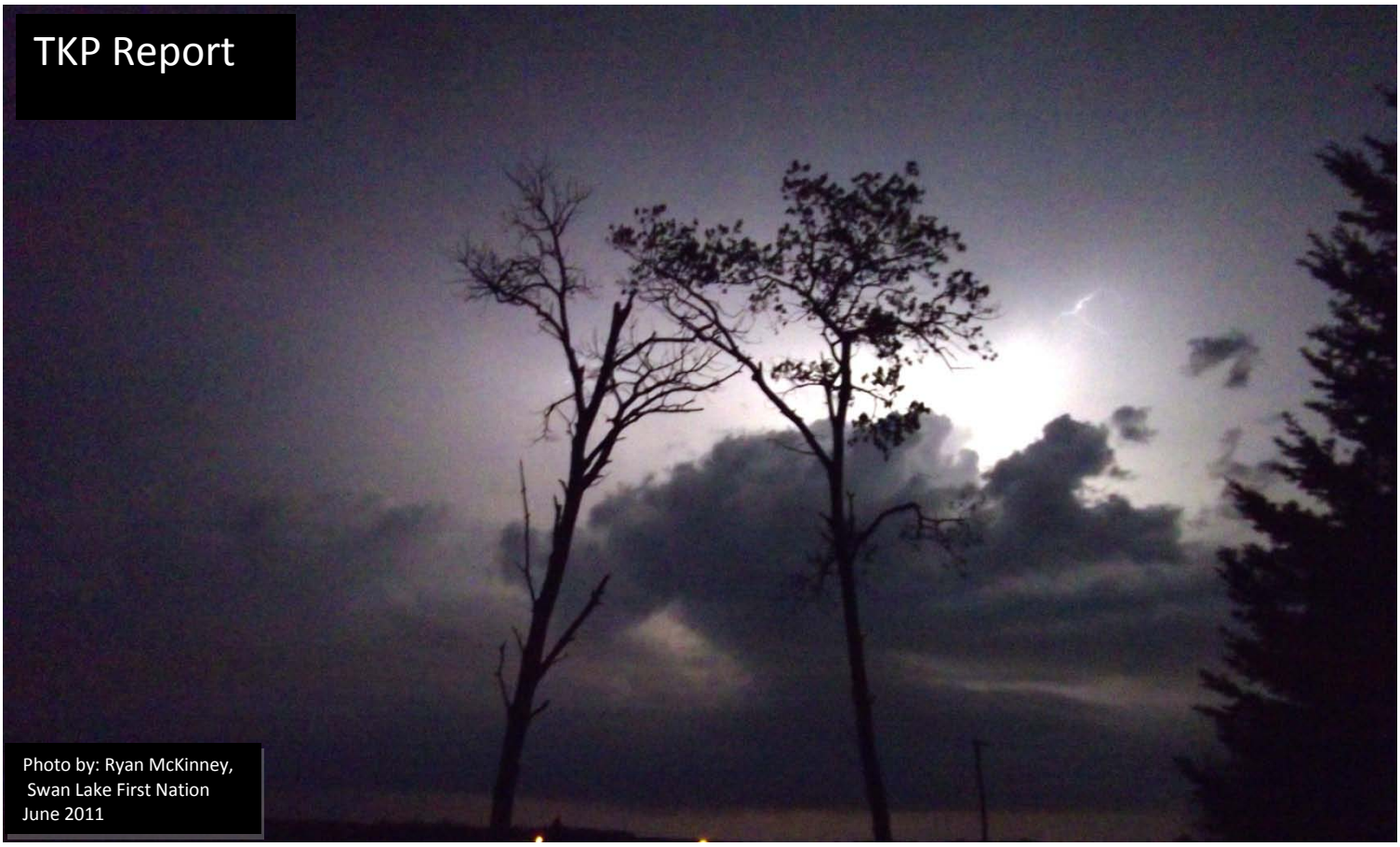
APPENDIX G

Swan Lake First Nation Traditional Knowledge Project Report

Swan Lake First Nation Traditional Knowledge Project Report



Swan Lake First Nation Report on the finding and the concerns identified by the Traditional Knowledge Project.

Prepared by: David Scott

History and Treaty Research Department

Swan Lake First Nation

Email: slfn.treaty.research.2011@gmail.com

SWAN LAKE FIRST NATION

Box 368
Swan Lake, Manitoba
R0G 2S0

1-204-836-2101

1-204=836-2255

6/8/2011

Chief Yellow Quill

SWAN LAKE FIRST NATION

TRADITIONAL KNOWLEDGE PROJECT

HISTORY AND TREATY RESEARCH DEPARTMENT

MANITOBA HYDRO BIPOLE III

NOTE: THIS REPORT IS PRESENTED TO ACCOMMODATE THE TIMEFRAME SET OUT BY MANITOBA HYDRO; ARCHEOLOGICAL EVIDENCE TO SUPPORT ALL THE FINDINGS HAS NOT BEEN COMPLETED. THIS REPORT ONLY IDENTIFIES THE SITES THAT MAY BE IMPACTED BY THE CONSTRUCTION AND MAINTENANCE ACTIVITIES OF BIPOLE III.

MITIGATION/ ACCOMODATION AND ALL POSSIBLE IMPACTS HAVE NOT BEEN DISCUSSED WITH THE PROPONANTS OF BIPOLE III.

SWAN LAKE FIRST NATION DOES NOT IN ANY WAY CLAIM EXCLUSIVE USE OF THIS TERRITORY, OTHER FIRST NATION COMMUNITIES MAY ALSO CLAIM TRADITIONAL USE FOR THE AREA.

TABLE OF CONTENTS

7.0 Current Land Use

8.0 Heritage Resources Branch Documentation Review

9.0 Archeologist Report

10.0 Botanical Survey

11.0 Swan Lake First Nation Traditional Land Use Map

1.0 INTRODUCTION

This report conveys the findings of the Swan Lake First Nation Traditional Knowledge Project (SLFN TKP) conducted between January and June 2011. It is submitted for information purposes to the Environmental Impact Statement process for the proposed Manitoba Hydro Bipole III transmission line construction and maintenance plan. This report reflects a very cursory study of the complex issues relating to s. 35 rights under the Canadian Constitution 1982. This report is prepared by the Swan Lake First Nation History and Treaty Research Department (SLFNHTRD) on behalf of the Swan Lake First Nation Chief and Council.

The cursory nature of the study should not in any way diminish the difficult aspects of setting out the terms by which Swan Lake First Nation's section 35 rights may be mitigated in a fair and equitable manner.

1.1 Background

The area of focus is north of what is known as Indian Gardens Indian Reserve # 8 held in trust by the Federal Crown for the people of Swan Lake First Nation. Manitoba Hydro's Biploe III line will run on a diagonal line west to east from Sections NW 35- 9- 9W1 to SW 17- 9-8W1. The actual 66 meter right of way has not been clearly identified to date. The 66 meter Right of Way crosses nine different sections of land; SLFNTKP study covers 34 sections of territorial land in the RM of South Norfolk, the land in question is under private ownership. The Assiniboine River flows through the area. Long Plain First Nation and Dakota Plain First Nation are on the North side of the 3 mile corridor and Indian Gardens IR#8 sits on the South side of this corridor. The approximate location of the preferred route traverses some flat plateau lands on the north, deep escarpments on the north valley slopes and to the valley flat lands below, then crossing the Assiniboine River and up the steep sloping hills on the south side of the valley.

In January of 2011, Manitoba Hydro was presented with historical documents that identified potential SLFN interests in the corridor and entered into agreement to conduct a study on the possible impacts of this type of project on our aboriginal and treaty rights. The Swan Lake First Nation History and Treaty Research Department (SLFNHTRD) undertook to conduct the study.

SLFNHTRD began by reviewing all documents and recorded oral history interviews that have been accumulated over the past 40 years. Swan Lake First Nation has documented the history of the community, thousands of government documents and hundreds of oral history interviews.

Swan Lake First Nation recognizes that the area land owners have an important role to play as part of the process; interviews were done with key Non- Indian (land owners) people in the area.

Hereditary interests also had to be identified should there be any and that both Indian and Non-Indian interests were to be considered.

Understanding that the Manitoba Hydro Bipole III project will not simply be a process of placing a few towers in the ground and that there will be extensive clearing of the right of way, crossing rivers, streams and perhaps disturbing large areas has brought about a more substantial look at the impacts. Continued maintenance of the line for decades also has longer term impacts that require clear and focused discussion. Due to the lateness of our involvement in the process and also to weather related delays in providing a complete report, both parties understand that mitigation will not be part of any discussion related to the findings submitted to the Environmental Impact Statement process at this time.

1.2 Objectives and Scope MB Hydro

The Bipole III transmission project will improve system reliability by providing a new transmission line and additional conversion facilities in both northern and southern Manitoba. These system improvements will reduce the risk of simultaneous and potential catastrophic outages by increasing the separation distance from existing facilities.

1.3 Objectives and Scope SLFN Traditional Knowledge Project

Swan Lake First Nation proposes to identify, locate and map traditional land use that is culturally relevant to the people of Swan Lake. The end result of the project will provide a basis for Chief and Council and Manitoba Hydro to deal appropriately and respectfully with a very large and significant area in Treaty 1 territory.

1.4 Objectives and Scope SLFN

The Swan Lake First Nation will identify any potential aboriginal and treaty rights that exist in this area, and that the dispossession of our lands from our people does not extinguish such rights.

2.0 Treaty Position

The submission of this report is presented in good faith and a tremendous amount of good will. Nothing in this report shall be construed to compromise or restrict the ability of our First Nation or other First Nations and their members to fully enjoy the Aboriginal and Treaty Rights recognized and affirmed by the Canadian Constitution1982, the 1763 Royal Proclamation, the 1867 BNA Act and any provision in the Treaties.

In addition to specific Indian reserved land, we maintain jurisdiction over a range of other lands. Some of these extraterritorial Land Rights include:

Hunting and Trapping Areas	**Burial Grounds and Sacred Lands**
Fishing Stations	**Traditional meeting Grounds**
Gathering Areas	**Timber Berths**
Hay Meadows	**Agricultural Reserves**

Anything not specifically negotiated by the First Nations by the Articles of Treaty remain under Indian Jurisdiction including renewable and non-renewable resources.

Indian Commissioner J.A.N. Provencher stipulated that any lands occupied or improved prior to the signing of treaties were to be set aside as “Indian Lands “separate from the lands reserved by formula for each family. 1873

In Treaty 5, 1915, “… but reserving the free navigation of the said lake and river, and free access to the shores and waters thereof, for Her Majesty and all Her subjects…”

3.0 ISSUES IDENTIFIED, IMPACTS AND RECOMMENDATIONS

3.1 Round Plain Site

There were several important villages of the Portage Band. These were Long Plain, Round Plain, Halfway Bank, Eagle's Nest, Indian Gardens, Backfat Lake and Indian Springs. Many place names are equally important such Hamilton Crossing, Indian Ford, 'lunch' creek where people camped and used for many purposes. The huge geographic area where the BiPole III transmission line will cross our territory encompasses many of these historic and strategic areas.

The early treaty pay lists indicate that there were several reception areas where treaty payments were issued. Long Plain, Round Plain, Indian Gardens, Swan Lake and District Offices of Indian Affairs were the principal locations. Of interest are those activities at Round Plain and Indian Gardens.

Round Plain is a historic site where the Portage Band was broken up into three bands; Sandy Bay, Long Plain and Swan Lake during the 1876 revision of Treaty One. The written record is available and equally important is the oral history concerning events within this area. Early treaty payments were also issued here during the period when the exact locations of the reserves were being determined.

Round Plain is located in the SW 1/4 section of 30-9-8W1 and is within 1 mile of the preferred 66 meter right of way, the area is now a wild life management area or Crown land.

3.1.1 Impact

Clearly this site has significant historical relevance to the people of Swan Lake First Nation and very likely to Long Plain and Sandy Bay. More precisely Round Plain is of Historical importance not only to the First Nations but should also be of historical value to Canada and the Province. The ground is also considered sacred ceremonial ground, this was the reason the First Nation people believed that the revision of Treaty 1 should be held there, in the hopes that the Crown would honor their promises made at treaty time in 1871.

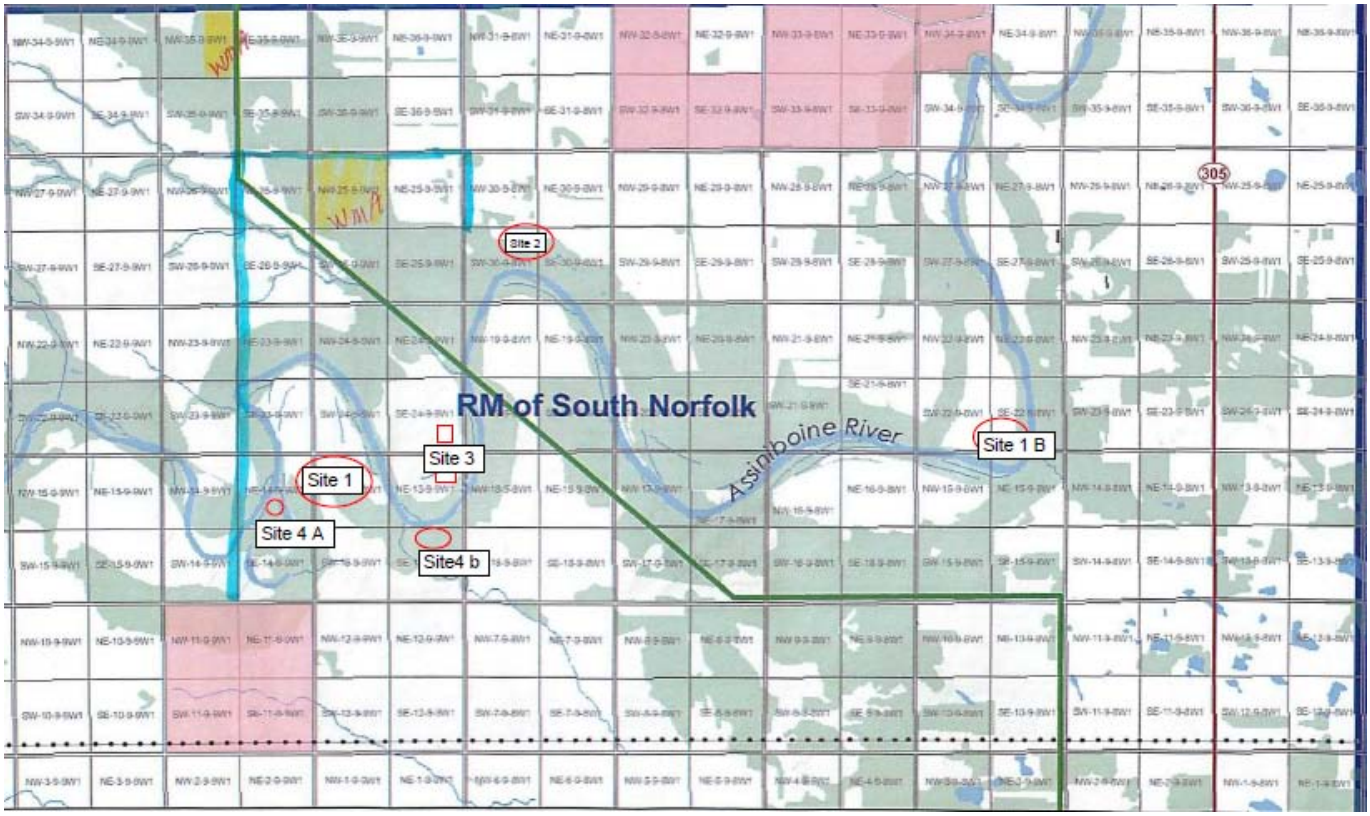
The loss and/or disturbance in anyway would not be supported by the First Nation.

3.1.2 Recommendations

This site should be left undisturbed and that further archeological study and Historical Research should be done to protect the area. Swan Lake First Nation and other Treaty First Nations as well as the land owner in the area should collectively determine what should happen to this site.

Traditional Knowledge Project

Site Map 1



Site 1 and Site 1b: Identified by oral history and is identified as sun dance grounds/ ceremonial grounds. This may be 1 site identified in 2 different areas. Ground research needs to be completed to confirm the site. SW 24-9-9W1 and SW 22-9-8W1

Site 2: Is Round Plain. SW 30-9-8W1

Site 3: Identified by oral History and is identified as burial site. SE 1/4 24-9-9W1 or NE 1/4 13-9-9W1

Site 4a and Site 4b: Are identified as ceremonial grounds and may be Bah-Gah-Mah-Gun's (Talking Stone's) medawiin grounds. NE 1/4 14-9-9W1 or SE 1/4 13-9-9W1

Note: A minimum of 3 different interviews are conducted to confirm memorial history. We also held group discussions with elder members of the community to try and narrow down specific locations.

3.2 Indian Garden Site

Indian Gardens is considered land occupied prior to Treaty and is not considered lands reserved by treaty formula (….as will furnish one hundred and sixty acres for each family of five, or in that proportion for larger or smaller families… treaty 1 text) it is also not considered part of the additional lands promised the followers of Yellow Quill (…reserving also a further tract enclosing said reserve to comprise an equivalent to twenty- five square miles of equal breath… treaty 1 text). Chief Yellow Quill resided there while he waited for his promised large reserve, he died there in 1910. After his death, the land was given reserve status under the Indian Act on November 21, 1913. The question as to the size of this land remains unanswered to this day, through First Nation elder's stories; there is indication the land extended to the river and beyond. The earliest registered land ownership interest on section 14 north of IR#8 is dated as 13 December 1886, to Trust & Loan Company of Canada.

The last known Swan Lake First Nation occupant of Indian Gardens No. 8 was Kewesance also known as John Yellow Quill, son of Chief Yellow Quill. Kewesance was born in 1886 and died at Indian Gardens in 1952. There are several burial plots on Indian Gardens No. 8 and in the area of Indian Gardens No.8 which are identified on maps of the reserve. In addition to family burial plots, location of homes, gardens and other important structures such as wells and pathways need to be documented. All these will be mapped using GPS and aerial photographs. Many families lived on and off this important reserve over many years. At times, people lived there temporarily during various seasons.

People visited Chief Yellow Quill at Indian Gardens to meet and discuss issues with the Chief. Chief Yellow Quill lived at Indian Gardens along with his families, children and relatives. Since that time, agricultural activities such as drainage and field expansion, much of the evidence may have been lost. Memory of individual farmers, elderly reserve members and archival information will attempt to recreate this community. The exact number of individuals and families who lived there is not known; the people of that day were migratory and moved from site to site depending on their needs.

Review of treaty pay list identifies who received treaty payments at Round Plain and Indian Gardens. However, this does not mean that they resided at those locations. In the same way, individuals collected treaty money at District offices. It meant that they were present at those locations at that time.

Government policy had a devastating impact on the people at Indian Gardens No.8 , Indian Gardens No.8 was seen by the Indian people as a sanctuary, they could hide their ceremonies from government officials very easily within that valley, alliances with area land owners was essential to this effort.

On April 14, 1915 issue of the Winnipeg Telegram the headline reads: "Pedley, Smart and White Made Huge Profits out Of Illegal Trafficking in Indian Lands". Pedley was the Deputy Superintendent General of Indian Affairs; Smart was Deputy Minister of The Interior, and White was an Immigration Inspector. This is one of the many examples that land speculators and Government officials took possession of Indian Lands under questionable practices.

3.2.1 Impact

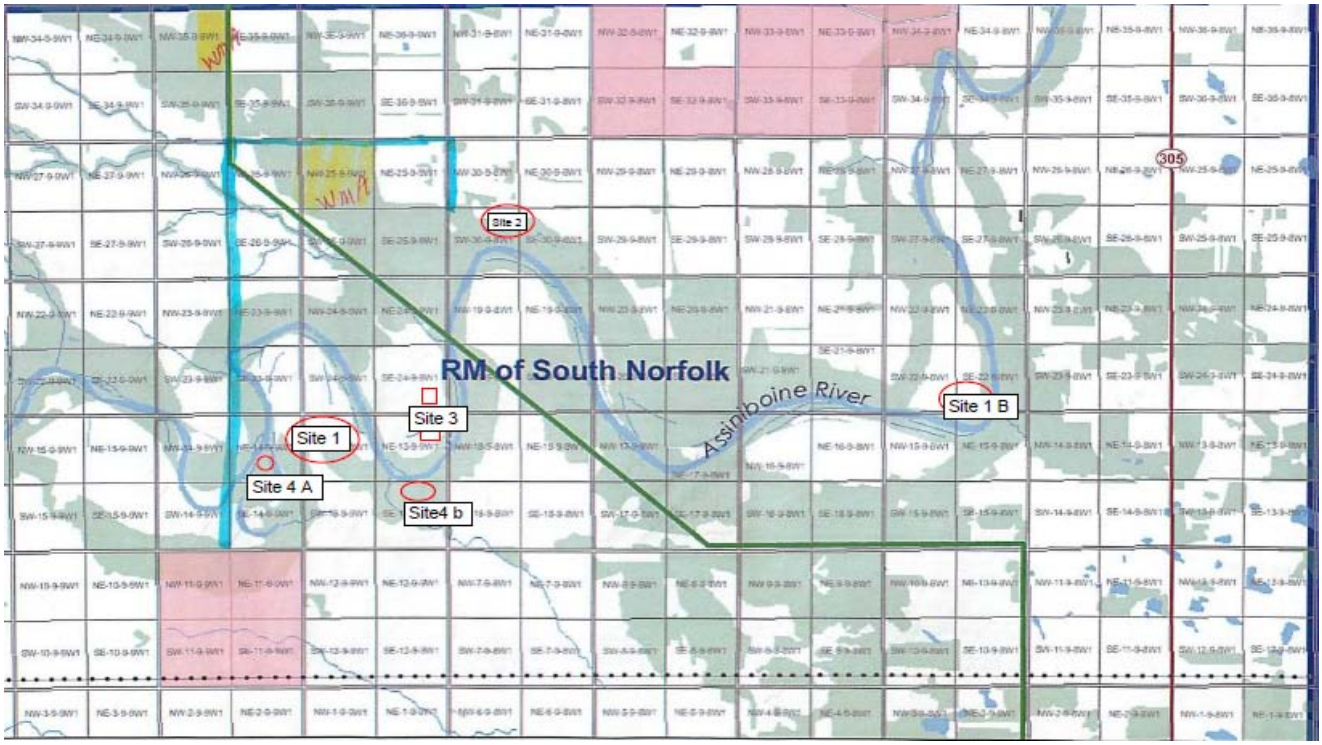
The 640 acres identified as IR# 8 does not fall within the 3 mile corridor of the Bipole III project, however the question as to the extent of Indian Gardens into the valley floor could potentially be impacted by future developments and most certainly fall within the 3 mile corridor.

The impact of encumbrances on future land settlements fall within the jurisdiction of the Federal Department of Indian Affairs, this is an issue that is beyond the scope of the TKP. However, the issue is identified for the Chief and Council of Swan Lake First Nation to consider. Focused research on the Dominion Lands Survey, Surveyor's instructions, Hudson's Bay Company documents and Indian Affairs Documents need to be completed as soon as possible. The Chief and Council need to also look at the Federal policies on Indian Land as they pertain to creating reserve lands. I have attached a map of survey done in 1873 and an overlay on Bipole III map; this indicates the land ownership question has not been settled.

Indian Commissioner J.A.N. Provencher stipulated that any lands occupied or improved prior to the signing of treaties were to be set aside as "Indian Lands "separate from the lands reserved by formula for each family. 1873

3.2.2 Recommendations

Immediate research into the land ownership question of sections 15, 14, 13 in TWP 9 RGE 9 should be considered, and registered with the Department of Indian affairs. A determination of the circumstances surrounding the dispossession of these lands needs to be made. No impact can be advanced at this time.



3.3 Burial Grounds

Identification of burial sites is more problematic in that these sites were usually left unmarked; it is and has been the practice of Indian people to allow burial plots to disintegrate back into the earth. The tradition of handing done burial site information from one generation to the next is handed down orally and is a practice that continues today.

We have been able to identify several potential burial sites in the area, 1 in particular that is close or within the 66 meter right of way. Locating this site would require archeological practices that are not acceptable to the elders of this First Nation. Information collected from the elders; locate this area in the NE ¼ of Section 13 TWP 9 RGE 9, or on the SE ¼ Section of 24 TWP 9 RGE 9, on property owned by Darcy and Valerie J. Watson. The site was likely disturbed by deforestation and agricultural practices. This site may be as recent as 1918 flu epidemic, not all deaths were reported by Indian people due mainly to the outlawing of certain First Nation Traditional practices.

Chief Yellow Quill's immediate relatives are suspected to have been buried at this location; this may also have been the location of Yellow Quill's ceremonial grounds. This site will be very difficult to locate and will likely not be possible to identify specifically.

3.3.1 Impact

Our people have very strong feelings about disturbances of grave sites, as one of our elders said *"… they did what they wanted to do to us because we were not respected, you leaders have laws you can use today".*

Heritage Resource Branch has adequate regulations to deal with potential disturbances of burials sites during the construction phase of the Bipole III transmission line. The enforcement of the laws and regulations we have concerns about, the enforcement of these regulations in the opinion of the writer is inadequate, therefore we recommend the following.

3.3.2 Recommendations

Swan Lake First Nation would wish to have an on-site observer during construction beginning from NW 35-9-9W1 down to SW 26-9-9W1, diagonally to NE 8-9-8W1 east to SE 15-9-8W1. A formal protocol needs to be considered and agreed to should sensitive site and in particular burial sites that may be disturbed, any mitigation/accommodation measures must consider the traditional practices of our people.

Section 12, 1876 Indian Act

The term "person" means an individual other than an Indian, unless the context clearly requires another construction.

1884 Indian Act Amendment

This amendment is intended to suppress any and all gatherings of three or more Indians as incitement to a riot. This amendment also restricts the movement from reserves, and the residential schools become law.

Indian Act, Section 140, 1927, Dances and Festivals

140.(1) Every Indian or other person who engages in, or assists in celebrating or encourages, either directly or indirectly, another to celebrate any Indian Festival, dance, or other ceremony of which the giving away or paying or giving back of money, goods or articles of any sort forms a part, or is a feature, whether such gift of money, goods or articles takes place before, at, or after the celebration of the same or who engages or assists in any celebration or dance of which the wounding or mutilation of the dead or living body of any human being or animal forms a part or is a feature, is guilty of an offence and is liable on summary conviction to imprisonment for a term not exceeding six months and not less than two months.

Although this policy was meant to protect Indian people from exploitation from carnival proprietors, Indian Agents took it to also mean Indian people were forbidden from practicing their traditional beliefs.

3.4 Sacred and Ceremonial Grounds

There are 3 sites identified other than Round Plain and Eagles Nest. Three (3) sites were mentioned during our interviews, however, this may be one sun dance ground identified in two different places. The other sacred site is not so clearly identifiable; this site went through some drastic land alterations and perhaps has had major flooding over the years it may be in the area directly north of Indian Gardens or further east on the NW ¼ section of 18-9-8W1, the site is identified as a ceremonial ground by medawin society. The medawin society does not exist in our community, however, these types of grounds are held in high regard even today.

These sites cannot be dealt with until the ground work by the archeologist is completed. However, it is the practice of traditional people to not allow disturbances in the area of these sites. Identification on the extent of these sites will be difficult; no impact statement is being advanced at this time.

1884 Indian Act Amendment

This amendment is intended to suppress any and all gatherings of three or more Indians as incitement to a riot. This amendment also restricts the movement from reserves, and the residential schools become law.

Indian Act, Section 140, 1927, Dances and Festivals

140.(1) Every Indian or other person who engages in, or assists in celebrating or encourages, either directly or indirectly, another to celebrate any Indian Festival, dance, or other ceremony of which the giving away or paying or giving back of money, goods or articles of any sort forms a part, or is a feature, whether such gift of money, goods or articles takes place before, at, or after the celebration of the same or who engages or assists in any celebration or dance of which the wounding or mutilation of the dead or living body of any human being or animal forms a part or is a feature, is guilty of an offence and is liable on summary conviction to imprisonment for a term not exceeding six months and not less than two months.

