Long and Beresford Lakes Power Distribution Project: Environmental Self-Assessment Report

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Licensing and Environmental Assessment
Winnipeg, MB

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1.0 Introduction

1.1. Background

Nopiming Provincial Park is located is southeast Manitoba approximately 125 km northeast from Winnipeg and 40 km northeast from Lac du Bonnet (Figure 1-1). The "natural" Park is accessible by Provincial Road (PR) 304 from Bissett to the north and by PR 313 from Lac du Bonnet to the west. Long and Beresford lakes are located in the northern part of Nopiming Provincial Park and are accessible by PR 304 from Bissett and PR 314 from Lac du Bonnet. The lakes are zoned as "Recreational Development" while the area between the lakes is zoned as "Resource Management". Development around Long and Beresford lakes includes road access, cottages, a campground, waste collection and park services. The cottages and other facilities around the lakes are not currently provided with electricity, water, sewer or other services.

1.2. Power Distribution Project

The North Nopiming Electrical Project Inc. (NNEPI) is proposing a 18 km 25 kV AC distribution line to service cottages and other facilities on Long and Beresford lakes (Figure 1-2). To date, a total of 72 (46%) of the 156 cottages on Long and Beresford lakes would be serviced and all other lots would be pre-serviced. It is proposed to construct a new Distribution Supply Centre (DSC) adjacent to an existing 66 kV transmission line (No. 77) that crosses Long Lake at "The Narrows". The new distribution line would run along existing road rights-of-way (ROW) to service cottages and other facilities on Long and Beresford lakes. The proposed distribution line will be designed, constructed and operated by Manitoba Hydro, and funded by the NNEPI. The NNEPI also be responsible for clearing the ROW for the distribution line. Cottagers and other property owners would be responsible for clearing vegetation and making their premises ready for electrical connections on their properties. The anticipated in-service date for the power distribution project is 30 September 2010.

1.3. Environmental Assessment

The proposed power distribution project in Nopiming Provincial Park does not require a licence under *The Environment Act* (Manitoba) and it does not trigger an environmental assessment under the *Canadian Environmental Assessment Act*. A Work Order will be issued once the appropriate project information has been submitted to Manitoba Conservation for approval. While the proposed development does not require an environmental assessment, Manitoba Hydro has determined that an assessment will be conducted in accordance with its corporate and environmental policies. The environmental assessment will satisfy Canadian environmental assessment legislation and guidance, adhere to international best practices, and conform to Manitoba Hydro's environmental assessment report template for small transmission projects.

1.4. Purpose

The purpose of this environmental assessment report is to identify, assess and mitigate any adverse environmental effects associated with the proposed distribution project in Nopiming Provincial Park. The report is for use by Manitoba Hydro and the NNEPI to implement mitigation measures and follow-up actions, Manitoba Conservation to identify terms and conditions for a work order, and the Government of Manitoba for consultations with First Nation communities.

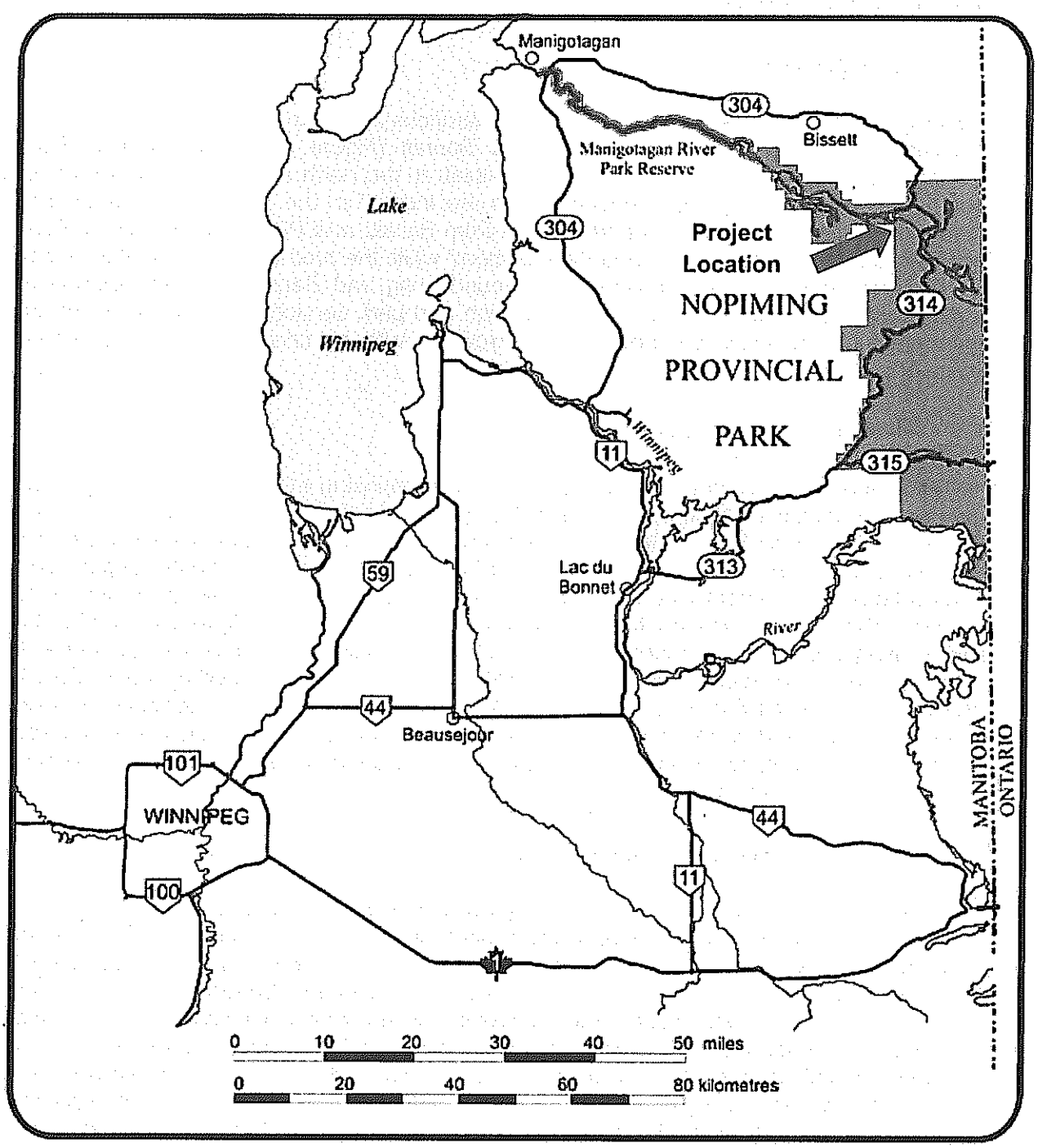

Figure 1-1. Location of Nopiming Provincial Park.

