (Appendix B; B25-B28). No one material predominates over another in this assemblage. The artifacts are constructed from agatized wood (20%), SRC (20%), feldspathic siltstone (20%), fused shale (20%) and chalcedony (20%).

11.2.1 Projectile Points (n=2)

Two projectile points were found in this level one of which is a complete point. Both of these points, recovered in Unit 47, Level 9, at a depth of 82cm, have been assigned to the Mummy Cave series. A first point is comparable to Bitterroot side-notched points. Construction of this point appears to be of high quality (Fig 11.2; Cat. #6733; A). This complete point is asymmetrical in shape and a small amount of chipping and grinding can be identified on the lateral margins. The material type of this point is fused shale and it has moderate amounts of calcium build-up on both ventral and dorsal surfaces.

A second point, stylistically resembling Gowen side-notched, is constructed from a white/brown chalcedony. This point is broken horizontally through the midsection of the body (Fig 11.2; Cat. #6734; B). There seems to be no obvious flaking pattern on either surface of this point. Slight retouching appears to be visible on the upper portion of the right lateral margin of the dorsal surface and there does appear to be some basal grinding.

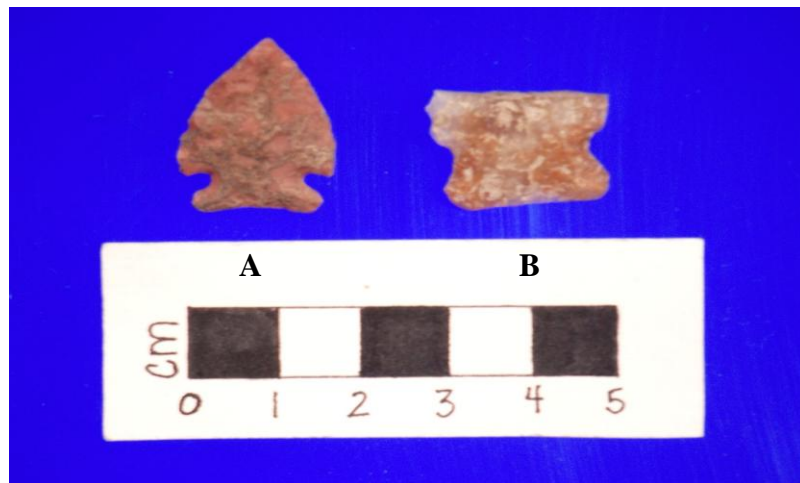


Figure 11.2: Projectile points from Cultural Zone 6 (A = Cat. #6733; B = Cat. #6734)

11.2.2 Unifaces (n=2)

A uniface was recovered from Unit 14, Level 9, at a depth of 84cm (Figure 11.3; Cat. #2063; B). This uniface was constructed from SRC and is triangular in outline. Both the distal and lateral working edge is present, each exhibiting minor chipping and retouching. The distal edge is convex and both right and left lateral margins are straight. The proximal edge has been broken off the main body. A second uniface, constructed out of feldspathic siltstone, was also located in Unit 14, Level 9, at a depth of 87cm (Fig 11.3; Cat. #2065; C). This uniface is asymmetrical in outline and is broken obliquely along the proximal edge. The left lateral margin has been unifacially thinned and exhibits retouch along the edge. Two longitudinal flakes have been removed from the dorsal surface.

11.2.3 Side scraper/graver/spokeshave (n=1)

Two artifacts recovered from Unit 3, Level 9, and Unit 13, Level 9, at a depth of 90cm refit into a complete side scraper/graver/spokeshave (Fig 11.3; Cat. #969/1990; A). This tool was constructed out of agatized wood with some patination occurring on the right lateral margin near the proximal end. The left lateral (primary) working edge is semi-circular with chipping occurring around the edge. The distal end is convex but no retouching or retouch is apparent on the surface. The right lateral margin is straight with definite retouching over most of its length.



Figure 11.3: Unifacial tools from Cultural Zone 6 (A = Cat. #969/1990; B = Cat. #2063; C = Cat. #2065)

11.3 Cultural Zone 6 Faunal Assemblage

The faunal assemblage for cultural zone 6 was recovered between the depths of 75 to 90cm and totalled 6,186 elements, specimens and unidentified fragments. Approximately two bison (*Bison bison*) and one Canid (*Canis sp.*) are represented in this assemblage. Excavations recovered 570 identifiable elements of which 32.11% (525.3g) are burned. The remaining 87.2% of the assemblage is unidentifiable fragments weighing 2,109g. Further separated by degree of burning, 51.6% of the unidentifiable assemblage (1390.8) is burned fragments and 36.1% (321.9g) are burned and calcined. The remaining 1% consists of calcined, charred and calcined/charred fragments (Table 11.1 and 11.2). These unidentifiable fragments were separated by size class due to the lack of identifying landmarks and characteristics.

Table 11.1: Summary of Cultural Zone 6 Faunal Counts

Faunal Type	Element	Mass (g)	Specimens	Mass (g)	Unidentified	Mass (g)
Unburned Bone	185	2174.55	74	1778.20	605	362.47
Burned Bone	183	525.30	130	272.20	2768	1390.75
Calcined Bone	-	-	-	-	28	29.40
Burned/Calcined Bone	-	-	-	-	1936	321.90
Charred Bone	5	24.90	-	-	13	2.20
Charred/Calcined Bone	-	-	-	-	14	2.30
Unburned Tooth Enamel	120	20.12	12	45.00	-	-
Burned Tooth Enamel	24	12.72	-	-	-	-
Shell	53	1.8	36	1.6	-	-
Total	570	2759.39	252	2097	5364	2109.02

Table 11.2: Summary of Cultural Zone 6 faunal remains by taxa

Common Name	Taxon	NISP	MNI
Mammals			
Bison	<i>Bison bison</i>	202	2
Canis	<i>Canis. Sp</i>	4	1
Miscellaneous			
Large Mammal		828	-

Medium Mammal		7	
Small Mammal		79	-
Misc. Mammal		4955	-
Misc. Ungulate		17	-

11.3.1 Order Artiodactyla

Bison bison

Specimens identified: NISP = 202; see Table 11.3 for a summary (excludes cranial elements)

Discussion: A total of 202 elements and element fragments (3.3%) of the faunal assemblage consist of bison remains. The specimens represent two adult individuals based on the number of astragalus and metatarsal elements recovered. Weathering is present on a complete petrous temporal bone in the form of manganese staining (Cat. #1061). Three elements (Cat. #983, #983a, 3983b) appear to be bleached. Due to prolonged exposure to the sun while in the recovery phase of the excavation. Cultural modification is evident on a femur fragment (Cat. #4972) and a fused second and third tarsal shows signs of wear (Cat. #7986).

Table 11.3: Summary of *Bison bison* elements from Cultural Zone 6

	NISP	MNI	MNE	MAU	%MAU
Axial					
Atlas	1	1	1	0.5	0.5
Petrous Temporal	1	1	1	0.5	0.5
Lumbar	1	1	1	0.5	0.5
Rib	12	1	6	0.27	0.27
Forelimb					
Ulna	1	1	1	0.5	0.5
Humerus	1	1	2	1	1
Metacarpal	1	1	1	0.5	0.5
Ulnar Carpal	1	1	1	0.5	0.5
Cuneiform	1	1	1	0.5	0.5
Femur	2	1	1	0.5	0.5

	NISP	MNI	MNE	MAU	%MAU
Hindlimb					
Tibia	1	1	1	0.5	0.5
Os Coxae	2	1	1	0.5	0.5
Fused Central and Fourth	2	1	1	0.5	0.5
Fused Second and Third	1	1	1	0.5	0.5
Astragalus	3	2	1	0.5	0.5
Metatarsal	4	2	3	1.5	0.5
Other Elements					
1 st Phalanx	4	1	4	0.67	0.5
2 nd Phalanx	4	1	4	0.67	0.5
1st Phalanx	2	1	2	0.33	0.5
Proximal Sesamoid	1	1	1	0.25	0.125
Lateral Malleolus	1	1	1	0.5	0.5
Misc. Carpals	2			-	-
Misc. Tarsals	6			-	-
Misc. Carpal/Tarsal	1				
Misc. Sesamoid	4			-	-
Misc. Metapodial	3				
Misc. Long Bone	4			-	-

11.3.2 Order Carnivora

Canis sp.

Specimens identified: NISP=4; 1 sesamoid (Cat. #1071), 1 proximal humerus (Cat. #2152) and 1 molar fragment with roots (#8004)

Discussion: The recovery of these specimens indicates that at least one individual of the genus *Canis* is represented. The specimen displays no weathering or burning and shows no signs of cultural modifications.

11.3.3 Miscellaneous Specimens

Specimens identified: NISP = 5886; see Table 11.4

Discussion: Most of the specimens represented in cultural zone 6's faunal assemblage are classified as miscellaneous mammal due to their high degree of fragmentation and lack of identifying characteristics. The large mammal specimens are believed to represent bison, but, this assumption is primarily based on size as opposed to recognizable landmarks. Varying degrees of burning are present on over 70.8% of the assemblage. Mineralization is apparent on 114 (1.9) unidentified and long bone fragments. Cultural modification is noted on less than 1%.

Table 11.4: Summary of Cultural Zone 6 miscellaneous specimens by size category

Size Class	NISP	Elements Represented
Large Mammal	828	Long Bone and Rib fragments
Medium Mammal	7	Long Bone, Rib and Enamel Fragments
Small Mammal	79	Long bones, Teeth Fragments, Vertebra Fragments
Misc. Mammal	4955	Enamel, Vertebra and Long bone fragments
Misc. Ungulate	17	Enamel, Ulna, Phalanx and Distal sesamoid fragment

11.4 Discussion

The lithic tool assemblage recovered in cultural zone 6 consists solely of 5 worked tools, constructed out of local raw materials. The recovery of a spokeshave and two unifaces combined with the high occurrence of burned, calcined and bone fragments suggest that activities occurring in this zone would have included later bison processing. A minimum of one canid specimen has also been recovered in this zone. The lack of weathering, burning or cultural modifications suggest that this specimen would not have been utilized as a food source.

The two projectile points recovered have been identified as a Bitterroot side-notched and Gowen side-notched which are stylistic variations of the Mummy Cave series assigned to the Early Middle Period. These recoveries are of particular importance to Saskatchewan archeology as Mummy Cave components are often difficult to locate, are represented by sparse assemblages, and are often misidentified as later side-notched points. A conventional radiocarbon date of 6850

+/- 40 BP was obtained from a charcoal sample (Cat. #1997). This date matches well with this cultural affiliation.

Chapter 12

Cultural Zone 7

12.1 Introduction

Cultural Zone 7 is the earliest occupation layer at Camp Rayner (EgNr-2) and on average ranges between depths of 95-115 cm below surface. Analyses of projectile points suggest that this level is associated with the Terminal/Late Paleoindian period (8,800-7,500 years B.P). These points were found in units 28 and 6 which are located within a 2x2 meter block (Refer to Figure 12.1). All other worked tools and fauna discussed as directly or indirectly linked to this cultural zone are scattered throughout the NE and SE portion of this site. Artifacts #5157, #5159, #1904 and #2682 are the only tools excavated in direct association with the projectile points. A radiocarbon date has been obtained from a bison distal humerus fragment recovered in Unit 13 Level 11 at a depth of 111cm (Cat. #2039). This sample yielded a conventional date of 7880 +/- 40 BP. (Appendix A; Table A.2). This date falls within the age range for the Terminal/Late Paleoindian period.

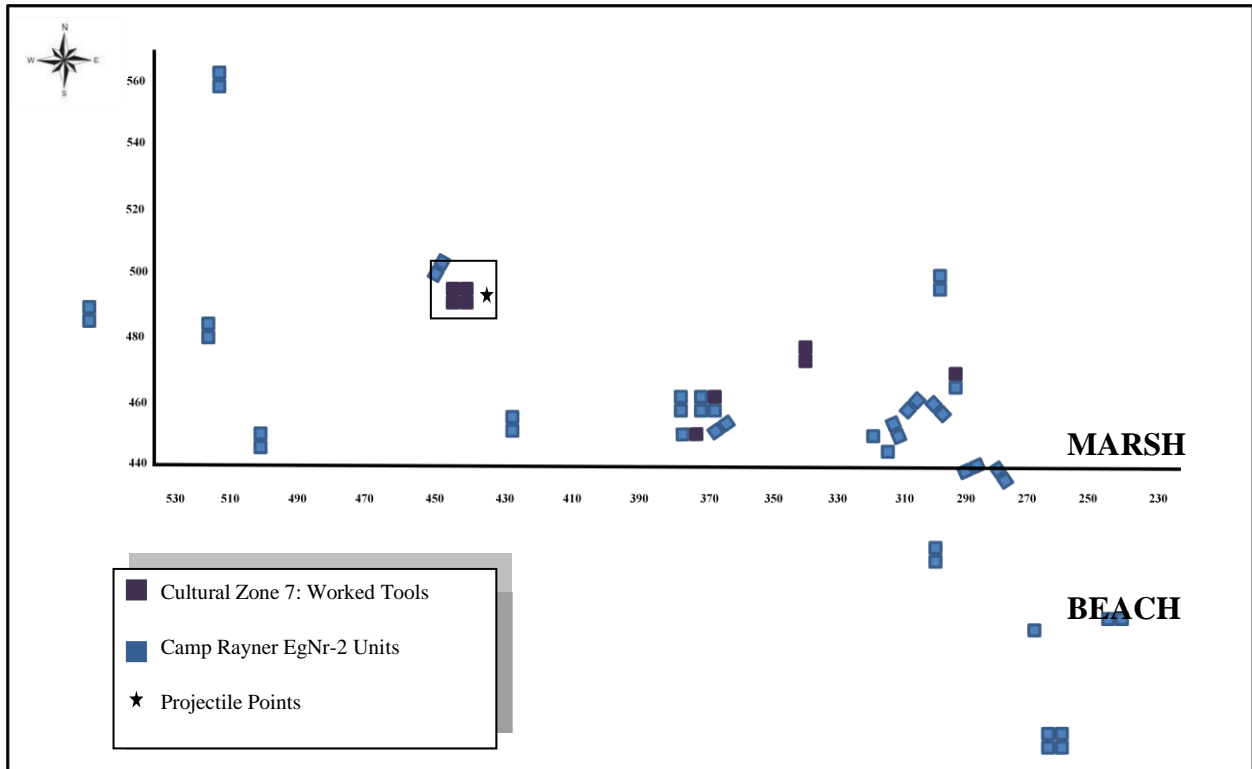


Figure 12.1: Distribution of diagnostic artifacts Cultural Zone 7

12.2 Cultural Zone 7 Lithic Tool Assemblage

A total of four projectile points, two bifaces, four unifaces, five side/endscrapers, one incomplete scraper, two spokeshaves and one retouched flake were excavated from cultural zone 7 (Appendix B; B29-B32). These worked tools were predominantly composed of SRC (64%), with the remaining artifacts constructed from chert (14%), pebble chert (7%), quartzite (7%) and KRF (7%). Four of the artifacts were heat treated, two constructed from the same material, accounting for 29% of the assemblage.

12.2.1 Projectile Points (n=4)

Four projectile points are assigned to cultural zone 7 all of which demonstrate morphological characteristics of Terminal/Late Paleoindian lanceolate points. Terminal/Late Paleoindian lanceolate points are generally poorly understood in the archaeological record (Walker 1999:25). Despite this, they are considered to be evidence of the transition from spears to dart points.

Two main cultural complexes are identified in Terminal/Late Paleoindian sites. The first, Plains/Mountain Complex is characterized by both Lovell Constricted and Pryor Stemmed points. These points are medium to large lanceolate points with constriction of the lateral edges slightly distal to base (Peck 2011:96). Projectile point bases show evidence of basal grinding along the base and edges with parallel-oblique flaking found along the lateral edges. The second cultural complex is the Lusk complex which includes Angostura, James Allen and Frederick points. Technologically these points relate to one another with differences lying within degree of basal concaveness and control over flaking (Peck 2011:108).

Stylistically, three of the projectile points found in cultural zone 7 display similar characteristics, all of which resemble points described in the Lusk Complex. Only the basal portion is present on all three points while each point exhibits marginal grinding and a basal notch or concavity. Bifacial retouching is also noted along the lateral margins. Projectile point Cat. #5154 and Cat. #5156 are found in Unit 28, Level 11, at a depth of 110 and 105cm respectively and are constructed from SRC (Fig 12.2; A and B). The construction material is silicified peat and point #1932 was recovered from Unit 6, Level 10 at 99.5cm below the surface (Figure 12.2; Cat. #1932; C). A break has occurred on the dorsal surface of this point.

Projectile point #5155 exhibit both stylistic and morphological differences as compared to the lanceolate points previously discussed (Fig 12.2; Cat. #5155; D). It was recovered in Unit 28, Level 11 at a depth of 103cm. These variations suggest that this point also belongs to the Plains/Mountains Complex since it is more comparable to the Lovell Constricted points. This point is constructed from SRC and is the only complete point recovered in Level 7. This point is asymmetrical in shape with broad shoulders, a long stem, and a concave base. Basal modifications include bifacial thinning and retouching of the edge. It is difficult to determine the amount of bifacial retouching and retouch along the lateral margins. This is due to the poor construction of this point and the large amount of calcium carbonate deposited on both surfaces. This point is similar to one from site DjPm-36 in Alberta (Peck 2011:98).

Projectile points from Cultural Zone 7 are shown in Figure 12.2.



Figure 12.2: Projectile points from Cultural Zone 7 (A = Cat. #5154; B = Cat. #5156; C = Cat. #1932; D = Cat. #5155)

12.2.2 Bifaces (n=3)

Cultural Zone 7 contained three biface fragments (Appendix; Table). The first biface fragment, probably the tip of an asymmetrical knife, was found in Unit 24, Level 12, at a depth

of 110-120cm (Figure 12.3; Cat. #7435; C). This knife is visibly worn and has multiple breaks on both lateral edges. Bilateral retouching on both left and right margins is apparent on the straight lateral primary working edge. The construction material is a white/pink SRC. The second biface fragment is constructed from a white/grey SRC and was excavated in Unit 5, Level 10, at a depth of 94cm (Figure 12.3; Cat. #1904; B). This biface is of a rectangular shape and is broken along the mid section revealing a plano-convex longitudinal cross section. Retouch is present on both the right and left working edges. A third biface fragment is constructed out of SRC and is polygonal in shape. This biface exhibits signs of retouching on the lateral (convex) edge. This tool was excavated from Unit 3, Level 11, at a depth of 104cm (Figure 12.3; Cat. #1837; A).

Bifacial tools from Cultural Zone 7 are shown in Figure 12.3



Figure 12.3: Bifacial tools from Cultural Zone 7 (A = Cat. #1837; B = Cat. #1904; C = Cat. #7435)

12.2.3 Unifacial Tools (n=11)

A total of eleven unifacial tools have been recovered in the level. These tools have been identified as uniface fragments (n=3), side/endscrapers (n=3), endscrapers (n=1), incomplete scraper (n=2) and spokeshaves (n=2)

12.2.3.1 Unifaces fragments (n=4)

A total of four uniface and uniface fragments was recovered from cultural zone 7. The first uniface is constructed from poor quality material, a mottled yellow/brown chert, obscuring the visibility of retouching or retouch patterns (Figure 12.4; Cat. #2975; B). This tool is a rounded polygon shape with a plano-convex cross section and a straight right lateral edge. All edges appear to have been purposely thinned and the proximal end is unfinished and slightly dulled. This uniface was found in Unit 24, Level 11, at 110cm below surface.

Three of these uniface fragments exhibit stylistic characteristics identified as end/side scraper preforms. The first of these fragments is constructed from heat-treated SRC. This uniface was recovered from Unit 46, Level 10, at a depth of 100cm. The fragment is coated with calcium carbonate build-up on both the dorsal and ventral faces which has obscured many features. An analysis of this uniface suggests that it was abandoned or utilized as an unfinished scraper. A second fragment was excavated from Unit 24, Level 11, at a depth of 104cm (Figure 12.4; Cat. #2995; A). A break has occurred on the main body resulting in the missing proximal end. The poor quality of the construction material, a Rocky Mountain quartzite, may be the reason for this break. This uniface is rectangular in shape with both primary and secondary working edges present. The distal (primary) working edge is convex and both lateral (secondary) edges are straight in outline. A small notch is displayed on the right lateral margin providing evidence of hafting. The second of these fragments is constructed from a pink SRC and was recovered in Unit 5, Level 11, at a depth of 104cm (Figure 12.4; Cat. #2682; K). The distal edge and right lateral margin are convex while the left lateral margin is straight. On the proximal end there is a small, purposeful break resulting in the formation of an angular notch.

