

EXECUTIVE SUMMARY

INTRODUCTION

This report was commissioned by The Forks Renewal Corporation to develop a management plan for the heritage resources at The Forks, with special attention to the archaeological resources.

The report reviews the commitments toward heritage and archaeological resources which were presented in the Phase I Concept and Financial Plan. Using these commitments as a starting point, the report presents a program for the implementation of management procedures which will preserve and protect the unique archaeological heritage of The Forks.

BACKGROUND

The report examines pertinent legislation under which the development in the East Yard must proceed, with particular emphasis on the Manitoba Heritage Resources Act. The primary concern of the Act is the preservation of archaeological resources. Regulatory aspects of the Act require that all operations which may impact upon heritage resource must operate under a Heritage Permit, which reflects approval of the proposed activity, by the Minister of Culture, Heritage and Recreation. These permits usually require that the developer conduct heritage resource impact assessments, which provide knowledge of the quantity and quality of heritage resources.

The report examines the expectations and requirements of the various segments of the archaeological community. All portions of the archaeological community are enthusiastic about the heritage potential at The Forks and see the development as an opportunity for exemplary heritage resource management.

A preliminary literature review and archival search was conducted and resulted in an inventory of seventy-one (71) known historical events and structures (Section 4). Beginning with La Verendrye in 1737, numerous events occurred at The Forks. The most notable are Fort Gibraltar I (1810), Fort Gibraltar II (1817), and Upper Fort Garry (1835). The construction of the CNR Main Line track effectively closed off the area and it, and its historical relevance to the history of Manitoba and Western Canada, was gradually forgotten.

Early historical documents indicate that The Forks were used by Assiniboine, Cree, Ojibwa, Ottawa and Sioux peoples. This historical usage was only a continuation of prehistoric patterns. Archaeological evidence of 'Blackduck' peoples (circa A.D. 500) has been found. It is possible that the archaeological record at The Forks can extend back to 6000 B.C.

OBJECTIVES OF THE FORKS ARCHAEOLOGICAL PLAN

The first four sections of the report provide the background information germane to the formulation of The Forks Archaeological Plan. The objectives of the Plan are:

- a. to enable the implementation of development projects in such a manner that the heritage resources are successfully managed,
- b. to preserve and protect the heritage resources of The Forks by the most appropriate mechanisms,
- c. to ensure that all archaeological investigations at The Forks are of a consistent high quality, and
- d. to foster and encourage public awareness of the heritage of The Forks through information services and public programming.

The report summarizes the known archaeological resources and estimates the potential impact which would be occasioned by different types of developments at The Forks. The scheduling of various components, as currently known, is detailed.

Heritage resource impact assessments, required under the Manitoba Heritage Resources Act, are intended to:

- a. ascertain the exact placement of known historic structures,
- b. determine the probability of construction encountering prehistoric or unrecorded historic archaeological features,
- c. to provide recommendations concerning appropriate mitigative actions which must be undertaken to comply with provisions of the Act.

The information obtained during the impact assessments will enable the formulation of appropriate mitigative actions to lessen or eliminate the impact upon heritage resources. The mitigative options include:

- a. relocation of the component to a location where less or no heritage resources would be impacted,
- b. modification of the design of the component to lessen the area or depth of the impact,
- c. incorporation of part or all of the archaeological feature into the component as part of the development,
- d. mitigative excavation of a representative sample of the archaeological feature(s), or
- e. mitigative excavation of the entire archaeological resource which will be impacted by construction of the component.

The criteria for selecting specific mitigative options are examined, as well as the process under which mitigative proposals are reviewed by FRC and Historic Resources Branch.

The process of heritage resource management, as shown in the accompanying flow chart, involves considerable interaction between the planners, the designers, the Site Archaeologist and the archaeological investigators.

The financial implications of The Forks Archaeological Plan are examined, to provide estimates of the costs of administration, heritage resource impact assessments and other aspects of the Plan. Financing options are reviewed for various scenarios, including mitigative actions and special projects.

8. Ensure that all archaeological operations at The Forks comply with the standards proposed in Appendix D.

The assessment report will recommend appropriate mitigative strategies. With regard to implementation of these strategies, it is recommended that:

9. Mitigative procedures should be scheduled soon after the assessment, to provide as much lead time, prior to construction, as possible.
10. The construction phase of a component should be monitored by the Site Archaeologist.

To augment development-driven heritage resource management, the report suggests:

11. Opportunities be made available for the implementation of research-oriented archaeological endeavors.
12. Establishment of an 'archaeological preserve', encompassing an area with known historical resources, such as Fort Gibraltar II, and high potential for prehistoric resources.
13. Utilize such a 'preserve' as the site of a public archaeology program, as proposed in the Phase I Concept and Financial Plan.

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....i

TABLE OF CONTENTS.....ix

LIST OF FIGURES.....xiii

1.0 INTRODUCTION.....1

 1.1 Summary of Phase I Concept and Financial Plan.....1

 1.2 Objectives of The Forks Archaeological Plan.....2

2.0 RELEVANT LEGISLATION.....5

 2.1 Manitoba Heritage Resources Act.....5

 2.1.1 Regulatory Aspects of the Act.....7

 2.1.2 Heritage Permits.....9

 2.1.3 Heritage Resource Impact Assessment.....13

 2.1.4 Applicability and Constraints of the Act.....15

 2.1.5 Custody of Artifacts.....16

 2.1.6 Burials.....19

 2.1.7 Provisions for Funding.....21

 2.2 Manitoba Fatalities Inquiry Act.....23

 2.2.1 Jurisdiction.....23

 2.2.2 Treatment of Human Remains.....24

 2.2.3 Treatment of 'Grave Goods'.....24

 2.3 Manitoba Environment Act.....26

 2.4 Manitoba Labor Code Act.....26

 2.5 Manitoba Workplace Safety and Health Act.....26

 2.6 City of Winnipeg Legislation.....27

 2.6.1 Rivers and Streams Authority.....27

3.0 CONCERNS AND INTERESTS OF THE ARCHAEOLOGICAL
COMMUNITY.....28

 3.1 Overview.....28

 3.2 Special Interest Groups.....29

 3.2.1 Regulatory Archaeologists.....29

 3.2.2 Consulting Archaeologists.....30

 3.2.3 Academic Researchers.....30

 3.2.4 Avocational Archaeologists.....31

 3.2.5 Interested Members of the Public.....32

 3.3 On-going Involvement of the Archaeological
Community.....33

4.0 HERITAGE RESOURCES AT THE FORKS.....34

 4.1 Prehistoric Period.....36

 4.2 Exploration and Early Fur Trade Period.....39

 4.3 Hudson's Bay Company Colonial Period (1821-1870).....43

 4.4 Growth Period - Industrial and Immigration.....46

 4.5 Early Railway Period (1885-1900).....51

 4.6 Late Railway Period (1900 to Present).....55

 4.7 Burials: Recorded and Potential.....60

 4.8 Archaeological Significance of The Forks.....63

As landowner, FRC has the right to custody of all recovered artifacts and the report recommends:

14. Transfer of the custody of the artifacts to the Manitoba Museum of Man and Nature for reasons ranging from financial considerations to enhancement of corporate image.

To facilitate successful operation of The Forks Archaeological Plan, the report recommends:

15. Establishment of a field archaeology laboratory facility, to be used by all investigators at The Forks, for artifact processing, curating and temporary storage.
16. Providing a micro-computer with appropriate software to enable uniform cataloguing of recovered artifacts.
17. Ensuring that all archaeological investigators at The Forks use the Canadian Heritage Inventory Network (CHIN) artifact cataloguing system.
18. All archaeological projects make provision for adequate conservation of recovered artifacts within their budgets.

As there is considerable public interest in the heritage resources at The Forks, it is recommended:

19. FRC encourage a multi-targetted information service.

5.0	THE FORKS ARCHAEOLOGICAL PLAN.....	64
5.1	Planning Objectives.....	64
5.1.1	Overview.....	64
5.1.2	Priority Actions.....	65
5.1.3	Flexibility of The Plan.....	66
5.2	The Forks Archaeological Plan and Corporate Structure.....	67
5.2.1	Advice and Consultation Mechanisms.....	67
5.2.2	Administration of The Plan.....	68
5.2.3	FRC Management Responsibilities.....	70
5.3	Archaeological Resources.....	71
5.3.1	Known Archaeological Resources.....	71
5.3.1.1	Resources with Vague Provenience.....	71
5.3.1.2	Resources with Specific Provenience.....	73
5.3.2	Potential Archaeological Resources.....	76
5.4	Development Impact upon Archaeological Resources.....	79
5.4.1	Types of Development.....	79
5.4.1.1	Roads and Services.....	79
5.4.1.2	Development Components.....	80
5.4.2	Types of Impact.....	81
5.4.3	Location and Scheduling of Phase I Impacts...83	
5.4.3.1	Infrastructure.....	83
5.4.3.2	Development Nodes.....	85
5.4.4	Projected Degree of Development Impact upon Heritage Resources.....	85
5.5	Heritage Resource Impact Assessments.....	87
5.6	Heritage Resource Mitigation.....	90
5.6.1	Mitigation Actions.....	90
5.6.2	Criteria for Resource Significance.....	91
5.6.3	Criteria for Mitigative Action.....	92
5.6.4	Scheduling of Mitigative Actions.....	94
5.6.5	Development Monitoring.....	95
5.6.6	Heritage Resource Management Strategy.....	95
5.7	Research Archaeology.....	98
5.8	Public Archaeology Programs.....	99
5.9	FRC Components of The Forks Archaeology Plan...101	
5.9.1	Archaeological Field Laboratory.....	101
5.9.2	Archaeological Field Computer.....	102
5.9.3	Custody of Artifacts.....	103
5.9.3.1	Ultimate Disposition of Recovered Artifacts.....	103
5.9.3.2	Custody of Artifacts from Dual Jurisdictions.....	105
5.9.4	Curation Requirements.....	106
5.9.5	Conservation Requirements.....	107
5.9.6	Data Dissemination.....	109

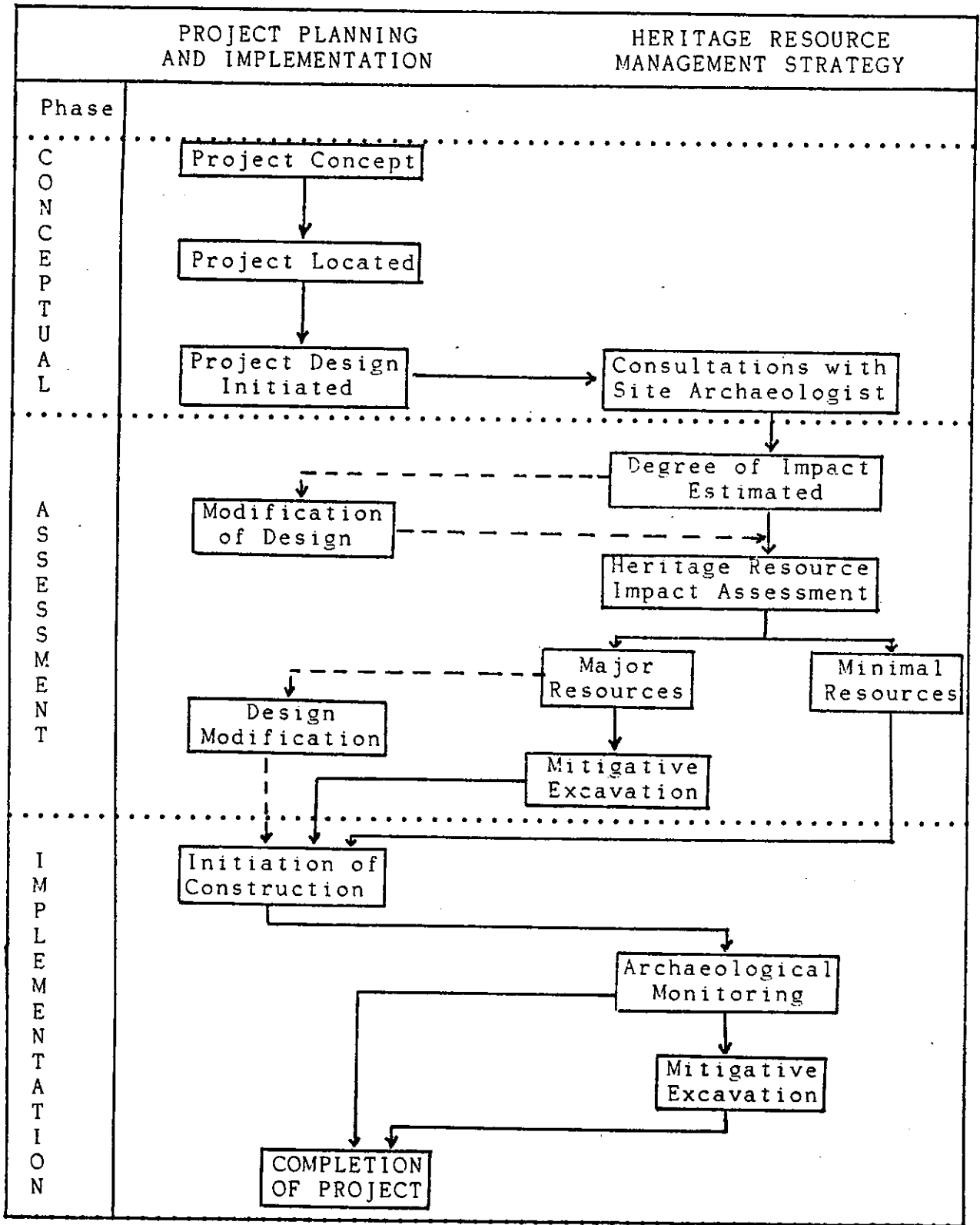


Figure A: Heritage Resource Management Process

RECOMMENDATIONS

To facilitate the implementation of The Forks Archaeological Plan, some corporate management structures are recommended:

1. Creation of a consultative heritage group to provide expert advice to the Heritage Committee of the Board of Directors.
2. Creation of the position of Site Archaeologist, to be responsible for the implementation of The Plan.

Due to the importance of impact assessments for adequate heritage resource management, the following recommendations have been proposed:

3. Undertake the impact assessment for the North/South Access Road, as delineated in Appendix E, as soon as possible.
4. Undertake the assessment of North Assiniboine Node, as delineated in Appendix F, during the spring of 1988.
5. Conduct impact assessments, during 1988, for any development which is slated for start-up in 1988 and 1989.
6. Conduct a separate heritage resource impact assessment for each development component.
7. Conduct the heritage resource impact assessment for each component, whenever possible, one year prior to the initiation of the construction phase.

5.10	Financial Implications of The Forks	
	Archaeological Plan.....	110
5.10.1	Estimated Administrative Costs.....	110
5.10.1.1	Personnel Costs.....	110
5.10.1.2	Capital Costs.....	111
5.10.1.3	Operating Costs.....	111
5.10.1.4	Summary of Administrative Costs.....	112
5.10.2	Estimated Cost of Heritage Resource	
	Impact Assessments.....	113
5.10.3	Estimated Cost of Mitigative Actions.....	115
5.10.4	Estimated Cost of Public	
	Archaeology Programing.....	117
5.11	Financing Options.....	118
5.11.1	Base Funding.....	118
5.11.2	Funding for Mitigative Actions.....	119
5.11.3	Special Project Funding.....	120
6.0	RECOMMENDATIONS.....	121
6.1	Corporate Structure.....	121
6.2	Heritage Resource Impact Assessments.....	122
6.3	Mitigative Operations.....	123
6.4	Research Archaeology.....	123
6.5	Public Archaeology Programs.....	124
6.6	Capital Cost Component of The Forks	
	Archaeological Plan.....	124
6.7	Custody of Artifacts.....	124
6.8	Artifact Curation Requirements.....	125
6.9	Artifact Conservation Requirements.....	125
6.10	Data Dissemination.....	125
6.11	Estimated Costs of Archaeological Activities....	126
7.0	REFERENCES CITED.....	127
APPENDIX A:	Past and Present Structures at The Forks....	130
APPENDIX B:	Chronology of Events at The Forks.....	137
APPENDIX C:	Relevant Literature.....	142
APPENDIX D:	Proposed Standards for Archaeological	
	Field Operations within The East Yard.....	160
D.1	Borden Number References.....	161
D.2	Grid Survey References.....	161
D.3	Field Research Standards.....	162
D.4	Field Logistical Requirements.....	164
D.5	Curation Requirements.....	166

APPENDIX E: Heritage Resource Management Strategy
for the North/South Access Road and Other
Infrastructure Components.....168

- E.1 Introduction.....169
- E.2 Archaeological Resources.....169
- E.3 Heritage Resource Management Strategy.....170
 - 3.1 Monitoring of Geo-Technical Exploration.....170
 - 3.2 Post-Drilling Operations.....174
 - 3.3 Pre-Construction Mitigative Actions.....175
 - 3.4 Construction Monitoring.....176
- E.4 Estimated Time Frame.....177
 - 4.1 Geo-Technical Investigations.....177
 - 4.2 Post-Drilling Activities.....178
 - 4.3 Pre-Construction Mitigative Actions.....179
 - 4.4 Construction Monitoring.....179
- E.5 Estimated Cost of Archaeological Operations...180
 - 5.1 Monitoring of Geo-Technical Explorations...180
 - 5.2 Post-Drilling Activities.....182
 - 5.3 Pre-Construction Mitigative Activities.....183
 - 5.4 Construction Monitoring.....183

APPENDIX F: Heritage Resource Management Strategy for
the North Assiniboine Node.....184

- F.1 Introduction.....185
- F.2 Archaeological Resources.....185
- F.3 Heritage Resource Management Strategy.....186
 - 3.1 Monitoring of Geo-Technical Exploration.....186
 - 3.2 Heritage Resource Impact Assessment.....188
- F.4 Estimated Time Frame.....192
 - 4.1 Geo-Technical Investigations.....192
 - 4.2 Heritage Resource Impact Assessment.....192
- F.5 Estimated Cost of Archaeological Operations...193
 - 5.1 Phase A (Stable Buildings Locality).....194
 - 5.2 Phase B (Test Excavations at Bore Holes)....194
 - 5.3 Phase C (Trench Excavations).....194
 - 5.4 Summary of All Phases.....195

LIST OF FIGURES

Figure A: Heritage Resource Management Process.....v

Figure 1: Exploration and Fur Trade Features.....40

Figure 2: Features of the Hudson's Bay Company
Colonial Period (1821-1870).....44

Figure 3: Features of the Growth Period:
Industrial and Immigration (1870-1885).....47

Figure 4: Structures of the Early Railroad
Period (1885-1900).....52

Figure 5: Structures of the Late Railroad
Period (1900-1988).....56

Figure 6: Recorded and Potential Burial Locations.....61

Figure 7: Features of Vague or Unknown Provenience.....72

Figure 8: Features with Specific Provenience.....74

Figure 9: Potential Archaeological Resources.....77

Figure 10: Location and Scheduling of Projected
Development Impacts.....84

Figure 11: Projected Degree of Impact Occasioned
by Current Development Components.....86

Figure 12: Heritage Resource Management Process.....97

Figure 13A: Location of Geo-Technical Holes #1-11.....171

Figure 13B: Location of Geo-Technical Holes #12-16.....172

Figure 13C: Location of Geo-Technical Holes #15-27.....173

Figure 13C: Location of Geo-Technical Holes #15-27.....187

Figure 14: Proposed Heritage Resource Impact
Assessment for the North Assiniboine Node....190

1.0 INTRODUCTION

1.1 Summary of Phase I Concept and Financial Plan

The Forks Renewal Corporation was established, by the Government of Canada, the Province of Manitoba and the City of Winnipeg, to own and develop the riverfront site at the junction of the Red and Assiniboine Rivers. On November 12, 1987, the Board of Directors published the Phase I Concept and Financial Plan. The Phase I Plan is a policy statement of The Forks Renewal Corporation (FRC) which, when implemented, will transform a sterile, out-of-date railroad yard into an active, bustling section of Winnipeg. Using the theme of the "Meeting Place", FRC is endeavoring to produce a mixture of components to attract people with diverse interests.

The area of the development is alternatively known as the East Yard or The Forks and includes:

1. The South Point which is that area lying east of Main Street and south of the Assiniboine River, excluding the land owned by The Fort Garry Curling Club,
2. the area enclosed by the CN Main Line and the Red River,
3. extensions of York and St. Mary Avenues between Main Street and the CN Main Line, and
4. the area east of Main Street and west of the CN Main Line, known as the Hudson Bay House parking lot.

From a heritage perspective, the dominant feature of the Phase I Plan is the strong commitment to the preservation and protection of archaeological and historical resources (FRC 1987:17-19, 23, 24, 29, 30, 33, 35). In addition, the focus of much of the development is upon the historical significance of the area and the events which have occurred there (FRC 1987:33).

A major provision of the Phase I Plan is the expectation that a public archaeology program will be included in the development of the site (FRC 1987:24). Initial projections have placed this activity at the location of Fort Gibraltar II/ Fort Garry I (1816-1835). Similar activities could be undertaken in other areas of the site.

The second major component of the heritage management commitment by FRC is the intention to operate in a pro-active management stance. While many of the provisions of the Manitoba Heritage Resources Act define, or require, actions as a result of development activity, FRC has taken the management initiative by commissioning the development of The Forks Archaeological Plan.

1.2 Objectives of The Forks Archaeological Plan

This report, which introduces The Forks Archaeological Management Plan, has six primary objectives:

- a. examine the legal requirements under which FRC must operate, particularly with regard to heritage resources,
- b. examine the requirements and expectations of the archaeological community of Manitoba and ascertain roles that specific segments can undertake in the heritage resource management of The Forks,
- c. undertake an inventory and initial analysis of the potential archaeological resources contained within the site,
- d. estimate the scope and scheduling of impact upon archaeological resources that will be occasioned by development,
- e. establish guidelines for all archaeological investigation at The Forks; whether it be development

initiated mitigative action, academic research or public programming, and

- f. suggest a structural framework for the implementation of all archaeological activity within FRC's jurisdiction.

The first three objectives were readily attained. Examination of pertinent legislation (City, Provincial and Federal) provided details of specific legal aspects with which development must comply (Section 2). The interpretations of particular sections may be debatable and it may well behoove FRC to obtain legal opinions on specific issues.

Interviews with the majority of the practicing archaeologists in Winnipeg, as well as with representatives of archaeological groups, provided considerable information. The underlying desire from all respondents appeared to be that all archaeological activity at The Forks, both research and management, must be exemplary in quality. The feeling is that The Forks can be, and should be, a showcase for superb heritage resource management. To attain this end, offers of assistance and constructive suggestions were offered by all.

Archival research, utilizing many of the references listed in Appendix C plus the resources of the Provincial Archives of Manitoba and the Winnipeg City Library, produced a preliminary listing of 71 historic features (Section 4; Appendix A). Where possible, structural data and dimensions were recorded for the feature. The time spans of the structures and features are listed in Appendix B. Often, either the beginning date or the end date or both are vague. In some cases, the presence of a structure is known only from one or two maps and it has not yet been determined when the structure was erected or demolished.

While structures are listed with confirmed dates, their actual duration may exceed the listing.

Liaison with staff of FRC enabled a determination of projected location and time frame of currently projected development components (Section 5). As projected impact is dependent upon the location and type of development, rigorous assessment of impact could not be determined for all areas of the site. Areas of high potential for heritage resources (historic and prehistoric) are delineated. Types of impact are described for different components of development.

On-going consultation has been maintained with professional archaeologists and with regulatory agencies to determine appropriate guidelines and standards for archaeological investigation within FRC's jurisdiction (Appendix D). Archaeological methodology can vary from researcher to researcher and from project to project. The guidelines are seen as flexible enough to permit implementation of varied archaeological projects which may be undertaken at The Forks. The proposed standards are generalized to allow for variations in research methodology but will permit investigators to correlate their data with that of others.

The effective implementation of The Forks Archaeological Plan will require a structural framework which is helpful to FRC and sensitive to the heritage resource base. To this end, a management structure ensuring accountability is proposed. This structure also makes provision for on-going communication with expert heritage advisors as well as providing for community participation.

2.0 RELEVANT LEGISLATION

The proposed development at The Forks will be governed by several legislated regulations; federal, provincial and municipal. The Forks Archaeological Plan is formulated to comply with all pertinent heritage legislation. The primary legislation is the Manitoba Heritage Resources Act, proclaimed in 1986. This, and other relevant legislation, will be reviewed and the implications examined.

2.1 Manitoba Heritage Resources Act

This act was assented to on July 11, 1985 and was proclaimed in May, 1986. The act is concerned with the preservation and protection of heritage sites resources within the jurisdiction of the Province of Manitoba. A heritage resource is defined as including:

1. "a heritage site (i.e., a site designated as a heritage site under Section 2),
2. a heritage object, and
3. any work or assembly of works of nature or of human endeavor that is of value for its archaeological, palaeontological, pre-historic, historic, cultural, natural, scientific or aesthetic features, and may be in the form of sites or objects or a combination thereof" (Section 1).

A heritage object is defined to include:

1. "an archaeological object,
2. a palaeontological object,
3. a natural heritage object, and
4. an object designated as a heritage object by the Lieutenant Governor in Council under subsection [2]" (Section 43[1]).

These definitions are further amplified in Section 43[1].

An 'archaeological object' refers to an object "that is the product of human art, workmanship or use, including plant and animal remains that have been modified by or deposited due to human activities".

'Human remains' means "the remains of human bodies that in the opinion of the minister have heritage significance and that are situated or discovered outside a recognized cemetery or burial ground in respect of which there is some manner of identifying the persons buried therein".

A 'palaeontological object' means "the remains or fossil or other object indicating the existence of extinct or prehistoric animals".

A 'natural heritage object' means "a work of nature consisting of or containing evidence of flora or fauna or geological processes.

Many of the clauses of the act pertain to the proposed development at The Forks. These relevant clauses can be classed within seven categories: Regulatory Provisions, Heritage Permits, Heritage Resource Impact Assessments, Applicability of the Act, Custody of Artifacts, Burials and Funding.

2.1.1 Regulatory Aspects of the Act

A number of the sections of the Act pertain to its regulatory parameters. The most extensive of these are Sections 16 and 17 which outline the steps which may be taken by the minister

"where the minister believes on reasonable and probable grounds that a person is in breach of a provision of section 12 or an order made thereunder, or a provision of section 14 or the terms and condition of a heritage permit, or a provision of a requirement of the minister imposed or an agreement entered into under section 15..."(Subsection 17[1]).

These steps include examination of the premises (Subsection 16[1]), entry into the premises with the owner's or lessee's permission (Subsection 16[2]), issue of a warrant with respect to the premises (Subsection 16[4]), imposition of remedial action (Subsection 17[1]), judicial authorization of a stop work order (Subsection 17[2], clause [a]) or mitigative action (Subsection 17[2], clause [b]) or ministerial declaration of a stop work order (Subsection 17[3]). If action is taken by the minister or designates under Section 17, recompense to the Crown can be accrued under Subsection 17[4] which states:

"Where the minister takes steps under this section to remedy a breach committed by any person, the minister may recover from the person, by action in any court of competent jurisdiction but subject always to any order of a judge or justice made under this section in respect thereof,

- [a] the costs and expenses necessarily incurred by the minister in taking those steps; and
- [b] the amount of any grant made to the person under this Act by way of assistance."

Judgements and/or ministerial actions under Section 17 may be appealed to Court of Queen's Bench as set forth in Section 18.

With reference to the protection and preservation of individual artifacts, Section 51 states that:

"No person shall destroy, damage or alter any heritage object, whether or not the person is the owner thereof, or any human remains."

Section 46, which would apply to all persons operating within the development area and not covered by a specific heritage permit for a specific operation, requires reporting of any discoveries. This section states that:

"Every person who finds an object that is or that the person believes to be a heritage object, or remains that are or the person believes to be human remains, shall forthwith report the find to the minister and shall not handle, disturb or do anything to the object or the remains except in accordance with such requirements as the minister may prescribe."

The provision for reporting the discovery to the minister or representatives of the minister at Historic Resources Branch can be alleviated by having sub-surface impact activities monitored by an archaeologist holding a heritage permit.

Penalties applicable for contravention of the provisions of the Act are delineated in Section 69 which contains the following two subsections:

"Any person who contravenes or fails to observe a provision of this Act or a regulation, order, by-law, direction or requirement made or imposed thereunder is guilty of an offense and liable, on summary conviction, where the person is an individual, to a fine of not more than \$5,000.00 for each day that the

offence continues and, where the person is a corporation, to a fine of not more than \$50,000.00 for each day that the offence continues."

"A judge or justice convicting a person of an offence under subsection [1] may, where the offence committed resulted in damage to or the demolition of or destruction of a heritage resource, order the person to pay, in addition to any penalty that may be imposed, the cost of the repair, restoration or reconstruction of the heritage resource."

2.1.2 Heritage Permits

Basically, a heritage permit recognizes ministerial approval and permission for the implementation of an activity at a site containing heritage resources. Several sections in the Heritage Resources Act are applicable.

Subsection 13[1], the most comprehensive, states:

"The minister, after considering any heritage resource impact assessment, development plan and other documents, material and information received under Section 12 in respect of any work, activity, development or project upon a site,

[a] may approve the work, activity, development or project in the form in which it was proposed, or with such variations as the minister deems necessary for the protection of the site or any heritage resources or human remains upon or within or beneath the site;

[b] may require the allocation of such amount as the minister deems necessary for the purpose of mitigating any damage to and for any subsequent restoration or maintenance of the site or the heritage resources or human remains, and may further require that the allocation and the use thereof for those purposes be secured by a bond in an amount and in a form to be approved by the minister;

[c] subject to subsection [2] and where the owner or lessee of the site complies with clause [b], ... may issue a heritage permit authorizing the proposed work, activity, development or project, in the form in which it was proposed or, as varied under clause [a], and may make the heritage permit so issued subject to such terms and conditions as the minister deems necessary."

This section follows naturally from Section 12[2] as part of the regulatory aspect of the Act. Often, projects are approved without variance, particularly when the heritage resource impact assessment has adequately addressed the problems of mitigative action. The import of clause [b] could be the imposition of an arbitrary value to be allocated for mitigative action. However, this can be alleviated by requiring costing of potential mitigative activity on a component-by-component basis. This will entail that the heritage resource impact assessments for each component provide estimated mitigative costs, or that a percentage of the development cost of a component be allocated for mitigative action.

The Subsection 13[2] referred to in the above section allows for the issuance of a heritage permit without having conducted a heritage resource impact assessment. However, given the public interest in the heritage resources of the site, this mechanism would not be politic, even if feasible. This subsection states that:

"Where the minister deems it advisable to do so, the minister may issue a heritage permit under subsection [1] without requiring the submission of a heritage resource impact assessment or any or all of the additional things that may be required under section 12."

In addition, Subsection 14[1] states that:

"No person shall carry out any work, activity, development or project ... upon or within a site ... that is a site with respect to which the minister has made and served an order under subsection 12[2], unless and until the minister has issued a heritage permit under section 13 authorizing the work, activity, development or project, and unless the work, activity, development or project is carried out in accordance with such terms and conditions as the minister may impose and as may be set out in or attached to the heritage permit."

Further sections which refer to the necessity for a heritage permit are Sections 53 and 54. These sections state that:

"No person shall search or excavate for heritage objects or human remains except pursuant to a heritage permit and in accordance with such terms and conditions as may be prescribed by the minister and set out in or attached to the heritage permit."

"The minister may issue any heritage permit required for the purposes of this Part, upon the receipt of an application therefor in a form approved by the minister, accompanied by such fee as the Lieutenant Governor in Council may by regulation prescribe and such information, particulars and documents as the minister may require."

