ARCHAEOLOGICAL MONITORING OF THE CANWEST GLOBAL PARK BASEBALL FACILITY EXPANSION

Submitted to

PRE-CON BUILDERS

QUATERNARY
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1.0 INTRODUCTION

The relocation of the roads connecting with the new Provencher Bridge resulted in an opportunity to expand the seating facilities on the south side of the CanWest Global Park Baseball Facility. Due to the known presence of archaeological resources in the immediate vicinity (Quaternary 1994, 1995a, 1995b, 1996, 2000), it was determined that monitoring of sub-surface components of the construction would be necessary.

The previous investigations identified an extensive cultural horizon which occurs in the general vicinity of the south dugout (Quaternary 2000). Additionally, extensive pre-European cultural deposits, known to be present on the south side of Water Avenue, extend into the project area (Quaternary 1988, 1990a, 1990b, 1990c, 1999a). The contractor, Pre-Con Builders, retained Quaternary Consultants Ltd. to provide heritage resource management services. All archaeological activities were carried out under the terms of Heritage Permit A50-02 (Appendix A), issued by Manitoba Culture, Heritage and Tourism.

1.1 Location and Scope of the Project

The project is on the west side of the Red River to the north of Water Avenue in the downtown section of Winnipeg and lies east of the main baseball facility which was constructed in 1998/99 (Quaternary 2000). That structure occupies the land which had contained the Winnipeg Hydro Sub-Station (demolished in 1995), as well as numerous residences and businesses that had existed along the north side of Pioneer Avenue from the 1870s up to the 1960s (Quaternary 1996:104-118).

Different components of the project have potential for impact upon archaeological resources:

- drilling of seating holes for pilings for structure support;
- excavation around pilings for construction of pile caps;
- excavation between pile caps for pouring of grade beams; and
- installation of a land drainage sewer which connects into the Waterfront Drive land drainage sewer (Quaternary 1999b).

The physical characteristics of the baseball stadium are such that minimal subsurface impact occurs, as compared with other types of structures. Most of the structure is above surface with only pilings, grade beams, and sub-surface service installations below current ground level. The deepest impact is that of the piling holes (Figure 1)which had diameters of 12", 14", and 16" (30, 35, and 40 cm). These were drilled to depths between 4.0 and 5.0 metres. The excavations for pile cut-off and the grade beams were only slightly below grade.

The land drainage sewer connection (Figure 1) was installed from the extreme east end of the new facility to the existing pipe in the median of Waterfront Drive. The distance of the installation was 82 metres, with the pipe sloping upward from a depth of 4.5 metres below surface at the road to a depth of 1.6 metres below grade at the ballpark. The section under the road was cored. The remainder was installed in an open-cut trench, with a manhole 31 metres east of the structure.