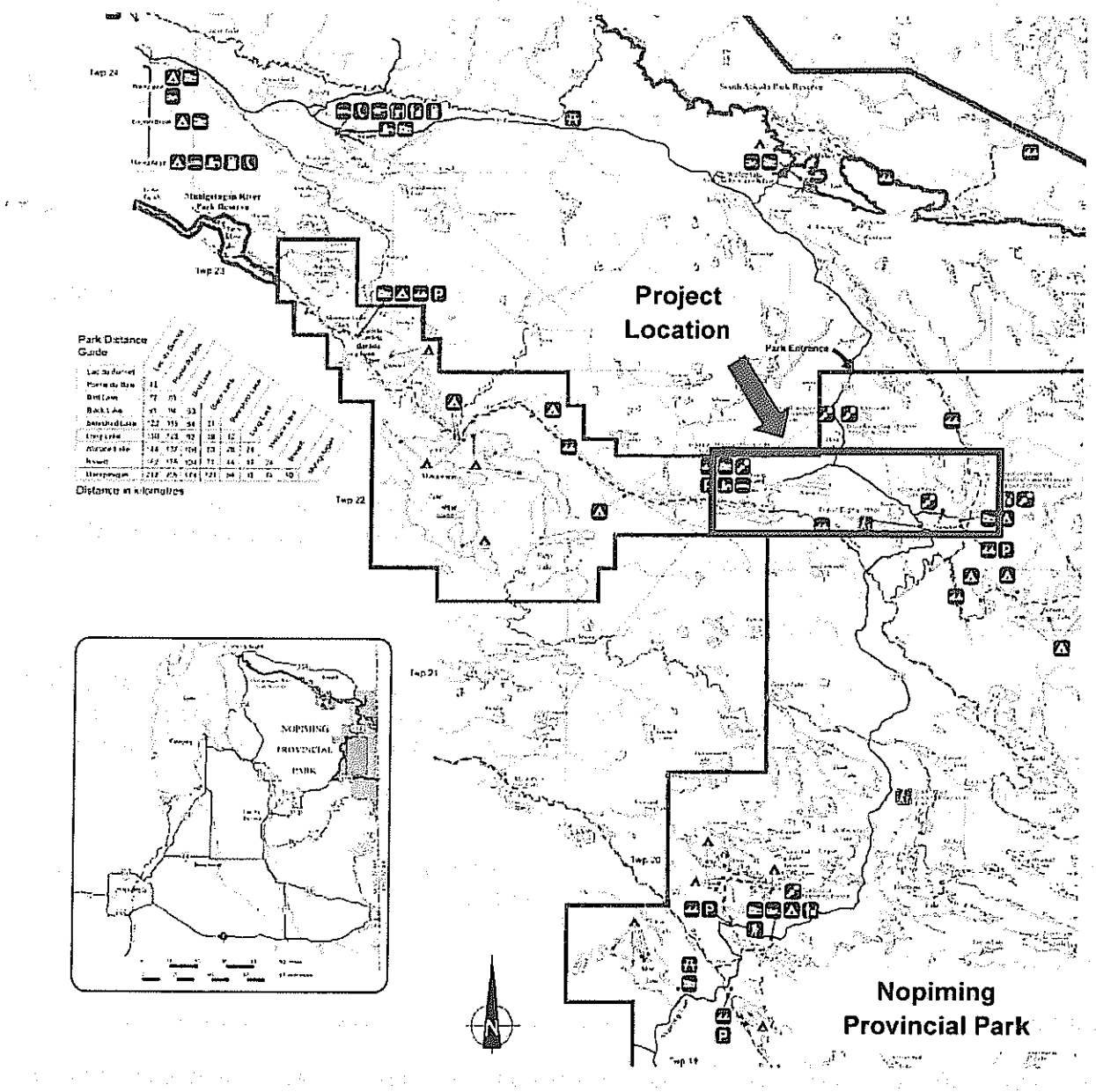

Figure 1-2. Location of the Proposed Project.

1.5. Report Organization

The environmental assessment report on the proposed power distribution project for Long and Beresford lakes in Nopiming Provincial Park is organized into seven chapters and an appendix as follows:

1.5.1. Introduction

Background information on proposed power distribution project is discussed, the purpose of the environmental assessment report is provided and the organization of the report is outlined.

1.5.2. Scope

The scope of the project and the assessment for the proposed power distribution project is described in relation to applicable legislation, guidance and best practices. Temporal and spatial boundaries are also provided.

1.5.3. Project Description

The proposed power distribution project is described in general and specific terms. Project alternatives are compared and the preferred alternative is presented. The development is broken down into project components and activities for the purpose of the environmental assessment.

1.5.4. Environment Description

The environment of the north portion of Nopiming Provincial Park is described in general terms while the environment of the Long and Beresford lakes area is described in specific terms. The environment is broken down into biophysical, socio-economic and cultural components for the purpose of the environmental assessment. Valued Environmental Components are identified to focus the environmental assessment.

1.5.5. Environmental Effects Assessment

In this chapter, the potential environmental effects are identified, assessed and mitigated, and the significance of any residual environmental effects is evaluated. Cumulative effects, effects of accidents and malfunctions, and effects of the environment on the project are also considered.

1.5.6. Conclusion

The conclusion on the significance of residual environmental effects of the proposed Long and Beresford lakes power distribution project is presented.

1.5.7. References

Literature consulted and contacts made as part of the environmental assessment are listed.

The **Appendix** contains background information on the power distribution project, environmental setting and environmental assessment.

2. Scope

2.1 Overview

The proposed project involves the development of electrical services for cottages, park services and local businesses at Long and Beresford lakes in Nopiming Provincial Park. This chapter of the environmental assessment report describes the scope of the proposed project and the scope of the assessment of the project, and serves to focus the assessment on important components of the environment.

2.2 Scope of the Project

The scope of the project includes the pre-construction, construction, operation/maintenance and eventual decommissioning of a 25 kV distribution line and associated equipment and facilities along existing provincial and park road allowances in Nopiming Provincial Park. Equipment includes a 66 kV – 25 kV Distribution Supply Centre (DSC) at Long Lake, pole-mounted conductors and pole-mounted transformers. The project's scope includes surveying and flagging, connecting to an existing 66 kV transmission line, constructing the DSC site, clearing for the distribution ROW, DSC, marshalling areas and access points, placing poles, stringing conductors, and running lines to cottages, park services and local businesses. The scope does not include clearing on private property and electrical hook-ups which are the owner's responsibility. Off-site granular material sources and waste disposal locations are not included in the project's scope.

2.3 Scope of the Assessment

The scope of the environmental assessment includes the identification, description, assessment and mitigation of potential adverse environmental effects, the identification of any required follow-up actions, and the evaluation of significance of residual environmental effects. The definition of "environment" includes ecological, social and economic components consistent with the principles of sustainable development. Direct and indirect biophysical and socio-economic effects, cumulative environmental effects, effects of accidents and malfunctions, and effects of the environment on the project are considered. The purpose and need for the proposed project are described, and alternative means of carrying out the project are compared. Public consultation was not carried out as part of the environmental assessment.

2.4 Scope of the Factors Assessed

The biophysical and socio-economic environments of Nopiming Provincial Park are described with particular reference to the proposed locations of the DSC, distribution line and marshalling areas. Biophysical assessment factors included air quality, soil quality, surface drainage, groundwater quality, wildlife habitat and behaviour, and vegetation disturbance. Socio-economic assessment factors included employment/ income, tourism, health/safety, culture/heritage, aesthetics, recreation and individual well-being. Adversity factors included biophysical features and values, and socio-economic conditions. Significance factors included ecological and societal values, magnitude, geographic extent, frequency, duration and reversibility.

2.5 Spatial and Temporal Boundaries

The spatial boundaries for the environmental assessment consist of project (footprint), local and park (regional) assessment areas as described below:

Project Assessment Area – footprint of the proposed project including DSC and ROW clearing, marshalling areas, access points and associated activities (~36 ha; 0.40 km^2) (Figure 2-1).

Local Assessment Area – area enclosed within a 0.1 km radius of the 18 km distribution and including the project footprint and adjacent cottage lots, businesses and park services (~357 ha; 2.5 km^2) (Figure 2-1).

Regional (Park) Assessment Area – Nopiming Provincial Park (142,900 ha; 1,429 km^2) (Figure 2-1).

Direct, indirect and cumulative environmental effects of the proposed power distribution project are considered within these assessment areas.

The temporal boundary of the environmental assessment covers the normal life expectancy of the DSC, distribution line and associated facilities, which is estimated to be about 50 years. The time-frame includes the duration of any residual environmental effects and any required follow-up or monitoring activities.