To summarize, the Manitoba Heritage Resources Act is explicit about the necessity for a heritage permit which authorizes the implementation of any activity which may impact upon a known or probable archaeological site. The relevant sections approach this regulatory provision from the aspect of entire sites (Sections 13 and 14) and the aspect of specific artifacts (Sections 50, 53 and 54).

2.1.3 Heritage Resource Impact Assessment

This phrase is defined as "a written assessment showing the impact that proposed work, activity or development or a proposed project is likely to have upon heritage resources or human remains" (Section 1). Two sections directly pertain to this aspect, while others, which are examined under different categories, make reference to this provision. The primary clause is Subsection 12[2], which states, in part,

"Where the minister has reason to believe that heritage resources or human remains upon or within or beneath a site, ... are likely to be damaged or destroyed by reason of any work, activity, development or project ... that is being or is proposed to be carried out upon the site, the minister may ... require the owner or lessee to ... submit to the minister an application for a heritage permit authorizing the work, activity, development or project, and thereafter, if the minister ... so requires, to submit ... a heritage resource impact assessment or development plan or both, ... prepared at the cost of the owner or lessee."

While this clause strongly suggests that a heritage resource impact assessment and/or development plan is required, it does not make the provision for either mandatory. However, within the regulatory sections, penalties can be assessed for disregarding this provision.

The format of documents referred to in Section 12[2] is covered by Section 12[3], which states that

"Any application for a heritage permit, and any heritage resource impact assessment or development plan required under this section shall be in such form

and shall contain such information as the minister may, by regulations, prescribe."

Pertinent forms are available from Historic Resources Branch, Manitoba Culture, Heritage and Recreation. Also, information regarding the type and detail of required information can be obtained from Historic Resources Branch.

While not defined as a heritage resource impact assessment, a similar provision can be found in Section 20, which states:

"Where the minister has reason to believe that there are heritage objects or human remains on or under any land, and that they are likely to be damaged or destroyed by reason of any activity including commercial, industrial, agricultural, residential, construction or other development or activity, the minister may enter into an agreement with the owner of the land or the person undertaking the activity respecting the searching for, and the excavation, investigation, examination, preservation and removal of, any heritage object or human remains found on or under the land".

This section is very similar to Section 12[2], except that it is oriented toward the protection of individual artifacts, whereas the previous subsection dealt with archaeological sites in toto.

2.1.4 Applicability and Constraints of the Act

The Manitoba Heritage Resources Act has jurisdiction on all land that is under jurisdiction of the Province of Manitoba. This is the entire province, excepting those lands which are under jurisdiction of the Government of Canada (e.g., Indian Reserves, National Parks).

The Act is binding upon the Crown (Section 66) and is constrained by Section 64 and Section 65, which read respectively:

"This Act is subject to any subsisting municipal zoning by-laws or other subsisting zoning restrictions enacted or made pursuant to an Act of the Legislature."

"This Act is subject to the provisions of any building code established by or under an Act of the Legislature."

2.1.5 Custody of Artifacts

The Act is quite explicit about ownership and custodianship of artifacts which are recovered. Title to all artifacts found after proclamation of the Act rests in the Crown. Custody rights may be vested with the finder or the owner of the land from which the artifact was recovered. Section 44 contains four relevant subsections which are cited below. A fifth subsection defines continued rights of ownership which were in force prior to proclamation of the Heritage Resources Act and is not cited as it's provisions are not germane. The relevant subsections state:

"Subject to subsections [2], [3], [4] and [5], the property in, and title and right of possession to, any heritage object found by any person on or after the day this Act comes into force is and vests in the Crown, but

[a] where the heritage object is found on or under Crown land or municipal land, or submerged or partially submerged beneath the surface of any watercourse or permanent body of water on Crown land or municipal land, other than such Crown land or municipal land as the minister may by regulation exclude from the application of this clause, it shall remain in the custody of the finder; and

[b] where the heritage object is found on or under private land, or submerged or partially submerged beneath the surface of any watercourse or permanent body of water on private land, it shall remain in the custody of the owner of the land;

unless the finder or owner, as the case may be, elects to give custody of the heritage object to the Crown".

"A person who retains custody of a heritage object under subsection [1] is deemed to be holding the heritage object in trust for the Crown, and the minister may on behalf of the Crown enter into an agreement with the person respecting the housing and protection of the heritage object and containing such other terms and conditions to be observed by the person in respect of the heritage object, including the length of the period of time during which the person is to retain custody of the heritage object, as the minister and the person may agree."

"The custody of a heritage object retained under subsection [1]

[a] is transferable, by the person who has the custody, to any other person at any time;
and

[b] upon the death of a person who has the custody, passes to the heirs, executors or administrators of the person;

and any transferee, heir, executor or administrator so receiving the custody is deemed to be holding the heritage object in trust for the Crown and subject to any agreement entered into under subsection [2] and to the provisions of this Part."

"The minister may at any time, on behalf of the Crown, by order, waive any right of ownership of a heritage object that the Crown has under subsection [1]."

The above Subsection 44[4] is constrained by Section 45 which differentiates between artifacts and human remains in terms of ownership. Section 45 states that

"The property in, and the title and right of possession to, any human remains found by any person after May 3, 1967, is and vests in the Crown."

The implications of Section 44 are that each of the four landowners within the East Yard, The Forks Renewal Corporation, Parks Canada, Canadian National Railway and The City of Winnipeg, have custody rights to the artifacts found within their jurisdictions. The import of exercising artifact custody rights and ultimate deposition of artifacts are discussed in the later section of this report which puts forth The Forks Archaeological Plan. However, this discussion is concerned primarily with artifacts found within FRC's jurisdiction and, to a lesser extent, those found on Parks Canada land. The other two landowners may or may not follow the policy decided by FRC.

2.1.6 Burials

As there is a high potential for encountering burials during the development at The Forks, it is pertinent to review the provisions of the Act concerning human remains. Section 45, stated above, indicates that title and right of possession is retained by the Crown. Section 46, referred to in 2.1.1, requires the immediate reporting of the discovery of human remains. Section 51, also referred to in 2.1.1, prohibits the damage or alteration of human remains. Section 50, Section 53 and Subsections 12[2] and 13[1] mention human remains in the context of heritage resource impact assessments (2.1.3) and heritage permits (2.1.2).

In addition, a Burial Policy has been developed by Historic Resources Branch. The salient points of this policy are:

1. no human remains should be disturbed or removed from their original resting place unless removal is unavoidable and necessary;
2. anyone who uncovers human remains shall immediately cease work in that area and contact the Historic Resources Branch;
3. neither the remains, nor associated artifacts, shall be further disturbed until the arrival of personnel designated by Historic Resources Branch as qualified to take further action with respect to the exhumation and removal of human remains and associated artifacts;
4. personnel designated by Historic Resources Branch shall carry out the exhumation and removal in accordance with professional archaeological standards.
5. such work will be conducted as much as possible out of the public eye;

6. identification procedures such as non-destructive analysis to determine ethnicity, tribal affiliation, physical characteristics, age, sex and cause of death, injuries and pathologies shall be carried out by qualified personnel designated by Historic Resources Branch;
7. where human remains may be identified with a particular cultural group, procedures with regard to exhumation, identification and reburial will be reviewed with that community;
8. following identification, all human remains shall be reburied in a place that will not be disturbed by subsequent foreseeable land development or natural erosion;
9. the reburial location will be in a location determined by the Province where identification procedures have:
 - a. not traced the human remains to a particular cultural group, or
 - b. no cultural group expresses an interest.
10. the reburial location will be determined in consultation with an appropriate organization representing an existing cultural group with which the remains have been identified.

Further considerations regarding the discovery and treatment of human remains are provided by The Manitoba Fatality Inquiries Act.

2.1.7 Provisions for Funding

Provision for assistance for heritage resource management is made by certain sections of the Act. Section 15 and 34 provide for financial and/or professional and technical assistance of the maintenance and management of provincial or municipal heritage sites. Neither are applicable at the present time as the area has not been designated as a Heritage Site. In lieu of designation, an application for funding may be made under Section 60 which reads:

"For the purposes of this Act, the minister or a municipality may

[a] cause to be prepared and produced informational material respecting the heritage resources of the province or municipality and make the material available to the public by means of circulars or pamphlets or other printed material, radio, television or newspaper advertising, or public lectures;

[b] undertake or, by means of grants or other assistance, support and encourage the undertaking of educational programs or courses in the public schools, colleges and universities of the province, or educational programs for the public at large, respecting the heritage resources of the province or municipality;

[c] undertake or, by means of grants or other assistance, support and encourage the undertaking of programs of research into the heritage resources of the province or municipality;

[d] provide assistance, in the form of grants or professional and technical services or otherwise, to any group, society, organization, agency or institution within the province dedicated to the discovery, maintenance, restoration, preservation, protection and study of the heritage resources of the province or municipality, either for the purposes of their work in general or for the purposes of any specific project relating to the heritage resources of the province or the municipality.

This section is further amplified by Section 61 which states that:

"The minister, or a municipality, may enter into an agreement with any person, group, society, organization, agency, institution, museum, government or other body within the province ... respecting

- [a] the co-ordination of programs;
- [b] the dissemination of information to the public;
- [c] public displays;
- [d] research programs;
- [e] programs of search and discovery, restoration and preservation;
- [f] programs of reciprocal professional and technical assistance;

relating to the heritage resources of the province or the municipality.

2.2 The Manitoba Fatalities Inquiry Act

While the Manitoba Fatality Inquiries Act is primarily concerned with recent deaths, sections of the Act pertain to the discovery and investigation of human remains of any temporal period.

2.2.1 Jurisdiction

A medical examiner, appointed under the Act, has jurisdiction throughout the province (Section 5[1]).

Under the terms of reference of the Act, Subsection 6[1] states, in part, that:

"Where a medical examiner is informed of the presence of a dead body of any person within the province, and it appears that

[a] there is reasonable cause to suspect that the person died by violence, undue means, or culpable negligence or in an unexpected, unexplained or sudden manner; or ...

[c] the cause of death is undetermined; ...

he shall forthwith take charge of the body, inform the police, and make diligent inquiry respecting the cause and manner of the death of the person".

This section does not, nor does any other section, provide temporal limits as to the applicability of the Act. It applies equally to human remains, whether one day or 1000 years has passed since the death of the person.

2.2.2 Treatment of Human Remains

Two sections of the Act have implications for archaeological and/or development impact discovery of human remains. Subsection 23[1] states that:

"In case of sudden death from any cause, no person shall remove, or cause to be removed, the body of a deceased person from the place where it is at the time of death until a medical examiner or police constable or police officer has given his order permitting the removal ..."

In addition, Subsection 8[4] allows that:

"The minister may direct a post-mortem examination to be made in any case where he deems it advisable".

In accordance with such post-mortem examination, Subsection 8[5] states that:

"Where under this or any other Act of the Legislature, any person is authorized to perform a post-mortem examination, he may, for the purposes of the post-mortem examination, excise or remove any part of the body for scientific or laboratory examination".

2.2.3 Treatment of 'Grave Goods'

'Grave goods' is an archaeological phrase referring to heritage objects or artifacts which are associated with human remains. These may be personal items interred with the individual or parts of the grave furniture (coffins, bark shrouds, etc.). Usually, these artifacts can provide a great deal of information concerning the cultural identity, sex, and status of the individual with whom they were interred. Two portions of the Act pertain to these artifacts.

Subsection 6[3] states that:

"A medical examiner may prohibit the removal of any exhibits without his permission, until his inquiry is completed."

Section 28 provides that:

"When a medical examiner makes an investigation under this Act he shall take charge of any money and other personal property found on or near the body of the deceased person and shall deliver it, together with any exhibits that he considers should be retained, together with an inventory of the property to a representative of the police force in charge of that area to be delivered to the person or persons entitled to its custody or possession ..."

This section may be construed to indicate that the 'person or persons' so entitled would be individuals, institutions or corporations holding a valid heritage permit pertaining to the operation during which the discovery of the human remains was made.

2.3 The Manitoba Environment Act

Telephone discussions were held with officials of Manitoba Environment. It was indicated that there was very little likelihood of any of the sections, by-laws or regulations of the new Environment Act pertaining to any aspect of the heritage resources management program. Due to the extremely disturbed conditions in the area, it is highly unlikely that any rare or endangered species of plants would occur at The Forks.

2.4 Manitoba Labor Code Act

Provisions of the Act would apply to the conduct of archaeological operations at The Forks. However, these would only pertain to The Forks Renewal Corporation when it is acting in the role of employer, rather than proponent.

2.5 Manitoba Workplace Safety and Health Act

Provisions of the Act, especially sections of Manitoba Regulation 189/85, cover many aspects of archaeological activity. These aspects include safety, sanitation and excavation procedures. As FRC's role, with regard to the various archaeological operations, will be that of client or proponent, none of these provisions will directly pertain to The Forks Renewal Corporation. Rather, it will be the responsibility of the director of each operation to ensure compliance with the regulations.

2.6 City of Winnipeg Legislation

Investigation with the office of the City Clerk of Winnipeg has resulted in the conclusion that no by-laws and/or regulations have been promulgated which are pertinent to the discovery of or the management of archaeological resources. Accordingly, there are no local jurisdiction provisions which would augment any of the provisions of the Manitoba Heritage Resources Act.

2.6.1 Rivers and Streams Authority

The Rivers and Streams Authority holds jurisdiction for a distance of 350 feet (106.7 m) inland from the shore of the body of flowing water and is primarily concerned with projects affecting bank stability and flow impedance.

Officials of the Authority have indicated that small scale excavations will probably not concern the Authority. Large scale excavations which may affect bank stability should be discussed with the Authority in advance of commencement of operations. Such operations, if they occur, will probably be conducted as mitigative action in conjunction with a major development component, which, in itself, would be the subject of discussions with the Authority.

3.0 CONCERNS AND INTERESTS OF THE ARCHAEOLOGICAL COMMUNITY

3.1 Overview

The archaeological community recognizes that a great opportunity for quality heritage resource management can be inherent in the development of The Forks. The site is an unique archaeological resource, not only in Manitoba, but in Canada. Accordingly, there is a strong desire to have the resource utilized to its maximum capacity, both in terms of research accessibility and broad-based involvement.

Naturally, as within any other grouping of people, there are different concerns, interests and requirements. Some of these concerns were presented to The Forks Renewal Corporation (FRC) during the public hearings in 1987 (FRC 1987:Appendix II). Examination of these concerns and mechanisms for addressing them will be undertaken in a later section.

Generally, the archaeological community applauds the recognition of the special character of the heritage resources at The Forks and is prepared to work with FRC to enable implementation of a management plan which addresses their concerns.

3.2 Special Interest Groups

There are two main divisions in the archaeological community; professional archaeologists and avocational archaeologists. Due to different career paths and interests, sub-divisions can be identified within each division. For the purposes of this report, five groups will be discussed.

3.2.1 Regulatory Archaeologists

This group consists of archaeologists employed by Parks Canada and Historic Resources Branch, Manitoba Culture, Heritage and Recreation. In their regulatory aspect, these archaeologists are concerned with development of adequate management plans which will protect and/or preserve the heritage resources at The Forks. Also, as part of their mandate, they are concerned with the quality and uniformity of the standards of the various archaeological investigations which will be undertaken during the development.

This report has been prepared, in part, to allay concerns about an adequacy of heritage resource management. The primary components of an appropriate management plan are the recognition of the resources (Section 4), the assessment of the projected impact (Section 5), and the implementation of appropriate procedures (Section 5). Appendix D will address the concerns about the quality of investigations.

3.2.2 Consulting Archaeologists

This group will be active at The Forks as agents of the development proponents. The primary concern within this group is the development of explicit guidelines, thereby enabling accurate bids and expeditious implementation of the various projects.

This concern will be addressed in The Forks Archaeological Plan. Guidelines concerning artifact recovery, analysis and curation standards will be put forth in Section 6.

3.2.3 Academic Researchers

This group of professional archaeologists have quite different concerns and requirements. Most, but not all, are affiliated with academic institutions. Staff archaeologists with Historic Resources Branch, Parks Canada and Museum of Man and Nature can also be considered as part of this group. Within Manitoba, the three universities have archaeological programs but, for reasons of varying research orientations, not all archaeologists or students will be interested in undertaking research at The Forks. As well, not all researchers who may be interested in the site will be resident in Manitoba.

The research programs that this group may wish to implement are usually topic-specific, such as early fur trade economy, the military encampments, Metis farmsteads, etc. Not all portions of the site offer the same heritage resources, so that not all researchers will wish to access the same portion of the site. Another aspect of the academic programs may be the operation of a teaching program, either on-site as an archaeological field school or by use of recovered artifacts in laboratory research courses.

In attempting to permit fulfillment of these different needs, The Forks Archaeological Plan must be flexible enough to accommodate valid research requests and integrate them into an on-going program of heritage resource impact assessments and mitigative actions. In some cases, the proposed research program may supplant a required mitigative action or serve as necessary heritage resource impact assessment.

The same field guidelines for archaeological investigations would apply to this group as to any other group undertaking archaeological activities within the site. Similar curation practices would be required as the ultimate repository for artifacts recovered under academic projects would be the same as for those obtained during any other component. During analysis, the artifacts would be considered as on loan from the repository.

Other researchers, who are not archaeologists, may be interested in participating in archaeological research at The Forks. Investigations of riverine sedimentology, flood dynamics as reflected in soil deposition, and past environmental and climatological conditions could be accommodated within an archaeological management plan.

3.2.4 Avocational Archaeologists

This group is the dedicated and informed portion of the public who have an interest in archaeological and historical matters and who have made a commitment to the furtherance of their knowledge of the discipline. These are the individuals who join societies such as the Manitoba Archaeological Society, the Manitoba Historical Society and the Archaeological Institute of America. They provide volunteer services at museums and other

institutions. In addition, many volunteer their services on archaeological 'digs'.

This group may also hold the highest expectations concerning possible involvement with any archaeological activity at The Forks, particularly in light of a commitment by FRC to "public excavations" (FRC 1987:24). The task of enlisting the support of this, often influential, group is not difficult. The problem may lie in over-enthusiasm and the necessity for limiting active involvement until a public archaeology program can be initiated. Once a public program is in place, this group can provide strong support, especially if they are involved in the operation to some degree.

3.2.5 Interested Members of the Public

This nebulous, ill-defined group is the ultimate consumer of all heritage information derived from The Forks. The public is, also, the ultimate proponent of all development, investigation and research as the funding from the three shareholders of FRC is tax-derived. The expectations of this group are difficult to ascertain. However, the degree of interest can be exemplified by the fact that 17 of the 66 (26%) private submissions to FRC during the public hearings mentioned archaeology, history or heritage resources (FRC 1987:Appendix II).

It will be necessary to develop mechanisms for informing this group of the process and progress of the archaeological program. Providing public information will engender public interest which may translate into increased awareness of the mission of The Forks Archaeological Management Plan. This increased awareness may be instrumental in developing funding for an on-going public archaeology program.

3.3 On-going Involvement of the Archaeological Community

A primary consideration, during the development of this report, was consultation with members of the archaeological community. Each of the above groups provided information that was useful.

Consultations with members of the three professional groups have assisted in the development of a plan which provides a series of guidelines delineating required standards for field operation, artifact analysis and curation, and data reporting. The benefit of involving these groups, on a consultative basis, is the development of a set of minimum standards which meets with the approval of academic researchers, consulting archaeologists, and those whose mandate includes the regulation of archaeological activities. On-going consultation should be maintained to co-ordinate incorporation of new techniques to keep the archaeological program abreast of advances within the discipline.

Liaison with the public archaeology groups should be maintained, during both the initiation and operation of the public portion of the archaeology program. An organization, with an interest in archaeology at The Forks, could operate as an arms-length funding agency for part of the operating costs of a volunteer program which may include public 'digs' and interpretive programs. Support from the general public, engendered through a public awareness program, could be channelled through such a group.

4.0 HERITAGE RESOURCES AT THE FORKS

Since Glacial Lake Agassiz receded from the area, the junction of the Red and Assiniboine Rivers has been the site of recurring human activity. Artifacts found within the City of Winnipeg date back several millenia, indicating that people have been hunting, fishing and living here for considerable time depth.

The first residents were big game hunters who arrived approximately 6000 B.C. As the temperatures continued to increase following the end of the glacial period, people tended to rely heavily on the resources of river valleys and forest edges. After the climate had ameliorated, the inhabitants, in conjunction with bison hunting on the plains, continued to use a wide variety of plant and animal resources found near the rivers.

Around A.D. 1, ceramics were introduced into Manitoba by a population from the eastern forests. The area may well have been a meeting place of the eastern forest dwellers and the bison hunters of the western plains; each of whom possessed resources for trade with the other group. Cultures evolved and adapted to changing climates and environments. Populations moved into and out of the region. At the beginning of the European presence, people from four Indian cultures utilized The Forks on an intermittent basis: Assiniboine, Ojibwa (Saulteaux), Cree and Sioux.

The rich animal resources of the area drew European fur traders and explorers, beginning with the expeditions of La Verendrye in 1737. The next seventy years saw occasional, or irregularly recorded, use of The Forks as a camping and trading location. Rivalry of the Northwest Company and the Hudson Bay Company resulted in intense utilization of The Forks as a transportation

nexus. After the amalgamation of the two companies in 1821, various activities were undertaken in the Hudson Bay Company Preserve during the next half-century.

The advent of the railroads and the burgeoning growth of Winnipeg resulted in considerable activity on the peripheries of the site. Structures associated with the railroad companies were concentrated along the banks of the Red and Assiniboine Rivers. Industrial establishments sprang up along the northern portion of the west side of the Red River, as well as along the streets connecting the centre of Winnipeg with the waterfront. During the century that the area was a railroad yard, numerous buildings were constructed; some of which are still standing, while others have been demolished, their purpose having been phased out.

Now that The Forks is returning to its original role as "a meeting place", The Forks Renewal Corporation is committed to preserving the heritage of the past, not as dusty and static facts, but as a vibrant part of the flavor of 'a special place'. Subsequent portions of this report detail the events of the past and the evidence of those events which may be uncovered during the future activities at The Forks. Further sections examine methods of discovering and assessing that evidence, safeguards that are necessary for the protection of these heritage resources, and mechanisms for sharing the resources with the people of Winnipeg, Manitoba and Canada.

4.1 Prehistoric Period

The rich potential of The Forks for evidence of prehistoric occupations has been only minimally confirmed. Two excavations have yielded traces of prehistoric material: the 1984 Parks Canada archaeological excavation in the Fort Gibraltar II vicinity and the 1988 construction of the ramp in the Parks Canada section of the site.

It is hypothesized that the first inhabitants of the area were large game hunters who arrived at The Forks prior to 6000 B.C. A projectile point, of the style used by these people, has been found at St. Norbert (Ebell 1982). These hunters may well have camped at The Forks, fished at the junction of the rivers or hunted the extinct, giant bison by stampeding them into the muddy flats of the Red River.

The average temperature continued rising after the disappearance of the glaciers until it reached its maximum values during the period known as the Altithermal (ca. 5500 to 3000 B.C.). During this prolonged warm climate, human and animal populations tended to abandon the desiccated plains and concentrate in or near the river valleys. Large game probably became scarce and the populations had to develop a broad-based food economy, utilizing small mammals, fish and plants.

About 3000 B.C., a change in the style of spear points occurs. It appears that a population or series of populations began moving into Manitoba from the southeast. These people harvested a wide range of resources, including hunting bison on the plains after the climate had ameliorated. Stylistic variations in the stone tools used by these peoples have been used by archaeologists to identify temporal and geographical boundaries for similar styles. The period, until A.D. 1, is collectively

called the Archaic Period. In Manitoba, the archaeological record contains evidence of Oxbow, McKean and Pelican Lake styles of projectile points. These styles are seen as diagnostic elements of the material culture of three different groups of people whose territories and time periods overlapped. Copper tools, dating from this period, have been found throughout southern Manitoba. The copper is derived from mines near the eastern Great Lakes and may have arrived in Manitoba as the result of long-distance trade. The other alternative is that peoples of the 'Old Copper Complex' migrated into Manitoba from the east as the climate became cooler and moister.

Another innovation, also originating in the east, was the manufacture of earthenware pots. About A.D. 1, a forest-adapted culture in the eastern part of Manitoba adopted the coil technique for making ceramic vessels. This style has been called 'Laurel' and vessels of this style are found throughout the southern Boreal Forest and from the Red River to the Manitoba/Ontario border. In some areas, the 'Laurel' culture lasted until A.D. 1000. In southern Manitoba, a new pottery manufacturing technique and an extremely different decorating style serve to denote the 'Blackduck' culture. This culture may be originally derived from southern Ontario and is probably the result of population movement. The archaeological recoveries from the 1984 Parks Canada excavations included eight to ten stratigraphically separate, prehistoric 'living-floors' or occupations. Most of these contained ceramic fragments which could be identified as 'Blackduck'. Three radiocarbon dates were obtained from charcoal associated with the ceramics. These dates were A.D. 510, A.D. 725 and A.D. 845. Evidence of the Blackduck ceramic tradition continues until the advent of the Fur Trade. Another ceramic tradition, the 'Selkirk' culture, existed at the same time as the 'Blackduck' culture. Geographically, the Selkirk peoples occupied the area to the east of the Red River, although there

is evidence of overlap of territorial occupation by the two groups. As both ceramic traditions existed until the beginning of the historical period, various researchers have attempted to identify the ceramic traditions with specific tribes. As yet, unequivocal evidence has not been recovered.

During the period immediately preceding the fur trade, the Assiniboine, the Cree and the Ojibwa considered the region of The Forks as part of their territory. Sioux war parties often raided into the area. Ray (1974) indicates that the allied Cree and Assiniboine tended to control the area ca. 1765. By 1821, it appears that the Ojibwa had displaced these groups toward the west. It appears that The Forks was a strategic point in a no-man's land around which the wintering grounds, hunting area and claimed territories of the Indian tribes continuously shifted. Some of the identified occupations of the early exploration period will be discussed in the subsequent section.

4.2 Exploration and Early Fur Trade Period

The Forks area (north side and South Point) was utilized during the Proto-Historic/Fur Trade period (the 18th Century) by a number of native groups, by parties of explorers and by representatives of at least two Fur Trading Companies. The habitation sites, used by these peoples, ranged from temporary to short and long term dwellings. In many instances, there are no descriptive records of these sites. However, where data is available, it will be mentioned.

La Verendrye, travelling extensively throughout the region in the early 18th century noted native camp sites at The Forks. In 1737, he reported two villages of Assiniboine (Fig. 1:1) at The Forks while in 1738, ten cabins of Cree (Fig. 1:2) were living there. Two Indian lodges (Fig. 1:6) were reported by McDonnell in 1793 and Alexander Henry and John Tanner both reported sighting a Saukteaux camp (Fig. 1:9) in 1800. Finally, just prior to 1800, Tanner reported a camp of Ojibwa and Ottawa (Fig. 1:8) residing at The Forks. He also noted that Sioux war parties occasionally raided the area. No architectural specifications of these dwellings or specific locations have been found to date.

During this period of exploration, other individuals spent time at The Forks. Winter camps were inhabited by St. Pierre in 1752-53 (Fig. 1:4) and Bruce and Boyer in 1781-82 (Fig. 1:5). Again, the whereabouts or size of these dwellings are unknown.

As the fledgling Fur Trade business increased, so did water traffic at the junction of the Red and Assiniboine Rivers. In 1793, McKay recorded a camp of Nor'Westers (Fig. 1:7) at The Forks. This camp may have been located on South Point as McKay states "...we deposited 200 lb. Beat [sic] meat and fat on the south side of the River" (Guinn 1980c:37).

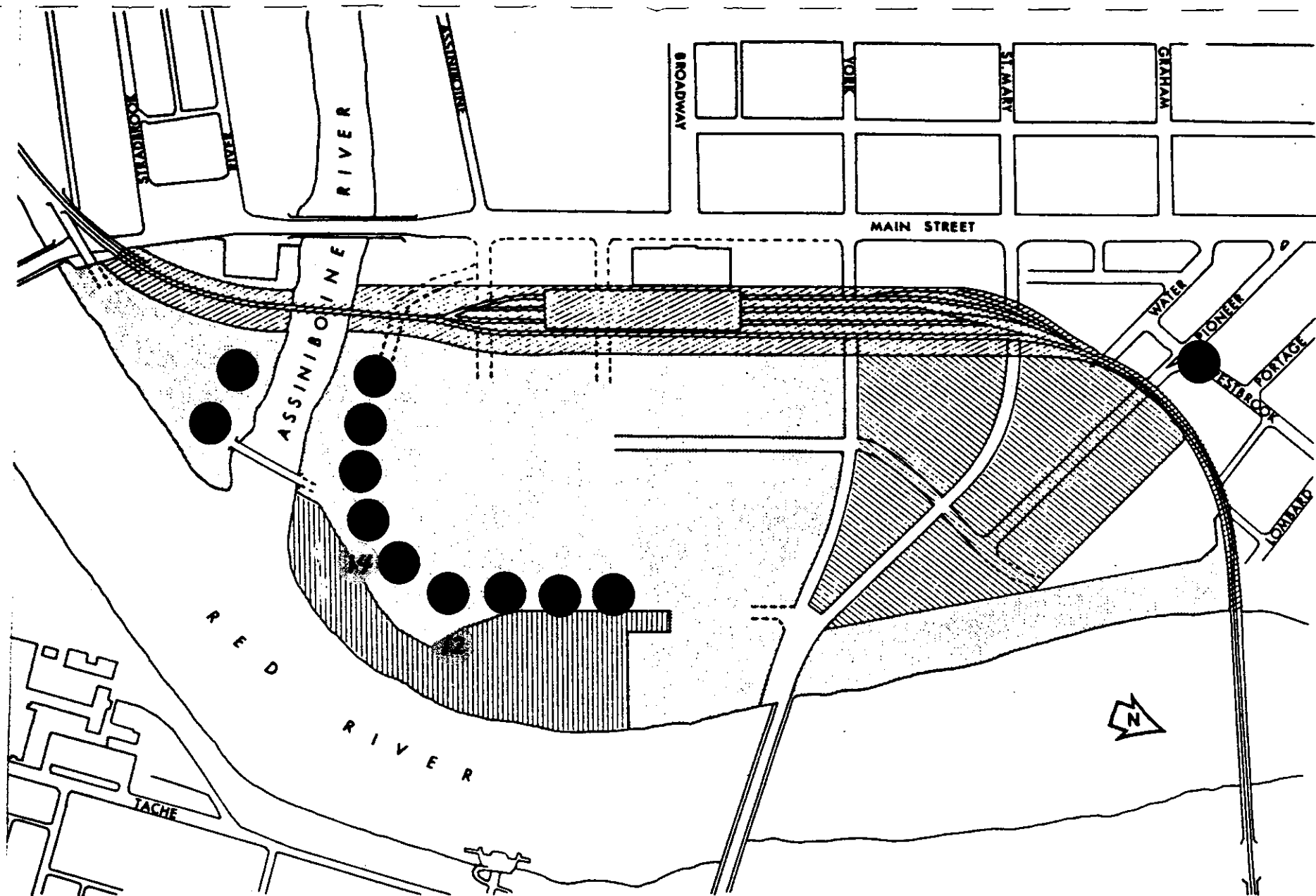


FIGURE 1: EXPLORATION AND EARLY FUR TRADE FEATURES

- -- Features with Vague Provenience
- -- Features with Specific Provenience

From 1800 to 1808 Alexander Henry, a representative of the Hudson's Bay Company, travelled extensively throughout the Red-Assiniboine area. Henry, in his journals, reported that he passed The Forks 20 times (Fig. 1:10) during the eight years and frequently met with groups of Nor'Westers at the junction (Guinn 1980c:38).