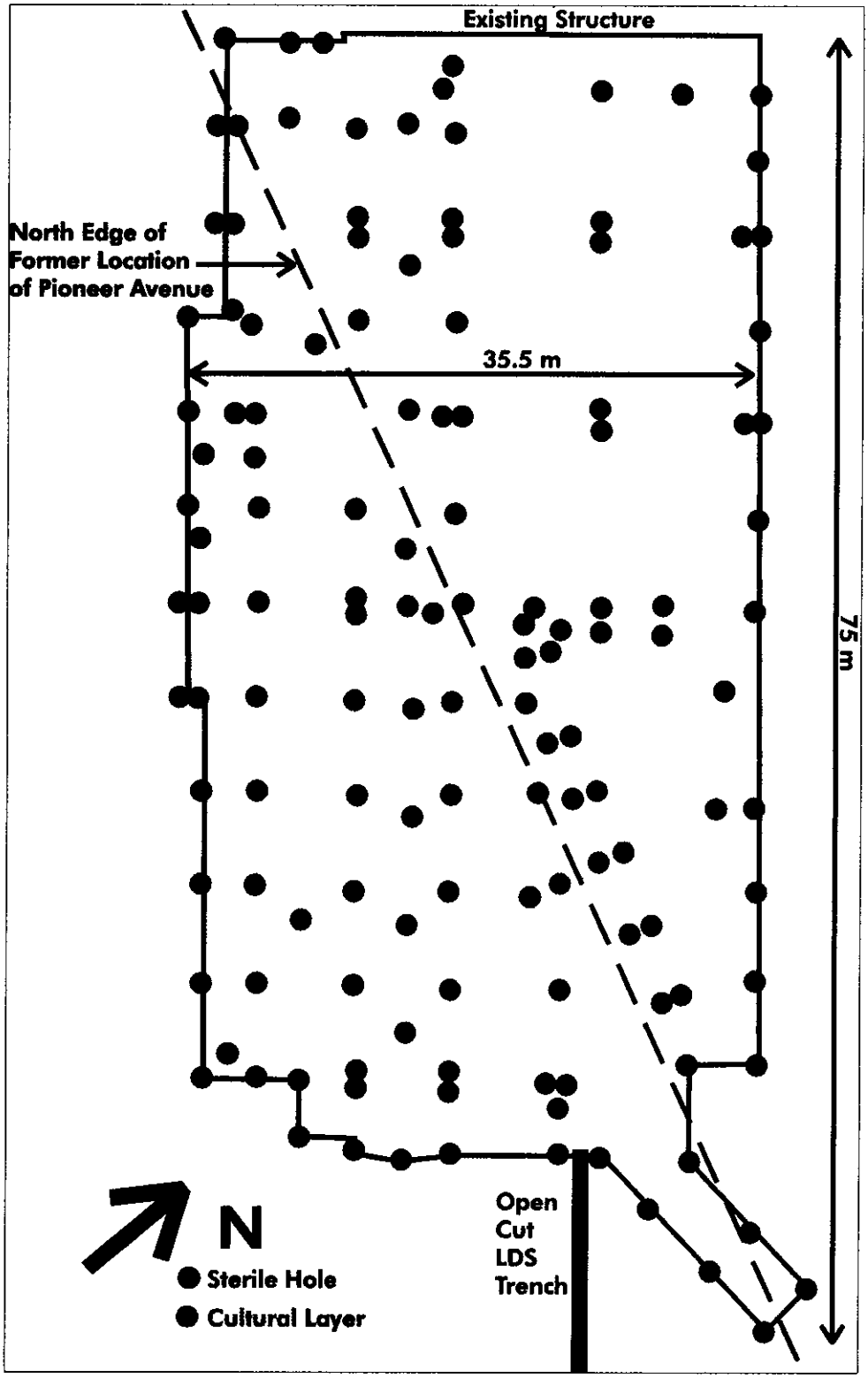

Figure 1: Location of Project Impacts and Evidence of Cultural Horizon

The first component, a geo-technical investigation consisting of drilling of four small (13 cm) holes, was undertaken on October 17, 2002. Drilling of holes for seating of piles began on November 22 and was completed by December 3, 2002. The pilecap and grade beam excavations occurred throughout December but did not require monitoring. The land drainage sewer installation, on the east side of the stadium, began December 16 and was completed on December 18.

1.2 Study Team

The entire archaeological resources management program was directed by Sid Kroker (Senior Archaeologist). The monitoring of pile hole drilling and subsurface services excavations was conducted by Sid Kroker. Laboratory operations resulting from artifact recovery, including primary preparation, sorting, and identification, was undertaken by Sid Kroker. Computer cataloguing was completed by Pam Goundry (Research Archaeologist). Documentation and analysis has been undertaken by Sid Kroker and Pam Goundry.

1.3 Excavation Monitoring Methodology

The excavations for the piling seating holes was done with a truck-mounted auger using three different diameters bits—12", 14", and 16". The auger bit is 5 feet in length and arrangements were made with the driller that after each five-foot drilling, the auger would be pulled up for observation before the extracted soil was spun off. The monitoring archaeologist recorded the presence or absence of pre-European cultural deposits and the depth of the horizon, if present. The extracted soil containing the cultural material was collected for further investigation at the laboratory facilities of Quaternary Consultants Ltd. Each piling excavation received its own number so that the presence of cultural material could be mapped across the site (Figure 1) and correlations between locations and depths could be maintained.

The pile cap excavations were undertaken with rubbermount backhoes which removed the upper soil around the piles, resulting in a roughly cylindrical excavation. As none of the excavations would reach the depth at which the cultural horizon had been identified from the drill monitoring, minimal observation was undertaken.

The excavations for the open-cut trench for the land drainage sewer were undertaken with a large backhoe and most of the soil was stockpiled for refilling the trench. Archaeological monitoring consisted of continual visual observation of the excavation. As the approximate depths of the cultural horizons had already been determined through the monitoring of the pile cap excavations and nearby prior projects, the backhoe operator was informed as to when the excavation could become sensitive. When the depth of the excavation neared the depth of the potential cultural horizon, the backhoe operator excavated thinner layers until below the horizon depth. No cultural resources were encountered during the trench excavations so that mitigative actions, such as *en bloc* removal, were not necessary.

In the pile hole drilling and the excavations for the land drainage sewer, the monitoring archaeologist would watch for buried soil horizons and changes in soil texture which could indicate possible former ground surfaces upon which cultural strata could occur. The indicators watched for were charcoal layers, ash lenses, and/or reddish stained soil. The colour change is usually indicative of oxidation of the iron particles in Red River silt by heat—the more intense the heat, the redder the soil. These features can indicate either a natural event such as a brush or prairie fire or a cultural event such as a campfire. If evidence of fire is observed, the layer is investigated to ascertain if the cause was natural or cultural. The presence of food remains, particularly mammal or fish bones, resting upon a buried soil is a positive indicator of an archaeological occupation horizon. Other positive indicators are the presence of fragments of earthenware containers and/or lithic tools or flakes resulting from tool manufacture.

1.4 Archaeological Site Designation

Each artifact is assigned a Borden designation as part of its catalogue number. The Borden designation, consisting of a four-letter prefix and a numerical suffix, is a Canada-wide system of identifying archaeological sites based upon latitude and longitude (Borden 1954). The four letter identifier, DlLg, designates a geographical block between 49° 50' and 50° 00' North latitude and 97° 00' and 97° 10' West longitude. Within each block, archaeological sites are assigned sequential numbers upon discovery. This site, lying north of Water Avenue, west of the Red River, and east of the CNR Main Line Embankment, had been previously designated as DlLg-69 (Quaternary 1996:4). As several different projects have occurred within this area, a year identifier is added to the Borden designation to differentiate between the recoveries from each of the projects. This project had the suffix 02 so that the full catalogue numbers of the recovered artifacts are DlLg-69:02/####.

