

**ST. MARY ARCHAEOLOGICAL
RECOVERY PROJECT:
INTERIM REPORT**

Prepared for

CITY OF WINNIPEG
Streets and Transportation Department

**Quaternary
Consultants
Limited**

December, 1990

TABLE OF CONTENTS

TABLE OF CONTENTS.....	i
LIST OF APPENDICES.....	ii
LIST OF FIGURES.....	ii
LIST OF TABLES.....	ii
1.0 BACKGROUND.....	1
1.1 Introduction.....	2
1.2 Project Staffing.....	4
1.3 Public Participation.....	5
1.4 Preparation of Site.....	6
1.5 Site Facilities.....	9
2.0 INVESTIGATION METHODOLOGY.....	11
2.1 Laboratory Procedures.....	12
2.2 Stratigraphy.....	13
2.3 Disturbances.....	16
3.0 ARCHAEOLOGICAL RECOVERIES.....	17
3.1 Features.....	18
3.1.1 Feature #1: Fish Processing Area.....	20
3.1.2 Feature #2: Fish Scale/bone concentration.....	22
3.1.3 Feature #3: Fish Scale Concentration.....	23
3.1.4 Feature #4: Hearth.....	23
3.1.5 Feature #5: Hearth.....	24
3.1.6 Feature #6: Hearth.....	24
3.1.7 Feature #7: Hearth.....	25
3.2 Artifact Assemblage.....	26
3.2.1 Faunal Remains.....	27
3.2.2 Lithic Tools.....	31
3.2.3 Flakes.....	32
3.2.4 Fire-Cracked Rocks.....	33
3.2.5 Other Lithic Recoveries.....	33
3.2.6 Ceramics.....	34
3.2.7 Samples.....	38
3.2.8 Floral Remains.....	38
4.0 INTERPRETATION AND SUMMARY.....	39
4.1 The Archaic Period (4000 B.C. to A.D.).....	39
4.2 The Pre-Contact Ceramic Period (A.D. 0 to A.D. 1737).....	40
5.0 SECOND PHASE.....	42
6.0 BIBLIOGRAPHY.....	43

LIST OF APPENDICES

APPENDIX A: Heritage Permit.....	46
APPENDIX B: Environment Canada, Monthly Climate Summaries.....	49

LIST OF FIGURES

1: Map of Archaeological Mitigation Area.....	3
2: Map of ST. Mary Avenue Archaeological Trenches.....	7
3: Map of 1990 (May) Assessment Trenches.....	8
4: Generalized Profile of South Wall of A29.....	16
5: Detailed Map of Excavated Area.....	19
6: Faunal Distribution Map.....	28
7: Frequency of Faunal Recoveries.....	29

LIST OF TABLES

1: Description of Soil Stratigraphy.....	15
2: Artifact Frequency.....	26
3: Faunal Frequency by Taxonomic Class.....	27
4: Frequency of Fish Faunal Remains.....	30
5: Flake Material and Frequency.....	32

1.0 BACKGROUND

The City of Winnipeg has made provision for an extension of York and St. Mary Avenues between Main Street and the Provencher Bridge. As a high potential for heritage resources was previously determined (Quaternary 1990a), the project engineers I.D. Engineering Ltd. (IDE), engaged Quaternary Consultants Ltd. (QCL) to undertake a further archaeological impact assessments (Quaternary 1990b). The goals of the investigations were a) to determine the nature and extent of archaeological resources located within the proposed construction corridors, and b) to recommend a mitigative strategy that would protect important archaeological artifacts and data otherwise lost to sub-surface construction.

As part of the research design, fourteen trenches within the two extension corridors between the CNR Mainline Embankment and Pioneer Boulevard were excavated and examined. A detailed description of the methodology and the results were compiled in two preliminary reports prepared for I.D. Systems Ltd. (Quaternary 1990a, 1990b). The presence of two Pre-Contact cultural horizons, identified as Late Woodland and Blackduck discovered within the St. Mary Avenue Extension right-of-way, was considered significant. These archaeological strata would be impacted by sub-surface construction requirements, i.e. road bed, water and sewer installation.

Based upon these findings, Historic Resources Branch (HRB) (Manitoba Culture, Heritage and Recreation) instituted a series of meetings with the City of Winnipeg, Streets and Transportation Department, IDE and QCL. These meetings began on March 6, 1990. The terms of reference for the May assessments (Quaternary 1990b) were provided by HRB on April 24. During the summer, further meetings were held to determine the scope of the project. Public participation was discussed in terms of feasibility and

degree of involvement. Initial determinations explored the budgetary considerations of 100% mitigation with a large volunteer component, as could be expected during mid-summer. On August 1, 1990, Winnipeg City Council authorized a budget for a mitigative archaeological project, which included public participation.

Clearance from Streets and Transportation Department was received on August 20 and right of access was obtained from Canadian National Railways (CNR) by September 10. Site preparation began immediately. The staff for the project were hired on September 12 and 13 and the archaeological excavation began on September 14. The lateness of the season had a serious impact concerning public involvement. This will be discussed in a later section.

1.1 Introduction

In the fall of 1990, Quaternary Consultants Ltd., in accordance with the provisions of the Manitoba Heritage Resources Act, and under the terms of Manitoba Heritage permit A46-90 conducted the first of a projected two phase (Fall 1990, Spring 1991) controlled excavation to mitigate archaeological resources located within the proposed St. Mary Extension Right-of-Way (Figure 1). The aim of this project is to provide careful, detailed recovery of artifacts and information relating to two sequential Pre-Contact cultural events that would eventually be impacted by the construction of the St. Mary Extension.

The location for the focus of this investigation was chosen from analysis of data obtained from previous test trenching (Quaternary 1990a, 1990b). It had been determined that an apparently continuous upper cultural horizon was present approximately one meter below surface level and occupied an area of approximately 1000 m². Two parallel excavation blocks were

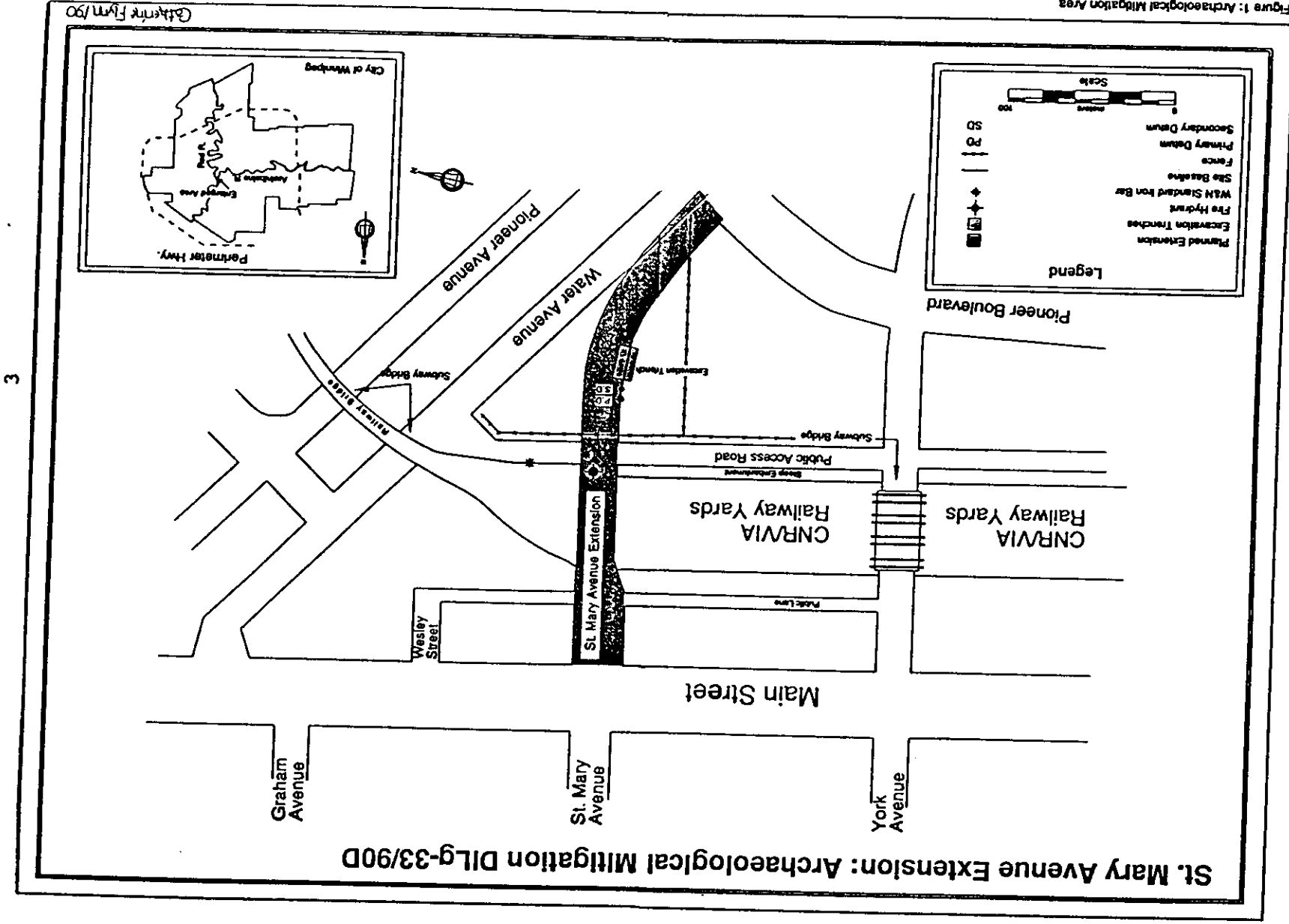


Figure 1: Archaeological Mitigation Area

Figure 1: Archaeological Mitigation Area

established in order to excavate the cultural horizon within the proposed right-of-way. Following the excavation of this upper horizon, the investigative strategy will include a second mitigative component to recover the lower Blackduck horizon present approximately 75 cm below the upper horizon.

Field operations for the first phase of investigation were conducted over a five week period between September 14 and October 22, 1990. It was decided to concentrate the investigation on the Pre-Contact layer I within the south excavation block. This interim report summarizes the results of the Fall 1990 field season, outlines procedure and methodology, and contains a description and preliminary analysis of the archaeological recoveries. As it has been recommended that all recovered artifacts be analyzed as a complete assemblage (Quaternary 1990b:20), a more comprehensive interpretation will be developed upon completion of the second phase. This will include the materials from both phases of the mitigative operation as well as all pertinent preliminary assessment work.

1.2 Project Staffing

The project was directed by Sid Kroker, Senior Archaeologist with Quaternary Consultants Ltd. Field personnel consisted of Peter Nieuwhof - site director, Marsha Brown - field supervisor, Theresa Hill and Chris Whaley - full time field assistants, and Catherine Flynn, Zoe Kogan, and Eric Simonds - part-time field assistants. Laboratory processing of the material and artifact identification was conducted by Karen Shearer, Laboratory Supervisor and Kate Peach, Laboratory Assistant. Computer cataloguing of the recovered materials was undertaken by Karen Shearer. The computer maps were prepared by Catherine Flynn and Peter Nieuwhof. The preparation of the report was done by Sid Kroker, Peter Nieuwhof, Marsha Brown and Karen Shearer.

1.3 Public Participation

The project was designed with the understanding that the public would participate in both the excavation and the laboratory components.

To accommodate public access, the project operated from Thursday through Monday. The original design of the project required that volunteers have had experience in archaeological projects, through a University Field School, through participation in The Forks Public Archaeology Project or through any other equivalent program. When the projections for public involvement initially were calculated, it had been assumed that the operation would begin in August, when a large volunteer pool would be available.

Due to the delayed start-up of the field season, public involvement was considerably reduced. The start of the public school year and university classes limited the participation of students. By mid-September, most potential volunteers had exhausted their vacation leave and were unavailable. Inclement weather and cooler temperatures (Appendix B) further discouraged public participation. Consequently, volunteers were considerably less numerous than projected.

Public involvement was highest on Saturdays, Sundays and Holidays. Originally, it was projected that 10 - 15 volunteers per day would participate on the weekend. In fact, the participants varied from a minimum of 3 to a maximum of 7 per weekend day. In order to augment the number of participants, volunteers were solicited from the people who had participated in The Forks Public Archaeology Projects (Fort Gibraltar I) conducted in 1989 and 1990. It was hoped that the opportunity to excavate a Pre-Contact site and to further their archaeological experience would encourage participation. A total of 17 people volunteered 36.5 days. As well, one Co-op student from

Transcona Collegiate worked afternoons Mondays and Fridays. During the second phase, public participation should be considerably greater given the time of year - late spring to early summer.