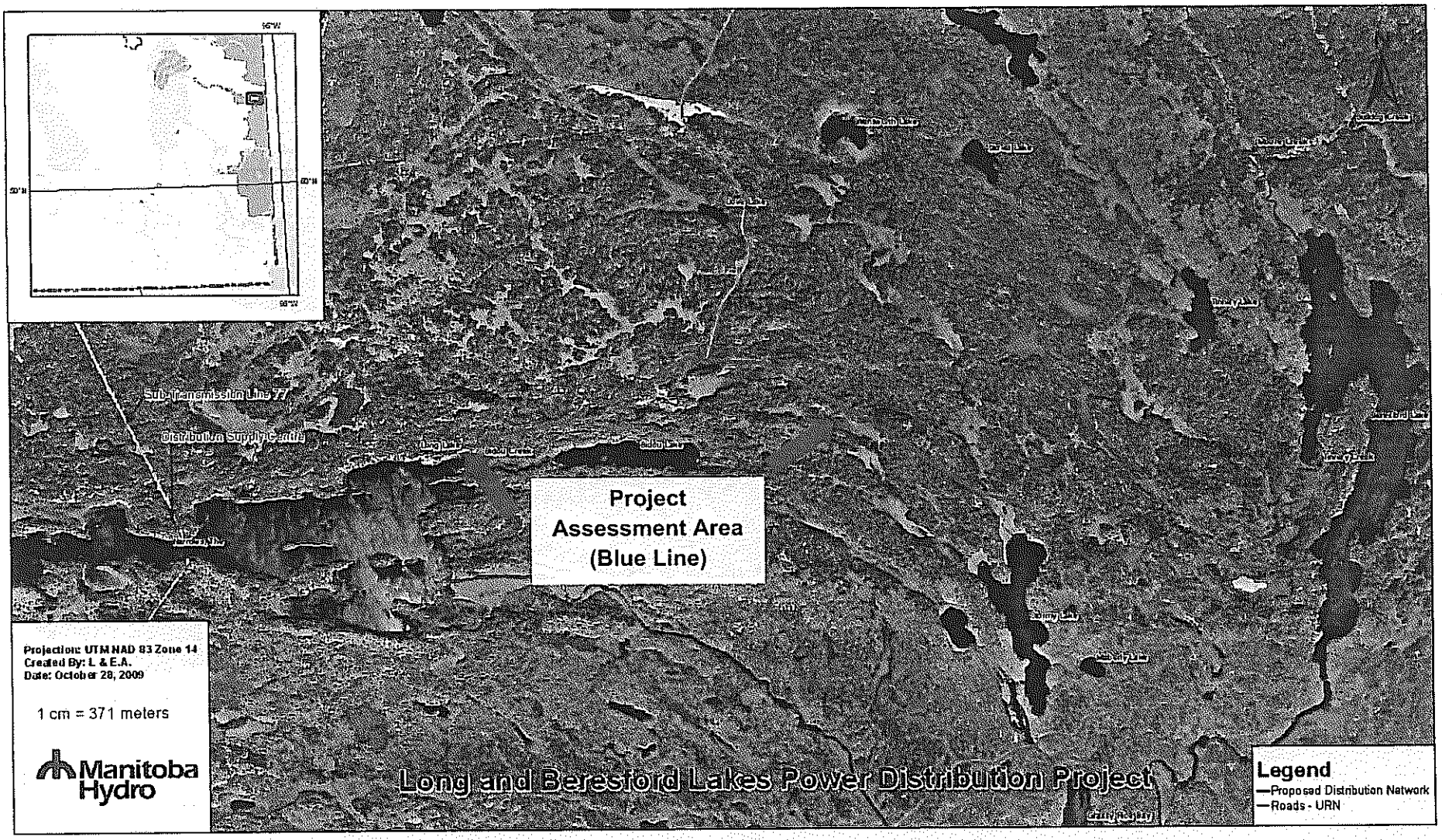

Figure 2-1. Project Assessment Area.

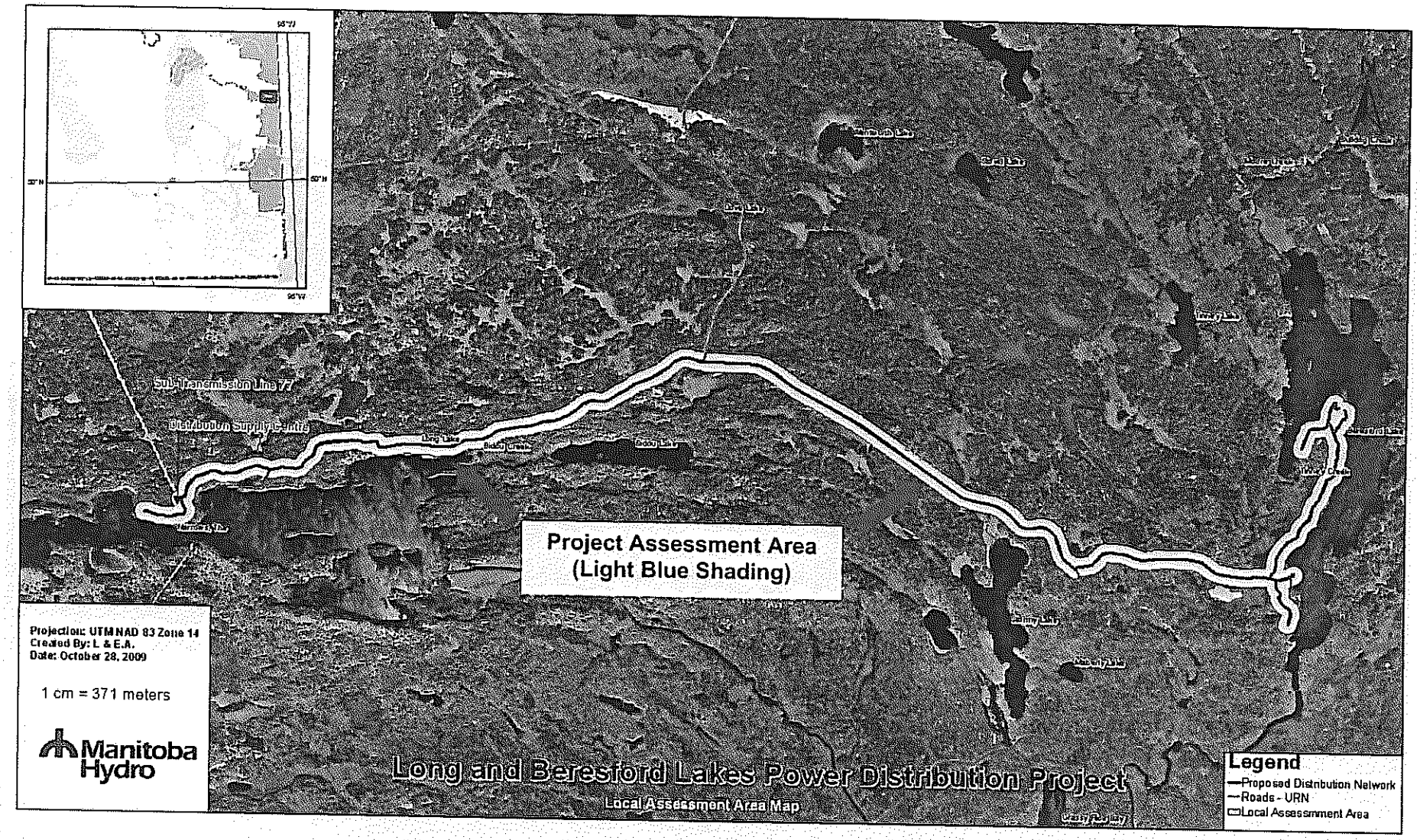

Figure 2-2. Local Assessment Area.

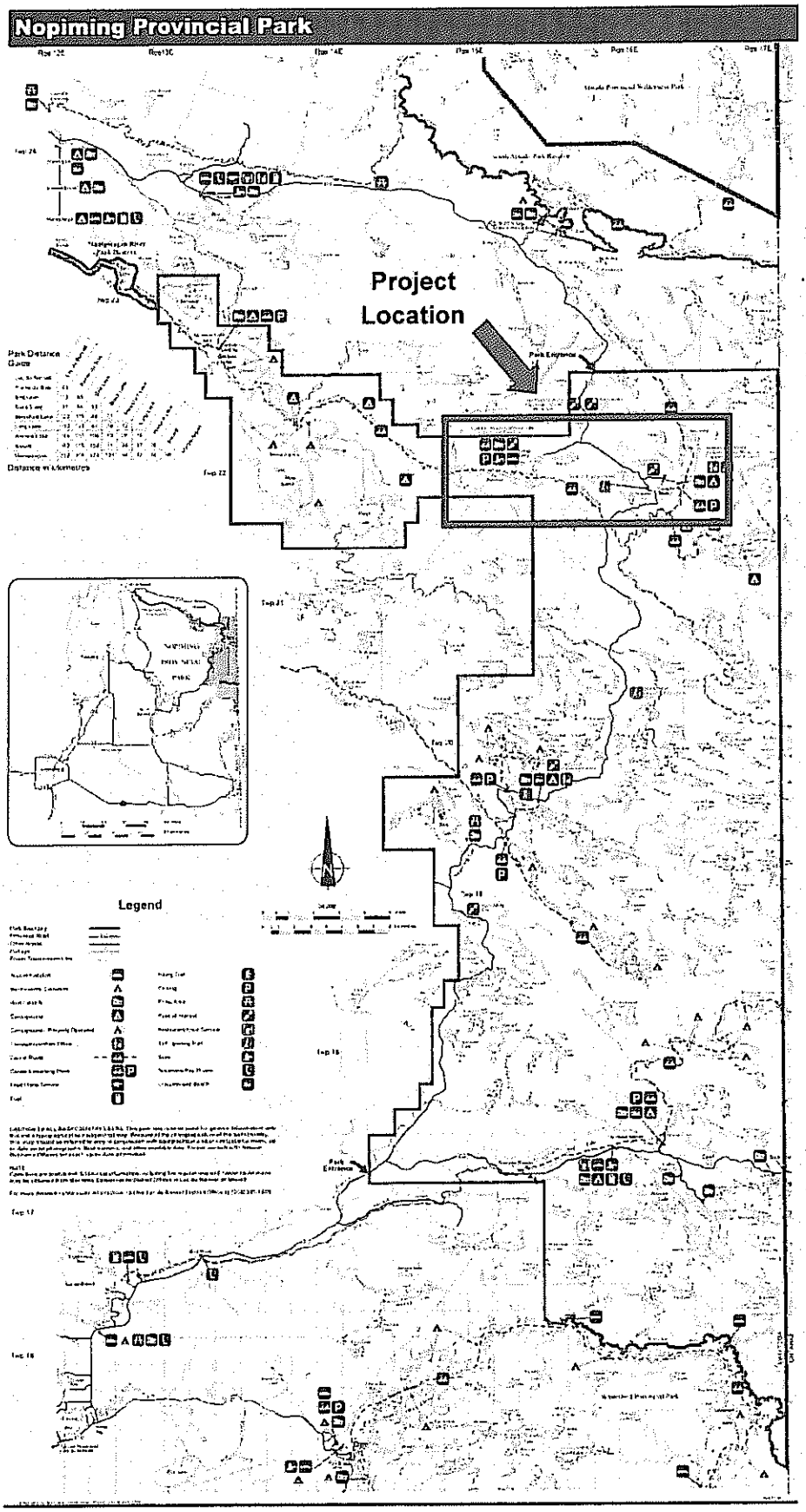

Figure 2-3. Regional (Park) Assessment Area.