12.2.3.2 Side/endscrapers (n=3)

Three end/side scrapers were excavated from cultural zone 7. One of these end/side scraper is thumbnail in size and triangular in outline (Figure 12.4; Cat. #2853; C). This scraper was recovered from Unit 23, Level 11, at a depth of 110cm. It is constructed of a white/orange

SRC and shows marks of dorsal flaking. Also present are two small notches on both left and right lateral margins. It is possible that these notches were intended for hafting purposes. The distal working edge is convex with an angle of 60°, and exhibits evidence of retouch and chipping along the surface edge. A second end/side scraper is thumbnail in size and was constructed from brown pebble chert (Figure 12.4; Cat. #2854; D). This scraper was excavated from Unit 23, Level 11, at 101cm below surface. The left lateral working edge is convex and contracts towards the proximal edge. The distal working edge is also convex with an angle of 60°. Thinning and narrowing of the right lateral margin towards the proximal end suggest that this was shaped for hafting. The scraper is constructed from KRF and is thumbnail in size (Figure 12.4; Cat. #5126; E). This scraper was recovered from Unit 27, Level 11, at a depth of 100-110cm. The distal working edge is convex with an angle of 35°. Both right and left margins are straight in outline with minimal narrowing and thinning towards the proximal end. Retouch is exhibited along the working edges.

12.2.3.3 Endscraper (n=1)

This end scraper fragment is constructed from a grey SRC and was excavated in Unit 27, Level 12, at a depth of 110.4cm (Figure 12.4; Cat. #7450; F). Only the distal working edge is present which displays a convex shape with an angle of 55°. The right lateral edge is straight and displays evidence of retouch while the left lateral margin is marked by an angular tang.

12.2.3.4 Incomplete scraper (n=2)

An incomplete scraper was located in Unit 4, Level 11, between 110 and 120cm (Figure 12.4; Cat. #1903; J). Retouch is exhibited on the convex lateral margin. Large flakes have been removed from both surfaces. A second incomplete scraper was recovered in Unit 46, Level 10, at a depth of 100cm (Fig 12.4; Cat. #6725; H). This is a poorly constructed scraper with steep lateral margins. Calcium carbonate deposits are noted on the ventral surface. These deposits have reduced the visibility of cultural modifications.

12.2.3.5 Spokeshaves (n=2)

One spokeshave was found in Unit 28, Level 11 at a depth of 110cm and is constructed from a heat-treated SRC and is yellow in color (Figure 12.4; Cat. #5157; I). This spokeshave is

unifacially flaked with a semi-circular cutting edge and a steep scraper-like edge angle. Each edge is retouched with visible retouch along the edge marked by the presence of chipping. A second spokeshave was also constructed from what seems to be the same material, heat-treated SRC, and was found in the same unit and level as artifact #5157 but at a depth of 106.5cm (Figure 12.4; Cat. #5159; G). A steep scraper-like edge is present on the right margin and a semi-circular cutting edge is found on the lower left margin. Retouch is visible on both edges and pressure retouching is exhibited on the concave distal edge.

All unifacially retouched tools from Cultural Zone 7 are shown in Figure 12.4.



Figure 12.4: Unifacially retouched tools from Cultural Zone 7 (A = Cat. #2995; B = Cat. #2975; C = Cat. #2853; D = Cat. #2854; E = Cat. #5126; F = Cat. #7450; G = Cat. #5159; H = Cat. #6725; I = Cat. #5157; J = Cat. #1903; K = Cat. #2682)

12.2.4 Retouched Flakes (n=1)

The retouched fragment was created from a secondary decortification flake and is formed from a grey chert (Figure 12.5; Cat. #10138). This retouched flake was recovered from Unit 26, Level 10 at a depth of approximately 90-100cm below surface. It is triangular in outline and diagonal flakes had been taken off the right margin, creating a serrated, straight lateral working edge.



Figure 12.5: Retouched Flake from Cultural Zone 7

12.3 Cultural Zone 7 Faunal Assemblage

The faunal assemblage excavated in conjunction with cultural zone 7 was recovered at a depth of 90-115cm below surface which totaled 5,135 fragments and complete elements. Out of this 4,327 (74.1%) are unidentified fragments weighing 2,471.56. A total of 76.8% (1,664g) of these remains are burned and 3.8% (78.37g) are calcined. These unidentified fragments are further divided into large, medium and small size classes (Table 12.1 and 12.2). The larger fragments are presumed to be bison due to their abundance on the plains during the Terminal/Late Paleoindian period.

Table 12.1: Summary of Cultural Zone 7 Faunal Counts

Faunal Type	Element	(g)	Specimens	(g)	Unidentified	(g)
Unburned Bone	339	1090.91	107	1904.97	810	720.09
Burned Bone	72	415.00	82	591.60	3,323	1,664.00
Calcined Bone	6	22.70	-	-	166	78.37
Burned/Calcined Bone	-	-	-	-	-	-
Charred Bone	2	8.20	-	-	24	4.40
Charred/Calcined Bone	-	-	-	-	4	4.70
Burned Tooth Enamel	31	21.90	2	35.20	-	-
Unburned Tooth Enamel	57	43.00	71	603.3	-	-
Unburned Shell	34	0.15	5	2.30	-	-
Total	541	1601.86	267	3137.37	4327	2471.56

Table 12.2: Summary of Cultural Zone 7 faunal remains by taxa

Common Name	Taxon	NISP	MNI
Mammals			
Bison	<i>Bison bison</i>	188	2
Snowshoe Hare	<i>Lepus Americanus</i>	2	2
	<i>Lepus Sp.</i>	2	1
Richardson's Ground Squirrel	<i>Spermophilis richardsonii</i>	1	1
Miscellaneous			
Large Mammals		493	-
Medium Mammal		15	-
Small		45	-
Misc. Mammal		4,776	-
Misc. Osteocytes		20	-

12.3.1 Order Artiodactyla

Bison bison

Specimens identified: NISP = 188; see Table 12.3 for a summary (excludes cranial elements)

Discussion: A total of 188 element and element fragments have been identified as bison comprising 3.2% of the faunal assemblage. Approximately two adult specimens have been identified based on the presence of two axis vertebrae. A left deciduous maxillary P₄ was also present indicating that there is also at least one immature individual represented in this level. This specimen is heavily worn (Cat. #3009). Moderate burning is present on 1.4% of these elements. Three rib fragments exhibit evidence of mineralization and have been culturally modified.

Table 12.3: Summary of *Bison bison* elements from Cultural Zone 7

	NISP	MNI	MNE	MAU	%MAU
Axial					
Rib	15	1	1	0.04	0.02
Axis	2	2	2	2	1.00
Caudal	1	1	1	0.2	0.10
Cervical	2	2	2	0.14	0.07
Lumbar	1	1	1	0.2	0.10
Forelimb					
Humerus	2	1	1	0.5	0.25
Ulnar Carpal	1	1	1	0.5	0.25
Cuneiform	1	1	1	0.5	0.25
Trapezoid magnum	1	1	1	0.5	0.25
Scapula	1	1	1	0.5	0.25
Hindlimb					
Patella	1	1	1	0.5	0.25
Fibular tarsal	1	1	1	0.5	0.25
Astragalus	1	1	1	0.5	0.25
Fused Central and Fourth tarsal	1	1	1	0.5	0.25
Fused Second and Third tarsal	2	1	1	0.5	0.25
Tibia	1	1	1	0.5	0.25
Calcaneus	1	1	1	0.5	0.25
Os Coxae	1	1	1	0.5	0.25
Other Elements					
Second Phalanx	1	1	1	0.25	0.13
Distal Sesamoid	1	1	1	0.25	0.13
Misc. Phalanx	1	-	-	-	-
Misc. Carpal	5	-	-	-	-
Misc. Tarsal	1	-	-	-	-
Misc. Sesamoid	1	-	-	-	-
Misc. L.Bone	1	-	-	-	-

12.3.2 Order Lagomorpha

Lepus americanus

Specimens identified: NISP = 2; 1 mandible fragment (Cat. #1848), 1 Left mandible fragment with P¹, P², M¹, M² (Cat. #1849)

Discussions: The two specimens recovered from this level represent two adult Snowshoe hares. The mandible fragment (Cat. #1848) is relatively worn compared to the other specimen. The specimens recovered exhibit no weathering and display no signs of cultural modification. The presence of a *Lepus* specimen this early in the cultural sequence is of particular interest.

Lepus sp.

Specimens identified: NISP = 1; 1 Right mandible fragment with incisor and molar (Cat. #2043)

Discussions: This specimen represents an adult individual. This specimen does not display any weathering, burning or cultural modifications.

12.3.3 Order Sciuridae

Spermophilis richardsonii

Specimens identified: NISP = 1; Complete mandible with right incisor and M₂ and left M₃ (Cat. #1839)

Discussions: This specimen represents one adult Richardson's ground squirrel. There does not appear to be any signs of weathering, burning or cultural modification on this specimen. For these reasons it is believed that this specimen is intrusive.

Cricetidae sp.

Specimens identified: NISP = 1; Partial cranium (Cat. #1850)

Discussions: This cranium represents an immature cricetid rodent. There are no indications of weathering, burning or cultural modifications. It is probable that this specimen is intrusive.

12.3.4 Miscellaneous Specimens

Summary: NISP = 3,699; See Table 12.4

Discussion: A total of 4,949 elements and element fragments could not be identified. The majority of the elements recovered could only be classified as rib, long bone, enamel and indeterminate for all class sizes. A total of 68.4% of the miscellaneous specimens are burned and 20.4% are slightly calcined and charred. One unidentified mammal bone displays evidence of mineralization and is slightly polished. Cultural modification markers in the form of butchering and cut marks are present on twenty-three fragments, twenty-one of which are burned.

Table 12.4: Summary of Cultural Zone 7 miscellaneous specimens by size category

Size Class	NISP	Elements Represented
Large Mammals	493	Ribs, Long Bones, Enamel fragments and Carpal fragments
Medium Mammal	15	Rib and Enamel fragments
Small Mammal	45	Rib, Enamel, Long bone fragments
Misc. Mammal	4776	Rib and Enamel fragments
Misc. Osteocytes	20	Branchial Rays

12.4 Discussion

The cultural assemblage recovered in zone 7 indicates that this area was utilized as a campsite for daily activities and later bison processing. Keeping with the theme of the previous zones, one can presume that the entire area was predominantly sought after as a campsite due to its location to a primary and secondary water source, i.e. the South Saskatchewan River and the west running spring. The location of this site on a sand dune would have also sustained a unique source of resources which would have supplemented those already located in the grassland ecosystem.

Four lanceolate bases were recovered in this zone and have been assigned to the Plains Mountain and Lusk complexes. A conventional date of 7880 +/- 40 BP was obtained from a distal bison humerus (Cat. #2039). This date corroborates with that of the Early Period. The recovery of these four lanceolate bases shown in Fig 12.2, validated by a radiocarbon date,

speaks volumes to an area that is under developed in Saskatchewan archaeology. This is primarily attributed to the difficulty in locating deeply buried, well preserved *in situ* Early Period sites. The cultural assemblage recovered in cultural zone 7 appears to be in its original context, as such this zone is considered to be an Early Period occupation level.

Chapter 13

Resource Management Plan

13.1 Summary of Key Cultural Zones

The Camp Rayner site offers an exceptional opportunity to assess a long sequence of cultural periods across Northern Plains prehistory. While each cultural zone is unique, and important, the projectile points and associated assemblages recovered from cultural zones 6 and 7 are of considerable significance due to their rarity on the northern grasslands. Cultural zones 2 to 4 are also regarded as especially significant due to the recovery of Sandy Creek and other Late Middle Period projectile points. The following section will provide a more detailed summary of the significance of these cultural zones in relation to the archaeology of the Northern Plains.

13.1.1 Terminal/Late Paleoindian

Until recently, the identification of Terminal/Late Paleoindian points has been limited to surface discoveries in Saskatchewan (Walker 1999). The identification of *in situ* Terminal/Late Paleoindian lanceolate point bases with a corresponding radiocarbon date of 7880 +/- BP is an important aspect of the Camp Rayner lithic assemblage. Three of these point bases represent the Lusk complex while one is identified as Lovell Constricted. The recovery of four lanceolate bases and a variety of worked tools further support the idea that these groups led highly mobile lifestyles with a subsistence economy focused on bison. The lithic tool assemblage is predominantly composed of local materials with the exception of the presence of KRF. If future archaeological investigations at this site would take place, a proposal to expand the 2x2m excavated block in which the lanceolate bases were recovered should be considered as it may reveal further information regarding the Terminal/Late Paleoindian period.

13.1.2 Early Middle Period: Mummy Cave Series

The Early Middle period is a time of considerable importance in the archaeological record due to the dynamic climatic conditions of the time. Paleoenvironmental indicators suggest that the environment was distinguished by an increase in temperature and aridity, known as the Mid-Holocene Climatic Optimum or Hypsithermal. It was originally thought that the grasslands

would have been abandoned during this time but this does not seem to have been the case. Rather, this climatic shift is believed to be the reason for the expansion and diversity in subsistence and subsistence practices as well as an increase in population.

There are few well preserved Early Middle Period sites in Saskatchewan. This is a poorly understood era in the Plains due to the difficulty of locating such sites and the problem of distinguishing dart tips from later side-notched points (Walker 1999:25). In these cases, projectile points were recovered in eroded contexts or as surface discoveries. A range of projectile points have been identified as the Mummy Cave series which includes many point styles including; Mount Albion corner-notched, Gowen side-Notched, Bitterroot side-notched, Hawken side-notched and Blackwater side-notch (Walker 1992). The two projectile points identified as Mummy Cave at this site were recovered in Unit 47, Level 9, at a depth of 82cm and radiocarbon analysis has yielded a calibrated age of 6850 +/-40 BP. A first point is comparable to a Bitterroot side-notch while the other is identified as a Gowen side-notch point. The distribution of the other three flaked tools is within the central portion of this site.

The Mummy Cave component at the Camp Rayner site corresponds to the two reoccurring themes that are apparent within all excavated sites during this period. The first is that all sites are recovered near water sources such as river banks, floodplains and springs (Walker 1992). The location of the Camp Rayner site is in close proximity to a primary water source (the South Saskatchewan River) and a secondary water source (west running spring). These locations support the natural refugees or oasis-like refugee hypothesis set forth by Hertz 1996, Sheehan 1995 and Yansa 2007. Both hypotheses propose that human response to the Hypsithermal would have been to move towards areas located near primary water sources rather than to completely abandon the grasslands. Areas near primary water sources would have been considered ideal as they would not have been drastically altered by the climatic conditions of this period. The second theme is that all excavated Mummy Cave sites are represented by sparse cultural assemblages (Walker 1992). The lithic tool assemblage at the Camp Rayner site is composed solely of local materials and is relatively sparse. This idea may simply be attributed to the difficult in locating deeply buried sites and the misidentification of projectile points.

13.1.3 Late Middle Precontact Period

After reviewing the lithic tool assemblage of cultural zone 2 through 4 it is important to consider its relationship to the Late Middle Precontact and Late Precontact cultures on the Northern Plains. The Late Middle Precontact period was a time of increased cultural complexity and technological variation in which a number of projectile point styles are observed, including Pelican Lake, Unnamed side-notch, and Sandy Creek. At the Camp Rayner site, numerous Sandy Creek and other contemporary projectile points have been identified in cultural zone 2 through 4. Of particular importance is the identification of Sandy Creek components as they are poorly represented in the archaeological record.

The origin of Sandy Creek is still unclear. Due to its association with Pelican Lake components, archaeologists have argued that Sandy Creek is contemporaneous with Pelican Lake and may simply reflect a stylistic variation of the series (Reeves 1983, Vickers 1986), or a separate complex (Dyck 1983, Wettlaufer 1995). More recently, it has been proposed that Sandy Creek points resemble earlier Oxbow points and may in fact represent the transitional point from Oxbow to Besant and, therefore defined as early Besant (Cloutier 2004, Dyck and Morlan 1995). Despite the fact that Sandy Creek points chronologically appear much later than Oxbow on the Plains, points have been misidentified as Oxbow. Identification of this point style is currently dependent on its association with other contemporaneous styles or radiocarbon dating.

Unfortunately, at the Camp Rayner site, the identification of these components is based solely on their location in relation to the Pelican Lake and Prairie side-notch zones. A reconstruction of the chronological sequence has revealed a compression of cultural zones 1 through 4 with no natural separation between levels. This cluster of occupational levels has hindered our ability to select high-quality samples that are in direct association with the Sandy Creek components. Despite this constraint, the identification of Sandy Creek points at the Camp Rayner site not only adds to the repertoire of similar assemblages on the Northern Plains, but provides further evidence which supports the idea that numerous traditions with distinct weaponry but similar lifestyles were occupying the Northern Plains during this time. Further analysis of the Sandy Creek projectile points recovered at Camp Rayner is part of an ongoing M.A thesis project by Brent Kevinsen.

13.2 Site Significance

The excavated assemblage suggests the Camp Rayner site was an ideal locale for continuous human occupation spanning the Terminal/Late-Paleoindian to Late Precontact period. More importantly, as previously discussed, this site has revealed an *in situ* Terminal/Late-Paleoindian as well as an *in situ* Mummy Cave component. Surface collections along the beach area adjacent to the excavated units include archaeological materials that indicate cultural materials which date even earlier, back to 9,000 years ago.

In addition to the archaeological material recovered at this precontact site, a human burial was partially exposed in 1987. Preliminary identifications suggest that this burial is of considerable significance as the flexed positioning of the lower limbs resembles Archaic or Middle Period internments (Walker in Belsham 2011:10). A more detailed discussion of the management of this burial will be discussed in section 13.7

Although this research focused on the precontact material recovered at this site, it is important to note the presence of an original poplar log cabin built in 1903 by Jack Hitchcock. Historic artifacts have been collected and excavated at this site and a considerable amount of Hitchcock's personal effects are on display in The David Greene Chapel and the original cabin. These structures are adjacent to excavated units 50, 51 and units 39, 40 respectively.

The continuous investigation and monitoring of this archaeological site, in addition to the preservation of these historic materials, is the key to maintaining the historical, scientific and public significance of these resources. The Camp Rayner site is one of the most significant sites of this nature in Saskatchewan. The following sections will provide a detailed site evaluation and impact assessment of the Camp Rayner site.

13.3 Research Limitations

The primary goal of this thesis was to reconstruct the cultural chronology of the Camp Rayner site through an analysis of diagnostic artifacts. This methodology was selected in response to the constraints and limitations outlined in Chapter 4. Prior to a discussion regarding site preservation and land use, these limitations will be further highlighted so as to set up a premise for a resource management plan.

13.3.1 Excavation Methodology

While the 1987-1995 field school excavations at the Camp Rayner site put into practice complex archaeological methods and research objectives, excavators were primarily focused on carrying out a salvage/rescue project. Many factors were considered in this decision including time constraints, budgets, the complex stratigraphy, and the size of the site. The main objective, as outlined in the Camp Rayner Interim Reports, was to determine the areal extent of the extant portion of the site by a program of placing 1m² excavation units and auger test holes in a variety of microtopographic settings across the site area (Jones and McCann 1996:4). These units were often opened as 1x2m² units; however, no trenching excavation techniques were employed. Each unit was also excavated using arbitrary levels as opposed to using natural stratigraphic levels because of the difficulty in determining equivalent stratigraphic units from one excavation area to the next (Jones and McCann 1996:5).

The excavation of 1x1m² units in varied microtopographic settings have delayed analysis and interpretation of the cultural artifacts collected. By exposing a dispersed distribution of artifacts, it has become problematic to interpret zones of cultural activities and determine their relationship to other cultural components. This dispersal has also affected the ability to reconstruct a stratigraphic profile because of this varying topographic setting. As such, the difficulty in analyzing both the stratigraphic profile and artifact distribution are considered to be the main limitations encountered in this research.

13.3.2 Artifact distribution and Features

No recorded hearths or features were discussed in the Camp Rayner Interim reports. Some samples of charcoal were located in the assemblage indicating the presence of four hearths. In a cross reference to the soil profiles only three of the four hearths are indicated. There are also some discrepancies in recorded depths.

While most projectile points were recorded by exact provenience, the majority of the lithic assemblage was recorded by a depth range of 5 or 10cm. It stands to reason that these were in fact screen finds. Combined with the lack of natural soil distinction between cultural zones, concentrations of debitage and charcoal could not be discussed as a part of this research. Due to this limitation, artifact distribution was only discussed in terms of worked tools in relation to the

plan view of the entire site as well as their cultural affiliation in association with diagnostic projectile point

13.3.3 Stratigraphy

As discussed in Chapter 4, section 4.3.1, analysis of soil stratigraphy was limited to an evaluation of projectile point depth and areas of soil disturbances. Across the site, the majority of the units revealed a highly compressed soil profile with little to no reference to cultural horizons or paleosols. There was also a lack of consistency in recorded soil profiles; some records contained varying legends while others contained little to no soil information. For example, see Figure 13.1. As such, a separation of the buried cultural zones could not be constructed through a reconstruction of the stratigraphic profiles. Rather, as established in the analysis portion of this thesis, the sequence of occupation levels was reconstructed using projectile points as cultural markers. Separation of the buried occupations was determined by an arbitrary division of cultural horizons in association with point depth.

