Cultural Resource Inventory and Cumulative Impacts Analysis

The Forks National Historic Site of Canada

Western Canada Service Centre

Winnipeg, Manitoba

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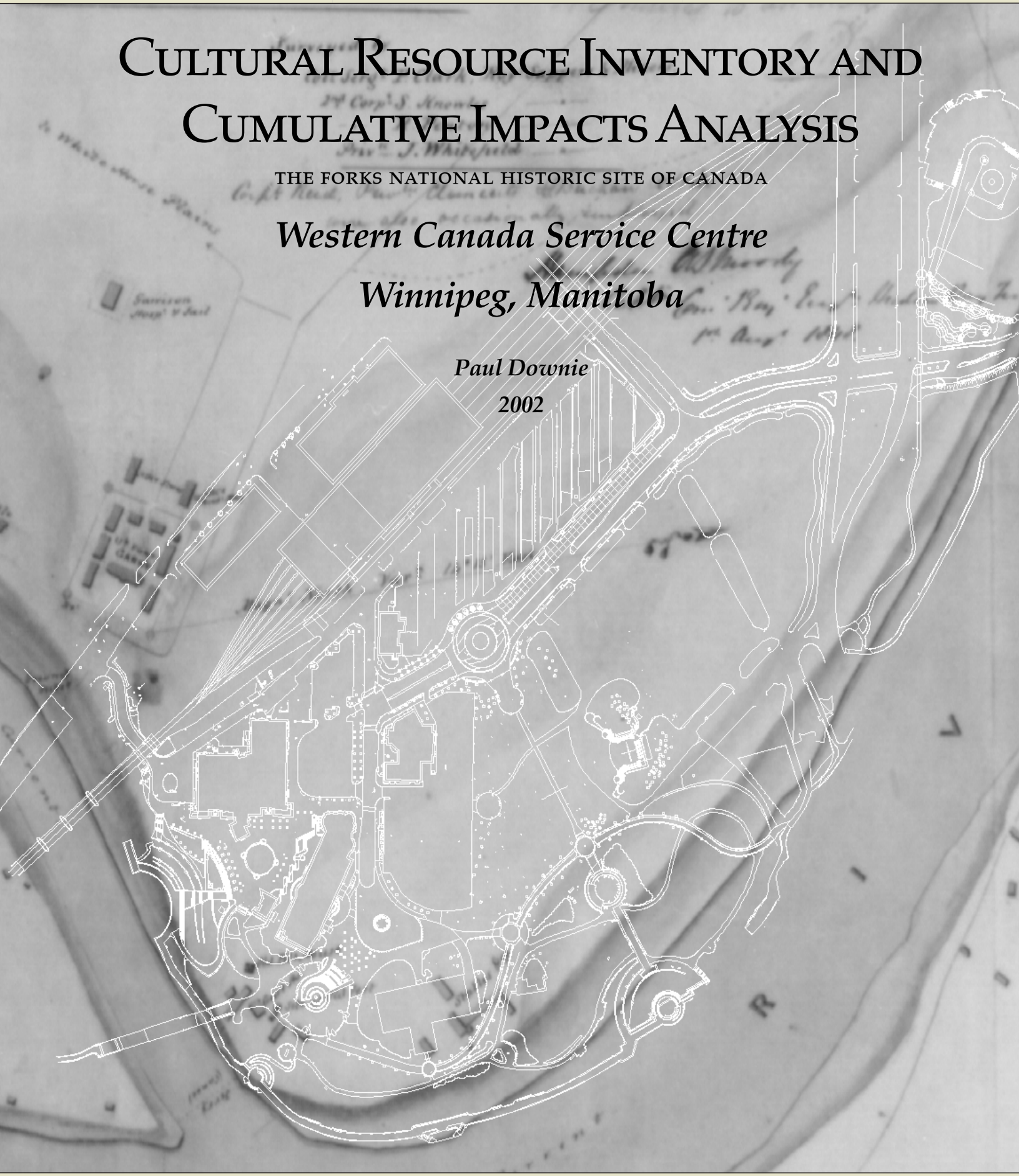

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Contents

Introduction

This report is intended to provide a comprehensive overview of the state of knowledge regarding the cultural resource investigations of The Forks National Historic Site (The Forks NHS). It also summarizes the archaeological investigations that have occurred on property adjacent to The Forks NHS managed by the Forks North Portage Partnership. This takes in the area bounded on the north and west by the Canadian National Railway mainline and on the east and south by the Red River including the south point. It provides a framework for the development of a plan for the protection and presentation of the cultural landscape and archaeological features at The Forks NHS. It is hoped it will be an aid to the management planning process, and enhance the site's capability to identify thresholds affecting commemorative integrity and to undertake cumulative impact assessments.

Included are:

- a brief discussion about the role of Cultural Resource Management (CRM) and cumulative effects analysis within management planning and environmental assessment;
- a summary of the various archaeological investigations and site developments with their related ground disturbance activities;
- a brief discussion about the site's archaeological potential;
- a CRM database report;
- an annotated bibliography;
- both a general and detailed site plan showing the current state of the site and its developments and locations of previous investigations within The Forks NHS; and,
- various historic maps referenced in this report.

Cumulative Effects, Commemorative Integrity and Environmental Assessment

The ongoing redevelopment of The Forks as a publicly accessible area after 1988 has had a significant impact on the site's heritage resources. Over 50 separate projects involving excavation have been undertaken at The Forks since 1984, most of these taking place outside of the national historic site. Each of these projects has had the potential to alter or obliterate the material, context and relationships of subsurface cultural remains and associated environmental information that forms the basis of the site's historic value. Due to the risk to the natural and cultural resources, each project was subject to an environmental assessment prior to approval. Traditionally the assessment process has looked at each project proposal in isolation. It has not considered the cumulative effects of impacts from all previous and proposed projects affecting the cultural resources within Parks Canada's jurisdiction, nor those projects conducted outside that jurisdiction that may impact on resources within or crossing jurisdiction boundaries. This situation is changing as the concept of "cumulative effects" is being applied to the assessment process.

Cumulative effects are the accumulation of incremental impacts that collectively "nibble" away at the commemorative integrity of a site (Kingsley 1997). The concept is an important one

when performing a comprehensive impact assessment. Project assessments made in isolation from other past and future impacts, and those occurring on adjacent lands, cannot adequately evaluate the threat posed to the health of a site. Small impacts which seem insignificant in themselves may have a serious detrimental impact to the commemorative integrity of a site when combined with other past and future impacts, and those impacts occurring on adjacent land under a different jurisdiction.

Employing a cumulative effects analysis during management planning and the environmental assessment process means looking not only at the impacts directly related to the current or proposed projects but also the accumulated history of past impacts and the potential future impacts that could result from all current, past or proposed actions. In order to assess the cumulative effects to a site it is necessary to have good information on hand regarding previous impacts. This project is an attempt to compile much of that information, and make it accessible to site and field unit staff who are responsible for the management of cultural resources at The Forks.

Through a close examination of the cumulative impacts at The Forks NHS it should be possible to set thresholds for preserving the site's commemorative integrity. The setting of thresholds can result in better guidelines for Commemorative Integrity Statements and make it easier to address cumulative effects through management plan reviews and environmental assessments.

Methods

With the exception of a brief visit to observe and comment on the condition of the bank edge within The Forks NHS with respect to the management of cultural resources, no original research was conducted. Rather the results of previous investigations over the past 15 years formed the bulk of the data reviewed for the project. The major focus was on the synthesis of the information held in reports related to the various projects conducted at The Forks both on and off Parks Canada property. It was hoped that the investigations at the site carried out in association with redevelopment could give guidance to the ongoing management of site resources. Specifically it was hoped that a better understanding of the location and extent of cultural deposits, and the degree of impact upon them could be developed. In a very general way, this has been accomplished though it was beyond the scope of the project to identify the specific location of each cultural resource. The effects of flooding on the cultural deposits, variations in the methods of investigation and depths of excavation, along with the fact that much of the investigation at The Forks has been restricted to working within the confines of development projects, makes predictions of resource location, condition and extent difficult.

Results

This project has contributed to the formation of a clearer picture of the cultural resources present at The Forks, the developments and associated archaeological investigations that have led to their

discovery, and the problems associated with their management and protection. A database of cultural resource information that describes the site and its associated resources, identifies and associates periods of occupation for the resources, and tracks investigations of and impacts to those resources is the major tool for tracking information on the site's cultural resources. As the location and extent of most of the cultural resources are only revealed through excavation, and much of the material that has been located through excavation has also been removed, the location of these resources are only relevant for what they indicate about the general location and condition of resources. The sheer volume of resources recovered from the area also precludes the usefulness of plotting each artifact or feature for an analysis such as this. Instead this project has focused on developing an overview of the resources to be found at The Forks and at particular areas within The Forks from which more detailed investigations can proceed.

Geological History

The geological history of The Forks begins with the end of the last glaciation and draining of Lake Agassiz from the area. This event occurred about 9000 to 10,000 years ago.

Two separate studies have shed light on the geological history of The Forks. The Rannie, Thorleifson and Teller study (1989) focused on the paleochannels of the Assiniboine River within the Portage la Prairie alluvial fan; the Nielsen, McKillop and Conley study (1993), focused on the Red River between its junction with the La Salle River and Lockport. Both studies found evidence for the changing course of the Assiniboine River over its history, draining into either Lake Manitoba or the Red River. There was also agreement on the more recent period from about 3000 years B.P. onward. At that time the Assiniboine River produced a succession of channels between Portage la Prairie and Winnipeg, abandoning its previous route to Lake Manitoba to follow a course that joined the Red River where the La Salle River meets the Red River today. By 1400 B.P. the Assiniboine River had shifted its position northward to its present location.

Unlike Nielsen, McKillop and Conley (1993:210-11) who found indications for the existence of the Assiniboine River drainage in the vicinity of The Forks by about 7500 B.P., Rannie, Thorleifson and Teller did not find conclusive evidence for a confluence of the Assiniboine and Red rivers prior to 3000 years B.P., though they admit this could have occurred prior to 7000 B.P. along channels no longer discernible, or during a period between 7000 and 4500 B.P. when the Assiniboine River flowed eastward toward the Red River (Rannie, Thorleifson and Teller 1989:1840).

The earliest discernible channel of the Assiniboine River on the Portage la Prairie fan drained into Lake Manitoba and has been dated to as early as 7000 B.P., or possibly much earlier (Rannie 1999b:107). The initial route of the Assiniboine River after the final recession of Lake Agassiz 9500 years ago is not clear and could have been either to the Red River or Lake Manitoba (Rannie, Thorleifson and Teller 1989:1840). The data obtained by Nielsen, McKillop and Conley, including stratigraphic and paleoecological analysis and a radiocarbon date from wood of about 7500 years B.P., suggest there was an earlier channel of the Assiniboine that flowed briefly into the Red River at The Forks prior to its course shifting and draining into Lake Manitoba (Nielsen, McKillop and Conley 1993:210-11). The Assiniboine may again have flowed through its present course between this period and about 3000 years ago when the flow was through the La Salle River Valley. Archaeological evidence for the Assiniboine River entering the Red River at The Forks during the period prior to 3000 years ago is also found in the large sand deposits found at the junction of the Red and Assiniboine rivers well below the Archaic occupation levels. During the period after the Assiniboine River Valley had been formed, but while the river flowed either south of The Forks or into Lake Manitoba, the mouth of the Assiniboine at The Forks would have been present as a steep-banked embayment of the Red

River (Rannie 1999b:111).

A layer of gyttja, a deposit characteristic of swamps and standing water, found in the central area of The Forks suggests that at some point in the past an active river channel existed in the central portion of The Forks. Over time this channel was cut off from the river, becoming an oxbow lake, a slough, and then a marshy location. This relict channel would have likely existed for a considerable length of time, probably into the 13th century (Kroker and Goundry 1990:163; Quaternary Consultants Ltd. 2000c:68).

In a pre-railway period plan of the area (General Survey of Upper Fort Garry & Its Immediate Vicinity by Captain Humpden Moody, Royal Engineers, 1848) (Figure 1) what appears to be a low area, consistent with a relict water channel such as is mentioned above, covering much of the interior area of The Forks site is shown (Guinn 1980b:254). Also visible on the 1848 plan is a broad lower terrace on the west side of the Red River extending north from the mouth of the Assiniboine River.

Whatever evidence existed of the previous natural surface geography of The Forks was covered by fill deposits laid down by the railway as early as 1888. As well, the operations of one or more city dumps, building products plants and other industries at the northern end of The Forks area appear to have included the dumping of additional materials at the bank edges which has extended these edges beyond their former limits.

Human History of The Forks

Palaeo-Indian Period (ca. 12,000–8000 B.P.)
Shortly after the draining of Lake Agassiz about 9000 to 10,000 years ago the area provided a suitable habitat for plants and animals as well as humans. While there has been no direct evidence found at The Forks for human occupation prior to 6000 years ago, the base of a lanceolate projectile point recovered near St. Norbert may indicate an occupation by nomadic bison hunters as early as 8000 years ago (Priess, Bradford, Ebell and Nieuwhof 1986:24).

Archaic Period (ca. 8000–2000 B.P.)
After the initial deglaciation the climate continued to become warmer and drier. This period, from about 8000 to 5000 years ago, is known as the Altithermal. It is believed that this change in the climate made the plains largely uninhabitable and led to the movement of the animal and human populations into the river valleys and forest edges (Priess, Nieuwhof and Ebell 1986:2). A general decrease in population in the area is suggested to have accompanied this period along with a change in subsistence strategy away from big game hunting toward a more diversified pattern that included hunting, fishing and foraging (Priess, Bradford, Ebell and Nieuwhof 1986:25). Most of the work conducted at The Forks has not penetrated any layers with a known association to the early Archaic Period. However, sediments dating to the Altithermal were encountered below the basement of the Johnston Terminal (Quaternary Consultants Ltd. 1993a:35) and during the installation of various services in 1989 referred to as the Stage I Construction. It has been suggested that two hearths, encountered during monitoring of the Stage I Construction, may be about 6000 years old. The organic remains from the hearths were not sufficient to provide a radiocarbon date so the age estimate was based on the depth of the deposits below horizons dated to 3000 years B.P. (Kroker and Goundry 1990:162).

As the climatic conditions improved human populations began to return to the area but with a more varied economic focus. However, during this period the area now known as The Forks may have been a less attractive location than it was during earlier and later times. From 4500 to 3000 B.P. the Assiniboine River drained into Lake Manitoba and the present course of the river would likely have been occupied by a small, possibly intermittent, stream. While the presence of permanent water in the Red River would have continued to make the region a prime area for food procurement, the reduced flow at The Forks would mean that numerous other locations along the river may have been equally attractive, thus resulting in only small and infrequent occupations at The Forks (Quaternary Consultants Ltd. 1993a:35).

An additional factor working against the likelihood of finding archaeological evidence for human occupation at The Forks during this period is the condition of the Archaic Period strata. The thinness of the organic strata below the 3000-year-old horizon suggests the area experienced frequent flooding. These deposits show a high degree of discontinuity, suggesting that erosion and ice-scouring associated with flood events often removed portions of the soil horizon which

had developed since the previous flood (Quaternary Consultants Ltd. 1993a:35).

Projectile points from this period (McKean, Oxbow, Pelican Lake) have been found in archaeological contexts around the province dating to between about 5000 to 2000 B.P. (Priess, Nieuwhof and Ebell 1986:2). Two Archaic Period horizons nearly three metres below surface and dating to about 2200 and 3000 B.P. have been identified and investigated in the area of the Forks Historic Port. The upper horizon is likely a short period spring or early summer occupation. The various loci associated with the lower horizon are likely components of an extensive Archaic horizon. Diagnostic projectile points have been found which suggest that three different groups were present at the site during the Archaic Period and had access to stone from Manitoba, North Dakota, the Lake Superior region and Texas from which they made their tools (Quaternary Consultants Ltd. 1994b:i).

Woodland Period (ca. 2200–200 B.P.)
This period is marked by the presence of ceramics. This technological innovation is believed to have been introduced to Manitoba from the east about two thousand years ago by people practicing a broadly based forest economy that included the hunting of large and small game, fishing and the gathering of plants (Priess, Nieuwhof and Ebell 1986:2). The earliest known occupation of Manitoba by Woodland culture is represented by the ceramic containers of the Laurel culture. The earliest Woodland Period occupations found at The Forks are associated with the Blackduck culture (Kroker and Goundry, comp. 1994:8). Radiocarbon dates obtained from Blackduck occupation layers suggest a Blackduck presence at The Forks as early as A.D. 665.

As many as ten discreet Late Woodland Period occupation layers have been identified in some areas of The Forks including the North Point area. Many of these layers are thin and likely represent short-term occupations. Large quantities of fish remains have been found in association with the Woodland occupations and suggest that fishing may have been a major activity (Adams et al. 1990:7-9; Priess, Nieuwhof and Ebell 1986:6-7). Most of the cultural deposits at The Forks are highly flood affected, including the Woodland Period occupations found at the North Point. Here the ceramic recoveries were in poor condition and showed a great deal of post-depositional scattering. It was also very difficult to make correlations between occupation layers across the site both within and between excavation projects (Adams et al. 1990:7-9).

A less disturbed and more extensive Late Woodland cultural horizon has been observed at The Forks during many of the projects carried out along the northern end of Pioneer Boulevard. The horizon contains ceramics associated with a number of different cultural groups from a wide area surrounding The Forks and has been interpreted to represent a meeting of Algonkian peoples from central and southern Manitoba, northwestern Ontario, northwestern Minnesota, and possibly parts of Minnesota and North Dakota along the Red River Valley (Quaternary

Consultants Ltd. 2001a:25). The diagnostic materials include Blackduck, Rainy River, Bird Lake, Duck Bay, Plains Woodland, Sandy Lake, Red River and Oneota styles of ceramics, as well as Plains Side-Notched and Plains Triangular style projectile points (Quaternary Consultants Ltd. 1999a:208).

A pre-contact secondary cremation burial was encountered on the bank of the Red River on the south point of The Forks. This is a very significant find as no cremation burials had previously been recorded in the area (Quaternary Consultants Ltd. 1996a:47). The earliest recorded date for Woodland culture cremation is A.D. 130 and a date for this burial of about A.D. 620 is based on evidence obtained from earlier investigations at The Forks containing Blackduck ceramics within the same time range as proposed for this burial (Quaternary Consultants Ltd. 1996a:54, 55).

Contact Period (1737–1821)

It is known from the documents of early explorers and fur traders in the area that The Forks was frequently used by several different Native groups. While the visits were often temporary, some of these occupations were for a longer period of time (Kroker and Goundry, comp. 1994:9). The first visit to The Forks by a European was that of La Verendrye in 1737 at the invitation of the Assiniboine aboriginals. He records the presence of two villages of Assiniboine there in that year and ten cabins of Cree in 1738 (Kroker and Goundry, comp. 1994:9). Fort Rouge was established at The Forks in 1738, most likely on the south point, and was abandoned in 1749 (Guinn 1980b:30-33; Kroker and Goundry, comp. 1994:9).

Jacques de Saint Pierre, a French explorer, wintered at The Forks in 1752-53. Bruce and Boyer, independent traders from Montreal, had a winter camp at The Forks in 1781-82. Donald McKay reported the presence of a camp of Nor'Westers at The Forks in 1793. Alexander Henry frequently visited the area and reported that the North West Company made regular use of The Forks between 1800 and 1808. By this time several Métis families had settled at The Forks and were working as commercial buffalo hunters for the North West Company (Kroker and Goundry, comp. 1994:9).

Evidence for a Contact Period occupation predating Fort Gibraltar I was found during excavations in the area of the fort. The evidence suggested that the occupation was more substantial than a short-term camp and could possibly be related to any of the above mentioned occupations (Kroker, Greco and Peach 1992:137).

Fort Gibraltar I (1810–1816)

The North West Company presence at The Forks became more established as the site began to be used as a transfer point. Goods from the east were broken up into smaller shipments for distribution to various posts in the region and the fur returns combined into larger shipments

headed east. Construction of Fort Gibraltar was begun by John Willis in 1810 to handle these distribution functions and those associated with the stockpile and distribution of pemmican. It was built using local Métis craftsmen (Kroker and Goundry, comp. 1994:9).

The post was enclosed within a stockade of split oak and contained a house for Willis and two houses for the men as well as a storehouse, two hangards or stores, a blacksmith's shop, a stable and an icehouse with a watch-house over it. All of the structures were of log construction. The lengths of some of the buildings are given by one of the workmen, Jean Baptiste Mennie. One of the houses was said to be 64 feet long, another was 30 and the third was 28. A kitchen 15 feet long and a store 22 feet long were also mentioned (Coutts 1988:85-86).

Conflicts between the North West Company and Hudson's Bay Company led to the destruction of Fort Gibraltar in the spring of 1816. Much of the fort was pulled down and moved to Fort Douglas. The remainder was burned (Kroker and Goundry, comp. 1994:10).

Evidence of a burned log structure with a plank floor have been found and investigated in the area suspected to be the location of Fort Gibraltar I. The structural remains have been interpreted as a store with an attached hangard located within the fort, which has been briefly described in historical documents. Other remains recorded and likely associated with the fort include cellars, activity areas (wood, stone, or metal working locations) and trade goods consistent with its period and function (Kroker, Greco and Peach 1992:136, 137).

Fort Gibraltar II (1817–1821)

The North West Company began the reconstruction of Fort Gibraltar in 1817 slightly upstream of the previous fort at the North Point of The Forks (Coutts 1988:92). While the location of the fort is well documented, little evidence of this occupation was found in either the initial investigation in 1984 or the 1988 excavation. Subsequent investigations on adjacent property in conjunction with The Forks heritage plaza project also failed to find any evidence of the Fort Gibraltar II occupation. A cribbed cellar and some pits were the only features identified that potentially have a relationship to the fort. The only structural debris found was associated with the two pits and may represent their use as refuse pits rather than indicating a structural presence in the immediate location. A variety of artifacts, including some with a definite association with the North West Company, were recovered from the area (Adams et al. 1990:8).

Transition Period (1821–1870)

After the amalgamation of the North West Company and Hudson's Bay Company, Fort Gibraltar II was renamed Fort Garry (Fort Garry I) and some of the existing fort buildings were renovated and other new structures built. The fort suffered substantial damage during the flood of 1826 and in the early 1830s plans were made to abandon the site at The Forks and build a new fort, Lower

Fort Garry, at a more favourable location below St. Andrew's Rapids. While Lower Fort Garry did become the administrative headquarters, there continued to be a need for a post at The Forks so a new replacement, Upper Fort Garry, was begun in 1835. The original Fort Garry continued to stand until 1852 when it was finally dismantled after being further damaged by flooding (Kroker and Goundry, comp. 1994:11).

The Experimental Farm (1836–1841)

The Hudson's Bay Company established an experimental farm at The Forks in 1836. The area under consideration for the farm was vaguely described as the "low grounds on each side of the New Establishment at The Forks" (Guinn 1980b:68). Another description of the farm area is contained in an undated document (HBCA, E.8/8, of. 48) in the Hudson's Bay Company archives (Guinn 1980b:178):

> From the north bank of the Assiniboine River immediately below George Thane's [lot], North 3° East, one hundred and fifty chains, or thereby and then 65° East down Jack Bird's upper line to the Red River, from there round the shores of the Red and Assiniboine rivers to the place of beginning (save and except the ground occupied by or required for Upper Fort Garry…)

Some of the buildings remaining from Fort Garry I were used in association with the experimental farm and some new buildings, including barns and stables, were constructed at the site. The 1848 plan of the area ("General Survey of Upper Fort Garry & its Immediate Vicinity" by Captain Humpden Moody, Royal Engineers) (Figures 1 and 2) shows a complex of seven buildings designated as "stables etc." in the area around the former location of Fort Gibraltar I (Guinn 1980b:255, 257). While the experimental farm had ceased operations in 1841, it is believed the area may have continued to be used between 1846 and 1862 by British Army troops and the Chelsea Pensioners, a group of British Army veterans (Kroker and Goundry, comp. 1994:11).

Evidence for the experimental farm at The Forks, in the form of a plough zone and to a lesser extent a manure layer is fairly widespread, but aside from these layers, the evidence related to this period has been very sparse. A pit containing a number of partial and complete domestic animal skeletons was recorded in the North Point area and may be associated with farm activities (Adams et al. 1990:7-9). Some post holes with a possible association with the farm were recorded during the 1991 Public Archaeology Program (Kroker, Greco and Peach 1992:28, 130).

Industrialization and Immigration Period (1870–1888)

Immigration to western Canada increased substantially between 1870 and 1888, and in 1872 two immigration sheds were constructed near the former location of Fort Gibraltar I. One of the sheds

is described as a one-storey wooden building measuring 180' x 121' and divided into 30 10' x 12' compartments. It is assumed the second shed would have been about the same. Both sheds had detached cookhouses and together were estimated to have a capacity of 400 to 500 people (Guinn 1980b:109). A shanty town grew up around the sheds in the area known as the flats along the west bank of the Red River and the north edge of the Hudson's Bay Company Reserve at Water Avenue (Kroker and Goundry, comp. 1994:11). The shanty town persisted until 1884 and the immigration sheds were removed by 1885 (Kroker and Goundry, comp. 1994:11).

Also constructed in 1872 was the Hudson's Bay Company's Steamboat Warehouse, later known as Warehouse No. 4, on the north bank of the Assiniboine River about 240 metres upstream of its mouth. The structure measured 100' x 60'. The warehouse was moved 120 feet further back from the river in 1877 and was demolished about 1895 (The Forks Renewal Corporation 1988:51-52).

In 1874 the Hudson's Bay Company built a steam-powered grist mill at The Forks. The initial extent of the development is not known but renovations were made to the mill and associated buildings in 1881 and 1885. By 1890 the complex included the mill, engine room, four warehouses for flour, elevator and adjoining office. By 1906 the complex consisted of nine buildings, of which only the mill building and lean-to were original. The complex was sold and demolished in 1907 (Guinn 1980b:142).

The Clarke and McLure Lumber Yard was in operation in the central portion of The Forks between 1876 and 1890. Throughout this period after 1872, a number of other industries began operations along the river in the area north of the Hudson's Bay Company Reserve, and a number of small businesses, rooming houses and residences were constructed there during the 1880s and 1890s (Quaternary Consultants Ltd. 2000d:6, 106; The Forks Renewal Corporation 1988:52-53). In 1890 the area immediately adjacent to the Red River north of Pioneer Avenue was taken over by the Winnipeg Transfer Railway and large quantities of fill (up to six metres) were deposited over the remains of the previously existing lumber facilities to produce a level grade for the tracks, extending eastward from the bank edge (Quaternary Consultants Ltd. 1999c:76 and 2000d:106-107).

Railway Period (1888–1988)

Twenty acres of land from the Hudson's Bay Company Reserve at The Forks was sold to the Northern Pacific and Manitoba Railroad in 1888. The land remained in the possession of the railway until it was transferred to the Canadian Parks Service and The Forks Renewal Corporation in 1988. Construction of a repair shop and roundhouse was begun in 1889. The roundhouse was demolished in 1926 but the repair shop, previously known as the B & B Building, remains standing and now houses the Manitoba Children's Museum (Kroker and Goundry, comp. 1994:12).

The B & B Building was originally built as the Northern Pacific and Manitoba Railway Engine House and Roundhouse. It derives its name from its use by the Bridges and Buildings Division of Canadian National Railways (Quaternary Consultants Ltd. 1992:1). The roundhouse portion is no longer standing but portions of its foundation remain buried to the north of the B & B Building.

In 1888 the railroad began the process of raising and leveling the surface of the site, initially with grading and gravel and then with cinder and debris. This layer is evident throughout The Forks area occurring to a variety of depths depending on the location. Using cinders (clinkers) as landfill material the railroad companies were able to elevate the land surface, provide good drainage and dispose of large quantities of spent coal (Kroker and Goundry 1990:155). In many cases the fill layer has allowed more shallow subsurface developments to proceed without impact to earlier deposits and in situ cultural remains. It appears that while the railway's efforts to level the surface consisted primarily of filling, some excavation was also carried with possible impact to buried deposits.

Forks Redevelopment Since 1984

There have recently been various projects undertaken at The Forks that have had the potential to impact on the cultural resources. These projects are presented chronologically, though those within the boundaries of The Forks National Historic Site are presented first followed by those conducted elsewhere at The Forks. All of the projects relate to the redevelopment of the former East Yards into an area that is accessible to the public.

While the redevelopment of the property did not begin until 1988, the first archaeological investigations took place in 1984 on property that was to become The Forks NHS. These initial investigations identified the archaeological potential in two areas thought to be particularly sensitive and helped to guide the mitigation of the North Point interpretive node development in 1988. More recent developments at The Forks NHS have generally been small and some of these were monitored. In addition to the development projects, three seasons of public archaeology were carried out in the area of Fort Gibraltar I.

Developments on the surrounding area of The Forks have been much more frequent and extensive. More than 50 separate Heritage Permits have been issued for work at The Forks, outside of The Forks NHS, between 1988 and 2001. Much of this work has been related to the installation of services and roads but also includes the construction of new buildings and facilities and the renovation of existing structures.

The Forks National Historic Site

Archaeological testing, 1984

In anticipation of the development of a national historic site at The Forks, archaeological investigations were carried out by Peter Priess within the boundaries of the proposed site in order to provide information for management planning and determine whether the property contained any physical remains representing the identified themes. The specific objectives were:

- to locate and identify archaeological resources;
- to collect and analyze a representative sample of artifacts; and,
- to plan for the mitigation of development impacts (Priess, Nieuwhof and Ebell 1986:4).

The investigations were focused on only a small portion of the property at two locations: the North Point and the area adjacent to the B & B Building. No determination of the archaeological potential of other areas was made. The areas investigated were chosen based on documentary evidence suggesting they were the likely locations of Forts Gibraltar I (adjacent to the B & B Building) and II (North Point). While structural evidence consistent with the periods of the forts was found at their respective suggested locations, no definite relationship was established (Priess, Nieuwhof and Ebell 1986:11).

Soil testing

A program of non-archaeological soil testing with a truck-mounted power auger preceded the archaeological testing to determine the depth and type of railway fill and the form of the pre-railway riverbank. Both the soil testing and subsequent investigations focused on the area around the B & B Building and North Point (Priess, Nieuwhof and Ebell 1986:4-5).

The soil testing program consisted of 24 auger holes drilled mostly on the upper terrace along lines running perpendicular to the river. The drilling was done under contract and monitored by an archaeologist. The depths of each deposit were measured and samples collected. Testing did not allow for the examination of undisturbed stratigraphy or the discovery of cultural remains; a general indication of the depths and character of the larger deposits were obtained. One test showed railway fill extending to a depth of over five metres. Only three of the test holes resulted in the recovery of artifacts attributable to the 19th century. The railway fill material consisted of cinders or coal occasionally mixed with gravel or other fill and the extracted soils often contained artifacts. The thickness of the fill deposits was found to increase toward the edge of the upper terrace and, in one test, to extend roughly to the level of the lower terrace. Testing concluded there has been extensive dumping of debris along the bank edge which has raised the height of the upper terrace, leveled its surface and shifted its edge toward the river. The pre-railway period ground surfaces and edges are buried at various depths below the fill layer and are more deeply buried closer to the river (Priess, Nieuwhof and Ebell 1986:5-6).