1.5 Laboratory Procedures

A total of 1155 artifacts were recovered. These were brought to Quaternary laboratory facilities, where they were washed and sorted by material class and identified. Material of the same type (e.g., chert flakes) from the same piling hole were combined under a single catalogue number.

Each artifact received a catalogue number consisting of the Borden designation for the site and a sequential number for permanent identification, i.e., DlLg-69:02/####. All pertinent data associated with the artifact was entered into the computer cataloguing system which is based upon the Canadian Heritage Inventory Network (CHIN) system (Manitoba Museum of Man and Nature 1986; Kroker and Goundry 1993:Appendix B). The computer cataloguing program is derived from DBASE3® and generates individual artifact catalogue cards.

Processed artifacts were prepared for storage by inserting the specimens and the catalogue card into standard plastic storage bags, then stapling the bags closed. At the end of the project, all recovered artifacts will be delivered to the Manitoba Museum of Man and Nature which is the repository designated by the City of Winnipeg for artifacts recovered during development projects in the vicinity of The Forks.

2.0 STRATIGRAPHY

Due to time constraints, the monitoring of the drilling of the pile seating holes focused on the identification and recovery of the cultural horizon rather than recording the details of the stratigraphic column. The stratigraphy within the impact zone is both simple and complex. The macro-stratigraphy consists of historic fill overlying an intermittent A Horizon, dating to the late 19th century, overlying sequential layers of riverine-deposited sediments. Within the riverine layers, periods of stable ground are represented by buried soil levels formed during the time between successive flood episodes. It is on one of these former soil horizons that the archaeological layer occurs.

The initial monitoring component during the drilling of seating holes for the piles produced some generalized stratigraphic knowledge. However, the rotary action of the auger tends to distort or obscure thin layers (less than 0.5 cm), so that only thicker layers of buried soils or different textured sediments (sand versus silt) can be discerned. Generally, monitoring of auger drilling can provide an overview of the stratigraphy throughout the site. A total of 137 auger holes were monitored.

The depth of the historic fill layer varied between 60 cm and 350 cm. The deeper deposits were associated with former building basements and previous installations of abandoned sub-surface services. In areas where the fill layer rested upon the soil horizon post-dating the 1881 flood, riverine deposits were encountered to base of the augering. Evidence of the undulating cultural horizon as well as a former soil horizon (blackish soil and traces of charcoal) at depths of 205 to 250 cm occurred in many holes. Layers of sand, ranging between 2 cm and 15 cm thick, were observed. One layer occurred at the same depth or slightly below the cultural horizon. In several instances, it appeared that the cultural horizon had been replaced with the sand layer. Other layers were observed at depths of 300 cm.

The sequences of the riverine sediments below the historic fill are quite complex when the micro-stratigraphy is examined. The primary sources of data for the detailed stratigraphy are the profiles recorded during the excavation of the open cut LDS trench between the east end of the structure and the junction with the existing LDS on Waterfront Drive. The trench sloped upward from east to west. It appears that the stratigraphy became more simplified with the further distance from the river. The greatest number of buried soil horizons was observed at the beginning of the trench at the east curb of Waterfront Drive (Table 1). No evidence of the cultural horizon was encountered during the trench excavation. Given the downward slope to the north recorded for the cultural horizons south of Water Avenue, during The Forks Access Project (Quaternary 1999a), it would have been expected to occur at a depth of approximately 250 cm. Buried soil horizons were noted above and below this depth and any of them could have correlated with the cultural horizon. It should be noted that, in any cultural horizon, there are areas with minimal or no artifacts and it is possible that the trench went through a sterile portion of the cultural level or that the cultural material in this location had been eroded during a flood.

STRATUM	WEST	MANHOLE	EAST
Fill	60	92	140
Disturbed top soil	68	104	160
Brown silty clay	120	135	
Sand	121	137	
Brown silty clay	185	166	185
Buried soil horizon	BASE	167	186
Brown silty clay		177	
Sand		183	
Brown silty clay			196
Buried soil horizon			197
Brown silty clay			200
Buried soil horizon			201
Brown silty clay			212
Buried soil horizon			213
Brown silty clay			228
Buried soil horizon			229
Brown silty clay		260	242
Buried soil horizon		BASE	243
Brown silty clay			280
Buried soil horizon			281
Brown silty clay			286
Grey-brown clayey silt			297
Brown silty clay			335
			BASE

Table 1: Soil Profiles from Selected Locations along LDS Trench

3.0 PRE-CONTACT ARTIFACTS

During the monitoring of the drilling of the piling seating holes, Pre-Contact cultural resources were recorded at several locations (Figure 1). As the recoveries appeared to derive from a single, undulating horizon, all artifacts will be analysed as a single component, rather than examining the recoveries from each of the holes that had had material as a discrete assemblage.