1.4 Preparation of Site

The area designated for mitigative excavation covers an area of approximately 220 m². Two parallel rectangular excavation blocks oriented east-west were established and designated simply as the North trench and the South trench (Figure 2). They are separated by a 3 m baulk for public access. To orient the project, in terms of previous research, the excavation areas are located between 1990 exploratory trenches 11 & 12 (Figure 3).

On September 12, 1990, the upper railroad fill layer was removed with a Caterpillar tractor and scraper. Final clearance of riverine silts and clays overlying the cultural horizon was undertaken by a track mounted backhoe with a 36" ditching bucket. This operation was conducted under the supervision of a senior archaeologist who monitored extracted soil for cultural material and the soil profile for correct sequencing. The backhoe operator ceased excavation as the surface of the Pre-Contact Layer I was approached. Remaining overburden was later removed by the excavation staff using shovels and trowels.

The North excavation trench was 24 m in length, 4.5 m wide and comprised a surface area of 108 m². The South trench was 24.5 m in length, 4.5 m wide and encompassed 110.25 m². Approximately 3 m at each end of each trench was sloped to provide access ramps to the excavation area. Snowfencing was installed along both edges of the centre baulk to provide a protected walkway for visiting members of the public.

St. Mary Avenue Extension: Archaeological Mitigation Area (DILg-33/90D)

Legend

- Planned Right of Way Extension
- Cleared Area (backhoe)
- North and South Excavation Trenches
- Outbound Freight Shed Foundation
- Site Baseline
- Primary Datum
- Secondary Datum

0 meters 100
Scale

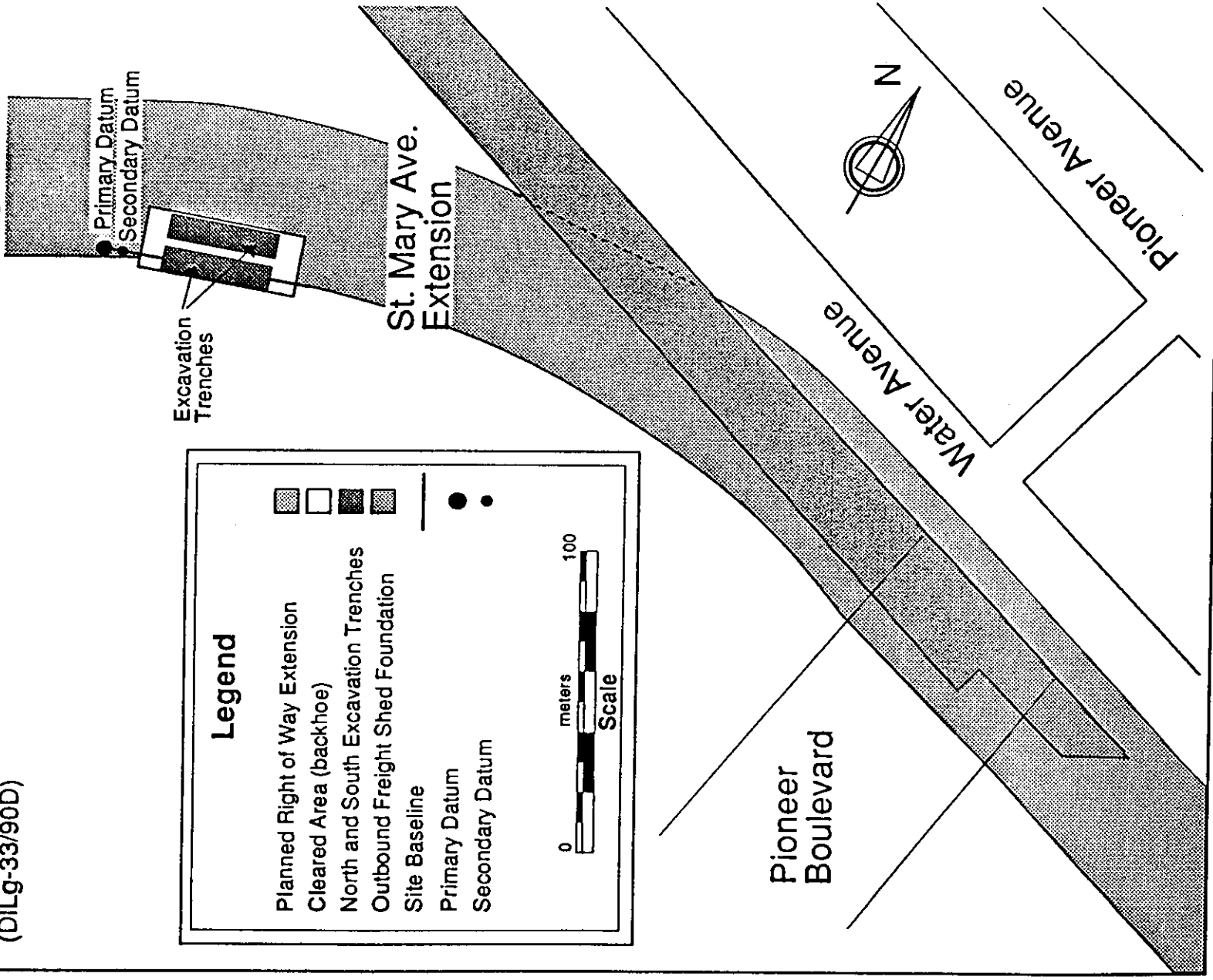
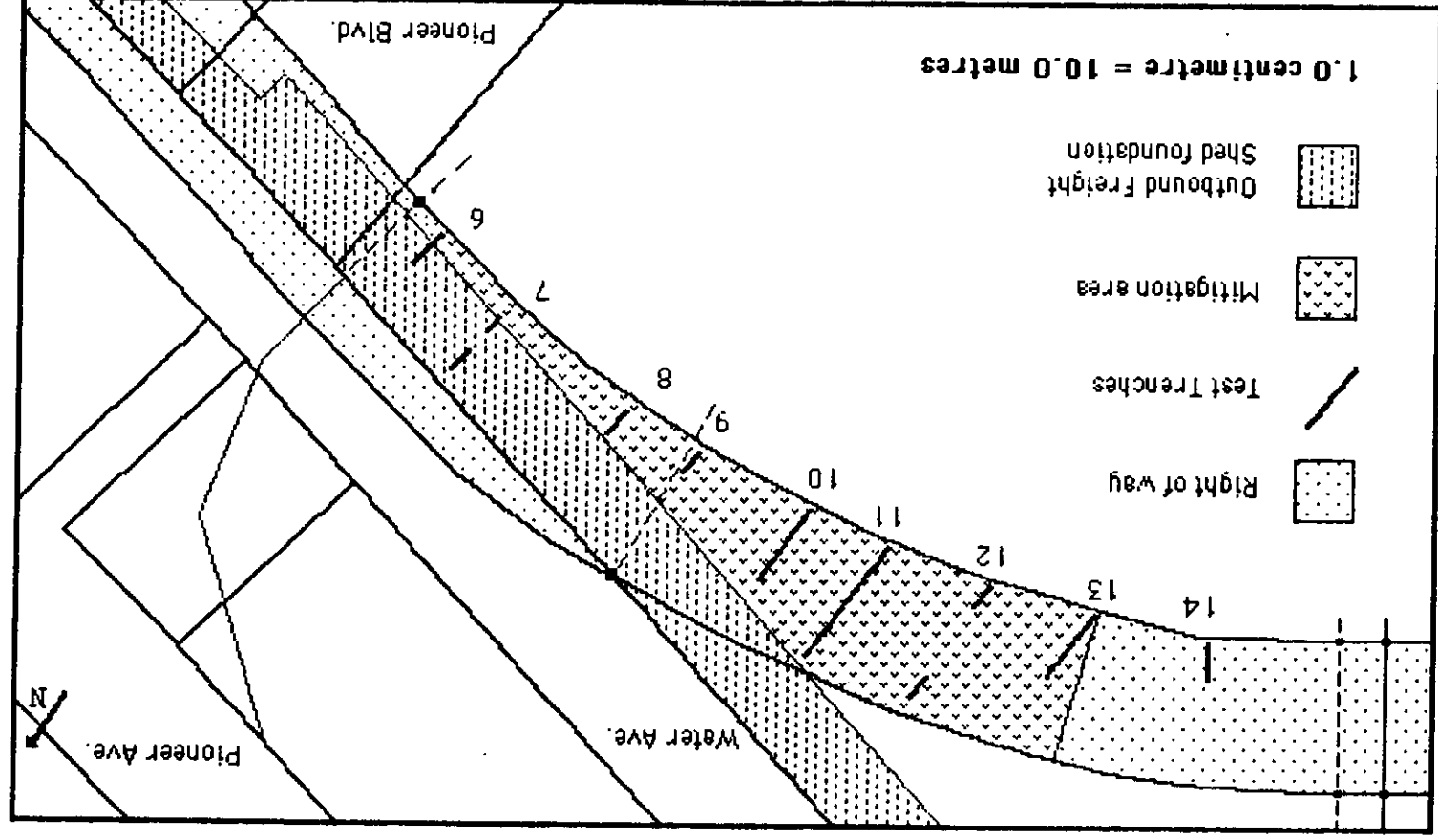


Figure 2: Location of St. Mary Avenue Archaeological Mitigation Trenches



St. Mary's Avenue Extension: Right of Way Impact Assessment.

Figure 3: Location of 1990 (May) Assessment Trenches
(Adapted from Quaternary 1990b)

1.5 Site Facilities

A 40 foot by 80 foot tent was obtained from Murray Tent and Awning. It was placed over the excavation site to provide shelter for the staff and volunteers as well as protect the site from the inclement weather common to Winnipeg during September and October. The tent was erected by a crew from Murray Tent.

Two , 25 foot by 8 foot, trailers were rented from Atco Space Rentals. One was utilized as an equipment storage space and the other as a field laboratory/office.

Cambrian Construction installed a water line from a hydrant located on the eastern edge of the CNR Main Line embankment passing under the access lane. This line provided a water source for the water screening required for the project. A perimeter snowfence was erected for site security.

Tri Power Electric Ltd. installed the pole for the fuse box and meter as well as hooking up the trailers for hydro. The electrician provided electrical outlets and light fixtures within the tent.

A portable toilet was rented from A-1 Sewage Services and placed on the site adjacent to the trailers.

An IBM SX 386 clone computer with a 40 megabyte hard drive and dot matrix printer was supplied by QCL for use on site.

1.6 Survey and grid

An arbitrary location for site datum (D-1) was established 7 m west of the edge of the South excavation trench. A base line was then established which extended from datum eastward to approximately bisect the trench longitudinally. A grid to

demarcate excavation units (one meter square) within the trench was imposed by standard triangulation method. North/south grid lines extended 2 m north and 2 m south of each base line, between access ramps, at 1 m intervals. Thus four rows containing eighteen 1x1 m excavation units were created for a total of 72 units. Each north/south grid line was sequentially numbered beginning at 20 to the west and extending eastward to 37. The choice of 20 as an arbitrary starting point was made in order to accommodate a possible future extension of the excavation block to the west, if factors permit. Each of the four east/west rows of excavation units was given a letter designation, A to D inclusive, beginning at the southern most line. For consistency, each unit was provenienced by the alpha-numeric designation of its NW corner. Elevations were taken at the NW corner of each unit.

A secondary datum (D-2) was established at a 90 degree angle, 7.11 m to the north of D-1. From this point, a line parallel to the south baseline was surveyed to bisect the North excavation trench. Four rows of excavation units were established following the methods employed in the south trench and designations are pending excavation in the Spring.

The provenience of D-1 has been surveyed into three permanent markers west of the site. The angle north of D-1 and distance was recorded to:

- i) Fire Hydrant on western edge of CNR access road parallel to Main Line Embankment.
- ii) W&N iron bar on west edge of access road north of hydrant and;
- iii) W&N iron bar located in the centre of the road.

The provenience of these locations have been surveyed into The Forks Archaeological Survey Grid.