3. Project Description

3.1. Overview

The proposed project involves the planning, pre-construction, construction, operation and maintenance, and eventual decommissioning of electrical services for cottages, park facilities and local businesses on Long and Beresford lakes in Nopiming Provincial Park. This chapter of the environmental assessment report provides descriptive information on the proposed project including location, phases, components and activities, alternatives, construction materials, waste products, schedule and budget.

3.2. Project Summary

Manitoba Hydro has been contracted by the North Nopiming Electrical Project Inc. (NNEPI) to supply residential electrical services for the cottage sub-divisions at Long and Beresford lakes in Nopiming Provincial Park. A total of 25 of the 76 cottages lots on Long Lake and 47 of the 80 cottages on Beresford Lake would be serviced by this project while the rest of the lots would be pre-serviced. The electrical power will also be provided to park facilities (e.g. Beresford Lake campground, transfer station) and commercial establishments (e.g. Windsock Lodge) at Long and Beresford lakes. The proposed project includes installation of one 66 – 25 kV Distribution Supply Centre (DSC) to be located adjacent to an existing Manitoba Hydro ROW near the west end of Long Lake. Approximately 18 km of 25 kV three-phase distribution line will be installed from the DSC through the Long Lake townsite to the Beresford Lake cottage sub-division. The DSC and line will be built to Manitoba Hydro standards which are based on Part III of the Canadian Electrical Code. The distribution line will follow existing Park roads and the PR 314 road allowance. Manitoba Hydro will be responsible for design, construction and operation of the distribution line while the NNEPI will be responsible for clearing the line corridor in accordance with Manitoba Conservation and Manitoba Hydro requirements.

3.3. Project Location

The proposed power distribution project is located at Long and Beresford lakes in the northern portion of Nopiming Provincial Park (Figure 1-1). The Park is located approximately 125 km northeast of Winnipeg and 40 km northeast of Lac du Bonnet. Long Lake is located about 21.5 km southwest of Bissett and 50 km northeast of Lac du Bonnet, and Beresford Lake is about 9 km east of Long Lake. The Manitoba-Ontario border is approximately 5.3 km to the east of Beresford Lake. The project location is accessible from Bissett by PR 304 to the north and from Lac du Bonnet by PR 314 to the south.

The proposed locations of the DSC and the distribution lines relative to Long and Beresford lakes, the exiting Manitoba Hydro 66 kV line, and the park and provincial road allowances are shown in Figure 1-2. The proposed location for the DSC is in a clearing on the west side of the park road to the west of the 66 kV line. The proposed distribution line generally follows the north side of provincial and park roads depending upon terrain conditions, infrastructure and land uses. The location of the service lines to cottage lots will be determined on a case-by-case basis. The final locations of the DSC and the distribution and supply lines are to be determined by Manitoba Hydro during the design phase and confirmed by site inspections.

3.4. Project Phases

The proposed power distribution project will be carried out in four phases as follows: 1. Planning and Design; 2. Pre-construction; 3. Construction; and 4. Operation/Maintenance. The scope of the assessment includes the eventual decommissioning of the project infrastructure.

3.4.1. Planning and Design

The proposed project is currently at the planning and design phase. Funding for the project by the NNEPI has been secured and a contract between the NNEPI and Manitoba Hydro has been negotiated.

3.4.2. Pre-Construction

During pre-construction, Manitoba Hydro will survey and flag the locations of the DSC and the distribution line. The location of the DSC, distribution line and individual supply lines will also be determined. Manitoba Hydro will then determine the tree/brush clearing requirements and provide them to the NNEPI.

3.4.3. Construction

Project construction will be carried out in four steps. First, the NNEPI will arrange for a contract to undertake the tree and shrub clearing for the DSC and the distribution line. The corridor cleared for the distribution line will be a maximum of 10 m. Any other required clearing within the road allowance will be the responsibility of Manitoba Infrastructure and Transportation. Second, Manitoba Hydro will construct the DSC, connect to the 66 kV transmission line, install three pole-mounted switches and connect to the distribution line. Third, Manitoba Hydro will place the power poles along the cleared corridor and locate power poles to cottagers, businesses (e.g. Windsock Lodge) and park facilities (e.g. Beresford Campground, waste transfer station) that request electrical services. The 13.7 and 16.7 m (40 and 60 ft) poles will be placed every 40 to 60 m depending on site conditions and will carry four to five wires. Two of the wires will be attached to one cross-member, one wire will be attached to the top of pole and the two wires will be attached below the cross-member. Manitoba Hydro will install the 5-wire 25 kV conductor, connect to the DSC, install pole-mounted 25kv – 120/240 V transformers and install 3-wire service lines to the premises that paid for the electrical service. Clearing on Crown or private property and electrical hook-ups will be the owner's responsibility.

3.4.4. Operation/Maintenance

During operation and maintenance, the project would be monitored and a performance would be assessed on an ongoing basis. Maintenance would include scheduled replacement of poles, lines, conductors, transformers, etc, repair of equipment malfunctions and damaged poles, lines, etc, and required mowing and clearing of vegetation along the distribution line. The operation and maintenance of the distribution line will be in accordance with Manitoba Hydro standards and guidelines.

3.5. Project Components and Activities

3.5.1. Project Components

There are two main project components: 1. the 66 – 25 kV DSC including transformer and associated facilities; and 2. the 18 km 25 kV distribution line (3 phase) including pole-mounted transformers and service lines.

Distribution Supply Center

A typical DSC layout is shown in Figure 3-1. An existing DSC located on the north side of the south Perimeter Highway south of Winnipeg, immediately east of St. Mary's Road is shown in Figure 3-2. The DSC as well as pad-mounted voltages regulators and recloser, dip poles with fuses, and switches are labelled.

25 kV Distribution Line

From the DSC, one 25 kV distribution line will run west a short distance along the park road allowance on the north shore of Long Lake. The another 25 kV distribution line will run east along the park road allowance on the north shore of Long Lake and the provincial road allowance to the park road allowance on the west shore of Beresford Lake (Figure 3-3). The locations of the park roads along Long and Beresford lakes are shown in Figures 3-4 and 3-5, respectively. A typical tree clearing diagram is shown in Figure 3-6. Diagrams showing a 66-kV tangent pole, 3-phase pole with transformer and a 3-phase tangent pole are shown in Figures 3-7, 3-8 and 3-9, respectively.

3.5.2. Project Activities

Project activities for the two main project components during pre-construction (PC), construction (C) and operation/maintenance (O/M) are provided in Table 3-1.

Table 3-1
Project Components and Activities

Project Component	Project Activities	Project Phase		
		PC	C	O/M
66 – 25 kV DSC	Accessing	X	X	
	Surveying	X		
	Flagging	X		
	Cutting trees and shrubs		X	X
	Removing tree limbs		X	X
	Removing trees from site		X	X
	Windrowing brush		X	
	Burning brush (possible)		X	
	Removing existing poles		X	
	Disposing existing poles		X	
	Disposing existing waste materials		X	
	Excavating soils		X	
	Grading site		X	
	Blasting (possible)		X	
	Pouring concrete		X	
	Drilling for poles		X	
	Anchoring for poles		X	