A total of 1155 artifacts were recovered. These consist of 30 lithic artifacts, 30 ceramic artifacts, 962 butchering remains, 8 naturally deposited faunal remains, and 125 floral remains.

3.1 Lithic Artifacts

The lithic component of pre-European tool kits is the portion that tends to preserve the best. Bone and wooden tools, as well as clothing and other organic artifacts, decay or burn during prairie/forest fires. Due to the indestructibility of stone artifacts, they have become one of the standard diagnostic tools for assessing cultural affiliations. This assessment is predicated upon the assumption that there were standardized forms for each type of artifact within each cultural group at a specific time period. However, considerable variation can occur due to the degree of skill of the individual tool maker, the quality of the lithic material from which the tool is being made, and the borrowing of ideas from other cultural groups. The above discussion applies to tools such as projectile points and scrapers, rather than non-diagnostic lithic detritus. The 30 lithic artifacts consist of six flakes and 24 fragments of fire-cracked rock.

3.1.1 Detritus

Detritus is the category under which the byproducts and waste elements of the tool manufacturing process are catalogued. This category refers to lithic material and includes flakes and cores. It can also include fragments of copper and, in proto/post-Contact times, iron. This category also includes waste products from the manufacture of bone or wooden tools.

The manufacture of stone tools is a complex process. Cobbles and pebbles of the desired raw material are struck with a hammerstone to remove flakes. A source cobble with flakes removed is known as a core. The flakes which have been removed are further shaped, using a stone or antler billet to strike off smaller flakes to thin the original object and to produce the desired shape. At this time, a pointed implement called a flaker, usually made of antler, is used to press small flakes from the edge to produce a sharp, straight cutting edge. During this process, many flakes are produced—some are further modified as retouched flakes, others are used *as is* as expedient cutting tools, but most are discarded at the place of manufacture.

Within the six flakes, three lithic material types are represented, the predominant one being undifferentiated chert (Table 2).

MATERIAL	GROUP	QUANTITY	FREQUENCY	WEIGHT	FREQUENCY
Chert	IV	3	50.0	1.4	82.4
Quartzite	IV	2	33.3	0.2	11.8
Swan River Chert	I	1	16.7	0.1	5.9
TOTAL		6	100.0	1.7	100.1

Table 2: Flake Recoveries by Material Type

Lithic source areas for tool manufacture can be divided into six groups—two of which, Group I and Group IV, are present in the recovered material:

Group I: Materials found throughout the western portion of Manitoba. This group includes Swan River Chert from the Swan River Valley region near the Saskatchewan border and St. Ambrose Chert from Lake Manitoba. Other materials, i.e., chalcedony and jasper, are found in deposits such as the Souris Gravel Pits.

Group II: Materials found to the south. The primary example of this group is Knife River Flint which occurs at quarry locations in North Dakota.

Group III: Materials associated with the Canadian Shield, found to the east and to the north of the Red River. This group consists of quartz and rhyolite.

Group IV: Materials whose distribution is a result of glacial transportation and can be found throughout the province. This group is represented by quartzite, siltstone, silicified sediment, and the various types of undifferentiated chert.

Group V: Materials from nearby quarry sources. This group is represented by Selkirk Chert and the limestone matrix in which the nodules occur.

Group VI: Materials from the western Lake Superior area, especially around Thunder Bay. This group includes Gunflint Chert and Jasper Taconite.

Inasmuch as lithic materials are not available at the site, all material would have been transported to the location by the occupants. Some materials, such as Group IV, could have been obtained at creek mouths and riffle areas to the west along the Assiniboine River. The most predominant groupings of lithic materials would represent source areas recently visited by the occupants.

A limited assemblage such as this one, which albeit showing very strong reliance on locally obtained material, is too small to enable definitive statements about the sources areas represented within the entire site. The presence of locally obtainable material indicates a knowledge of regional lithic source areas and suggests the practise of gathering tool-quality material when the opportunity arises. As certain types of material are favoured for specific tools, often that type of material is carried until needed. Thus, representations of previously visited areas or source areas accessed by traders can often occur as components of a lithic assemblage.

3.1.2 Fire-cracked Rock

Fire-cracked rocks are those specimens which have evidence of being subjected to intense heat. Depending upon the structure of the rock, extreme temperature variations cause different results. Fine-grained homogenous lithic cobbles, such as limestone, quartzite, and rhyolite, will spall and shatter into angular fragments, while coarse-grained granitic rocks will tend to decompose into smaller granular fragments of the different parent materials, i.e., granite, granodiorite, diorite, etc.

Twenty-four fire-cracked rock fragments (DlLg-69:02/3 and 85), all granite, were recovered. The total weight is 46.9 grams indicating severe fragmentation probably as a result of being adjacent to hearths.

3.2 Ceramics

Thirty ceramic sherds were recovered. This quantity consists of 28 body sherds and two decorated sherds, one from a lip tab or handle and the other from the shoulder of a different vessel.