2.0 INVESTIGATION METHODOLOGY

The aim of this investigation was to achieve near complete retrieval of artifactual material and appropriate contextual data within the designated excavation blocks. Accordingly, the method of investigation was designed so that all cultural material would be provenienced to its location within the site grid. Careful excavation procedures were implemented.

To facilitate accurate data recording of recovered material, each 1x1 m excavation unit was further divided into quadrants (50x50 cm). All materials were collected and bagged according to the quadrant from which they were recovered. For culturally undiagnostic artifacts such as fish bone or lithic flakes, location by quadrant was deemed adequate. Diagnostic artifacts were recorded by precise horizontal and vertical measurements taken from the NW datum of the unit from which they were recovered.

Excavation procedures consisted of shovel-shaving any sterile silts and clays overlying the cultural layer. At this time, trowels were substituted for shovels as excavation tools. All soil removed was water screened, initially using 1/16" mesh. Due to time constraints the fine screen was later replaced with 1/4" mesh, unless a significant feature or concentration of artifacts was encountered. Controlled experiments assessing the degree of recovery were undertaken with the 1/16" and 1/4" meshes. It appeared that the use of the larger mesh did not alter significantly the attainment of an excellent representative sample of the cultural materials present.

A total of 18 soil samples, from random locations, were collected for flotation analysis. Such analysis can provide information pertaining to the presence of minute debitage, bone or botanical remains which may not be recovered by normal excavation methods.

Soil samples from the riverine deposited stratum above, including and below the occupation zone were collected for chemical analysis. These procedures are to be conducted by Dr. C. T. Shay, Department of Anthropology, University of Manitoba. In addition, 13 carbon samples were collected for purposes of obtaining radiocarbon dates.

2.1 Laboratory Procedures

All recovered materials were washed, identified and sorted by provenience (i.e., location on the site [excavation unit number and quadrant] and stratigraphic level). Identification procedures consisted of ascertaining the material of which the artifact was composed, as well as determining the function of the object and the method of manufacture. Additional descriptive data, such as colour, decorative technique and condition of the artifact, were recorded when ascertainable. Whenever possible, the cultural affiliation of the artifact was determined (e.g. Late Woodland; Blackduck; Selkirk; etc.)

All of the faunal remains were examined and identified as specifically as possible. Any evidence of butchering techniques, such as cutting or smashing, was recorded. The condition of each specimen was noted, i.e., charred, broken, calcined, etc. The specimens were identified using standard references: Olsen (1960, 1964), Gilbert (1973), DeBlase and Martin (1974), Mundell (1975), Clarke (1981), Scott and Crossman (1973). Floral remains were identified as specifically as possible, using Montgomery (1977). Specimens were identified to the lowest taxonomic ranking wherever possible, although incompleteness of the element often resulted in identification at the Family, Order or Class level.

After the artifacts had been prepared, the locational and identifying data were entered into the computer cataloguing system. Each artifact, or cluster of artifacts, received a

sequential catalogue number which consisted of the Borden designation for The Forks (DLLg-33), followed by the project designator (90D - indicating the fourth project of 1990 on the site) and the specimen number (e.g., DLLg-33/90D-1234).

The cataloguing system is based upon the Canadian Heritage Inventory Network (CHIN) system (Manitoba Museum of Man and Nature 1986; FRC 1988:110, 171). The computer program was developed by Brian Lenius, based upon DBASEIII, for use on personal computers. The project used an IBM AT clone computer with a 40 megabyte hard drive and a dot matrix printer for the generation of individual artifact catalogue cards on fanfold 3" x 5" cards.

Processed artifacts were prepared for storage by inserting the specimens and the catalogue card into a standard plastic storage bag and stapling the bag closed. All analysis and research on the artifacts was undertaken at the laboratory facilities of Quaternary Consultants Ltd. At the end of the project, all recovered artifacts will be taken to the repository designated by the City of Winnipeg.

2.2 Stratigraphy

The soil profile was recorded along the entire length of the south wall of the south excavation block from ground level to the base of the excavation. A portion of the profile is illustrated in Figure 4 and is indicative of the relative uniform stratigraphy encountered throughout the excavation. A portion of the site has been disrupted as a result of an intrusive foundation trench related to CNR Freight Shed #2 which is discussed in more detail below. Where uninterrupted, the stratigraphic sequence consists of discrete natural riverine deposited silty clay layers underlying railway-related fill. These sequences have been divided into three major levels of

chronological events in conformity with data recovered in the preliminary assessment of the site and from other archaeological projects at The Forks. These are as follows:

Level 1

Railroad Fill Stratum:

Comprised of railway fills including gravel, mixed clays and silts, cinder and asphalt. Also containing related historic artifacts such as glass, fragmented earthenware, machine cut nails, and mammal bone.

Level 2

Early Historic Stratum:

Correlated with the period between 1737 (La Verendrye) and the arrival of the railroad (1888). Marked by evidence of historically recorded floods (1793, 1826, 1850, 1882). Consists of discrete clay/silt strata, occasionally separated by a thin, juvenile soil layer.

Level 3

Pre-Contact Native Ceramic Stratum: Numerous discrete soil zones, separated by layers of river-deposited silts and clays. Several soil zones contain evidence of occupation: fish and mammal bone, ceramic sherds, lithic tools and flakes.

The following table lists the observed strata in the south excavation block. As the stratigraphic layers undulate throughout the length of the block, the depths below surface were recorded at datum A29 along the south wall. It should also be noted that, as no early historic artifacts were found in the upper flood deposited strata underlying the fill, correlation of these events to the Early Historical Stratum (Level 2) is tentative.

Depth below surface (Datum A29)	Range of Thickness (cm)	Stratum Description	Level
0-75cm	71-87cm	Railway fills including gravel, mixed clays and silts, cinder, asphalt and related historic artifacts.	1
75-77cm	2-3cm	Thin relict soil horizon-consists of black organic band, culturally sterile.	2*
77-94cm	2-17cm	Brown silty clay, flood deposited, culturally sterile.	2*
94-96cm	2-4cm	Thin relict soil horizon. Consists of black organic band, culturally sterile.	2*
96-104cm	4-16cm	Tan silty clay, flood deposited, culturally sterile.	2*
104-125cm	10-25cm	Olive-brown silty clay with charcoal flecks. Contains the upper Pre-Contact cultural layer with continuous archaeological deposits, sparse to dense.	3
125 cm to base of excavation	Variable	Light brown clayey silts. Distinct ferrous streaks and CaCO ₃ flecks.	3

Table 1: Description of Soil Stratigraphy

* The upper strata which have been correlated to Levels 1 and Level 2 were removed by backhoe to prepare for mitigative operations. No cultural material from the railway fill strata was curated.

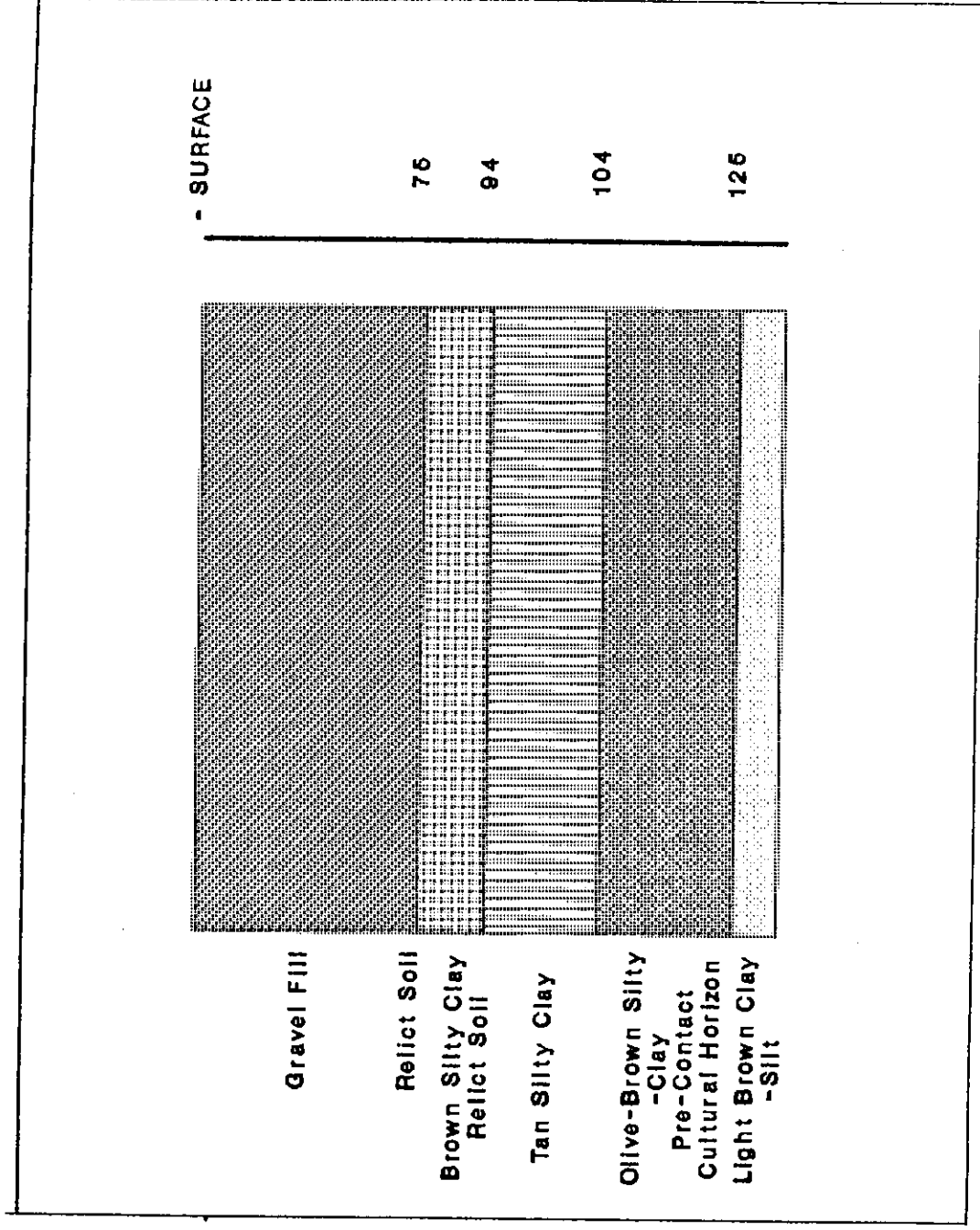


Figure 4: Generalized Profile of South Wall of A29.

2.3 Disturbances

Three main events resulted in disturbances in the stratigraphic sequences which included the cultural zone. Within the excavation area of the south trench, approximately 28% of the cultural layer had been disrupted. The greatest amount of disturbance had been caused by a trench relating to the concrete footing of CNR Freight Shed #2. This foundation trench, approximately 1.5 m wide, diagonally intersects the south trench.

It is estimated to comprise 18.5 m² or 25% of the total area. A gravely cinder fill and compressed olive clay were encountered in units excavated along this line and the base of the trench was located in the strata underlying the cultural horizon. Remnants of the concrete are present in profile between datum A31 and A33 along the south wall and between D24 and D25 along the north wall (Figure 5).

A portion of earlier Test Trench #5 (Quaternary 1990a) was also encountered. This trench, 60 cm wide, occurs on a diagonal from the edge of the east access ramp and extends 2.5 m, towards the northwest. It has disturbed an area of 2.25 m², or 3.1% of the total excavation area.

A heavy diesel-soaked 'bluish' clay was encountered in excavated units A33 and A35. It is clearly evident in the south wall profile adjacent to the concrete footing on the west side. The profile indicates that the diesel fuel has permeated the naturally deposited silts and clays through the overlying railway fill. Most of this contamination was located in the upper strata and hence had been removed by backhoe. Visually, it appears to have had only minimal impact on the cultural horizon, although charcoal and bone samples for radio-carbon dates, taken in this area, may have been contaminated.

3.0 ARCHAEOLOGICAL RECOVERIES

The time frame permitted controlled excavation of 50.75 m² or 70% of the total prepared area. Many units were purposely omitted as they were located within the perimeter of the CNR Freight Shed #2 footing which accounted for 25% disruption of the total excavation area. Of those units excavated, 31.25 were located outside the disturbed areas. Within the foundation trench, 2.5 units were excavated to determine the trench boundaries and the depth of the fill. It must be noted that any

recoveries from these units must be considered as deriving from a completely disturbed context. The remaining 17 units were partially disturbed by either the concrete footing or Test Trench # 5 (Quaternary 1990a).