Henry also refers to a small dwelling occupied by Louis Dorion, in 1803 (Fig. 1:11). This appears to have been a short term residence, perhaps a winter camp, and again no mention is made of size, type or location.

The longer-term dwellings at The Forks, during the Exploration/Fur Trade period, were in the form of Forts. These were Fort Rouge, Fort Gibraltar I, Fidler's Fort, and Fort Gibraltar II.

Fort Rouge, established by a compatriot of La Verendrye, M. de Louviere in 1738 (Guinn 1980c:33), is the first known fort in The Forks area. A disagreement in the literature places the general location of Fort Rouge alternately on the South Point side or the North Assiniboine side. Bell (1927) argues for Fort Rouge on the North side but Guinn (1980b:6-11) vigorously suggests that the Fort is on South Point (Fig. 1:3). Fort Rouge's existence was short lived. It was abandoned by 1749 and no descriptions of it have been found in the literature.

The next fort at The Forks was Fort Gibraltar I (Fig. 1:12) built in 1810 by the North West Company. From 1811 to 1816 conflict was rife between the two fur trade companies, the North West Company and the Hudson's Bay Company as well as the first settlers, the Selkirk settlers. In 1816, the conflict resulted in the dismantling of Fort Gibraltar I by a group of Hudson's Bay Company men and Selkirk settlers. Much of the dismantled

fort was sent downriver to Fort Douglas and incorporated into that fort.

The probable location of Fort Gibraltar I (Priess et al 1984:10) is reported to be in the area of the Northern Pacific Engine House (1889 to present). Fort Gibraltar I was described as having nine buildings erected within a square 18 foot double bastioned palisade.

Another fort, this one built by the Hudson's Bay Company, was reported to have been built in 1817/1818. This fort called Fidler's Fort (after Peter Fidler) was positioned, by Bell (1927) as being in the present day area of Pioneer Avenue and Westbrook Street (Fig. 1:13). Fidler's Fort appears to have gone into decline perhaps as a result of the amalgamation of fur trading companies in 1821. By this time, it had ceased to exist and may have been washed away by flood waters during a severe flood of the Red River in that year. The exact location or actual existence of this fort is still open to speculation.

Meanwhile, the Nor'Westers, undaunted by the dismantling of Fort Gibraltar I in 1816, began construction of Fort Gibraltar II (Fig. 1:14) in 1817. This fort is described as a 100 foot square site within a fourteen foot palisade. The fort may have been uncovered during excavations in 1984 (Priess et al 1986:9-10). Historic material was recovered in the south-west corner of the National Park on the north shore of the Assiniboine River. However, identification of this location with Fort Gibraltar II is tenuous until further investigation.

In 1821, the North West Company joined forces with the Hudson's Bay Company and in 1822 Fort Gibraltar II was renamed Fort Garry, the first of several structures to bear that name.

4.3 Hudson's Bay Company Colonial Period (1821 - 1870)

The era after amalgamation was marked by not only the continuation of the newly renamed Fort Garry I but by the construction of a new centre of trade, commerce and socio/political activity for the Hudson's Bay Company at The Forks - Upper Fort Garry. In addition a number of other ventures and establishments occurred.

Fort Garry I (formerly Fort Gibraltar II) (Fig. 2:14) began to decline in both a structural sense and as the focal point for The Forks area. In 1825 Alexander Ross, upon seeing Fort Garry I, said that "... I saw nothing but a few wooden houses huddled together without palisades..." (Guinn 1980b:16).

The flood of 1826 did a great deal of damage to Fort Garry I leaving only a few remaining buildings. The flood of 1852 dealt the final blow to the old fort and any remnants of buildings were dismantled after that flood.

Prior to this, however, Fort Garry I had ceased to be the headquarters of the Hudson's Bay Company by 1835. At this time, the construction of a large new fort - Upper Fort Garry - was begun (Fig. 2:15). An extensive description with accompanying maps, photographs and drawings of Upper Fort Garry can be found in Guinn (1980b and 1980c) as well as other numerous authors and archival sources. During a short-lived real estate boom, 1881-1882, Upper Fort Garry was sold and in 1885 the fort was dismantled.

Throughout the area surrounding Upper Fort Garry, and particularly in The Forks area, numerous other activities were occurring with the attendant buildings being constructed.

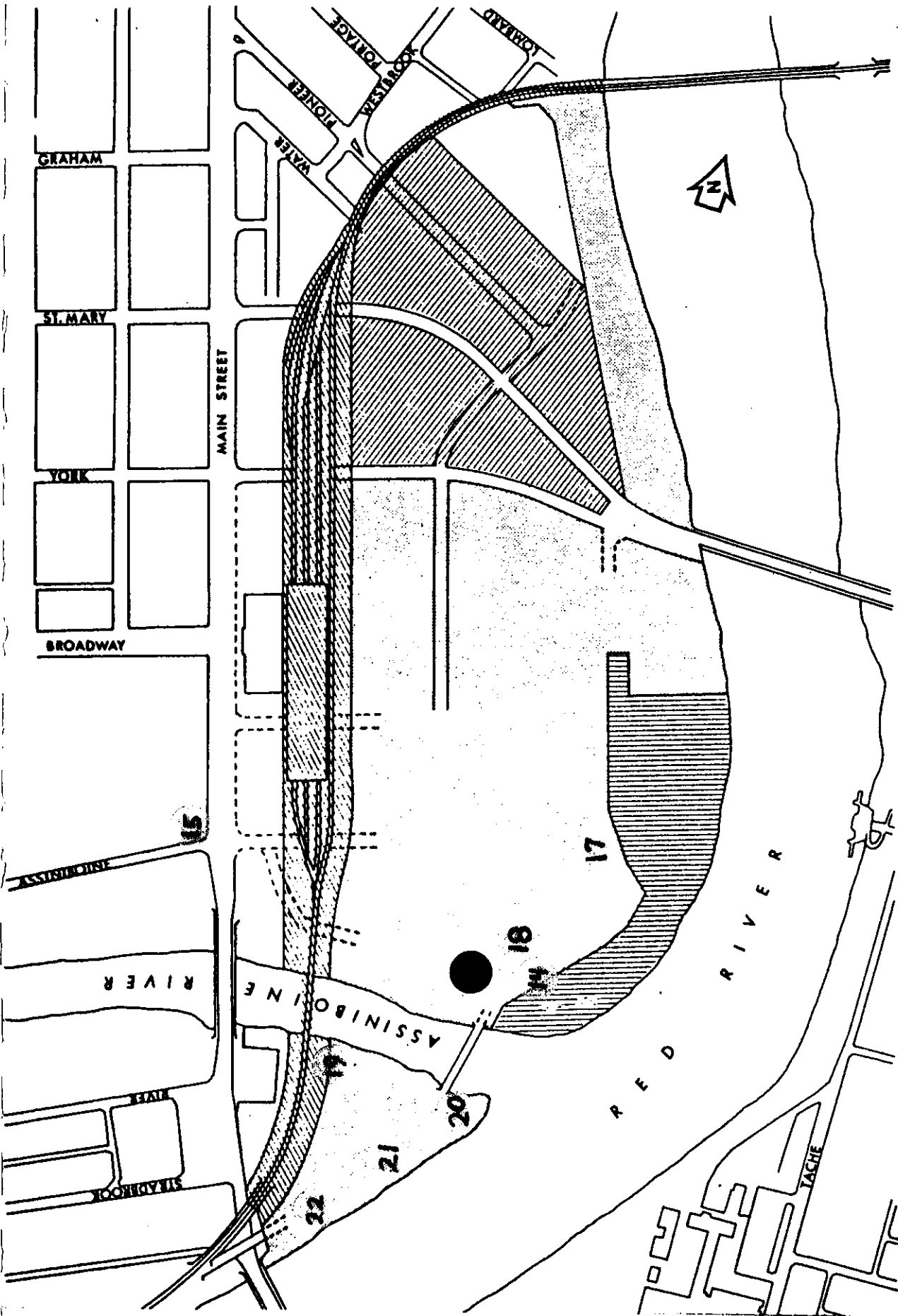


FIGURE 2: FEATURES OF THE HUDSON'S BAY COMPANY COLONIAL PERIOD (1821-1870)

- Features with Vague Provenience
- Features with Specific Provenience

Several attempts were made during this period to establish an agricultural base at The Forks site. In 1836, an Experimental Farm (Fig. 2:16) was set up, purportedly in the area of Fort Garry I (Guinn 1980c:87). In association with the farm, a stable complex (Fig. 2:17) of five or six buildings was built north of the farm along the Red River.

The Experimental Farm project was not a success and ended in 1841. The stable complex, however, still appears on an 1848 map drawn by Moody (Guinn 1980c:257). The flood of 1852 may have destroyed any stable buildings left at that time.

In 1848 another group, the Chelsea Pensioners, arrived at The Forks to take up farming lots. Guinn (1980c:87) records that these farmers first resided in the few preserved buildings of Fort Garry I until housing units were provided for them along the Assiniboine River west of Upper Fort Garry. No actual locale of the farm lots can be found in the literature.

In 1852, Upper Fort Garry was enlarged, doubled in size, due to the impending arrival of a Regiment of Royal Canadian Rifles in 1858. The Regiment occupied Upper Fort Garry from 1858 to 1860 and during that time outbuildings such as stable, cookhouses and urinals were provided for them, outside the walls of the Fort. As with the Chelsea Pensioners farm lots, no actual locale could be determined for these buildings and they have not been given a designated number in this report.

The only other building that has come to light, to date, is reported to have been a courthouse/jail structure (Fig. 2:18) built in 1837 (Guinn 1980c:69). There are no structural specifications for this building although on a map of the junction area (Guinn 1980c:257) the courthouse/jail is in the vicinity of Fort Gibraltar II/Fort Garry I. A termination date

for this building is unknown.

During this period, 1821 - 1870, the South Point side of The Forks complex appears to have been utilized mainly for agricultural purposes. A farmhouse (Fig. 2:19) belonging to a McDougall is recorded as well as three other farmhouses (Fig. 2:20,21,22) with tenants unknown are listed on South Point (Warkentin & Ruggles 1970:Fig. 77; Guinn 1980c:245). These four properties are present in 1845 but all have uncertain end dates.

Two events occurred, in the latter part of this period, that would have major ramifications for the future of The Forks. In 1867 the Confederation of Canada was achieved and in 1870 Manitoba became a province within Confederation. A boom era of business and immigration began in the Winnipeg region and the era of the Railway loomed on the horizon.

4.4 Growth Period - Industrial and Immigration

The period of 1870 to 1885 was marked by a rapid increase in immigration to Western Canada, through Winnipeg, plus an expanding economic base of industry and mercantilism. The Forks area was a focus of development during this era.

For ease of description in the next three sections, The Forks site, per se, will be divided into three discrete areas. The first, South Point, is the inverted triangle bounded by Main Street, the Red River and the Assiniboine River. The second land area described will be the central portion north of the Assiniboine River, east of Main Street to the Red River and north to the now present, Provencher Bridge. The final sector will be the north strip, north of the Provencher Bridge to the outer edge of the property bounded by the rail tracks.

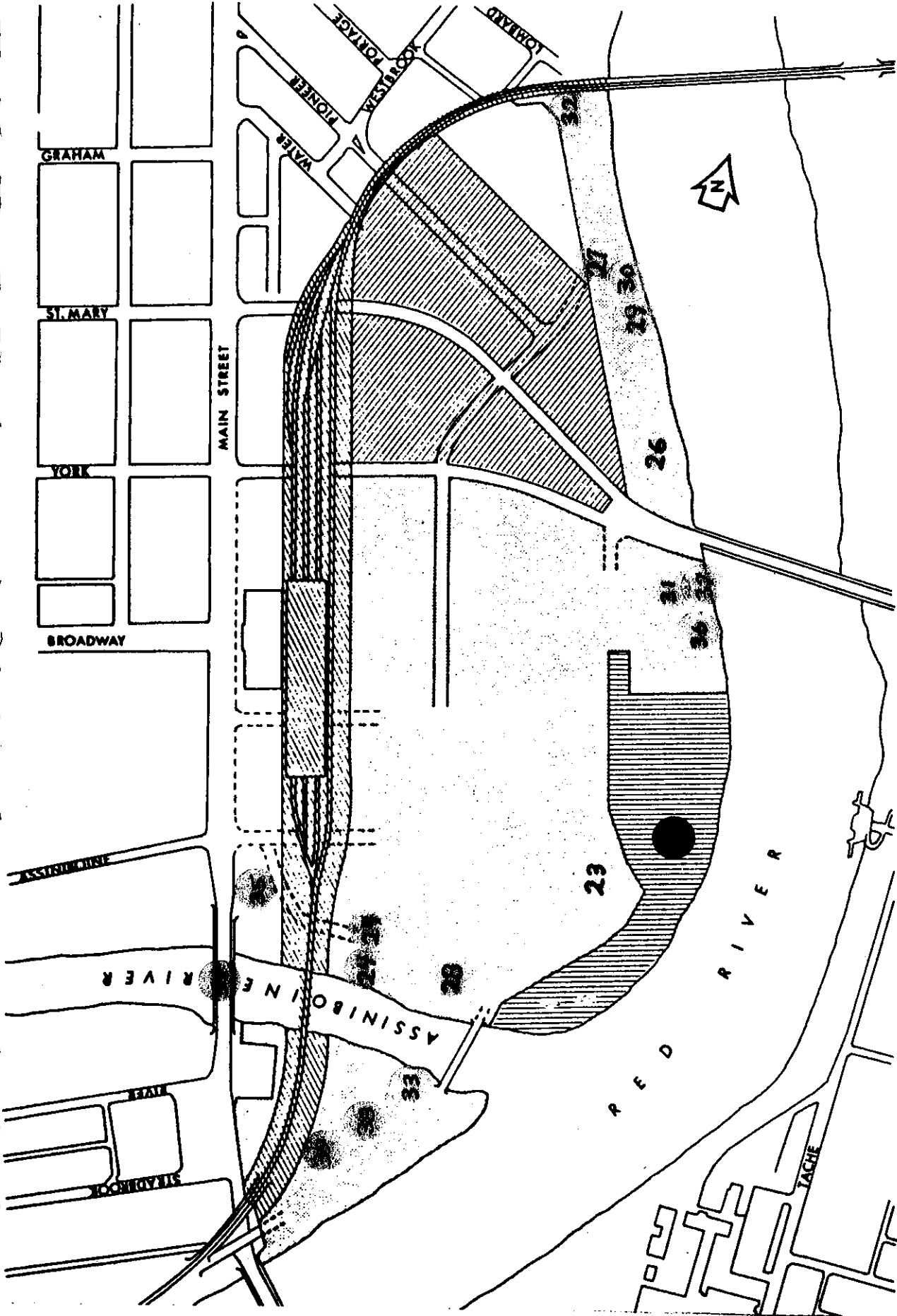


FIGURE 3: STRUCTURES OF THE GROWTH PERIOD: INDUSTRIAL AND IMMIGRATION (1870-1885)

- Features with Vague Provenience
- Features with Specific Provenience

To date, the South Point area has been only minimally researched in the literature. Future research in this area would develop a more complete picture.

During this project, it was noted that three houses existed on South Point in this period. The first house (Fig. 3:33) was listed in 1880 with a possible end date of 1884 (Warkentin & Ruggles 1970: Fig. 194,195). The other two houses (Fig. 3:38,39) occurred from 1884 to 1905 (Henderson Directory). No further information has been located for these structures.

As the City of Winnipeg was expanding, the need for permanent bridges across the rivers became imperative. The Main Street bridge and the Broadway Bridge were both built during this period.

The first Main Street bridge (Fig. 3:34) was erected in 1880 to join South Point with the north side. A 1920's Winnipeg City Map designated the Main Street bridge as "the Bridge of the Old Forts". Throughout the years from 1880 to the present, the Main Street bridge has undergone several rebuildings.

Shortly after the building of the Main Street bridge, construction began on the Broadway Bridge (Fig. 3:36). The first bridge connecting Broadway to Provencher, over the Red River, was built in 1881. It was destroyed by flood waters in 1882, rebuilt that year and demolished in 1920 (Guinn 1980c:128-129).

Meanwhile, several projects were occurring simultaneously in the central portion of The Forks. Industrial complexes were sharing the area with immigration facilities, personal dwellings and businesses.

In 1872, with increasing numbers of immigrants arriving, via water, it was decided to build immigration facilities near the junction of the Rivers. Two one-story sheds, 180 feet by 120 feet, were erected along with detached cookhouses (Fig. 3:23) (Guinn 1980c:108-109,285).

In the beginning, the sheds were described as "...good substantial looking buildings...comfortable enough for a temporary residence..."(Guinn 1980c:109). However, by 1884 living conditions had deteriorated at the sheds to the point that residents "...experienced considerable hardships...and sickness...during their stay..."(Guinn 1980c:109). The shed complex was demolished in 1885.

Adjacent to the immigration sheds, on the flats, was a series of dwellings described as a Shanty town (Fig. 3:25). This feature appeared in 1872 and disappeared in 1884.

Two personal dwellings have been recorded in the central portion on opposite sides of the site. Both are in close proximity to the bridges.

At the foot of the Main Street bridge, on the east side, references were found to a house. It was first noted in 1881 and called James Anderson's house (Fig. 3:35)(Guinn 1980c:327; Warkentin & Ruggles 1970:Fig. 190).

The other property is at the foot of the Broadway Bridge and has been listed as the Finkelstein Grocery (Fig. 3:37). It existed from 1883 to approximately 1889 (Henderson Directory).

From 1870 to 1885 three industrial complexes occurred in the central portion. Two were Hudson's Bay Company properties and one was privately run.

In 1872, the Hudson's Bay Company built a 100 foot by 60 foot Steamboat warehouse, later called Warehouse No. 4 (Fig. 3:24), on the bank of the Assiniboine River. In 1877, a major relocation project was undertaken to move the warehouse 120 feet further back from the river (Fig. 3:24). The warehouse was demolished in approximately 1895.

As well as the warehouse, the Hudson's Bay Company began construction, in 1874, of a large mill complex (Fig. 3:28). During its existence, until demolition in 1907, the mill consisted of nine buildings divided into a series of five inter-connected units. For a complete description refer to Guinn 1980c (pp. 142-143).

Finally, a small private business enterprise appears in 1876 in the central portion of The Forks site. This was called the Clarke and McLure Lumber Yard (Fig. 3:31) and either moved, sold out, or went out of business around 1890 (Henderson Directory).

Meanwhile, the north strip area was becoming akin to a mini-industrial park. Five businesses established premises during this era.

In 1872, the McCauley Lumber Mill with an adjacent boarding house and office (Fig. 3:26) was built north of Pioneer (the former Notre Dame East). It disappears from the records in 1890. Also in 1872, the first Dick and Banning Saw Mill (Fig. 3:27) was located on Thistle Lane (north of Notre Dame East). In 1885, the location of the mill was moved closer to the Red River but still near Thistle Lane (Fig. 4:42).

The year 1876 saw the establishment of a Sash and Door Factory (Fig. 3:29) by McCauley and Jarvis, who both ran other

businesses in the area. The factory was close to the Red River on Thistle Lane. Between the Sash and Door Factory and the Dick and Banning Saw Mill No. 1, Jarvis built a saw mill (Fig. 3:30). Both the Sash and Door Factory and the Jarvis Saw Mill lasted until 1890 and then disappeared from the records (Historic Resources Branch 1987:Map 8, Henderson Directory).

Finally, the last business noted in this area, the McMillan Grist Mill (Fig. 3:32), was built in 1877. This was built near the northern-most edge of the site on Post Office Street (now Lombard Street). A termination date for this structure is unknown.

With the advent of the railroad, The Forks was to see further growth and changes. As the style of transportation shifted from river transport to rail transport, more businesses were established in the northern sector while railway structures began to appear in the south and central regions.

4.5 Early Railway Period (1885-1900)

With the coming of the railroad era to Winnipeg, The Forks area expanded rapidly and diversely. Within this area, bounded on the east by the Red River, on the west by Main Street, to the north by Lombard Street and dissected by the Assiniboine River on the south, business enterprises, railway facilities and a recreational structure co-existed.

On South Point, the Arctic Ice Company warehouse (Fig. 4:49) was built in 1891. There are no descriptions of this building but it can be located on a map off Main Street on the then River Avenue (Guinn 1980c:353). In 1905, the company moved out of the South Point area to the vicinity of Bell and Bricker Streets (Henderson Directory).

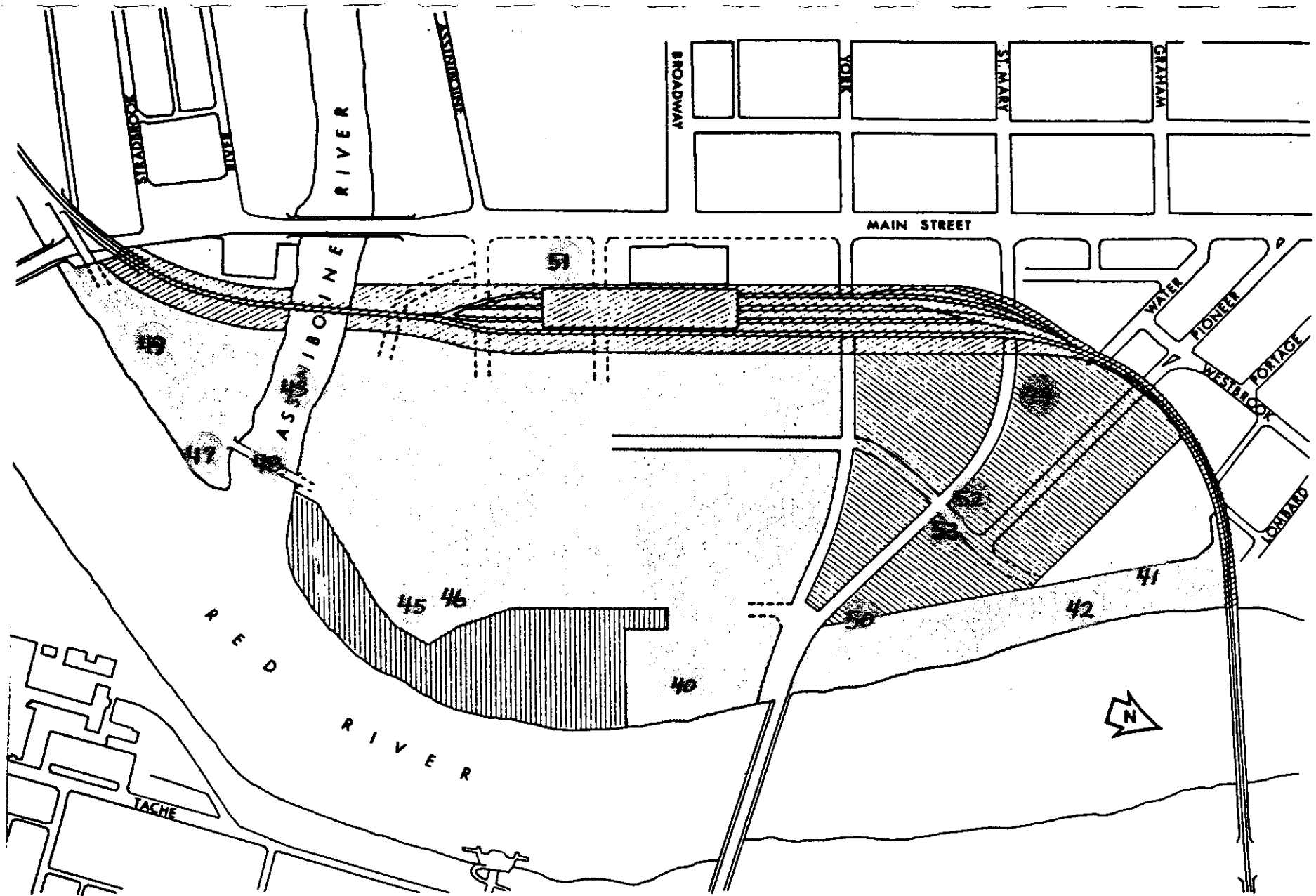


FIGURE 4: STRUCTURES OF THE EARLY RAILROAD PERIOD (1885-1900)

- -- Features with Vague Provenience
- -- Features with Specific Provenience

As the City of Winnipeg grew, the necessity for recreational facilities also expanded. In 1889, the Winnipeg Rowing Club built a boathouse (Fig. 4:47) on River Avenue at the Red River. The boathouse remained on this spot until 1911 at which time it was relocated to Lyndale Drive (Henderson Directory).

Between South Point and the Central Forks area, north of the Assiniboine, two bridges were constructed by the Northern Pacific and Manitoba Railroad. In 1888, to facilitate the needs of the expanding railroad, a temporary bridge (Fig. 4:43) was built across the Assiniboine River (Guinn 1980c:139).

During test hole drilling on The Forks site in February 1988, two sets of pilings were located. One or both of these sites may be associated with this temporary bridge (Quaternary Consultants Ltd., 1988).

Maps of the junction area, from this period, show another bridge (Fig 4:48) crossing from north to south near the mouth of the Assiniboine (Guinn 1980c:347). This bridge, which exists today, was built in approximately 1890 and is currently known as the Low Level/Low Line bridge.

In the central Forks area two major railway buildings were erected in 1889 and a large recreational area was established in 1894. There also appears to be evidence of a residence/toll house structure.

The Northern Pacific and Manitoba Railroad constructed two much-needed facilities in 1889. A large repair shop (Fig. 4:45) and a roundhouse (Fig. 4:46) were built north of the junction on the Red River. A detailed description of the historical significance and the architecture can be found in Guinn 1980a (pp. 4-8) along with accompanying maps and drawings.

The roundhouse portion of the building was demolished by 1926 but the repair shop portion still stands today. It is currently known, as the B & B Building.

During this period, the Hudson's Bay Company had agreed to lease property on The Forks site for a recreational facility. This would be in return for a rental fee plus a percentage of the profits. A public park, called River Park, with a racetrack and grandstand (Fig. 4:51) was established in 1894. The grandstand, which measured 100 feet by 36 feet, was situated near the north east corner of Main Street and Assiniboine Avenue until 1906 when it was completely destroyed by fire.

While perusing historical sources, a building, described as the Bridgeman's house (Fig. 4:40), was located at the foot of the Broadway Bridge (Fig. 3:36). The earliest reference found, for this structure, was 1885 and it disappears after 1889. Whether this was an actual house or a shed or a toll house can only be a matter of conjecture at the present time.

The northern end of the property became increasingly industrialized with the establishment of a railway warehouse plus more warehouses, businesses and companies.

In 1888, the National Pacific and Manitoba Railroad built a 236 foot by 94 foot freight warehouse parallel to Water Street. This was designated as Freight Shed No. 1 (Fig. 4:44) and was utilized until demolished in 1985(?). In the Freight Shed complex off Water Street, three other sheds (Fig. 5:59,60,61) were built during the period of 1908 to 1912. These structures will be discussed in section 4.6.

In 1885, a building called McArthur's Warehouse (Fig. 4:41) occurred close to the northern boundary of the site between Thistle Lane and Lombard Street. Also in 1885, the Dick and Banning Saw Mill (Fig. 4:42) appears to have been relocated. An earlier Dick and Banning outlet (Section 4.4) was situated on a different site (HRB map 8).

During the 1890's other buildings occur on the north portion of the site. Two structures (Fig. 4:52,53) of unknown affiliation were located on Water Street (D. McLeod, personal communication March 3, 1988). Future investigation may produce more information on these two buildings.

In 1891, a light company (Fig. 4:50) was also situated on Water Avenue, on the north side of the street, but closer to the Red River (Guinn 1980c:347,353). Again, no specific information, including the actual name of the company is available at present.

The early 20th century was to see a combination of the building and business at The Forks. More railway structures were erected and other private enterprises were established.

4.6 Late Railway Period (1900 to Present)

The early 20th century witnessed the decline in usage of one area of The Forks, the increase of rail related building in another and the establishment of more private business enterprises in the third area. With the passage of time, however, many of these buildings no longer exist and those that do have been utilized for other purposes.

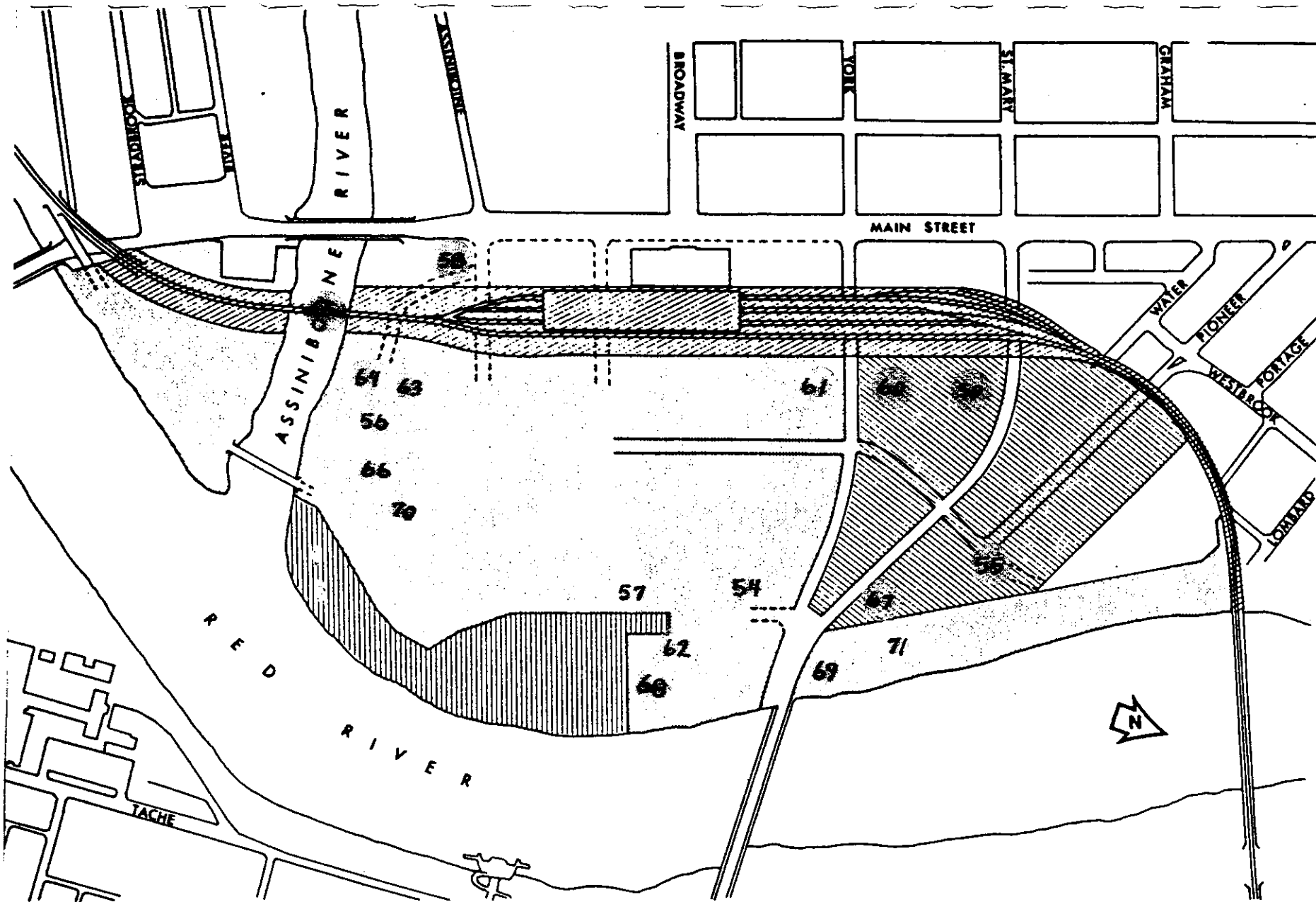


FIGURE 5: STRUCTURES OF THE LATE RAILROAD PERIOD (1900-1988)

- -- Features with Vague Provenience
- -- Features with Specific Provenience

With the construction of the High Line Bridge (Fig. 5:65) in 1910, the South Point area was essentially closed to through traffic. No new buildings have gone up in this area from 1900 to the present. The High Line Bridge is used today as the Main Line bridge.