The inability to provide an overall stratigraphic profile for this site has limited the scope of this research. The lack of distinct changes in sediments or positive paleosols, suggests continual deposition. All cultural zones were identified based on a separation of stylistic variation of projectile points. As such, cultural zones 1 through 4 demonstrate no natural or cultural separations between lithic tool kits. Careful consideration was taken when determining the arbitrary parameters for these tool kits in relation to their affiliated cultural zone.

If any future archaeological research were to take place regarding the Camp Rayner site, a reconstruction of the stratigraphic profile needs to take priority. Unfortunately, this reconstruction will only be feasible if controlled block excavations are opened at this site. A proposal for future excavations and/or monitoring of the excavated units located in the marsh will be discussed in section 13.6.

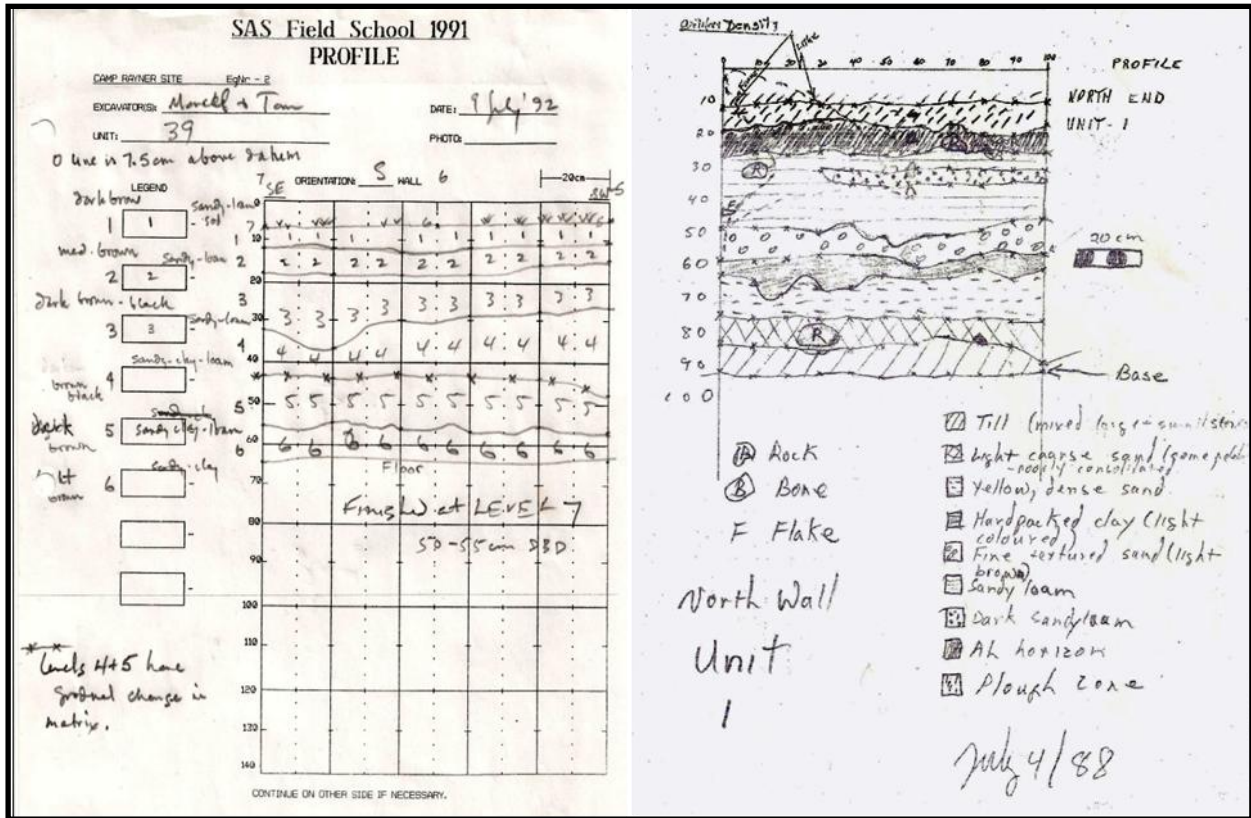


Figure 13.1: Examples of Camp Rayner Stratigraphic Profiles

13.4 Site Evaluation

Numerous factors are considered when determining the significance of archaeological resources. Typically, site significance is determined by comparison with other sites in the same region. In Saskatchewan, so few sites have been adequately studied, the data base is generally too small to be useful in this regard (Walker 1983:130). The treatment of the Camp Rayner site over the last twenty years, and the lack of a thorough archaeological assessment of the area and cultural assemblages, indicate that a site evaluation of this area should concentrate be on the presence and significance of cultural materials rather than by site comparison. A version of the Moratto and Kelly (1978) strategy for site assessment will be proposed. This will include an evaluation of the historical, scientific, ethnic and public significance of the Camp Rayner site.

13.4.1 Historical Significance

A poplar log cabin built in 1903 is located at the Camp Rayner site. This cabin belonged to Jack Hitchcock and is believed to be one of the few standing structures that were original built by the homesteaders from that era. Preservation of some of the personal effects and tools used by Jack Hitchcock has been undertaken and are on display. Excavations at this site have also revealed a small historic assemblage. Preliminary analysis of these artifacts suggests that they would date to the time that Hitchcock occupied the area.

13.4.2 Scientific Significance

The Camp Rayner site contains a vital and integral part of the archaeological record on the Northern Plains. As previously outlined, cultural material at this site represents the last 9,000 years of human occupation, with *in situ* deposits spanning approximately 8,000 years. This site serves as an educational resource in terms of future academic research projects as well as by adding to the repertoire of known precontact sites on the Northern Plains. The information gathered from this research as well as future research will not only provide further evidence supporting human occupation of the Plains, but may help to clarify some of the grey areas in the literature as discussed in section 13.1.

Through a detailed assessment of the stratigraphy of the area, this site also offers the potential to reconstruct the assemblage from a geological and paleoenvironmental context. To date, few reliable samples were recovered from the excavated portion of the Camp Rayner site, and analysis could only be completed in terms of standard AMS radiocarbon dating. Due to the lack of natural separation between cultural zones 1 to 4, only the deeper levels could be assessed. Samples supplied were from both bone collagen and charcoal from cultural zones 6 and 7 and were submitted to Beta Analytic Inc. for analysis. A distal bison humerus from cultural zone 7 provided a measured age 7760 +/-40 BP of and a conventional age of 7880 +/-40. A charcoal sample from zone 6 provided a measured age 6810 +/-40 BP of and a conventional age of 6850 +/-40 BP. The success of this analysis and the reliable chronological sequence of this site leaves one optimistic about the potential of what could come from evaluating and exploring the relationship between the Late Middle and Late Precontact periods through a reconstruction of the stratigraphy of the area.

13.4.3 Ethnic Significance

Ethnic significance is defined in terms of sites which represent the religious, mythological or cultural values of a particular ethnic group (Walker 1983:131). The preliminary designation of the human burial at the Camp Rayner site would be of particular concern to the Saskatchewan First Nations who consider areas of this nature sacred. Consultation with the local First Nation band would be required if and when any further investigation of this burial would take place.

13.4.4 Public Significance

Dissemination, by means of presentations, of the Camp Rayner material has taken place at the Saskatchewan Archaeological Society (SAS) conference and Annual General Meeting (AGM) 2010, the University of Saskatchewan undergraduate student union (APALA) conference 2011 and the SAS conference and AGM 2012. This has raised support and concern from the community who expressed the need to further protect and preserve this site. Replicas of a few of the Camp Rayner projectile points have also been included in various educational programs administered by the SAS. There is also the potential to develop a cultural exhibit displaying the Camp Rayner material through the Royal Saskatchewan Museum, as this is where the collection will be housed.

13.5 Impact Assessment

The impact of both natural and future activities at this site was assessed as part of this research. The first assessment included locating and evaluating natural disturbances such as shoreline erosion. The location of the Camp Rayner site directly adjacent to a large reservoir indicates that impacts of this nature will be severe. Large reservoirs are subject to extensive water level fluctuations which effectively increase the beach area exposed to the destructive action of nearshore waves and currents. As such, heritage sites become increasingly susceptible to various secondary erosional processes such as ice scouring, surface runoff and wind deflation (Germann 1989:25). The second assessment included an evaluation of the region for agricultural, recreational and industrial use. Areas assessed as desirable may result in an increase in land use and development which may adversely affect this non-renewable resource.

13.5.1 Shoreline erosion

To date, the most serious impact on the Camp Rayner site has been shoreline erosion. This has been a major concern especially for the excavated areas located on the cusp of the marsh and beach clearing. Reservoir levels have fluctuated considerably over the last 10 to 15 years and several meters of shoreline have been eroded. Excavated units located at this shoreline division have been or are in danger of being destroyed and, as such, archaeological material is continuously being exposed on the southern periphery of this site. Moreover, this erosion continues to alter our ability to reconstruct the archaeological, environmental and geological history of this site through scientific evaluations of both natural and cultural stratigraphy.

13.5.1.1 Recommendations for Stabilization of the Shoreline

At Camp Rayner the Lake Diefenbaker shoreline is actively eroding between 1 and 4 meters per year and while this rate is expected to decrease in the future, the process of beach formation is still very active (Germann 1989: 25) (Figure 13.2 and 13.3). Until sustained monitoring of the shoreline or a water management program is put in place to stabilize the shoreline, the effects of the reservoir on the archaeological, geological and historical record of this site will remain unknown however, there almost certainly will be adverse effects on the historic, scientific, ethnic and public significance of this area.



Figure 13.2a: Water Level Fluctuation and Shoreline Erosion 1987 (Camp Rayner Photo Record)



Figure 13.2b: Water Level Fluctuation and Shoreline Erosion 1995 (Camp Rayner Photo Record)



Figure 13.3: Shoreline Erosion 1990 (Camp Rayner Photo Record)

13.5.2 Land Development

In 2008, a Notice of Intention for proposed changes in the designation of the leases involving land located on Lake Diefenbaker was placed in the Saskatoon Star Phoenix by the Minister in charge of the Saskatchewan Watershed Authority. The re-designation of these leases would be from Institutional Recreational to Residential Recreational, implying that lease holders/owners would have the authority to subdivide the area. According to the Heritage

Conservation Branch, testing along the property line did not reveal any artifacts and the stratigraphy has revealed that the area proposed for sale was swampy in the past as opposed the sandy deposits encountered during excavations in the Camp Rayner site (Nathan Friesen; Per.com. with the executive director of the SAS). It was determined that this area would not have been widely occupied in the past and that it was unlikely that the extensive and significant deposits recovered at the Camp Rayner site would be present on the adjacent property.

While the proposal states that the land sale would not directly affect the Camp Rayner area and amendments to the lease would not adversely affect other uses in adjacent areas, protective measures should still be applied due to an increase in pedestrian traffic in the area. Tourism promotions such as Hitchcock's Hideaway are meant to attract individuals to the Camp Rayner area to visit Hitchcock's cabin and the display of historic artifacts. Land development for residential use will only further increase human presence in the area. While development can be seen as necessary for the infrastructure, it can have an adverse affect on the maintenance of these non-renewable natural and cultural resources. Shoreline erosion is exposing artifacts at an alarming rate and pedestrian traffic along the beach and adjacent areas will only lead to increased unlicensed artifact collecting.

13.5.2.1 Recommendations for Site Preservation

To date, the Camp Rayner site is designated as a Site of Special Nature under the *Saskatchewan Heritage Property Act*. This designation assures that "Notwithstanding the other provisions of the [*Saskatchewan Heritage Property Act*], no person shall destroy, desecrate or deface any pictograph, petroglyph, human skeletal material, burial object, burial place or mound, boulder effigy or medicine wheel" and that "No person shall remove, excavate or alter these features "except as authorized by a subsisting permit from the minister" (Heritage Property Act 1980: Clause 65). As it stands, it is recommended that a Heritage Resource Impact Assessment and a detailed mitigation be conducted involving a systematic testing program of the site and surrounding area. Archaeological investigations of the Camp Rayner site provided only a sample of the remains, mainly the area near the beach and marsh clearing and a few tens of meters inland. While this sampled portion has exposed a substantial cultural assemblage it has not provided a clear stratigraphic and areal overview of the excavated area.

It is also recommended that the Province declare the Camp Rayner site as Provincial Heritage Property, also a provision of the *Saskatchewan Heritage Property Act*. With this designation; “Notwithstanding any other Act, no person shall destroy, alter, restore, repair, disturb, transport, add to, change or move, in whole or in part, real property designated pursuant to this Part or remove any fixtures from any such property (Heritage Property Act 1980: clause 44). This designation would further ensure protection and maintenance of the natural and human heritage resources of the Camp Rayner site.

13.5.3 Recreational site/Unlicensed artifact collection

The research presented in the thesis dealt with the excavated portion of the Camp Rayner site. While the excavated assemblage is substantial in terms of diagnostic flaked tools and sheer artifact numbers, there are also an overwhelming number of artifacts recovered through surface discoveries and located in personal collections. The recovered beach artifacts have revealed some diagnostic artifacts dating to 9,000 years ago; however, not all surface discoveries are reported to professional archaeologists. The use of the Camp Rayner area and adjacent areas as a recreational site has had adverse affects on the preservation of these artifacts through unlicensed artifact collecting.

13.6 Further Research at the Camp Rayner Site

The Camp Rayner site is significant in regional and national prehistory. Sites of this magnitude are rare and poorly understood. Shoreline erosion and land development continue to impact this site and, therefore, it is recommended that the following steps are taken in order to ensure the proper recovery and dissemination of the archaeological and scientific data. Table 13.1 provides a list of areas at the Camp Rayner site that require further research. Each site area is accompanied by a proposal for immediate research and future research. Figure 13.2 is the Camp Rayner site map which highlights these specific areas.

TABLE 13.1: Outline of further research at the Camp Rayner site

<u>Site Area</u>	<u>Immediate Requirement</u>	<u>Future Research</u>
Area A – Burial	Forensic investigation in compliance with the <i>Heritage Property Act</i> Potential removal and reburial	Monitoring of the area. Subsequent testing to determine the presence of other human burials
Area B - Terminal/Late-Paleoindian	Expanded test excavations adjacent to Units 27&28, 5&6 to recover diagnostic artifacts, radiocarbon dates and a stratigraphic profile of the area	Periodic artifact collection and monitoring of the area
Area C –Worked Tool Concentration/Mummy Cave component	Expanded test excavations to recover diagnostic artifacts, radiocarbon dates and a stratigraphic profile of the area	Periodic artifact collection and monitoring of the area
Area D -Ceramic Concentration Affected by Erosion	Periodic artifact collection and monitoring of the area.	Periodic artifact collection and monitoring of the area
Area E	Systematic testing to assess the spatial extent of this site	Expanded test excavations to recover diagnostic artifacts, radiocarbon dates and a stratigraphic profile of the area
Area F - Shoreline Affected by Erosion	Stabilization of the shoreline	Periodic artifact collection and monitoring of the area

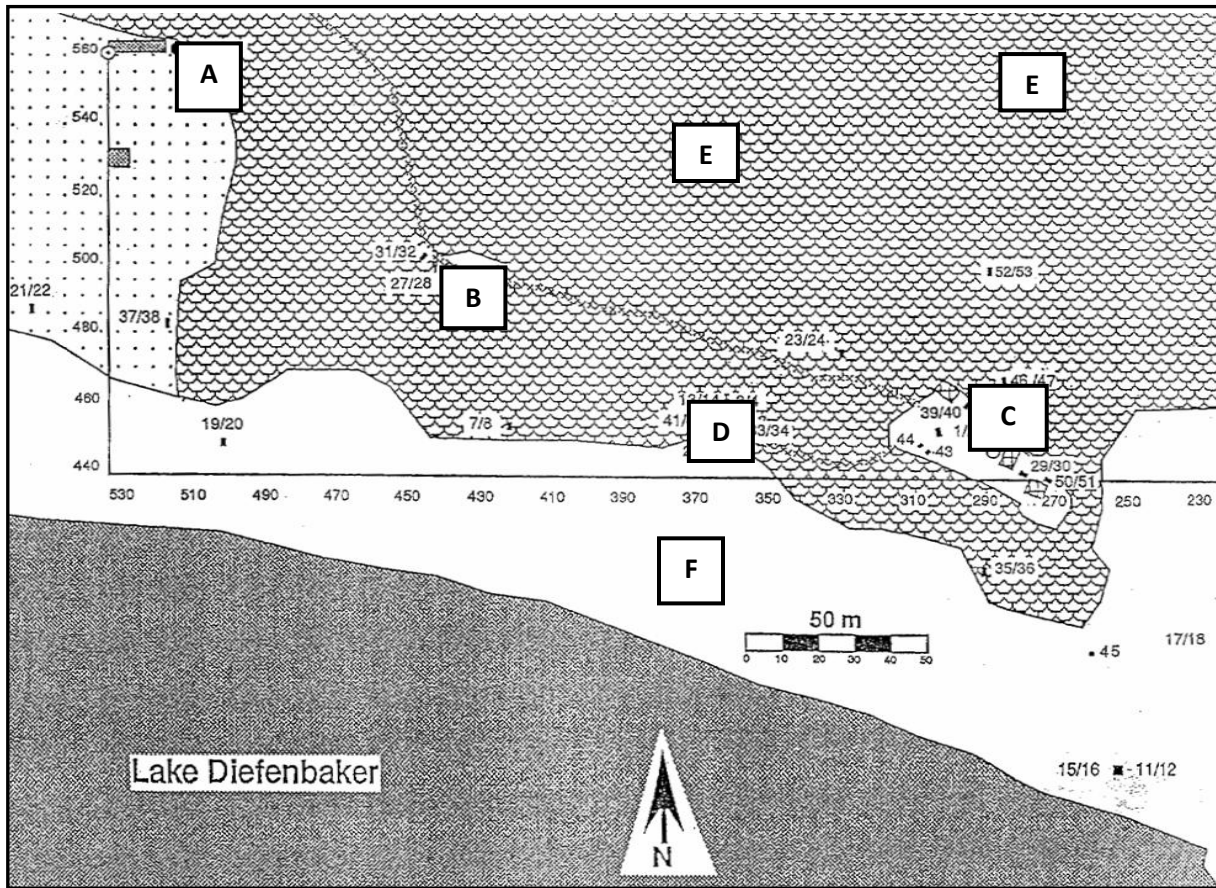


Figure 13.4: Location of Further Research Areas

13.7 Archaeological Burial Management

13.7.1 Burial Assessment

During the first field season at the Camp Rayner site, a human burial was partially exposed. This burial was recovered in the far most northwestern corner of the excavated site in Unit 9 Level 10 at a depth of 130cm. According to the interim reports there were no diagnostic artifacts or faunal remains uncovered above the burial or in direct association with these remains. Two hearths were recorded in a fine sand layer in Unit 9. The first hearth was located between 10 and 35cm while the second hearth was discovered between 50 and 70cm (Fig 13.5). The burial was left intact and closed after the 1987 season.

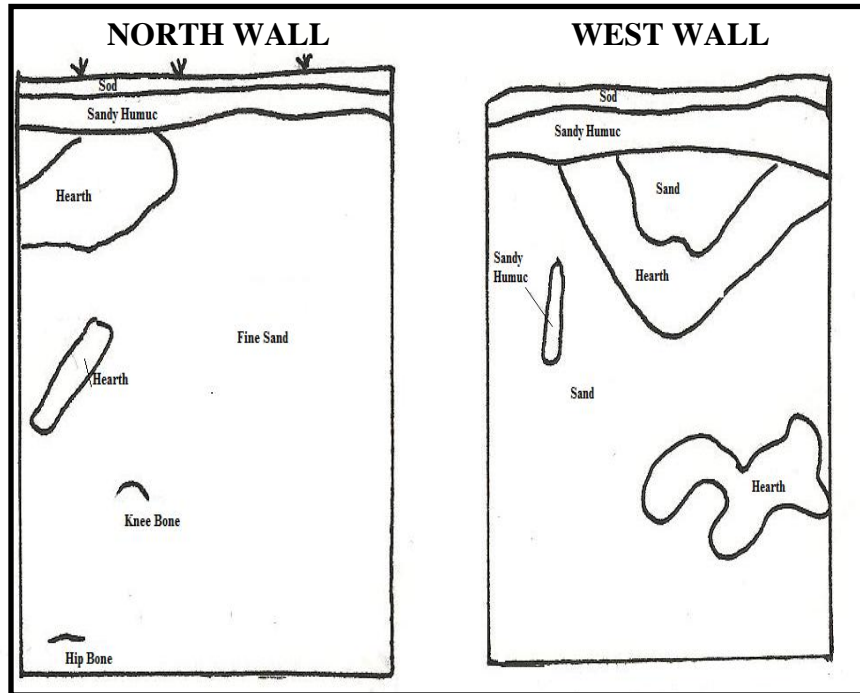


Figure 13.5: Stratigraphic Profile Unit 9 North and West Walls

Initial excavation of the human burial had revealed both legs and the feet (Fig 13.6). Once it was determined that these were in fact human bones, excavations ceased and the area was mapped and photographed. To date, no thorough investigations of this burial have taken place and it is reputed that the lack of reporting since 1987 is in contravention with the archaeological burial management policy outlined in the *Heritage Property Act*.

