ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED CANADIAN MUSEUM FOR HUMAN RIGHTS AT THE FORKS

Submitted to

Friends of the
Canadian Museum for Human Rights Inc.

QUATERNARY
CONSULTANTS
LIMITED

May, 2004

EXECUTIVE SUMMARY

The anticipated construction of a facility to house the Canadian Museum for Human Rights at a location within the northeastern portion of The Forks has resulted in the undertaking of a heritage resources impact assessment for the area east of Waterfront Drive, north of The Forks Axial Pathway, and south of Water Avenue. Within this area, twenty-four impact assessment trenches were excavated by backhoe. These trenches, measuring four metres in length, extended to a depth of three metres. The excavated soil was processed by a team of archaeologists to recover all evidence pertaining to previous cultural occupations and to assess the density and extent of cultural horizons.

Archaeological deposits were recovered from twenty-one of the trenches. The three sterile trenches are located in the northeastern portion of the study area. Those trenches containing archaeological evidence have at least one and as many as four discrete cultural layers, resulting in forty-nine separate manifestations of archaeological resources. A total of 71,874 artifacts were recovered during the impact assessment from the various cultural levels. Some levels were extremely dense—containing more than 20,000 artifacts, while others were very sparse, with less than twenty-five specimens.

The diagnostic artifacts, primarily sherds from earthenware cooking vessels, indicate that at least four different groups had used the area as a camping, fishing, and trading location at several different times between A.D. 1000 and A.D. 1500. The identified styles of ceramics—Bird Lake, Duck Bay, Rainy River, and Blackduck—are represented at other locations at The Forks and throughout south and central Manitoba.

Specific recommendations cannot be proffered as the configuration of the facility to house the Canadian Museum for Human Rights is not known, nor is the location on the site or the style of construction. However, it is recommended that a mitigation program be developed as soon as the above information becomes available.

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF PLATES

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

In order to obtain preliminary information concerning the extent of cultural horizons within the area which has been proposed for the location of the Canadian Museum for Human Rights, it was determined that an archaeological impact assessment would be conducted for the general vicinity within which the footprint of the museum is expected to occur. The project was originally planned to begin in mid-September, 2003, but due to delays in obtaining permits from the City of Winnipeg and the unfortunate death of the Museum for Human Rights originator, Dr. Israel Asper, it did not begin until November 3, 2003.

Quaternary Consultants Ltd. was contracted by Friends of the Canadian Museum for Human Rights Inc. to undertake a preliminary impact assessment consisting of a series of test trenches (Figure 1) to record the presence, the number, and the density of sub-surface cultural horizons across the area. The project was conducted under the terms of Heritage Permit A46-03, issued by Historic Resources Branch, Manitoba Culture, Heritage and Citizenship (Appendix A), and City of Winnipeg Development Permit No. 03 329220 000 00 DP (Appendix A).

1.1 Location and Scope of the Project

As depicted on Figure 1, the project is located on the east side of Waterfront Drive (formerly Pioneer Boulevard), on land owned by The Forks North Portage Partnership (Parcel A1) and the City of Winnipeg (Parcel A2). A series of twenty-four test trenches were excavated between Water Avenue to the north and the Festival Park Interpretive Pathway to the south. The primary goal of the investigation was to ascertain the number of archaeological strata that occur in the upper three metres. The test trenches were situated to provide a general overview of the presence and depths of cultural horizons within the potential impact zone.

As of yet, the footprint and location of the proposed museum structure is undetermined. The preliminary stratigraphic data (Quaternary 2003a), obtained from the impact assessment, was included in the project information database made available in mid-December, 2003, to the numerous architectural firms who were competing in the international design competition. This report refines the stratigraphic data and undertakes the analysis and interpretation of the artifacts recovered from the numerous cultural levels encountered during the project. The data presented in this report will be utilized to develop an appropriate cultural resource management program to be implemented in conjunction with the construction of the Museum.

1.2 Existing Data

Several reports containing information concerning archaeological horizons in the vicinity are available:

- North/South Access Road Archaeological Impact Assessment (Quaternary 1988);
- Provencher Bridge Project Archaeological Impact Assessment (Quaternary 1989);
- Archaeological Monitoring of the Stage I Construction Program (Kroker and Goundry 1990);

- Heritage Resources Impact Assessment for Proposed York & St. Mary Avenue Extensions (Quaternary 1990a);
- Assessment of Archaeological Resources within the St. Mary Avenue Extension Right-of-Way (Quaternary 1990b);
- St. Mary Archaeological Recovery Project: Interim Report (Quaternary 1990c);
- Archaeological Monitoring of the York Avenue Underpass Reconstruction Project (Quaternary 1998);
- Impact Assessment and Archaeological Monitoring of The Forks Access Project: South of Water Avenue (DlLg-33:97A) (Quaternary 1999a);
- Archaeological Impact Assessment of the Legacy Estates Project at The Forks (Quaternary 2000a);
- Archaeological Monitoring of the Construction Components of Festival Park at The Forks (Quaternary 2000b.);
- Geo-technical Monitoring and Heritage Resource Management Program for the West Roads Project (Quaternary 2001a);
- Archaeological Monitoring of the Construction of the Eastbound Component of the Provencher Paired Bridges (Quaternary 2002a);
- Archaeological Monitoring of Excavations for the West Abutment of the Provencher Pedestrian Bridge (Quaternary 2002b);
- Archaeological Monitoring and Mitigation of the West Roads Project (Quaternary 2003b.);
- Archaeological Monitoring of Services Installations for the Provencher Pedestrian Bridge (Quaternary 2003c);
- Archaeological Monitoring of The Forks Axial Pathway from Esplanade Riel (Pedestrian Bridge) to VIA Rail Station (Quaternary 2003d); and
- Archaeological Monitoring of the Construction of the Westbound Component of the Provencher Paired Bridges (Quaternary 2003e).

All of the above projects were located in the immediate vicinity of the area which is projected to contain the Canadian Museum for Human Rights and all provide some information on the presence of archaeological resources. A major baseline study was associated with The Forks Access Project - South of Water (Quaternary 1999a). Information on cultural stratigraphy within the study area was also derived from the assessment of the proposed York Avenue Extension to Provencher Bridge (Quaternary 1989) and the Legacy Estates Project (Quaternary 2000a). The other projects provide information on the periphery of the projected impact zone. This current assessment project has been designed to alleviate the knowledge gap that occurs in the central portion of the area.

Other projects in the southern portions of The Forks area (Kroker 1989; Kroker and Goundry 1993a, 1993b, 1994; Priess *et al.* 1986; Quaternary 1993a, 1993b, 1994a, 1994b, 2002c, 2003f) provide information on the age and types of occupations of First Nations groups, culminating in the establishment of the fur trade posts (Kroker *et al.* 1990, 1991, 1992; Priess, Bradford *et al.* 1986). Additional projects north of Water Avenue show continuation of the cultural horizons northward along the original upper river bank (Quaternary 1996, 2000c, 2003g, 2003h) as well as historic activities (Quaternary 1999b, 2001b, 2001c).

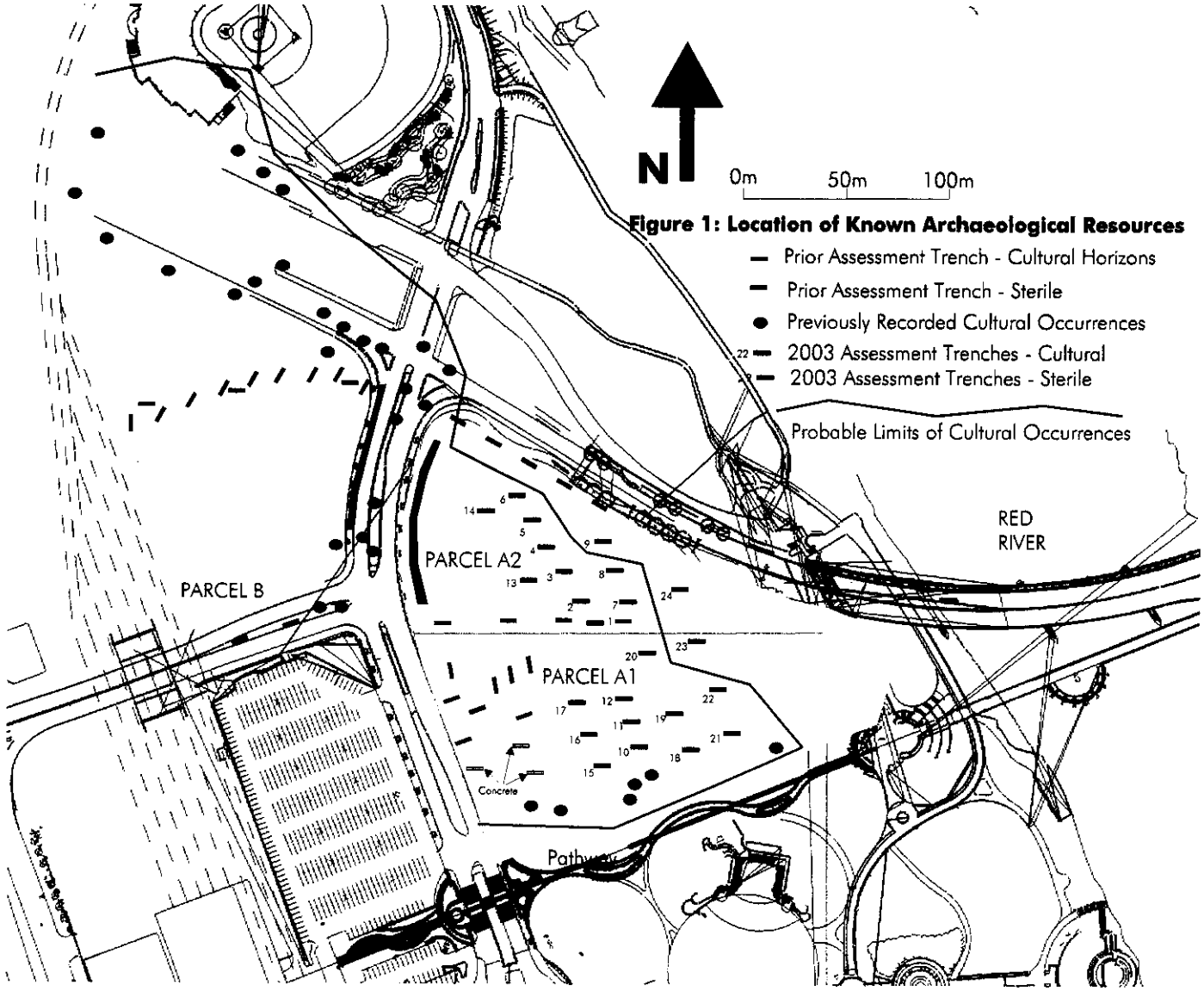


Figure 1: Location of Previously Known Archaeological Resources and the 2003 Assessment Trenches

The Provencher Bridge assessment indicated that archaeological horizons are present along the York Avenue right-of-way, east of the intersection with Waterfront Drive (Figure 1). Archaeological deposits were recorded in Test Hole 1, Test Hole 2, Test Hole 3, and Test Hole 4 at depths below surface between 145 cm and 301 cm (Quaternary 1989:25). The Legacy Estates assessment, in the northeast corner of Parcel A1, had evidence of archaeological horizons at Test Hole 1, Test Hole 2, Test Hole 3, Test Hole 5, and Test Hole 8. This data will be incorporated with the information recovered during the current project.

The Stage I project encountered archaeological horizons slightly south of the York Avenue intersection with Waterfront Drive (Kroker and Goundry 1990:28-31). Two cultural horizons were recorded on the east side of the open-cut land drainage sewer trench at depths below surface of 220 cm and 228 cm. Radiocarbon dates of 675 ± 100 years and 630 ± 90 years before present were obtained from these two horizons. On the west side of the 4 metre wide trench, a single cultural horizon was present at 240 cm below surface. This would be a representation of one of the two horizons on the east side. The construction plans show the elevation at this location to be 229.95 metres above sea level.

The impact assessment component of The Forks Access Project - South of Water Avenue recorded thirteen cultural horizons, with some of them being very extensive (Quaternary 1999a). Horizon B, which occurs at an elevation of 228.50 metres above sea level, extends throughout the area. Horizon E extends to the north and west and Horizon F, which occurs at the south end of the assessment trench, may be a disjunct continuation of Horizon E extending to the south and east (Quaternary 1999a:Figure 2). Several of these archaeological horizons can be correlated with the cultural layers recorded during the Provencher Bridge, Legacy Estates,and Stage I projects.

1.3 Study Team

The entire archaeological resources management program was directed by Sid Kroker (M.A.) (Senior Archaeologist). The field component employed Donalee Deck (M.A.), Edward Eastaugh (M.A.),Brian Smith (M.A.), Jim Ward (B.A.), and Ernie Reichert (CRM Certificate).The backhoe was operated by Jim Kowerko of Cambrian Excavators.

Artifact preparation was undertaken by Sid Kroker and Pam Goundry (B.A. Hon.) (Research Archaeologist). The computer cataloguing was done by Pam Goundry. Faunal remains were identified by Sid Kroker. Artifact analysis and report preparation was undertaken by Sid Kroker and Pam Goundry.

1.4 Investigation Methods

The locations of the initial seventeen test trenches were surveyed on November 3, 2003 with excavations beginning that day. Additional trenches were located to the east to determine the furthest extent of the cultural resources. Due to the thickness of frost penetration in some traffic routes, some of the trenches were slightly relocated to move them out of areas of heavy vehicle traffic which had driven the frost down below depths of 75 cm. The final locations of the trenches are depicted on Figure 1. The geographical provenience of each trench is determined by using the property line between the two land

owners as the east/west zero line and a line perpendicular to the east side of the York Avenue/Waterfront Drive as the north/south axis.

Thick frost made it necessary to engage a backhoe-mounted jackhammer to break the upper ground layer for two of the trenches. The excavation of the trenches was done with a rubbermount backhoe with a 22" (56 cm) bucket. Due to the presence of frost, it was necessary to use a bucket outfitted with longer frost teeth rather than a smooth bucket. Long teeth extending beyond the bucket can result in the recovery of artifacts from a lower level due to the drag of the teeth which can bring up material from 10 to 15 centimetres below the actual cut base. The skill of the operator in curling the bucket to minimize upward drag made the recording of actual depths much easier and resulted in minimal cross-level mixing.

Each trench was 4.0 metres long and oriented E/W, parallel with the property line between the City of Winnipeg land and The Forks North Portage Partnership land. Vertical provenience was maintained by ensuring that the backhoe bucket took horizontal cuts within each trench. Each cut was generally 10 cm thick. The recorded stratigraphy is based upon natural strata.

The excavated soil was brought to the surface by the backhoe (Plate 1) and spread across the ground adjacent to the trench. The archaeological field crew, using garden rakes, spread and sorted through the excavated soil (Plate 2). Artifact recovery techniques included the use of trowels and hand-retrieval.

The primary focus during this impact assessment was the determination of the depths of the pre-European cultural horizons. Within the excavations, it is necessary to retrieve all artifacts in order to determine the density of a cultural horizon. The upper railroad fill horizon consisted mainly of cinders and gravel. As this layer was frozen, no artifacts were recovered. Previous projects have recorded mainly fragmented structural material with occasional glass or ceramic containers. Within the pre-European cultural horizons, much of the archaeological layers were recovered *en bloc*, due to the inclement weather (-25° C with a windchill greater than 1800). Much of the normal summer artifact recovery procedure could not be implemented, meaning that all soil containing the cultural horizon was collected in bags or pails for further screening and washing at the laboratory facilities of Quaternary Consultants Ltd. All recoveries were curated and bagged according to trench number and depth below surface. In total, more than five cubic metres of soil required wet-screening through a 2 mm screen.

Stratigraphic profiles were recorded for each test trench. Upon completion of excavation to the depth of three metres, the trenches were shored using 2" x 12" planks and trench jacks. The senior archaeologist entered the stabilized trench and recorded the detailed stratigraphy. The walls were visually examined to record the different soil types (clay, silty clay, silt, etc.) and the colours of each discrete layer. The vertical position of each cultural stratum was ascertained. By compiling the stratigraphic profiles, an overall chart of the depths and extent of each cultural horizon was obtained (Table 1).

The timeframe for completion of the assessment was quite tight as the weather was often unpleasant. The lateness of the season meant that daylight faded quickly as the days were short. Due to safety concerns regarding public access and vehicle movement throughout the area, it was necessary to infill each trench upon completion of the excavation and recording of the stratigraphy.

Plate 1: Backhoe Spreading Excavated Soil

Plate 2: Archaeology Team Raking Through Excavated Soil

1.5 Laboratory Procedures

During the project, a total of 71,874 artifacts was recovered. These had been either hand-retrieved during the examination of excavated soil on site or, in the case of the majority of the Pre-Contact artifacts, were recovered from the bulk soil samples which had been brought to Quaternary laboratory facilities. The soil samples, with as many as five two-gallon pails deriving from a single cultural horizon in a single trench, were washed through 4 mm, 2 mm, and 1 mm screens to remove the encapsulating soil. Some samples, with a high clay content required several successive soakings to eliminate the clay.

The artifacts were sorted by material class and identified by the lab personnel. Material of the same type (e.g., Knife River Flint flakes) within the same location and depth were combined under a single catalogue number. Identification was carried to the limit obtainable by available reference works and staff expertise.

Each artifact received a catalogue number consisting of the Borden designation for the site and a sequential number for permanent identification, i.e., DlLg-33:03B/####. 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 south of Water Avenue, west of the Red River, and east of the CNR Main Line Embankment, had been previously designated as DlLg-33. As numerous archaeological projects have occurred within the site boundaries over the past decade, the site designation has been expanded to include a sequential year/project identifier. The identifier for this project is 03B, denoting that this is the second project initiated at the site during 2003.

All pertinent data associated with the artifact was entered into the computer cataloguing system which is based on the Canadian Heritage Inventory Network (CHIN) system (Manitoba Museum of Man and Nature 1986; Kroker and Goundry 1993a: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 which is the repository designated by The City of Winnipeg and The Forks North Portage Partnership for artifacts recovered during development projects at The Forks.

2.0 STRATIGRAPHIC DATA

Stratigraphic data was recorded for each of the twenty-four trenches (Table 1). The upper stratum consists fill deposited by the railroads during the past century. This fill layer consists of bands of railroad cinders, sands, gravels, and clay or silty clay fill. The cinder resulted from the operation of steam locomotives and the nearby Steam Plant. This waste product was used to raise the surface of the area as well as provide drainage equivalent to the use of aggregate. Below the railroad fill layer, which often rested on a moderately well-developed soil horizon showing varying degrees of disturbance, sequences of river-deposited clays and silts were present. Different flood episodes could be distinguished on the basis of differing textures of the sediments and by the presence of buried soil horizons separating the different layers of sediments.

As the primary focus of the investigation was the determination of the depths and densities of cultural levels within the structure footprint, analysis of the sedimentological regimens portrayed by the profiles will be minimal. For a detailed analysis of flood episodes and riverine sedimentation, see Kroker (1999) and the report on The Forks Access Project (Quaternary 1999a:8-16).

Cultural horizons were encountered in twenty-one of the trenches with depths varying between 137 cm below surface (Trench 15) to 317 cm below surface (Trench 13). Three trenches, Trench 9, Trench 23, and Trench 24, were culturally sterile. All other trenches had at least one cultural horizon with Trench 10 having four discrete cultural horizons.

Most of the trenches were located on the level surface of the parking lot area (Parcel A1) and the level area in Parcel A2. The general elevation of the area is 230 metres above sea level. One trench (Trench 20) was situated in a depression near the property line. This trench began at an elevation of approximately 229.50 metres asl.

Given that the area is a flood deposition (and erosion) zone, it is nearly impossible to correlate strata between the separated trenches. Due to vagaries of sediment deposition, where flood swirls, ice jams, and tree falls cause impediments to water flow, silts will be deposited in areas of slower water movement while erosion can occur where the flow is faster. Thus, even a thick sediment layer will tend to pinch out and disappear after ten or twenty metres. In the case where a 120 metre long continuous trench was excavated (Quaternary 1999a), it was not possible to absolutely correlate disjunct cultural levels. In the current project where the trenches are separated by at least 10 metres, all correlation must be considered as tenuous.

Data concerning known cultural horizons recorded during other projects in the vicinity are detailed in Table 2. These are used, in conjunction with current data, to compile the composite map of cultural horizons (Figure 2). The composite data is used to map three east/west profiles (Figure 3, Figure 4, Figure 5) across the site. Each profile is located to incorporate as much information as possible. However, all linkages between cultural levels in the profiles are tenuous for the reasons noted above.

	TR. 1 4N/80E	TR. 2 13N/73E	TR. 3 27N/65E	TR. 4 39N/58E	TR. 5 50N/51E
Fill	0 - 50	0 - 74	0 - 98	0 - 89	0 - 49
Disturbed top soil	50 - 90	74 - 96	98 - 107		49 - 64
Silty clay	90 - 94	96 - 158	107 - 153	89 - 139	64 - 79
Relict soil horizon	94 - 95			139 - 139	79 - 79
Silty clay	95 - 121			139 - 143	79 - 85
Relict soil horizon	121 - 121			143 - 143	85 - 85
Silty clay					85 - 105
Relict soil horizon					105 - 105
Silty clay					105 - 112
Relict soil horizon					112 - 112
Silty clay					112 - 116
Relict soil horizon					116 - 116
Sandy silt					116 - 120
Clayey silt	121 - 132	158 - 168			
Silty clay		168 - 179		143 - 145	
Relict soil horizon			153 - 153	145 - 145	120 - 120
Silty clay				145 - 150	120 - 186
Sand			153 - 157		
Sandy silt	132 - 135	179 - 182		150 - 156	
Silty clay	135 - 157		157 - 173	156 - 164	
Relict soil horizon			173 - 173	164 - 164	
Silty clay		182 - 199	173 - 223	164 - 177	186 - 205
CULTURAL HORIZON	**157 - 162**				
Clayey silt	162 - 205	199 - 204		177 - 191	
Sandy silt				191 - 203	
Silty clay		204 - 236			
Relict soil horizon			223 - 224		
CULTURAL HORIZON	**205 - 208**				**205 - 206**
Silty clay	208 - 240		224 - 250	203 - 264	
Clayey silt	240 - 245				206 - 220
CULTURAL HORIZON		**236 - 238**		**264 - 265**	**220 - 221**
Marly silty clay		238 - 290	250 -283		
Clayey silt					221 - 262
Silty clay	245 - 295			265 - 300	262 - 285
CULTURAL HORIZON	**295 - 297**	**290 - 291**	**283 - 284**	**300 - 301**	**285 - 287**
Silty clay	297 - 302	291 - 298	284 - 302	301 - 310	287 - 298

Table 1: Stratigraphic Profile of Assessment Trenches

	TR. 6 62N/43E	TR. 7 13N/95E	TR. 8 28N/89E	TR. 9 40N/83E	TR. 10 53S/100E
Fill	0 - 93	0 - 79	0 - 72	0 - 89	0 - 82
Disturbed top soil	93 - 99		72 - 82	89 - 107	82 - 85
Silty clay	99 - 112	79 - 96	82 - 102	107 - 109	85 - 103
Sandy silt		96 - 106			
Relict soil horizon	112 - 114	106 - 108	102 - 102	109 - 109	103 - 104
Silty clay	114 - 127	108 - 152	102 - 112	109 - 126	104 - 109
Relict soil horizon	127 - 127		112 - 112	126 - 126	109 - 109
Silty clay	127 - 151		112 - 121	126 - 131	109 - 131
Sandy silt			121 - 123	131 - 136	
Relict soil horizon	151 - 151			136 - 136	131 - 132
Silty clay	151 - 163		123 - 141	136 - 141	132 - 153
Clayey silt		152 - 157			153 - 172
Relict soil horizon	163 - 163		141 - 141	141 - 141	
Silty clay	163 - 177		141 - 143	141 - 143	
Relict soil horizon	177 - 177			143 - 143	
Silty clay	177 - 207	157 - 224		143 - 183	
CULTURAL HORIZON			**145 - 146**		**172 - 173**
Relict soil horizon	207 - 207				
Silty clay	207 - 262		146 - 230		173 - 188
Sandy silt				183 - 193	
Clayey silt	262 - 274		230 - 230		188 - 197
CULTURAL HORIZON		**223 - 224**			**197 - 197**
Clayey silt			230 - 233		
Silty clay		224 - 232	233 - 250	193 - 228	197 - 220
Hematite stained silty/clay			250 - 261	228 - 230	
Clayey silt		232 - 260			220 - 226
Silty clay				230 - 293	226 - 231
CULTURAL HORIZON	**274 - 275**	**260 - 262**			**231 - 232**
Silty clay		262 - 290			232 - 244
Clayey silt	275 - 315				244 - 251
Silty clay					251 - 280
Marly silty clay			261 - 298		
Hematite stained silty/clay		290 - 295			
Sand				293 - 298	
CULTURAL HORIZON		**295 - 296**	**298 - 298**		**280 - 282**
Silty clay		296 - 317	298 - 318	298 - 303	282 - 308

Table 1: Stratigraphic Profile of Assessment Trenches (continued)

	TR. 11 42S/97E	TR. 12 31S/93E	TR. 13 23N/50E	TR. 14 55N/30E	TR. 15 62S/83E
Fill	0 - 105	0 - 118	0 - 82	0 - 138	0 - 103
Disturbed top soil	105 - 112		82 - 92		103 - 114
Silty clay	112 - 120	118- 184	92 - 102	138 - 158	114 - 117
Relict soil horizon	120 - 120		102 - 103		117 - 117
Silty clay	120 - 132		103 - 129		117 - 137
Relict soil horizon	132 - 132		129 - 132	158 - 158	
Silty clay	132 - 140		132 - 143	158 - 162	
CULTURAL HORIZON					**137 - 137**
Relict soil horizon	140 - 142	184 - 184	143 - 145	162 - 162	
Silty clay	142 - 202	184 - 212	145 - 152	162 - 168	137 - 202
Clayey silt			152 - 217		
Relict soil horizon		212 - 212	217 - 218	168 - 168	
Silty clay		212 - 231	218 - 235	168 - 208	
CULTURAL HORIZON	**202 - 202**	**231 - 231**	**235 - 235**		**202 - 203**
Relict soil horizon				208 - 208	
Silty clay	202 - 250	231 - 244	235 - 254	208 - 254	203 - 211
Relict soil horizon			254 - 254	254 - 254	211 - 211
Silty clay					211 - 222
Clayey silt		244 - 248			222 - 235
Silty clay		248 - 282	254 - 268	254 - 286	235 - 258
CULTURAL HORIZON	**250 - 253**		**268 - 270**		**258 - 258**
Clayey silt					
Silty clay	253 - 294		270 - 317		258 - 315
Clayey silt					
Silty clay					
CULTURAL HORIZON		**282 - 283**	**317 - 317**	**286 - 286**	
Hematite stained silty/clay		283 - 290			
Silty clay		290 - 305	317 - 326	286 - 322	

Table 1: Stratigraphic Profile of Assessment Trenches (continued)

	TR. 16 57S/77E	TR. 17 33S/72E	TR. 18 54S/124E	TR. 19 37S/116E	TR. 20 10S/104E
Fill	0 - 96	0 - 102	0 - 74	0 - 120	0 - 101
Disturbed top soil	96 - 105	102 - 113		120 - 122	
Silty clay	105 - 114	113 - 120	74 - 99	122 - 152	101 - 110
Relict soil horizon	114 - 115	120 - 121	99 - 100		110 - 111
Silty clay	115 - 134	121 - 126	100 - 117		
Relict soil horizon	134 - 134	126 - 126	117 - 119	152 - 153	
Silty clay	134 - 139	126 - 147	119 - 122	153 - 164	111 - 145
Relict soil horizon	139 - 140	147 - 148	122 - 122	164 - 166	145 - 145
Silty clay	140 - 185	148 - 183	122 - 126	166 - 201	145 - 180
Clayey silt		183 - 192			
Marly silty clay		192 - 203		201 - 218	
Relict soil horizon	185 - 185	203 - 203	126 - 126		180 - 180
Silty clay	185 - 196	203 - 224	126 - 156		180 - 206
Relict soil horizon			156 - 156		
Clayey silt	196 - 208			218 - 239	
Silty clay	208 - 218		156 - 203		
CULTURAL HORIZON	**218 - 219**	**224 - 224**	**203 - 203**		**206 - 209**
Silty clay					209 - 236
Relict soil horizon					236 - 237
Marly silty clay			203 - 220		
Silty clay	219 - 241	224 - 244	220 - 244		237 - 259
CULTURAL HORIZON		**244 - 244**	**244 - 244**	**239 - 240**	
Relict soil horizon					
Silty clay		244 - 254	244 - 272	240 - 249	
Clayey silt	241 - 253	254 - 270			
Hematite stained silty/clay		270 - 282		249 - 259	
Silty clay	253 - 274	282 - 295		259 - 295	
CULTURAL HORIZON	**274 - 275**		**272 - 274**		**259 - 260**
Clayey silt					
Silty clay	275 - 305		274 - 299		260 - 279
Hematite stained silty/clay					279 - 294
CULTURAL HORIZON		**295 - 296**		**295 - 296**	
Clayey silt				296 - 311	
Silty clay		296 - 303			294 - 334

Table 1: Stratigraphic Profile of Assessment Trenches (continued)

	TR. 21 46S/142E	TR. 22 27S/136E	TR. 23 5S/126E	TR. 24 19N/119E
Fill	0 - 72	0 - 84	0 - 121	0 - 91
Disturbed top soil				
Silty clay	72 - 78	84 - 103	121 - 140	91 - 101
Sand				101 - 103
Relict soil horizon	78 - 83	103 - 105	140 - 141	
Silty clay	83 - 87	105 - 107	141 - 176	103 - 128
Relict soil horizon	87 - 89	107 - 109	176 - 176	128 - 130
Silty clay	89 - 103	109 - 128	176 - 184	130 - 139
Hematite stained silty/clay		128 - 134		
Relict soil horizon	103 - 104	134 - 136	184 - 184	139 - 140
Silty clay	104 - 111	136 - 164	184 - 190	140 - 162
Clayey silt				162 - 168
Relict soil horizon	111 - 112	164 - 165	190 - 190	168 - 169
Silty clay	112 - 114	165 - 180	190 - 204	169 - 176
Hematite stained silty/clay		180 - 189		
Relict soil horizon	114 - 114		204 - 204	176 - 176
Silty clay	114 - 117	189 - 223	204 - 215	176 - 184
Relict soil horizon	117 - 119		215 - 215	184 - 184
Silty clay	119 - 142		215 - 273	184 - 196
Hematite stained silty/clay			273 - 286	
Relict soil horizon				196 - 196
Clayey silt	142 - 174			
Silty clay	174 - 192			196 - 240
CULTURAL HORIZON	**192 - 193**	**223 - 224**		
Silty clay	193 - 213	224 - 260		
Sandy silt				240 - 247
Silty clay				247 - 263
CULTURAL HORIZON		**260 - 260**		
Relict soil horizon				263 - 263
Clayey silt	213 - 239			
Marly silty clay				
Silty clay	239 - 270	260 - 274		263 - 274
CULTURAL HORIZON	**270 - 272**	**274 - 276**		
Relict soil horizon				274 - 274
Sandy silt			286 - 304	274 - 306
Silty clay	272 - 319	276 - 314	304 - 328	306 - 321

Table 1: Stratigraphic Profile of Assessment Trenches (continued)

Location								
York 1	150	165		230				
York 2	150	175	195	235				300
York 3	145			240				300
York 4				240		270		
Access -North				240				
Access -Middle	150	175	215	240		270		295
Access - South			200			260	280	
Legacy 1			195					295
Legacy 2					255			
Legacy 3						270		
Legacy 5					250		280	
Legacy 8			195		250			
Festival 3W		185						
Festival 3H		180						
Festival 5L						270		
Festival 5S							285	
Festival 5H	155							
Festival 6W			200					
Festival 6H		170						
Festival 9L			185					

Table 2: Depths Below Surface of Cultural Layers Recorded During Previous Projects
York = York Avenue Extension (Quaternary 1989)
Access = Forks Access Project (Quaternary 1999a)
Legacy = Legacy Estates Project (Quaternary 2000a)
Festival = Festival Park Services (Quaternary 2000b)
(W = Water; H = Hydro; S = Sewer; L = Land Drainage)

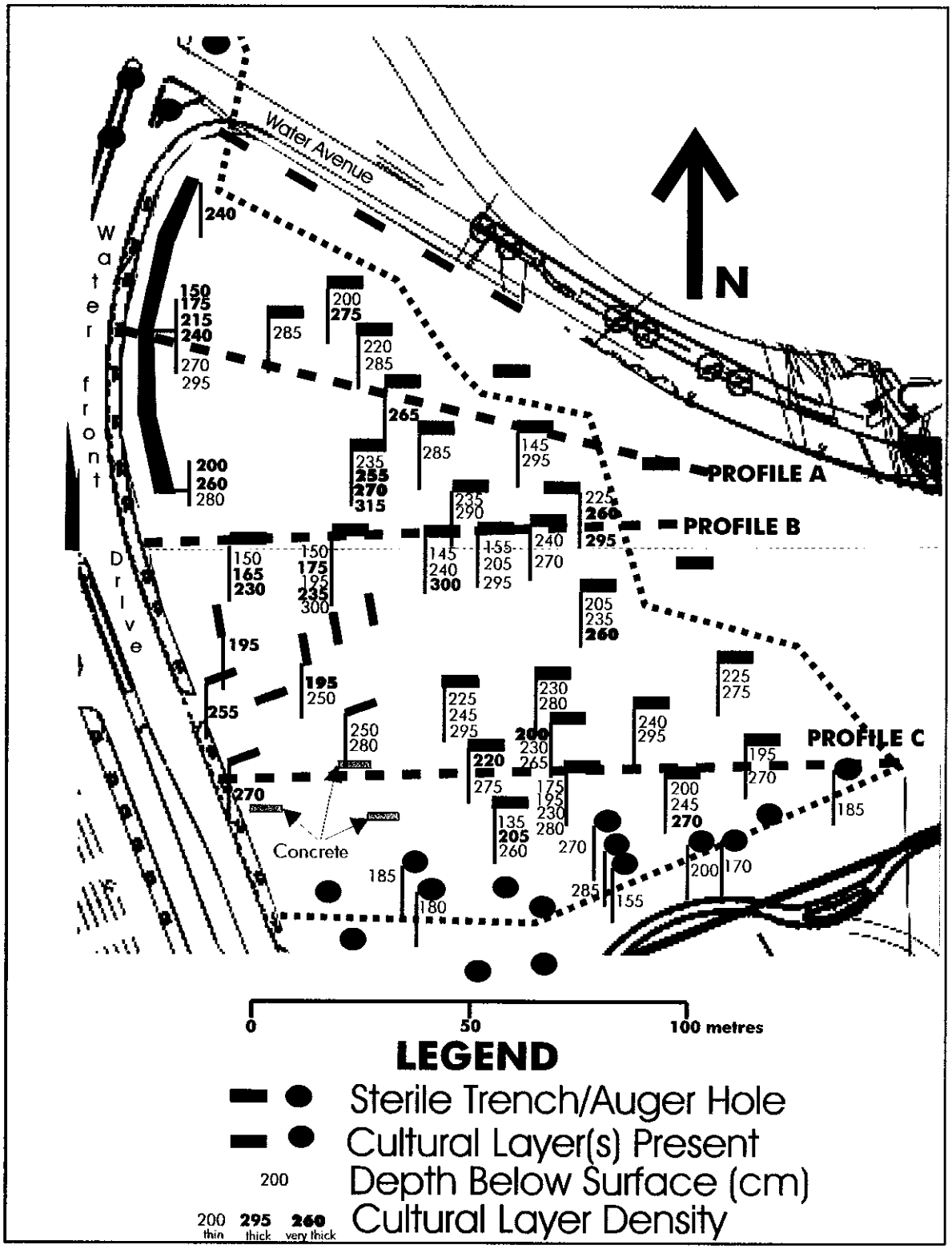


Figure 2: Composite Map of Cultural Horizons

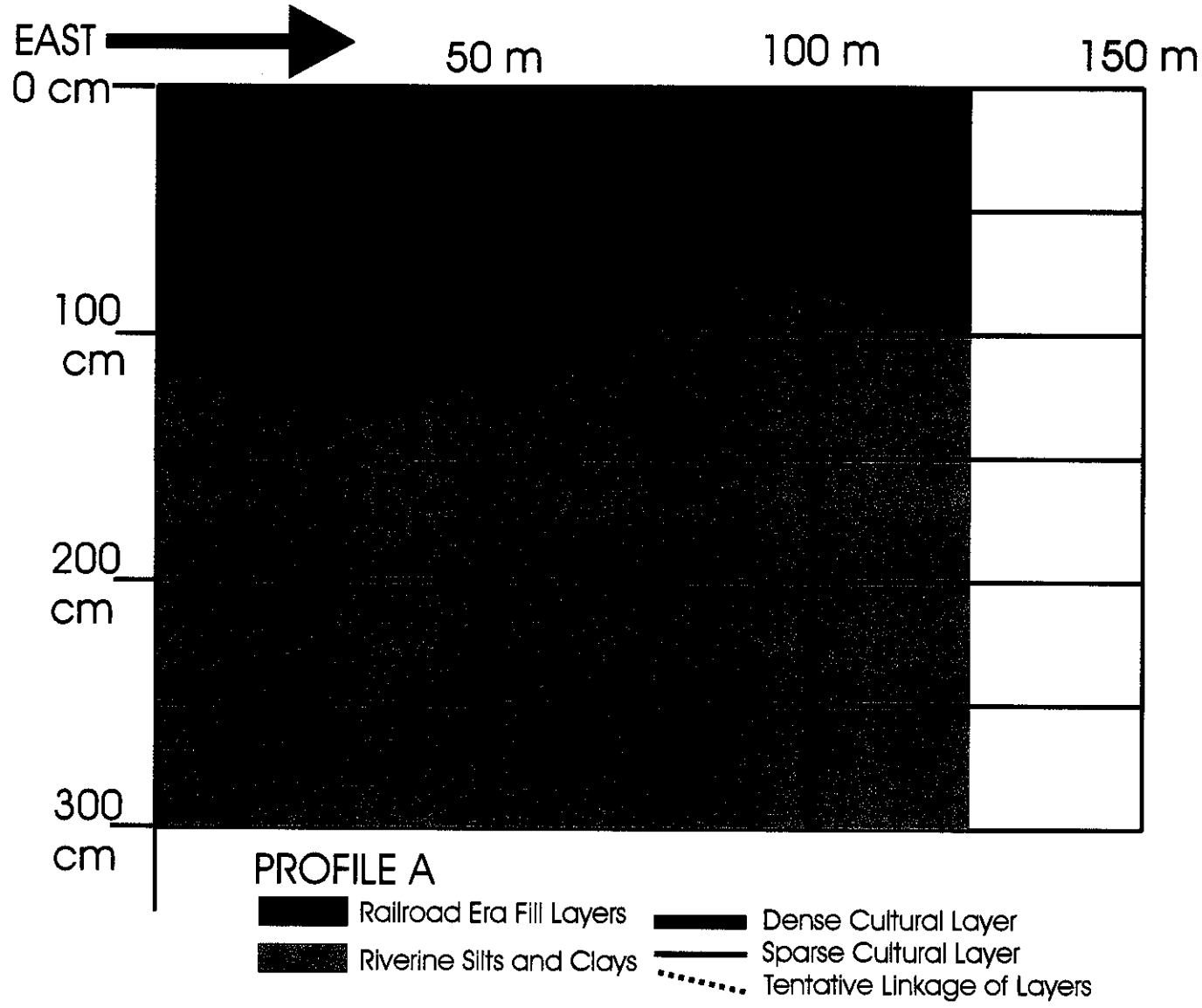


Figure 3: Stratigraphic Profile Showing Cultural Horizons along Transect A

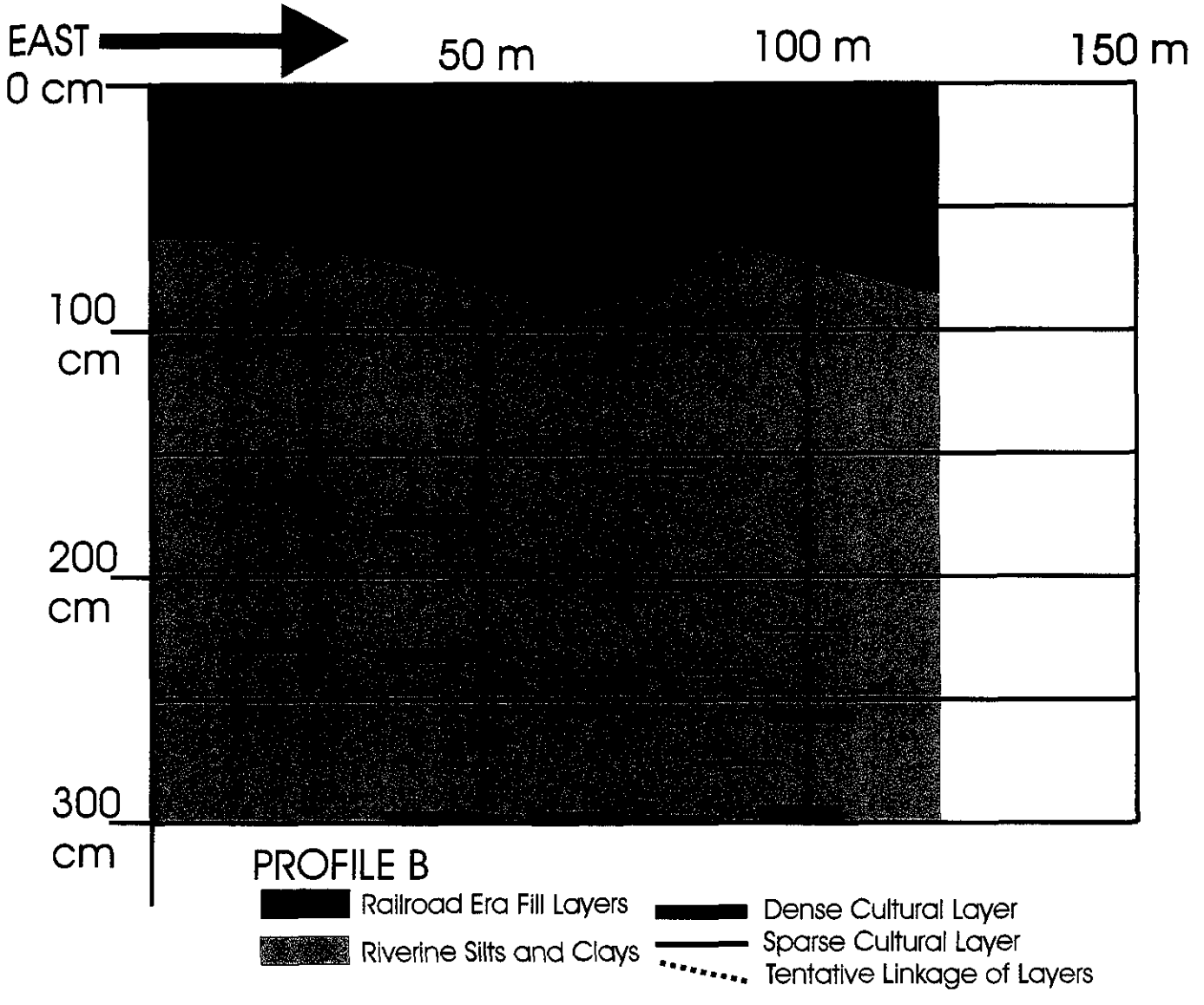


Figure 4: Stratigraphic Profile Showing Cultural Horizons along Transect B

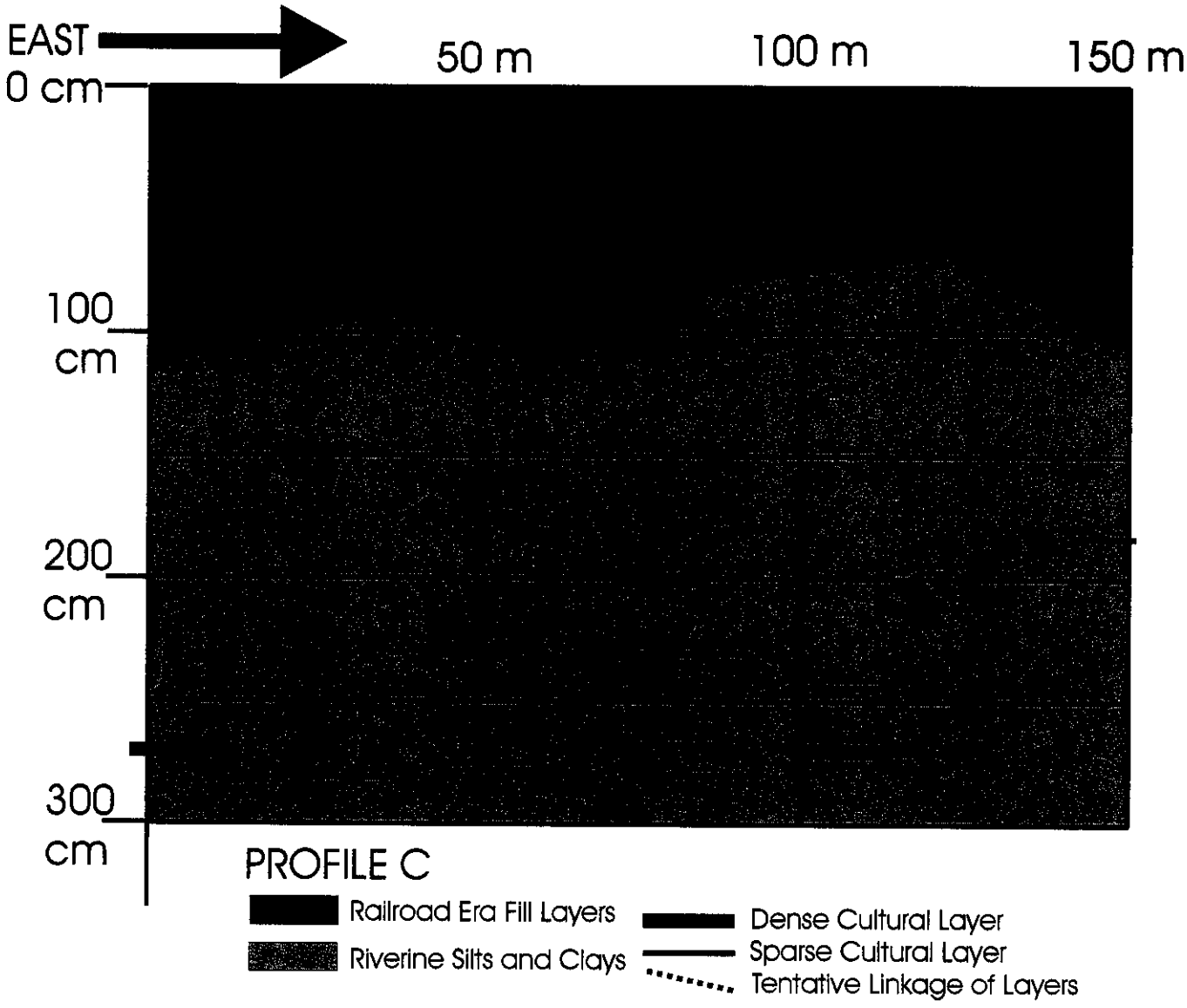


Figure 5: Stratigraphic Profile Showing Cultural Horizons along Transect C

3.0 ANALYTICAL METHODOLOGY

Numerous pre-European cultural horizons were encountered during the excavation of the impact assessment trenches. The horizons recorded in each excavation trench were designated sequentially by depth. All horizons are disjunct and will be tentatively correlated with other occurrences in the summary chapter (Chapter 25). These correlations will be based upon stratigraphic sequence and similarity of diagnostic cultural artifacts. A possible concern is the mixing of artifacts from separate horizons. This can be due to backhoe disturbance while excavating where upper material falls from the walls of the trench into a lower level or where the teeth of the backhoe bucket drag lower material upward. Admixture can also be caused by cultural activity such as the digging of pits by later occupants at the site, cryoturbation where frost action moves objects upwards, erosion by wind or water, and/or tunneling by ground squirrels. Determining the cultural affiliation of the horizon and possible linkages with adjacent manifestations must take the possibility of admixture into consideration. Given the skill of the backhoe operator, it is considered that cross-mixing of the artifacts, due to excavation, is unlikely.