Although this policy was meant to protect Indian people from exploitation from carnival proprietors, Indian Agents took it to also mean Indian people were forbidden from practicing their traditional beliefs

4.0 Summary of Community Members Comments

Italicized indicates Ojibwa Translation

Swan Lake First Nation Elder 1974

"We use to travel by horse and buggy, if you were good to your horses it would take 2 days to get to Long Plain. We gathered berries or hunt deer, mostly rabbits. We didn't carry food when we traveled. Sometimes there were a lot of Indians at the river crossing. We would stay at Indian Gardens sometimes for the summer; they had the Sundance, medawin, dances, (grass dance) and give away dances."

"There was sickness after the flood, many kids died and old people some were taken to the sanatorium in Ninette. They buried them right there at Indian Gardens."

"They lived there because of good hunting, and in the winter because it was sheltered, the horses stayed in the valley all winter."

Swan Lake First Nation Elder 2008 and 2010 (Italicized *indicates Ojibwa translation)*

" Oo-za-we-kwun lived in that area all his life, he didn't want the reserve here (Swan Lake) he always said the government owed him the big reserve at Eagles Nest, he owned Indian Gardens before the Treaty was signed, I should say Indians stayed there before the treaty. *They were treated very badly by the government, by the Indian agents."*

"Oo-za- we-kwun moved some of his people to Swan Lake because they were sick and starving, they hayed in the valley down there they use to fish and hunt, collect maple sugar, berries, rabbits, muskrats, beaver."

"Some of the Indians tried to sell the reserve; it was Mesha- Kee -Penais that saved this reserve."

"My father spoke Ojibwa, English and French so he use to be the translator, there were many times that the government wanted us to join up with Long Plain Indians, *they said we would be closer to Portage where we would be looked after, because my father use to speak (translate) they started to send non-treaty people out of the reserves, you didn't have to be mixed blood if you were not registered or there was white blood in you, you were to leave the reserve."*

"The Sundance was outlawed, they use to hide in the valleys, I heard the valley at Indian Gardens was a Sundance ground, the Indians use to keep that ground clean, I am not sure who that would have been."

Swan Lake First Nation Elder 1974

" We all use to be in that valley from the forests to Long Plain, we use to hunt, collect berries, medicines, when people got sick we had to heal them, we had no doctors, if someone died they were buried where they died."

" The children were taught to look after the plants and the animals, they looked after us if we don't they wouldn't help us, they had spirits, you have to respect your life as well as the lives of the animals and the plants, they'll look after us."

Swan Lake First Nation Elder

"The last one that lived there was Kwezanse (John Yellow Quill), that old man lived there that's why they didn't sell that land. The white people (government) tried to always take that land from us."

"My grandmother collected medicines in that valley, we dug medicines all over the place, she use to know where to go and when to go to these places, I use to help her, she raised me, I enjoyed travelling around by horse and buggy with her, we lived in a tent."

"Indians had ceremonies where ever they lived, the police didn't allow us to have the piercing at sun dances, so they would have it somewhere out of sight, so we had them before the sun came up."

"Yes, Bah-gah-mah-gun (Talking Stone) and Oo-za-we-kwun (Yellow Quill) had sun dances in there, they were wise men, Bah-gah-mah-gun wore his medicine on his forehead, and he was medawin."

"The reserve use to be down to the river, I don't know what ever happened, water was always important to us, that's where Indian people lived always beside water, that old man use to live down there I don't know what happened." (Means John Yellow Quill)

"You people know more now, you have to find out what happened to our land, you need to talk to the old white people that live in there, Indians were always dealing with them they must know something. Talk to them some of them were kind."

5.0 Land Owner Comments

Rathwell Area Land Owner 2011

"I was born in 1924, I am 86 years old, and my father was born in 1864 and moved to the area sometime in the late 1880's. My father told me or he may have talked about the people who lived in the valley from a place called eagle's nest to round prairie and all the way down to Swan Lake. The Indian people who lived in the area worked for some of the farmers and for my father."

"They use to have sun dances, drumming, hunting, they hide from police." (He is referring to hiding the ceremonies)

"The Indians could not farm they were not allowed to, the Indian agent took everything."

"My father talked about Oo-za-we-kwun, they were poor people sick and starving, they were not allowed to sell anything, the Indian agent from portage was a cruel man, and he didn't care about the Indians. Oo-za-we-kwun sold my dad a horse for corn or grain, he had to hide the sale or the agent would collect it. In my day the people from Swan Lake would come with whatever rations they had and feed these people."

"My father talked about a large gathering of Indians at the place called eagle's nest, they talked about selling land for food and medicine. He talked highly of the Chief; he did not want to give up land."

"My father died in 1947, he was 82 years old, and he told me about the sickness, I think it was the flu, many Indians died, they had ceremonies, with drumming and singing in that valley, they sang for days, this was around 1918-1920."

6.0 Government Policies and the Impacts on Aboriginal and Treaty Rights

Indian Commissioner Hayter Reed Peasant Farmer and Permit System

In 1888 Commissioner Reed announced that North West Reserves were to be subdivided into separate farms, and individualism and self-reliance, not cooperation, were to be the guiding light of Indian farmers. Reed's implementation of the policies of allotments, peasant farming, and the permit system served to ensure that Indian people would be separated and internal community cooperation would not occur.

The permit system, in particular, which required that a department agent authorize any transaction between a merchant and an Indian, placed severe restraints on Indian people. Another consequence is Indian people could not move from reserve lands because of the reserve system, it was against the law for Indian people to go outside the boundaries of their assigned reserve without permission of the local Indian agent.

The Natural Resources Transfer Agreement 1930

Section 13 states that, In order to secure to the Indians of the Province the continuance of the supply of game and fish for their support and subsistence, Canada agrees that the laws respecting game in force in the Province from time to time shall apply to the Indians within the boundaries thereof, provided, however, that the said Indians shall have the right, which the Province hereby assures to them, of hunting, trapping and fishing game and fish **for food** at all seasons of the year on all unoccupied Crown lands and on any other lands to which the said Indians **may** have a right of access. Most crown lands became occupied through lease arrangements with farmers and therefore not accessible to the Indian.

The 1930 NRTA allowed the Federal Government to give away assets it had not secured by treaty from the Indian people and that the Indian would remain wards of the state. The NRTA was an assault on the true spirit and intent of the original understanding of the treaties that were negotiated previously and the NTRA ensured that Indian people would not create a commercial system of their own.

Under the NRTA hunting rights were severely restricted, and that the food Indian people traded and bartered were now controlled by law and became illegal to use for commercial purposes.

7.0 Current Land Use by First Nation People

The practice of gathering traditional medicines in this valley continues today.

There are also hunters from Dakota Plains and Long Plain that still use this area when exercising their right to hunt and fish all along the valley and the river. There are many people from these communities that still consume wild game and fish as part of their diet.

The location of this area is close to the Long Plain First Nation as well as Dakota Plains First Nation continue to use this area for hunting fishing and gathering of traditional foods.

Much of this area is under private land ownership and depending on the activity ownership is secures, access to the river for fishing and hunting trapping is still practiced.

Indian Act, Section 120, 1930, Prevention of Trade

120. Every person who buys or otherwise acquires from any Indian, or band or irregular band of Indians, in the province of Manitoba, Saskatchewan, or Alberta, or the Territories, any cattle or other animals or any grain, root crops or other produce or sells to any such Indian any goods or supplies, cattle or other animals contrary to the provisions of this Act, shall on summary conviction, be liable to a penalty not exceeding one hundred dollars, or to imprisonment for a term not exceeding three months, or to both.

This policy ensured that Indian people would not in any way compete with immigrant farmers and that Indian people would remain within the confines of the reserves they belong to. Commercial practices were outlawed to Indian people and that the continued control over Indian people was explicitly the purview of the government.

The Natural Resources Transfer Agreement

The Natural Resources Transfer Agreement 1930

Section 13 states that, In order to secure to the Indians of the Province the continuance of the supply of game and fish for their support and subsistence, Canada agrees that the laws respecting game in force in the Province from time to time shall apply to the Indians within the boundaries thereof, provided, however, that the said Indians shall have the right, which the Province hereby assures to them, of hunting, trapping and fishing game and fish **for food** at all seasons of the year on all unoccupied Crown lands and on any other lands to which the said Indians **may** have a right of access. Most crown lands became occupied through lease arrangements with farmers and therefore not accessible to the Indian.

The 1930 NRTA allowed the Federal Government to give away assets it had not secured by treaty from the Indian people and that the Indian would remain wards of the state. The NRTA was an assault on the true spirit and intent of the original understanding of the treaties that were negotiated previously and the NTRA ensured that Indian people would not create a commercial system of their own.

Under the NRTA hunting rights were severely restricted, and that the food Indian people traded and bartered were now controlled by law and became illegal to use for commercial purposes.

8.0 Review of Heritage Resource Branch Documentation

SEE ATTACHMENT ON THE FOLLOWING PAGE

9.0 Archeologist Preliminary Report

SEE ATTACHMENT ON THE FOLLOWING PAGE

10.0 Botanical Survey of Swan Lake First Nation (SLFN) Indian Gardens and Surrounding Area

SEE ATTACHMENT ON THE FOLLOWING PAGE

Swan Lake First Nation

Traditional Knowledge Project

Land Use

Traditional Lands Map

The Swan Lake First Nation traditional lands are visually displayed in the attached maps; these maps are in draft form. The maps are incomplete because we were not able to conduct the necessary ground work by our archeologist and the botanist.

The maps contain information that display the relationship Swan Lake First Nation people have to our traditional territory. This information was collected from interviews with community members conducted over decades, 1974, 1979, 1984, 1990, 2008, 2009, 2010, and 2011.

The interviews were part of the process for land claim settlement, history, and other specific projects identified by our community.

Traditional Lands Map Data Sources

The information on the maps showing features of the lands, waters, roads and municipalities or crown land designations of Swan Lake First Nation traditional lands is primarily from government sources. These include the Manitoba Land Initiative, Manitoba Conservation, Manitoba Geological Survey, Federal and Provincial Archives and Natural Resource Canada.

The information on the maps show the land area, the environment, human alterations and traditional land use activities, such as:

- Environmental features
- Human footprint
- Land use activities

The information collected was not as yet been located by GPS, the information was verified by interviewing community members 3 or 4 times on the same subject. The approximate locations of sites may not be exact but are in the area of focus.

The mapping is a partial or initial picture using maps of our traditional land use and occupancy.

This tool can be the basis for discussing any mitigation on land use in our traditional territories.

Swan Lake First Nation

Traditional Land Use

Map Description

Overview

Swan Lake First Nation Traditional Use

The maps contain information that display the relationship Swan Lake First Nation people have to our traditional territory. This information was collected from interviews with community members conducted over decades, 1974, 1979, 1984, 1990, 2008, 2009, 2010, and 2011.

The writer has reviewed and translated past and present interviews that directly pertain to the area the Traditional Knowledge Project was focused on. The oral history is based on the First Nation tradition of handing down stories from one generation to the next.

Although memories may not be exact to specific locations, verification by a minimum of three other sources was secured for each location.

The base map shows the significant features and locations of Swan Lake First Nation territorial lands. Symbols and colors are used to show the location of reserve lands, protected areas, roads and all major rivers and streams.

The symbols used indicate the following;

- Big Game Hunting
- Bird Hunting
- Trapping
- Fishing
- Gathering Food Areas
- Travel and Occupancy
- Travel and Occupancy without Roads
- Commerce
- Special sites

The Map 1 shows the travel routes and also the areas frequently occupied usually for seasonal purposes such as hunting, trapping and food gathering.

The Map 2 shows the amount of activity in the entire area by Indian people, many Indian people continue the traditional practices today. Legal interference has diminished the activities to a great extent but where permission is granted some activities continue. The map remains in draft form because some of the sites need to be located on the ground.

Map 3 shows the special sites that are of major concern to our elders; these sites indicate sacred and ceremonial sites. The map remains in draft form because the sites need to be located on the ground.

APPENDIX 02
An Assessment of Manitoba's Historic Resources Branch Archaeology Site Inventory Form

Introduction

Preparation of this report necessitated the retrieval and use of the Manitoba Historic Resources Branch's (HRB) archaeology site inventory form for sites located within the study area. Manitoba's archaeological heritage resources are legislated by the *Manitoba Heritage Resources Act* (1986) and the HRB is the agency responsible for overseeing the implementation of the Act. As such, the HRB maintains a register of all recorded heritage sites in the province which should show:
(a) the location of the site and a description sufficient to identify the boundaries thereof;
(b) particulars sufficient to explain the heritage significance of the site;
(c) the date of the designation of the site as a heritage site;
(d) the names and residence addresses of the owners and any lessees of the site;
(e) such other particulars and information as the minister deems advisable (Historic Resources Act 23(1).
According to the Historic Resources Act 23(2) this register "shall be available for public inspection at such location, on such days and during such hours as the minister may direct".

In order to undertake an evaluation of heritage resources in any area, one of the first actions is to examine the recorded heritage resources of that area. Not addressed here, but of great concern is the identification of what constitutes a heritage resource or site. This study assess only the archaeological resources as managed by the HRB, but does not include any other type of culturally significant site. The Act however designates heritage sites, not just archaeological sites. There is a concern here that other heritage sites are not being recorded, managed or protected. The following is an assessment of the archaeological site information received from the HRB in part to determine the archaeological potential of Indian Gardens and the surrounding locale. Examples of site forms from Saskatchewan and Ontario are presented for comparison.

Information Requests

Three separate requests were made to HRB in order to obtain archaeological site information relevant to this study. An initial request was made by Swan Lake First Nation (SLFN) to HRB for a listing of all heritage resources located in Township 9, Ranges 8 and 9 , West 1 of the Prime Meridian. A Microsoft Excel© datasheet (hereafter referred to as an excel datasheet) was provided to SLFN from HRB with a listing of 11 archaeological sites. A subsequent request to HRB for the site forms for these 11 sites was fulfilled and HRB emailed PDF copies of each site form. A further

request was sent to HRB for information and site forms for all sites located within the areas bounded by topographic maps 62G 09, 10 and 15 and a shape file was specifically requested. The HRB fulfilled the information and shape file request but indicated that a request for all site forms was not feasible. There were 90 sites recorded for this area and HRB did not have the resources to scan each site form, but if desired, one could come into the office and scan forms as needed.

Review of the HRB's Archaeology Site Inventory Form Information

As previously discussed, archaeological site inventory form information was provided in two different formats. The PDF site forms were provided but unfortunately, pages two and four were missing for each site, which accounts for roughly half of all site information including the site NTS map location and sketch map. It is assumed that this was an oversight by the HRB and a fourth follow-up request would have rectified this situation although such a request was not made.

There are 81 information fields on an archaeology site information form and slightly less than half of these are present in the excel datasheet (Figure 01). Emphasis will be placed on the information in the excel datasheet files for two reasons. First, they are more easily accessible and are the preferred method of information transfer used by the HRB. Second, the received site forms for the 11 archaeological sites were incomplete making the excel datasheet information more comprehensive.

Comparison of the HRB's Archaeology Site Information Form to Ontario and Saskatchewan Forms

The Canadian Constitution Act (1867) designates natural non-renewable resources as the sole domain of the provincial/territorial governments. As such, each province/territory has passed and implemented Acts to legislate identifying, recording and preserving heritage resources. An agency, such as the HRB, is responsible for implementing the act, and is responsible for maintaining a record of heritage resources. For this reason, archaeology site forms are different for every province. To evaluate the HRB archaeology site inventory form, the comparable forms used by the heritage agencies in Ontario and Saskatchewan were reviewed.

There are two categories of information to be evaluated. The first is quantitative in nature, and corresponds to the *amount* of information requested by each province from the individual(s) completing the record forms. The second is qualitative in nature, and corresponds to the information *accepted* by the province from the individual(s) completing the record forms.

IDENTIFICATION
1. Borden No
2. Other No
3. Principal Name
4. Other Names

LOCATION
5. Province
6. Municipality
7. Admin Jurisdiction a) Dept. Region: b) Planning District: c) River Lot
8. Map Ref.
9. UTM: NAD27
10. Latitude
11. Longitude
12.Legal Des
13. Phys. Zone
14. Vegetation Zone
15. Drainage System
16. Elevation a) feet b)metres
17. Air Photo #:
18. Descriptive Location
19. Access
20. Nearest Settlement
21. Nearby Sites

OWNERSHIP LAND STATUS
22. Previous
23. Address
24. Present Owner
25. Address
26. Present Occupant
27. Address

SITE DESCRIPTION
28. General
29. Site Size
30. Site Type
31. Stratigraphic Data
*32. Condition of Site
*33. Site Disturbance Factors

CULTURAL DATA
*34. Cultural Affiliation(s)
*35. Dates
*36. Dating Techniques
*37. Archival Data

ENVIRONMENTAL DATA
*38. General Topography
*39. Geological Features
*40. Local Terrain
*41. Soil
*42. Local Ecology
*43. Site Drainage
*44. Water Source

SITE HISTORY
*45. Informant a)Address
*46. Date
*47. First Recorded By
*48. Date
*49. Surface Collected By
*50. Controlled
*51. Project/Affiliation
*52. Date
*53. Tested By
*54. Controlled No
*55. Project/Affiliation
*56. Date:
*57. Excavated By
*58. Controlled No
*59. Project/Affiliation
*60. Date
*61. Revisited
*62. Remarks/Comments on Archaeological Investigations of Site
63. Extent of Investigations
64. Area & Method
65. Depth
66. Features
67. Artifact Catalogue Numbers
68. Diagnostic Artifacts
69. Loci of Artifacts in Site
70. Artifact Collection Repository
71. Photo Record
72. Location of Unpublished Data
73. Publications
74. Assessment
75. Recommendations
76. Salvage/Excavation Priority
*77. Place sketch map (showing landmarks, geologic features, scale, etc.) on reverse
78. Other Comments
79. Form Completed By
80. Date
*81. Portion of NTS Map Showing Location of Site

Figure 01: List of 81 information fields on the HRB's archaeology site inventory form. Highlighted fields correspond to those present in the excel datasheet files and * fields are those from the missing pages 2 and 4 of the PDF site forms received from the HRB.

To review the quantitative information, the archaeology site forms for Manitoba, Saskatchewan and Ontario were reviewed and the number and type of information fields required by each were compiled and compared. To examine the qualitative information of the forms, two site forms from each province were selected for review. For Manitoba, two of the 11 archaeology site inventory forms provided to SLFN were randomly selected. Two Saskatchewan archaeological resource record forms in the author's possession were randomly selected while two Ontario archaeological site record forms were solicited from a colleague. It is recognized that the methods employed in this assessment of the HRB archaeology site inventory form are not rigorous and is not meant to be an exhaustive analysis. Instead, this assessment was undertaken to determine whether or not the information on the HRB's archaeology site inventory form is sufficient to meet it's stated purpose in the *Manitoba Heritage Resources Act* (1986).

Quantitative Information

The archaeology site forms for Manitoba, Ontario and Saskatchewan (Attachment 1) were reviewed. For each form, the number and type of data fields were tabulated (Figures 01, 02 and 03). The Manitoba form has 81 information fields while Ontario has 34 and Saskatchewan has 27. Both the Ontario and Saskatchewan forms have information fields not numbered which would bring their total information field numbers to 37 and 34 respectively.

The 81 information fields on the Manitoba archaeology site information form are grouped into seven categories including; identification, location, ownership/land status, site description, cultural data, environmental data and site history. The four information fields in the identification category consists of Borden number and site name(s). The location category has 17 information fields and pertains mostly to the regional geographical location and setting of the site. The ownership/land status category has six fields which include the previous and present owner or occupant as well as their addresses. The site description has six information fields and asks for a general description of the site, it's size, type, stratigraphic data as well as any disturbance factors. There are four information fields in the cultural data category and these correspond to cultural affiliations for the site, dates and dating techniques as well as any archival data. The environmental data category is site specific and consists of seven categories describing the topography, soils, ecology and water sources. The largest category is the site history category with 37 information fields. Twenty of these fields refer specifically to site investigation and include informant address, dates that the site was first recorded, surface collected, tested or excavated and by whom, as well as the methods used. There are five fields related to artifact and feature recoveries and artifact repository. Three additional fields cover the photographic record as well as

SITE IDENTIFICATION
1. Borden No
2. Sequential Number
3. Researcher's site number
4. Preferred name
5. Other names

SITE LOCATION
6. Province
7. County or District
8. Township
9. Concession Lots
10. Municipal Plan Reference No.
11. Street Address
12. Elevation a) feet or b) metres
13. NTS map
14. Copy of map segment
15. Sketch map of site
16. Military grid reference (UTM)
17. Latitude and longitude
18. Location and access

SITE INVESTIGATION
19. Researcher
20. License or PIF number
21. Date site observed
22. Informant(s), Address(es), Nature of information
23. Activities conducted at site
24. Description of environment
25. Nature, density and extent of observed cultural remains

INFERENCES
26. Dates
27. Basis (of dates)
28. Site structure
29. Affinities a) basis

DOCUMENTATION
30. Artifact collections a) location b) nature
31. Pictorial records a) location b) nature
32. Field notes a) location b) nature
33. Unpublished material a) location b) nature
34. Published material a) location b) nature

COMMENTS

form completed by
date

Figure 02: List of 34 information fields on the Ontario Ministry of Culture archaeological site record form.

Site Name
a) observed, mapped or tested/excavated
b) Borden number
c) permit number
Site Type
Principal Name
Affiliation

LOCATION
1. NTS Map Reference #
2. UTM Grid Coordinates
3. Legal Description
4. Rural Municipality
5. Geographical Coordinates
6. Geographical Description
7. Land Ownership a) Private & Owner b) Provincial Crown & Lessee c) Federal Crown

SITE DESCRIPTION
8. Dimensions a)length b) width – measured or estimated
9. Features
10. Artifacts/Other materials a) observed b) collected c) collection repository & last catalogue #
11. Buried components a) yes & number & depth b) no
12. Other Observations

SITE ENVIRONMENT
13. Vegetation Zone a)grassland b) parkland c) boreal forest d) azonal complex e) other
14. Soil texture a) boulders b) cobbles c) gravel d) sand e) loam f) silt g) clay h) other
15. Landform a) terrain b) modifier c) sub-zone
16. Water Sources a) lake b) river c) stream d) slough/pond e) spring f) other
17. Elevation
18. Other Observations

SUPPLEMENTARY INFORMATION
19. Other Artifact Collections a) keeper
20. Photo Record a) type b) # of photos c) stared at

RESOURCE MANAGEMENT
21. Condition a) cultivated b) partially cultivated c) uncultivated d) other disturbances e) % of site intact f) potential disturbances g) when
22. Recommendations
23. Informant
24. recorded by a) date b) permit #
25. Updated by a) date b) permit #

OTHER REMARKS
26. Remarks

ACCESS
27. Access

Figure 03: List of 27 information fields and supplementary data on the Saskatchewan Heritage Resource's archaeological resource record form.

published and unpublished data. Field categories 74, 75 and 76 ask for an assessment, recommendations and the salvage or excavation priority of the site. The date and individual completing the form are two more information fields to be completed and there is a field for additional comments. There are also two fields designated for the site sketch map and the portion of the NTS map showing the site location.

Based on the number of information fields present on the Ontario and Saskatchewan forms it would appear that the Manitoba form is the most comprehensive. It should remembered however that only 38 of the 81 information fields (Figure 01) are available in the site form excel datasheet. There is also some redundancy of the information fields. For examples, there are six information fields pertaining to ownership/land status where one or two fields could provide the same answers. Similarly, there is a series of fields pertaining to the general location of the site which are again covered under site environment. A comparison of the information fields for each province's site forms (Figure 04) indicates that the Manitoba forms do request more *specific* types of information. There is no corresponding request for ownership/land status on the Ontario form but a similar request is made on the Saskatchewan form. The Manitoba form has a series of specific information fields related to recording, surface collecting, testing and excavation of the site. This type of information is requested on the Ontario form but not specifically on the Saskatchewan form. One other field not requested on either the Ontario or Saskatchewan forms is the salvage/excavation priority of the site. The Saskatchewan form requests recommendations while the Ontario form does not. Information not requested on the Manitoba form but on the Ontario form includes the nature and location of the field notes as well as a license or permit number for the site. The Saskatchewan form also requests a permit number.

Qualitative Information

It is difficult to judge the qualitative data on the provincial archaeology site forms because the nature of the information does not lend itself to a systematic comparison. This is partly due to the different formats of the site forms and partly due to the format of information requested on each site form. For example, while the Manitoba archaeology inventory site form has seven information fields for the environmental data, the Ontario archaeological site record form has one open-ended field. Rather than compare each information field, the categories (i.e. identification, location, site description etc.) were compared in order to determine if the same quality of information was being solicited. Again, it should be reiterated that this is not an exhaustive study. A statistically valid sample would require the examination of a greater number of forms. This assessment is a preliminary examination of the Manitoba archaeology site inventory form.

Manitoba	Ontario	Saskatchewan
01	01 & 02	Present
02	03	
03	04	Present
04	05	
05	06	
06	10	04
07	07 & 09	
08	13	01
09	16	02
10	17	05
11	17	05
12	08	03
13		
14		13
15		16
16	12	17
17		
18	18	06
19	18	27
20		
21		
22		
23		
24		
25		
26		07
27		
28	25	
29	25	08
30	25	Present
31	25	
32		21
33		21
34	29	Present
35	26	
36	27	
37		
38	24	15
39	24	15
40	24	15

Manitoba	Ontario	Saskatchewan
41	24	14
42	24	13
43	24	16
44	24	16
45	22	23
46		
47	19	
48		
49	23	
50	23	
51	20	
52	21	
53	19	
54		
55	20	
56		
57	19	
58		
59	20	
60		
61		
62	present	present
63		
64		
65		
66	09	
67	30	10
68	29	10
69	25	11
70	30	19
71	31	20
72	33	
73	34	
74		
75		22
76		
77	15	present
78	present	26
79	present	24
80	present	24
81	Present	14

Figure 04: Tally of 81 information fields on the HRB's archaeology site information form and corresponding information fields present on Ontario and Saskatchewan archaeology site information forms. Highlighted fields correspond to those present in the excel datasheet files received from the HRB.

All provincial site forms provided basic identification such as site name and Borden number as well as who completed the form and on what date. Location information such as map reference, UTM coordinates and legal description (where applicable) was also present on all six forms. The latitude and longitude descriptions however were not completed on any of the Ontario or Saskatchewan forms but were filled out on both Manitoba forms. The Ontario and Saskatchewan forms provided more specific detail regarding the descriptive location of their sites when compared to one of the Manitoba site forms. The second Manitoba site form was comparable to those from Ontario and Saskatchewan. The same situation existed for the access information. For ownership/land status, the Ontario forms did not request this information while the Saskatchewan forms did. On both of the Saskatchewan forms, the present owner was listed as was the present occupant and phone number for the second site form. These fields were left blank on the first Manitoba site form and only the present owner is listed on the second form. The Saskatchewan forms had the most information pertaining to general site description with a fairly lengthy and very specific description of each site. Site size was designated in both the Ontario and Saskatchewan forms on the sketch maps. The sketch maps were not available for the Manitoba forms as they are located on page 4 of the forms which was missing, nor were they present with the excel datasheet. Likewise, all of the environmental data and about half of the site history data was not on the excel datasheet and it was one of the missing pages of the PDF site forms, making it unavailable. Of the remaining site history information, all forms listed diagnostic artifacts (when present) and all but one of the Manitoba forms listed the dates and dating techniques. All forms list the artifact repository (where applicable) and all but one of the Manitoba forms list the photo record repository (where applicable). The Ontario forms do not specifically request assessment and recommendations while the Saskatchewan forms request recommendations. For Manitoba, the first form was blank for assessment but recommended that amateur archaeologists be encourage to do controlled surface collection of the site. The second form recommended shovel testing and had an assessment of "*a potentially significant site because locale is associated with a historic toponym; site size is large; site stratigraphy is probably excellent behind fence lines (uncultivated)*". The Saskatchewan site form recommendations were quite detailed. One recommended avoidance of the site and monitoring of the right-of-way for a SaskPower transmission line. The other site had no further concerns because the site would not be further impacted.

Assessment of HRB's Archaeology Site Inventory Form Information

The HRB's archaeology site information form was assessed for accessibility and how well it meets the objectives in the *Manitoba Heritage Resources Act* (1986) as outlined in the Introduction. Accessing the completed archeology site forms is done by submitting a request to the HRB. The experience for this project was positive in that the

HRB was incredibly efficient and quick to fulfill our information requests. The use of electronic files (excel and shape) greatly enhances the accessibility of this information There are however three concerns regarding accessibility. The first two are somewhat related and correspond to audience.