The central portion of the junction site became the core area of activity from 1900 on. One dwelling was built plus two businesses and eight railway structures.

The dwelling house (Fig. 5:58) was on the east side of Main Street at Assiniboine Avenue. This building was identified on a 1906 map as a Hudson's Bay Company dwelling house (Guinn 1980c:355,365). It could be conjectured that this building may be the same or on the same property as that of the James Anderson House (Fig. 3:35). However, there is no confirmation of this to date.

In the central area, close to the Red River, two new businesses were started in the early 1900's. Near the foot of the Provencher Bridge, on the south side, the City Asphalt Plant (Fig. 5:54) was established in 1900. The Plant lasted until 1934 when it may have been phased out. The other business, begun in 1920, was called Building Products and Coal Company (Fig. 5:68). In 1966, this company changed its name to Building Products and Concrete Supply and in 1974 it disappeared from the area (Henderson Directory).

By far, the greatest amount of building, in the central area, was accomplished by the various railroad franchises. In the early years, the Hudson's Bay Company did build one structure.

In 1903, the Hudson's Bay Company built a track warehouse (Fig. 5:56) along side the Canadian Northern track (Guinn 1980c:157, 357). This was utilized until 1911 when it was demolished. As well, in 1903, the Canadian Northern Railroad built a roundhouse (Fig. 5:57) north of the pre-existing Northern Pacific Roundhouse. The Canadian Northern roundhouse was demolished in 1917.

During a period of active construction from 1908 to 1912, several more railway associated buildings went up. Between 1908 and 1912, three new freight sheds (Fig. 5:59,60,61) were built parallel to Freight Shed No. 1 (Fig. 4:44). These three sheds are still standing as of March, 1988.

As well as the sheds, an ice house (Fig. 5:62) was built in 1908. This was located close to the Red River in the centre of the site. The ice house was originally built by the Canadian Northern Railway and lasted until approximately 1960.

In 1909 and 1910 two large stable buildings were put up. The Canadian Northern Cartage Company constructed a stable (Fig. 5:63) in 1909 while the Grand Trunk Pacific railway built their stable (Fig. 5:64) in 1910. Guinn (1980a:2-3) describes these buildings in detail. Both are still standing today although their usage as stables has long since passed.

To the east of the two stables, a large warehouse was built in 1912. This was the 241 foot by 118 foot McNaughton Warehouse (Fig. 5:66). It was demolished in 1955.

Finally in 1928, the National Cartage Building (Fig. 5:70) went up. This building, now known as the Johnson Terminal, still stands and is described in Guinn (1980a:1-2).

Meanwhile, the north section of The Forks site saw four new businesses becoming established in the early part of the 20th century.

The J.I. Case Threshing Machine Co. (Fig. 5:55) set up business at 49 Notre Dame East in 1902. Years later, in 1913, the Sterling Engine Works (originally Doty Engine Works) (Fig. 5:67) began operation at 33 Water Street. The Threshing Machine Company closed its doors about 1925 but Sterling Engine Works lasted until 1983 (Henderson Directory).

A somewhat more esoteric business began around 1926 and ended approximately 1955. This was the Fort Garry Coal Yards (Fig. 5:69). It is difficult to pin down an exact time frame as this structure was apparently used by many firms over the years. The location is intermittently listed in the Henderson Directories from 1926 through 1955, but information is somewhat vague.

The last business recorded for the northern portion was that of Lambert Fuel Supply (Fig. 5:71). This business began in 1933 and ceased operation 30 years later in 1966.

4.7 Burials: Recorded and Potential

One of the most potentially controversial aspects of development at The Forks will be the discovery of burials during excavations. There is a high probability that human skeletal material will be encountered during the development. Numerous archival sources refer to Indian burial grounds in the vicinity of The Forks (Figure 6).

Alexander Henry, while camping at The Forks in 1800, referred to "the old graves, of which there are many, this spot having been a place of great resort for the natives in 1781-82; and at the time the small pox made such havoc many hundreds of men, women, and children were buried here" (Coues 1965:46). This is probably the same location which was noted by Denig in 1856 when he mentioned "a mound near the mouth of the Assiniboine River embracing an area of several hundred yards in circumference and ten to twenty feet high, being the cemetery of nearly an entire camp of 230 lodges who died of the infection" (1961:115). This location is not specified, but a tentative identification will be proposed in conjunction with description of recorded burials.

Peter Fidler (1808) alluded to a gravesite near the mouth of the Assiniboine when he included in his description of The Forks: "formerly 2 houses here, fine spots and graves on E. side by river at mouth". The houses could refer to the wintering camps of Dorion (1803) and Bruce and Boyer (1781/82). Bell (1927) notes that, in 1871, he and General Sam Steele observed "several much decayed human bones and one skull close to the water's edge, which had apparently rolled down from near the general ground level of the bank through undermining by the heavy spring flood." Bell's location is not precise; he assumes that he is near the site of Fort Gibraltar I, while his description could equally apply to the location of Fort Gibraltar II.

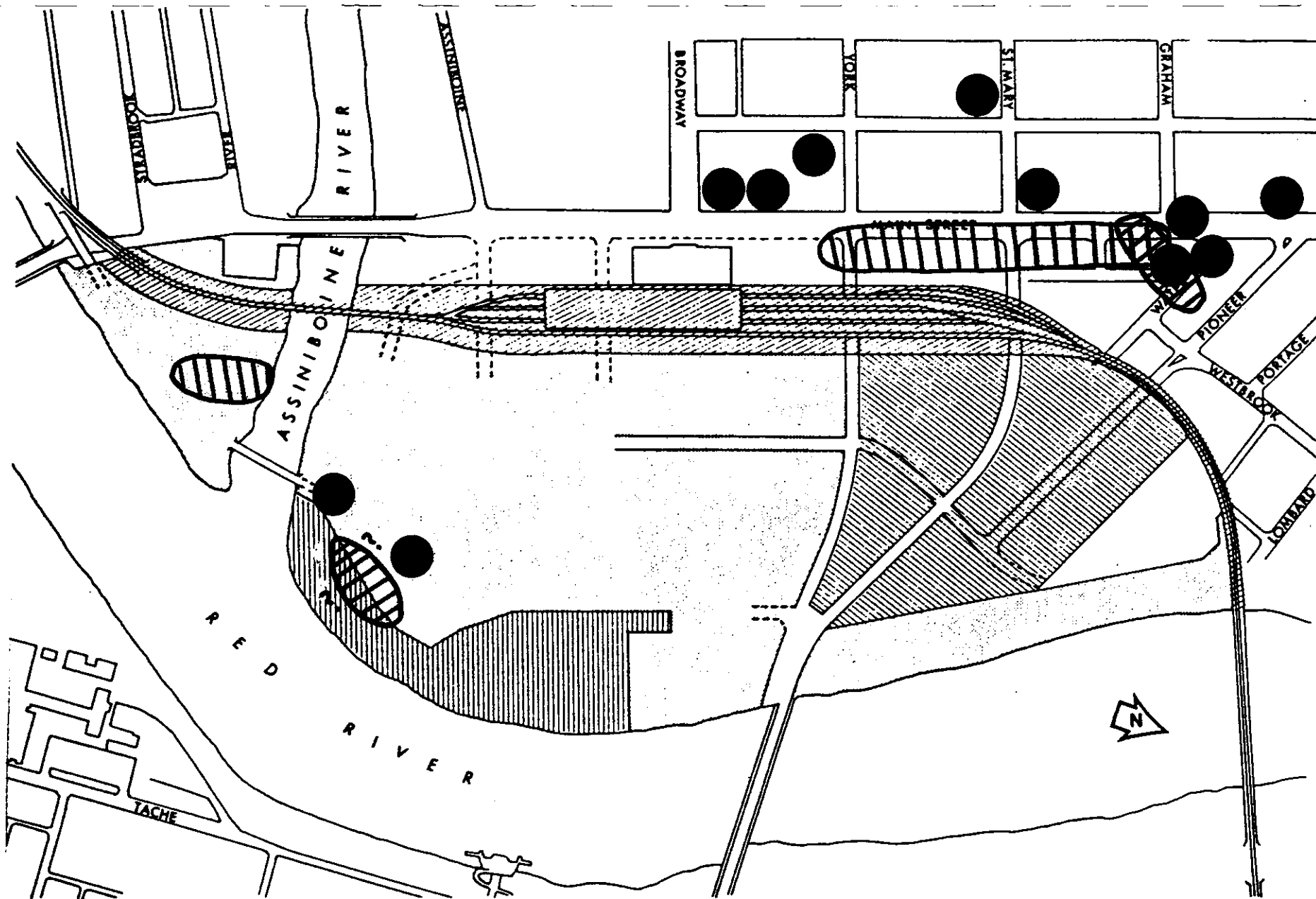


FIGURE 6: RECORDED AND POTENTIAL BURIAL LOCATIONS

- -- Recorded locations of burials
- ▨ -- Potential burial locations

The surveyor, George McPhillips, in 1874, noted that "Lot 39 [on South Point] was an old Indian camp and burial ground." A sketch from 1847 (Guinn 1980c:247) and a painting from 1873 (Guinn 1980c:287) both depict tipis on South Point. These may be considered as confirming evidence of native use of the location or they may be the result of artistic license.

An 1871 Plan of the Hudson Bay Company's Upper Fort Garry Reserve by Dennis delineated an area between Main Street and Water Avenue, opposite Graham Avenue as an "Indian burying ground." This location was referred to by Bell (1888), who stated that "even as late as 1870, when I arrived at Fort Garry, the thicket of willows and brambles which stretched along what is now the east side of Main Street, from near the entrance of Graham St. south to York St., covered the site of an extensive Indian graveyard."

Eleven recoveries have been made of human skeletal material during construction in and adjacent to the East Yards area (Figure 6). The first recorded instance was in 1875 and the last was in 1922. Three instances occur at the Main/Water location, in part confirming Dennis' map. Three further instances have been recorded in the Broadway/Main area. An early reference to this location mentions an "excavation in the mound opposite the northern gate of Fort Garry" (Manitoba Daily Free Press, 11 October 1875:3). This may be the mound referred to by Denig.

Only two burials have been encountered in the East Yards per se. Both were discovered, in 1888, during land modification for the Northern Pacific and Manitoba rail line construction. The locations are not overly specific. These discoveries may be related to the graves noted by Fidler.

In summary, the potential for recovery of burials is high, although the exact locations cannot be predicted. The current state of knowledge does not suggest that either the North Assiniboine Development Node or the North/South Access Road has a high probability of burials. However, this cannot be adequately ascertained until after a heritage resource impact assessment has been conducted. Mitigative procedures, in the event of the discovery of human remains during development of these two components, will be proposed in Appendix E and Appendix F. These procedures are based upon standard archaeological procedures and the burial policy of Historic Resources Branch.

4.8 Archaeological Significance of The Forks

The preceding sections have detailed the numerous historic events which have occurred at The Forks; events which have contributed greatly to the shaping of Winnipeg, Manitoba and the Canadian West. Given the extreme richness of the historic record plus the high potential for a continual archaeological record of the native inhabitants of Manitoba, The Forks is the most significant archaeological site in Manitoba, if not the entire prairies. No other location has successive evidence of prehistoric occupations, French explorers, the fur trade period, early homesteading, military occupations, Metis farmsteads and an early urban period. Disturbance of the archaeological record should be minimal as the ground level was raised, rather than excavated, during the railroad occupancy. Minimal excavation has occurred to disrupt the archaeological resources, so that the context and content of many of the archaeological deposits will be pristine.

5.0 THE FORKS ARCHAEOLOGICAL PLAN

5.1 Planning Objectives

The objectives of The Forks Archaeological Plan are fourfold:

- a. to enable the implementation of development projects in such a manner that the heritage resources are successfully managed,
- b. to preserve and protect the heritage resources of The Forks by the most appropriate mechanisms,
- c. to ensure that all archaeological investigations at The Forks are of a consistent high quality, and
- d. to foster and encourage public awareness of the heritage of The Forks through information services and public programming.

5.1.1 Overview

The Forks Archaeological Plan is a multi-faceted program. It is a policy and management program which deals with aspects of implementation and operation. It discusses details of:

- a. aims and requirements of heritage resource impact assessments,
- b. standards to which archaeological field operations must conform,
- c. development monitoring and mitigation criteria,
- d. artifact processing procedures,
- e. custody of recovered artifacts,
- f. information dissemination,
- g. estimated cost and scheduling of heritage resource impact assessments,
- h. management planning and structures,
- i. public participation, and
- j. funding possibilities.

Each of these aspects is discussed in a subsequent section. The overall plan is intended to be seen as an integrated whole, wherein each facet buttresses the others. This is not to suggest that if one portion is altered, the rest must be altered. Instead, it is an acknowledgement of the inter-relatedness of many of the facets.

5.1.2 Priority Actions

Three priority actions must be addressed in the near future.

The first priority is the initiation of heritage resource impact assessments for the development components which are scheduled for 1988/89.

A second priority is the establishment of a management structure and process that will be responsible for the implementation of The Forks Archaeological Plan. A future section of this report contains suggestions for a possible framework. These are submitted for consideration by The Forks Renewal Corporation.

A third priority concerns the question of custody of the artifacts. The decision, relating to the ultimate disposition of the recovered material, has ramifications in several other areas. The options are outlined in a future section, along with the entailments of each option.

Other decisions concern matters which are not as imminent. Some of these aspects include information dissemination mechanisms, the form and structure of public archaeology programming, and funding possibilities.

5.1.3 Flexibility of The Plan

The Forks Archaeological Plan should be flexible enough to accommodate a varied range of heritage activities, based upon proper management of the archaeological resources of The Forks. Possible archaeological activities which must be accommodated are:

- a. heritage resource impact assessments of development component sites undertaken by consulting archaeologists,
- b. mitigation action at development component sites undertaken by consulting archaeologists,
- c. research and/or university teaching programs undertaken by academic archaeologists,
- d. public interpretive programs administered by a special interest group, and
- e. public excavation programs administered by professional and avocational archaeologists.

The management structure must be such that decisions on required mitigative action can be quickly made. An advantage of having sufficient lead time is the possibility of attracting a fully or partially-funded research project which could undertake part or all of the necessary mitigation.

5.2 The Forks Archaeological Plan and Corporate Structure

In order to effectively implement The Forks Archaeological Plan, FRC must develop a management structure which is responsible for the orderly conduction of all potential archaeological projects within its jurisdiction. To this end, this report will offer the following suggestions.

5.2.1 Advice and Consultation Mechanisms

The Forks Renewal Corporation has already created a Heritage Committee of the Board. To aid and assist this committee with the development of heritage policies, it is proposed that a Heritage Consultative Group be appointed to offer expert advice. While, ideally, a representative of every interest could be on such a group, the diversity of the heritage community would make the group very unwieldy. It is, therefore, suggested that the group consist of five to seven individuals who are appointed for their expertize and abilities, rather than appointing representatives of special interest groups. The individuals will, naturally, carry their affiliations and their specific foci with them but will not be representing a specific constituency, per se. This will also provide for continuity, as presidents and/or representatives of organizations tend to change frequently.

The composition of such a group should be determined by the Board of Directors of FRC on advice from the Heritage Committee. This report will suggest that certain areas of interest and expertize should be represented on such a group. As the majority of the heritage resource management at The Forks deals with archaeological resources, it would not be unreasonable to have two professional archaeologists, representing different foci, in the group. Suggested foci are familiarity with the academic

milieu, familiarity with consulting operations, interest in fur trade research, interest in prehistoric research, interest in urban and industrial research. Other academically-oriented individuals could be selected from the ranks of physical anthropologists, ethnographers, ethnologists, historians, historical geographers, architectural historians, conservators, etc. To provide a balance, other appointees should be from a non-academic milieu; they could bring with them, along with an interest in heritage management, expertise in fields such as journalism, education, museology, interpretive programming, native and Metis aspirations, etc.

5.2.2 Administration of the Plan

While the Consultative Group may assist the FRC Heritage Committee develop heritage policy, a structure must be developed to permit implementation and administration of that policy. Therefore, it is recommended that the position of Site Archaeologist be created. The individual filling this position would be charged with the responsibility for implementing The Forks Archaeological Plan and other relevant policies. In addition, the Site Archaeologist would be responsible for the administration and supervision of all archaeological projects within the jurisdiction of FRC. As the administrator, the Site Archaeologist would be responsible for ensuring that all projects were conducted within the appropriate time frames and to the appropriate standards. In such a role, the Site Archaeologist will consult with the Site Planning Manager and other staff of FRC. The precise line of authority would be determined by FRC.

If, in the future, FRC decides to establish a permanent heritage and/or archaeological facility, the Site Archaeologist could also act as manager of that facility. In such a role, the Site Archaeologist would then become responsible for any public heritage and archaeology programming, interpretive or participatory, that would be undertaken.

It is suggested that, initially, the position of Site Archaeologist be filled by an archaeological consultant on an annual contract. The contract should provide a retainer which covers a specified number of hours of services with additional services being covered on a fee-for-service basis at a previously negotiated charge-out rate. For the first two or three years, the amount of archaeologically related work may not justify making this a permanent staff position. If it becomes more cost-effective as the work load and concomitant charge increases, this position could be converted to a staff position rather than an external consultative position.

5.2.3 Archaeological Management Responsibilities of The Forks Renewal Corporation

With regard to heritage resources at The Forks, FRC's prime responsibility is to conduct adequate heritage resource management. This report is recommending mechanisms for the implementation of heritage resource impact assessments as well as the standards with which they must comply. Some capital cost mechanisms to facilitate these assessments will be suggested.

In a purely administrative sense, the creation of a Site Archaeologist position, would provide a direct management function which would coordinate and oversee all archaeological projects on the site. This individual would also be the representative of the FRC in discussions, on archaeological matters, with Provincial regulatory agencies, developers, Canadian Parks Service, and the public. Proposals for archaeological projects, both academic and public, would be scrutinized by the Site Archaeologist and integrated into the overall Archaeological Plan and the Site Development Plan.

5.3 Archaeological Resources

5.3.1 Known Archaeological Resources

Known archaeological resources shall be defined as features which have been discovered by sub-surface examination and features or structures which have been recorded in historic archives.

The accuracy and degree of detail in early documents often leaves much to be desired from a researcher's point of view. However advantageous it would have been for the archaeologist, very few explorers noted that their camp was so many feet from the river's edge or so many paces from the mouth of the river. Accordingly, historic features fall into two classes: those whose location can be reasonably accurately ascertained, and those whose general location is known, but whose specific provenience has yet to be determined.

5.3.1.1 Resources with Vague Provenience

Chronologically, the first eleven historically recorded events at The Forks, have so little locational data attached to the record that the features occasioned by these events may occur almost anywhere on the site (Figure 7). Two exceptions are Fort Rouge (#3), which was established on South Point in 1738 and a Nor'westers' camp (#7) which was established on the south side of the Assiniboine River (South Point) in 1793. The other nine events could have occurred throughout the site, although the most probable locations are on the upper bank of the north side of the Assiniboine River and the west side of the Red River.

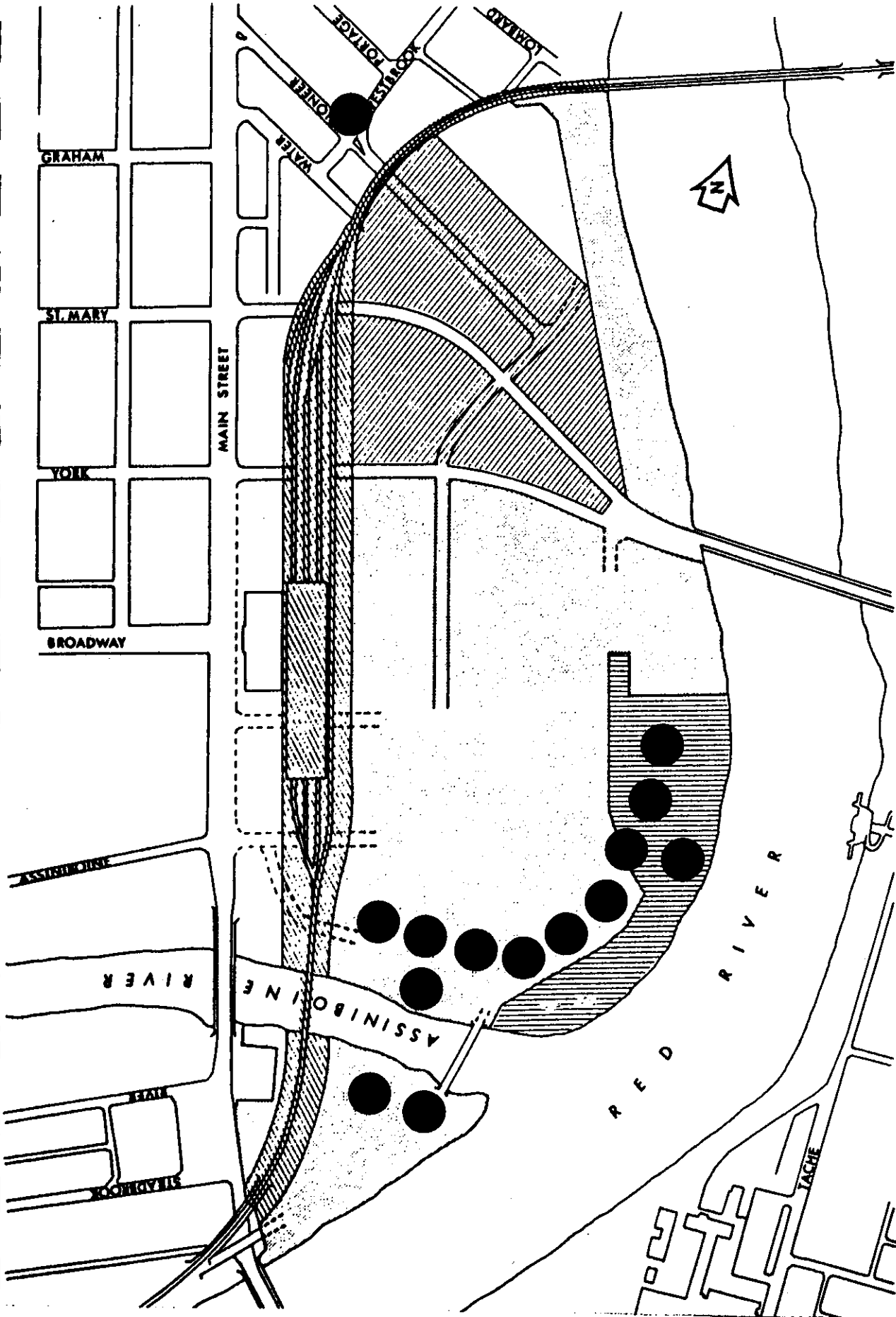


FIGURE 7: STRUCTURES WITH VAGUE OR UNKNOWN PROVENIENCE

The Fort (#13), established by Fidler in 1817/18, has been variously placed by researchers. Current interpretations suggest that the location is near the intersection of Pioneer Avenue and Westbrook Street. While this location lies outside of the project boundaries, it is possible that the post occurred nearer the river. Given the uncertainty of location, Fidler's Fort must be considered as a heritage resource which may be impacted during the development of the northern portion of the site.

Traces of the 1836-1841 Experimental Farm (#16) may occur at any point between Fort Gibraltar II and Upper Fort Garry. Accordingly, the provenience is considered as vague. A similar case occurs with the Shanty Town of the 1870's (#25). It was scattered along the west bank of the Red River and exact placement of individual components may not be possible from archival sources.

5.3.1.2 Resources with Specific Locations

The resources which fall under this classification have been located with a reasonable degree of accuracy. This is not to say that the map placement will exactly reflect the location of the feature, but that it should be within a few meters of the projected location. This category includes Fort Gibraltar I, Fort Gibraltar II, Upper Fort Garry and most structures post-dating 1835 (Figure 8). The concentrations are along the upper banks of both the Red and Assiniboine Rivers.

Many of the smaller buildings of the later railroad period (1900 to present) have not been recorded at this time. They were usually small and impermanent. These buildings occurred throughout the East Yards and were dismantled when no longer needed. Individual buildings of the industrial complex on Christie Street have not been denoted. The major firms operating

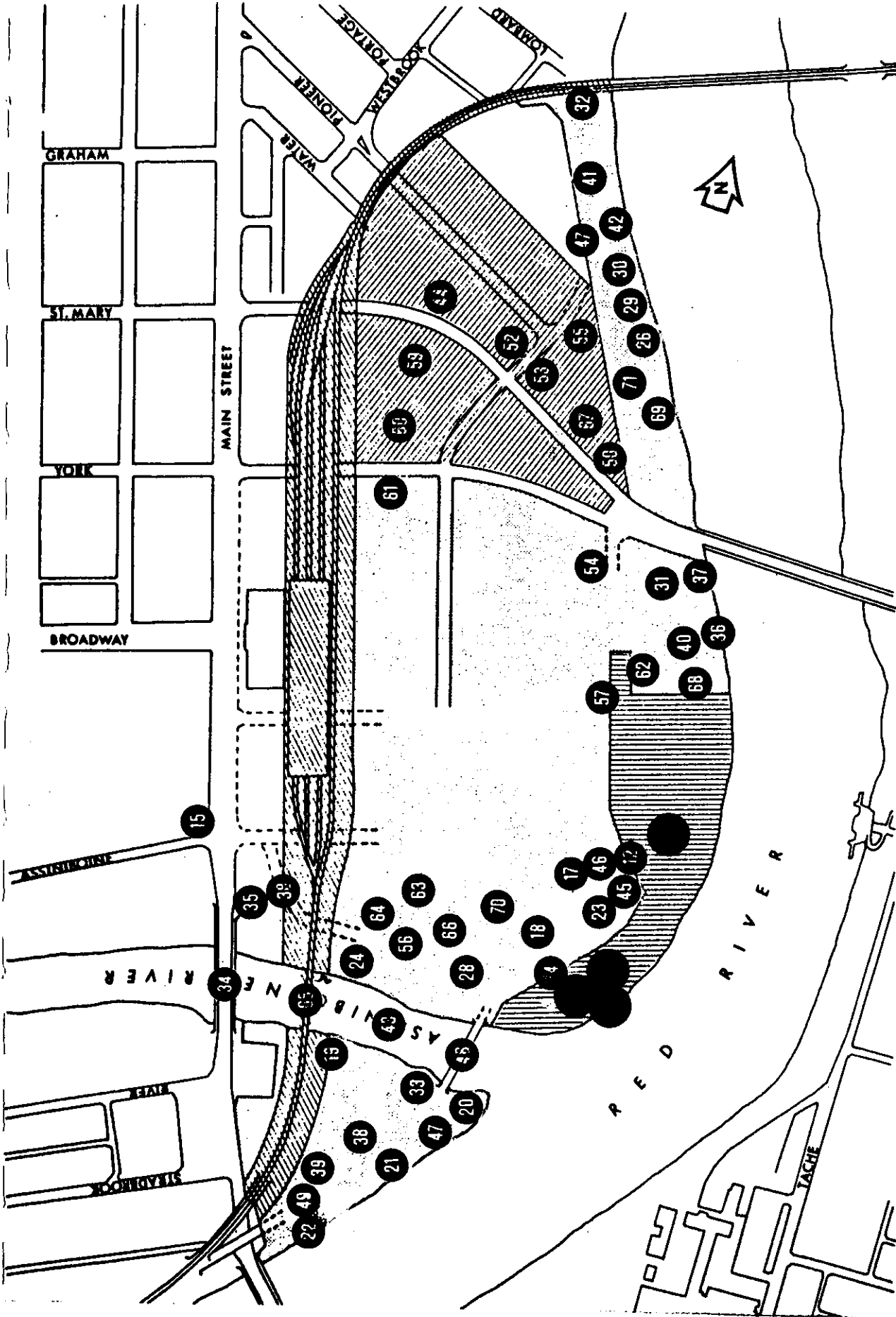


FIGURE 8: FEATURES WITH SPECIFIC PROVIENIENCE

- -- Features recorded in archival sources
- -- Features recorded by excavations

in the area have been identified, but identification and enumeration of all small sheds, out-buildings, etc., was not possible within the research time frame of this report. These buildings will require additional archival research when development occurs in that specific location. At present, they provide information on land use patterns. They may also have importance in determining the degree of disruption of earlier heritage resources which they impacted.

Three identified heritage components can be specifically located as a result of the 1984 archaeological investigations by Parks Canada (Priess et al. 1986; Priess & Bradford 1985). Two historic (Figure 8:A,B) structures and one prehistoric feature (Figure 8:C) location were encountered during the research. The historic structures have been tentatively identified as Fort Gibraltar I (A) and Fort Gibraltar II (B). The prehistoric feature contains evidence of several occupations by 'Blackduck' cultural groups between 1200 and 1400 years ago. An additional prehistoric feature (Figure 8:D) was recorded during Parks Canada construction in February 1988 (Priess, 1988: personal communication). A cultural or temporal determination is not available.

5.3.2 Potential Archaeological Resources

Potential resources include manifestations of the entire prehistoric period (ca. 6000 B.C. to A.D. 1737) and all unrecorded structures and features of the historic period (1737 to present).

Prehistoric occupations could have occurred at any location within the development zone. The most probable locations would be adjacent to either river, for access to water and fish resources. Fidler, in 1817, recorded a fish weir across the Assiniboine River, just upstream of the Main Street Bridge. It is a logical assumption that similar food procurement practices had occurred throughout the unrecorded past. The area of highest potential for the discovery of prehistoric occupations would be a zone approximately 100-150 meters wide on the upper banks of the rivers (Figure 9).

Confirmation of the potential for prehistoric occupations was obtained during the Parks Canada archaeological investigations of 1984. Nine or ten stratigraphically discrete 'living floors' were uncovered at depths of greater than one meter, in the area of Fort Gibraltar II (Figure 8:C). Three of these occupations yielded radiocarbon dates : A.D. 510, A.D. 725, and A. D. 845 and contained diagnostic pottery of the 'Blackduck' cultural group. Another prehistoric component was discovered during 1988 construction (Figure 8:D).

Unrecorded historic resources of the early fur trade would probably pre-date the Hudson Bay Company period at The Forks. No estimation of the potential for such resources can be made as archival data is very sparse (Appendix B). Numerous fur traders and explorers travelled through the area. However, records are non-existent for much of the time period.