The recovered artifacts from each horizon have been analysed as a total assemblage. While the recovery locations derive from a narrow linear trench, the density of the cultural layers has been determined as this may be useful data in determining mitigative strategies. However, determining activity areas and living patterns is not feasible, as would be the case in block excavations.

The analytic format will be to examine the primary diagnostic artifacts, i.e., lithic tools and ceramics. Following these sections, the faunal and floral recoveries will be described to provide a brief outline of subsistence strategies. Tools made of bone and wood are analysed within the appropriate sections. Not all horizons contained representations of each of the above listed artifact categories.

3.1 Lithic Analyses

The lithic component of pre-European tool kits is the portion that tends to preserve best. Wood and bone 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 based on 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.

3.1.1 Lithic Tool Analysis

Archaeologists record a sequence of measurements on various aspects of different tools. These measurements can be used to perform statistical comparisons with other tools within the site and between sites. The standardized types of measurements for projectile points are different from other tools and include the length and width of the blade, the length and the width of the base, the depth and angle of side-notches (if present), and the angle of the tip.

Two main styles of projectile points occur in the central and southern Manitoba region during the time period represented by the cultural horizons—a triangular style without notches and a style with side notches to enhance hafting to arrow shafts. The side-notched points fall into one of two types: Prairie Side-notched or Plains Side-notched. The identification is based upon differences in blade shape, notch shape, and basal configuration. Both types appear to cross-cut many cultural and linguistic boundaries.

Other lithic tools tend to be less diagnostic than projectile points. In the case of cutting and scraping tools, form is often determined by function as well as qualities of the lithic material. For these tools, the measurements focus on the working edge: the width of the working edge; the length of the working edge (the distance off-linear which is positive for convex edges like scrapers and negative for concave edges like spokeshaves); and the edge angle.

3.1.2 Lithic Material Analysis

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. These would be analysed under metallic artifacts. The category also includes waste products from the manufacture of bone or wooden tools. These would be described in the faunal sections.

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.

An examination of source areas of lithic detritus can provide information about the movements and trade patterns of the occupants of an archaeological site. Often, suitable lithic material for tool manufacture is collected when encountered and carried until used. Naturally, among nomadic peoples, higher quality stone will be retained longer than more common, lower quality material and would be used to manufacture tools which are intended to be retained. Regionally, the lithic material types that have been curated from the Human Rights Museum impact assessment can be organized into five groups:

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, jasper, agate, and porcellanite, 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 (Burns 1995:33-34). Other materials are Tongue River Silicified Sediment from the Dakotas and obsidian from Wyoming.

Group III: Materials found east and north of the Red River. Associated with the Canadian Shield, this group contains quartz, rhyolite, etc.

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, 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.

3.1.3 Fire-cracked Rock

Concentrations of fire-cracked rock tend to indicate hearths and cooking activities areas. These can be determined from the database where groupings of combined weights and/or quantities were recovered from the same excavation unit. Due to the mechanized nature of the excavations, other attributes of hearths such as ash, charcoal, fire-reddened clay, etc. are not always observed as they can become mixed into the general soil matrix.

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 causes 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., quartz, biotite, feldspar, etc.

There are a limited number of purposes which limestone and granitic rocks can fulfill, one of which is as raw material for tool manufacture. Granitic cobbles can be shaped, by pecking and grinding, into hammerstones. The granular nature of the stone precludes the manufacture of cutting implements, although tabular granitic spalls can be shaped into chithos, a large tool for primary flensing of hides.

Limestone fractures erratically and is not usually selected for tool manufacture, although coarsely flaked choppers can be made from it. Limestone is also relatively soft and cutting tools would wear out quickly. Chert nodules are often embedded in limestone deposits and large cobbles could have been collected for chert recovery. Treating the limestone cobble by subjecting it to intense heat prior to shattering would have resulted in fractures passing around the chert nodule rather than through it, thereby resulting in a better recovery rate of usable chert for tool manufacture.

Stones could have been used as boiling stones. Ethnographic literature records the use of heated stones to cook soups and stews. The liquid food, in a hide, basket, or ceramic container, is gradually raised to boiling point by the addition of stones which have been heated in the adjacent fire. The documentation does not record if certain types of stones were preferred or if it was a case of using what was available. Intuitively, one would suspect that hot stones, which would produce small granular spalls upon suffering thermal shock when submerged in cold liquid, would not be the optimum choice. If this supposition is valid, perhaps the limestone and other fine-grained rocks were mainly used as boiling stones.

3.1.4 Unmodified Lithic Material

Given that the site location is in a flood deposition zone, all rock would have been imported by people. It is remotely possible that some lithic specimens could have been rafted into the area on winter ice. Notwithstanding this possibility, cobbles and spalls were probably carried to the campsite locations.

Another type of unmodified lithic material, which has a cultural use, is often recovered. Ochre is a naturally occurring deposit of iron oxide found in two forms—limonite has a yellow or yellow-brown colour while hematite is reddish. Ochre was used for decorative purposes with the mineral being pulverized and mixed with a variety of suspending media, e.g., bear grease, fish oil, or goose fat. The resultant pigment was used either as a personal cosmetic or general purpose paint for teepees, ceramics, parfleches, etc. In addition, powdered ochre was frequently added to dye mixes as the iron content would assist in setting the dye (Densmore 1974:370-373).

3.2 Ceramic Analyses

For thousands of years people have been making vessels of fired clay in which to carry water, store food, cook meals, or use in ceremonies. Potsherds—broken pieces of ceramic vessels from archaeological sites—constitute an important component of most artifact assemblages. These sherds provide information on the people who lived at a particular site and when they lived there, as well as some indications of other groups with whom they traded. Broken pottery may also contain traces of the foods that were cooked and impressions of the textiles and baskets that were present. Pottery can be analysed through many different types of intensive analyses, most of which fall beyond the purview of an archaeological impact assessment report.

3.2.1 Pottery Chronology in Southeastern Manitoba

The development of ceramics in Manitoba began over two thousand years ago with the production of pottery known as *Laurel*. The term *Laurel* does not designate a particular ethnic or linguistic group, it is merely the name of the site in Minnesota where this type of pottery was first recovered. Laurel pottery is spread over a wide area of North America, primarily within the boreal forest and woodlands from Lake Michigan to east-central Saskatchewan. Many archaeologists believe that its distribution correlates with the spread of Algonkian-speaking peoples. Laurel pottery is thick, coil-built, smooth surfaced, and conical in shape.

Around A.D. 500, a change in pottery styles occurred. The differences include a shift to a globular rather than conical shape, textured surface finishes, and different manufacturing techniques which include the use of fabric wrapped paddles and/or molding inside a woven textile bag. Decorations were frequently applied with cord wrapped tools and there seems to be an increasing regional differentiation in pottery styles. This change in pottery style is also associated with a number of other technological and dietary changes which, all together, identify the Late Woodland period. Some of the ceramic wares that follow Laurel include *Blackduck*, *Rainy River*, *Bird Lake*, *Duck Bay*, *Winnipeg River*, *Sandy Lake*, and *Red River*. These ceramic complexes are not mutually exclusive; for example, the Laurel configuration

continues in some areas until quite late in the Pre-Contact period, while Rainy River, Duck Bay, and Bird Lake complexes all co-exist in different areas of the boreal forest at about the same time. Various styles of pottery made by groups living in the prairie ecotone during the Late Woodland period are referred to as *Plains Woodland* styles. The vast majority of archaeologically-defined cultures in this area, and indeed on the North American continent as a whole, are based, in part, on changes in pottery style and technology. These are also presumed to reflect some degree of cultural and linguistic reality although just how much ceramic variation correlates with ethno-linguistic boundaries is a matter of debate.

Blackduck: Ceramics are characterized by globular shape, grit temper, decorations consisting of cord wrapped object impressions (CWOI), and textile-impressed or cordmarked exteriors. The vessels are relatively thin walled and, rarely, show coil breaks that characterize Laurel ceramics. The classic vessels have outflaring rims with rims and necks that are thickened relative to the bodies and lips which are often flattened and wedge shaped. Decoration is confined to the upper rim, lip, neck, and interior rim. These decorations consist almost entirely of combinations of cord wrapped object impressions (CWOI) oriented obliquely and horizontally, punctates (small round impressions) and bosses (small bumps), and brushing or combing over the exterior neck surfaces. Sites containing Blackduck ceramics are scattered widely throughout northwestern Michigan, northern Minnesota, northwestern Ontario, southern Manitoba, and east central Saskatchewan. Temporally, the range for Blackduck ceramics is between A.D. 800 and A.D. 1400.

Rainy River: This taxonomic division was first defined by Lenius and Olinyk (1990) based on analysis of existing ceramic assemblages. It appears to be a successor to Blackduck in that many Blackduck design elements (CWOI) are still used but there are distinct differences. The vertical brushing or combing and the punctates do not occur, but small stamps have been added to the design package. The Rainy River grouping subsumes regional variants—Duck Bay, Bird Lake, and Winnipeg River. Rainy River ceramics are found in sites along a broad corridor running from northwest Saskatchewan, towards Lake Winnipegosis and Lake Winnipeg, through the Manitoba Lowlands towards the Winnipeg River, and then southwards to the Rainy River and northern Minnesota. This ceramic tradition occurs between A.D. 1000 and A.D. 1400.

Bird Lake: This style of ceramic is characterized by the use of stamping as the primary design element. The stamps are various shapes (ovoid or triangular) but tend to be much smaller than those used on Duck Bay ceramics. Cord wrapped object impressions are commonly combined with the stamps. Bird Lake sites tend to occur in an arc from Lake Winnipegosis to Lake of the Woods with outliers on the Assiniboine and Souris Rivers in southwestern Manitoba. The chronological period for this type of ceramic ware is considered to be the latter part of the Rainy River period.

Duck Bay: Similar to Bird Lake, this ceramic style is part of the Rainy River tradition. It is marked by larger stamps (usually rectangular or ovoid) in conjunction with CWOI. The surface finish is textile impressed or smoothed. The temporal span of this type is thought to be A.D. 1100 to A.D. 1300.

Winnipeg River: This is a term applied to southern ceramics of the Selkirk ceramic tradition which appears to have begun in north-central Manitoba about A.D. 1100. Typical vessels are globular with

smoothed textile impressions on the exterior body surfaces. The most common decorative element of northern types is a single row of punctates but this element is lacking on the Winnipeg River ceramics. The geographical extent of this style is relatively localized, extending from Lake Winnipeg to Lake of the Woods. Temporally, a range of A.D. 1350 to the late 1600s is suggested by numerous researchers.

Sandy Lake: This is a southern ceramic type and is considered by many archaeologists to be representative of Souian-speaking cultures. The distribution is strongest in central and western Minnesota but sites have been recorded in southern Manitoba, eastern North Dakota, and northwestern Manitoba. The vessels are cordmarked or smoothed cordmarked with some fabric impressing. They are generally undecorated but, when present, decoration is generally confined to lip notching combined with large interior rim punctates. The temper consists of either shell, a shell and grit mix, or grit alone in the northern areas. Dates for this ceramic type are suggested to be from A.D. 1000 to A.D. 1700.

Red River: This type of pottery tends to be found along the Red River and its associated drainages, primarily in North and South Dakota. The vessels are grit tempered, thin walled, and decorated with shallow trailing or incising. Decorations may extend down onto the body with trailing arranged in chevrons or *tail of the thunderbird*. The span of this type is thought to be from A.D. 1300 to A.D. 1650.

Oneota related: These types of ceramics are often found in artifact assemblages from horticultural sites in Minnesota and North Dakota, dating between approximately A.D. 1100 and A.D. 1500. They correlate with a movement of corn horticulture towards its northern limits after A.D. 1000. It is not known whether or not the movement of people also accompanied this process but many archaeologists believe that this period saw a corresponding northern migration and expansion of Siouan-speaking peoples together with maize cultivation.

Plains Woodland: This is a generalized taxonomic category equivalent to Late Woodland but referring to ceramic produced by plains-oriented peoples during the equivalent time period. This category subsumes numerous local styles and is not regularly encountered in large proportions in sites in south-central Manitoba. These vessels tend to be characterized by smooth surface finish and neck and rim decoration consisting of trailing or incising, along with lip decorations.

3.2.2 Ceramic Analysis Methods and Terminology

Generally, a rim sherd is defined as any portion of the vessel that contains decorative elements. This normally includes the upper one third of a vessel: the lip, rim, neck, and sometimes the shoulder. Optimally, in an analytic report of an occupation site, every rim sherd would be examined in detail: macroscopically for type of surface treatment, decorative technique, decorative motif, and rim profile; and under magnification for paste structure and temper type. Other measurable attributes such as size, weight, colour, thickness, post-depositional modification, and the presence or absence of charred deposits would be recorded

Like any other specialized profession, archaeologists have devised an analytical language wherein words may have different meanings or connotations than in standard English. Thus, definitions are provided for the main terms used in ceramic analysis.

Colour: Colour is frequently employed in ceramic analysis, generally using a Munsell Soil Colour Guide. In some circumstances, colour can be used to ascertain information on the firing technique. Brighter hues such as red, orange, terracotta, and beige infer the presence of a firing environment with ample oxygen, while darker colours such as deep iron red, gray, brown, and black suggest a reducing (or oxygen deprived) firing atmosphere. However, due to the vagaries of open pit firing, one area of a pot may be reduced while another has oxidized. As well, vessels were used over an open fire on a day-to-day basis and this subsequent use affects the final colours of the pot. Once the pot has broken and the sherds discarded, subsequent fires (either domestic or natural) may affect the final colour of the potsherds. In fact, this particular attribute is often unimportant since sherds of radically different colours later turn out to be from the same vessel, with one next to the other in a reconstruction. Colour may say more about post-depositional conditions than it does about firing conditions. For this reason, it is recorded only in general terms, as a descriptor to distinguish the black and gray sherds from bright orange and beige ones.

Temper Type: Temper is the non-plastic material added to clay to enhance its structural strength, reduce shrinkage, decrease plasticity, and improve the finished vessel's ability to withstand the firing process. In this region, tempering material is almost invariably crushed granite, while sand and shell are less common. The choice of tempering material may vary between different cultural groups and also changes over time. Therefore major changes in the type, size, and quantity of temper can be informative.

Paste Type: Paste is a term used to describe the structure of the fired clay. It is generally examined by making a small fresh break on the sherd and observing the texture or structure of the clay under magnification. A set of descriptive terms—flaky, compact flaky, laminated, compact laminated, blocky, grainy, and compact—are used to express the degree of paste compactness. Flaky describes the loosest, least compact paste (resembling pie crust) while compact paste is one in which very little layering or lamination is visible. While no empirical tests are presently available to test this assumption, the degree of paste compactness (or lack thereof) probably results from a combination of the clay body itself, the amount and type of added tempering material, and the manufacturing technique, i.e., how much the walls have been compacted during manufacture.

Sherd Thickness: Thickness provides information about the technical skill of the potter herself as well as the choice of clay used to create a pot. Certain clays lend themselves more readily to thin walls than others, while with other types of clay, no amount of skill or finesse will yield a thin wall. Thickness does seem to vary through time with the thickest walls often found on Laurel pottery. In general, wall thickness decreases as one gets closer to the present. However, wall thickness, like many other traits, also varies regionally and can be a useful trait when searching for trends through time and space. The difference between a subjectively thick wall and one that appears thin is only about 2 mm, i.e., a thin wall is about 4 mm or less, while a thick wall is over 6 mm.

Charred Deposits: Charred deposits on the interior and exterior surfaces of pot sherds can be subjected to chemical analysis. This may provide some idea of what was cooked in the pot. Additionally, radiocarbon dating by linear accelerator can use very small quantities of carbon and produce dates for the last use of the vessel.

Post-depositional Modification: The edges of sherds often show rounding and/or abrasion on the exterior surfaces. The exact mechanism of producing this attribute is unknown and may be a combination of several factors. Possible mechanisms include surface weathering (prior to burial by subsequent flood deposits), erosion by water borne sediment during a high water episode, root activity, chemical reactions to humic acid in the active soil zone, granular spalling due to freeze/thaw cycles in saturated buried sediments, and cryoturbation.

Surface Treatment: The surface finish of a pot is due primarily to the method of manufacture. Glaze technology was unknown on this continent and, while Pre-Contact groups may have been aware of the painted vessels from other regions, this type of surface finish was never applied here. A thin wash of red ochre was sometimes used, but the final appearance of household pottery resulted from a combination of the tools used to make the pot and the clouding arising from the use of the vessel over an open fire.

Body sherds have traditionally been considered less diagnostic than the rims, necks, and shoulders that contain the decorated portion of a vessel. Archaeologists who replicate pottery find that decorations are normally easier to reproduce than surface impressions. Body sherds are usually not subjected to the detailed analysis of rim sherds but are examined to record basic data: quantity, weight, surface finish.

Textured surface finishes can be created in a number of ways: by using a carved or fabric wrapped paddle, by making the pot inside a curved support lined with a piece of fabric, by manufacturing the pot inside a woven bag, or by beating the outer surface with a rough piece of bone or wood. Textured surfaces may be wiped or scraped smooth when the vessel is completed and the use of a plain paddle during the manufacturing process also results in a smooth surface. Surface finishes are both regionally and temporally variable and are considered diagnostic.

In the aspen parkland and boreal forest, surface treatments change through time—from the plain/smooth surfaces found on Laurel pottery to textile impressed surfaces which are characteristic of Late Woodland vessels. Textile impressed surfaces are more than just decorative, they also reflect a technological advancement. Not only were these surfaces attractive, a textured surface also improved heat transfer through the vessel by providing more surface area per unit of volume. This better allowed for the expansion and contraction of the pot as it moved in and out of the fire, probably several times a day. For the archaeologist, these Late Woodland surface impressions can provide an excellent record of Pre-Contact textile technology. At Wykliffe Mounds in Kentucky (Drooker 1990), pot sherds have been used to reconstruct the appearance of woven fabric bags—an important element of Pre-Contact technology that is not normally preserved in archaeological sites.

The words textile and fabric are used interchangeably. Textile impressed pottery shows unaltered textile/fabric impressions on the outer surface, with the term *textile impressed* being used to encompass a broad range of surface impressions. *Obliterated textile impressions* result when the original impression is lightly smoothed over and obscures the details of the weave, probably when the vessel was leather hard. The term *smoothed textile impression* denotes a process whereby the original textile impression is almost completely removed by smoothing with a tool, such as a cloth or scraper. *Smooth* surface finishes show no indication whatsoever of any pre-existing textile impression. Such pots may have been

manufactured using a plain paddle. It must be noted that the surface finishes on the rim and those on the body may differ; bodies may be textile impressed while the rim is smoothed or vise-versa.

These terms encompass an enormous amount of variability. Textile impressed as a category does not indicate the variety that may be evident in an assemblage. Different weaves can be identified from the sherds and include a number of possible variations on weft faced twining, net impressions, and a host of other patterns.

Method of Manufacture: Method of manufacture, while important and probably diagnostic, is difficult to determine with any certainty. In the absence of coil breaks, which characterize Laurel pottery, and the unequivocal marks of a woven bag, it is very difficult to tell the difference between paddle and anvil, bag molding, and pinch-coil methods of manufacture. These were probably the three main methods used to make pots in this region. Where there is evidence of warp and weft threads in the surface impression, and where there is no evidence of overlapping paddle marks, the method of manufacture can be tentatively labeled *bag molded.* Where the interior surface shows gentle, finger-sized undulations, it can be assumed that these probably resulted from the maker providing some interior support, possibly in the form of fingers or an anvil, for an exterior paddle. However, different techniques can frequently result in very similar exterior markings.

Decorative Treatment: Decorative treatment is divided into a number of fairly large, descriptive categories: stamped, incised, trailed, fingernail impressed, cord-wrapped object impressed (CWOI), and obliterated CWOI. No attempt was made to analyse the nature of the tools used to create stamps, incisions, or trailing. Such analysis is beyond the scope of an impact assessment report.

Vessel Designation: In projects which recover a large number of ceramic rim sherds or cover an extensive area, each diagnostic rim sherd is designated as a discrete vessel. Then, sherds (either rim or body) from different catalogue numbers can be assigned to that vessel for analytical purposes. The assignment of different sherds to the vessel is based upon similarity of decorative elements, temper, and paste. Mapping of the recovery locations of the sherds of each vessel can provide information concerning possible cross-level mixture or horizontal displacement of fragments of the cooking pot across the occupation site.

3.3 Faunal Analyses

The largest number of artifacts often consist of faunal objects—butchering remains, naturally deposited specimens and samples. The faunal material is identified using comparative collections and the standard faunal 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. Unless the specimen could be identified to species, genus, or family, it was recorded as generalized mammal with the size range of the animal predicated upon the specimen. Large mammals would include bison, elk, deer, etc., with medium mammals including species such as wolf, coyote, fox, beaver, and rabbit, and small mammals being reserved for small rodents. When the fragmentary nature of the artifact precluded determination of even the size range

of the animal, the specimens were catalogued as undifferentiated mammal. 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

Due to the excellent bone preservation in the riverine silty clay sediments at The Forks, the highest percentage of artifacts in most cultural horizons is the residue from food procurement and processing, i.e., butchering remains. For comparative purposes, the identified elements of each taxon are tabulated and the frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

Evidence of butchering can be preserved on the bone elements in the form of cut marks where the joints were separated and/or the flesh was stripped from the bone for further preparation. A large percentage of the mammalian bone exhibits spiral fracture indicating breakage while fresh. Often, this breakage was probably for the production of bone grease. In this process, the bones are broken into small fragments (Zeirhut 1967:35) and then boiled to extract the fat (Paget 1909:78). The resulting bone grease, variously termed marrow fat, soft fat, and grease (Hurlburt 1977:19-21), was consumed directly or used for making pemmican. The product has been described as "...quite hard like tallow, and has the appearance and very nearly the flavour of the richest yellow butter" (Catlin 1926:131). Another reason for shattering of bone is for the extraction of marrow for food. Occasionally, the bones are roasted preparatory to breakage.

In many instances, charred or calcined bones are recovered. In the cases of calcined bone, the material has been burned sufficiently that all the organic component has been consumed, leaving only the white calcium carbonate component of the bone. Two reasons for the burning of bone, beyond roasting for marrow, are the use as fuel wherein the grease content of the bones will provide energy or as a simple housekeeping aspect to reduce odour from decay.

Other post-depositional trauma can be recorded on butchering remains. Carnivore chewing, either by domesticated dogs or scavenging canids, occurs on some specimens. A high proportion would suggest the presence of dogs in the campsite rather than visits to the location by coyotes or wolves after the departure of the occupants. Calcium is not a common mineral for animals to obtain from natural sources and the consumption of bone to obtain it can be evident in rodent gnawing of the discarded butchering remains. A small percentage of mammal bones may show the characteristic tooth marks of small rodents, i.e., mice and voles. Some elements can have evidence of weathering indicating that the bone rested on the ground surface for a considerable length of time before being incorporated into the soil matrix.

Within some assemblages, a portion of the mammal assemblage may consist of juvenile and/or foetal bone. It is tempting to use the presence of foetal or newborn animals as an indicator of a spring occupation, as the young of most species are usually born in the spring and bone has reached its adult appearance by the time the individual is 6-8 months old. However, it must be noted that historical records have documented bison bearing calves as late as August. Hence, juvenile bone can occur in late fall as well as late spring or summer occupations.

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 correcting 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. Hence, the usable meat would be a compilation of the combined ratios times 10 kilograms. A study of this magnitude is only applicable in projects where a large block area encompassing a sizable portion of the campsite has been excavated.

The frequency of the butchering remains are often illustrated by both quantity and weight. In the quantity graph, fish remains, especially from riverine areas, overwhelm the other categories. However, as they are small and light in comparison to the larger, denser mammal bone, the proportions often change 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.

3.3.2 Samples

Samples are an expeditious mechanism for the cataloguing of myriads of minuscule recoveries. These consist of specimens recovered on a 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. They contain diverse small artifacts such as bone, charcoal, and shell fragments. The intensive study necessary to fully analyse the minute material does not fall within the parameters of an impact assessment as there are usually hundreds, if not thousands, of minute artifacts.

3.4 Floral Analyses

The floral recoveries often encompass charcoal, wood, and seeds. An intensive analysis to determine the representative species is beyond the scope of an impact assessment report. Moderately sized charcoal specimens can be identified due to characteristics of ring structure and placement and size of vessel pores. It can be assumed that most of the charcoal and wood would derive from locally available trees including oak, maple, willow, poplar, and birch.

Seeds are usually only preserved if they have been charred and can represent local species that were part of the diet. Montgomery (1977) is a comprehensive pictorial atlas of many common seeds and can be used to identify most of the commonly occurring specimens.

4.0 TRENCH 1

Trench 1 is located at 4m north of the property line and 80m east of the York/Waterfront intersection. Three cultural levels were encountered, each of which will be analysed separately.

4.1 Level 1

Level 1 was encountered at a depth of 160 cm. A total of 1027 artifacts, with a total weight of 751.4 grams, was recovered from this level: eight lithic artifacts, 1016 faunal remains, and three floral remains.

4.1.1 Lithic Artifacts

The eight lithic artifacts are analysed within the following categories: detritus and fire-cracked rock.

4.1.1.1 Detritus

One small quartz flake, DlLg-33:03B/1, was curated. It weighs 0.1 grams.

4.1.1.2 Fire-cracked Rock

Seven granite fire-cracked rocks, DlLg-33:03B/48, were recovered in Level 1. The two large fragments and five smaller fragments weigh 538.3 grams.

4.1.2 Faunal Remains

The largest number of artifacts from Level 1consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 1016 with a total weight of 176.9 grams.

4.1.2.1 Butchering Remains

As is usually the case in archaeological sites at The Forks, the highest percentage of artifacts is the residue from food procurement and processing, i.e., butchering remains. A total of 1004 artifacts, with a combined weight of 162.3 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 were camped at this location.

For comparative purposes, the identified taxa are listed in Table 3. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage. Only one unidentifiable mammal fragment (DlLg-33:03B/9) was calcined.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	8	0.8	1.5	0.9
Large Mammal	9	0.9	65.7	40.5
TOTAL MAMMAL	17	1.7	67.2	41.4
Undifferentiated Fish	883	87.9	32.4	20.0
Catfish (*Ictalurus* sp.)	101	10.1	62.1	38.3
Sucker Family (Catostomidae)	3	0.3	0.6	0.4
TOTAL FISH	987	98.3	95.1	58.6
TOTAL	1004	100.0	162.3	100.0

Table 3: Butchering Remains from Trench 1, Level 1

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 6). In the quantity graph, 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 tend to be 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.

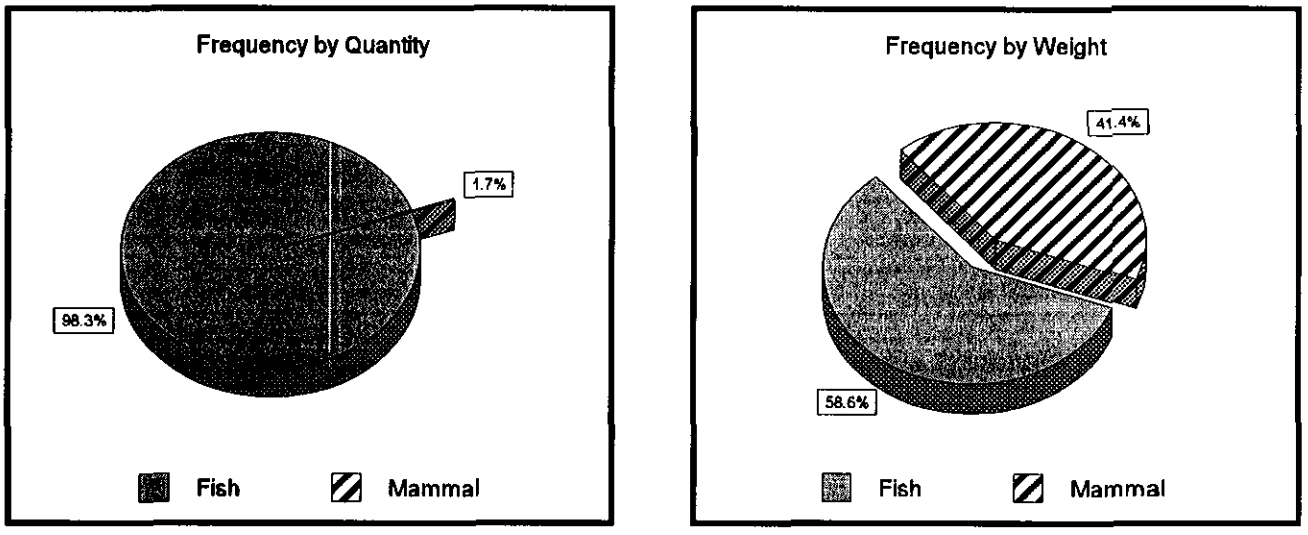


Figure 6: Frequencies of Butchering Remains from Trench 1, Level 1

With the above caveats, it can be seen that slightly more than half of the protein component of the occupants' diet was fulfilled by meat from fish, with the remainder deriving from mammals. As most could not be identified beyond large mammal, it is tenuous, but probable, that bison was the main contributor. Within the identifiable fish, catfish was overwhelmingly dominant with a small percentage of sucker being caught. Further analysis of vertebra and scales, which can often be identified to specific

taxa within a rigorous analysis, could produce data which would determine the season of harvest, as annular growth rings (like tree rings) occur in both elements.

4.1.2.2 Naturally Deposited Fauna

Representations of non-food faunal remains are often incorporated into cultural deposits. These include aquatic taxa, freshwater snails and pea clams, which 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. Eleven specimens were recovered. DlLg-33:03B/3 is two Lymnaeidae, pond snails, weighing 0.1 gms and DlLg-33:03B/4 is nine Planorbidae, ramshorn snails, weighing 0.1 gms.

4.1.2.3 Samples

One sample, DlLg-33:03B/47, consists of recoveries on the 1 millimetre screen. It weighs 14.4 grams.

4.1.3 Floral Remains

The three floral recoveries are small charcoal fragments. DlLg-33:03B/2 weighs 0.1 grams. It can be assumed that most of the charcoal would derive from locally available trees. These would include oak, maple, willow, poplar, and birch.

4.2 Level 2

Level 2 was encountered at a depth of 205 cm. A total of 8629 artifacts, weighing 414.7 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, floral remains, and clay samples.

4.2.1 Lithic Artifacts

The 120 lithic artifacts are analysed within the following categories: tools (3 = 2.5%), detritus (110 = 91.7%), fire-cracked rock (1 = 0.8%), and unmodified lithic material (6 = 5.0%).

4.2.1.1 Lithic Tools

Three lithic tools were recovered from Level 2—a scraper, a retouched flake, and a utilized flake. Each type will be described in the appropriate sections below.

4.2.1.1.1 Scraper

DlLg-33:03B/59 is a domed, rectangular, banded chert scraper. The length is 23.1 mm, the width is 19.8 mm, the thickness is 7.2 mm, and it weighs 3.2 grams. The length of the working edge measures 18.9 mm with the width of the working edge measuring 5.4 mm. The working edge angle is quite steep at 81°. An unusual aspect of this artifact is the presence of notches on the lateral sides to facilitate hafting to a bone or wood shaft.

Scrapers are a functional tool type where the lithic material is flaked to produce a steep sloping edge which allows the use of considerable pressure in a lateral movement to remove tissue (fat, meat, etc.) from a hide without cutting the material. The steepness of the slope is usually a result of the type of material, although rarely do scraping tools have an edge angle of less than 45°. In addition to hide processing for clothing manufacture, scrapers can be used for woodworking or for scaling fish.

4.2.1.1.2 Retouched Flake

DlLg-33:03B/60 is an irregular, trapezoidal flake of Selkirk Chert with some unifacial retouch on a portion of one of the lateral sides. The length is 36.1 mm, the width is 24.0 mm, the thickness is 4.9 mm, and it weighs 3.3 grams. The working edge width measures 22.1 mm with the working edge length measuring 1.9 mm, indicating a nearly linear edge. The working edge angle is 40°.

4.2.1.1.3 Utilized Flake

One utilized flake, DlLg-33:03B/61, is made of Selkirk Chert. The overall length is 24.1 mm, the width is 21.8 mm, with a thickness of 4.1 mm. It weighs 1.5 grams. A portion of one edge shows evidence of usage as a cutting implement with subsequent breakage of a portion of the working edge. The original working edge width would have been 18.1 mm but only 11.3 mm remains. The remaining portion is nearly linear with a working edge length of 0.5 mm. The working edge angle measures 37°.

4.2.1.2 Detritus

One core and 109 lithic flakes (Table 4) were recovered from Trench 1, Level 2. The core, DlLg-33:03B/62, is a Swan River Chert specimen weighing 46.2 grams.

Within the flakes, nine lithic material types were represented, the predominant one being undifferentiated chert (62 flakes). The second most frequent material is Swan River Chert from the southwestern part of Manitoba with 14 flakes. Knife River Flint is a close third with 13 flakes.

The most frequent group is Group IV, representing 60.6% of the total. Group I provides 15.5% followed by Group II which provides 13.7%. Groups III and V provide 9.2% and 0.9% respectively. 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 along the Assiniboine River. Group V materials could have been found slightly downstream on the Red River at the St. Andrews Rapids (Selkirk Chert). Most of the other lithic types are the result of long-distance transport. The most predominant groupings of lithic materials would represent source areas recently visited by the occupants.

An assemblage such as this one, which shows that most of the non-generalized lithic material is extra-local, indicates either considerable travel with lithic collection from lithic source areas in other locations or a participation in an extensive trade network which extends to the south and west. If the material was gathered while traversing areas which have lithic resources, the people would have gathered tool-quality material when the opportunity arose. 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 can occur

as components of the current lithic assemblage. In this case, the amount of Knife River Flint would suggest that it was one of the more favoured materials and was used as long as supplies lasted. The frequency of Knife River Flint could also suggest that the occupants of the site had recently arrived from the quarry locations in North Dakota. Alternatively, given the river accessible location of the site, an individual trader or trading group from the south may have arrived recently thereby permitting the resident group the opportunity to augment their supply of Knife River Flint.

MATERIAL	GROUP	QUANTITY	FREQUENCY	WEIGHT	FREQUENCY
Agate	I	1	0.9	0.1	0.3
Chalcedony	I	2	1.8	0.1	0.3
Chert	IV	62	56.9	12.1	36.6
Knife River Flint	II	13	11.9	2.1	6.3
Quartz	III	10	9.2	0.2	0.6
Quartzite	IV	4	3.7	1.6	4.8
Selkirk Chert	V	1	0.9	0.4	1.2
Swan River Chert	I	14	12.8	15.6	47.1
Tongue River Sil. Sed.	II	2	1.8	0.9	2.7
TOTAL		109	99.9	33.1	99.9

Table 4: Flake Recoveries from Trench 1, Level 2

The determination of concentrations is beyond the scope of this project and is most relevant in block excavations to determine activity areas. When the investigation units are a narrow linear trench and isolated vertical excavations, minimal information relating to activity loci can be determined as considerable evidence would lie on all sides of the investigation unit.

4.2.1.3 Fire-cracked Rock

One granite fragment (DlLg-33:03B/73) of fire-cracked rock was recovered Level 2. It weighs 1.3 grams.

4.2.1.4 Unmodified Lithic Material

Six small reddish ochre fragments, DlLg-33:03B/72, were recovered. They weigh 0.2 grams. Ochre, mixed with various greases or fats, was used as a personal cosmetic or as a decorative paint for teepees, ceramics, parfleches, etc.

4.2.2 Ceramics

A total of 22 ceramic sherds was recovered—four rim sherds and eighteen body sherds.

4.2.2.1 Rim Sherds

The four rim sherds (Table 5) derive from various portions of two ceramic vessels. Vessel 1, represented by three specimens, has a vertical rim with a flat lip. Several different decorative elements are present on the different portions of the vessel. The lip, DlLg-33:03B/49, has oblique cord wrapped object impressions (CWOI). The external rim surface has a band of oblique CWOI at the lip with at least three horizontal bands of CWOI below. The lip,neck junction, DlLg-33:03B/50, shows considerable smoothing, possibly with a bone or wood spatula while the clay was soft. Two vertical bands of small (4.6 mm by 2.1 mm), elliptical stamps continue from the lip,neck junction to below the bend at the shoulder. The non-decorated portion of DlLg-33:03B/50 shows a twining textile impression. This same surface finish is present on DlLg-33:03B/52 which is a shoulder sherd from the same pot. Some degree of smoothing with a spatula is present. The vertical stamps are not a common decorative element but similar aspects can be seen within vessels ascribed to the Bird Lake Complex (Lenius and Olinyk 1990).

CAT. #	QTY	WT	PORTION	DECORATION	COMMENTS
49	1	3.2	lip,neck	CWOI	Vessel 1; pale brown
50	1	6.8	shoulder	CWOI; stamped	Vessel 1; pale brown
51	1	2.3	neck	CWOI	Vessel 2; grey brown
52	1	1.3	shoulder	obliterated textile impressed	Vessel 1; pale brown
TOTAL	4	13.6			

Table 5: Rim Sherds Recovered from Trench 1, Level 2

Vessel 2 is represented by DlLg-33:03B/51 which is a neck sherd showing slight traces of oblique CWOI extending upward towards the lip. Cord wrapped object impressions are a common decorative element within several ceramic wares and this specimen cannot be ascribed to a particular cultural type.

4.2.2.2 Body Sherds

As with every ceramic assemblage, the bulk of the recovered sherds, 18, 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. DlLg-33:03B/55 is a single pale brown body sherd showing spatula smoothed marks over textile impressions and, as such, is assigned to Vessel 1. It weighs 0.5 grams.

DlLg-33:03B/53 consists of nine body sherds with an obliterated textile impressed surface finish. They weigh 25.5 grams. The sherds range in thickness from 6.7 mm to 3.7 mm suggesting they came from different portions of the vessel. All have varying degrees of carbonization and soot staining resulting from cooking activities. It is not possible to assign these sherds to either of the two vessels.

DlLg-33:03B/54 is three body sherds with pronounced textile impressions. The weight is 5.8 grams. One sherd has massive grit temper resulting in a thickness of 8.9 mm. The other two sherds are 4.0 mm and

3.6 mm in thickness. There is soot staining on the exterior of all three sherds and carbon encrustation on the interior of one sherd. The pattern of textile impression resembles slightly that observed on Vessel 1 but the temper is extremely different and no traces of surface finish smoothing are evident. Therefore, DlLg-33:03B/54 cannot be ascribed to either of the two vessels.

DlLg-33:03B/56 consists of five body sherdlets weighing 0.5 grams. Sherdlets are defined as ceramic fragments smaller than a dime. Due to the small size of these sherds, identification of surface treatment and other characteristics is often tenuous. In addition, small fragments often show the effect of thermal alteration and have exfoliated so that only one surface is present. Based on temper and colour characteristics, these five sherdlets appear to be from both of the vessels.

4.2.3 Faunal Remains

The largest number of artifacts from Level 2consist of faunal objects: bone tools, butchering remains, natural faunal deposits, and samples. The total number is 8189 with a total weight of 269.4 grams.

4.2.3.1 Bone Tool

One bone tool, an awl, was recovered. DlLg-33:03B/86 is manufactured from an accessory metacarpal of an elk (*Cervus elaphus*). The distal end has been carved and ground to form a very sharp point. The exterior surface is somewhat pitted and corroded indicating either surface weathering or contact with a corrosive substance such as ash residue. The overall length is 77.8 mm with a width of 13.0 mm and a thickness of 9.0 mm. This specimen weighs 3.4 grams.

Awls are used in clothing manufacture to pierce tanned hides for the insertion of sinew or fibre for sewing. Usually, the shaft of the implement is sturdy and the point is quite sharp. Most archaeologically recovered awls are broken, as a favoured tool would be carefully handled and seldom lost. DlLg-33:03B/86 is an exception to this general statement as it is intact.

4.2.3.2 Butchering Remains

A total of 8155 artifacts, with a combined weight of 230.3 grams, was recovered from Level 2. The identified taxa are listed in Table 6. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

Nine unidentifiable mammal fragments (DlLg-33:03B/88) and two fish ribs (DlLg-33:0B/129) were charred. Thirteen unidentifiable mammal bone, DlLg-33:03B/89, were calcined.

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 7). In the quantity graph, the fish remains overwhelm the other taxa. When weight is considered, the ratio change considerably with mammal being closer to half of the assemblage. The amount of meat is thought to be relatively proportional to the weight of the bones, although shellfish tend to skew the proportion as the weight of the shell is considerably greater than that of the edible portion.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	36	0.4	3.8	1.7
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	1	<0.1	83.5	36.3
Rabbit Family (Leporidae)				
Jack Rabbit (*Lepus* sp.)	1	<0.1	0.1	<0.1
TOTAL MAMMAL	38	0.5	87.4	38.0
Undifferentiated Aves	2	<0.1	0.1	<0.1
TOTAL AVES	2	<0.1	0.1	<0.1
Undifferentiated Fish	7984	97.9	64.6	28.1
Catfish (*Ictalurus* sp.)	77	0.9	35.3	15.3
Drum (*Aplodinotus grunniens*)	9	0.1	8.0	3.5
Perch (*Perca flavescens*)	6	<0.1	0.2	0.1
Sucker Family (Catostomidae)	21	0.3	1.2	0.5
TOTAL FISH	8097	99.3	109.3	47.5
Freshwater Clam (Unionidae)	15	0.2	9.9	4.3
Three-ridge clam (*Amblema plicata*)	1	<0.1	18.7	8.1
Fat Mucket (*Lampsilis radiata*)	2	<0.1	4.9	2.1
TOTAL SHELLFISH	18	0.2	33.5	14.5
TOTAL	8155	100.0	230.3	100.0

Table 6: Butchering Remains from Trench 1, Level 2

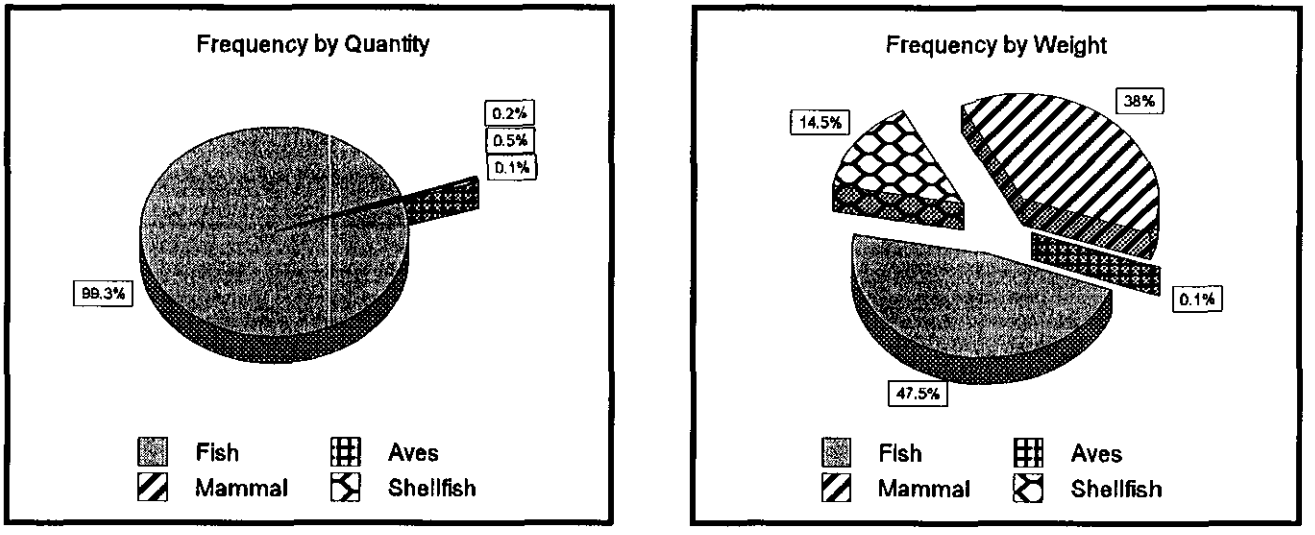


Figure 7: Frequencies of Butchering Remains from Trench 1, Level 2

4.2.3.3 Naturally Deposited Fauna

Thirty-two specimens were recovered (Table 7). The aquatic taxa can be used for advanced research into river water conditions and climatic regimens. In addition to these specimens being incorporated in the cultural matrix, small rodents, which are natural residents scavenging occupation sites, are often present.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Freshwater Snails (Gastropod)				
Ramshorn Snails (Planorbidae)	13	40.6	0.1	16.7
Pond Snails (Lymnaeidae)	12	37.5	0.1	16.7
TOTAL GASTROPODS	25	78.1	0.2	33.3
Freshwater Clam (Eulamellibranchia)				
Pea Clams (Sphaeriidae)	1	3.1	0.1	16.7
TOTAL CLAM	1	3.1	0.1	16.7
Mammal				
Small Rodent (Rodentia)	6	18.8	0.3	50.0
TOTAL MAMMAL	6	18.8	0.3	50.0
TOTAL	32	100.0	0.6	100.0

Table 7: Natural Faunal Remains from Trench 1, Level 2

4.2.3.4 Samples

One sample, DlLg-33:03B/134, consists of recoveries on the 1 millimetre screen. It weighs 35.1 grams.