3.2.1 Body Sherds

As with every ceramic assemblage, the bulk of the sherds are from the body of the pot. Mathematically, this makes sense since the decorated portions of the vessel usually account for less (generally much less) than 20% of the total vessel surface. Body sherds have traditionally been considered less diagnostic than the rims, necks, and shoulders that comprise the decorated portion of the vessel. However, it is the experience of archaeologists who replicate pottery that decorations are normally easier to reproduce than surface impressions. Until a systematic method of analyzing and describing the visible variation in the body sherds is developed, the level of description tends to be relatively coarse.

Surface treatment was the only attribute apart from weight that was systematically examined for every item in this assemblage. The surface impressions (or lack thereof) for 20 sherds—71.4% of the assemblage—could not be determined, due to the small size of the sherds or the fact that their exterior surfaces were exfoliated and missing (DlLg-69:02/46 and 82). For the eight sherds whose surface impressions could be identified, seven (DlLg-69:02/48 and 68) had smooth surfaces and one sherd (DlLg-69:02/98) was obliterated textile impressed. The total weight of these sherds is 7.8 grams.

3.2.2 Rim Sherds

The two rim sherds are from different ceramic vessels. DlLg-69:02/1 has a very sharp angle with a cylindrical boss projecting outward at the point of inflection (Figure 2). The sherd weighs 7.1 grams and measures 19.8 mm wide and 37.6 mm long. The boss measures 8.4 mm in width by 9.3 mm in length and extends 3.9 mm from the body of the vessel. On the upper portion of the sherd, three vertical grooves are present—formed by the impression of a round object or by trailing a round object while the clay was plastic. The edges of the projecting grooved section are smooth indicating that this

is not the result of breakage but represents the edges of a projecting lip tab or handle. Grooved tabs are known to occur in the ceramic assemblage which has been designated as Devil's Lake-Sourisford. In addition, grooved handles are present on some Oneota ceramic vessels. This sherd is too incomplete to permit further identification. Both types of ceramic wares are produced by southern groups, with Oneota material usually found in southern Minnesota and Devil's Lake-Sourisford found throughout western North Dakota and extreme southwestern Manitoba.

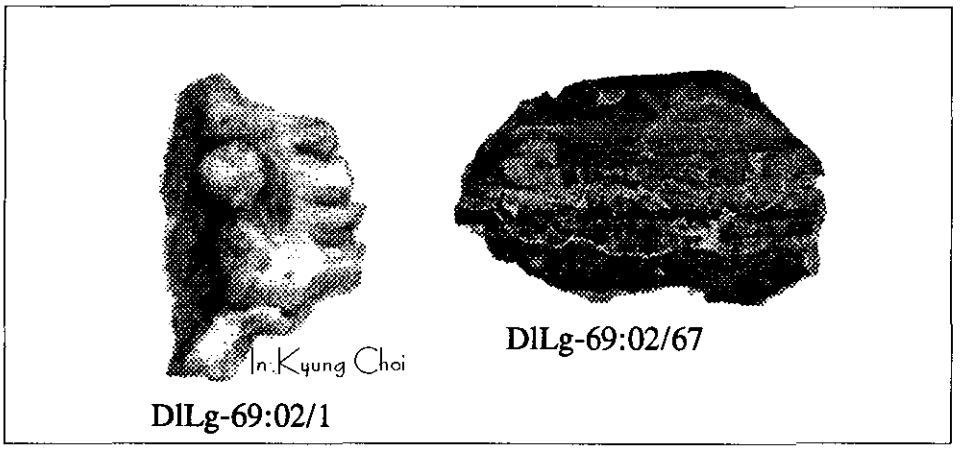

Figure 2: Ceramic Rim Sherds

DlLg-69:02/67 is also a shoulder sherd with a relatively sharp angle of inflection. The portion below the shoulder is smooth and carbon encrusted, while the portion above the shoulder is decorated with two horizontal grooves, 3.9 mm wide (Figure 2). It weighs 4.9 grams. Horizontal trailed grooves are one of the attributes indicative of Oneota-like ceramics.

3.3 Faunal Remains

The largest number of artifacts consists of faunal objects. These include butchering remains, samples, and natural faunal deposits. The faunal material was identified using the standard references: Casteel (1976), Clarke (1981), Gilbert (1973), Mundell (1975), Olsen (1960, 1964, 1968, 1971), Schmid (1972). All of the faunal remains were examined and identified as specifically as possible: body part, age of individual, and species. Evidence of butchering techniques, such as cut marks, was recorded as was the condition of the specimen, i.e., charred, broken, chewed, or gnawed.

3.3.1 Butchering Remains

As is usually the case, food residue in the form of butchering remains is the highest percentage of recovery. A total of 948 artifacts, with a combined weight of 280.3 grams, was recovered. While samples could be construed as butchering remains, in that they are the result of cluster cataloguing of minute residue obtained during the wet screening process, they are not included in the quantities or weights of butchering remains. This is done so as not to skew the percentages inordinately in favour of undetermined or unidentifiable fragments. As such, the quantities that can be identified to

specific taxa more closely reflect the actual food procurement practices of the peoples that camped here.

For comparative purposes, the identified taxa are listed in Table 3. The frequencies of each taxon are calculated on the combined weight and quantities of all recoveries to give a picture of the relative frequency within the entire faunal food assemblage.