Pre-contact remains

Ten soil horizons were found which predate the historic structural remains. They contained material from the pre-contact period including an abundance of Blackduck ceramic sherds and non-diagnostic stone tools, tool fragments and debitage (byproducts of stone tool manufacture). Three charcoal samples were recovered and analyzed. As the sample from the deepest occupation layer yielded a later radiocarbon date than the two samples taken from higher levels, a weighted mean of A.D. 697 was calculated for the three samples to provide an estimated date for all the Blackduck occupations. While no fishing gear was recovered, large quantities of fish remains were found suggesting that fishing and fish processing was a major focus at the site, possibly employing net or weir systems (Priess, Nieuwhof and Ebell 1986:6-7).

Fort Gibraltar I

The remains of one structure and small clusters of artifacts were encountered in the area believed to be the location of Fort Gibraltar I. It was not clear whether the artifacts represented a primary deposit or were washed in by flooding. The structural remains consisted of charred flooring, the base of a fireplace, a probable cellar and a heavy concentration of baked chinking. A number of details were recorded and the features were interpreted to be the remains of a log structure with a plank floor laid on three joists with a mortared limestone fireplace and chimney on the north wall. The artifacts are generally attributable to the first half of the 19th century. While the burned

remains are consistent with the history of Fort Gibraltar I they could not be definitely attributed to the fort. A narrow and shallow trench had been cut through the structural remains for the installation of a fence. The period and origin of the impact could not be determined (Priess, Nieuwhof and Ebell 1986:7-8).

Fort Gibraltar II

The Fort Gibraltar II investigations were located in a narrow zone on the North Point of the junction of the two rivers. It was suspected that there would be little remaining of the high bank where the fort had stood due to the effects of erosion and filling. Several 19th century features were recorded, including a large cribbed cellar of post-in-ground construction overlaid by a thick layer of burnt chinking and associated artifacts of the period. The feature had been badly disturbed by railroad period construction. Two uncribbed cellars or trash pits were also recorded, one of which was disturbed by 20th century utility lines and contained a variety of 19th century artifacts. The other cellar or trash pit contained burnt chinking, window glass and wrought nails. While the remains are consistent with the time period of Fort Gibraltar II/Fort Garry I they could not be positively attributed to the fort (Priess, Nieuwhof and Ebell 1986:9-10).

Railway period occupation

The railway period is marked by a fill layer consisting largely of gravel overlying layers of cinders, sand or coal which extends throughout the site. Some of the layers contained railway hardware and several structural features were also encountered including an extensive network of water and steam pipes laid in shallow trenches in the North Point area. A section of foundation for the north wall of the 1889 roundhouse was encountered near the Fort Gibraltar I excavation (Priess, Nieuwhof and Ebell 1986:10).

Interpretive node geo-technical testing, 1987

Four geo-technical bore holes to determine the stability of the riverbank in areas where three interpretive nodes were to be developed were monitored by Biron Ebell in June 1987. A trench was excavated to allow the boring machine to pass under the Provencher Bridge, and three additional excavations were required to modify the edge of the upper terrace to allow the boring machine access to the lower terrace. No significant deposits were recorded for any of the backhoe excavations. The depth of the fill layer was recorded for three of the bore holes, while concrete precluded the drilling at the fourth hole. Natural soils were observed at a depth of about ten metres at the location along the walkway opposite the St. Boniface Cathedral at the north end of the site. The second borehole was attempted about thirty metres west of the first hole but could not penetrate the concrete. The result of a proposed second attempt the following week is not known. The third hole located on the upper terrace south of the first hole reached clean fill at about 1.5 metres and natural soils at three metres. The fourth test hole was located on the lowest terrace adjacent to the water at the North Point where natural soils were present at the surface

(Ebell 1987:5, 6).

North Point interpretive node development, 1988

Cultural materials were exposed during excavation for the installation of an interpretive facility and pedestrian ramp at the North Point in January 1988. An evaluation of the situation determined that the impact to archaeological resources would be substantial, and as a result archaeological investigations under the direction of Peter Priess were undertaken the following summer to mitigate the impact of construction at the site. An estimated 400 cubic metres of soil were removed over four months with a crew of two assistant archaeologists, four site supervisors and 13 (later 15) fieldworkers. The proposed time frame would allow construction to be completed by the end of the year (Adams et al. 1990:1-2).

The research interests relating to the historic period primarily focused on the fur trade era, and specifically upon determining whether features uncovered at the site in 1984 could be definitely associated with Fort Gibraltar II and if so, the identification of those structures and their construction phases. It was also hoped that resources relating to other historic periods might be encountered such as remains of the immigration sheds, or evidence of earlier fur trade or historic native occupations. As the earlier 1984 excavations had documented nine separate Blackduck occupations, the main objectives for the pre-contact period were related to dating occupation layers and documenting evidence of changes through time in such areas as resource procurement, settlement, technology and stylistic attributes (Adams et al. 1990:2-3).

Excavation was carried out in blocks of one-metre-square units up to eight metres square and following stratigraphic layers rather than arbitrary levels. The mechanical removal of the railway fill layer from the excavation area was monitored by project staff. Sterile deposits were removed by shovel and occupation layers were either shovel shaved or troweled. All features, ceramics, lithics and larger bones were plotted on plan drawings before removal and all features were fully described and photographed. Soil samples were collected regularly and flotation samples were taken from features and sometimes occupation layers. Radiocarbon samples were collected from almost all occupation levels and some non-cultural strata as well. All faunal remains were collected including fish scales. Wood was also collected for identification and analysis (Adams et al. 1990:5-6).

Ninety percent of the endangered cultural deposits were removed by controlled excavation; the removal of the remaining deposits were monitored by an archaeologist during construction. Little cultural material was found in the deepest soil layers excavated, though other concurrent archaeological projects in the area did encounter cultural materials at these and greater depths, including artifacts associated with the Archaic Period (Adams et al. 1990:7-9).

Evidence for seven historic and protohistoric periods were identified. The most obvious occupation layer was the railway period fill layer which resulted from their leveling and disposal activities. Some features likely associated with railway activities at the site include a system of deeply-laid footings consisting of heavy posts set on sleepers, a post hole complex along the east edge of the excavations, concrete anchors for support cables, and a variety of small pits and dump deposits. A post-fur trade horizon consisting of mixed soils and artifacts was recorded as were three layers, two to five cm thick, relating to the late 18th to mid-19th century period. These layers are sometimes separated by two to five cm thick artifact-bearing flood deposits (Adams et al. 1990:7-9).

The investigations in 1988 recorded at least eight distinct pre-contact cultural horizons. The uppermost of these layers is possibly a pre-contact or protohistoric living floor mixed with the lowest historic occupation. The second layer is a very late pre-contact horizon containing few features but some ceramic sherds which may be related to Sandy Lake ware. The third level is just above a major flood deposit and contains very little but a projectile point, and is the only layer to have a basin to conical-shaped prepared hearth. There are five known living floors below the major flood deposit, all related to one or more Blackduck occupations. Each occupation has distinctive characteristics but all held a mixture of fish and animal remains, shallow unprepared hearths and very sparse lithics. They also contained Blackduck style ceramics and showed only thin soil development. Each horizon is interpreted to represent a very short occupation, possibly a single season. Correlation between 1984 and 1988 occupations was more difficult than had been anticipated due to many natural and cultural disturbances and variations in the natural strata (Adams et al. 1990:7-9).

Most of the ceramic recoveries were in poor condition. Vessels are represented by a small number of fragments suggesting a high degree of post-depositional scattering. Lithic samples are small but show significant variation in distribution of local versus exotic material both within and between occupation levels. Fourteen charcoal samples yielded dates from 500 to 1560 years ago. The most recent came from just above the possible Sandy Lake level and more than half are from Blackduck levels (Adams et al. 1990:7-9).

Public archaeology at Fort Gibraltar I, 1989–1991

For three consecutive seasons a public archaeology program was conducted under the direction of Sid Kroker at the Fort Gibraltar I locality first investigated by Peter Priess in 1984. The project was funded by the Canadian Parks Service, The Forks Renewal Corporation and the Historic Resources Branch of Manitoba Culture, Heritage and Recreation. A ratio of two volunteers to one professional archaeologist was maintained throughout project to ensure the work was of a high quality.

During the first year the program ran for eight weeks and included the excavation of 63 0.5 x 1.0 m units. These excavations revealed structural remains and a cellar depression. Evidence of six major historic period occupations were encountered, including the flood of 1826, the railway period, the B & B Building, the Hudson's Bay Company experimental farm, Fort Gibraltar I and structural remains of buildings associated with the post. Over 22,000 artifacts were recovered (Kroker, Greco, Melikian and Riddle 1990:i).

In 1990 16 weeks of excavation were carried out, completing the excavation of the units begun in 1989 and opening 56 new 0.5 x 1.0 m units. Further evidence of the six major historic period occupations recorded the previous year were encountered including the possible structural remains of a storehouse, cellar depression and ash deposit. Over 24,000 artifacts were recovered (Kroker, Greco and Thomson 1991:i).

In 1991 a 12-week program was carried out continuing investigations begun the previous year. Sixty-five 0.5 x 1.0 m units were excavated, and the remains of two structures (possibly a hangard and the store) and a large ash/midden deposit were investigated finding evidence for a pre-1810 occupation. Over 25,000 were artifacts recovered (Kroker, Greco and Peach 1992:i).

Over the three years of public archaeology a number of significant findings were made. A cellar depression with associated artifacts including 1591 trade beads, 394 pieces of lead shot, two gunflints, and two trade rings was excavated. This cellar was similar to a cellar depression excavated in 1984 and both cellars may have been located within the same structure. Additional structural remains were encountered in the form of a thin vertical line of burnt wood fragments running east-west for approximately three metres and two metres north of the cellar depression. This may be remains of the collapsed north wall of the building containing the cellar. Piles of limestone rocks are interpreted as further remains of the chimney collapse identified in 1984. Chinking and charred wooden flooring planks extended to the north, south and east below the chimney collapse and are also believed to be associated with the same structure. Additional remains, possibly of a separate structure, were encountered as was a midden deposit believed to be associated with Fort Gibraltar I (Kroker, Greco and Peach 1992:131-34).

In 1984 the structural remains were interpreted as representing row housing. During the subsequent investigations of the public archaeology program, the earlier interpretation was revised. Structural remains previously thought to be an interior wall were reinterpreted as the outer east wall of the structure. An unlined, uncribbed cellar, east of this reinterpreted wall, could have been part of another building or an attachment, possibly a hangard or storehouse for meat and other food. Based on the dimensions of the structural remains they are interpreted as possibly being those of the fort's store (Kroker, Greco and Peach 1992:136).

Three different activity areas were identified. One area had evidence of both metal and stone working functions. The lithic debitage suggest the manufacture of a stone tool or gun flint and a high concentration of small scrap iron fragments in the same area may be related to the manufacture of tinkling cones. A deposit of small wood and bark fragments is interpreted to represent log and timber preparation during construction of the fort buildings, manufacture of furniture or preparation of firewood. A deposit of horse bone is believed to be the result of butchering activity.

Evidence for an earlier historic occupation of the site was found in undisturbed deposits below those associated with Fort Gibraltar I and include a fragment of a French trigger guard and a variety of faunal remains (Kroker, Greco and Peach 1992:137).

Flagpole base, 1995
August 17, 1995
A flagpole base was installed east of the B & B Building near the pathway connecting The Forks National Historic Site property with the site's information office on the east side of the Children's Museum. The monitoring of the auger hole for the installation was carried out by Mary Ann Tisdale. No significant cultural deposits were encountered. Two holes were drilled as the first hole struck a water pipe about 50 cm below the surface. The second hole struck what was identified as an unmodified limestone block about 62 cm below the surface which was subsequently broken up with a jackhammer and removed. The depth of excavation was 96 cm. The conclusions of the monitoring was that excavations did not penetrate below fill layers associated with the national historic site construction phase (Tisdale 1995).

Signage installation, 1999
December 23, 1999
The excavation of two post holes for the installation of signage along the walkway at the entrance to the site was monitored by Barry Greco. Excavation of the post holes reached a depth of 107 cm. Only railway fill was encountered and no cultural remains were observed (Greco 1999a).

Festival park development, 1999
June 17–22, 1999
A pathway was excavated across the north portion of the park, curving from the west property line north of the main entrance to the exit at the extreme northeast corner of the park. Associated with the pathway excavation were seven auger holes for the installation of the light bases. These holes were drilled to a depth of approximately 2.5 metres at 20 metre intervals on the river side of the pathway. Only fill deposits were encountered during monitoring of the excavations by Paul Downie. Monitoring of the drilling consisted of observing the soil as it was excavated while still on the bit and raking through the backdirt after its removal. The material removed consisted of

loose gravel and sand containing modern debris, and at the deepest level, mottled clays with the continued presence of modern debris. These results suggest that excavation did not penetrate below fill layers (Downie 1999b).

Electrical services upgrade, 1999
March 1–9, 1999
Three trenches were cut for the installation of electrical cables at The Forks NHS and were monitored by Barry Greco. Two of the trenches cross the site from north to south with a third short trench running east to west connecting the two long trenches. The excavations were about one metre deep and only railway fill was encountered (Greco 1999b).

Forks Renewal Corporation/Forks North Portage Partnership
Manitoba universities archaeological field school, 1988
May 2–August 26, 1988
An archaeological field school was conducted during the summer of 1988 under the direction of Dr. Gregory G. Monks. The permit application stated the following as its aims: academic research; investigate and preserve The Forks' heritage; provide students with field training in archaeology; facilitate public education and participation in archaeology. The research objective was to investigate the economic and social relations within the Red River Settlement, how these relations changed over time, and how material heritage can be used to clarify these changing social and economic relations. A wide-area methodology was proposed calling for the testing and mechanical removal of recent historic deposits in the area at Fort Gibraltar II so that a large as possible exposure of the fort could be made. Underlying prehistoric deposits were also to be tested to confirm and expand upon Parks Canada's 1984 findings. A field lab was to be run concurrently with the excavation and analysis with interpretation to take place during the winter of 1988-89. At the time of writing, no formal report on this project has been submitted to the province.

North Assiniboine node archaeological impact assessment, 1988
July–September, 1988
As part of the planned boat dock and promenade development, an archaeological impact assessment was conducted in the summer of 1988 in an 8000 square metre area of the upper and lower terraces of the north bank of the Assiniboine River. The area is bounded by the two railroad bridges, the Johnston Terminal, and The Forks Market buildings.

Five trenches were excavated twenty metres apart on the upper terrace. Three of the trenches continued on the lower terrace. Two trenches were excavated east of the first trench and another small unit was excavated within a trench associated with a University of Manitoba project. The excavations reached a depth of more than three metres on the upper bank and 1.5 metres on the

lower terrace (Kroker 1993:10). Excavation was carried out using a backhoe with a modified 24" bucket excavating in 10 cm levels. Excavated soils were raked at the side of the unit to recover diagnostic artifacts (Kroker 1993:12).

The upper soil deposits were found to consist of layers of ash, cinder, sands, gravels, concrete and artifact-laden garbage which varied in depth from a few centimetres to over two metres. These layers represent successive periods of dumping and spreading in the course of construction and industrial activity in the area. Below these layers, are a series of flood deposits, consisting primarily of silty clays but also containing purer lenses of sand and silt (Kroker 1993:174).

Evidence of the past century of railroad activity, was found in the upper layers, including remnants of a spur line that curved along the upper bank of the Assiniboine River. Structural remnants of the Hudson's Bay Company flour mill (1874-1907) were located, and a layer of ash likely associated with "Winnipeg Dump Site #1" (Kroker 1993:i; 1, 181). Traces of Late Woodland occupations were found as well as an extensive Shield Archaic horizon lying at a depth of nearly three metres below surface. This occupation was dated at 920 +/- 80 B.C. and covers at least 2000 square metres. (Kroker 1993:i). More than 9600 artifacts were recovered during the project, mostly from the upper levels (Kroker 1993:5).

It was recommended that part of the North Assiniboine Node which contains the Hudson's Bay Company flour mill complex and the Shield Archaic horizon, be set aside as a permanent archaeological preserve (Kroker 1993:i).

Provencher Bridge project impact assessment, 1988
August 22–31, 1988
A heritage resource impact assessment was carried out by Quaternary Consultants Ltd. of areas to be affected by the Provencher Bridge project including the proposed York and St. Mary avenues extensions. This assessment took in areas on both sides of the Red River with the area of investigation within the East Yards being located between the proposed north-south access road and the Red River. The objective was to:

- ascertain the soil stratigraphy of the impact area;
- determine the presence or absence of cultural strata, relict soil horizons or heritage resources, and their nature and extent if present, and;
- identify the depth of historic deposits and the temporal period of any early historic components.

Ten exploratory excavations were made along the proposed route of the extensions of York and St. Mary avenues. Each test hole was three metres long and excavated to a depth of 3.5 metres. A surface inspection was made of the impact areas on both sides of the Red River. Sixteen

geo-technical drill holes, 16 inches in diameter, were monitored along the York Extension and St. Mary Avenue locations and at the Provencher Bridge abutment location on the west side of the Red River. All relict soil horizons were noted and examined, and depths recorded where possible (Quaternary Consultants Ltd. 1989:1-5).

The majority of the evidence for the pre-contact occupation strata was recovered from the backhoe excavations along the York Avenue extension. The geo-technical drilling program helped to establish the areal extent of pre-contact occupations observed during the excavations. It was determined that the railway period fill layer ranged from 0.4 to 2.8 metres, increasing in thickness from west to east. Other findings included manure deposits and structural remains believed to relate to the historic period prior to the establishment of the railway in the area. At least five Late Woodland period occupations were identified, the deepest of which was recorded three metres below surface and contained sherds identified as Blackduck (Quaternary Consultants Ltd. 1989: 21-24).

Infrastructure development, 1988
September 1988–June 1989
A heritage resource impact assessment of the areas to be affected by the initial infrastructure development at The Forks was conducted by The Forks Renewal Corporation. Developments included internal roads, parking facilities, and municipal services such as sewer and water. The objectives were:

- to determine the presence or absence of subsurface heritage resources within the impact zones;
- to record locations and depths of any archaeological resources encountered;
- to develop baseline data to permit compilation of an inventory of known cultural occurrences; and,
- to enable informed heritage management decisions in areas adjacent to impact zones without hindering development.

The methods used included the monitoring of all subsurface excavations by the site archaeologist, and the use of “adjacent trench” techniques if required and the curation of all recovered artifacts.

Construction took place throughout the entire East Yards at the locations of roads and parking lots and where subsurface services were installed. Parking lot excavations were carried out at the bus turnaround lot, market parking lot and market service plaza. Trenches for the installation of subsurface components extended from the north bank of the Assiniboine River to the junction of Pioneer Boulevard and York Avenue, with another series extending from the powerhouse to the Parks Canada property line.

Additional subsurface service impact zones included:

- a rectangular area extending from the intersection of the York Avenue extension and Pioneer Boulevard to the market plaza;
- an area from the market plaza, past the Johnston Terminal to the B & B Building;
- from the west side of The Forks Market to the Assiniboine River near the CNR main line bridge;
- from the market service lot to the market tower;
- from the bus turnaround road to the pavilion location; and,
- from the Assiniboine control structure to Main Street.

Services

In most locations all three service conduits were installed parallel to each other; though in some locations only the water main was installed. A series of three trenches were excavated along the Pioneer Boulevard route, through the market plaza to the west side of The Forks Market. Another series of three trenches were excavated from Pioneer Boulevard to the bus turnaround, adjacent to the Johnston Terminal. Single water mains were excavated from the west side of Main Street to join the line on the west side of The Forks Market; from the bus turnaround to the boundary of the national historic site; and from the Market Road to the site of the future pavilion. Other single services include the tower trench and pavilion sewer. A major control structure for the land drainage sewer line was installed between the CNR main line, Assiniboine River and The Forks Market. Subterranean tunneling was conducted from the control structure towards the bank of the Assiniboine River and in the opposite direction to link with the land drainage sewer line which had been installed along the long trench (Kroker and Goundry 1990: 9-13).

Roads

The roadbed for Pioneer Boulevard was excavated to a depth of 1.3 metres and overlies service trenches, as does the bus turnaround road. The road extending from the south side of the market service parking lot under the CNR main line bridge to Main Street overlies a single water line trench.

Parking lots and plazas

The subsurface excavation area for the market plaza and market parking lot lies north of The Forks Market between the market buildings and the road parallel to the CNR main line and the bus turnaround road. The excavation averaged 1.4 metres. A small service parking lot is located on the south side of The Forks Market and was excavated to a depth of 1.6 metres. The areas between the west walls of the market and the CNR embankment were excavated to develop parking and service access facilities to an average depth of 1.3 metres and overlie numerous past and present subsurface pipes and conduits (Kroker and Goundry 1990:13-14).

Method
Roadbeds were constructed over the services installations, minimizing the resulting impact. Parking lot excavations were confined to the upper metre largely avoiding pre-contact sediments (Kroker and Goundry 1990:6). Safety considerations and methods of construction restricted the opportunities for recording a continuous profile as the upper portions of each trench were sloped back and safety cages were used in the seven metre deep land drainage trench. As well, the toothed buckets left the wall profile uneven and the trenches were filled almost immediately after the pipe was laid (Kroker and Goundry 1990:146).

Discussion
Forty-one pre-contact horizons were recorded. The locations of the recoveries were a partial confirmation of the "moderate and high potential zones" that had previously been predicted. Investigations showed that portions of The Forks had been intensively utilized prior to the fur trade period and Native occupation of the area may date back as far as 6000 years ago (Kroker and Goundry 1990:i, 165).

Stratigraphy
There is a general decline of strata toward the north away from the north bank of the Assiniboine River, and the stratigraphy is much more complex than had originally been thought. At one location 26 distinct soil horizons were recorded in the upper three metres. It was observed that the variable and discontinuous soil layers found at the north bank of the Assiniboine River also continued into the central area of The Forks. Even some of the more easily identifiable horizon markers such as the thick sand deposit referred to as the 750 year flood layer (dated ca. A.D. 1200) which is up to 100 cm thick in some locations can pinch out and disappear and reappear several metres away (Kroker and Goundry 1990:146, 147, 149). Certain strata are widespread and provide a degree of stratigraphic control, including the railroad fill, plow zone and the double A horizon lying below the plow zone (Kroker and Goundry 1990:147-48).

A deposit characteristic of swamps and standing water (gyttja) was encountered during excavations, suggesting that at one time an active river channel existed in the central portion of the East Yards, and that over time this channel was truncated and became an oxbow resulting in the formation of the deposit. It is likely this low-lying area existed as a slough and then a marshy location for a considerable length of time, probably not being filled in until after the 750 year flood (Kroker and Goundry 1990:163).

Railway period (1888–1988)
One of the first documented modifications made to the site by the railway is the grading, leveling and graveling of the area in order to raise the ground level by about four feet (Guinn 1980b:140). While cinder fill associated with the railway is found throughout The Forks, no evidence of the

initial gravel fill was discovered during the course of the project. It is assumed that most of this activity must have occurred at the north end of the site between the car repair shop and roundhouse (B & B Building) and the rail terminal at Main and Pioneer. Evidence for the graveling and installation of cobblestone platforms adjacent to the location of the former warehouses was observed in the northern impact zone and likely occurred between 1908 and 1912 (Kroker and Goundry 1990:155).

The uppermost stratum consists of cinders and clinkers, residue from the coal-fired steam locomotives and stationary steam plant. By using cinders as landfill material the railroad companies were able to address three separate issues: elevate the land surface, provide adequate drainage and efficiently dispose of large quantities of spent coal. The grey ash horizon which occurs above the highest natural soil level and below the cinder fill is identified as being associated with the Winnipeg Dump Site No. 1 containing residue from household coal or wood furnaces with other discarded objects being incorporated (Kroker and Goundry 1990:155).

Industrial and immigration period (1870–1888)
Little evidence of activities related to the industrial and immigration period were observed, possibly due to the fact that these structures and activities were located adjacent to the riverbank areas. The boardwalk feature located along the Johnston Trench impact zone was probably constructed and utilized during this period and may have served as a pedestrian route to the Hudson's Bay Company flour mill or immigration sheds (Kroker and Goundry 1990:156).

The parking lot of 77 Main Street is located in the area of the previous Hudson's Bay Company liquor store. A bridge across the Assiniboine River at Main Street bridge was constructed in 1880 and a bridgeman's house built on the north bank of the river between the liquor store and bridge. Excavations in the parking lot revealed a cellar-like depression that may be related to that structure. Also uncovered in this location was a thick deposit of both ceramic and glass containers which are believed to be associated with the Hudson's Bay Company liquor store and the later garbage dump. The land was subdivided in 1927 and occupied by various commercial businesses, including automotive service companies which may be the origin of various automotive related artifacts within the gravel fill underlying the asphalt of the parking lot (Kroker and Goundry 1990:157, 158).

Contact and transition periods (1737–1870)
The most prevalent feature of the contact and transition periods was the buried plow zone relating to the Hudson's Bay Company experimental farm (1836-1848). This feature was observed at several locations along Long Trench and at one location near the bus turnaround in front of the Manitoba Children's Museum. A manure layer at Johnston Water 457E suggests a relationship with the experimental farm Period as well (Kroker and Goundry 1990:160).

Native ceramic period (A.D. 0–1737)
Ten localities yielded ceramic artifacts including specimens identified as Blackduck or Bird Lake. Two carbon dates were obtained: one dated to A.D. 1300 was associated with the Bird Lake ceramics; the other was dated to A.D. 1080 and found within a horizon assumed to correspond to the two Late Woodland ceramic occupations located near the Johnston Terminal. Many of the other locations observed probably fall within the same time period (Kroker and Goundry 1990:161).

Archaic Period (6000 B.C.–A.D. 0)
Based on the depth of deposit, stratigraphic context and cultural assemblages, ten separate locations are thought to relate to the Archaic Period. Radiocarbon dates were obtained from two of the Archaic cultural horizons. A date of 900 B.C. was obtained at the River Cut and a date of 380 B.C. was obtained from a hearth at Stable Sewer 487S (Kroker and Goundry 1990:162). While there was insufficient organic remains to provide a radiocarbon date, the depths of the two hearth discoveries at Stable Sewer 521S (600 cm) and the sewer control excavation (580 cm) are estimated to relate to approximately 6000 years ago. The estimates for these deposits are calculated based upon their depth below horizons dated to 3000 years B.P. and assuming a rate of deposition of about 100 cm per 1000 years; a rate that has been demonstrated in more recent periods (Kroker and Goundry 1990:162). The spacing between the occupation loci along Long Trench could suggest that campsites were placed at the periphery of a hypothesized oxbow located in the central portion of the East Yards (Kroker and Goundry 1990:163).

B & B Building foundation inspection, 1988
March 1–4, 1988
An inspection of the foundations of the B & B Building was carried out in conjunction with its proposed redevelopment. Four excavations using a backhoe were placed adjacent to the building to assess the structural stability of the foundation. This activity was monitored for cultural resource impact by Sid Kroker for The Forks Renewal Corporation. The objective of the monitoring was to ascertain the presence or absence of cultural horizons during excavations adjacent to the B & B Building.

The investigations indicated that only minimal subsurface excavation occurred during the construction of the foundations of the building. The original foundation excavations were approximately one metre deep and did not extend very far laterally from the actual placement of the footings. No occupation layers were encountered and much of the excavation occurred in fill deposits (Kroker 1989:4, 7).

Proposed York and St. Mary avenues extension, 1989
July 4–August 31, 1989

As part of the research design for the archaeological impact assessment for the proposed extension of York and St. Mary avenues between Main Street and the Provencher Bridge, five trenches within the two extension corridors between the CNR main line embankment and Pioneer Boulevard were excavated and examined by Quaternary Consultants Ltd. (1990d:1). The objective was to ascertain the presence or absence of heritage resources which may be impacted by the proposed development and recommend appropriate mitigative procedures.

Geo-technical soil test drill holes (5 inch diameter) were placed at various locations between the CNR main line embankment and Main Street. Information revealed through the drilling program were minimal due to the small diameter of the bit. Railroad fill formed the upper ca. 73 - 142 cm, followed by disturbed silt over a plow zone or layer of manure. This overlies a series of relict soil horizons separated by bands of riverine-deposited silts and clays. Pre-contact horizons were located at 117, 137, 139, 147, 167, 217 and possibly 345 cm below surface (Quaternary Consultants Ltd. 1990d:5).

Assiniboine riverfront quay (Forks historic port), 1989
June 28–August 1, 1989
December 3, 1990–March 31, 1991
Monitoring of excavation for the construction of the Assiniboine quay at The Forks (now known as Forks Historic Port) was carried out by Sid Kroker for The Forks Renewal Corporation. The area comprises the north bank of the Assiniboine River between the low line bridge and the high line railway bridge extending north from the river to the edge of the previously monitored Forks market plaza. The objective was to recover diagnostic historic artifacts from the upper “dump” horizon, maintain constant monitoring of pre-contact sediments and perform mitigative actions as required.

The methods employed included the visual examination of the entire excavation procedure and the retrieval of diagnostic historic artifacts. As the soils were hauled offsite there was limited opportunity available for artifact recognition and recovery, and only diagnostic historic materials were recovered. The mitigative excavation for large pre-contact deposits was carried out in situ while smaller deposits were removed in a block for controlled excavation at the side of the excavation area (Kroker and Goundry 1993:11-12).

Evidence of various types of post-contact utilization was found throughout the construction zone. This was primarily railway related and the result of secondary deposition of waste materials since the beginning of the 20th century. The presence of pre-contact cultural horizons within the impact zone resulted in mitigative actions at five locations (Kroker and Goundry 1993:i).

Stratigraphy

Upper horizons were generally found to be about one metre thick on the upper bank and up to three metres thick on the lower terrace, and contained artifacts of the post-fur trade period which were mainly railway related. Large deposits of container artifacts are interpreted to be the result of the Winnipeg Dump No. 1 being located nearby. A number of ceramics associated with either the Canadian Northern or Grand Trunk Pacific Railroad were found in the northwest portion of the impact zone adjacent to the location of the former spur line along the upper bank (Kroker and Goundry 1993:159, 160).

The lower horizons contained small discontinuous pre-contact occupation sites dating to the Archaic Period (Kroker and Goundry 1993:159). A radiocarbon sample taken from the central bank location in the lower section of a thick sand stratum 1.5 m below surface and 0.65 m below the railroad fill was tested and determined to be about 750 years old, dating to the period of the massive flood that deposited this sand layer about A.D. 1200. This layer is as much as 100 cm thick in some locations and is one of the few layers that can be recognized to occur throughout The Forks, providing a useful temporal marker (Kroker and Goundry 1993:166).