4.2.4 Floral Remains

The floral recoveries consist of 283 small charcoal fragments. DlLg-33:03B/74 weighs 2.1 grams. This sample is too small for radiocarbon dating but perhaps could provide a linear accelerator date.

4.2.5 Natural Object - Modified

The presence of the two samples of fire-hardened clay indicates that there had been hearths or campfires at this location. DlLg-33:03B/58 consists of thirteen more or less tabular fragments, weighing 7.5 grams. DlLg-33:03B/57 consists of two similar fragments, weighing 1.0 grams. These two specimens are distinguished by a pattern of concentric, narrow linear grooves equally spaced 3.6 mm apart. Underlying the grooves is an appearance of tightly meshed fabric. One edge of the larger fragment has fine parallel grooves similar to rodent gnawing. It is possible that these fragments represent waste material from ceramic manufacture. However there is no grit present and it is possible that they also could have resulted from a piece of fabric lying on wet soil which then hardened.

4.3 Level 3

Level 3 was encountered at a depth of 280 cm. A total of 929 artifacts, weighing 122.8 grams, was recovered from this level. The lithic artifacts consist solely of fire-cracked rock. Again, the preponderance of artifacts are faunal remains—butchering remains, natural faunal deposits, and samples. The floral remains are charcoal and there is a clay sample.

4.3.1 Lithic Artifacts

One small fragment of granitic fire-cracked rock was recovered. DlLg-33:03B/136 weighs 1.1 grams.

4.3.2 Faunal Remains

The largest number of artifacts from Level 3 consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 885 with a total weight of 118.4 grams.

4.3.2.1 Butchering Remains

Butchering remains total 874 artifacts and have a combined weight of 108.9 grams. The identified taxa are listed in Table 8. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	4	0.5	0.1	0.1
Large Mammal	2	0.2	2.3	2.1
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	1	0.1	63.4	58.2
TOTAL MAMMAL	7	0.8	65.8	60.4
Undifferentiated Fish	838	95.9	9.4	8.6
Catfish (*Ictalurus* sp.)	20	2.3	30.9	28.4
Sturgeon (*Acipenser fulvescens*)	4	0.5	1.2	1.1
Sucker Family (Catostomidae)	2	0.2	0.6	0.6
TOTAL FISH	864	98.9	42.1	38.7
Freshwater Clam (Unionidae)	3	0.3	1.0	0.9
TOTAL SHELLFISH	3	0.3	1.0	0.9
TOTAL	874	100.0	108.9	100.0

Table 8: Butchering Remains from Trench 1, Level 3

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 8). In the quantity graph, the fish remains overwhelm the other taxa. When weight is considered, the ratio changes considerably with mammal being greater then half of the assemblage.

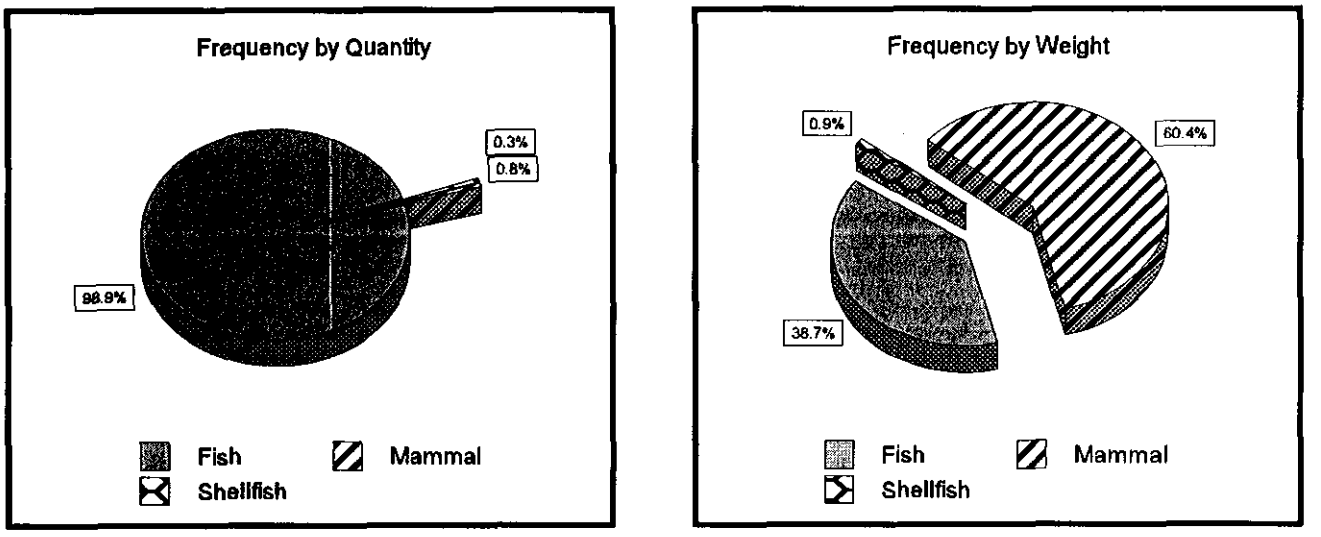


Figure 8: Frequencies of Butchering Remains from Trench 1, Level 3

4.3.2.2 Naturally Deposited Fauna

Ten freshwater snails were recovered. DlLg-33:03B/138 is four Lymnaeidae weighing 0.1 grams, while DlLg-33:03B/139 is six Planorbidae weighing 0.1 grams. Three minute fragments of eggshell were also recovered. DlLg-33:03B/165 weighs 0.1 grams. While eggs can be a food source, shells could also be deposited at the site as a result of nesting activity or predatory action upon nests.

4.3.2.3 Samples

One sample, DlLg-33:03B/164, consists of recoveries on the 1 millimetre screen. It weighs 9.3 grams.

4.3.3 Floral Remains

The floral recoveries consist of 33 small charcoal fragments. DlLg-33:03B/137 weighs 0.1 grams.

4.3.4 Natural Object - Modified

One sample of fire-hardened clay was collected. DlLg-33:03B/166 consists of seven fragments, weighing 3.1 grams.

5.0 TRENCH 2

Trench 2 is located at 13m north of the property line and 73m east of the York/Waterfront intersection. Two cultural levels were encountered, each of which will be analysed separately.

5.1 Level 1

Level 1 was encountered at a depth of 235 cm. A total of 425 artifacts, with a weight of 361.2 grams, was recovered from this level: faunal remains, floral remains, and a clay sample.

5.1.1 Faunal Remains

The majority of artifacts from Level 1consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 409 with a total weight of 360.7 grams.

5.1.1.1 Butchering Remains

There are 405 butchering remains with a combined weight of 352.8 grams (Table 9). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal				
Large Mammal	31	7.7	9.2	2.6
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	5	1.2	253.0	71.7
Rodent Family (Rodentia)				
Beaver (*Castor canadensis*)	7	1.7	48.1	13.6
TOTAL MAMMAL	43	10.6	310.3	88.0
Undifferentiated Fish	347	85.7	7.1	2.0
Catfish (*Ictalurus* sp.)	9	2.2	3.7	1.0
Sucker Family (Catostomidae)	2	0.5	0.3	0.1
TOTAL FISH	358	88.4	11.1	3.1
Freshwater Clam (Unionidae)	3	0.7	0.3	0.1
Fat Mucket (*Lampsilis radiata*)	1	0.2	31.1	8.8
TOTAL SHELLFISH	4	1.0	31.4	8.9
TOTAL	405	100.0	352.8	100.0

Table 9: Butchering Remains from Trench 2, Level 1

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 9). In the quantity graph, the fish remains overwhelm the other taxa. However, as fish bone is small and light in comparison to larger and denser mammal bone, the proportions are reversed when weight is considered.

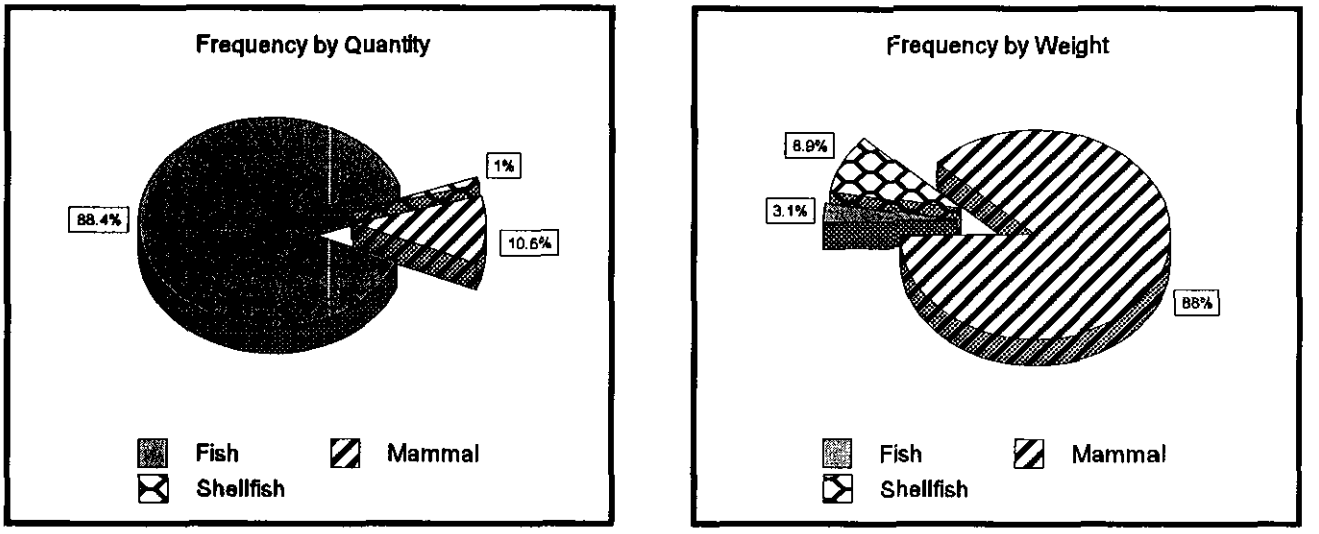


Figure 9: Frequencies of Butchering Remains from Trench 2, Level 1

With the above caveats, it can be seen that considerably more than half of the protein component of the occupants' diet was fulfilled by meat from mammal with the remainder deriving from shellfish and fish. Two species, bison and beaver, were identified. Most of the large mammal bone probably derives from bison. Within the identifiable fish, catfish was more frequent than sucker.

5.1.1.2 Naturally Deposited Fauna

Three naturally deposited fauna were curated. DlLg-33:03B/171 is one Lymnaeidae weighing 0.1 gms and DlLg-33:03B/172 is one Planorbidae, also weighing 0.1 gms.

DlLg-33:03B/170 is a small fragment of an insect body. It weight 0.1 grams. The specimen is too incomplete to be able to identify it to a particular genus.

5.1.1.3 Samples

One sample, DlLg-33:03B/189, was recovered from the 1 millimetre screen. It weighs 7.6 grams.

5.1.2 Floral Remains

The floral recoveries consist of small charcoal fragments and wood. DlLg-33:03B/167 is fourteen charcoal fragments weighing 0.1 grams. DlLg-33:03B/169 is a small wood fragment with a weight of 0.3 grams

5.1.3 Natural Object - Modified

A single fragment of fire-hardened clay was curated. The presence of DlLg-33:03B/168, weighing 0.1 grams, indicates that there had been a hearth or campfire at this location.

5.2 Level 2

Level 2 was encountered at a depth of 290 cm. A total of 889 artifacts was recovered—lithic artifacts, ceramic artifacts, faunal remains, and floral remains. The total weight is 201.2 grams.

5.2.1 Lithic Artifacts

Only one lithic artifact was curated. DlLg-33:03B/203 is a small chert flake weighing 0.1 grams.

5.2.2 Ceramics

A total of 20 ceramic sherds was recovered—two rim sherds and eighteen body sherds.

5.2.2.1 Rim Sherds

The two rim sherds (Table 10) derive from different portions of a ceramic vessel. The lip,neck sherd has several different decorative elements. Oblique CWOI are present on the lip and in a band below the lip. A horizontal row of small (5.6 mm by 2.1 mm), elliptical stamps occurs below the oblique CWOI and at least three horizontal bands of CWOI are present below the stamps.

The neck sherd appears to have the remnants of a horizontal band of CWOI at the upper break with a horizontal band of vertically-oriented large (9.0 mm by 3.9 mm) elliptical stamps below it. The colour, surface finish, paste, and temper appear to be the same as the lip,neck sherd. The two sherds are considered to be part of the same vessel which, given the combined attributes, is classified as Duck Bay.

CAT. #	QTY	WT	PORTION	DECORATION	COMMENTS
198	1	10.1	lip,neck	CWOI, stamped	Vessel 3; dark grey
199	1	6.0	neck	stamped	Vessel 3?; dark grey
TOTAL	2	16.1			

Table 10: Rim Sherds Recovered from Trench 2, Level 2

5.2.2.2 Body Sherds

As with every ceramic assemblage, the bulk of the recovered sherds, 18, are from the body of the pot. DlLg-33:03B/200 is ten dark grey body sherds showing a linear fabric weave. The weight is 53.9 grams. Some of the sherds have carbon encrustation. DlLg-33:03B/201 consists of five body sherds with textile

impressed surface finish that appears to have a cross-weave. They weigh 7.4 grams. DlLg-33:03B/202 is three body sherds where the underlying fabric impressions have been obliterated through brushing and smoothing. They weigh 8.3 grams.

All of the body sherds have a paste and temper similar to the two rim sherds and it is possible that they were all part of the same vessel. The sherds range in thickness from 6.3 mm to 2.1 mm suggesting that they came from different portions of the vessel. All have varying degrees of carbonization and soot staining resulting from cooking activities.

5.2.3 Faunal Remains

The largest number of artifacts from Level 2 consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 797 with a total weight of 113.1 grams.

5.2.3.1 Butchering Remains

A total of 788 butchering remains, with a combined weight of 92.1 grams, was recovered (Table 11). The frequencies of each taxon are calculated on the combined weight and quantities. Two Unionidae shell fragments (DlLg-33:03B/211) and seven unidentifiable fish bones (DlLg-33:03B/250) are charred.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	29	3.7	9.5	10.3
Large Mammal	2	0.3	3.3	3.6
Medium Mammal	2	0.3	3.7	4.0
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	1	0.1	5.5	6.0
TOTAL MAMMAL	34	4.3	22.0	23.9
Undifferentiated Fish	690	87.6	16.6	18.0
Catfish (*Ictalurus* sp.)	34	4.3	22.6	24.5
Drum (*Aplodinotus grunniens*)	2	0.3	0.9	1.0
Sturgeon (*Acipenser fulvescens*)	3	0.4	0.3	0.3
Sucker Family (Catostomidae)	7	0.9	1.7	1.8
TOTAL FISH	736	93.4	42.1	45.7
Freshwater Clam (Unionidae)	12	1.5	5.2	5.6
Black Sand-shell (*Ligumia recta*)	3	0.4	15.2	16.5
Fat Mucket (*Lampsilis radiata*)	3	0.4	7.6	8.3
TOTAL SHELLFISH	18	2.3	28.0	30.4
TOTAL	788	100.0	92.1	100.0

Table 11: Butchering Remains from Trench 2, Level 2

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 10). In the quantity graph, the fish remains overwhelm the other taxa. When weight is considered, the ratio changes considerably with fish being closer to half of the assemblage. The amount of meat is thought to be relatively proportional to the weight of the bones, although shellfish tend to skew the proportion as the weight of the shell is considerably greater than that of the edible portion.

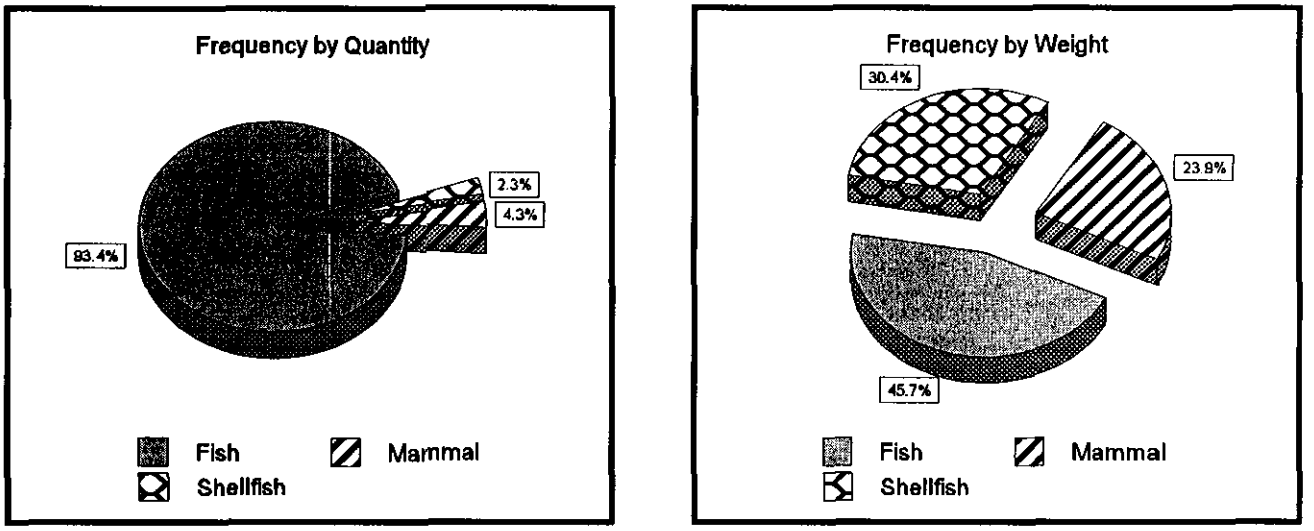


Figure 10: Frequencies of Butchering Remains from Trench 2, Level 2

5.2.3.2 Naturally Deposited Fauna

Eight naturally deposited specimens were recovered. DlLg-33:03B/206 is two Sphaeriidae (pea clams) weighing 0.1 grams, while DlLg-33:03B/207 is six Lymnaeidae (pond snails) also weighing 0.1 grams.

5.2.3.3 Samples

One sample, DlLg-33:03B/253, consists of bone, shell, and charcoal recoveries from the 1 millimetre screen. It weighs 20.8 grams.

5.2.4 Floral Remains

The floral recoveries consist of small charcoal fragments and wood. DlLg-33:03B/204 is 66 charcoal fragments weighing 0.7 grams. DlLg-33:03B/205 is five small wood fragments with a weight of 1.6 grams.

6.0 TRENCH 3

Trench 3 is located at 27m north of the property line and 65m east of the York/Waterfront intersection. Only one cultural level was encountered.

6.1 Level 1

Level 1 was encountered at a depth of 280 cm. A total of 404 artifacts, weighing 159.5 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

6.1.1 Lithic Artifacts

The 13 lithic artifacts are analysed within the following categories: detritus (1), fire-cracked rock (2), and unmodified lithic material (10).

6.1.1.1 Detritus

A single porcellanite flake, DlLg-33:03B/256, was recovered from Trench 3, Level 1. It weighs 0.6 grams. Porcellanite is a fine-grained rock found occasionally in the southwestern portion of Manitoba.

6.1.1.2 Fire-cracked Rock

Two granite fragments (DlLg-33:03B/258) of fire-cracked rock were recovered. They weigh 26.5 grams.

6.1.1.3 Unmodified Lithic Material

Ten small reddish ochre fragments, DlLg-33:03B/257, were recovered. They weigh 0.3 grams.

6.1.2 Ceramics

A total of 11 ceramic sherds was recovered—one rim sherd and ten body sherds.

6.1.2.1 Rim Sherds

DlLg-33:03B/254 is a lip,neck sherd weighing 10.7 grams. The wedge-shaped lip is 9.2 mm wide, while the neck is 6.5 mm wide. A pattern of deeply impressed oblique CWOI is present on the lip. Two horizontal bands of oblique isoscelene stamps occur just below the lip on the interior of the vessel. A similar band of stamps occurs on the exterior surface 27.0 mm below the lip. Due to the position of the break, it is not known whether or not the exterior decoration consisted of more than one band. The exterior of this vessel is heavily carbon encrusted but it appears that the surface finish is smooth as is the interior surface. This sherd has been designated as Vessel 4 and assigned to the Bird Lake type.

6.1.2.2 Body Sherds

The ten body sherds, DlLg-33:03B/255, are fabric impressed with a low relief pattern of a coarse weave. Several of the sherds are heavily carbon encrusted and the paste and temper are similar to that of DlLg-33:03B/254. Therefore, it is assumed that they are all representative of the same vessel. The body sherds are relatively uniform with a range in thickness from 5.0 mm to 6.1 mm. They weigh 44.0 grams.

6.1.3 Faunal Remains

The largest number of artifacts from Trench 3 consist of faunal objects: butchering remains and samples. The total number is 260 with a total weight of 75.6 grams.

6.1.3.1 Butchering Remains

A total of 259 butchering remains, with a combined weight of 66.9 grams, was recovered (Table 12). The frequencies of each taxon are calculated on the combined weight and quantities to illustrate the relative frequency within the assemblage. Only one unidentifiable mammal bone fragment, DlLg-33:03B/264, was calcined.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	35	13.5	4.4	6.6
Large Mammal	9	3.5	19.8	29.6
TOTAL MAMMAL	44	17.0	24.2	36.2
Undifferentiated Fish	191	73.7	9.0	13.5
Catfish (*Ictalurus* sp.)	14	5.4	6.8	10.2
Sucker Family (Catostomidae)	1	0.4	0.1	0.1
TOTAL FISH	206	79.5	15.9	23.8
Freshwater Clam (Unionidae)	7	2.7	4.7	7.0
Fat Mucket (*Lampsilis radiata*)	2	0.8	22.1	33.0
TOTAL SHELLFISH	9	3.5	26.8	40.1
TOTAL	259	100.0	66.9	100.1

Table 12: Butchering Remains from Trench 3, Level 1

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 11). In the quantity graph, the fish remains overwhelm the other taxa. When weight is considered, the ratio changes considerably with shellfish being dominant. This is skewed considerably as the weight of the shell is much greater than that of the edible portion. Shellfish is often anomalous when one is considering a direct relationship between edible meat and discarded residue.

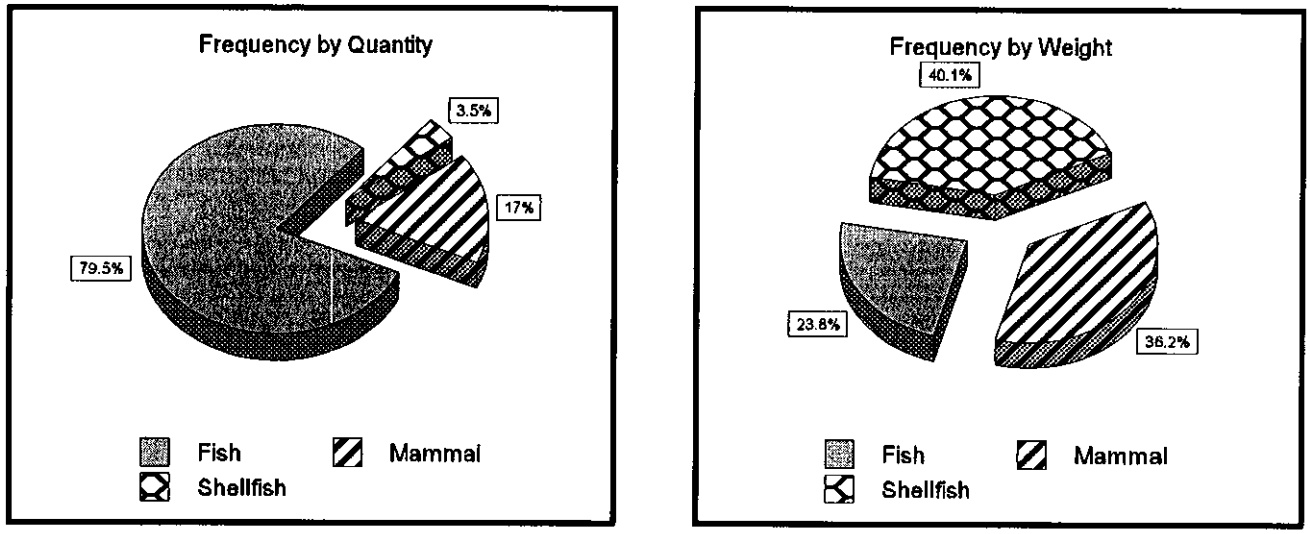


Figure 11: Frequencies of Butchering Remains from Trench 3, Level 1

6.1.3.2 Samples

One sample, DlLg-33:03B/283, consists of recoveries on the 1 millimetre screen. It weighs 8.7 grams.

6.1.4 Floral Remains

The floral recoveries consist of 120 small charcoal fragments. DlLg-33:03B/259 weighs 1.8 grams.

7.0 TRENCH 4

Trench 4 is located at 39m north of the property line and 58m east of the York/Waterfront intersection. Two cultural levels were encountered, each of which will be analysed separately.

7.1 Level 1

Level 1 was encountered at a depth of 265 cm. A total of 1830 artifacts, weighing 420.5 grams, was recovered. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

7.1.1 Lithic Artifacts

The eleven lithic artifacts are analysed within the following categories: detritus and fire-cracked rock.

7.1.1.1 Detritus

Nine lithic flakes (Table 13) were recovered from Trench 4, Level 1. Within the flakes, four lithic material types were represented, the predominant one being undifferentiated chert with 6 flakes.

MATERIAL	GROUP	QUANTITY	FREQUENCY	WEIGHT	FREQUENCY
Chert	IV	6	66.7	0.2	15.4
Quartzite	IV	1	11.1	0.6	46.2
Selkirk Chert	V	1	11.1	0.4	30.8
Swan River Chert	I	1	11.1	0.1	7.7
TOTAL		9	100.0	1.3	100.1

Table 13: Flake Recoveries from Trench 4, Level 1

Both local material (Selkirk Chert) and extra-local material (Swan River Chert) are present. The quartzite and chert flakes could derive from any location.

7.1.1.2 Fire-cracked Rock

Two granite fragments (DlLg-33:03B/289) of fire-cracked rock were recovered. They weigh 95.4 grams.

7.1.2 Ceramics

Only one body sherd was recovered from Level 1 in Trench 4. DlLg-33:03B/284 has a smooth exterior surface and contains a high percentage of fine-grained granitic grit. It weighs 3.8 grams.

7.1.3 Faunal Remains

The largest number of artifacts from Level 1 consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 1684 with a total weight of 316.4 grams.

7.1.3.1 Butchering Remains

A total of 1669 artifacts, with a combined weight of 213.3 grams, was recovered (Table 14). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage. The four valve fragments, DlLg-33:03B/296, are charred as are nine unidentifiable mammal fragments (DlLg-33:03B/309), one catfish pectoral spine (DlLg-33:03B/323), and one unidentifiable fish bone (DlLg-33:0B/355).

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	21	1.3	3.9	1.8
Large Mammal	3	0.2	12.3	5.8
Deer/Cow Family (Artiodactyla)	3	0.2	52.3	24.5
Carnivore Family (Carnivora)				
Dog/Wolf/Coyote Family (Canidae)				
Dog/Wolf (*Canis* sp.)	15	0.9	26.2	12.3
TOTAL MAMMAL	42	2.5	94.7	44.4
Undifferentiated Aves				
Medium Aves	3	0.2	0.5	0.2
TOTAL AVES	3	0.2	0.5	0.2
Undifferentiated Fish	1475	88.4	55.3	25.9
Catfish (*Ictalurus* sp.)	120	7.2	56.7	26.6
Drum (*Aplodinotus grunniens*)	7	0.4	3.8	1.8
Perch Family (Percidae)	1	0.1	0.2	0.1
Sucker Family (Catostomidae)	17	1.0	2.0	0.9
TOTAL FISH	1620	97.1	118.0	55.3
Freshwater Clam (Unionidae)	4	0.2	0.1	0.1
TOTAL SHELLFISH	4	0.2	0.1	0.1
TOTAL	1669	100.0	213.3	100.0

Table 14: Butchering Remains from Trench 4, Level 1

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 12). In the quantity graph, the fish remains overwhelm the other taxa. When weight is considered, the ratio changes considerably with mammal being closer to half of the assemblage.

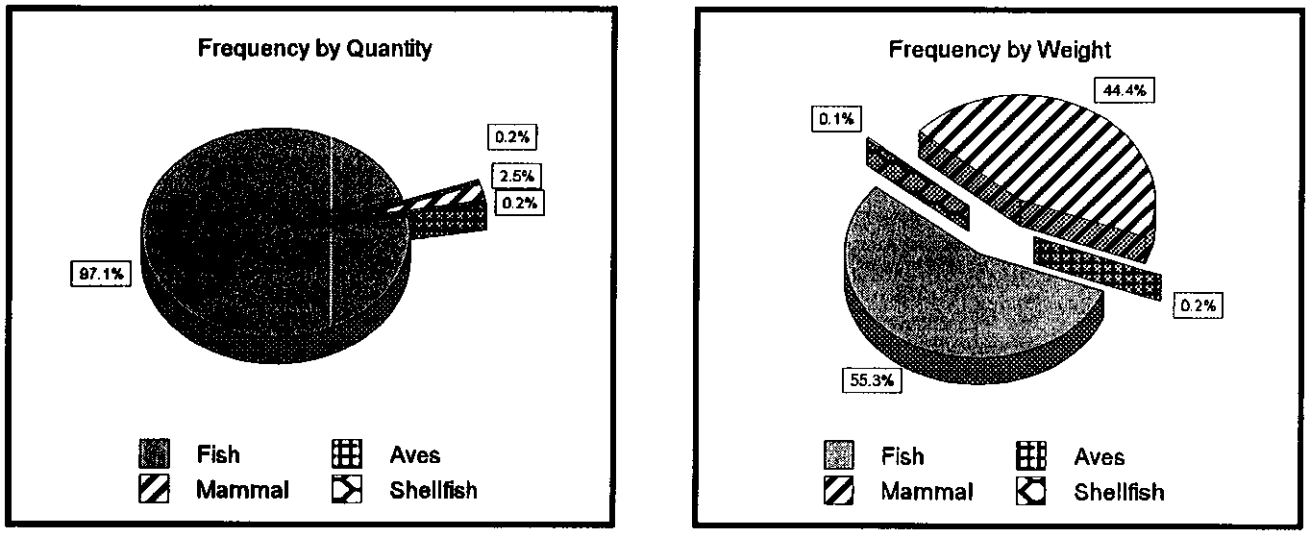


Figure 12: Frequencies of Butchering Remains from Trench 4, Level 1

7.1.3.2 Naturally Deposited Fauna

Thirteen specimens were recovered (Table 15). These include the normal aquatic taxa, freshwater snails and pea clams, as well as one bone from a frog which probably died during hibernation.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Freshwater Snails (Gastropod)				
Ramshorn Snails (Planorbidae)	4	30.8	0.1	25.0
Pond Snails (Lymnaeidae)	5	38.5	0.1	25.0
TOTAL GASTROPODS	9	69.2	0.2	50.0
Freshwater Clam (Eulamellibranchia)				
Pea Clams (Sphaeriidae)	3	23.1	0.1	25.0
TOTAL CLAM	3	23.1	0.1	25.0
Amphibian				
Frog (*Anura*)	1	7.7	0.1	25.0
TOTAL AMPHIBIAN	1	7.7	0.1	25.0
TOTAL	13	100.0	0.4	100.0

Table 15: Natural Faunal Remains from Trench 4, Level 1

7.1.3.3 Samples

Two samples were curated. DlLg-33:03B/360 consists of bone, shell, and charcoal recoveries on the 2 millimetre screen. It weighs 39.0 grams. DlLg-33:03B/361 consists of bone, shell, and charcoal recoveries on the 1 millimetre screen. It weighs 63.7 grams.

7.1.4 Floral Remains

The floral recoveries consist of 129 small charcoal fragments and five wood fragments. The charcoal, DlLg-33:03B/291, weighs 2.9 grams, while DlLg-33:03B/290, the wood fragments, weighs 0.7 grams.

7.2 Level 2

Level 2 was encountered at a depth of 300 cm. Only butchering remains were recovered from this sparse level—38 artifacts weighing 6.3 grams. The identified taxa are listed in Table 16. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	3	7.9	2.7	42.9
TOTAL MAMMAL	3	7.9	2.7	42.9
Undifferentiated Fish	32	84.2	0.6	9.5
Catfish (*Ictalurus* sp.)	3	7.9	3.0	47.6
TOTAL FISH	35	92.1	3.6	57.1
TOTAL	38	100.0	6.3	100.0

Table 16: Butchering Remains from Trench 4, Level 2

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 13). In the quantity graph, the fish remains overwhelm the mammal taxa. When weight is considered, the ratio changes with mammal being approximately half of the assemblage.

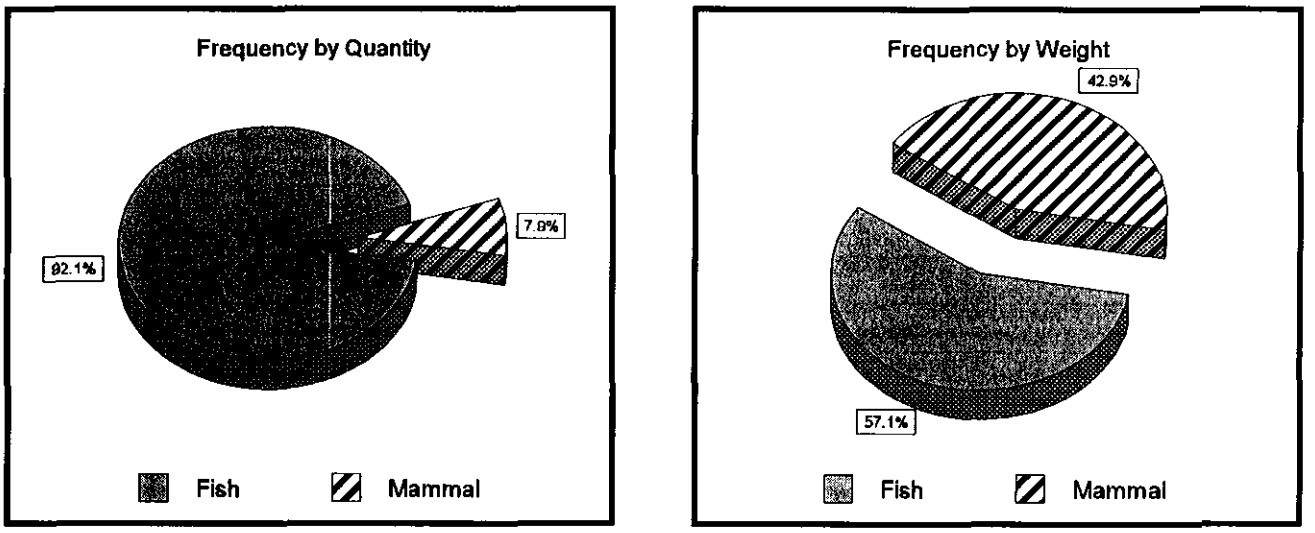


Figure 13: Frequencies of Butchering Remains from Trench 4, Level 2

8.0 TRENCH 5

Trench 5 is located at 50m north of the property line and 51m east of the York/Waterfront intersection. Three cultural levels were encountered, each of which will be analysed separately.

8.1 Level 1

Level 1 was encountered at a depth of 205 cm. A total of 17 artifacts was recovered from this very thin, sparse level. These include lithic artifacts, faunal remains, and floral remains and have a total weight of 0.7 grams.

8.1.1 Lithic Artifacts

A single lithic flake was recovered. DlLg-33:03B/369 is a quartz flake weighing 0.1 grams.

8.1.2 Faunal Remains

The recovered faunal artifacts include only butchering remains. The only taxa recovered is undifferentiated fish. The elements consist of ribs, scales, undetermined fragments, and unidentifiable fragments. The total is 15 with the total weight being 0.5 grams.

8.1.3 Floral Remains

One minute fragment of charcoal, DlLg-33:03B/370, was recovered. It weighs 0.1 grams.

8.2 Level 2

Level 2 was encountered at a depth of 220 cm. A total of 44 artifacts, weighing 273.1 grams, was recovered: fire-cracked rock and faunal remains.

8.2.1 Lithic Artifacts

Two specimens of fire-cracked rock were recovered. DlLg-33:03B/375 is a single granite fragment weighing 52.0 grams, while DlLg-33:03B/376 is a single fragment of diorite weighing 116.2 grams.

8.2.2 Faunal Remains

The largest number of artifacts from Level 2consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 42 with a total weight of 104.9 grams.

8.2.2.1 Butchering Remains

A total of 40 artifacts, with a combined weight of 104.1 grams, was recovered from Level 2. The identified taxa are listed in Table 17. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	5	12.5	1.4	1.3
Large Mammal	3	7.5	11.9	11.4
Deer/Cow Family (Artiodactyla)	3	7.5	90.4	86.8
TOTAL MAMMAL	11	27.5	103.7	99.6
Undifferentiated Fish	29	72.5	0.4	0.4
TOTAL FISH	29	72.5	0.4	0.4
TOTAL	40	100.0	104.1	100.0

Table 17: Butchering Remains from Trench 5, Level 2

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 14). In the quantity graph, the fish remains are nearly three-quarters of the assemblage. When weight is considered, the ratio changes considerably with mammal overwhelming the fish.

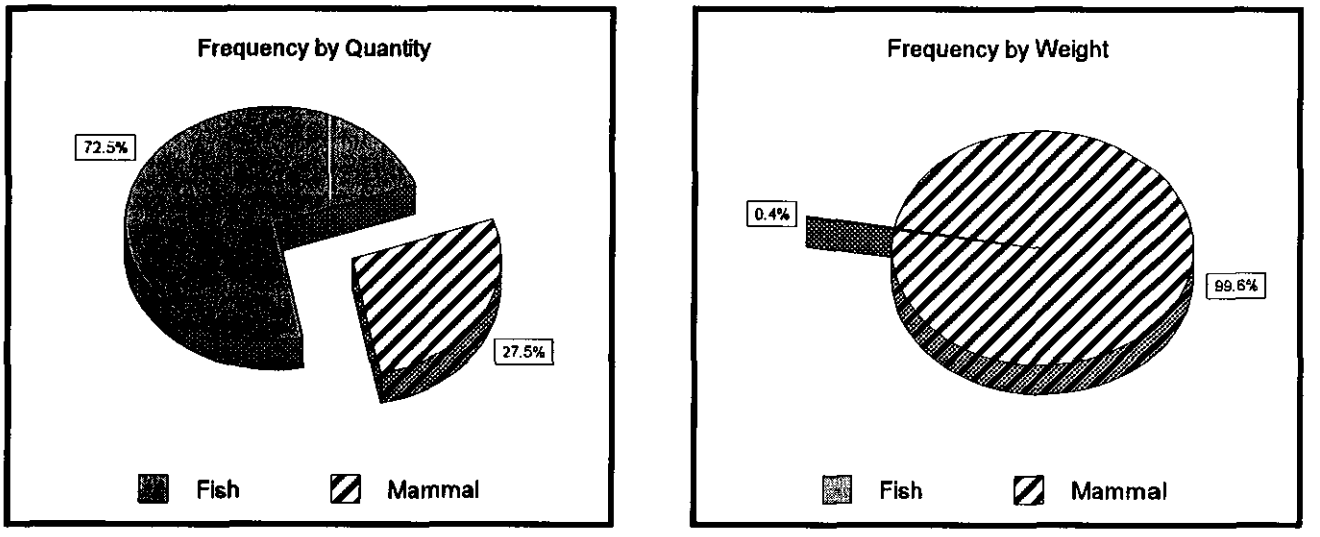


Figure 14: Frequencies of Butchering Remains from Trench 5, Level 2

8.2.2.2 Naturally Deposited Fauna

One small Lymnaeidae snail was recovered. DlLg-33:03B/385 weighs 0.1 grams.

8.2.2.3 Samples

One sample, DlLg-33:03B/384, of bone, shell, and charcoal was recovered from the 1 millimetre screen. It weighs 0.7 grams.

8.3 Level 3

Level 3 was encountered at a depth of 285 cm. Only butchering remains were recovered. These total 39 specimens with a weight of 4.8 grams. Table 18 lists the identified taxa. The frequency of the butchering remains are illustrated by both quantity and weight (Figure 15). In the quantity graph, the fish remains overwhelm the mammal while, when weight is considered, the proportions are reversed.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	6	15.4	0.5	10.4
Deer/Cow Family (Artiodactyla)	1	2.6	2.4	50.0
TOTAL MAMMAL	7	17.9	2.9	60.4
Undifferentiated Fish	25	64.1	0.8	16.7
Catfish (*Ictalurus* sp.)	7	17.9	1.1	22.9
TOTAL FISH	32	82.1	1.9	39.6
TOTAL	39	100.0	4.8	100.0

Table 18: Butchering Remains from Trench 5, Level 3

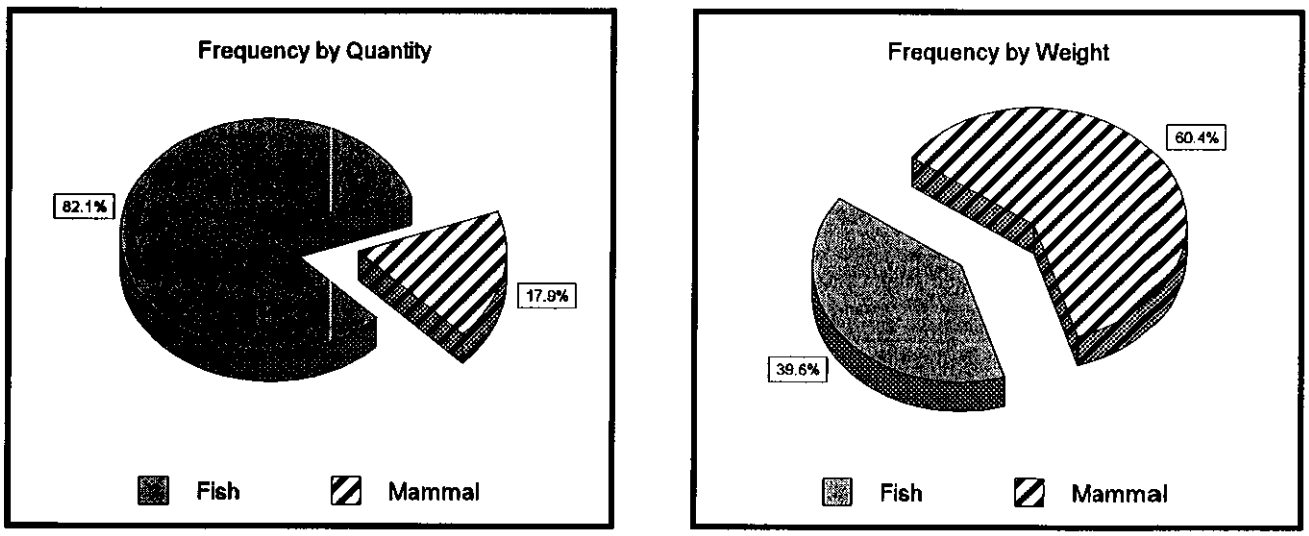


Figure 15: Frequencies of Butchering Remains from Trench 5, Level 3

9.0 TRENCH 6

Trench 6 is located at 62m north of the property line and 43m east of the York/Waterfront intersection. Only one cultural level was encountered.

9.1 Level 1

Level 1 was encountered at a depth of 275 cm. A total of 4677 artifacts, weighing 288.4 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

9.1.1 Lithic Artifacts

The nine lithic artifacts include a tool, detritus, and fire-cracked rock.

9.1.1.1 Utilized Flake

One utilized flake, DlLg-33:03B/399, is made of St. Ambrose Black Chert. This semi-lunate specimen shows step fracturing due to wear on the inner curved margin indicating use as a serendipitous spokeshave. The length measures 33.9 mm, the width is 12.4 mm, and the thickness is 5.9 mm. It weighs 2.0 grams. The working edge encompasses most of the length of the inner curve with a width of 25.9 mm and a length of -2.2 mm. The effective working edge angle measures 46°.

9.1.1.2 Detritus

Four lithic flakes were catalogued. Two flakes of St. Ambrose Black Chert, DlLg-33:03B/400, weigh 5.1 grams. Another two flakes of undifferentiated chert, DlLg-33:03B/401, weigh 0.1 grams.