The Act states that the record of heritage sites be made available for public inspection. This is concerning because it means everyone has the right to access the archaeology site inventory forms, and could locate archaeological sites. There is the potential for a person to abuse this information and loot a site. Ontario provides this information to licensed archaeologists, municipalities, First Nations or researchers, engineers or lawyers acting on their behalf[1]. The *Heritage Property Act* (1980) of Saskatchewan states, "*The minister shall maintain a register of archaeological and palaeontological objects found in or taken from land in Saskatchewan"* Section 66.2(3). No reference is made to making it a public record. Although there has not been a known case where an archaeological site in Manitoba was looted as a result of site location information being obtained from the HRB, this type of information is sensitive and should be treated as such. If there is an HRB vetting process of providing information only to qualified individuals, it is not known. The entire process of soliciting site information from the HRB is not publically available and is a second concern regarding accessibility.

As development in Manitoba increases and as the government's *duty to consult* First Nations is clarified[2], utilization of the HRB's heritage site records will undoubtedly increase. The potential audience may not consist only of individuals familiar with the request process. This was the experience of SLFN when they made their initial request to the HRB. SLFN received an excel datasheet file with a listing of 11 archaeological sites and corresponding information fields. However, there was no explanation as to the *meaning* of the information fields and what type of data one would expect for the information fields. Both Ontario and Saskatchewan have guidelines for completing a site form. The Ontario guidelines are part of the site form (Attachment 1) while Saskatchewan guidelines are available on their website http://www.tpcs.gov.sk.ca/siteForms as is a PDF of the site form itself. The provincial websites for the Ontario and Saskatchewan heritage agencies provide detailed explanations of what constitutes a heritage resource, which agency is responsible for

---

1 http://www.mtc.gov.on.ca/en/archaeology/archaeology.shtml

2 Newman, D 2009 *Duty to Consult: New Relationships with Aboriginal Peoples*. Purich Publishing Ltd., Saskatoon.

managing the resources, licensing procedures and report procedures. On the Historic Resources Branch page of the Culture, Heritage and Tourism website (http://www.gov.mb.ca/chc/hrb/index.html) of Manitoba, *Archaeology* is found under *Heritage Publications*, and only two links are provided (Figures 05 & 06). The information provided on these pages is very vague, and unless a person has had experience with, or knowledge about the HRB, obtaining useful information may be challenging. Again, using the experience of SLFN and their confusing regarding the excel datasheet, they were unaware that they could request the individual site forms as well as the shape file. Situations such as this are likely to increase due to the reasons expressed above.

The preferred use of electronic data files by the HRB creates another concern. When a large volume of site information was requested from the HRB, the archaeology site inventory forms were not received, only the excel datasheet. The HRB did extend an offer for SLFN or their representative to come into the office to scan the site forms, but also indicated that it would be time consuming and unfeasible to scan all 90 site forms. This is problematic because the site forms contain more information, including the section of the NTS where the site is located and more importantly the site sketch map. The site sketch map provides the exact location of the site and any site boundaries (if known). This type of information is often vital to relocate a site or to determine if it will be impacted by development.

The HRB archaeology site inventory form was also evaluated as to whether or not it fulfilled the requirements of Section 23(1) of the *Manitoba Heritage Resources Act* (1986). Section 23(1) states that the register of heritage sites should include the location and boundaries of sites, why a heritage site is significant, the date it was designated a heritage site, the name and addresses of the owners or lessees and any other particulars and information that the minister deems advisable. As already outlined, the site information received from the HRB for this study did not include specific location details because the NTS and sketch maps were not available. The HRB does request the information about land ownership (information fields 22-27) but on the two forms reviewed, this information was either not present, or only partially present. As for date of designation, the only date present on the form is the date of form completion.

There is little information on any of the Manitoba site information received as to whether the sites are deemed significant. There is no explanation as to what the term *significant* represents. Are all sites significant because they are archaeological or because they contain recoveries of a high quality or quantity? If so, neither of the reviewed site forms list the quantity of artifacts recovered – only the types (i.e. projectile points, ceramics).

Manitoba

Culture, Heritage and Tourism

Historic Resources Branch

Do I need a permit to hunt for artifacts or excavate a site? Who owns any artifacts I find?

Heritage Permits

A heritage permit, issued by the Historic Resources Branch, is required to search for and collect heritage objects from any archaeological site on private or Crown land. A permit is obtained by filling out an application outlining where and when the individual will search for heritage objects, the methods to be used and the reasons for the activity. A heritage permit may restrict activities that can be conducted at a site, such as the areas to be investigated and how they will be examined.

Appropriate recording forms are issued with a permit to simplify preparing the report that is required as a condition of each permit.

A heritage permit is also required for metal detecting at known or potential archaeological sites. The Branch maintains a list of the types of archaeological sites where metal detecting is acceptable. Recording forms for metal detecting studies are issued with a heritage permit and, when completed, satisfy the basic report requirements.

Only professional or qualified avocational archaeologists are issued permits to excavate sites.

Download a copy of Provisions Regarding Found Human Remains

Ownership of Artifacts

Any artifacts found after proclamation of *The Heritage Resources Act* in 1986 are the property of the Province of Manitoba. However, the Province provides for custodianship of heritage objects. Artifacts collected on private land remain in the custody of the property owner, although landowners may transfer their rights to other persons, including those who collected the artifacts. Heritage objects recovered on Crown land may remain in the custody of the persons who found them.

A heritage permit is required to remove heritage objects from Manitoba. The permit is issued by the Historic Resources Branch, following completion of the appropriate application.

The Branch has two publications available which discuss artifacts: *Heritage Objects* and *The Treatment, Care and Preservation of an Archaeological Collection.*

Figure 05: One of two archaeology links on the Heritage Publications page of the HRB page on the Culture, Heritage and Tourism website.

Manitoba

Culture, Heritage and Tourism

Historic Resources Branch

How do I know if I have found a real archaeological site or real artifacts? What should I do if I come across artifacts or an archaeological site?

Archaeological Sites and Artifacts

The Historic Resources Branch routinely examines sites and artifacts to determine their age, uniqueness and significance. Interested members of the public can bring artifacts to the Branch's office at 213 Notre Dame Avenue in Winnipeg for identification. In addition, Branch archaeologists examine private collections and/or sites throughout the province and offer assistance regarding the care and treatment of artifacts, as well as the preservation of archaeological sites. The Branch maintains Volunteer Regional Advisors throughout the province; these avocational archaeologists also examine sites and identify artifacts. Advisors know their local areas and are familiar with what sites and artifacts have been found previously, either by themselves or other collectors.

Procedures to Follow

The best procedure is to have a qualified archaeologist examine the artifacts or the site. The locations where heritage objects have been found should be accurately recorded, using the legal section, township, range, or parish and/or river lot number, so that these locations can be examined and entered into the Branch's inventory of heritage resource sites. If a site is in danger of being destroyed by either man-made or natural agents, the Branch should be notified immediately so that adequate steps can be taken to obtain as much information from the site as possible.

Download a copy of Provisions Regarding Found Human Remains

Figure 06: Two of two archaeology links on the Heritage Publications page of the HRB page on the Culture, Heritage and Tourism website.

Information fields 74 (assessment), 75 (recommendations) and 76 (priority) seem to be related to significance. Field 74 was blank on the first form while field 76 was left blank on the second form. These fields introduce a related concern which is whether or not the assessment, recommendations and priority level, or any other information field is verified and/or followed up on by the HRB or another qualified entity. Recently, there has been criticism of the HRB's lack of standards and ability to enforce existing heritage legislation in regards to the construction of the Canadian Museum of Human Rights (Attachment 02). There also appears to be a lack of standards regarding completion of

the archaeology site inventory form. Hill[3] raised similar concerns regarding the site inventory form and cautioned against using the information on the site forms without first confirming the data. He focused on the fields relating to cultural affiliation and artifact description and was aware of researchers using the archaeology site register as primary data for their research.

Finally, the inclusion of any other particulars and information that the minister deems advisable is taken here to mean all other information present on the archaeology inventory site form. Of the two Manitoba archaeology site inventory forms reviewed, there were 14 blank information fields of the 49 fields available for review. Comparatively, there were only two blank fields on both of the Ontario forms and three blank fields on both of the Saskatchewan forms. Blank information fields is very concerning because the information could either be unknown, unavailable or not relevant. The second Manitoba archaeology site inventory form did use not applicable for two information fields but left other information fields blank.

Recommendations

There are four key areas where recommendations can be made and include; accessibility of information, archaeology site inventory forms, as well as implementation and transparency. These recommendations are meant as a starting point for dialogue and any changes should take place only with consultation from all stakeholders. including (but not limited to) government agencies, consultants, academics, students, First Nations, developers, landowners and interested members of the general public. There is also a consensus within the archaeological community (Attachment 02) that the HRB is underfunded, understaffed and is not allowed to enforce standards as used in other provincial heritage agencies. The HRB is staffed by a group of knowledgeable, experienced and dedicated employees and the concerns and recommendations in this Appendix is in no way meant to reflect on them as individuals. Instead, the problems experienced with the archaeology site inventory forms appear to be representative of problems with the HRB as an agency. Fulfillment of these recommendations can likely only occur with increase in funding and staffing of the HRB.

Accessibility of Information

- digitize all existing archaeology site inventory forms and create electronic database of digitized forms
- require one electronic version of all new archaeology site inventory forms

[3] Hill, G. 2009 *Data Data Everywhere but not a Byte to Eat*. Paper presented at 2009 MAS Fall Conference and AGM, Swan River.

- establish information request screening process ensure that only qualified individuals obtain site location information

Archaeology Site Inventory Forms

- simplify archaeology site inventory forms by consolidating information fields to reduce redundancy of information
- employ terms such as not applicable, not known or unavailable in the appropriate information fields rather than leaving information fields blank
- do not accept incomplete archaeology site inventory forms (other agencies restrict the ability to hold archaeological permits for individuals who have outstanding/incomplete site record forms and/or reports)
- require full name signatures rather than initials
- list all relevant publications in full detail including title not just author
- do not accept handwritten forms
- provide easily accessible guidelines for the archaeology site inventory form with qualifiers referring to information fields
- develop a process of verifying archaeology site inventory form information and reexamine all existing archaeology site inventory forms using this process

Implementation and Transparency

- provide detailed explanation of what the HRB is and what it does on Ministry website
- qualify what is meant by *significant* heritage resource
- distinguish between archaeological and heritage resources/sites and maintain registry of recorded heritage sites in conjunction with registry of recorded archaeological sites
- provide all HRB guidelines and forms on Ministry website
- provide a list of qualified archaeological consultants on the Ministry website
- develop a process to follow up on all assessment, recommendations and priorities on new archaeology site inventory forms and assess the need to do so on existing forms
- provide annual reports of the HRB activities on the Ministry website

Summary

The HRB's archaeology site inventory form was evaluated for accessibility and how well it fulfilled requirements of *the Manitoba Heritage Resources Act* (1986). The site form was compared to those required by similar heritage agencies in Ontario and Saskatchewan. A comparison of the number and type of information fields present on the three provincial archaeology site record/inventory forms indicates that the

information requested by the HRB on it's archaeology site inventory form is analogous to those used by the heritage agencies in Ontario and Saskatchewan. The information *accepted* by the HRB on the archaeology inventory site form is not equivalent to the standards of Ontario and Saskatchewan. Most concerning is the presence of blank information fields or vague descriptions on the Manitoba forms. There have also been concerns raised about the accuracy of the information. While the use of electronic files to fulfill site information requests can be completed in a timely manner, the current method (excel datasheets) excludes about half of the information fields and does not provide sufficient detail to be useful in relocating sites or assessing impact. Recommendations were presented to address these concerns although it is recognized here that without adequate funding and proper staffing, the HRB likely cannot implement many of the recommendations.

Attachment 01: Copies of the archaeology site forms used in Manitoba, Ontario and Saskatchewan

Manitoba

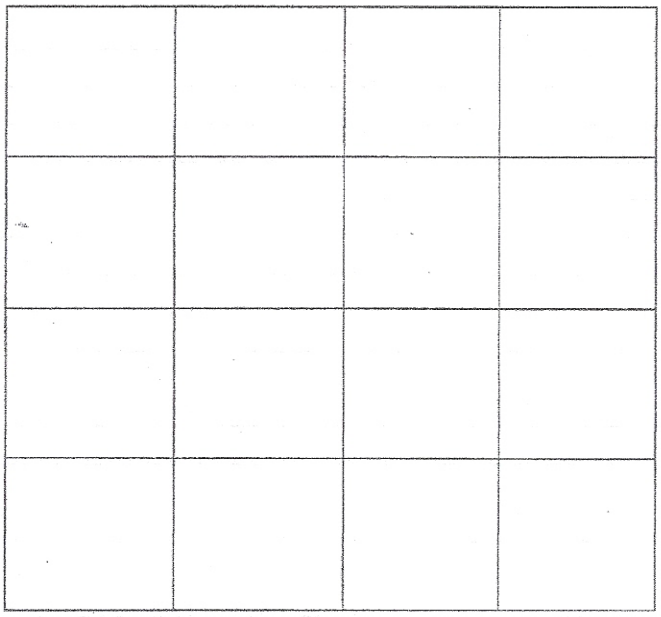
Archaeology Site Inventory Form		Manitoba Culture, Heritage & Tourism Historic Resources Branch

IDENTIFICATION		1. Borden No.:			
2. Other No.:	3. Principal Name:				
4. Other Names:					
LOCATION					
5. Province: Manitoba		6. Municipality:			
7. Admin Jurisdiction: a) Dept. Region:					
b) Planning District:					
8. Map Ref.:	9. UTM	X-	Y-	NAD 27	
10. Latitude:		11. Longitude:			
12.Legal Desc.: –1/4	Of –1/4	Of Sec.	TWP	Range	P.M.
River Lot:	Parish of:				
13. Phys. Zone:		14. Vegetation Zone:			
15. Drainage System:					
16. Elevation: feet. metres		17. Air Photo #:			
18. Descriptive Location:					
19. Access:					
20. Nearest Settlement:					
21. Nearby Sites:					
OWNERSHIP/LAND STATUS					
22. Present Owner:		23. Address:			
24. Present Occupant:		25. Address:			
26. Previous:		27. Address:			
SITE DESCRIPTION					
28. General:					

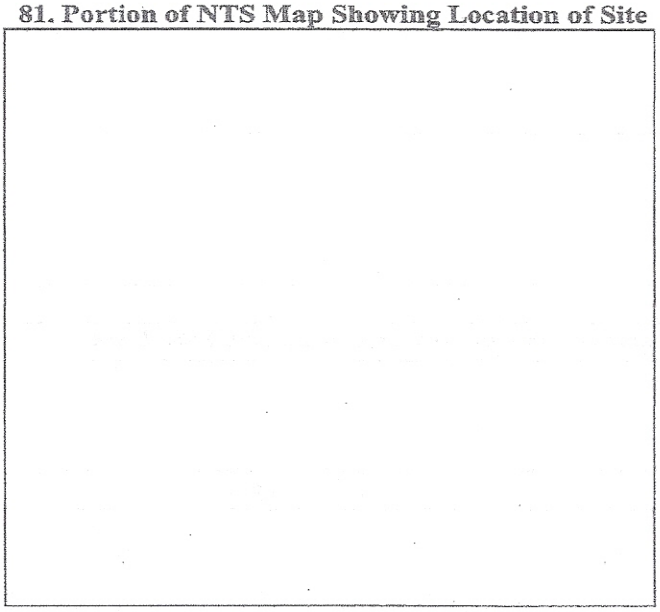
29. Site Size:	30. Site Type:
31. Stratigraphic Data:	
32. Condition of Site:	
33. Site Disturbance Factors:	
CULTURAL DATA	
34. Cultural Affiliation(s):	
35. Dates:	
36. Dating Techniques:	
37. Archival Data:	
ENVIRONMENTAL DATA	
38. General Topography:	
39. Geological Features:	
40. Local Terraine:	
41. Soil:	
42. Local Ecology:	
43. Site Drainage:	
44. Water Source:	
SITE IIISTORY	
45. Informant:	
Address:	46. Date:
47. First Recorded By:	48. Date:
49. Surface Collected By:	50. Controlled No
51. Project/Affiliation:	52. Date:
53. Tested By:	54. Controlled No
55. Project/Affiliation:	56. Date:
57. Excavated By:	58. Controlled No
59. Project/Affiliation:	60. Date:
61. Revisited:	

62. Remarks/Comments on Archaeological Investigations of Site:	
63. Extent of Investigations:	
64. Area & Method:	
65. Depth:	
66. Features:	
67. Artifact Catalogue Numbers:	
68. Diagnostic Artifacts:	
69. Loci of Artifacts in Site:	
70. Artifact Collection Repository:	
71. Photo Record:	
72. Location of Unpublished Data:	
73. Publications:	
74. Assessment:	
75. Recommendations:	
76. Salvage/Excavation Priority:	
77. Place sketchmap (showing landmarks, geologic features, scale, etc.) On Reverse.	
78. Other Comments	
79. Form Completed By	80. Date

77. Sketch Map of Site **Scale** **Legend**



81. Portion of NTS Map Showing Location of Site



Ontario

Ministry of Culture

Ministère de la Culture

Archaeological Site Record

Formule de renseignement - site archéologique

Borden Number
Numéro Borden

- *This form is intended for the field recording of archaeological site information for sites which have not previously been documented with the Ministry of Culture.*
- *Use the Archaeological Site Update form to record additional or corrected information concerning sites known to be in the Ministry's files.*
- *Refer to the instructions when completing this form and contact the Ministry of Culture for further assistance.*
- *Return original to the Ministry of Culture.*

- *La présente formule sert à consigner sur le terrain même les renseignements archéologiques concernant les sites pour lesquels le ministère de la Culture ne dispose pas encore d'une documentation.*
- *Utiliser la feuille de mise à jour pour noter les renseignements supplémentaires ou révisés sur les sites archéologiques répertories dans les dossiers du ministère.*
- *En remplissant cette formule, se reporter aux instructions et solliciter au besoin l'aide du ministère de la Culture.*
- *Renvoyer l'original au ministère de la Culture.*

Site Identification
Identification du site

1. Borden number – Upper case / Lower case
Numéro Borden – section du haut / Section du bas

2. Sequential number
Numéro de série

3. Researcher's site number
Numéro du site fixé par l'archéologue

4. Preferred name
Nom préconisé

5. Other names / identifiers
Autres désignations

Site Location
Réparage du site

6. Province: Ontario

7. County or District
Comté ou district

8. Township
Canton

9. Concession / Lot(s)

10. Municipal Plan Reference No.
Numéro du plan officiel

11. Street Address
Adresse

12. Elevation / Altitude ☐ feet / pieds ☐ metres / mètres

13. NTS map
Carte du système national de référence cartographique
NAD

14. ☐ Copy of map segment
Copie du segment de la carte

15. ☐ Sketch map of site
Plan du site

16. Military grid reference – Grid zone / 100,000 metre square / 100 000 mètres carrés / Easting / Orientation par rapport à l'est / Northing / Orientation par rapport au nord
Référence au quadrillage militaire – zone du quadrillage

17. Latitude / Longitude

18. Location and access
Emplacement exact et accès

Site Investigation
Exploration du site

19. Researcher
Archéologue

20. Licence number
Numéro du permis

21. Site observed
Site étudié
Year / année *Month / mois*

22. Informant'(s), Address(es), Nature of information

Borden Number
Numéro Borden

Site Investigation
Exploration du site

24. Description of environment
Description de l'environnement

25. Nature, density and extent of observed cultural remains
Nature, densité et ampleur des vestiges culturels étudiés

Inferences
Inférences

26. Dates

Basis
Indices à l'appui

27. Site function/type
Fonction/nature du site

Basis
Indices à l'appui

28. Site structure
Structure du site

Basis
Indices à l'appui

29. Affinities
Affinités

Basis
Indices à l'appui

Documentation	Location Emplacement	*Nature*
30. Artifact collections Collections d'artefacts		
31. Pictorial records Documentation visuelle		
32. Field notes Observations faites sur le terrain		
33. Unpublished material Matériel inédit		
34. Published material Matériel publié		

Comments
Commentaires

N.B. Incomplete and/or incorrectly completed forms will be returned to the researcher.
Les formules incomplètes ou incorrectement remplies seront renvoyés a l'archéologue.

Form completed by
Formule remplie par

Date

22-530 (03/2004) Page 2

Archaeological Site Record
Formule de renseignements – site archéologique

Instructions

Site Identification

1. For assistance in determining the Borden unit in which a site is located, contact the Ministry of Culture (see Sources).
2. In Ontario, sequential numbers are assigned only by the Ministry of Culture (See Sources).
3. Any systematic means of site identification other than the Borden Scheme, used by the researcher.
4. Any name by which the site is or has been known. It is preferable to record the most common local name in usage; if none exists, the researcher may assign any name he/she chooses.
5. Any additional names or identifiers, including incorrect Borden numbers, by which the site is or has been known.

Site Location

6. Ontario
7. County may be obtained from recent Ministry of Transportation (MTO) maps or from local sources. Record Regional Municipality where more appropriate. In areas of the province that are not organized into counties, record the district.
8. Township may be obtained from recent MTO maps or from local sources. Leave blank for areas of the province that are not organized into townships.
9. Lot and concession may be determined from recent MTO maps or from local sources. Where lots do not exist, leave blank.
10. Enter Municipal Plan Reference No., if applicable.
11. Enter street address, if applicable.
12. Approximate elevation may be determined from National Topographic Series (N.T.S.) maps. Indicate whether elevation is supplied in feet or metres. Do not convert from feet to metres or vice versa.
13. Index number of N.T.S. map upon which site location appears. For most of Ontario, this will be a 1:50,000 scale map, although portions of southwestern Ontario are covered at a scale of 1:25,000. Some areas of northern Ontario covered only by N.T.S., 1:25,000, maps are mapped at approximately 1:32,000 through the Ministry of Natural Resources M-plan series. These maps may be used in communicating the site location, however, reference to an N.T.S. map is still required.
14. Photocopy the section of the 1:50,000 or larger scale N.T.S. map upon which the site location appears. Label the copy with the map index number and the Borden number of the site. Clearly mark the exact location of the site on the copy, using a pen of contrasting colour. The location should be consistent with the military grid reference and elevation given.
15. Draw on a separate sheet of paper, a sketch map of the site and its environs. The map should portray the results of your investigation so as to enable the site to be relocated in the field, to permit the site location to be accurately communicated for land use planning purposes, to provide an understanding of the site's situation in the landscape, and to indicate the areas where activities were conducted on the site. Include the following:
    a) scale;
    b) direction indicator;
    c) drainage and transportation networks in the area;
    d) terrain, including key landforms;
    e) land use (e.g. fields, gravel pit, structures);
    f) areas examined;
    g) concentration of cultural remains;
    h) delineation of site boundaries as presently understood.

    Refer to the Site Investigation section of the site record form before completing the map.
16. Military grid reference is explained on all N.T.S. maps and in the *Guide to Archaeological Site Records*. Using a metric ruler to calculate the third digits of both easting and northing, provide a reference to at least six digits.
17. Latitude and longitude may be calculated from N.T.S. maps. Determine degrees, minutes and seconds as accurately as possible.
18. Describe the site location in an orderly manner from the general to the specific, indicating the most convenient access route and means of travel as though that would enable someone to find you at the site. Mention the relationships of local drainage and transportation networks to the site and supply accurate distances from permanent features on the landscape (e.g. building, stream, obvious point of land). Tie location description to features indicated on the accompanying sketch map.

Site Investigation

19. The name of the person making the site observations documented on this form.
20. The archaeological licence number under which activities were conducted at the site.
21. The year and month when current investigation of the site commenced.
22. Where possible, give names and addresses of local contacts who have contributed to your understanding of the site. Indicate the kinds of information available (e.g. locational information, rumours and anecdotes). Record information on site specific local collections under Documentation.
23. Referring to the sketch map, describe the field methods (e.g. mapping, sampling and recording techniques) that were used in the examination of this site.
24. Describe and account for the physical environment of the site in terms of factors such as soil or site matrix, vegetation, slope, drainage.
25. Referring to the sketch map, describe the variety and distribution of such cultural remains as artifacts, features or structures, rock art, etc.
26. If possible, supply an absolute or relative date accompanied by supporting evidence.
27. State how this site might have been used and provide supporting evidence.
28. If possible, describe the inter-relationships among the cultural remains, inferring the layout of the complete site and discussing the site's relationship to local terrain. Supply supporting evidence.
29. Describe the relationship of the site to broader categories such as cultural groupings (e.g. Iroquoians), techno traditions (e.g. Laurentian Archaic), corporate groups (e.g. Huron), or cultural stages (e.g. Middle Woodland). Provide supporting evidence for your statements.

Documentation

30. **to 34.** Collections and records of researchers previously involved with the site are of interest, as is documentation associated with current investigations and information on site-specific local collections. Pictorial records include such material as photographs and slides, maps and rice-paper tracings. For documentation housed in a regional office of the Ministry of Culture, location may be left blank and the region's abbreviation (NW, NE, SW, SC, E) noted in the space marked "regions".

Comments

Include here any comments not provided for elsewhere on the form. Incomplete and/or incorrectly completed forms will be returned to researcher.

The information contained on this update form is subject to the provisions of the Freedom of Information and Protection of Privacy Act, 1987.

Sources

Ministry of Culture
Heritage and Libraries Branch
Archaeology Unit
400 University Ave., 4th Floor
Toronto ON M7A 2R9 416-314-7161

Contact the Data Co-ordinator to obtain archaeological site record and update forms, assistance in completing the forms, and information concerning access to the archaeological sites data base.

Ministry of Natural Resources
Public Information Centre
Room M1-73, Macdonald Block, Queen's Park
Toronto ON M7A 2C1 416-314-2000

Ontario Base maps, and aerial photos are available from the Public Information Centre.

Crown Land Registry
300 Water Street, P.O. Box 7000
Peterborough ON K9J 8M5 (705) 755-2104

Ministry of Transportation
Map Office
301 St. Paul Street
St. Catharines ON L2R 7R4 (905) 704-2919

County, district and regional municipality maps may be obtained from this office.

Archaeological Site Record
Formule de renseignements – site archéologique

Instructions

Identification du site

1. Au besoin, solliciter l'aide du ministère de la Culture (voir Sources) pour trouver dans quelle unité Borden s'inscrit un sit donné.
2. En Ontario, l'attribution des numéros de série est réservée au ministère de la Culture (voir Sources).
3. Mentionner tout moyen systématique d'identification du site, autre que la méthode Borden, auquel a recouru l'archéologue.
4. Noter tout nom qui désignait le site. Il convient d'indiquer le nom le plus couramment employé sur les lieux; s'il n'y en a aucun, l'archéologue pourra lui attribuer le nom de son choix.
5. Préciser tous les autres noms ou désignations, y compris les numéros Borden inexacts, que porte ou a porté le site.