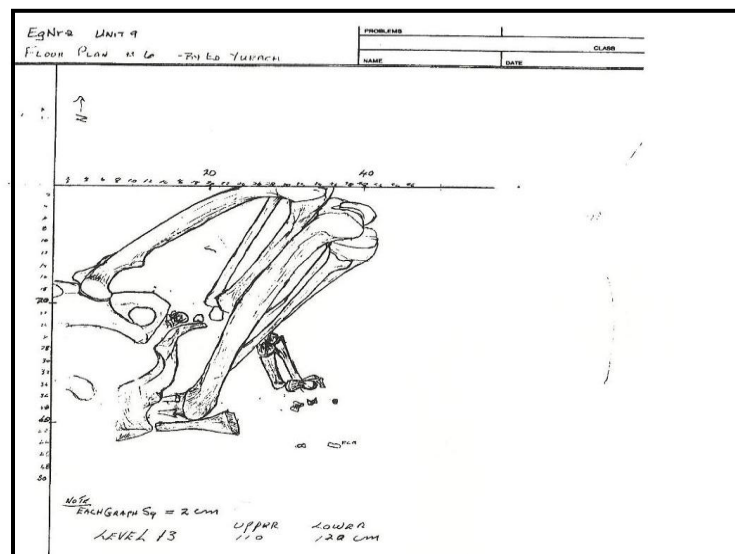


Figure 13.6: Floor Plan of Partially Exposed Human Remains

In 2011, an addendum to the Final Report *Summary of the Saskatchewan Archaeological Society Field Schools Held Between 1987 and 1997 at the Camp Rayner Site (EgNr-2) on the Shores of Lake Diefenbaker* was submitted by Leanne Belsham to the Heritage Conservation Branch in Regina regarding the human burial. This addendum included a preliminary identification of the burial based on the photographs taken during the 1987 field school. Dr. Ernest Walker, a professor of archaeology at the University of Saskatchewan who specializes in the forensic identification of human remains, assessed these photographs and provided the following preliminary assessment (Walker in Belsham 2011:10-11):

“the burial is indeed flexed and is in a sitting position... This is not unusual for Archaic or Middle Period interments although [at this time age and cultural affiliation is unknown]. The left pubic symphysis is exposed and although the image is grainy, the symphyseal surface indicated the individual was at least a middle-aged adult. I cannot be more specific than that in this instance. In one image there appears to be the perimeter of a burial pit (darker coloration than the surrounding yellowish sand). In this instance, the head was on the west and the feet on the east given the placement of the north arrow in the photo. I would suggest we are dealing with a male because the linea aspera running down the posterior shaft of the left side femur is very robust indicating extensive musculature and by association likely a male. Finally, there seems to be some arthritic changes (osteophytic lipping and a porous appearance to the lateral aspects of both distal femora indicating some degenerative changes consistent with the age at death assessment.”



Figure 13.7: Photograph of Partially Exposed Human Remains 1987

13.7.2 Recommendations for Burial Management

The provincial archaeological inventory has designated the Camp Rayner site as a Site of Special Nature under the *Saskatchewan Heritage Act*. As such, it is recommended that this burial be protected by *The Heritage Property Act*, S.S. 1979-80, C.h-2.2 S.64, 65, 66, 67, and removed and reburied in accordance with the Archaeological Burial Management Policy. This policy, as outlined by the Saskatchewan Ministry of Tourism Parks Culture and Sport (TPCS), will provide for the efficient and respectful handling of exposed human skeletal material not found in a recognized cemetery or otherwise identified. Archaeological burials are further defined as (Archaeological Burial Management Policy 2003:1):

Burials, burial places, burial mounds and skeletal material (with or without burial objects)...that are usually unmarked and of unknown origin and cultural affiliation. Most will predate A.D. 1900, although exceptions may arise (e.g. unmarked, post-1990 homestead burials). Criteria for distinguishing archaeological burials may include, but are not limited to, the presence of skeletal material without soft tissue or preserved clothing, the presence of stone, bone, ceramic or metal artifacts, and/or association with non-contemporary features (e.g. large earthen mounds).

Archaeological burial management has four stages. The first is discovery and notification. The human remains at the Camp Rayner site is of prehistoric origin and therefore of archaeological interest. This determination was based on soil conditions, bone preservation and the presence of archaeological materials in the general area and lithic debitage in the corresponding units. At this time, the burial site has been left intact pending further assessment from proper authorities.

The second stage is the assessment of the burial. Because of the lack of preliminary analysis or diagnostic artifacts, the age and cultural affiliation of this burial has not been identified. Further extensive investigation, in consultation with local enforcement authorities and in accordance with standard recovery techniques, needs to be considered so as to perform a detailed identification and assessment of the remains (Archaeological Burial Management Policy 2003: 5).

Preservation and removal of the archaeological burial is the third stage. According to the archaeological burial management policy a number of factors must be considered when

determining whether archaeological burials should be removed, relocated or preserved. These include: the circumstances of the discovery, degree of disturbance or damage to the burial, the probability of future disturbance, completeness of the remains, long term preservation options, scientific significance, and the sensitivities and concerns of direct descendants (Archaeological Burial Management Policy 2003: 6).

The land adjacent to the Camp Rayner site is currently undergoing review for private sale. Land development is of concern not only because of its possible adverse effects on the burial but because of the array of archaeological materials recovered at this site. Site erosion, as outlined in section 13.3.2, is also a concern in terms of burial preservation. In accordance with the protocols and procedures outlined in stage three of the archaeological burial management plan, the Camp Rayner burial falls under the fourth category (Archaeological Burial Management Policy 2003: 6).

“If an archaeological burial is found largely disturbed and under imminent threat of further destruction from land development, natural erosion, or other cause, the burial shall be removed according to standard archaeological practices and procedures. The recovered skeletal remains and associated funerary objects shall undergo routine documentation and scientific examination (including artifact description, skeletal inventory, age, gender, and race determination, discrete trait recording, pathological examination, etc.). Burial removal, examination and disposition shall be carried out in consultation with the appropriate interest group, and with respect for all appropriate cultural and ceremonial protocols.”

The fourth and final stage deals with determining final disposition of the examined archaeological burial. In Saskatchewan, reburial of the remains is required and consideration will be determined based on the current legal regulations, the interests and claims of appropriate interest groups, and the scientific importance of the burial (Archaeological Burial Management Policy: 8). If no claims are made by appropriate interest groups, it stands that the identified burial be repatriated into the provincial burial ground. The provincial burial ground is located in the Warman, Saskatchewan district northeast of Saskatoon.

It is only a matter of time before the burial located at the Camp Rayner site is impacted by land development or site erosion. Not only this, but, the fact that this burial is located on a stabilized sand dune suggests that there may be other burials in the area. Sand dunes are commonly known as locales for ancient burials in this province. Appropriate investigation of the burial and surrounding area for the presence of other sites of this nature needs to be undertaken as soon as possible and a protective caveat should be registered against the property. This caveat

would protect the burial from future land disturbance through long term preservation and legal protection (Archaeological Burial Management Policy 2003: 7-8).

Chapter 14

Summary/Conclusions

14.1 Summary of Identified Northern Plains Precontact Cultures at the Camp Rayner site

This thesis was designed to reconstruct the cultural sequence of the Camp Rayner site by focusing on an analysis of the lithic tool assemblage. The Camp Rayner site is located in and adjacent to a poplar forest and broad lacustrine beach. This beach was created when construction of the Lake Diefenbaker reservoir cut into a postglacial sand dune area. This site is multi-component and spans over 8,000 years, but also contains surface finds that indicate occupation approximately 10,000 years ago. Analysis of the excavated cultural assemblage forms the basis of this thesis. The following objectives were addressed through this analysis:

- 1) To reconstruct the cultural sequence of the site through an analysis of both lithic and ceramic tools
- 2) To analyze and describe the worked tools present in each level
- 3) To determine the number and type of faunal taxa present in each associated level
- 4) To examine the cultural zones so as to provide an account of zones of cultural specialization
- 5) To initiate a proposal for future excavations and site preservation

Analysis of the *in situ* projectile points recovered at the Camp Rayner site (EgNr-2) has revealed a chronological sequence that extends from the Terminal/Late Paleoindian to the Late Precontact period. Each of these periods is represented by an arbitrary depth range with anomalies occurring in the cultural zones associated with the Late Middle and Late Precontact periods. It stands to reason that these anomalies are present due to geomorphic processes, soil compression and weakly developed soil profiles.

Due to the scattered nature of the excavated units and the lack of recorded hearths or other features, a discussion of artifact distribution is limited. A general trend noted is that artifact count, type and material variety increases in the later levels. This can be attributed to better preservation and an increase in population as well as a shift towards a broader subsistence pattern from the Middle Precontact period and onward.

With the exception of cultural zone 7, the majority of the lithic tool assemblage dominates the eastern portion of the site. These tools are also predominantly located in units that are within close proximity to a spring (Figure 14.1). Archaeologically, we would expect a higher concentration of artifacts in this general area because of its close proximity to both a primary (the South Saskatchewan River) and a secondary (the spring) water source. It stands to reason that this site was consistently utilized as a habitation or campsite. Seasonality is determined by an age estimate of faunal specimens. Due to a lack of identifying age markers, an approximate seasonal frame for occupation of this site could not be provided.

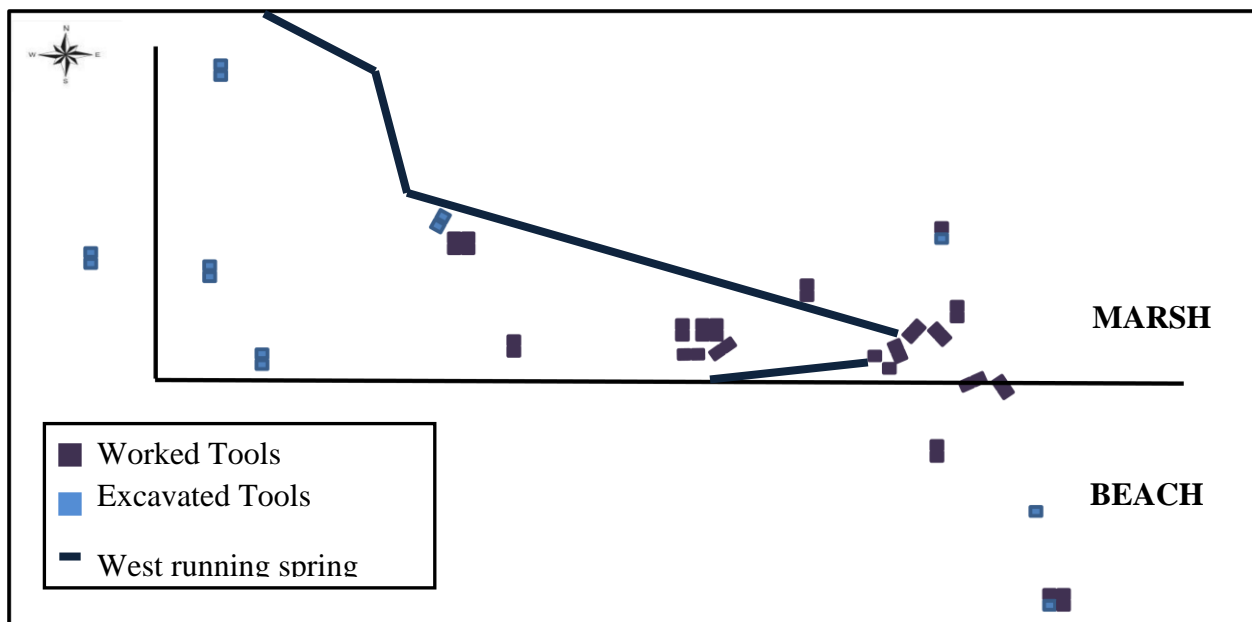


Figure 14.1: Concentration of Worked Tools at the Camp Rayner Site

14.1.1 Lithic Raw Material

The majority of the lithic material types recovered from the Camp Rayner site can be found throughout Saskatchewan and are referred to as local materials with the exception of Knife River Flint (Fig 14.2). Primary sources of KRF are located in North Dakota. The lithic tool assemblage at this site is predominantly composed of cherts and chalcedonies with an increase in the presence of quartzite and KRF by cultural zone 5.

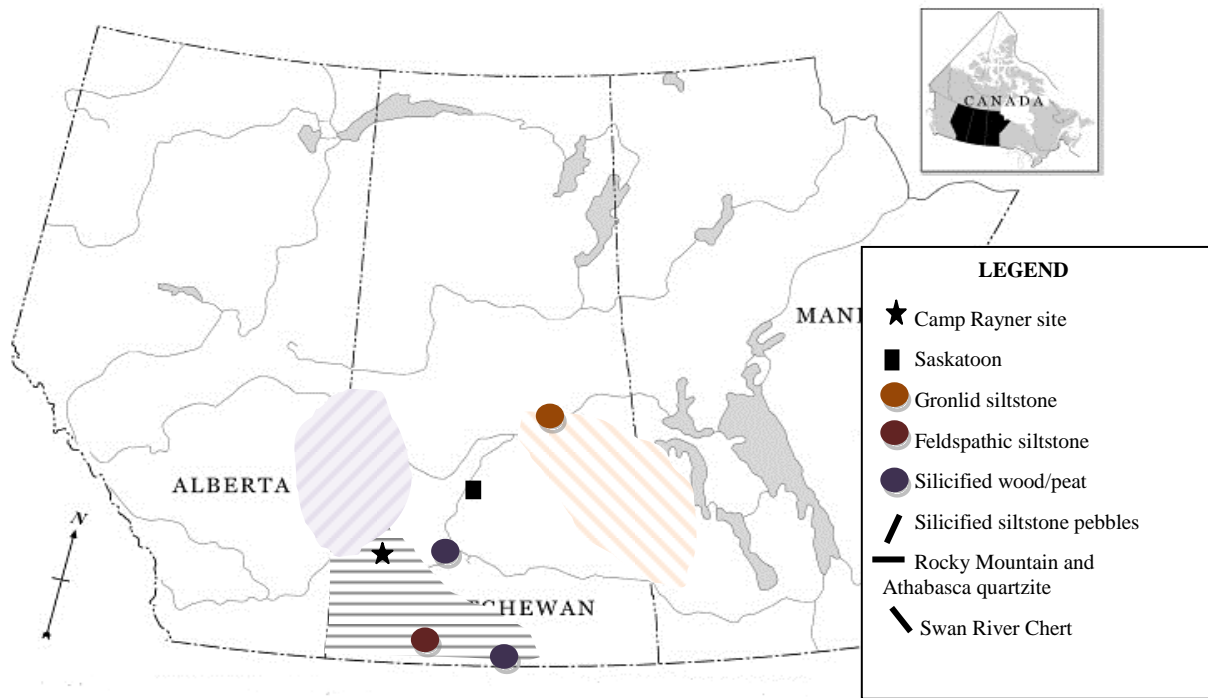


Figure 14.2: Distribution of Local Raw Material (adapted from Pletz 2011; Johnson 1998)

The local materials described in this section are secondary deposits which have been transported by natural action (Johnson 1998:28). Glacial deposits of SRC are located throughout east central Saskatchewan and west central Manitoba (Johnson 1998:32). Naturally deposited nodules and clasts of silicified peat have been observed south of Rockglen, on portions of the western shore of Lake Diefenbaker, and in gravel deposits in the vicinity of Macrorie (Johnson 1998:34). Silicified wood is also observed in this region and it was formed *in situ* in the Rockglen area some time after the deposition of the fluviially transported gravels of the Wood Mountain Formation (Johnson 1998:36). Gronlid siltstone has been discovered near Wynyard, Lake Lenore and south west of Nipawin. Fragments have been found in glacial drift and have been observed as far away as western Saskatchewan (Johnson 1998:38). Feldspathic siltstone is present in Tertiary gravels which originated in the Belt Formation in northern Montana and were fluviially transported into southwestern Saskatchewan (Johnson 1998:40). Primarily, this material is found in gravels located near the Ponteix district. Silicified siltstone pebbles are sparsely

represented in west-central Saskatchewan but are abundant on the shore of Grassy Island Lake, in eastern Alberta (Johnson 1998:37). Two Quartzites, Rocky Mountain and Athabasca, are also found in Saskatchewan and archaeologically are the most common lithic materials used in the making of coarser tools in southwestern Saskatchewan.

14.1.2 Faunal Assemblage

The recovery of unidentifiable fragments outweighs the identification of complete elements at this site. One also notes a higher percentage of unidentified burned bone as opposed to complete or partially complete elements. This is fairly typical in the Plains region as a result of processing techniques and geological processes. The recovery of bison elements remain consistent throughout the cultural zones which leads one to postulate that bison was consistently utilized as the primary food source.

By 8,000 years ago archaeological evidence suggests that hunting strategies shifted from a focus on bison population to small animals and plants which were added or incorporated into diets. Studies have shown that this was a combined result of worsening ecological conditions, human predation and a diminishing bison population (Grayson 2002; Martin 1984; Newby et al. 2005). At the Camp Rayner site, we should expect to find evidence supporting a subsistence strategy focused on smaller game and initial analysis of the miscellaneous specimen assemblage does support this hypothesis. A large percentage of the assemblage is classified as unidentified large, medium and small mammalian long bone fragments. Further taphonomic analysis of these remains may yield information regarding cultural versus scavenger modification and provide one with a more precise size class category.

Few specimens other than *Bison bison* were identified in this assemblage. *Lepus* (Rabbit) specimens are noted as early as the Late Terminal Paleoindian period whereas evidence of *Canis* (Dog, Wolf) specimens and *Rodentia* specimens are present by the Early Middle Precontact period. Specimens belonging to the Order Rodentia are intrusive to the archaeological record due to lack of cultural modifiers. *Avian* specimens have been identified in the Sod Level; however coloration and preservation of the bone suggest that these remains are of recent times.

14.2 Future Directions

An archaeological investigation at the Camp Rayner site has revealed a massive multi-occupational site. This site has the potential to yield even further information if a systematic archaeological survey of the site can be conducted. As it stands, this site represent one single site, however, with the added presence of the burial it is likely that there is more than one site in this area.

This study has highlighted five main areas which warrant further archaeological studies; the burial, the Terminal/Late-Paleoindian component, the worked tool concentration/Mummy Cave component, the ceramic concentration, the northern portion of the site (unexcavated area) and the shoreline. Future testing of these areas will provide us with a better understanding of artifact densities and concentrations, site depth and size, and the stratigraphy of the site. The latter would be of particular interest to help refine the relationship between the Late Middle to Late Precontact components at this site and elsewhere on the Northern Plains.

This site is of considerable importance and to date is one of the most significant sites in Saskatchewan. As such it is recommended that this site be declared as Provincial Heritage Property in addition to its designation as a Site of Special Nature. It is also recommended that a protective caveat be registered against the property to ensure the protection of the human burial in the short term.