9.1.1.3 Fire-cracked Rock

Four granite fire-cracked rocks, DlLg-33:03B/402, were recovered in Level 1. They weigh 116.9 grams.

9.1.2 Ceramics

A total of 17 ceramic sherds was recovered—three rim sherds and fourteen body sherds.

9.1.2.1 Rim Sherds

The two rim sherds in DlLg-33:03B/394 (Table 19) derive from a vessel with an extremely excurvate neck. The flat lip is 9.0 mm thick and decorated with oblique CWOI. A band of oblique CWOI extends downward from the lip on the exterior, truncated by an incised line. Below the line, there is a band of vertically oriented small rectangular stamps. These stamps are 4.9 mm by 2.2 mm in size. Below the vertical stamps, there is a horizontal row of very small ovoid stamps which slightly overlap each other. At the inflection point in the neck, a horizontal row of triangular marks is present. These probably are

stamps although they could be knots in the weave of the fabric in which the pot was molded. On the interior surface, three vertical CWOI impressions extend from the lip to the point of inflection. Given the small size of the stamps and the presence of oblique CWOI, Vessel 5 is ascribed to the Bird Lake type.

The second rim sherd, DlLg-33:03B/395, only has a small portion of the neck present. The flat lip, 6.3 mm wide, is not perpendicular to the neck, suggesting that this vessel also had an excurvate neck. The lip is decorated with large (5.3 mm by 6.3 mm) triangular stamps. The neck has large vertical, rectangular (10.3 mm by 2.3 mm) stamps. The size of the stamps indicate that this specimen is representative of Duck Bay ware.

CAT. #	QTY	WT	PORTION	DECORATION	COMMENTS
394	2	24.7	lip,neck	CWOI; stamped	Vessel 5
395	1	2.4	lip,neck	stamped	Vessel 6
TOTAL	3	27.1			

Table 19: Rim Sherds Recovered from Trench 6, Level 1

9.1.2.2 Body Sherds

As usual, the majority of the recovered sherds, 14, are from the body of the pot. DlLg-33:03B/396 consists of three pale brown body sherds showing an obliterated textile impressed surface finish. They range in thickness from 4.2 to 5.0 mm and weigh 12.3 grams.

DlLg-33:03B/397 consists of ten body sherds with a very pronounced textile impressed surface finish, which resembles that on Vessel 5. They weigh 9.4 grams. These relatively thin sherds range in thickness from 3.1 mm to 3.9 mm. All have varying degrees of carbonization and soot staining resulting from cooking activities.

DlLg-33:03B/398 is one body sherd with faint textile impressions. The weight is 1.6 grams. The thickness is 5.1 mm. The temper and paste resembles Vessel 5.

9.1.3 Faunal Remains

The largest number of artifacts from Level 1consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 4394 with a total weight of 111.3 grams.

9.1.3.1 Butchering Remains

As is usually the case, the highest percentage of artifacts is the residue from food procurement and processing, i.e., butchering remains. A total of 4364 artifacts, with a combined weight of 87.0 grams, was recovered. For comparative purposes, the identified taxa are listed in Table 20. The frequencies of

each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

Four shellfish valve fragments, DlLg-33:03B/409, are charred. DlLg-33:03B/415, a large mammal rib, is also charred, as is DlLg-33:03B/418, two unidentifiable mammal bones. In the fish, a single dentary, DlLg-33:03B/429, from an unidentified species is charred. Several specimens show evidence of being calcined—DlLg-33:03B/417, eighteen unidentifiable mammal bone, DlLg-33:03B/435, three fish vertebra, and DlLg-33:03B/437, one fish rib.

In addition to being charred, DlLg-33:03B/415, the large mammal rib, shows evidence of carnivore chewing, either by a domestic dog, a wolf, or a fox.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	52	1.2	12.0	13.8
Large Mammal	13	0.3	37.3	42.8
Medium Mammal	2	<0.1	0.4	0.5
Rabbit Family (Leporidae)				
Jack Rabbit (*Lepus* sp.)	4	0.1	0.3	0.3
TOTAL MAMMAL	71	1.6	50.0	57.5
Undifferentiated Fish	4272	97.9	23.8	27.4
Catfish (*Ictalurus* sp.)	5	0.1	11.5	13.2
Sucker Family (Catostomidae)	10	0.2	0.5	0.6
TOTAL FISH	4287	98.2	35.8	41.1
Freshwater Clam (Unionidae)	6	0.1	1.2	1.4
TOTAL SHELLFISH	6	0.1	1.2	1.4
TOTAL	4364	99.9	87.0	100.0

Table 20: Butchering Remains from Trench 6, Level 1

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 16). In the quantity graph, 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 largely reversed when weight is considered.

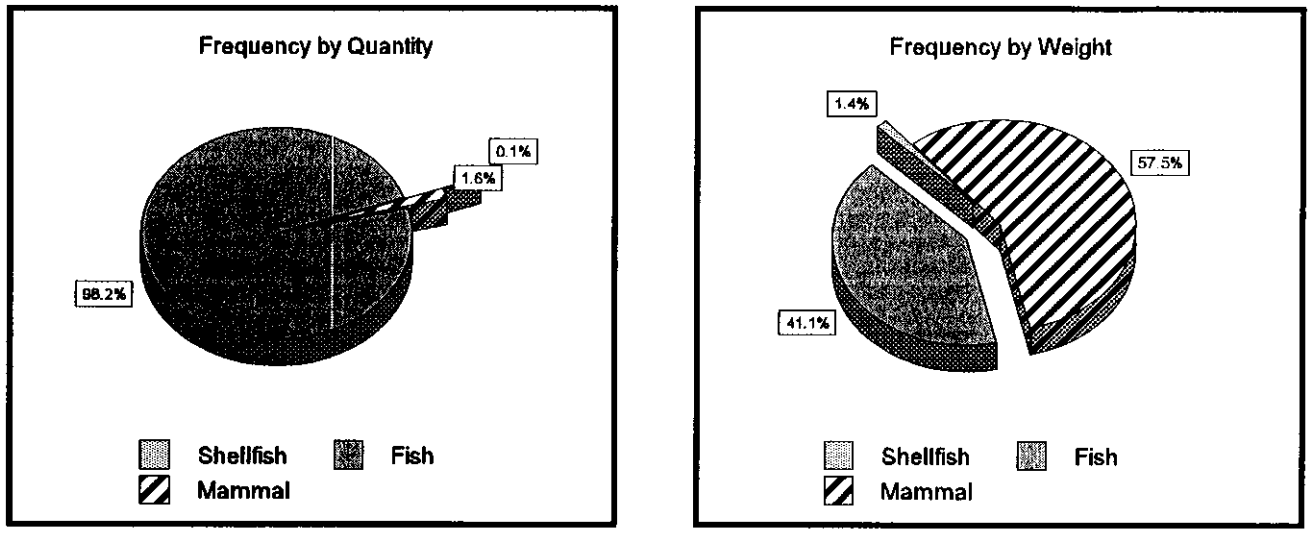


Figure 16: Frequencies of Butchering Remains from Trench 6, Level 1

9.1.3.2 Naturally Deposited Fauna

Representations of non-food faunal remains are often incorporated into cultural deposits (Table 21). These include aquatic taxa, freshwater snails and pea clams, which are deposited as part of the sediment load during flood episodes. Frogs often utilize disturbed ground to burrow into for winter hibernation and may not survive, thereby becoming part of the archaeological site.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Freshwater Snails (Gastropod)				
Ramshorn Snails (Planorbidae)	2	6.9	0.1	25.0
Pond Snails (Lymnaeidae)	20	69.0	0.1	25.0
TOTAL GASTROPODS	22	75.9	0.2	50.0
Freshwater Clam (Eulamellibranchia)				
Pea Clams (Sphaeriidae)	6	20.7	0.1	25.0
TOTAL CLAM	6	20.7	0.1	25.0
Amphibian				
Frog (*Anura*)	1	3.4	0.1	25.0
TOTAL AMPHIBIAN	1	3.4	0.1	25.0
TOTAL	29	100.0	0.4	100.0

Table 21: Natural Faunal Remains from Trench 6, Level 1

9.1.3.3 Samples

One sample, DlLg-33:03B/442, consisting of bone, shell, and charcoal recovered on the 1 millimetre screen was curated. It weighs 23.9 grams.

9.1.4 Floral Remains

The floral recoveries consist of 257 charcoal fragments. DlLg-33:03B/403 weighs 2.6 grams. Most of the charcoal would derive from locally available trees, including oak, maple, willow, poplar, and birch.

10.0 TRENCH 7

Trench 7 is located at 13m north of the property line and 95m east of the York/Waterfront intersection. Three cultural levels were encountered, each of which will be analysed separately.

10.1 Level 1

Level 1 was encountered at a depth of 225 cm. A total of 2826 artifacts, with a weight of 854.4 grams, was recovered. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

10.1.1 Lithic Artifacts

The thirty-three lithic artifacts are analysed within the following categories: lithic tools, detritus, fire-cracked rock, and unmodified lithic material.

10.1.1.1 Lithic Tools

Three lithic tools were recovered from Level 1—one scraper and two utilized flakes.

10.1.1.1.1 Scraper

DlLg-33:03B/449 is a domed, triangular chert scraper. The length is 19.8 mm, the width is 16.1 mm, the thickness is 7.8 mm, and it weighs 2.1 grams. The length of the working edge measures 14.9 mm with the width of the working edge measuring 2.1 mm. The working edge angle is quite steep at 76°. There is some degree of wear polish on the right lateral edge which could have been used as a serendipitous scraping edge if the tool was hand held or could result from movement within a handle if the tool was hafted.

10.1.1.1.2 Utilized Flakes

DlLg-33:03B/450 is made of undifferentiated chert. The artifact is roughly square and is a reduction flake with wear polish on the edge opposite the bulb of percussion. The overall length is 18.5 mm, the width is 18.6 mm, with a thickness of 7.7 mm. It weighs 2.6 grams. The working edge width is 13.7 mm with a length of 1.2 mm. The working edge angle measures 36°.

DlLg-33:03B/451 is a trapezoidal, cortical utilized flake of undifferentiated chert. A portion of the flake margin, opposite the bulb of percussion, has step fracturing due to use. The length is 29.0 mm, the width is 35.6 mm, the thickness is 9.2 mm, and it weighs 9.2 grams. The working edge width is 16.1 mm with a length of 1.1 mm. The working edge angle measures 39°.

10.1.1.2 Detritus

Twenty-five lithic flakes (Table 22) were recovered from Level 1. Five lithic types are represented with the predominant one being undifferentiated chert (16 flakes = 64.0%). The second most frequent

material is Knife River Flint with four flakes (16.0%). A limited assemblage such as this one shows that most of the used material is not site specific and could have been recovered from any region traversed by the people. The Knife River Flint indicates links with southern areas, the Swan River Chert indicates links with southwestern Manitoba, and the Selkirk Chert indicates a knowledge of nearby lithic sources.

MATERIAL	GROUP	QUANTITY	FREQUENCY	WEIGHT	FREQUENCY
Chert	IV	16	64.0	8.6	7.17
Knife River Flint	II	4	16.0	0.2	1.7
Quartz	III	2	8.0	0.1	0.8
Selkirk Chert	V	1	4.0	0.4	3.3
Swan River Chert	I	2	8.0	2.7	22.5
TOTAL		25	100.0	12.0	100.0

Table 22: Flake Recoveries from Trench 7, Level 1

10.1.1.3 Fire-cracked Rock

Four fire-cracked rocks were recovered from Level 1. The three granite fragments, DlLg-33:03B/509, weigh 91.9 grams and the larger diorite fragment, DlLg-33:03B/510, weighs 281.6 grams.

10.1.1.4 Unmodified Lithic Material

One limestone spall, DlLg-33:03B/511, was recovered. It weighs 302.5 grams. It could have been brought to the site as a part of a large cobble which was subsequently broken to obtain Selkirk Chert or for use as a hearth stone.

10.1.2 Ceramics

A total of 23 ceramic sherds, all body sherds or body sherdlets, were recovered. DlLg-33:03B/444 is five textile impressed sherds with a reddish exterior, deriving from either an ochre wash or firing in a oxygen rich environment resulting in oxidization of the iron content of the clay. The temper is medium sized granitic grit. The total weight is 7.9 grams.

DlLg-33:03B/445 consists of three sherds which are thinner and bear an impression of an elongated weave as opposed to the close weave on DlLg-33:03B/444. The temper has a high proportion of quartz in the grit. These sherds weigh 2.1 grams.

DlLg-33:03B/446 is four sherds which appear to have been highly affected by heat. The laminated paste has evidence of spalling and the small amount of surface present could have an obliterated textile impressed surface finish. The temper contains biotite and quartz. The quartz fragments are rounded suggesting the use of sand as well as crushed granite for temper. The weight is 5.1 grams.

DlLg-33:03B/447 consists of two sherds with a moderate degree of carbon encrustation on the exterior partially obscuring the surface finish which seems to resemble the tight weave on DlLg-33:03B/444. The sherds seem to have experienced considerable heat resulting in a reddish tone to the entire interior paste. The temper consists of feldspar, quartz, and biotite. These sherds weigh 8.2 grams.

DlLg-33:03B/448 is nine small sherdlets, weighing 1.3 grams. Due to the size, the surface finish is difficult to determine.

Because of similarities in temper and clay, it is possible that all these ceramic artifacts derive from the same vessel. The variation in weave can be explained as a result of strecthing of the bag mold while the pot was being manufactured.

10.1.3 Faunal Remains

The largest number of artifacts from Level 1consist of faunal objects: a bone tool, butchering remains, natural faunal deposits, and a sample. The total number is 2544 with a total weight of 126.2 grams.

10.1.3.1 Bone Tool

Only one type of food processing artifact, a spatula, was recovered. Spatulas are described as linear bone tools which have a rectangular outline and a rounded end to facilitate use as a marrow extractor, where the utensil was inserted into the central cavity of long bones to scoop out the marrow. These tools could have been used in more than one function. Orchard (1946:80) and Lehmer *et al.* (1978:280) suggest that they were used for softening hides. Alternative functions could be as pottery smoothing or shaping implements or as handles for hafting bifaces or scrapers.

DlLg-33:03B/443 is a mid-shaft section, possibly from a large mammal rib, which has been cut and ground into a linear implement. The overall length is 49.5 mm, the width is 13.2 mm, and the thickness is 5.2 mm. It weighs 3.8 grams. Some wear polish exists on the upper surface where the tool was grasped. Although the artifact has been identified as a spatula, it could also be the handle section of large awl.

10.1.3.2 Butchering Remains

A total of 2536 artifacts, with a combined weight of 90.1 grams, was recovered (Table 23). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage. One unidentifiable mammal fragment (DlLg-33:03B/468) was charred. Another unidentifiable mammal fragment (DlLg-33:03B/469) and one unidentifiable fish fragment (DlLg-33:03B/503) were calcined.

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 17). In the quantity graph, the fish remains overwhelm the other taxa. Even though fish bone is small and light in comparison to the larger and denser mammal bone, the proportions remain similar when weight is considered.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	20	0.8	2.6	2.9
Large Mammal	1	<0.1	2.7	3.0
Small Mammal	1	<0.1	0.1	0.1
Rodent Family (Rodentia)				
Beaver (*Castor canadensis*)	1	<0.1	0.4	0.4
TOTAL MAMMAL	23	0.9	5.8	6.4
Aves				
Medium Aves	3	0.1	0.5	0.6
TOTAL AVES	3	0.1	0.5	0.6
Undifferentiated Fish	2448	96.5	37.1	41.2
Catfish (*Ictalurus* sp.)	47	1.9	36.4	40.4
Sucker Family (Catostomidae)	5	0.2	0.4	0.4
Drum (*Aplodinotus grunniens*)	3	0.1	2.5	2.8
Perch Family (Percidae)	1	<0.1	0.1	0.1
TOTAL FISH	2504	98.7	76.5	84.9
Freshwater Clam (Unionidae)	5	0.2	2.7	3.0
Fat Mucket (*Lampsilis radiata*)	1	<0.1	4.6	5.1
TOTAL SHELLFISH	6	0.2	7.3	8.1
TOTAL	2536	99.9	90.1	100.0

Table 23: Butchering Remains from Trench 7, Level 1

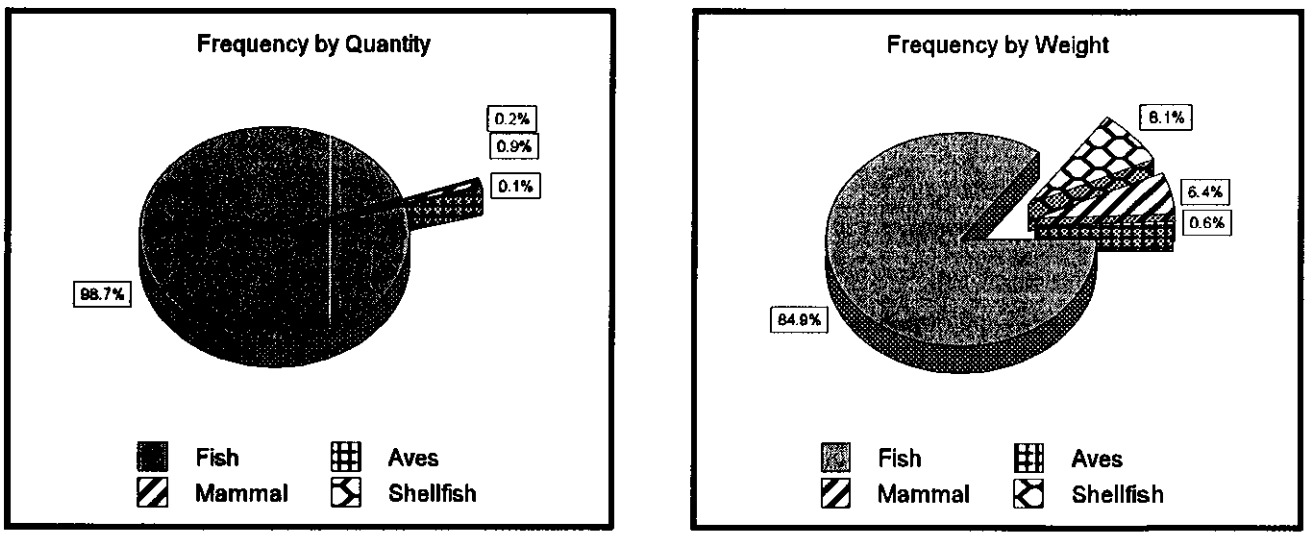


Figure 17: Frequencies of Butchering Remains from Trench 7, Level 1

10.1.3.3 Naturally Deposited Fauna

Freshwater snails were recovered from the cultural matrix. DlLg-33:03B/458 is seven Lymnaeidae, pond snails, weighing 0.1 gms and DlLg-33:03B/459 is nine Planorbidae, ramshorn snails, weighing 0.1 gms.

10.1.3.4 Samples

One sample, DlLg-33:03B/508, consists of bone, shell, and charcoal recoveries on the 1 millimetre screen. It weighs 32.1 grams.

10.1.4 Floral Remains

The floral recoveries consist of small charcoal fragments. DlLg-33:03B/457 is 216 fragments which weigh 1.7 grams.

10.2 Level 2

Level 2 was encountered at a depth of 260 cm. A total of 20,632 artifacts, weighing 1225.9 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

10.2.1 Lithic Artifacts

The 304 lithic artifacts are analysed within the following categories: detritus (262), fire-cracked rock (16), and unmodified lithic material (26).

10.2.1.1 Detritus

Two hundred and sixty-two lithic flakes were recovered from Trench 7, Level 2 (Table 24). Within the flakes, eight lithic material types were represented, the predominant one being undifferentiated chert (134 flakes = 51.1%). The second most frequent material is Selkirk Chert which has 77 flakes (29.4%) followed by Swan River Chert which has 30 flakes (11.5%). The remaining five types have trace amounts.

The most frequent group is Group IV, representing 52.6% of the total. Group V provides 29.4% followed by Group I which provides 13.0%. Groups II and III provide 3.4% and 1.5% respectively. The Group IV materials could have been obtained at creek mouths and riffle areas along the Assiniboine River. Group V materials would have been obtained downstream on the Red River at the St. Andrews Rapids (Selkirk Chert). Most of the other lithic types are the result of long-distance transport. The most predominant groupings of lithic materials would represent source areas recently visited by the occupants.

An assemblage such as this one shows that most lithic material is local, with minimal indications of long-distance travel with lithic collection from lithic source areas in other locations or a participation in an

extensive trade network which extends to the south and west. It does indicate a familiarity with the lithic source areas in the vicinity.

MATERIAL	GROUP	QUANTITY	FREQUENCY	WEIGHT	FREQUENCY
Chalcedony	I	3	1.1	0.1	0.2
Chert	IV	134	51.1	39.2	67.0
Knife River Flint	II	9	3.4	3.0	5.1
Jasper	I	1	0.4	0.1	0.2
Quartz	III	4	1.5	0.2	0.3
Quartzite	IV	4	1.5	1.0	1.7
Selkirk Chert	V	77	29.4	11.5	19.7
Swan River Chert	I	30	11.5	3.4	5.8
TOTAL		262	99.9	58.5	100.0

Table 24: Flake Recoveries from Trench 7, Level 2

10.2.1.2 Fire-cracked Rock

Sixteen fire-cracked rocks were recovered. DlLg-33:03B/528 is eight granite fragments weighing 7.4 grams and DlLg-33:03B/529 is eight granodiorite fragments weighing 3.1 grams.

10.2.1.3 Unmodified Lithic Material

Twenty-six small reddish ochre fragments, DlLg-33:03B/527, were recovered. They weigh 1.2 grams. Ochre, mixed with various greases or fats, was used as a personal cosmetic or as a decorative paint for teepees, ceramics, parfleches, etc.

10.2.2 Ceramics

Forty-nine ceramic sherds were recovered—five rim sherds and forty-four body sherds.

10.2.2.1 Rim Sherds

The five rim sherds, DlLg-33:03B/512, fit together and have been designated as Vessel 7. It has a total weight of 46.8 grams. This vessel is highly decorated with a flat lip surmounting a vertical neck. The lip is decorated with oblique cord wrapped object impressions (CWOI). The exterior has right oriented oblique CWOI immediately below the lip subtended by a band of sharply angled, left oriented CWOI producing a chevron pattern. Five horizontal bands of CWOI occur below the chevron pattern with widely spaced, small round punctates, resulting in slight bosses on the interior. Below the horizontal bands, a horizontal row of small (5.3 mm by 2.4 mm) vertical ovoid stamps occurs. One of the five sherds appears to come from between the neck juncture and the shoulder juncture. Although it does not fit onto any of the four rim sherds, the colour, paste, and temper are identical. In addition, the pattern

on this sherd is textile impressed and is identical to the surface finish visible below the lower band of stamps. Based on the size of the stamps and the chevron pattern, Vessel 7 is assigned to the Bird Lake Complex.

10.2.2.2 Body Sherds

DlLg-33:03B/513 is fifteen body sherds with a significant degree of carbon encrustation on the exterior. The textile impressed surface finish ranges from pronounced to shallow and the curvature ranges from moderate to pronounced. The thickest sherd is 6.6 mm and the thinnest is 2.7 mm. The sherds weigh 42.6 grams.

DlLg-33:03B/514 consists of twelve body sherds with the textile impressed surface largely obliterated by smoothing or the clay having been relatively dry at the time of the impression. Some degree of soot staining and blackening occurs on the exterior. These sherds weigh 16.1 grams.

DlLg-33:03B/515 is six body sherds with a textile impressed exterior and a use blackened interior. They weigh 7.7 grams. DlLg-33:03B/516 consists of four body sherds with a smooth exterior surface weighing 4.7 grams. DlLg-33:03B/517 is seven small exfoliated body sherdlets weighing 1.7 grams.

There are similarities in temper and, to some degree, the paste among all ceramic recoveries from this level. Reconstruction to ascertain if they are all part of the same vessel is impractical due to the small percentage of a vessel which is represented. However, there may be some cross-matching between sherds from the various catalogue numbers. If this is the case, the specimens would have derived from different portions of the body of the vessel.

10.2.3 Faunal Remains

The largest number of artifacts from Level 2, and from the project, are faunal objects: butchering remains, natural faunal deposits, and samples. These total 19,633 with a total weight of 1020.8 grams.

10.2.3.1 Butchering Remains

A total of 19,588 butchering remains, with a combined weight of 511.3 grams, was recovered from Level 2 in Trench 7. The identified taxa are listed in Table 25. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

Numerous specimens are charred: DlLg-33:03B/541, three Unionidae valve fragments, DlLg-33:03B/550, four unidentifiable mammal fragments, DlLg-33:03B/567, one catfish angular, DlLg-33:03B/570, one catfish dorsal spine, DlLg-33:03B/604, five fish vertebra, DlLg-33:03B/606, two fish ribs, and DlLg-33:03B/607, thirty-nine unidentifiable fish fragments. The calcined specimens consist of five unidentifiable mammal fragments, DlLg-33:03B/549, and four unidentifiable fish fragments, DlLg-33:03B/605. A canid metapodial, DlLg-33:03B/545, shows evidence of carnivore chewing.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	9	<0.1	0.9	0.2
Large Mammal	109	0.6	47.6	9.3
Small Mammal	1	<0.1	0.1	<0.1
Carnivore Family (Carnivora)				
Dog/Wolf/Coyote Family (Canidae)				
Dog/Wolf (*Canis* sp.)	2	<0.1	3.6	0.7
Rodent Family (Rodentia)				
Beaver (*Castor canadensis*)	2	<0.1	3.9	0.8
TOTAL MAMMAL	123	0.6	56.1	11.0
Undifferentiated Aves	3	<0.1	0.4	0.1
TOTAL AVES	3	<0.1	0.4	0.1
Undifferentiated Fish	19068	97.3	221.4	43.3
Catfish (*Ictalurus* sp.)	295	1.5	180.5	35.3
Sucker Family (Catostomidae)	40	0.2	4.3	0.8
Drum (*Aplodinotus grunniens*)	24	0.1	11.9	2.3
Sturgeon (*Acipenser fulvescens*)	2	<0.1	0.5	0.1
TOTAL FISH	19429	99.2	418.6	81.9
Freshwater Clam (Unionidae)	28	0.1	15.8	3.1
White Heel-Splitter (*Lasmigona complanata*)	2	<0.1	10.2	2.0
Fat Mucket (*Lampsilis radiata*)	3	<0.1	10.2	2.0
TOTAL SHELLFISH	33	0.2	36.2	7.1
TOTAL	19588	100.0	511.3	100.0

Table 25: Butchering Remains from Trench 7, Level 2

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 18). In the quantity graph, the fish remains overwhelm the other taxa. When weight is considered, the ratio changes slightly but fish still dominates the assemblage.

The quantity graph is severely distorted due to the presence of a large quantity of fish scale (15,636—DlLg-33:03B/612 and 613). The complete scales, in an academic research project, could be identified to individual species and used for age and weight determinations. However, this is a long, labour-intensive study which, while elucidating harvesting preferences, would only fine-tune the basic fact that fish were a predominant part of the diet at this particular campsite.

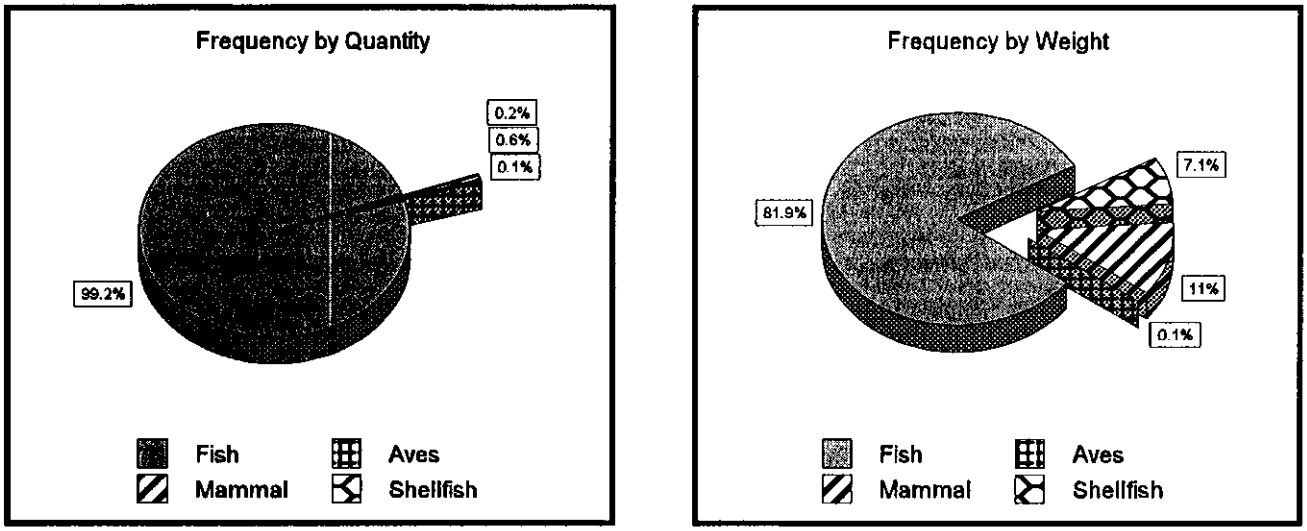


Figure 18: Frequencies of Butchering Remains from Trench 7, Level 2

10.2.3.2 Naturally Deposited Fauna

Forty-two specimens were recovered (Table 26). These consist of the usual aquatic taxa as well as a portion of a mandible and teeth from a small rodent. In addition, a vertebra from a frog was recovered.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Freshwater Snails (Gastropod)				
Ramshorn Snails (Planorbidae)	20	47.6	0.1	20.0
Pond Snails (Lymnaeidae)	16	38.1	0.1	20.1
TOTAL GASTROPODS	36	85.7	0.2	40.0
Freshwater Clam (Eulamellibranchia)				
Pea Clams (Sphaeriidae)	4	9.5	0.1	20.0
TOTAL CLAM	4	9.5	0.1	20.0
Mammal				
Small Rodent (Rodentia)	1	2.4	0.1	20.0
TOTAL MAMMAL	1	2.4	0.1	20.0
Amphibian				
Frog (*Anura*)	1	2.4	0.1	20.0
TOTAL AMPHIBIAN	1	2.4	0.1	20.0
TOTAL	42	100.0	0.5	100.0

Table 26: Natural Faunal Remains from Trench 7, Level 2

10.2.3.3 Samples

Three samples were curated. DlLg-33:03B/614 is bone, shell, and charcoal recovered on the 0.5 mm screen. It weighs 51.2 grams. DlLg-33:03B/615 is a sample recovered on the 1.0 mm screen. It weighs 203.5 grams. DlLg-33:03B/616 was recovered on the 2.0 mm screen and it weighs 254.3 grams.

10.2.4 Floral Remains

There are 646 floral specimens. DlLg-33:03B/532 is 633 charcoal fragments weighing 14.8 grams.

DlLg-33:03B/530 is two seeds from puccoon (*Lithospermum* sp.), with a total weight of 0.1 grams. This identification was based on Montgomery (1977:59). Densmore (1974:290, 371) lists the root of *Lithospermum carolinense* as a source of red dye. This species does not occur in Manitoba (Looman and Best 1979) but it is unknown if the local species were used for the same purpose.

DlLg-33:03B/531 is eleven fragments of hazelnut (*Corylus* sp.), weighing 0.4 grams. There are two species (Looman and Best 1979) which could provide the edible nuts. The specimens were too incomplete to distinguish the species. Both types grow in the parklands and eastern Boreal Forest and would have been present in the gallery forest along the Red River and the Assiniboine River.

10.3 Level 3

Level 3 was encountered at a depth of 295 cm. A total of 2901 artifacts, weighing 102.8 grams, was recovered including lithic artifacts, ceramic artifacts, faunal remains, floral remains, and a fragment of native copper.

10.3.1 Lithic Artifacts

The nine lithic artifacts are analysed within the following categories: detritus and fire-cracked rock.

10.3.1.1 Detritus

Eight lithic flakes were recovered (Table 27). Four lithic material types were represented, the predominant one being undifferentiated chert. A minimal assemblage such as this one does not permit substantive statements about resource utilization.

10.3.1.2 Fire-cracked Rock

One granite fire-cracked rock was recovered. DlLg-33:03B/624 weighs 32.2 grams.

10.3.2 Metallic Artifact

One small fragment of copper scrap was curated from this cultural horizon. DlLg-33:03B/619 weighs 0.1 grams. The copper would have been traded in for use as ornaments or possibly tools. It most likely

came from the Lake Superior region where copper ore is pure enough that it can be cold-hammered into a stable and functional form.

MATERIAL	GROUP	QUANTITY	FREQUENCY	WEIGHT	FREQUENCY
Chert	IV	4	50.0	2.0	80.0
Quartz	III	1	12.5	0.1	4.0
Quartzite	IV	1	12.5	0.3	12.0
Selkirk Chert	V	2	25.0	0.1	4.0
TOTAL		8	100.0	2.5	100.0

Table 27: Flake Recoveries from Trench 7, Level 3

10.3.3 Ceramics

Eleven body sherds were recovered. DlLg-33:03B/617 is ten body sherds with a low relief textile impressed surface finish. The sherds are carbon encrusted on the exterior and use-blackened on the interior. These sherds weigh 12.7 grams.

DlLg-33:03B/618 is a single body sherd weighing 2.8 grams. It has the same thickness (3.5 mm) as DlLg-33:03B/617 but is not carbon encrusted and has a smooth surface finish.

10.3.4 Faunal Remains

The largest number of artifacts from Level 3 consist of faunal objects: butchering remains, natural faunal deposits, and a sample. The total number is 2602 with a total weight of 49.5 grams.

10.3.4.1 Butchering Remains

Butchering remains total 2592 artifacts and have a combined weight of 35.4 grams (Table 28). The frequency of the butchering remains are illustrated by both quantity and weight (Figure 19). In both the quantity and the weight graph, the fish remains overwhelm the other taxa. The quantity dominance is in part due to a large number of scales (1669—DlLg-33:03B/665).

Several specimens are charred: five clam fragments (DlLg-33:03B/630); one catfish pterotic (DlLg-33:03B/644); two drum dorsal spines (DlLg-33:03B/646); ten fish vertebrae (DlLg-33:03B/656); three fish ribs (DlLg-33:03B/658); and fifty-one unidentifiable fish bone (DlLg-33:03B/663). In addition, twenty-one unidentifiable mammal bones, DlLg-33:03B/633, are calcined.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	25	1.0	1.7	4.8
TOTAL MAMMAL	25	1.0	1.7	4.8
Undifferentiated Aves	1	<0.1	0.1	0.3
TOTAL AVES	1	<0.1	0.1	0.3
Undifferentiated Fish	2529	97.6	21.1	59.6
Catfish (*Ictalurus* sp.)	18	0.7	10.1	28.5
Sucker Family (Catostomidae)	5	0.2	1.0	2.8
Drum (*Aplodinotus grunniens*)	4	0.2	0.7	2.0
Perch Family (Percidae)	1	<0.1	0.1	0.3
TOTAL FISH	2557	98.6	33.0	93.2
Freshwater Clam (Unionidae)	9	0.3	0.6	1.7
TOTAL SHELLFISH	9	0.3	0.6	1.7
TOTAL	2592	99.9	35.4	100.0

Table 28: Butchering Remains from Trench 7, Level 3

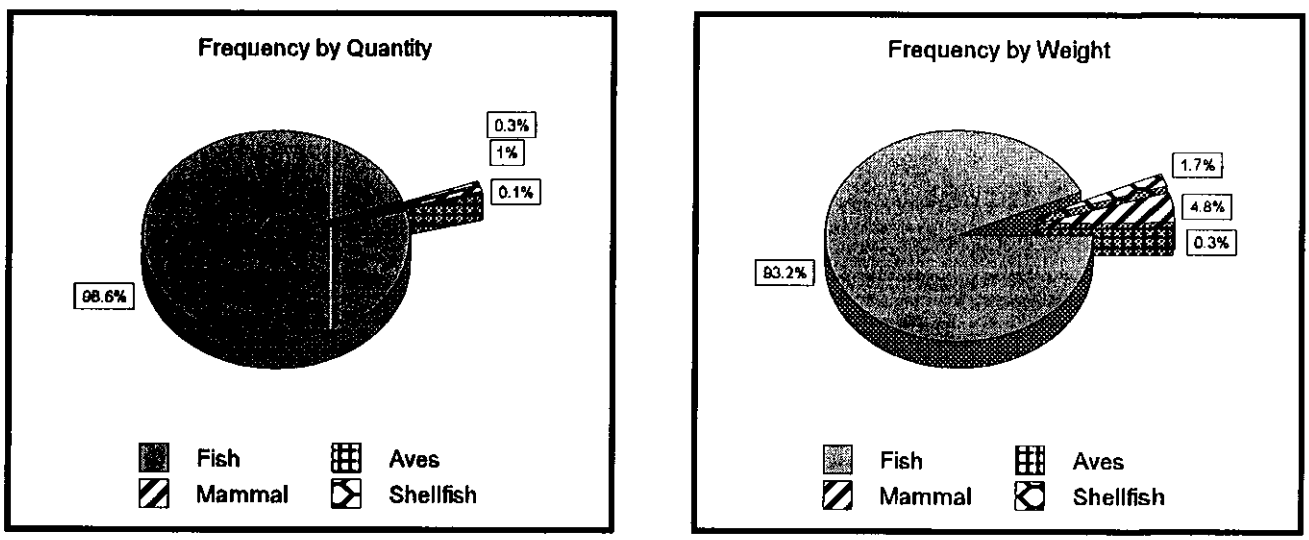


Figure 19: Frequencies of Butchering Remains from Trench 7, Level 3

10.3.4.2 Naturally Deposited Fauna

Nine freshwater snails were recovered. DlLg-33:03B/627 is two Lymnaeidae weighing 0.1 grams, while DlLg-33:03B/628 is seven Planorbidae weighing 0.1 grams.

10.3.4.3 Samples

One sample, DlLg-33:03B/666, consists of recoveries on the 1 millimetre screen. It weighs13.9 grams.

10.3.5 Floral Remains

The floral recoveries consist of 265 charcoal fragments (DlLg-33:03B/626) weighing 2.7 grams. In addition, thirteen hazelnut (*Corylus* sp.) fragments were also recovered. They weigh 0.3 grams.

11.0 TRENCH 8

Trench 8 is located at 28m north of the property line and 89m east of the York/Waterfront intersection. Two sparse cultural levels were encountered, each of which will be analysed separately.

11.1 Level 1

Level 1 was encountered at a depth of 145 cm. A total of 70 artifacts, weighing 121.2 grams, was recovered from this level. These consisted of faunal remains and floral remains.

11.1.1 Faunal Remains

Only butchering remains, all mammal, were recovered from Level 1 (Table 29). Two bison innominate fragments, DlLg-33:03B/670, are from a juvenile animal.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal Large Mammal	59	86.8	25.7	21.2
Deer/Cow Family (Artiodactyla) Cow Family (Bovidae) Bison (*Bison bison*)	9	13.2	95.4	78.8
TOTAL	68	100.0	121.1	100.0

Table 29: Butchering Remains from Trench 8, Level 1

11.1.2 Floral Remains

The floral recoveries consist of two very small charcoal fragments. DlLg-33:03B/667 weighs 0.1 grams.

11.2 Level 2

Level 2 was encountered at a depth of 295 cm. Only faunal material was recovered from this level.

11.2.1 Faunal Remains

The faunal remains consist of butchering remains and a sample. The total is 60 with a total weight of 55.1 grams.

11.2.1.1 Butchering Remains

Fifty-nine butchering remains, with a combined weight of 54.5 grams, was recovered from Level 2 (Table 30). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	4	6.8	0.6	1.1
Medium Mammal	1	1.7	2.8	5.1
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	1	1.7	30.5	56.0
TOTAL MAMMAL	6	10.2	33.9	62.2
Undifferentiated Fish	39	66.1	2.1	3.9
Catfish (*Ictalurus* sp.)	5	8.5	6.0	11.0
TOTAL FISH	44	74.6	8.1	14.9
Freshwater Clam (Unionidae)	7	11.9	7.7	14.1
Three-ridge clam (*Amblema plicata*)	2	3.4	4.8	8.8
TOTAL SHELLFISH	9	15.3	12.5	22.9
TOTAL	59	100.1	54.5	100.0

Table 30: Butchering Remains from Trench 8, Level 2

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 20). In the quantity graph, the fish remains constitute approximately three-quarters of the assemblage. When weight is considered, the ratio is reversed with mammal being closer to two-thirds of the assemblage. While shellfish tends to skew the proportion as the weight of the shell is considerably greater than that of the edible portion, in these graphs it remains relatively constant.

11.2.1.2 Samples

One sample, DlLg-33:03B/683, consists of recoveries on the 1 millimetre screen. It weighs 0.6 grams.

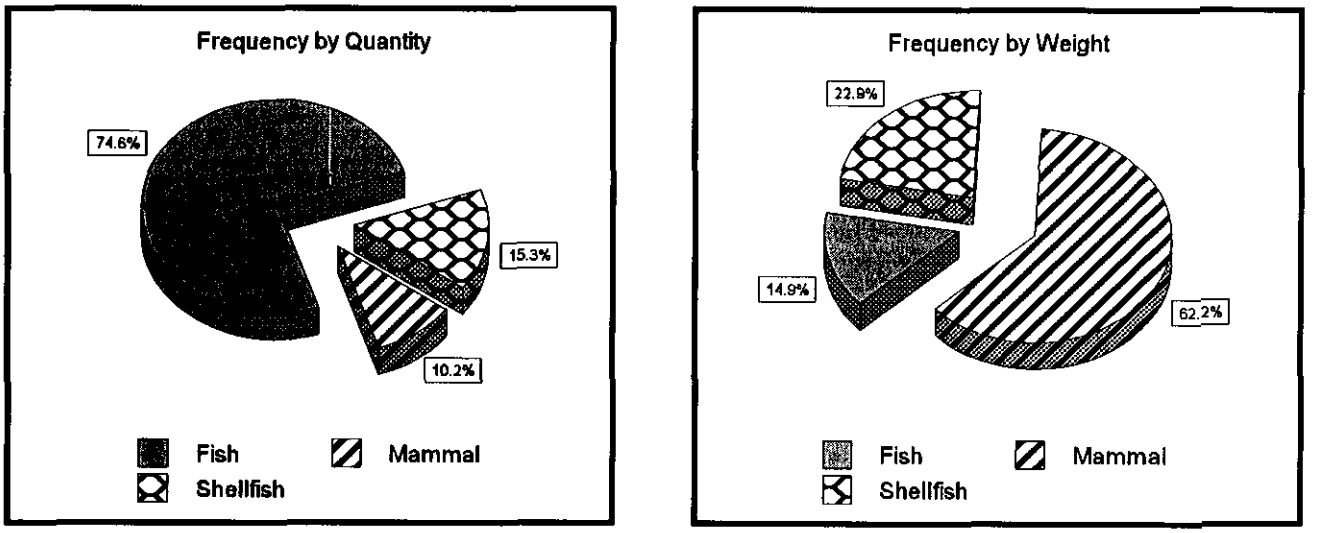


Figure 20: Frequencies of Butchering Remains from Trench 8, Level 2

12.0 TRENCH 10

Trench 10 is located at 53m south of the property line and 100m east of the York/Waterfront intersection. Four cultural levels were encountered, each of which will be analysed separately.

12.1 Level 1

Level 1 was encountered at a depth of 170 cm. Only faunal remains, totaling 54 artifacts with a weight of 32.0 grams, were recovered from this level.

12.1.1 Faunal Remains

The faunal remains consist of butchering remains and a sample.

12.1.1.1 Butchering Remains

Butchering remains total 53 with a combined weight of 31.6 grams (Table 31). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage (Figure 21). In the quantity graph, the fish remains overwhelm the mammal but, in the weight graph, the proportions are nearly equal.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal				
Large Mammal	4	7.5	14.7	46.5
TOTAL MAMMAL	4	7.5	14.7	46.5
Undifferentiated Fish	41	77.4	4.6	14.6
Catfish (*Ictalurus* sp.)	8	15.1	12.3	38.9
TOTAL FISH	49	92.5	16.9	53.5
TOTAL	53	100.0	31.6	100.0

Table 31: Butchering Remains from Trench 10, Level 1

12.1.1.2 Samples

One small sample, DlLg-33:03B/694, consists of bone, shell, and charcoal recoveries on the 1 millimetre screen. It weighs 0.4 grams.

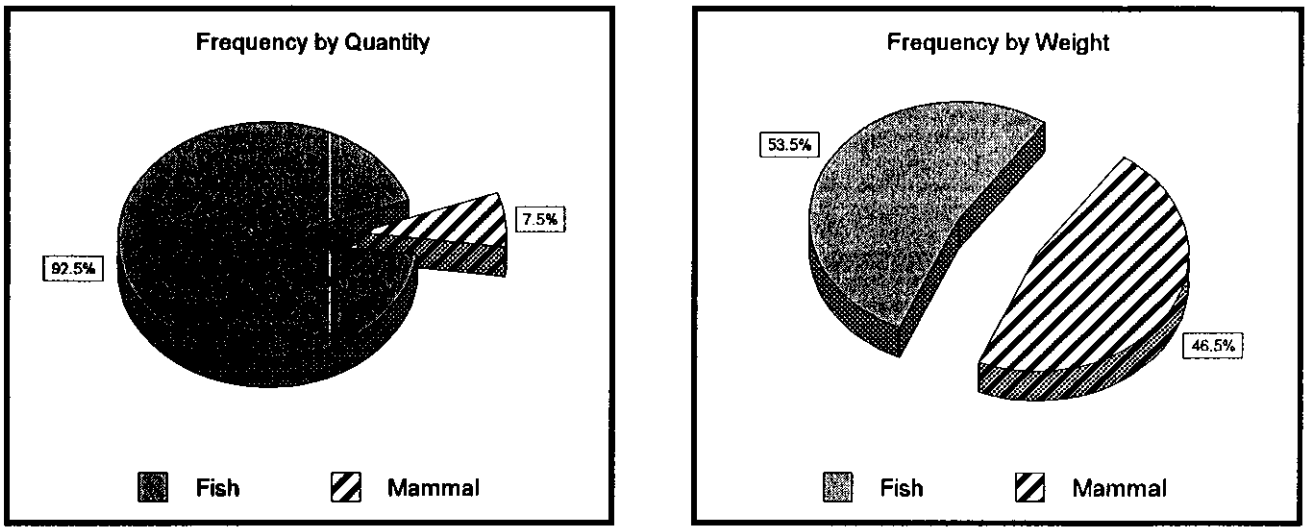


Figure 21: Frequencies of Butchering Remains from Trench 10, Level 1

12.2 Level 2

Level 2 was encountered at a depth of 200 cm. A total of 1457 artifacts, with a weight of 540.1 grams, was recovered from this level. These include ceramic artifacts, faunal remains, and floral remains.