Repérage du site

6. Ontario
7. Pour savoir dans quel comté se trouve le site, consulter les cartes récentes du ministère des Transports (MTO) ou les sources locales. Indiquer la municipalité régionale si cela semble préférable. Pour les régions de la province qui ne s'inscrivent pas dans un comté, inscrire le nom du district.
8. Pour identifier le canton, consulter les cartes du MTO récentes ou les sources locales. S'il s'agit d'une région qui n'a pas le statut de canton, laisser en blanc.
9. Le lot et la concession peuvent être identifiés à partir de cartes récentes du MTO ou de sources locales. S'il n'existe pas de lot déterminé, laisser en blanc.
10. Inscrire le numéro du plan officiel s'il y a lieu.
11. Inscrire l'adresse s'il y a lieu.
12. Pour connaître l'altitude approximative, il suffit de consulter des cartes du système national de référence cartographique. Préciser si l'altitude est exprimée en pieds ou en mètres. Ne pas faire la conversion d'une mesure à l'autre.
13. Indiquer le numéro de la carte SNRC (Système national de référence cartographique) sur lequelle figure l'emplacement du site. Pour la majeure partie de l'Ontario, il s'agira d'une carte à l'échelle de 1:50 000, bien que certaines zones du Sud-Ouest de la province soient cartographiées à une échelle de 1:25 0000. Certaines zones du Nord de l'Ontario, pour lesquelles if n'existe des cartes SNRC qu'à l'échelle de 1:25 000, sont représentées à une échelle d'environ 1:32 000 sur les plans M du ministère des Richesses naturelles. On peut recourir à ces cartes pour délimiter avec précision l'emplacement du site, mais il faut néanmoins fournier le numéro de référence de la carte SNRC correspondante.
14. Photocopier la section de la carte SNRC sur lequelle figure le site. Noter sur cette copie le *numéro de répertoire de la carte ainsi que le numéro Borden du* site. Marquer clairement le site sur la copie au moyen d'une plume de couleur contrastante. Cet emplacement doit être conforme à la référence du quadrillage militaire et à l'altitude indiquée.
15. Sur une feuille distincte, tracer un plan du site et des environs. Le plan doit montrer les résultats des recherches, de manière que l'on puisse retrouver le site sur le terrain, transmettre avec précision ses coordonnées aux fins d'aménagement, comprendre comment le site s'inscrit dans le paysage et retracer les zones où les trafaux ont eu lieu. Il faut fournir les renseignements suivants :
    a) échelle;
    b) orientation;
    c) réseaux de drainage et de transport de la région;
    d) configuration, y compris les; principaux accidents de terrain;
    f) mode d'utilisation (par exemple, champs, carrières, bâtiments);
    g) aires de concentration des vestiges culturels;
    h) délimitation du site d'après les connaissance actuelles.

    Avant de tracer le plan, se reporter à la section de l'exploration du site sur la formule de renseignements.
16. Les références au quadrillage *militaire sont expliquées sur toutes les cartes* SNRC ainsi que dans le *Guide to Ontario's Archaeological Site Records*.
17. Pour trouver la latitude et le longitute, recourir aux cartes SNRC. Préciser les degrés, minutes et secondes avec le plus d'exactitude possible.
18. Décrire l'emplacement du site en procédant de façon ordonnée, soit du général au spécifique; indiquer les voies d'accès ainsi que les moyens de transport les plus pratiques, et donner des repères permettant de retrouver l'archéologue sur les lieux. Expliquer comment le site est raccordé aux réseaux de drainage et de transport locaux, et préciser les distances exactes par rapport à des points permanents de l'environnement (par exemple, édifices, cours d'eau, éminences apparentes). Tracer un parallèle entre la description des lieux et les particularités indiquées sur le plan.

Exploration du site

19. Nom de l'auteur des observations et des inférences relatives au site exposées dans la présente formule.
20. Numéro du permis en vertu duquel les travaux archéologiques ont été réalisés sur le site.
21. L'année et le mois où a débuté l'exploration actuelle du site.
22. Autant que possible, indiquer les noms et adresses des contacts locaux dont l'aide a permis de mieux comprendre la nature du site. Indiquer le genre d'information disponible (exemple : informations quant à l'emplacement, rumeurs et anecdotes). Noter à la rubrique « documentation »les renseignements sur les collections locales propres au site.
23. En se référant au plan, décrire les méthodes appliquées (soit les techniques de cartographie, d'échantillonnage et d'enregistrement) qui ont servi à l'étude de ce site.
24. Décrire et exposer les caractères physiques du site relativement à des *facteurs comme la composition* du sol ou du site, la végétation, l'inclinaison du terrain et le drainage.
25. En se référant au plan des lieux, a décrire les divers types de vestiges culturels comme les artefacts, les configurations ou structures, les œuvres rupestres, etc. et la façon dont ils sont répartis.
26. Autant que possible, préciser une date absolute ou relative avec preuve à l'appui.
27. Indiquer le mode probable d'utilisation du site et corroborer cette supposition par des preuves à l'appui.
28. Autant que possible, exposer les liens entre les vestiges culturels, en reconstituant la disposition théorique de l'ensemble du site et en expliquant sa signification éventuelle par rapport aux lieux environnants. Fournir des preuves à l'appui.
29. Préciser comment le site s'inscrit dans des catégories plus générales comme les groupements culturels (exemple : Iroquois), les traditions techniques (exemple : technique laurentienne achaïque), les nations (exemple : les Hurons), ou les stades culturels (exemple : stade forestier moyen). Corroborer ces affirmations par des preuves.

Documentation

30. to 34. Les artifacts trouvés sur les lieux et les dossiers constitués par les achéologues qui ont étudié le site offrent de l'intérêt, de même que les documents relatifs aux fouilles en cours et l'information sur les collections locales d'artefacts provenant du site. La documentation illustrée comprend toutes sortes d'éléments tels que photographies, diapositives, cartes et calques sur papier de riz. Dans le cas des documents qui se trouvent dans un bureau régional du ministère de la Culture, il suffit de laisser en blanc l'espace réservé à l'emplacement et d'inscrire l'abréviation de la région (NO, CN, NE, SO, CE, E) dans l'espace intitulé « région ».

Commentaire

Inscrire ici tout commentaire pour lequel aucun espace n'est prévu ailleurs sur cette formule. Les formules incomplètes ou incorrectement remplies seront renvoyés a l'archéoloque.

Les renseignements contenus dans cette formule de mise à jour sont régis par les dispositions de la Loi de 1987 sur l'accès à l'information et la protection de la vie privée.

Sources

Ministère de la Culture
Direction du patrimoine et des bibliothèques, Unité de l'archéologie
400, avenue University, 4e étage
Toronto ON M7A 2R9 416-314-7161

Communiquer avec le coordonnateur des donnés pour obtenir des formules de renseignements et de mise à jour concernant les sites achéologiques, se faire aider à remplir les formules et se renseigner sur la façon de consulter la banque de données sur les sites achéologiques.

Ministère des Richesses naturelles
Centre d'information
Bureau M1-73, Édifice Macdonald, Queen's Park
Toronto ON M7A 2C1 416-314-2000

On peut se procurer des cartes du système national de référence cartographique, des cartes de base de l'Ontario ainsi que des photos aériennes auprés du centre d'information.

Registre des terres de la Couronne
300, rue Water, C.P. 7000
Peterborough ON K9J 8M5 (705) 755-2104

Ministère des Transports
Bureau des cartes
301, rue St. Paul
St. Catharines ON L2R 7R4 (905) 704-2919

On peut commander à ce bureau des cartes de comté, de district et de municipalité régionale.

Saskatchewan
Ministry of
Tourism, Parks,
Culture and Sport

Heritage Conservation Branch

Saskatchewan Archaeological Resource Record

Office Use Only

SPL #

Site Name: _____ Observed ☐

Site Type: _____ Mapped ☐

Affiliation: _____ Tested/Exc ☐

Borden Number

_____

Permit Number

_____ C14 dates _____

LOCATION

1. **NTS Map Reference #:** _____

2. **UTM Grid Coordinates:** _____ E _____ N _____ NAD 27 _____

(only one UTM must be provided) _____ E _____ N _____ NAD 83

Zone 13U/ E _____ N _____ *NAD 83 (Office Use Only)*

3. **Legal Description:** _____ of _____ Sec _____ Twp _____ Rge _____ W _____ M

4. **Rural Municipality of:** _____ No. _____

5. **Geographical Coordinates:** _____ ° _____ ' _____ " N. Lat. _____ ° _____ ' _____ " W. Long

6. **Geographical Description:** _____

_____

_____

7. **Land Ownership:** Private ☐ Provincial Crown ☐ Federal Crown ☐

Owner: Lessee:

SITE DESCRIPTION

8. **Dimensions:** length _____ m width _____ m depth _____ m measured ☐ estimated ☐

9. **Features:** _____

_____

10. **Artifacts/Other Material:** (a) observed _____

_____

(b) collected _____

_____

_____ Last Catalogue # _____

(c) collection repository _____

11. **Buried Components:** yes ☐ no ☐ number _____ depth _____

_____

12. **Other Observations:** _____

_____

_____

Borden No. _____

SITE ENVIRONMENT

13. Vegetation Zone: grassland ☐ parkland ☐ boreal forest ☐
azonal complex _____ other _____

14. Soil Texture: boulders ☐ cobbles ☐ gravel ☐ sand ☐ loam ☐ silt ☐ clay ☐
other _____ other observations _____

15. Landform

(3 one Terrain Zone, one Modifier, and one Subzone, if applicable)

Terrain Zone	☐ Upland	☐ Lowland	☐ U/Low Transition	☐ Valley	☐ Lake
MODIFIER	☐ level ☐ undulating ☐ hummocky ☐ ridged ☐ irregular	☐ level ☐ undulating ☐ hummocky ☐ ridged ☐ irregular	☐ level ☐ undulating ☐ hummocky ☐ ridged ☐ irregular	☐ main valley ☐ tributary valley ☐ valley juncture ☐ crest ☐ sideslope	☐ active ☐ relic ☐ saline ☐ shoreline ☐ beach ridge
SUB-ZONE	☐ crest ☐ toe ☐ depression ☐ coulee/ravine ☐ hill ☐ ridge	☐ crest ☐ toe ☐ depression ☐ coulee/ravine ☐ hill ☐ ridge	☐ upper ☐ lower ☐ slump block ☐ coulee/ravine ☐ hill ☐ ridge	☐ terrace ☐ slump block ☐ floodplain ☐ island ☐ fan/apron ☐ hill/ridge	☐ terrace ☐ delta ☐ spit ☐ island ☐ ☐

16. Water Source lake ☐ river ☐ stream ☐ slough/pond ☐ spring ☐ other ☐
modifier: active ☐ seasonal ☐ name: _____
distance: _____ m direction: _____ **17. Elevation:** _____ m (asl)

18. Other Observations: _____

SUPPLEMENTARY INFORMATION

19. Other Artifact Collections: _____

_____

_____ Keeper: _____

20. Photo Record: type _____ # photos _____ stored at: _____

RESOURCE MANAGEMENT

21. Condition: cultivated ☐ partially cultivated ☐ uncultivated ☐
other disturbances _____

_____ % site intact _____

potential disturbances _____ when _____

22. Recommendations: _____

_____

_____

23. Informant: _____

24. Recorded by: _____ Date _____ Permit # _____

_____

25. Updated by: _____ Date _____ Permit # _____

Borden No. Scale: 1 cm = m

LEGEND

site boundary

building

roads

trail

railway

fence

break in slope

waterways

Other Symbols:

√TRUE ☐MAGNETIC ☐GRID

Borden No. _____

OTHER REMARKS

26. _____

References: _____

ACCESS

27. _____

OFFICE USE ONLY _____

Attachment 02: Copy of letter written by Dr. Leigh Syms outlining concerns regarding archaeological investigations at the Canadian Museum of Human Rights

Accelerated Destruction of First Nations Heritage Beneath the Canadian Museum of Human Rights, 2009

Background

The Canadian Museum of Human Rights (CMHR) is being built at The Forks, a popular centre in Winnipeg. Its design indicates that this $300,000,000 edifice will be stunning. The Forks also happens to have the richest and most complex archaeological record of ancient First Nations heritage, fur trade and early settlement heritage in Manitoba, spanning some 6,000 years, and has been identified by an archaeologist recovering the local heritage as one of the most important sites in Canada.
Accelerated Destruction of First Nations Heritage Beneath the Canadian Museum of Human Rights, 2009.

In 2002, an impact assessment of the CMHR area of the site produced the unbelievably rich record of 72,000 artifacts from 134 m², all of it representing First Nations heritage from about AD 1000-1200. It was estimated that the total area of the museum would yield 7,000,000 million artifacts within its 7,000 m² (about 1.1 football fields in size). Nothing was done until construction began in 2008 when a miniscule budget was allocated to recover about 134 m² or 1.9% of the site, and the remaining 98% was left to be capped and be inaccessible until such time as the museum was dismantled at some distant future date. Despite the efforts of the archaeologists, it was impossible to recover and process the ancient record adequately due to minuscule funding and the lack of standards and enforcement by the Historic Resources Branch (HRB) whose mandate and responsibility is to look after the archaeological heritage in the province. The normal procedure of heritage recovery is for the responsible government department to determine what needs to be done and issue a call for tendering for recovery, to work with a professional CRM (Cultural Resource Management) archaeologist to determine recovery details and necessary budget and then inform the developer what budget is needed; in this case, developments were reversed. The developer determined what budget would be available, the archaeologist scrambled to make the best possible use of the very, very limited budget, and the HRB essentially went along with whatever was decided by the developer. There were no resources to properly label the artifacts so that they could be handled and processed properly, and staff was forbidden to reconstruct any broken pieces of artifacts. No resources were committed to properly store the collection at a place where they could be properly managed and be readily accessible rather than merely stored as small broken fragments in boxes of plastic bags. Only a few samples could be submitted for scientific analyses such as food encrustation analyzes due to very limited funds. See the AMA (Association of Manitoba Archaeologists) November 2008 newsletter for more details and concerns expressed by a variety of people at the AMA website at www.assocmanarch.com.

2008 excavations at the CMHR area at The Forks. The narrow trench along the right side and the small rectangular area toward the back of the site was the total area excavated out of 7,000 m². (Photograph by E. Leigh Syms)

During the subsequent winter, analyses have been undertaken by a number of researchers. Fortunately at least some of these people are so committed that they have been putting in vast numbers of hours of their personal time to provide some detail, even though they have been hampered by limited budget contracts and directives such as not being able to do any artifact reconstruction due to funding limitations. The results of this very limited recovery have produced very exciting results. Despite the tiny sample of excavations, parts of 122 ceramic vessels were recovered from 7 camp/village sites laid down one upon the other over a few hundred years. The ceramics are unique and provide exciting new insights into the rich Woodland Native traditions that probably represented ancient Anishinaabe ancestors. The fauna also apparently show evidence of unique food preferences including antelope. One can only wonder at what the record would have been like if a larger adequate sample had been recovered!

The 2009 Excavations

The CMHR staff had assured concerned individuals and groups such as The Forks Heritage Committee that the 98% of the heritage record that was left behind would be protected and safe for some much later date because the museum was being built on a metal grid on top of the hundreds of concrete pilings and that the record would not even suffer from compaction. However when CMHR staff and construction staff met with the consulting archaeologist in the spring of 2009, a very different story emerged.

1. Many of the tops of pilings would not be poured to levels above the cultural heritage levels, requiring removal of large areas of the cultural layers to build on them.
2. A number of large pits would be dug through the camp/village levels to build large concrete platform caps across groups of pilings whose tops were below the cultural occupations. These were large, including dimensions of 16 X 16 feet.
3. The thousands of metres of trenches for sewer lines and other uses were originally to have been laid down by digging insertion holes vertically only at specific points and the pipes then being placed underneath the cultural layers in a minimally destructive manner. This minimally destructive approach was now being replaced by the massively destructive strategy of digging out the trenches along their entire lengths through the cultural layers in order to lay the service lines into the building.
4. The 100s of piling holes continued to be drilled out rather than being excavated, destroying artifacts and the stratigraphic record of the villages.

The consulting archaeologist was shocked at these sudden and very destructive changes. When he attempted to point out that this change in design would require a lot more mitigation, requiring a larger budget and a minimum of 15 staff, he was yelled at and treated abusively. He decided that he did not need 2 years of this abuse and resigned.

There was now no archaeologist to monitor the site destruction. The consulting archaeologist agreed to work with HRB to monitor the drilling of the holes for the pilings for HRB until another CRM company was found. The story appears to become bazaar at this point. This monitoring project appears to have taken place without any permits being issued by HRB (April to May 2009). It was then reported that HRB even gave the archaeological permit directly to CMHR rather that than to an archaeological firm, which is a bit like giving the key to a chicken house to a fox, if this is true. Eventually, a CRM permit was given to another experienced archaeologist with a reputable firm although again there was no call for tenders. Once again the developer appears to have determined the budget and by default set the severe limitations on the recoveries, and HRB appeared to feel compelled to go along with these developments and not insist that additional work be undertaken, which is within their legal right and responsibility as regulators. I have few details except that the project employed only 3 field assistants to monitor and recover the heritage that was being destroyed by the digging of 2 or more large pits for the piling caps, the back dirt from the drilling of numerous piling bore holes, and digging up on an unknown number of trenches. To cite a famous phrase— never was so much expected of so few!! This was clearly an inadequate staff to recover the detailed, complex record from a large area of such a site with rich, detailed, multi-village record with the care that was practiced the previous year and which was so necessary. During the subsequent winter, analyses have been undertaken by a number of researchers. Fortunately at least some of these people are so committed that they have been putting in vast numbers of hours of their personal time to provide some detail, even though they have been hampered by limited budget contracts and directives such as not being able to do any artifact reconstruction due to funding limitations. The results of this very limited recovery have produced very exciting results. Despite the tiny sample of excavations, parts of 122 ceramic vessels were recovered from 7 camp/village sites laid down one upon the other over a few hundred years. The ceramics are unique and provide exciting new insights into the rich Woodland Native traditions that probably represented ancient Anishinaabe ancestors. The fauna also apparently show evidence of unique food preferences including antelope. One can only wonder at what the record would have been like if a larger adequate sample had been recovered!

2009 excavation at the CMHR site showing one of the cavernous holes that was dug through the ancient village layers for caps for pilings. (Photograph by E. Leigh Syms)2009 excavation at the CMHR site showing one of the cavernous holes that was dug through the ancient village layers for caps for pilings. (Photograph by E. Leigh Syms)

As construction took place over the summer, the magnitude of the impact became somewhat evident. The digging of the pits for the piling caps turned out to be cavernous holes as they included not only the structures but also the surrounding work area for making forms as well as roads for machinery to access the pits. As this limited heritage recovery took place over the summer, comments started to circulate about problems. These included the few field staff not being able to keep up with checking the piling core mounds of back dirt and the excavations, the construction crews digging into the village layers and then informing the crew after the fact, first once and then on a number of occasions, and heritage materials were allowed to be destroyed when the excavation holes were too deep and narrow to be recovered due to health and safety standards. The AMA expressed concerns to the HRB and the consulting archaeologist about these rumours. The supervising CRM archaeologist confirmed that a portion of the record was allowed to be destroyed because of health and safety standards, i.e. the pits being too deep for the width that was being removed; the alternative of widening the excavation units to the bottom of the heritage village levels to meet health and safety standards was apparently not considered or else the heritage was not considered sufficiently important. The consulting archaeologist did point out that he had been in weekly contact with HRB, *which had confirmed all decisions. This same archaeologist informed* the AMA that he had warned his few staff that if they talked to anyone about the project that they would be fired immediately, an action that itself casts some concerns about what was happening.

This project has raised other questions. Why was such a totally inadequate amount of funds allowed to be expended on recovering this rich heritage so inadequately? Are the artifacts being processed in the same inadequate, manner as in 2008 with no reconstruction of artifacts and no labelling of artifacts so that they cannot be managed properly? Will funds be available to do even the limited analyses such as dating and residue that was conducted in a limited fashion in 2008?

Why was the archaeological field project allowed to be terminated during the week of April 5-9 (due to inadequate funds to even complete this minimal effort?) as reported despite there being ongoing construction excavation and heritage destruction? Are the recovered artifacts going to be processed, i.e. washed, catalogued and labelled? Will there be at least a descriptive report written at the calibre of the 2008 report? Since all decisions were apparently authorized by HRB, thereby making everything legally right, why has the CMHR not addressed its moral and ethical responsibilities to the First Nations heritage that it has been capping and destroying? How does the CMHR

address the irony that a human rights museum would have such a blatant disregard for First Nations heritage protection and development? And how and why has HRB sunk to such a low level of confidence and responsibility that it would ignore its responsibilities and allow this damage and totally inadequate project to continue in this fashion?

How do we as concerned individuals work to make certain that the political will is there so that the HRB will feel inclined to enforce the higher standards that are necessary to protect and develop the ancient heritage in the future? If the HRB is allowing this degree of substandard heritage protection to take place here, what is the future for the rest of the heritage at The Forks and other sites throughout the province?

In the 45 years that I have been involved in the rich heritage of the province, this is the worst case of legal destruction of the rich heritage that I have had the misfortune to witness. Archaeologists, all Manitobans, and anyone concerned about heritage need to be concerned about these developments. As people have become aware of these local developments they have been appalled. A Winnipeg Free Press poll in 2008 found that the public was in favour of more archaeological research in a two to one ratio (over 1300 individuals voted). The few archaeologists who have become aware of these developments have tended to express their anger and frustrations quietly because they fear being blackballed by the HRB who is the heritage permitting body and by at least some CRM archaeologists, as the above reaction by the 2009 consulting archaeologists reveal is a real concern. Nevertheless, concerned individuals need to speak up and let the CMHR, provincial government, federal government, and various First Nations such as the Assembly of First Nations know that these developments are not satisfactory and that remedial developments need to take place. Fortunately First Nations whose heritage is being mismanaged at this site are starting to become aware and concerned. As they hear about this travesty to their heritage, they, too, tend to feel betrayed and angry. See the First Nations developed Face book site, Forever Lost: Heritage Beneath the Canadian Museum of Human Rights, at
http://www.facebook.com/home.php?#!/groups.php?gid=17056386933&ref=ts

E. Leigh Syms, PhD
Ancient Heritage researcher, educator, and advocate
Adjunct Professor, University of Manitoba
Former Curator of Archaeology, The Manitoba Museum
slsyms@mts.net
204-786-5455
April 8, 2010

1.0 INTRODUCTION

The Swan Lake First Nation (SLFN) is a community of Anishinabe people whose primary land base is located in south-central Manitoba . In 1871, Chief Yellowquill (of the Portage band which would later divide into three separate bands including SLFN) signed Treaty 1 and he and his followers settled along Swan Lake in southern Manitoba. Today, the SLFN has four reserves, the main reserve at Swan Lake, one near Carberry, Indian Gardens near Rathwell and a small parcel of land in Headingley.

The Swan Lake people are proud and prosperous. They are also a traditional people with strong beliefs and close ties to their land. The proposed construction of a Manitoba Hydro Bipole III 500 kV high –voltage direct current transmission line directly north of Indian Gardens (Figure 01) raised concerns regarding the potential impact to cultural resources in the area.

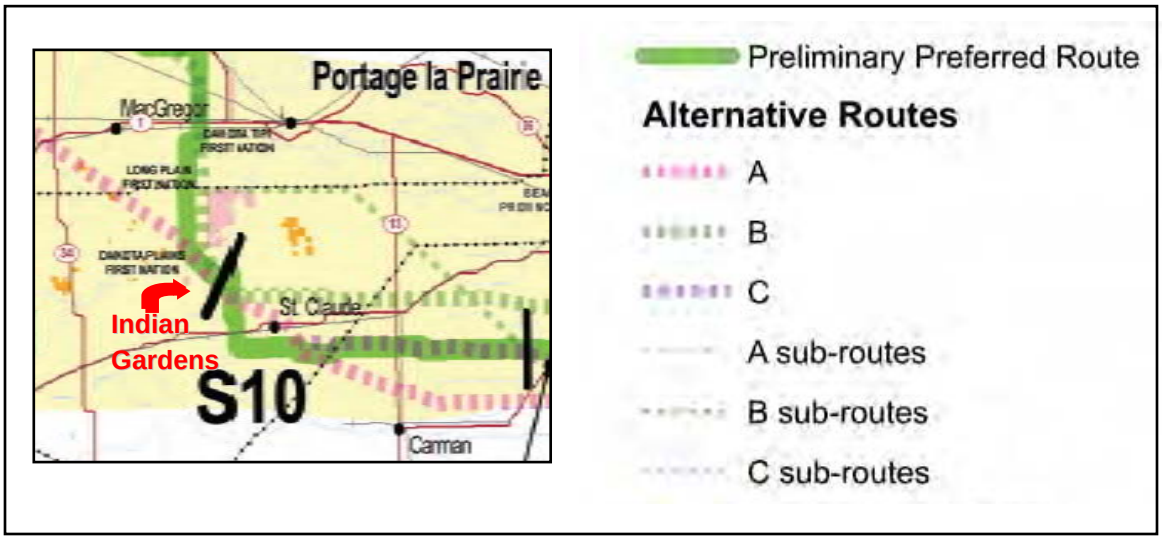


Figure 01: Proposed preferred and alternative routes for section 10 and part of section 9 of the Bipole III transmission line.

The following interim report outlines the objectives of this study which was to confirm the location of known archaeological sites and assess the potential for undiscovered or unreported archaeological sites within the study area by undertaking a background study and property inspection. The bio-physical environment is characterized using the Canadian National Ecological Framework while a brief archaeological chronology is presented to contextualize the cultural environment. An important distinction between archaeological and culturally significant sites is made here. This report focuses solely on the archaeological record and does not attempt to identify or record culturally significant sites. A culturally significant site may have an archaeological component or vice-versa or a culturally significant site may have no archaeological or visible footprint whatsoever. Sites significant to Swan Lake First Nation and/or other people potentially impacted by the Hydro Bipole III transmission line need to be identified and mitigated.

The remainder of this report focuses on the methodology of the background study and property inspection and presents the results. Three known archaeological sites were confirmed while a fourth was not. Three new archaeological sites and several other finds were observed during the property inspection. Finally conclusions and recommendations are presented

2.0 OBJECTIVES

2.1 Proposed Objectives

The initial proposal for this project consisted of two main objectives (1 & 2) and two consequential objectives (3 & 4). These included;

1. the identification of archaeological resources through landowner interviews;
2. information processing and submission of archaeological site forms as needed;
3. compilation of data, preparation and report writing; and
4. consultation meetings with Council and Manitoba Conservation.

As the project evolved, two additional main objectives were included. These included;

5. confirming the location of known archaeological sites along the preferred route; and
6. assessing the potential for undiscovered archaeological sites.

2.2 Completed Objectives

Of the six stated objectives above, none have been completely satisfied. Completion of objectives 3 and 4 can only occur once all other objectives have been met. Objective 1 could not be satisfied at this time due to the unavailability of landowners. It is anticipated that once the fall harvest is finished, landowners will be available for interviews and objective 1 can proceed at that time. Objectives 5 and 6 have been partially completed and are the focus of this interim report.

3.0 STUDY AREA CHARACTERIZATION

3.1 The Study Area Location

The study area for this project was initially proposed to be the Indian Gardens land base and surrounding area. A more defined study area was selected to undertake objectives 5 and 6 and encompasses the section of preferred route and buffer zone at the point where it turns southeast to cross the Assiniboine River and then resumes eastward (Figure 02).

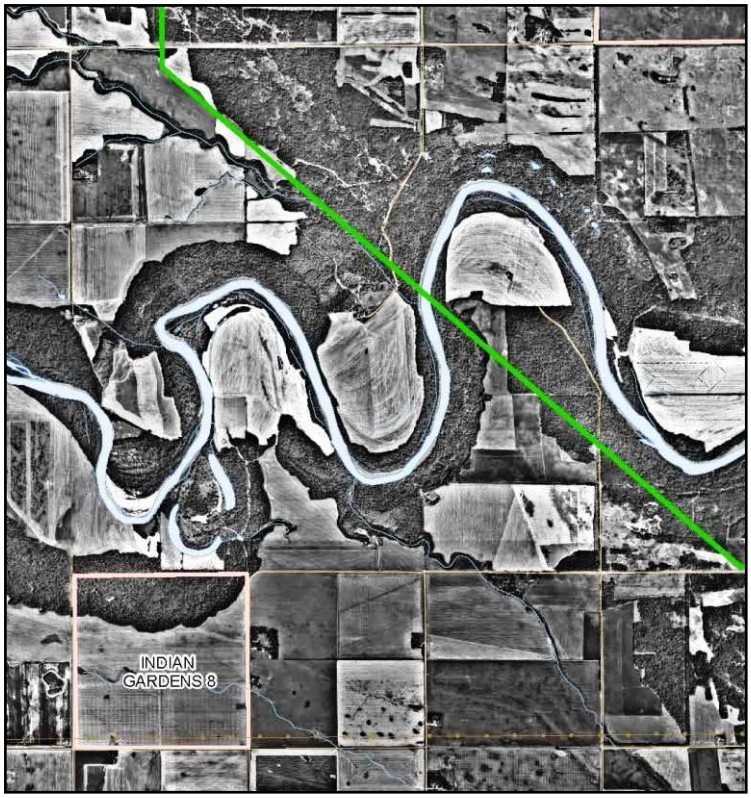


Figure 02: Defined study area – portion of the Bipole III transmission line (Map courtesy of Manitoba Hydro).