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APPENDIX A
STANDARD AMS RADIOCARBON DATING

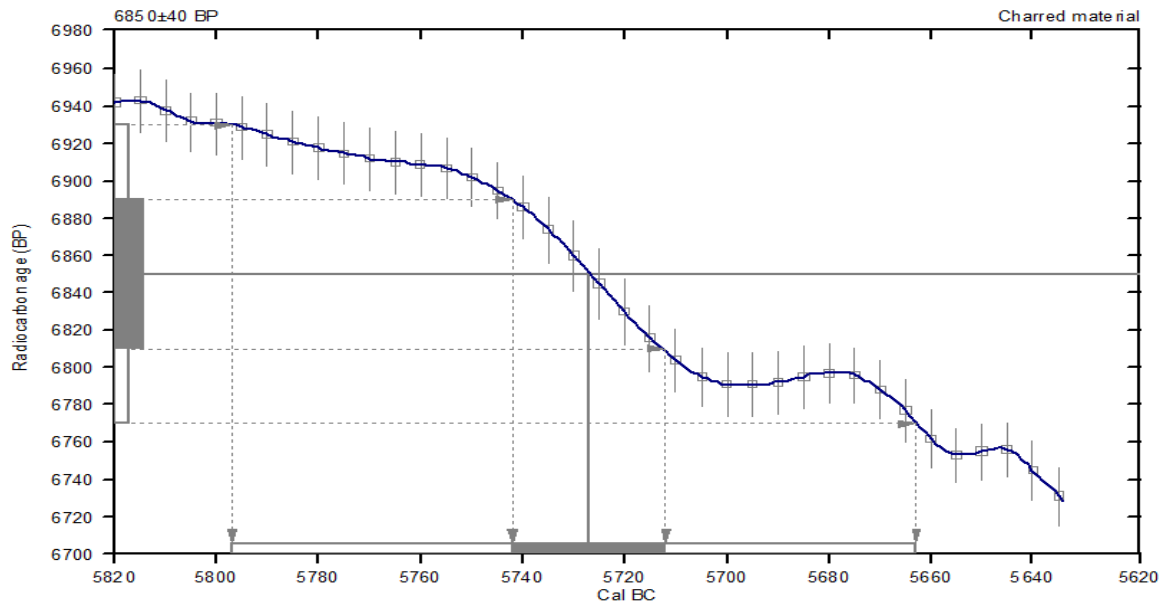
Cultural Zone 6

TABLE A.1

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.5;lab. mult=1)

Laboratory number: Beta-321402
Conventional radiocarbon age: 6850±40 BP
2 Sigma calibrated result: Cal BC 5800 to 5660 (Cal BP 7750 to 7610)
(95% probability)
Intercept data
Intercept of radiocarbon age
with calibration curve: Cal BC 5730 (Cal BP 7680)
1 Sigma calibrated result: Cal BC 5740 to 5710 (Cal BP 7690 to 7660)
(68% probability)



References:

Database used
INTCAL09

References to INTCAL09 database

Heaton, et.al., 2009, *Radiocarbon* 51(4): 1151-1164, Reimer, et.al., 2009, *Radiocarbon* 51(4): 1111-1150, Stuiver, et.al., 1993, *Radiocarbon* 35(1): 137-189, Oeschger, et.al., 1975, *Tellus* 27: 168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates
Talm a, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2): 317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

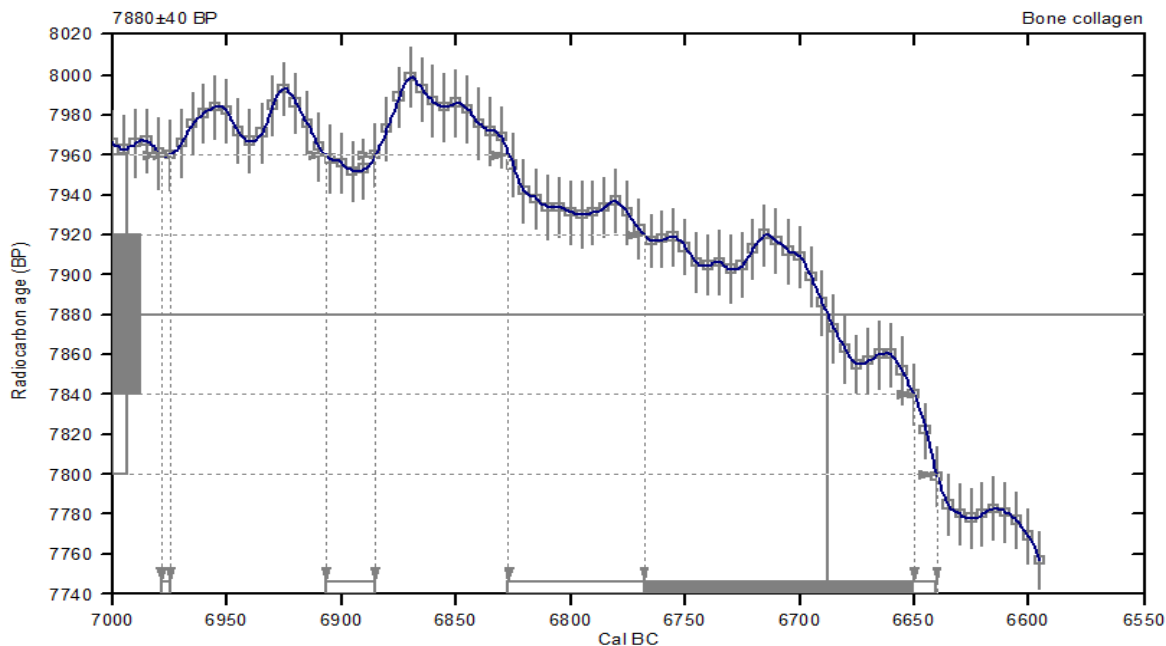
APPENDIX A
STANDARD AMS RADIOCARBON DATING

Cultural Zone 7

TABLE A.2
CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-17.9;lab. mult=1)

Laboratory number: Beta-321403
Conventional radiocarbon age: 7880±40 BP
2 Sigma calibrated results: Cal BC 6980 to 6980 (Cal BP 8930 to 8920) and
 (95% probability) Cal BC 6910 to 6880 (Cal BP 8860 to 8840) and
 Cal BC 6830 to 6640 (Cal BP 8780 to 8590)
 Intercept data
 Intercept of radiocarbon age
 with calibration curve: Cal BC 6690 (Cal BP 8640)
 1 Sigma calibrated result: Cal BC 6770 to 6650 (Cal BP 8720 to 8600)
 (68% probability)



References:

- Database used*
INTCAL09
- References to INTCAL09 database*
Heaton, et al., 2009, Radiocarbon 51(4): 1151-1164, Reimer, et al., 2009, Radiocarbon 51(4): 1111-1150, Stuiver, et al., 1993, Radiocarbon 35(1): 137-189, Oeschger, et al., 1975, Tellus 27: 168-192
- Mathematics used for calibration scenario*
A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2): 317-322

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APPENDIX B

Lithic Analysis of the Camp Rayner Site

Table B.1: Projectile Point Metric Analysis: Sod Level

Level	Cultural Zone	Cat. #	Max Length (mm)	Max Width (mm)	Max Thickness (mm)	Body Length (mm)	Max Body Width (mm)	Max Base Width (mm)	Internotch Width (mm)	Left Notch Depth (mm)	Left Notch Width (mm)	Distance Left Notch From Basal (mm)	Right Notch Depth (mm)	Right Notch Width (mm)	Distance Right Notch From Basal (mm)	Weight (g)
1	Sod	1416	21.96	17.2	4.94	16.1	17	14.2	9.42	5.67	3.61	6.53	5.29	4.83	6.72	1.81
3	Sod	4695	18.31	19.5	5.77	12	19.1	16.9	12.73	2.7	6.5	7.2	2.9	5.8	8.11	2.2
1	Sod	4377	13.2	15.1	3.5	-	-	15.1	-	-	-	-	3.8	1.2	6.8	0.6
1	Sod	4201	8.4	19.8	3.8	-	-	19.8	16.9	-	-	-	-	-	-	1.0

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Table B.2: Projectile Point Non Metric Analysis: Sod Level

Level	Cultural Zone	Cat. #	Completeness (Missing Portions)	Cultural Affiliation	Material	Longitudinal Cross Section	Transverse Cross Section	Symmetry	Basal Corner Shape	Basal Margin Modification	Basal Margin
1	sod	1416	tip	Late Middle Pelican Lake	SRC	asymmetric biconvex	biconvex	asymmetric	convex	use wear	straight
3	sod	4695	tip	Late Middle Pelican Lake	SRC	asymmetric biconvex	biconvex	asymmetric	convex	use wear	concave
1	sod	4377	tip/body	Late Precontact	silicified peat	asymmetric biconvex	biconvex	asymmetric	convex	retouch/use wear	convex
1	Sod	4210	tip/body	Late Middle/Late Precontact	silicified peat	asymmetric biconvex	biconvex	asymmetric	convex	thinning	convex

Table B.3: Flaked Tools Metric Analysis: Sod Level

Level	Cultural Zone	Cat. #	Weight (g)	Primary Working Edge (mm)	Secondary Working Edge (mm)	Maximum Length (mm)	Maximum Width (mm)	Maximum Thickness (mm)
2	Sod	2193	2.5	-	-	25.8	20.2	5.7
2	Sod	1435	1.2	11.2	11.9	15.5	14.8	4.5
2	Sod	4203	1.0	-	-	20.0	18.5	4.0
2	Sod	3227a	3.7	-	-	21.1	12.2	3.6
2	Sod	6211	0.9	15.5	-	15.5	13.0	2.9
2	Sod	4200	0.9	-	-	21.0	15.0	2.5
2	Sod	3384	0.2	14.1	9.8	12.3	10.0	0.1
2	Sod	4196	1.0	-	-	20.0	18.0	2.7
2	Sod	1720	6.5	40.2	-	41.1	19.0	10.9
2	Sod	5531	0.9	11.2	19.8	20.0	15.0	3.0
2	Sod	1436	33.4	-	-	61.0	34.0	13.0
2	Sod	387	2.2	24.0	31.1	41.7	25.7	10.7
2	Sod	44	5.8	20.2	-	23.0	23.0	6.5
2	Sod	46	1.6	9.8	17.1	18.0	11.0	6.5
2	Sod	4206	7.4	-	-	33.7	25.4	8.6
2	Sod	4696	4.3	-	-	22.0	21.5	8.0
2	Sod	4202	1.5	15.8	-	30.0	17.0	4.0
2	Sod	4224	4.3	20.9	-	30.0	18.0	8.0
2	Sod	4431	3.2	-	-	25.0	13.0	7.0
2	Sod	4432	1.1	-	-	23.0	10.0	5.0
2	Sod	4198	3.0	-	-	30.0	22.0	6.0
2	Sod	4197	3.5	18.8	9.4	25.0	21.0	6.0
2	Sod	8176	1.9	16.8	13.9	23.9	14.9	5.5
1	Sod	1713	1.0	16.1	8.9	18.2	13.7	4.5
2	Sod	3240	0.5	-	-	15.0	12.5	2.5
2	Sod	45	5.5	-	-	31.0	21.0	10.0

Table B.4: Flakes Tools Non Metric Analysis: Sod Level

Level	Cultural Zone	Cat. #	Unit	Material	Tool Type	Modification	Shape	Primary Working Edge (Location)	Secondary Working Edge (Location)	Longitudinal Cross Section	Transverse Cross Section
2	Sod	2193	15	chalcedony	retouched flake	retouch/retouch	polygon	-	-	-	-
2	Sod	1435	12	SRC	endscraper	retouch	rectangle	convex (distal)	straight (lateral)	Plano-convex	Plano-convex
2	Sod	4203	39	chalcedony	retouched flake	retouch/retouch	triangle	-	-	-	-
2	Sod	3227a	30	SRC	retouched flake	retouch	rectangle, rounded	-	-	-	-
2	Sod	6211	49	Jasper	endscraper	retouch/retouch	polygon	convex (distal)	-	Plano-convex	Plano-convex
2	Sod	4200	39	chalcedony	retouched flake	retouch/retouch	polygon	-	-	-	-
2	Sod	3384	33	SRC	biface fragment	retouch	Asymmetric triangle	convex (lateral)	straight (lateral)	Asymmetric biconvex	biconvex
2	Sod	4196	39	KRF	retouched flake	retouch	polygon	-	-	-	-
2	Sod	1720	16	chalcedony	biface fragment	retouch/retouch	split ovoid	convex	-	biconvex	biconvex
2	Sod	5531	47	silicified peat	biface fragment	retouch/retouch	rectangle	straight (lateral)	concave (lateral)	biconvex	biconvex
2	Sod	5406	45	SRC	biface fragment	retouch/thinning	split ovoid	-	-	biconvex	biconvex
2	Sod	1436	12	quartzite	biface	retouch/thinning	ovoid	-	-	biconvex	biconvex
2	Sod	387	2	chert	side/endscraper	retouch/retouch	rectangle, rounded	convex (distal)	straight (lateral)	Plano-convex	Plano-convex
2	Sod	44	1	SRC	endscraper	retouch	rectangle, rounded	convex (distal)	-	Plano-convex	Plano-convex
2	Sod	46	1	chert	side/endscraper	retouch	ovoid	convex (distal)	straight (lateral)	Plano-convex	Plano-convex
2	Sod	4206	39	chalcedony	retouched flake	retouch/retouch	ovoid	-	-	-	-
2	Sod	4696	43	SRC	biface fragment	retouch	rectangle, rounded	-	-	biconvex	biconvex
2	Sod	4204	39	chalcedony	retouch uniface	retouch/retouch	rectangle, rounded	straight (lateral)	-	Plano-convex	Plano-convex
2	Sod	4224	39	KRF	retouched flake	retouch/retouch	rectangle	straight (lateral)	-	-	-
2	Sod	4431	40	chalcedony	uniface fragment	retouch	rectangle, rounded	-	-	Plano-convex	Plano-convex
2	Sod	4432	40	KRF	retouched flake	retouch/retouch	rectangle	straight (lateral)	-	-	-
2	Sod	4198	39	chalcedony	retouch shatter	retouch	polygon	straight (lateral)	-	-	-
2	Sod	4197	39	agatized wood	side scraper	retouch/retouch	ovoid	straight (lateral)	straight (distal)	Plano-convex	Plano-convex

2	Sod	8176	39	silicified peat	side/endscraper	retouch/retouch	rectangle	straight (lateral)	convex (distal)	Plano-convex	Plano-convex
2	Sod	1713	16	silicified peat	biface fragment	retouch	polygon	straight (lateral)	convex (lateral)	Asymmetric biconvex	biconvex
2	Sod	3240	30	shale	biface fragment	retouch	triangle, broken	-	-	Asymmetric biconvex	biconvex
2	Sod	45	1	SRC	side/endscraper	-	triangle	-	-	Plano-convex	Plano-convex

Table B.5: Projectile point metric analysis: Cultural Zone 1

Level	Cultural Zone	Cat.#	Max Length (mm)	Max Width (mm)	Max Thickness (mm)	Body Length (mm)	Max Body Width (mm)	Max Base Width (mm)	Internotch Width (mm)	Left Notch Depth (mm)	Left Notch Width (mm)	Distance Left Notch From Basal (mm)	Right Notch Depth (mm)	Right Notch Width (mm)	Distance Right Notch From Basal (mm)	Weight (g)
4	1	3303	20.0	12.2	2.7	14.8	12.2	9.2	7.1	2.5	4.0	4.7	2.5	3.7	5.0	0.5
5	1	7219	18.8	17.1	5.0	-	-	16.8	13.4	1.2	6.6	7.7	-	-	-	1.5
3	1	4759	16.8	15.7	4.2	-	-	-	-	-	-	-	-	-	-	0.5
4	1	6516	17.1	10.0	2.9	12.2	10.1	8.1	6.9	3.7	1.1	4.4	-	-	-	0.4
4	1	418	9.8	19.1	5.0	-	-	19.1	-	-	-	-	-	-	-	1.2
3	1	580	30.0	18.2	4.8	-	-	-	-	-	-	-	-	-	-	3.1
3	1	4243	27.2	17.7	5.0	20.8	17.8	15.1	12.7	1.3	4.9	5.7	1.2	5.5	7.3	2.4
3	1	3166	22.8	16.0	3.5	-	-	-	-	-	-	-	-	-	-	1.4
3	1	4242	27.1	13.9	4.7	-	-	6.1	-	-	-	-	-	-	-	2.2
4	1	187	23.7	16.0	4.8	16.8	14.9	15.9	12.3	1.6	3.7	6.8	2.2	4.1	6.4	1.4
4	1	3634	13.9	19.0	6.2	-	-	-	-	-	-	-	-	-	-	1.9
4	1	6026	44.1	21.0	5.9	36.8	21.0	19.0	13.3	3.4	7.1	10.1	3.0	7.2	8.6	5.6

Table B.6: Projectile point non metric analysis: Cultural Zone 1

Level	Cultural Zone	Cat. #	Completeness (Missing Portions)	Cultural Affiliation	Material	Longitudinal Cross Section	Transverse Cross Section	Symmetry	Basal Corner Shape	Basal Margin Modification	Basal Margin
4	1	3303	complete	Late Middle Pelican Lake	KRF	asymmetric biconvex	biconvex	asymmetric	convex	use wear	straight
5	1	7219	tip	Late Middle Pelican Lake	silicified peat	asymmetric biconvex	biconvex	asymmetric	convex	thinning	straight
3	1	4759	tip/body	Late Middle Pelican Lake	chert	asymmetric biconvex	biconvex	asymmetric	convex	use wear	convex
4	1	6516	Part. Complete	Late Middle Pelican Lake	KRF	asymmetric biconvex	biconvex	asymmetric	-	use wear	convex
4	1	418	tip/body	Late Middle Pelican Lake	gronlid siltstone	asymmetric biconvex	biconvex	asymmetric	convex	use wear	straight
3	1	580	base	Late Middle Pelican Lake	chert	asymmetric biconvex	biconvex	asymmetric	-	-	-
3	1	4243	complete	Late Middle Pelican Lake	jasper	asymmetric biconvex	biconvex	asymmetric	convex	thinning	convex
3	1	3166	tip/base	Late Middle Pelican Lake	quartzite	asymmetric biconvex	biconvex	asymmetric	-	-	-
3	1	4242	tip/base	Middle Middle McKean	silicified shale	asymmetric biconvex	biconvex	asymmetric	convex	use wear	concave
4	1	187	complete	Late Middle Pelican Lake	KRF	asymmetric biconvex	biconvex	asymmetric	convex	use wear	concave
4	1	3634	body/base	Late Middle Pelican Lake	chalcedony	biconvex	biconvex	symmetric	-	thinning	concave
4	1	6026	complete	Late Middle Sandy Creek	silicified peat	asymmetric biconvex	biconvex	asymmetric	convex	use wear	concave

Table B.7: Flaked Tool Metric Analysis: Cultural Zone 1

Level	Cultural Zone	Cat.#	Weight (g)	Primary Working Edge (mm)	Secondary Working Edge (mm)	Maximum Length (mm)	Maximum Width (mm)	Maximum Thickness (mm)
4	1	419	3.80	18.10	-	28.61	21.68	4.86
4	1	3195	4.40	16.80	-	29.17	24.25	7.64
4	1	6250	2.10	9.10	11.70	27.40	16.40	5.30
3	1	4451	1.90	19.80	15.80	21.00	18.00	3.50
2	1	4424	4.20	26.90	-	27.00	26.00	6.00
3	1	6015	3.95	15.40	-	26.10	19.50	6.10
2	1	4425	4.10	-	-	31.00	18.00	7.00
4	1	134	6.90	24.90	-	46.38	38.87	11.02
4	1	10121	6.60	25.20	-	26.00	23.00	7.00
4	1	392	15.60	19.90	-	39.41	30.55	12.93
2	1	3143	0.23	-	-	9.80	4.20	1.81
3	1	4450	13.40	37.30	30.10	63.00	25.00	19.50
5	1	6533	4.70	20.80	-	26.10	20.50	6.50
6	1	7240	6.48	-	-	30.50	22.00	9.00
4	1	10361	8.80	22.90	23.90	30.30	26.80	9.20
3	1	1458	4.80	27.10	-	27.90	25.00	6.00
4	1	633	0.85	-	-	16.60	12.20	2.90
2	1	4204	2.60	-	-	27.00	17.00	6.10
3	1	8330	0.70	-	-	15.95	13.76	2.82
5	1	6932	0.90	-	-	23.88	8.13	3.59
4	1	6249	0.98	16.10	-	16.00	14.00	5.40
3	1	1459	2.70	14.80	16.80	27.00	20.00	5.00
6	1	6311	2.40	-	-	27.65	16.95	7.96
2	1	8125	0.90	-	-	13.90	12.20	3.90
3	1	2525	3.20	19.10	-	25.00	20.00	5.00
5	1	6534	1.95	17.60	-	18.20	17.00	6.10
2	1	3385	5.60	-	-	30.10	27.10	7.30

2	1	4205	11.20	-	-	36.00	30.00	11.00
4	1	8231	1.40	-	-	21.09	14.10	4.07
3	1	3323	4.00	-	-	25.00	24.00	5.50
3	1	2523	8.10	55.90	-	51.00	35.00	5.20
3	1	3167	6.20	-	-	27.00	24.00	6.50
4	1	6457	2.70	19.90	-	17.20	20.20	6.90
6	1	7241	0.70	-	-	16.70	14.20	2.40
5	1	6532	7.40	-	-	26.20	24.90	8.50
4	1	6027	1.42	17.30	18.90	42.00	13.80	2.70
6	1	6304	2.93	-	-	32.00	24.00	3.80
3	1	8021	2.10	-	-	20.10	18.90	5.90
5	1	10692	11.30	-	-	35.00	33.00	9.00
3	1	4452	1.30	14.30	-	12.20	15.10	5.20
3	1	8179	2.30	16.80	13.80	19.10	17.10	3.80
5	1	8494	1.00	8.80	8.90	9.00	12.40	4.80
4	1	593	3.28	11.10	8.30	23.00	16.70	7.20
3	1	8180	1.50	10.10	14.60	19.20	12.10	5.90
6	1	10718	8.90	40.90	34.80	34.60	36.30	6.80