Evidence recovered from the upper of the two Archaic occupation layers shows it to have been a short period spring or early summer occupation around 300 B.C., near the end of the Archaic Period (Kroker and Goundry 1993:167). The lower occupation loci may all be components of the extensive Archaic horizon first located during the North Assiniboine node assessment and Stage I project which indicated this horizon covered a large area. The lithic assemblages from the North Assiniboine node assessment and from the four loci identified in this project are eclectic. The lithic materials are derived from several source areas, and were in part responsible for the hypothesis that the Archaic horizon represents a recurring presence and The Forks was a meeting place where trade activity took place (Kroker and Goundry 1993:168).

Paddlewheel riverboats trench, 1989
September 5–November 30, 1989
Quaternary Consultants Ltd. was contracted to monitor the excavation of a stability trench for Paddlewheel Riverboats Ltd. in conjunction with the construction of docking facilities in the area immediately south of the Provencher Bridge. The objective was to:

- ascertain the presence or absence of heritage resources;
- determine the depth of recent fill;
- recover any pre-1900 artifacts present; and,
- determine the soil strata below the fill.

The methods proposed included the onsite monitoring of excavation operations and recovery of diagnostic artifacts. The report on the project consisted of a memo, and only fill related to the railway and building products companies occupations was encountered.

St. Mary Avenue extension assessment, 1990
May 14–June 15, 1990
A permit was granted to Quaternary Consultants Ltd. to carry out subsurface testing of the proposed route of St. Mary Avenue from the east side of the high line to Pioneer Boulevard using a backhoe. The testing was part of the research design for the archaeological impact assessment for the extension of York and St. Mary avenues between Main Street and the Provencher Bridge. Nine trenches (another five had been examined previously) within the two extension corridors between the CNR main line embankment and Pioneer Boulevard were excavated and examined (Quaternary Consultants Ltd. 1990c:1). The objective was to ascertain the presence or absence of heritage resources and to determine the extent of the cultural deposit first identified during a heritage resource impact assessment conducted in 1988.

Two sequential pre-contact cultural horizons identified as Late Woodland and Blackduck were discovered within the St. Mary Avenue extension right-of-way and considered to be significant. It was determined these archaeological strata would be impacted by construction of the roadbed and the water and sewer installations (Quaternary Consultants Ltd. 1990c:1).

Manitoba universities archaeological field school, 1990
May 22–June 29, 1990
A permit was granted to Dr. Gregory G. Monks to carry out archaeological test excavations of a 36 m^2 block area north of the low line bridge and adjacent to trench 5 of the 1988 Fort Gibraltar II project. This was to be the field component of the joint University of Manitoba/University of Winnipeg archaeological field school, focusing on locating Fort Gibraltar II/Fort Garry while also testing for pre-contact occupations. The area was inaccessible in 1988 due to active railway tracks and is thought to contain central areas of Fort Gibraltar II/Fort Garry. Testing in 1988 revealed a cellar containing fill dating to the early 1830s. The 1990 testing was to try to determine the feature's possible association with the fort. It was proposed that approximately 36 m^2 be opened simultaneously at a location immediately west of the cellar discovered in 1988, and that the area be troweled and screened in one by one metre units following a combination of natural strata and arbitrary levels. No report on the project was submitted to the permitting authority and the results of the project or even if it was carried out are unknown.

St. Mary archaeological recovery project, 1990
September 13–October 8, 1990
Quaternary Consultants Ltd. carried out a controlled mitigative excavation of a Late Woodland ceramic occupation lying within a 1000 to 1200 m^2 area in the right-of-way of the proposed route of St. Mary Avenue on the east side of the high line west of Pioneer Boulevard. The objective was to recover as much artifact material and archaeological information as possible as it was believed that the material would be lost due to the development of the extended roadway. The

project was conceived as a two-phase project. It appears the second phase was not carried out.

During a previous archaeological impact assessment for the extension of York and St. Mary avenues, 14 trenches within the two corridors between the CNR main line embankment and Pioneer Boulevard were excavated and examined. At that time, two sequential pre-contact cultural horizons identified as Late Woodland and Blackduck were discovered within the St. Mary Avenue extension right-of-way and were considered significant. An apparently continuous upper cultural horizon was present approximately one metre below the surface level and occupied an area of approximately 1000 m^2. A Blackduck layer was found 75 cm below the upper horizon (Quaternary Consultants Ltd. 1990a:1-4).

The mitigative excavation area covered approximately 220 m^2 (Quaternary Consultants Ltd. 1990a:6). The upper pre-contact layer was about 16 cm thick and occurs at approximate 95 cm below surface (Quaternary Consultants Ltd. 1990a:18). A portion of the site area had been previously disturbed by an intrusive foundation trench related to CNR Freight Shed No. 2 (Quaternary Consultants Ltd. 1990a:13).

South point archaeological impact assessment, Norwood/Main Street Bridge project, 1990
October 9–31, 1990
A heritage resource impact assessment of the proposed right-of-way at the south point locality of The Forks was carried out by Quaternary Consultants Ltd. The project was undertaken in conjunction with the proposed Main Street and Norwood Bridges project. The objective was to ascertain the presence or absence of heritage resources. Investigations consisted of a series of four backhoe trenches to the east of Main Street. Trenches were cut using a backhoe with a 24 inch bucket removing soil layers in five to ten cm increments. The trenches ranged in length from 5.5 to eight metres and depths from 265 to 318 cm were reached (Quaternary Consultants Ltd. 1990b:1-5).

A preliminary archaeological inspection of the area undertaken in 1989 found evidence of early historic occupation horizons on the south bank of the Assiniboine River. No evidence of pre-contact resources were observed during the inspection (Quaternary Consultants Ltd. 1990b:38).

Public archaeology, Forks archaeological reserve, 1992–1993
July 13–October 15, 1992, July 29–October 8, 1993
An investigation of the Archaic component of The Forks Renewal Corporation Archaeological Preserve was undertaken as a public archaeology project by The Forks Public Archaeology Association during two consecutive seasons. The objectives were:

- to provide an archaeological experience for members of the general public, school students

and visiting tourists;
- to expand the research on the 3000-year-old Archaic occupation site; and,
- to test the hypothesis that the site is a trade centre.

The methods employed included:
- the hand excavation of gridded units by participants under the close supervision of professional archaeologists;
- laboratory preparation of recovered artifacts under the supervision of professional archaeologists;
- computer cataloguing of recovered artifacts; and,
- the generation of a detailed analysis of recoveries by qualified researchers.

Forty-two square metres were excavated in 1992 and in 1993 28 square metres were excavated. Two archaeological horizons, both relating to the Archaic Period, were encountered and tentatively dated to 2200 and 3000 years B.P. (Kroker and Goundry, comp. 1993:i). The railroad period fill was recorded to have a depth of from 0.80 to 1.25 metres (Kroker and Goundry, comp. 1993:14). Previous impacts to the two Archaic horizons resulted from the installation of wooden pilings associated with the Hudson's Bay Company mill complex (Kroker and Goundry, comp. 1993:32, 34).

The range of recoveries shed light on the past environment and lifeways of the peoples who met, traded, fished and hunted at the site. Diagnostic projectile points suggest that three different groups were present and had access to lithic materials from Manitoba, North Dakota, the Lake Superior region and Texas (Quaternary Consultants Ltd. 1994b:i).

B & B Building archaeological monitoring, 1992

July 20–October 30, 1992

An engineering inspection of the foundation and the stability of the surrounding soil was undertaken at the B & B Building in conjunction with its proposed redevelopment. A heritage resource impact assessment and monitoring of these activities was carried out by Quaternary Consultants Ltd. The objective was to determine the presence or absence of cultural resources within the impact zone. Four holes were excavated by backhoe to expose the foundations and footings, and a series of 4.5 inch auger holes were opened to test the soils (Quaternary Consultants Ltd. 1992:1). The auger tests provided minimal information due to soil distortion and mixing resulting from the action of the auger. Only soil horizons more than three cm thick can be observed with this method (Quaternary Consultants Ltd. 1992:2).

A pre-contact cultural horizon was encountered in one backhoe excavation and ceramic artifacts recovered are estimated to be 400 to 800 years old. Evidence of the plow zone related to the Hudson's Bay Company experimental farm was encountered at 38 to 72 cm below surface

(Quaternary Consultants Ltd. 1992:2, 6).

It was found that there had been only minimal subsurface disturbance during the original construction of the B & B Building as excavations had not extended very far laterally from the actual placement of the footings. Excavation of about one metre of upper sediments would have occurred during the construction of the medial mechanics pits and eliminated any fur trade period strata within these trenches (Quaternary Consultants Ltd. 1992:10).

Johnston Terminal refurbishment, 1992
September 25–30, 1992
The mitigation of impact to heritage resources resulting from activities related to the construction of the elevator shaft (an area of about 8 m^2) on the west face of the Johnston Terminal Building was carried out by Quaternary Consultants Ltd. The objective was to record and remove a cultural horizon associated with a 3000-year-old Archaic horizon previously recorded in the vicinity. The methods employed included the water screening of hand-excavated soils from grid units.

The archaeological horizon was encountered during initial excavation for the north elevator sub-shaft. Mitigative excavation was undertaken within the impact area encompassing the south elevator sub-shaft and the machine room area between the two shafts (Quaternary Consultants Ltd. 1993a:1).

During the excavation associated with the elevator shaft, an inspection of the original wood pilings supporting the building was carried out. It was determined they had deteriorated and underpinning was needed. As a result of this inspection, 54 excavations were examined by the senior archaeologist and no evidence of cultural deposits was observed (Quaternary Consultants Ltd. 1993a:34).

Two hearths were recorded during the excavation. The location is interpreted as a specific activity area within the larger Archaic campsite and trade centre that have been investigated through other projects such as the north assiniboine node impact assessment; the Stage I construction monitoring program; the assiniboine riverfront quay monitoring program; and the 1992 public archaeology program. The estimated size of the Archaic horizon is 2500 m^2 (Quaternary Consultants Ltd. 1993a:32).

The stratigraphy consists of railroad fill overlying undisturbed riverine sediments. The cultural horizon occurs at a depth of 3.54 metres below the main floor level of the Johnston Terminal (Quaternary Consultants Ltd. 1993a:5). The thinness of the organic strata below the Archaic horizon suggests there was frequent flooding during the period prior to 3000 years ago

(Quaternary Consultants Ltd. 1993a:35). The discontinuity of these relict horizons suggests that flood-related activities such as erosion and ice-scouring often eradicated portions of the soil horizon which had developed since the previous flood (Quaternary Consultants Ltd. 1993a:35).

Heritage plaza (cobblestone roundabout and Oodena-Celebration Circle) project 1993, 1995
June 14, 1993, July 6–23, 1993, August 4–September 15, 1993, July 26–December 30, 1995
An archaeological resource management program was undertaken by Quaternary Consultants Ltd. as part of the development of The Forks heritage plaza. The Forks heritage plaza consists of a cobblestone courtyard and traffic area (cobblestone roundabout) in its northern portion and a shallow, bowl-shaped performance space and naked eye observatory (Oodena-Celebration Circle) to the south, and includes subsurface components. The program consisted of three monitoring components and an impact assessment including:

- the monitoring of soil test augering at nine locations between the Johnston Terminal, B & B Building and the low line bridge;
- the monitoring of the augering of a manhole and lamp standard bore holes in the northern portion of the plaza; and,
- the continual monitoring of the installation of a land drainage sewer line from the B & B Building to the manhole near the centre of the proposed bowl.

No cultural material was encountered during the soil test augering or the augering in the northern portion of the plaza, though a deposit of bison bone was recovered.

The impact assessment consisted of mechanized excavation of two trenches in the southern portion of the plaza, each 30 metres long perpendicular to each other and crossing at the centre of the bowl. Recent disturbance relating to railroad installations of water and sewer lines were encountered in portions of the impact zone. In the undisturbed areas, the soil strata were intact and represented three distinct historic periods: the Railroad Period (1888-1988); the Railroad Development Period (1885-99); and the Hudson's Bay Company experimental farm period (1836-48). No evidence of pre-contact occupations was encountered in the assessment trenches indicating that the extensive occupation sites (such as the Archaic horizon) observed elsewhere in the area do not extend into this location. It was noted that the absence of archaeological material does not preclude the presence of small occupation sites or activity areas associated with the archaeological horizons that are known to occur on the periphery of the construction area.

Six of the soil test holes were drilled to a depth of three metres, two to nine metres and one to refusal at 15.2 metres. Some relict soil horizons were detected. Railroad period fill extended from 1.1 to 1.5 m with another disturbed area found to extend to a depth of 2.2 m (Quaternary Consultants Ltd. 1993b:3-5). A rubber mounted backhoe with a modified 18 inch bucket was used for the assessment excavation to remove soils in five cm levels. Auger drilling for the manhole was unmonitored but is said to have occurred entirely within recent infill material. Five

lamp standard placements were drilled to a depth of eight feet with a ten inch diameter bore. Fill deposits were found to extend to an average depth of 1.2 metres. The land drainage line for the Oodena-Celebration Circle replaced an existing combined sewer line in the same path. A small bone deposit was found and interpreted as being associated with a late pre-contact event (Quaternary Consultants Ltd. 1993b:24, 25).

A pre-1988 disturbance was noted when the assessment trenches encountered locations of recent fill below the cinder and gravel layers possibly related to the laying of sub-surface water pipelines (Quaternary Consultants Ltd. 1993b:21). A 1962 utilities map indicated the location of oil tanks at the eastern edge of the Oodena-Celebration Circle. In 1988 these tanks were removed and two pre-contact cultural strata were recorded within the severely diesel fuel-stained soil at 254 cm and 286 cm below surface (Quaternary Consultants Ltd. 1993b:23).

Manitoba Children's Museum services installation, 1993
August 3–September 30, 1993
An archaeological resource monitoring program was undertaken by Quaternary Consultants Ltd. as part of the installation of services for the Manitoba Children's Museum. The project had 11 components including: water service; two hydrants; sanitary sewer; three catchbasins; a land drainage sewer line; and underground hydro services to the B & B Building and Parks Canada Orientation Node (Quaternary Consultants Ltd. 1994a:i).

Cultural material was encountered at 14 locations during the monitoring. Nine locations were interpreted as representative of post-contact period activities, one location related to activities adjacent to Fort Gibraltar I (1810-16), three related to the period of the immigration sheds (1872-85), and five were related to railroad period activities (1888-1988). Five pre-contact locations were recorded, of which three are interpreted as Late Woodland Period occupations (A.D. 500-1737). The remaining two represent natural deposition of faunal remains through river flooding activities. None of the recoveries were extensive (Quaternary Consultants Ltd. 1994a:i).

The most significant recoveries are the brick foundations of the former roundhouse at the north end of the B & B Building, the midden relating to the occupation of the immigration sheds and a small previously disturbed pre-contact occupation site (Quaternary Consultants Ltd. 1994a:i).

The northern extension of the land drainage sewer was excavated to a depth of over six metres. Examination of the strata at that depth was limited to what could be observed from a sewer cage. Abandoned steam heat piping encased in a wood and concrete framework was encountered during excavation of the sanitary sewer extension (Quaternary Consultants Ltd. 1994a:5). During excavation of the centre catchbasin component of the new land drainage system, a continuous pre-contact artifact-bearing horizon was observed at 198 cm below surface and a thin

discontinuous horizon was present at 208 cm (Quaternary Consultants Ltd. 1994a:8). The southwest land drainage sewer line excavation consisted of combined open trench and horizontal boring (Quaternary Consultants Ltd. 1994a:9).

The hydro installations began at the end of the existing subsurface lines near the overflow parking and continued in a wide curve to the transformer near the Parks Canada interpretive centre. The trenching was carried out to a depth of two metres for hydro lines while the manholes were excavated to three metres. Railroad fill extended to a depth of 120 cm in the west trench and 50 cm in the east trench (Quaternary Consultants Ltd. 1994a:10). Butchered mammal bones were interpreted as being related to the Fort Gibraltar I Period (Quaternary Consultants Ltd. 1994a:11-12). A midden deposit below the railway fill ca. 155 cm below surface is interpreted as relating to the immigration shed and shanty town period (1872-1885) (Quaternary Consultants Ltd. 1994a:15).

Two relict soil horizons were observed at 195 and 229 cm below surface in the area of the manhole near the Parks Canada property. The upper horizon was interpreted to be Late Woodland based on the depth of the horizon (Quaternary Consultants Ltd. 1994a:15). The railroad fill extended to a depth of 70 cm below surface in the area of the southeast trench and relict soil horizons were encountered at 100, 152 and 168 cm (Quaternary Consultants Ltd. 1994a:16).

Travel Manitoba Idea (Explore Manitoba) Centre, 1993

Quaternary Consultants Ltd. was employed to monitor the excavation of several small areas within the Travel Manitoba Idea (Explore Manitoba) Centre building site. The objective was to record the stratigraphic profile, the nature and extent of any heritage resources that may be present and to undertake their mitigative recovery if found. The methods proposed include the visual inspection of excavated soils and wall profiles, and the hand recovery of historic resources prior to and during mechanized excavation.

It was revealed during monitoring of the Stage I construction that five archaeological strata were present in the vicinity of the Travel Manitoba Idea (Explore Manitoba) Centre ranging in depth from 150 - 280 cm. To minimize impact to these occupation layers, the building support pilings were driven into place and excavation only occurred at the elevator location in the southwest corner of the building and around the upper portions of the piles for the pouring of the foundation (Quaternary Consultants Ltd. 1994d:1).

During the construction, an archaeological horizon containing pre-contact ceramics was encountered adjacent to the north of the Johnston Terminal within a black, charcoal-rich soil layer at a depth of 45 cm below the cinder fill. It appeared that the cultural deposit was largely

eradicated by the construction of the building in 1928. The mitigative excavations for this horizon were limited to an area approximately two metres square (Quaternary Consultants Ltd. 1994d:1). The small recovery area and non-diagnostic nature of the artifacts did not allow for much interpretation of the occupation, though a Late Woodland Period occupation by a plains culture group is suggested. The location may have been a minor refuse deposit area at the periphery of the occupation area (Quaternary Consultants Ltd. 1994d:11).

Main/Norwood project, 1994
July 5–30, 1994, August 8–31, 1994
A heritage resource management program was undertaken by Quaternary Consultants Ltd. in three areas affected by components of the Main/Norwood project. The program consisted of two impact assessments and one construction monitoring though only the two assessments took place in the vicinity of The Forks at the south point. These two assessments consisted of an archaeological investigation of the area between the Red River and the existing railroad embankment to the west of Main Street, and the investigation of sub-surface resources in and adjacent to the Fort Garry Curling Club (Quaternary Consultants Ltd. 1994c:i).

The assessment of the area affected by the CN grade separation relocation was investigated in three backhoe trenches 18 inches wide excavated to depths of 3.2 metres. No evidence of pre-contact Aboriginal or fur trade occupations were encountered. All recovered artifacts date later than 1880 (Quaternary Consultants Ltd. 1994c:i). Recent deposits were found to be two to 2.5 m deep. No evidence of pre-contact occupations within the impact zone were found though an archaeological site was previously identified on the north side of the railroad embankment and remains associated with this occupation may still be present (Quaternary Consultants Ltd. 1994c:28).

For the assessment of the curling club, a two-man gasoline powered auger with a 6 inch bit was used to test below the interior of the club, while soil probes and test excavations were used outside the building for comparative purposes (Quaternary Consultants Ltd. 1994c:32). Only minimal evidence of activities prior to the construction of the elevated railroad tracks were found (Quaternary Consultants Ltd. 1994c:i). Historical maps had indicated that structures may have once stood in the area of impact in the mid-19th century (Quaternary Consultants Ltd. 1994c:30). The investigations revealed a manure layer which may be associated with the Arctic Ice Company operation or a residence located east of Main Street between 1884 and 1905 (Quaternary Consultants Ltd. 1994c:44).

CN Rail overpass reconstruction, 1994–1995
September 20–December 31, 1994, April 7–May 31, 1995
A permit was granted to Quaternary Consultants Ltd. to monitor the construction activities

related to the rail relocation components of the Main Street and Norwood Bridges project at the south point of The Forks. The objective of the monitoring was to determine the presence or absence of heritage resources excavated within localized impact areas and record or mitigate if necessary. The methods included the visual observation of strata and hand retrieval of artifacts.

The development of the Main and Norwood bridges required a southward relocation of the elevated Canadian National main line where it crosses Main Street. Construction activities included:

- a general lowering of the elevation in the immediate construction area east of Main Street;
- the sloping of the high ground to the east of the construction area;
- the continuous excavation for the retaining wall west of Main Street; and,
- localized excavation for pier construction.

The primary impact locations on the east side of Main Street extended for about 100 metres. Previous investigations in the area indicated a considerable depth of recent (post-1880) deposits, most of which were redeposited after construction of the railroad track embankments (Quaternary Consultants Ltd. 1995c:1, 3).

The upper horizons consisted of 20th century deposits including soil fill, coal cinders, structural debris and garbage dumps. A leather coat believed to be related to the homestead period (1860s to 1880s) was located at the eastern edge of the excavations on the east side of Main Street. Two earlier archaeological horizons were encountered on the west side of Main Street and tentatively identified as relating to the protohistoric period.

Large backhoes were employed in the excavation and the soil was trucked off site. Monitoring consisted of the visual inspection of the excavation face and the hand retrieval of artifacts from historic fill layers with a focus on diagnostic artifacts.

The stratigraphy consists of several layers of recent deposits overlaying original pre-railroad sediments. Much of the recent material on the east side of Main Street derives from dumping of waste materials in the area between the current CNR main line and the original rail bed. The pre-railroad period surface was marked by wood debris and sawdust. It is suggested the wood debris is related to the demolition of the Arctic Ice Company warehouse and the sawdust used to insulate the ice contained in the warehouse (Quaternary Consultants Ltd. 1995c:10).

Earlier horizons tend to rise to the north and west suggesting that the periodic flooding did not result in the development of a levee but rather smoothed the bank area (Quaternary Consultants Ltd. 1995c:10). A localized manure deposit included a commercially manufactured coat and several pieces of milled lumber. It was found to pre-date the 1882 flood and is suggested to post-date the 1861 flood (Quaternary Consultants Ltd. 1995c:12).

Johnston Terminal access ramp monitoring, 1995
April 18–21, 1995
The monitoring of six augered pile holes for the construction of a wheelchair ramp on the southwest side of the Travel Manitoba Idea (Explore Manitoba) Centre was carried by Quaternary Consultants Ltd. The objective was to determine the presence or absence of archaeological strata and recover any diagnostic artifacts present. The auger holes were 16 inches in diameter and nine metres deep within an area measuring ten by three metres. While archaeological horizons are known to occur in the immediate vicinity no evidence of any were encountered. Fifty to 60 cm of railway period fill were encountered immediately below the concrete surface of the plaza. Below the fill layer were alternating strata of sand, sandy silt, silt, silty clay and clay with no defined relict soil horizons observed. It appears that none of the archaeological strata previously recorded in nearby areas extend into this location (Quaternary Consultants Ltd. 1995d:1).

Portage East impact assessment, 1995
July 18–31, 1995, August 1–15, 1995
A heritage resource impact assessment within the limits of three sections of the crawl space of the proposed arena at the Portage East site was conducted by Quaternary Consultants Ltd. in order to determine the presence of soil strata containing pre-industrial cultural materials, assess their significance and recommend mitigation as required.

The area under investigation encompassed the current location of the CanWest Global Park north of Pioneer Avenue and south of the elevated CNR track. While most of the facility was to be constructed above ground, some excavation was anticipated for crawl spaces associated with mechanical and electrical services and assessment focused on these areas. It had been shown in geo-technical studies that the southern arc of the crawl space zone had the greatest depths of riverine deposits with archaeological potential. One hundred and sixty-eight metres of trenches were excavated within the impact zone (Quaternary Consultants Ltd. 1996f:i).

The upper strata consisted of gravel, cinder and clay fill related to land modifications since 1975 (Quaternary Consultants Ltd. 1996f:i). A cinder layer believed to be associated with railway activity along the spur line track parallel to Thistle Lane was encountered (Quaternary Consultants Ltd. 1996f:5). Other layers consisting of loam and sawdust were found to contain artifacts from the period of residential and business activity in the area after 1880, and the basements of two former buildings identified as 89 and 91 Pioneer Avenue were also encountered (Quaternary Consultants Ltd. 1996f:i).

Two relict soil zones separated by 20 to 50 cm were found about two metres below surface within the majority of the impact assessment trenches. The upper zone averages 1.5 cm thick and

the lower zone is consistently 0.5 cm in thickness. The extent of these thin layers was considered unusual as it had previously been observed that very few strata extend for a distance of greater than ten metres due to the natural variations in sediment deposition and soil erosion during flood events at The Forks. The consistency and continuity of these layers suggests the location was not subject to the severe soil erosion that appears to have affected many other deposits in the area (Quaternary Consultants Ltd. 1996f:5).

What had been described as a moderately extensive protohistoric archaeological horizon was encountered in the southwest part of the impact zone. The presence of copper in the assemblage, which also included stone tools and debitage, ceramics and faunal remains, led to the speculation that the site occupants had contact with European trade goods and a date of about A.D. 1650 to 1730 was proposed. The occupation has since been reinterpreted as having occurred within the pre-contact period dating to ca. A.D. 1285 (Quaternary Consultants Ltd. 2000d:114). The layer was reinvestigated in 1999 in association with the mitigation of the CanWest Global Park construction and a radiocarbon date of 675 +/- 60 years B.P. and 655 +/- 55 years B.P. was obtained from material recovered from what is believed to be the same occupation layer encountered during The Forks access project in 1997 (Quaternary Consultants Ltd. 1999a, Quaternary Consultants Ltd. 1996f:i).

Heritage plaza (cobblestone roundabout and Oodena-Celebration Circle) monitoring, 1995
July 26–December 30, 1995
The monitoring of the excavation of The Forks heritage plaza was carried out by Quaternary Consultants Ltd. The development entailed excavation of a central ceremonial bowl in the area between the Johnston Terminal and Manitoba Children's Museum. Other components of the project with potential for impacting upon subsurface resources included:

- the pre-boring for piling installation;
- excavations for the armature footings for the naked eye observatory; and,
- an extension of the land drainage system into The Forks Archaeological Preserve (Quaternary Consultants Ltd. 1996b:i).

A number of archaeological horizons had previously been recorded on the periphery of the proposed plaza but no significant resources were located during an archaeological impact assessment conducted in 1993. As a result it was determined that none of the known pre-contact archaeological cultural horizons extended into the impact zone. This included the ceramic horizons previously encountered at the North Point node and near the Johnston Terminal, and the edges of the Archaic horizon found in The Forks Archaeological Preserve. No evidence of Fort Gibraltar II/Fort Garry I was found, suggesting it may have been positioned closer to the bank of the Assiniboine River south of the heritage plaza. Evidence of fur trade period activities was minimal and consisted primarily of subsurface soil horizons which possibly relate to

horticultural practices associated with the Hudson's Bay Company experimental farm or subsequent private farm operations (Quaternary Consultants Ltd. 1996b:i).

Each of the eight armatures rest on footings anchored by three or four piles, the seats for which were drilled with a nine inch auger to a minimum depth of five metres and in most cases eight or ten metres. The excavations for footings for the armatures were done with a backhoe and rarely extended below the railway fill layer. The base of excavations in the centre of the bowl was two metres below existing grade and, given the sloping sides of the bowl, only the central portion of the excavation extended below the railway fill layer which averaged 110 cm in depth. The excavation of the bowl was carried out with a large backhoe and all soil was trucked offsite. Approximately one quarter of the bowl was excavated before the archaeologist was notified. The drainage system was installed by subsurface boring from the western catchbasin located within the archaeological preserve west of the heritage plaza, and an intermediate vertical shaft was required between the archaeological preserve and the heritage plaza. Excavations for the installation of the drainage system extended below the potential Archaic layer (Quaternary Consultants Ltd. 1996b:3).

Several prior impacts were encountered within the excavation area. An abandoned combined sewer line and former watermain had crossed the western portion of the bowl. The discovery of these service installations were not expected at the locations they were found and confirmed there are inaccuracies in the information available about the location of underground services (Quaternary Consultants Ltd. 1996b:10).

Three relict soil horizons were encountered during the excavation at the base of the bowl. Slight traces of charcoal were present but there was no evidence of cultural material or faunal remains (Quaternary Consultants Ltd. 1996b:12). The railway fill layer was relatively free of artifacts and while most recovered artifacts are from the railway period, it is doubtful if any are the result of primary deposition. It was noted that during the railway period public access was minimal. A series of tracks ran through the impact area and the Hudson's Bay Company track warehouse was also located there until its demolition in 1911 (Quaternary Consultants Ltd. 1996b:22). Five buildings related to the Hudson's Bay Company experimental farm complex, which operated during the period 1836-41 and continued to be worked privately until 1847, were situated north of where the B & B Building stands. Traces of the plow zone believed to be associated with this period were found (Quaternary Consultants Ltd. 1996b:22).

No evidence for a pre-contact occupation was observed during any of the excavations. It appears that the several occupational horizons encountered during the 1988 Parks Canada excavations in the adjacent North Point area do not reach the excavation area for the deeper parts of the ceremonial bowl. It is possible this area was a less desirable location than the area nearer the

riverbank. It is suggested the levee at the riverbank would have provided better drainage and visibility along the river and access to breezes that may have made the North Point area a preferable camping location (Quaternary Consultants Ltd. 1996b:23).

The lack of archaeological strata in the area of excavation may also be due to earlier land modification activities carried out by the Northern Pacific and Manitoba Railroad. These actions may have removed much of the evidence of the fur trade period from the probable location of Fort Gibraltar II/Fort Garry I immediately south of the bowl. Erosion from previous flood episodes may have also contributed to the lack of cultural resources (Quaternary Consultants Ltd. 1996b:23).

Northbound Norwood Bridge construction, 1995
August 1–October 31, 1995
The archaeological monitoring of the construction activities related to the north and south abutments for the Norwood Bridge project was carried out by Quaternary Consultants Ltd. Only the abutment on the north side of the river was in the area of The Forks on the south point. All mechanized excavation was monitored, stratigraphic profiles recorded and diagnostic artifacts collected. Excavations consisted of the lowering of the elevation in the abutment locations, auger excavations for the placement of caissons and excavations around the caissons for the placement of the abutment foundations. Excavations on the north side of the river also included the removal of the embankment of the old low freightline railroad track and excavation of the riverbank for construction of the north abutment. A stepped series of level working surfaces were excavated by backhoe and the soil trucked offsite. Twenty caissons were drilled to bedrock to provide footings for the abutment foundation. After the concrete caissons were poured the surrounding soil was excavated (Quaternary Consultants Ltd. 1996a:3). These excavations revealed some buried soils and charcoal lenses but all were thin and did not extend for more than one metre in any direction (Quaternary Consultants Ltd. 1996a:10).

Historic deposits were encountered in the upper levels. A small pre-contact occupation horizon, tentatively identified as Blackduck, was excavated adjacent to the river at the north abutment location. A pre-contact secondary cremation burial was present at the bank of the Red River, immediately adjacent to the support caissons for the north abutment which required meticulous excavation and recording (Quaternary Consultants Ltd. 1996a:i). Mitigative excavation of the remaining pre-contact archaeological horizons was done in situ using trowels and following the natural stratigraphy. Artifacts and features were recorded with three-point provenience (Quaternary Consultants Ltd. 1996a:47, 7).