12.2.1 Ceramics

Fifteen ceramic sherds were recovered—three rim sherds and twelve body sherds.

12.2.1.1 Rim Sherds

Three rim sherds were recovered (Table 32) DlLg-33:03B/695 is a sherd from a thick-walled (9.6 mm) vessel. The vertical neck is topped with a flat lip which has been decorated with oblique cord wrapped object impressions (CWOI). The exterior has a band of right oriented oblique CWOI immediately below the lip. At least four horizontal bands of CWOI occur below the oblique pattern. It appears that a narrow object was used to incise a smooth groove in the middle of each of the CWOI bands. A large (6.5 mm diameter) circular punctate occurs over the second horizontal band. There is no boss on the interior. This sherd, Vessel 8, has been designated as Rainy River.

DlLg-33:03B/696 is two sherds from a thin-walled (4.7 mm) vessel with a short vertical neck. It has been designated as Vessel 9. As with the previous specimen, the flat lip is decorated with oblique CWOI. Intermittent right oriented CWOI occurs below the lip, some of the impressions having been largely obliterated by smoothing. Below the oblique pattern, three horizontal bands of CWOI occur with small (2.9 mm) circular punctates between the first and second horizontal rows. A horizontal row of slightly oblique stamps occurs below the horizontal CWOI. These stamps have been formed by impressing a narrow linear object into the clay at an oblique angle. Stamps are an element of both Bird Lake and Duck Bay ceramic types and the other elements are similar to Vessel 8. The angle of the impressed stamps of

the basal design row are indicative of Duck Bay ceramics, although the stamps used for Duck Bay decorations tend to be much larger, i.e., greater than 20 square millimetres (Lenius and Olinyk 1990). Hence, Vessel 9 cannot be ascribed to one of the specific wares and therefore is designated as the more generalized Rainy River Complex.

CAT. #	QTY	WT	PORTION	DECORATION	COMMENTS
695	1	16.2	lip,neck	CWOI; punctate	Vessel 8
696	2	9.0	lip,neck	CWOI; punctate; stamped	Vessel 9
TOTAL	3	25.2			

Table 32: Rim Sherds Recovered from Trench 10, Level 2

12.2.1.2 Body Sherds

DlLg-33:03B/697 is six body sherds with a very pronounced textile impressed surface finish. The sherds range in thickness from 2.7 mm to 4.8 mm and exhibit varying degrees of carbon encrustation and soot staining. They weigh 9.0 grams.

DlLg-33:03B/698 consists of six body sherdlets. Those which have the exterior present show textile impressions. These sherdlets weigh 1.4 grams.

12.2.2 Faunal Remains

The faunal remains consist of: butchering remains, natural faunal deposits, and samples. The total number is 1380 with a total weight of 503.7 grams.

12.2.2.1 Butchering Remains

A total of 1358 artifacts, with a combined weight of 502.3 grams, was recovered from Level 2. The identified taxa are listed in Table 33. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage. One large mammal rib fragment, DlLg-33:03B/710, derives from a juvenile individual. It is probable that this, as well as the other large mammal elements, come from a bison.

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 22). In the quantity graph, the fish remains overwhelm the mammal. When weight is considered, the proportions are closer to equal.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	35	2.6	14.7	2.9
Large Mammal	13	1.0	40.8	8.1
Medium Mammal	1	0.1	0.3	0.1
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	7	0.5	156.2	31.1
TOTAL MAMMAL	56	4.1	212.0	42.2
Undifferentiated Fish	1114	82.0	78.7	15.7
Catfish (*Ictalurus* sp.)	173	12.7	210.7	41.9
Sucker Family (Catostomidae)	3	0.2	0.2	<0.1
Sturgeon (*Acipenser fulvescens*)	12	0.9	0.7	0.1
TOTAL FISH	1302	95.9	290.3	57.8
TOTAL	1358	100.0	502.3	100.0

Table 33: Butchering Remains from Trench 10, Level 2

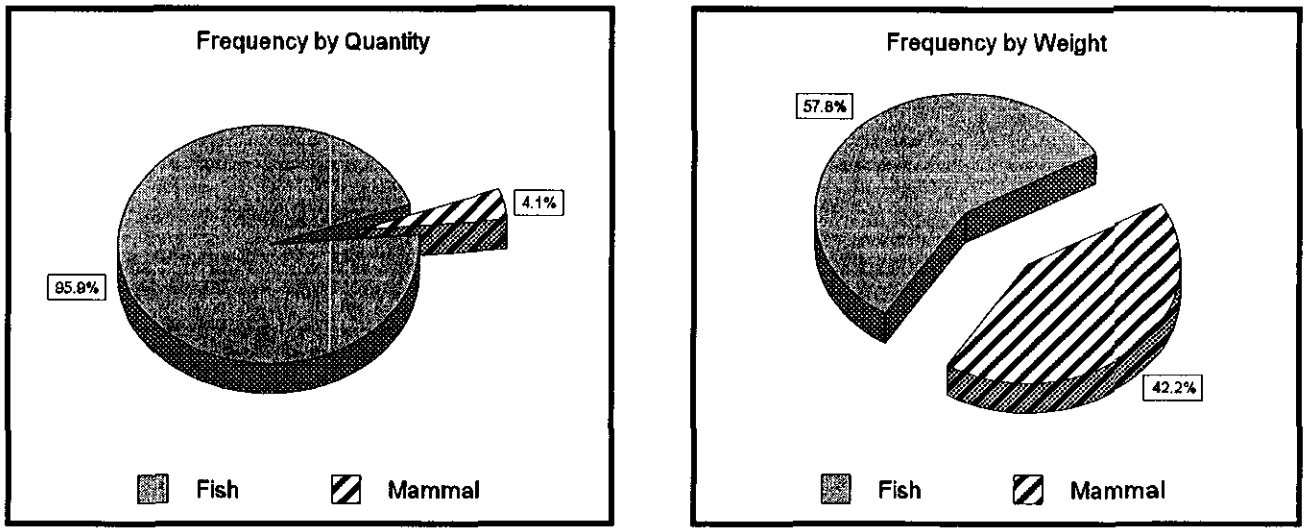


Figure 22: Frequencies of Butchering Remains from Trench 10, Level 2

12.2.2.2 Naturally Deposited Fauna

Twenty-one specimens were recovered (Table 34). These consist the usual aquatic taxa as well as a femur from a small rodent.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Freshwater Snails (Gastropod)				
Ramshorn Snails (Planorbidae)	10	47.6	0.1	25.0
Pond Snails (Lymnaeidae)	9	42.9	0.1	25.0
TOTAL GASTROPODS	19	90.5	0.2	50.0
Freshwater Clam (Eulamellibranchia)				
Pea Clams (Sphaeriidae)	1	4.8	0.1	25.0
TOTAL CLAM	1	4.8	0.1	25.0
Mammal				
Small Rodent (Rodentia)	1	4.8	0.1	25.0
TOTAL MAMMAL	1	4.8	0.1	25.0
TOTAL	21	100.1	0.4	100.0

Table 34: Natural Faunal Remains from Trench 10, Level 2

12.2.2.3 Samples

One sample was recovered. DlLg-33:03B/747 is bone, shell, and charcoal recovered on the 1.0 mm screen. It weighs 1.0 grams.

12.2.3 Floral Remains

The floral recoveries consist of 62 specimens of charcoal. DlLg-33:03B/703 weighs 0.8 grams.

12.3 Level 3

Level 3 was encountered at a depth of 230 cm. A total of 551 artifacts, with a weight of 267.0 grams, was recovered including lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

12.3.1 Lithic Artifacts

Six lithic artifacts are analysed within the following categories: detritus and fire-cracked rock.

12.3.1.1 Detritus

One chalcedony flake was recovered. DlLg-33:03B/749 weighs 0.1 grams.

12.3.1.2 Fire-cracked Rock

Five granite fire-cracked rocks were recovered. DlLg-33:03B/750 weighs 93.9 grams.

12.3.2 Ceramics

One rim sherd was recovered. DlLg-33:03B/748 is a lip,neck sherd with a slightly out-flaring neck topped by a wedge-shaped flat lip. The lip is decorated with oblique CWOI and a narrow band of right oriented oblique CWOI occurs immediately below the lip. At least five horizontal bands of well-defined CWOI continue down the lip. A medium-sized (5.3 mm in diameter) circular punctate occurs between the first and second horizontal bands. A minimal boss is present on the interior. The design is almost classic Blackduck. This sherd has been designated as Vessel 10. It weighs 6.1 grams.

12.3.3 Faunal Remains

The largest number of artifacts from Level 3 consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 513 with a total weight of 166.3 grams.

12.3.3.1 Butchering Remains

Butchering remains total 500 artifacts and have a combined weight of 155.8 grams (Table 35). The frequency of the butchering remains are illustrated by both quantity and weight (Figure 23). In the quantity graph, the fish remains overwhelm the other taxa while, in the weight graph, the dominance is not as pronounced.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	1	0.2	0.1	0.1
Deer/Cow Family (Artiodactyla)	1	0.2	10.8	6.9
Cow Family (Bovidae)				
Bison (*Bison bison*)	1	0.2	26.4	16.9
TOTAL MAMMAL	3	0.6	37.3	23.9
Undifferentiated Fish	422	84.4	29.4	18.9
Catfish (*Ictalurus* sp.)	63	12.6	81.4	52.2
Sucker Family (Catostomidae)	2	0.4	2.1	1.3
Drum (*Aplodinotus grunniens*)	1	0.2	0.1	0.1
TOTAL FISH	488	97.6	113.0	72.5
Freshwater Clam (Unionidae)	8	1.6	0.1	0.1
Fat Mucket (*Lampsilis radiata*)	1	0.2	5.4	3.5
TOTAL SHELLFISH	9	1.8	5.5	3.5
TOTAL	500	100.0	155.8	99.9

Table 35: Butchering Remains from Trench 10, Level 3

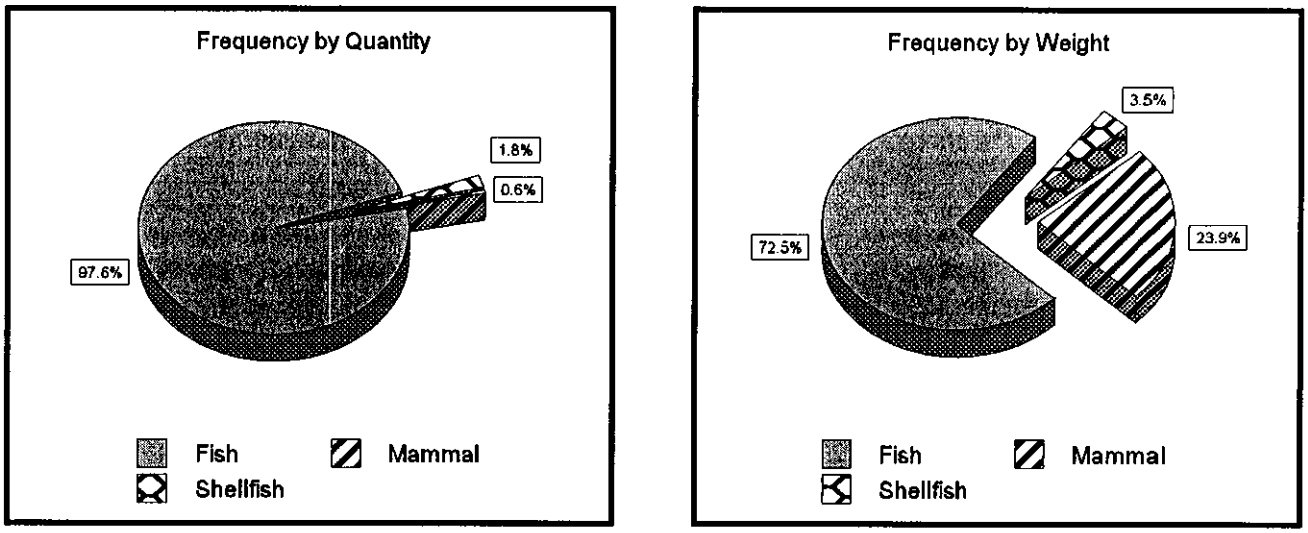


Figure 23: Frequencies of Butchering Remains from Trench 10, Level 3

12.3.3.2 Naturally Deposited Fauna

Twelve freshwater snails were recovered. DlLg-33:03B/755 is eleven Lymnaeidae weighing 0.1 grams, while DlLg-33:03B/754 is one Planorbidae weighing 0.1 grams.

12.3.3.3 Samples

One sample, DlLg-33:03B/794, consists of recoveries on the 1 millimetre screen. It weighs 10.3 grams.

12.3.4 Floral Remains

The floral recoveries consist of 29 charcoal fragments (DlLg-33:03B/752) weighing 0.2 grams. In addition, one wood fragment (DlLg-33:03B/753) was curated. It weighs 0.3 grams. One fragment of a hazelnut (*Corylus* sp.) was also recovered. DlLg-33:03B/751 weighs 0.1 grams.

12.4 Level 4

Level 4 was encountered at a depth of 280 cm. A total of 73 faunal artifacts, all butchering remains, (Table 36) was recovered from this sparse level. They have a combined weight of 41.7 grams. The frequency of the butchering remains are illustrated by both quantity and weight (Figure 24). In the quantity graph, the fish remains overwhelm the other taxa. The weight graph is a good example of how the heaviness of the shellfish valves can inordinately skew the proportions. In this case, the edible food would not be proportionate to the weight of the residue due to the imbalance of shellfish.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	8	11.0	3.9	9.4
Medium Mammal	2	2.7	2.1	5.0
TOTAL MAMMAL	10	13.7	6.0	14.4
Undifferentiated Fish	57	78.1	2.4	5.8
Catfish (*Ictalurus* sp.)	4	5.5	5.9	14.1
Sturgeon (*Acipenser fulvescens*)	1	1.4	0.1	0.2
TOTAL FISH	62	84.9	8.4	20.1
Freshwater Clam (Unionidae)				
White Heel-Splitter (*Lasmigona complanata*)	1	1.4	27.3	65.5
TOTAL SHELLFISH	1	1.4	27.3	65.5
TOTAL	73	100.0	41.7	100.0

Table 36: Butchering Remains from Trench 10, Level 4

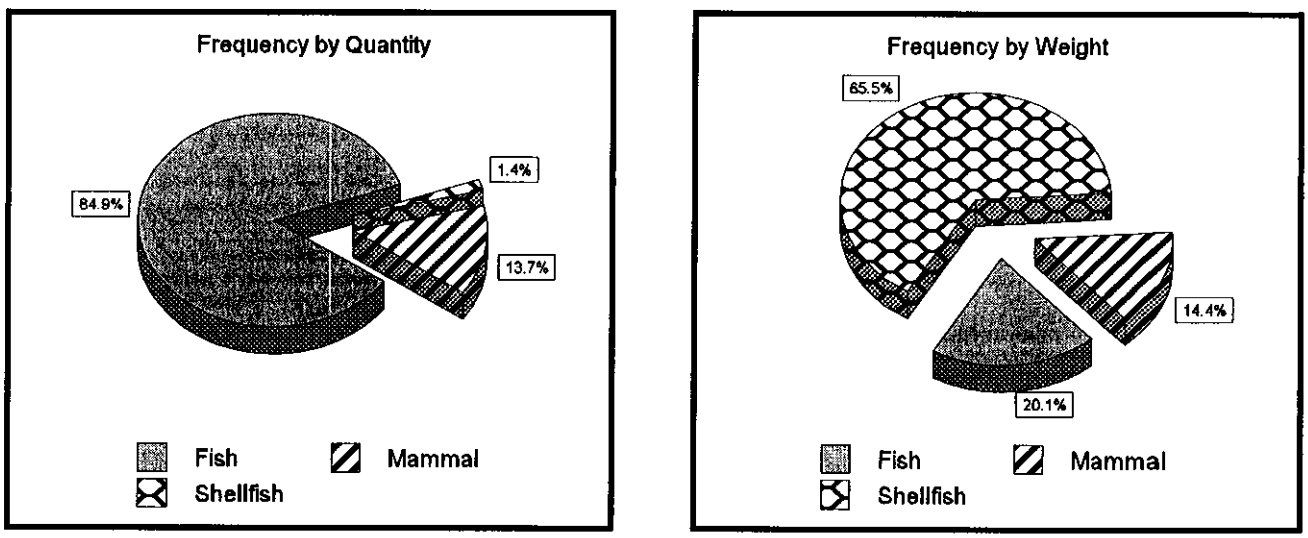


Figure 24: Frequencies Butchering Remains from Trench 10, Level 4

13.0 TRENCH 11

Trench 11 is located at 42m south of the property line and 97m east of the York/Waterfront intersection. Two cultural levels were encountered, each of which will be analysed separately.

13.1 Level 1

Level 1 was encountered at a depth of 200 cm. A total of 2974 artifacts, weighing 2560.0 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

13.1.1 Lithic Artifacts

The four lithic artifacts include a tool, a flake, and fire-cracked rock.

13.1.1.1 Lithic Tool

One scraper was recovered. DlLg-33:03B/809 is a very unusual scraper in that it is made from a rectangular, tabular piece of schist. The distal end has been bifacially chipped to form a crescentic working edge with a varying working edge angle, due to the inherent fracture characteristics of the parent stone. The dimensions of the tool are: length - 68.9 mm; width - 34.6 mm; thickness - 5.2 mm; and weight - 18.5 grams. The length of the working edge measures 25.9 mm with the width of the working edge measuring 5.5 mm. The working edge angle is 27°. The sharpness of the working edge could mean that this tool was used as a woodworking scraper or a chisel rather than for hide preparation. The entire tool shows evidence of heat alteration with discolouration and ash and carbon encrustation.

13.1.1.2 Detritus

One lithic flake was recovered from Level 1. DlLg-33:03B/807 is a single undifferentiated chert flake which weighs 0.1 grams.

13.1.1.3 Fire-cracked Rock

DlLg-33:03B/808 is two minute fragments of granite fire-cracked rock. They weigh 0.1 grams.

13.1.2 Ceramics

Five body sherds were recovered. DlLg-33:03B/806 are relatively thin (4.3 mm) sherds and have a textile impressed surface finish which varies in relief. They weigh 7.9 grams.

13.1.3 Faunal Remains

The faunal remains consist of: butchering remains, natural faunal deposits, and samples. The total number is 2924 with a total weight of 2532.2 grams.

13.1.3.1 Butchering Remains

A total of 2902 artifacts, with a combined weight of 2383.3 grams, was recovered from Level 1 (Table 37). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

Several elements were charred—a rabbit metapodial, DlLg-33:03B/843, a bison carpus/tarsus, DlLg-33:03B/855, and 47 unidentifiable mammal bone fragments, DlLg-33:03B/865. In addition, 24 unidentifiable mammal fragments (DlLg-33:03B/864) were calcined.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	2116	72.9	563.8	23.7
Large Mammal	354	12.2	1318.0	55.3
Small/Medium Mammal	6	0.2	0.8	<0.1
Small Mammal	1	<0.1	0.1	<0.1
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	71	2.4	439.4	18.4
Rabbit Family (Leporidae)				
Jack Rabbit (*Lepus* sp.)	16	0.6	1.9	0.1
TOTAL MAMMAL	2564	88.4	2324.0	97.5
Undifferentiated Fish	298	10.3	19.3	0.8
Catfish (*Ictalurus* sp.)	26	0.9	26.9	1.1
Sucker Family (Catostomidae)	5	0.2	0.1	<0.1
Drum (*Aplodinotus grunniens*)	2	0.1	0.3	<0.1
TOTAL FISH	331	11.4	46.6	2.0
Freshwater Clam (Unionidae)	6	0.2	4.1	0.2
Fat Mucket (*Lampsilis radiata*)	1	<0.1	8.6	0.4
TOTAL SHELLFISH	7	0.2	12.7	0.5
TOTAL	2902	100.0	2383.3	100.0

Table 37: Butchering Remains from Trench 11, Level 1

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 25). This assemblage is different than all previously described assemblages in that mammal bone is a dominant factor in both quantity and weight. The mammal bone indicates the hunting of large herd animals as well as smaller species.

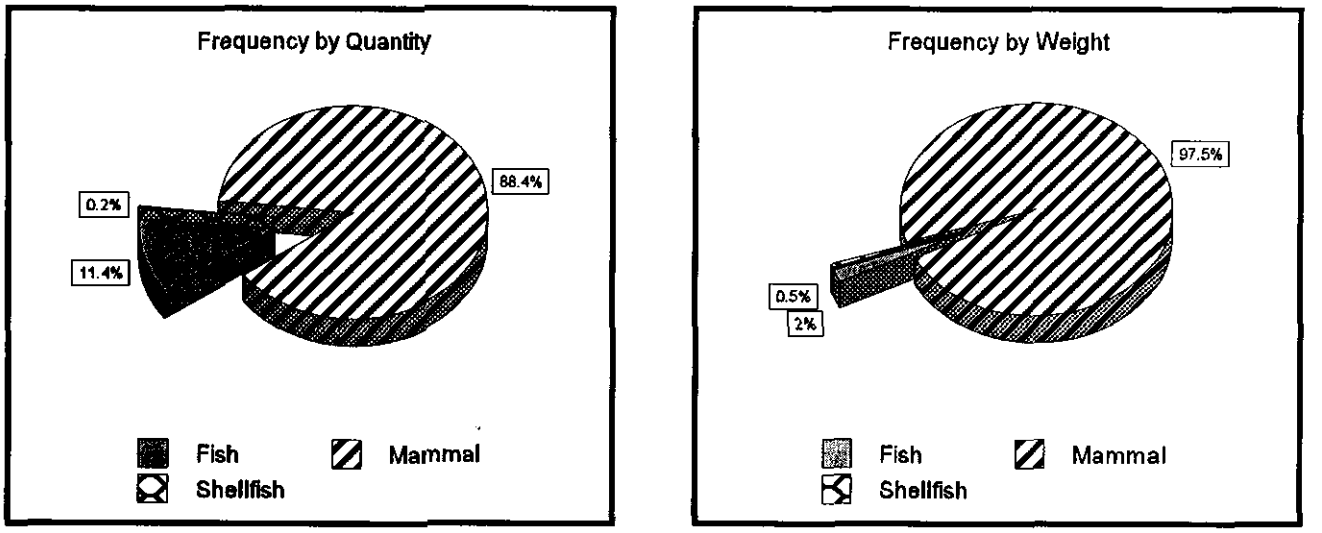


Figure 25: Frequencies of Butchering Remains from Trench 11, Level 1

13.1.3.2 Naturally Deposited Fauna

Twenty specimens were recovered (Table 38). These consist of aquatic taxa as well as a mandible and teeth from a small rodent.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Freshwater Snails (Gastropod)				
Ramshorn Snails (Planorbidae)	14	70.0	0.1	33.3
Pond Snails (Lymnaeidae)	5	25.0	0.1	33.3
TOTAL GASTROPODS	19	95.0	0.2	66.7
Mammal				
Small Rodent (Rodentia)	1	5.0	0.1	33.3
TOTAL MAMMAL	1	5.0	0.1	33.3
TOTAL	20	100.0	0.3	100.0

Table 38: Natural Faunal Remains from Trench 11, Level 1

13.1.3.3 Samples

Two samples were curated. DlLg-33:03B/841 is bone, shell, and charcoal recovered on the 1.0 mm screen. It weighs 77.4 grams. DlLg-33:03B/842 is a sample recovered on the 2.0 mm screen. It weighs 71.2 grams.

13.1.4 Floral Remains

DlLg-33:03B/810 consists of 41 charcoal fragments. They weigh 1.2 grams.

13.2 Level 2

Level 2 was encountered at a depth of 250 cm. A total of 448 artifacts, with a weight of 393.7 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

13.2.1 Lithic Artifacts

The four lithic artifacts include flakes and fire-cracked rock.

13.2.1.1 Detritus

Three chert flakes were recovered. DlLg-33:03B/871 weighs 0.1 grams.

13.2.1.2 Fire-cracked Rock

DlLg-33:03B/872 is one fragment of granite fire-cracked rock. It weighs 62.5 grams.

13.2.2 Ceramics

Three body sherds, DlLg-33:03B/870, were curated. The two thinner (3.7 mm) sherds have a more defined textile impressed surface finish than the thicker (5.9 mm) sherd. The paste and temper appear similar so that they may derive from different portions of the same pot. These sherds weigh 10.8 grams.

13.2.3 Faunal Remains

The faunal remains consist of: butchering remains, natural faunal deposits, and samples. The total number is 426 with a total weight of 319.9 grams.

13.2.3.1 Butchering Remains

A total of 413 butchering remains, with a combined weight of 298.1 grams, was recovered from Level 2 (Table 39). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage. The two unidentifiable mammal fragments, DlLg-33:03B/906, are calcined as is one unidentifiable fish fragment, DlLg-33:03B/895.

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 26). In the quantity graph, the fish remains dominate the assemblage. When weight is considered, the proportions are reversed.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	2	0.5	0.1	<0.1
Large Mammal	138	33.4	205.2	68.8
Medium Mammal	3	0.7	0.9	0.3
Small/Medium	1	0.2	0.1	<0.1
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	2	0.5	38.9	13.0
Rabbit Family (Leporidae)				
Jack Rabbit (*Lepus* sp.)	1	0.2	0.8	0.3
TOTAL MAMMAL	147	35.6	246.0	82.5
Undifferentiated Fish	229	55.4	22.8	7.6
Catfish (*Ictalurus* sp.)	32	7.7	29.0	9.7
Sucker Family (Catostomidae)	2	0.5	0.1	<0.1
Drum (*Aplodinotus grunniens*)	1	0.2	0.1	<0.1
Sturgeon (*Acipenser fulvescens*)	2	0.5	0.1	<0.1
TOTAL FISH	266	64.4	52.1	17.5
TOTAL	413	100.0	298.1	100.0

Table 39: Butchering Remains from Trench 11, Level 2

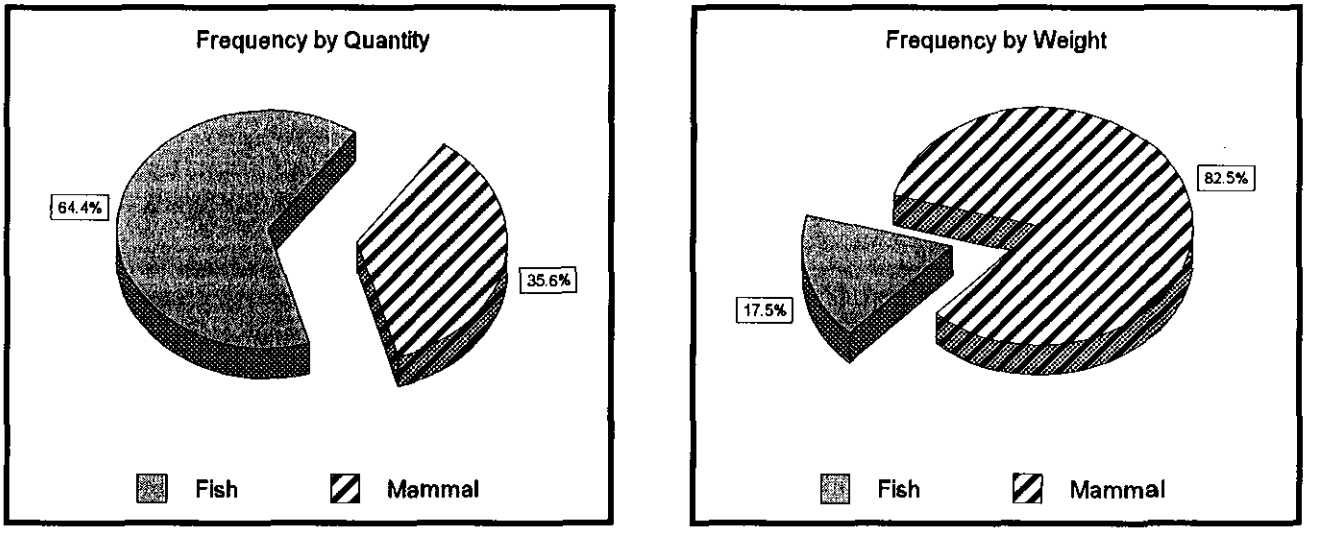


Figure 26: Frequencies of Butchering Remains from Trench 11, Level 2

13.2.3.2 Naturally Deposited Fauna

Eleven aquatic snails were collected. DlLg-33:03B/874 is four Lymnaeidae weighing 0.1 grams and DlLg-33:03B/875 is seven Planorbidae weighing 0.1 grams.

13.2.3.3 Samples

Two samples was catalogued. DlLg-33:03B/916 is bone, shell, and charcoal recovered on the 2.0 mm screen. It weighs 10.5 grams. DlLg-33:03B/915 is bone, shell, and charcoal recovered on the 1.0 mm screen. It weighs 11.1 grams.

13.2.4 Floral Remains

The floral recoveries consist of fifteen fragments of charcoal. DlLg-33:03B/873 weighs 0.4 grams.

14.0 TRENCH 12

Trench 12 is located at 31m south of the property line and 93m east of the York/Waterfront intersection. Two cultural levels were encountered, each of which will be analysed separately.

14.1 Level 1

Level 1 was encountered at a depth of 230 cm. This sparse level yielded 14 artifacts, with a total weight of 16.6 grams. These include lithic artifacts, ceramic artifacts, and faunal remains.

14.1.1 Lithic Artifacts

DlLg-33:03B/918 is a single Selkirk Chert flake. It weighs 0.3 grams.

14.1.2 Ceramics

Two minute body sherdlets, DlLg-33:03B/917, were recovered. They weigh 0.1 grams. Both are exfoliated, one showing a carbon encrusted smooth interior and the second showing a carbon encrusted textile impressed exterior.

14.1.3 Faunal Remains

The only faunal remains recovered were butchering remains (Table 40) .The total number is 11 with a total weight of 16.2 grams.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	6	54.5	2.5	15.4
Large Mammal	1	9.1	4.0	24.7
TOTAL MAMMAL	7	63.6	6.5	40.1
Undifferentiated Fish	1	9.1	0.1	0.6
Catfish (*Ictalurus* sp.)	2	18.2	2.8	17.3
TOTAL FISH	3	27.3	2.9	17.9
Freshwater Clam (Unionidae)				
Fat Mucket (*Lampsilis radiata*)	1	9.1	6.8	42.0
TOTAL SHELLFISH	1	9.1	6.8	42.0
TOTAL	11	100.0	16.2	100.0

Table 40: Butchering Remains from Trench 12, Level 1

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 27). In the quantity graph, the mammal remains are the dominant taxa. In the weight graph, the shellfish remains are dominant indicating again how the heaviness of shellfish valves can skew the proportions, especially in small assemblages.

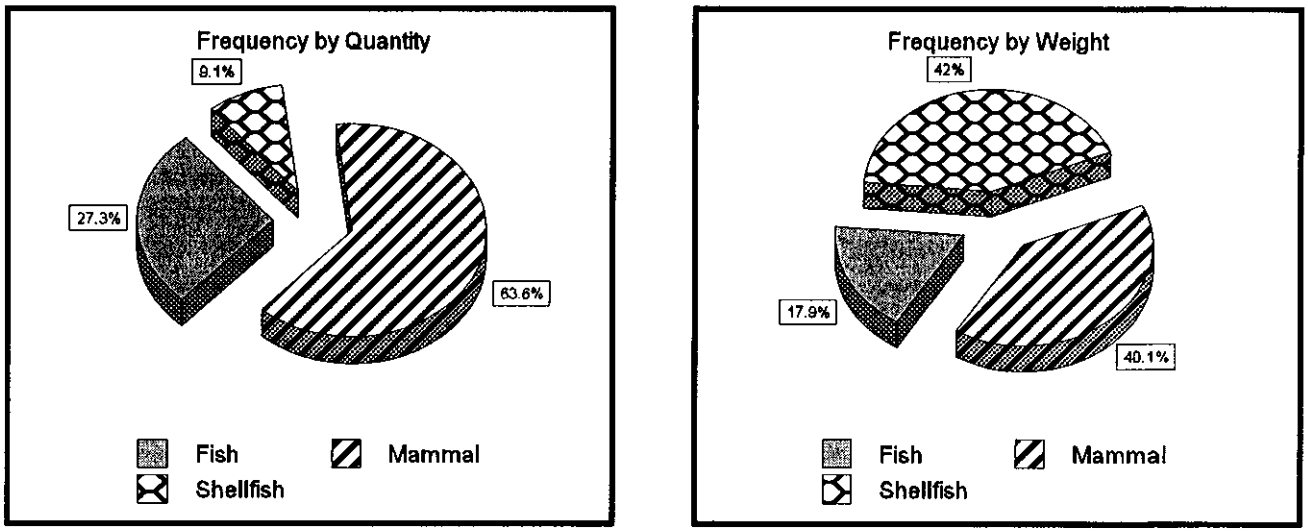


Figure 27: Frequencies of Butchering Remains from Trench 12, Level 1

14.2 Level 2

Level 2 was encountered at a depth of 280 cm. A total of 867 artifacts, weighing 170.7 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

14.2.1 Lithic Artifacts

The nine lithic artifacts are analysed within the following categories: detritus, fire-cracked rock, and unmodified lithic material.

14.2.1.1 Detritus

Five Knife River Flint flakes were catalogued. DlLg-33:03B/927 weighs 0.3 grams. As noted earlier, Knife River Flint is found in quarries to the south and was either collected as raw material on a trip to those quarries or traded into this area.

14.2.1.2 Fire-cracked Rock

Two granite fragments of fire-cracked rocks were recovered. DlLg-33:03B/930 weighs 43.4 grams.

14.2.1.3 Unmodified Lithic Material

DlLg-33:03B/929 is a small peridotite spall. It weighs 0.7 grams.

One small ochre fragment, DlLg-33:03B/928, was recovered. It is hematite (red) and weighs 0.1 grams. As noted earlier, ochre was mixed with various greases or fats and was used as a personal cosmetic or as a decorative paint for teepees, ceramics, parfleches, etc.

14.2.2 Ceramics

Nineteen ceramic sherds were recovered, all body sherds or body sherdlets. DlLg-33:03B/924 is two sherds weighing 5.0 grams. They measure 6.0 mm in thickness. One sherd shows linear striae where the underlying textile impressed surface finish was smoothed, while the other shows minor traces of smoothing but the surface finish is largely intact. The temper and paste of both sherds are similar as is the degree of soot staining suggesting they are from different portions of the same pot.

DlLg-33:03B/925 is five body sherds weighing 17.4 grams. These sherds have a pronounced textile impressed surface finish and have a more flaky paste than DlLg-33:03B/924. They are also thinner (4.6 mm) in thickness and show no evidence of staining.

DlLg-33:03B/926 consists of twelve small exfoliated body sherdlets weighing 2.2 grams. Most, by colour, appear related to DlLg-33:03B/925.

14.2.3 Faunal Remains

The largest number of artifacts from Level 2 are faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 757 with a total weight of 100.9 grams.

14.2.3.1 Butchering Remains

A total of 740 butchering remains, with a combined weight of 64.4 grams, was recovered (Table 41). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

One unidentifiable fish bone is charred. DlLg-33:03B/961 is from an undetermined fish species. In addition, DlLg-33:03B/937, the medium mammal rib, shows evidence of carnivore chewing.

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 28). In both graphs, the fish remains overwhelm the other taxa.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal Medium Mammal	1	0.1	2.6	4.0
TOTAL MAMMAL	1	0.1	2.6	4.0
Undifferentiated Aves Medium Aves	4	0.5	1.0	1.6
TOTAL AVES	4	0.5	1.0	1.6
Undifferentiated Fish	609	82.3	27.7	43.0
Catfish (*Ictalurus* sp.)	30	4.1	19.3	30.0
Sucker Family (Catostomidae)	5	0.7	0.9	1.4
Drum (*Aplodinotus grunniens*)	1	0.1	0.8	1.2
Sturgeon (*Acipenser fulvescens*)	90	12.2	12.1	18.8
TOTAL FISH	735	99.3	60.8	94.4
TOTAL	740	99.9	64.4	100.0

Table 41: Butchering Remains from Trench 12, Level 2

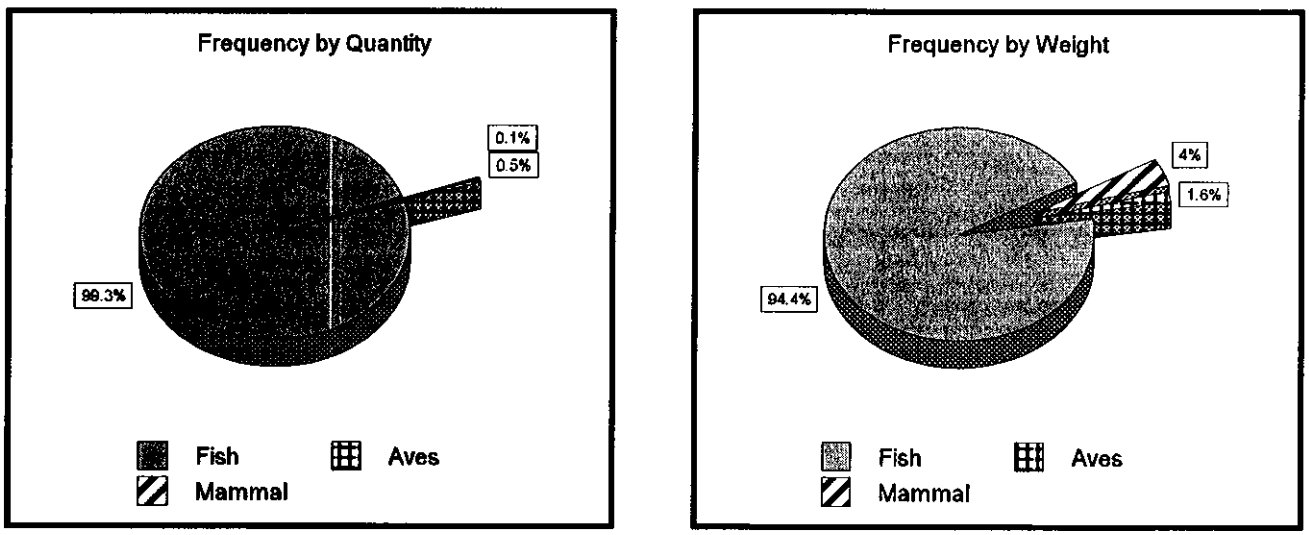


Figure 28: Frequencies of Butchering Remains from Trench 12, Level 2

14.2.3.2 Naturally Deposited Fauna

Fifteen specimens were recovered (Table 42). These consist of the usual aquatic taxa as well as a vertebra from a frog.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Freshwater Snails (Gastropod)				
Ramshorn Snails (Planorbidae)	3	20.0	0.1	25.0
Pond Snails (Lymnaeidae)	4	26.7	0.1	25.0
TOTAL GASTROPODS	7	46.7	0.2	50.0
Freshwater Clam (Eulamellibranchia)				
Pea Clams (Sphaeriidae)	6	40.0	0.1	25.0
TOTAL CLAM	6	40.0	0.1	25.0
Amphibian				
Frog (*Anura*)	2	13.3	0.1	25.0
TOTAL AMPHIBIAN	2	13.3	0.1	25.0
TOTAL	15	100.0	0.4	100.0

Table 42: Natural Faunal Remains from Trench 12, Level 2

14.2.3.3 Samples

Two samples were curated. DlLg-33:03B/964 is bone, shell, and charcoal recovered on a 2.0 mm screen. It weighs 12.6 grams. DlLg-33:03B/963 is a sample recovered on the 1.0 mm screen. It weighs 23.5 grams.

14.2.4 Floral Remains

The floral recoveries consist of 82 fragments of charcoal. DlLg-33:03B/931 weighs 0.7 grams.

15.0 TRENCH 13

Trench 13 is located at 23m north of the property line and 50m east of the York/Waterfront intersection. Three cultural levels were encountered, each of which will be analysed separately.

15.1 Level 1

Level 1 was encountered at a depth of 235 cm. A total of 659 artifacts, with a weight of 383.4 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

15.1.1 Lithic Artifacts

Only fire-cracked rock was recovered from Level 1. DlLg-33:03B/966 consists of eleven granite fragments weighing 2.8 grams.

15.1.2 Ceramics

DlLg-33:03B/965 is three body sherds with textile impressed surface finishes and differing degrees of soot staining and carbon encrustation. A wide range of thicknesses was observed: 2.1 mm, 4.2 mm, and 4.9 mm suggesting different portions of the pot. These sherds weigh 6.6 grams.

15.1.3 Faunal Remains

The largest number of artifacts from Level 1consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 581 with a total weight of 371.5 grams.

15.1.3.1 Butchering Remains

A total of 571 butchering remains, with a combined weight of 343.7 grams, was recovered (Table 43). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage. One unidentifiable mammal fragment (DlLg-33:03B/1004) was charred as was one fish rib (DlLg-33:03B/995). The bison phalanx , DlLg-33:03B/1006, was weathered indicating exposure on the surface prior to burial by flood sediments.

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 29). In the quantity graph, the fish remains are dominant. When weight is considered, the proportions are reversed with the mammal remains being dominant.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	29	5.1	6.2	1.8
Large Mammal	11	1.9	149.4	43.5
Medium Mammal	3	0.5	3.3	1.0
Small/Medium Mammal	1	0.2	0.1	<0.1
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	3	0.5	92.7	27.0
Carnivore Family (Carnivora)	1	0.2	0.4	0.1
TOTAL MAMMAL	48	8.4	252.1	73.3
Undifferentiated Fish	462	80.9	18.0	5.2
Catfish (*Ictalurus* sp.)	36	6.3	37.1	10.8
Sucker Family (Catostomidae)	5	0.9	0.4	0.1
Drum (*Aplodinotus grunniens*)	8	1.4	2.6	0.8
Sturgeon (*Acipenser fulvescens*)	1	0.2	0.1	<0.1
TOTAL FISH	512	89.7	58.2	16.9
Freshwater Clam (Unionidae)	9	1.6	5.1	1.5
Black Sand-shell (*Ligumia recta*)	2	0.4	28.3	8.2
TOTAL SHELLFISH	11	1.9	33.4	9.7
TOTAL	571	100.0	343.7	99.9

Table 43: Butchering Remains from Trench 13, Level 1

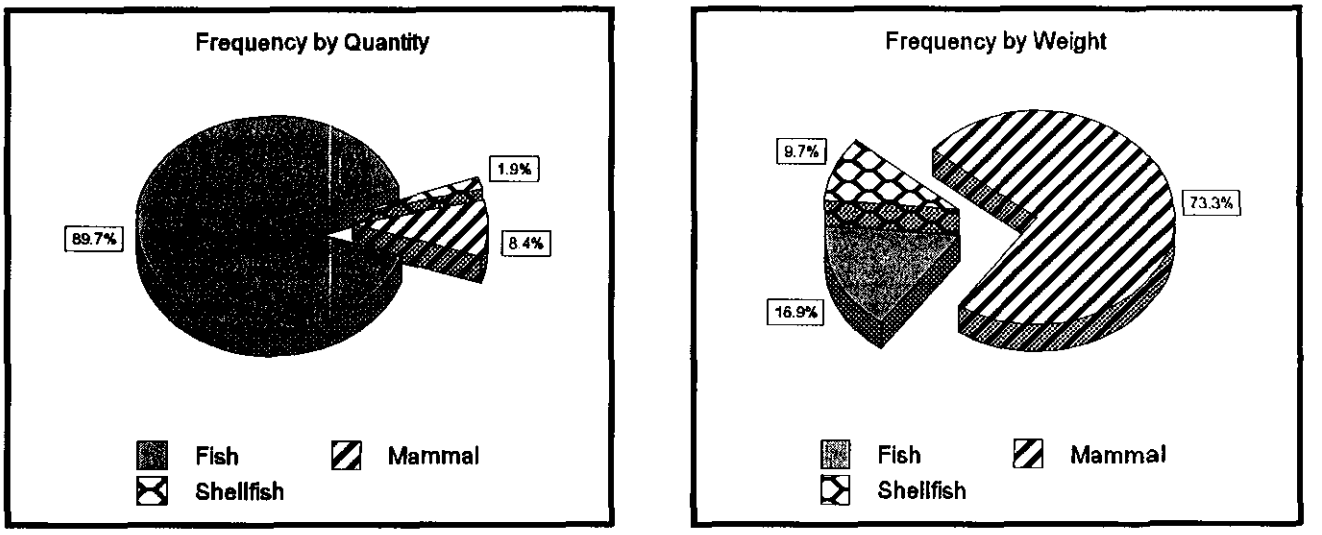


Figure 29: Frequencies of Butchering Remains from Trench 13, Level 1

15.1.3.2 Naturally Deposited Fauna

Freshwater snails were recovered from the cultural matrix. DlLg-33:03B/968 is six Lymnaeidae, pond snails, weighing 0.1 gms and DlLg-33:03B/969 is two Planorbidae, ramshorn snails, weighing 0.1 gms.