Table 3-1
Project Components and Activities

Project Component	Project Activities	Project Phase		
		PC	C	O/M
	Placing poles		X	
	Erecting DSC		X	
	Connecting to 66 kV line		X	
	Connecting to 25 kV lines		X	
	Testing grounding		X	
	Cleaning conductors		X	
	Operating vehicles	X	X	X
	Operating equipment	X	X	X
	Establishing marshalling area		X	
	Transporting materials/equipment		X	
	Transporting/storing fuel		X	
	Fuelling equipment/vehicles		X	
	Stockpiling materials/equipment		X	
	Disposing solid waste		X	
	Disposing hazardous waste		X	
	Disposing liquid waste		X	
	Accommodating construction crews	X	X	
	Fencing		X	
	Signing		X	
	Operating DSC			X
	Maintaining DSC			X
	Mowing/spraying vegetation			X
18 km 25 kV (3-phase) distribution line	Surveying	X		
	Flagging	X		
	Cutting trees and shrubs		X	X
	Removing tree limbs		X	X
	Removing trees from site		X	X
	Windrowing brush		X	
	Burning brush (possible)		X	
	Blasting (possible)		X	
	Drilling/augering for poles (soil)		X	
	Anchoring for poles (rock)		X	
	Cribbing for poles (wetland)		X	
	Placing poles		X	
	Running 25 kV distribution conductors		X	
	Running 120/240 V supply conductors		X	
	Cleaning conductors		X	
	Operating vehicles	X	X	X
	Operating equipment	X	X	X
	Establishing marshalling area		X	
	Transporting materials/equipment		X	
	Transporting/storing fuel		X	
	Fuelling equipment/vehicles		X	
	Stockpiling materials/equipment		X	
	Disposing solid waste		X	
	Disposing hazardous waste		X	
	Disposing liquid waste		X	
	Accommodating construction crews		X	
	Signing	X	X	
	Operating distribution Line			X
	Maintaining distributing Line			X
	Mowing/spraying vegetation			X

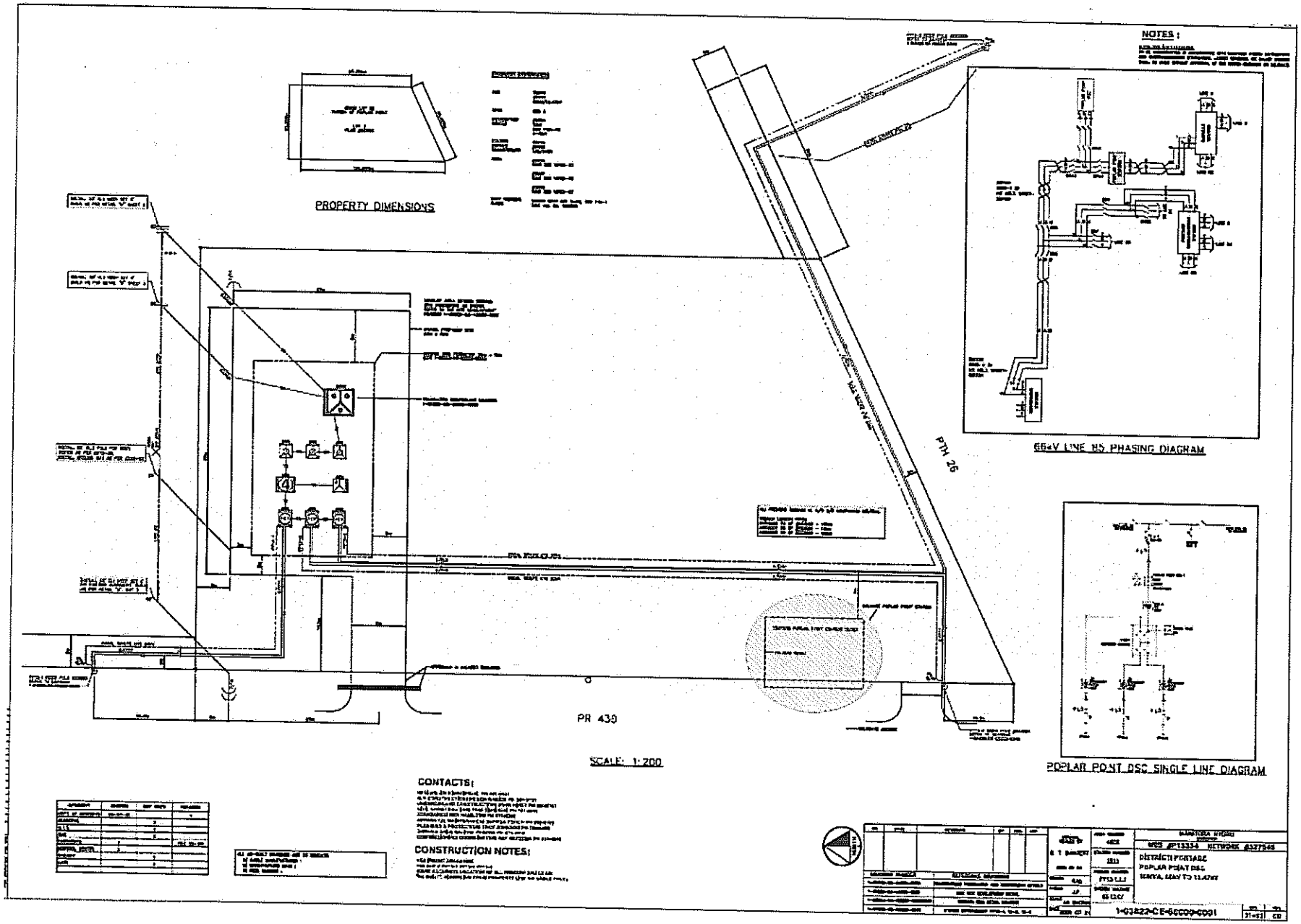

Figure 3-1. Typical Layout of a Distribution Supply Centre.

Figure 3-2. Photograph of a Distribution Supply Centre (South Perimeter Hwy, St. Mary Road).

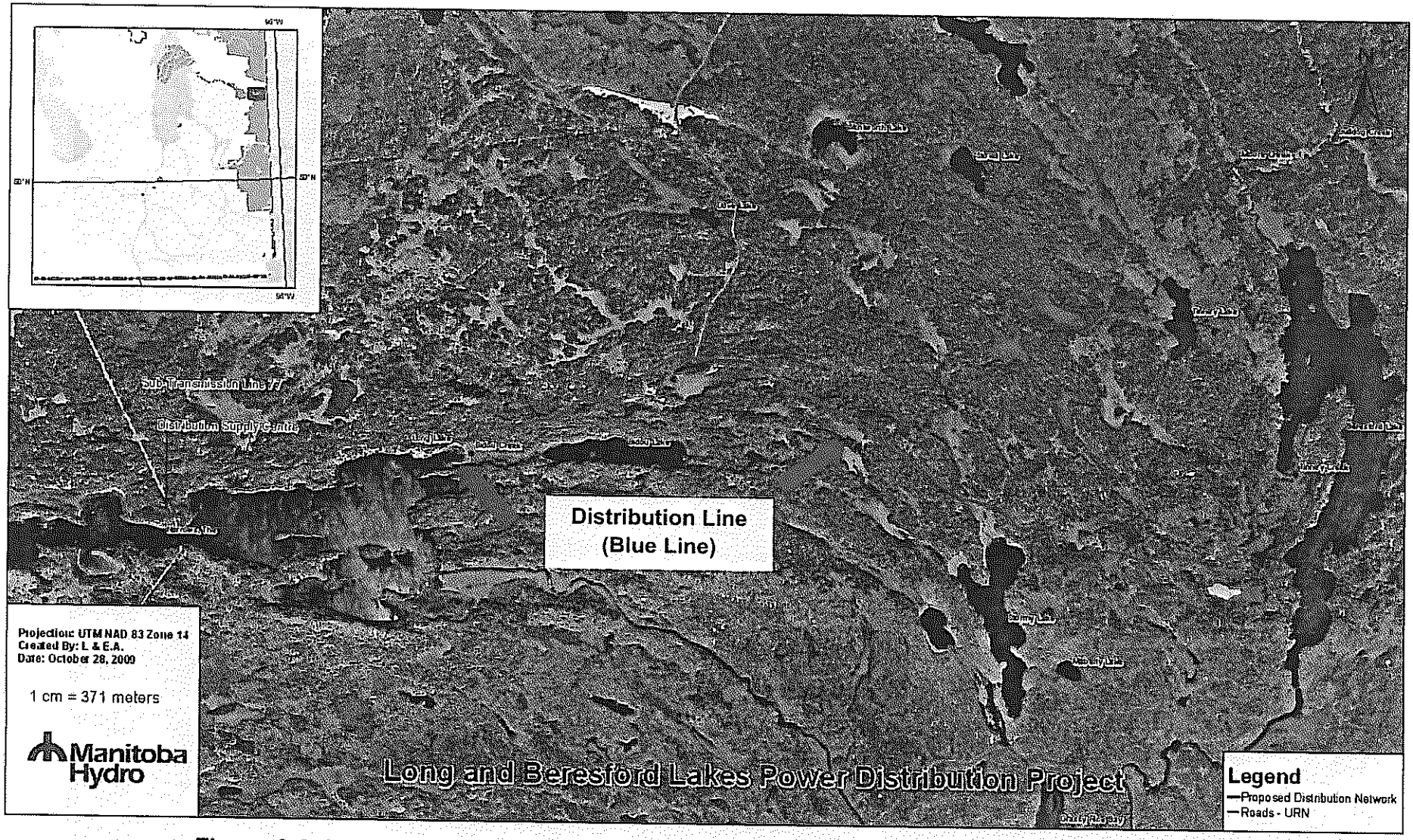

Figure 3-3. Location of the Distribution Line from Long to Beresford Lakes.