The stratigraphic profile of the excavation area of the north abutment is characterized by sequential layers of very recent fill overlying undisturbed riverine deposits of silt, sand, and clay

(Quaternary Consultants Ltd. 1996a:9). The elevated railroad embankment rises about seven metres above the original ground level (Quaternary Consultants Ltd. 1996a:9). A localized cultural horizon was located about eight metres north of the bank edge and measured about five by three metres in area (Quaternary Consultants Ltd. 1996a:9). Cultural material from this horizon included lithic and ceramic artifacts, charcoal and faunal remains (Quaternary Consultants Ltd. 1996a:21).

Traces of red-orange discoloured soil extending for 180 cm were observed near the original riverbank. A small pocket of fish scales was present and an intermittent black charcoal layer 1.5 to three cm thick overlaid a five cm layer of grey-brown silty clay which rested on the red soil. No association between the charcoal and red soil could be determined. The red deposit was subsequently discovered to be the result of an inhumation and ceremonial fire associated with a secondary cremation burial (Quaternary Consultants Ltd. 1996a:9). The deceased had been buried in the ground and a fire maintained over the grave (Quaternary Consultants Ltd. 1996a:54).

A localized thin and rectangular deposit of charcoal associated with the burial is interpreted as a possible bark, wood or leather container. Pole remains and the bones of an owl were also found in association (Quaternary Consultants Ltd. 1996a:52, 53). The burial is suggested to date to about A.D. 620. Cremation burials have not previously been recorded for the area in an archaeological context though further east they have been recorded at Late Woodland sites containing Blackduck ceramics. The earliest date for Woodland culture cremations is A.D. 130. A Blackduck cultural affiliation is proposed based on the previous identification of Blackduck ceramics from occupation layers within the same time range as is proposed for this burial (Quaternary Consultants Ltd. 1996a:54, 55).

Only a small number of historic artifacts were recovered during mechanized excavations. A large proportion of these are likely related to the Arctic Ice Company ice house which was situated just north of the tracks and demolished in 1905 (Quaternary Consultants Ltd. 1996a:78). The localized pre-contact occupation likely represents the campsite of a small group of people, possibly a single family (Quaternary Consultants Ltd. 1996a:78). Similarities were noted between the ceramic artifacts recovered during this project and those previously recovered west of Main Street though no determination of cultural affiliation has been made. The presence of iron and copper in the assemblage has led to speculation that the occupation relates to the protohistoric period (A.D. 1650 to 1740) though this remains to be confirmed (Quaternary Consultants Ltd. 1996a:80).

Steam plant foundation inspection, 1995
September 8, 1995

In conjunction with the redevelopment of the steam plant for new facilities for the Manitoba Television Network, the wooden pilings under the foundation needed to be inspected. Two 36 inch diameter caissons were drilled to a depth of 3.65 metres adjacent to the north wall of the structure in order to inspect the clusters of piles there. This work was monitored by Quaternary Consultants Ltd. It appeared that some soils had been deposited around the walls of the structure since construction in 1947. No relict soil strata were observed in either hole (Quaternary Consultants Ltd. 1995a:1).

Geo-technical investigations for the proposed Manitoba Theatre for Young People, 1995
October 10–30, 1995
A geo-technical investigation carried out in conjunction with the preparation for development of the Manitoba Theatre for Young People was monitored by Quaternary Consultants Ltd. Six holes were drilled to various depths within the proposed footprint of the structure at the northeast corner of Pioneer Boulevard and Forks Market Road. Four holes were drilled to a depth of 20 feet and two were drilled into the underlying glacial till using a 6 inch bit (Quaternary Consultants Ltd. 1995b:1).

The method of investigation for the upper six metres was continuous coring whereby the operator drills a five-foot section of the auger bit into the ground and then extracts it for observation of the soil column. This method tends to smear the soil column and only thick soil layers are readily observable. A split spoon sampler which results in an undisturbed soil column was used at depths below six metres and for the entire depth of one of the holes (Quaternary Consultants Ltd. 1995b:1).

During activities associated with the Stage I construction project (Kroker and Goundry 1990), most of the railroad cinder level was removed from the parking lot area and replaced with an approximately equal amount of gravel and asphalt. No evidence of the cinder horizon was encountered below the surface layers of asphalt and gravel in any of the geo-technical holes. The only soil horizon present in all holes is the uppermost horizon marking the beginning of the railway period. There was also no evidence of the sand deposit related to the 1826 flood or the plow zone associated with the Hudson's Bay Company experimental farm. At least nine soil horizons were recorded in the six holes with only minor cultural evidence in the form of fish remains present in one of the layers (Quaternary Consultants Ltd. 1995b:5).

Parking lot drainage, 1995
October 12–31, 1995
The extension of the parking lot north of Forks Market Road required the installation of a land drainage system tied into the existing services installed during the Stage I construction project. About 90 metres of trench were excavated within the impact zone and monitored by Quaternary

Consultants Ltd. The project consisted of the installation of three catchbasins with linear trenches between them. The connecting pipe was installed in 60 cm wide trenches excavated to a depth of between 2.3 to 0.9 metres below surface. Traces of a pre-contact archaeological horizon were observed (Quaternary Consultants Ltd. 1996c:1).

The upper strata consisted of cinder, gravel and clay and varied in thickness from 60 to 162 cm. A lower soil layer consisting of modified loam is interpreted as the result of agricultural activities related to the Hudson's Bay Company experimental farm (Quaternary Consultants Ltd. 1996c:i). The most extensive relict soil horizon was first noted at a depth of 172 cm and included traces of ash, charcoal and fish bone, suggesting the location is at the periphery of a cultural occupation zone. The presence of ash, charcoal and fish bone are suggested to be the result of flood movement from the primary deposit location (Quaternary Consultants Ltd. 1996c:3). A trench for a plank-encased steam pipe was found to extend to a depth of 120 cm resulting in a downward extension of the upper cinder horizon (Quaternary Consultants Ltd. 1996c:13).

Main Street retaining wall, 1995–1996
December 20, 1995–March 31, 1996
The monitoring of construction activities related to the Main Street and Norwood Bridges project was carried out by Quaternary Consultants Ltd. This component was the construction of a retaining wall on the western side of the embankment along the new route of northbound Main Street immediately north of the abutment of the north end of the overpass. The objective was to determine the presence or absence of heritage resources excavated within localized impact areas and record or mitigate if necessary. The methods proposed include the visual observation of strata and the hand retrieval of artifacts.

Excavation was carried out by a large backhoe and the soil trucked offsite. The majority of the excavations for the construction did not extend below the elevation of the parking lot area, the exception being the southern section adjacent to the former and new north abutments (Quaternary Consultants Ltd. 1996d:1).

The stratigraphic profile of the excavated area is characterized by sequential layers of relocated silts interspersed with layers of structural material, primarily brick which occurred in two layers. No diagnostic artifacts were present. The two brick layers were the only artifact-bearing deposits encountered. A few fragments of broken concrete and milled lumber were mixed with the upper brick layer (Quaternary Consultants Ltd. 1996d:3).

Main Street roadworks, 1996–1998
May 6–September 30, 1996, May 13–25, 1998
The construction of road linkages between the new Norwood and Main Street bridges and the

rebuilding of existing roadways required that considerable excavation take place. An impact assessment of the project and monitoring of the associated construction activities were carried out by Quaternary Consultants Ltd. (Quaternary Consultants Ltd. 1998b:i).

In most cases the depth of excavation was approximately 1.5 metres and sufficient to impact upon subsurface archaeological resources relating to Upper Fort Garry. Excavations for a new roadbed on the south point reached depths of up to 2.5 metres and consisted of the removal of soil alongside the CNR main line embankment where historic deposits were encountered. A considerable amount of prior impact was observed in the south point excavations and though relict soil horizons were encountered, no evidence of pre-contact cultural occupations was found (Quaternary Consultants Ltd. 1998b:9). Secondary deposits of historic period artifacts (largely structural debris and household refuse) were recovered (Quaternary Consultants Ltd. 1998b:11). Various prior impacts and historic features were encountered during the Main Street reconstruction project, including some relating to Upper Fort Garry. Footings for portions of the walls and interior structures of the fort were observed and accurately surveyed during the project (Quaternary Consultants Ltd. 1998b:196). Many of the prior impacts were the result of previous roadworks and subsurface services installations (Quaternary Consultants Ltd. 1998b:57).

Norwood and Main Street Bridges reconstruction, 1996–1998
November 12, 1996–March 31, 1997, June 1, 1997–March 31, 1998
Excavation activities relating to the reconstruction of the original Main Street and Norwood bridges were monitored by Quaternary Consultants Ltd. Construction was contained within the area of previous impact. No evidence of the bank rip-rap and historic debris recorded during the construction of the northbound Main Street Bridge was present, and no impact to heritage resources were noted (Quaternary Consultants Ltd. 1998a).

York Avenue underpass reconstruction project, 1997–1998
July 28, 1997–October 31, 1998
A heritage resource impact assessment of the York Avenue and Pioneer Boulevard redevelopments, the reconstruction of the York Avenue underpass and related services at The Forks was conducted by Quaternary Consultants Ltd. Construction involved the building of a new railroad trestle, the installation of subsurface services (land drainage sewer, waste water sewer, watermain and hydro duct lines) and the building of a new road connecting Main Street with Pioneer Boulevard. All components required excavation into undisturbed soil. Prior impact had occurred adjacent to the railroad embankment on the east side with the installation of a watermain along the railway access road (Quaternary Consultants Ltd. 1998c:1).

The services were installed at varying depths with the land drainage sewer being the deepest at an average of 5.5 metres below surface. Open-cut trenches were excavated for the hydro duct line

both north and south of York Avenue. The remaining service installations employed horizontal boring between vertical shafts. Excavation was by large backhoe with the soil hauled offsite. Large augers were used to complete excavation of the deeper holes (Quaternary Consultants Ltd. 1998c:3).

The entire zone of construction was covered with a thick layer of fill related to various railroad construction and land modification events during the last century. The deposits of this layer are thicker on the west side of the trestle, reflecting the build up of Main Street and adjacent building sites. The historic artifacts within this layer represent secondary deposition (Quaternary Consultants Ltd. 1998c:25).

Two minor occurrences of pre-contact encampments were recorded at the eastern end of York Avenue. It is suggested these locations were on the periphery of the encampments which were identified during The Forks access project and dated to approximately 600 ago (Quaternary Consultants Ltd. 1998c:i). It was observed that the pre-contact occupation horizons became much denser and continuous as one nears the Red River (Quaternary Consultants Ltd. 1998c:25).

The soil profiles show a history of sequential flooding and sediment deposition with some instances of soil formation during the periods between floods though little evidence of the historically recorded floods (1826, 1852, 1861 and 1882) is present (Quaternary Consultants Ltd. 1998c:9). The soil horizons present in the upper layers could not be correlated with other excavations. It was observed that 39 cm of deposits, including one distinct soil stratum, separate the upper cultural horizons identified in The Forks access project at Pioneer Boulevard. At the embankment this separation is 96 cm and includes four distinct layers, including one buried soil horizon indicating the degree of variability in the rate of accretion across the site (Quaternary Consultants Ltd. 1998c:9).

The Forks access, south of Water Avenue, 1997–1998
July 28, 1997–October 31, 1998
The project was monitored by Quaternary Consultants Ltd. and involved the construction of a twinned road from Water Avenue to Arrival Square along the Pioneer Boulevard right-of-way including subsurface services (watermain, waste sewer, land drainage sewer and hydro decline), with excavations reaching depths below five metres. Previous investigations in the area had revealed extensive cultural deposits within the upper three metres. A 120 metre long assessment trench was excavated to a depth of three metres using a rubber-mounted backhoe adjacent to the right-of-way to provide stratigraphic data to help guide the work toward limiting the impacts to buried occupation layers (Quaternary Consultants Ltd. 1999a:i). All excavated soil was raked and all artifacts recovered.

Only gross stratigraphy could be recorded below two metres due to the lack of shoring (Quaternary Consultants Ltd. 1999a:4). Most of the vertical shafts were excavated by backhoe, though some deeper shafts were excavated with a truck-mounted auger (Quaternary Consultants Ltd. 1999a:2). Backhoe excavation proceeded with caution coming down onto the occupation layer which was then removed in a block to be examined at the side of the excavation. In the trench excavations, stratigraphy was recorded once excavation was completed and sewer cages had been installed. In one particularly sensitive area the depth of the roadbed was raised in order to avoid impact to the upper pre-contact horizon (Quaternary Consultants Ltd. 1999a:5).

A program of mitigative recovery of cultural resources was carried out with a total of 95,543 artifacts recovered. Two thousand six hundred and ninety-five artifacts were derived from the railway period occupation layer and 92,848 artifacts were recovered from 13 separate cultural levels dated between A.D. 1000 and 1400. A variety of ceramic styles diagnostic of different cultural groups from beyond the local area were recovered from a single occupation layer (Quaternary Consultants Ltd. 1999a:i).

The stratigraphy is described as railway related fill overlying an intermittent A horizon overlying sequential layers of riverine deposited sediments (Quaternary Consultants Ltd. 1999a:8). Several thin buried soil layers were recorded in the upper 50 cm and are believed to relate to historically recorded floods prior to the railway period (1826, 1852,1861, 1882). Many of the soil layers were discontinuous or continuous but resting on different substrates. A minimum of eight discreet flood events are represented (Quaternary Consultants Ltd. 1999a:11).

The first train depot was located at the junction of Main Street and Pioneer Avenue with four freight sheds paralleling Pioneer Avenue. Spur line tracks accessing the freight sheds ran parallel to Pioneer Avenue. Most of the railway activity over the last century has been above grade though some concrete beams relating to former freight sheds were encountered as well as portions of building foundations on the northwest corner of the intersection of Pioneer Boulevard and Pioneer Avenue (Quaternary Consultants Ltd. 1999a:206).

All pre-contact strata are relatable to the Late Woodland Period including representation of Blackduck, Rainy River, Bird Lake, Duck Bay, Plains Woodland, Sandy Lake, Red River, and Oneota styles of ceramics and Plains Side-Notched or Plains Triangular style projectile points. At least eight and possibly ten discreet pre-contact cultural horizons were recorded (Quaternary Consultants Ltd. 1999a:208). Stylistic similarities between the ceramics recovered from the upper and lower horizons suggest a relatively short time period between the earliest and latest occupations recorded. The ceramic assemblage from horizon B is unusually diverse and has been interpreted to represent a gathering of Algonkian peoples from central and southern Manitoba, northwestern Ontario, northwestern Minnesota, and possibly parts of Minnesota and North

Dakota along the Red River valley. Quaternary Consultants Ltd. (1999a:215) reports that a "peace meeting" is recorded in Aboriginal oral history to have occurred approximately 500 years ago at The Forks and was attended by several different groups and suggests that the assemblage may represent such a meeting.

Healing Rock pilings, 1998
March 3–17, 1998
A heritage resource impact assessment by Quaternary Consultants Ltd. consisted of monitoring the excavation of a maximum of four piling auger holes, 12 inches in diameter to a depth of five metres, adjacent to the low line bridge at The Forks. The objective was to record the soil stratigraphy, recover diagnostic artifacts from the railway horizon and any artifacts from the pre-1888 cultural horizon that are present. The methods proposed included the visual observation of soils and hand retrieval of artifacts.

CanWest Park, 1998
May 14–September 30, 1998
All excavations associated with the construction of CanWest Park north of Pioneer Avenue and extending below 228.5 m above sea level were monitored by Quaternary Consultants Ltd. An initial archaeological impact assessment of the area was completed in 1995 in preparation for the proposed construction of an arena. As a result of that assessment, it was known that significant pre-contact cultural deposits were present in the area of the proposed south dugout. Extensive cultural deposits were also known to be present on the south side of Water Avenue and could potentially extend into the project area (Quaternary Consultants Ltd. 2000d:1).

While the proposed impacts to the area were considered minimal, they did include pilings, grade beams, subsurface service installations and the two dugouts. Two hundred and twenty-eight auger holes were drilled and monitored. Truck-mounted augers of different sizes were used to excavate piling seating holes, and observations of soil removed by auger were made while on the bit. The presence or absence of pre-contact cultural deposits was recorded, as was the depth of the horizon if present. Extracted soils observed to contain cultural material were collected for further investigation at the lab and any findings correlated to the excavation location and soil volume (Quaternary Consultants Ltd. 2000d:1).

Rubber-mounted backhoes were used to remove the upper soil levels around the piles. Backhoes were also used for the excavation of the vertical service shafts. Excavation proceeded carefully when coming down onto occupation layers. Cultural layers were removed in a block, placed to the side of the excavation and examined by the archaeological team while maintaining horizontal provenience. Subsurface pipes were excavated by horizontal boring. Small amounts of cultural material were recovered from the pile augering and in the vertical shafts for the watermain

installation (Quaternary Consultants Ltd. 2000d:i).

Mitigative excavation was carried out in the area of the south dugout and two separate pre-contact occupations were encountered. Over 37,000 artifacts were recovered from the upper level and over 49,000 artifacts were recovered from the earlier occupation layer. Analysis of the artifacts recovered suggest that various cultural groups had used the area during both occupation periods with Bird Lake, Rainy River, Plains Woodland and Oneota-like ceramic styles all being represented in the upper level, and a similar pattern but with fewer styles present in the earlier layer. The upper level is believed to correlate to a layer previously identified south of Water Avenue which yielded a radiocarbon date of A.D. 1285 +/- 60 yrs. The lower level could correlate with any one of five cultural horizons previously identified below the above-mentioned strata and is believed to date later than A.D. 1200 (Quaternary Consultants Ltd. 2000d:i).

The stratigraphy is described as historic fill, overlying an intermittent A horizon representing the soil surface of the 1870s and 1880s immediately prior to urbanization, overlying sequential layers of riverine-deposited sediments. Periods of stable ground are represented by buried soil levels formed between successive flood episodes which sometimes contain evidence of occupation. The two pre-contact strata are believed to be separated by a single flood event (Quaternary Consultants Ltd. 2000d:9). The depth of historic fill varied between 60 and 350 cm, the deeper deposits being associated with basements and abandoned subsurface services. Soil horizons were encountered at 200 to 230 cm and 340 to 370 cm below surface in many of the excavations (Quaternary Consultants Ltd. 2000d:6).

The project area occupies land which had contained the Winnipeg Hydro sub-station (demolished in 1995) as well as numerous residences and businesses that had existed along the north side of Pioneer Avenue from the 1870s up to the 1960s. The industrial presence in the area ended after the Winnipeg Transfer Railway developed a series of tracks along the Red River at the eastern edge of the development area in 1890 (Quaternary Consultants Ltd. 2000d:106-107). The residential district continued to be present until the 1960s. The demolition of area buildings resulted in the build up of a layer of historic deposits including structural remains and infilled basements (Quaternary Consultants Ltd. 2000d:6).

The two pre-contact occupations observed both fall within the late Woodland Period with artifacts representative of Rainy River, Bird Lake, Plains Woodland, Red River, and Oneota ceramic types. Each cultural occupation is believed to represent a single occupation event or successive occupation at the location between flood events. The archaeological evidence, including correlations with strata for which radiocarbon dated samples were obtained, suggests that both cultural levels represent occupations of Aboriginal peoples between 600 and 700 years ago (Quaternary Consultants Ltd. 2000d:9).

Based upon the experience of having monitored numerous prior projects in and around The Forks area, it was noted that the preponderance of pre-contact sites appear to be immediately adjacent to the north bank of the Assiniboine River or inland of the west bank of the Red River. Heritage resource impact assessments conducted south of Water Avenue revealed that the number and density of archaeological horizons diminished toward the east approaching the Red River, and a number of archaeological deposits have been recorded in the surrounding area:

- a localized Late Woodland occupation at the crossroad between Pioneer and Water avenues at the intersection of Pioneer Boulevard;
- an extensive Late Woodland occupation along the south side of Water Avenue, due south of the ballpark location;
- numerous cultural horizons in the vicinity of Pioneer Boulevard between the York Avenue and Water Avenue intersections; and,
- most significantly within the project area in the vicinity of the south dugout (Quaternary Consultants Ltd. 2000d:104).

A variety of evidence indicates that the natural formation of the west bank of the Red River below The Forks contained a broad low-lying terrace (Quaternary Consultants Ltd. 2000d:107). With construction of the rail line this area would have been filled in to make it level with the surrounding area. Large quantities of fill would have been required to do this. Evidence for this fill averaging five metres or more was observed during the drilling of the vertical shafts for the installation of the land drainage system as well as the 1995 hydro pylon caisson drilling (Quaternary Consultants Ltd. 2000d:107). Given the comparative similarity of the ceramic, lithic and faunal assemblages it is likely that the upper Late Woodland Period occupation encountered during this project is a northern extension of the same occupation encountered during The Forks access project (Quaternary Consultants Ltd. 2000d:114).

Forks Access, north of Water Avenue, 1998–1999

October 5, 1998–July 31, 1999

This project covers the extension of Pioneer Boulevard north of Water Avenue and the concurrent extension of the land drainage system from Water Avenue to Lombard. The subsurface components were monitored by Quaternary Consultants Ltd. The new roadway follows a curve paralleling the Red River and connects with Lombard Avenue. Excavation for the roadway was minimal, being required only at its junctions with Lombard and Water avenues (Quaternary Consultants Ltd. 1999c:i).

The land drainage system consisted of a horizontal pipe and the connections to two outfalls, one being new and the other refurbished. Excavations of vertical shafts for the pipe placement were monitored and up to six metres of fill was recorded in places. Evidence for four episodes of bank modification were discovered, beginning in 1890 with the dumping of land fill to produce a level

railway right-of-way which covered all evidence of previous industrial activity. Later bank modifications occurred in the 1900s, 1920s and 1950s.

The southern outfall was excavated as an open-cut backhoe trench under continuous archaeological monitoring. Vertical shafts were excavated with truck-mounted augers with large (approximately 2.5 m) bits. The northern outfall was a refurbishment involving the replacement of an existing pipe. All excavated soils were determined to be fill. As a bank stabilization measure, 52 holes were drilled to bedrock along the bank edge adjacent to the roadbed using a 1.5 metre auger bit and filled with limestone (Quaternary Consultants Ltd. 1999c:3).

No pre-contact occupation levels were encountered. The area was one of the first industrial areas in the city and was preferred due to its convenient location to riverboat transportation facilities. The deposits are traceable to the period of initial urbanization of the area with the establishment of various lumber industries along the west bank of the Red River. The area was subsequently taken over by the Winnipeg Transfer Railway and large quantities of fill (up to six metres) were deposited over remains of the lumber facilities to produce a level grade for the tracks and extending the bank edge eastward. Additional bank building took place about 1900 and in the mid-1920s. The last period of bank building dates to the time of the wooden dike construction following the 1950 flood (Quaternary Consultants Ltd. 1999c:76).

Steam plant redevelopment, 1999
November 3–March 31, 1999
Quaternary Consultants Ltd. monitored the subsurface activities associated with the redevelopment of the Canadian National power plant, situated on the northwest corner of the intersection of Pioneer Boulevard and Forks Market Road, converting it into a facility for the Manitoba Television Network. The work consisted of drilling holes for support piles for new additions on the north wall and excavations for the installation of new services on the east side of the building (Quaternary Consultants Ltd. 1999b:i).

Horizontal boring was used for connecting the building to water and sewer lines located along Pioneer Boulevard from vertical shafts excavated at the face of the east foundation wall. All vertical shafts were dug in locations which had been previously excavated and infilled (Quaternary Consultants Ltd. 1999b:1, 3). The piling holes on the north side of the building were drilled with a truck-mounted auger with a 16 inch bit, with only minor impacts to undisturbed sediments occurring (Quaternary Consultants Ltd. 1999b:2).

At least three metres of fill were recorded around the foundation of the steam plant. The north row of auger holes showed a surface layer of cinder ranging in depth between 80 and 100 cm. One hole yielded some possible cultural material. Two fragments of bison bone were recovered

at approximately 275 cm, 18 metres west of the east wall. A charcoal layer interpreted as resulting from a natural burn was encountered at 390 cm at the centre of the north wall of the garage annex (Quaternary Consultants Ltd. 1999b:4). The limited degree of excavation did not allow for a correlation of buried soil horizons (Quaternary Consultants Ltd. 1999b:4, 6).

Manitoba Theatre for Young People construction, 1998–1999
November 2, 1998–March 31, 1999
Quaternary Consultants Ltd. monitored the construction of the Manitoba Theatre for Young People at the intersection of Forks Market Road and Pioneer Boulevard. Impacts to undisturbed soils resulted from augering holes for seating concrete piles, pilecap and foundation wall excavations, and the installation of water and sewer pipes. Minor archaeological recoveries were made and a small cultural horizon dating between the 1826 and 1881 floods was observed. The primary result of the monitoring was the compilation of stratigraphic data for determination of flood activity over the past 3000 years (Quaternary Consultants Ltd. 1999d:i).

One hundred and twenty-six holes were drilled with truck-mounted 16 inch augers to a depth of 25 feet to seat the supporting piles. Excavations were made around each pile and trenches were cut to connect the piles for the construction of foundation forms. Open-cut trenching was used for the installation of water connections from Pioneer Boulevard into the building site. Vertical shafts were excavated for horizontal boring of sewer linkages to the existing sewer main underlying Forks Market Road (Quaternary Consultants Ltd. 1999d:1-4).

The recording of the stratigraphy was hampered by smearing of augered soil obscuring the thin soil layers (Quaternary Consultants Ltd. 1999d:3). Fill layers generally extended 80 to 120 cm below surface and at some locations extended to depths of 240 cm. A distinct buried soil horizon containing some bone and considerable charcoal was observed in most holes between 180 and 210 cm. A second distinct buried soil horizon occurred at a general depth of 275 cm intermittently across the site. A thick layer of sand occurred at depths between 390 and 450 cm (Quaternary Consultants Ltd. 1999d:5).

Geo-technical testing of the area in 1995 revealed several buried soil horizons ranging from 90 to 580 cm below surface. Correlations between the layers observed in 1995 and 1998 cannot be made due to the undulating nature of the deposits. Strata which could be identified include the railroad fill layer immediately overlying the 1885 ground surface and containing artifacts which are likely related to an early Winnipeg dump located at The Forks around 1907 to 1910. A homestead period occupation layer has been identified as representing the ground surface prior to either the 1881 or 1861 flood but no artifacts from this layer could be dated. A plough zone representing farming activity during the operation of the Hudson's Bay Company experimental farm (1836-1848) was encountered as were deposits of laminated tan sands representing the 1826

or earlier flood event. The profiles showed numerous layers of sediments containing sand and indicate large flood events. A major flood has been identified as occurring about 750 years B.P. and several other large floods dating to around 3000 years ago may be represented in the sand deposits lying over three metres below surface.

There was little evidence of cultural occupation in either the 1995 or 1998 investigations though several of the buried soil horizons can be correlated with previously identified cultural strata recorded in the Stage I construction project (Kroker and Goundry 1990) including an extensive upper horizon also encountered during The Forks access project (Quaternary Consultants Ltd. 1999a) and dated to about 665 years B.P. (Quaternary Consultants Ltd. 1999d:18- 20).

Festival park construction, 1998–1999

December 1998– May 1999

The festival park development included three different components: a bandshell at the southeast corner of parking lot 4; the extension of subsurface services from Pioneer Boulevard to the bandshell; and the extension of waste water sewer lines to kiosk nodes in the green space between the paved parking lot and bandshell. All construction was monitored by Quaternary Consultants Ltd. and mitigative recovery was undertaken when archaeological resources were encountered.

The upper levels of the services corridor consisted of railroad era fill. Undisturbed riverine sediments were present under the fill layer, and pre-contact archaeological resources were recorded at eight locations during the excavations of the vertical shafts for the services and the continuous hydro duct line trench. Some of the archaeological layers can be correlated with those defined during The Forks access project (Quaternary Consultants Ltd. 1999a) which date between A.D. 1200 and 1300. Few indications of cultural occupation were found suggesting that the occurrences are on the periphery of the main occupation areas. The waste water sewer in the green space was also installed by vertical shafts and horizontal boring but as the placement was generally less than two metres below surface, railroad era fill extended to the base of excavations in several places. No pre-contact or fur trade resources were encountered during the waste water sewer component (Quaternary Consultants Ltd. 2000c:i).

Fifty-three auger holes were monitored in the bandshell location. The depth of the historic fill in the bandshell area varies from 75 to 220 cm. It was known the bandshell was located where previous building supply companies had existed and evidence for structures and operations associated with these companies was recorded. The deeper fill deposits appear to be associated with the basements of former buildings or excavations for garbage disposal. Where fill layers rested on the soil horizon post-dating the 1881 flood, riverine deposits were encountered to the base of excavation. These deposits also contained buried soil horizons marking periods of stable

ground surfaces. An undulating sand horizon occurred at depths between 340 and 410 cm in the bandshell area (Quaternary Consultants Ltd. 2000c:6, 67).

The upper fill horizon within the services corridor averages between one and 1.5 metres thick. Evidence of earlier excavations for garbage disposal or buildings was also observed (Quaternary Consultants Ltd. 2000c:6). Thin bands of buried soil horizons were found throughout the depth of the riverine sediments and two distinct pre-contact occupation layers associated with the Late Woodland Period were found. The upper horizon was recorded between 155 and 200 cm below surface at six different locations. The lower horizon was recorded at 272 and 288 cm below surface at two separate locations. An analysis of the observations and correlation with the information obtained from The Forks access project suggests that both occupations date to between 600 and 700 years ago (Quaternary Consultants Ltd. 2000c:9).

Waste water sewer lines were installed by horizontal boring between vertical shafts to four locations in the green space between the paved parking lot and the berm at the south edge of parking lot 4. The vertical shafts were relatively shallow. One waste water line was installed through a short open-cut trench. The deposits at the eastern end of this trench had been disturbed by the prior installation of the original pipe. Undisturbed sediments were encountered at the southwestern end of the manhole excavation and a stratigraphic column was recorded. Several courses of mortared brick, a remnant of the roundhouse that had been attached to the north end of the engine repair facility of the Northern Pacific and Manitoba Railway, were encountered at the southwestern end of the open-cut trench (Quaternary Consultants Ltd. 2000c:9-10).

The central portion of the East Yards had been used primarily as a switching and mastering yard. All observed historic period artifacts and structural remains were associated with the railway period but were primarily the result of secondary deposition. The source of much of the artifactual material is believed to be derived from other railway facility locations. These artifacts would have been collected as debris, transported to the site, and used as landfill throughout the area. Other sources of fill may have included Winnipeg Dump Site No. 1 on the north bank of the Assiniboine River (Quaternary Consultants Ltd. 2000c:66).