The Upper Pre-Contact Layer I was encountered within the olive brown silty clay stratum with charcoal flecks present at roughly 95 cm below surface (Figure 4). This stratum undulates gently throughout the South trench and averages 16 cm in thickness. The majority of archaeological recoveries tended to occur 3 to 5 cm into this deposit and continued to a maximum depth of 12 cm gradually diminishing in quantity. Below this, only minimal cultural material was recovered in association with rodent burrows. Exceptions occurred when recoveries were contained within small depressions such as pits, scour pockets, or hearth features. Of the 48.25 units located outside or partially within a disturbed context, 95.9% tested positive for archaeological remains suggesting a near continuous cultural layer with deposits ranging from sparse to dense.

A discussion of the features as well as the artifact assemblage will follow.

3.1 Features

A "feature" is an archaeological term used to designate a cluster of artifacts and their context, a series of structural elements, or a description of normal soil stratigraphy caused by human activity. In an analytical sense, a feature is interpreted as the result of a specific activity undertaken at that location. Three types of archaeological features found in the South trench at D1Lg-33/90D. These features consisted of hearths, shallow pits with faunal remains (primarily fish bones), and a red stained soil feature (Figure 5).

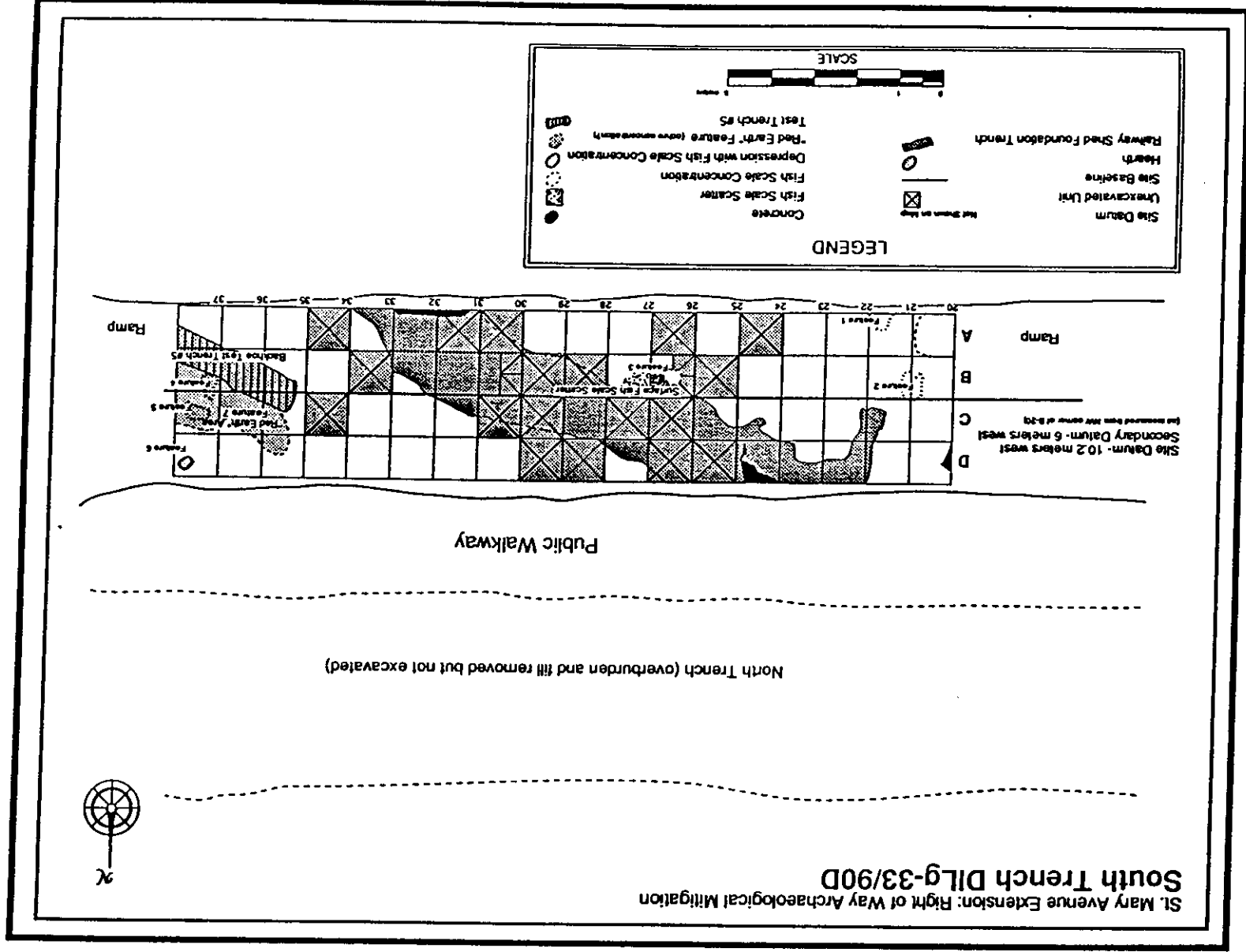


Figure 5: Detailed Map of Excavated Area

Pre-Contact hearths were discovered in excavation units B37, C37, and D37. They consisted of charcoal, charcoal staining, and fire-cracked rocks within an oval area of soil distinct from the remainder of the unit or quad.

Fish bone concentrations in shallow pits were found in units A20, A21, B20/21, and B26/27. The recoveries from the features were primarily fish scales and bones but lithics, ceramic sherds, and mammal bones were found in association.

The third type of feature was a red-stained soil in the immediate vicinity of the hearths in the eastern portion of the south excavation trench. It was observed in units B37, C35 to C37, and D35 to D37.

3.1.1 Feature #1: Fish Processing Area (Units A20, A21)

This feature consists of two components; a thick mat of fish bone located within unit A20 and an adjacent pocket of fish scale and bone in unit A21. Both concentrations continue beyond the south wall of the excavation trench. For convenience, each will be discussed separately.

(1) Fish scale and bone concentration (A21):

This concentration was first encountered 8 cm below the upper boundary of the olive brown silty clay and continued for a maximum depth of 7 cm. The base of the concentration was located at the interface of the olive silty clay and the underlying riverine deposit. The maximum width of the deposit is 52 cm from east to west. The deposit extended from the south wall of the excavation trench 40 cm north. The concentration intercepts the south wall at its greatest width and depth. Therefore, at least half the concentration exists south of the trench.

The concentration consists primarily of fish scale interspersed with fish bone densely banded between very thin soil lenses. A portion of a large mammal scapula was embedded in the south wall profile at the top of the concentration. In addition to the predominate faunal remains, a chert scraper (DLLg-33/90D-482), 3 chert waste flakes (DLLg-33/90D-398, 399, 405), 73 fire-cracked rock fragments (DLLg-33/90D-342, 407), and 3 textile-impressed body sherds (DLLg-33/90D-396, 397) were recovered from this deposit.

(ii) Fish bone concentration (A20):

This component was a dense layer of fish bone and a small amount of scales laminated between very thin lenses of silty clay. It occurred at the top of the olive brown silty-clay and ranged in thickness from 3-5 cm. The concentration of bone is greatest in the northwestern quadrant and tapers to the southeast. Most of the artifacts were cranial bones, pectoral spines and the occasional pocket of fish scales. Some of the fish bone was deposited vertically indicating possible flood washing.

Other artifacts from the concentration were 5 ceramic body sherds (DLLg-33/90D-2087, 2088, 2208, 2235), 41 fire-cracked rock fragments (DLLg-33/90D-2116, 2202, 2225), and 15 seeds (DLLg-33/90D-2122, 2165, 2212, 2226). Below the dense fish bone layer, the olive brown silty clay soil continued with diminishing frequencies of bone, gradually becoming sterile at approximately 14 cm below its surface.

Due to the proximity of these two components, they are considered as representative of a single event. The fish scale concentration in A21 showed no definite truncation of the natural stratigraphy to indicate a culturally modified pit or depression. As the concentration occurs lower than the cultural layer identified in A20, it has probably been flood affected.

High water, inundating the site, could have scoured the material from a nearby location and deposited it in a natural depression. Normal soil development processes would have subsequently buried this secondary deposit. Flood washing is also substantiated by the vertical orientation of some of the bone contained within A20.

3.1.2 Feature #2: Fish scale/bone concentration
(Units B20, B21):

This feature was located primarily within the NE quad of B20 and the NW quad of B21 and extends marginally to the south. It consisted of a concentration of fish scale interspersed with fish and mammal bone. The deposits occur in a shallow bowl-like depression. The maximum length was 59 cm from north to south and the maximum width was 46 cm from east to west.

The feature was exposed at the base of the cultural layer. This was most evident in B20 where a continuous scatter, comprised of numerous fish bones, a few mammal bones, waste flakes, and small body sherds, was collected overlying the depression. Characteristic of the occupation zone, these recoveries diminished in occurrence to 10 cm below surface. At this point, the fish scale concentration was revealed and was excavated to a maximum depth of 9 cm. The basin exposed in the west profile of B21 contained two dense layers of fish scale and bone separated by a silty-clay lens. This banding was consistent with results obtained from the remainder of the concentration located in the NW quad of B21. This feature is similar to that encountered in A21. Again no obvious truncation of the natural stratigraphy is present to indicate cultural modification.

In addition to the fish remains, one small ceramic body sherd (D1Lg-33/90D-475) was recovered within the concentration. In association, an earthenware ceramic rim sherd (D1Lg-33/90D-511)

with Cord-Wrapped Object Impression (CWOI) and chevron pattern on the exterior surface was excavated from the SE quad of B20 at the same depth as the top of the feature. Below this, the olive brown silty-clay stratum surrounding the feature was culturally sterile.

3.1.3 Feature #3: Fish Scale Concentration

This feature consists of a semi-circular concentration of fish scales present on the surface of the excavation floor within units B26 and B27. They were exposed during the backhoe excavation of the south trench as a result of an undulation in the cultural horizon. The concentration is further truncated to the north by the foundation trench (CNR Freight Shed #2) which is present along the northern edge of these units. The remainder of this deposit has a maximum extension of 75 cm from east to west and 70 cm from north to south.

Cultural artifacts were found to underlie the concentration in both B26 and B27 suggesting its vertical proximity to the original occupation floor. The underlying recoveries included fish and large mammal bone fragments, 6 chert secondary flakes (DILg-33/90D-1107, 1155, 1156, 1650), 3 textile-impressed body sherds (DILg-33/90D-1136, 1137, 1153) and one fire-cracked rock (DILg-33/90D-1106).

3.1.4 Feature #4: Hearth

This feature consisted of an oval, black-orange stain with charcoal pieces, burnt bone fragments, and fire-cracked rocks. It was uncovered in the NW quad of B37 and the SW quad of C37. The feature had a maximum length of 60 cm, a maximum width of 40 cm, and varied in thickness from 3 to 5 cm. Lithic recoveries consisted of seventeen fire-cracked granitic rock fragments (DILg-33/90D-158, 651, 659, 1278), 26 chert flakes (DILg-33/90D-

5, 165, 166, 679, 682, 1268), a chalcedony flake (DILg-33/90D-141), 1 quartzite flake (DILg-33/90D-664), and a Selkirk chert utilized flake (DILg-33/90D-1259). The faunal remains included fish bone and mammal bone fragments. Ceramic artifacts, comprising 16 textile-impressed body sherds (DILg-33/90D-4, 114, 115, 658), 2 fingernail-impressed neck/shoulder sherds (DILg-33/90D-2, 116), a textile-impressed neck sherd (DILg-33/90D-683), and 2 textile-impressed neck/shoulder sherds (DILg-33/90D-117) were found in association. The presence of fire-cracked rocks, fire-discoloured soil, charcoal, calcined bone fragments and textile-impressed ceramic sherds led to the identification of this feature as a Late Woodland Period hearth.

3.1.5 Feature #5: Hearth

The feature consisted of an dark oval stain with charcoal and fire-cracked rocks in the centre of C37. It had a diameter of 35 to 40 cm and was 3 cm in depth. Three fire-cracked rock (DILg-33/90D-646, 685), charcoal fragments, burnt bone fragments, two textile-impressed body sherds (DILg-33/90D-644, 701), fish remains, and mammal bone fragments were recovered. This feature has been interpreted as a Late Woodland Period hearth contemporaneous with Feature #4. A charcoal sample was collected for radiocarbon dating. The results of this assay will be reported in the final report.