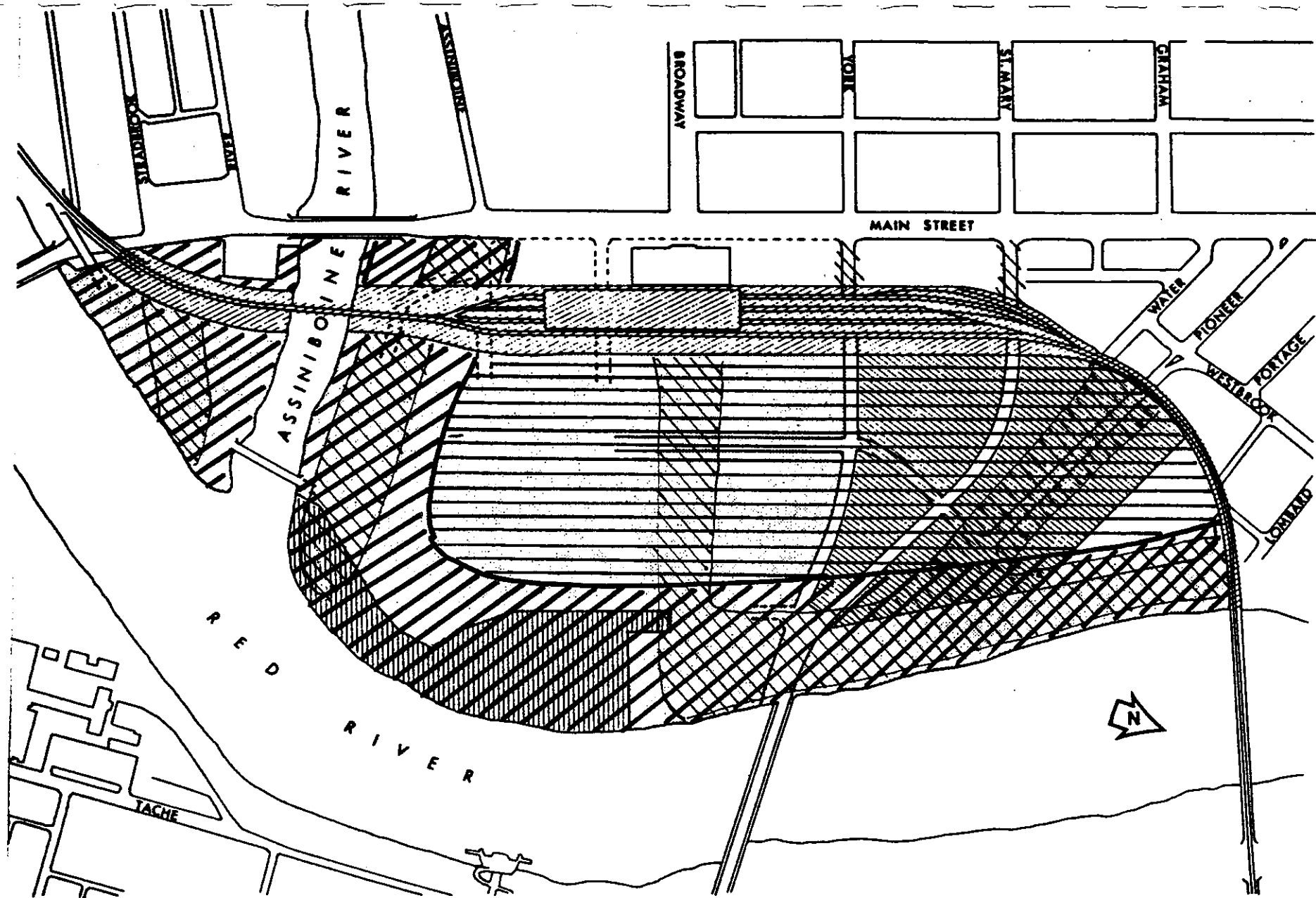





FIGURE 9: POTENTIAL ARCHAEOLOGICAL RESOURCES

-  -- Areas with a high potential for prehistoric features
-  -- Areas with a moderate potential for prehistoric features
-  -- Areas with a potential for unrecorded historic features

After amalgamation with the North West Company in 1821, the Hudson Bay Company appears to have rigorously controlled access to the lands it owned. While documentation is quite complete, in comparison with the earlier period, it is probable that not all activities undertaken within the Hudson Bay Company Preserve have been recorded. Structures associated with specific events could have been built along the north side of the Assiniboine River. Three possible events which could have resulted in the construction of unrecorded structures are the Experimental Farm (1836-1841), the settlement of the Chelsea Pensioners (1848-1855?), and the occupation of the site by soldiers of the Sixth Regiment of the Royal Canadian Rifles (1856-61). These may occur adjacent to currently identified structures.

Recorded, but not identified, structures have been located in the early Henderson Directories (1876-1900) and the 1918 City of Winnipeg Fire Atlas, among other sources. These structures occurred along the north side of the Broadway Avenue extension, along Water and Pioneer Avenues, and adjacent to the Red River in the North Strip (Figure 9). These structures appear to have been residences and small businesses which have since been demolished.

5.4 Development Impact upon Archaeological Resources

5.4.1 Types of Development

The type of development will determine the nature and severity of impact upon archaeological resources at The Forks. Impact can be defined as any disturbance upon archaeological resources caused by any construction activity: excavation, trenching, implanting pilings, landscaping, etc. By definition, no impact can occur if no archaeological deposits occur in the location of the development. Also, development which does not entail any sub-surface activity will not disrupt any archaeological feature. However, if archaeological resources are present and the development component requires large-scale excavations, there can be a major impact upon sub-surface materials.

5.4.1.1 Roads and Services

The degree of impact occasioned by the installation of services is dependent upon the size of the excavations. Narrow trenches, up to one meter, may impact upon archaeological deposits but the disruption is not as severe as with larger excavations which may eradicate entire features. In some aspects, a linear trench across an area, can provide significant information concerning soil stratigraphy and cultural material. This data can be very useful when projecting impact which will occur in conjunction with other development components adjacent to the trench. In some ways, a sewer (or other) trench is a positive trade-off for an archaeologist. Monitoring of the excavation provides data on depths of deposits, sequences of stratigraphic units, and cultural identity of archaeological deposits. It can permit an estimation of the extent of deposits on in the trench area.

The impact occasioned by road construction is dependent upon the data obtained from geo-technical tests. Significant impact may occur, if substantial excavation is required for road bed installation. The degree of impact can be seen as a function of the width of the road and the depth of required excavation. If a major archaeological feature is threatened by the construction of the road, extensive mitigative excavation may be required. As an alternative, displacement of the road may be less costly, especially if the feature is a spatially discrete historical structure.

5.4.1.2 Development Projects and Components

A development project tends to occupy a large physical area, either as a single element or as a combination of several elements. Given the preponderance of archaeological resources within the East Yard, any component will tend to be placed at or near the location of a known archaeological feature (Figure 8) or cover sufficient area that there is a near certainty of being adjacent to an unlocated historic or prehistoric archaeological feature (Figure 7, Figure 9).

The degree of impact upon the heritage resources by any specific component will have to be evaluated in terms of area covered by that component, degree of land modification and scale of required excavations. Components involving large-scale excavations may, depending upon the location within the site, impact upon numerous historical structures and several potential prehistoric features.

5.4.2 Types of Impact

Three classes of impact upon archaeological resources can be established: minimal, moderate and severe. Minimal impact may be defined as disturbance of a small portion of the resources present at the location; due to the sub-surface activity being either small, in terms of area, or shallow, such that deeper archaeological deposits are not disturbed. Moderate impact may be defined as total disruption of all archaeological resources within a small area or wide-scale shallow disruption of cultural deposits. Severe impact may be defined as total disruption of all archaeological strata, involving several cultural events, over a wide area; quite often totally eradicating the archaeological features.

Minimal impact would be occasioned by surface modification such as landscaping. As approximately one meter of fill, either gravel (Guinn 1980c:140) or cinder (Quaternary Consultants 1988), overlies most of the original, pre-railroad surface of the area, landscaping and shallow surface alterations will produce minimal or no disruption of archaeological deposits pre-dating 1885.

Moderate impact can be projected where deep, but small-scale, disruptions will occur. These disruptions can impact several layers of cultural deposits, but none on a large enough scale to severely damage or eradicate entire archaeological features. Examples of these types of disruptions are building pilings and services trenches. Moderate impact may also be projected for large-scale excavations in areas which have a low potential for heritage resources. This low potential would, of course, have to be confirmed by 'ground-truthing' during a rigorous heritage resource impact assessment.

Severe impact can be forecast for most large-scale operations which entail deep sub-surface activity. The size of large developments is such that entire archaeological features can be eradicated. As an example, the palisades of Fort Gibraltar II were only 100 feet on a side and enclosed several structures. Two forts plus all outbuildings could be placed in the confines of the B & B Building. In cases where the component will be placed over known heritage resources, there is an absolute certainty of severe impact. A very high probability of severe impact can be predicted in areas of high archaeological potential, i.e., the north bank of the Assiniboine River. Severe impact can be expected when excavations cut deeply into the pre-railroad soils, as is the case with the Parks Canada ramp which will impact a large prehistoric occupation horizon.

5.4.3 Location and Scheduling of Phase I Impacts

Any major development, especially in the early stages, is in a state of flux with regard to determination and scheduling of components. Thus, statements concerning location of currently projected components and their time-frame must be considered as subject to change in the future. Information used in this section is as 'up-to-date' as possible. However, it must be borne in mind that all aspects of location and time-frame may be varied at a later date.

5.4.3.1 Infrastructure

The two components of development infrastructure are access roads and services (power, water, sewer). It is probable that these two components will occupy the same area, with services being placed below the roads. The services will probably be installed shortly before the construction of the roads so that the impact of these two components can be considered together.

The North/South Road (Figure 10:A), from Pioneer Avenue to the York Avenue extension, is to be constructed in 1988. The siting of this component is firm, as is that of the York Avenue and St. Mary Avenue extensions (Figure 10:B). The York and St. Mary extensions are projected to be constructed in the period between 1990 and 1992. Continuation of the North/South Road (Figure 10:C) is projected for 1988/89. An access road (Figure 10:D), from Main Street, into the North Assiniboine section of the site is projected for construction in 1988 or 1989.

These current plans may be modified by future developmental decisions. In addition, further services and access facilities may be required in the future, as dictated by developmental considerations.

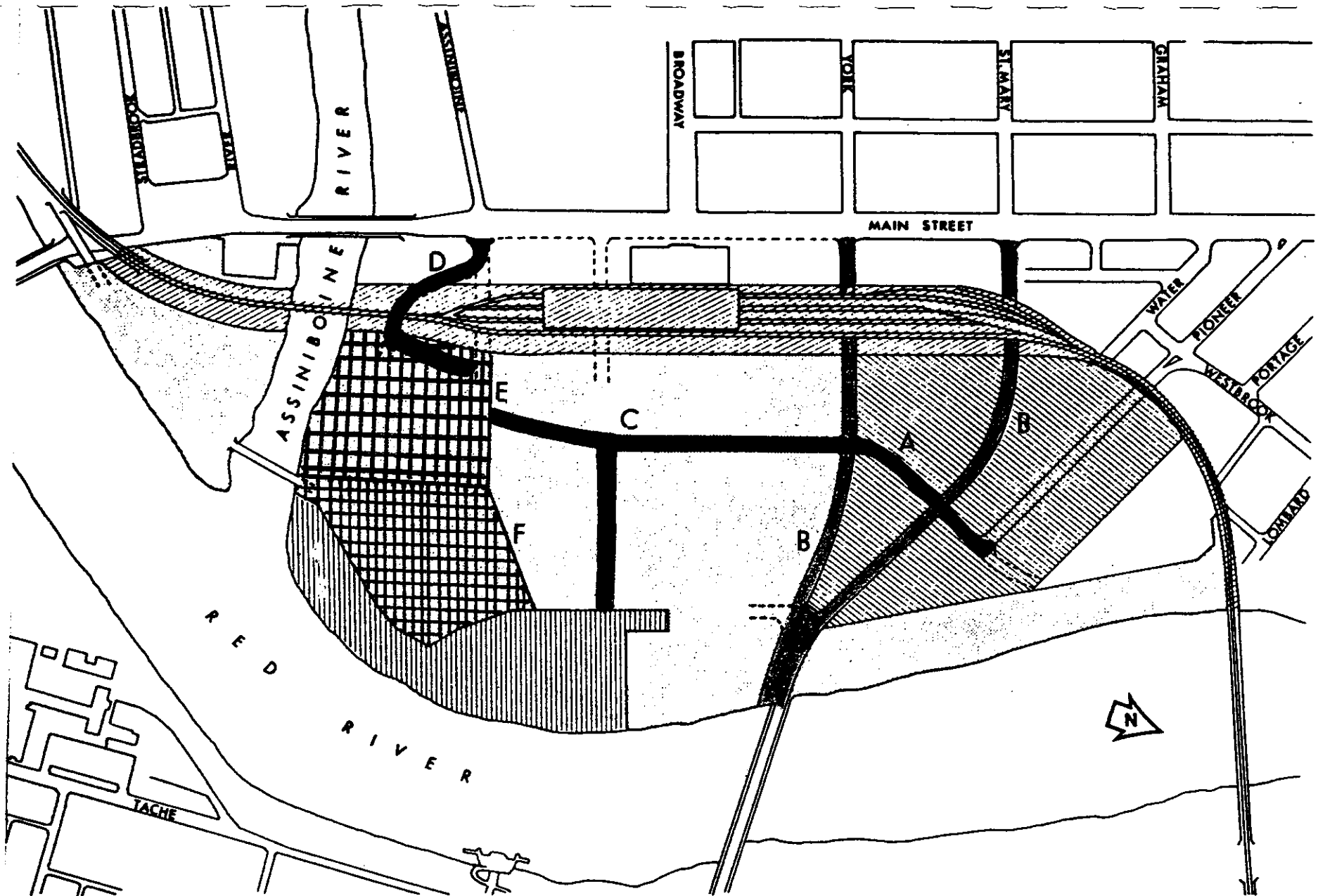








FIGURE 10: LOCATION AND SCHEDULING OF PROJECTED DEVELOPMENT IMPACTS

 -- Roads and Services
 -- Development Nodes

 -- 1988
 -- 1988/89
 -- 1989/90
 -- 1990/92

5.4.3.2. Development Nodes

Development planning is in the early stages, especially with regards to the placement of specific components. Currently, the North Assiniboine Node (Figure 10:E) is the only location which has been specifically targetted. Development within this area, defined as that portion of the site between the Low Line Bridge and the Main Line Bridge, extending from the Assiniboine River north of the existing buildings (Figure 8:54, 55, 57), is projected to occur in 1988/89. The area to the east, up to the boundary of Parks Canada land (Figure 10:F), is under consideration for development in 1989/90. The type of development, and the time table, has not yet been determined. Other portions of the site will undergo development throughout the next five years.

5.4.4 Projected Degree of Development Impact upon Heritage Resources

Given that The Forks have witnessed many centuries of human activity, there is a potential of impact at any location within the site. Certain areas, such as the banks adjacent to the rivers, have a very high potential for unrecorded resources (Figure 7, Figure 9) as well as containing most of the identified features (Figure 8). Prior to on-site heritage resource impact assessments of each development component, it is only possible to estimate impact on the basis of known and estimated archaeological resources within the area of the component. Figure 11 illustrates potential degree of impact of currently designated components according to the three categories previously defined. Projected degree of impact of the remaining areas of the site can be estimated from Figures 8 and 9, depending upon the type of development which will be initiated.

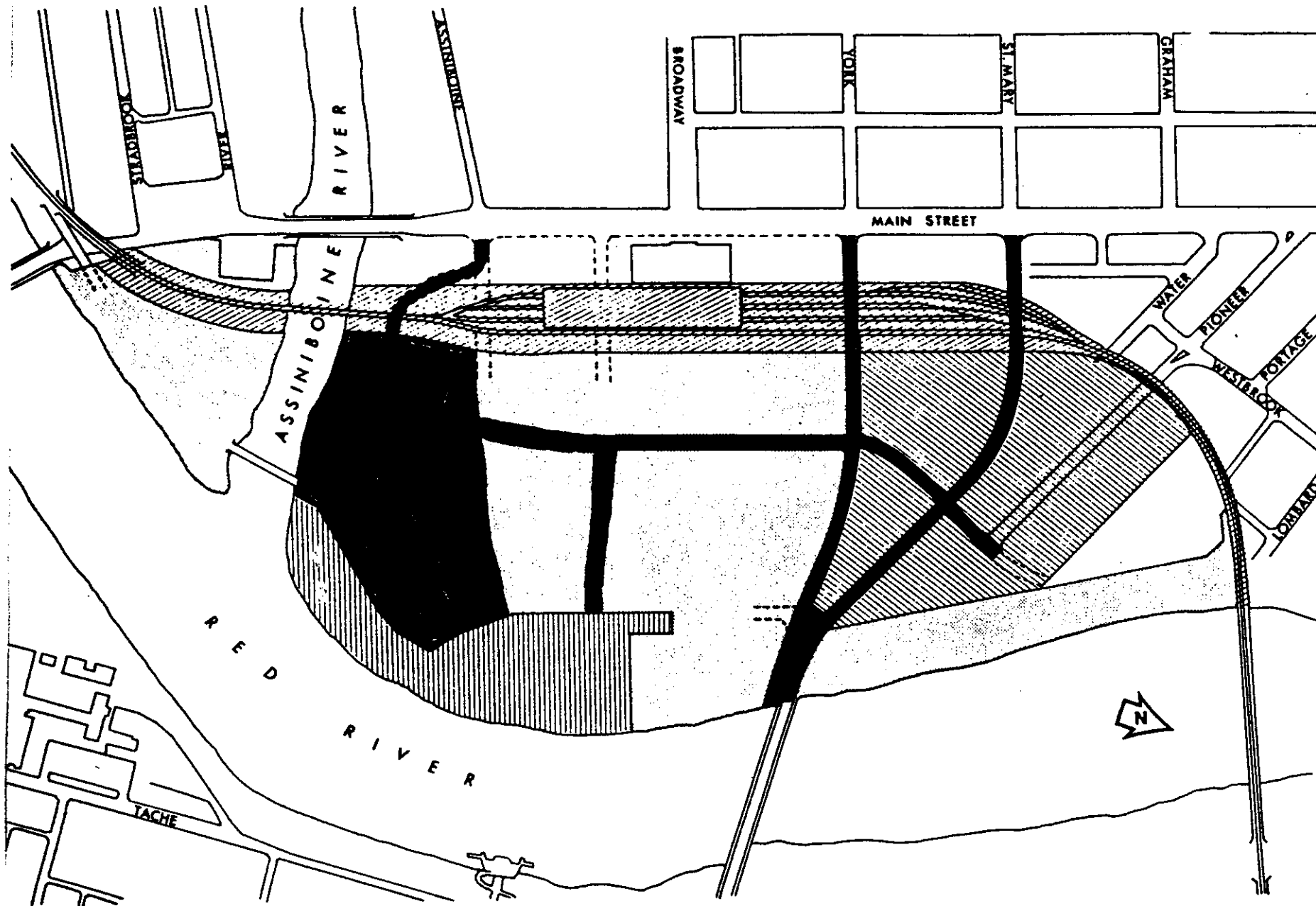


FIGURE 11: PROJECTED DEGREE OF IMPACT OCCASIONED BY CURRENT DEVELOPMENT COMPONENTS

-- Minimal Impact
 -- Moderate Impact
 -- Severe Impact

5.5 Heritage Resource Impact Assessments

A heritage resource impact assessment is a study which attempts to define the quantity and quality of archaeological resources within an impact zone. As it is a statistical sampling of an area, it provides probabilities rather than certainties. The purpose of heritage resource impact assessments in the East Yard is threefold:

1. to ascertain the exact placement of known historic structures (Figure 8),
2. to determine the probability of component construction encountering prehistoric (Figure 9) or unrecorded historic (Figure 7, Figure 9) archaeological features,
3. to provide recommendations concerning appropriate mitigative actions which must be undertaken to comply with provisions of the Manitoba Heritage Resources Act.

The knowledge of the exact location of a known historic structure will permit drafting of development plans which can avoid the feature or incorporate the archaeological feature into an interpretive portion of the component. In either case, costly and time-consuming mitigative action can be avoided.

Fore-knowledge of the probability of development construction encountering an archaeological feature can be used to advantage. Sufficient warning can permit design element modification where such action is possible. Where the design and the location of the component cannot be altered, sufficient lead time may permit the short-term exploitation of the archaeological resource by an externally funded program (research or public). Even when such options are not available, mitigative actions can be completed prior to the projected date of construction. The results of the heritage resource impact assessment will permit accurate costing

of the necessary mitigative actions. As a spin-off, keeping the general public aware of the heritage management, undertaken to preserve the archaeological resources at The Forks, produces a good corporate image.

It is recommended that the assessment for the North/South Access Road be undertaken as soon as possible to permit sufficient time for mitigative action if, perchance, such is required. A proposed heritage resource impact assessment program has been developed for this component and is attached to the report as Appendix E.

It is recommended that a heritage resource impact assessment be conducted for the North Assiniboine Node during the spring of 1988. As the area has several known archaeological resources (Figure 8) and a high potential for prehistoric and/or unrecorded historic features (Figure 7, Figure 9), the sooner the assessment is undertaken, the more lead time will be available for mitigative actions. A proposed heritage resource impact assessment program has been developed for this component and is attached to this report as Appendix F.

It is recommended that heritage resource impact assessments should be conducted, during the summer of 1988, for those components whose construction is slated for start-up in 1988 and 1989. Again, this is necessary to allow sufficient time for mitigative action, if necessary.

In general, it is recommended that the heritage resource impact assessment for each component, whenever possible, proceed one year prior to the initiation of the construction phase of that component. This will permit sufficient lead time for the completion of mitigative action, if necessary.

It is recommended that separate heritage resource impact assessments be conducted for each development component. Although a generalized compilation of historic resources and an estimated potential for prehistoric resources has been presented in this report, accurate knowledge of the archaeological resources within the specific impact zone for each component can only be attained by direct investigation. Also, component-oriented impact assessments can be specifically designed, taking into consideration the potential resources and the potential types of impact. As a case in point, the heritage resource impact assessments developed for the North/South Access Road (Appendix E) and the North Assiniboine Node (Appendix F) are very different. The North/South Road program concerns limited impact within a small area of moderate archaeological potential; the North Assiniboine program deals with wide-scale impact in an area of extremely high archaeological potential.

Normally, each heritage resource impact assessment must be conducted under the terms of a Heritage Permit issued by Historic Resources Branch. Discussions have been held with staff members of the Branch and Parks Canada concerning the attachment of certain standards (Appendix D) as part of the conditions of the permit. Consultations are on-going and this report includes recommendations setting minimum standards for all archaeological activity at The Forks. These could be included as conditions which must be fulfilled by the permit holder.

On an associated aspect, this report has not addressed the heritage resource impact assessment requirements for the four remaining structures in the East Yard. The Minister of Culture, Heritage and Recreation has indicated an intention to formally designate the former Stable Buildings and the B & B Building as heritage sites. Additionally, the City of Winnipeg has listed

the Johnson Terminal as a Class III Historic Building. Irregardless of designation and/or listing, the provisions of the Heritage Resources Act (either Section 12[1] or Section 12[2]) will apply. As the structures are not archaeological, it was felt that consideration and analysis of these buildings was not within the mandate of this report.

5.6 Heritage Resource Mitigation

5.6.1 Mitigation Actions

Mitigative activity can be defined as an action which is taken to lessen or eliminate impact upon heritage resources. As such, mitigation can range from none, where no archaeological resources are threatened by a projected development, to very extensive, in cases where large areas of archaeological resources will be impacted.

Mitigative options include:

- a. relocation of the component to a location where less or no heritage resources would be impacted,
- b. modification of the design of the component to lessen the area or depth of the impact,
- c. incorporation of part or all of the archaeological feature into the component as part of the development,
- d. mitigative excavation of a representative sample of the archaeological feature(s), or
- e. mitigative excavation of the entire archaeological resource which will be impacted by construction of the component.

Where mitigative excavations are required, the archaeological operations would be expected to comply with the same standards as would the heritage resource impact assessments (Appendix D).

5.6.2 Criteria for Resource Significance

While all heritage resources should be equal in importance, some are more equal than others. Common sense will dictate that Fort Gibraltar II has a higher intrinsic value than a temporary shed erected in 1930 and demolished in 1935. This is by way of preamble to the main considerations for determining site significance:

- a. Integrity - the less the site has been disrupted, the more contextual information can be derived concerning cultural behavior patterns. While information on material culture, technology and subsistence base can be obtained from disturbed contexts, much of the associational patterning data has been lost.
- b. Relevance to 'gaps' in the local culture history - the site becomes significant if it can provide currently unknown data concerning demography, resource utilization strategies, site function, cultural identity, technology, etc.
- c. Potential for palaeoecological data - the site becomes significant if it can provide data on past faunal and floral assemblages, evidence of climatic and/or cultural modification of the environment, evidence of natural phenomena such as floods or fires, etc.
- d. Contribution to public interest and understanding of the archaeological heritage - the site becomes highly significant when, by virtue of its history, location or nature, it serves to stimulate public interest in archaeology and an appreciation of the heritage represented by the archaeological record. (Adapted from Association of Manitoba Archaeologists 1986:20).

Many portions of the East Yard contain historic and prehistoric features which fulfill most of these criteria. Another 'rule-of-thumb' approach considers that the less known about the culture, history and artifact assemblage, the more important the site becomes. Lack of archival data about much of the early fur trade period makes excavation of these locations important from a 'knowledge-gap' point-of-view. Similar reasons apply to prehistoric features.

From a public perception, the most noteworthy resources will be those of the prehistoric and fur trade periods (Appendix A: 1-22). These elements, especially the forts, tend to invoke public interest. In temporal terms, any feature which dates back to the 19th century can stimulate public interest (Appendix A: 1-54).

5.6.3 Criteria for Mitigative Action

Each heritage resource impact assessment will recommend appropriate mitigative action for the location, depending upon the archaeological resources and the type of projected impact. These recommendations will be examined by FRC and Historic Resources Branch, in its regulatory function.

Evaluation of heritage resource impact assessments conducted on behalf of FRC will occur under two different mechanisms. Firstly, FRC will review the assessment in terms of this management plan, i.e., does it meet the required standards, did it address the appropriate development concerns, do the recommendations accord with adequate resource management, etc. Secondly, as the regulator of provincial heritage resources, Historic Resources Branch will review and comment upon the heritage resource impact assessments. Their concern will be with the quality of the investigation and the appropriateness of the

mitigative recommendations in terms of preservation and/or protection of the resource base. Internal and external review will enable balanced evaluation of the assessments and provide a baseline for effectively judging the appropriateness of recommended mitigative procedures prior to the initiation of development.

It is impossible to forecast, with any degree of accuracy, what types of mitigative actions will be judged appropriate without having knowledge of the archaeological resource at a component location and knowing the construction specifications of that component. In general, it can be stated that the most likely locations for requiring the most mitigative action are the areas along the upper banks of the Red and Assiniboine Rivers.

In terms of known resources along the north side of the Assiniboine River, five structures stand out, as requiring mitigative procedures, preservation and/or protection:

1. Fort Gibraltar I (Figure 1:12)
2. Fort Gibraltar II/Fort Garry I (Figure 1:14)
(which would include the Courthouse (Figure 2:18))
3. Immigration Sheds (Figure 3:23)
4. HBC Steamboat Warehouse (Figure 3:24)
5. HBC Mill Complex (Figure 3:28).

In terms of unknown resources, any prehistoric or early historic feature which has not been disrupted by railroad or earlier construction will require mitigative action.

5.6.4 Scheduling of Mitigative Actions

Mitigative procedures should be scheduled as soon as possible after the recommendations proposed in the heritage resource impact assessment are approved by FRC and Historic Resources Branch. The heritage resource impact assessment is a sampling of the entire impact location and, thus, cannot fully predict the entire range of archaeological resources which may be encountered during mitigation. As unexpected occurrences may happen, it is preferable to have as much lead time as possible.

A previous recommendation was that heritage resource impact assessments be undertaken one year prior to the initiation of construction. This will permit a portion of one field season, if not two, for the implementation of the mitigative procedures.

5.6.5 Development Monitoring

Monitoring of development and development impact upon heritage resources will occur at two levels. At the planning level, a proposed component will be assessed as to potential impact based upon type of development (Section 5.4) and potential for archaeological resources (Section 4, 5.3). Design and location modifications may be undertaken, where feasible, to minimize potential impact. If siting and design features are firm and it appears that impact may be severe, the heritage resource impact assessment should be tendered a considerable time in advance, to allow time for mitigative action prior to, and during, the initial phases of construction.

During the component construction phase, some monitoring of excavation activity should occur. While the heritage resource impact assessment would have identified most of the expected archaeological features; heritage objects, including burials, can occur at any point. In some cases, the recommendations of the heritage resource impact assessment may consist solely of monitoring of sub-surface activity.

5.6.6 Heritage Resource Management Strategy

The process of heritage resource management is not a straight-line operation. At each of steps of the process, the subsequent procedure depends upon the data obtained during the previous action. In general, the steps are project planning, heritage resource impact assessment, feedback to design, mitigative action and monitoring during construction. However, the scope of each of these actions and, occasionally, the necessity for a specific action is dependent upon the results of the previous action. To illustrate the process, a procedural flow chart showing actions and options is presented as Figure 12.

The first phase can be designated as the 'Conceptual Phase', wherein the idea of the project is formulated, the location for the project is chosen and the project design is initiated. During this phase, heritage resource management comes into play at the design stage. Consultations between the Project Designers and the Site Archaeologist will provide preliminary indications of the archaeological resource potential and the potential degree of impact upon those resources.

The second phase can be designated as the 'Assessment Phase'. The Site Archaeologist estimates the degree of potential impact which may, or may not, result in some modification of the design of the project. At this point, the area and depth of impact caused by the project will be known and an heritage resource impact assessment will be undertaken. The results of the assessment may, again, result in design modification.

The third phase can be designated as the 'Implementation Phase'. The quantity and quality of the archaeological resources within the area of impact will have been ascertained by the heritage resource impact assessment. One of two procedural paths will be chosen, depending upon the data obtained. If there appears to be minimal archaeological resources within the impact zone, construction may be initiated immediately. If it has been determined that major resources will be affected, mitigative actions, including compensatory excavation, will be undertaken prior to the initiation of construction. Once construction has begun, monitoring of the operations will be conducted. In the event of the discovery of unexpected archaeological resources, expeditious mitigative excavations will be preformed (upon the discovered resource) while construction proceeds in other portions of the project.