Some post-depositional trauma occurs during or immediately after the food preparation process when bone fragments are placed into the fire. The result is bone which is either charred or calcined (so thoroughly burned that only the inorganic white calcium carbonate remains). One mammal bone is charred and three are calcined. In addition, the unidentified shellfish (Unionidae) are also charred.

One innominate of a bison (*Bison bison*) is from a juvenile animal. The size and condition of this specimen indicates that the individual is nearing adulthood, older than 6-8 months. This may suggest a later summer/fall occupation of the site. Further research on the multitudinous fish scales (520 specimens equaling 63.4% of all fish recoveries), which possess annular rings, could fine tune the period of occupation. However, this type of analysis is beyond the scope of a mitigative project.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Mammal				
Large Mammal	3	0.3	7.3	2.6
Small Mammal	1	0.1	0.1	<0.1
Undetermined Mammal	98	10.3	22.7	8.1
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	9	0.9	212.1	75.7
Carnivore Family (Carnivora)	1	0.1	0.4	0.1
TOTAL MAMMAL	112	11.8	242.6	86.6
Undifferentiated Fish	802	84.6	20.9	7.5
Catfish (*Ictalurus* sp.)	16	1.7	11.9	4.2
Sucker family (Catostomidae)	2	0.2	0.2	0.1
TOTAL FISH	820	86.5	33.0	11.8
Freshwater Clam (Unionidae)	15	1.6	2.3	0.8
Fat Mucket (*Lampsilis radiata*)	1	0.1	2.4	0.9
TOTAL SHELLFISH	16	1.7	4.7	1.7
TOTAL BUTCHERING REMAINS	948		280.3	

Table 3: Faunal Recoveries

Archaeologists have many techniques to analyse the protein component of Pre-Contact diets. The most common method is to determine the minimum number of individuals of each species represented at the site. This is done by selecting the most frequent element, e.g., left dentary of a catfish, right femur of a bison, etc., and using that number as the minimum number of animals that would have been harvested. A rigorous analysis uses these minimum numbers and an average body weight of the particular species to determine the amount of usable meat that is represented by the bones in the faunal assemblage. This can be further refined by using base line measurements of the specific element and calculating percentage size ratios of the recovered specimens and then applying that corrected value to the usable meat formula. As an example, a dentary from a 10 kilogram catfish measures a certain length and the archaeological specimens may range from 50% to 150% of that size. The usable meat would be a compilation of the combined ratios times 10 kilograms. A study of this type is applicable when large portions of an occupation site have been excavated. It is not valid for a project like this where a very limited sampling of the cultural horizon has occurred. For example, a single recovery like the bison vertebra, DlLg-69:02/129, can radically skew the result as this single bone, partially shattered by the auger, accounts for more than 60% of the weight of the entire butchering remains assemblage.

The frequency of the butchering remains is calculated by both quantity and weight (Table 3). In quantity, the fish remains overwhelm the other taxa. However, as fish bone is small and light in comparison to the larger and denser mammal bone, the proportions are reversed when weight is considered. In this rather simplistic type of analysis, the amount of available meat is deemed to be relatively proportional to the weight of the residue, although in the case of shellfish, the weight of the discarded shell is considerably greater than that of the available meat.

The recoveries are not sufficient to be able to make substantive statements as to dietary preferences. Bison (and perhaps other mammals) were a significant component with both catfish and sucker (and possibly other species of fish) contributing to the remainder of the protein in the diet. Freshwater clams were harvested. The undocumented portion of the diet is that which was contributed by plants. As plant fragments, except for charred seeds, rarely are preserved, the percentage of vegetable components within the diet is undeterminable.

3.3.2 Samples

Samples are an expeditious mechanism for the cataloguing of myriads of minuscule recoveries. These consist of specimens recovered on a 4, 2, or 1 millimetre screen and contain diverse artifacts, i.e., charcoal fragments, shell fragments, and small fragmented bone elements. Intensive detailed study of the material catalogued as samples may result in the identification of various plant or animal species, but most of the dominant taxa are already represented by larger recoveries. The additional information obtained through a comprehensive analysis of samples is usually that of degree and further confirmation of specific taxa rather than the identification of previously unrecorded species. Fourteen samples weighing 27.8 grams were catalogued.

3.3.3 Naturally Deposited Fauna

Eight specimens of non-food faunal remains have been curated (Table 4). Representations of these types of faunal specimens are often incorporated into cultural deposits. They include frogs, which burrow into the soil for hibernation. Insects, such as DlLg-69:02/76, a possible ladybug, may have been incorporated in the soil during or after the occupation. The aquatic taxa, freshwater snails and pea clams, are deposited as part of the sediment load during flood episodes and are part of the soil substrate below the cultural level. As the cultural material mixes slightly with the upper portion of the original soil, these taxa are incorporated within the cultural matrix.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Amphibia	1	12.5	0.1	12.5
TOTAL AMPHIBIAN	1	12.5	0.1	12.5
Freshwater Snails (Gastropod) Ramshorn Snails (Planorbidae) Pond Snails (Lymnaeidae)	 2 2	 25.0 25.0	 0.2 0.2	 25.0 25.0
TOTAL GASTROPODS	4	50.0	0.4	50.0
Freshwater Clam (Eulamellibranchia) Pea Clams (Sphaeriidae)	 2	 25.0	 0.2	 25.0
TOTAL CLAM	2	25.0	0.2	25.0
Insects	1	12.5	0.1	12.5
TOTAL INSECTS	1	12.5	0.1	12.5
TOTAL NATURAL FAUNA	8		0.8	