At least two and possibly four pre-contact cultural horizons were recorded during the monitoring of the festival park construction. Some of these horizons are likely continuations of occupation layers previously identified during The Forks access and Legacy Estates projects (Quaternary Consultants Ltd. 2000c:68). It is suggested the sparse pre-contact recoveries in this area, compared to those from The Forks access project to the northwest, indicates that the central portion of the East Yards was not heavily used during the 13th century, possibly due to unfavourable conditions such as dense tree cover or swampy ground. Evidence for this interpretation included the finding of gyttja, an organic sediment that forms at the bottom of

lakes and sloughs and may indicate the presence of an oxbow lake in the central area of The Forks. The oxbow may have existed up to the 13th century as a slough and later a marshy area accounting for the sparseness of cultural resources between Arrival Square and the York Avenue intersection (Quaternary Consultants Ltd. 2000c:68).

Legacy Estates Impact Assessment, 1999
December 16–24, 1999
A heritage resource impact assessment for a proposed development of a condominium complex at the intersection of York Avenue and Pioneer Boulevard was carried out Quaternary Consultants Ltd. The impact assessment consisted of the excavation of eight test trenches within the footprint of the proposed structure. The objective was to determine the elevation of pre-contact horizons to guide the design of the structure so as to have minimal impact on cultural layers. Due to the presence of frost in the ground it was necessary to use a backhoe-mounted jackhammer to break up the upper layer. Excavations were then conducted with a rubber-mounted backhoe with a 24 inch bucket. The excavated soil was raked, the artifacts collected and the stratigraphy recorded (Quaternary Consultants Ltd. 2000e:3-4).

Previous work had identified the location as a sensitive area with archaeological resources known to be present to the west, northwest, and north of the proposed building location (Quaternary Consultants Ltd. 2000e:i). The upper stratum consisted of a thin layer of parking lot gravel overlying railway fill deposits. Below the fill were flood deposits and buried soil horizons. Cultural horizons were found in five of the trenches (Quaternary Consultants Ltd. 2000e:6).

It was suggested that most of the horizons recorded in this project can be correlated with other layers recorded in various other projects. The undulatory nature of the soil layers requires these correlations be based on the similarity of the cultural resources as well as their stratigraphic position (Quaternary Consultants Ltd. 2000e:32). It was determined that the heritage resources present are considerable and occur at different depths in the area of the proposed development. One of the cultural deposits can be correlated with a layer identified in several other projects in the area containing a wide variety of regional ceramic styles and interpreted as a manifestation of an event said to be held in Aboriginal oral history as a peace meeting (Quaternary Consultants Ltd. 2000e:34).

PanAm cauldron, 2000
May 30, 2000
Three piling holes 30 inches in diameter were augered to a depth of 25 feet by a truck-mounted auger near the Manitoba Children's Museum north of the east end of the paved parking lot. These pilings were installed to support the PanAm cauldron. The work was monitored by Quaternary Consultants Ltd. (Quaternary Consultants Ltd. 2000a:1).

The depth of fill and buried soil horizons and the presence or absence of pre-contact cultural deposits were recorded. The upper stratum of railroad cinder deposits extended to an average depth of approximately 125 cm. Below the fill, riverine sediments extended to the base of the excavation. One of the holes showed the railway fill to be over two metres and is interpreted to be a function of its proximity to the roundhouse which had been attached to the nearby B & B Building (Quaternary Consultants Ltd. 2000a:2). A small number of artifacts were collected from the railroad fill (Quaternary Consultants Ltd. 2000a:3).

Festival park gateway, 2000
July 14–August 4, 2000
The piling support for a monument at the entrance to festival park at the east side of Arrival Square had been estimated to require drilling five auger holes to a depth of 25 feet. The excavations were to be monitored by Quaternary Consultants Ltd. After numerous delays, work began on July 14, 2000 with a truck mounted auger and a 16 inch bit. The number of holes to be drilled had changed to 12. A high water table was encountered and caused repeated collapses of the lower soil layers so, despite drilling to a depth of 32 feet, collapsed soils made the effective depth of the hole only 18 feet. Drilling stopped after the first hole so a different strategy could be developed. Quaternary Consultants was not advised when drilling resumed on July 20 and as a result no monitoring of the remaining pile support excavations took place. The excavated soils were later examined where they had been deposited at Christie Road and no evidence of cultural remains were found (Quaternary Consultants Ltd. 2000b:1).

On August 4 an additional three holes for the placement of flagpoles were drilled to a depth of 8.5 feet using a 16 inch auger in the same general location, monitored by Quaternary Consultants under the same permit (Quaternary Consultants Ltd. 2000b:1). No cultural occupations below the railway period fill were observed, though it was noted that thin strata tended to be blurred by the action of the drilling, obscuring more subtle changes in the stratigraphy. An average of 115 cm of recent construction and railway fill overlay the natural riverine deposits. A single thin charcoal horizon was also observed and interpreted to be a natural burn (Quaternary Consultants Ltd. 2000b:4).

Geo-technical investigations along the Via Rail right-of-way, 2001
January 3–March 31, 2001
A geo-technical investigation was commissioned by The Forks North Portage Partnership along the right-of-way between the CNR main line and the parking lot west of Pioneer Boulevard. Four holes were bored using a 5 inch diameter bit. Two were drilled to a depth of 25 feet and the other two were drilled deeper, extending into the till layer below the Lake Agassiz clays. Quaternary Consultants Ltd. observed and recorded the excavations (Quaternary Consultants Ltd. 2001b:1). The small scale of the investigation program precluded the identification of any subsurface

cultural horizons which may be present (Quaternary Consultants Ltd. 2001b:4).

Geo-technical investigations for Provencher Bridge reconstruction, 2001
January 15–March 15, 2001
Quaternary Consultants Ltd. was granted a heritage permit to monitor geo-technical investigations for the City of Winnipeg's reconstruction of the Provencher Bridge, focusing on the west side of the Red River. The objective was to record the soil strata, determine the presence or absence of cultural material, and recover any artifacts. The methods proposed included the visual observation of soils while on the drill auger. No report on these investigations has yet been produced. However, in personal communication with Sid Kroker of Quaternary Consultants Ltd. it was suggested that as much as five metres of fill were being recorded in the area of construction for the new bridge south of the ramp on the west side of the Red River.

Geo-technical investigations for West Roads project, 2001
March 19–April 30, 2001
A geo-technical drilling program was undertaken between Provencher Bridge and the CNR main line in conjunction with the proposed realignment of the road system in the area of Pioneer and Water avenues (West Roads) to connect to the new Provencher Bridge on the west bank of the Red River. As the work had the potential to impact upon heritage resources, the drilling was monitored by Quaternary Consultants Ltd. Ten holes were drilled using a truck-mounted 16 inch auger along the proposed right-of-way on the west side of the Red River.

The stratigraphic profiles showed varying depths of fill overlying undisturbed riverine sediments. Some of the fill is related to construction activities in the area over the past 130 years and the development of the Winnipeg Transfer Railway in 1890. Substantial fill layers were found in all but one test where the fill extended to a depth of only 40 cm. The deeper fill layers range from 120 to 220 cm and are interpreted as being the result of excavations for basements or crawl spaces associated with the various buildings constructed here (Quaternary Consultants Ltd. 2001a:5).

The upper soil layers contained artifacts relating to the residential occupation of the area from the late 19th century onward. Two of the test holes showed evidence of an extensive pre-contact occupation while a third had traces of a deeper cultural horizon. An extensive cultural horizon dated to 665 years ago extends throughout the entire impact zone except where it has been removed through previous excavation. Numerous basement excavations have occurred in conjunction with the construction of the buildings formerly existing along Water and Pioneer avenues. Archival research shows that at the beginning of the 20th century there was a large residential and, to a lesser extent, commercial presence in the area that has diminished steadily up to the present. While subsurface excavations for the roadbed are largely above the depth of the

665-year-old cultural strata, deeper excavations for subsurface services will require intensive monitoring as impact on the pre-contact cultural horizons is assured (Quaternary Consultants Ltd. 2001a:i).

The upper pre-contact horizon is known to relate to an extensive occupation which has been recorded elsewhere in the area. It has been observed at the south dugout of CanWest Global Park; south from Water Avenue along Pioneer Boulevard; along the once-proposed routes of the St. Mary and York Avenue extensions; and south into The Forks gravel parking lot. The extent of the occupation zone identified to date reflects the extent of investigation rather than the horizon. The horizon may extend well beyond the area currently identified. It has been dated to about 665 years B.P. (A.D. 1285) and is interpreted to represent a meeting of Algonkian peoples from central and southern Manitoba, northwestern Ontario, northwestern Minnesota, and possibly parts of Minnesota and North Dakota along the Red River valley. Such an event occurring about 500 years ago is said to be held in local Aboriginal oral history (Quaternary Consultants Ltd. 2001a:25).

The lower cultural horizon encountered at a depth of 400 cm was sparse and did not contain any culturally diagnostic artifacts but may correlate with one of the deeper horizons recorded during The Forks access project, representing an occupation of the area between the early Late Woodland and Archaic periods, 1000 B.C. to A.D. 1040 (Quaternary Consultants Ltd. 2001a:25).

Assessment trench, 2001
April 9–May 31, 2001
Quaternary Consultants Ltd. was granted a heritage permit to excavate an L-shaped assessment trench within the footprint of a proposed structure at the southeast corner of the paved lot between the tourism centre and the Manitoba Theatre for Young People. The objective was to determine the depth and density of cultural deposits to allow the architect to develop a final design of the structure and a heritage resource management program for the construction phase of the project. The methods proposed included excavation using a small backhoe with a smooth bucket, a surface investigation of excavated soil for artifact retrieval and the recording of soil strata. A report on this investigation is currently in production.

Provencher Bridge construction, 2001–2002
July 3, 2001–March 31, 2002
Quaternary Consultants Ltd. was granted a heritage permit to monitor excavations related to the construction of the new Provencher Bridge with attendant road and sewer works. The objective was to recover any significant historic artifacts from post-1890 layers, record the presence or absence of pre-contact or fur trade period soil horizons and, if present, mitigate any impacts to those horizons. The methods proposed include the visual observation of mechanical excavation

and the hand retrieval of historic artifacts. A report on this investigation is currently in production.

Summary of Findings

Some of the more significant findings relating to type, location, condition and extent of cultural resources at The Forks are presented below. This section will begin with an overview of some of the most common elements found throughout the site and then present findings related to specific areas of The Forks.

Overview of The Forks Area

While geological evidence seems to suggest that the Assiniboine River valley was a developed water course by 7500 B.P., likely joining the Red River at or near The Forks, it has not continuously flowed through this valley throughout the intervening period. About 4800 B.P. the Assiniboine River began to flow north into Lake Manitoba, and when it again began to flow to the Red River about 3000 B.P., its outlet was not at The Forks but near the current location of the mouth of the La Salle River. Not until about 1400 B.P. did the Assiniboine River shift its position northward to again enter the Red River at The Forks (Nielsen, McKillop and Conley 1993:10-11).

While the physical characteristics of The Forks have been shaped throughout most of its history by the effects of these two rivers, these features have been largely obscured by the accumulated fill deposits laid down since 1888. That there are significant surface irregularities lying below the modern surface is indicated by the varying depths of fill present across The Forks site. The earlier location and form of the historic bank edges have also been altered by bank edge dumping carried out in conjunction with the operations of one or more city dumps, and by the building products plants and other industries at the northern end of The Forks property. Both Sid Kroker (1996e) and Biron Ebell (1987) record very substantial historic fill deposits which extend below water level, Kroker just east of the Main Street Bridge on the north bank of the Assiniboine, and Ebell just north of the amphitheatre in the national historic site. Kroker also encountered evidence for four separate periods of bank building during excavations north of Pioneer Avenue. The effect of this bank edge dumping is shown to be the extension of the edge of the bank outward from its natural position.

The cutting, filling and dumping that has occurred at The Forks over the years masks earlier topographic features and drainage patterns that could help determine the archaeological potential of various areas of the site. Low wet areas are less suitable for occupation and will be less likely to contain archaeological deposits than those that are higher and drier. Those sites situated closer to the bank may also have been more desirable areas for various types of occupations, but they are also more prone to impacts due to bank erosion or subsequent occupations and developments.

Areas of The Forks which have proven to be favoured for repeated occupations include the site of Fort Gibraltar I. Archaeological investigations show it contained an earlier fur trade period

occupation as well as portions of the later Hudson's Bay Company experimental farm and subsequent railway period roundhouse and repair shop. Eight to ten distinct pre-contact horizons have been recorded at the site of Fort Gibraltar II as well as remains of railway period structures and evidence for a fur trade period occupation.

As these are the only two areas of The Forks National Historic Site that have received any substantial investigation, the extent of this pattern of reoccupation is not clear. Nor is it clear what the full impact of the railway landscape modification efforts were. While the dumping of fill is a very obvious effect of this work, there is also the suggestion that excavation was employed, possibly at the mouth of the Assiniboine River near the former location of Fort Gibraltar II. Guinn mentions that during the ground preparations in 1888, two human skeletons were recovered, one of which was recovered near the mouth of the Assiniboine River (Guinn 1980b:140).

The soil testing program carried out at The Forks national historic site in 1984 was restricted to the southern end of the site, extending north only about 65 metres beyond the B & B Building but taking in the area of Fort Gibraltar I and II. As little as 30 cm of fill was recorded in one of the tests in the area of Fort Gibraltar II, though other tests less than 20 m away showed fill deposits over three times as thick. Other areas tested showed equally sharp differences in fill deposits over very small distances. On the river side of the B & B Building one test revealed fill extending to about a metre and a half while ten metres away in the direction of the river but still almost ten metres from the bank edge, the deposits extend to a depth of four metres (National Testing Laboratories Limited 1984). Test results such as these show the difficulty in trying to map the form of the pre-railway period topography onto the current ground surface and make inferences about site potential.

One pre-railway period plan of the area (General Survey of Upper Fort Garry & Its Immediate Vicinity by Captain Humpden Moody, Royal Engineers, 1848) (Figure 1) shows a broad lower terrace on the west side of the Red River extending north from the mouth of the Assiniboine River (Guinn 1980b:254). Also visible on the 1848 plan is what appears to be a low area covering much of the interior area of The Forks site. It appears from this map that the high ground at The Forks may have been fairly limited, running in a northwest-southeast direction from the mouth of the Assiniboine River. Its broadest end is the zone surrounding the former locations of Forts Gibraltar I and II. The area runs well inside the edge of the second terrace making it about 50 metres or more from the water's edge.

There is also some indication on that map of there having been other river channels surrounding The Forks area. The map captures the area of the former oxbow lake on the east side of the Red River opposite The Forks and identifies it as a swamp. A similar formation, though not as well

defined, is indicated on the west side and may indicate the presence of a relict river channel, oxbow and swamp within The Forks area.

Further evidence supporting the existence of such a formation is presented by Kroker and Goundry who have identified a layer of gyttja among the sediments present in the central area of The Forks between Arrival Square and the intersection of St. Mary Avenue and Pioneer Boulevard (Quaternary Consultants Ltd. 2000c:68). Gyttja is a deposit characteristic of swamps and standing water and its presence in this part of The Forks seems to indicate that the area was indeed low and therefore not likely a desirable place for occupation.

Stratigraphy

The stratigraphy of The Forks is complex due to its history of frequent flooding. Both natural and cultural deposits are often found to be interrupted and difficult to trace beyond a few metres in any direction. This has made the correlation of layers between excavation units difficult, even within a single project. The action of flood water across a site can remove cultural deposits from their context and destroy their continuity and integrity. Such heavily disturbed deposits have a much diminished archaeological value. Artifacts recovered from within the flood deposits between the occupation layers are a good indication of this effect, as is the high degree of artifact scattering observed during the 1988 excavations in the area of Fort Gibraltar II (Adams et al. 1990:9).

There are also some significant and relatively well preserved cultural deposits recorded at The Forks, such as the substantial Late Woodland occupation layers observed by Sid Kroker during the mitigation of The Forks access project near Pioneer Avenue and the CanWest Global Park development (Quaternary Consultants Ltd. 1999a; Quaternary Consultants Ltd. 2000d); the early historic period tracks and prints (Kroker, Greco and Peach 1992); the Late Woodland cremation burial on the south point (Quaternary Consultants Ltd. 1996a); and the extensive Archaic Period horizons in the archaeological preserve near the Johnston Terminal (Quaternary Consultants Ltd. 1993a; 1994b; 1996b).

Soils

As mentioned above, the natural soils at The Forks are largely overlain by layers of ash, cinder, sand, gravels, concrete and artifact-bearing refuse. These layers range in depth from a few centimetres to over two metres. Even thicker fill deposits were encountered in some locations along bank edges. These layers are associated with recent periods of filling and construction and industrial activity in the area.

Beneath these layers are successive flood deposits, consisting primarily of silty clays but with purer lenses of sand and silt, and partially developed soils representing the gradual build up of

humic material between flood events. At a few locations sufficient time has passed between major flood events to allow the development of mature soil. Among the more mature soils found at the site are those containing the Archaic Period deposits found in the area of the North Assiniboine Node, and include the thick horizon at 160 cm and the lower component of the double band at 110 cm. Below this level the soils are less well developed, due to more frequent flooding that likely resulted from having a lower elevation at that time (Kroker 1993:174).

While there is a positive correlation between thicker soil horizons and well-preserved archaeological deposits, occupations also occur in the more brief periods between flood events, resulting in archaeological deposits in the thinner layers as well. The factors determining the effects of flooding are many and can be very local, so isolated pockets of well-preserved archaeological deposits can also be found (Kroker 1993:174).

Area Summaries

What follows are brief summaries of the relevant data related to the subsurface deposits in various areas in and around The Forks National Historic Site, organized according to the area of The Forks where the investigations were performed. The data is broken up into specific types of data pertinent to the area being discussed such as occupation evidence, stratigraphy and impacts.

South point

The stratigraphy of the south point consists of several layers of recent deposits two to 2.5 m thick including soil fill, coal cinders, structural debris and garbage dumps overlaying original pre-railroad sediments (Quaternary Consultants Ltd. 1995c:10, Quaternary Consultants Ltd. 1994c:28). Most of the artifacts recovered from the area are believed to be the result of authorized or unauthorized dumping. The earlier horizons tend to rise to the north and west and suggest that flood events affecting the area may have resulted in a smoothing of the surface area (Quaternary Consultants Ltd. 1995c:10).

The first rail line was built in 1888 by the Northern Manitoba and Pacific Company immediately adjacent to the Red River. The second embankment was constructed in 1910–1911 for the elevation of the tracks leading to the current CNR high line bridge and Union Station (Quaternary Consultants Ltd. 1995c:1). This elevated railroad embankment rises about seven metres above the original ground level (Quaternary Consultants Ltd. 1996a:9).

Wood debris from the demolition of the Arctic Ice Company warehouse and sawdust used to insulate the ice in the warehouse were found below the level of the fill associated with the later railroad embankment (Quaternary Consultants Ltd. 1995c:10). A localized manure deposit which included a commercially manufactured coat and several pieces of milled lumber was found to predate the 1882 flood and is suggested to postdate the 1861 flood (Quaternary Consultants Ltd.

1995c:12). The manure may have been related to the homestead period when several different farm structures were located in the area as indicated on mid-19th century maps of the area. No features related to these structures have yet been recorded.

Only a small amount of pre-contact cultural remains have been recorded on the south point, though a pre-contact secondary cremation burial on the bank of the Red River, immediately adjacent to the support caissons for the north abutment site, is one of the most significant finds made in The Forks area. It was encountered during excavation for the construction of the north abutment of the Norwood Bridge (Quaternary Consultants Ltd. 1996a:47). In a secondary cremation burial, the deceased is buried in the ground and a fire maintained over the grave. Finds associated with the burial include a thin rectangular deposit of charcoal, interpreted as a possible bark, wood or leather container, the remains of a pole, and the bones of an owl (Quaternary Consultants Ltd. 1996a:52, 53). No cremation burials have been previously recorded in the area in an archaeological context though further east they have been recorded at Late Woodland period sites containing Blackduck ceramics (Quaternary Consultants Ltd. 1996a:54). The earliest recorded date for Woodland culture cremations is A.D. 130 and a date of about A.D. 620 is suggested for this burial. This date is based on evidence obtained from earlier investigations at The Forks containing Blackduck ceramics within the same time range as proposed for the burial (Quaternary Consultants Ltd. 1996a:54, 55). A small pre-contact occupation horizon was also encountered during the same project and tentatively identified as Blackduck (Quaternary Consultants Ltd. 1996a:i). This occupation likely represents a small short-term campsite occupied by a small group (Quaternary Consultants Ltd. 1996a:78).

Pioneer Avenue/Pioneer Boulevard

The archaeological potential of the Pioneer Avenue/Pioneer Boulevard area is variable though the area around Water Avenue at Pioneer Boulevard has been very productive of artifacts as were the excavations at CanWest Global Park. A total of 95,543 artifacts were recovered during impact assessment and monitoring of The Forks access project south of Water Avenue. Of these artifact recoveries, 2695 were derived from the railway period occupation layer and 92,848 were recovered from 13 separate cultural levels which have been dated between A.D. 1000 and 1400 (Quaternary Consultants Ltd. 1999a:i).

Railway period

Aside from the railway fill deposit that has been found throughout The Forks site, including the Pioneer Avenue area, some evidence for railway associated structures have also been found. Concrete beams relating to former freight sheds were encountered on the northwest corner of the intersection of Pioneer Boulevard and Pioneer Avenue during The Forks access project (Quaternary Consultants Ltd. 1999a:206).

Industrial and residential period
Soil layers consisting of structural remains, loam and sawdust, and containing artifacts from the period of residential and business activity in the area after 1880 are found in this area of The Forks as are the basements of former buildings (Quaternary Consultants Ltd. 1996f:i).

Fur trade period
The area appears to have been peripheral to the fur trade occupation and activities at The Forks which tended to focus on the junction of the Red and Assiniboine rivers to the south and Point Douglas to the north (Quaternary Consultants Ltd. 1996f:105). No evidence of occupation layers of this period were found during the various projects undertaken in the area.

Pre-contact
Based upon experience gained from monitoring numerous projects in and around The Forks over the past 15 years, Sid Kroker has observed a general pattern of pre-contact site locations. He notes that most of the pre-contact sites appear to be located immediately adjacent to the north bank of the Assiniboine River or inland of the west bank of the Red River. For the area south of Water Avenue he observed that the number and density of archaeological horizons diminished toward the east approaching the Red River (Quaternary Consultants Ltd. 2000d:104).

An extensive cultural horizon dated to 665 years ago was encountered during many of the projects carried out along the northern end of Pioneer Boulevard. It was found to extend throughout the entire impact zone during the geo-technical investigations of the West Roads project, except where it has been removed through previous excavation (Quaternary Consultants Ltd. 2001a:i). It has been possible to correlate this layer across a wide area and through a number of projects including the south dugout of CanWest Global Park; the north side of Water Avenue; south of Water on the once proposed extension of St. Mary Avenue; south along Pioneer Boulevard; east along the once proposed York Avenue extension; and south into The Forks gravel parking lot (Quaternary Consultants Ltd. 2001a:25). Material from this layer found in association with the festival park development is scarce, suggesting the location is on the periphery of the main occupation area. While the known extent of the occupation zone is substantial, it is also considered to represent only a portion of its actual area and reflects the limits of the investigation rather than that of the horizon (Quaternary Consultants Ltd. 2001a:25).

The horizon contains ceramics associated with a number of distinct cultural groups from beyond the local area. The material has been interpreted to represent a meeting of Algonkian peoples from central and southern Manitoba, northwestern Ontario, northwestern Minnesota, and possibly parts of Minnesota and North Dakota along the Red River valley. Kroker and Goundry mention such an event is held in local Aboriginal oral history, though it is not otherwise documented (Quaternary Consultants Ltd. 2001a:25). Other more deeply buried cultural horizons

found in the area are less substantial and believed to represent a single occupation event or successive occupations between flood events occurring between the early Late Woodland and Archaic periods (Quaternary Consultants Ltd. 2001a:25; Quaternary Consultants Ltd. 2000d:9). To date all of the diagnostic material relate to one or another Late Woodland Period cultural tradition. These materials include Blackduck, Rainy River, Bird Lake, Duck Bay, Plains Woodland, Sandy Lake, Red River, and Oneota styles of ceramics and Plains Side-Notched or Plains Triangular style projectile points (Quaternary Consultants Ltd. 1999a:208).

Stratigraphy
A layer of clay fill overlying the remnants of building foundations are associated with the demolition of residential and commercial structures along Pioneer Avenue. Below this layer is the railway period fill deposit which overlies the pre-contact strata with artifacts associated with various Late Woodland ceramic traditions (Quaternary Consultants Ltd. 1988:13-14). The depth of the fill layers varies considerably from as little as 40 cm to 220 cm with the deeper deposits interpreted as indicating full or partial basements or crawl spaces (Quaternary Consultants Ltd. 2001a:5).

During many of the projects undertaken in the area at the northwest end of the site in the vicinity of Pioneer Boulevard and Pioneer Avenue, two pre-contact horizons are frequently found. The upper and thicker of the two averages 1.5 cm and the lower, from 20 to 50 cm below the first, is about 0.5 cm thick. The areal extent of these layers is unusual at The Forks where very few strata are found to extend for greater than ten metres in any direction due to the effects of flooding. The consistent presence of these layers suggests the location was not subject to the severe soil erosion common elsewhere at the site (Quaternary Consultants Ltd. 1996f:5).

Previous impacts
Basement excavations associated with commercial and residential buildings have impacted upon some of the pre-contact layers in the area, as has a foundation trench associated with CNR Freight Shed No. 2 (Quaternary Consultants Ltd. 1990a:13).

Assiniboine River north bank
Stratigraphy
During the monitoring of the Stage I construction program, five archaeological strata were encountered in the vicinity of the Travel Manitoba Idea (Explore Manitoba) Centre at the Johnston Terminal ranging in depth from 150 - 280 cm below the surface. Included in these strata are small discontinuous loci of pre-contact occupation sites dating to the Archaic Period around 3000 years ago (Kroker and Goundry 1993:159).

Railroad fill was present to a depth of one metre on the upper bank and up to three metres thick

on the lower terrace. This layer contained artifacts relating the post-fur trade period, largely representative of the site's function as a railroad centre over the century prior to its redevelopment in 1988 (Quaternary Consultants Ltd. 1994d:1; Kroker and Goundry 1993:159).

A radiocarbon sample taken from a thick sand deposit lying about 1.5 metres below the surface and 65 cm below the railroad fill was determined to be about 750 years old, dating the period of the massive flood event that deposited this sand to about A.D. 1200. This layer is as much as 100 cm thick in some locations and is one of the few layers that has been recognized to occur in many parts of The Forks site, and is therefore a useful temporal marker (Kroker and Goundry 1993:166).

Bank building
There is evidence to suggest that a major bank building operation took place on the north bank of the Assiniboine River some time after 1940. This was possibly an effort to recover bank edge lost during the 1950 flood (Quaternary Consultants Ltd. 1996e:i), though it is also possible this action served to move the bank edge south of its historic location. Excavations in the area revealed the bank had been rebuilt with fill and stabilized with overlapping tires. Subsequent to that event, deposits of cinder, clay and artifacts accumulated on the new surface (Quaternary Consultants Ltd. 1996e:i, 9). This overlying deposit may be related to the same bank building event or may represent an unrelated and gradual accumulation of material (Quaternary Consultants Ltd. 1996e:41).

Garbage dump
There is a sequence of layers of slope wash and silt deposits along the bank edge of the Assiniboine River that are marked with coal dust and fine cinders and contain historic artifacts. The area shows the evidence of long use as a garbage dump. Along the river's edge, the upper 1.2 metres consist of black cinders and historic debitage. This dump, referred to as Winnipeg Dump Site No. 1, is believed to date to the period after the demolition of the Hudson's Bay Company flour mill in 1907. This interpretation is based upon the discovery of an ash layer believed to be associated with the dump overlying the fill in a cellar associated with the flour mill (Kroker 1993:181).

The deposits of historic debris at the bank edge were found to extend below current water levels east of the Main Street Bridge during its construction (Quaternary Consultants Ltd. 1996e:i). Large deposits of container artifacts likely associated with the dump were also found in the area of the heritage plaza during the assiniboine riverfront quay project (Kroker and Goundry 1993:160). The practice of dumping debris at this location is believed to have been continued in an unauthorized manner. Artifacts found in the upper layers likely relate to local businesses present during the late 1940s and early 1950s. It is not clear whether these deposits are the result

of cumulative dumping or a single clean up of dumps built up on local business sites over the years (Quaternary Consultants Ltd. 1996e:41).

Railway period
The railway fill layer is found throughout the area on the north bank of the Assiniboine River, though the associated grey ash horizon was not continuous and may have been disrupted by previous building construction including the southern annex of the Grand Trunk Pacific Stable which was removed in 1988 (Kroker and Goundry 1990:27). Other evidence of the railway period occupation includes the remnants of a spur line along the upper bank of the Assiniboine River which is associated with a series of pilings driven into the scarp of the bank (Kroker 1993:182). A number of pieces of ceramics associated with either the Canadian Northern or Grand Trunk Pacific Railroad were found in an area adjacent to the former spur line during monitoring of the riverfront quay construction (Kroker and Goundry 1993:160).

Immigration period
A layer of milled wood, interpreted to be the remnants of a boardwalk, was found in the area of the Johnston Terminal during the monitoring of the Stage I construction program. The boardwalk was likely constructed and utilized during the immigration period and may have been associated with the Hudson's Bay Company flour mill or the immigration sheds (Kroker and Goundry 1990:156, 22).

Hudson's Bay Company
A manure layer and other subsurface soil horizons likely associated with the Hudson's Bay Company experimental farm or subsequent private farm operations were found in the area of the Johnston Terminal (Kroker and Goundry 1990:28; Quaternary Consultants Ltd. 1996b:22). Remnants of the Hudson's Bay Company flour mill complex (1874-1907) were also located in the area (Kroker 1993:180). No evidence of Fort Gibraltar II/Fort Garry I was found during the heritage plaza construction, suggesting it may have been positioned closer to the bank of the Assiniboine River south of The Forks heritage plaza (Quaternary Consultants Ltd. 1996b:i).

Fur trade period
No archaeological evidence of the fur trade period occupation was found in this area. It is suggested this may be due to land modification activities carried out by the Northern Pacific and Manitoba Railroad which may have removed much of the fur trade period evidence from what is considered to be the likely location of Fort Gibraltar II/Fort Garry I, immediately south of the Oodena Celebration Circle (Quaternary Consultants Ltd. 1996b:23).

Pre-contact
While there are major occupation layers surrounding the heritage plaza there has been no

evidence found for the extension of pre-contact occupation layers, including the Archaic horizons, into this area. Both natural and cultural factors have been proposed to account for this absence of material, including erosion, the relatively greater suitability of other areas of the site for occupation, and disturbance of the area by the Northern Pacific and Manitoba Railroad (Quaternary Consultants Ltd. 1993b:i).

Late Woodland

Only traces of Late Woodland (ca. 1200-200 B.P.) occupations have been recorded in the area including a small hearth and a few non-diagnostic ceramic sherds (Kroker 1993:179). One horizon containing pre-contact ceramics suggestive of a Late Woodland Period occupation by a Plains culture group located north of Johnston Terminal appears to have been severely impacted by the building's construction in 1928. The locality may have been peripheral to the main occupation area and used for the deposit of refuse (Quaternary Consultants Ltd. 1994d:1, 11).