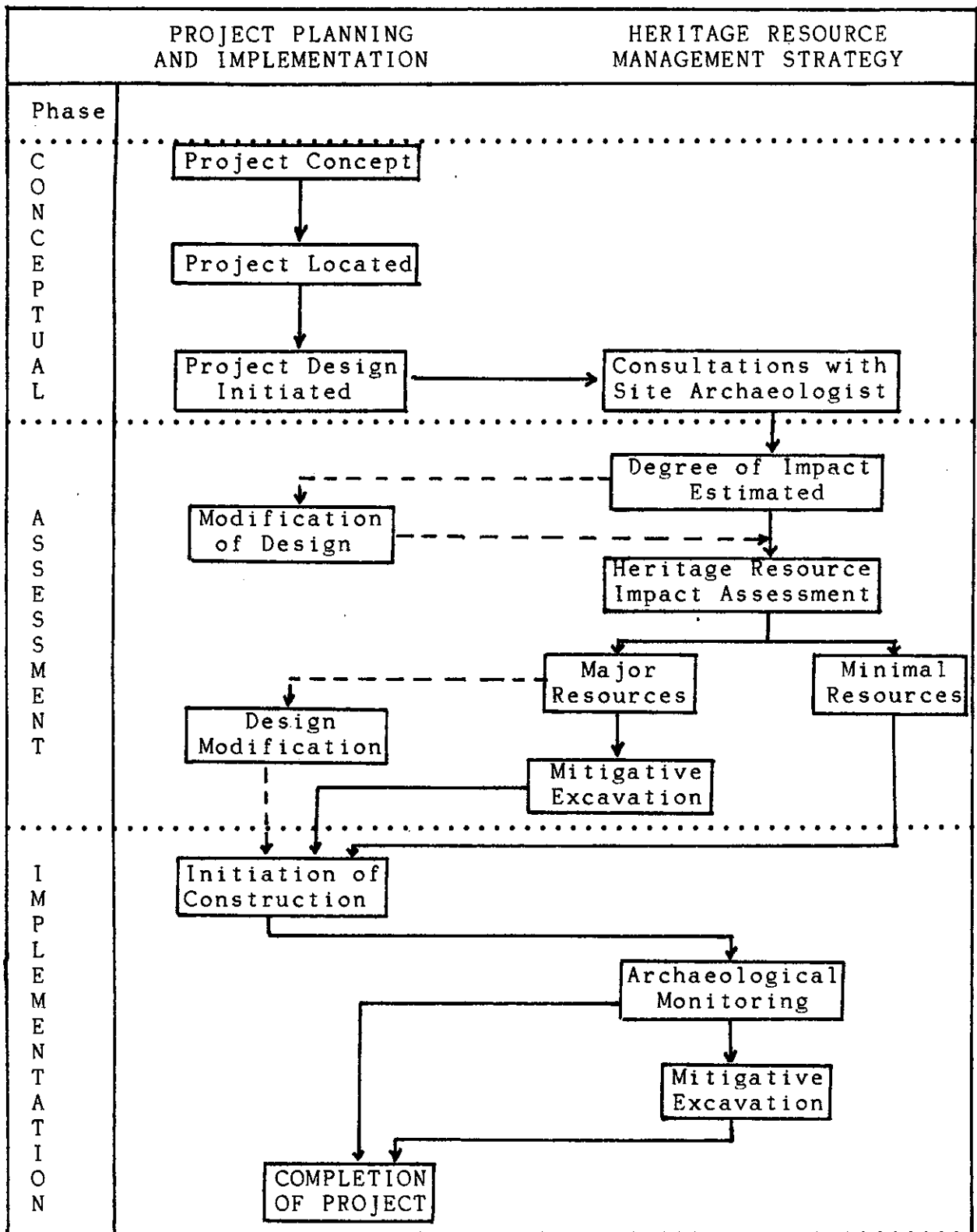


Figure 12: Heritage Resource Management Process

5.7 Research Archaeology

The University of Manitoba will be conducting an Archaeological Field School at The Forks during the early summer of 1988. In the course of deliberations about the field school, the suggestion of designating a portion of the site as an 'archaeological preserve' was advanced. Certain areas of the site, both on FRC land and on adjoining Canadian Parks Service land, offer extremely rich archaeological resources. If the idea of maintaining an area for continuing research, perhaps in conjunction with public archaeology programs, is seen as valid, FRC could entertain proposals from academic researchers who would wish to work at the site.

The archaeological community, while spread across Canada, has good internal communications. If it was known that The Forks was 'open for business', applications for research opportunities would be submitted. In some cases, these research applications would carry funding with them and, thus, would not add to the expenses of FRC. In addition, some of the research applications may be fitted into the program of mitigative action and assist, or even supplant, contracted mitigation activities. If such a possibility occurs, FRC may wish to consider granting permission for those projects which are only partially funded, as the cost of 'topping off' the project may be less than contracting a complete action. Naturally, all such projects would have to be undertaken within a time frame specified by FRC.

5.8 Public Archaeology Programs

There are two types of public archaeology programs that may be considered by FRC. They are not mutually exclusive and can even run in parallel. The first program is passive, in the sense that information is provided to the public. This can be done with guided, interpretive tours of archaeological operations on the site, displays of recovered artifacts, video and television programs, public lectures and media coverage of the activities at The Forks. This type of program does not carry large capital costs, although it will require an operating budget. There is minimal direct revenue generation from such a program, although it does foster an increased public awareness in the heritage resources of The Forks. Such an awareness may produce revenue for The Forks, in general, in the long term.

The second type of program is an active participation program which is operated on site. The Canadian proto-type is the Strathcona Science Centre in Edmonton which operates a public excavation program in conjunction with a public interpretive program. An annual university archaeological field school is conducted in the early part of the season and graduates of the program can be retained as staff to work as supervisors of members of the public who wish to participate in excavations. The facility has a permanent display and interpretive centre with a functioning field laboratory. Volunteers who wish to participate commit themselves to a minimum number of days and undergo a thorough training program. At the end of the program, the volunteers participate in the on-going excavations, under supervision of staff. This centre was established in 1980 with a considerable infusion of Provincial money; a situation which is unlikely to occur at The Forks. Part of its operating budget derives from the Alberta government, while some is raised by an adjunct association, The Friends of Strathcona Science Centre.

Such a mechanism may be considered by the Board as a vehicle for developing a public archaeology program at The Forks. Capital funding for such a centre may be difficult to obtain, but initially, the program could be run as a continuance of academic programs, with operating costs being derived from grants and/or raised by a "Forks Foundation" type of group. Such a program would encounter enthusiastic support from avocational archaeologists, such as the Manitoba Archaeological Society.

5.9 FRC Components of The Forks Archaeological Plan

Each archaeological investigation at The Forks will require access to certain facilities. It should not be incumbent upon FRC to provide any of the normal operating equipment for the implementation of a project. However, in cases of contracted heritage resource impact assessments and mitigative actions, the obtaining of such equipment by the archaeological investigator would be considered as reimbursable expenses.

While most of the equipment (Appendix D.4) will be provided by the archaeologist, certain items may be provided by The Forks Renewal Corporation.

5.9.1 Archaeological Field Laboratory

For most archaeological projects in the East Yard, a primary consideration is the necessity for a field laboratory facility. If the project, and expected artifact recovery, is small, an off-site facility can be used. However, if the project is large and/or long-term, an on-site facility will be required. The facility should be large enough to provide lay-out and work space, artifact preparation space, artifact and equipment storage space and shelter for excavation personnel during short periods of inclement weather. Further, it requires some furniture (tables and chairs) as well as a refrigerator for storage of perishable organic artifacts. Electricity is a necessity, due to the refrigerator and the required computer cataloging of artifacts. Running water would be advantageous. FRC is providing a trailer as a laboratory facility for the 1988 University of Manitoba Archaeological Field School. It may be worth considering the possibility of developing a permanent facility, which could be integrated into a public archaeology program.

5.9.2 Archaeological Field Computer

It is recommended that, for the purpose of facilitating data management, FRC should consider providing a micro-computer and dot matrix printer. The cataloging of artifacts and labelling of artifacts by computer is much more cost effective than hand-recording. If FRC opts for this decision, it is recommended that the computer be an IBM XT or IBM AT clone with a hard drive. The rationale for this choice is that a program for the CHIN (Canadian Heritage Inventory Network) artifact cataloging system was developed at the Manitoba Museum of Man and Nature by Brian Lenius for operation on this type of computer. The compatibility of the program with other MS.DOS computers is unknown. Use of a single computer would ensure uniformity of data entry by varied researchers. The computer would be used, in the field laboratory, on a time-share basis by all archaeological investigators. After the end of the archaeological project, it would be returned to the offices of FRC.

5.9.3 Custody of Artifacts

5.9.3.1 Ultimate Disposition of Recovered Artifacts

It can be readily assumed that large quantities of historic and prehistoric artifacts will be recovered from the various archaeological activities which will be undertaken at The Forks. The ultimate disposition of these artifacts is a decision that must be made by FRC. The policy statement in the Phase I Plan provides that "the Corporation is proceeding on the premise that it will provide to the Province in trust any artifacts discovered on the site" (FRC 1987:30). Without prejudice, this report shall examine the three options that are available concerning the disposition of recovered artifacts. Given the provisions of the Heritage Resources Act, the Province retains ownership of all artifacts which will be recovered but FRC, as landowner, has the right to custody of the artifacts. This right may be transferred by FRC as it sees fit.

The first option that is open to FRC is the retention of the artifacts. The advantage to this is that the artifacts would be available, as needed, for display and public programming. The collection could be the material core for a public interpretive program and a participatory public archaeology program. This option does, however, have several financial entailments:

- a. a storage facility which can provide environmentally controlled conditions would be required,
- b. the cost of conservation of perishable artifacts may have to be borne by the FRC,
- c. FRC would need to consider the necessity of providing a collections and data manager to curate the artifacts, manage the collections and make the artifacts available to contracted consultants and academic researchers, and

- d. FRC would have to carry the insurance for the artifacts.

The second option is that custody of the artifacts be directly transferred to the Minister of Culture, Heritage and Recreation, as represented by Historic Resources Branch. Mr. Gary Dickson has stated that the Branch does not have adequate facilities for the long-term storage of the artifacts. Neither does the Branch possess a facility with adequate environmental controls for perishable artifacts. Historic Resources Branch has stated that they would prefer that the custody of the artifacts be transferred to the Museum of Man and Nature rather than themselves. If Historic Resources Branch received custody of the artifacts, the material would have to be in a storage-ready condition at the time of transfer.

The third option is that custody of the artifacts be transferred to the Museum of Man and Nature. Storage facilities and environmental controls already exist. Artifacts could be readily retrieved from the Museum on short or long-term loans. In addition, they would be available for on-site analysis by researchers. A computer data management system is already in place. This option has some entailments, as well. Dr. E. Leigh Syms, Curator of Archaeology, would require that:

- a. the artifacts must be storage-ready when received by the Museum, as Museum staff would not be available to catalog and identify artifacts en masse, and
- b. the artifacts must be cataloged, by computer, in a format compatible with the nation-wide system that the museum has used for its own collections (the CHIN system).

It is recommended that the third option be selected by FRC. It eliminates the necessity of providing the physical structures and personnel requirements of the first option, while ensuring adequate storage and conservation for the artifacts. The accessibility of the artifacts for research and investigation may be better than if FRC retained custody without providing the necessary facilities. It also permits the retrieval of artifacts on a loan-basis without delay. An additional benefit is the identification of FRC as a major donor of archaeological material. This can enhance the corporate image of FRC as a pro-heritage agency.

5.9.3.2 Custody of Artifacts from Dual Jurisdictions

A committee of personnel from Canadian Parks Service, Historic Resources Branch and the Museum of Man and Nature have examined the problem of archaeological resources which occur on both sides of current land ownership boundaries. Resources, such as Fort Gibraltar II, may be found on land owned by FRC and Canadian Parks Service. In concurrence with their suggestion, it is recommended that custody of the artifacts deriving from the entire feature shall be conferred upon the party whose jurisdiction encompasses the majority of the resource. Thus, if most of Fort Gibraltar I occurs on Parks land, all artifacts from that feature would be relegated to Parks for custody. Conversely, if most of Fort Gibraltar II occurs within the FRC jurisdiction, FRC or its designate would receive custody of all artifacts from the feature, without regard to which side of the boundary the material was located.

5.9.4 Curation Requirements

It is recommended that all archaeological projects at The Forks use an identical computer cataloging system to enable data cross-referencing between researchers.

Further, it is recommended that all artifacts recovered during investigations in the East Yards be computer cataloged using the CHIN (Canadian Heritage Inventory Network) system. This system is used nationally by all institutions affiliated with the National Museum and is becoming prevalent elsewhere. Data can be retrieved at any institution with an active terminal, including all provincial and territorial museums. The end result is that an data in the system is widely accessible by researchers across the country. The system can be interfaced with the computer system used by Canadian Parks Service which is based upon a numerical taxonomy. A CHIN cataloging manual has been provided to FRC by the Museum and the cataloging program for use on a micro-computer is available.

The other option is to utilize the Canadian Parks Service computer cataloging system. The data would not be as widely available, due to a smaller number of access terminals. Also, it is easier to translate data in the CHIN format to the Parks format rather than vice versa. For these reasons, this option is not recommended.

5.9.5 Conservation Requirements

Due to moist soil conditions in parts of the site, there is a potential for the recovery of perishable organic items. Optimum conditions at Bonnycastle Park resulted in the recovery of more than 3000 wood, leather, cloth and paper artifacts, including a portion of an 1838 newspaper. The conservation treatment of these items required the services of a conservation technician for most of two years as well as considerable expense in supplies.

Provincial assistance for conservation of recovered artifacts in the form of grants and/or professional and technical services may be available under Section 60[d] of the Heritage Resources Act. An agency, the Manitoba Heritage Conservation Service, provides such assistance to groups and institutions which do not have the resources to undertake artifact conservation treatment on their own behalf. However, the agency's eligibility criteria appear to exempt FRC from availing themselves of the service. The eligible organization must, among other criteria,

- a. be a non-profit permanent establishment, exempt from Federal and Provincial government income taxes, administered in the public interest, and
- b. have the collections open for access to the public on a regular basis.

Eligibility for such assistance could, perhaps, be negotiated with the Minister of Culture, Heritage and Recreation under the provisions of Section 60[d] and Section 61 of the Act.

In lieu of obtaining provincial assistance, FRC can require that each archaeological project undertake at The Forks designate a portion of its budget for conservation requirements. For contracted heritage resource impact assessments and mitigative

actions, this could be listed as a percentage surcharge, to be expended if required. For academic and public projects, it could be an off-the-top percentage allocation. As the project progresses, the amount and estimated cost of conservation treatment could be estimated by an expert conservator. However the allocation is determined, it is recommended that FRC make aware to all proponents that the cost of conservation treatment of perishable artifacts must be an identified item in any proposed budget.

If it is determined that FRC will designate the Manitoba Museum of Man and Nature as the artifact repository, conservation requirements can be addressed by the Museum Conservation Department and the Manitoba Heritage Conservation Service. If the artifacts are to be transferred to Historic Resources Branch, the Manitoba Heritage Conservation Service would be available to treat artifacts. It must be noted that, whatever the final disposition of the artifacts, the costs of artifact conservation will still be applicable.

5.9.6 Data Dissemination

To paraphrase an old quote; 'not only must good heritage management be done, it must be seen to be done.' Many criticisms of inadequate heritage resource management are leveled because the information about the project has been poorly communicated.

To prevent such an occurrence, it is recommended that FRC encourage a multi-targetted information service about heritage activities at The Forks. The appropriate targets are professional archaeologists, avocational archaeologists and the general public.

The professional target is the easiest to reach. Researchers tend to present their data at peer conferences and publish in professional journals. As each archaeological project must file a final report with Historic Resources Branch as part of the Heritage Permit condition, the data will have been compiled into a format which should be publishable. It is possible that an annual archaeological report could be compiled concerning all projects which were undertaken during the year. Such a report could be published, in limited quantities, by FRC using the 'desk-top publishing' capabilities of the field computer.

The avocational archaeologist can be reached through meetings of the Manitoba Archaeological Society and through the Society's journal. Researchers at The Forks can be encouraged to present talks in this forum. Another mechanism is the use of the television program "Archaeology in Manitoba". Unfortunately, the program probably only reaches those with a confirmed interest in archaeology. The nebulous 'general public' is more difficult to reach and to stimulate. Cultivation of the electronic and print media will be necessary, especially in the early stages of the development before a public program can be initiated.

5.10 Financial Implications of The Forks Archaeological Plan

5.10.1 Estimated Administrative Costs

Administration costs can be divided into three types: personnel costs, capital costs and operating costs. Capital costs represent a one-time expense and would be incurred during the first year of the operation of the Plan. Personnel and operating costs will demonstrate annual variations dependent upon the intensity of the archaeological program for that year.

5.10.1.1 Personnel Costs

It has been previously recommended that FRC create the position of Site Archaeologist and fill the position by retaining an archaeological consultant (Section 5.2.2). While the scale of the retainer, the concomitant number of hours of retained service, and the charge-out rate for additional service will be negotiated between FRC and the consultant, this report will attempt to project an annual cost. Depending upon the amount of services required during the 1988/89 fiscal year, it is estimated that FRC should budget between \$20,000 and \$30,000 for professional archaeological services.

Additional personnel costs would be the allocation of FRC staff-hours towards the administration of The Forks Archaeological Plan. While the individuals are on an annual salary, it may be advantageous for costing purposes, to record the hours which have been expended upon the archaeology component of the East Yard Development.

5.10.1.2 Capital Costs

Capital costs for the administration of The Forks Archaeological Plan are relatively small. The acquisition of a field computer system (Section 5.7.2) for the archaeological program is not a major expense. An IBM AT clone micro-computer and printer, with appropriate software, can be obtained for less than \$5,000. The software package for the 'desk-top publishing' feature has not been costed. However, it should be less than \$2,000.

5.10.1.3 Operating Costs

The provision of a non-permanent field archaeology laboratory facility is not expensive. If a permanent facility is developed, construction costs and amortization would be much greater. Preliminary costing, for the use of an on-site trailer for the 1988 University of Manitoba Archaeological Field School, indicates that a rental figure is estimated at \$1,000 to \$1,500 per season. An on-going expense of the field laboratory, and the only one for which FRC would be responsible, would be electrical services. Including hook-up charges, this cost should be less than \$2000 per season.

Other operating costs are difficult to estimate. These costs would include FRC office facilities used by the Site Archaeologist, computer supplies used by the field operations and the operating costs of the field laboratory. The office requirements would include secretarial services, duplicating facilities and general office supplies. While the secretarial services would not be an additional expense to FRC, the recording of staff-hours allocated to the administration of The Forks Archaeological Plan may be advantageous for costing purposes. The cost of the computer supplies (discs, ribbons, etc.,) is minimal and should be less than \$500 per field season.

5.10.1.4 Summary of Administrative Costs

All figures used in the preceding sections have been 'guesstimates'. Many costs are dependent upon specific situations. Using the above estimated values, the table below will summarize the projected financial costs for the annual administration of The Forks Archaeological Plan. The largest direct expense will be the fee for the professional services of the Site Archaeologist. Capital and operating costs will vary from year to year. The following table provides the estimated range of the various expenses.

	Minimum	Maximum
Site Archaeologist	20,000	30,000
Field Computer*	5,000	7,000
Field Laboratory	1,000	1,500
Office Expenses	500	1,000
Field Computer Supplies	500	500
Field Laboratory Expenses	1,000	2,000
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Totals	28,000	42,000

* One-time expense

5.10.2 Estimated Cost of Heritage Resource Impact Assessments

The site consists of approximately 58 acres (23.5 hectares or 235,000 square meters). All archaeological resources are buried below a surface fill of gravel and cinder, whose depth varies from 0.5 to 5.0 meters. All heritage resource impact assessments will have to conduct some type of sub-surface examination to ascertain the location and quantity of archaeological resources that may be impacted by development. The type of the sampling technique for each heritage resource impact assessment will depend upon the potential for resources and the consequences of a too widely spaced survey which may miss material. In addition, the depth and area of the projected impact must be considered. In summary, the entire site cannot be seen as a whole with uniform requirements. This is illustrated by the two, very different, impact assessment strategies outlined for the North/South Access Road (Appendix E) and the North Assiniboine Node (Appendix F).

When portions of the site are examined individually, heritage resource impact assessments along the north bank of the Assiniboine will tend to be more costly than in areas in the middle of the East Yard. The judicious use of mechanized equipment can reduce the length of time required to conduct each heritage resource impact assessment. Without having baseline figures, it is difficult to estimate the cost and time frame required for implementing several heritage resource impact assessments which would encompass the entire site over the next five years.

The implementation of heritage resource impact assessments will require field operations, artifact curation and analysis, data interpretation, report preparation and development of recommendations for appropriate heritage management. The time

frame for all of these aspects will vary greatly, depending upon the location that is being assessed. Usually, the ratio of field work:lab work:report preparation is 1:1:1. In areas where large quantities of artifacts may be recovered, this ratio will rise to 1:2:2. These figures indicate that, for every person/day of field operations, there are two to four person/days required for processing the recoveries and preparing reports.

The first set of figures would probably apply to the impact assessment of the North/South Access Road (Appendix E). For each person/day of monitoring the geo-technical drilling, there would be a concomitant two/person days to curate, analyze and report on the recoveries. Similar figures would apply to the trench monitoring component of the assessment.

The proposed heritage resource impact assessment strategy for the North Assiniboine Node (Appendix F) will probably result in the recovery of greater quantities of artifacts, as the area has a much higher archaeological resource potential (Figure 9). Accordingly, it would be prudent to utilize the higher ratios when calculating time and personnel requirements.

Some developments in the United States, where Federal legislation requires the allocation of 1.5% of the capital cost of a project on Federal land to be allocated to heritage action, have found the figure too low. In Ontario, 2% is a suggested allocation. If the capital expenditures for land clearing, service installation and landscaping are expected to approach \$19 million (FRC 1987:30), it would be expedient to earmark a minimum of 1.5% and a maximum of 3% (\$285,000 to \$570,000) for heritage related activities. The lower limit should cover a significant portion of the necessary heritage resource impact assessments. The upper limit, depending upon the amount required, may cover some of the subsequent mitigative actions.

With regard to personnel, it would not be cost-beneficial for FRC to retain, on a long-term salary basis, sufficient personnel to conduct in-house heritage resource impact assessments and mitigative activities. There would be considerable periods when the services of a salaried crew of archaeologists would not be required. Rather, it is recommended that FRC contract each of the necessary heritage resource impact assessments, as and when required, according to the time frame of the development and the specific component whose location is being assessed.

It has been suggested that FRC consider allocating sufficient funds to cover the costs of heritage resource impact assessments for all components within the entire development. The rationale for this suggestion is that one of two scenarios will occur. If the project is FRC-owned, it is automatic that the impact assessment would be funded by FRC. If the development is to be conducted by an external agency or company, FRC may find it necessary to conduct the heritage resource impact assessment in order to enter into meaningful negotiations with an outside proponent.

5.10.3 Estimated Cost of Mitigative Actions

Mitigative actions, particularly those which involve large scale compensatory excavations, can require a large expenditure of time and money. A trained archaeologist can excavate, following appropriate standards and rigor, approximately one cultural level per square meter per day. If, as has been discovered at the Parks Canada Ramp Site, there are ten cultural levels, it would require two person/weeks to conduct appropriate mitigative excavation for each square meter of the area to be impacted. The North Assiniboine Node covers approximately 36,000 m² and impact of varying degrees will occur over most of the area. Sub-surface

modification will probably occur in less than one-third of the area. However, if complete compensatory excavations are required, this would entail a phenomenal financial commitment. It is unlikely that such a worst-case scenario would occur, as archaeological resources, especially of the prehistoric period, are not going to be uniform across the site.

The quantity of artifacts and information recovered during mitigative excavations result in the field:lab:report ratio rising to 1:3:3 or 1:3:4. As a result, these actions are quite labor intensive, even taking into consideration aspects such as mechanized excavation and computerized artifact cataloging.

In order to estimate the costs of necessary mitigative actions, it is necessary to know:

1. through the heritage resource impact assessment, the quantity of the archaeological resources present within the impact zone,
2. the area of the projected impact zone, and
3. the depth of the impact zone.

Such information will permit the determination of the volumetric size of the impact zone and the resource density (number of cultural levels and the projected number of artifacts/m²/level). Costing of mitigative operations can then be performed using the field productivity and concomitant lab:report ratios.

5.10.4 Estimated Cost of Public Archaeology Programing

At present, it is impossible to estimate the cost of establishing any type of public archaeology program at The Forks. The example has been given of the Strathcona Science Centre in Edmonton which provides both passive and participatory public archaeology programming. Current operating costs are underwritten by the Province of Alberta and the adjunct Friends of Strathcona society. The current budget provides for an infusion of approximately \$40,000 in provincial monies (M. Magne, 1988:personal communication).

While a public archaeology program at The Forks is one of the commitment made by The Forks Renewal Corporation, the mechanisms of developing and funding such a program have yet to be devised. This problem is addressed in a future section.

5.11. Financing Options

5.11.1 Base Funding

Within the framework of the capital development expenditures, FRC should include the cost of all component heritage resource impact assessments. With allocation of specific monies for heritage resource management, there will not be a searching for funding to conduct required impact assessments. Portions of this allocated funding can be used to implement a public information program to heighten public awareness of the resources at The Forks and the management program that is preserving and protecting those resources. Surpluses of allocated impact assessment funds can be used to off-set costs of mitigative actions during the pre-construction phases of development components.

5.11.2 Funding for Mitigative Actions

Adequate resource management will require that necessary mitigative actions are undertaken to lessen development impact upon the archaeological resources. The costs of mitigative action can be high, as such operations are labor intensive, requiring sizable crews of skilled personnel plus substantial logistic support.

In the event that mitigative costs exceed the allocated base funding, FRC will find it necessary to obtain sufficient funding to comply with the provisions of the Heritage Resources Act and any special conditions appended to the development plan by the Minister. FRC has noted that "its funds do not provide for any significant heritage protection or redevelopment programs" (FRC 1987:30). In order to raise the necessary capital, FRC may be required to enter into negotiations with the component developer, the prospective tenants or the shareholders of the Corporation. It is possible that the developers and tenants may take the position that FRC, as landlord, must maintain them free from liability for mitigative actions. In such a case, FRC must request, from the shareholders, a special levy to underwrite the cost of complying with the provisions of heritage legislation.

5.11.3 Special Project Funding

Fully or partially funded academic research projects have already been discussed. There may be a role for both within the management plan. Special project proposals requiring complete funding from FRC must be assessed in terms of product delivery, i.e., will the project augment or supplant an operation, such as a heritage resource impact assessment or a mitigative action, which the Corporation would have been required to finance in any case. Assessments such as these could be undertaken by the Site Archaeologist, in conjunction with the Site Manager and staff of FRC.

Public archaeology programs will require funding assistance. Mechanisms exist, within several government agencies (Federal and Provincial), for heritage program assistance. To reduce reliance upon often uncertain government grant programs, external funding sources should be sought for the public programs. An arms-length foundation, with charitable organization status, may be an appropriate vehicle for developing such a funding base.

While FRC must provide adequate funding for the archaeological operations which are necessary to enable the successful development of the site, the Corporation should not be obliged to fully fund activities which, while in the public interest, are targetted for special interest groups. Accordingly, it is suggested that an information dissemination service be considered as a fundamental Corporation commitment but that the projects which will provide such information must be largely self-sustaining or must provide the Corporation with a service which outweighs any attendant costs.

6.0 RECOMMENDATIONS

This section will recapitulate recommendations that have been made in the context of The Forks Archaeological Plan (Section 5). For ease of reference, the subsection of The Plan from which the recommendation is taken will be provided as a postscript to the recommendation.

There are two levels of recommendations: recommendations and suggestions. Recommendations are proposed actions which, it is felt, are necessary for adequate implementation of appropriate heritage resource management. Suggestions are proposed actions, which while not necessary, would be beneficial for the smooth operation of The Forks Archaeological Plan.

6.1 Corporate Structure

It is recommended that a Heritage Advisory Group be appointed to provide expert advice to the Heritage Committee of the Board of Directors of The Forks Renewal Corporation. (5.2.1).

It is recommended that the position of Site Archaeologist be created. (5.2.2)

It is recommended that the position of Site Archaeologist be filled by a consultant on an annual contract. (5.2.2)

6.2 Heritage Resource Impact Assessments

It is recommended that the assessment for the North/South Access Road be undertaken as soon as possible to permit sufficient time for mitigative action, if required. (5.5)

It is recommended that a heritage resource impact assessment be conducted for the North Assiniboine Node during the spring of 1988. (5.5)

It is recommended that heritage resource impact assessments should be conducted, during the summer of 1988, for components whose construction is slated for start-up in 1989. (5.5)

It is recommended that the heritage resource impact assessment for each component, whenever possible, proceed one year prior to the beginning of the construction phase of that component. (5.5)

It is recommended that heritage resource impact assessments be conducted for each development component. (5.5)

It is recommended that FRC contract each of the necessary heritage resource impact assessments, as and when, required, according to the time frame of the development and the specific component whose location is being assessed, rather than maintaining sufficient staff to conduct the operations in-house. (5.10.2).

It is recommended that the proposed archaeological standards (Appendix D) be forwarded to Historic Resources Branch for attachment to all Heritage Permits for archaeological operations undertaken in the East Yard. (5.5)

6.3 Mitigative Operations

It is recommended that mitigative procedures be scheduled as soon as possible after the recommendations proposed in the heritage resource impact assessment are approved by FRC and Historic Resources Branch. (5.6.4)

It is recommended that monitoring of development and development impact occur at both the planning stage and the construction phase of each development component. (5.6.5)

6.4 Research Archaeology

It is suggested that a portion of the East Yard be set aside as an 'archaeological preserve' to facilitate the implementation of research archaeology programs. (5.7)

It is suggested that this area be located at the site of Fort Gibraltar II (south of the B & B Building, adjacent to Parks Canada land). (5.7)

It is suggested that FRC make known to the archaeological community that it will consider providing research opportunities at The Forks for fully funded research proposals. (5.7)

6.5 Public Archaeology Programs

It is recommended that a public archaeology program be developed at The Forks. (5.8)

It is suggested that the public archaeology program combine passive and active orientations. (5.8)

It is suggested that FRC foster the development of an 'arms-length' foundation which could assist in heritage programs at The Forks. (5.8)

6.6 Capital Cost Component of The Forks Archaeological Plan

It is suggested that FRC consider the possibility of developing a permanent field laboratory facility, which could be integrated into an on-going archaeology program. (5.9.1)

It is recommended that FRC provide a micro-computer and dot matrix printer for the archaeological operations at The Forks. (5.9.2)

It is recommended that the computer be an IBM XT or IBM AT clone with a hard drive. (5.9.2)

6.7 Custody of Artifacts

It is recommended that custody of all artifacts recovered from archaeological operation within FRC's jurisdiction be transferred to the Manitoba Museum of Man and Nature. (5.9.3)

6.8 Artifact Curation Requirements

It is recommended that all archaeological projects at The Forks use an identical computer cataloging system. (5.9.4)

It is recommended that all artifacts recovered during investigations in the East Yard be computer cataloged using the CHIN (Canadian Heritage Inventory Network) system. (5.9.4)

6.9 Artifact Conservation Requirements

It is recommended that FRC make aware to all archaeological investigators that the cost of conservation treatment of perishable artifacts must be an identified item in any proposed budget. (5.9.5)

6.10 Data Dissemination

It is recommended that FRC encourage a multi-targetted information service about heritage activities at The Forks (5.9.6)

It is suggested that an annual archaeological/heritage report could be published by FRC.

It is suggested that archaeological investigators be encouraged to promulgate their finding through mechanisms which reach avocational archaeologists. (5.9.6)

It is suggested that the electronic and print media be cultivated to provide information about heritage resource management operations undertaken by FRC. (5.9.6)

6.11 Estimated Costs of Archaeological Activities

It is suggested that FRC budget between \$20,000 and \$30,000 per annum for professional archaeological services. (5.10.1.1)

It is suggested that FRC budget approximately \$10,000 per annum for support (capital and operating costs) for implementation of The Forks Archaeological Plan. (5.10.1.4)

It is recommended that FRC earmark between 1.5% and 3% of the capital expenditures to cover the costs of heritage related activities, including professional services, capital costs, operating expenses and heritage resource impact assessments. (5.10.2).