Table 4: Natural Faunal Remains

3.4 Floral Remains

The 125 floral recoveries encompass charcoal (124 specimens) and one piece of bark. An intensive analysis to determine the representative species is beyond the scope of a mitigative report, however, it can be assumed that most of the charcoal would derive from locally available trees. These would include oak, maple, willow, poplar, and birch. Several of the charcoal specimens are large enough for species determination at a macro-analysis level. Cursory examination of random specimens indicates that the charcoal derives from deciduous trees rather than coniferous. The total weight of the charcoal is 1.9 grams, indicating the extremely fragmentary nature of the recoveries. DlLg-69:02/63 is a chunk of tree bark, weighing 0.8 grams. This is likely from a local deciduous tree.

4.0 INTERPRETATION

The recoveries are from limited samplings of a large area (Figure 1), portions of which have experienced prior impact through basements, road construction, and sub-surface services such as water, sewer, Hydro, and telephone. Many of the holes did not produce evidence of the cultural horizon. This absence does not mean that resources are not immediately adjacent to the sterile hole. This is best exemplified by cases where one hole from a paired cluster has cultural material while the other does not (Figure 1). Evidence from the mitigation excavations at the south dugout (Quaternary 2000) showed that erosion, either from the former stream that flowed through the current site of the ballpark or from high waters on the Red River, had removed portions of the cultural deposits at that location. During monitoring of the drilling, thin layers of sand were often observed at the same elevation as where the cultural horizon should have been, suggesting erosion of the cultural layer and deposition of a sand layer. This erosion could have been widespread but irregular, in that the material had been washed away at one spot, while no effect occurred less than a metre away.

Several of the holes in the northwest corner encountered structural debris (brick, timber, etc.) to depths approximating three metres. These are the result of infilling of basements of former buildings that had occurred along Pioneer Avenue (Quaternary 1996:109). Many of the holes in the southeast portion of the footprint encountered fill as a result of prior impact through the installation and/or servicing of underground services, i.e., water, sewer.

The limited cultural assemblage of 1155 artifacts derives from nineteen different loci within the footprint (Figure 1), each of which contained varying densities of artifacts. [As a point of illustration, over 85,000 artifacts were recovered from the mitigative excavations within the south dugout during the initial construction of the baseball facility (Quaternary 2000).] Because of the small quantity of artifacts, determinations of cultural choices in terms of preferred lithic material, ceramic styles, and subsistence strategies are, of necessity, tenuous.

Only two diagnostic ceramic sherds were recovered. Both represent types of ceramics manufactured by people whose seasonal round does not normally include The Forks area. Representing groups of people who live at considerable distance, these ceramic sherds are probably linked to the extensive cultural deposit correlated with the Aboriginal Peace Meeting that occurred 640 years ago. The extensive deposits from this event were recorded during The Forks Access Project (Quaternary 1999a) and correlated with earlier recoveries from the St. Mary's Project (Quaternary 1990a, 1990b, 1990c). The cultural horizon of this event also extended into the south dugout (Quaternary 2000) and it is not surprising that there are manifestations in the area of the current project.

Given the construction of a large facility over top of the cultural horizon, this will safeguard the buried resources for the foreseeable future.

5.0 BIBLIOGRAPHY

Borden, C.E.
1954 A Uniform Site Designation Scheme for Canada. *Anthropology in British Columbia* 4:44-48.

Casteel, Richard W.
1976 *Fish Remains in Archaeology and Paleo-environmental Studies*, Academic Press, London.

Clarke, Arthur H.
1981 *The Freshwater Molluscs of Canada*. National Museum of Natural Sciences, National Museums of Canada, Ottawa.

Gilbert, B. Miles
1973 *Mammalian Osteo-Archaeology: North America*. Missouri Archaeological Society, Columbia, Missouri.

Kroker, Sid and Pamela Goundry
1993 *Archaeological Monitoring and Mitigation of the Assiniboine Riverfront Quay*. The Forks Renewal Corporation, Winnipeg.

Manitoba Museum of Man and Nature
1986 Guides and Manuals for Processing Archaeological Materials. E.L. Syms (Ed.). Winnipeg.

Mundell, Raymond L.
1975 *An Illustrated Osteology of the Channel Catfish*. National Parks Service, Midwest Archaeological Center, Lincoln.

Olsen, Stanley J.
1960 Post-Cranial Skeletal Characters of *Bison* and *Bos*. Harvard University, Peabody Museum, *Papers of the Peabody Museum of Archaeology and Ethnology*, Volume XXXV, No. 4.

1964 Mammal Remains from Archaeological Sites: Part I, Southeastern and Southwestern United States. Harvard University, Peabody Museum, *Papers of the Peabody Museum of Archaeology and Ethnology*, Volume LVI, No. 1.