While Parks Canada excavations at the North Point encountered several occupation horizons, it does not appear they extend into the heritage plaza area, as no trace of these cultural horizons appeared in the deeper parts of the ceremonial bowl. It is possible the lack of archaeological strata here may be due to earlier land modification activities carried out by the Northern Pacific and Manitoba Railroad. This suggestion may also account for the lack of archaeological strata associated with the fur trade period so close to the location of Fort Gibraltar II/Fort Garry I. Erosion due to flooding and the effect of natural topography on site selection are also identified as possible factors contributing to the lack of cultural resources. Pre-railway period landforms such as the levee at the bank edge would have provided better drainage and visibility along the river and would have been more open to breezes. These factors may have made the North Point area a preferred location for a camp over areas further removed from the bank edge (Quaternary Consultants Ltd. 1996b:23).

Archaic

Two Archaic Period (ca. 8000–2000 B.P.) horizons have been found in the area of the Forks Historic Port and have been tentatively dated to about 2200 and 3000 B.P. (Kroker and Goundry, comp. 1993:i). The upper horizon appears to have been a short period spring or early summer occupation. Various loci associated with the lower horizon are likely components of an extensive Archaic horizon first located during the Stage I construction project and suggested to be about 2500 square metres (Kroker and Goundry 1993:167, 168; Quaternary Consultants Ltd. 1993a:32). Diagnostic projectile points have been found which suggest that three different groups were present at the site during the Archaic Period and had access to lithic materials from Manitoba, North Dakota, the Lake Superior region and Texas (Quaternary Consultants Ltd. 1994b:i). Evidence for a gully at the east edge of the Archaic horizon is believed to have provided a natural boundary for the campsite (Quaternary Consultants Ltd. 1996b:23).

Impacts
A number of the occupations recorded in this area have had an impact on the remains of earlier occupations. Among these impacts are modern underground services installations, railway period installations and those associated with commercial activity in the area during the 1940s and 1950s (Quaternary Consultants Ltd. 1993b:21, 23). Wooden pilings associated with the Hudson's Bay Company mill complex were found to have impacted upon the two Archaic horizons (Kroker and Goundry, comp. 1993:32, 34). It appears the construction of the Johnston Terminal in 1928 may have largely eradicated an archaeological horizon containing pre-contact ceramics (Quaternary Consultants Ltd. 1994d:1, 11). Some evidence of this occupation was found at the north end of the building while the majority of the occupation area seems to have been concentrated to the south and removed with the excavation of the basement.

Land modification activities by the Northern Pacific and Manitoba Railroad may be responsible for the lack of archaeological strata encountered during the 1996 excavation of the heritage plaza (Quaternary Consultants Ltd. 1996b:23). Specifically it is thought these actions may have removed much of the evidence for the fur trade period occupation from the likely location of Fort Gibraltar II/Fort Garry I immediately south of the ceremonial bowl, though erosion may have also been a contributing factor (Quaternary Consultants Ltd. 1996b:23).

Red River, west bank
Stratigraphy
The stratigraphic profiles recorded on the west bank of the Red River showed varying depths of fill overlying undisturbed riverine sediments. Some of this fill is related to building construction and demolition activities over the past 130 years, and the construction of the Winnipeg Transfer Railway in 1890 (Quaternary Consultants Ltd. 2001a:5). The current bank edge does not reflect its historic natural condition. Its current form is largely a result of a massive degree of filling during the railway occupation of the site, undertaken to raise the low lying portions of the site and provide a level surface for laying track and building facilities. Prior to this event, the west bank of the Red River below The Forks included a broad low lying terrace (Quaternary Consultants Ltd. 2000d:107). The depth of the railway fill layer varies considerably across the area and is believed to be at least partly a function of proximity to the roundhouse (Quaternary Consultants Ltd. 2000a:2).

Summary
Evidence for a variety of occupation periods have been found in the area of the west bank of the Red River, mainly in the area near the B & B Building during activities associated with its redevelopment as the Children's Museum. Beyond this area recoveries are very slight and the depth of fill is considerable. While the recoveries were varied, covering most of the occupation periods previously identified at the site, none of the recoveries were extensive. Most of the

evidence comes from the post-Contact Period, including the fur trade, immigration, and railway periods. Evidence for a Late Woodland Period occupation was also found (Quaternary Consultants Ltd. 1994a:i, 6, 11-12, 15).

The area is known to have held the site of Fort Gibraltar I northeast of the B & B Building as well as significant portions the Hudson's Bay Company experimental farm and stables. The immigration sheds were located immediately west of the B & B Building which formerly had a roundhouse attached to its north end (Quaternary Consultants Ltd. 1992:10-11).

The resources identified during monitoring of excavation activities include the substantial remains of the brick foundations of the former roundhouse at the north end of the B & B Building, a midden relating to the occupation of the immigration sheds, and a small, previously disturbed pre-contact period site. The plow zone related to the Hudson's Bay Company experimental farm was encountered at 38-72 cm below surface during monitoring of subsurface activities around the B & B Building (Quaternary Consultants Ltd. 1992:6). Mammal bones with butchering evidence representative of post-contact occupation are interpreted as being related to the Fort Gibraltar I Period (Quaternary Consultants Ltd. 1994a:11-12).

Two relict soil horizons were observed at depths of 195 and 229 cm below surface. The upper horizon was interpreted to be a Late Woodland occupation based on the depth of the horizon. Pre-contact ceramic artifacts recovered during the project were estimated to be 400 to 800 years old (Quaternary Consultants Ltd. 1994a:15).

The eastern part of Parking Lot 4 was occupied by two construction materials facilities. The City Asphalt Plant was in operation from 1900 to 1934, and Building Products and Coal Company from 1920 to 1974. Considerable quantities of material related to these operations were recorded during the festival park excavations in the area of the bandshell (Quaternary Consultants Ltd. 2000c:67).

Impacts

Investigations around the foundations of the B & B Building show there was only minimal subsurface excavation during the construction of the foundations of the building. The original foundation excavations were approximately one metre in depth and not much wider than the footings (Kroker 1989:7). No occupation layers were encountered during the monitoring and much of the excavation occurred in fill deposits (Kroker 1989:4). It appears about one metre of upper sediments would have been excavated during the construction of the structure's medial mechanics pits. This action would have eliminated any fur trade period strata within these trenches (Quaternary Consultants Ltd. 1992:10).

Central zone

It is suggested that the sparse pre-contact recoveries from the festival park area compared to the density of the recoveries from The Forks access project located to the northwest indicates the central portion of the East Yards was not heavily used during the 13th century, possibly due to dense tree cover or being a low wet area. A deposit of gyttja, an organic sediment that forms at the bottom of lakes and sloughs, was found during investigations within the festival park. This finding provides additional support for the interpretation that the central portion of the East Yards may have been uninhabitable for a portion of the pre-contact period. It may indicate there was an oxbow lake and, prior to that, a meander channel in the central area of The Forks. The oxbow may have existed up to the 13th century as a slough and later a marshy area and therefore account for the sparseness of cultural resources between Arrival Square and the York Avenue intersection (Quaternary Consultants Ltd. 2000c:68).

This pattern of avoidance of the area is believed to have continued through the early Historic Period and even into the railway period. This part of the East Yards was relatively free of structures and contained mainly railway lines, one exception being the CNR Roundhouse (Quaternary Consultants Ltd. 1996c:13).

The stratigraphy in the area of the bandshell consists of historic fill overlying an intermittent A horizon overlying sequential layers of riverine-deposited sediments between which occur buried soil horizons marking periods of stable ground surfaces. The depth of the historic fill layer varies between 75 and 220 cm. Deeper fill deposits appear to be associated with former building basements or excavations for garbage disposal (Quaternary Consultants Ltd. 2000c:6).

Stratigraphy

Investigations conducted in the central area of the East Yards showed the stratigraphy to be much more complex than originally thought. These soils are just as variable and discontinuous as those at the north bank of the Assiniboine River. Even the very thick layers such as the 750 year flood sands, which are up to 100 cm thick in some locations, can pinch out, disappear, and reappear several metres distant in a different context (Kroker and Goundry 1990:146).

Certain strata were found to be widespread and provided some stratigraphic control. These include the railroad fill, plow zone, and the double A horizon situated below the plow zone and above the 750 year flood. At one location, 26 distinct soil horizons were recorded in the upper three metres (Kroker and Goundry 1990:147-149).

Contact and transition periods (1737–1870)

The most prevalent feature of the contact and transition periods is the buried plow zone relating to the Hudson's Bay Company experimental farm. It was observed at several locations along

Long Trench (Kroker and Goundry 1990:160).

Pre-contact period (4000 B.C.–A.D. 1737)
Traces of ash, charcoal and fish bone found during development activities in the parking lot north of The Forks Market suggest the area is at the periphery of a cultural occupation zone and may occur as a result of flood movement from the primary deposit location (Quaternary Consultants Ltd. 1996c:3).

Native ceramic period (A.D. 0–1737)
Diagnostic ceramic specimens identified as Blackduck or Bird Lake were recovered from the central area of the site during monitoring of the Stage I construction (Kroker and Goundry 1990:161). A radiocarbon date of A.D. 1300 was obtained from material associated with the Bird Lake ceramics. Another date of A.D. 1080 is believed to correspond to two other Late Woodland Period ceramic occupations (Kroker and Goundry 1990:161).

Archaic Period (6000 B.C.–A.D. 0)
Localities including two hearths believed associated with the Archaic Period were encountered during monitoring of the Stage I construction. While identification of the period of occupation for many of the localities was based on their depth, stratigraphic context and associated cultural assemblages, two radiocarbon dates —900 B.C. and 380 B.C.— were also obtained. The two hearths did not provide enough organic remains to provide a radiocarbon date but have been estimated to be about 6000 years old based on the depth of the deposits below horizons dated to 3000 years B.P. and assuming a fairly constant rate of soil deposition of about 100 cm per 1000 years (Kroker and Goundry 1990:162). The patterning of the site locations observed during the monitoring of the Stage I construction have led to an interpretation that campsites were placed at the periphery of the hypothesized oxbow located in the central portion of the East Yards (Kroker and Goundry 1990:163).

Summary for The Forks National Historic Site
North Point
While it is not certain that Charles Bell's observation of a major loss of bank edge affecting the remains of a fort refer to those of Fort Gibraltar II/Fort Garry I, it is likely these are the remains to which he is referring. He indicates the presence of cellars and chimney remains but suggests that most of the area surrounded by the enclosure has eroded into the river (Kelly et al. 1979:27).

Flooding and erosion have almost certainly affected the resources at this location and evidence of its effects on the pre-contact cultural strata have frustrated attempts to correlate stratigraphic layers recorded during the 1988 investigations (Adams et al. 1990:4-5).

Stratigraphy
The amount of railway era fill overlying the site was found to be variable in the 1984 excavations with depths of almost two metres encountered in some areas while in other places deposits were less than half a metre thick. The dumping of debris over the bank edge has resulted in fill deposits up to five metres thick. Accumulated flood deposits up to eight metres deep have been found in some areas near the river and it is suggested they may exceed 11 metres in areas further removed from the bank (Adams et al. 1990:4-5). During the 1984 investigations the area was found to have been cut by an extensive network of water and steam pipes laid in shallow trenches (Priess, Nieuwhof and Ebell 1986:10).

Historic Period
The 1988 excavations identified seven distinct soil horizons representative of the Historic and Proto-Historic periods. This includes the railway fill layer and a few features likely associated with the railway period including footings, postholes, small pits and dump deposits. It is also possible that some of these features may be related to the immigration sheds present between 1872 and 1885. A post-fur trade period horizon of mixed soils and artifacts was identified as well as three layers relating to the late 18th to mid-19th century. Among the features associated with the later occupation are trash-filled pits and cribbed cellars. The flood deposits between the occupation layers were sometimes found to contain artifacts. A pit containing a number of partial and complete domestic animal skeletons may be related to the 19th century Hudson's Bay Company experimental farm (Adams et al. 1990:7-9).

The scattered remains of several open campfires, ash dumps, a track-like feature and several artifact concentrations were also identified as being associated with the 19th century occupations and may represent small transient camps associated with the fur trade. The presence of large quantities of small trade items may also indicate the presence of Native occupants in or around the post (Adams et al. 1990:7-9).

Pre-contact period
Eight pre-contact horizons, including a possible proto-historic living floor, were recorded during the 1988 investigations, and ten were recorded in 1984. A very late pre-contact horizon contained few features but some ceramic sherds, possibly of Sandy Lake Ware. Five occupation layers were identified below the major flood deposit, all related to one or more Blackduck occupations. Each of these occupations were distinctive but had a number of traits in common. Each layer included a mixture of fish and animal remains, contained shallow unprepared hearths and very few lithic artifacts. The amount of soil development was small representing a very short occupation, possibly a single season. No fishing gear was recovered, though the large quantities of fish remains encountered suggested that fishing and fish processing was a major focus at the site and nets or weir systems may have been employed (Adams et al. 1990:7-9; Priess, Nieuwhof and

Ebell 1986:6-7).

The 14 charcoal samples recovered yielded dates ranging from 500 to 1560 B.P. The most recent came from just above the possible Sandy Lake level and more than half are from Blackduck levels. Most of the ceramic recoveries were in poor condition and a high degree of post-depositional scattering is suggested by the small number of fragments which can be associated with individual objects. The number of lithic recoveries was also small but showed significant variation in distribution of local versus exotic material, both within and between occupation levels (Adams et al. 1990:7-9).

Fort Gibraltar I

During the 1984 investigations it was observed that the edges of the upper terrace appeared to be formed primarily of railway related debris (Priess, Nieuwhof and Ebell 1986:5-6). The railway period fill extends throughout the area and was found to consist largely of gravel overlying layers of cinders, sand or coal. Some of the layers contained railway hardware and several structural features related to this period were also encountered, including a portion of the 1889 roundhouse foundation (Priess, Nieuwhof and Ebell 1986:10). The public archaeology program carried out around the proposed Fort Gibraltar I location encountered railway fill deposits approximately 1.75 m deep.

Soil testing carried out along the upper bank in the area around the presumed location of Fort Gibraltar I showed railway fill extending to a depth of over five metres. In some cases the thickness of the fill deposits increased toward the edge of the upper terrace and appeared in one test to extend roughly to the level of the lower terrace. The general impression received from the testing was the present topography in the area around the Fort Gibraltar I location is largely the result of extensive dumping of debris along the bank edge. This has had the effect of increasing both the elevation and the width of the upper terrace, leveling its surface and shifting its edge toward the river. This leaves the pre-railway period ground surfaces and edges protected beneath varying depths of fill apparently most deeply buried closer to the river (Priess, Nieuwhof and Ebell 1986:5-6).

Post holes and a layer of manure believed associated with the Hudson's Bay Company experimental farm period were recorded during excavations conducted during the 1991 public archaeology program (Kroker, Greco and Peach 1992:28, 130). Soil impressions interpreted as cart wheel ruts and hoofprints (likely cattle or oxen, and horse) and including a possible human footprint, all associated with the fur trade period, were found immediately below the 1826 flood sands and above the burnt remains of the fort structures (Kroker, Greco and Peach 1992:30, 131). The layer containing the prints is believed to have been deposited by a minor flood episode sometime between the summer of 1817 and the spring of 1826 (Kroker, Greco and Peach

1992:131).

Fur trade period
The remains of a single structure and small clusters of artifacts were encountered during testing in 1984. It was not clear whether or not the artifacts were flood deposited. The structural remains consisted of a charred floor with fireplace base, a probable cellar and a heavy concentration of baked chinking. The features were interpreted to be the remains of a log structure with a plank floor laid on three joists and a mortared limestone fireplace and chimney on the north wall. While the artifacts are generally attributable to the first half of the 19th century and the burned remains are consistent with the history of Fort Gibraltar I, none of the material could definitely be attributed to the fort (Priess, Nieuwhof and Ebell 1986:7-8).

The excavation of a cellar depression in 1989 and 1990 resulted in the recovery of 1591 trade beads, 394 pieces of lead shot, two gunflints and two trade rings. A similar cellar depression was excavated in 1984 and may have been located within the same structure (Kroker, Greco and Peach 1992:131). Additional evidence was gathered during the public archaeology program which led to a reinterpretation of the form of the structure recorded in 1984 and the discovery of the remains of what is possibly an additional structure (Kroker, Greco and Peach 1992:134). What was thought in 1984 to be the interior wall of a row housing structure was reinterpreted as an outer east wall. An unlined and uncribbed cellar east of this wall could have been associated with another building or an attachment, possibly a hangard or storehouse for meat and other food. Based on the dimensions of the remains it is believed the building may have been the store described by a contemporary of the fort, Jean Baptiste Mennie (Kroker, Greco and Peach 1992:136).

Four different activity areas have been identified at the Fort Gibraltar I location. One of these areas is related to flint working, possibly representing the manufacture of a stone tool or gun flint. Another manufacturing area containing a high concentration of small metallic scrap iron fragments may be related to the manufacture of tinkling cones. A deposit of small wood and bark fragments is interpreted as log and timber preparation during construction of the fort buildings, manufacture of furniture or preparation of firewood. A deposit of horse bone is believed to be the result of butchering activity (Kroker, Greco and Peach 1992:137).

Evidence for an earlier historic occupation of the site was also found in undisturbed deposits below those associated with Fort Gibraltar I and include a fragment of a French trigger guard and a variety of faunal remains. The evidence indicates the occupation was more than short term and there are a number of possible Native or European occupants, both documented and undocumented, that might be associated with the site (Kroker, Greco and Peach 1992:137).

Impacts
Bryce, writing in 1885, concluded that during the 19th century 25 yards of bank had been lost on either side of the river due to erosion (Priess, Nieuwhof and Ebell 1986:5-6). The remains were cut by a narrow and shallow trench for the installation of a fence of undetermined period or origin (Priess, Nieuwhof and Ebell 1986:7-8).

Northern end of The Forks NHS
Very thick fill deposits have consistently been reported during soil testing and monitoring operations at the extreme northern end of the site. Of the seven auger holes drilled for the lamp bases along the pathway through the site to the festival park, none extended below the fill layer. Each of these holes were drilled to a depth of approximately 2.5 metres (Downie 1999b). Fill deposits of three and ten metres were recorded on the upper bank at the north end of the site during soil testing in 1987 (Ebell 1987). Fill deposits almost three metres deep were recorded about 65 metres north of the B & B Building in 1984 (National Testing Laboratories Limited 1984).

These findings are consistent with what has been recorded outside of the national historic site by Sid Kroker during projects related to the festival park, Forks access and Provencher Bridge projects. From 1900 to 1934 the City Asphalt Plant operated in this area. This operation was joined by the Building Products and Coal Company in 1920 which continued until 1974. Much of the fill in this area is believed to be related to these operations (Quaternary Consultants Ltd. 2000c:67).

Conclusions

It is hoped that the information presented above regarding the cultural resources of The Forks, their character, condition, and how they have been shaped and affected by human and natural forces will assist in developing management practices best suited to their ongoing protection. In this section some of the more pertinent findings related to the history of The Forks that may inform future decisions regarding the protection of its cultural resources are presented.

Geological Beginnings and Early Occupation
While it appears there was a long period of time during which the confluence of the Red and Assiniboine rivers was located near the current junction of the La Salle and Red rivers, there is also evidence to suggest that the current Red and Assiniboine junction was established as early as 10,000 years B.P. This finding suggests that while no Palaeo-Indian occupation has yet been found at The Forks, there is the possibility that such an occupation may have taken place.

Dated evidence has been found for an occupation of the site during the Archaic Period as early as 4000 years B.P. There is also stratigraphic evidence suggesting an occupation as early as 6000 years ago. There is abundant evidence for occupation during the late Woodland Period and a particularly strong representation of Blackduck cultural material. For both the Archaic and Woodland period occupations, there is good evidence for the existence of long distance trade networks or for the visitation of the area by groups from neighbouring and more distant regions of the continent.

It appears that cultural remains at The Forks have been subject to significant loss through erosion as well as being impacted by later occupations. The relative scarcity of remains associated with the known occupations during the early fur trade period demonstrate this effect. Later fur trade and immigration period resources are also not very common with the exception of soils believed associated with the experimental farm period.

Most of the known archaeological deposits at The Forks have been significantly disturbed by flooding. It has been repeatedly observed that the stratigraphy at The Forks is very difficult to follow though there are exceptions, including the Archaic horizons on the north bank of the Assiniboine River and the late Woodland Period horizons in the vicinity of Pioneer Avenue and Pioneer Boulevard. These cultural strata appear to have been less affected by flooding, are much thicker and more intact.

The natural topography of the site is quite different from the level surface that is visible today and likely influenced the selection of building areas, campsites and activity areas throughout history. The current surface formation, while providing a certain level of protection to the underlying natural and cultural strata, also limits the ability to determine site potential based on topography. The areas most suitable for occupation at The Forks during much of its history may

actually have been fairly limited. Evidence for repeated occupations at locations between North Point and the Children's Museum and at locations along Pioneer Boulevard may indicate the extent of this zone.

Human Modification
The occupation of The Forks by the Hudson's Bay Company and, following that, the railway largely protected the site from the type of intensive development that occurred in the area surrounding The Forks during Winnipeg's initial period of urban development in the late 1800s. While both The Forks Renewal Corporation and Parks Canada have taken over the stewardship of the heritage resources and have active cultural resource management programs, the pace and degree of impact to the site over the past 15 years has been considerable.

Despite the limited degree of development that had taken place at The Forks prior to 1988 it is notable that much of the development seems to have occurred at the same locations as those of previous occupations. This pattern was also found in relation to the fur trade and pre-contact periods with evidence for the reoccupation of sites by later visitors having also been recorded.

Site Selection
It was noted that in the area of North Point there was a significant difference in the presence of archaeological strata between the 1984 and 1988 investigations, and those conducted for The Forks heritage plaza construction ten years later. Much of the difference between these areas has been attributed to preferential site selection and local topography. A swale discovered during investigations of the Archaic horizon in the archaeological preserve appears to mark the boundary of that site. As mentioned, later Woodland Period occupation strata appear to be absent from the area completely and it is suggested the levee present at North Point where the Parks Canada excavations were carried out in 1984 and 1988 made that a more suitable location.

Railway Period
Evidence for the railway period occupation is found throughout The Forks area. All of the surviving pre-1988 structures on the property date to this period and the thick layer of fill which covers the site is also associated with the railway. The layer of gravel which the railway initially laid down does not occur everywhere on site with the same regularity as the later cinder fill deposits. Kroker and Goundry suggest that most of the gravel fill was probably laid down at the north end of the site between the B & B Building and the rail terminal at Main and Pioneer (Kroker and Goundry 1990:154). Other remains associated with the railway period found in the northern area of the site include gravel surfaces and cobblestone platforms at the locations of the former warehouses and likely date to the period between 1908 and 1912 (Kroker and Goundry 1990:155).

The central portion of the East Yards tended to be used as a switching and mastering yard. It therefore has little potential for encountering structural features or even artifacts associated with the railway period other than those associated with the fill layer. The artifacts recovered from the fill layer are most likely to have been brought to the site with the fill and not associated with any activity at the location where they were found. Some exceptions are railroad spikes and rail car parts which may have been dropped along the tracks and warehouses (Quaternary Consultants Ltd. 2000c:66). Other types of non-railway debris found within the fill layer may have their origin as household waste collected and dumped at Winnipeg Dump Site No. 1 on the north bank of the Assiniboine River and used by the railway as fill.

It appears that large quantities of fill were placed on the lower terrace to raise its bank to the level of the upper terrace. Evidence for this fill averaging five metres or more was observed during the drilling of the vertical shafts for the installation of the land drainage system along the Red River east of the baseball stadium as well as during the 1995 hydro pylon caisson drilling (Quaternary Consultants Ltd. 2000d:107).

Site Redevelopment

The pace of change at The Forks since 1984 has been substantial. Over 50 separate projects involving excavation have been identified as having occurred during this period including infrastructure projects, building construction, visitor services development, archaeological testing programs and public archaeology projects. Many have required substantial disturbance of the site's various cultural layers. All of the projects have been conducted in compliance with applicable Provincial and Federal regulations regarding excavation and in almost all cases reports have been completed. The quantity of artifacts and information generated from all of this activity is enormous. Applying this information to the assessment of all future impacts at the site is difficult due the volume of material, but essential due to the nature of the site and number of developments there. Without an understanding of the cumulative effects of all past impacts and those likely to arise in the future, whether as a direct or indirect result of past developments, it is impossible to do a proper assessment of a project's impact potential. Hopefully this document will serve as a base from which these assessments can more easily be realized and to which additional information can be added in the future.

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Glossary

Altithermal
A warm and dry climatic period believed to have occurred in western North America between 8000 and 4000 years ago. It is also known as the Atlantic Climatic Episode (Manitoba Culture Heritage and Recreation 1989).

Archaic Period
A cultural period situated between the earlier Palaeo-Indian and later Woodland periods present in Manitoba between about 8000 and 2000 years ago. The period is defined materially by the absence of bow and arrow and ceramic technology and the presence of the atlatl or dart thrower (Manitoba Culture Heritage and Recreation 1989).

debitage
The waste or byproducts of stone tool manufacture. This category of artifact includes unutilized flakes and exhausted stone cores (Manitoba Culture Heritage and Recreation 1989).

gyttja
A soil deposit characteristic of standing water containing a large proportion of partially decomposed organic matter (Manitoba Culture Heritage and Recreation 1989).

hangard
A storage shed.

lithic
Identifies the material as consisting of stone. In the context of this report, it refers to selected minerals for the production of stone tools.

Palaeo-Indian Period
The earliest of the established North American cultural periods. It is associated with the Clovis, Folsom and Plano complexes and the hunting of large ice age mammals using spears. The Palaeo-Indian Period extends from about 12,000 years ago until the beginning of the Archaic Period about 8000 years ago (Manitoba Culture Heritage and Recreation 1989).

protohistoric
A period specific to a given region bracketing the time from the arrival of Europeans in North America to their documented presence within that region. It denotes a time prior to direct contact between a local aboriginal population and Europeans but during which their influence may already have been felt, such as through the acquisition of goods of European manufacture (Manitoba Culture Heritage and Recreation 1989).

tinkling cone
A cone or tube formed from metal and used as decoration on clothing. The name refers to the sound they make when they strike each other (Manitoba Culture Heritage and Recreation 1989).

Woodland Period
The most recent of the cultural periods of the eastern and mid-western parts of North America that preceded the arrival of Europeans. The period is marked by the manufacture of pottery, the use of the bow and arrow, burial mound construction and the cultivation of maize and other crops. In Manitoba the beginning of the Woodland Period dates to about 2200 years ago (Manitoba Culture Heritage and Recreation 1989).

Figures

Figure 1.

"General Survey of Upper Fort Garry & its Immediate Vicinity," July 31, 1848 by Captain Humpden Moody, Royal Engineers. Among the buildings indicated are the "Old Blk House", "Court Ho." and "Site of Old Fort" at the mouth of the Assiniboine near the former location of Fort Gibraltar II; and the "Stables Etc." along the bank of the Red River associated with the experimental farm.

Provincial Archives of Manitoba (619.2 gbb 1848R; N6094).

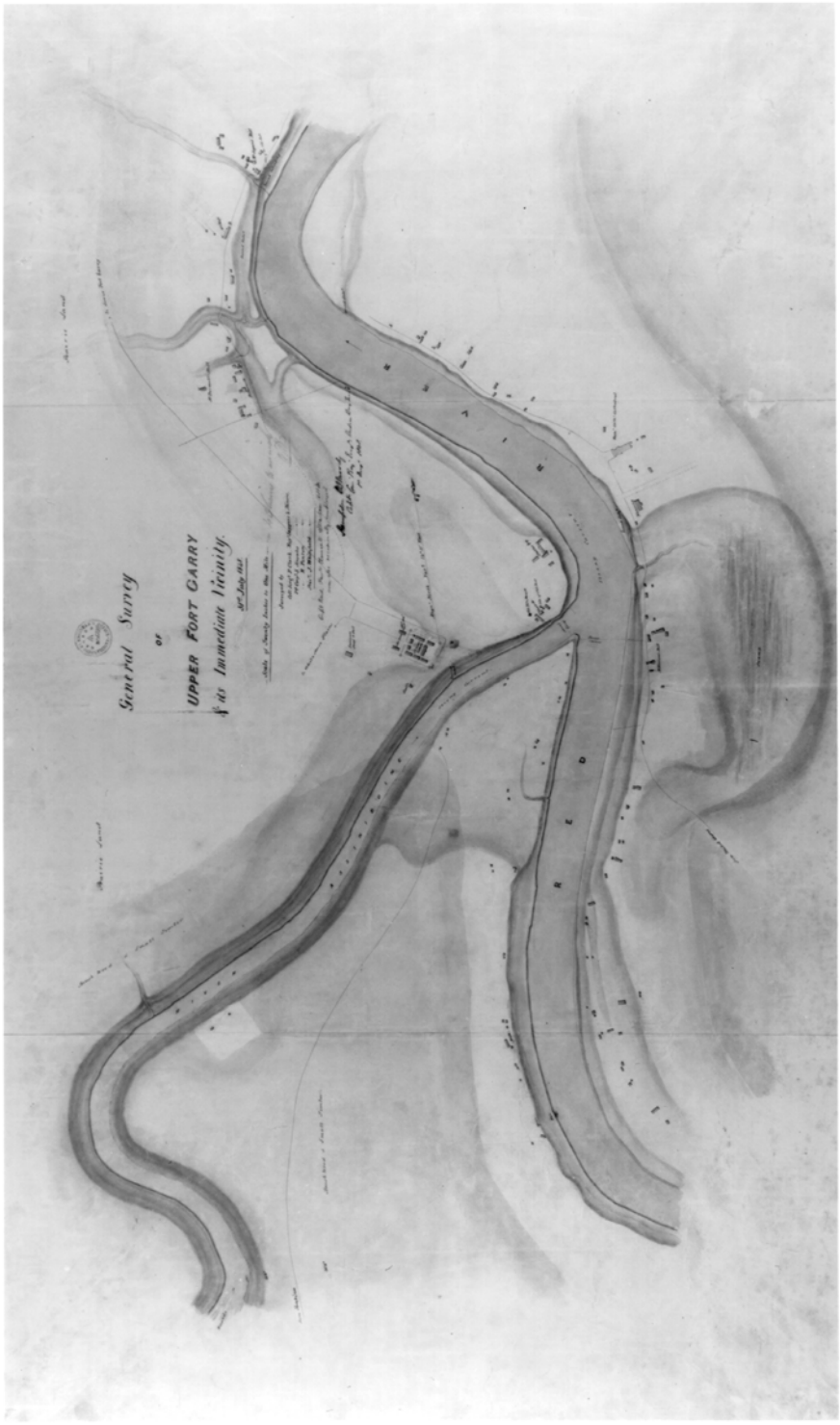

General Survey
of
UPPER FORT GARRY
& its Immediate Vicinity.
RED

Figure 2.