Understanding archaeological resources necessitates placing them within a tripartite context of the physical, biological and cultural environments (Butzer 1982). The physical environment is composed of climate, landscape, soils, hydrology, local and regional topographic relief and the geological processes that created the landscape while the biological environment is comprised of all living things from bacteria, plants and animals. Humans, are considered part of the biological environment, but also comprise the third context; culture (Nicholson *et al* 2007). Culture is a suite of learned human behaviours such as language, values, belief systems and material culture shared by a society to cope with their world.

Describing the biological and physical characteristics of the study area is accomplished through the use of the National Ecological Framework of Canada classification system. Although this system was developed using modern attributes, many are abiotic and are considered to be enduring features of the environment (soils, geology, landforms) that change very little over time and can be considered appropriate indicators for assessing ecological conditions in the past (Wiseman and Graham 2007).

Characterizing the cultural environment is more difficult. This is due in part to the extended human occupation of the area as well as the complex interactions during the historical as well as precontact time periods. The study area has an exceptionally rich historical record of Indigenous populations, European exploration, missionary and fur-trade development into the railway and settlement era. A comprehensive summary of this record is beyond the scope of this report and has been provided by Mr. David Scott elsewhere. Instead, the archaeological record of south-central Manitoba is presented to provide the framework for understanding the archaeological resources of the study area.

3.2 National Ecological Framework of Canada

The National Ecological Framework of Canada was developed in the 1990's and is a system of delineating and classifying ecologically distinct areas of the earth's surface. It is a holistic system that incorporates all major ecosystem components (air, water, land and biota) and is based on a hierarchy. It is recognized that ecosystems are interactive and that map lines generally depict zones of transition. Table 01 outlines the hierarchy and the distinctive characteristics of each level (Ecological Stratification Working Group 1995). This is an excellent framework for describing the current bio-physical environment of the study area.

Level	Number of Units	Definition
Ecozone	15	top of hierarch; sub-continental scale; large and generalized units characterized by abiotic and biotic factors
Ecoprovince	53	subdivision of ecozone; characterized by major assemblages of structural or surface forms, faunal realms and vegetation, hydrology, soil and macro climate
Ecoregion	194	subdivision of ecoprovince; characterized by distinctive regional ecological factors such as climate, physiographic, vegetation, soil, water and fauna
Ecodistrict	1021	subdivision of ecoregion; characterized by distinctive assemblages of relief, landforms, geology, soil, vegetation, water bodies and fauna

Table 01: Canadian National Ecological Framework classification system (Ecological Stratification Working Group 1995).

Following the Canadian National Ecological Framework classification system, the study area is located within the present day Prairie Ecozone (Figure 03)

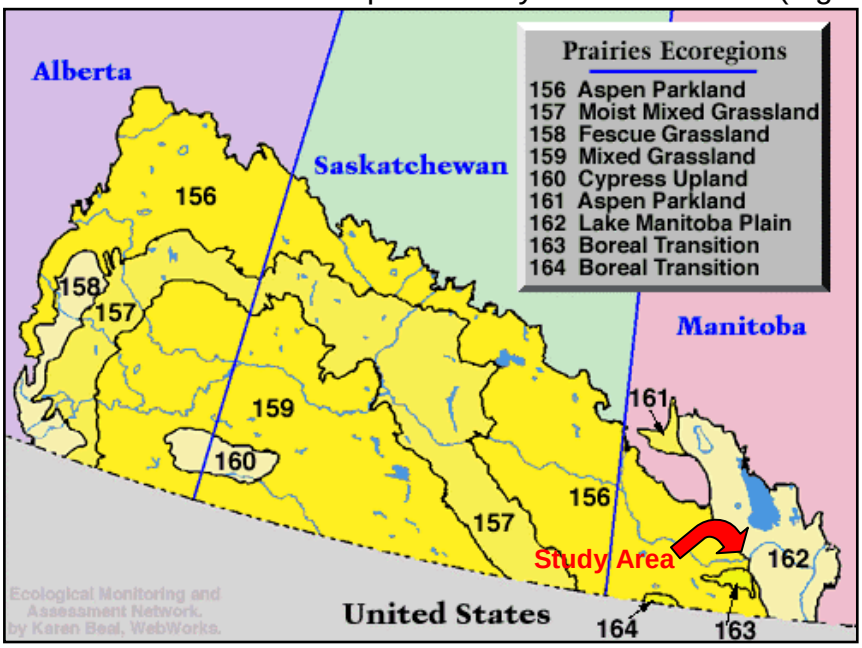


Figure 03: Location of the study area within the Prairies Ecozone.

3.2.1 Prairie Ecozone

The Prairie Ecozone is an area characterized by little topographic relief with large expanses of undulating and hummocky terrain intersected by large river valleys. The climate is continental, being subhumid to subarid. Summers are short and warm with a mean temperature ranging from 14°C to 16°C. Winters are long and cold with the mean temperature ranging from -12.5°C to -8.0°C. There is a low level of precipitation

and high evaporation rates due in part to frequent, strong winds. Precipitation is variable across the Ecozone ranging from 250 mm in the more arid southwest to about 550 mm in the east. Cretaceous shales and Paleozoic limestone underlay glacial moraine and sandy to clayey glaciolacustrine surface deposits. Prior to agriculture, the hummocky undrained depressions created numerous small wetlands. The North and South Saskatchewan, the Assiniboine and the Red are the major rivers of the Prairie Ecozone in Manitoba although there are numerous smaller rivers and creeks. Chernozems are the dominant soils and are characterized by an organic rich surface horizon. Across the Prairie Ecozone, most of the native tall-grass, mixed-grass and Aspen Parkland have been cultivated. The Aspen Parkland is found along the eastern and northern edge of the Ecozone and is a transition between grassland and Boreal Forest. Existing characteristic mammals of the area include elk, coyote, badger, whit-tailed jack rabbit, Richardson's ground squirrel and northern pocket gopher. In the west, pronghorn antelope and mule deer can also be found. Ferruginous hawk, sage grouse, American avocet, burrowing owl, great blue heron, black-billed magpie, baltimore oriole, veery and brown thrasher are representative birds. Reptile and amphibians of the Prairie Ecozone include the red-sided and western plains garter snakes, the blue-tailed skink, the western painted turtle, gray salamander and various toads and frogs (Smith *et al* 1998).

The study area is located at the transecting point of three different Ecoregions. It is primarily located within the Lake Manitoba Plain (162) Ecoregion but is immediately adjacent to the Boreal Transition (163) as well as the Aspen Parkland (156) Ecoregions (Figure 4). Furthermore, the presence of the Assiniboine River and Valley introduces a fourth, riparian environment.

3.2.2 Lake Manitoba Plain Ecoregion

The Lake Manitoba Plain Ecoregion is a transition between the northern boreal forest and the aspen parkland of the southwest. Black Chernozemic soils support trembling aspen, shrubs as well as bur oak and grasses. Willow and sedge communities are found on poorly drained Gleysolic soils. It is one of the warmest and must humid regions in the Canadian prairies with a mean summer temperature of 16°C and a mean annual precipitation of 450 – 700 mm. The mean winter temperature is -12.5°C. The limestone bedrock is covered by smooth, level, lacustrine sands, silts and clays in the south. Elevation ranges from 410m above sea level (asl) near the Manitoba Escarpment to 218m asl at Lake Winnipeg. Wildlife includes significant waterfowl, as well as white-tailed deer, coyote, rabbit, and ground squirrel (Smith *et al* 1998).

3.2.3 Pembina Hills Boreal Transition

The Pembina Hills Boreal Transition (163) is an elevated upland rising 200 m above the Manitoba Plains to the east and 30-100 m on the west. Mean temperatures and precipitation are similar to those in the Lake Manitoba Plains. Cretaceous shale

bedrock is covered with glacial till creating hummocky to kettled uplands. Upper elevations tend to be wooded with trembling aspen and balsam poplar. Shrubs and herbs constitute the understory and ground cover. Climax species of white spruce and balsam are not well represented. Sedges, willow, black spruce and tamarack are found in poorly drained areas. Soils are well-to imperfectly drained Dark Gray Chernozems with localized areas of Gray Luvisols, peaty Gleysols, and Mesisols. Small lakes, ponds and sloughs created from morainal deposits provide habitat for waterfowl. Representative wildlife includes white-tail deer, black bear moose, ruffed grouse, beaver, coyote and rabbit (Smith *et al* 1998).

3.2.4 Aspen Parkland Ecoregion

The Aspen Parkland Ecoregion covers the southwest corner of Manitoba and is bounded on the east by the Manitoba Escarpment which forms the dip slope of the Saskatchewan Plain. Surface deposits range from kettled to gently undulating loamy glacial till, glaciofluvial and glaciolacustrine deposits. Aeolian dunes are also present. Then entire region slopes gently eastward and is drained by the Souris, Assiniboine, Qu'Appelle and Pembina Rivers. Soils are mostly well drained Chernozemic Black on stone-free to moderate and very calcareous glacial till. Climate is continental. Vegetation in moist areas consists of trembling aspen and shrubs while drier areas support bur oak and grassland. Fescues, wheat grasses, June grass and Kentucky Bluegrass dominate while there is also a variety of deciduous shrubs and herbs. Poorly drained areas support slough grasses, marsh reed grasses, sedges, cattails and shrubby willows. Wildlife has been greatly impacted by grassland and wetland habitat destruction. Animals characteristic of the Prairie Ecozone are also characteristic of the Aspen Parkland Ecoregion (Smith *et al* 1998).

3.2.5 Assiniboine River Riparian Corridor

Riparian corridors are located between terrestrial and aquatic ecosystems and are considered the most diverse, dynamic and complex terrestrial habitats on earth. Large stream channel corridors, such as the Assiniboine River, are characterized by well-developed, geomorphically complex floodplains with long periods of seasonal flooding, lateral channel migration, oxbow lakes in old river channels, a diverse vegetative community, and moist soils. They are marked by a diverse mosaic of landforms, communities and environments within the larger landscape (Naiman *et al* 1992).

3.3 Biological Diversity

A correlation has been shown to exist between areas of increased biodiversity and human population settlement (Collard and Foley 2002; Pautasso 2007). Within southern Manitoba, there is also correlation between areas of high biodiversity and an abundance of recorded archaeological sites (Nicholson 1987; Hamilton and Nicholson

1999; Wiseman and Graham 2007). One reason for increased biodiversity is due to the edge effect concept initially proposed by Odum (1971) in reference to increased biodiversity of ecotones. Ecotones are considered to be a transitional zone between two adjacent biotic communities and contain species characteristic of both as well as species unique to the transition zone. The ecotone concept has been criticized for being imprecise and indefinable and that the transition between two biotic environments represents a continuum rather than a discrete entity (Rhoades 1978). The concept however, is useful as a descriptive idea for resource abundance frequently encountered in transition zones due to edge effect (Nicholson 1987:48).

The position of the study area at the intersection of three ecoregions and the presence of a riparian corridor creates a mosaic environment of uplands, forest, prairie and waterway. Plants and animal species of each environment are present and their availability make this an attractive locale for humans (Hamilton *et al* 2006). Prior to the decimation of the bison herds and the advent of the settlement era in the late 1800's, this environment would have been ideal bison habitat. Mass seasonal bison migrations is know for the area from the ethnographic and historic literature. Ray (1998) presents a generalized bison migration model where small bison herds winter in the parkland and move out onto the grasslands at the beginning of the calving season in spring. Large herds gathered during the summer months through the rut, in fall. Afterwards, they disperse into nursery and bull herds and moved back into the parklands for on coming winter. There is compelling evidence however, that bison could have been present year round in some parts of southern Manitoba. The forest-wetland microhabitats found throughout all of the northeastern Plains, and as seen in the study area, provided ideal winter habitation for bison. Immediately adjacent is rich prairie forage, ideal for summer habitation (Hamilton *et al* 2006). Bison hunting-orientated groups as well as generalized foragers would have been attracted to the seasonally diverse resources of the study area.

3.4 Archaeological Context

The archaeological record of southern Manitoba is detailed and complex. Below is a simplified version of southern Manitoba's cultural chronology. Archaeological chronologies are usually divided into segments of time called periods and periods are differentiated based on changes in artifact types (usually projectile points or ceramics) that represent changes in technology and may correspond with climatic change. Several chronologies have been developed for southern Manitoba (Pettipas 1980; Syms 1977; Syms *et a*l 2011; Nicholson 1987) and the terminology varies depending on the author and the area for which the chronology was developed. The most recent chronology (Figure 04) presented by Syms *et al* (2011) will be followed whenever possible. Syms (1977) recognized that southern Manitoba was an area rich in

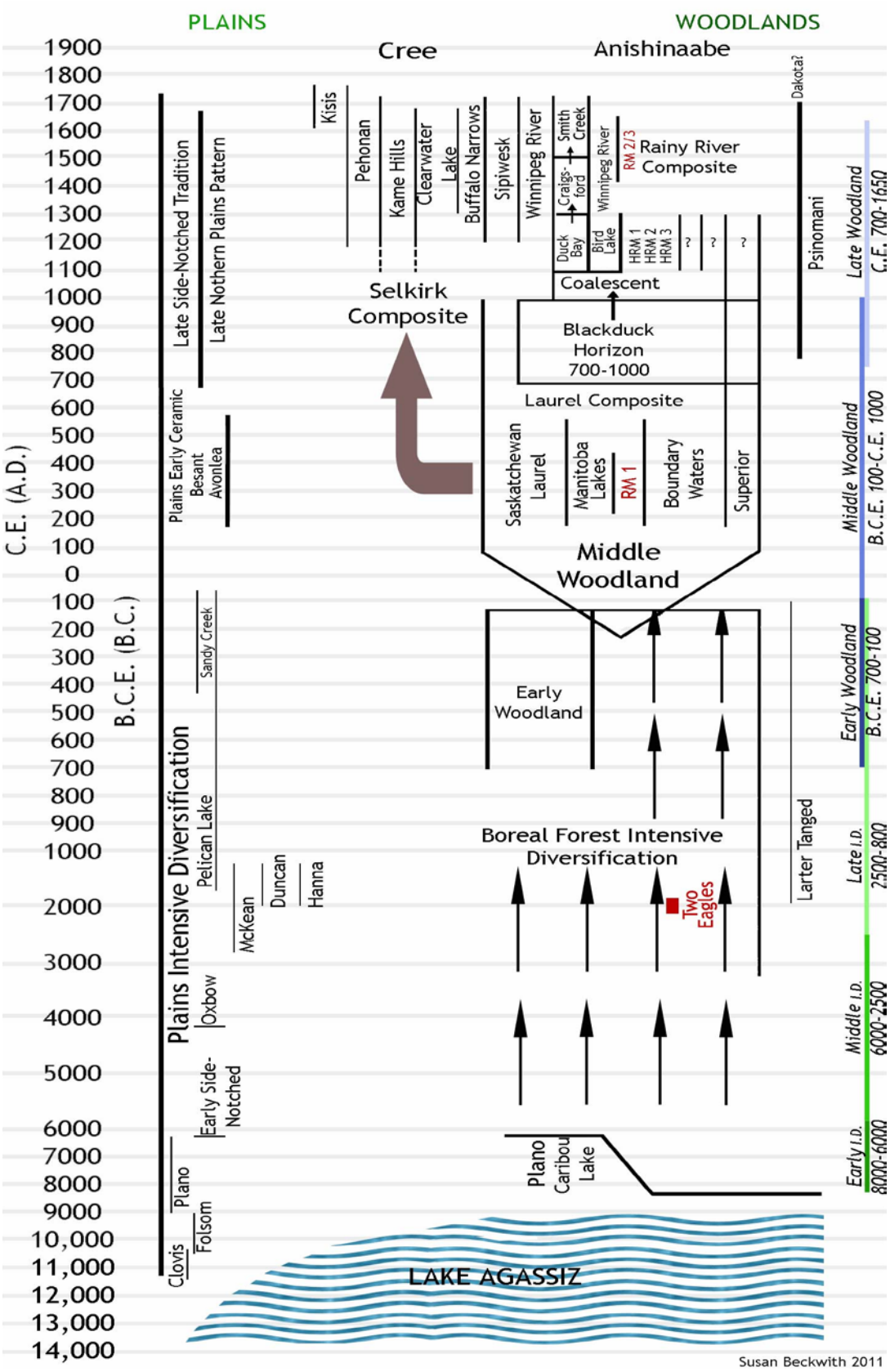


Figure 04: Manitoba archaeological chronology (Syms *et al* 2011).

archaeological cultures and biophysical environments, so that a single stacked chronology did not adequately explain the diversity seen in the archaeological record.

3.4.1 Early Period (Paleoindian): 11 500 – 8 000 years ago

Figure 05: Distribution of glacial ice, meltwater and open terrain about 11 000 years ago (Pettipas 2011).

This early period is commonly called the Paleoindian period in North America and coincides with the end of the last glacial episode. During this time, much of southern Manitoba was covered either with glaciers, or glacial lakes (Figure 05). Glacial Lake Agassiz was one of the largest glacial and existed for about 4 000 years. As Glacial Lake Agassiz retreated, land in the southwestern corner of the province became exposed and open to human settlement (Pettipas 2011). In other parts of the New World, distinctive fluted projectile points used with spears, called Clovis points (Figure 06) were found in association with extinct megafauna especially mammoth. Other animal food resources utilized by Clovis hunters include mastodons, caribou, extinct species of bison as well as variety of extinct camels and horses. In Manitoba, several Clovis projectile points have been recovered, but all are from surface collections and all are west of the Manitoba Escarpment. Water levels of Glacial Lake Agassiz made much of Manitoba uninhabitable until around 10 500 years ago which corresponds to the appearance of the Folsom projectile point (Manitoba Department of Cultural Affairs and Historical Resources 1983).

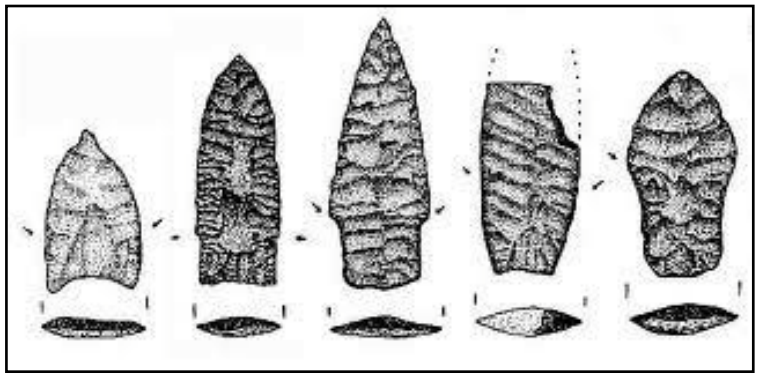


Figure 06: Paleoindian projectile points: L-R Clovis, Scottsbluff, Scottsbluff, Agate Basin, Hell Gap (Damone Illustrations 2011).

Folsom points are much like Clovis, but tend to be smaller and have a much larger flute. Like Clovis, Folsom projectile points are not well represented in Manitoba's archaeological record. Unlike during Clovis times, there was no physical barriers such as glaciers or glacial lacks to explain the lack of Folsom recoveries in southern Manitoba (Pettipas 2011). Instead, it is postulated by Boyd (2007) that the area was marked by a low plant biomass/carrying capacity and could not support large game. Later Paleoindian projectile point types are more numerous in southern

Manitoba . These later Paleoindian points represent a stemmed point tradition starting about 10 000 years ago and seen through much of the Plains. These non-fluted, laneolate points with parallel flaking are sometimes collectively refereed to as Plano (meaning Plains in Spanish) (Peck 2011). Plano projectile points recovered from southern Manitoba include Agate Basin, Hell Gap, Alberta and Scottsbluff (Figure 06). Makers of these points types focused on bison hunting as well as adapting to new developing environments. The end of the Paleoindian period came about 8 000 years ago with the complete disappearance of Lake Agassiz and the appearance of lakes Winnipeg, Winnipegosis, Manitoba and Dauphin. The Canadian Shield became covered in boreal forest while the grasslands expanded up to the western shores of Lake Winnipeg (Pettipas 1996). This changing environment to a warmer, drier climate coincides with extinction of the megafauna and diversification of archaeological cultures (Manitoba Department of Cultural Affairs and Historical Resources 1983).

3.4.2. Intensive Diversification (Middle Period):8 000 – 2 000 years ago

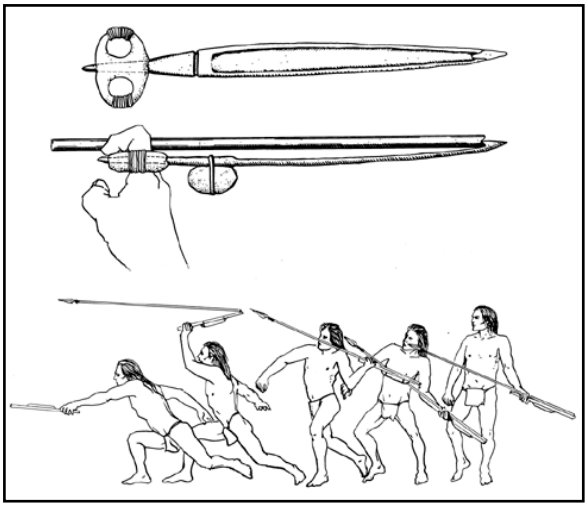


Figure 07: Artistic rendition of the atlatl.

The Intensive Diversification Period coincides with a warmer, drier climate known as the Atlantic episode which lasted until about 5 000 years ago. There is also a shift from the spear to use of the atlatl or spear thrower (Figure 07). This change in hunting technology resulted in changing styles of projectile points from the stemmed or lanceolate spear points to large side-notched darts (Peck 2011).

The Mummy Cave Series existed between 7 500 and 5 000 years ago and contains several different side-notched points that have been found in the Northern United States, Alberta and Saskatchewan. Big game hunting continued, but large communal bison kills as seen at Hell Gap and Agate Basin sites are replaced with fewer bison recoveries. There is also a greater reliance on smaller game and plants (Walker 1992). Few Mummy Cave sites have been reported in Manitoba, with the exception of the Atkinson site along the Souris River in southwestern Manitoba (Nicholson and Playford 2009). Other early side notch points have been found along the Swan River Valley in west central Manitoba and are called Logan Creek. The dearth of archaeological sites from this time period is attributed to the warmer drier climate, with people moving into better-watered areas of higher elevation (Manitoba Department of Cultural Affairs and Historical Resources 1983).

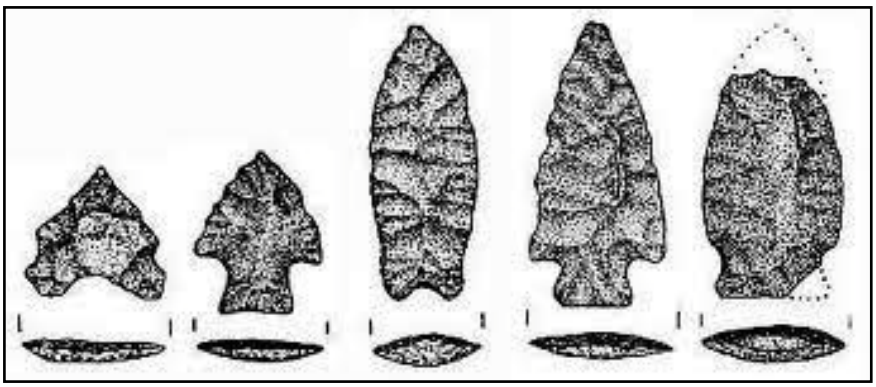


Figure 08: Intensive Diversification Period projectile points. L-R Oxbow, Hanna, McKean, Pelican Lake, Besant (Damone Illustrations 2011).

Subsequent Oxbow points (Figure 08) dated between between 4 700 and 4 000 but as young as 3 000 years ago, are better represented in the province. Oxbow points are side-notched dart points with an indented or concave base and the shape of the notching produces distinctive "ears". Some researchers speculate that Oxbow developed out of Mummy Cave in Saskatchewan while others believe that Oxbow developed in Alberta (Peck 2011). This time period is marked by increased trade as evidenced by native copper and marine shell artifacts (Green 2005) as well as an increased presence of stone boiling pits and hearths suggesting that bone grease manufacture became important (Peck 2011). Not surprisingly, there is evidence of mass communal bison kills such as jumps (Manitoba Department of Cultural Affairs and Historical Resources 1983).

The McKean Complex dates between 4 200 and 3 500 years ago and consists of the McKean, Duncan and Hanna projectile points (Figure 08). All are dart points with a lenticular cross-section. The McKean and Duncan varieties are lanceolate in shape with a narrow base. McKean points usually have a deep basal notch while Duncan points have a slight shoulder and concave base. The Hanna type are corner-notched with expanding stems and concave bases (Dobson 1994). McKean Complex sites are relatively uncommon on the Northern Plains but have been recovered from Alberta, Saskatchewan and southwestern Manitoba as well as sites in the Northern United States. Northern McKean sites are associated with food processing features such as hearths, roasting and boiling pits as well as pecking and grinding stone although bison still dominate faunal assemblages (Peck 2011).

Pelican Lake projectile points (Figure 08) are sometimes called the Christmas tree point and are distinguished by their sharp barbs formed by deep corner-notching (Dobson 1994). Pelican Lake sites are more numerous than other Intensive Diversification Period cultures and similar assemblages of comparable age (3 600 – 2 800 years ago) have been found across the Prairie Provinces. Identified sites tend to be camp sites with few bison kill sites excavated (Peck 2011) although faunal assemblages indicate that specialized big game (i.e. bison) hunting was practiced.

The end of the Intensive Diversification Period and the beginning of the Plains/Woodland period is a period of transition marked by the appearance of technological innovations such as pottery making, the bow and arrow, pound structures and burial mounds (Syms 1977). Syms *et al* (2011) recognized this transition and coined the term *Plains Early Ceramic.* Two transition cultures include Sonota/Besant and Avonlea. Sonota/Besant will be considered here with the Intensive Diversification Period while Avonlea will be addressed in the Plains/Woodland Period

Besant projectile points date from about 2 000 to 1 200 years ago and are thought to represent quintessential bison hunters. Large communal bison kill sites have been excavated across the Canadian Prairies and into the Northern United States. Besant points are short and broad with shallow side notches and a slightly concaved thinned base. Most Besant points are considered to be dart points but smaller examples are thought to represent arrow points and are sometimes called Sonota points. Knife river flint (KRF) is the predominate lithic material and is only available from outcrops in North Dakota (Novecosky 1999). Thick, coarse undecorated pottery has been excavated from Besant sites and represents some of the earliest pottery within the Prairie Ecozone (Scribe 1996). The Sonota culture exists just slightly later in time and is recorded along the Missouri River in South Dakota. The material culture of Sonota and Besant (projectile points and pottery) are similar but Sonota sites are associated with burial mounds. Some researchers consider Sonota and Besant to be manifestations of the same culture while others believe they represent separate groups of people (Novecosky 1999).

3.4.3. Plains/Woodland Period (Late Precontact): 2 000 – 500 years ago

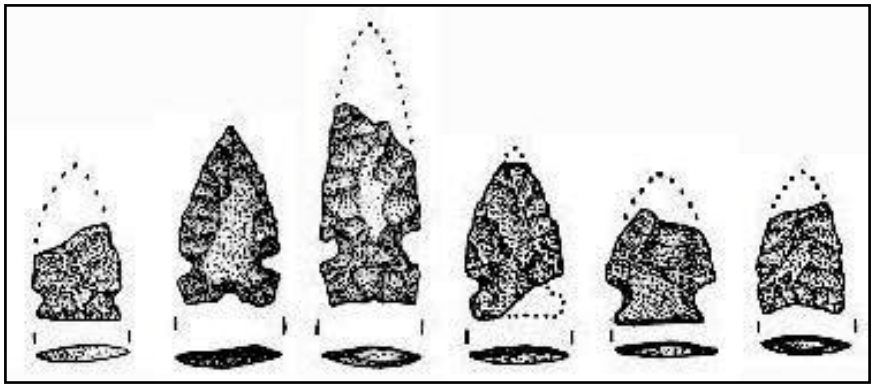


Figure 09: Plains/Woodland Period projectile points. L-R Avonlea, Trinotched, Plains Side Notched, Prairie Side Notched, Corner Notched, Triangular (Damone Illustrations 2011).