15.1.3.3 Samples

Two samples were collected. DlLg-33:03B/1010 consists of bone, shell, and charcoal recoveries on the 2 millimetre screen. It weighs 13.6 grams. DlLg-33:03B/1009 consists of bone, shell, and charcoal recoveries on the 1 millimetre screen. It weighs 14.0 grams.

15.1.4 Floral Remains

Sixty-four small charcoal fragments, DlLg-33:03B/967, were catalogued. They weigh 2.5 grams.

15.2 Level 2

Level 2 was encountered at a depth of 265 cm. A total of 11,160 artifacts, weighing 512.9 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

15.2.1 Lithic Artifacts

The lithic artifacts are analysed within the following categories: detritus, fire-cracked rock, and unmodified lithic material.

15.2.1.1 Detritus

One core and two lithic flakes were recovered. DlLg-33:03B/1015 is an undifferentiated chert core weighing 18.0 grams. DlLg-33:03B/1013 is a single chalcedony flake weighing 0.8 grams, while DlLg-33:03B/1014 is a single Knife River Flint flake weight 0.1 grams.

15.2.1.2 Fire-cracked Rock

Fifteen fire-cracked rocks were recovered. DlLg-33:03B/1016 are granite fragments weighing 14.8 grams.

15.2.1.3 Unmodified Lithic Material

DlLg-33:03B/1017 is a single piece of ochre. This pebble is limonite (i.e., yellow in colour) and it weighs 0.1 grams.

15.2.2 Ceramics

Ten ceramic sherds were recovered—one rim sherd and nine body sherds.

15.2.2.1 Rim Sherds

DlLg-33:03B/1011 is a single rim sherd weighing 3.8 grams. It has been designated as Vessel 11. The slightly excurvate neck is topped with a flat lip which is decorated with oblique CWOI. Right oriented oblique CWOI occurs in a horizontal band immediately below the lip with at least four horizontal bands of CWOI below the oblique pattern. A pattern of large (7.6 mm x 3.1 mm) ovoid stamps is impressed over the horizontal CWOI. This pattern, at least that portion of it present on the small sherd, appears to be a diagonal row extending from the oblique pattern below the lip downward, at a left oriented angle, to the lowest present horizontal CWOI band. Based upon the design elements and the size of the stamps, this sherd is designated as Duck Bay.

15.2.2.2 Body Sherds

DlLg-33:03B/1012 consists of nine body sherds, weighing 11.4 grams. The thickest sherd is 4.7 mm and the thinnest is 3.2 mm. While the paste and temper seem similar, there are variations in the textile impressions and this may indicate that more than one pot is represented.

15.2.3 Faunal Remains

The largest number of artifacts from Level 2 are faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 10,786 with a total weight of 454.3 grams.

15.2.3.1 Butchering Remains

A total of 10,653 butchering remains, with a combined weight of 316.8 grams, was recovered (Table 44). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

Two Unionidae fragments, DlLg-33:03B/1023, are charred as are one fish vertebra, DlLg-33:03B/1083, and four unidentifiable fish fragments, DlLg-33:03B/1084.

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 30). In both the quantity and weight graphs, the fish remains overwhelm the other taxa. Part of the quantity includes the presence of a large number of fish scale (8756—DlLg-33:03B/1089). As noted earlier, the complete scales could be identified to individual species and used for age and weight determinations. However, this is beyond the purview of this project and would only serve to emphasize the fact that fish were a predominant part of the diet at this particular campsite.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	17	0.2	4.2	1.3
Large Mammal	2	<0.1	5.6	1.8
Medium Mammal	3	<0.1	4.1	1.3
Carnivore Family (Carnivora)				
Dog/Wolf/Coyote Family (Canidae)				
Dog/Wolf (*Canis* sp.)	1	<0.1	12.7	4.0
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	1	<0.1	2.7	0.9
TOTAL MAMMAL	24	0.2	29.3	9.2
Undifferentiated Fish	10403	97.7	126.6	40.0
Catfish (*Ictalurus* sp.)	143	1.3	137.6	43.4
Sucker Family (Catostomidae)	30	0.3	3.0	0.9
Drum (*Aplodinotus grunniens*)	40	0.4	16.9	5.3
Sturgeon (*Acipenser fulvescens*)	6	0.1	0.9	0.3
TOTAL FISH	10622	99.7	285.0	90.0
Freshwater Clam (Unionidae)	7	0.1	2.5	0.8
TOTAL SHELLFISH	7	0.1	2.5	0.8
TOTAL	10653	100.0	316.8	100.0

Table 44: Butchering Remains from Trench 13, Level 2

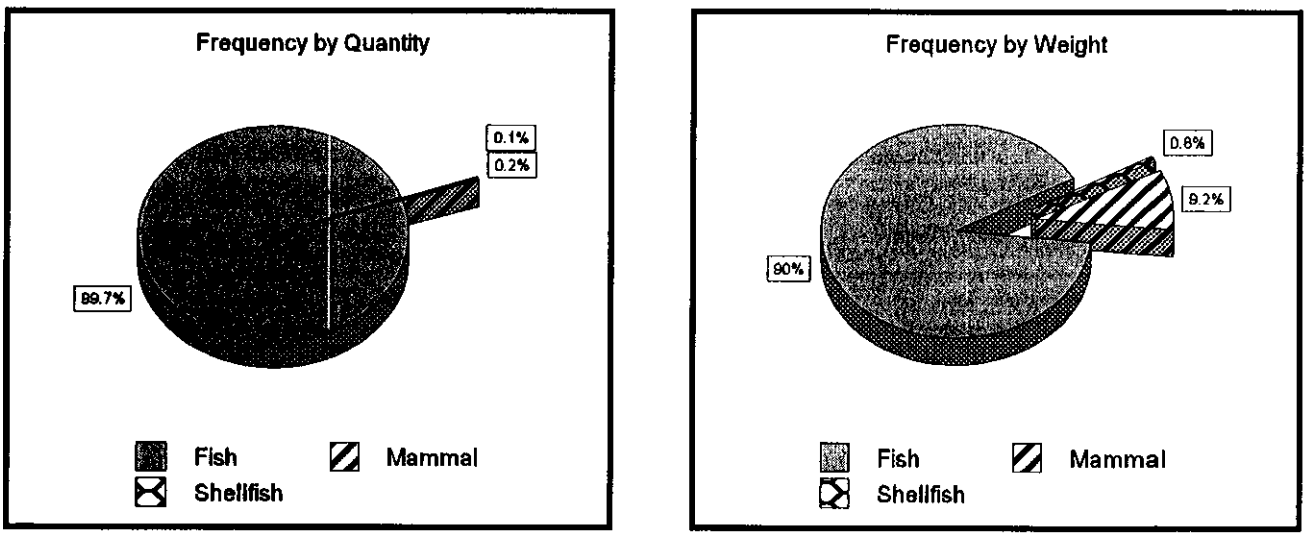


Figure 30: Frequencies of Butchering Remains from Trench 13, Level 2

15.2.3.2 Naturally Deposited Fauna

One hundred and thirty-one specimens were recovered (Table 45). These consist of the usual aquatic taxa as well a vertebra from a frog.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Freshwater Snails (Gastropod)				
Ramshorn Snails (Planorbidae)	71	54.2	0.5	20.8
Pond Snails (Lymnaeidae)	57	43.5	1.7	70.8
TOTAL GASTROPODS	128	97.7	2.2	91.7
Freshwater Clam (Eulamellibranchia)				
Pea Clams (Sphaeriidae)	2	1.5	0.1	4.2
TOTAL CLAM	2	1.5	0.1	4.2
Amphibian				
Frog (*Anura*)	1	0.8	0.1	4.2
TOTAL AMPHIBIAN	1	0.8	0.1	4.2
TOTAL	131	100.0	2.4	100.1

Table 45: Natural Faunal Remains from Trench 13, Level 2

15.2.3.3 Samples

Two samples were collected. DlLg-33:03B/1091 consists of bone, shell, and charcoal recoveries on the 1 millimetre screen. It weighs 96.7 grams. DlLg-33:03B/1090 is a sample recovered on the 2 millimetre screen. It weighs 38.4 grams.

15.2.4 Floral Remains

The floral recoveries consist of charcoal and wood. DlLg-33:03B/1019 is 344 charcoal fragments weighing 9.5 grams. Some of these specimens could be used for macroscopic species identification. DlLg-33:03B/1018 is a single small fragment of wood weighing 0.1 grams.

15.3 Level 3

Level 3 was encountered at a depth of 315 cm. A total of 1388 artifacts, weighing 642.4 grams, was recovered from this level including lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

15.3.1 Lithic Artifacts

The lithic artifacts include fire-cracked rock and unmodified lithic material.

15.3.1.1 Fire-cracked Rock

Thirty-three fire-cracked rocks were catalogued. DlLg-33:03B/1148 is a single, large granite fragment weighing 101.9 grams. DlLg-33:03B/1149 consists of 31 granite fragments with a weight of 135.5 grams. DlLg-33:03B/1150 is a single diorite specimen which weighs 127.5 grams.

15.3.1.2 Unmodified Lithic Material

One limestone spall, DlLg-33:03B/1147, was recovered. It weighs 30.3 grams and may have been brought to the site as part of a cobble which was broken for extraction of Selkirk Chert for tool manufacturing.

15.3.2 Ceramics

Thirty-three body sherds were recovered. DlLg-33:03B/1092 consists of twenty-two body sherds with a weight of 88.1 grams. The thin (3.0 mm) specimens have differing degrees of curvature suggesting different locations on the body of the pot. This variation is borne out by slightly different treatments of the surface finish. On some sherds, the textile impressed surface finish is pronounced while on other portions of the same sherd, it shows evidence of smoothing. Considerable carbon encrustation occurs on the exterior of many of the sherds.

DlLg-33:03B/1093 is five body sherds weighing 5.6 grams. These sherds are slightly thicker (4.0 mm) and have a surface finish of an extremely coarse textile pattern. There is no evidence of cooking activity on these sherds.

DlLg-33:03B/1094 is three body sherds weighing 13.5 grams. These sherds are also textile impressed with thicknesses varying between 2.7 mm and 4.2 mm. The textile impressions show different orientations indicating that this pot was manufactured by using a fabric wrapped paddle.

DlLg-33:03B/1095 is three minute body sherdlets. They weigh 0.4 grams. Due to exfoliation, it is not possible to allocate them to any of the pots represented by the body sherds.

15.3.3 Faunal Remains

The largest number of artifacts from Level 3 consist of faunal objects: butchering remains, natural faunal deposits, and a sample. The total number is 1226 with a total weight of 138.3 grams.

15.3.3.1 Butchering Remains

Butchering remains total 1176 artifacts and have a combined weight of 108.1 grams (Table 46). The frequency of the butchering remains are illustrated by both quantity and weight (Figure 31).

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	1	0.1	0.8	0.7
Large Mammal	1	0.1	10.0	9.3
Medium Mammal	1	0.1	2.3	2.1
TOTAL MAMMAL	3	0.3	13.1	12.1
Undifferentiated Fish	1109	94.3	33.6	31.0
Catfish (*Ictalurus* sp.)	33	2.8	44.8	41.4
Sucker Family (Catostomidae)	15	1.3	1.4	1.3
Drum (*Aplodinotus grunniens*)	14	1.2	2.6	2.4
TOTAL FISH	1171	99.6	82.4	76.2
Freshwater Clam (Unionidae)	1	0.1	0.6	0.6
Fat Mucket (*Lampsilis radiata*)	1	0.1	12.0	11.1
TOTAL SHELLFISH	2	0.2	12.6	11.7
TOTAL	1176	100.1	108.1	100.0

Table 46: Butchering Remains from Trench 13, Level 3

In the quantity graph, the fish overwhelm the other taxa. In the weight graph, the fish remain dominant. As usual, the weight of the non-edible shellfish skews their proportion of the assemblage and shows a greater prominence than would have occurred if one had measured only edible meat.

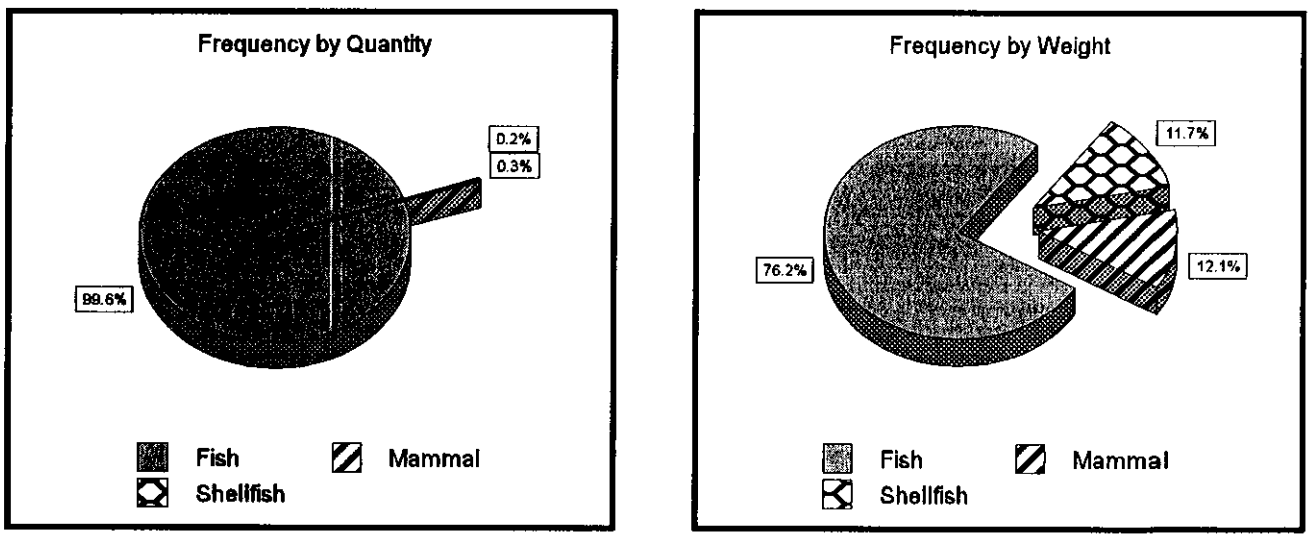


Figure 31: Frequencies of Butchering Remains from Trench 13, Level 3

15.3.3.2 Naturally Deposited Fauna

Forty-eight freshwater snails were recovered. DlLg-33:03B/1098 is seventeen Lymnaeidae weighing 0.1 grams, while DlLg-33:03B/1097 is thirty-one Planorbidae weighing 0.1 grams.

15.3.3.3 Samples

Two samples were catalogued. DlLg-33:03B/1146 consists of recoveries on the 2 millimetre screen. It weighs 13.4 grams. DlLg-33:03B/1145 consists of recoveries on the 1 millimetre screen. It weighs16.6 grams.

15.3.4 Floral Remains

The floral recoveries consist of 95 charcoal fragments. DlLg-33:03B/1096 weighs 1.3 grams.

16.0 TRENCH 14

Trench 14 is located at 55m north of the property line and 30m east of the York/Waterfront intersection. Only one cultural level was encountered.

16.1 Level 1

Level 1 was encountered at a depth of 285 cm. A total of 152 artifacts, with a weight of 439.4 grams, was recovered from this level. Only faunal remains and floral remains were recovered from this sparse level.

16.1.1 Faunal Remains

Only butchering remains and a sample were curated. The total number is 147 with a total weight of 439.3 grams.

16.1.1.1 Butchering Remains

A total of 146 artifacts, with a combined weight of 438.0 grams, was recovered (Table 47). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	113	77.4	20.9	4.8
Large Mammal	1	0.7	265.6	60.6
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)	1	0.7	2.8	0.6
Bison (*Bison bison*)	1	0.7	141.4	32.3
TOTAL MAMMAL	116	79.5	430.7	98.3
Undifferentiated Fish	23	15.8	0.2	<0.1
Catfish (*Ictalurus* sp.)	3	2.1	2.1	0.5
Sturgeon (*Acipenser fulvescens*)	3	2.1	0.3	0.1
TOTAL FISH	29	19.9	2.6	0.6
Freshwater Clam (Unionidae)	1	0.7	4.7	1.1
TOTAL SHELLFISH	1	0.7	4.7	1.1
TOTAL	146	100.1	438.0	100.0

Table 47: Butchering Remains from Trench 14, Level 1

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 32). In both graphs, the mammal remains are dominant and when the heavier aspect of mammal bone is taken into consideration the frequency is overwhelming.

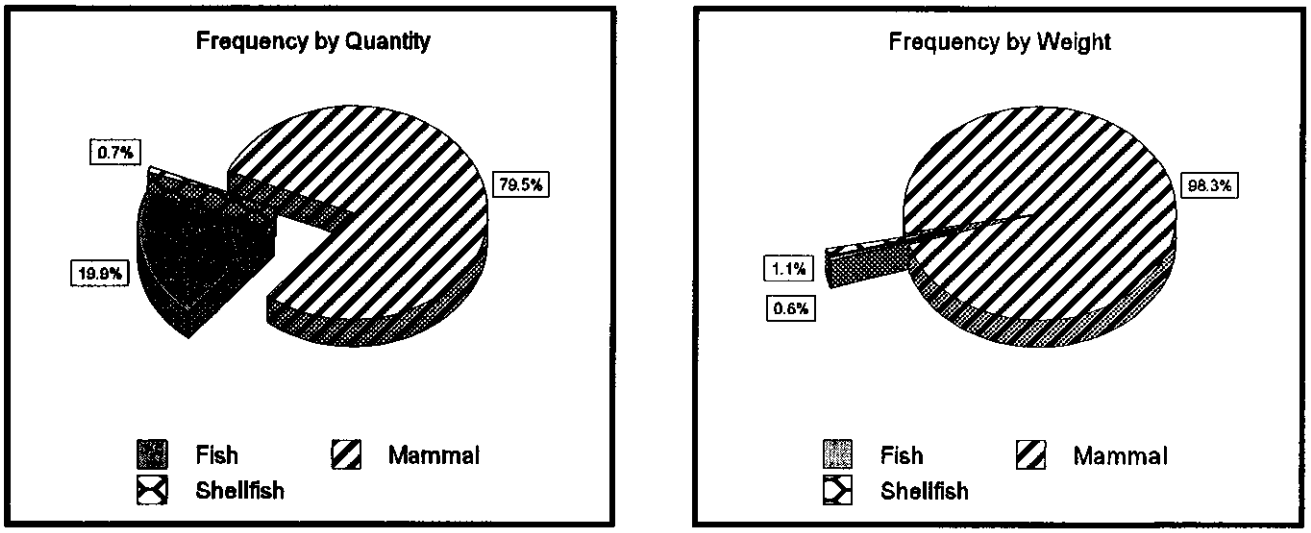


Figure 32: Frequencies of Butchering Remains from Trench 14, Level 1

16.1.1.2 Samples

One sample was collected on the 1 mm screen. DlLg-33:03B/1159 weighs 1.3 grams.

16.1.2 Floral Remains

Five charcoal fragments, DlLg-33:03B/1151, were catalogued. They weigh 0.1 grams.

17.0 TRENCH 15

Trench 15 is located at 62m south of the property line and 83m east of the York/Waterfront intersection. Three cultural levels were encountered, each of which will be analysed separately.

17.1 Level 1

Level 1 was encountered at a depth of 140 cm. This very sparse level yielded only butchering remains. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage (Table 48).The remains indicate the presence of at least one large mammal and a trace of fishing activity.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	3	42.9	0.1	0.7
Large Mammal	3	42.9	13.2	98.5
TOTAL MAMMAL	6	85.7	13.3	99.3
Undifferentiated Fish	1	14.3	0.1	0.7
TOTAL FISH	1	14.3	0.1	0.7
TOTAL	7	100.0	13.4	100.0

Table 48: Butchering Remains from Trench 15, Level 1

17.2 Level 2

Level 2 was encountered at a depth of 200 cm. A total of 273 artifacts, weighing 196.1 grams, was recovered from this level. These include lithic artifacts, faunal remains, and floral remains.

17.2.1 Lithic Artifacts

The only lithic artifact, an unmodified specimen, is a single limestone cobble. DlLg-33:03B/1167 weighs 134.6 grams. Due to the weight, it is obviously a manuport and could have been used as a hearth stone or a source of Selkirk Chert.

17.2.2 Faunal Remains

The largest number of artifacts from Level 2 are faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 265 with a total weight of 61.4 grams.

17.2.2.1 Butchering Remains

A total of 232 butchering remains, with a combined weight of 47.5 grams. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage (Table 49). The medium/large mammal caudal vertebra, DlLg-33:03B/1172, is from a juvenile animal.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	7	3.0	1.1	2.3
Medium/Large	1	0.4	3.7	7.8
Small Mammal	2	0.9	0.1	0.2
TOTAL MAMMAL	10	4.3	4.9	10.3
Undifferentiated Fish	189	81.5	13.6	28.6
Catfish (*Ictalurus* sp.)	24	10.3	15.1	31.8
Sucker Family (Catostomidae)	1	0.4	0.2	0.4
Sturgeon (*Acipenser fulvescens*)	7	3.0	0.5	1.1
TOTAL FISH	221	95.3	29.4	61.9
Freshwater Clam (Unionidae)				
Black Sand-shell (*Ligumia recta*)	1	0.4	13.2	27.8
TOTAL SHELLFISH	1	0.4	13.2	27.8
TOTAL	232	100.0	47.5	100.0

Table 49: Butchering Remains from Trench 15, Level 2

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 33). In the quantity graph, the fish remains overwhelm the other taxa. When weight is considered, the shellfish once again skew the ratio due to the weight of the valves versus the edible meat.

17.2.2.2 Naturally Deposited Fauna

Thirty-one aquatic taxa were recovered. DlLg-33:03B/1170 is nineteen Lymnaeidae weighing 0.2 grams, while DlLg-33:03B/1169 is twelve Planorbidae weighing 0.1 grams.

17.2.2.3 Samples

Two samples were curated. DlLg-33:03B/1195 is bone, shell, and charcoal recovered on the 2.0 mm screen. It weighs 5.6 grams. DlLg-33:03B/1196 was recovered on the 1.0 mm screen and it weighs 8.0 grams.

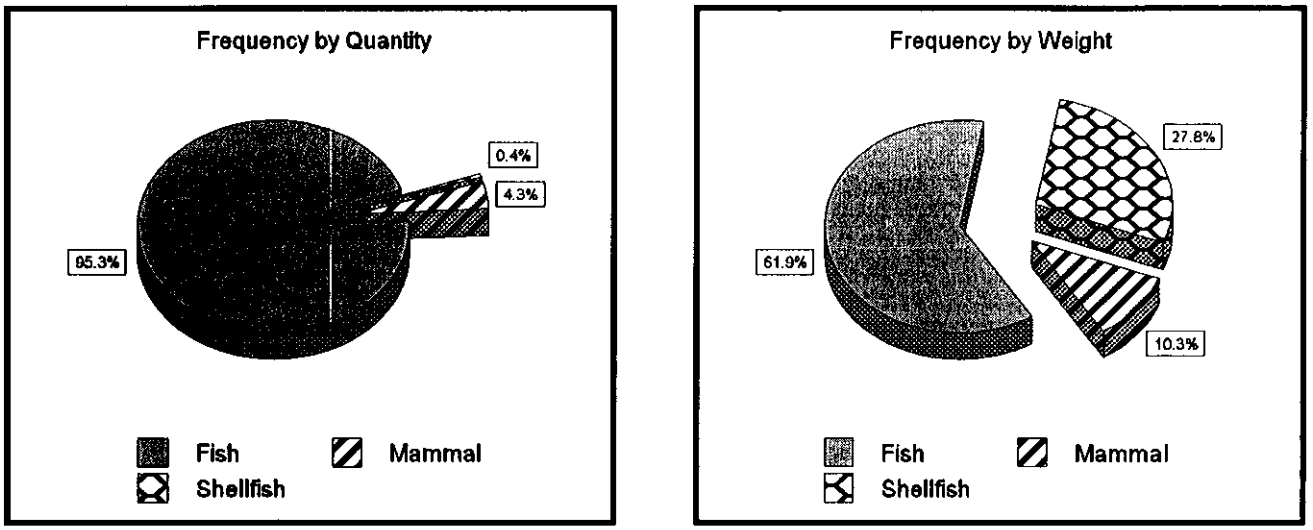


Figure 33: Frequencies of Butchering Remains from Trench 15, Level 2

17.2.3 Floral Remains

The floral recoveries consist of seven small charcoal fragments. DlLg-33:03B/1168 has a total weight of 0.1 grams.

17.3 Level 3

Level 3 was encountered at a depth of 260 cm. A total of 98 artifacts, weighing 51.8 grams, was recovered from this level including lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

17.3.1 Lithic Artifacts

DlLg-33:03B/1198 is three flakes of undifferentiated chert. They weigh 0.1 grams.

17.3.2 Ceramics

One textile impressed body sherd was recovered. DlLg-33:03B/1197 weighs 2.4 grams. On one portion of the sherd, the textile impression is partially obliterated due to smoothing. There is a small amount of carbon encrustation on both the interior and exterior surfaces.

17.3.3 Faunal Remains

The largest number of artifacts from Level 3 consist of faunal objects: butchering remains, natural faunal deposits, and a sample. The total number is 89 with a total weight of 49.2 grams.

17.3.3.1 Butchering Remains

Butchering remains total 84 artifacts and have a combined weight of 48.1 grams (Table 50). The frequency of the butchering remains are illustrated by both quantity and weight (Figure 34). In the quantity graph, the mammal remains account for slightly more than half of the assemblage, while in the weight graph, the mammal remains are overwhelmingly dominant.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	42	50.0	4.9	10.2
Large Mammal	7	8.3	9.1	18.9
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	1	1.2	30.3	63.0
TOTAL MAMMAL	50	59.5	44.3	92.1
Undifferentiated Fish	27	32.1	1.6	3.3
Catfish (*Ictalurus* sp.)	2	2.4	1.6	3.3
Sturgeon (*Acipenser fulvescens*)	5	6.0	0.6	1.2
TOTAL FISH	34	40.5	3.8	7.9
TOTAL	84	100.0	48.1	100.0

Table 50: Butchering Remains from Trench 15, Level 3

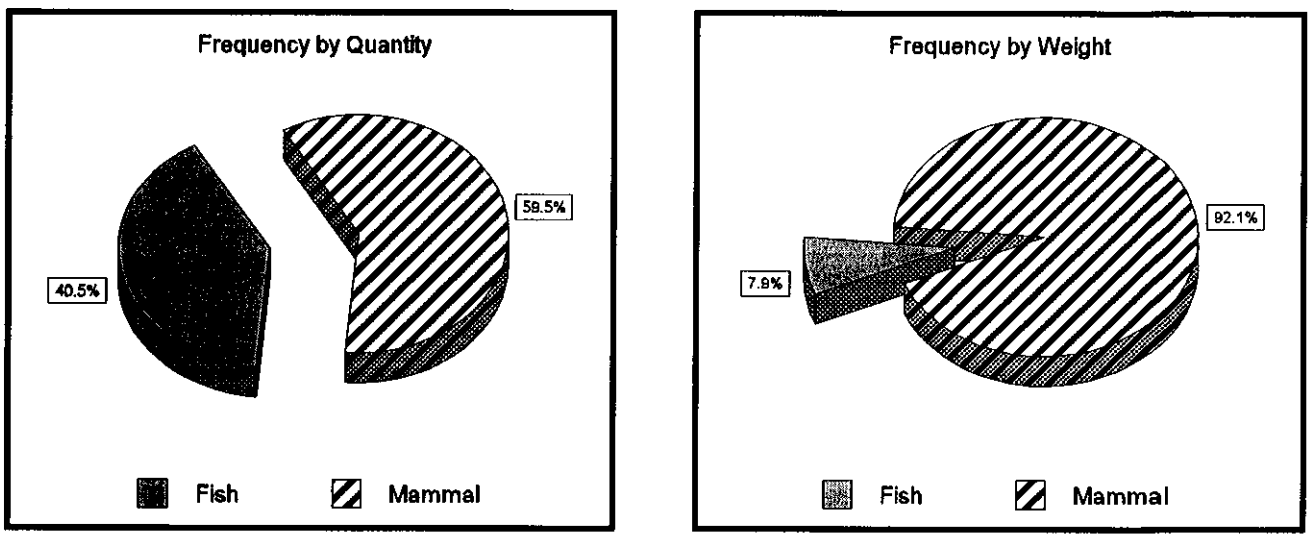


Figure 34: Frequencies of Butchering Remains from Trench 15, Level 3

17.3.3.2 Naturally Deposited Fauna

DlLg-33:03B/1204 is four Planorbidae snails weighing 0.1 grams.

17.3.3.3 Samples

One sample, DlLg-33:03B/1212, consists of recoveries on the 1 millimetre screen. It weighs 1.0 grams.

17.3.4 Floral Remains

The floral recoveries consist of 5 charcoal fragments (DlLg-33:03B/1203) weighing 0.1 grams.

18.0 TRENCH 16

Trench 16 is located at 57m south of the property line and 77m east of the York/Waterfront intersection. Two cultural levels were encountered, each of which will be analysed separately.

18.1 Level 1

Level 1 was encountered at a depth of 220 cm. A total of 577 artifacts, with a weight of 256.4 grams, was recovered from this level. These include ceramic artifacts, faunal remains, and floral remains.

18.1.1 Ceramics

A total of seventeen ceramic sherds, all body sherds or body sherdlets, were recovered. DlLg-33:03B/1213 is nine textile impressed sherds of varying thickness. The thickest sherd is 5.1 mm with the thinnest sherd measuring 3.6 mm. There are varying degrees of carbon encrustation on the interior of the sherds. Slight variations in the texture of the fabric impression occur and there are differences in grit suggesting that this grouping may represent two different pots. The total weight of these sherds is 25.4 grams.

DlLg-33:03B/1214 consists of eight, small exfoliated body sherdlets weighing 1.3 grams. Those sherds which have an exterior surface present are textile impressed.

18.1.2 Faunal Remains

The largest number of artifacts from Level 1consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 501 with a total weight of 228.6 grams.

18.1.2.1 Butchering Remains

A total of 479 artifacts, with a combined weight of 203.1 grams, was recovered. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage (Table 51). One large mammal clavicle fragment (DlLg-33:03B/1224) has evidence of butchering, in the form of cut marks, on it.

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 35). In the quantity graph, the fish remains overwhelm the other taxa. In the weight graph, fish and mammal are in nearly equal proportions, however the weight of the shellfish valve again skews the percentages.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	13	2.7	4.9	2.4
Large Mammal	6	1.3	78.2	38.5
Small Mammal	1	0.2	0.1	<0.1
TOTAL MAMMAL	20	4.2	83.2	41.0
Aves				
Large Aves	1	0.2	3.6	1.8
TOTAL AVES	1	0.2	3.6	1.8
Undifferentiated Fish	395	82.5	30.1	14.8
Catfish (*Ictalurus* sp.)	57	11.9	63.5	31.3
Sucker Family (Catostomidae)	4	0.8	2.0	1.0
TOTAL FISH	456	95.2	95.6	47.1
Freshwater Clam (Unionidae)	1	0.2	0.8	0.4
Fat Mucket (*Lampsilis radiata*)	1	0.2	19.9	9.8
TOTAL SHELLFISH	2	0.4	20.7	10.2
TOTAL	479	100.0	203.1	100.1

Table 51: Butchering Remains from Trench 16, Level 1

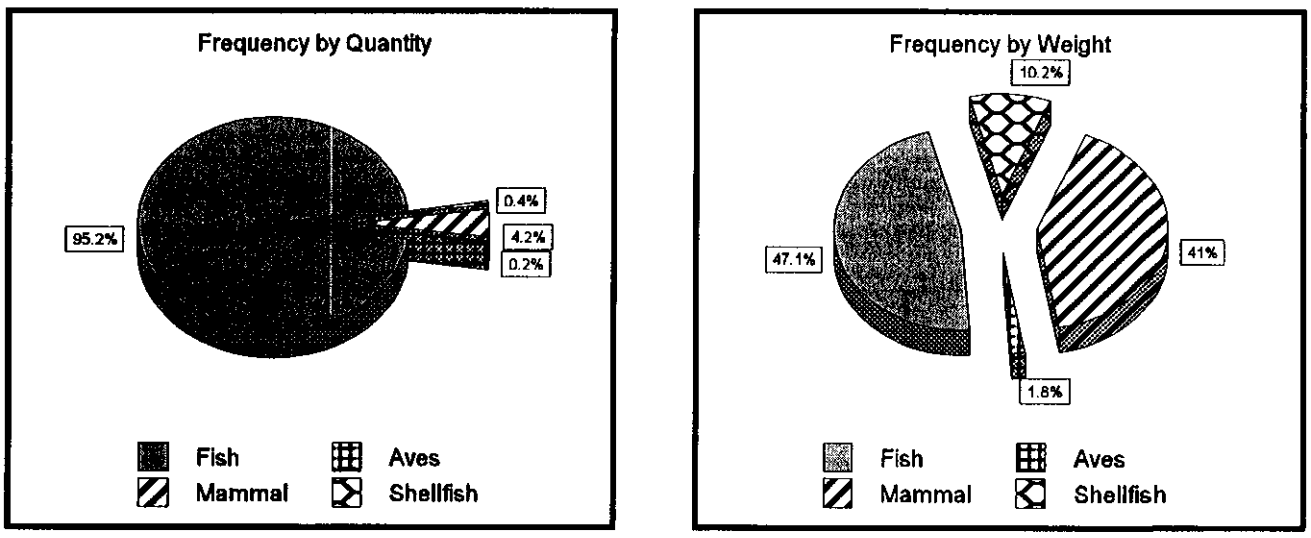


Figure 35: Frequencies of Butchering Remains from Trench 16, Level 1

18.1.2.2 Naturally Deposited Fauna

Three types of freshwater snails were recovered from the cultural matrix. DlLg-33:03B/1218 is eight Lymnaeidae, pond snails, weighing 0.1 gms, while DlLg-33:03B/1217 is eleven Planorbidae, ramshorn snails, weighing 0.1 gms. In addition, DlLg-33:03B/1219 is one pea clam, Sphaeriidae, which weighs 0.1 grams.

18.1.2.3 Samples

Two samples consist of bone, shell, and charcoal recoveries. DlLg-33:03B/1262 was recovered on the 2 millimetre screen and weighs 9.7 grams, while DlLg-33:03B/1261 was recovered on the 1 mm screen and weighs 15.5 grams.

18.1.3 Floral Remains

The floral recoveries consist of charcoal and wood. DlLg-33:03B/1216 is 58 small charcoal fragments which weigh 0.7 grams. DlLg-33:03B/1215 is a small fragment of wood. It weighs 0.4 grams.

18.2 Level 2

Level 2 was encountered at a depth of 275 cm. A total of 248 artifacts, weighing 153.5 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

18.2.1 Lithic Artifacts

The thirty-eight lithic artifacts are analysed within the following categories: lithic tools, detritus, and unmodified lithic material.

18.2.1.1 Lithic Tools

Two lithic tools were recovered from Level 1—a scraper and a retouched flake.

18.2.1.1.1 Scraper

DlLg-33:03B/1266 is a trapezoidal scraper made from a Knife River Flint flake which has numerous flake scars, resulting from both original flake production from the core and subsequent thinning flakes to make this tool. The distal end, opposite the bulb of percussion, has steep unifacial retouch producing a curved working edge which shows step fracture resulting from moderate to extensive use. The length is 20.3 mm, the width is 18.1 mm, the thickness is 5.1 mm, and it weighs 1.7 grams. The length of the working edge measures 3.2 mm with the width of the working edge measuring 18.1 mm. The working edge angle is 64°.

18.2.1.1.2 Retouched Flake

DlLg-33:03B/1267 is a retouched flake of grey undifferentiated chert. Unifacial retouch occurs on the ventral side of the right lateral margin and the dorsal side of the left half of the distal margin. The right retouch extends around the curve of the distal end and shows the most extensive wear at the point of inflection. The distal working edge shows minimal wear. The length is 28.6 mm, the width is 28.7 mm, and the thickness is 5.1 mm. It weighs 3.2 grams. The length of the right working edge on the linear right margin measures 11.4 mm and the portion of the working edge extending onto the distal margin is 6.5 mm. Both are almost straight with a working edge length for the right margin of 0.2 mm and 0.6 mm for the distal margin. The working edge angles are 54° and 56° respectively. The dorsal working edge has a width of 14.0 mm and a length of 0.3 mm with a working edge angle of 43°.

18.2.1.2 Detritus

Thirty-five lithic flakes were recovered from Trench 16, Level 2 (Table 52). Within the flakes, five lithic material types were represented, the predominant one being undifferentiated chert (23 flakes = 65.7%).The second most frequent material is Knife River Flint which has four flakes (29.4%) with the other three lithic types being smaller amounts.

MATERIAL	GROUP	QUANTITY	FREQUENCY	WEIGHT	FREQUENCY
Chert	IV	23	65.7	0.6	13.3
Knife River Flint	II	4	11.4	0.5	11.1
Selkirk Chert	V	2	5.7	2.8	62.2
St. Ambrose Chert	I	3	8.6	0.2	4.4
Swan River Chert	I	3	8.6	0.4	8.9
TOTAL		35	100.0	4.5	99.9

Table 52: Flake Recoveries from Trench 16, Level 2

18.2.1.3 Unmodified Lithic Material

One minute fragment of reddish ochre (hematite) was curated. DlLg-33:03B/1273 weighs 0.1 grams.

18.2.2 Ceramics

Seventeen ceramic sherds, either body sherds or body sherdlets, were recovered. DlLg-33:03B/1263 is thirteen body sherds with a pronounced textile impressed surface finish which appears to have been applied, at least on one sherd, by using a fabric wrapped paddle. The thicknesses range between 7.1 mm and 3.3 mm. The sherds weigh 45.1 grams. Some of the sherds have carbon encrustation on the interior.

DlLg-33:03B/1264 consists of two body sherds that have a similar paste and temper as DlLg-33:03B/1263. However, the exterior surface is marked with linear striae resulting from smoothing of the clay with a spatula or other implement, totally obliterating any textile impressions if they had even been

present. These sherds weigh 17.2 grams. It is possible that these two sherds derive from a different portion of the same pot as DlLg-33:03B/1263.

DlLg-33:03B/1265 is two body sherdlets weighing 0.3 grams. Both are exfoliated interior fragments.

18.2.3 Faunal Remains

The largest number of artifacts from Level 2 are faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 177 with a total weight of 81.2 grams.

18.2.3.1 Butchering Remains

A total of 171 butchering remains, with a combined weight of 75.8 grams, was recovered from Level 2 (Table 53). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	39	22.8	19.6	25.9
Medium/Large Mammal	3	1.8	9.7	12.8
Medium	3	1.8	1.3	1.7
Small/Medium Mammal	1	0.6	0.2	0.3
Carnivore Family (Carnivora)	2	1.2	1.5	2.0
TOTAL MAMMAL	48	28.1	32.3	42.6
Undifferentiated Fish	100	58.5	9.5	12.5
Catfish (*Ictalurus* sp.)	9	5.3	12.1	16.0
Sucker Family (Catostomidae)	2	1.2	0.1	0.1
Drum (*Aplodinotus grunniens*)	3	1.8	4.8	6.3
Sturgeon (*Acipenser fulvescens*)	6	3.5	0.7	0.9
TOTAL FISH	120	70.2	27.2	35.9
Freshwater Clam (Unionidae)	1	0.6	0.7	0.9
Three-ridge clam (*Amblema plicata*)	1	0.6	11.0	14.5
Black Sand-shell (*Ligumia recta*)	1	0.6	4.6	6.1
TOTAL SHELLFISH	3	1.8	16.3	21.5
TOTAL	171	100.1	75.8	100.0

Table 53: Butchering Remains from Trench 16, Level 2

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 36). In the quantity graph, the fish remains constitute approximately three-quarters of the assemblage. When weight

is considered, the ratio changes with fish and mammal being nearly equal, but the percentages are skewed by the heaviness of the valves.

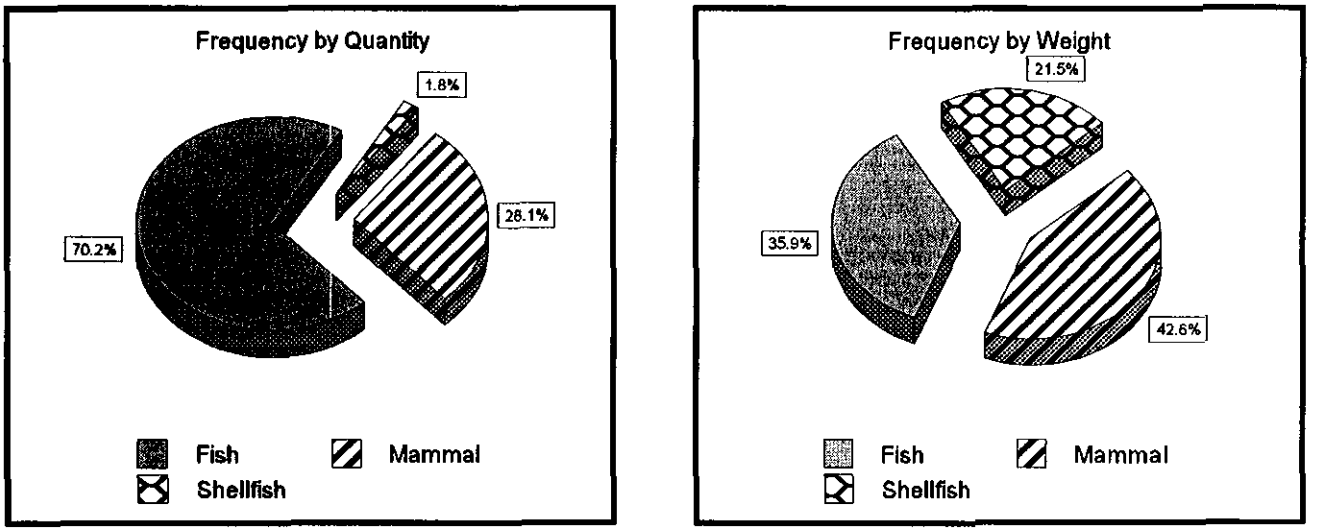


Figure 36: Frequencies of Butchering Remains from Trench 16, Level 2

18.2.3.2 Naturally Deposited Fauna

Four specimens were recovered. DlLg-33:03B/1275 is three Lymnaeidae snails, weighing 0.1 grams. DlLg-33:03B/1276 is one Planorbidae snail, weighing 0.1 grams.

18.2.3.3 Samples

Two samples were curated. DlLg-33:03B/1304 is bone, shell, and charcoal recovered on the 2.0 mm screen. It weighs 2.4 grams. DlLg-33:03B/1305 is a sample recovered on the 1.0 mm screen. It weighs 2.8 grams.

18.2.4 Floral Remains

DlLg-33:03B/1274 is sixteen small charcoal fragments. They weigh 0.2 grams.

19.0 TRENCH 17

Trench 17 is located at 33m south of the property line and 72m east of the York/Waterfront intersection. Three cultural levels were encountered, each of which will be analysed separately.

19.1 Level 1

Level 1 was encountered at a depth of 225 cm. A total of 151 artifacts, with a weight of 44.2 grams, was recovered from this level. Only faunal remains and floral remains were recovered.

19.1.1 Faunal Remains

Butchering remains, natural faunal deposits, and samples were curated. The total number is 144 with a total weight of 44.1 grams.

19.1.1.1 Butchering Remains

A total of 135 artifacts, with a combined weight of 40.5 grams, was recovered (Table 54). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	6	4.4	1.4	3.5
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	1	0.7	24.7	61.0
TOTAL MAMMAL	7	5.2	26.1	64.4
Undifferentiated Fish	115	85.2	7.5	18.5
Catfish (*Ictalurus* sp.)	10	7.4	6.7	15.8
Sucker Family (Catostomidae)	1	0.7	0.1	0.2
Sturgeon (*Acipenser fulvescens*)	2	1.5	0.1	0.2
TOTAL FISH	128	94.8	14.4	35.6
TOTAL	135	100.0	40.5	100.0

Table 54: Butchering Remains from Trench 17, Level 1

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 37). In the quantity graph, the fish remains overwhelm the mammal remains. When weight is considered, the mammal bones constitute approximately two-thirds of the assemblage.

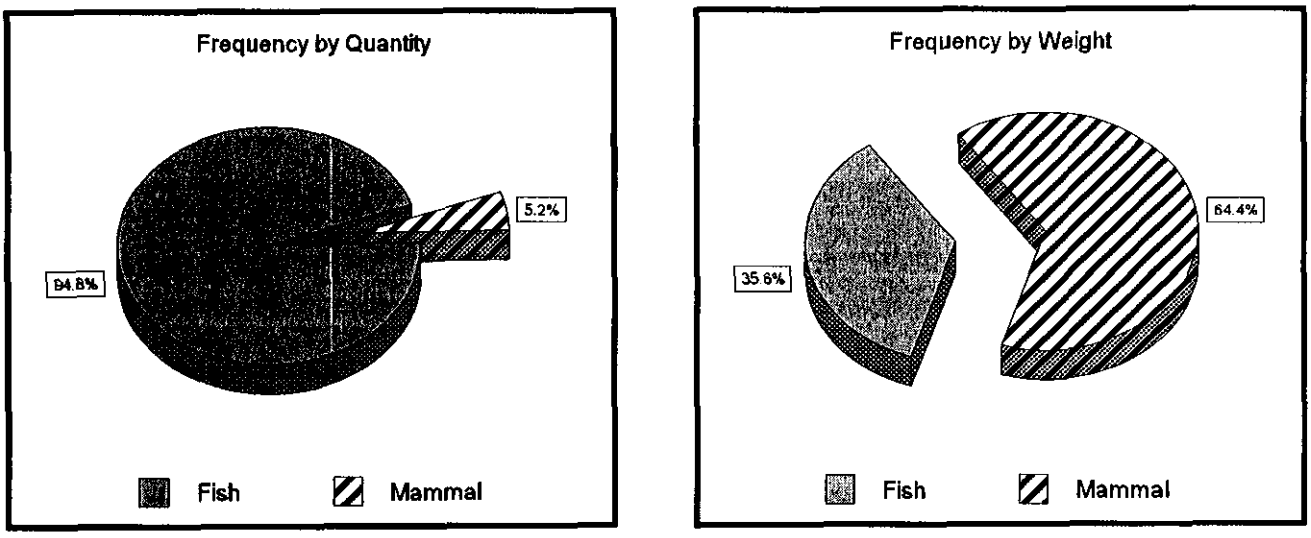


Figure 37: Frequencies of Butchering Remains from Trench 17, Level 1

19.1.1.2 Naturally Deposited Fauna

Four Lymnaeidae, DlLg-33:03B/1306, were recovered. They weigh 0.1 gms.