Table B.8: Flaked Tool Non Metric Analysis: Cultural Zone 1

Level	Cultural Zone	Cat.#	Unit	Material	Tool Type	Modification	Shape	Primary Working Edge (Location)	Secondary Working Edge (Location)	Longitudinal Cross Section	Transverse Cross Section
4	1	419	2	SRC	retouched flake	retouch/thinning	polygon	convex	-	-	-
4	1	3195	29	SRC	spokeshave	retouch	triangle	concave (lateral)	-	Asymmetrical Plano-convex	Plano-convex
4	1	6250	49	Chalcedony	scraper/spokeshave	retouch	polygon	concave (lateral)	distal (convex)	Asymmetrical Plano-convex	Plano-convex
4	1	4451	40	silicified shale	uniface fragment	retouch/retouch	rectangle, rounded	straight (lateral)	straight (lateral)	Asymmetrical Plano-convex	Plano-convex
2	1	4424	40	SRC	biface fragment	retouch	rectangle, rounded	concave/convex (lateral)	-	Asymmetrical biconvex	biconvex
3	1	6015	48	Agate	biface fragment	retouch	rectangle, rounded	straight (lateral)	-	Asymmetrical biconvex	biconvex
2	1	4425	40	SRC	biface	retouch	triangle	convex	-	Asymmetrical biconvex	biconvex
2	1	4412	40	Quartzite	uniface	retouch	ovoid	-	-	biconvex	biconvex
4	1	134	1	SRC	biface fragment	retouch	rectangle, rounded	straight (lateral)	-	Asymmetrical biconvex	biconvex
4	1	10121	4	silicified wood	split pebble	retouch	ovoid	convex	-	-	-
4	1	392	2	SRC	side scraper	retouch	polygon	straight (lateral)	-	Asymmetrical plano-convex	Plano-convex
2	1	3143	29	Chert	biface fragment	retouch	triangle	straight (lateral)	straight (lateral)	Asymmetric biconvex	biconvex
3	1	4450	40	SRC	scraper/spokeshave	retouch/retouch	polygon	concave (lateral)	convex (lateral)	Asymmetric Plano-convex	Plano-convex
5	1	6533	51	chert	biface fragment	rectangle, broken	retouch	straight (lateral)	-	biconvex	biconvex
6	1	7240	50	chert	side/endscraper	rectangle	retouch/retouch	-	-	plano-convex	Plano-convex
4	1	10361	48	SRC	biface fragment	rectangle	retouch	straight	straight	Asymmetric biconvex	biconvex
3	1	1458	12	silicified peat	biface fragment	triangle	retouch	convex (lateral)	-	biconvex	biconvex
4	1	633	8	silicified peat	biface fragment	triangle	retouch	straight (lateral)	straight (lateral)	Asymmetric biconvex	biconvex
2	1	4204	39	chert	biface fragment	triangle	retouch	straight (lateral)	-	Asymmetric biconvex	biconvex
3	1	8330	47	SRC	retouched flake	polygon	retouch/retouch	-	-	-	-

5	1	6935	2	SRC	Retouched flake	rectangle	retouch	straight (lateral)	-	plano-convex	Plano-convex
4	1	6249	49	KRF	endscraper	polygon	retouch	convex (distal)	-	plano-convex	Plano-convex
3	1	1459	12	silicified peat	scraper/spokeshave	triangle	retouch	concave (lateral)	-	Asymmetric Plano-convex	Plano-convex
2	1	8125	29	agatized wood	scraper	rectangle	retouch/retouch	straight	-	-	-
3	1	2525	23	SRC	endscraper	polygon	retouch/retouch	convex (distal)	-	Asymmetric Plano-convex	Plano-convex
5	1	6534	51	chert	endscraper	polygon	retouch/retouch	convex (distal)	-	plano-convex	Plano-convex
2	1	3385	33	SRC	retouched flake	polygon	retouch/retouch	-	-	-	-
2	1	4205	39	crystal quartz	biface fragment	polygon	-	-	-	Asymmetric biconvex	biconvex
4	1	8231	43	quartz	scraper	polygon	retouch/retouch	convex	-	plano-convex	Plano-convex
3	1	3323	27	chert	retouched flake	ovoid	retouch	-	-	-	-
3	1	2523	24	silicified peat	side scraper	triangle	retouch	convex	-	plano-convex	Plano-convex
3	1	3167	29	SRC	biface fragment	rectangle	retouch	straight (lateral)	convex (lateral)	Asymmetric biconvex	biconvex
4	1	6457	50	chert	endscraper	polygon	retouch	convex (distal)	-	Asymmetric Plano-convex	Plano-convex
6	1	7241	50	KRF	retouched flake	rectangle	retouch/retouch	-	-	-	-
5	1	6532	51	quartzite	uniface	ovoid	retouch	-	-	plano-convex	Plano-convex
4	1	6027	48	KRF	Scraper/spokeshave	polygon	retouch/retouch	straight (lateral)	concave (lateral)	plano-convex	Plano-convex
6	1	6304	49	SRC	retouched flake	rectangle	worn	-	-	-	-
3	1	8021	8	silicified peat	scraper	triangle	retouch	-	-	plano-convex	Plano-convex
5	1	10692	54	SRC	Biface fragment	Rectangle	Retouch	-	-	Biconvex	biconvex
3	1	4452	40	Fused shale	Side/endscraper	Rectangle	Retouch	Convex (distal)	Straight (lateral)	Plano-convex	Plano-convex
3	1	8179	39	KRF	Side/endscraper	Rectangle	Retouch	Convex (distal)	Straight (lateral)	Plano-convex	Plano-convex
5	1	8494	54	Fused shale	Biface fragment	Rectangle	Retouch/thinning	Straight (lateral)	Straight (lateral)	Biconvex	biconvex
4	1	593	7	SRC	Scraper	Polygon	Retouch	Convex (distal)	Straight (lateral)	Asymmetric Plano-convex	Plano-convex
3	1	8180	39	Chert	Scraper/spokeshave/graver	Rectangle	Retouch	Concave (lateral)	Concave (lateral)	Plano-convex	Plano-convex

6	1	10718	54	Silicified wood	Biface fragment	Triangle	Retouch/retouch	Straight (lateral)	Convex (lateral)	Asymmetric biconvex	Biconvex
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Table B.9: Projectile point metric analysis: Cultural Zone 2

Level	Cultural Zone	Cat.#	Max Length (mm)	Max Width (mm)	Max Thickness (mm)	Body Length (mm)	Max Body Width (mm)	Max Base Width (mm)	Internotch Width (mm)	Left Notch Depth (mm)	Left Notch Width (mm)	Distance Left Notch From Basal (mm)	Right Notch Depth (mm)	Right Notch Width (mm)	Distance Right Notch From Basal (mm)	Weight (g)
5	2	268	24.60	14.10	4.25	16.90	13.20	14.00	11.18	1.76	3.49	6.39	1.74	3.36	6.83	1.80
4	2	4310	24.10	19.50	5.30	18.00	19.20	16.80	14.00	1.80	4.60	6.90	1.40	4.90	6.70	2.50
4	2	1471	9.10	15.80	5.10	-	-	-	13.16	-	-	-	-	-	-	0.80
4	2	4309	30.70	20.10	5.80	22.10	20.10	19.20	16.80	1.30	3.60	7.00	1.10	5.30	8.10	2.60
4	2	3503	19.62	18.90	6.01	-	-	7.80	-	-	-	-	-	-	-	2.80
5	2	246	15.70	20.00	5.64	-	-	15.70	-	5.31	7.06	9.40	-	-	-	1.40
3	2	824	17.07	15.70	4.78	-	-	-	-	-	-	-	-	-	-	1.10
4	2	701	16.10	16.90	3.85	-	-	-	-	-	-	-	-	-	-	0.50
4	2	1263	22.80	14.90	4.11	16.80	14.20	11.10	-	-	-	-	4.76	3.37	5.50	1.00
5	2	245	24.60	14.50	4.10	-	-	-	-	-	-	-	-	-	-	1.20
7	2	6329	22.90	17.30	3.90	16.10	17.20	12.90	7.00	5.10	5.90	0.00	3.80	4.60	5.50	5.00

Table B.10: Projectile point non-metric analysis: Cultural Zone 2

Level	Cultural Zone	Cat. #	Completeness (Missing Portions)	Cultural Affiliation	Material	Longitudinal Cross Section	Transverse Cross Section	Symmetry	Basal Corner Shape	Basal Margin Modification	Basal Margin
5	2	268	complete	Late Middle Precontact /Sandy Creek	fused shale	asymmetric biconvex	biconvex	asymmetric	convex	use wear	convex
4	2	4310	tip	Late Middle Precontact /Sandy Creek	Shale	asymmetric biconvex	biconvex	asymmetric	convex	thinning	concave
4	2	1471	tip/body	Late Middle Precontact /Sandy Creek	chalcedony	asymmetric biconvex	biconvex	asymmetric	convex	use wear	convex
4	2	4309	complete	Late Middle Precontact /Sandy Creek	Chert	asymmetric biconvex	biconvex	asymmetric	convex	use wear	concave
4	2	3503	body/base	Middle Middle Precontact/McKean	SRC	biconvex	biconvex	symmetric	convex	use wear	concave
5	2	246	tip/body	Late Middle Precontact/Pelican Lake	SRC	asymmetric biconvex	biconvex	asymmetric	convex	thinning	concave
3	2	824	base	Late Middle Precontact	gronlid siltstone	biconvex	biconvex	symmetric	-	-	-
4	2	701	tip/body	Late Middle Precontact	Quartzite	asymmetric biconvex	biconvex	asymmetric	convex	use wear	concave
4	2	1263	split	Late Middle Precontact/Pelican Lake	silicified peat	asymmetric biconvex	biconvex	asymmetric	convex	use wear	straight
5	2	245	complete	Late Middle Precontact	SRC	biconvex	biconvex	symmetric	-	use wear	straight
7	2	6329	complete	Late Middle Precontact/Pelican Lake	Agate	asymmetric biconvex	biconvex	asymmetric	convex	use wear	convex

Table B.11: Flaked tool metric analysis: Cultural Zone 2

Level	Cultural Zone	Cat.#	Weight (g)	Primary Working Edge (mm)	Secondary Working Edge (mm)	Maximum Length (mm)	Maximum Width (mm)	Maximum Thickness (mm)
4	2	691	1.7	13.2	-	14.9	17.7	4.9
4	2	3779	7.32	-	-	41.7	25.5	6.9
4	2	1161	8.2	-	-	25	14	5.5
4	2	8043	3.2	10.5	-	19.8	26.7	6
4	2	3517	3.7	10.9	11.7	22	20.5	8
4	2	1472	5.1	13.8	-	29.2	19.9	9.8
4	2	1401	9	27.2	-	34	23	11
4	2	1402	7.3	24.1	11.2	41	28	9
3	2	823	5.85	18.2	17.9	23.6	21.3	8.4
5	2	839	3	10.1	-	24.8	16.9	6.5
4	2	1623	1.45	25.5	22.2	22.5	16.5	7.8
4	2	703	9.2	17.9	-	41.36	23.42	7.26
3	2	826	12.2	27.1	-	47.1	24.4	11.4
4	2	547	1.6	16.2	12.1	20.5	14.6	5.4
5	2	226	0.3	12.1	10.6	12.3	11.32	2.02
5	2	8029	4	25	-	26.94	22.89	5.88
4	2	712	1.65	-	-	10.6	10.5	51
4	2	3645	3.5	17.9	-	28.5	23.5	5.2
3	2	825	3.75	-	-	27.5	21.3	9.1
5	2	3556	3.7	13.1	16.9	22	20.5	8
4	2	3041	2.2	22	11.1	54	32	8.1
5	2	201	2.9	-	-	26.54	16.53	5
5	2	267	59.6	-	-	70.2	43.9	15
5	2	864	10.3	9.9	5.3	13.5	12.9	2.1
4	2	3635	1.7	-	-	21.1	15.5	3.5
4	2	4316	10.9	17.4	21.1	60	35	10
4	2	4486	3.5	-	-	28	21	7.4
4	2	8189	5.7	20.9	-	25.97	28.75	5.09

4	2	4313	1.2	14.9	-	23	12	3
4	2	8184	0.1	-	-	11.7	4.4	1.91
4	2	4493	2	-	-	51	35	10
4	2	8187	4.3	-	-	35.64	18.21	5.94
7	2	8629	0.7	10	9.8	8.9	11.9	4.1
4	2	4062	2	12	6.5	20	13.5	4
7	2	10570	2.2	17.2	-	19.8	24.1	5.1
4	2	4631	12	15	8.8	42	38	9
4	2	4490	6.85	-	-	36	20	7
6	2	10434	2.2	21.9	9	22	19	4
4	2	4487	5.9	17.1	9.9	36	32	4
4	2	4491	0.95	20.1	-	21	14	3
4	2	8185	0.6	-	-	15.4	9.52	3.85
4	2	4311	1.3	16.9	9.1	17	14.7	5.5
6	2	7283	9	21.1	-	27.2	29.6	18
7	2	6330	4.7	24.1	-	20.8	26.5	17.2
8	2	6343	3.7	22.5		29.5	23.2	7.2
8	2	6344	1.7	18.8	17.9	22	21	4
8	2	6345	4.5	15.2	-	29	21	7
8	2	6104	1.1	16.7	24.1	29	13.5	2.2
8	2	6100	2.2	21.9	-	25	18	4
8	2	6101	0.82	17	5.1	17	8.5	3.8
8	2	6099	1.2	15	17.1	20.8	15	5.3
8	2	6103	2.32	6.1	20	22	12	6
4	2	5434	1.22	28	-	19	18	6
7	2	2913	1.7	12.1	-	18.32	13.76	5.38
5	2	200	2.8	26.5	6.5	31.68	18.13	5.28
5	2	225	6.9	32.1	27.8	37.76	22.38	8.33
5	2	8031	1.8	-	-	20.88	15.98	7.2

Table B.12: Flake tool non-metric analysis: Cultural Zone 2

Level	Cultural Zone	Cat.#	Unit	Material	Tool Type	Modification	Shape	Primary Working Edge (Location)	Secondary Working Edge (Location)	Longitudinal Cross Section	Transverse Cross Section
06	3	903	02	KRF	side/end scraper	Retouch/retouch	rounded	convex	-	Plano-convex	Plano-convex
4	2	691	4	quartzite	Biface fragment	retouch	asymmetrical triangle	straight (lateral)	-	Asymmetrical biconvex	Biconvex
4	2	3779	33	silicified peat	Biface	retouch/retouch	asymmetrical triangle	straight (lateral)	convex (distal)	Asymmetrical biconvex	Biconvex
4	2	1161	7	limestone chert	Retouched flake	retouch	polygon	straight	-	-	-
4	2	8043	7	SRC	Retouched flake	retouch	rectangle, broken	straight (lateral)	-	Asymmetrical Plano-convex	Plano-convex
4	2	3517	29	chert	Retouched flake	retouch	polygon	straight (lateral)	straight (lateral)	-	-
4	2	1472	12	SRC	Retouched flake	retouch	polygon	straight	-	-	-
4	2	1401	11	SRC	Side scraper	retouch	polygon	convex (lateral)	-	Asymmetrical Plano-convex	Plano-convex
4	2	1402	11	quartzite	endscraper/Spokeshave	retouch	polygon	straight (lateral)	concave (lateral)	Asymmetrical Plano-convex	Plano-convex
3	2	823	2	SRC	Uniface Fragment	retouch	rectangle, broken	straight (lateral)	straight (lateral)	Asymmetrical Plano-convex	Plano-convex
5	2	839	2	jasper	end scraper	retouch	rectangle, rounded	convex (distal)	-	Plano-convex	Plano-convex
4	2	1623	14	chert	Biface fragment	retouch	asymmetrical triangle	convex (lateral)	convex (lateral)	Asymmetrical biconvex	Biconvex
4	2	703	4	SRC	Retouched flake	retouch	rectangle	straight (lateral)	-	Asymmetrical Plano-convex	Plano-convex
3	2	826	2	KRF	Preform	retouch	asymmetrical triangle	straight (lateral)	-	Asymmetrical biconvex	Biconvex
4	2	547	3	SRC	side/endscraper preform	retouch	polygon	straight (lateral)	convex (distal)	Asymmetrical Plano-convex	Plano-convex
5	2	226	1	SRC	side/endscraper	retouch	rectangle, broken	straight (lateral)	convex (distal)	Asymmetrical Plano-convex	Plano-convex
5	2	8029	2	silicified peat	Biface fragment	retouch/retouch	rectangle, broken	straight (lateral)	-	Asymmetrical biconvex	Biconvex
4	2	712	4	SRC	side/endscraper	retouch/retouch	rounded polygon	straight (lateral)	convex (distal)	Asymmetrical Plano-convex	Plano-convex
4	2	3645	30	SRC	endscraper/Spokeshave	retouch	rectangle, broken	straight (lateral)	-	Asymmetrical biconvex	Biconvex
3	2	825	2	KRF	Preform	retouch	asymmetrical triangle	-	-	Asymmetrical Plano-convex	Plano-convex

5	2	3556	29	SRC	Biface fragment	retouch	asymmetrical triangle	straight (lateral)	convex (lateral)	Asymmetrical biconvex	Biconvex
4	2	3041	27	chert	Biface fragment	retouch/retouch	asymmetrical triangle	convex (lateral)	straight (lateral)	Asymmetrical biconvex	Biconvex
5	2	201	1	KRF	uniface, incomplete	retouch/retouch	rectangle	straight		Plano-convex	Plano-convex
5	2	267	1	quartzite	Uniface, reverse	retouch/retouch	rectangle, rounded	straight	convex	Asymmetrical Plano-convex	Plano-convex
5	2	864	2	chert	Retouched flake	retouch/retouch	polygon	convex	concave	-	-
4	2	3635	30	KRF	side/endscraper	retouch/retouch	rounded polygon	straight (lateral)	convex (distal)	Asymmetrical Plano-convex	Plano-convex
4	2	4316	39	SRC	Retouched flake	retouch/retouch	rounded polygon	convex (lateral)	straight (distal)	-	-
4	2	4486	40	silicified peat	Biface fragment	retouch/retouch	asymmetrical triangle	straight (lateral)	straight (lateral)	Asymmetrical biconvex	Biconvex
4	2	8189	39	silicified wood	Biface fragment	retouch/retouch	rectangle, broken	straight (lateral)	-	Biconvex	Biconvex
4	2	4313	39	agatized wood	Retouched flake	retouch/retouch	rectangle, broken	straight (lateral)	-	Plano-convex	Plano-convex
4	2	8184	39	chert	Retouched flake	retouch/retouch	small ovoid	-	-	Plano-convex	Plano-convex
4	2	4493	40	SRC	uniface, incomplete	retouch	inverted triangle	-	-	Asymmetrical Plano-convex	Plano-convex
4	2	8187	39	quartzite	Uniface Fragment	retouch	ovoid, broken	-	-	Plano-convex	Plano-convex
7	2	8629	44	silicified peat	Biface fragment	grinding	polygon	concave (lateral)	straight (proximal)	Asymmetrical biconvex	Biconvex
4	2	4062	36	chalcedony	Biface fragment	retouch	Asymmetrical triangle, broken	straight (lateral)	-	Asymmetrical biconvex	Biconvex
7	2	10570c	43	chert	Retouched flake	retouch	rectangle, broken	straight (lateral)	-	-	-
4	2	4631	42	SRC	Retouched flake/Spokeshave	retouch/retouch	rounded polygon	straight (lateral)	concave (proximal)	Asymmetrical Plano-convex	Plano-convex
4	2	4490	40	quartzite	Biface fragment	retouch/retouch	rounded polygon	-	-	Asymmetrical biconvex	Biconvex
6	2	10434	43	chert	side scraper	retouch/retouch	Asymmetrical triangle	straight (lateral)	-	Asymmetrical Plano-convex	Plano-convex
4	2	4487	40	silicified wood	Retouched flake	retouch/retouch	polygon	concave	straight	-	-
4	2	4491	40	KRF	Retouched flake	retouch/retouch	rectangle, broken	straight (lateral)	-	-	-
4	2	8185	39	silicified wood	Uniface Fragment	retouch/retouch	ovoid, broken	convex	-	Asymmetrical Plano-convex	Plano-convex
4	2	4311	39	jasper	side/endscraper	retouch/retouch	polygon	convex (distal)	straight (lateral)	Asymmetrical Plano-convex	Plano-convex