The Plains/Woodland Period is marked by increased cultural diversity as seen in the assortment of pottery wares, subsistence strategies and social organizations. These characteristics are believed to be influenced by the social developments occurring in the Eastern Woodlands, notably the Mississippian Culture. Avonlea sites are identified by their distinctive Avonlea projectile points (Figure 09) as well as Avonlea pottery (Figure 10). Avonlea points are well made with narrow side notches, a slightly concave base and triangular blades. It is generally

accepted that Avonlea appears suddenly in the archaeological record, covers a large geographical area and eventually transitions into a later group. Avonlea pottery tends to be large conical vessels with net or parallel groove impressions. Makers of Avonlea points and pottery were specialized bison hunters but also made considerable use of smaller game and utilized fishing weirs (Landals *et al* 2004).

Figure 10: Reconstructed Avonlea vessel (Royal Saskatchewan Museum).

After the appearance of Sonota/Besant and Avonlea cultures, pottery becomes the diagnostic trait rather than projectile points. Projectile point types such as Prairie and Plains Side Notch and Triangular (Figure 09) are now ubiquitous in the archaeological record and have been associated with a number of different pottery wares. The variability potential of pottery is much greater than that of stone tools because of it's plasticity. Many different decorative techniques were used, resulting in an unending number of different possible styles. When certain pottery traits (manufacture style, pot style as well as decoration) occur together over time and/or space, they are identified as a *ware*. Wares are often regionally and temporally distinct, but can be grouped together within a component, focus, phase or complex – depending on the taxonomic system being used. These are then grouped into higher categories and encompass different wares as well as other aspects of a society such as subsistence, other material culture, social organization etc. Presenting a 'simplified' version of the pottery wares encountered in southern Manitoba is difficult because various researchers have defined wares differently. Most notably is the difference between 'lumpers' and 'splitters'. Lumpers categorize pottery using a greater number of traits so fewer ware are defined while splitters categorize pottery using few traits which results in a larger number of wares being defined. For simplicity sake, this report will only review pottery wares that are well established in the literature and does not make any attempt to sort out the relationships between different pottery types. The different pottery types encountered in southern Manitoba are presented in a generalized chronological order but it should be remembered that as outlined by Syms *et al* (2011) many wares either existed at the same time or overlapped with each other.

Laurel pottery is represented in southern Manitoba, especially in the southeast corner as well as the central eastern part of the province although Laurel vessels have been recovered from northern Manitoba. It generally accepted that the Rainy River region and northern Minnesota represent the ceremonial and religious

Figure 11: Examples of Laurel pottery (Institute for Minnesota Archaeology).

centre as evidenced by the number of sites and burial mounds. Laurel sites tend to be located on waterways and take advantage of fishing (Brandzin-Low 1997). Vessels are coil-made and conical shape with unthickened lips. Decorative techniques is quite varied and include punctates, basses, dentate stamps, pseudo-scallop shell, and incising. Dates on Laurel sites vary but generally range from 2 500 to 1 000 years ago. The relationship between Laurel pottery and other wares such as Blackduck has been expressed in 'transitional vessels" with decorative techniques of both wares present on a single vessel. The source of these transitional vessels and their meaning is currently little understood (Peach *et al* 2006).

Blackduck ceramics is the perfect example of lumpers versus splitters. Blackduck vessels are characterized by their globular form, with a slight to thick lips. Decorations can include cord-wrapped object impressions, punctates or bosses, vertical combing or brushing. Blackduck sherds have been recovered across northern Minnesota, northwestern Ontario, throughout most of Manitoba and into Saskatchewan (Peach *et al* 2006). Blackduck pottery found within the eastern woodlands and boreal forest is associated with a generalized foraging subsistence focused on fishing, small game and wild rice. There are however also Blackduck sites located on the Plains/Aspen Parkland where large scale communal bison hunting took place (Hamilton *et al* 2007). This variability in landuse and inferred social organization, as well as decorative techniques has lead others, notably Lenius and Olinyk (1990), to 'split' Blackduck into three temporally and regionally derived complexes; Duck Bay, Bird Lake and Winnipeg River. These complexes comprise the Rainy River Composite which is separate from Blackduck which preceded Rainy River. Duck Bay ceramics are characterized by the application of large rectangular to square stamps with an unthickened lip and sharply defined shoulder. Duck Bay ceramics are concentrated in the Interlake region and few vessels are found in southern Manitoba. Bird Lake ceramics are also globular with a pronounced, out flaring rim and a slightly thickened lip. Stamps are common and various decorative motifs are located on the shoulder and/or body of the vessel. Winnipeg River ceramics are considered to be a late manifestation of Rainy River, dating from about 600 years ago into the Protohistoric. Vessels are textile impressed but generally undecorated and have an out flaring rim and are found throughout southern Manitoba (Peach *et al* 2006).

Figure 12: Examples of Blackduck Pottery (Institute for Minnesota Archaeology).

Clearwater Lake ceramics are found throughout the boreal forest regions of Manitoba and Saskatchewan but are sometimes encountered in southern Manitoba. These are

part of the Selkirk Composite and similar to those of the Rainy River Composite in shape, surface finish and mouth-flare but the Selkirk Composite is generally restricted to the boreal forest of Saskatchewan, Manitoba and Ontario. Decoration consists of a single row of large, circular and widely-spaced punctates (Meyer and Russell 1987).

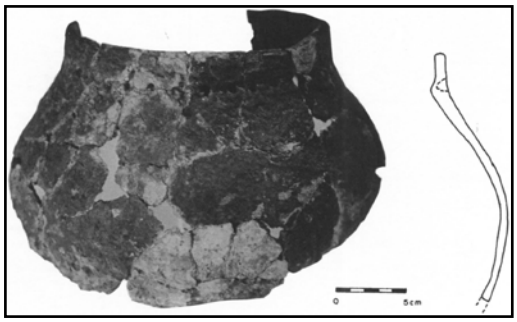


Figure 13: Example of reconstructed Clearwater Lake vessel (Royal Saskatchewan Museum).

With the possible exception of Avonlea, ceramic wares discussed so far have either originated from, or been connected to the east, either in the Boreal Forest or Eastern Woodlands of the Northern United States. Influences directly from the south and/or possibly the west were also taking place in southern Manitoba and these developments are reflected in pottery wares such as Sandy Lake, Vickers Focus and Mortlach.

Sandy Lake pots are thin-walled with straight rims and interior lip notching and likely represent an early influx of groups from the Middle Missouri area into southern Manitoba (Nicholson *et al* 2006) The presence of shell is a distinctive characteristic. Sherds have been recovered from sites in southern Manitoba but only in minute numbers and often with other pottery wares (Peach *et al* 2006).

The co-occurrence of various pottery wares including Sandy Lake is a defining characteristic of Vickers Focus pottery which appears in the archaeological record about 550 years ago (Nicholson 1990). Other distinctive pottery traits include finger pinched nodes on the rim (Figure 14) in addition to a whole host of decorative techniques. Vickers Focus sites have been recorded from the Tiger Hills of south-central Manitoba as well as the Lauder Sandhills of southwestern Manitoba. Based on pottery similarities to groups in the Dakota's practicing horticulture, Nicholson (1990) made a case that the makers of Vickers Focus pottery were also practicing horticulture in the Tiger Hills region. There was no archaeological evidence of horticulture at the Launder sites and those people had become specialized bison hunters (Nicholson and Hamilton 1997). Evidence of maize horticulture has also been recorded at the Lockport site north of Winnipeg where corn kernels and underground storage pits have been

Figure 14: Vickers Focus sherds with distinctive finger pinched nodes (Nicholson *et al* 2006).

excavated. A relationship between Vickers Focus people and the Lockport inhabitants is most likely but the nature of that relationship is currently unknown. There does however seem to be a relationship between Vickers Focus and Mortlach wares.

Figure 15: Examples of Mortlach vessels from southern Manitoba (Nicholson *et al* 2006).

Mortlach pottery has been excavated from the southwest part of the province and are similar to Vickers Focus pots (Figure 15). Mortlach pottery has generally been confined to Alberta and Saskatchewan and are thought to represent plains adapted bison hunters and dates between 500 years ago up until the contact period (Walde 2003).

3.4.4 Protocontact and Contact Period: 500 years ago - present

After Europe rediscovered South and North America in the late 15th century, contact between the Old and New Worlds accelerated quickly as explorers, missionaries and fur traders made their way across the continents. Indigenous groups were greatly affected by such contact due to the introduction of new diseases, access to new technologies such as the gun and horse and the creation of new economic markets. Contact is often visualized as wave with the effects of contact being encountered by Indigenous populations prior to physical contact with Europeans. In Manitoba, initial contact between populations inevitably involved the fur trade (Hamilton and Nicholson 2007). The Protocontact period in Manitoba is relatively brief and few archaeological sites have been dated to this timeframe.

The fur-trade period begins in the late 1600's with the establishment of the Hudson's Bay Company (HBC). Initially the HBC company had a monopoly and maintained forts along Hudson's Bay which required native groups to travel to the forts. In the later part of the 1600's, the French challenged HBC's monopoly and a period of intense completion ensued from 1682-1713. In 1713, the HBC again maintained a monopoly over the Hudson Bay fur trade. Quebec traders shifted their focus westward and began exploring land west of the Great Lakes. This forced the HBC to move inland and it established Cumberland House along the Saskatchewan River in 1774. Shortly afterward, the Northwest Company (NWC) was formed and another period of intense competition took place with the 'leap frogging' of trading posts along major water routes including the Assiniboine and Souris Rivers. This lasted until 1821 with the amalgamation of the HBC and NWC and centralized administration. The end of the fur trade era in southern Manitoba during the 1860's coincides with the decimation of the

bison herds as well as the arrival of the railway and introduction of the settlement era. Over 30 fur trade posts in Manitoba have had some type of archaeological excavation, within southern Manitoba, these include Upper and Lower Fort Garry, Fort Gibraltar, St. Anne, Lane's Post, Brandon House, Pine Fort, Fort Desjarlais, Canoe Forts along the Souris, Riding Mountain House and Fort Ellice (Klimko 1994).

The fur trade did not happen within a cultural void, and the explorers and fur traders encountered a number of different Indigenous populations with their own established socioeconomic, organizational and subsistence strategies. Theses groups inhabiting southern Manitoba at the time of contact were greatly influenced by the fur trade and it's resulting developments (Ray 1998).

4.0 METHODOLOGY

Confirming the known archaeological sites and assessing the potential for undiscovered sites within the study area was accomplished through a preliminary background study and property inspection. The individual steps of each are described below.

4.1 Background Study

The background study was initiated with a literature review of the archaeological record of south-central Manitoba . The archaeology site inventories for National Topographic 1:50 000 maps 62G09, 10 and 15 were requested and received from the Historic Resources Branch of Manitoba. Recent aerial photographs as well as National Topographic maps of the study area and surrounding locale were examined in consultation with Mr. David Scott and other members of Swan Lake First Nation to establish areas of high archaeological potential within the study area.

4.2 Property Inspection

Field work was undertaken on August 12th, and between August 15th – 18th, 2011 by Tomasin Playford and community member Grace Walker. Landowner permission was obtained by Mr. David Scott for the purpose of this study. Establishing the location of identified archaeological sites was accomplished by using a Garmin GPSMAP 60CSx handheld global positioning system (GPS) with TopoCanada software to locate co-ordinates provided by HRB. Sites were inspected for evidence of human occupation. Field notes and a photographic record were maintained for all site visits.

Spot checks along the preferred route and surrounding area were undertaken to determine the archaeological potential of the area. Exposed areas such as roads, blowouts and cultivated fields were examined for the presence of human occupation. All examined locations were recorded using the GPS, field notes and photographs. Identified archaeological resources were noted and all with the exception of lithic tools were not collected. Collected artifacts remain in the custody of Swan Lake First Nation.

5.0 RESULTS AND ANALYSIS

Results of the background study and property inspection indicate the potential for archaeological resources.

5.1 Recorded Archaeological Sites

There were over 90 sites in the HRB inventory for the three 1:50 000 NTS maps (62G09, 10 and 15). For the purpose of fulfilling Objective 05, only sites within the buffer zone of the primary study area were examined and included two sites located on the preferred route and one site within a mile of the preferred route. A fourth site outside the buffer zone but accessible was visited while two other sites just within the buffer zone of the primary study area were not visited due to lack of accessibility.

Figure 17: View of DkLp-14, facing south.

5.1.1 DkLp-14 (Lightening Cow)

This site is located directly on the identified preferred route. According to the HRB site form, this is a precontact lithic scatter in a blowout consisting of flakes and micro-debitage. The site was recorded from the Huberdeau collection and it was recommended that the site be visited with collectors to identify diagnostic artifacts and locate nearby sites. This site was located with the HRB co-ordinates. A single flake (Figure 16) was identified in a sand blowout (Figure 17).

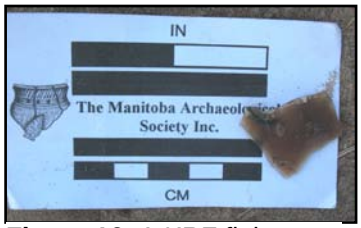


Figure 16: A KRF flake observed at DkLp-14.

5.1.2 DkLp-15 (Watson Trail)

The Watson Trail site is located almost directly on the proposed route. The HRB site form describes this site as a precontact lithic scatter on the slope of a small dune. Shovel testing was recommended given the potential for undisturbed deposits. The property inspection located this site with the HRB co-ordinates (Figure 18) and several lithic artifacts including a knife tip (Figure 19) and utilized flake, as well as small pieces of burned bone were identified at the site.

Figure 18: View of DkLp-15 facing east.

Figure 19: Knife tip observed at DkLp-15.

5.1.3 DkLp-03 (Dyer)

Information obtained from HRB indicated that the Dyer site was located within a mile of the proposed preferred route and would therefore fall within the buffer zone. This site is described as being located on the northeast bank of a step ravine and has been collected from since the 1930's. A site visit to the HRB co-ordinates did not seem to locate this site. The site location is currently in a completely flat, cultivated field with evidence of a no longer existent small waterway (Figure 20). A pedestrian survey through an uncultivated portion of this field did not yield any precontact artifacts. It is hypothesized here that the location of DkLp-03 is one mile north and one mile west. A steep ravine exists at this location.

Figure 20: HRB coordinates for DkLp-03 facing north.

5.1.4 DkLp-11 (Rathwell #1)

Figure 21:. DkLp-11 facing west.

A site visit to DkLp-11(Figure 21) was undertaken because it is located just outside the buffer zone and was easily accessible. Several diagnostic artifacts have been collected from this cultivated field including Sonota and Triangular projectile points as well as Laurel and Blackduck ceramics. A few bone fragments and some historical artifacts were encountered during the site visit. No definitive precontact artifacts were located.

5.1.5 DkLp-01 (Fisher Mound)

This site is located just outside the buffer zone of the proposed preferred route. This site is a burial mound site which as been completely destroyed by cultivation. Recoveries from the site include over 40 projectile points, pipes, and human remains. No site visit took place due to the presence of crops and inaccessibility to the site.

5.1.6 DkLp-07

A single scraper was recorded for this site. It falls within the buffer zone of the proposed preferred route but a site visit did not take place due to the presence of crops, making the site inaccessible at this time.

5.2 Undiscovered Archaeological Site Potential

Assessing the potential for undiscovered or unreported archaeological resources resulted in the identification of three archaeological sites, an isolated find and other finds (Figure 22).

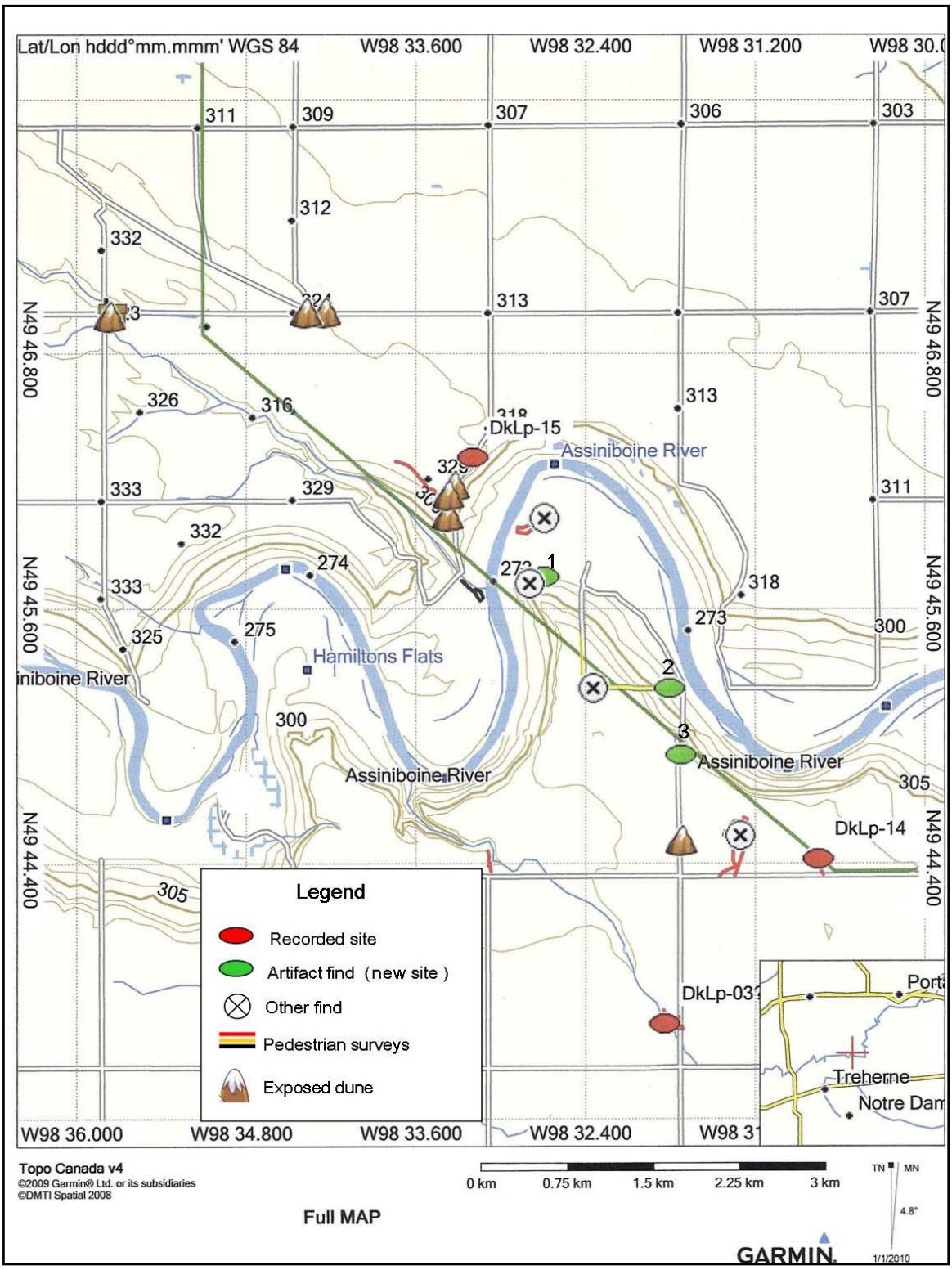


Figure 22: Map of refined study area showing archaeological sites (recorded and new), other finds, as well as observed sand dune blowouts and pedestrian surveys.

5.2.1 Site 01

Site 01 is located at the south end of the cultivated river floodplain along an access road (Figure 23). Two FCR cobbles and a knife river flint (KRF) core modified into an endscaper (Figure X) were observed. A few pieces of large ungulate bone was also observed in the cultivated field south of the access road. No diagnostic artifacts were recovered.

Figure 23: Site 01 facing west.

Figure 24: KRF core/scraper recovered from Site 01.

5.2.2 Site 02

Site 02 is approximately one and a half kilometers directly southeast of Site 01 along the south valley of the Assiniboine River at the 290 m asl elevation line (Figure 25). Lithic debitate, FCR and bison bones were observed as was a Sonota/Besant swan river chert (SRC) projectile point (Figure 26).

Figure 25: Site 02 facing east.

Figure 26: SRC Besant point recovered from Site 02.

5.2.3 Site 03

Site 03 is located immediately on the plains south of the Assiniboine River valley and is less than one kilometer almost directly south of site 02. Lithic debitate, a concentration of FCR and several pieces of bone were observed along the west shoulder of Rural Road 47 West.

Figure 28: FCR cluster identified at Site 03.

Figure 27: Site 03 facing north.

5.2.4 Other Finds

In addition to the three archaeological sites, other finds were observed. A single pecking stone (Figure 29) was observed in a sand blowout along the south shoulder of Rural Road 50 North. No other precontact artifacts were observed and this artifact is considered an isolated find. Other finds included historic artifacts (Figure 30) and bone concentrations (Figure 31) without any related artifacts Also observed during the property study were historic buildings such as the South Rosendale School (figure 32) and possible original homesteads (figure 33).

Figure 29: Observed pecking stone.

Figure 30: Example of observed historical artifacts.

Figure 31: Example of observed bone cluster.

Figure 32: South Rosendale School.

Figure 33: Homestead building.

6.0 CONCLUSIONS

The results of the background study and the property inspection indicate that the archaeological resource potential within the defined study area is high. The archaeological record for this are is very rich as indicated by the archaeological chronology. Two known archaeological sites were confirmed to be located on or very close to the proposed preferred route. Three previously unrecorded sites were observed to be within less than half a kilometer from the proposed preferred route. The archaeological information corroborates the traditional ecological knowledge of the Swan Lake First Nation people and establishes the study area as being culturally significant.

7.0 RECOMMENDATIONS

Specific recommendations from this interim report are related to the outlined objectives while more generalized recommendations are presented for the on-going Bipole III transmission line project. Completion of Objectives 01 through 04 should take place as soon as feasible. Recording landowner collections will aid in the identification of areas of high archaeological resource potential. All newly identified archaeological sites should then be reported to HRB following standard practices. These results will be reported and presented to Swan Lake First Nation and Manitoba Conservation as deemed necessary.

In terms of the on-going development within the study area in relation to the Bipole III transmission line project it is difficult to make specific recommendations at this time. The exact location of the proposed preferred route is unknown and only a general location is available to date. Once the exact location of the route is established and has been ground-truthed, a property assessment should take place. This would entail a pedestrian and test pit survey along the route. The location and number of test pits should be determined in collaboration with HRB and Swan Lake First Nation. The outcome of this survey would affect further mitigation. Where the route impacts known archaeological resources and avoidance is not possible, site specific assessment must take place for each site and require establishing the site boundaries and determining the nature of the site. Ideally this would be accomplished through test excavations. Again, the nature of site specific assessment would be made in collaboration with HRB and Swan Lake First Nation if the need so arises.

8.0 REFERENCES CITED

Boyd, Matthew
2007 Paleoindian Geoarchaeology of the Assiniboine Delta of Glacial Lake Agassiz. *Canadian Journal of Archaeology* 31(3):198-221.

Brandzin-Low, Vera
1997 *The Distribution and Characteristics of Laurel Ceramics from Northern Manitoba: A Comparative Study*. Unpublished Master of Arts Thesis, Department of Anthropology and Archaeology, University of Saskatchewan, Saskatoon.

Butzer, Karl W.
1982 *Archaeology as Human Ecology*. Cambridge University Press, Cambridge.

Collard, Ian F. and Robert A. Foley
2002 Latitudinal Patterns and Environmental Determinants of Recent Human Cultural Diversity: Do Humans Follow Biogeographical Rules? *Evolutionary Ecology Research* 4:371-383.

Dincauze, Dena F.
2000 *Environmental Archaeology: Principles and Practices*. Cambridge University Press, Cambridge.

Dobson, Michael M.
1994 *Projectile Points of Manitoba*. Minnedosa Tribune, Minnedosa.

Ecological Stratification Working Group
1995 *A National Ecological Framework for Canada*. Agriculture and Agri-Food Canada, Research Branch, Centre for Land and Biological Resources Research and Environment Canada, State of the Environment Directorate, Ecozone Analysis Branch, Ottawa/Hull. Report and national map at 1:7500 000 scale.

Green, D'Arcy
2005 *A Re-Evaluation of the Oxbow Dam Site (DhMn-1): Middle Holocene Cultural Continuity on the Northern Plains*. Occasional Papers of the Archaeological Society of Alberta, Archaeological Society of Alberta, Alberta.

Hamilton, Scott and Beverly Nicholson
1999 Ecological "Islands" and Vickers Focus Adaptive Transitions in the Pre-Contact Plains of Southwestern Manitoba. *Plains Anthropologist* 43(165):05-26.
2007 The Middleman Fur Trade and Slot Knives: Selective Integration of European Technology at the Mortlach Twin Fawns Site (DiMe-23). *Canadian Journal of Archaeology* 31(3):137-162.

Hamilton, Scott, Bev Nicholson and Dion Wiseman
2006 Extrapolating to a More Ancient Past: Ethnohistoric Images of Northern Plains Vegetation and Bison Ecology. *Plains Anthropologist* 51(199:281-302).

Hamilton, Scott, James Graham and Beverly Nicholson
2007 Archaeological Site Distributions and Content: Modeling Late Precontact Blackduck Land Use in the Northeastern Plains. *Canadian Journal of Archaeology* 31(3):93-136.

Klimko, Olga
1994 *The Archaeology of Land Based Fur Trade Post in Western Canada: A History and Critical Analysis*. Unpublished PhD Thesis, Department of Archaeology, Simon Fraser University, Burnaby.

Landals, Allyson, B. Kulle and D. Cockle
2004 *The Miniota Site, An Avonlea Component in Southwestern Manitoba*. Occasional Papers of the Archaeological Society of Alberta, Archaeological Society of Alberta, Alberta.

Lenius, Brian J. and Dave M. Olinyk
1990 The Rainy River Composite: Revisions to Late Woodland Taxonomy. In *The Woodland Tradition in the Western Great Lakes: Papers Presented to Elden Johnson*. Edited by Guy E. Gibb, pp 77-112. University of Minnesota Publication in Anthropology, Number 4, University of Minnesota, Minneapolis.

Manitoba Department of Cultural Affairs and Historical Resources
1983 *Introducing Manitoba Prehistory*. Manitoba Department of Cultural Affairs and Historical Resources, Winnipeg.

Meyer, David and Dale Russell
1987 The Selkirk Composite of Central Canada: A Reconsideration. *Arctic Anthropology* 24(2):1-31.

Naiman, Robert J., Henri Decamps and Michael Pollock
1992 The Role of Riparian Corridors in Maintaining Regional Biodiversity. *Ecological Applications* 3(2):209-212.

Nicholson, Beverly A.
1987 *Human Ecology and Prehistory of the Forest/Grassland Transition Zone of Western Manitoba*. Unpublished PhD Dissertation, Simon Fraser University, Vancouver.
1990 Ceramic Affiliations and the Case for Incipient Horticulture in Southwestern Manitoba. *Canadian Journal of Archaeology* 14:33-59.

Nicholson, Beverly and Scott Hamilton
1997 Material Correlates Accompanying Transition by Vickers Focus People from a Horticulture/Forager Economy to an Intensive Forager/Bison Economy. *Manitoba Archaeological Journal* 7(2):24-37

Nicholson, Beverly, Lorie Mokelki and Sylvia Nicholson
2006 Vickers, Mortlach and Moose Jaw Culture, Scattered-Village: Who Were They and How Did They Get Here? *Manitoba Archaeological Journal* 16(1&2):23-47.

Nicholson, Beverly A., Scott Hamilton, Garry Running and Matthew Boyd
2007 Building the Contextual Milieu: An Approach to Data Collection and Interpretation. *Canadian Journal of Archaeology* 31(3):10-47.

Nicholson, Beverly A. and Tomasin Playford
2009 The Atkinson Site: A 6 400 year old Gowen (Mummy Cave)Occupation Near Lauder, Manitoba. *Plains Anthropologist* 209(54):29-48.

Novecosky, Brad
1999 A Summary of Besant Communal Bison Hunting. *Manitoba Archaeological Journal* 9(1):113-138.

Odum, Eugene
1971 *Fundamentals of Ecology*, Third Edition. Saunders, Philadelphia.

Pautasso, Paul
2007 Scale Dependence of the Correlation between Human Population Presence and Vertebrate and Plant Species Richness. *Ecology Letters* 10(1):16-24.

Peach, Kate, Barry Greco and Brian J. Lenius
2006 Precontact Ceramics of Southeastern Manitoba. *Manitoba Archaeological Journal* 16(1&2):3-22.