19.1.1.3 Samples

Two bone, shell, and charcoal samples were catalogued. DlLg-33:03B/1322 was recovered on the 2 millimetre screen and weighs 1.5 grams. DlLg-33:03B/1323 was recovered on the 1 millimetre screen. It weighs 2.0 grams.

19.1.2 Floral Remains

The floral recoveries consist of ten small charcoal fragments. DlLg-33:03B/1305 weighs 0.1 grams.

19.2 Level 2

Level 2 was encountered at a depth of 245 cm. A total of 593 artifacts, weighing 198.6 grams, was recovered. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

19.2.1 Lithic Artifacts

The lithic artifacts consist of detritus and fire-cracked rock.

19.2.1.1 Detritus

One small Knife River Flint flake was recovered. DlLg-33:03B/1326 weighs 0.1 grams.

19.2.1.2 Fire-cracked Rock

Three granite fire-cracked rocks were recovered. DlLg-33:03B/1327 weighs 59.9 grams.

19.2.2 Ceramics

Five body sherds were recovered. DlLg-33:03B/1324 is a single body sherd weighing 3.0 grams. The thickness measures 4.5 mm. The exterior surface was originally textile impressed but this pattern has been largely obliterated through smoothing of the surface with a spatula.

DlLg-33:03B/1325 consists of four body sherds weighing 9.9 grams. The thickness ranges from 3.2 mm to 4.7 mm. The exterior surface is textile impressed and there is some carbon encrustation on both exterior and interior surfaces.

19.2.3 Faunal Remains

The largest number of artifacts from Level 2 are faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 556 with a total weight of 125.5 grams.

19.2.3.1 Butchering Remains

A total of 544 butchering remains, with a combined weight of 102.7 grams, was recovered. The identified taxa are listed in Table 55. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage. Three unidentifiable mammal fragments, DlLg-33:03B/1337, are calcined.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	7	1.3	3.1	3.0
Large Mammal	3	0.6	3.6	3.5
Medium/Large	1	0.2	0.5	0.5
Medium	2	0.4	2.1	2.0
Small Mammal	2	0.4	0.2	0.2
TOTAL MAMMAL	15	2.8	9.5	9.3
Undifferentiated Fish	446	82.0	35.7	34.8
Catfish (*Ictalurus* sp.)	48	8.8	51.5	50.1
Sucker Family (Catostomidae)	4	0.7	0.4	0.4
Drum (*Aplodinotus grunniens*)	1	0.2	1.0	1.0
Sturgeon (*Acipenser fulvescens*)	30	5.5	4.6	4.5
TOTAL FISH	529	97.2	93.2	90.7
TOTAL	544	100.0	102.7	100.0

Table 55: Butchering Remains from Trench 17, Level 2

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 38). In the quantity graph, the fish remains overwhelm the mammal. In the weight graph, fish still dominates the assemblage.

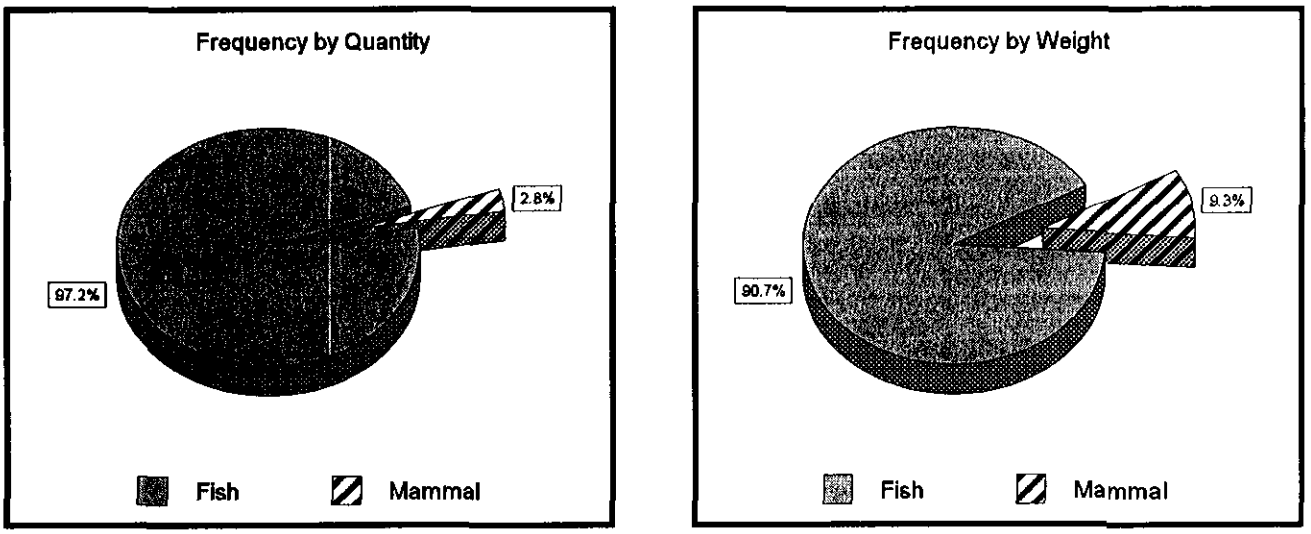


Figure 38: Frequencies of Butchering Remains from Trench 17, Level 2

19.2.3.2 Naturally Deposited Fauna

Ten specimens were recovered. These consist of the usual aquatic taxa including six Lymnaeidae, DlLg-33:03B/1329, weighing 0.1 grams, and two Planorbidae, DlLg-33:03B/1330, weighing 0.1 grams. In addition, two Sphaeriidae, DlLg-33:03B/1331, were also recovered. These weigh 0.1 grams.

19.2.3.3 Samples

Two samples were curated. DlLg-33:03B/1373 is bone, shell, and charcoal recovered on the 2.0 mm screen. It weighs 8.7 grams. DlLg-33:03B/1372 is a bone, shell, and charcoal sample recovered on the 1.0 mm screen. It weighs 13.8 grams.

19.2.4 Floral Remains

The floral recoveries consist of twenty-eight small charcoal specimens. DlLg-33:03B/1328 weighs 0.2 grams.

19.3 Level 3

Level 3 was encountered at a depth of 295 cm. A total of 348 artifacts, weighing 280.6 grams, was recovered from this level including lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

19.3.1 Lithic Artifacts

The three lithic artifacts are all flakes. DlLg-33:03B/1375 is a flake made of St. Ambrose Chert. It weighs 0.1 grams. DlLg-33:03B/1376 is an undifferentiated chert flake weighing 0.1 grams. DlLg-33:03B/1377 is a Selkirk Chert flake weighing 0.3 grams.

19.3.2 Ceramics

Dllg-33:03B/1374 is a single body sherd weighing 3.0 grams. The thickness is 5.5 mm. The exterior surface is smooth although there appears to be evidence of weathering resulting in a microtopography caused by the clay eroding from around the extrusive temper.

19.3.3 Faunal Remains

The largest number of artifacts from Level 3 consist of faunal objects: butchering remains, natural faunal deposits, and a sample. The total number is 330 with a total weight of 276.8 grams.

19.3.3.1 Butchering Remains

Butchering remains total 326 artifacts and have a combined weight of 260.5 grams (Table 56). Two unidentifiable mammal fragments, DlLg-33:03B/1390, are charred.

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 39). In the quantity graph, the fish remains are more than half the assemblage. When weight is considered, the mammal remains are nearly three-quarters of the assemblage. However, the numbers are skewed by the heaviness of the shellfish valves.

19.3.3.2 Naturally Deposited Fauna

Two Planorbidae snails were recovered. DlLg-33:03B/1379 weighs 0.1 grams.

19.3.3.3 Samples

Two samples were catalogued. DlLg-33:03B/1406 consists of bone, shell, and charcoal recoveries on the 2 millimetre screen. It weighs 7.0 grams. DlLg-33:03B/1407 consists of bone, shell, and charcoal recoveries on the 1 millimetre screen. It weighs 9.2 grams.

19.3.4 Floral Remains

The floral recoveries consist of fourteen charcoal fragments. DlLg-33:03B/1378 weighs 0.3 grams.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	95	29.1	16.1	6.2
Large Mammal	11	3.4	51.4	19.7
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	2	0.6	123.5	47.4
TOTAL MAMMAL	108	33.1	191.0	73.3
Undifferentiated Fish	150	46.0	8.6	3.3
Catfish (*Ictalurus* sp.)	7	2.1	10.7	4.1
Sucker Family (Catostomidae)	1	0.3	0.1	<0.1
Drum (*Aplodinotus grunniens*)	7	2.1	0.6	0.2
Sturgeon (*Acipenser fulvescens*)	26	8.0	4.3	1.7
TOTAL FISH	191	58.6	24.3	9.3
Freshwater Clam (Unionidae)	23	7.1	7.0	2.7
Three-ridge clam (*Amblema plicata*)	1	0.3	12.1	4.6
Black Sand-shell (*Ligumia recta*)	2	0.6	12.8	4.9
White Heel-Splitter (*Lasmigona complanata*)	1	0.3	13.3	5.1
TOTAL SHELLFISH	27	8.3	45.2	17.4
TOTAL	326	100.0	260.5	100.0

Table 56: Butchering Remains from Trench 17, Level 3

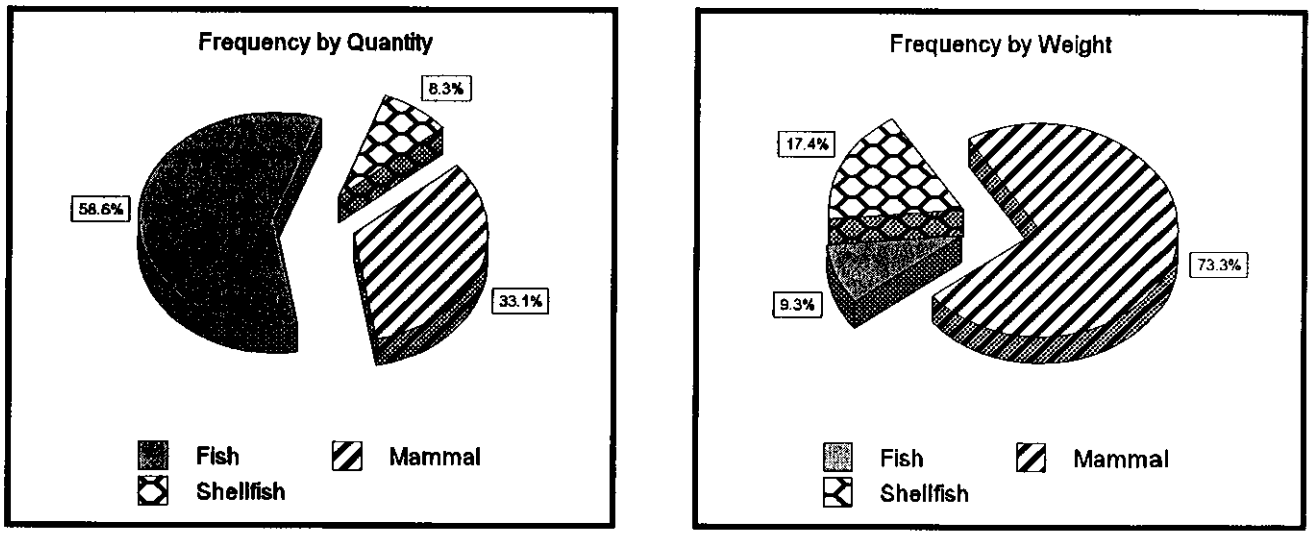


Figure 39: Frequencies of Butchering Remains from Trench 17, Level 3

20.0 TRENCH 18

Trench 18 is located at 54m south of the property line and 124m east of the York/Waterfront intersection. Three cultural levels were encountered, each of which will be analysed separately.

20.1 Level 1

Level 1 was encountered at a depth of 200 cm. Except for two ceramic body sherds, only faunal remains were recovered from this level. The total number of artifacts is 61 with a total weight of 145.0 grams.

20.1.1 Ceramics

Two small textile impressed body sherds were recovered. DlLg-33:03B/1407 weighs 3.7 grams. Both sherds are thin (3.0 mm thick) and are carbon encrusted on the exterior.

20.1.2 Faunal Remains

The total number of faunal remains, butchering remains and a sample, is 59 with a total weight of 141.3 grams.

20.1.2.1 Butchering Remains

A total of 58 artifacts, with a combined weight of 140.3 grams, was recovered (Table 57). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal				
Large Mammal	2	3.4	14.5	10.3
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	1	1.7	113.9	81.1
TOTAL MAMMAL	3	5.2	128.4	91.5
Undifferentiated Fish	45	77.6	4.8	3.4
Catfish (*Ictalurus* sp.)	10	17.2	7.1	5.1
TOTAL FISH	55	94.8	11.9	8.5
TOTAL	58	100.0	140.3	100.0

Table 57: Butchering Remains from Trench 18, Level 1

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 40). In the quantity graph, the fish remains overwhelm the other taxa. As fish bone is small and light in comparison to the larger and denser mammal bone, the proportions are reversed when weight is considered.

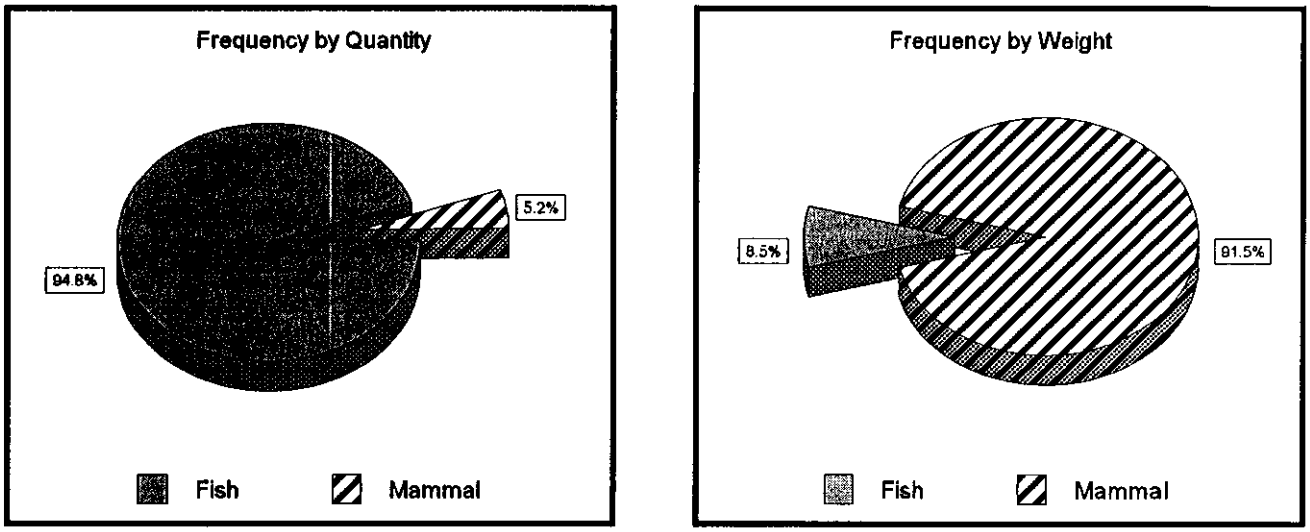


Figure 40: Frequencies of Butchering Remains from Trench 18, Level 1

20.1.2.2 Samples

One sample, DlLg-33:03B/1419, consists of bone, shell, and charcoal recoveries on the 1 millimetre screen. It weighs 1.0 grams.

20.2 Level 2

Level 2 was encountered at a depth of 245 cm. A total of 55 artifacts, weighing 29.4 grams, was recovered from this level. These include faunal remains and floral remains.

20.2.1 Faunal Remains

The majority of the artifacts from Level 2 are faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 50 with a total weight of 29.3 grams.

20.2.1.1 Butchering Remains

A total of 36 butchering remains, with a combined weight of 28.1 grams, was recovered from Level 2 in Trench 18. The identified taxa are listed in Table 58. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	2	5.6	0.1	0.4
Large Mammal	1	2.8	7.3	26.0
TOTAL MAMMAL	3	8.3	7.4	26.3
Undifferentiated Fish	12	33.3	0.4	1.4
Catfish (*Ictalurus* sp.)	2	5.6	2.6	9.3
Sucker Family (Catostomidae)	2	5.6	0.3	1.1
TOTAL FISH	16	44.4	3.3	11.7
Freshwater Clam (Unionidae)	15	41.7	0.5	1.8
Three-ridge clam (*Amblema plicata*)	2	5.6	16.9	60.1
TOTAL SHELLFISH	17	47.2	17.4	61.9
TOTAL	36	99.9	28.1	99.9

Table 58: Butchering Remains from Trench 18, Level 2

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 41). In both the quantity graph and the weight graph, the shellfish remains are dominant. The skewing due to the fragmentation and heaviness of the clam valve is readily apparent, especially when it is likely that all of the shellfish remains derive from one specimen.

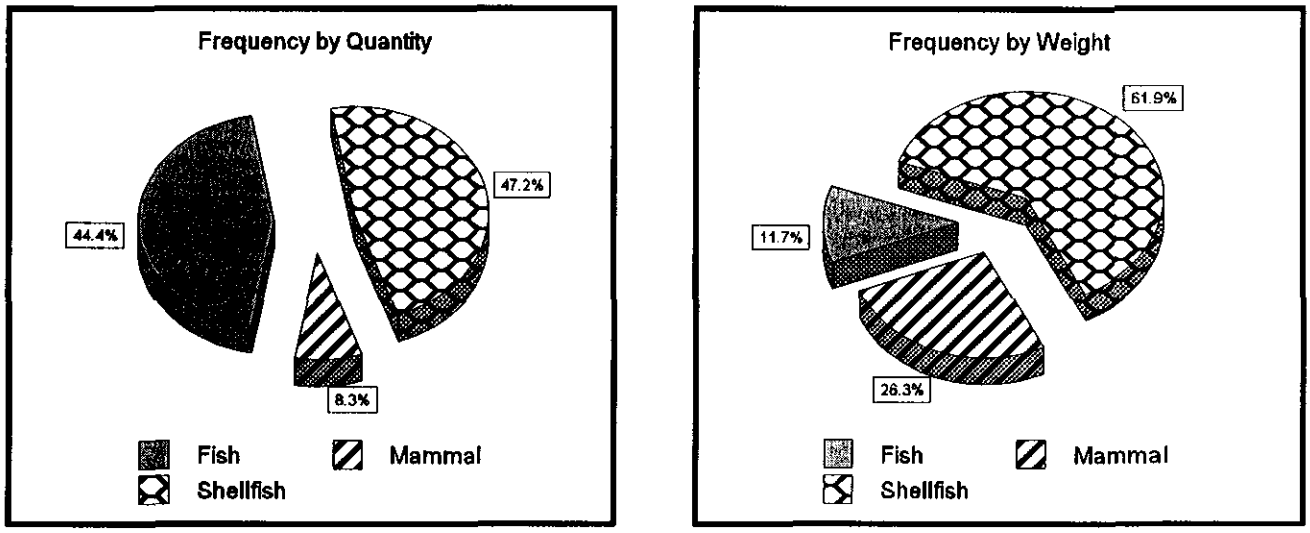


Figure 41: Frequencies of Butchering Remains from Trench 18, Level 2

20.2.1.2 Naturally Deposited Fauna

The usual aquatic taxa were present. DlLg-33:03B/1424 consists of six Lymnaeidae, weighing 0.1 grams. DlLg-33:03B/1424 consists of seven Planorbidae, weighing 0.1 grams.

20.2.1.3 Samples

One sample was catalogued. DlLg-33:03B/1436 is bone, shell, and charcoal recovered on the 1.0 mm screen. It weighs 1.0 grams.

20.2.2 Floral Remains

The floral recoveries are only charcoal. DlLg-33:03B/1423 is five fragments weighing 0.1 grams.

20.3 Level 3

Level 3 was encountered at a depth of 275 cm. A total of 1672 artifacts, weighing 33.1 grams, was recovered from this level including lithic artifacts, faunal remains, and floral remains.

20.3.1 Lithic Artifacts

The thirteen lithic artifacts represent the following categories: detritus, fire-cracked rock, and natural objects.

20.3.1.1 Detritus

Eleven lithic flakes were recovered. DlLg-33:03B/1437 is six Knife River Flint flakes, weighing 0.3 grams. DlLg-33:03B/1438 is five chalcedony flakes, weighing 0.2 grams.

20.3.1.2 Fire-cracked Rock

One granodiorite fire-cracked rock was recovered. DlLg-33:03B/1440 weighs 102.8 grams.

20.3.1.3 Unmodified Lithic Material

One minute fragment of yellow ochre (limonite) was curated. DlLg-33:03B/1439 weighs 0.1 grams.

20.3.2 Faunal Remains

The largest number of artifacts from Level 3 consist of faunal objects: butchering remains, natural faunal deposits, and a sample. The total number is 1644 with a total weight of 227.9 grams.

20.3.2.1 Butchering Remains

Butchering remains total 1598 artifacts and have a combined weight of 331.5 grams (Table 59). It is not necessary to graph the proportions by quantity or weight, as it is obvious from the table that fish remains comprise nearly the totality of the assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	4	0.3	0.7	0.5
TOTAL MAMMAL	4	0.3	0.7	0.5
Undifferentiated Fish	1445	90.4	81.3	52.4
Catfish (*Ictalurus* sp.)	59	3.7	57.2	36.8
Sucker Family (Catostomidae)	14	0.9	3.0	0.6
Sturgeon (*Acipenser fulvescens*)	76	4.8	13.1	8.4
TOTAL FISH	1594	99.7	154.6	99.5
TOTAL	1598	100.0	155.3	100.0

Table 59: Butchering Remains from Trench 18, Level 3

20.3.2.2 Naturally Deposited Fauna

Forty-four freshwater snails were recovered. DlLg-33:03B/1477 is twenty-six Planorbidae weighing 0.1 grams, while DlLg-33:03B/1478 is eighteen Lymnaeidae weighing 0.1 grams.

20.3.2.3 Samples

Two samples were curated. DlLg-33:03B/1476 consists of recoveries on the 2 millimetre screen. It weighs 27.6 grams. DlLg-33:03B/1475 consists of recoveries on the 1 millimetre screen. It weighs 44.8 grams.

20.3.3 Floral Remains

The floral recoveries are fifteen small charcoal fragments. DlLg-33:03B/1441 weighs 0.2 grams.

21.0 TRENCH 19

Trench 19 is located at 37m south of the property line and 116m east of the York/Waterfront intersection. Two relatively sparse cultural levels were encountered, each of which will be analysed separately.

21.1 Level 1

Level 1 was encountered at a depth of 240 cm. Only faunal remains were recovered from this level.

21.1.1 Faunal Remains

The recoveries consist of butchering remains, natural faunal deposits, and a sample. The total number is 37 with a total weight of 3.2 grams.

21.1.1.1 Butchering Remains

A total of 31 artifacts, with a combined weight of 2.6 grams, was recovered (Table 60). Only fish remains are present, with catfish being the only identified species. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Fish	27	87.1	0.8	30.8
Catfish (*Ictalurus* sp.)	4	12.9	1.8	69.2
TOTAL FISH	31	100.0	2.6	100.0
TOTAL	31	100.0	2.6	100.0

Table 60: Butchering Remains from Trench 19, Level 1

21.1.1.2 Naturally Deposited Fauna

Freshwater snails were recovered from the cultural matrix. DlLg-33:03B/1479 is three Planorbidae (ramshorn snails), weighing 0.1 grams and DlLg-33:03B/1480 is two Lymnaeidae (pond snails) weighing 0.1 grams.

21.1.1.3 Samples

One sample, DlLg-33:03B/1486, consists of bone, shell, and charcoal recoveries on the 1 millimetre screen. It weighs 0.4 grams.

21.2 Level 2

Level 2 was encountered at a depth of 295 cm. A total of 193 artifacts, weighing 38.0 grams, was recovered from this level. These include faunal remains and floral remains.

21.2.1 Faunal Remains

The 146 faunal objects (butchering remains, natural faunal deposits, and samples) weigh 37.3 grams.

21.2.1.1 Butchering Remains

A total of 141 butchering remains, with a combined weight of 33.8 grams, was recovered from Level 2 in Trench 19. The identified taxa are listed in Table 61. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage. However, only fish and shellfish are represented and the shellfish remains probably derive from a single individual. Hence, it was not deemed necessary to graph the frequencies to illustrate the percentages as the assemblage is predominately fish.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Fish	107	75.9	5.3	15.7
Catfish (*Ictalurus* sp.)	20	14.2	17.0	50.3
Drum (*Aplodinotus grunniens*)	2	1.4	1.3	3.8
TOTAL FISH	129	91.5	23.6	69.8
Freshwater Clam (Unionidae)	11	7.8	5.0	14.8
Fat Mucket (*Lampsilis radiata*)	1	0.7	5.2	15.4
TOTAL SHELLFISH	12	8.5	10.2	30.2
TOTAL	141	100.0	33.8	100.0

Table 61: Butchering Remains from Trench 19, Level 2

21.2.1.2 Naturally Deposited Fauna

Four specimens were recovered. DlLg-33:03B/1488 is three Planorbidae weighing 0.1 grams and DlLg-33:03B/1489 is one Lymnaeidae weighing 0.1 grams.

21.2.1.3 Samples

DlLg-33:03B/1513 is bone, shell, and charcoal recovered on the1.0 mm screen. It weighs 3.3 grams.

21.2.2 Floral Remains

The floral recoveries consist of 47 charcoal specimens. DlLg-33:03B/1487 weighs 0.7 grams.

22.0 TRENCH 20

Trench 20 is located at 10m south of the property line and 104m east of the York/Waterfront intersection. Two cultural levels were encountered, each of which will be analysed separately.

22.1 Level 1

Level 1 was encountered at a depth of 210 cm. A total of 226 artifacts, with a weight of 147.9 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

22.1.1 Lithic Artifacts

Two lithic artifacts were catalogued in the following categories: detritus and unmodified lithic material.

22.1.1.1 Detritus

A single undifferentiated chert core was recovered from Level 1. DlLg-33:03B/1516 weighs 13.1 grams.

22.1.1.2 Unmodified Lithic Material

A limestone cobble, DlLg-33:03B/1517, was recovered. It weighs 88.9 grams.

22.1.2 Ceramics

Six body sherds were recovered. DlLg-33:03B/1514 is a single sherd weighing 2.5 grams. This sherd, 4.4 mm thick, has a textile impressed exterior. The outer surface is soot stained and the inner surface is reddish indicating post-depositional heat alteration.

DlLg-33:03B/1515 consists of five body sherds weighing 10.1 grams. These sherds range in thickness from 3.7 mm to 4.2 mm. The exterior surface is an obliterated textile impression which shows minor striae caused by the smoothing tool. The interior is slightly carbon encrusted.

22.1.3 Faunal Remains

The largest number of artifacts from Level 1consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 207 with a total weight of 33.0 grams.

22.1.3.1 Butchering Remains

A total of 196 artifacts, with a combined weight of 13.7 grams, was recovered. The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage (Table 62).

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	1	0.5	0.6	43.8
Small/Medium Mammal	1	0.5	0.1	0.7
Rodent Family (Rodentia)				
Beaver (*Castor canadensis*)	2	1.0	1.7	12.4
TOTAL MAMMAL	4	2.0	2.4	17.5
Undifferentiated Fish	178	90.8	5.2	38.0
Catfish (*Ictalurus* sp.)	7	3.6	4.5	32.8
Sturgeon (*Acipenser fulvescens*)	2	1.0	0.1	0.7
Pike (*Esox lucius*)	4	2.0	0.4	2.9
TOTAL FISH	191	97.4	10.2	74.5
Freshwater Clam (Unionidae)	1	0.5	1.1	8.0
TOTAL SHELLFISH	1	0.5	1.1	8.0
TOTAL	196	99.9	13.7	100.0

Table 62: Butchering Remains from Trench 20, Level 1

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 42). In the quantity graph, the fish remains overwhelm the other taxa. In the weight graph, fish is still the dominant taxon.

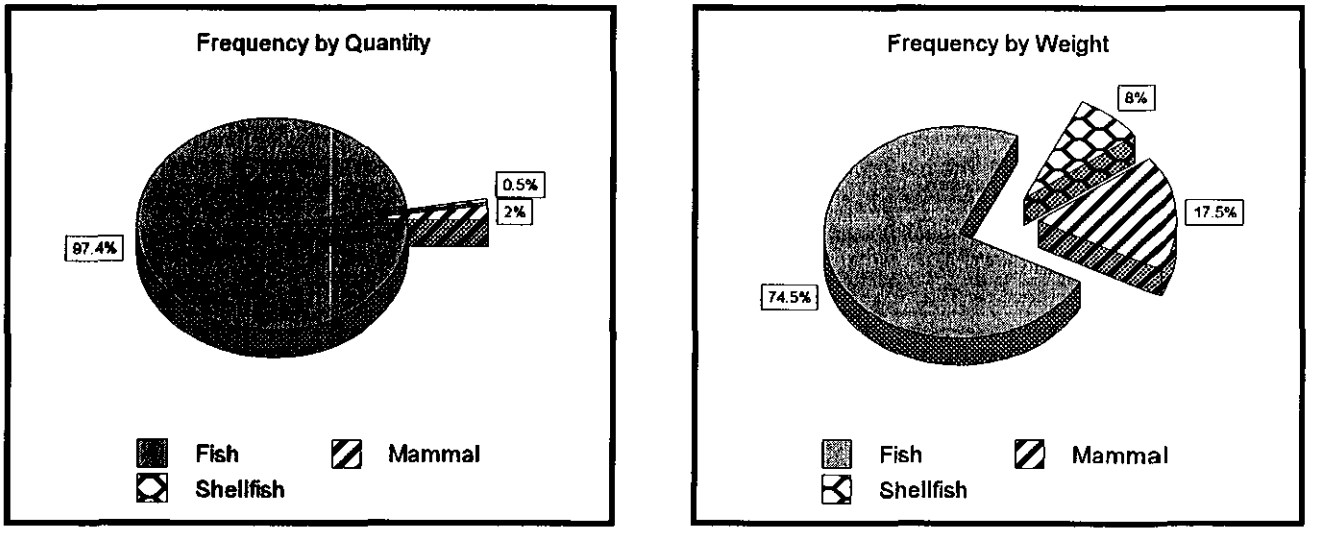


Figure 42: Frequencies of Butchering Remains from Trench 20, Level 1

22.1.3.2 Naturally Deposited Fauna

DlLg-33:03B/1519 is three Lymnaeidae, pond snails, weighing 0.1 grams, while DlLg-33:03B/1518 is six Planorbidae, ramshorn snails, weighing 0.1 grams.

22.1.3.3 Samples

Two samples consist of bone, shell, and charcoal recoveries. DlLg-33:03B/1539 was recovered on the 2 millimetre screen and weighs 6.2 grams, while DlLg-33:03B/1538 was recovered on the 1 mm screen and weighs 12.9 grams.

22.1.4 Floral Remains

The floral recoveries consist of eleven small fragments of charcoal. DlLg-33:03B/1540 weighs 0.3 grams.

22.2 Level 2

Level 2 was encountered at a depth of 260 cm. A total of 1391 artifacts, weighing 273.2 grams, was recovered from this level. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

22.2.1 Lithic Artifacts

Only lithic detritus was recovered. Twelve flakes from tool manufacture were catalogued (Table 63). Four lithic material types were represented, with undifferentiated chert and Knife River Flint being predominant.

MATERIAL	GROUP	QUANTITY	FREQUENCY	WEIGHT	FREQUENCY
Chert	IV	5	65.7	0.1	13.3
Knife River Flint	II	5	11.4	0.6	11.1
St. Ambrose Chert	I	1	5.7	0.3	62.2
Swan River Chert	I	1	8.6	0.1	4.4
TOTAL		12	100.0	1.1	99.9

Table 63: Flake Recoveries from Trench 20, Level 2

22.2.2 Ceramics

Two hundred and thirty-nine ceramic sherds were recovered. These consist of one rim shred and 238 body sherds or body sherdlets.

22.2.2.1 Rim Sherds

DlLg-33:03B/1541 is a lip,neck portion of a rim sherd. It weighs 3.5 grams. It has been designated as Vessel 12. It has a slightly expanded wedge-shaped lip which is decorated with oblique cord wrapped object impressions (CWOI). Right oriented oblique CWOI occurs immediately below the lip. Due to the smallness of the sherd, it is unknown if other design elements occur on the remainder of the neck. Due to the incompleteness, it is not possible to assign this to a more specific type than the generalized Rainy River Complex.

22.2.2.2 Body Sherds

DlLg-33:03B/1542 is eleven body sherds weighing 12.7 grams. These thin (3.3 mm) sherds have a surface finish of textile impressions. Some are exfoliated but most have carbon encrustation on the exterior and interior surfaces.

DlLg-33:03B/1543 is 227 body sherdlets weighing 37.8 grams. Those sherds large enough to display a pattern are textile impressed on the exterior and smooth on the interior. The extreme fragmentation of the sherds suggests either of two possibilities. The sherds, after the pot was broken during use, were in an area of heavy traffic and were pulverized by people walking on them. Alternatively, the sherds were broken down, possibly using a hammerstone, to manufacture grog to use as temper for making another pot.

22.2.3 Faunal Remains

The largest number of artifacts from Level 2 are faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 1112 with a total weight of 216.8 grams.

22.2.3.1 Butchering Remains

A total of 1096 butchering remains, with a combined weight of 94.1 grams, was recovered from Level 2 (Table 64). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage. DlLg-33:03B/1586, a fish dentary, and DlLg-33:03B/1589, two fish vertebra, are calcined. Five unidentifiable fish fragments, DlLg-33:03B/1592, are charred. DlLg-33:03B/1553, a large mammal long bone, has evidence of carnivore chewing.

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 43). In both the quantity graph and the weight graph, the fish dominate the assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	7	0.6	1.0	1.1
Large Mammal	1	0.1	5.8	6.2
Small/Medium Mammal	2	0.2	0.9	1.0
Small Mammal	1	0.1	0.1	0.1
Rabbit Family (Leporidae)				
Jack Rabbit (*Lepus* sp.)	1	0.1	0.3	0.3
TOTAL MAMMAL	12	1.1	8.1	8.6
Undifferentiated Fish	946	86.3	40.5	43.0
Catfish (*Ictalurus* sp.)	32	2.9	18.4	19.6
Sucker Family (Catostomidae)	47	4.3	5.6	6.0
Drum (*Aplodinotus grunniens*)	40	3.6	18.3	19.4
Sturgeon (*Acipenser fulvescens*)	10	0.9	1.8	1.9
TOTAL FISH	1075	98.1	84.6	89.9
Freshwater Clam (Unionidae)	9	0.8	1.4	1.5
TOTAL SHELLFISH	9	0.8	1.4	1.5
TOTAL	1096	100.0	94.1	100.0

Table 64: Butchering Remains from Trench 20, Level 2

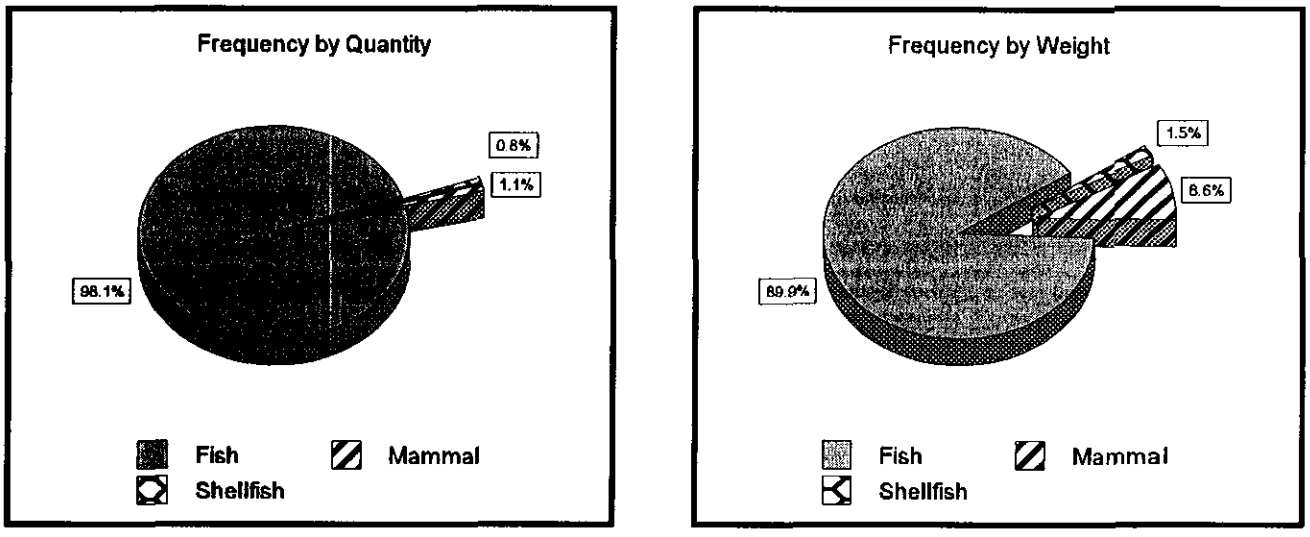


Figure 43: Frequencies of Butchering Remains from Trench 20, Level 2

22.2.3.2 Naturally Deposited Fauna

Thirteen freshwater snails were recovered. DlLg-33:03B/1550 is eleven Lymnaeidae, weighing 0.2 grams, while DlLg-33:03B/1549 is two Planorbidae, weighing 0.1 grams. In addition, DlLg-33:03B/1557 is an incomplete mandible, with teeth, from a small rodent. It weighs 0.2 grams.

22.2.3.3 Samples

Two samples were curated. DlLg-33:03B/1595 is bone, shell, and charcoal collected on the 2.0 mm screen. It weighs 48.3 grams. DlLg-33:03B/1594 is a sample recovered on the 1.0 mm screen. It weighs 73.9 grams.

22.2.4 Floral Remains

DlLg-33:03B/1548 is twenty-eight charcoal fragments. They weigh 1.3 grams.

23.0 TRENCH 21

Trench 21 is located at 46m south of the property line and 142m east of the York/Waterfront intersection. Two cultural levels were encountered, each of which will be analysed separately.

23.1 Level 1

Level 1 was encountered at a depth of 195 cm. This very sparse level contains a total of thirteen artifacts, with a weight of 8.9 grams. These include ceramic artifacts and faunal remains.

23.1.1 Ceramics

Three body sherds were recovered. DlLg-33:03B/1596 weighs 7.4 grams. The exterior of these sherds have an obliterated textile impressed surface. They are relatively thin—3.9 mm. The interior has a reddish tinge suggesting heat alteration after the pot was broken.

23.1.2 Faunal Remains

The sparse faunal remains in Level 1consist solely of butchering remains. Ten fish specimens were recovered. DlLg-33:03B/1597 is a single dorsal spine from a freshwater drum (*Aplodinotus grunniens*). It weighs 0.5 grams. The remaining nine specimens are all from undifferentiated fish: DlLg-33:03B/1598 is five ribs weighing 0.6 grams and DlLg-33:03B/1599 is four unidentifiable fragments.

23.2 Level 2

Level 2 was encountered at a depth of 270 cm. A total of 22 artifacts, weighing 13.3 grams, was recovered from this level. This sparse level includes lithic artifacts, faunal remains, and floral remains.

23.2.1 Lithic Artifacts

Only one lithic artifact, an unmodified specimen, was recovered. DlLg-33:03B/1600 is a limestone spall weighing 5.3 grams.

23.2.2 Faunal Remains

Level 2 contained 17 faunal artifacts with a total weight of 7.9 grams. These include butchering remains, natural faunal deposits, and a sample.

23.2.2.1 Butchering Remains

A total of 15 butchering remains, with a combined weight of 7.7 grams, was recovered from Level 2 (Table 65). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage. DlLg-33:03B/1603, the

bison carpus is eroded, a result of lying on the surface for an extended period of time. As is obvious from Table 65, the fish dominate the taxa in this very sparse level, although when weight is considered, the single bison carpus is much heavier.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal				
Deer/Cow Family (Artiodactyla)				
Cow Family (Bovidae)				
Bison (*Bison bison*)	1	6.7	7.1	92.2
TOTAL MAMMAL	1	6.7	7.1	92.2
Undifferentiated Fish	12	80.0	0.3	3.9
Sucker Family (Catostomidae)	2	13.3	0.3	3.9
TOTAL FISH	14	93.3	0.6	7.8
TOTAL	15	100.0	7.7	100.0

Table 65: Butchering Remains from Trench 21, Level 2

23.2.2.2 Naturally Deposited Fauna

One Planorbidae snail was curated. DlLg-33:03B/1602 weighs 0.1 grams.

23.2.2.3 Samples

DlLg-33:03B/1608 is bone, shell, and charcoal collected on the 1.0 mm screen. It weighs 0.1 grams.

23.2.4 Floral Remains

Four minute charcoal fragments were recovered. DlLg-33:03B/1601 weighs 0.1 grams.

24.0 TRENCH 22

Trench 22 is located at 27m south of the property line and 136m east of the York/Waterfront intersection. Three cultural levels were encountered, each of which will be analysed separately.

24.1 Level 1

Level 1 was encountered at a depth of 225 cm. A total of 91 artifacts, with a weight of 53.0 grams, was recovered from this level. Only faunal remains and floral remains were curated.

24.1.1 Faunal Remains

The largest number of artifacts from Level 1 consist of faunal objects: butchering remains, natural faunal deposits, and a sample. The total number is 88 with a total weight of 52.9 grams.

24.1.1.1 Butchering Remains

A total of 75 artifacts, with a combined weight of 51.1 grams, was recovered (Table 66). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Aves				
Large Aves	1	1.3	1.3	2.5
TOTAL AVES	1	1.3	1.3	2.5
Undifferentiated Fish	50	66.6	4.3	8.4
Catfish (*Ictalurus* sp.)	24	32.0	45.5	89.0
TOTAL FISH	74	98.6	49.8	97.5
TOTAL	75	99.9	51.1	100.0

Table 66: Butchering Remains from Trench 22, Level 1

The table shows that fish are the main component of the assemblage. The single bird element does not comprise an appreciable amount, either in quantity or weight.

24.1.1.2 Naturally Deposited Fauna

Twelve fragments of the skeleton of a small rodent were recovered. These include the maxilla, the mandible, teeth, leg bones (radius and humerus), scapula, pelvis, and vertebrae. The total weight of these rodent bones is 0.9 grams.

24.1.1.3 Samples

DlLg-33:03B/1637 is a sample from the 1 millimetre screen. It weighs 0.9 grams.

24.1.2 Floral Remains

The floral recoveries are three charcoal fragments. DlLg-33:03B/1609 weighs 0.1 grams.

24.2 Level 2

Level 2 was encountered at a depth of 260 cm. A total of 54 artifacts, weighing 21.1 grams, was recovered. These include lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

24.2.1 Lithic Artifacts

Only one granite fire-cracked rock was catalogued. DlLg-33:03B/1641 weighs 7.1 grams.

24.2.2 Ceramics

Three ceramic sherds were recovered—one rim sherd, one body sherd, and one body sherdlet.

24.2.2.1 Rim Sherds

DlLg-33:03B/1638 is a neck sherd without any decorative elements. The exterior surface is fabric impressed. The thickness is 4.0 mm and it weighs 2.2 grams. It has been designated as Vessel 13.

24.2.2.2 Body Sherds

DlLg-33:03B/1639 is a single, carbon encrusted body sherd with a textile impressed surface finish. The thickness is 4.2 mm and the weight is 5.0 grams. Similarities in paste and temper suggest that this sherd is part of the same vessel as DlLg-33:03B/1638.

DlLg-33:03B/1640 is a small, exfoliated body sherdlet with carbon encrustation. It weighs 0.1 grams.

24.2.3 Faunal Remains

Faunal remains consist of butchering remains, natural faunal deposits, and a sample. The total number is 42 with a total weight of 6.6 grams.

24.2.3.1 Butchering Remains

A total of 38 butchering remains, with a combined weight of 5.4 grams, was recovered (Table 67). The frequencies of each taxon are calculated on the combined weight and quantities to give a picture of the relative frequency within the entire faunal food assemblage.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	2	5.3	0.2	3.7
TOTAL MAMMAL	2	5.3	0.2	3.7
Undifferentiated Fish	24	63.2	0.6	11.1
Catfish (*Ictalurus* sp.)	1	2.6	0.9	16.7
Drum (*Aplodinotus grunniens*)	1	2.6	1.1	20.4
TOTAL FISH	26	68.4	2.6	48.1
Freshwater Clam (Unionidae)	8	21.1	0.6	11.1
Black Sand-shell (*Ligumia recta*)	2	5.3	2.0	37.0
TOTAL SHELLFISH	10	26.3	2.6	48.1
TOTAL	38	100.0	5.4	99.9

Table 67: Butchering Remains from Trench 22, Level 2

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 44). In the quantity graph, the fish remains are the dominant taxa in the assemblage. In both graphs, the shellfish remains distort the frequency. In the quantity graph, this is due to the friability of the valves and in the weight graph, it is due to the heaviness of shell versus bone. It would not be logical to think that half the diet could be attributed to shellfish when all of the remains probably represent a single individual clam.