1968 Fish, Amphibian and Reptile Remains from Archaeological Sites: Part I, Southeastern and Southwestern United States. Harvard University, Peabody Museum, *Papers of the Peabody Museum of Archaeology and Ethnology*, Volume LVI, No. 2.

1971 *Zooarchaeology: Animal Bones in Archaeology and their Interpretation*. Addison-Wesley Publishing Co. Inc., Philippines.

Quaternary Consultants Ltd.

1988 *North/South Access Road Archaeological Impact Assessment*. On file with Canadian National Railroad, The Forks Renewal Corporation and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch.

1990a *Heritage Resources Impact Assessment for Proposed York and St. Mary Avenue Extensions (Main Street - Pioneer Boulevard)*. On file with I.D. Systems Ltd. and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1990b *Assessment of Archaeological Resources within the St. Mary Avenue Extension Right-of-Way*. On file with I.D. Systems Ltd. and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1990c *St. Mary Archaeological Recovery Project: Interim Report*. On file with Streets and Transportation Department, City of Winnipeg and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1994 *Archaeological Monitoring of Geo-Technical Investigations at the Portage East Site*. On file with Manitoba Entertainment Complex Inc., DS-Lea Consultants Ltd., and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1995a *Archaeological Monitoring of Additional Geo-Technical Investigations at the Proposed Arena Location (Portage East Site)*. On file with Manitoba Entertainment Complex Inc., DS-Lea Consultants Ltd., and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1995b *Archaeological Monitoring of Hydro Pylon Caisson Drilling at the Portage East Site*. On file with Manitoba Entertainment Complex Inc., DS-Lea Consultants Ltd., and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1996 *Heritage Resources Impact Assessment of the Portage East Site*. On file with Spirit of Manitoba and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch.

1999a *Archaeological Monitoring of The Forks Access Project: South of Water Avenue (DlLg-33:97A)*. On file with Reid Crowther & Partners and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1999b *Archaeological Monitoring of The Forks Access Project: North of Water Avenue (DlLg-77)*. On file with Reid Crowther & Partners and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

2000 *Archaeological Mitigation of the CanWest Global Park Baseball Facility*. On file with The Dominion Company and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

Schmid, Elisabeth

1972 *Atlas of Animal Bones: For Prehistorians, Archaeologists, and Quaternary Geologists*. Elsevier Publishing Company, Amsterdam.

APPENDIX A

HERITAGE PERMIT

The Heritage Resources Act (Subsection 14(2) and Sections 52 and 53)

Manitoba
Culture, Heritage
And Tourism

Heritage Permit No. A50-02

Pursuant to Section/Subsection 53 of *The Heritage Resources Act*:

Name: Quaternary Consultants Ltd.
Address: 130 Fort Street
Winnipeg MB R3C 1C7

ATTENTION: Mr. Sid Kroker

(hereinafter referred to as "the Permittee"),

is hereby granted permission to:

conduct an appropriate heritage resource management strategy for expansion of the south wing of the CanWest Global Baseball Park,including monitoring of geo-technical drilling, augering for pre-seating of piles, pilecap excavation and installation of subsurface services, in order to record the presence/absence of cultural resources and the soil stratigraphy, and to recover archaeological materials during drilling and excavation;

during the period:

October 17, 2002 – April 30, 2003.
This permit is issued subject to the following conditions:

(1) That the information provided in the application for this permit dated the 10th day of October 2002, is true in substance and in fact;

(2) That the permittee shall comply with all the provisions of *The Heritage Resources Act* and any regulations or orders thereunder; **Please note attachment re custody and ownership of heritage objects**

(3) That the Permittee shall provide to the Minister a written report or reports with respect to the Permittee's activities pursuant to this permit, the form and content of which shall be satisfactory to the Minister and which shall be provided on the following dates:
May 30, 2003;

(4) That this permit is not transferable;

(5) This permit may be revoked by the Minister where, in the opinion of the Minister, there has been a breach of any of the terms or conditions herein or of any provision of *The Heritage Resources Act* or any regulations thereunder;

(6) Special Conditions:

a. All heritage objects are to be deposited with the Manitoba Museum by November 30, 2002, for permanent curation and storage, unless appropriate loan requirements are arranged with the Curator of Archaeology prior to that date;
b. A complete set of archaeological field records, catalogue sheets, laboratory analysis records, photographs, reports, etc. are to be deposited with the Manitoba Museum of Man and Nature upon completion of the archaeological research, or sooner if required, and any subsequent revisions or additions to these records are to be filed as soon as possible thereafter;
c. Neither the Government of Manitoba nor the party issuing this permit shall be liable for any damages resulting from any activities carried out pursuant to this permit, and the Permittee specifically agrees, in consideration for receiving this permit, to indemnify and hold harmless the Minister and the Government of Manitoba, the Minister and any employees and officials of the Government, against any and all action, liens, demands, loss, liability, cost, damage and expense including, without limitation, reasonable legal fees, which the Government, Minister or any employee or official of the Government may suffer or incur by reason of any of the activities pursuant to or related to this permit.

Dated at the City of Winnipeg, in Manitoba, this 11th day of October 2002.

for Donna Dul
Minister of Culture, Heritage and Tourism