Peck, Trevor
2011 *Light from Ancient Campfires: Archaeological Evidence for Native Lifeways on the Northern Plains*. AU Press, Athabasca University.

Pettipas, Leo
1980 Cultural Dynamics of the Late Woodland Period of Southern Manitoba. In *Directions in Manitoba Prehistory: Papers in Honour of Chris Vickers*. edited by Leo Pettipas, pgs 141-168, Association of Manitoba Archaeologists and the Manitoba Archaeological Society, Winnipeg.
1996 *Aboriginal Migrations: A History of Movements in Southern Manitoba*. Manitoba Museum of Man and Nature, Winnipeg.
2011 Paleoindian Developments in Southern Manitoba. *Manitoba Archaeological Journal* 11(1&2): IN PRESS

Ray, Arthur J.
1998 *Indians in the Fur Trade*. Reprinted. University of Toronto Press, Toronto. Originally published 1974, University of Toronto Press, Toronto.

Rhoades, Robert E.
1978 Archaeological Use and Abuse of Ecological Concepts and Studies: The Ecotone Example. *American Antiquity* 43(4):608-614.

Scribe, Brian
1996 *Pinew Watchi, Wapiti Sakihtaw* and *Wawaskesiw Miteskum*: Plains Woodland (Pottery-Bearing) Sites in South-Central Manitoba. *Manitoba Archaeological Journal* 6(2):82-94.

Smith, R.E., H. Veldhuis, G.F. Mills, R.G. Eilers, W.R. Fraser and G.W. Lelyk
1998 *Terrestrial Ecozones, Ecoregions and Ecodistrics, An Ecological Stratification of Manitoba's Natural Landscapes.* Technical Bulletin 98-9E. Land Resource Unit, Brandon Research Centre, Research Brand, Agriculture and Agri-Food Canada, Winnipeg, Manitoba. Report and map at 1:1 500 000 scale.

Syms, Leigh
1977 Cultural Ecology and Ecological Dynamics of the Ceramic Period in Southwestern Manitoba. *Plains Anthropologist Memoir 12*.

Syms, Leigh, Nicole Skalesky, Vanda Fleury and Susan Broadbent
2011 *Toggling Many Fragments: An Initial Effort at Assembling a Taxonomic Overview for the Northern Plains, Late Plains Woodland*. Paper presented at the Canadian Archaeological Association Annual Meeting, Calgary AB.

Walde, Dale
2003 *The Mortlach Phase*. Occasional Papers of the Archaeological Society of Alberta, Archaeological Society of Alberta, Alberta.

Walker, Ernest
1992 *The Gowen Sites: Cultural Responses to Climatic Warming on the Northern Plains (7 500- 5000 BP)*. Archaeological Survey of Canada, Mercury Series Paper 145, Canadian Museum of Civilization, Gatineau, Quebec.

Wiseman, Dion and James Graham
2007 Quantifying Landscape Diversity and Uniqueness in the Prairie Ecozone. *Canadian Journal of Archaeology* 31(3):251-270).

Botanical Survey of Swan Lake First Nation Indian Gardens

and Lands Surrounding the Proposed Bipole III Assiniboine River Crossing

Final Report
September 29, 2011

Laura Reeves, B.Sc. (Botany)

Executive Summary

At the request of Swan Lake First Nation (SLFN), a survey of medicinal and rare plant species was conducted to determine the potential impact of Manitoba Hydro's proposed Bipole III transmission line on important plants and plant communities in and around the Assiniboine River crossing. This included approximately 7 km of the proposed transmission corridor, as well as Indian Gardens (11-9-9W), which is part of the Swan Lake Reservation, and Round Plain (S½30-9-8W), which is a traditional gathering site. Sites were visited in June, July and September of 2011.

This area is situated where three ecoregions (tall grass prairie, boreal forest and aspen parkland) converge, making it a significant area for both rare species and the gathering medicinal plants. More than 200 plant species were identified, approximately 95% of which are known as medicinal plants to members of SLFN. Nine species are considered rare in Manitoba (ranked S1 – S3 by the Manitoba Conservation Data Centre). All of the rare species have medicinal importance to members of SLFN. Two plant communities were determined to be highly vulnerable to the potential disturbance of Bipole III. Several mitigation measures, including three alternate routes, have been proposed to minimize the impact on these plant communities, as well as those that were deemed to be at medium to low risk.

Acknowledgments

Special thanks is given to David Daniels, of Long Plain First Nation, for his help with photo documentation and research regarding the uses of medicinal plants by members of Swan Lake First Nation. I would also like to thank Liz Punter, University of Manitoba herbarium, for sharing her extensive knowledge and resources concerning the rare plants identified over the course of this study.

Table of Contents

List of Figures

Introduction

Members of Swan Lake First Nation (SLFN) are interested and active in maintaining and securing traditionally used plants within the area designated under Treaty #1. A new transmission line, Bipole III, proposed by Manitoba Hydro, would run from the Nelson River in northern Manitoba west of Lake Manitoba to Winnipeg. The preferred route for Bipole III would cross the Assiniboine River north of Rathwell, Manitoba at a point that is of particular importance to the elders of SLFN. As a traditional community gathering ground, this area is significant not only for archaeological reasons, but for the gathering of medicinal and other traditionally used plants. The Bipole III project would involve the clearing and maintenance of a 66-meter wide corridor along which approximately 150-foot steel towers would be erected. In response to concern from SLFN, a survey of medicinal and rare plant species was conducted to determine the potential impact of this development on important plants and plant communities in and around this river crossing. Indian Gardens (11-9-9W), part of the Swan Lake Reservation, and Round Plain (S½30-9-8W), a traditional gathering ground, were also included in the survey. The following private lands lie along this section of the proposed route: 17-9-8W, 18-9-8W, 24-9-9W, 25-9-9W and NE26-9-9W.

Objectives

The intent of this survey was to identify important plant communities as well as medicinal and rare plant species within the area outlined above. The information provided by this study will help determine 1) the importance of these lands to members of SLFN for the purpose of preserving and gathering medicinal plant species, 2) the distribution and abundance of rare plant species in the area and 3) the need to implement mitigation measures to protect traditional medicines and/or rare plant species and their habitats.

Method

Approximately 7 km of the proposed transmission corridor was divided into five sections based on anthropogenic divisions as well as differences in plant communities (Figure 1). Walk-through surveys were conducted on June 8, July 10, 16 and 17, and September 5. A Garmin handheld GPS was used to follow the proposed route as depicted on aerial photographs provided by Manitoba Hydro. Species lists were made for each of the major plant communities found along this route, as well as for Indian Gardens and Round Plain. (A compilation of these lists can be found in Appendix A, however the lists for each section are available on request.) Rare species (those ranked S1 – S3 by the Manitoba Conservation Data Centre), as well as those of particular medicinal interest were marked with a GPS. In cases where important plants were frequently encountered, GPS points were taken to sufficiently illustrate species distribution and abundance and do not represent every individual occurrence. Data was downloaded using Garmin BaseCamp software, but is not included with this report. Photo documentation was also gathered for most species. Rare species were documented with photos and/or pressed specimens.

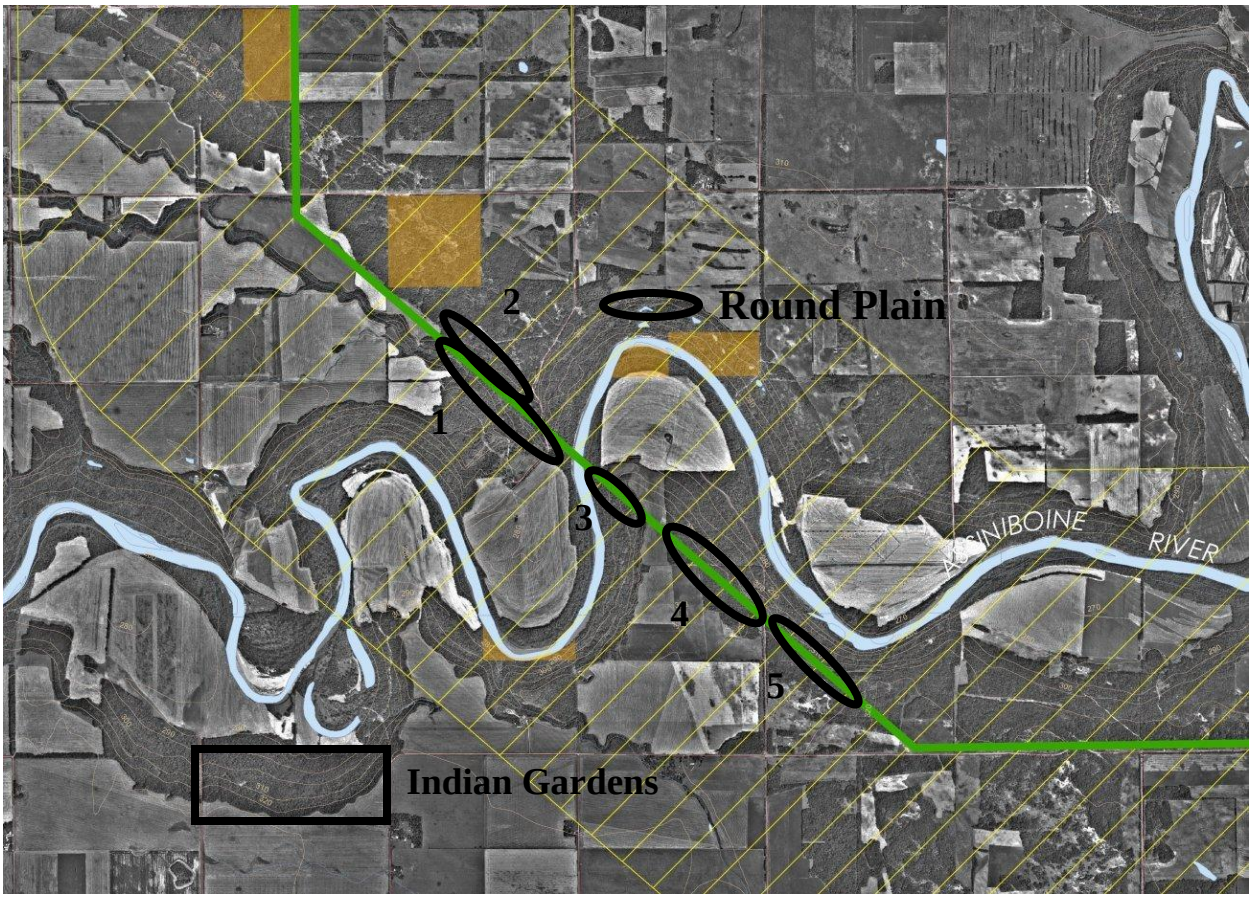


Figure 1. Map showing Indian Gardens, Round Plain and the five sections surveyed along the proposed Bipole III transmission corridor at the Assiniboine River crossing.

Results

More than 200 plant species were identified during this survey (see Appendix A). Approximately 95% of these are known as medicinal plants by members of Swan Lake First Nation (D. Daniels, pers. com.). Many of these species have additional uses for food, shelter, fire, containers, ceremony, cordage, tools, etc.

Species of Conservation Concern

The Manitoba Conservation Data Centre assigns a rank of 1 (very rare) to 5 (demonstrably secure) to all species in Manitoba based on their range-wide (Global – G) and province-wide (Subnational – S) status. These ranks reflect a species' relative endangerment and are based on the number of occurrences, date of collection, degree of habitat threat, geographic distribution patterns and population size and trends (Manitoba Conservation, 2011). The Manitoba Conservation Data Centre website provides the following definitions for each rank (Manitoba Conservation, 2011):

1 = Very rare throughout its range or in the province (5 or fewer occurrences, or very few remaining individuals). May be especially vulnerable to extirpation.

2 = Rare throughout its range or in the province (6 to 20 occurrences). May be vulnerable to extirpation.

3 = Uncommon throughout its range or in the province (21 to 100 occurrences).

4 = Widespread, abundant, and apparently secure throughout its range or in the province, with many occurrences, but the element is of long-term concern
(> 100 occurrences).

5 = Demonstrably widespread, abundant, and secure throughout its range or in the province, and essentially impossible to eradicate under present conditions.

U = Possibly in peril, but status uncertain; more information needed.

Nine species identified during this survey are considered rare in Manitoba (S1 – S3). The local variety of one of these (western false gromwell) is currently ranked SU, though at the species level it is considered S3. Collectively, these species are abundant along approximately 4 kilometers of the proposed route. All of these plants are considered medicinal by members of SLFN, with bloodroot being particularly important.

Tall hairy agrimony (*Agrimonia gryposepala*) – S1S2

This species has a wide range in North America, occurring in 7 provinces and 38 states (NatureServe, 2011). It prefers moist to dry open woodlands, prairie ravines and stream valleys (Great Plains Flora Association (GPFA), 1986; Gleason and Cronquist, 1991). Currently, less than 10 occurrences have been documented in Manitoba, where it is only found in the lower 1/8 of the province (NatureServe, 2011).

Tall hairy agrimony was recorded in Sections 1 and 3. In Section 1, it was commonly found in areas where the forest canopy is thin to open. In Section 3, one occurrence was mapped in a somewhat shrubby grassy meadow.

Enchanter's nightshade (*Circaea lutetiana* ssp. *canadensis*) – S2

Like the preceding species, enchanter's nightshade (Figure 5) occurs throughout eastern North America, reaching the northwest extent of its range in Manitoba (NatureServe, 2011). It may be rare to locally abundant in moist woodlands where it often grows along streams (GPFA, 1986; Gleason and Cronquist, 1991). This species spreads vegetatively by underground rhizomes and often forms dense patches of stems that may belong to one or a few individual plants (Punter, pers. comm.).

Enchanter's nightshade was recorded in Section 1 and at Indian Gardens where it was commonly found in and around wetter soils. Occurrences ranged from single plants to patches of 50 or more.

Bloodroot (Sanguinaria canadensis) – S2

Bloodroot (Figure 2) is found throughout eastern North America, reaching the northwest extent of its range in Manitoba (NatureServe, 2011). It is partial to rich deciduous forests that are mesic to somewhat dry (NatureServe, 2011). Bloodroot is ephemeral, going dormant in the summer when soil conditions become dry. (When sites were revisited in September, there was no sign of bloodroot in areas where it had been abundant in July.) Currently, "more than eight" populations are documented in Manitoba, most of them in the southeastern portion of the province (NatureServe, 2011). Threats to this species include habitat conversion and fragmentation, urban/rural development and cattle grazing (NatureServe, 2011). Bloodroot has shallow rhizomes that are vulnerable to trampling and soil compaction (Punter, pers. comm.).

Figure 2. Bloodroot prefers the shade of rich deciduous forests.

Bloodroot commonly occurs in Sections 1 and 4 under the canopy of mature hardwoods with a medium density of shrubs.

Figure 3. Showy tick-trefoil prefers damp, open areas.

Showy tick-trefoil (*Desmodium canadensis*) – S2

This species of tick-trefoil can be found in south-central to north-eastern North America (NatureServe, 2011). Like many of the other rare species, Manitoba marks the northwestern edge of its range (NatureServe,2011). It prefers moist, open areas, like those found along rivers and streams.

One small patch of approximately 10 flowering stems was found in Section 3 just above the 2011 flood level of the Assiniboine River (Figure 3).

Figure 4. Hairy sweet cicely prefers moist woods or wooded hillsides.

Hairy sweet cicely (*Osmorhiza claytonii*) – S2

This species of sweet cicely (Figure 4) ranges throughout eastern North America and is found as far northwest as Saskatchewan, where it's rank is currently under review (NatureServe, 2011). It prefers moist woods or wooded hillsides (GPFA, 1986; Gleason and Cronquist, 1991).

Hairy sweet cicely was recorded in Sections 1, 3, 4 and 5 and at Indian Gardens. It is locally abundant in Section 1 and Indian Gardens. It is less common in Sections 3, 4 and 5.

Alternate-leaved dogwood (*Cornus alternifolia*) – S3

This species extends throughout eastern North America, reaching the northwest extent of its range in Manitoba (NatureServe, 2011). It is associated with rich woods and thickets (GPFA, 1986; Gleason and Cronquist, 1991), occurring very sporadically in the lower 1/6 of the province (Punter, pers. comm.). It prefers well-drained soils and is often found along streams, swamps and near the bottom of steep slopes (GPFA, 1986; Gleason and Cronquist, 1991).

Alternate-leaved dogwood was recorded at Indian Gardens, where it is locally abundant.

Figure 5. Lopseed (right) and enchanter's nightshade (left) grow in damp woods.

Lopseed (*Phryma leptostachya*) – S3

Lopseed extends throughout eastern North America, reaching the northwest extent of its range in southeastern Manitoba (NatureServe, 2011). It prefers moist woodlands, thickets and stream valleys (GPFA, 1986; Gleason and Cronquist, 1991). This perennial species does not spread vegetatively, and populations tend to be quite small (Punter, pers. comm.).

Lopseed was commonly found throughout Sections 1 and 3, as well as in the forested area below Round Plain. It occurs occasionally at Indian Gardens (Figure 5).

Black ash (*Fraxinus nigra*) – S3

This tree occurs throughout northeastern North America (NatureServe, 2011). Like many of the preceding rare species, it reaches the northwest extent of its range in Manitoba, where it stops just south of Lake Manitoba (Punter, pers. comm.). It is associated with wet woods and swamps, including the low banks of rivers and lakes (GPFA, 1986; Gleason and Cronquist, 1991).

Black ash was found in Sections 3 and 4 and at Indian Gardens in flood-prone areas.

Western false gromwell (*Onosmodium molle* var. *occidentale*) – S3SU

Western false gromwell is found throughout the plains and prairie region of central North America, reaching the northern extent of its range in Manitoba (NatureServe, 2011). It is most often associated with dry sandy or gravelly prairies, pastures and open woods (GPFA, 1986; Gleason and Cronquist, 1991) (Figure 6). It is currently unranked or under review throughout most of its range.

Figure 6. Western false gromwell is associated with prairies, pastures and open woods.

Western false gromwell was regularly found in forest openings along the length of the proposed transmission corridor (excluding Section 2). Two patches were found at Indian Gardens and a single occurrence was documented at Round Plain.

Survey Results by Section

The following is a summary of the survey results for each section along the proposed Bipole III transmission line (Figure 1). It includes Indian Gardens and Round Plain.

Section 1

Surveyed June 8, July 10 and 16, and September 5, 2011

This area includes 1.5 km of undulating forested terrain along an ephemeral creek. The elevation ranges from approximately 289 m at creek level to 320 meters. On the north side of the creek, the forest canopy is comprised of bur oak (*Quercus macrocarpa*), Manitoba maple (*Acer negundo*), green ash (*Fraxinus pensylvanica*) and trembling aspen (*Populus tremuloides*). Basswood (*Tilia Americana*) is also common on the east side of the gravel road, closer to the

Assiniboine River. Some hardwoods in this area have reached considerable size. One green ash was measured at 2.2 m CBH (70 cm DBH). Several aspen were estimated to be close to 2 m CBH (~60 cm DBH) (Figure 7). On the west end of this section, a stand of towering aspen trees was estimated at 20 meters tall (Figure 8). Dominant shrubs are hazelnuts (American (*Corylus americana*) and beaked (*C. cornuta*)) and downy arrowwood (*Viburnum lentago*). The ground layer is dominated by wild sarsaparilla (*Aralia nudicaulis*). At the higher elevations, there are small, scattered grassy openings. Two small drains that feed into the creek as well as a couple of isolated, flood-prone areas above the creek provide favourable conditions for flood-tolerant species such as jewelweed (*Impatiens capensis*), wild mint (*Mentha arvensis*), marsh hedge-nettle (*Stachys palustris*) and water-hemlock (*Cicuta maculata*).

On the south side of the creek, the forest canopy is comprised of mature oak and green ash. Paper birch (*Betula papyrifera*) had fallen out of the canopy. The shrub layer is similar to that found on the north side of the creek, but is not as dense. This area is fenced and subject to cattle grazing.

Six rare species were found in this area, including **tall hairy agrimony**, **bloodroot**, **hairy sweet cicely**, **enchanter's nightshade**, **lopseed**, and **western false gromwell**. Bloodroot and enchanter's nightshade were recorded on the north side of the creek, but not south of the creek. (The south side of the creek was not surveyed until September 5, after the bloodroot had gone dormant in other areas.) In general, rare species were less abundant on the south side of the creek. The remaining rare species were found throughout the area and appear to be locally abundant.

Figure 7. Large poplar trees in Section 1.

Figure 8. Towering aspen trees in Section 1.

The ephemeral creek hosts many species that are tolerant of, or dependent on, disturbances such as flooding or soil erosion. These include Joe-pye weed (*Eupatorium maculatum*), American brooklime (*Veronica Americana*), wild mint, arrowhead (*Sagittaria sp)*, water-horehound (*Lycopus Americana*), wild grape (*Vitis riparia*) and balsam poplar (*Populus balsamifera*). Important shrubs include speckled alder (*Alnus incana*) and red-osier dogwood (*Cornus stolonifera*). Ostrich fern (*Matteuccia struthiopteris*), which occurs occasionally along the creek bed, is more common along the shaded creek banks.

Four rare species were identified along the edge of the creek bank, including **tall hairy agrimony**, **bloodroot**, **lopseed**, and **western false gromwell**.

Section 2

Approximately 300 meters north of the creek described in Section 1, the soil becomes sandy and a convergence of woodland and prairie habitats occurs. Open, sandy soil favours a species composition very similar to that found at Round Plain and includes creeping juniper (*Juniperus horizontalis*), narrow-leaved puccoon (*Lithospermum incisum*), leadplant (*Amorpha canescens*), hairy golden-aster (*Chrysopsis villosa*), dotted blazingstar (*Liatris punctata*) and sand reed grass (*Calamovilfa longifolia*) (Figures 9 and 10). Wooded areas contain a mix of riparian species from Section 1, such as paper birch, beaked hazelnut, and wild sarsaparilla while shaded openings contain patches of bearberry (*Arctostaphylos uva-ursi*) and pipsissewa (*Chimaphila umbellate*). This area hosts a high diversity of medicinal plants within a small area.

Lopseed was the only rare species recorded in this area.

Figure 9. Porcupine grass growing where woodland and prairie habitats converge (Section 2).

Figure 10. Narrow-leaved puccoon in sandy soil (Section 2).

Section 3
Surveyed July 10 and September 5, 2011

This area is an undulating mosaic of shrubs, trees, grassy meadows and wetlands. A steep 5-meter drop immediately west of the cultivated field (elevation = 324 m) tapers off into a wetland area about 100 m to the northwest (elev. = 305 m) (Figure 11). This long, narrow wetland was impassable in July, but by September the water had dropped significantly, revealing a beaver channel along its length. Floodwaters from the Assiniboine River reached approximately 150 m inland for most of the summer and in September, the area was covered in silt with very little vegetative growth. As a result, the species that would normally occur in this flood zone could not be recorded. Treed areas are dominated by trembling aspen, paper birch and bur oak. Black ash (*Fraxinus nigra*) saplings are common in the lower flood-prone areas. Important shrubs include smooth sumac (*Rhus glabra*), buffaloberry (*Shepherdia argentea*), chokecherry (*Prunus virginiana*), saskatoon (*Amelanchier alnifolia*) and red-osier dogwood. Important herbs include cow parsnip (*Heracleum maximum*), hog-peanut (*Amphicarpa bracteata*), spreading dogbane (*Apocynum androsaemifolium*), northern bedstraw (*Galium boreale*) and sweet-scented bedstraw (*Galium triflorum*). Along the wetland, wild mint, marsh hedge-nettle, giant hyssop (*Agastache foeniculum*) and wood sorrel (*Oxalis stricta*) are common.

Figure 11. Section 3 is a mosaic of shrubs, trees, grassy meadows and wetlands.

Five rare species occur in this area. **Lopseed** was recorded throughout the area. **Western false gromwell** was commonly found in sparsely shrubby and grassy meadows. **Hairy sweet cicely** was infrequently encountered and one patch of **showy tick trefoil** was recorded just above the 2011 flood level of the river. **Black ash** is common throughout the lower elevations.

Section 4
Surveyed July 10 and September 5, 2011

This area is comprised of rich oak forest with scattered pockets of trembling aspen and black ash. Dominant shrubs are beaked hazelnut and chokecherry. Ground cover is dominated by wild sarsaparilla and thick patches of sun-loving sedge (*Carex pensylvanica*). Important herbs include bloodroot, sweet-scented bedstraw, giant hyssop and prairie sage (*Artemisia ludoviciana*), which occurs along grassy trails and in forest openings. For the most part, this area appears to be undisturbed.

Five rare species occur here. **Bloodroot** is common throughout the northwest portion of this section. **Black ash** occurs in wetter sites. **Lopseed**, **hairy sweet cicely**, and **western false gromwell** are occur regularly, but are less abundant.

Section 5
Surveyed July 10, 2011

The forested area above the river valley appears to have been cleared several years ago. It is comprised mostly of young aspen with some mature oak, Manitoba maple and young elm (*Ulmus americana*). The shrub layer is dominated by American hazelnut, but pin cherry (*Prunus pensylvanica*) and chokecherry are also common. Poison ivy (*Toxicodendron rydbergii*) is abundant throughout this area. The soil is sandy and several prairie species, such as giant hyssop, ground cherry (*Prunus pumila*), dwarf milkweed (*Asclepias ovalifolia*), sweet grass (*Hierochloe odorata*) and Canada wild rye (*Elymus canadensis*) occur in grassy openings and occasionally among shrubs where openings have filled in with woody species. Several trails and openings in the bush have been cleared and the area is used as cattle pasture.

Hairy sweet cicely, was the only rare species found in this area and was not commonly encountered.

Indian Gardens
Surveyed June 10 and July 17, 2011

The majority of the 640-acre Indian Gardens is under cultivation. However, the north portion contains approximately 170 acres of mature forest habitat that slopes toward the Assiniboine River. Several different plant communities occur over a 45-meter drop in elevation as soil moisture levels change from dry to wet. Though poplar is the dominant tree cover, cottonwood (*Populus deltoids*), basswood, paper birch, elm, Manitoba maple and black ash occupy different elevations. One paper birch had a circumference of 2.17 m (diameter = 70 cm). Common shrubs include alternate-leaved dogwood, beaked hazelnut, chokecherry, downy arrowwood and red-osier dogwood. Wild sarsaparilla is the dominant ground cover. Important herbs include ostrich fern, mad-dog skullcap (*Scutellaria lateriflora*), colt's-foot (*Petasites spp*) and bugleweed (*Lycopus asper*).

Six rare species were commonly found in this area, including **black ash**, **alternate-leaved dogwood**, **lopseed**, **hairy sweet cicely**, **enchanter's nightshade** and **western false gromwell**.

Round Plain
Surveyed June 10 and July 17, 2011

Most of this historical gathering ground has been converted to cropland. However, several native prairie species occur in the dry, sandy soil along the south edge of the cultivated field. Sand cherry, prairie crocus, cinqfoil, prairie sage, hoary and narrow-leaved puccoons, alumroot and sumac are among the plants important to SLFN. This prairie area drops steeply into a cottonwood, oak and birch forest (Figure 12). Species composition in this lowland area is very similar to Section 1 with wild grape and ostrich fern growing in dense patches. Several wetlands contain important species such as jewelweed, mad-dog skullcap, and wild mint.

Figure 12. Round Plain - a sand ridge drops steeply into a cottonwood, oak and birch forest.

Lopseed is locally abundant in damp, low-lying areas.

Discussion

The results of this survey illustrate why the area around Indian Gardens is of great importance to members of Swan Lake First Nation, and other surrounding communities. Manitoba is an eclectic mix of ecosystems – a transition area where many ecoregions come together. The area surrounding Indian Gardens marks the convergence of three major ecoregions – tall grass prairie, boreal forest and aspen parkland. In addition, the Assiniboine River valley, with its undulating landscape and significant elevation changes, supports a wide variety of plant communities, ranging from ephemeral wetlands to flood-tolerant mixed hardwood forests and mature oak forests. This combination of natural features has resulted in a large diversity of plant communities within a small geographic area. In terms of medicinal plant gathering, the significance of having so many plant communities within walking distance cannot be understated.