3.1.6 Feature #6: Hearth

The feature was a circular, black-brown stain in the NE quad of D37. It was circumscribed by a reddish-brown, ochre-stained silty-clay. It had a diameter of 30 cm and was 3 cm thick. Associated recoveries included two fire-cracked granitic rocks (DILg-33/90D-1699), 15 chert detritus flakes (DILg-33/90D-1696, 1697), a Knife River Flint (KRF) flake (DILg-33/90D-1700), four quartzite flakes (DILg-33/90D-1698, 1702), a body sherd (DILg-

33/90D-1727), fish remains and mammal bone fragments. Although charcoal pieces were noted in this unit, none were found in direct association with the feature. The presence of a railway disturbance, immediately to the east of the hearth, plus the blue staining on bone fragments suggested that this unit was contaminated with diesel fuel. The hearth appears to be contemporaneous with Features 4 and 5.

3.1.7 Feature #7: Reddish-Brown Soil

A reddish-brown clay-silt was noted in B36, B37, C35 to C37, and D35 to D37. The dimensions of the feature were 2.5 m long, 1.0 m wide, and 3 to 5 cm thick. This feature appeared to continue to the east of the South trench excavation area. A portion of this area had been previously excavated during initial impact assessment of the St. Mary Avenue Extension Right-of-Way, i.e. Trench #5.

Artifacts from these units as well as Test Trench #5 (Quaternary 1990a:17) had an ochre wash or staining upon them. This staining was readily observed on the large mammal bone fragments and the ceramic sherds. Similar features, involving bright hematite stains, were recorded at Bushfield East, in the Nipawin area of Saskatchewan (T. Gibson, 1990:pers. comm.).

A possible explanation for this widespread feature is deduced from the assumption that ochre-washed pottery was manufactured at the site. A thin slurry of clay, coloured by fired and finely ground hematite was used to decorate the ceramic vessels as an external slip. After pottery manufacture, the slurry was discarded and, being liquid, spread over a relatively large area.

3.2 Artifact Assemblage

The artifact assemblage from D11g-33/90D is very large. The quantity of recovered artifacts suggests that the archaeological resources within the estimated site area (Quaternary 1990b) are extensive. A total of 15,908 artifacts were recovered from 72 m². This area represents less than 10% of the estimated area.

The predominate category of artifact (Table 2) was faunal remains, i.e., the refuse from food processing, from cooking and from eating. Most of the recoveries (94.8%) fell within this category. This frequency suggests that the investigated area encompasses food processing and cooking areas.

Artifact	Quantity	Frequency (%)
Faunal Remains	15,079	94.78
Lithic Recoveries	232	1.46
Ceramics	235	1.48
Soil Samples	18	0.11
Charcoal Samples	13	0.08
Fire-cracked rock	223	1.40
Floral Remains	108	0.68
Totals	15,908	99.99

Table 2: Artifact Frequency

A limited number of lithic tools and a small quantity of tool-making residue (flakes and cores) were recovered. Most of the flakes were tertiary or sharpening flakes (microdebitage) which indicates that the lithic activity in the investigated area was

limited to re-sharpening tools which had been dulled by use. The primary lithic workshops or activity areas, where initial tool manufacture was undertaken, would have been located elsewhere.

3.2.1 Faunal Remains

Faunal material was found throughout the investigated area. Densities, depicted on Figure 6, indicate food processing areas as well as areas of refuse disposal. It should be noted that the higher densities coincide with feature designations (Figure 5).

Of the 15,079 faunal fragments recovered, the majority were fish remains. In the following table (Table 3), the faunal material has been listed by taxonomic class. It should be noted that the quantities, especially for fish, are considered as minimum numbers. Large quantities of unidentifiable fragments of the same class from the same provenience were 'cluster-catalogued' as "1 sample", rather than counting hundreds of minute specimens.

Taxon	Quantity	Percentage	Weight	Percentage
Amphibian	67	0.44	6.1	0.15
Bird	32	0.21	11.2	0.28
Fish	13,060	86.62	3030.1	74.47
Mammal	862	5.71	953.0	23.42
Shellfish	81	0.54	37.5	0.92
Snail	973	6.45	30.8	0.76
Unknown	3	0.02	0.4	0.01
TOTALS	15,078	99.99	4068.7	100.01

Table 3: Faunal Frequency by Taxonomic Class

MAP OF FAUNAL DISTRIBUTION AT DILg-33/90D

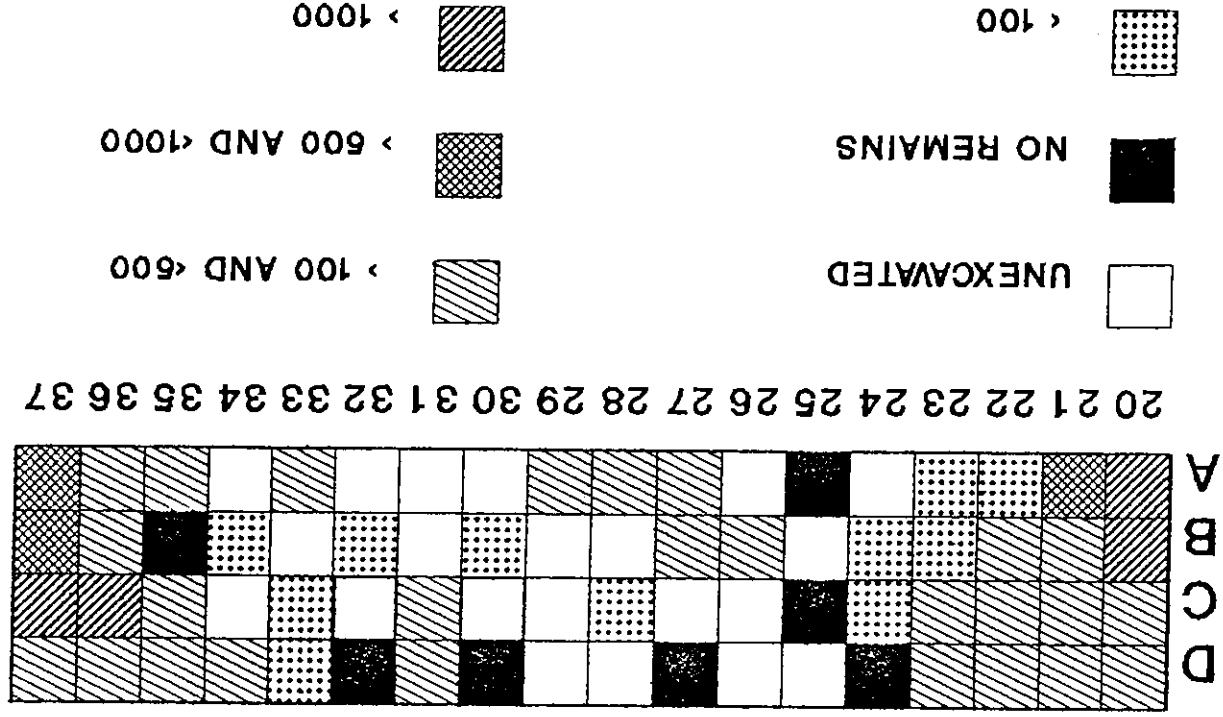


Figure 6: Map of Faunal Distribution at DILg-33/90D

The recoveries identified as "Amphibian" and "Snail" represent non-cultural, natural depositions and, thus, have been combined in the accompanying diagrams. Figure 7 portrays the relative frequency of each taxon by quantity and by weight in grams.

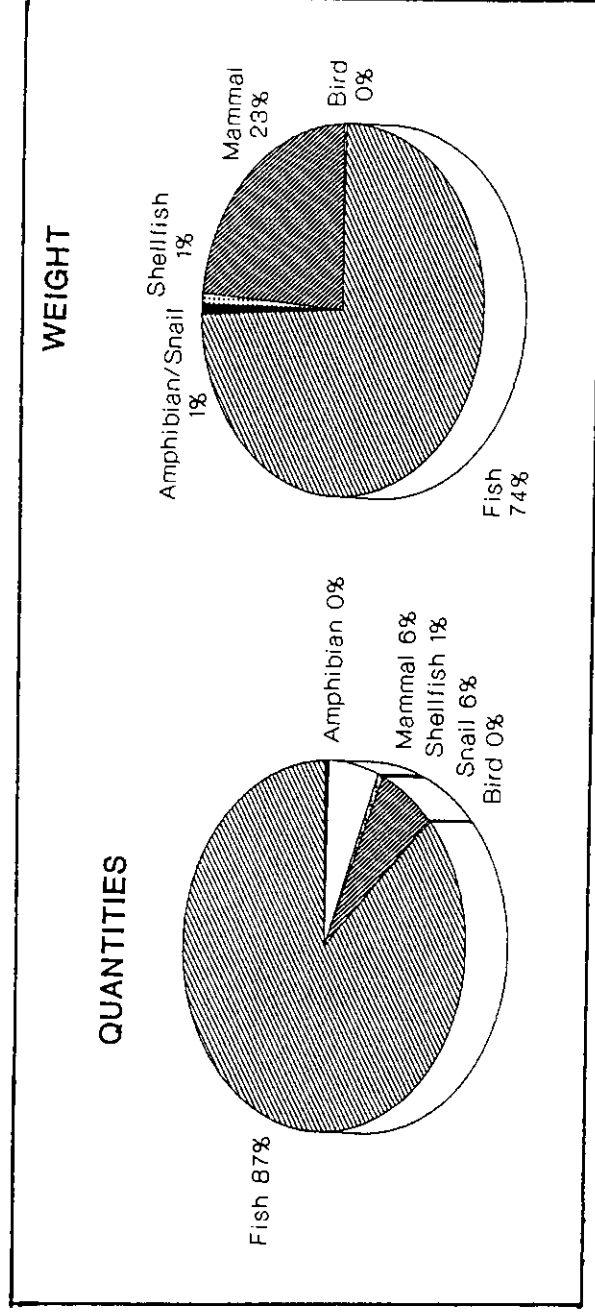


Figure 7: Frequency of Faunal Recoveries

Four species of fish were positively identified. Ictalurus sp. (catfish/bullhead), Catostomidae (sucker family), Stizostedion sp. (walleye/sauger), and Aplodinotus grunniens (freshwater drum) have been identified using comparative collections. Due to food processing techniques, resulting in extremely fragmented bones, most of the specimens could only be identified to class, i.e., fish. All four identified taxa are available throughout the year but would be concentrated during the spring spawning seasons (Scott and Crossman 1973). The relative frequency of each taxon is depicted in Table 4.

Taxon	Quantity	Percentage	Weight	Percentage
Catostomidae	163	1.25	12.7	0.42
Stizostedion	17	0.13	0.3	0.01
Aplodinotus	4	0.03	2.8	0.09
Ictalurus	1151	8.81	690.7	22.79
Unidentified	11,725	89.78	2323.6	76.68
TOTALS	13,060	100.00	3030.1	99.99

Table 4: Frequency of Fish Faunal Remains

The problem of fragmented specimens limited the identification of species of mammals represented at the site. Often, only the size range of the animal could be ascertained, i.e., large, medium or small. Within these limitations, the following identifications were made: non-specific mammal, Artiodactyla (cloven-hoofed animals), Carnivora, Canidae (wolf/dog family), Leporidae (rabbit family), Bison bison, Castor canadensis (beaver), Ondatra zibethicus (muskrat), Martes americana (martin) and various small rodents, including Microtus (meadow vole) and Sciurus (squirrel). All identified species are known to have occurred at The Forks (Banfield 1974).

The bison bone fragments included skull, shoulder blade, leg and toe bones. Molar and incisor teeth were also recovered. The specimens of Canidae consisted of two teeth and one toe bone, which are not sufficiently diagnostic to determine whether or not they represent domestic dog or wolf. The other specimens represent animals which were harvested for food or clothing

purposes. The exceptions would be some of the smaller rodents which are probably the result of natural deposition.

The amphibian remains and the freshwater snails are the result of natural deposition. Although non-cultural, these specimens were collected to obtain data concerning climatic conditions at the time of the occupation.