It is suggested that mechanisms of developing and funding a public archaeology program be developed by the Heritage Committee of the Board of Directors of The Forks Renewal Corporation. (5.10.4, 5.11.3)

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APPENDIX A

PAST AND PRESENT STRUCTURES

AT THE FORKS

DATA CONCERNING STRUCTURES (PAST AND PRESENT) AT THE FORKS
Information as of April 1, 1988

BLDG NO.	DATES	LOCATION	DESCRIPTION	REFERENCES
1.	1737	North Assiniboine?	Two villages of Assiniboines Recorded by La Verendrye	Guinn 1980c:23
2.	1738	North Assiniboine?	Ten cabins - Cree Recorded by La Verendrye	Guinn 1980b:8 Guinn 1980c:30
3.	1738-1749?	South Point	FORT ROUGE - Built by de Louviere Recorded by La Verendrye	Guinn 1980b:6-11 Guinn 1980c:30-33
4.	1752-1753	North Assiniboine?	Wintering camp of de St. Pierre	Preiss et al. 1986:3 Guinn 1980c:31
5.	1781-1782	North Assiniboine?	Wintering camp of Bruce & Boyer	Preiss et al. 1986:3 Guinn 1980c:32
6.	1793	North Assiniboine?	Two Indian Lodges Recorded by McDonnell	Guinn 1980c:24
7.	1793	South Point?	Nor'westers' Camp on south side Recorded by McKay	Guinn 1980c:37
8.	Pre-1800	North Assiniboine?	Camps of Ojibwa & Ottawa; Sioux war parties. Recorded by Tanner	Guinn 1980c:23
9.	1800	North Assiniboine?	Saulteaux entrenchments Recorded by Henry	Guinn 1980c:22
10.	1800-1808	North Assiniboine?	HBC & Nor'westers met often. Henry passed Forks 20 times.	Guinn 1980c:38
11.	1803	North Assiniboine?	Winter/Trading camp of L. Dorion Recorded by Henry	Guinn 1980b:11

12.	1810-1816	North Assiniboine North of mouth	FORT GIBRALTER I 9 buildings, palisades, bastions	Guinn 1980b:12-14
13.	1817-1826	Near Notre Dame St.E. (Pioneer). Few 100 yards from Red River	FIDLER'S FORT Square, palisades	Bell 1927:28-30 Guinn 1980c:55
14.	1817-1822 1822-1852	North Assiniboine	FORT GIBRALTER II Renamed FORT GARRY 100 ft. square, palisade	Guinn 1980b:15-17
15.	1835-1885	North Assiniboine	UPPER FORT GARRY	Guinn 1980a:17 Guinn 1980c:many
16.	1836-1841	North Assiniboine Near Ft. Garry I	Experimental Farm	Guinn 1980c:113,257
17.	1836-1852?	North Assiniboine Near Ft. Gibraltar I	Experimental Farm Stables Approx. 100 ft. long	Guinn 1980c:257
18.	1837-1852?	North Assiniboine Near Ft. Gibraltar II	Courthouse & Jail	Guinn 1980c:69,257
19.	1845-1880?	South Point	McDougall Farmhouse	Atlas:Fig.76,77,194
20.	1845-1848?	South Point	Farmhouse	Atlas:Fig.77 Guinn 1980c:245
21.	1845-1884?	South Point	Farmhouse	Atlas:Fig.77,194,195 Guinn 1980c:245
22.	1845-1848?	South Point	Farmhouse	Atlas:Fig.77 Guinn 1980c:245
23.	1872-1885	North Assiniboine	Immigration Shed I Immigration Shed II Detached Cookhouses 1 story, 180' x 120' (?)	Guinn 1980c:108,109, 285,303,335 Atlas:Fig.192

24.	1872-1877 1877-1895?	North Assiniboine Moved up bank	Steamboat Warehouse HRC Warehouse #4	Guinn 1980c:113,282, 289,291,341
25.	1872-1884	North Assiniboine	Shanty Town near Immigration Sheds on Flats along Red River	Guinn 1980c:104,130, 339
26.	1872-1890?	North Strip	Macauley Lumber Mill Boarding House, Office	HRB: Map 8 Wpg. F.P. 1922
27.	1872-1885?	North Strip	Dick & Banning Saw Mill	HRB: Map 8 Wpg. F. P. 1922
28.	1874-1907	North Assiniboine	HBC Mill Complex 9 bldgs, joined into 5 units	Guinn 1980c:142,143, 303,321,335,341
29.	1876-1890?	North Strip	Sash & Door Factory Co-owned? Macauley & Jarvis	HRB: Map 8 Henderson 1876
30.	1876-1890?	North Strip	Jarvis Saw Mill	HRB: Map 8 Henderson 1876
31.	1876-1890?	North Assiniboine	Clarke & McClure Lumber Yard	Henderson 1876,1890
32.	1877-?	North Strip	McMillan Grist Mill	Fire Atlas 1885 MacLeod 1986 McPhillips Map 1877
33.	1880-1884?	South Point	House	Atlas:Fig.194,195
34.	1880-Now	South Point/ North Assiniboine	Main Street Bridge Rebuilt several times	Guinn 1980c:129,324
35.	1881-?	North Assiniboine	James Anderson House East end of Main St. Bridge	Atlas:Fig. 190 Guinn 1980c:327
36.	1881-1882 1882-1920	North Assiniboine	Broadway Bridge, washed out by 1882 flood, rebuilt.	Guinn 1980c:128, 129, 341, 374
37.	1883-1889?	North Assiniboine	Finkelstein Grocery Near Broadway Bridge	Henderson Dir.

38.	1884-1905?	South Point	House	Atlas: Fig. 195 Henderson Dir.
39.	1884-1905?	South Point	House	Atlas: Fig. 195 Henderson Dir.
40.	1885?-1889?	North Assiniboine	Bridgeman's House at foot of Broadway Bridge	Henderson Dir.
41.	1885-?	North Strip	McArthurs's Warehouse	Fire Atlas 1885
42.	1885-1890?	North Strip	Dick & Banning Saw Mill #2 Relocated #27 ?	HRB Map 8 Fire Atlas 1885
43.	1888-1890?	North Assiniboine	Temporary Railroad Bridge Across Assiniboine River	Guinn 1980c:139
44.	1888-1985	North Assiniboine Parallel to Water St.	Freight Shed #1 N.P.&M.R. See 1908 for other sheds(2,3,4)	Guinn 1980c:139, 353, 381
45.	1889-Now	North Assiniboine	Northern Pacific Engine House (B & B Building)	Guinn 1980a:4-8 Guinn 1980c:141, 347
46.	1889-1926?	North Assiniboine	Northern Pacific Roundhouse	Guinn 1980a:4-8 Guinn 1980c:141, 347
47.	1889-1911	South Point River Ave at Red	Winnipeg Rowing Club Boathouse	Henderson Dir.
48.	1890-Now	North Assiniboine	Low Level (Low Line) Bridge	Guinn 1980c:347
49.	1891-1905	South Point East of River/Main	Arctic Ice Co. Warehouse Moved to Bell & Bricker	Guinn 1980c:353 Henderson Dir. McPhillips Map 1891
50.	1891-?	North Assiniboine N. side of Water St.	(Electric?) Light Co.	Guinn 1980c:347, 353

51.	1894-1906	North Assiniboine East of Main	Grandstand & Racetrack (100' x 36')	Guinn 1980c:141, 353, 355
52.	1894-?	North Assiniboine Water Street	Unidentified Building	D. Macleod, pers comm
53.	1894-?	North Assiniboine Water Street	Unidentified Building	D. Macleod, pers comm
54.	1900-1934	North Assiniboine Near Provencher Brdg.	City Asphalt Plant	Guinn 1980a:11 Henderson Dir.
55.	1902-1925?	North Strip #49 Notre Dame East	J. I. Case Threshing Machine Co.	Henderson Dir.
56.	1903-1911	North Assiniboine	HRC Track Warehouse	Guinn 1980c:154,157
57.	1903-1917	North Assiniboine	Can. Northern R/R Roundhouse	Guinn 1980c:154, 365
58.	1906-1917	North Assiniboine East of Main	HRC Dwelling? Same as #35 ?	Guinn 1980c:355, 365
59.	1908/12-Now	North Assiniboine	Freight Shed #2	Guinn 1980c:139, 353
60.	1908/12-Now	North Assiniboine	Freight Shed #3	Guinn 1980c:353,381
61.	1908/12-Now	North Assiniboine	Freight Shed #4	Guinn 1980c:139,381
62.	1908-1960?	North Assiniboine	CNR Ice House- Lot 196	Guinn 1980c:155
63.	1909-Now	North Assiniboine	Can. Northern Cartage Stable	Guinn 1980a:2-3
64.	1910-Now	North Assiniboine	Grand Trunk Pacific Stable	Guinn 1980a:3
65.	1910-Now	North Assiniboine	High Line Railroad Bridge	Guinn 1980a:11
66.	1912-1955	North Assiniboine Near Stables	McNaughton Warehouse (241' x 118')	Guinn 1980c:157-158

67. 1913?-1983 North Strip Sterling Engine Works Henderson Dir.
#33 Water (originally Doty Engine) Fire Atlas 1918
68. 1920-1974 North Assiniboine Building Products and Coal Co. Guinn 1980a:12
Nr Provencher Brdg. Bldg. Prod & Concrete Sup. (1966) Henderson Dir.
69. 1926?-1955? North Strip Fort Garry Coal Yards HRB Map 8
apparently many firms used bldg. Henderson Dir.
70. 1928-Now North Assiniboine National Cartage Building Guinn 1980a:1-2
Johnson Terminal
71. 1933-1963 North Strip Lambert Fuel Supply HRB Map 8
Henderson Dir.

APPENDIX B

CHRONOLOGY OF EVENTS

AT THE FORKS

CHRONOLOGY OF EVENTS AT THE FORKS

EVENT	DESCRIPTION	1730	1740	1750	1760	1770	1780	1790
1.	Assiniboine village	.	*					
2.	Cree village	.	*					
3.	Fort Rouge	.	*****					
4.	De St. Pierre camp	.		**				
5.	Bruce & Boyer camp	.					**	

EVENT	DESCRIPTION	1790	1800	1810	1820	1830	1840
6.	Indian lodges	*					
7.	Nor'westers' camp	*					
8.	Ojibwa, Ottawa, Sioux	****					
9.	Saulteaux entrenchments		*				
10.	Alexander Henry camps		*****				
11.	Louis Dorion camp		*				
12.	Fort Gibraltar I			*****			
13.	Fidler's Fort				*****		
14.	Fort Gibraltar II/ Fort Garry				*****	*****	
15.	Upper Fort Garry					*****	*****
16.	Experimental Farm						*****
17.	Experimental Farm Stables						*****
18.	Courthouse & Jail						*****

EVENT	DESCRIPTION	1840	1850	1860	1870	1880	1890
14.	Fort Gibraltar II	*****					
15.	Upper Fort Garry	*****					
16.	Experimental Farm	**					
17.	Experimental Farm Stables	*****					
18.	Courthouse & Jail	*****					
19.	McDougall Farmhouse	*****					
20.	Farmhouse (South Point)	****					
21.	Farmhouse (South Point)	*****					
22.	Farmhouse (South Point)	****					
23.	Immigration Sheds					*****	
24.	Steamboat (#4) Warehouse					*****	-
25.	Shanty Town					*****	
26.	Macauley Lumber Mill					*****	
27.	Dick & Banning Mill #1					*****	
28.	Hudson Bay Co. Mill					*****	-
29.	Sash & Door Factory					*****	
30.	Jarvis Saw Mill					*****	
31.	Clarke & McClure Lumber Yard					*****	
32.	McMillan Grist Mill					*****?	
33.	House (South Point)					*****	
34.	Main Street Bridge					*****	-
35.	James Anderson House					*****?	
36.	Broadway Bridge					*****	-
37.	Finkelstein Grocery					*****	
38.	House (South Point)					*****	-
39.	House (South Point)					*****	-
40.	Broadway Bridgeman's House					*****	
41.	McArthur's Warehouse					*****?	
42.	Dick & Banning Mill #2					*****	
43.	Temporary Bridge					***	
44.	Freight Shed #1					***	-
45.	Northern Pac. Enginehouse					**	-
46.	Northern Pac. Roundhouse					**	-
47.	Winnipeg Rowing Club					**	-

EVENT	DESCRIPTION	1890	1900	1910	1920	1930	1940	1950
24.	Steamboat (#4) Warehouse	*****						
28.	Hudson Bay Company Mill	*****						
34.	Main Street Bridge	*****						
36.	Broadway Bridge	*****						
38.	House (South Point)	*****						
39.	House (South Point)	*****						
44.	Freight Shed #1	*****						
45.	Northern Pac. Enginehouse	*****						
46.	Northern Pac. Roundhouse	*****						
47.	Winnipeg Rowing Club	*****						
48.	Low Line Railroad Bridge	*****						
49.	Arctic Ice Co. Warehouse	*****						
50.	Electric? Light Co.	*****?						
51.	Grandstand for Racetrack	*****						
52.	Building on Water St.	*****?						
53.	Building on Water St.	*****?						
54.	City Asphalt Plant		*****					
55.	J. I. Case Company		*****					
56.	HBC Track Warehouse		*****					
57.	Grand Trunk Roundhouse		*****					
58.	HBC Dwelling		*****?					
59.	Freight Shed #2			*****				
60.	Freight Shed #3			*****				
61.	Freight Shed #4			*****				
62.	CNR Ice House			*****				
63.	Can. Northern Stable			*****				
64.	Grand Trunk Stable			*****				
65.	High Line Railroad Bridge			*****				
66.	McNaughton Warehouse			*****				
67.	Sterling Engine Works			*****				
68.	Building Products Co.				*****			
69.	Fort Garry Coal Yards					*****		
70.	National Cartage Bldg.					*****		
71.	Lambert Fuel Supply						*****	

EVENT	DESCRIPTION	1950	1960	1970	1980	1988
34.	Main Street Bridge	*	*	*	*	X
44.	Freight Shed #1	*	*	*	*	*
45.	Northern Pac. Enginehouse	*	*	*	*	*
48.	Low Line Railroad Bridge	*	*	*	*	*
59.	Freight Shed #2	*	*	*	*	*
60.	Freight Shed #3	*	*	*	*	*
61.	Freight Shed #4	*	*	*	*	*
62.	CNR Ice House	*	*	*	*	*
63.	Can Northern Stable	*	*	*	*	*
64.	Grand Trunk Stable	*	*	*	*	*
65.	High Line Railroad Bridge	*	*	*	*	*
66.	McNaughton Warehouse	*	*	*	*	*
67.	Sterling Engine Works	*	*	*	*	*
68.	Building Products Co.	*	*	*	*	*
69.	Fort Garry Coal Yards	*	*	*	*	*
70.	National Cartage Bldg.	*	*	*	*	*
71.	Lambert Fuel Supply	*	*	*	*	*

APPENDIX C
PRELIMINARY SURVEY OF
RELEVANT LITERATURE

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APPENDIX D

PROPOSED STANDARDS FOR
ARCHAEOLOGICAL FIELD OPERATIONS
WITHIN THE EAST YARD

D.1 Borden Number References

After discussions with personnel from Canadian Parks Service and Historic Resources Branch, it was decided that only two Borden designations would apply. The area of South Point is designated as D1Lg-32. The entire East Yards area, bounded by the Red River, the Assiniboine River and the C.N.R. Main Line shall be designated as D1Lg-33.

D.2 Grid Survey References

Discussions regarding the determination of the site datum (the prime survey reference point) have been less conclusive. A marker on the Provencher Bridge designates that spot as a Canadian Geological Survey Bench Mark. Using this feature as the site datum is under consideration. If this is accepted, arbitrary co-ordinates would be assigned (e.g., 1000 meters East, 2000 meters North) and all archaeological projects would be measured from that spot. Project datums and other key features (such as the Low Line Bridge) should be surveyed in from the site datum. In addition, the project datum measurements shall also determine elevations in relationship to the bench mark.

D.3 Field Research Standards

Many of the points which shall be enumerated in this section are standard archaeological procedure. However, reiteration can serve as a useful reminder.

1. All methodological provisions must be clearly specified in the project research proposal and the summary reports.
2. All site sampling procedures must be clearly specified in the research proposal and the summary reports.
3. All excavated material must be recorded with horizontal and vertical provenience. Such measurements must be metric.
4. Records must be kept on all pertinent facets of the investigations:
 - a. site and project maps,
 - b. record of excavation methodology,
 - c. field notes containing a daily log detailing progress on individual excavation units,
 - d. floor plans of the levels of each excavation unit,
 - e. profiles of the walls of each excavation unit, including a precise description of each stratum; color, texture and composition of each soil layer; locations of artifacts or features exposed in the profile; and the profile coordinates,
 - f. drawings of features, including dimensions (in both plan views and cross sections where necessary to show the configuration) and associational aspects with artifacts and other features,
 - g. feature descriptions,

- h. level summaries, including provenience, depth below surface, unit datum, coordinates, matrix descriptions, presence of features, artifacts and disturbances, summary of artifacts and samples collected, name of excavator and date of excavation,
- i. excavation unit summaries, compiling the level summaries,
- j. artifact catalog records,
- k. inventories of all samples (soil, phosphate, pollen, palaeobotanical, radiocarbon, etc.),
- l. photographs and slides of the general site, excavation operations, features, profiles, artifacts, etc.
- m. photographic record of the investigation, including date of exposure, location and description of subject, type of film, orientation of photograph and light conditions,

As the investigation of an archaeological resource, in essence, destroys the resource by means of the investigation, it is incumbent upon all investigators to perform to the most rigorous standards. Meticulous records enable the reconstruction of the resource and permit research upon the data long after the investigation has been completed.

D.4 Field Logistical Requirements

Each archaeological investigation at The Forks will require access to certain facilities. Most of the equipment will be provided by the investigator (i.e., the consultant, the research archaeologist, etc.). Some items may be provided by The Forks Renewal Corporation.

This report has recommended that FRC consider providing a field laboratory facility. If the archaeological project is large and/or long-term, an on-site facility will be required. The facility should be large enough to provide lay-out and work space, artifact preparation space, artifact and equipment storage space and shelter for excavation personnel during short periods of inclement weather. Further, it requires some furniture (tables and chairs) as well as a refrigerator for storage of perishable organic artifacts. Electricity is a necessity, due to the refrigerator and the required computer cataloging of artifacts. Running water would be advantageous.

FRC is providing a trailer as a laboratory facility for the 1988 University of Manitoba Archaeological Field School. It is possible that a similar provision may occur for future archaeological operations. If, however, such a provision does not occur, it will be necessary for the individual investigators to make arrangements for a field laboratory facility.

This report has recommended that FRC consider making a micro-computer and dot matrix printer available to archaeological investigators. As cataloging of artifacts and labelling of artifacts by computer is much more cost effective than hand-recording, it has been recommended that all archaeological investigators have access to an IBM XT or an IBM AT clone, with a hard drive, provided by FRC. If such a computer is not

provided by FRC, each investigator or consultant will need to arrange for such access.

Other needs, as enumerated below, should be supplied by the various investigators. Each project director should be aware of these needs and budget accordingly. However, a listing of major items may not be amiss:

- a. excavation equipment, ranging from trowels and dental picks to back-hoes, as required by the project,
- b. clerical supplies including pens, pencils, paper, staplers, erasers, ink, etc.,
- c. artifact curation supplies including artifact cards, catalog forms, etc.
- d. laboratory equipment including rubber gloves, scrub brushes, vernier calipers, goniometers, hand lenses, scales, tape, individual desk lamps, etc.
- e. artifact storage supplies including plastic storage bags of various standard sizes, artifact storage boxes, etc.,
- f. computer related equipment including drive cleaners, paper, discs, ribbons, etc.

It should not be incumbent upon The Forks Renewal Corporation to provide any of the normal operating equipment for the implementation of a non-development project. However, in cases of contracted heritage resource impact assessments and mitigative actions, the obtaining of such equipment by the investigator would be considered as reimbursable expenses.

D.5 Curation Requirements

It has been recommended that all artifacts, recovered during archaeological activities in the East Yard, be catalogued using the CHIN (Canadian Heritage Inventory Network) artifact cataloging system. A program for the CHIN system was developed at the Manitoba Museum of Man and Nature by Brian Lenius for operation on this type of computer. The compatibility of the program with other MS.DOS computers is unknown. The program and the CHIN cataloging manual would be made available to all archaeological investigators.

Under the CHIN cataloging system, the minimum cataloging standards will need to be determined. At present, a suggested list of mandatory entries includes:

- a. provenience - horizontal & vertical location
- b. cultural identity - Fur Trade, Blackduck, Cree
- c. name of artifact - e.g., knife
- d. type of artifact - e.g., butcher
- e. material - e.g., iron, wood
- f. manufacture technique - e.g., forged, carved
- g. physical state - e.g., incomplete
- h. condition - e.g., rusted, charred

It is recognized that, because of time constraints, there is an extreme difference between field cataloging and research cataloging. Accordingly, the list of entries required for field cataloging will not be extensive, serving to identify the object, its age and/or cultural identity and its location. Further data can be entered during analysis. The CHIN system offers the capability of using 208 discrete data fields, each of which can accept up to 10,000 characters, to describe an artifact. Discussions are on-going with representatives of the

Canadian Parks Service, the Museum of Man and Nature, Historic Resources Branch and the University of Manitoba Field School. If the CHIN system is adopted, the use of the system can be appended to the Heritage Permit as a required condition.

All artifacts will have to have been cataloged and in a storage-ready state by the end of the time period covered by the Heritage Permit (usually the end of the fiscal year). Subsequent analysis and research on the artifacts can be accommodated with the artifacts 'on loan' from the repository.

APPENDIX E

HERITAGE RESOURCE MANAGEMENT STRATEGY

FOR THE NORTH/SOUTH ACCESS ROAD

AND ASSOCIATED INFRASTRUCTURE COMPONENTS

1. INTRODUCTION

The North/South Access Road extends from Pioneer Avenue to an intersection with the proposed extension of York Ave. (Figure 10A). Internal roads continue south from this intersection to the North Assiniboine Node and east to the Parks Canada parcel (Figure 10C). Services will be installed under the road along the North/South Road, the South Extension and from Main Street to the North/South Road along the extension of York Avenue.

2. ARCHAEOLOGICAL RESOURCES

With the exception of the railroad freight sheds (Figure 5:59, 60, 61), which are to be demolished in 1988, only two known historic structures are within the impact zone. Two unidentified buildings (Figure 4:52, 53), dating to 1894, occurred at or near the intersection of the North/South Road and the extension of St. Mary Avenue. The duration of these structures, the type of construction and their function are unknown, as yet.

The majority of the projected development occurs within an area which is estimated to have a moderate potential for unrecorded historic and prehistoric archaeological resources. The historic features, along Pioneer Avenue and Water Avenue, would have been wood frame structures. Minimal evidence is expected. It is unknown if any buildings had been constructed, within the impact zone, along the former eastern route of Broadway Avenue. Any pre-railroad development would have resulted in minimal sub-surface disturbance of earlier archaeological deposits. The area traversed by the infrastructure components has been adjudged to hold the potential for moderate prehistoric archaeological resources. Any such cultural evidence probably occurs in the form of localized features; the various cultural layers being separated by layers of flood-deposited silt.

3. HERITAGE RESOURCE MANAGEMENT STRATEGY

3.1 Monitoring of Geo-Technical Exploration

Due to concerns about the suitability of the substrate for road construction, a series of twenty-seven geo-technical bore holes will be drilled throughout the impact zone (Figure 13A; 13B; 13C). These bore holes will be drilled to depths of at least 4 meters by Dyregrov & Burgess in the spring of 1988. The drilling will be done with 18 inch diameter, truck-mounted augers.

The purpose of the geo-technical data recovered during the drilling operations is to provide information about the fill thickness and permit an evaluation of the suitability of the fill as a subgrade for road construction. The data will also be relevant to the installation of buried utilities. The interpretation of the data will result in two possibilities:

1. the excavations for construction of the road grade will not extend to the base of the fill layer, or
2. the excavations for construction of the road grade will extend beyond the fill layer, into the original silts and clays.

Excavations for the installation of buried utilities will, naturally, extend below the pre-railroad fill layer, to a depth of approximately 4 meters. The width of the trench for these utilities is, as yet, unknown. It is projected that it will be one meter, at least.

PIONEER AVE.

ST. MARY

TEST HOLES 1-6

REV	DESCRIPTION	BY	DATE

APP'D: *[Signature]*
 SCALE: 1" = 100'
 DATE: *11/20/88*
 JOB NO. *1*

DYREGROV & BURGESS
 CONSULTING GEOTECHNICAL ENGINEERS

FERRY WISER ROAD
 TEST HOLE LOCATION
 DS-1EA
 DWG. NO. 1

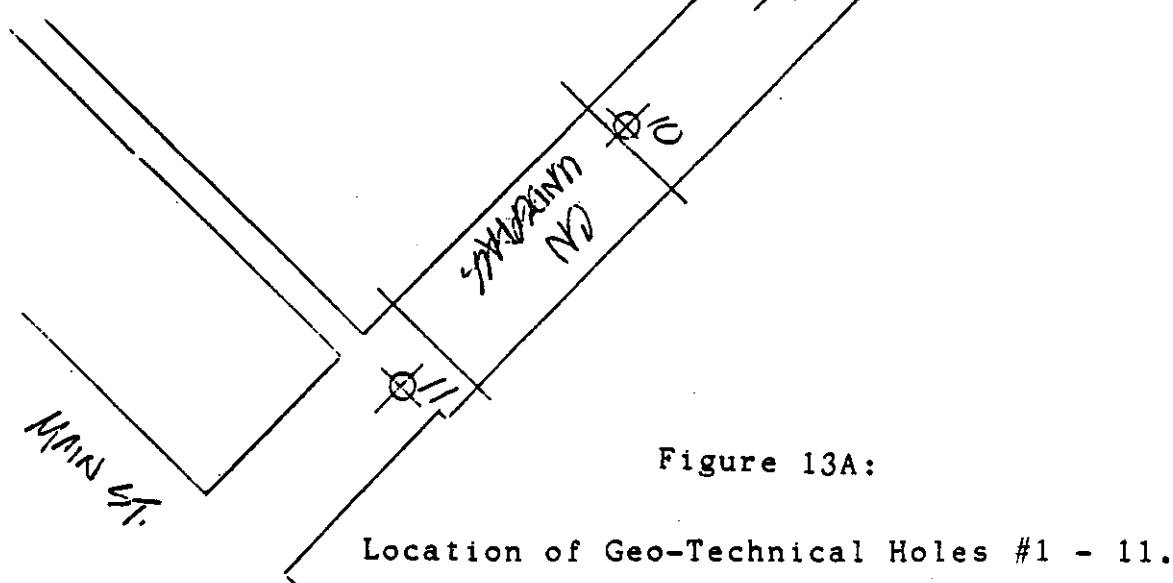
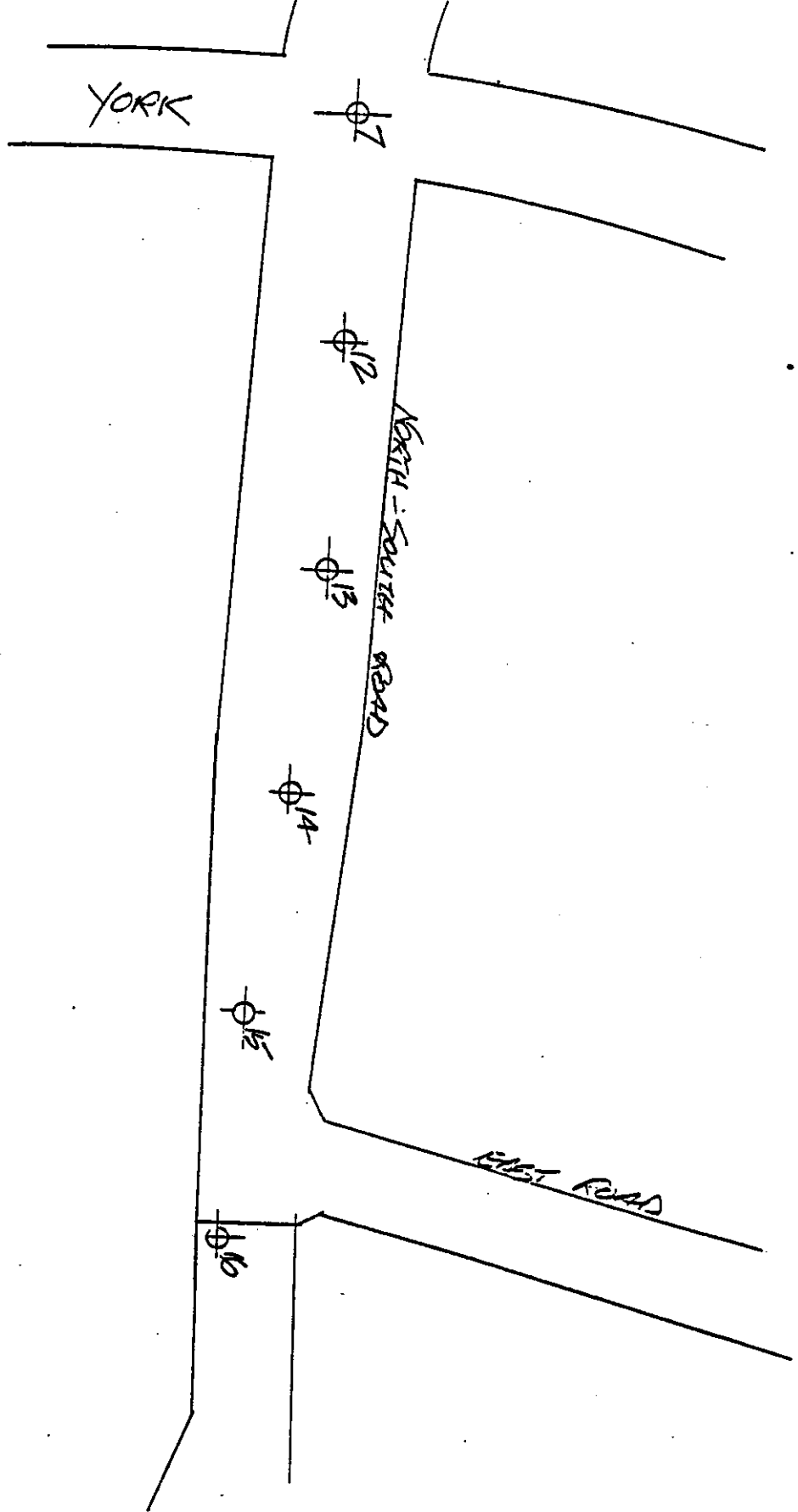


Figure 13A:

Location of Geo-Technical Holes #1 - 11.



REV	DESCRIPTION	DRAWN	APP	DATE

APP'D	DATE	JOB NO.	DWG NO.
SCALE	1:1000	11/11/18	2

DYREGROV & BURGESS CONSULTING GEOTECHNICAL ENGINEERS		EMER'S RICHARDS
TEST W/CE CONSULTANTS		DS-CEA

Figure 13B: Location of Geo-Technical Holes #12 - 16.