Many of the rare plants found in the survey area occur throughout a large area of North America. However, they occur only in the southern 1/8 to 1/6 of Manitoba. In addition to being found in only a small portion of Manitoba, their habitat has been heavily impacted by human activity. Only 11% of the aspen parkland ecoregion, which occurs almost entirely within Manitoba, remains intact (L. Punter, pers. comm.) and less than half of 1% of the tall grass prairie

ecosystem still exists. Continued conversion or disruption of the remaining remnants of these ecosystems makes these rare species increasingly vulnerable.

For each area surveyed, the potential impact of the development and maintenance of Bipole III was determined by 1) the importance of these habitats for medicinal and/or rare species, 2) the potential for direct or indirect disturbance of line development or maintenance on important plants or plant communities and 3) the tolerance of important species or plant communities to the expected disturbance. The clearing of forest causes changes in light conditions, humidity and soil moisture that can impact vegetation as far as 30 meters into the remaining bush (Punter, pers. comm.). This edge effect can be detrimental to species that require a closed forest canopy. In addition, the shallow-rooted rhizomes of species such as bloodroot are vulnerable to trampling and soil compaction effects that may result from the use of heavy machinery. After all of these factors were considered, two areas (Sections 1 and 4) were deemed to be at high risk for disturbance or destruction of important plants and/or plant communities. The remaining areas were determined to be at medium to low risk.

Section 1

Of the 10 rare species that were documented during this survey, seven occur frequently in Section 1. This is a high concentration of rare plants for an area that is less than one square kilometer in size. Many of these species (bloodroot, enchanter's nightshade, hairy sweet cicely, and lopseed) prefer the shaded conditions under the canopy of mature hardwoods and would react poorly to the removal of this canopy. Tall hairy agrimony and western false gromwell occur most commonly in areas where the canopy is disrupted such as in small grassy openings or along trails where they may receive a few hours of direct sunlight per day. Though they have some tolerance of sun, complete removal of the trees and shrubs that provide partial shade would be detrimental.

The area north of the creek also contains old growth trees that are highly valued by members of SLFN. The stand of towering poplars, as well as very large poplars and green ash have a large influence on this plant community and their removal would cause considerable change to this unique forest community. The presence of these large trees also provides an important spiritual component to this forest that would be lost if it was bisected, lengthwise, by Bipole III. Approximately 300 meters of this forest lie between the creek and the sand prairie openings to the north. Taking edge effect into account, 126 meters of this forest community and rare species habitat would be negatively impacted by putting the transmission line through it.

Section 1 has a large diversity of medicinal plants due to the undulating terrain, mix of forest and grassy openings, the ephemeral creek and proximity to the sand prairie openings of Section 2. There is great value in having this much diversity in such a small area.

The oak ridge on the south side of the creek was surveyed in September to determine if it would make an acceptable alternate route for Bipole III, as it would require significantly less disruption of forest habitat. This bush does not have the same number or density of rare species as the north side of the creek. The drier conditions of this oak forest are not as conducive to the species that prefer moist conditions, such as enchanter's nightshade and lopseed. Three species – lopseed, hairy sweet cicely and tall hairy agrimony - were found in relatively low numbers. Bloodroot

was not recorded, but may have been dormant during the September survey. A search for bloodroot would need to be conducted before August to determine if it occurs here or not. This area is fenced for grazing with established cattle trails and a lower shrub density compared to the north side of the creek. It is possible that grazing has caused a decrease in rare plant density due to direct and indirect impacts of grazing and soil compaction. (The rhizomes of bloodroot, which lie just below the soil surface, are vulnerable to soil compaction that results from grazing (Punter, pers. comm.).) In addition to having a much lower abundance of rare plants, this forested area is approximately 400 m shorter than the forest on the north side of the creek. The negative impact of clearing a line through this area would be lower, making this area a more acceptable route for Bipole III.

Section 2

The sandy soil in this area supports an interesting mix of forest and prairie habitats. As a result, there is a large diversity of medicinal plants in this area. One rare species, lopseed, was found in here. Though it is recommended that this area be avoided, the development of Bipole III through Section 2 is unlikely, as it would introduce further complications to the river crossing in order to avoid the next bend in the river. Therefore, the potential impact of Bipole III on Section 2 is considered low.

Section 3

A complete survey of this area was not possible because of extensive flooding of the Assiniboine River. However, the area that could be surveyed includes a mosaic of open, closed, wet and dry plant communities that supports a large diversity of plants, and a high concentration of medicinal plants. Half (five) of the rare species found during this survey occur in this area, increasing the importance of this habitat. Because of the more open nature of this landscape, tree canopy removal would not be as devastating compared to the sections containing closed forests. Though most of the species here would be tolerant of some mechanical disturbance, herbicide use should be avoided. The risk to this area is considered moderate.

Section 4

This area has a high occurrence of rare species (five) and contains important medicinal plants. Because these species are shade tolerant and thrive under the closed canopy of the mature oak (or aspen) forest, the negative impact of tree canopy removal would be high. Bloodroot, which is common here, is also vulnerable to damage by trampling and soil compaction. As a result, it is recommended that this area be avoided by selecting an alternate route that would bypass Section 4.

Section 5

This area is highly disturbed as a result of bush clearing and cattle grazing. Only one rare species was found here. Though medicinal plants are present throughout the area, the abundance of most individual species is fairly low. As a result, the potential impact of Bipole III on medicinal and rare plant species in this area would be low.

Indian Gardens

The forested area at Indian Gardens provides important habitat for a significant number of rare species, including alternate-leaved dogwood, which was found nowhere else in the survey area.

The diversity of plant communities that result from the large change in elevation and undulating terrain create an interesting mix of medicinal plants. Though no wild ginger was recorded here, species that it is often associated with (e.g. bishop's cap), were found here and it is possible that wild ginger occurs in an area that was not covered during the survey. This section of Indian Gardens appears to be relatively undisturbed by human activity and contains some sizable trees. It is of great value to members of Swan Lake First Nation and should not be avoided by this project.

Round Plain

The sand ridge at Round Plain is an important source of plant medicines. Though the area is small, it contains an impressive diversity of prairie plants. The sandy soil and close proximity to an eroding cliff make it especially vulnerable to disturbance by vehicles and/or heavy machinery. Round Plain is not recommended as a route for Bipole III because of its importance as a traditional gathering ground and source for medicinal plants.

Recommendations

The following recommendations are proposed to significantly reduce the impact that the development and maintenance of Bipole III would have on important plant communities around Indian Gardens and the Assiniboine River crossing.

1) Adjust the route of Bipole III to avoid Sections 1 and 4, which are highly vulnerable to disturbance.

2) Conduct detailed site surveys before any ground is disturbed to allow for localized mitigation measures in low to medium impact areas. Surveys will need to be conducted in July, before the dormancy period of bloodroot, to ensure that all species at risk are accounted for.

3) Adjust tower placement, after detailed site surveys, to minimize negative impacts on rare or medicinal plant hotspots.

4) Conduct destructive activities, including bush clearing and those that require heavy machinery, when they will have the least impact on soil structure and loft (i.e. when the ground is frozen).

5) Avoid the use of herbicides for line maintenance where rare species are present and where the gathering of medicinal plants may occur.

Suggested Alternate Routes

Three alternate routes are suggested to minimize the disturbance to important plant communities that lie along the current proposed route (Figure 13). Route A would cross the creek before Section 1 and then follow a path parallel to the original route. Routes B and C would go east, north of the creek, following right-of-ways and crossing the Assiniboine River in areas that are significantly more disturbed than the original route.

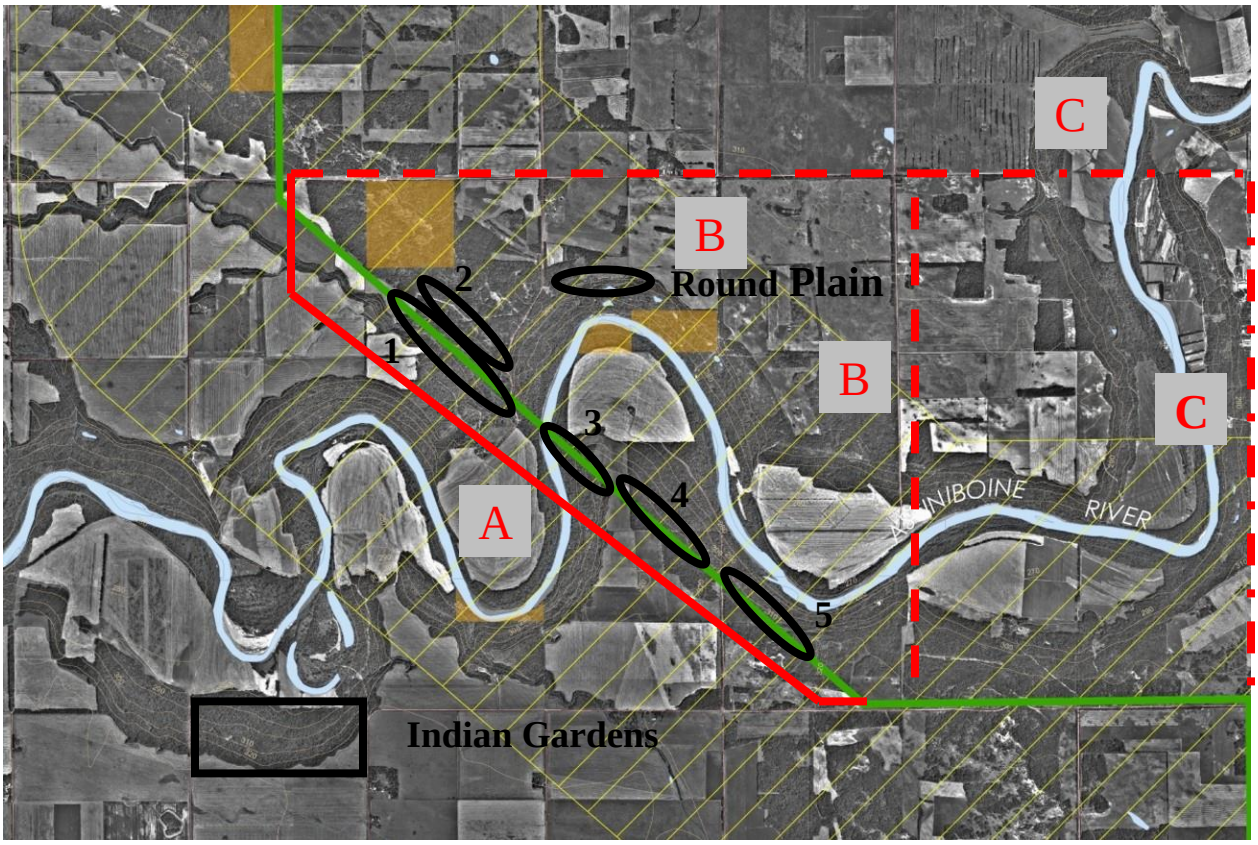


Figure 13. Three suggested alternate routes (A, B, C) would minimize disturbance to important plant communities.

References

Daniels, David. Long Plain First Nation.

Gleason, H. A. and Cronquist, A. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada 2nd Edition. The New York Botanical Garden Press. Bronx, New York. 994 pp.

Great Plains Flora Association, 1986. Flora of the Great Plains. Barkley, T. M., Ed. University Press of Kansas. Lawrence, Kansas. 1400 pp.

Manitoba Conservation. 2011. Species of Conservation Concern. http://www.gov.mb.ca/conservation/cdc/consranks.html. (Accessed: August 20, 2011).

NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: August 31, 2011).

Punter, Liz. University of Manitoba.

Appendix A

List of plant species identified at Indian Gardens, Round Plain and along the proposed Bipole III transmission corridor at the Assiniboine River crossing. Provincial S-rank is included for rare species.

Scientific Name	Common Name	Provincial Rank (if rare)
Acer negundo	Manitoba maple	
Achillea millefolium	yarrow	
Achillea sibirica	Siberian yarrow	
Actaea rubra	baneberry	
Actaea rubra forma neglecta	white baneberry	
Agastache foeniculum	giant hyssop	
Agrimonia gryposepala	tall hairy agrimony	S1/S2
Alisma triviale	northern water-plantain	
Alnus incana	speckled alder	
Amelanchier alnifolia	saskatoon	
Amorpha canescens	leadplant	
Amphicarpa bracteata	hog-peanut	
Andropogon sp	bluestem	
Anemone canadensis	Canada anemone	
Anemone cylindrica	long-fruited anemone	
Anemone patens	prairie crocus	
Anemone quinqefolia	wood anemone	
Apocynum androsaemifolium	spreading dogbane	
Aquilegia canadensis	wild columbine	
Aralia nudicaulis	wild sarsaparilla	
Arctium lappa	common burdock	
Arctostaphylos uva-ursi	bearberry	
Arenaria lateriflora	grove sandwort	
Artemisia frigida	pasture sage	
Artemisia ludoviciana	prairie sage	
Asclepias ovalifolia	dwarf milkweed	
Aster ciliolatus	Lindley's aster	
Aster laevis	smooth aster	
Astragalus canadensis	Canada milk-vetch	
Astragalus sp	milk-vetch	
Betula papyrifera	paper birch	
Betula nigra	river birch, red birch	
Botrichium virginianum	virginia grape fern	
Bromus ciliatus	fringed brome	
Bromus inermis	smooth brome	
Caltha palustris	marsh marigold	
Campanula rotundifolia	harebell	
Carex pensylvanica	sun-loving sedge	
Carex radiata	stellate sedge	

Scientific Name	Common Name	Provincial Rank (if rare)
Carex sp	sedge	
Carex sp	pendulous sedge	
Carex utriculata	beaked sedge	
Cerastium arvense	field chickweed	
Ceratophyllum demersum	hornwort	
Chenopodium album	lamb's-quarters	
Chimaphila umbellata	pipsissewa	
Chrysopsis villosa	hairy golden-aster	
Cicuta maculata	water-hemlock	
Circaea alpina	small enchanter's nightshade	
Circaea lutetiana ssp. canadensis	enchanter's nightshade	S2
Cirsium arvense	Canada thistle	
Comandra umbellata	pale comandra	
Convolvulus sepium	hedge bindweed	
Corallorhiza maculata	spotted coralroot	
Corallorhiza striata	striped coralroot	
Cornus alternifolia	alternate-leaved dogwood	S3
Cornus canadensis	bunchberry	
Cornus stolonifera	red-osier dogwood	
Corydalis aurea	golden corydalis	
Corylus americana	American hazelnut	
Corylus cornuta	beaked hazelnut	
Crataegus rotundifolia	hawthorn	
Crepis tectorum	narrow-leaved hawks-beard	
Cruciferae	yellow mustard	
Dalea candidum	white prairie-clover	
Dalea purpurea	purple prairie-clover	
Desmodium canadense	showy tick-trefoil	S2
Elaeagnus commutata	wolfwillow	
Elymus canadensis	Canada wild rye	
Equisetum arvense	common horsetail	
Equisetum sp	scouring-rush	
Erigeron canadensis	Canada fleabane	
Erigeron hyssopifolius	daisy fleabane	
Erigeron philadelphicus	Philadelphia fleabane	
Erigeron sp	fleabane	
Eupatorium maculatum	spotted joe-pyeweed	
Euphorbia esula	leafy spurge	
Fragaria virginiana	wild strawberry	
Fraxinus nigra	black ash	S3
Fraxinus pensylvanica	green ash	
Galium boreale	northern bedstraw	
Galium triflorum	sweet-scented bedstraw	
Geum aleppicum	yellow avens	
Geum triflorum	three-flowered avens	

Scientific Name	Common Name	Provincial Rank (if rare)
Glyceria boreale	small floating mannagrass	
Glycyrrhiza lepidota	wild licorice	
Hackelia deflexa	northern stickseed	
Helianthus pauciflorus	stiff sunflower	
Heliopsis helianthoides	ox-eye	
Heracleum maximum	cow-parsnip	
Heuchera richardsonii	alumroot	
Hieracium umbellata	umbellate hawkweed	
Hierochloe odorata	sweet grass	
Humulus lupulus	hops	
Impatiens capensis	spotted touch-me-not	
Juniperus horizontalis	creeping juniper	
Koeleria cristata	June grass	
Laportea canadensis	Canada wood-nettle	
Lathyrus ochroleucus	cream-colored vetchling	
Lathyrus venosus	wild peavine	
Lemna minor	lesser duckweed	
Lemna trisulca	star duckweed	
Liatris punctata	dotted blazingstar	
Lithospermum canescens	hoary puccoon	
Lithospermum incisum	narrow-leaved puccoon	
Lonicera dioica	twining honeysuckle	
Lycopus americana	northern water-horehound	
Lycopus asper	bugleweed	
Lygodesmia juncea	rush skeleton-plant	
Lysimachia ciliatum	fringed loosestrife	
Maianthemum canadensis	Canada mayflower	
Matteuccia struthiopteris	ostrich fern	
Melilotus officinalis	sweet clover	
Mentha arvensis	wild mint	
Mitella nuda	bishop's-cap	
Monarda fistulosa	wild bergamot	
Oenothera biennis	yellow evening-primrose	
Onosmodium molle ssp. occidentale	false gromwell	S3SU
Orthilia secunda	one-side wintergreen	
Oryzopsis asperifolia	white-grained mountain rice grass	
Osmorhiza claytonii	hairy sweet cicely	S2
Osmorhiza longistylis	sweet cicely	
Oxalis stricta	yellow wood-sorrel	
Parthenocissus quinquefolia	virginia creeper	
Penstemon sp	beard-tongue	
Petasites frigidus var. *palmatus*	sweet colt's-foot	
Petasites sagittatus	arrow-leaved colt's-foot	
Phryma leptostachya	lopseed	S3
Physalis virginiana	ground cherry	

Scientific Name	Common Name	Provincial Rank (if rare)
Poa pratensis	Kentucky bluegrass	
Polygonatum biflorum	solomon's-seal	
Polygonum amphibium	smartweed	
Polygonum sp	buckwheat	
Populus balsamifera	balsam poplar	
Populus deltoides	cottonwood	
Populus tremuloides	trembling aspen	
Potentilla arguta	tall cinqfoil	
Potentilla norvegica	rough cinqfoil	
Prenanthes alba	white lettuce	
Prosartes trachycarpa	fairy bells	
Prunus americana	American plum	
Prunus canadensis	Canada wild plum	
Prunus pensylvanica	pin cherry	
Prunus pumila	sandcherry	
Prunus virginiana	chokecherry	
Pyrola asarifolia	pink wintergreen	
Pyrola eliptica	common shinleaf	
Quercus macrocarpa	bur oak	
Ranunculus gmelinii	yellow water-crowfoot	
Rhamnus alnifolia	alder-leaved buckthorn	
Rhus glabra	smooth sumac	
Ribes americanum	wild black currant	
Ribes oxyacanthoides	northern gooseberry	
Rosa sp	wild rose	
Rubus idaeus	wild raspberry	
Rubus pubescens	dewberry	
Rudbeckia hirta	brown-eyed susan	
Rudbeckia laciniata	tall coneflower	
Sagittaria sp	arrowhead	
Salix bebbiana	Bebb's willow	
Sanguinaria canadensis	bloodroot	S2
Sanicula marilandica	black snakeroot	
Schizachyrium scoparium	little bluestem	
Scutellaria lateriflora	mad-dog skullcap	
Shepherdia argentea	buffaloberry	
Sisyrinchium montanum	blue-eyed grass	
Sium suave	water-parsnip	
Smilacina stellata	star-flowered false solomon's-seal	
Smilax herbacea	carrionflower	
Solidago canadensis	Canada goldenrod	
Solidago gigantea	smooth goldenrod	
Solidago nemoralis	showy goldenrod	
Solidago rigida	stiff goldenrod	
Stachys palustris	marsh hedge-nettle	

Scientific Name	Common Name	Provincial Rank (if rare)
Stipa spartea	porcupine grass	
Symphoricarpos occidentalis	snowberry	
Taraxacum officinale	common dandelion	
Thalictrum dasycarpum	tall meadow-rue	
Thalictrum venulosum	veiny meadow-rue	
Tilia americana	basswood	
Toxicodendron rydbergii	poison ivy	
Trifolium pratense	red clover	
Trillium cernuum	nodding trillium	
Typha sp	cattail	
Ulmus americana	American elm	
Urtica dioica	stinging nettle	
Verbena hastata	blue vervain	
Veronica americana	American brooklime	
Viburnum lentago	nannyberry	
Viburnum opulus var. americanum	high bush-cranberry	
Viburnum rafinesquianum	downy arrowwood	
Vicia americana	American vetch	
Viola canadensis	Canada violet	
Viola cucullata	marsh blue violet	
Viola pedatifida	crow-foot violet	
Viola pubescens	downy yellow violet	
Viola seroria	early blue violet	
Viola sp	bush violet	
Vitis riparia	wild grape	
Zizia aurea	golden alexander	

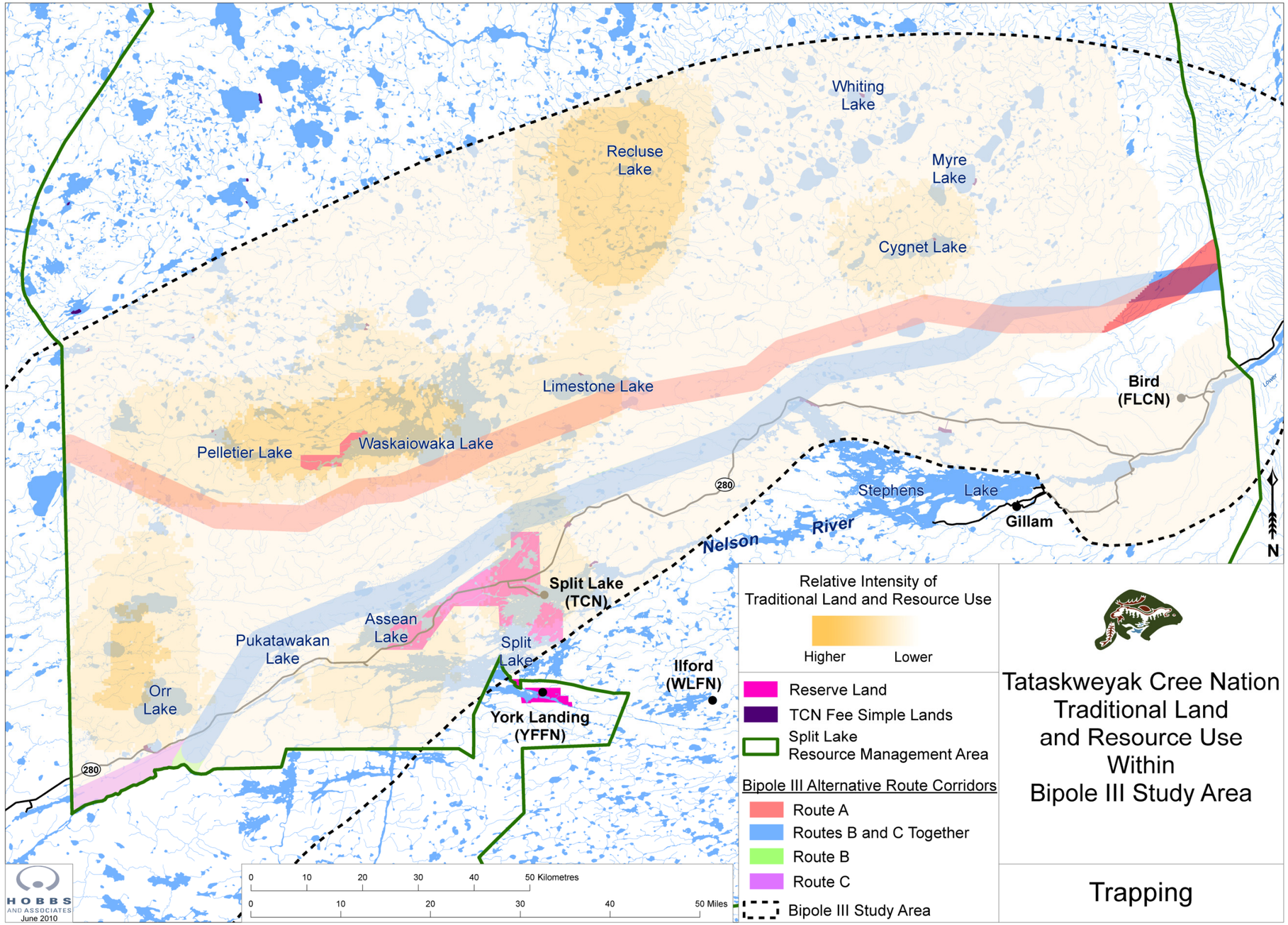


Figure 12: Data collected as referring to trapping.

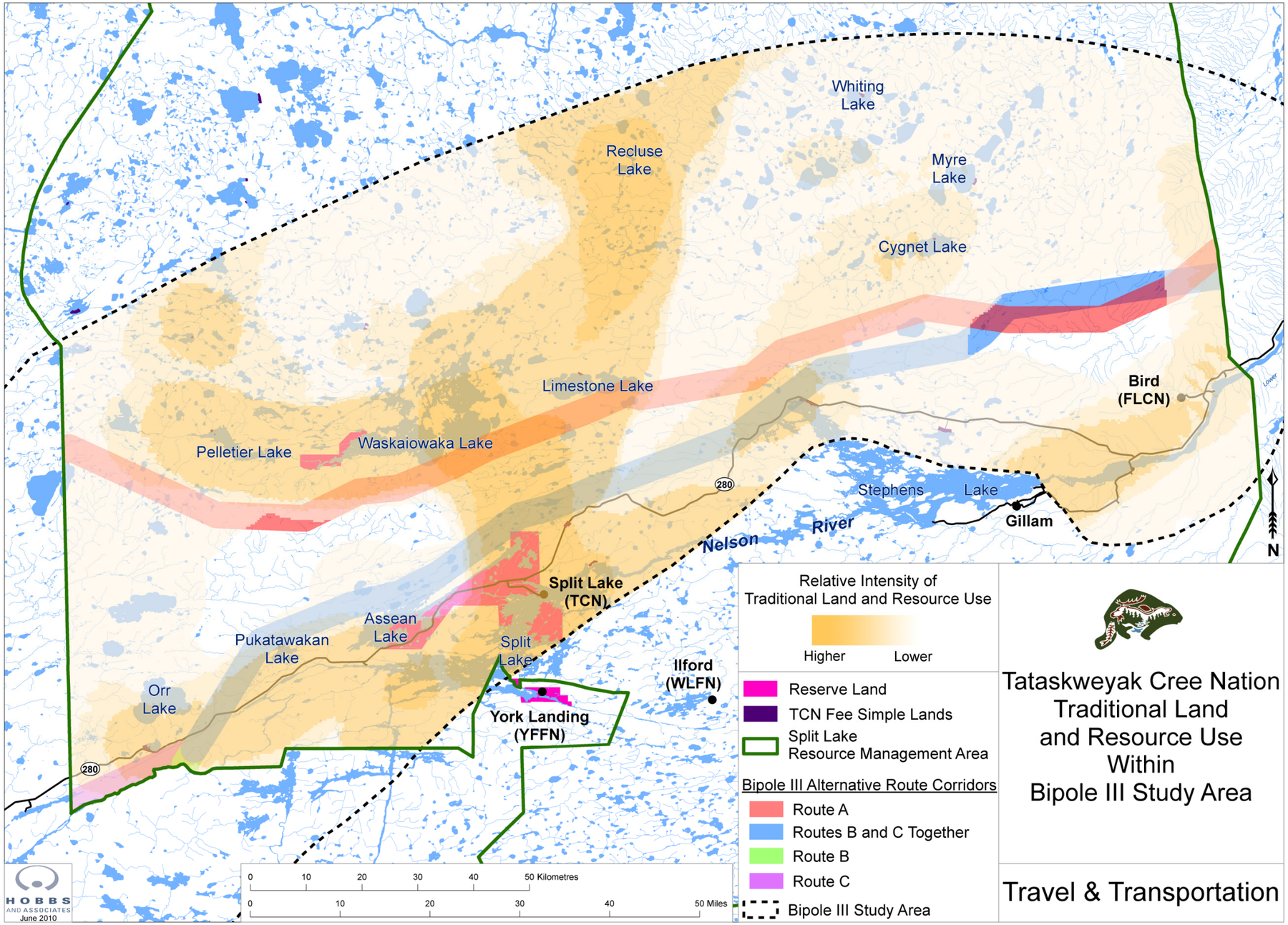


Figure 13: Data collected as referring to transportation.