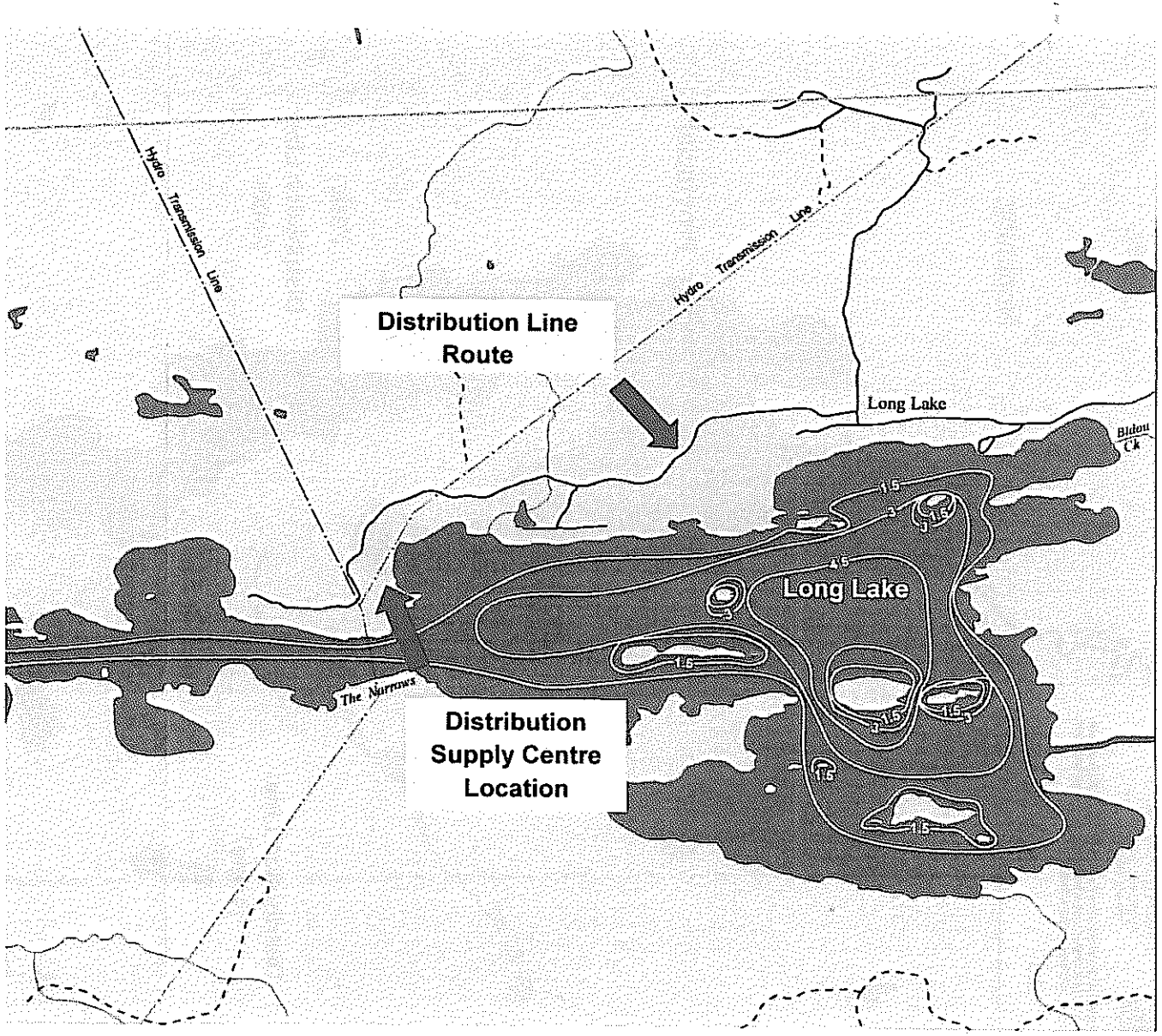

Figure 3-4. Location of the Distribution Line at Long Lake.

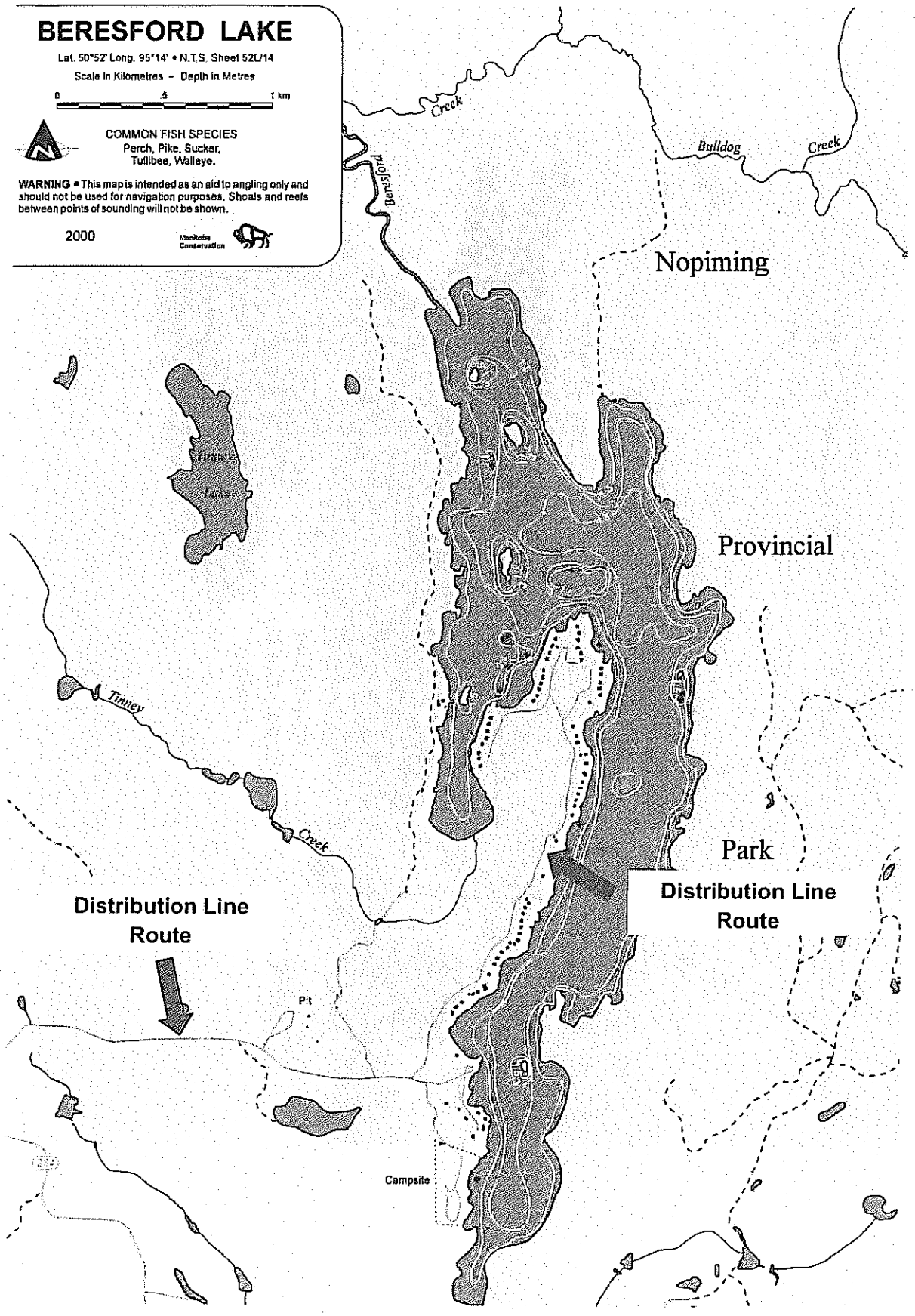

Figure 3-5. Location of the Distribution Line at Beresford Lake.