Bird bones were found as well as several specimens of egg shell. The shell could have derived from food resources or may be the result of the incorporation in the cultural level of an egg from a ground-nesting species, such as killdeer.

Several specimens of freshwater bivalve shells were recovered. These would have been harvested for food, as well as for the shell, which would have been used for making tools and ornaments.

3.2.2 Lithic Tools

A projectile point, a scraper, and 3 utilized flakes were recovered during the excavation.

The projectile point has been identified as a Swan River chert (SRC) Plains side-notched point (DILg-33/90D-2364). It has a length of 24.9 mm, a width of 15.0 mm, and a thickness of 4.5 mm. The projectile point was found, in association with ceramics and bison bone fragments, in Feature #7, the ochre wash area. Plains side-notched points are from the Late Pre-Contact period.

A banded grey/white chert end scraper fragment (DILg-33/90D-408) was collected. The scraper has a working edge length of 19.6 mm. The end scraper was found in Feature #1, a fish bone/scale concentration. A possible interpretation for its use is as a tool for cleaning fish. Alternative interpretations are as a tool for removing fat and tissue from hides or as a woodworking

tool. Although the paucity of bison or other mammal bones in the immediate area of the feature suggests the former interpretation has greater credence.

The three utilized flakes were comprised of KRF (D1Lg-33/90D-1941), SRC (D1Lg-33/90D-2365), and Selkirk Chert (D1Lg-33/90D-1259). The utilized flakes exhibit wear patterns which suggest use as temporary cutting tools.

3.2.3 Flakes

A total of 216 flakes and one core were excavated. Table 5 illustrates the material and frequency of the flakes.

Material	Quantity	Frequency (%)
Swan River Chert	95	43.98
Undifferentiated Chert	56	25.93
Selkirk Chert	35	16.20
Quartzite	12	5.56
Chalcedony	8	3.70
Knife River Flint	6	2.78
Rhyolite	2	0.93
Agate	1	0.46
Bone	1	0.46
Total	216	100.00

Table 5: Flake Material and Frequency

The majority of the flakes were manufactured of undifferentiated chert, Swan River Chert, and Selkirk Chert. The variety of lithic materials in Table 5 indicates the availability of material from distant sources, i.e., Knife River Flint from North Dakota, rhyolite from eastern Manitoba, agate from southwestern Manitoba and Swan River Chert from central western Manitoba.

3.2.4 Fire-cracked Rocks

A large percentage of the 223 fragments of FCR were found in association with the hearths. Other fragments were scattered about the excavated area. The specimens varied in size from complete cobbles to small friable pieces of granitic cobbles.

3.2.5 Other Lithic Recoveries

Two specimens of ochre, a naturally formed mineral of ferrous oxide, were recovered. DILg-33/90D-409 was excavated from unit A21 (SE quadrant) in Feature 1 and DILg-33/90D-1622 occurred in the southeast quadrant of unit B26 (Feature 3). Both specimens were the reddish hematite variety.

Certain recovered specimens, such as cobbles and pebbles, may have been brought to the location by people, but there is no direct evidence. While strong flood waters can move stones of a considerable size, it is more likely that these specimens had been carried to the location. A similar situation arises with the six recovered spalls. Spalls are 'flake-like' objects which do not possess definite diagnostic attributes that would permit positive identification as the products of tool manufacture. The spalls could have derived from heat-fractured or frost-cracked rocks.

3.2.6 Ceramics

There were 235 sherds recovered from the South trench. This included 224 body sherds/sherdlets, 2 shoulder sherds, 4 neck/shoulder sherds, and five rim sherds. Eleven of the sherds had decorative elements other than textile-impressions. These sherds included 5 rim sherds (DILg-33/90D-511, 2082, 2408, 2595, 2597), 2 shoulder sherds (DILg-33/90D-2, 1947) and 4 neck/shoulder sherds (DILg-33/90D-116, 117, 683, 1366). As well, a rim sherd and a neck sherd (DILg-33/89C-54, 55) found in Test Trench #5 will be included in the discussion as these artifacts had been recovered from the area of current investigation in direct association with Feature #7. The 224 body sherds had either a textile-impressed or an obliterated surface finish.

All of the ceramics have been assigned to the Late Woodland phase of the Woodland Period. In southern Manitoba, this phase includes the Blackduck culture and the Selkirk culture and derivative regional variants. This phase is characterized by ceramics manufactured by a paddle and anvil technique or by formation within a fabric mold (Manitoba Culture, Heritage and Recreation 1989). The ceramics will be discussed by types of ware. The Glossary of Manitoba Prehistoric Archaeology (Manitoba Culture, Heritage and Recreation 1989) states that "Wares are usually defined on the basis of such attributes as surface finish (e.g., smooth, corded, etc.), composition of the paste (e.g., shell-tempered, grit-tempered, etc.) and vessel form (globular, conoidal, etc.)".

The pottery of the various archaeologically defined Late Woodland groups is distinguished by the decorative techniques on the rims and exterior of the ceramic containers. Lenius and Olinyk (n.d.) have re-examined ceramics from this period and presented revisions to the Late Woodland taxonomy. Within their framework, the culture that produced Blackduck ceramics is succeeded by

derivative regional variants. i.e., Duck Bay Complex, Bird Lake Complex and Winnipeg River Complex. These complexes are combined within the Rainy River Composite.

Blackduck ceramics are decorated with cord-wrapped object impressions (CWOI) in oblique or horizontal patterns, rows of punctates, and brushing or combing (Lenius and Olinyk n.d.). Rainy River Composite ceramics have CWOI, stamps, or are undecorated.

The temporal distinction between the two groups is suggested by Lenius and Olinyk (n.d) to be Blackduck, A.D. 500 to 1000, and Rainy River Composite, A.D. 1100 to 1600. This is based on their extensive re-examination of Late Woodland ceramics and associated radiocarbon dates. The earliest date for Blackduck occupation at The Forks (510 A.D.± 165) was obtained from a radiocarbon sample associated with a Blackduck hearth at the North Point (Priess et al 1986). Other Late Woodland ceramic recoveries fall into the time period ascribed to the Rainy River Composite (Adams et al. 1990, Kroker and Goundry 1990).

Two ceramic specimens from Trench #5 have diagnostic decorations. The first is an ochre-stained rim sherd (DLG-33/89C-54) which exhibits oblique CWOI on the lip and oblique CWOI and stamps on the exterior. The exterior has a pseudo-chevron pattern. This vessel is of a type which has been assigned to the Bird Lake Complex of the Rainy River Composite. The second (DLG-33/89C-55) is a small neck sherd with ochre wash and is decorated with horizontal stamps. This sherd is tentatively assigned to the Rainy River Composite.

A heavily carbon encrusted rim sherd (DLG-33/90D-511) has oblique CWOI on the lip and on its exterior giving it a chevron pattern. The rim was recovered from the SW quadrant of B20 adjacent to Feature #1. The absence of the neck/shoulder portion

from this sherd makes ware identification uncertain, although the context would suggest affiliation with Rainy River Composite.

A second encrusted earthenware rim sherd (DLLg-33/90D-2082) has oblique CWOI on the lip and exterior. The rim sherd was found in association with 69 body sherds and faunal remains in D21. The rim sherd was incomplete and, accordingly, was not assigned to a specific ware. The context suggests that the specimen could be representative of the Rainy River Composite.

An undecorated rim sherd (DLLg-33/90D-2408) is complete from the lip to its shoulder. The exterior has fabric-impressions. Although undecorated utilitarian vessels are found in most ceramic complexes, which are defined by decorative styles, this specimen has been described as Alexander Fabric Impressed (Lenius and Olinyk 1990: pers. comm.). It was found in the SE quadrant of C36 which also contained many ochre-stained artifacts and is associated with Feature #7.

Two rim sherds (DLLg-33/90D-2595, 2597) were recovered from the south wall profile of A27. The first rim sherd (DLLg-33/90D-2597) is fingernail impressed on the lip and textile-impressed on the exterior. This specimen is identified as Alexander Fabric Impressed. The second rim sherd (DLLg-33/90D-2595) has a plain lip which is bevelled toward the interior and has oblique incising on its exterior. While not identified to a specific type of ceramic ware, the form of the specimen is reminiscent of various Plains Woodland types.

Only one shoulder sherd (DLLg-33/90D-2) has decorative elements other than textile-impressions. The sherd has 3 horizontal rows of vertical stamps. Lenius and Olinyk (1990: pers. comm.) have identified it as Bird Lake Stamped ware. It was associated with Features #4 and #5 within the SW quadrant of C37.

The four neck or neck/shoulder sherds have various decorative elements. These elements include CWOI, punctates, and stamp decoration. Three of the sherds (DLLg-33/90D-116, 117, 683) were found in the SW quadrant of C37 in association with the two hearths. The remaining neck/shoulder sherd (DLLg-33/90D-1366) was excavated from the NW quadrant of C31.

One neck sherd (DLLg-33/90D-116) has zone decoration with a single vertical row and two horizontal rows of stamps. The sherd is identified as Bird Lake Stamped ware and probably from the same vessel as the shoulder sherd (DLLg-33/90D-2).

A second neck/shoulder sherd (DLLg-33/90D-117) has irregular stamps and fabric impressions. The sherd is probably Rainy River Composite given its context but the incompleteness of the specimen makes the identification tentative.

The third sherd (DLLg-33/90D-683) was a neck sherd with a single stamp and an extreme flare angle. It has been tentatively assigned to Rainy River Composite (Lenius and Olinyk 1990:pers. comm.).

The fourth neck/shoulder sherd (DLLg-33/90D-1366) has three horizontal rows of CWOI with a row of punctates beneath. This sherd has the characteristic decoration of Blackduck ceramics. The recovery of a Blackduck body sherd in the midst of many Rainy River Composite vessels suggests that it could be from a disturbed context. Unit C31 is adjacent to the concrete footing trench which intersects the South trench.

The ceramics of the Late Woodland occupation at DLLg-33/90D were undifferentiated Rainy River Composite, Bird Lake Stamped or Alexander Fabric Impressed. It is assumed that the Blackduck neck/shoulder sherd (DLLg-33/90D-1366) was from a railway disturbed context. Test trenches #1 to #14 (Quaternary 1990a,

1990b) yielded other Rainy River Composite ceramics including Duck Bay Stamped, Alexander Fabric Impressed, Sturgeon Falls, and unassigned. Alexander Fabric Impressed ware is found within the Duck Bay, Bird Lake, and Winnipeg River Complexes of the Rainy River Composite. These complexes have temporal ranges between A.D. 1100 and 1600.

3.2.7 Samples

Three types of samples were collected during the St. Mary Archaeological Recovery Project in 1990. These were soil samples, charcoal samples, and ochre samples. The soil samples were selected for flotation and chemical analysis, the charcoal samples for radiocarbon and species identification, and the ochre samples for chemical analysis.

Miniscule fragments of ochre were observed throughout the excavation. Concentrations were associated with Feature #7. Ochre was utilized for decorative purposes. It was pulverized and mixed in a suspending media, e.g. bear grease, fish oil, goose fat. The pigment could then be used as personal cosmetic or general purpose paint (Densmore 1974:370-373). In addition, the manufacture of an ochre slip for pottery decoration is hypothesized from the staining of the slurry found throughout the feature area at the east end of the trench (Figure 5).

3.2.8 Floral Remains

The identified floral remains include seeds of Lithospermum canescens (puccoon), Chenopodiaceae (goosefoot) and some seeds which could not be identified beyond Angiospermae. The bulk soil samples taken from the features and other locations throughout the site should provide additional information on plant species available at The Forks during the occupation period.

4.0 INTERPRETATION AND SUMMARY

The preliminary archaeological assessment of The Forks by Parks Canada archaeologists in 1984 as well as University Field Schools and mitigative archaeological projects during the past six years has begun to delineate the extent of the Pre-Contact occupations. Pre-Contact sites from the Archaic and Late Woodland Periods have been located and excavated (Priess et al. 1986; Kroker 1989; Quaternary 1989, 1990a, 1990b; Kroker and Goundry 1990; Adams et al. 1990). Middle Woodland sites of the Laurel culture have as yet not been encountered. As further research and mitigation archaeology occurs at The Forks, it is expected that occupations of this earliest ceramic culture will be encountered.