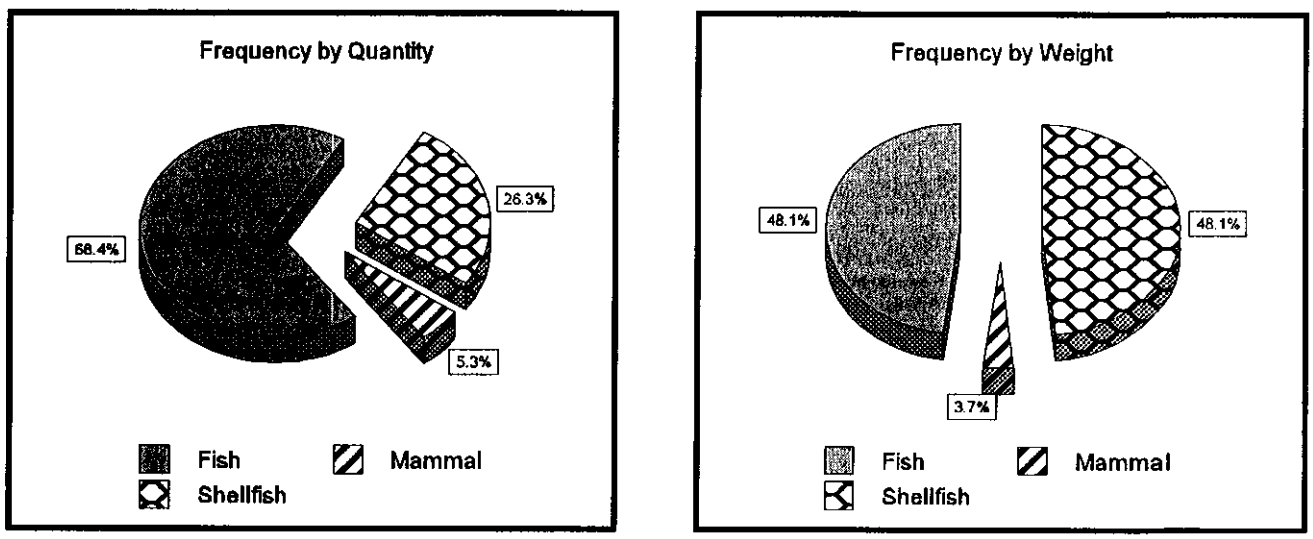


Figure 44: Frequencies of Butchering Remains from Trench 22, Level 2

24.2.3.2 Naturally Deposited Fauna

Three freshwater snails were recovered. DlLg-33:03B/1644 is one Lymnaeidae weighing 0.1 grams, while DlLg-33:03B/1643 is two Planorbidae weighing 0.1 grams.

24.2.3.3 Samples

One sample was curated. DlLg-33:03B/1655 is bone, shell, and charcoal recovered on the 1.0 mm screen. It weighs 1.0 grams.

24.2.4 Floral Remains

The floral recoveries consist of eight specimens. DlLg-33:03B/1642 weighs 0.1 grams.

24.3 Level 3

Level 3 was encountered at a depth of 275 cm. A total of 359 artifacts, weighing 102.8 grams, was recovered from this level including lithic artifacts, ceramic artifacts, faunal remains, and floral remains.

24.3.1 Lithic Artifacts

The sole lithic artifact is a Selkirk Chert core. DlLg-33:03B/1657 weighs 22.0 grams.

24.3.2 Ceramics

Three body sherds, DlLg-33:03B/1656, were recovered. These sherds are textile impressed. There are varying degrees of soot staining. The thickness ranges from 4.1 mm to 6.2 mm and the sherds weigh 11.8 grams The temper is relatively coarse grit.

24.3.3 Faunal Remains

The largest number of artifacts from Level 3 consist of faunal objects: butchering remains, natural faunal deposits, and samples. The total number is 301 with a total weight of 68.0 grams.

24.3.3.1 Butchering Remains

Butchering remains total 280 artifacts and have a combined weight of 44.6 grams (Table 68). One unidentifiable fish bone, DlLg-33:03B/1682, is charred.

The frequency of the butchering remains are illustrated by both quantity and weight (Figure 45). In the quantity graph, the fish remains overwhelm the other taxa. In the weight graph, the distortion due to the heaviness of shellfish valves becomes apparent.

TAXON	QTY	FREQUENCY	WT	FREQUENCY
Undifferentiated Mammal	3	1.1	0.6	1.3
Medium Mammal	2	0.7	0.9	2.0
TOTAL MAMMAL	5	1.8	1.5	3.4
Undifferentiated Fish	247	88.2	14.2	31.8
Catfish (*Ictalurus* sp.)	16	5.7	13.9	31.2
Sucker Family (Catostomidae)	3	1.1	0.2	0.4
Drum (*Aplodinotus grunniens*)	1	0.4	0.1	0.2
TOTAL FISH	267	95.4	28.4	63.7
Freshwater Clam (Unionidae)	6	2.1	3.3	7.4
Fat Mucket (*Lampsilis radiata*)	2	0.7	11.4	25.6
TOTAL SHELLFISH	8	2.9	14.7	33.0
TOTAL	280	100.1	44.6	100.1

Table 68: Butchering Remains from Trench 22, Level 3

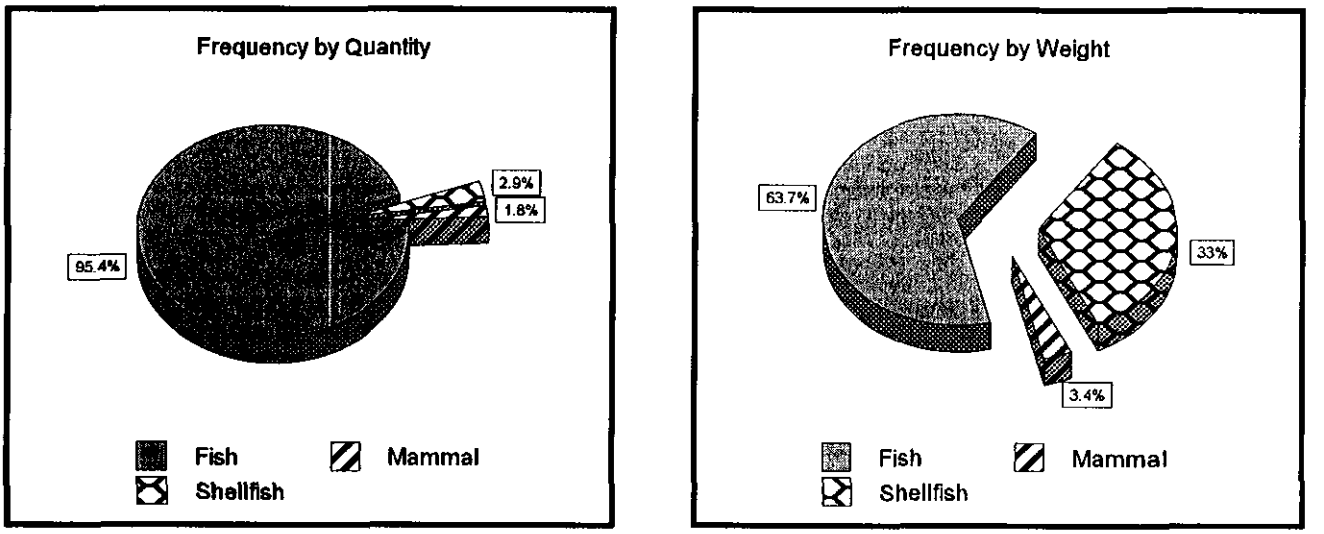


Figure 45: Frequencies of Butchering Remains from Trench 22, Level 3

24.3.3.2 Naturally Deposited Fauna

DlLg-33:03B/1660 is three Lymnaeidae weighing 0.1 grams, while DlLg-33:03B/1659 is fourteen Planorbidae weighing 0.1 grams. DlLg-33:03B/1661 is two Sphaeriidae valves weighing 0.1 grams.

24.3.3.3 Samples

Two samples were catalogued. DlLg-33:03B/1685 consists of recoveries on the 2 millimetre screen. It weighs 8.4 grams. DlLg-33:03B/1684 was recovered on the 1 millimetre screen and it weighs 14.7 grams.

24.3.4 Floral Remains

Fifty-four charcoal fragments were recovered. DlLg-33:03B/1658 weighs 1.0 grams.

25.0 DISCUSSION AND RECOMMENDATIONS

25.1 Discussion

Twenty-four trenches were excavated during the impact assessment. These trenches were spaced to ascertain the areal extent of the known cultural layers within the area for the proposed Canadian Museum for Human Rights. In conjunction with the data obtained from these trenches, the information obtained during The Forks Access Project (Quaternary 1999a), the Legacy Estates impact assessment (Quaternary 2000a), and the impact assessment triggered by the proposed extension of York Avenue from Main Street to the Provencher Bridge (Quaternary 1989) will be compiled.

The data shall be examined in terms of cultural affiliations of the different cultural horizons. A relative scarcity of diagnostic artifacts limits the linkage of each cultural level with either a cultural group or a temporal period. All cultural levels that contain ceramic artifacts are within the Late Woodland Period. No evidence of the preceding Laurel ceramic ware was present, even in the deepest levels. Thus, all cultural levels encountered during the impact assessment are temporally between A.D. 1000 and A.D. 1500. During this time period, ceramic artifacts are the most diagnostic. There is a minor problem with the cultural data from the York Extension recoveries. A major taxonomic revision (Lenius and Olinyk 1990) occurred after the 1989 project and the artifacts were not reexamined to fit them into the new taxonomy.

25.1.1 Artifact Recoveries

The majority of the artifact recoveries were the remains of food processing, encompassing bison, beaver, rabbit, catfish, sucker, freshwater drum, sturgeon, and several species of clams. A limited number of lithic and bone tools were present. Many of the cultural horizons contained ceramic sherds.

25.1.1.1 Lithic and Bone Tools

A total of eleven tools were recovered from the forty-nine discrete cultural levels. This is a relatively sparse frequency and would tend to indicate that few of the impact assessment trenches were placed in locations of intensive activity in the campsites. As the occupants were nomadic peoples, travelling throughout the year to locations for food harvesting, most tools would have been carefully husbanded and were discarded only when no longer functional.

Nine lithic tools were recovered: four scrapers; two retouched flakes; and three utilized flakes. Scrapers rarely tend to be culturally diagnostic as form follows function and the final configuration of the artifact is dependant upon the shape of the original flake from which the tool is made as well as the flaking characteristics of the lithic material. Retouched flakes are even less diagnostic as they are simply slightly modified waste flakes, produced for a short-term use. Utilized flakes are expedient tools where a sharp flake is used as temporary cutting tool.

Three of the four scrapers are domed endscrapers: DlLg-33:03/59 from Trench 1, Level 2; DlLg-33:03/449 from Trench 7, Level 1; and DlLg-33:03/1266 from Trench 16, Level 2 (Plate 3). The fourth scraper (DlLg-33:03/809 from Trench 11, Level 1) is unusual in that it is a tabular flake of schist which has been flaked to produce a distal working edge (Plate 3).

The two bone tools (Plate 3) are a complete awl made from an elk accessory carpal (DlLg-33:03/86 from Trench 1, Level 2) and a mid-shaft section of a spatula carved from a large mammal rib (DlLg-33:03/443 from Trench 7, Level 1). The spatula would have been discarded due to breakage but the awl is complete and apparently was lost.

25.1.1.2 Lithic Manufacturing Detritus

A number of the cultural levels contained lithic flakes and an occasional core to indicate that tool manufacture occurred at the campsites. However, as lithic tool manufacture tends to occur in localized portions of a campsite, an assessment trench may not intersect one of those areas. Only in three instances (Figure 46) were sufficient quantities of flakes recovered to be able to attempt to analyse the travel routes and trade patterns of the occupants of the campsites. The levels are Trench 1 - Level 2 (109 flakes); Trench 7 - Level 2 (262 flakes); and Trench 16 - Level 2 (35 flakes). In all three assemblages, non-specific chert is the most frequent material type, but the variations within the other types show an interesting pattern.

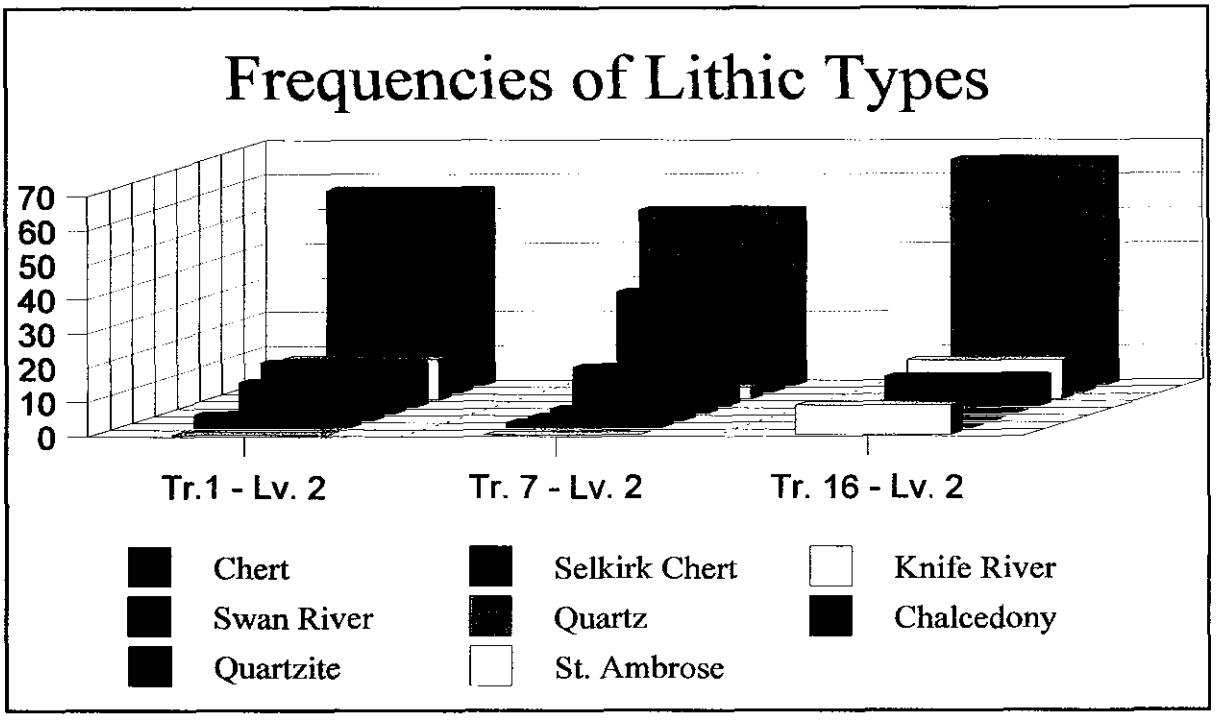


Figure 46: Comparison of Three Lithic Assemblages

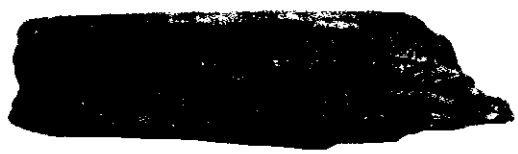
DlLg-33:03B/59
Trench 1, Level 2

DlLg-33:03B/449
Trench 7, Level 1

DlLg-33:03B/1266
Trench 16, Level 2

DlLg-33:03B/809

DlLg-33:03B/86
Trench 1, Level 2



DlLg-33:03B/443
Trench 7, Level 1

Plate 3: Lithic and Bone Tools (2x actual size)

The graph (Figure 46) shows that the lithic assemblage in Trench 1 - Level 2 and Trench 16 - Level 2 are similar with corresponding frequencies of Knife River Flint from the south and Swan River Chert from the southwest. These two assemblages do not indicate a reliance on locally available Selkirk Chert as does the assemblage from Trench 7 - Level 2 which, in turn, has little Knife River Flint. It can be hypothesized that the occupants of both Trench 1 - Level 2 and Trench 16 - Level 2 had recently travelled from the southwest, along the Assiniboine River, bringing with them a supply of Swan River Chert. Their lithic inventory was augmented by the southern material, either through travel up the Red River or by meeting with a trader who had come from the source area.

In contrast, the occupants of Trench 7 - Level 2 had several types of extra-local lithic materials but not large quantities of any except for Swan River Chert. A high percentage of their lithic assemblage was comprised of Selkirk Chert. This assemblage may indicate that the group had spent considerable time in the vicinity of The Forks and their inventory of non-local lithic supplies was steadily diminishing.

25.1.1.3 Ceramic Recoveries

Ceramic artifacts were recovered from twenty-eight of the forty-nine cultural layers. A total of thirteen discrete ceramic vessels were identified. The body sherds from the various levels may represent one or more vessels for each location. However, lacking a diagnostic rim sherd, vessel numbers were not assigned on the basis of body sherds. Most recovery units contained only one vessel although two vessels were encountered in each of Trench 1 - Level 2, Trench 10 - Level 2, and Trench 20 - Level 2. The most frequent of the identified types of ceramics was the Bird Lake type, consisting of Vessels 1, 4, 5, and 7 (Plate 4). Three vessels each of Duck Bay (Vessels 3, 6, and 11) and Rainy River (Vessels 8, 9, and 12) were present, as well as one specimen of Blackduck ware (Vessel 10) (Plate 5). Vessel 2 and Vessel 13 could not be identified to a specific type as they were undecorated shoulder or neck portions.

Only in one level, Trench 6 - Level 1, were two different types present, both Bird Lake and Duck Bay. In all other instances only a single diagnostic type was present in each horizon. This is not surprising in that the area of excavation encompasses only slightly more than 2 square metres which would be a very minuscule portion of a campsite which could cover more than 1000 m^2. Even if two or more groups were camped together, evidence of their presence is constrained by the small sampling area as the living area for each family would probably encompass as much as 100 m^2 and joint occupancy could only be determined by excavation of a large block area or by the serendipitous event of an assessment trench intercepting a communal cooking area.

25.1.2 Stratigraphy and Cultural Correlations

In Table 69, the impact assessment trench from the Forks Access Project (Quaternary 1999a) is used as the baseline, with the data from the York Extension assessment (Quaternary 1989), the Legacy Estates assessment (Quaternary 2000a), and the monitoring of installation of services for Festival Park (Quaternary 2000b) included. The Forks Access trench was 120 metres long and provided significant recoveries, albeit within a narrow linear strip. Within the extensive recoveries from this trench many diagnostic artifacts were recovered, permitting the determination of more cultural affiliations of the archaeological materials and the temporal range of the occupation for each archaeological horizon.

Vessel 1
Trench 1, Level 2

Vessel 5 exterior
Trench 6, Level 1

Vessel 5 interior

Vessel 7
Trench 7, Level 2

Vessel 4 exterior, interior
Trench 3, Level 1

Plate 4: Bird Lake Ceramic Vessels (1.5x actual size)

DUCK BAY

Vessel 3
Trench 2, Level 2

Vessel 6
Trench 6, Level 1

Vessel 11
Trench 13, Level 2

RAINY RIVER

Vessel 8
Trench 12, Level 2

Vessel 9
Trench 12, Level 2

Vessel 12
Trench 20, Level 2

BLACKDUCK

Vessel 10
Trench 10, Level 3

Plate 5: Duck Bay, Rainy River, and Blackduck Ceramics (1.5x actual size)

PROJECT	UNIT	LEVEL	DEPTH	CULTURAL AFFILIATION
Forks Access		Horizon A	160	Late Woodland
		Horizon B	160 - 240	Blackduck, Rainy River, Bird Lake, Duck Bay, Winnipeg River, Sandy lake, Red River, Oneota, Plains Woodland
		Horizon C	170 - 175	Rainy River, Bird Lake, Winnipeg River
		Horizon D	180 - 180	Blackduck, Bird Lake
		Horizon E	190 - 220	Rainy River, Bird Lake, Plains Woodland
		Horizon F	210 - 240	Blackduck?
		Horizon G	240 - 250	Blackduck, Bird Lake, Duck Bay, Red River, Plains Woodland
		Horizon H, J, K	260 - 300	Blackduck
		Horizon I	280 - 280	Late Woodland
York Extension	Tr. 1	Level II	170	Blackduck?
		Level IV	235	Blackduck
	Tr. 2	Level I	150	Late Woodland
		Level II	175	Blackduck?
		Level III	195	Late Woodland
		Level IV	240	Blackduck
		Level V	305	Blackduck
	Tr. 3	Level I	145	Late Woodland
		Level IV	240	Blackduck
		Level V	300	Blackduck
	Tr. 4	Level IV	240	Blackduck
		Level V	270	Blackduck
Legacy Estates	Tr. 1	Level 1	270	Late Woodland
	Tr. 2	Level 1	255	Late Woodland
	Tr. 3	Level 1	195	Late Woodland
	Tr. 5	Level 1	250	Late Woodland
		Level 2	280	Late Woodland
	Tr. 8	Level 1	195	Blackduck, Rainy River
		Level 2	250	Late Woodland
Festival Park	LDS9	Level 1	187	Late Woodland
	H 3	Level 1	180	Late Woodland
	W 3	Level 1	188	Late Woodland
	H 5	Level 1	155	Late Woodland
	W 6	Level 1	200	Late Woodland
	H 6	Level 1	170	Late Woodland
	W 5	Level 2	288	Late Woodland
	LDS5	Level 2	272	Late Woodland

Table 69: Compilation of Depths and Cultural Affiliations of Adjacent Projects

The composite stratigraphic profile from the Forks Access trench is depicted in Figure 47. A composite stratigraphic profile, based on data from the impact assessment, has been developed along a northwest/southeast transect across the middle of the impact area (Figure 48). The transect begins with the data from Festival Park watermain Hole 6 and continues northward to current assessment Trench 6, including Trench 10, Trench, 11, Trench 12, Trench 1, Trench 2, Trench 3, Trench 4, and Trench 5. The stratigraphic data for these trenches is detailed in Table 1. From comparison with the Forks Access baseline profile, some tenuous correlations can be made with the composite transect profile.

Even though the cultural affiliations of most of the levels encountered during the impact assessment (Table 70) cannot be determined beyond the generalized Late Woodland, most would have diagnostic artifacts within the cultural matrix in areas adjacent to the impact assessment trenches.

The density of the excavated horizons is recorded in number of artifacts per square metre in order to provide a base line for determining the necessary laboratory component for a mitigative program. This readily illustrates that some levels were quite dense (9230 artifacts/m^2 - Trench 7, Level 2). Others were extremely sparse (3 artifacts/m^2 - Trench 15, Level 1; 6 artifacts/m^2 - Trench 12, Level 1 and Trench 21, Level 1). However, the density of the levels would vary greatly, as within a campsite, there are locations of heavy deposition and areas of little or no deposition. Areas of tool manufacture, food preparation areas, and refuse disposal areas produce large quantities of artifacts in small areas with sparse deposits in other areas. Also, the location of the site in a flood plain can mean that, in addition to sediment deposition, erosion could have occurred or smaller artifacts were relocated by moving water. Without undertaking block excavations, determination of activity areas and the patterns of behaviour of the inhabitants is not possible.

The stratigraphic profiles in Chapter 2 (Figures 3, 4, and 5) were oriented east/west. The baseline stratigraphic profile (Figure 47) for the area was developed as a north/south soil and cultural layer map from the information obtained during The Forks Access Project (Quaternary 1999a:9). Using the data from Figure 47, it is possible that the extensive horizon at depths approximating 200 cm (Figure 48) could correlate with Horizon B, although Horizon C and/or Horizon D could also be the equivalent. The horizons at depths of 250 cm could correlate with Horizon E, Horizon F, or Horizon G. The basal horizons at depths of nearly 300 cm may correlate with the bottommost levels in the Access trench—Horizons H, J, and K. Alternatively, depending upon the ground topography one thousand years ago, the lowest horizon may correlate with Horizon G.

PROJECT	UNIT	LEVEL	DEPTH	CULTURAL AFFILIATION	DENSITY
Museum	Tr. 1	Level 1	160	Late Woodland	459.5/m²
		Level 2	205	Bird Lake	3860.5/m²
		Level 3	280	Late Woodland	415.6/m²
	Tr. 2	Level 1	235	Late Woodland	190.1/m²
		Level 2	290	Duck Bay	397.7/m²
	Tr. 3	Level 1	280	Late Woodland	180.7/m²
	Tr. 4	Level 1	265	Late Woodland	818.7/m²
		Level 2	300	Late Woodland	17.0/m²
	Tr. 5	Level 1	205	Late Woodland	7.6/m²
		Level 2	220	Late Woodland	19.7/m²
		Level 3	285	Late Woodland	17.4/m²
	Tr. 6	Level 1	275	Bird Lake, Duck Bay	2092.4/m²
	Tr. 7	Level 1	225	Late Woodland	1264.3/m²
		Level 2	260	Bird Lake	9230.5/m²
		Level 3	295	Late Woodland	1297.9/m²
	Tr. 8	Level 1	145	Late Woodland	31.3/m²
		Level 2	295	Late Woodland	26.8/m²
	Tr. 9	Sterile			
	Tr. 10	Level 1	170	Late Woodland	24.2/m²
		Level 2	200	Blackduck, Rainy River	651.8/m²
		Level 3	230	Blackduck	246..5/m²
		Level 4	280	Late Woodland	32.7/m²
	Tr. 11	Level 1	200	Late Woodland	1330.5/m²
		Level 2	250	Late Woodland	200.4/m²
	Tr. 12	Level 1	230	Late Woodland	6.3/m²
		Level 2	280	Late Woodland	387.9/m²
	Tr. 13	Level 1	235	Late Woodland	294.8/m²
		Level 2	265	Duck Bay	4992.8/m²
		Level 3	315	Late Woodland	621.0/m²
	Tr. 14	Level 1	285	Late Woodland	68.0/m²
	Tr. 15	Level 1	140	Late Woodland	3.1/m²
		Level 2	200	Late Woodland	122.1/m²
		Level 3	260	Late Woodland	43.8/m²
	Tr. 16	Level 1	220	Late Woodland	258.1/m²
		Level 2	275	Late Woodland	111.0/m²
	Tr. 17	Level 1	225	Late Woodland	69.6/m²
		Level 2	245	Late Woodland	265.3/m²
		Level 3	295	Late Woodland	155.7/m²
	Tr. 18	Level 1	200	Late Woodland	27.3/m²
		Level 2	245	Late Woodland	24.6/m²
		Level 3	275	Late Woodland	748.0/m²
	Tr. 19	Level 1	240	Late Woodland	16.6/m²
		Level 2	295	Late Woodland	86.3/m²
	Tr. 20	Level 1	210	Late Woodland	101.1/m²
		Level 2	260	Rainy River	622.3/m²
	Tr. 21	Level 1	195	Late Woodland	5.8/m²
		Level 2	270	Late Woodland	9.8/m²
	Tr. 22	Level 1	225	Late Woodland	40.7/m²
		Level 2	260	Late Woodland	24.1/m²
		Level 3	275	Late Woodland	160.6/m²
	Tr. 23	Sterile			
	Tr. 24	Sterile			

Table 70: Cultural Levels Recorded in Human Rights Museum Impact Assessment Trenches

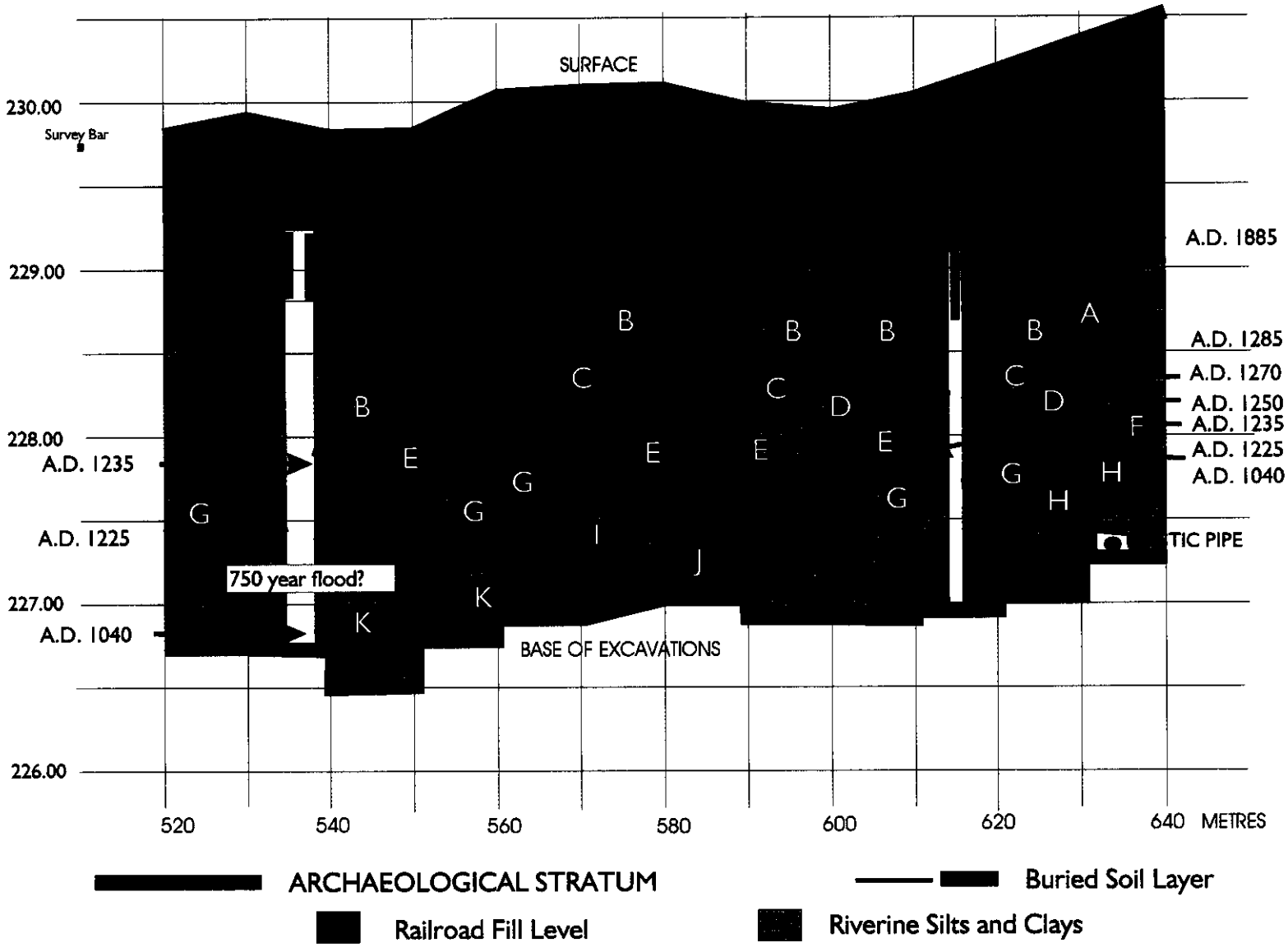


Figure 47: Annotated Stratigraphic Profile Showing Cultural Layers on East Side of Waterfront Drive (Quaternary 1999a:9)

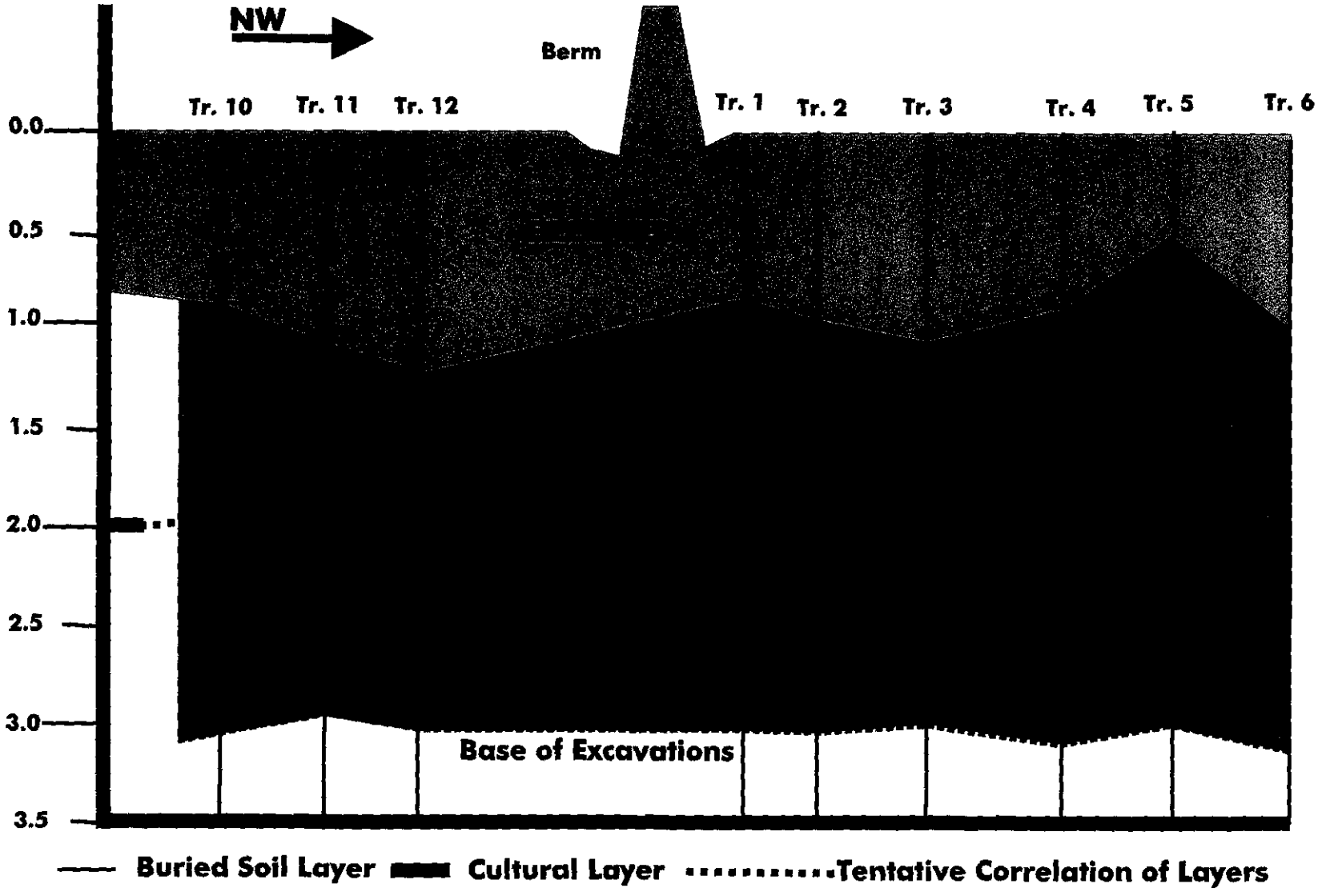


Figure 48: NW Transect Showing Cultural Levels and Tentative Correlations

25.2 Recommendations

Twenty-one of the excavated trenches had cultural material in one or more levels. The only three sterile trenches are located in the northeastern portion of the site. In addition, the area along the south side of Water Avenue is known to not have archaeological deposits (Quaternary 2003b). Given that the preponderance of the area for the projected Canadian Museum for Human Rights contains significant heritage resources, some degree of impact can be expected. As the footprint and sub-surface building parameters are unknown, only generalized recommendations can be made at this point.

It is recommended that, as soon as the size and location of the footprint of the proposed structure is known, an archaeological mitigation program be devised. This program **must** address the scope of the impact and have a methodology which maintains stratigraphic and horizontal control for all recoveries. In such a program, the following situations must be addressed:

- If the proposed structure is to be constructed as slab-on-pile at grade, all pre-seating auger holes for the piles must be monitored by an archaeologist with all recoveries from the auger recorded as to location and depth. In addition, if the excavations of the piles for pilecaps exceeds 130 cm, these must be monitored by archaeologists.
- All excavations for services, i.e., hydro, water, sewer, and land drainage, must be monitored by archaeologists. If installation is undertaken by boring between vertical shafts, each excavation unit should be treated as an assessment trench with cultural layers removed *en bloc* for archaeological recovery. Open-cut installation is not recommended except at the extreme east end of the area as archaeological recovery of each of the cultural layers could add considerable time to the procedure.
- If the structure is situated in the central portion of the site and entails extensive sub-surface components such as a full or partial basement, the mitigation program must devise a mechanism whereby the archaeological resources can be removed *en bloc* for off-site remedial excavation. This will enable the construction of the facility to proceed and still ensure appropriate recovery of all cultural resources.
- The budget set aside for archaeological mitigation must be sufficient for both the field recovery component and the laboratory component to produce the reports required by the regulations of the Manitoba Heritage Resources Act. This becomes quite important especially due to the density of some of the cultural layers. More than 70,000 artifacts were recovered from the limited test areas of this assessment, encompassing approximately 53 m^2. The footprint size has been estimated at approximately 100,000 square feet and, if this is the actual area of a basement excavation, the mitigative program would result in the recovery of more than 10,000,000 artifacts. The laboratory processing, artifact analysis, and report preparation for such a massive compilation of data would require a considerable budget.

While not part of an archaeological mitigation program, it is also recommended that the stories of the peoples represented by the archaeological resources beneath the building be told within the facility. This can perhaps be done in conjunction with elders from the Aboriginal community.

26.0 BIBLIOGRAPHY

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

Burns, Tammy Elizabeth
1995 Monomineralic Lithic Resources of the Precontact Period in Manitoba, with Special Reference to Monomineralic Quartz. *Manitoba Archaeological Journal*, Vol. 5, No. 1.

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

Catlin, George
1926 *North American Indians being Letters and Notes on Their Manners, Customs, and Conditions, Written During Eight Years Travel Amongst the Wildest Tribes of Indians in North America, 1832-1839.* J. Grant, Edinburgh.

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

Densmore, Frances
1974 *How Indians Use Wild Plants for Food, Medicine & Crafts.* Dover Publications, New York. Originally Published (1928) as "Uses of Plants by the Chippewa Indians" in "Forty-fourth Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution, 1926-1927".

Drooker, Penelope B.
1990 Textile Production at Wykliffe Mounds (15BAY) Kentucky. *Mid-Continental Journal of Archaeology*, Volume 15, No. 2.

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

Hurlburt, Isobel
1977 Faunal Remains From Fort White Earth, NWCo. (1810-1813). Provincial Museum of Alberta, *Human History Occasional Paper* No. 1.

Kroker, Sid
1989 *North Assiniboine Node Archaeological Impact Assessment.* The Forks Renewal Corporation, Winnipeg.

1999 *Flood Sediments and Archaeological Strata*. www.ijc.org/boards/rrbtf.html.

Kroker, Sid and Pamela Goundry
1990 *Archaeological Monitoring of the Stage I Construction Program*. The Forks Renewal Corporation, Winnipeg.

1993a *Archaeological Monitoring and Mitigation of the Assiniboine Riverfront Quay*. The Forks Renewal Corporation, Winnipeg.

1993b *A 3000 Year Old Native Campsite and Trade Centre at The Forks*. The Forks Public Archaeological Association, Inc., Winnipeg.

1994 *Archaic Occupations at The Forks*. The Forks Public Archaeological Association, Inc., Winnipeg.

Kroker, Sid, Barry B. Greco, Arda Melikian and David K. Riddle
1990 *The Forks (1989) Pilot Public Archaeology Project: Research Report Excavations at 21K (Fort Gibraltar I)*. Canadian Parks Service, The Forks Renewal Corporation, and Manitoba Culture, Heritage and Recreation, Historic Resources Branch, Winnipeg.

Kroker, Sid, Barry B. Greco and Kate Peach
1992 *1991 Investigations at Fort Gibraltar I: The Forks Public Archaeology Project*. The Forks Public Archaeology Association, Inc., Winnipeg.

Kroker, Sid, Barry B. Greco and Sharon Thomson
1991 *1990 Investigations at Fort Gibraltar I: The Forks Public Archaeology Project*. Canadian Parks Service, The Forks Renewal Corporation, and Manitoba Culture, Heritage and Recreation, Historic Resources Branch, Winnipeg.

Lenius, Brian J. and Dave M. Olinyk
1990 The Rainy River Composite: Revisions to Late Woodland Taxonomy. In The Woodland Tradition in the Western Great Lakes: Papers Presented to Elden Johnson. Guy E. Gibbon (Ed.). University of Minnesota: *Publications in Anthropology* 4. Minneapolis.

Looman, J. And K.F. Best
1979 Budd's Flora of the Canadian Prairie Provinces. Agriculture Canada, Research Branch, *Publication* 1662.

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

Montgomery, F.H.
1977 *Seeds and Fruits of Plants of Eastern Canada and Northeastern United States*. University of Toronto Press, Toronto, Canada.

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.

Paget, Amelia M.
1909 *The People of the Plains*. Ryerson Press, Toronto.

Priess, Peter J., P.W. Nieuwhof and S.B. Ebell
1986 Archaeological Investigations of the Junction of the Red and Assiniboine River, 1984. Parks Canada, *Research Bulletin* No. 241.

Priess, Peter J., Sheila E. Bradford, S. Biron Ebell, and Peter W.G. Nieuwhof
1986 Archaeology at The Forks: An Initial Assessment. Parks Canada, *Microfiche Report Series* 375.

Quaternary Consultants Ltd.
1988 *North/South Access Road Archaeological Impact Assessment*. On file with The Forks Renewal Corporation and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1989 *Provencher Bridge Project Archaeological Impact Assessment*. On file with Wardrop Engineering Inc. and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1990a *Heritage Resources Impact Assessment for Proposed York & 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 City of Winnipeg, Streets and Transportation Department and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1993a *Archaeological Mitigation of the Johnston Terminal Refurbishment Project.* On file with Marwest Management Canada Ltd. and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1993b *Archaeological Monitoring and Impact Assessment Component of The Forks Heritage Plaza Project.* On file with The Forks Renewal Corporation and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1994a *Archaeological Monitoring of Services Installations for the Manitoba Children's Museum at The Forks.* On file with The Forks Renewal Corporation, Manitoba Children's Museum, Winnipeg Hydro, and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

1994b *Archaeological Mitigation at the Travel Manitoba Idea Centre at The Forks.* On file with Manitoba Industry, Trade and Tourism, Travel Manitoba 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, Winnipeg.

1998 *Archaeological Monitoring of the York Avenue Underpass Reconstruction Project.* On file with Stanley Consulting Group Ltd. and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

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.

2000a *Archaeological Impact Assessment of the Legacy Estates Project at The Forks.* On file with The Forks North Portage Partnership and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

2000b *Archaeological Monitoring of the Construction Components of Festival Park at The Forks.* On file with The Forks North Portage Partnership and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

2000c *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.

2001a *Geo-technical Monitoring and Heritage Resource Management Program for the West Roads Project.* On file with Wardrop Engineering Inc. and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

2001b *Riverside Drive Heritage Resource Management Program.* On file with KGS Group and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

2001c *Archaeological Monitoring of the Construction of Waterfront Drive: Phase I - Lombard Avenue to James Avenue.* On file with KGS Group and Manitoba Culture, Heritage and Citizenship, Historic Resources Branch, Winnipeg.

2002a *Archaeological Monitoring of the Construction of the Eastbound Component of the Provencher Paired Bridges.* On file with City of Winnipeg, Wardrop Engineering Inc., and Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

2002b *Archaeological Monitoring of Excavations for the West Abutment of the Provencher Pedestrian Bridge.* On file with City of Winnipeg, Wardrop Engineering Inc., and Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

2002c *Archaeological Monitoring and Mitigation of the Parking Structure at The Forks.* On file with The Forks North Portage Partnership and Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

2003a *Preliminary Report of the Cultural Stratigraphy at the Proposed Location for The Canadian Museum for Human Rights.* On file with Friends of the Canadian Museum for Human Rights Inc. and Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

2003b *Archaeological Monitoring and Mitigation of the West Roads Project*. On file with Wardrop Engineering Inc. and Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

2003c *Archaeological Monitoring of Service Installations for the Provencher Pedestrian Bridge*. On file with City of Winnipeg, Wardrop Engineering Inc., and Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

2003d *Archaeological Monitoring of The Forks Axial Pathway From Esplanade Riel (Pedestrian Bridge) to VIA Rail Station*. On file with Scatliff + Miller +Murray and Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

2003e *Archaeological Monitoring of the Construction of the Westbound Component of the Provencher Paired Bridges*. On file with City of Winnipeg, Wardrop Engineering Inc., and Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

2003f *Archaeological Monitoring and Mitigation of The Inn at The Forks*. On file with Inn at The Forks Inc. and Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

2003g *Archaeological Monitoring of the CanWest Global Park Baseball Facility Expansion*. On file with Pre-Con Builders and Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

2003h *Archaeological Monitoring of the CanWest Global Park Baseball Facility Parking Lot*. On file with Pre-Con Builders and Historic Resources Branch, Manitoba Culture, Heritage and Tourism.

Schmid, Elisabeth

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

Zeirhut, Norman W.

1967 Bone Breaking Activities of the Calling Lake Cree. *Alberta Anthropologist*, Vol. 1, No. 3.

APPENDIX A

HERITAGE PERMIT

AND

CITY OF WINNIPEG DEVELOPMENT PERMIT

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

Manitoba
Culture, Heritage
And Tourism

Heritage Permit No. A46-03

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 a heritage resource impact assessment of a potential location for the Canadian Museum of Human Rights, situated east of Waterfront Drive at The Forks, DlLg-33, in order to determine the limits of pre-European Aboriginal cultural horizons by excavating short assessment trenches in the areas where there is presently no knowledge about the presence of buried cultural materials, or their significsnce;

during the period:

September 15 – October 10, 2003.

This permit is issued subject to the following conditions:

(1) That the information provided in the application for this permit dated the 4th day of September 2003, 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:
March 31, 2004;

(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. In the event that human remains are discovered, the Historic Resources Branch shall be notified immediately in accordance with provisions of the provincial *Policy Concerning the Reporting, Exhumation and Reburial of Found Human Remains*, in order that the Historic Resources Branch may ensure that the appropriate Elders have been consulted about proper procedures for preserving and protecting the human remains and any associated materials, and the analytical options available to them;

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 8th day of September 2003.

for Donna Dul
Minister of Culture, Heritage and Tourism