6	2	7283	51	SRC	endscraper	retouch	rounded polygon	convex (distal)	-	Asymmetrical Plano-convex	Plano-convex
7	2	6330	49	Silicified peat	endscraper	retouch	rounded polygon	convex (distal)	-	Asymmetrical Plano-convex	Plano-convex
8	2	6343	49	SRC	Biface fragment	retouch/thinning	triangular	straight (lateral)	-	Asymmetrical biconvex	Biconvex
8	2	6344	49	silicified peat	Biface fragment	retouch	Asymmetrical triangle	straight (lateral)	convex (lateral)	Asymmetrical biconvex	Biconvex
8	2	6345	49	quartzite	Uniface Fragment	retouch	rounded polygon	concave (lateral)	-	Plano-convex	Plano-convex
8	2	6104	48	chert	Retouched flake	retouch	polygon	straight (lateral)	convex (lateral)	-	-
8	2	6101	48	fused shale	Retouched flake	retouch/retouch	rectangle, rounded	straight (lateral)	convex (distal)	Plano-convex	Plano-convex
8	2	6099	48	KRF	endscraper	retouch/retouch	rounded triangle	convex (distal)	straight (lateral)	Asymmetrical Plano-convex	Plano-convex
8	2	6103	48	silicified shale	endscraper	retouch/retouch	rectangle, rounded	straight (distal)	convex (lateral)	Asymmetrical Plano-convex	Plano-convex
4	2	5434	46	KRF	endscraper	retouch/retouch	rounded polygon	convex (distal)	-	Asymmetrical Plano-convex	Plano-convex
4	2	2913	47	silicified peat	Biface fragment	retouch	polygon	straight (lateral)	-	Asymmetrical biconvex	Biconvex
8	2	6100	48	KRF	Retouched flake	retouch	rectangle, broken	straight(lateral)	-	-	-

Table B.13: Projectile point metric analysis: Cultural Zone 3

Level	Cultural Zone	Cat.#	Max Length (mm)	Max Width (mm)	Max Thickness (mm)	Body Length (mm)	Max Body Width (mm)	Max Base Width (mm)	Internotch Width (mm)	Left Notch Depth (mm)	Left Notch Width (mm)	Distance Left Notch From Basal (mm)	Right Notch Depth (mm)	Right Notch Width (mm)	Distance Right Notch From Basal (mm)	Weight (g)
9	3	10122	10.6	17.7	5.59	-	15	17.55	12.75	-	-	-	3.04	7.71	10.16	5.33
10	3	10758	27.85	17.8	4.33	20.9	-	16.47	13.31	2.44	3.53	8.98	2.26	3.81	8.21	3.04
6	3	5310	43.4	20.5	4	35.1	-	19.2	14	2.6	2.8	6.8	3	3.4	7.5	3.5
5	3	6861	24.3	20.9	3.4	19.6	-	16.8	16	1.7	2.7	5	1.7	2.8	4.5	2.2
9	3	7830	25.93	20.1	7.28	19.1	-	15.56	-	-	-	-	-	-	-	4.2
10	3	6988	24	16.1	5	16.9	-	14.8	11.3	2.2	5	8.2	1.6	6.4	7.1	2.3
4	3	5705	39.22	21	4.97	31.3	-	17.83	16.28	1.7	5.1	8.53	1.9	4.7	9.1	4.09
6	3	1320	37.33	21.9	6.03	28.8	21	23.5	20.63	-	-	-	-	-	-	4.89
5	3	5176	11	15.1	4.3	-	-	14.9	-	-	-	-	1	4.2	6.76	0.71
5	3	5563	7.92	13.9	4.8	-	-	13.8	-	-	-	-	-	-	-	0.42
4	3	4484	15.9	18.7	3.2	8.8	-	15.6	-	-	-	-	2.1	5.5	8.8	1.2
9	3	6145	27.3	20.2	5	20.8	-	7.3	14.3	2.5	4.5	8.7	2.3	5.8	8.1	0.5

Table B.14: Projectile point non-metric analysis: Cultural Zone 3

Level	Cultural Zone	Cat. #	Completeness (Missing Portions)	Cultural Affiliation	Material	Longitudinal Cross Section	Transverse Cross Section	Symmetry	Basal Corner Shape	Basal Margin Modification	Basal Margin
9	3	10122	Body/Tip	Late Middle Precontact (Sandy Creek/Unknown)	Chert	Asymmetrical Biconvex	Biconvex	Asymmetrical	convex	use wear	straight
10	3	10758	Complete	Late Middle Precontact (Sandy Creek/Unknown)	Gronlid Siltstone	Asymmetrical Biconvex	Biconvex	Asymmetrical	convex	grinding	slightly concave
6	3	5310	Complete	Late Middle Precontact (Sandy Creek/Unknown)	Fused Shale	Biconvex	Biconvex	Symmetrical	convex	use wear	slightly convex
5	3	6861	Base	Late Middle Precontact (Sandy Creek/Unknown)	Silicified Peat	Asymmetrical Biconvex	Biconvex	Asymmetrical	-	-	-
9	3	7830	Tip	Middle Middle Precontact (McKean)	SRC	Asymmetrical Biconvex	Biconvex	Asymmetrical	convex	use wear	concave
10	3	6988	Tip	Late Middle Precontact (Sandy Creek/Unknown)	SRC	Asymmetrical Biconvex	Biconvex	Asymmetrical	convex	thinning	slightly convex
4	3	5705	Complete	Late Middle Precontact (Sandy Creek/Unknown)	SRC	Biconvex	Biconvex	Symmetrical	convex	use wear	straight
6	3	1320	Incomplete	Middle Middle Precontact (Oxbow?)	Silicified Peat	Asymmetrical Biconvex	Biconvex	Asymmetrical	convex	thinning/retouch	concave
5	3	5176	Body/Tip	Late Middle Precontact (Sandy Creek/Unknown)	chalcedony	Asymmetrical Biconvex	Biconvex	Asymmetrical	convex	use wear	straight
5	3	5563	Body/Tip	Late Middle Precontact (Sandy Creek/Unknown)	SRC	Asymmetrical Biconvex	Biconvex	Asymmetrical	convex	grinding	slightly concave
4	3	4484	Body/Tip	Late Middle Precontact (Sandy Creek/Unknown)	Agatized wood	Asymmetrical Biconvex	Biconvex	Asymmetrical	convex	retouch/grinding	straight
9	3	6145	Complete	Late Middle Precontact (Sandy Creek/Unknown)	Basalt	Asymmetrical Biconvex	Biconvex	Asymmetrical	convex	use wear	concave

Table B.15: Flaked tool metric analysis: Cultural Zone 3

Level	Cultural Zone	Cat.#	Weight (g)	Primary Working Edge (mm)	Secondary Working Edge (mm)	Maximum Length (mm)	Maximum Width (mm)	Maximum Thickness (mm)
05	3	723	3.61	23.7	14.1	26.5	22.4	5.3
05	3	1077	7.6	35.6	12.1	52	30.5	6
05	3	1540	13.7	-	-	47.5	23	13.2
05	3	1648	2	11.2	9.3	21.8	13.3	5.5
05	3	8111	0.8	-	-	12.3	19.1	3.2
05	3	8112	1.3	15.5	-	23.1	16.1	3.9
05	3	8113	1.5	11.9	-	25.2	20.6	3.8
05	3	8114	0.6	8.8	-	19	12	3.8
05	3	7423	944.8	-	-	147	65	61
05	3	4804	1.15	9.4	-	21.1	6.5	5.1
05	3	5004	4	17.1	-	30.55	19.01	5.07
04	3	3504	1.8	12.2	17.4	17.5	13.5	5.7
05	3	3549	6.4	22.9	-	28	25	6
05	3	3987	67.7	-	-	56	50	23
05	3	3989	7.9	26.8	-	54	17	7.5
04	3	4312	21.5	24.3	46	46	29	9
05	3	5177	1.65	19.1	18.1	25	24	4
05	3	5178	1.41	15.9	15.8	16.58	15.48	3.91
05	3	5179	1.5	16.5	-	17.5	17	5.4
05	3	5180	2.75	12.5	13.2	18.2	17	9
05	3	5210	21	17.8	-	64	34	9
05	3	8246	1.4	18.2	-	23.11	14.25	4.99
05	3	8247	3.3	8.5	-	23.18	16.49	7.92
05	3	8256	0.3	4.1	-	10.39	10.98	3.16
04	3	4485	4.6	33.8	19.5	30	30	3.6
04	3	4501	3.4	16.1	20.3	21	18	7.5
05	3	5272	0.62	11.8	-	12.7	11.4	5.3
05	3	5273	1.8	10.1	16.1	18	16	5

07	3	5327	88.3	-	-	103	54	15
05	3	8301	0.8	11.9	-	19.5	11.94	3.06
04&05	3	4555	471	-	-	101	65	47
03	3	4630	15.2	20.8	12.9	43	37	8
05	3	4660	4	12.9	-	28	22	4.9
09	3	10287	30	23.8	-	20	21	14
05	3	5445	24.85	-	-	49	34	18.5
05	3	5446	2.6	9.1	5.2	27	8	7
09	3	6146	4.76	17.1	-	26.5	21.5	9.5
09	3	6959	1.22	18.9	13.9	17	15	4
09	3	6960	3.2	24	15	29.7	16	4.3
10	3	6991	35.75	17.1	-	66	38	14
09	3	8401	2.9	15.2	-	25.01	18.29	5.84
09	3	8403	1.8	11	17.2	17.55	15.08	6.07
09	3	6388	8.15	42.1	-	44	31	3.5
10	3	6989	5	20.2	-	30	15.5	9.8
10	3	6990	37.9	53	-	69	48	9
09	3	7785	1.5	14.1	14	19.2	15.9	5.5
10	3	7856	4.68	-	-	27	15.5	6
9	3	6377	1.25	16.1	11.9	16.3	16.3	5.2

Table B.16: Flake tool non-metric analysis: Cultural Zone 3

Level	Cultural Zone	Cat.#	Unit	Material	Tool Type	Modification	Shape	Primary Working Edge (Location)	Secondary Working Edge (Location)	Longitudinal Cross Section	Transverse Cross Section
05	3	723	04	KRF	Uniface fragment	retouch	Asymmetrical Triangle	straight (lateral)	convex (distal)	Asymmetrical Plano-convex	Plano-convex
05	3	1077	05	Silicified Peat	Retouched flake	Retouch/retouch	Asymmetrical Triangle, broken	straight (lateral)	concave (distal)	Plano	Plano
05	3	1540	13	chert	Biface fragment	thinning	Ovoid, split	-	-	Asymmetrical Biconvex	Biconvex
05	3	1648	14	gronlid siltstone	side/end scraper	Retouch/retouch	Polygon, broken	straight (lateral)	convex (distal)	Plano-convex	Plano
05	3	8111	23	silicified peat	Biface fragment	Retouch/retouch	rectangle, broken	straight (lateral)	-	symmetrical biconvex	Biconvex
05	3	8112	23	silicified peat	Retouched flake	Retouch	rectangle, broken	concave (lateral)	-	-	-
05	3	8113	23	silicified peat	Retouched flake	Retouch	polygon	straight	-	-	-
05	3	8114	23	Silicified Peat	Retouched flake	Retouch/retouch	ovoid, broken	concave (lateral)	-	-	-
05	3	7423	24	quartzite	Hammerstone	-	ovoid	-	-	-	-
05	3	4804	25	chalcedony	Biface fragment	Retouch/thinning	rectangle	straight (lateral)	-	Asymmetrical Biconvex	Biconvex
05	3	5004	26	agate	Biface fragment	retouch	asymmetrical triangle	straight (lateral)	-	Asymmetrical Biconvex	Biconvex
04	3	3504	29	KRF	side/end scraper	retouch	rounded polygon	straight (lateral)	convex (distal)	Asymmetrical Plano-convex	Plano-convex
05	3	3549	29	SRC	Biface fragment	retouch	rounded polygon	convex (lateral)	-	Asymmetrical Biconvex	Biconvex
05	3	3987	35	SRC	Chopper	retouch	rounded polygon	-	-	-	-
05	3	3989	35	SRC	Spokeshave	retouch	polygon	concave (lateral)	-	concave	Plano-convex
04	3	4312	39	KRF	Biface fragment	Retouch/retouch	Asymmetrical Triangle	straight (lateral)	convex (lateral)	Asymmetrical Biconvex	Biconvex
05	3	5177	39	Silicified Peat	Biface fragment	retouch	Asymmetrical triangle	convex (lateral)	straight (lateral)	Asymmetrical Biconvex	Biconvex
05	3	5178	39	SRC	Side scraper	retouch	Triangle	straight (lateral)	straight (lateral)	symmetrical plano-convex	Plano-convex
05	3	5179	39	jasper	End scraper	Retouch/retouch	rounded polygon	convex (distal)	straight (lateral)	Asymmetrical Plano-convex	Plano-convex
05	3	5180	39	silicified peat	side/end scraper	Retouch/retouch	rounded polygon	straight (lateral)	convex (distal)	symmetrical plano-convex	Plano-convex

05	3	5210	39	Silicified Peat	Retouched flake	Retouch	ovoid, broken	convex (lateral)	-	-	-
05	3	8246	39	KRF	Biface fragment	Retouch/retouch	rounded polygon	convex	-	Asymmetrical Biconvex	Biconvex
05	3	8247	39	Agate	Biface fragment	Retouch	rounded rectangle	concave (lateral)	-	Asymmetrical Biconvex	Biconvex
05	3	8256	39	Silicified Peat	Biface fragment	retouch	Asymmetrical triangle	straight (lateral)	-	Asymmetrical Biconvex	Biconvex
04	3	4485	40	Silicified Peat	Biface fragment	Retouch/retouch	Asymmetrical triangle	straight (lateral)	convex (lateral)	Asymmetrical Biconvex	Biconvex
04	3	4501	40	silicified peat	Uniface fragment	Retouch/retouch	rounded polygon	straight (lateral)	convex (lateral)	Asymmetrical Plano-convex	Plano-convex
05	3	5272	40	KRF	End scraper	retouch	rounded polygon	convex (distal)	-	Plano-convex	Plano-convex
05	3	5273	40	Silicified Wood	side/end scraper	Retouch/retouch	rounded polygon	straight (lateral)	convex (distal)	symmetrical plano-convex	plano-convex
07	3	5327	40	quartzite	biface	retouch	ovoid	-	-	symmetrical biconvex	Biconvex
05	3	8301	40	chert	Uniface fragment	retouch	Asymmetrical Triangle, broken	straight (lateral)	-	Asymmetrical Plano-convex	Plano-convex
04&05	3	4555	41	quartzite	Hammerstone	-	ovoid	-	-	-	-
03	3	4630	42	SRC	Biface fragment	retouch	Asymmetrical triangle	straight (lateral)	concave (lateral)	Asymmetrical Biconvex	Biconvex
05	3	4660	42	quartzite	Spokeshave	thinning/retouch	rounded polygon	concave (lateral)	-	Asymmetrical Biconvex	Biconvex
09	3	10287	44	SRC	End scraper	retouch	rounded polygon	convex (distal)	-	Plano-convex	Plano-convex
05	3	5445	46	SRC	Biface fragment	thinning	ovoid	-	-	-	-
05	3	5446	46	SRC	End scraper	retouch	rounded rectangle	convex (distal)	concave (lateral)	Plano-convex	Plano-convex
09	3	6146	48	silicified peat	Biface fragment	thinning/retouch	ovoid	convex (distal)	-	Asymmetrical Biconvex	Biconvex
09	3	6959	48	fused shale	Biface fragment	Retouch/retouch	Asymmetrical triangle	convex (lateral)	straight (lateral)	Asymmetrical Biconvex	Biconvex
09	3	6960	48	siltstone	side/end scraper	retouch	rounded polygon	straight (lateral)	convex (distal)	Plano-convex	Plano-convex
10	3	6991	48	quartzite	Retouched flake	retouch	rectangle, broken	straight	-	-	-
09	3	8401	48	chert	Retouched flake	retouch	rectangle, broken	straight (lateral)	-	-	-
09	3	8403	48	Silicified Peat	side/end scraper	Retouch/retouch	rounded polygon	straight (lateral)	convex (distal)	Plano-convex	Plano-convex
09	3	6388	49	Agatized Wood	Retouched flake	Retouch/retouch	rectangle, broken	convex (lateral)	-	-	-

10	3	6989	48	chert	Biface fragment	retouch	ovoid, broken	convex	-	Asymmetrical Biconvex	Biconvex
10	3	6990	49	quartzite	Split cobble	retouch/grinding	ovoid	convex	-	-	-
09	3	7785	50	fused shale	side/end scraper	retouch	rounded polygon	straight (lateral)	convex (distal)	Asymmetrical Plano-convex	Plano- convex
10	3	7856	51	Agatized Wood	Biface fragment	Retouch/retouch	rectangle, broken	-	-	Asymmetrical Biconvex	Biconvex
09	3	6377	49	Fused shale	side/endscraper	retouch/retouch	Triangle	Convex (distal)	Straight (lateral)	Plano-convex	Plano- convex

Table B.17: Projectile point metric analysis: Cultural Zone 4

Level	Cultural Zone	Cat. #	Max Length (mm)	Max Width (mm)	Max Thickness (mm)	Body Length (mm)	Max Body Width (mm)	Max Base Width (mm)	Internotch Width (mm)	Left Notch Depth (mm)	Left Notch Width (mm)	Distance Left Notch From Basal (mm)	Right Notch Depth (mm)	Right Notch Width (mm)	Distance Right Notch From Basal (mm)	Weight (g)
7	4	914	18.7	19.5	4.91	18.43	18.8	18.05	15.47	2.41	4.45	7.21	1.8	2.91	6.95	2
11-12	4	7879	10.79	18.5	4.8	-	-	18.91	16.09	-	-	-	-	-	-	0.88
6	4	10236	4.98	17.2	4.77	15.24	-	15.01	14.15	-	2.79	7.11	-	-	-	1.3
10	4	10169	32.05	19.9	4.61	22	19.9	13.87	9.2	5.22	5.57	10.4	6.31	9.51	11.21	2.6
6	4	2394	19.9	20.9	6.2	10.8	-	16.79	13.42	3.8	6.24	9.25	3.41	-	9.92	2.9

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Table B.18: Projectile point non-metric analysis: Cultural Zone 4

Level	Cultural Zone	Cat. #	Completeness (Missing Portions)	Cultural Affiliation	Material	Longitudinal Cross Section	Transverse Cross Section	Symmetry	Basal Corner Shape	Basal Margin Modification	Basal Margin
7	4	914	tip	Late Middle Period/Sandy Creek	KRF	Asymmetric biconvex	biconvex	Asymmetric	convex	retouch	concave
11-12	4	7879	body	Late Middle Period/Sandy Creek	quartzite	Asymmetric biconvex	biconvex	Asymmetric	convex	-	concave
6	4	10236	body/tip	Late Middle Period/Sandy Creek	chert	Asymmetric biconvex	biconvex	Asymmetric	convex	retouch	straight
10	4	10169	complete	Late Middle Period/Sandy Creek	quartzite	Asymmetric biconvex	biconvex	Asymmetric	convex	retouch/grinding	convex
6	4	2394	body/base	Late Middle Period/Sandy Creek	chert	Asymmetric biconvex	biconvex	Asymmetric	straight	dulled	square

Table B.19: Flaked tool metric analysis: Cultural Zone 4

Level	Cultural Zone	Cat. #	Weight (g)	Primary Working Edge (mm)	Secondary Working Edge (mm)	Maximum Length (mm)	Maximum Width (mm)	Maximum Thickness (mm)
6	4	992	153.6	-	-	80	61.5	34.5
6	4	1127	5.7	40.8	-	41.3	24	7
6	4	1563	1.9	13.2	7.8	23	12	6.5
6	4	2649	0.6	15.3	14.9	16.1	15.14	3.2
6	4	4819	14.4	36.1	-	40.6	22.1	12.1
6	4	5036	1.6	10.8	8.9	25	16	3
6	4	5719	3.7	-	-	31	22	9.5
7	4	6580	5.95	20.1	-	30.2	22.1	7.2
7	4	6585	3.75	18.1	-	32	17	8.8
7	4	5255	6.9	19.2	-	38.1	31.1	5.6
8	4	5734	203.5	-	-	109	70	27
8	4	5795	26.85	44.2	41.5	49.5	47.7	11.9
8	4	5796	1.05	23.1	18.2	21.5	17.7	5.1
7	4	8309	0.9	-	-	22.34	7.43	5.33
6&7	4	8222	0.6	9.9	-	20.4	11.1	2.2
10	4	4867	0.3	10.9	0.9	15.63	8.95	3.17
10	4	6992	222.7	-	-	86	46	33
11	4	7031	7.2	34.9	-	36.4	24.9	6.6
11	4	7032	24.2	31.9	19.2	57.2	31.8	10.2
11	4	7033	4	12.9	-	27	15	6
10	4	7117	239.26	-	-	81.4	58.5	36
10	4	7118	2.1	18.2	11.1	25.9	21.1	4.3
11	4	7170	3.83	20.3	6.1	30	21	6.8
11	4	7800	0.82	15.8	-	16.5	16	3.1
12	4	7810	2.29	8.5	-	29	20.4	3
12	4	7811	2.1	19.2	16	24.5	20.4	5.3
11	4	7873	9.1	12.8	22.7	32.6	31.3	7.4
12	4	7634	4.5	35.2	-	38	22.2	5.1