Detail of "General Survey of Upper Fort Garry & its Immediate Vicinity," July 31, 1848 by Captain Humpden Moody, Royal Engineers. Note the indications of topography at the site which seem to show the high ground in the area of The Forks to be confined to a zone running north from the north bank of the assiniboine at its mouth, following the Red River but located at some distance from the bank edge. A fairly broad middle terrace is indicated along the length of the west bank of the Red River beginning just north of the Hudson's Bay Company experimental farm buildings.

Provincial Archives of Manitoba (619.2 gbb 1848R; N6094).

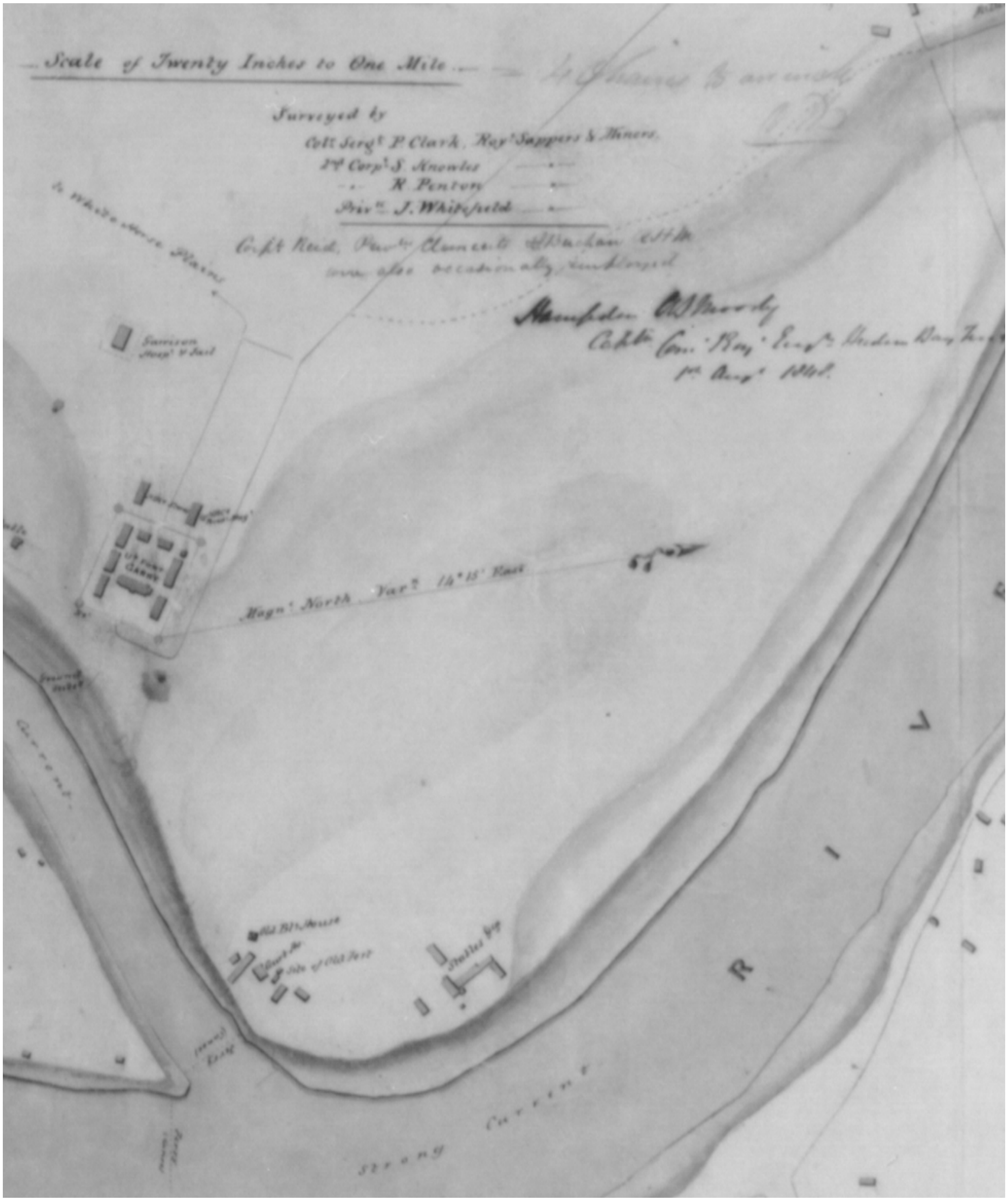

Scale of Twenty Inches to One Mile
Surveyed by
Col. Serg. P. Clark, Roy. Sappers & Miners
2d Corp. S. Knowles
R. Penton
Priv. J. Whitfield
Magn. North Var. 14° 15' East
Current
Strong Current

Figure 3.

Detail of "General Survey of Upper Fort Garry & its Immediate Vicinity," July 31, 1848 by Captain Humpden Moody, Royal Engineers with an overlay of recent developments at The Forks. While there may be distortions present in both the 1848 drawings and the placement of the recent developments, the changes in the outline of the bank edge may give some indication of the degree of bank building that has taken place along the west bank of the Red River since 1848. This figure also indicates the relationship between the recent development and what the map suggests regarding the pre-railway period topography.

Provincial Archives of Manitoba (619.2 gbb 1848R; N6094).


Scale of Twenty Inches to One Mile
Surveyed by
Colt. Serg.t P. Clark, Roy.l Sappers & Miners.
2.d Corp.l S. Knowles
R. Penton
Priv.te J. Whitefield
Strong Current

Figure 4.

A Map Showing the City of Winnipeg by G. McPhillips Jr. (A portion thereof), May 29, 1877.

National Archives of Canada (NMC 19746 1/4; NMC 19746 3/4).

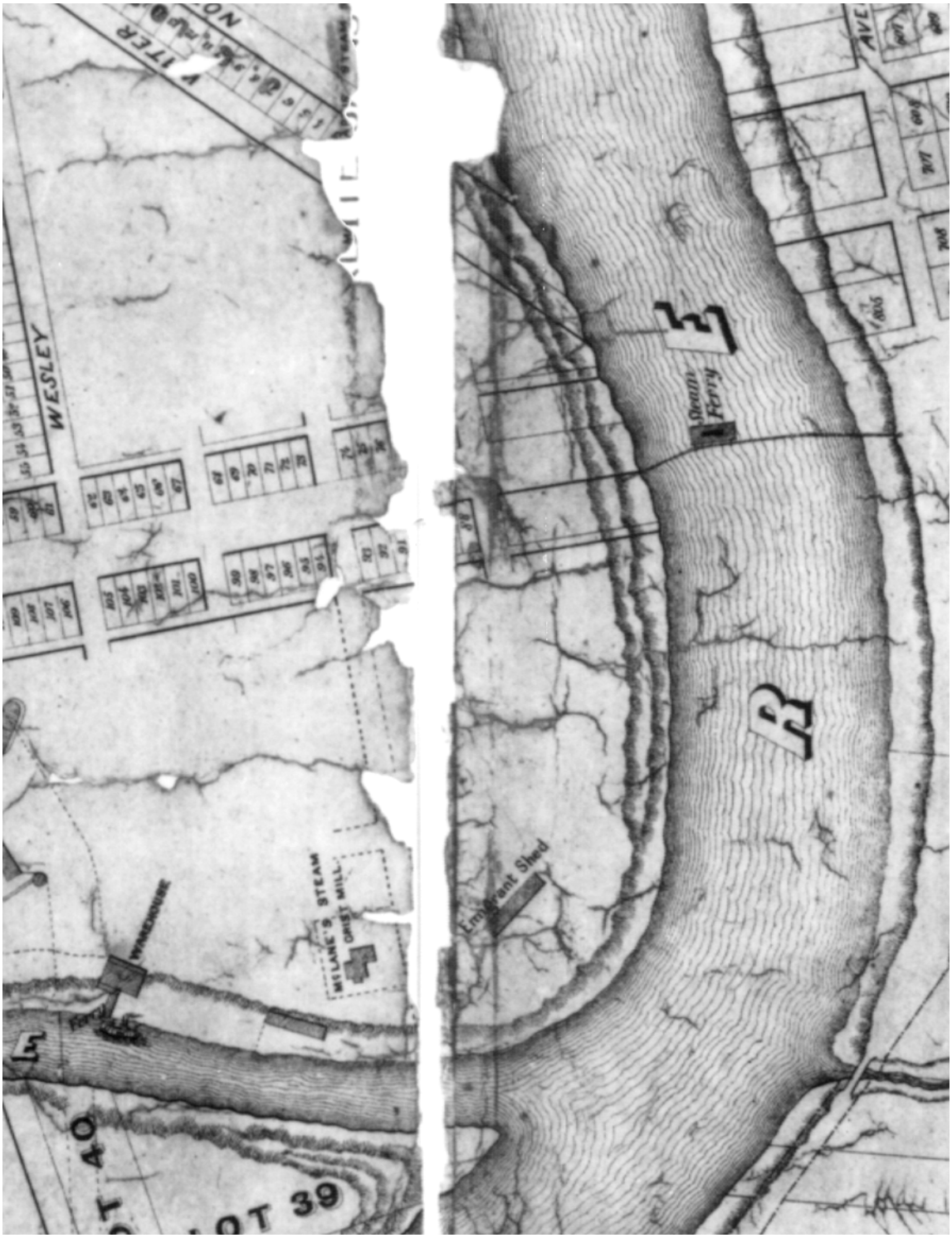

WESLEY
Steam Ferry
Emigrant Shed
MILLANE'S STEAM GRIST MILL
WAREHOUSE
LOT 40
LOT 39

Figure 5.

A plan of the east yards as they existed prior to its development; by the joint terminals, 1913.

National Archives of Canada (AT/540-Winnipeg-1913).

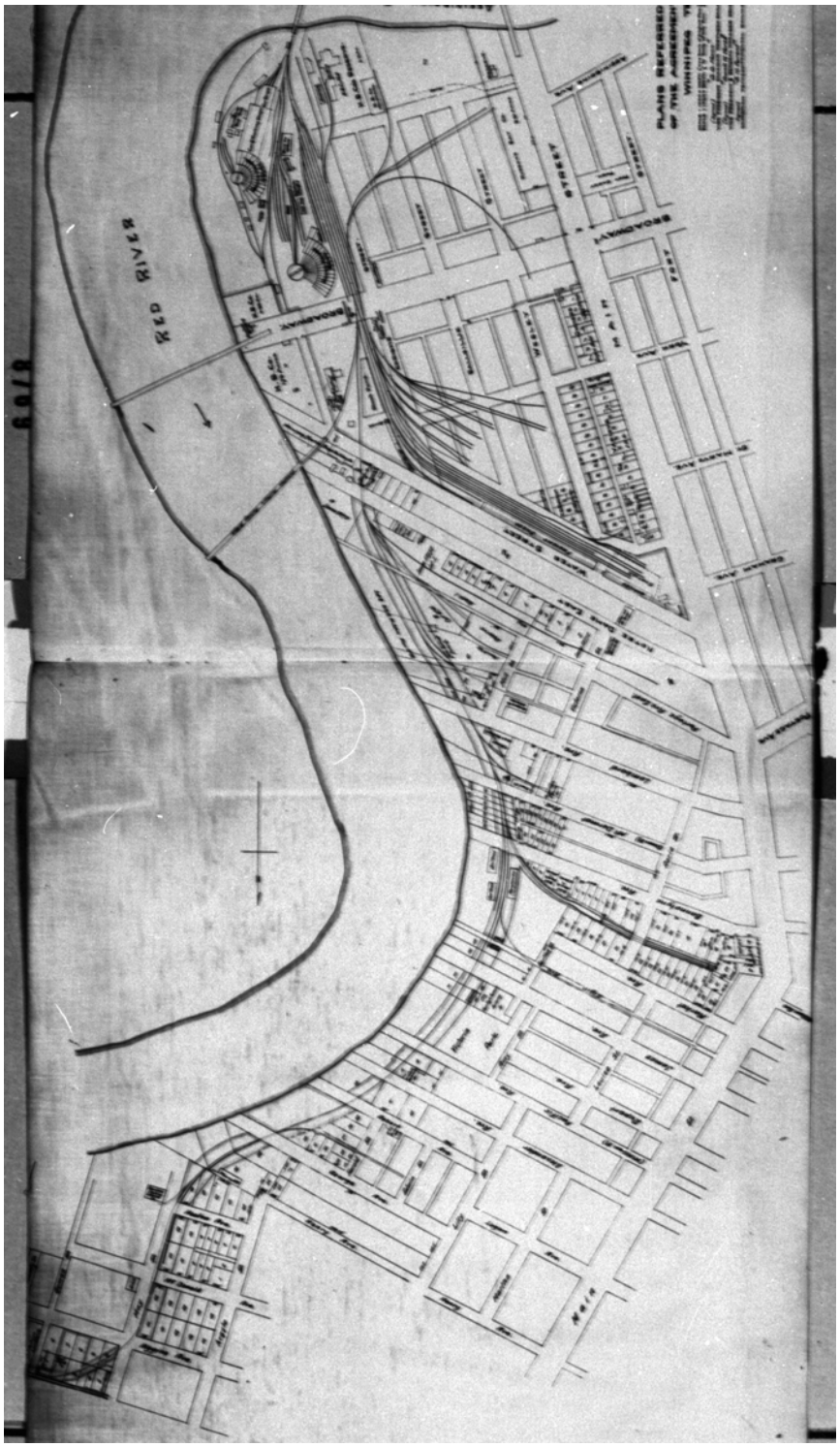

RED RIVER
BROADWAY
MAIN ST.

Figure 6.

"Insurance Plan of City of Winnipeg, Dec. 1955."

Provincial Archives of Manitoba (oversize).

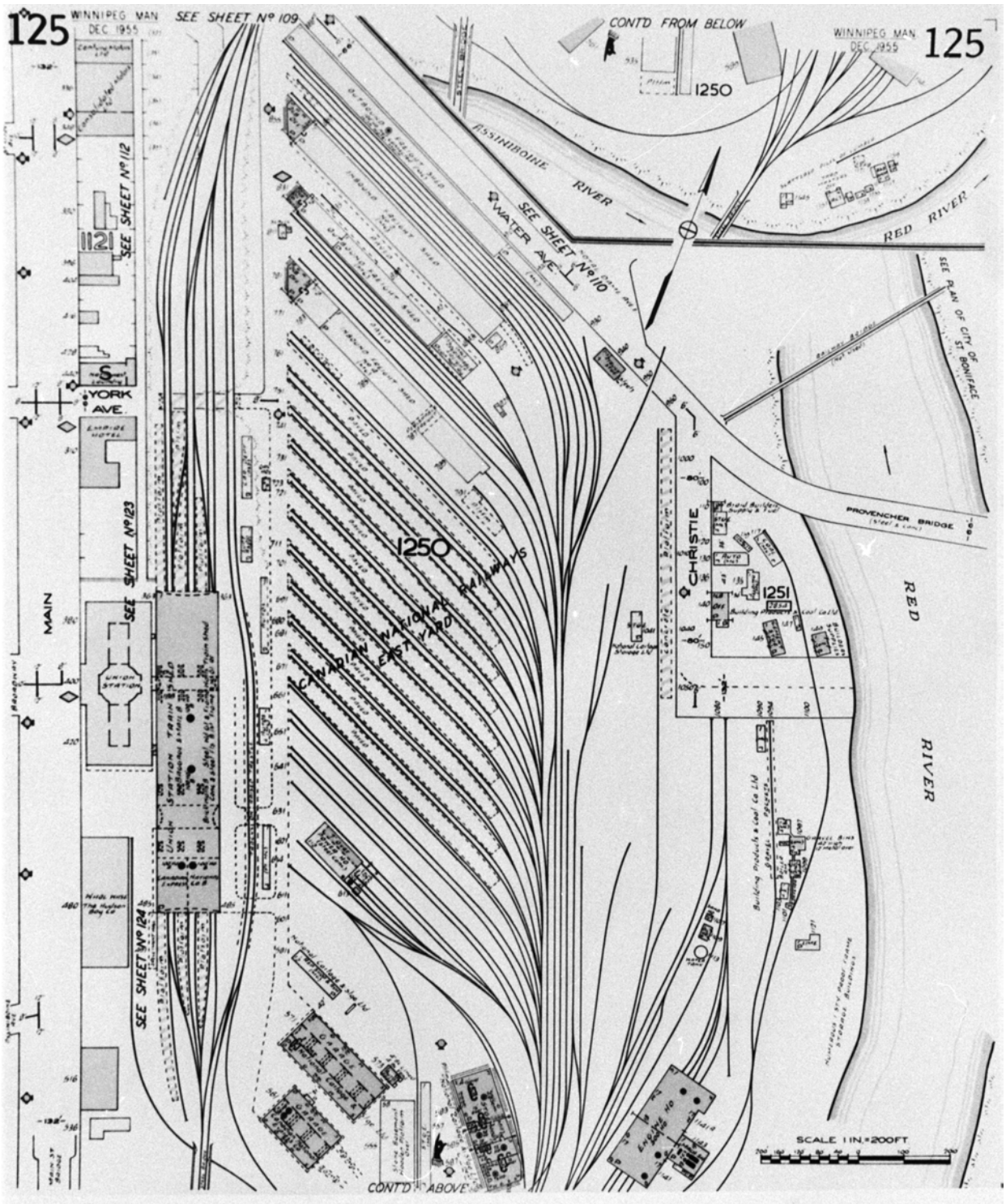

125
WINNIPEG MAN DEC 1955
SEE SHEET Nº 109
CONT'D FROM BELOW
1250
ASSINIBOINE RIVER
SEE SHEET Nº 110
WATER AVE
RED RIVER
SEE PLAN OF CITY OF ST BONIFACE
SEE SHEET Nº 112
YORK AVE
PROVENCHER BRIDGE
CHRISTIE
1251
SEE SHEET Nº 123
MAIN
1250
CANADIAN NATIONAL RAILWAYS
EAST YARD
RED RIVER
SEE SHEET Nº 124
SCALE 1 IN.=200FT
CONT'D ABOVE

Figure 7.

Recent airphoto mosaic showing The Forks area.

Cultural Resource Management Data

21K0 The Forks

BORDEN: DlLg-33
EXTENT: 50,000 sqm
ELEVATION: 229 m ASL
DRAINAGE: Assiniboine River
Red River
NTS MAP: 620H/14 (NAD 1927)
UTM REFERENCE: 14UPL E344.0 N276.0
COORDINATES: 49° 53' 10" N, 097° 06' 30" W
AIR PHOTO: A21433-135
ACCESS: Located at the junction of the Red and Assiniboine rivers in downtown Winnipeg. Most of the site is along the west bank of the Red River, curving south around to the north bank of the Assiniboine River.
COMMENTS: The site covers ca. 12 square acres. The site of Fort Gibraltar I is located ca. 200 m north of the junction of the rivers, 75m west of the west bank of the Red River, on the second river terrace. The site of Fort Gibraltar II is located on the upper terraces of the west bank of the Red River and on the north bank of the Assiniboine River. In 1985 separate Borden numbers were assigned for Forts Gibraltar I (DlLg-33) and II (DlLg-35); and Forks firehearth (DlLg-34) recorded in 1984. In 1988 it was decided that the entire East Yards (north of the Assiniboine River, south and east of the CNR high line tracks, and west of the Red River) will be considered one archaeological site (DlLg-33).

HISTORY OF OCCUPATION

Blackduck
1560 B.P.
EVIDENCE: C14 charcoal sample taken from hearth in 21K25G28, AECV #S-783C.
COMMENTS: Sample taken during 1988 excavations from piece of burned wood at a depth of 1.85 m below railway fill. Sample has a +/- of 100 years BP.

21K0-12

Blackduck
A.D. 500 - 1650
EVIDENCE: Characterized by globular ceramic vessels with large circular punctates, and horizontal and/or oblique cord-wrapped object impressions on rim.
COMMENTS: Excavations in 1984 resulted in the recovery of sherds from at least three vessels with associated lithic and faunal artifacts. Three C14 dates, A.D. 510, A.D. 725 and A.D. 845 were obtained. Work in 1988 resulted in the

submission of 14 charcoal samples for C14 dating. Dates ranged from A.D. 390 to 1450 with a mean of A.D. 764 A.D., the earlier part of the Blackduck culture.

21K0-1

Blackduck
1440 B.P.

EVIDENCE: Charcoal sample taken from hearth containing Blackduck sherds. From 21K3N15, SRC #S-2564.

COMMENTS: Sample taken during 1984 excavations.

21K0-3

Blackduck
1350 B.P.

EVIDENCE: C14 charcoal sample from hearth in 21K35D20, AECV #S-788C.

COMMENTS: Sample taken during 1988 excavations at a depth of 1.10 m below railway fill. Sample has a +/- of 90 years BP.

21K0-15

pre-contact
1300 B.P.

EVIDENCE: C14 charcoal sample taken from hearth in 21K25D37, AECV #S-782C. Date is within range for Blackduck culture, but no ceramics found.

COMMENTS: Sample taken during 1988 excavations at a depth of more than 1.0 m below railway fill. Sample has a +/- of 400 years BP.

21K0-11

Blackduck
1280 B.P.

EVIDENCE: C14 charcoal sample taken from hearth in 21K27F26, AECV #S-784C.

COMMENTS: Sample taken during 1988 excavations at a depth of 1.7 m below railway fill. Sample has a +/- of 100 years BP.

21K0-13

Blackduck
1250 B.P.

EVIDENCE: C14 charcoal sample from hearth in 21K36D12, AECV #S-789C.

COMMENTS: Sample taken during 1988 excavations at a depth of ca. 1.0 m below railway fill. Sample has a +/- of 140 years BP.

21K0-16

Blackduck
1250 B.P.

EVIDENCE: C14 charcoal sample from hearth in 21K38G30, AECV #S-791C.

COMMENTS: Sample taken during 1988 excavations at a depth of ca. 1.3 m below railway fill. Sample has a +/- of 100 years BP.

21K0-17

pre-contact
1250 B.P.

EVIDENCE: C14 charcoal sample taken from hearth in 21K23D18, AECV #S-778C. Date is within range for Blackduck culture, but no ceramics listed.

COMMENTS: Sample taken during 1988 excavations from depth of more than 1.0 m below railway fill. Sample has a +/- of 170 years BP.

21K0-9

Blackduck
1225 B.P.

EVIDENCE: Hearth associated with ceramic rimsherds. C14 charcoal sample from 21K3L5/6 (SRC #S-2563).

COMMENTS: Sample taken during 1984 excavations from 119-129 cm DBD in 21K3L5 and from 118-140 cm DBD in 21K3L6.

21K0-2

pre-contact
1220 B.P.

EVIDENCE: C14 charcoal sample taken from hearth in 21K16F15, AECV #774C.

COMMENTS: Sample collected during 1988 excavations from a depth of 1.3 m below railway fill. Date has +/- of 130 years.

21K0-5

pre-contact
1220 B.P.

EVIDENCE: C14 charcoal sample taken from hearth in 21K21G15, AECV #S-776C. Date is within range for Blackduck culture, but no ceramics listed.

COMMENTS: Sample taken during 1988 excavations from depth of ca. 1.4 m below railway fill. Sample has a +/- of 150 years BP.

21K0-7

pre-contact
1190 B.P.

EVIDENCE: C14 charcoal sample taken from hearth in 21K23D23, AECV #S-779C. Date is within range for Blackduck culture, but no ceramics located.

COMMENTS: Sample taken from charred wood during 1988 excavations at a depth of more than 1.0 m below railway fill. Sample has a +/- of 130 years BP.

21K0-10

pre-contact
1130 B.P.

EVIDENCE: C14 charcoal sample taken from hearth in 21K35D6, AECV #-S787C. Date is within range for Blackduck culture, but no ceramics found.
COMMENTS: Sample taken during 1988 excavations at a depth of ca. 1.0 m below railway fill. Sample has a +/- of 110 years BP.

21K0-14

pre-contact
1120 B.P.

EVIDENCE: C14 charcoal sample taken from burned wood in 21K21G33, AECV #S-777C. Date is within range for Blackduck culture, but no ceramics found.
COMMENTS: Sample taken during 1988 excavations at a depth of 1.7 m below railway fill. Sample has a +/- of 150 years BP.

21K0-8

Blackduck
1105 B.P.

EVIDENCE: C14 charcoal sample taken from dark grey clay containing compacted fish remains and associated Blackduck sherds. From 21K3H19, SRC #S-2565.
COMMENTS: Sample taken during 1984 excavations.

21K0-4

pre-contact
980 B.P.

EVIDENCE: C14 charcoal sample taken from hearth in 21K17E15, AEVC #775C. Date is within range for Blackduck culture, but no ceramics listed.
COMMENTS: Sample collected during 1988 excavations at depth of 1.3 m below railway fill.

21K0-6

pre-contact
500 B.P.

EVIDENCE: C14 charcoal sample from a hearth in 21K41H12, AECV #S-792C. Date is within range for Blackduck culture, but no ceramics found.
COMMENTS: Sample taken during 1988 excavations at a depth of 0.5 m below railway fill. Sample has a +/- of 100 years BP.

21K0-18

Euro-Canadian, Metis and Native
A.D. 1760 - 1821

EVIDENCE: Competitive fur trade Period between the HBC and NWC.
COMMENTS: By 1800 Metis families settled at The Forks and worked as commercial buffalo hunters for the NWC. The Forks became an important trading and transfer point for the NWC, and Fort Gibraltar I was established in 1810 as

a pemmican provisioning post. Increased competition between the NWC and HBC resulted in the destruction of the fort by the HBC in 1816. The NWC built Fort Gibraltar II in 1817. The two companies amalgamated in 1821.

21K0-19

Euro-Canadian, Metis and Native

A.D. 1821 - 1886

EVIDENCE: Period of increased settlement, initially by HBC workers and Metis, and later by European immigrants.

COMMENTS: After amalgamation, Fort Gibraltar II was renamed Fort Garry and continued as the administrative centre for the fur trade until it was abandoned in 1930. In 1936 a 20-acre experimental farm was established by the HBC for the rearing of sheep and cattle, and growing flax and hemp. By 1841 the farm was abandoned by the HBC and a portion of it was privately managed until 1847 (MF00383A). Between 1870 and 1886 European immigrants and people from Eastern Canada flowed into Manitoba, with The Forks serving as the receiving centre. Immigration sheds were constructed and a shanty town developed.

21K0-20

Euro-Canadian

A.D. 1888 - 1988

EVIDENCE: The Northern Pacific and Manitoba Railroad was established and the B&B repair depot was built. The associated roundhouse was demolished in 1926.

COMMENTS: The Bridges and Buildings (B&B) Department depot was constructed in 1888-1889. It consisted of a repair shop, blacksmith's shop and a 10-stall roundhouse. The turntable associated with the roundhouse is located on The Forks NHS property. Other railway structures were built at The Forks outside of the NHS, such as the Grand Trunk Pacific Railway stables and National Cartage Building (Johnston Terminal). The area remained under railway control until ownership was transferred to Parks Canada and The Forks Renewal Corporation in 1988.

21K0-21

HISTORY OF SITE INVESTIGATION

1984

Peter Priess
excavate intensively

OBSERVATIONS: Fort Gibraltar II excavation using 11 2 x 1m, a 1 x 1m and a 0.5 x 2m unit. A cribbed cellar and two uncribbed cellars were found. Ten pre-contact occupations were identified, mostly Blackduck with three C14 dates from 1105-1440 BP.

REFERENCE: MF00375

21K0-0-9

1984

Peter Priess

excavate intensively

OBSERVATIONS: Soil testing consisting of 24 auger holes revealed some early historic material. Fort Gibraltar I was then investigated via excavation of several 2 x 2 m units. Structure remains (flooring, chinking) ca. 4.5 m, 7 m and an uncribbed cellar were found.

RECOMMENDATIONS: Further excavation needed in several parts of the Fort Gibraltar I area to clarify the nature of archaeological remains uncovered in 1984.

REFERENCE: MF00375

21K0-0-10

1987

Biron Ebell

monitor

OBSERVATIONS: Four geo-technical bore holes drilled June 3, 1987 to determine stability of riverbank in area where three interpretive nodes will be developed. Natural soils observed at depth of ca. 10 m, 3 m and from the surface (north point bore hole).

REFERENCE: FN0015P-87

21K0-0-11

1988

Peter Priess

excavate intensively

OBSERVATIONS: Construction of pedestrian ramp led to excavation of a ca. 30 x 4 m area of 1 x 1m units, as deep as 3.5 m. Part of a cribbed cellar from Fort Gibraltar II was found and five Blackduck living floors with 14 C14 dates from 500-1560 BP.

REFERENCE: RB00283

21K0-0-8

1989

David Riddle

excavate intensively

OBSERVATIONS: First season of the public archaeology project at Fort Gibraltar I. Excavation of 63 0.5 x 1.0 m units revealed structural remains and evidence of a cellar depression.

RECOMMENDATIONS: Public archaeology program should continue. The unexcavated portions of the site grid should be excavated to the base of historic levels. Future work should be undertaken as block excavations and multi-disciplinary studies be incorporated.

REFERENCE: MS00479

21KO-0-7

1990

Barry Greco

excavate intensively

OBSERVATIONS: Public archaeology project at Fort Gibraltar I. Excavation of 1989 units was completed and 56 new units 0.5 x 1.0 m were opened. The possible structural remains of a hangard were investigated, along with a cellar depression and ash deposit.

REFERENCE: MS00480

21KO-0-6

1991

Barry Greco

excavate intensively

OBSERVATIONS: Public archaeology project at Fort Gibraltar I with 65 units 0.5 x 1.0 m excavated. The remains of two structures, (possibly a hangard and the store) and a large ash/midden deposit were investigated.

REFERENCE: MS00481

21KO-0-5

1995

Mary Ann Tisdale

monitor

OBSERVATIONS: August 17, 1995, monitored augering for flagpole base near pathway connecting NHS property with the information office on the east side of the Children's Museum. Depth was 96 cm and only clean fill present, associated with NHS construction.

REFERENCE: MS00511

21KO-0-4

1999

Barry Greco

monitor

OBSERVATIONS: Monitored excavation of two post holes on December 23, 1999 for signage along walkway at entrance to site. Depth to 107 cm, gravel railway fill encountered, no cultural remains.
REFERENCE: MS00517

21KO-0-1

1999
Paul Downie
monitor

OBSERVATIONS: June 17, 18 and 22 1999, monitoring of pathway excavation and associated auger drilling of seven holes for installation of lighting bases. The depth of each hole was ca. 2.5 m. Only fill with modern debris was observed.
REFERENCE: MS00512

21KO-0-2

1999
Barry Greco
monitor

OBSERVATIONS: Monitored trenching for electrical cable March 1-9, 1999. Two trenches crosscut the entire site from south-north, with a shorter connecting east-west trench. Excavations were ca. 1.0 m deep and only railway fill was encountered.
REFERENCE: MS00516

21KO-0-3

CULTURAL RESOURCES

FEATURE: **fish remains**
DATE: 1105 +/-160 yrs BP
COMMENTS: Concentration of compacted fish remains with associated lithics and ceramics located across the entire unit. C14 sample SRC #S-2565 collected in 1984.
PROVENIENCES: 21K3H19

21KO-19

AFFILIATION: Blackduck
A.D. 500 - 1650
Blackduck
1105 B.P.