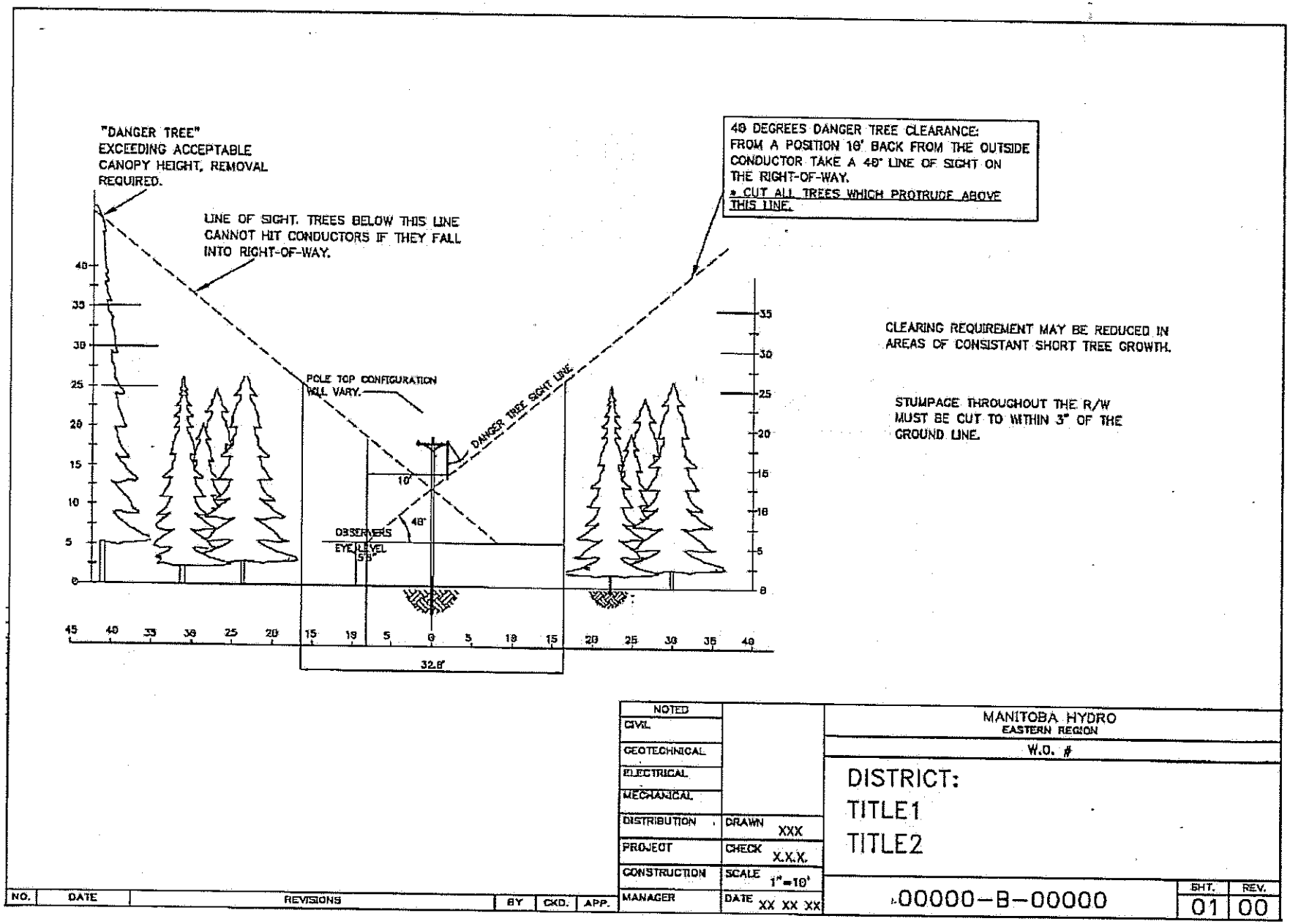

Figure 3-6. Typical Tree Clearing Diagram for Distribution Line.

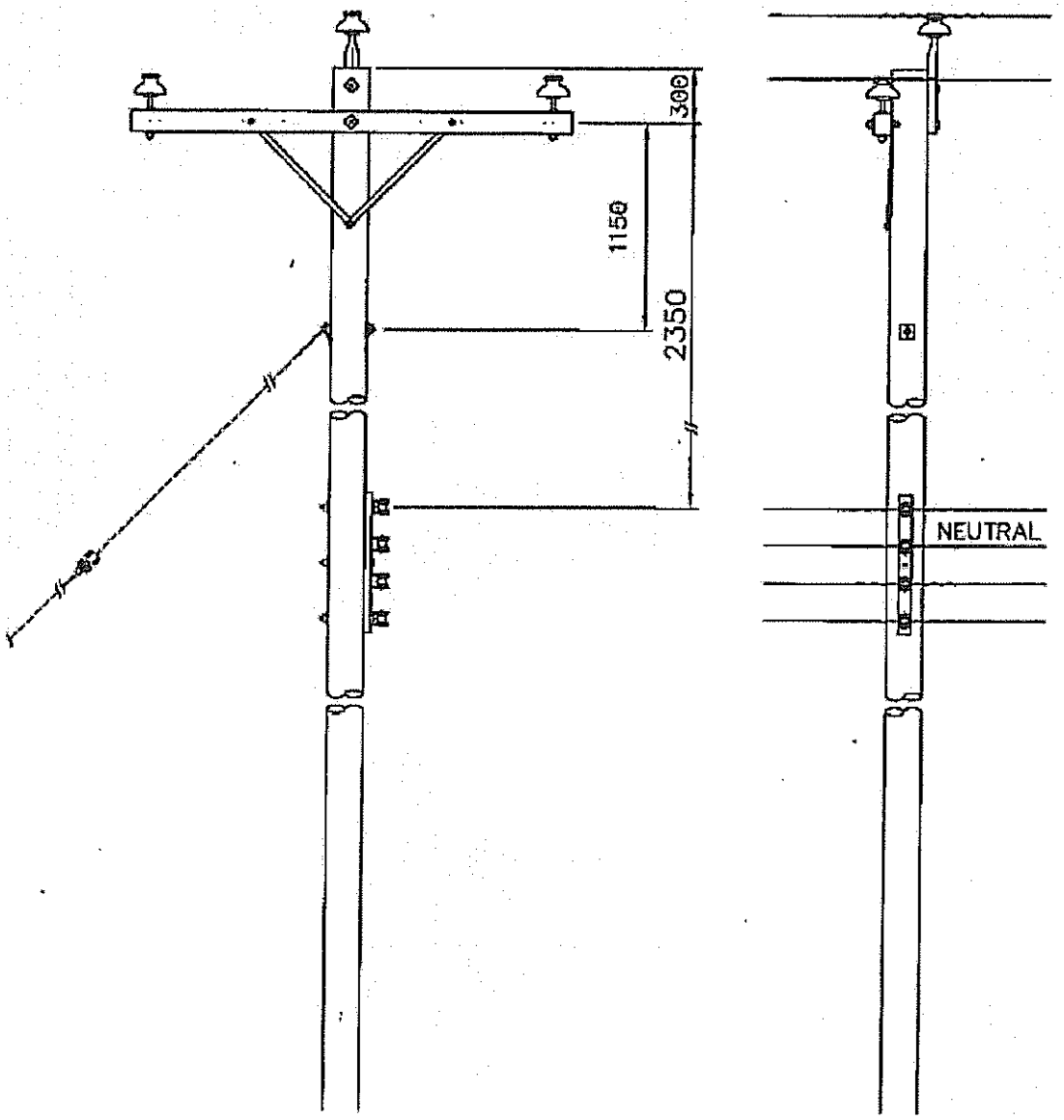

Figure 3-7. Diagram of a 25 kV Tangent Pole.