5	4	4644	2.6	-	-	22	18	5
6	4	2635	5.5	15.8	-	27	25	7
6	4	1561	82.5	48.2	-	114	55	18
5	4	4803	18.1	-	-	53.9	36.1	10.6
5	4	8304	1.4	17.2	16.5	19.1	21.3	3.0

Table B.20: Flake tool non-metric analysis: Cultural Zone 4

Level	Cultural Zone	Cat. #	Unit	Material	Tool Type	Modification	Shape	Primary Working Edge (Location)	Secondary Working Edge (Location)	Longitudinal Cross Section	Transverse Cross Section
6	4	992	4	SRC	Core	-	rounded polygon	-	-	-	-
6	4	1127	6	silicified peat	Biface fragment	retouch	Asymmetric triangle	straight (lateral)	-	Asymmetric Biconvex	Biconvex
6	4	1563	13	chert	Biface fragment	retouch/grinding	ovoid, split	straight (lateral)	convex (lateral)	Asymmetric Biconvex	Biconvex
6	4	2649	24	basalt	Biface fragment	retouch/chipping	Asymmetric triangle	straight (lateral)	straight (lateral)	Asymmetric Biconvex	Biconvex
6	4	4819	25	chert	Uniface, reverse	retouch/retouch	triangle, broken	straight (lateral)	-	Plano-convex	Plano
6	4	5036	26	siltstone pebble	Spokeshave	retouch/retouch	polygonal	concave (lateral)	convex (distal)	Plano-convex	Plano-convex
6	4	5719	34	SRC	Retouched flake	retouch/thinning	rectangle, broken	-	-	Plano	Plano
7	4	6580	34	feldspathic siltstone	Retouched flake	retouch/thinning	rectangle, broken	straight (lateral)	-	Plano-convex	Plano-convex
7	4	6585	34	chert	Graver		triangle, broken	convex (lateral)	-	Asymmetric Biconvex	Biconvex
7	4	5255	39	Fused shale	Biface	retouch	Asymmetric hafted triangle	straight (lateral)	-	Asymmetric Biconvex	Biconvex
8	4	5734	39	quartzite	Chopper	retouch	split ovoid	-	-	-	-
8	4	5795	40	SRC	Biface fragment	retouched/thinning	Asymmetric triangle	straight (lateral)	convex (lateral)	Asymmetric Biconvex	Biconvex

8	4	5796	40	silicified shale	Biface fragment	retouch/thinning	Asymmetric triangle	straight (lateral)	straight (lateral)	Asymmetric Biconvex	Biconvex
7	4	8309	40	quartzite	Uniface	-	ovoid, split	-	-	Asymmetric Biconvex	Biconvex
6&7	4	8222	41	KRF	Retouched flake	retouch/thinning	rectangle, broken	straight (lateral)	-	Plano	Plano
10	4	4867	44	silicified wood	Biface fragment	retouch	Asymmetric triangle	straight (lateral)	straight (lateral)	Asymmetric Biconvex	Biconvex
10	4	6992	48	quartzite	Hammerstone	-	ovoid	-	-	-	-
11	4	7031	48	agate	Biface fragment	retouch/retouch	rectangle, broken	straight (lateral)	-	-	-
11	4	7032	48	basalt	Uniface fragment	retouch	rectangle, broken	convex (distal)	straight (lateral)	Plano-convex	Plano-convex
11	4	7033	48	silicified peat	end scraper	retouched	rectangle, broken	convex (distal)	-	Plano-convex	Plano
10	4	7117	49	basalt	Chopper or adze	retouch/split	ovoid	-	-	-	-
10	4	7118	49	SRC	Retouched flake	retouched/thinning	polygonal	straight (lateral)	concave (lateral)	Plano-convex	Plano-convex
11	4	7170	49	basalt	Uniface/Spokeshave	retouch/grinding	rounded polygon	convex (lateral)	concave (distal)	Asymmetric Plano-convex	Plano-convex
11	4	7800	50	gronlid siltstone	Retouched flake	retouch/retouch	rounded polygon	convex (lateral)	-	Plano-convex	Plano-convex
12	4	7810	50	fused shale	Retouched flake	retouched	rounded polygon	concave (lateral)	-	Plano	Plano
12	4	7811	50	gronlid siltstone	Biface fragment	retouch/thinning	rounded polygon	straight (lateral)	convex (lateral)	Asymmetric Biconvex	Biconvex
11	4	7873	51	silicified peat	Biface fragment	retouch/retouch	rounded polygon	convex (distal)	straight (lateral)	Asymmetric Biconvex	Biconvex
12	4	7634	49	chalcedony	Retouched flake	retouched	rectangle, broken	straight (lateral)	-	Plano-convex	Plano-convex
5	4	4644	42	SRC	Biface fragment	Retouch/thinning	Ovoid	-	-	Biconvex	Biconvex
6	4	2635	24	Agate	Spokeshave	Retouch/retouch	Polygon	Concave (lateral)	-	Plano-convex	Plano-convex
6	4	1561	13	Quartzite	Chopper	Retouch/thinning	Triangle	Convex (distal)	-	Plano-convex	Plano-convex
5	4	4803	25	SRC	Incomplete Uniface	Chipping	Triangle	-	-	Plano-convex	Plano-convex
5	4	8304	40	Silicified Peat	Biface Fragment	Retouch/retouch	Triangle	Straight (lateral)	Convex (lateral)	Asymmetric Biconvex	Asymmetric Biconvex

Table B.21: Projectile point metric analysis: Cultural Zone 5

Level	Cultural Zone	Cat.#	Max Length (mm)	Max Width (mm)	Max Thickness (mm)	Body Length (mm)	Max Body Width (mm)	Max Base Width (mm)	Internotch Width (mm)	Left Notch Depth (mm)	Left Notch Width (mm)	Distance Left Notch From Basal (mm)	Right Notch Depth (mm)	Right Notch Width (mm)	Distance Right Notch From Basal (mm)	Weight (g)
14	5	7559	15.00	10.00	2.00	11.00	10.00	6.00	5.00	2.50	3.80	1.20	1.00	4.50	1.50	0.35

Table B.22: Projectile point non-metric analysis: Cultural Zone 5

Level	Cultural Zone	Cat. #	Completeness (Missing Portions)	Cultural Affiliation	Material	Longitudinal Cross Section	Transverse Cross Section	Symmetry	Basal Corner Shape	Basal Margin Modification	Basal Margin
14	4	7559	tip	Middle Middle Precontact	Silicified Peat	Asymmetrical Biconvex	Biconvex	Symmetric	convex	Thinning	Straight

Table B.23: Flaked tool metric analysis: Cultural Zone 6

Level	Cultural Zone	Cat.#	Weight (g)	Primary Working Edge (mm)	Secondary Working Edge (mm)	Maximum Length (mm)	Maximum Width (mm)	Maximum Thickness (mm)
07	5	946	1.5	25.00	-	29.50	14.00	2.80
07	5	1960	29.8	-	-	37.50	36.10	15.10
07	5	1577	1.7	18.80	11.20	17.50	20.50	3.10
07	5	1689	14.2	42.10	11.00	56.20	23.90	4.20
07	5	2119	12.8	49.80	-	45.90	34.60	7.30
07	5	5043	499	-	-	90.00	60.00	55.00
08	5	10027	1.1	16.90	14.00	16.50	17.10	3.80
07	5	4023	4.5	31.50	-	33.00	25.20	4.10
08	5	5733	3.55	18.90	9.40	25.00	24.90	4.95
10	5	6611	2.52	25.60	9.50	21.80	14.80	6.90
08	5	8346	5.6	23.00	17.80	25.10	22.90	8.90
07	5	5486	5.71	-	-	37.80	25.20	4.80
07	5	5597	2.8	29.90	25.70	33.60	21.10	4.10
07	5	5598	1.91	21.90	14.90	20.00	18.20	4.10
13	5	7525	10.3	26.80	-	30.50	42.90	8.90
13	5	10088	3.3	1.30	25.10	29.20	20.10	5.80
07	5	5378	4.25	21.00	17.00	21.50	15.10	6.00
15	5	10314	101	37.00	33.90	32.80	40.00	8.90
08	5	7366	5.05	33.30	31.50	33.00	27.50	7.00
10	5	4233	3.2	31.50	-	39.90	22.10	4.00
08	5	8368	2.7	14.8	-	17.90	17.00	7.90
7	5	1108	6.6	-	-	37	23	9

Table B.24: Flake tool non-metric analysis: Cultural Zone 6

Level	Cultural Zone	Cat.#	Unit	Material	Tool Type	Modification	Shape	Primary Working Edge (Location)	Secondary Working Edge (Location)	Longitudinal Cross Section	Transverse Cross Section
07	5	946	03	agatized wood	Retouched flake	retouch	Rectangle, broken	straight (lateral)	-	-	-
07	5	1960	07	quartzite	Uniface, reverse	retouch/retouch	rounded polygon	-	-	Plano-convex	Plano-convex
07	5	1577	13	KRF	end/side scraper	retouched	rounded rectangle	convex (distal)	straight (lateral)	Plano-convex	Plano-convex
07	5	1689	14	SRC	Biface Fragment	retouched	rounded polygon	straight (lateral)	convex (distal)	Biconvex	Plano-convex
07	5	2119	14	silicified peat	Biface Fragment	retouched/thinning	Asymmetric triangle	straight (lateral)	-	Asymmetrical Biconvex	Biconvex
07	5	5043	26	dolomite	Hammerstone	-	ovoid	-	-	-	-
08	5	10027	34	silicified peat	end/side scraper	retouched	rounded polygon	convex (distal)	straight (lateral)	Plano-convex	Plano-convex
07	5	4023	35	SRC	Retouched flake	retouched/thinning	rounded polygon	convex (lateral)	-	-	-
08	5	5733	39	chert	Retouched flake	Bifacially retouched	Rectangle, broken	straight (lateral)	concave (lateral)	Plano-convex	Plano-convex
10	5	6611	39	silicified wood	Retouched flake	retouched	Rectangle, broken	straight (lateral)	straight (distal)	-	-
08	5	8346	39	SRC	End scraper	retouched	rounded polygon	convex (distal)	straight (lateral)	Plano-convex	Plano-convex
07	5	5486	46	chert	Uniface Fragment	retouched	Rectangle, broken	-	-	Plano-concave	Plano-concave
07	5	5597	47	SRC	Biface Fragment	retouch/serrated	Triangle	straight (lateral)	straight (lateral)	Asymmetrical Biconvex	Biconvex
07	5	5598	47	shale	Biface Fragment	thinned	Asymmetric triangle	straight (lateral)	straight (lateral)	Asymmetrical Biconvex	Biconvex
13	5	7525	48	chert	Retouched flake	retouch	-	straight (distal)	-	-	-
13	5	10088	50	SRC	Retouched flake	retouched	rounded polygon	straight (lateral)	straight (lateral)	Plano-convex	Plano-convex
07	5	5378	42	chert	Biface Fragment	retouched	Asymmetric triangle	straight (lateral)	convex (lateral)	Asymmetrical Biconvex	Biconvex
15	5	10314	48	SRC	Biface Fragment	retouched/thinning	Asymmetric triangle	straight (lateral)	straight (lateral)	Asymmetrical Biconvex	Biconvex
08	5	7366	52	fused shale	Biface	retouched/thinning	Asymmetric triangle	straight (lateral)	-	Asymmetrical Biconvex	Biconvex
10	5	4233	34	silicified peat	Retouched flake	retouch	-	straight (lateral)	-	-	-

08	5	8368	46	SRC	Uniface, reverse	retouch/retouch	rounded polygon	convex (distal)	-	Plano-convex	Plano-convex
7	5	1108	5	SRC	Retouched flake	retouch/retouch	Polygon	-	-	-	-

Table B.25: Projectile point metric analysis: Cultural Zone 6

Level	Cultural Zone	Cat.#	Max Length (mm)	Max Width (mm)	Max Thickness (mm)	Body Length (mm)	Max Body Width (mm)	Max Base Width (mm)	Internotch Width (mm)	Left Notch Depth (mm)	Left Notch Width (mm)	Distance Left Notch From Basal (mm)	Right Notch Depth (mm)	Right Notch Width (mm)	Distance Right Notch From Basal (mm)	Weight (g)
9	6	6733	24.77	18.30	5.14	19.00	18.80	15.38	11.73	3.60	2.20	5.71	3.40	2.50	6.01	2.17
9	6	6734	17.64	21.10	5.41	-	21.10	18.72	16.24	2.10	7.00	9.14	1.90	6.00	10.13	2.48

Table B.26: Projectile point non-metric analysis: Cultural Zone 6

Level	Cultural Zone	Cat. #	Completeness (Missing Portions)	Cultural Affiliation	Material	Longitudinal Cross Section	Transverse Cross Section	Symmetry	Basal Corner Shape	Basal Margin Modification	Basal Margin
9	6	6733	Complete	Early Middle Precontact Bitterroot	fused shale	Asymmetrical Biconvex	Biconvex	Asymmetrical	Convex	Thinning/retouch	Concave
9	6	6734	Tip	Early Middle Precontact Gowen	chalcedony	Asymmetrical Biconvex	Biconvex	Asymmetrical	Convex	Thinning/retouch	Straight

Table B.27: Flaked tool metric analysis: Cultural Zone 6

Level	Cultural Zone	Cat.#	Weight (g)	Primary Working Edge (mm)	Secondary Working Edge (mm)	Maximum Length (mm)	Maximum Width (mm)	Maximum Thickness (mm)
9	6	969/1990	2.3	29.1	-	38	17.1	3.6
9	6	2063	5.4	22.9	-	37	25.2	5.6
9	6	2065	1.7	18.9	-	21	19.5	3

Table B.28: Flake tool non-metric analysis: Cultural Zone 6

Level	Cultural Zone	Cat.#	Unit	Material	Tool Type	Modification	Shape	Primary Working Edge (Location)	Secondary Working Edge (Location)	Longitudinal Cross Section	Transverse Cross Section
9	6	969/1990	3/13	Agatized wood	Scraper/graver/spokeshave	retouch	Modified rectangle	Straight (lateral)	Concave (lateral)	triangular	Plano-convex
9	6	2063	4	SRC	Uniface	retouch	Triangle, broken	Convex (distal)	Straight (lateral)	Plano-convex	Plano-convex
9	6	2065	14	Feldspathic siltstone	Uniface fragment	retouch	Triangle, broken	Convex (distal)	-	Plano-convex	Plano-convex

Table B.29: Projectile point metric analysis: Cultural Zone 7

Level	Cultural Zone	Cat.#	Max Length (mm)	Max Width (mm)	Max Thickness (mm)	Body Length (mm)	Max Body Width (mm)	Max Base Width (mm)	Internotch Width (mm)	Left Notch Depth (mm)	Left Notch Width (mm)	Distance Left Notch From Basal (mm)	Right Notch Depth (mm)	Right Notch Width (mm)	Distance Right Notch From Basal (mm)	Weight (g)
11	7	5154	22.60	22.00	5.20	-	-	-	-	-	-	-	-	-	-	3.40
11	7	5155	36.74	-	6.06	-	-	14.89	13.74	3.40	8.80	14.50	2.40	9.00	11.40	5.75
11	7	5156	29.00	23.00	6.00	-	-	-	-	-	-	-	-	-	-	4.20
10	7	1932	39.50	23.10	6.40	-	-	-	-	-	-	-	-	-	-	6.70

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Table B.30: Projectile point non metric analysis: Cultural Zone 7

Level	Cultural Zone	Cat. #	Completeness (Missing Portions)	Cultural Affiliation	Material	Longitudinal Cross Section	Transverse Cross Section	Symmetry	Basal Corner Shape	Basal Margin Modification	Basal Margin
11	7	5154	Tip, Base	Terminal Paleoindian	SRC	Asymmetrical biconvex	biconvex	asymmetrical	straight	thinning	straight
11	7	5155	Complete	Terminal Paleoindian	SRC	Asymmetrical biconvex	biconvex	asymmetrical	convex	Thinning/retouch	concave
11	7	5156	Body/base	Terminal Paleoindian	Silicified Peat	Asymmetrical biconvex	biconvex	asymmetrical	straight	Thinning/retouch	convex
10	7	1932	Body/base	Terminal Paleoindian	Chert	Asymmetrical biconvex	biconvex	asymmetrical	straight	Thinning/retouch	convex

Table B.31: Flake tools metric analysis: Cultural Zone 7

Level	Cultural Zone	Cat.#	Weight (g)	Primary Working Edge (mm)	Secondary Working Edge (mm)	Maximum Length (mm)	Maximum Width (mm)	Maximum Thickness (mm)
11	7	2853	2.60	17.70	-	22.40	18.90	5.00
11	7	2854	2.00	14.60	19.00	20.00	20.00	4.50
11	7	2975	0.80	25.40	-	42.00	30.00	8.00
11	7	2995	28.90	30.80	36.5; 37.8	54.00	39.00	10.00
12	7	7435	1.43	17.10	-	17.40	15.10	5.00
10	7	10138	0.50	13.00	-	15.00	13.00	3.00
11	7	5126	1.30	13.90	17.5; 18.5	18.50	10.00	4.10
12	7	7450	1.80	23.80	9.00	23.60	16.10	3.70
11	7	5157	18.60	25.10	26.00	46.00	28.00	14.20
11	7	5159	4.10	29.80	13.10	33.90	28.00	5.50
10	7	6725	8.52	-	17.1*	28.00	25.00	9.30
11	7	1837	40.80	28.00	-	45.50	46.90	19.00
10	7	1904	23.40	15.00	42.1; 28.6	41.60	36.00	12.80
11	7	2682	55.50	35.90	62.1; 50.5	75.00	45.00	15.00
11	7	1903	3.22	-	-	26.3	15.5	5.5

Table B.32: Flaked tools non metric analysis: Cultural Zone 7

Level	Cultural Zone	Cat.#	Unit	Material	Tool Type	Modification	Shape	Primary Working Edge (Location)	Secondary Working Edge (Location)	Longitudinal Cross Section	Transverse Cross Section
11	7	2853	23	SRC	side/endscraper	retouched	triangular	convex (distal)	possible notch	plano-convex	plano-convex
11	7	2854	23	pebble chert	side/endscraper	retouched	triangular	straight (distal)	convex (lateral)	plano-convex	plano-convex
11	7	2975	24	SRC	Uniface	retouched	rounded polygon	straight (lateral)	-	plano-convex	plano-convex
11	7	2995	24	quartzite	Uniface Fragment	retouched	rectangular/broken	convex (distal)	possible notch	plano-convex	Triangular
12	7	7435	24	SRC	biface fragment	retouched	knife tip	straight (lateral)	-	Asymmetric bi-convex	Asymmetric bi-convex
10	7	10138	26	chert	Uniface Flake	serrated	triangular	straight (lateral)	-	triangular	bi-planar
11	7	5126	27	KRF	side/endscraper	retouched	rectangular	straight (distal)	straight (lateral)	plano-convex	plano-convex
12	7	7450	27	SRC	side/endscraper	retouched	rounded polygon	convex (distal)	straight (lateral)	plano-convex	plano-convex
11	7	5157	28	chert	Spokeshave	retouched	rectangular/broken	straight (lateral)	concave (distal)	plano-convex	plano-convex
11	7	5159	28	SRC	Spokeshave	retouched	triangular	straight (lateral)	concave (distal)	plano-convex	plano-convex
10	7	6725	46	SRC	Incomplete scraper	retouched	rounded polygon	convex (distal)	straight (lateral)	plano-convex	plano-convex
11	7	1837	03	SRC	core fragment	use-wear	polygonal	convex (lateral)	-	bi-convex	bi-convex
10	7	1904	05	SRC	Biface	thinned	rectangular/broken	straight (lateral)	convex (distal)	plano-convex	Triangular
11	7	2682	05	SRC	side/endscraper	retouched	triangular	straight (lateral)	convex (distal)	plano-convex	plano-convex
11	7	1903	04	silicified peat	incomplete scraper	retouched	rectangular/broken	convex (lateral)	-	plano-convex	plano-convex