4.1 The Archaic Period (4000 B.C. - A.D. 0)

Archaic Period site locations have been recorded at The Forks. A large Archaic horizon was discovered during the North Assiniboine Node Assessment (3.0 metres DBS) (Kroker 1989). During the archaeological monitoring of the Stage I Construction (Kroker and Goundry 1990), the River Cut location (3.0 metres DBS) and the Stable Sewer (2.6 metres DBS) were found to have Archaic occupations. These locations have been dated to 900 B.C., 920 B.C. and 380 B.C. respectively. Additional Archaic horizons, hearths with faunal remains and charcoal, have been encountered at Stable Sewer (6.0 metres DBS) and the Sewer Control Excavation (5.8 metres DBS). It is estimated that these occupations are approximately 6000 years B.P. This date has been estimated on the basis of a average rate of deposition of 100 cm/1000 years (Kroker and Goundry 1990:162).

4.2 The Pre-Contact Ceramic Period (A.D. 0 - A.D. 1737)

Ceramic rim sherds, identified as Blackduck, Bird Lake, Duck Bay, Alexander Fabric Impressed, and Sandy Lake types, have been recovered at various locations at The Forks. The North Point excavations by the Canadian Parks Service in 1984 (Priess *et al.* 1986) and 1988 (Adams *et al.* 1990) yielded stratified ceramic occupations bounded by riverine flood deposits. These horizons were radiocarbon dated from 500 B.P. to 1560 B.P. Other ceramic period locations were encountered during the North/South Road assessment (Quaternary 1988), Provencher Bridge assessment (Quaternary 1989), North Assiniboine Node assessment (Kroker 1989), Stage I Construction monitoring (Kroker and Goundry 1990), and York/St. Mary Impact assessments (Quaternary 1990a, 1990b). A date of A.D. 1300 was obtained from material associated with Bird Lake ceramics from the Long Trench. A second radiocarbon date (A.D. 1080) was obtained from the cultural horizon at Johnson Storm (Kroker and Goundry 1990). The aforementioned dates place the latter at the interface of Blackduck/Rainy River Composite Periods and the former well within the Rainy River Composite. The upper Pre-Contact occupation at DILg-33/90D is estimated to fall between A.D. 1400 and A.D. 1600. The Bird Lake, Duck Bay, and Alexander Fabric Impressed ceramics excavated during the first phase and the depth of the associated Pre-Contact occupation (104-125 cm at A29) support the estimated age of the site. The radiocarbon and bone collagen samples submitted for dating should clarify the age of this cultural horizon.

Based upon the faunal recoveries the evidence seems to suggest a spring/early summer occupation. The identified fish bones are predominately catfish/bullhead and sucker. These species spawn during the spring and early summer (Scott and Crossman 1973) and are readily available at this time. Bison would be available throughout the spring to fall period, although the greatest concentrations would occur during the spring or fall migration.

No foetal bison bones, which would indicate early spring, have been recovered. Conversely, no juvenile bison bones, which would indicate fall, were excavated. Therefore, determination of the season of occupation will have to be determined by laboratory analysis of the annular rings on the fish scales.

Four shallow hearths, three fish bone concentrations, and a red ochre/soil feature were located during the excavation. The features represent food processing and cooking activity areas. The large quantity of microdebitage indicates that tools were sharpened for food processing activities and that the lithic reduction activities took place elsewhere. The projectile point, endscraper, and utilized flakes were used and discarded or inadvertently lost.

The lithics derive from various sources. The extra-local materials included Knife River Flint, a brown chalcedony from quarries in North Dakota, Swan River Chert from the Upper Assiniboine River areas, Selkirk Chert from the vicinity of Lockport, rhyolite from the Boreal Forest of Eastern Manitoba, and agate which is frequently found in the gravel deposits near Souris, Manitoba. It is likely that lithic materials were brought and traded between groups meeting at The Forks.

The presence of ceramics of different styles suggests that The Forks was a gathering or meeting place to exchange goods between the groups from the plains, parkland and boreal forest. The late spring/early summer spawning runs of the identified species would have provided an easily obtainable food resource for large groups camping adjacent to The Forks. Gatherings of various Native groups is well documented during the Historic period and it can safely be proposed that similar meetings occurred in the Pre-Contact period.

5.0 SECOND PHASE

The start-up date of the second phase of the St. Mary Archaeological Recovery Project has yet to be determined. The date will be dependant upon ground frost level, temperature considerations and the availability of volunteer personnel. The latter is seen as the prime consideration as a large volunteer pool will be required to excavate a large area within the budgetary limitation of the 2 August 1990 decision of City Council. It is suggested that the project begin after the close of the University academic year and overlap with the end of the public school year. It should be in operation prior to the beginning of The Forks Public Archaeology Program (estimated to be the first week of July).

The recovery techniques will be slightly modified to effect an increase in the area of excavation/individual/day. As a data baseline has been established, portions of the occupation level which do not contain features will be excavated using shovel-shaving and dry screening through a 1/4 in" mesh. Areas which contain features will be excavated by trowel. The matrix from these features will be screened according to the types of artifacts present. Matrices which contain small artifacts, such as micro-flakes and floral remains, will be wet screened through fine mesh, to ensure total recovery. Bulk soil samples will be collected for later laboratory flotation analysis.

Charcoal and bone samples will be collected for radiocarbon dating to add confirming evidence to the date(s) obtained from the currently submitted samples. Two charcoal samples (DILg-33/90D-37, 570) and a combined bone sample (DILg-33/90D-2319, 2320, 2357) have been submitted to Brock University. The results will be in the final report.

6.0 BIBLIOGRAPHY

- Adams, G., K. Lunn, M. A. Tisdale and P. J. Pries
 1990 Archaeological Investigations At The Forks National
 Historic Site, Winnipeg: Mitigation of the North
 Point Development. Canadian Parks Service, Research
 Bulletin No. 283.
- Banfield, A. W. F.
 1974 The Mammals of Canada. University of Toronto Press,
 Toronto.
- Clarke, Arthur H.
 1981 The Freshwater Molluscs of Canada. National Museum
 of Natural Sciences, National Museums of Canada,
 Ottawa.
- DeBlase, Anthony F. and Robert E. Martin
 1974 A Manual of Mammology. Wm. C. Brown Company.
 Dubuque, Iowa.
- 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".
- Forks Renewal Corporation, The
 1988 The Forks Archaeological Impact Assessment and
 Development Plan (The Forks Archaeological Plan).
 The Forks Renewal Corporation, Winnipeg.
- Gilbert, B. Miles
 1973 Mammalian Osteo-Archaeology: North America.
 Missouri Archaeological Society, Columbia, Missouri.
- Kroker, Sid
 1989 North Assiniboine Node Archaeological Impact
 Assessment. The Forks Renewal Corporation,
 Winnipeg.

Kroker, Sid and Pamela Goundry

1990 Archaeological Monitoring of the Stage I Construction Program. The Forks Renewal Corporation.

Lenius, Brian J. and Dave M. Olynik

n.d. The Rainy River Composite: Revisions To Late Woodland Taxonomy. University of Minnesota Publications in Anthropology No. 4. G. Gibbon (Ed.), University of Minnesota. (In Press).

Manitoba Culture, Heritage and Recreation; Historic Resources

1989 A Glossary of Manitoba Prehistoric Archaeology. Manitoba Culture, Heritage and Recreation, Historic Resources Branch, Winnipeg, Manitoba.

Manitoba Museum of Man and Nature

1986 Guides and Manuals for Processing Archaeological Materials. E. L. Syms (Ed.). Winnipeg, Manitoba.

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 (Ictalurus punctatus)". Manuscript.

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, Vol. 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, Vol. LVI, No. 1.

Priess, Peter J., P. W. Nieuwhof, and S. B. Ebell

- 1986 Archeological Investigations of the Junction of the Red and Assiniboine River, 1984. Parks Canada, Research Bulletin No. 241.

Quaternary Consultants Ltd.

- 1988 North/South Access Road Archaeological Impact Assessment. Quaternary Consultants Ltd., Winnipeg.
- 1989 Provencher Bridge Project Archaeological Impact Assessment. Quaternary Consultants Ltd., Winnipeg.
- 1990a Heritage Resources Impact Assessment for Proposed York & St. Mary Avenue Extensions (Main Street-Pioneer Boulevard). Quaternary Consultants Ltd., Winnipeg.
- 1990b Assessment of Archaeological Resources Within the St. Mary Avenue Extension Right-of-Way. Quaternary Consultants Ltd., Winnipeg.

Scott, W. B. and E. J. Crossman

- 1973 Freshwater Fishes of Canada. Environment Canada, Fisheries and Marine Services, Fisheries Research Board of Canada, Bulletin 184

APPENDIX A
HERITAGE PERMIT



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

Heritage Permit No.

A46-90

FORM 11

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

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

(hereinafter referred to as "the Permittee"),

is hereby granted permission to:

carry out mitigative excavations of a Late Woodland ceramic occupation lying within a 1000 - 1200 m² area in the right-of-way of the proposed route of St. Mary Avenue on the east side of the highline west of Pioneer Boulevard at The Forks in the City of Winnipeg in order to recover as much artifactual material and information as possible.

during the period:

September 13 to October 8, 1990 (Phase I) and May 1 to August 31, 1991 (Phase II)

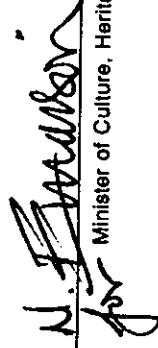
This permit is issued subject to the following conditions:

- (1) That the information provided in the application for this permit dated the 6th day of September, 1990, 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, 1992
- (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) The Permittee will keep the Historic Resources Branch apprised of all proposed activities and of the occurrence and extent of heritage resources in the area under study.
- b) In the event that human remains are encountered, all activity in the immediate area will cease and the special procedures relative to the treatment of human remains located at The Forks will be implemented forthwith.
- c) The Permittee must obtain permission from any land owner, lessee or regulatory authority, as applicable, concerning access to the subject property.
- d) The Permittee shall provide a preliminary written report with respect to the Permittee's activities pursuant to Phase I of the project, as per the project terms of reference as defined by the Historic Resources Branch, by January 31, 1991.
- e) Neither the Government of Manitoba nor the party issuing this permit will 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 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 to or related to this permit.

Dated at the City of Winnipeg, in Manitoba, this 11th day of September 1990.