FEATURE: **Fort Gibraltar I**
COMMENTS: The North West Co. constructed Fort Gibraltar I in 1810-1811. It consisted of 9 buildings within an 18' high double-bastioned oak palisade. The

buildings included a house for the partner 64' long, houses for the men 36' and 28' long, a store 22' long, 2 hangards or stores, blacksmith shop, stable and ice-house with a watch-house over it (RB00128). In 1816 the Hudson Bay Co. took over the fort, dismantled part of it and burnt the rest.

PROVENIENCES: 21K4; 21K6; 21K52; 21K53; 21K54; 21K55; 21K56; 21K57; 21K58; 21K63; 21K64; 21K65; 21K66; 21K67

21 KO-1

AFFILIATION: Euro-Canadian, Metis and Native
A.D. 1760 - 1821

FEATURE: **Fort Gibraltar II**

COMMENTS: In 1817 the North West Co. constructed a fort to replace Fort Gibraltar which had been destroyed in 1816. It consisted of a 14' high oak palisade encompassing an area of ca. 100 square feet. Following amalgamation, it was taken over by the Hudson's Bay Co. in 1822 and renamed Fort Garry I. The fort was expanded and a retail shop and a new two-storey dwelling house were built in 1822-1823. In 1824 a large store was added and wooden bastions constructed for the north and east angles of the fort. The fort was severely damaged during the 1826 flood, abandoned in 1830 and dismantled in 1852 (RB00128).

PROVENIENCES: 21K3

21 KO-2

AFFILIATION: Euro-Canadian, Metis and Native
A.D. 1760 - 1821

FEATURE: **HBC Experimental Farm**

COMMENTS: In 1836 an experimental farm was established by the HBC, consisting of barns and stables. By 1838 only 20 acres were cultivated and by 1841 the farm was abandoned. It was privately managed until 1847. A picket post fence/trench line 11 m long was revealed during 1984 excavations in stratigraphic layers associated with this time period (MF00375:107). The discovery of a manure layer during the 1989-1991 excavations may indicate the presence of domestic animals at the stable complex, although no structural evidence was found (MS00481:130).

21 KO-3

AFFILIATION: Euro-Canadian, Metis and Native
A.D. 1821 - 1886

FEATURE: **hearth**

DATE: 1220 +/-130 yrs BP

COMMENTS: Hearth in southeast corner of unit containing charcoal and ash. C14 sample AECV #S-774C collected in 1998.

LOCATION: AECV #S-774C
PROVENIENCES: 21K16F15

21 KO-5

AFFILIATION: pre-contact
1220 B.P.

FEATURE: **hearth**
DATE: 980 +/-160 yrs BP
COMMENTS: Hearth containing charcoal, C14 sample AECV #S-775C collected in 1988.
PROVENIENCES: 21K17E13

21 KO-6

AFFILIATION: pre-contact
1130 B.P.
pre-contact
980 B.P.

FEATURE: **hearth**
DATE: 1220 +/-150 yrs BP
COMMENTS: Hearth containing ash, charcoal, flake, ochre and shell located in the northeast corner of unit. C14 samples AECV #S-776C and S-777C collected in 1988. The latter date is 1120 +/-150 years BP.
PROVENIENCES: 21K21G12

21 KO-7

AFFILIATION: pre-contact
1220 B.P.
pre-contact
1120 B.P.

FEATURE: **hearth**
DATE: 1250 +/-170 yrs BP
COMMENTS: Hearth located in northwest corner of unit containing charcoal and burnt wood. C14 samples AECV #S-778C and S-779C collected in 1988. The latter is from the burnt wood and dated to 1190 +/-130 years BP.
PROVENIENCES: 21K23D18; 21K23D23

21 KO-8

AFFILIATION: pre-contact
1250 B.P.
pre-contact
1190 B.P.

FEATURE: **hearth**
DATE: 1300 +/-400 yrs BP

COMMENTS: Hearth located in southeast part of unit containing charcoal. C14 sample AECV #S-782C collected in 1988.
PROVENIENCES: 21K25D35; 21K25D37

21K0-9

AFFILIATION: pre-contact
1300 B.P.

FEATURE: **hearth**
DATE: 1280 +/-100 yrs BP
COMMENTS: Hearth located in the eastern part of unit containing charcoal, faunal remains and interpreted as associated with a Blackduck occupation. C14 sample AECV #S-784C collected in 1988.
PROVENIENCES: 21K27F24; 21K27F26

21K0-11

AFFILIATION: Blackduck
A.D. 500 - 1650
Blackduck
1280 B.P.

FEATURE: **hearth**
DATE: 1130 +/-110 yrs BP
COMMENTS: Hearth located in the central part of unit containing charcoal, ash and charred wood fragments. C14 sample AECV #S-787C collected in 1988.
PROVENIENCES: 21K35D6

21K0-12

AFFILIATION: pre-contact
1130 B.P.

FEATURE: **hearth**
DATE: 1350 +/-90 yrs BP
COMMENTS: Hearth located in southeast corner of 21K35D containing charcoal and interpreted as associated with Blackduck ceramics above it. C14 sample AECV #S-788C collected in 1988.
PROVENIENCES: 21K35D20

21K0-13

AFFILIATION: Blackduck
A.D. 500 - 1650
Blackduck
1350 B.P.

FEATURE: **hearth**
DATE: 1250 +/-140 yrs BP

COMMENTS: Hearth located in northeast part of unit containing ash and charcoal, and associated with dark organic lens (living floor) containing Blackduck ceramics. C14 sample AECV #S-789C collected in 1988.
PROVENIENCES: 21K36D9; 21K36D12

21K0-14

AFFILIATION: Blackduck
A.D. 500 - 1650
Blackduck
1250 B.P.

FEATURE: **hearth**
DATE: 1250 +/-100 yrs BP
COMMENTS: Hearth located in eastern half of 21K38G and western half of 21K39G containing charcoal and associated with Blackduck ceramics from a dark organic lens interpreted as a living floor. C14 sample AECV #S-791C collected in 1988.
PROVENIENCES: 21K38G28; 21K38G30; 21K39G36

21K0-15

AFFILIATION: Blackduck
A.D. 500 - 1650
Blackduck
1250 B.P.

FEATURE: **hearth**
DATE: 500 +/-100 yrs BP
COMMENTS: Hearth located in southern half of 21K41H and northern part of 21K41G containing charcoal and faunal remains. C14 sample AECV #S-792 collected in 1988.
PROVENIENCES: 21K41H10; 21K41H12; 21K41G11

21K0-16

AFFILIATION: pre-contact
500 B.P.

FEATURE: **hearth**
DATE: 1225 +/-160 yrs BP
COMMENTS: Hearth located in north part of unit containing lithic flakes, faunal remains and Blackduck ceramics. C14 charcoal sample SRC #S-2563 collected in 1984.
PROVENIENCES: 21K3L5; 21K3L6

21K0-17

AFFILIATION: Blackduck
A.D. 500 - 1650

Blackduck
1225 B.P.

FEATURE: **hearth**
DATE: 1440 +/-165 yrs BP
COMMENTS: Hearth located along east wall of unit containing ash, charcoal, faunal remains and Blackduck ceramics. C14 sample SRC #S-2564 collected in 1984.
PROVENIENCES: 21K3N15

21K0-18

AFFILIATION: Blackduck
A.D. 500 - 1650
Blackduck
1440 B.P.

FEATURE: **living floor**
DATE: 1560 +/-100 yrs BP
COMMENTS: A thin black organic lens (band 5) interpreted as a living floor. Other organic bands from this unit contained Blackduck ceramics and faunal remains. C14 sample AECV #S-783C collected from associated burnt log fragment in 1988.
PROVENIENCES: 21K25G27; 21K25G28

21K0-10

AFFILIATION: Blackduck
1560 B.P.
Blackduck
A.D. 500 - 1650

FEATURE: **roundhouse turntable**
COMMENTS: Part of the curved limestone foundation of the roundhouse turntable associated with the B&B building was revealed during 1984 excavations. Wooden beams or joists uncovered on the interior of the foundation appear to relate to the turntable operation. The turntable could have been ca. 20 m in diameter (MF00375). The B&B Building and the roundhouse itself are not on NHS property.

21K0-4

AFFILIATION: Euro-Canadian
A.D. 1888 - 1988

Annotated Bibliography

Adams, G., K. Lunn, M.A. Tisdale, and P.J. Priess

1990 *Archaeological Investigations at the Forks National Historic Site, Winnipeg: Mitigation of the North Point Development*. Research Bulletin, No. 283, Environment Canada, Canadian Parks Service, Ottawa.

Report on the archaeological investigations carried out at The Forks NHS in preparation for construction at the North Point interpretive node. Includes an historical overview, project objectives, methods and findings of historic as well as pre-contact remains.

Berkowski, Gerry

1987 *The Forks: Post 1870.* Microfiche Report Series, No. 381, Environment Canada, Canadian Parks Service, Ottawa.

This history of The Forks focuses on the period after 1870 and examines the larger social, political and economic forces that shaped the development of Winnipeg in general and The Forks in particular.

Coutts, Robert

1988 *The Forks of the Red and Assiniboine: A Thematic History, 1734-1850.* Microfiche Report Series, No. 383, Environment Canada, Canadian Parks Service, Ottawa.

This report was written to support the development of interpretive exhibits and programming at The Forks National Historic Site. It deals with the history of the Forks from 1734 to 1850, from contact between Natives Euro-Canadians through the competitive fur trade period to Native settlement and the Hudson's Bay Company.

Coutts, Robert and Richard Stuart (editors)

1994 *The Forks and the Battle of Seven Oaks in Manitoba History.* Manitoba Historical Society.

This volume is composed of papers by a number of different contributors to two symposiums with different themes: The Forks; and The Battle of Seven Oaks. The Forks section covers the history and development of the Forks of the Red and Assiniboine Rivers.

Downie, Paul

1999a Untitled field notes on file, Western Canada Service Centre, Winnipeg.

Prince Albert National Park, Bagwa Canoe Route, Smoothstone River, MacLennan River survey. Fort Battleford CRM, guardhouse, sick horse stable. Forks National Historic Site Folk Festival Park monitoring.

1999b Monitoring Report Festival Park Development, Phase I, Forks National Historic Site. Report on file, Parks Canada, Western Canada Service Centre, Winnipeg.

This report covers the monitoring of excavations associated with the installation of a walkway and lighting at the north end of the park. A brief description of methods and observations is provided. It was concluded that there was no penetration below the Railroad Period fill.

Ebell, Biron

1987 Untitled field notes on file, Department of Canadian Heritage, Winnipeg.

Kluane: inspection of Mush Bates Portage site, 17Y4, 2/10/87 Forks geo-technical bore hole monitoring

Ebell, Biron S. and Peter J. Priess

1986 *Period Artifacts from The Forks.* Microfiche Report Series, No. 233, Environment Canada, Parks, Ottawa.

This catalogue of selected artifacts recovered during Parks Canada excavations at the Forks in 1984, provides an indication of items which may be of some value in developing interpretations for the public. A description, interpretation and photograph accompanies each artifact listing.

Ebell, S. Biron

1988 The Red and Assiniboine Rivers in Southern Manitoba: A Late Prehistoric and Early Historic Buffer Zone? *Manitoba Archaeological Quarterly* 12(2):3-26.

Archaeological data for the area between the forks of the Red and Assiniboine rivers and the junction of the Rat River with the Red indicate that no large permanent villages existed on the riverbanks in this area. All sites seem to be the remains of brief camps, a pattern which is associated with contested areas of high resource potential.

Greco, Barry

1999a Untitled memo on file, Parks Canada, Western Canada Service Centre, Winnipeg.

Memo regarding the monitoring of post hole excavations for the installation of signage near the main entrance to the site. No archaeological deposits were encountered.

1999b Project #400480 The Forks National Historic Site Electrical Services Upgrade. Memo on file, Parks Canada, Western Canada Service Centre, Winnipeg.

Memo regarding the monitoring of trenching for the installation of an electrical cable. No archaeological deposits were encountered and it was concluded that railway fill layers extend to a depth of at least one metre below surface.

Guinn, Rodger

1980a *The Forts at the Junction of the Red and Assiniboine Rivers.* Research Bulletin, No. 128, Parks Canada, Ottawa.

This report discusses the historical evidence related to locations of the early forts which were situated at the Forks in order to clarify certain discrepancies and offer suggestions on where any remains of these past structure may be found.

1980b *The Red-Assiniboine Junction: A Land Use and Structural History, 1770-1980.* Manuscript Report Series No. 355, Parks Canada, Ottawa.

The purpose of this report is to present a comprehensive land use history of the Forks, and to serve as a guide for archaeological investigation. Where historical documents allow, the location and characteristics of each structure and land usage are presented along with contemporary maps, plans, paintings or photographs of the area.

1980c *An Historical Assessment of Four Structures in the Canadian National Railways East Yards, Winnipeg, Manitoba.* Research Bulletin, No. 126, Parks Canada, Ottawa.

This report is an assessment of the historical and architectural significance of four structures in the Canadian National Railways East Yards: the National Cartage Building, the Canadian Northern Cartage Company Stables, the Grand Trunk Pacific Railway Stable and The Northern Pacific and Manitoba Engine and Roundhouse.

Kelly, M.E., O.L. Mallory and G.S. Richards

1979 The Junction: An Assessment of Potential and Preparations for Archaeological Research. Prepared for Parks Canada, Archaeological Research Division, Prairie Region, by Paleo Sciences Integrated.

This document reports on research into historical and recent documents pertinent to future archaeological excavations at the Forks. The report identifies significant archaeological potential as well as natural and cultural impacts in the area with possible consequences to the archaeological record.

Kelly, Michael E.

1984 Towards a Model of Aboriginal Land Use in the Red-Assiniboine Rivers Junction. *Manitoba Archaeological Quarterly* 8(1):23-37.

Ethno-historical accounts that refer to the proto-historic native activities near the Red-Assiniboine Rivers junction, are used to form some models of possible Late Prehistoric period land use in the Lower Red River region.

Kroker, Sid and Pam Goundry

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

This report details the procedures and results of an archaeological impact assessment of the assiniboine riverfront quay at the Forks. It includes a review of previous archaeological activity in the area, details of the monitoring and mitigation program, an analysis of material recovered and an interpretation of the results of the

Kroker, Sid and Pam Goundry (compilers)

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

This report documents the procedures, findings and interpretations resulting from the 1993 public archaeology program at the Forks. It includes an historical background of the area, a description of project operations, details of archaeological recoveries and analyzes and interpretations of the program results.

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

This report documents the procedures, findings and interpretations resulting from the 1992 public archaeology program at the Forks. It includes an historical background of the area, a

description of project operations, details of archaeological recoveries and analyzes and interpretations of the program results.

Kroker, Sid, Barry B. Greco and Kate Peach
1992 1991 Investigations at Fort Gibraltar I: The Forks Public Archaeology Project. The Forks Public Archaeological Association, Winnipeg.
This report documents the procedures, findings and interpretations resulting from the 1991 public archaeology program at the Forks. It includes an historical background of the area, a description of project operations, details of archaeological recoveries and analyzes and interpretations of the program results.

Kroker, Sid, Barry B. Greco and Sharon Thomson
1991 1990 Investigations at Fort Gibraltar I: The Forks Public Archaeology Project. Prepared for Canadian Parks Service, The Forks Renewal Corporation, Historic Resources Branch, Manitoba Culture, Heritage and Citizenship, Winnipeg.
This report documents the procedures, findings and interpretations resulting from the 1990 public archaeology program at the Forks. It includes an historical background of the area, a description of project operations, details of archaeological recoveries and analyzes and interpretations of the program results.

Kroker, Sid, Barry B. Greco, Arda Melikian and David K. Riddle
1990 The Forks (1989) Pilot Public Archaeology Project: Research Report, Excavations at 21K (Fort Gibraltar I). Prepared for Canadian Parks Service, The Forks Renewal Corporation, Historic Resources Branch, Manitoba Culture, Heritage & Recreation, Winnipeg.
This report documents the procedures, findings and interpretations resulting from the 1989 public archaeology program at the Forks. It includes an historical background of the area, a description of project operations, details of archaeological recoveries and analyzes and interpretations of the program results.

Kroker, Sid, Pamela Goundry, Leigh Hambly and Karen Lawlor
1990 The Forks (1989) Pilot Public Archaeology Project: Administrative Report. Prepared for Canadian Parks Service, The Forks Renewal Corporation and Historic Resources Branch Manitoba Culture, Heritage & Recreation, Winnipeg.
This administrative report on the initial Forks Public Archaeology Program contains information on the background to the development of project, its organizational structure, project operations, and financial operations.

Laflèche, Louis
1989 Identification of Charcoal Samples from the Forks, Manitoba. Prepared for Mary Ann Tisdale, Archaeological Services, Prairie and Northern Region, by Historic

Resource Conservation Branch, National Historic Parks and Sites Directorate, Ottawa.

This is a brief report on the results of testing to identify species from charcoal samples recovered from the Parks Canada archaeological excavations at the Forks in 1988. The most commonly identified specimens were elm, ash and poplar. One specimen was identified as possibly being oak.

Lombard North Group Ltd.

1986 The Forks Site Development Plan. Prepared for Environment Canada - Parks Prairie Region, Winnipeg, Manitoba by Lombard North Group Ltd. Winnipeg, Manitoba.

The Forks National Historic Site development plan identifies the various objectives of Parks Canada, and includes sections on the planning review process, issues affecting Forks development, the interpretive plan framework and the site development plan.

1985 The Forks Development Interim Status Report on Development Concepts. Prepared for Parks Canada Prairie Region, Winnipeg, Manitoba by The Lombard North Group Ltd. Winnipeg, Manitoba.

This interim report on the concepts for site development identifies the various objectives of Parks Canada, themes sub-themes associated with the site, the various site development concepts and a site analysis and inventory that includes data on soils, riverbank stability, vegetation and historic resources.

Moyle, Joy M.

1989 Analysis of Botanical Samples from the Forks, Winnipeg. Prepared for Mary Ann Tisdale and Kevin Lunn, Archaeological Services, Prairie Region, by Historic Resource Conservation Branch, National Historic Parks and Sites Directorate, Ottawa.

This is a brief report on the results of testing to identify species from microbotanical samples recovered from the Parks Canada archaeological excavations at the Forks in 1988. Bulrush, hazel, oak, plum, pin cherry and sand cherry were identified.

National Testing Laboratories Limited

1984 Report on contract 501/84-53 Core Sampling & Analysis C.N. East Yards Winnipeg, Manitoba. Prepared for Parks Canada Prairie Region Winnipeg, Manitoba File No. C4870-1020404 by The National Testing Laboratories Limited Winnipeg, Manitoba.

This report outlines the results of bore hole testing, initiated to provide preliminary assessment of in situ historic resources and subsoil conditions at the Forks prior to archaeological testing in 1984. The overburden and general soil characteristics are discussed, and conclusions are drawn regarding areas of potential historic value.

Nielsen, Erik, W. Brian McKillop and Glen G. Conley

1993 Fluvial sedimentology and paleoecology of Holocene alluvial deposits, Red River, Manitoba. *Géographie physique et Quaternaire* 47(2):193-210.

Various data show that the Red and Assiniboine rivers cut the valleys they occupy today within a thousand years of the regression of Lake Agassiz. A decrease in sedimentation rate at 1400 BP is coincident with the shift in the position of the Assiniboine from the valley of the La Salle River to its present position.

Payment, Diane

1988 *Native Society and Economy in Transition at the Forks, 1850-1900.* Microfiche Report Series, No. 383, Environment Canada, Canadian Parks Service, Ottawa.

This report was written to support the development of interpretive exhibits and programming at The Forks National Historic Site. It focuses on the last half of the 19th century at the Forks, specifically the changing nature of the predominantly Native community that existed in Red River prior to 1900.

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

1986 *Archaeological Investigation of the Junction of the Red and Assiniboine Rivers, 1984.* Research Bulletin, No. 241, Environment Canada, Parks, Ottawa.

Report on the archaeological investigations carried out at the future site of The Forks NHS. Includes an historical overview, project objectives and findings of historic as well as pre-contact remains. Investigations were focused on suspected locations of Forts Gibraltar I and II and included soil testing using a truck mounted auger.

Priess, Peter J. and Sheila E. Bradford

1985 The Forks. *Manitoba Archaeological Quarterly* 9(3):31-43.

This paper presents the results of Parks Canada's 1984 excavations at the Forks. Except for the turntable foundation, the features located have not been conclusively identified although it is considered probable that the remains observed are associated with the two Forts Gibraltar.

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

1986 *Archaeology at the Forks: An Initial Assessment.* Microfiche Report Series, No. 375, Parks Canada, Ottawa.

This report outlines the objectives and field techniques of the initial Parks Canada archaeological testing at the Forks in 1984. It includes sections on the findings related to both the prehistoric and historic components and railway period remains. A summary of the accomplishments and site potential is included.

Rannie, W.F

1999a A Survey of Hydroclimate, Flooding, and Runoff in the Red River Basin Prior to 1870. Geological Survey of Canada, Open-File Report 3705, Ottawa.

This report examines archival material to reconstruct the flood history of the Red and Assiniboine Rivers for the period from 1793 to 1870. The analysis is also extended to non-flood years by inferring the general runoff conditions in the basins for as many years as allowed by the data.

1999b A Geomorphological Perspective on the Antiquity of the "Forks". *Manitoba Archaeological Journal* 9(1):103-113.

This paper discusses the physical history of the lower Assiniboine River to add an earth science perspective to the potential human history of the Forks. The geomorphological content of the paper summarizes earlier research having relevance to the archaeological community and others interpreting the significance of the Forks.

Rannie, W.F., L.H. Thorleifson and J.T. Teller

1989 Holocene evolution of the Assiniboine River paleochannels and Portage la Prairie alluvial fan. *Canadian Journal of Earth Sciences* 26:1834-41.

This paper examines the changing flow of the Assiniboine River during the Holocene. By 6000-7000 years ago the river flowed into Lake Manitoba. By 3000 years ago the flow was eastward to the Red River. Despite the climate being warmer and drier during much of the Holocene, discharges and sediment loads were similar to modern values.

Shay, C.T., S. Coyston, H. Isfeld and M. Waddell

1991 Paleobotanical Studies at The Forks: Analysis of Seeds, Charcoal and Other Organic Remains. *Manitoba Archaeological Journal* 1(1):62-92.

A study of thirty-five soil samples from Parks Canada excavations at The Forks in 1984 and 1988 form the basis for an interpretation of the area's past environment, and the identification of plant food species. A trend toward an increase in the use of goosefoot during the Late Prehistoric and Historic periods was also found.

Smith, Pamela J.

1985 *Faunal Analysis of the Forks (Winnipeg) (21K1 to 21K6).* Microfiche Report Series, No. 277, Environment Canada, Parks, Ottawa.

This report on the analysis of faunal material recovered from Parks Canada's 1984 excavations at the Forks records information on species, skeletal element, modification, and minimum numbers of individuals. The data is used to provide information on the butchering techniques and diet as well as seasonality and lifestyle.

Speidel, Paul

1996 A Parallel-Grooved Avonlea Vessel from The Forks, Winnipeg (DlLg-33). *Manitoba Archaeological Journal* 6(2):72-81.

Analysis of ceramic sherds recovered during construction of the Manitoba Travel Idea Centre resulted in the identification of a parallel grooved Avonlea vessel with a suggested date of A.D. 800-1100.

The Forks Renewal Corporation

1988 The Forks Archaeological Impact Assessment and Development Plan (The Forks Archaeological Plan). The Forks Renewal Corporation, Winnipeg.

This document provides an inventory and initial analysis of the archaeological resource potential at The Forks, and examines legal and ethical requirements for the their management. It provides estimates of impacts to archaeological resources and establishes guidelines for their investigation or mitigation within FRC jurisdiction.

Tisdale, Mary Ann

1995 Excavation of Flagpole Base at The Forks NHS. Memo on file, Department of Canadian Heritage, Professional and Technical Service Centre, Winnipeg.

Memo regarding the monitoring of an auger hole excavation for the installation of a flagpole base east of the B & B building. No archaeological deposits were encountered.

Winnipeg Core Area Initiative

1987 Technical Background Report East Yard Task Force March 1987. Prepared by the Winnipeg Core Area Initiative, Winnipeg.

This report presents information and analysis relevant to the future planning of the East Yard. The results of a preliminary soils investigation, riverbank stability assessment, a structural and architectural assessment, and historical background report are included as attachments.

Wolk, Jack

1982 The North West Company and the Hudson's Bay Company Forts: 1810-1830. *Manitoba Archaeological Quarterly* 6(3):26-45.

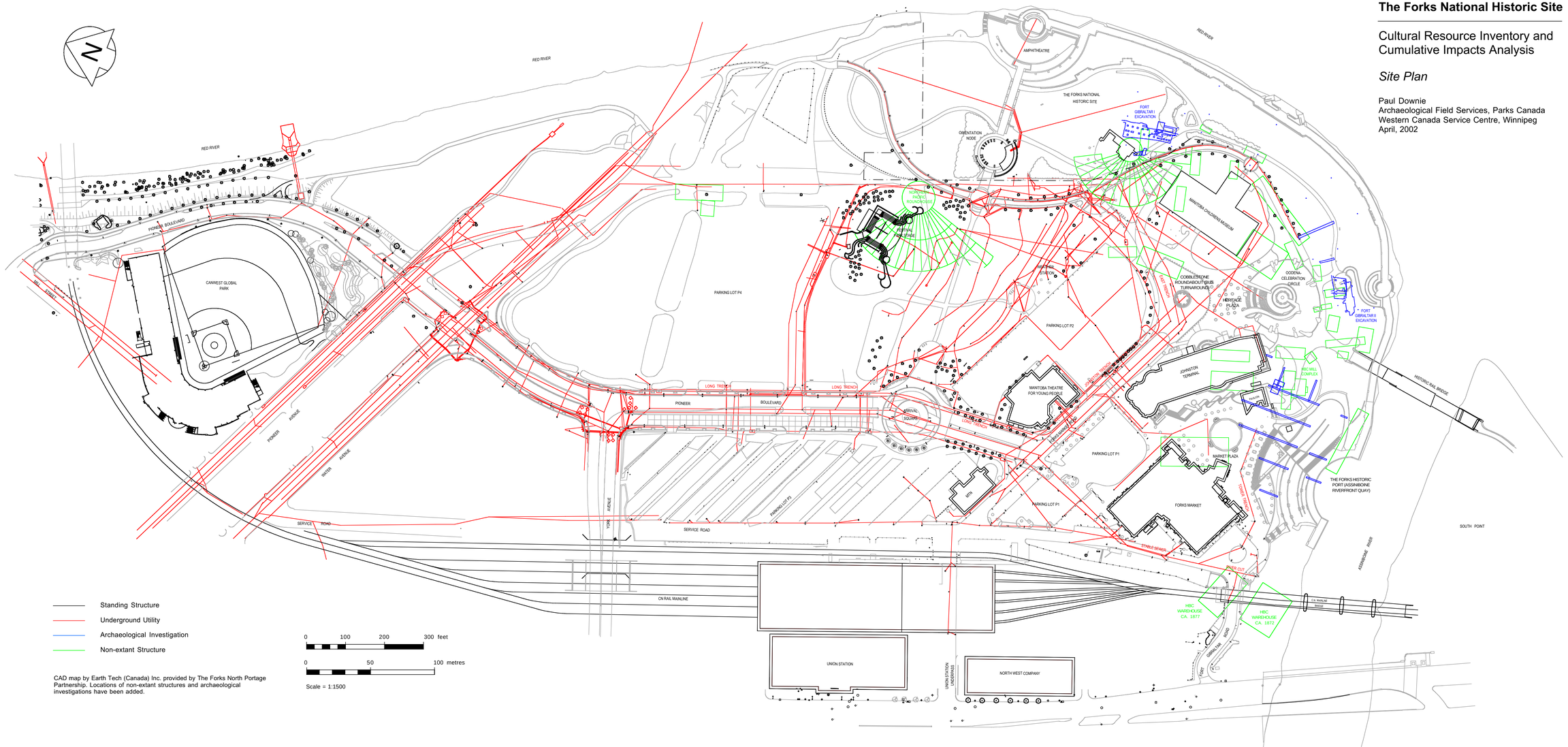
This paper presents a structural history of Forts Gibraltar I and II, Fort Garry I and Upper Fort Garry. It includes a description of the construction techniques employed at the forts, and a discussion of the archaeological significance of the study.

The Forks National Historic Site

Cultural Resource Inventory and Cumulative Impacts Analysis

Site Plan

Paul Downie
Archaeological Field Services, Parks Canada
Western Canada Service Centre, Winnipeg
April, 2002



CAD map by Earth Tech (Canada) Inc. provided by The Forks North Portage Partnership. Locations of non-extant structures and archaeological investigations have been added.

The Forks National Historic Site

Cultural Resource Inventory and Cumulative Impacts Analysis

Site Detail

Paul Downie
Archaeological Field Services, Parks Canada
Western Canada Service Centre, Winnipeg
April, 2002

- Standing Structure
- Underground Utility

- Parks Canada, Archaeological Testing 1984
- Parks Canada, North Point Node 1988
- Forks Renewal Corporation, North Assiniboine Node 1988
- Public Archaeology, Fort Gibraltar I 1989-91
- Public Archaeology, Forks Archaeological Reserve 1992-93

- Remains of Fort Gibraltar II and Experimental Farm, ca. 1848
- HBC Mill Complex and Warehouses, Immigrant Shed
- Railway Period structures

RED RIVER
AMPHITHEATRE
THE FORKS NATIONAL HISTORIC SITE
ORIENTATION NODE
PLAY STRUCTURE
NORTHERN PACIFIC ROUNDHOUSE
EXPERIMENTAL FARM STABLES ETC.
CANADIAN NORTHERN RAILWAY ROUNDHOUSE
FESTIVAL PARK STAGE
MANITOBA CHILDRENS MUSEUM
IMMIGRATION SHED
WEATHER STATION
EAST TRENCH
COBBLESTONE ROUNDABOUT (BUS TURNAROUND)
ODDENA-CELEBRATION CIRCLE
HERITAGE PLAZA
FORT GIBRALTAR II REMAINS
COURT HOUSE
PARKING LOT P2
OLD BLOCK HOUSE
JOHNSTON TRENCH
JOHNSTON TERMINAL
HBC MILL COMPLEX
HISTORIC RAIL BRIDGE
LONG TRENCH
PIONEER BOULEVARD
ARRIVAL SQUARE
MANITOBA THEATRE FOR YOUNG PEOPLE
FORKS ACCESS ROAD
PAVILION
MARKET PLAZA
PARKING LOT P1
FORKS MARKET
POWER TRENCH
MANITOBA TELEVISION NETWORK
THE FORKS HISTORIC PORT (ASSINIBOINE RIVERFRONT QUAY)

0 100 200 300 feet

0 50 100 metres

Scale = 1:800

CAD map by Earth Tech (Canada) Inc. provided by The Forks North Portage Partnership.
Locations of non-extant structures and archaeological investigations have been added.