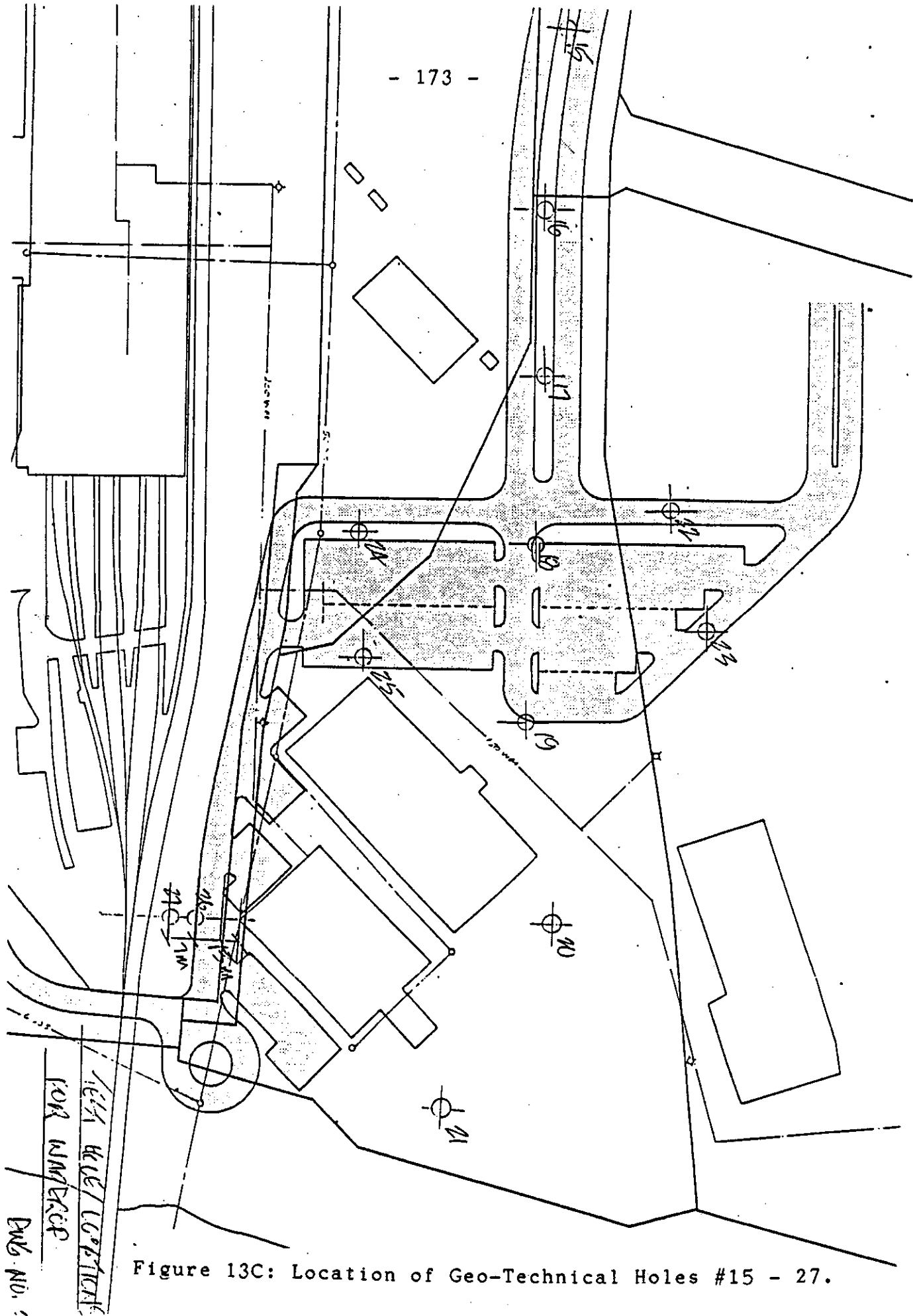


Figure 13C: Location of Geo-Technical Holes #15 - 27.

Provision has been made for the operations to be monitored by Quaternary Consultants Ltd. The monitoring would consist of:

- a. observing the depth of all strata encountered during the drilling of each bore hole,
- b. collecting all artifacts recovered from each hole,
- c. cataloguing all recovered artifacts,
- d. charting the vertical profile of all strata throughout the impact zone, using the strata depths recorded from the drilling,
- e. estimating the quantity and quality of the archaeological resources within the impact zone, and
- f. recommending further actions which may be required.

3.2 Post-Drilling Operations

The type of archaeological artifacts recovered during the drilling process will determine the extent of required activity after the completion of the geo-technical program. There are four possibilities.

1. No artifacts are recovered during the drilling operations,
2. Artifacts are recovered only from the upper portion of the fill layer,
3. Historical artifacts are recovered from the base of the fill layer, or
4. Prehistoric artifacts are recovered from below the fill layer.

In the case of the first two possibilities, the development can proceed immediately to the construction phase. In Case #3 and #4, the type of recoveries will dictate the next step. If the recoveries in Case #3 are indicative of the remains of a building, test excavations will be undertaken. If the Case #3

artifacts appear to result from a disturbed context, test excavations will not be necessary. In the event of Case #4, test excavations may be undertaken to ascertain the quantity and quality of the archaeological resources encountered during the drilling. Test excavations will be considered obligatory if the recoveries, during drilling, include human bone.

The test excavations will consist of the sinking of a one meter square excavation unit around the bore hole. Depending upon the depth of the resource to be assessed, mechanized equipment may be used. The excavation will yield data on the extent of the feature and the density of artifacts within the feature. This information will be used to determine whether or not mitigative excavations are required at this locality. If mitigative excavations are not required, the operation may proceed to the construction phase.

During this period, the suitability of the fill for the subgrade will have been assessed. If roadbed excavations are not projected below the fill layer, the project may proceed to the construction phase. If the roadbed excavations will impinge upon the sub-fill strata, mitigative action may be required in areas where resources were recovered during the test excavations.

3.3 Pre-Construction Mitigative Actions

As noted above, the possibility of mitigative actions is contingent upon the recoveries during the post-drilling test excavations and the scope of the projected impact. If the sub-fill impact is to be confined to the utilities trench, mitigative action can be implemented during the construction phase. If sub-fill impact will occur for the entire roadbed, a more extensive mitigative program may be required. As the siting of the project is firm, the mitigative options do not include

relocation of the impact. Therefore, compensatory excavations would be required at locations where archaeological resources have been identified at or above the depth of the projected construction excavations. The scope of such mitigative activity is not estimable from current information.

3.4 Construction Monitoring

By the initiation of construction activities, any mitigative activity, relating to roadbed construction, will have been completed. The monitoring action will be concerned, primarily, with excavations for the utilities trench. The progress of the excavation will be observed by an archaeologist. If artifacts and/or human remains are encountered during the excavations, the archaeologist must have the authority to halt excavation at the location of discovery. The equipment may continue operations at another portion of the component. Once the construction has ceased at the discovery location, the archaeologist(s) will proceed to expeditiously record and recover the archaeological material. As soon as the archaeological resources have been adequately recorded and removed from the impact zone, the construction may proceed at that location.

Three types of discoveries may occur:

1. Remnants of historic buildings,
2. Evidence of prehistoric occupations, or
3. Evidence of a human burial.

The mitigative operation, in all cases, would be similar. The archaeological team would excavate the artifacts, maintaining a complete photographic and documentary record. The artifacts would be removed for laboratory processes (cleaning, cataloging, conservation treatment where needed, and analysis). In the event of the discovery of human remains, Historic Resources Branch

would be contacted and the procedures detailed in Section 2 of The Forks Archaeological Plan would be implemented.

The above mitigative operations would be confined to the area of the impact; in this case, the utilities trench. It is not expected that any circumstance would arise, wherein mitigative excavations would be necessary beyond the trench impact zone.

4. ESTIMATED TIME FRAME

4.1 Geo-technical Investigations

In their original proposal to DS-Lea (Feb. 10, 1988), Dyregrov & Burgess estimated that drilling the seven holes along the North/South Access Road would require 1 to 2 days, depending upon soil conditions. Subsequent proposals (Mar. 22; Mar. 28) do not provide estimated times. Using the original information, it is projected that the twenty-seven holes will require 4 to 8 days to complete. As frost conditions will have ameliorated since the original proposal, the figure of 6 days will be used for this portion of the heritage resource management strategy.

The field:lab:report ratios discussed in Section 5.10.2 will be used for estimating time and cost of the archaeological activities. As minimal recoveries are expected from the geo-technical explorations, the ratio of 1:1:1 will be used. Accordingly, the budget would consist of 6 person/days for field operations, 6 person/days for laboratory procedures and 6 person/days for preparing the final report, including recommendations for subsequent action. Laboratory processing will begin at the consultant's laboratory facilities on Day 2 of the project. Report preparation will begin on on Day 7. The final report will be filed with FRC within three weeks from the initiation of the drilling program.

4.2 Post-Drilling Activities

The geo-technical bore holes which produce archaeological material may range from zero to twenty-four. Three holes (#19, #20, #21) are considered to be in the North Assiniboine Node and post-drilling activities relating to these holes will be addressed in the heritage resource impact assessment program for that area (Appendix F).

For the purposes of this estimate, it will be assumed that 25% of the bore holes produce archaeological evidence which requires additional examination by way of test excavations. This would mean that six one-meter square excavation units would be dug. Using mechanized equipment to remove the overburden, it is estimated that each unit could be completed in 1 to 2 days. A crew of two archaeologists would be employed in this operation, resulting in a maximum time of six days to complete the project. Naturally, the required time will be dependent upon the results from the drilling program. The length of time required to complete the test excavation phase may range from a minimum of zero to a maximum of 48 person/days, if every bore hole requires test excavation. In the unlikely event of the latter, the field crew size would be increased to ensure that the field portion of this phase would be completed within two weeks.

Depending upon the quantity and type of recovered data, the field:lab:report ratio will range between 1:1:1 and 1:2:2. Using the initial assumption of 25% testing and maximum artifact recovery, the resultant laboratory requirements would be 12 to 24 person/days. The report preparation component, due to the disjunct nature of the tests, will probably be at the lower end of the ratio, requiring approximately 14 person/days.

4.3 Pre-Construction Mitigative Actions

It is impossible to project what, if any, time will be required by this phase. As the actions are dependent upon the results from the geo-technical drilling, the archaeological test excavations and the engineering determination of the suitability of the fill for roadbed material, there are too many variables to allow projection with any degree of confidence.

4.4 Construction Monitoring

The time frame of this phase of the heritage resource management strategy is contingent upon the type of construction, the depth of the impact and the time frame of the construction. The sensitive locations would have been ascertained by the previous archaeological operations. These locations would be closely monitored during the constructions. It is proposed that two archaeologists be on-site to facilitate matters. If artifacts are observed, the construction will be relocated and monitored by one archaeologist while the second performs the necessary mitigative action on the discovered resource, prior to resumption of construction at the location of discovery. Laboratory time will be a function of the quantity of recoveries and, as such, is impossible to estimate at this time.

5. ESTIMATED COST OF ARCHAEOLOGICAL OPERATIONS

The initial phases of the heritage resource management strategy for the infrastructure component of the development at The Forks can be costed with a reasonable degree of accuracy. As subsequent activities become dependent upon the results of earlier operations, estimation becomes more akin to guessing. Activities, where the time frame can be ascertained, can be costed for professional services fees. Reasonable estimates of ancillary expenses can be made. Reimbursable expenses would consist of artifact curation supplies (artifact cards, storage bags, etc.), expendable computer and office supplies, and secretarial services.

5.1 Monitoring of Geo-Technical Explorations

As noted above, it is estimated that this project would take six days. There would be an archaeologist on-site for the entire drilling period. The laboratory operations will also employ one archaeologist for six person/days. Subsequent report preparation will require six person/days. The personnel required for the project will be a:

- Senior Archaeologist responsible for field operations, artifact analysis, report writing; and
- Laboratory Supervisor responsible for artifact preparation, artifact cataloging, artifact analysis.

The estimated budget of this operation would as follows:

FIELD OPERATIONS

Archaeological Services - 48 hrs @\$50	\$2400
Expenses	70

LABORATORY OPERATIONS

Archaeological Services - 48 hr @\$30	1440
Expenses	160

REPORT PREPARATION

Archaeological Services - 48 hrs @\$50	2400
Secretarial & Drafting Services	120
Printing Costs	50

.....

TOTAL	\$6640
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5.2 Post-Drilling Activities

In the previous section, it was estimated that 25% of the bore hole may require test excavations, with a concomitant necessity for the deployment of two archaeologists for six days. This figure will be used for costing, although it must be recognized that the estimate may be high or low. The field crew will consist of the Senior Archaeologist and a field assistant, while the laboratory operations will be undertaken by the Laboratory Supervisor, with occasional assistance from the field assistant and the Senior Archaeologist.

The estimated budget of this operation would as follows:

FIELD OPERATIONS			
Senior Archaeologist - 48 hrs	@\$50		\$2400
Assistant Archaeologist - 48 hrs	@\$30		1440
Equipment Rental (?)			500
Other Expenses			160
LABORATORY OPERATIONS			
Archaeological Services - 100 hr	@\$30		3000
Expenses			240
REPORT PREPARATION			
Archaeological Services - 48 hrs	@\$50		2400
Secretarial & Drafting Services			120
Printing Costs			50
.....			
TOTAL			10310

5.3 Pre-Construction Mitigative Activities

As noted during the discussion of time frame, it is impossible to estimate the necessary commitment of personnel or resources to undertake this phase of the management strategy. This phase may range from non-existent to a major operation. When data has been obtained from the geo-technical monitoring phase and the test excavation activities, it will be possible to cost the mitigations which will be required.

5.4 Construction Monitoring

As above, it is impossible to cost an operation where none of the variables (time frame, type of operation and anticipated locations of sensitivity) are known. When the construction phase begins, two archaeologists should be deployed on-site; the Senior Archaeologist and a field assistant. The length of day of the consultant will have to conform with that of the construction firm. Based upon an eight-hour day, the per diem charge-out rate for a two-person team for field operations would be \$500 to \$700 plus reimbursable expenses. The laboratory operations, undertaken by a Laboratory Supervisor, would be charged-out at \$250 to \$325 per diem. The services of the field assistant may occasionally be seconded to the laboratory. Reimbursable expenses for laboratory procedures and report preparation would be on a pro rata basis, using the geo-technical monitoring program as a base-line.

APPENDIX F

HERITAGE RESOURCE IMPACT ASSESSMENT

FOR THE NORTH ASSINIBOINE NODE

1. INTRODUCTION

The North Assiniboine Node is considered to be that area which lies between the CN Main Line and the CN Low Line (Figure 10E). It extends from the north bank of the Assiniboine River to a line drawn east from an extension of Assiniboine Avenue. Three buildings currently exist in the area. A development component is centred around the two former Stable Buildings (Figure 5:63, 64). Slight to moderate sub-surface impact is expected in conjunction with this component. Another component is placed between the Stable Buildings and the Johnson Terminal (Figure 5:70). This component, extending from the north shore of the Assiniboine River to a line between the southern edges of the buildings, may result in significant impact as large-scale excavations are currently projected.

2. ARCHAEOLOGICAL RESOURCES

With the exception of the standing buildings (Figure 5:63, 64, 70), there are two known historic structures within the impact zone. The Hudson's Bay Steamboat Warehouse (Figure 3:24), dating to 1872, occurred near the south end of the Grand Trunk Pacific Stable. This building was built on the north shore of the Assiniboine River in 1872 and moved up the bank in 1877. It was demolished circa 1895. The other structure was the Hudson's Bay Company Mill complex which, at its maximum, consisted of nine components grouped into five buildings. The original portion of the mill was constructed in 1874, with additions being built until demolition in 1907.

The majority of the projected development occurs within an area which is estimated to have a high potential for unrecorded historic archaeological resources (Figure 9). The historic features include components of the Hudson's Bay Company

Experimental Farm (Figure 2:16) and most of the events of the early fur trade period (Figure 1). The archaeological remains of these events will be relatively small, in comparison with the size of the development. As an example, even Fort Gibraltar II only measured one hundred feet on a side.

The potential for prehistoric archaeological resources is considered high (Figure 9). Evidence of 'Blackduck' occupations, dating to A.D. 500, has been recovered during the 1984 Parks Canada excavations near Fort Gibraltar II. Similar prehistoric occupations, of any time period from 6000 B.C. to the fur trade, may be expected within the impact zone. Again, the evidence of these occupations will tend to be localized, both in terms of area and within discrete sedimentary strata, separated by layers of river-deposited silts and clays.

3. HERITAGE RESOURCE MANAGEMENT STRATEGY

3.1 Monitoring of Geo-Technical Exploration

Some geo-technical bore holes (Appendix E) will be drilled in the impact zone (Figure 13C). These bore holes will be monitored in conjunction with the heritage management strategy for the infrastructure component. The monitoring would consist of:

- a. observing the depth of all strata encountered during the drilling of each bore hole,
- b. collecting all artifacts recovered from each hole,
- c. cataloguing all recovered artifacts, and
- d. charting the vertical profile of all strata throughout the impact zone, using the strata depths recorded from the drilling.

The information recovered during the drilling process will be integrated into the heritage resource impact assessment program for the North Assiniboine Node.

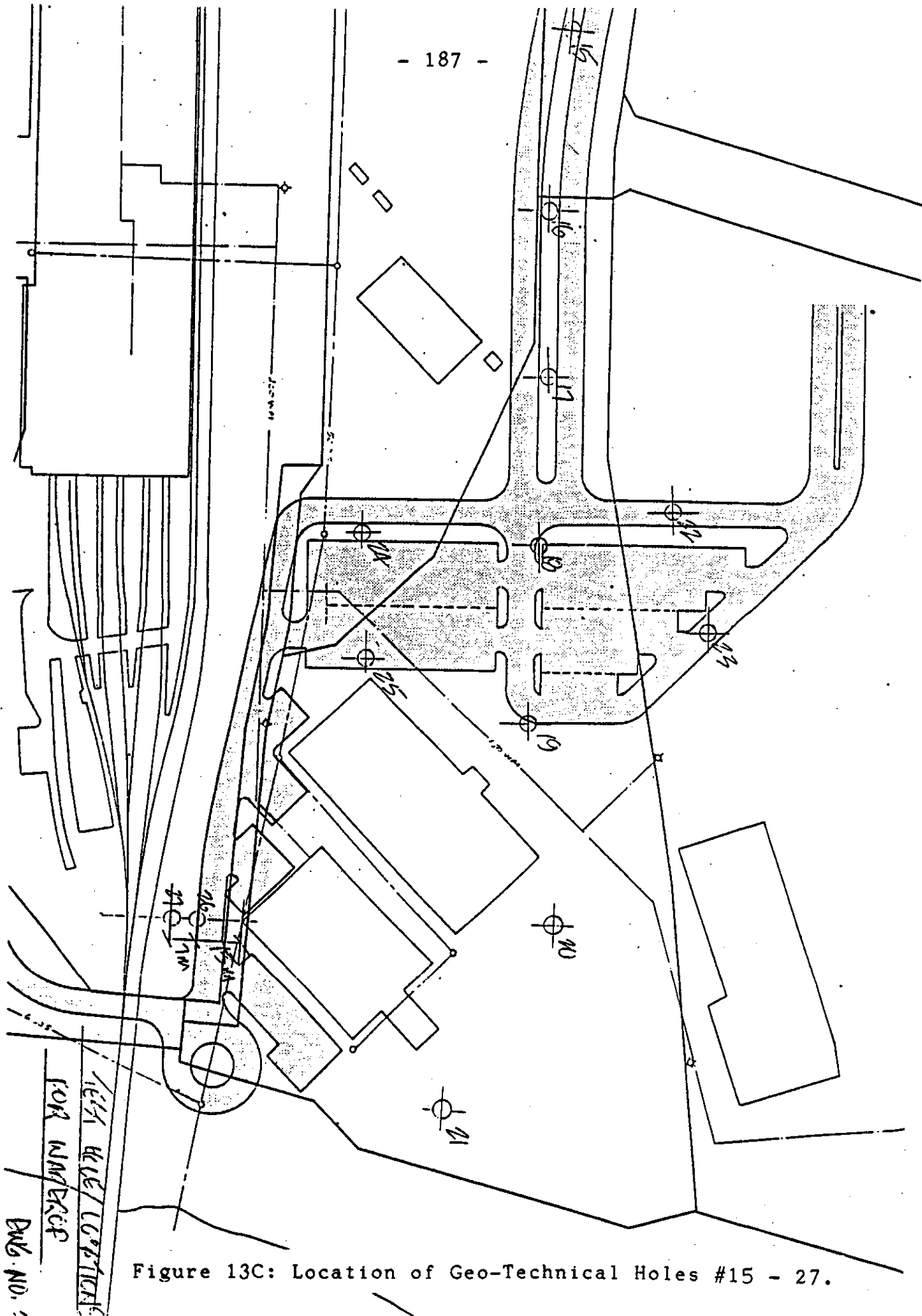


Figure 13C: Location of Geo-Technical Holes #15 - 27.

3.2 Heritage Resource Impact Assessment

The heritage resource impact assessment for the North Assiniboine Node consists of three phases:

- A. assessing the potential impact zones of the Stable Buildings development, after consultations with the project designers to ascertain the extent of impact,
- B. test excavations around bore holes which have yielded archaeological evidence from below the fill layer, and
- C. a major investigative program to assess the quantity and quality of the archaeological resources in the south-eastern portion of the Node.

Phase A is seen as a small scale program, as sub-fill impact for this project is anticipated to be minimal. It may be necessary to bore a few 12" diameter holes around the periphery of the Stable Buildings within the zone of land modification.

Phase B shall only be undertaken for the three geo-technical bore holes which will not be examined under investigations associated with the Infrastructure Component (Appendix E). These are Bore Holes 19 - 21 (Figure 13C).

Phase C is the major portion of the heritage resource impact assessment of the North Assiniboine Node. The purposes of this assessment would be to:

1. locate the archaeological remains of the Hudson's Bay Company Grist Mill and other historic structures, and
2. locate and assess the historic and prehistoric archaeological resources by excavation of an extensive trench system. The final shape of this trench system will be determined after consultations with the project designers.

One possible configuration, that of an open triangle with a medial bar, is used to provide estimates of the time frame and cost of this operation (Figure 14). The base of the inverted triangle would be placed to encounter the foundations and/or other remains of the Grist Mill. The wings of the triangle and the medial bar will extend from the upper bank baseline to the north shore of the Assiniboine River.

The projected dimensions are 100 meters along the base, 80 meters for each wing and 60 meters for the medial bar. The trench is anticipated to be one meter wide, although the width will be dependant upon the blade size on the type of equipment available. The trench will slope from the top of the original pre-railroad fill layer along the baseline to near high water level at the shore. Due to the irregular slope of the river bank, the volume of excavation cannot be accurately estimated.

Excavations of this trench will be conducted by using mechanized equipment to remove sterile layers. When artifacts and remains of structural features are encountered, excavation will proceed by hand. All recoveries will be meticulously recorded under the standards set forth in Appendix D. The artifacts will be cleaned and cataloged. Arrangements may be made to share space at the University of Manitoba Field School on-site laboratory and to share time on the cataloging computer.

Three types of discoveries may occur:

1. Remnants of historic buildings and features,
2. Evidence of prehistoric occupations, or
3. Evidence of a human burial.

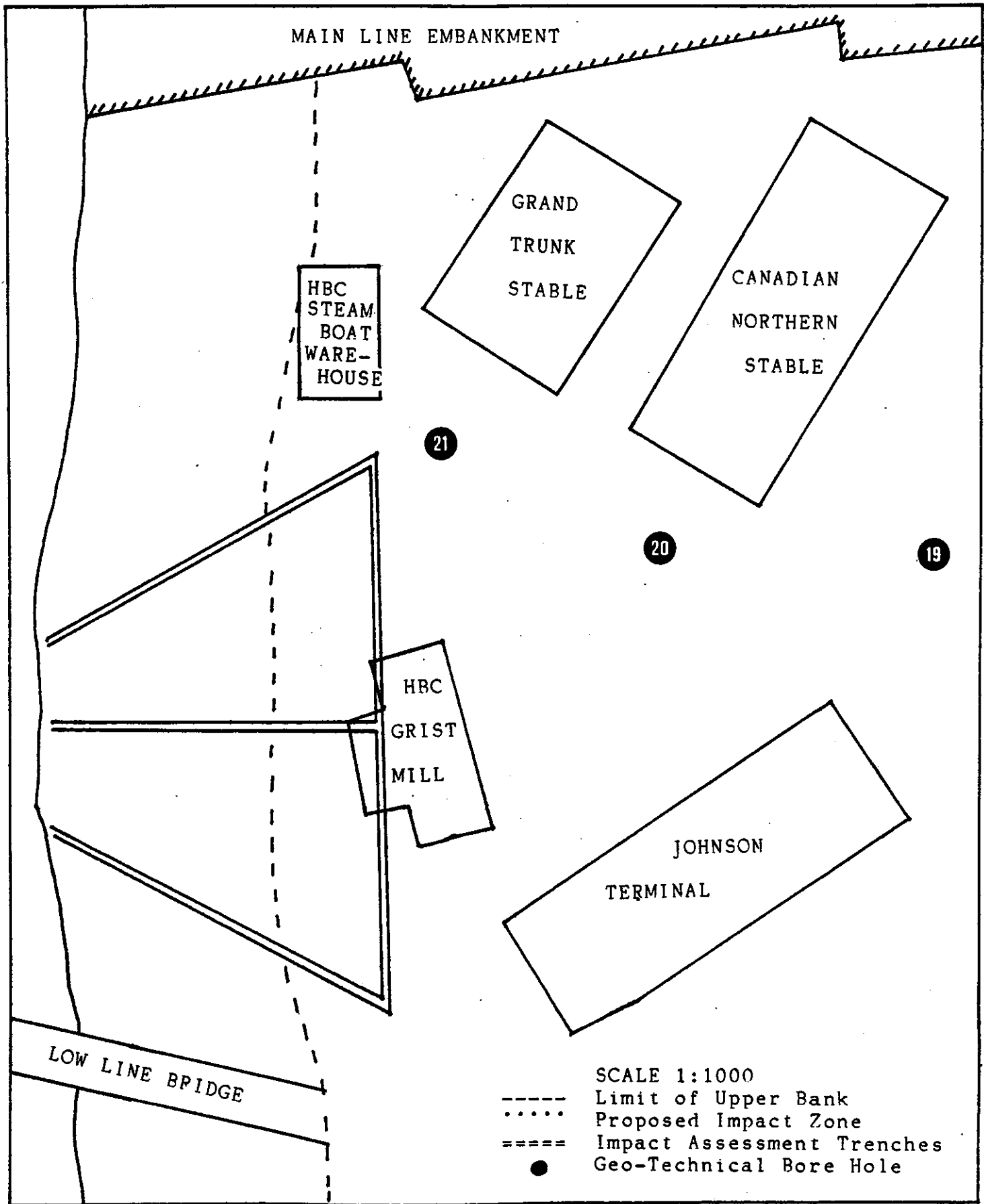


Figure 14: Proposed Heritage Resource Impact Assessment for the North Assiniboine Node

No immediate mitigative activity would take place until after the completion of the heritage resource impact assessment. The exception would be the discovery of human remains. If such an event occurs, Historic Resources Branch would be contacted and the procedures detailed in Section 2 of The Forks Archaeological Plan would be implemented.

The data recovered from the assessment excavations will be analyzed and interpreted. The report will quantify and locate the heritage resources within the impact zone and recommend appropriate mitigative actions.

4. ESTIMATED TIME FRAME

4.1 Geo-technical Investigations

All time considerations of the geo-technical investigations have been addressed in Appendix E.

4.2 Heritage Resource Impact Assessment

It is difficult to assess the amount of time required to undertake the North Assiniboine Node impact assessment. Each of the three phases requires different equipment and a different strategy.

Phase A of the assessment may be satisfied by modification of design plans or by boring a few 12" holes around the periphery of the Stable Buildings. A mobile, trailer-mounted auger would be sufficient, as the depths of impact will not require deep drilling. This operation may require the services of two archaeologists for three days.

Phase B would only apply for three geo-technical bore holes (#19, 20, 21). With the high potential for resources in this location, it is possible that all three holes will require a test excavation at the location of the hole. The excavation of each one square meter unit will require 1 to 2 person/days, for a maximum of 6 person/days for this component.

Phase C is the major portion of the operation and will require the greatest allocation of person/days and logistical support. The combined length of the trench is 320 meters; 220 of which will be excavated below the fill layer. The area which will be excavated is $320 + m^2$. It is projected that mechanized equipment, such as a Bobcat with front-end loader, will be used to expedite

matters. It is anticipated that the field operations can be completed in four weeks with a field crew of four archaeologists plus the project director.

The field:lab:report ratios discussed in Section 5.10.2 will be used for estimating time and cost of the archaeological activities. As significant recoveries are expected from the trench other than the upper baseline, a ratio of approximately 1:1.5:1 will be used. Accordingly, the budget would consist of 100 person/days for field operations, 150 person/days for laboratory processing and analysis, and 100 person/days for preparing the final report, including recommendations for subsequent action. Laboratory processing would begin at the facilities of the consultant on Day 2 of the project. The final report will be filed with FRC within twelve weeks from the initiation of the heritage resource impact assessment.

5. ESTIMATED COST OF ARCHAEOLOGICAL OPERATIONS

The heritage resource impact assessment for the North Assiniboine component of the development at The Forks can be costed with a reasonable degree of accuracy. Activities, where the time frame and number of personnel can be ascertained, can be costed for professional services fees. Reasonable estimates of ancillary expenses can be made. Reimbursable expenses would consist of artifact curation supplies (artifact cards, storage bags, etc.), expendable computer and office supplies, and secretarial services.

5.1 Phase A (Stable Buildings Locality)

It is estimated that the field operations would take six person/days. This portion of the assessment will require two archaeologists for three days. The laboratory operations will also employ one archaeologist for six person/days. Subsequent report preparation will require six person/days. The personnel required by the project will be:

Senior Archaeologist responsible for field operations,
artifact analysis, report writing,
Laboratory Supervisor responsible for artifact preparation,
artifact cataloging, artifact analysis,
Assistant Archaeologist responsible for field operations,
laboratory assistant.

5.2 Phase B (Test Excavations at Geo-Technical Bore Holes)

This component would require two field archaeologists for three days. The laboratory operations will require one archaeologist for six person/days. Report preparation will require six person/days.

5.3 Phase C (Trench Excavations)

This component will require the services of the Senior Archaeologist plus four assistant archaeologists for four weeks (100 person/days) to complete the field operations. The laboratory operations will require two archaeologists for eight weeks plus the four field assistants for four weeks (180 person/days). The Senior Archaeologist and the Laboratory Supervisor will begin the preparation of the report during the second four-week period. It is anticipated that 100 person/days will be more than adequate to prepare a final report of publishable quality.

5.4 Summary of All Phases

In order to assess the estimated cost of the complete heritage resource impact assessment for the North Assiniboine Node, it is necessary to combine the estimated personnel requirements for all three phases. The following chart provides a break-down of allocated time (in person/days) for each procedure in each of the three phases.

	Field	Lab	Report	Total
Phase A	6	6	6	18
Phase B	6	6	6	18
Phase C	100	134	80	314
.....				
TOTALS	112	146	92	350

To convert the above figures to person/hours, a factor of eight hours per day is used.

The charge-out rates for each of the personnel are as follows:

1. Senior Archaeologist:	400 hrs @ \$50	20000
2. Laboratory Supervisor:	400 hrs @ \$30	12000
3. Assistant Archaeologist:	400 hrs @ \$30	12000
4. Field & Lab Staff (5):	1600 hrs @ \$25	40000

TOTAL PERSONNEL COSTS 84000

Estimated expenses for the field operations would include:

1.	rental of a mobile auger for 3 days	350
2.	rental of a Bobcat for 4 weeks	1200
3.	incidental reimbursable expenses	150

Estimated expenses for laboratory operations would include:

1.	artifact storage bags (8 cents/bag)	400
2.	artifact catalog cards	100
3.	computer discs & paper	100
4.	incidental reimbursable expenses	200
5.	conservation of perishable artifacts	2000

Estimated expenses for report preparation would include:

1.	drafting & graphics	500
2.	secretarial services	500
3.	printing costs	300
4.	incidental reimbursable expenses	200

TOTAL REIMBURSABLE EXPENSES 6000

TOTAL COST OF ASSESSMENT 90000

The combined estimated cost for conducting the proposed heritage resource impact assessment for the North Assiniboine Node is estimated at \$90,000. The labor-intensive nature of archaeological work results in the preponderance of the budget being allocated for salaries. The values used for salary estimates are generalized, and may vary with specific consultants. The proposed investigation utilizes mechanized equipment to facilitate the operations. Computer cataloging of artifacts will also expedite matters. However, a large volume of soil will be moved, and carefully examined during that movement. The estimated area of excavation is approximately 320 m² and the depth of excavation will range from one meter to four or five.

Thus, the archaeological investigations will process more than 1000 m³ of soil, maintaining rigorous professional standards.

The final report of this heritage resource impact assessment will include a comprehensive description of the operations, the discoveries and the implications for archaeological resources within the impact zone. Assessments of the quantity and quality of the resources will be provided. Appropriate mitigative strategies will be proposed for review by FRC and Historic Resources Branch.

It must be borne in mind that the above procedures and estimates are solely concerned with the implementation of the heritage resource impact assessment. If discoveries are made which will require mitigative action, this will be an add-on cost to the above figures.