Minister of Culture, Heritage and Recreation

APPENDIX B

MONTHLY CLIMATE SUMMARIES

MONTHLY METEOROLOGICAL SUMMARY SOMMAIRE MÉTÉOROLOGIQUE MENSUEL

MONTH/MOIS: **SEPTEMBER / SEPTEMBRE** 19 **90**

AT/A: **WINDYBIC INT'L AIRPORT / AEROPORT INTERN. DE WINDYBIC**

LAT	49° 54' N	LONG.	97° 14' W	ELEVATION ALTITUDE MÈTRES (ASL) MÈTRES (NNM)	239.6		CENTRAL						
					STANDARD TIME USED HEURE NORMALE UTILISÉE	WIND VENT							
DATE	TEMPERATURE TEMPERATURE		DEGREE-DAYS DEGRÉS-JOURS		PRECIPITATION PRÉCIPITATIONS		SNOW ON GROUND NEIGE AU SOL		WIND VENT		HOURS HEURES BRIGHT SUNSHINE INSOLATION EFFECTIVE		
	MAXIMUM MAXIMALE	MINIMUM MINIMALE	MEAN MOYENNE	HEATING DE CHAUFFAGE BASE 18.0°C	COOLING DE REFRIGÉRATION BASE 18.0°C	REL. HUMIDITY HUMIDITÉ REL.	THUNDERSTORM ORAGE	RAINFALL PLUIE (HAUTEUR) mm	SNOWFALL NEIGE (HAUTEUR) cm	TOTAL PRECIP. TOTAL PRECIP. mm		AVERAGE SPEED VITESSE MOYENNE km/h	PREVAILING DIRECTION DIRECTION DOMINANTE
1	21.2	11.8	16.5	1.5	11.5	2.8	55				14.7	NNW	W 28
2	30.9	10.6	20.8		15.8	5.8	28				20.0	SSE	SSE35
3	32.7	14.9	23.8		18.8	5.8	51	6.6		6.6	21.7	S	S 35
4	24.7	9.4	17.1	0.9	12.1		29				13.3	NNW	N 30
5	29.3	11.4	20.4		15.4	2.4	41				14.0	S	S 22*
6	24.9	10.5	17.7	0.3	12.7		41	1.6		1.6	15.9	NNE	NE 30
7	25.0	8.2	16.6	1.4	11.6		37				13.7	S	S 24
8	24.9	12.6	18.8		13.8	0.8	40	TR.		TR.	21.5	S	SSE37
9	19.3	5.4	12.4	5.6	7.4		42	TR.		TR.	10.1	NW	NW 22
10	23.9	7.3	15.6	2.4	10.6		26				15.8	S	S 30
11	30.1	10.7	20.4		15.4	2.4	26	TR.		TR.	22.0	S	SSE30
12	20.7	8.6	14.7	3.3	9.7		57				20.3	ESE	ESE39
13	18.6	10.0	14.3	3.7	9.3		67	TR.		TR.	24.0	N	N 37
14	22.3	9.2	15.8	2.2	10.8		39	0.4		0.4	13.8	WSW	NNW24
15	15.5	4.6	10.1	7.9	5.1		51	0.4		0.4	22.8	N	N 39
16	15.5	-1.8	6.9	11.1	1.9		42				9.3	SSE	SSE19*
17	20.0	7.8	13.9	4.1	8.9		41	6.2		6.2	24.0	S	S 39
18	20.3	9.1	14.7	3.3	9.7		100	5.7		5.7	17.1	NNW	NW 26*
19	19.5	4.4	12.0	6.0	7.0		30				13.3	W	NW 22
20	18.3	8.4	13.4	4.6	8.4		63	7.8		7.8	7.5	SSW	SSW15*
21	10.6	5.6	8.1	9.9	3.1		71	2.0		2.0	29.5	NW	NW 44
22	11.3	0.4	5.9	12.1	0.9		48	TR.		TR.	25.0	N	N 39
23	21.7	-0.3	10.7	7.3	5.7		28				15.2	SW	SW 26*
24	26.6	5.9	16.3	1.7	11.3		32				23.0	NW	NW 54
25	25.8	10.4	18.1		13.1	0.1	27				16.8	NNW	NNW33*
26	23.9	6.7	15.3	2.7	10.3		22				16.4	NNW	NW 35
27	12.9	3.3	8.1	9.9	3.1		59				15.7	NW	NNW24*
28	12.6	-0.5	6.1	11.9	1.1		51				13.3	NNE	NNE22
29	12.4	-2.5	5.0	13.0			56	0.8		0.8	4.6	CALM	ENE13*
30	13.0	1.5	7.3	10.7	2.3		59				14.4	S	S 31*
MEAN MOYENNE	20.9	6.8	13.9	TOTAL 137.5	TOTAL 266.8	TOTAL 14.3	TOTAL 432	TOTAL 31.5	TOTAL 0.0	TOTAL 31.5	TOTAL 16.9	PREVAILING DOMINANTE S	TOTAL 54
NORMAL NORMALE	18.4	6.3	12.4	178.1	223.8	8.7	3	53.0	0.2	53.3	18.5	S	184.6

DEGREE-DAY SUMMARY/SOMMAIRE DE DEGRÉS JOURS

BELOW 18°C AU-DESSOUS DE 18°C	TOTAL FOR MONTH TOTAL DU MOIS	PREVIOUS YEAR ANNÉE PRÉCÉDENTE	NORMAL NORMALE	ABOVE 5°C AU-DESSUS DE 5°C	TOTAL FOR MONTH TOTAL DU MOIS	PREVIOUS YEAR ANNÉE PRÉCÉDENTE	NORMAL NORMALE	TOTAL		TOTAL		TOTAL	
								THIS YEAR ANNÉE EN COURS	DIFFERENCE	THIS YEAR ANNÉE EN COURS	DIFFERENCE	THIS YEAR ANNÉE EN COURS	DIFFERENCE
137.5	178.1	143.9	178.1	266.8	259.2	223.8	223.8	266.8	43	2	31.5	0.0	31.5
171.9	182.2	242.5	1805.1	1895.2	1697.4	1895.2	1895.2	1895.2	5	6	5	0	0

TOTAL	TOTAL		TOTAL		TOTAL	
	THIS YEAR ANNÉE EN COURS	DIFFERENCE	THIS YEAR ANNÉE EN COURS	DIFFERENCE	THIS YEAR ANNÉE EN COURS	DIFFERENCE
213.8	16.9	16.9	53.3	0.2	53.3	0.2
184.6	18.5	18.5	53.3	0.2	53.3	0.2

UDC 551-506 1 (1)

1 Climatological Day/Jourées climatologique 00-01 C ST - 00-00 C ST
 2 Normal/Normale 1951-1980
 3 TR = Trace
 4 M = Missing/Méquant
 5 No entry/Pas de valeur - No occurrence/Pas d'événement
 6 * Indicates first of more than one prevailing direction and/or maximum 2 minute mean speed (see page 4) / indique la première de plusieurs des directions dominantes et/ou la vitesse moyenne maximale sur 2 minutes (voir page 4)
 7 C = Calm/Calm \$2.75
 8 Price single issue / Prix numéro individuel \$2.75



\$2.75 \$27.30

annual (Jan to Dec)



Environnement Canada

Service de l'environnement
Service atmosphérique

MONTHLY METEOROLOGICAL SUMMARY SOMMAIRE MÉTÉOROLOGIQUE MENSUEL

MONTH/MOIS

OCTOBER / OCTOBRE

19 90

AT/A WINNIPEG INT'L AIRPORT / AEROPORT INTERN. DE WINNIPEG

LAT	49	54	N	LONG	97	14	W	ELEVATION ALTITUDE	239.6		METRES (ASL) MÈTRES (NMM)				STANDARD TIME USED CENTRAL						
									REL HUMIDITY HUMIDITÉ REL.		PRECIPITATION PRÉCIPITATIONS		SNOW ON GROUND NEIGE AU SOL		WIND VENT		AVERAGE SPEED VITESSE MOYENNE		PREVAILING DIRECTION DIRECTION DOMINANTE		SPEED & DIRECTION VITESSE & DIRECTION MAX SUR 2 MIN
DATE	TEMPERATURE TEMPÉRATURE		MEAN MOYENNE	DEGREES-DAYS DEGRÉS-JOURS		THUNDERSTORM ORAGE	PRECIPITATION PRÉCIPITATIONS		SNOW ON GROUND NEIGE AU SOL	WIND VENT		AVERAGE SPEED VITESSE MOYENNE		PREVAILING DIRECTION DIRECTION DOMINANTE		SPEED & DIRECTION VITESSE & DIRECTION MAX SUR 2 MIN		HOURS HEURES			
	MAXIMALE MAXIMALE	MINIMALE MINIMALE		HEATING DE CHAUFFE	DE CROISSANCE DE CROISSANCE		COOLING DE RÉFRIGÉRATION DE RÉFRIGÉRATION	MAXIMALE MAXIMALE		MINIMALE MINIMALE	RAINFALL PLUIE (HAUTEUR)	SNOWFALL NEIGE (HAUTEUR)	TOTAL PRECIP TOTAL PRECIP	cm	mm	cm	mm	cm	mm	km/h	mph
1	19.4	2.4	10.9	7.1	5.9		86	28									15.7	W	N 26	9.9	
2	23.2	5.5	14.4	3.6	9.4		65	33									18.8	SE	S 33	1.7	
3	14.6	6.9	10.8	7.2	5.8		79	37									20.0	W	W 30*	4.8	
4	11.5	3.2	7.4	10.6	2.4		69	43									24.6	W	W 39*	5.5	
5	11.0	1.9	6.5	11.5	1.5		93	53									13.8	ENE	NNW30	7.9	
6	7.3	-5.4	1.0	17.0			92	40									15.5	WNW	WNW26*	6.7	
7	8.6	-7.6	0.5	17.5			88	36									7.9	W	WNW19	1.9	
8	11.1	-6.2	2.5	15.5			90	30									12.0	SSW	SSW30	6.6	
9	15.5	-3.6	6.0	12.0	1.0		94	23									15.6	S	S 30	9.4	
10	13.3	3.4	8.4	9.6	3.4		61	30									33.7	S	S 56	0.5	
11	10.5	-1.6	4.5	13.5			74	34									18.7	W	W 26*	7.5	
12	9.9	-6.2	1.9	16.1			85	37									16.3	S	S 30	7.1	
13	15.3	4.1	9.7	8.3	4.7		92	34									11.9	S	S 28	6.9	
14	13.7	-0.4	6.7	11.3	1.7		88	41									10.0	W	NW 26	3.6	
15	8.7	-1.4	3.7	14.3			94	42									9.2	W	W 19	~3	
16	8.1	-3.4	2.4	15.6			79	40									13.3	NE	NE 22*	5.5	
17	3.4	-4.9	-0.8	18.8			86	61									20.5	N	NNE31	1.6	
18	4.0	-5.6	-0.8	18.8			90	49									9.3	SSE	SSE26	3.8	
19	9.8	-0.2	4.8	13.2			85	46									18.1	SSE	SE 28	0.9	
20	5.1	0.8	3.0	15.0			100	69									16.0	NW	NW 28	0.0	
21	9.0	-2.1	3.5	14.5			100	33									12.9	W	S 26	5.4	
22	12.6	-4.5	4.1	13.9			90	40									18.6	S	S 30	8.1	
23	8.7	-5.7	1.5	16.5			100	71									8.0	WNW	WNW15*	3.1	
24	7.5	-3.9	1.8	16.2			92	54									10.1	NW	NNW20	7.8	
25	12.1	-0.1	6.0	12.0	1.0		83	43									24.3	S	S 33	8.8	
26	23.8	3.2	13.5	4.5	8.5		80	25									21.5	S	WSW33*	7.4	
27	5.7	-5.0	0.4	17.6			100	53									24.1	NNW	NW 37	9.2	
28	10.0	-6.8	1.6	16.4			97	44									21.7	S	S 43	5.4	
29	12.3	2.1	7.2	10.8	2.2		75	29									6.0	WSW	SSW15	3.8	
30	13.5	-3.4	5.1	12.9	0.1		78	45									10.2	SW	S 30	7.3	
31	17.2	4.8	11.0	7.0	6.0		85	48									17.9	S	S 30*	2.8	
MEAN MOYENNE	11.5	-1.3	5.1	398.8	53.6	0.0	86	42	0	7.6	1.2	8.8					16.0	S	S 56	170.2	
NORMAL NORMALE	11.5	0.7	6.1	369.6	82.1	0.5				25.9	5.2	30.9					19.6	S		151.5	

DEGREE-DAY SUMMARY/SOMMAIRE DE DEGRES JOURS

BELOW -1°C AU-DESSOUS DE -1°C	THIS YEAR ANNEE EN COURS	PREVIOUS YEAR ANNEE PRECEDENTE	NORMAL NORMALE	ABOVE 5°C AU-DESSUS DE 5°C	THIS YEAR ANNEE EN COURS	PREVIOUS YEAR ANNEE PRECEDENTE	NORMAL NORMALE	DAYS WITH TOTAL PRECIPITATION JOURS AVEC PRÉCIPITATIONS TOTALES			DAYS WITH SNOWFALL JOURS AVEC CHUTE DE NEIGE				
								0.0	0.1	0.5	0.0	0.1	0.5		
TOTAL FOR MONTH TOTAL DU MOIS	398.8	378.5	369.6	TOTAL FOR MONTH TOTAL DU MOIS	53.6	77.7	82.1	0	2	2	0	0	1	0	0
ACCUMULATED SINCE JULY DEPUIS LE 1 ^{er} JUILLET	570.7	560.7	612.1	ACCUMULATED SINCE APRIL DEPUIS LE 1 ^{er} AVRIL	1858.7	1972.9	1779.5	5	2	2	0	0	1	0	0

-DC 55-536

Nov/Nov

1 Climatological Day/Jour climatologique
2 No. of days/Nombre de jours
3 TR: Trace
4 M: Missing/Manquant

5 No entry/Pas de valeur: No occurrence/Pas d'évènement

6 * Indicates first of more than one prevailing direction and/or maximum 2 minute mean speed (see page 4) / Indique la première des directions dominantes et/ou la vitesse moyenne maximale sur 2 minutes (voir page 4)

7 C: Ciel/Clouds

8 Price: single issue / Prix: numéro individuel

Canada

annual (Jan to Dec) _____ annual (Jan to Dec) _____
\$27.75 \$27.30
\$27.75 \$27.30