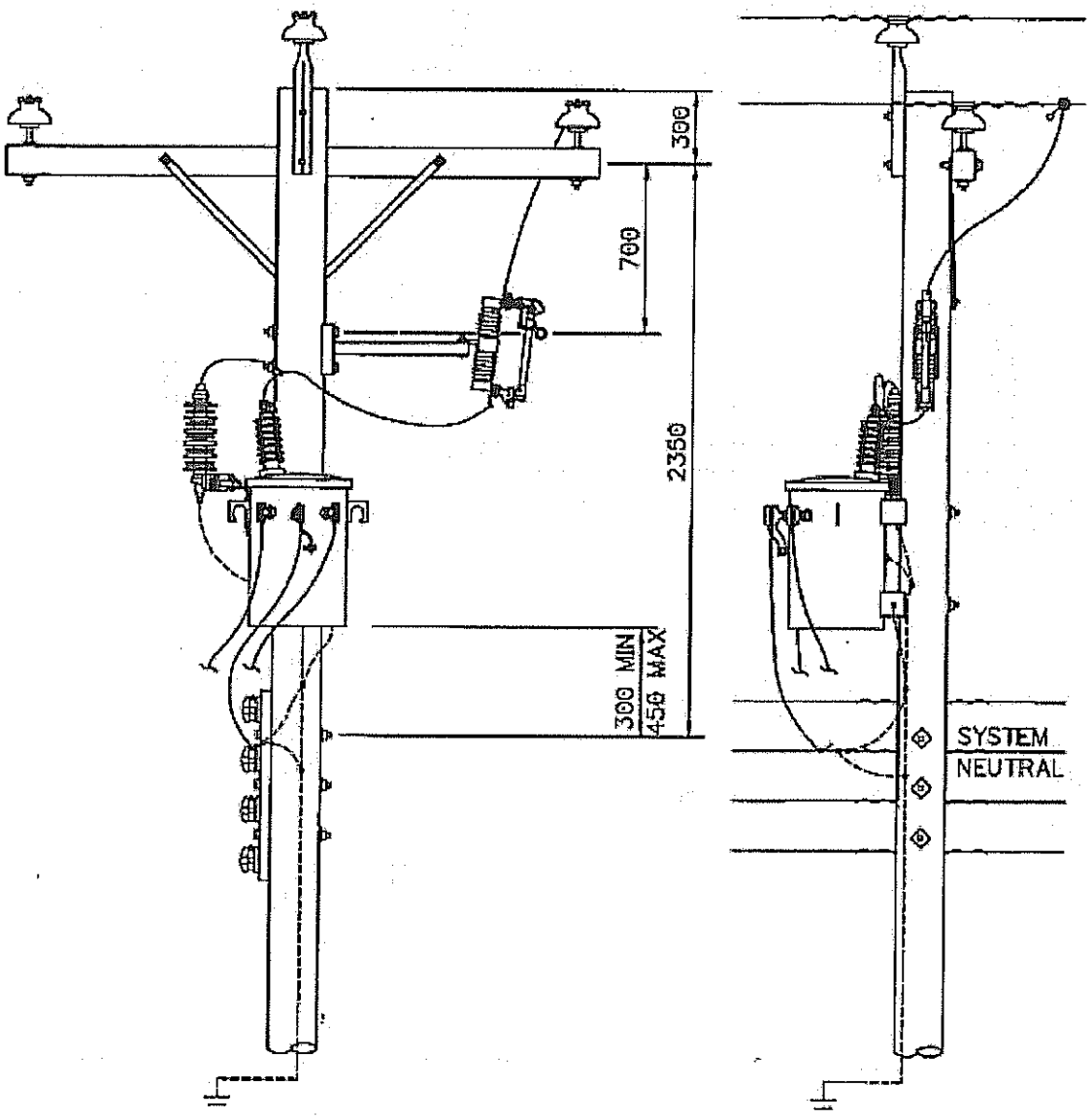

Figure 3-8. Diagram of a 3-Phase Pole with Transformer.

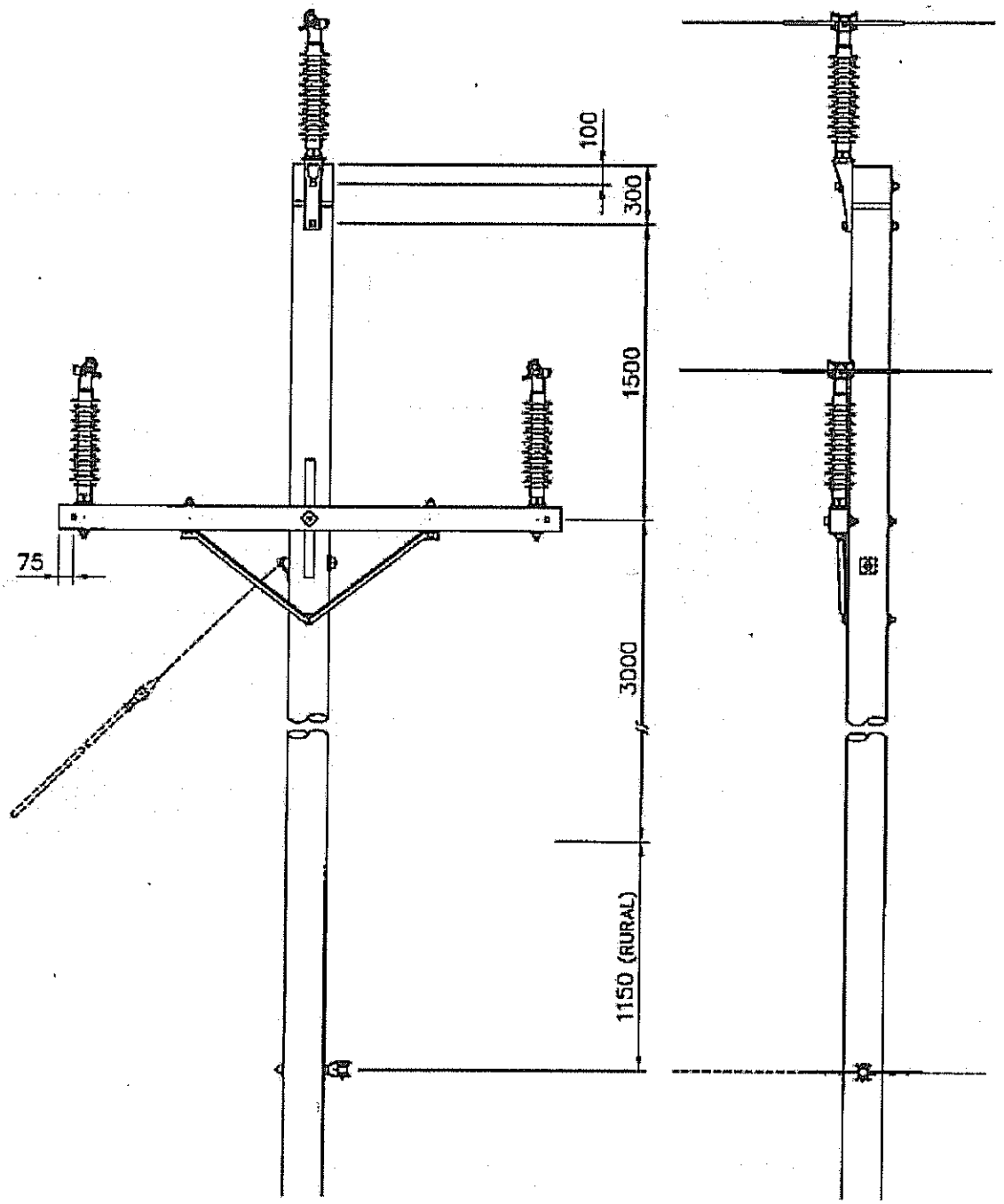

Figure 3-9. Diagram of a 3-Phase Tangent Pole Built to 66kv Standards.

3.6. Project Alternatives

3.6.1. Need

The NNEPI identified the need for the proposed project in relation to the lack of reliable, long-term and cost-effective electrical services for the cottage owners on Long and Beresford lakes. Electricity is currently produced by various means for domestic purposes including generators, solar panels and wind turbines. Propane is used by many cottages for heating, cooking, refrigeration, etc.

3.6.2. Purpose

The purpose of the proposed project is the provision of safe, reliable, long-term and cost-effective electrical services to cottage developments on Long and Beresford lakes. Electricity is to be provided via a 25 kV distribution line from an existing 66 kV transmission line that crosses Long Lake at The Narrows. Only those cottagers who have paid for the service will be hooked up.

3.6.3. Alternatives To

Alternatives to the proposed power distribution project for Long and Beresford lakes include:

1. Do nothing: This alternative would involve continuing the current situation and would not satisfy the purpose the project;
2. Run the distribution line above ground directly between Long and Beresford lakes: The distribution line would be run directly between the two lakes instead of following the road allowances. The cost of the alternative and the adverse environmental effects would be greater;
3. Bury the distribution line between along existing road allowances: The distribution line between Long and Beresford lakes would be buried. While the adverse biophysical effects would be greater due to excavating and blasting, the social effects on park values and aesthetics would be less. The overall cost of this alternative would be much greater; and
4. Run the distribution line above ground along existing road allowances: The power distribution proposal satisfies the purpose of the project with the lowest overall cost and environmental consequences.

The preferred alternative is to run the distribution line along existing road allowances to minimize costs and adverse effects on the environment. Running the distribution line along then north or south sides of the park and provincial roads, and accessing cottage developments will be determined during the design phase based on terrain conditions, lot configuration, access points, etc.

3.6.4. Alternative Means

Alternative means of providing electricity to cottage developments on Long and Beresford lakes include:

1. Generation of electricity by solar panels: Individual cottage owners would purchase their own solar panels to generate electricity. Roof and pole-mounted solar panels are already used by many cottage owners. While this alternative is feasible and environmentally acceptable the cost to owners would be higher and it does not satisfy the purpose of the project;
2. Generation of electricity by community wind turbines: Windmill turbines would be constructed at each of Long and Beresford lakes to provide electricity to the cottage developments. At least one cottage owner has a wind turbine for power generation. This alternative does not satisfy the purpose of the project due to the higher cost and the unreliable nature of wind energy; and
3. Distribution of electricity by a 25 kV line: The power distribution proposal satisfies the purpose of the project with the lowest overall cost.

3.7. Design Specifications

Technical specifications for the proposed power distribution project will be based on applicable legislation, standards, codes and procedures including the following:

- National Fire Code (2005);
- Canadian Electrical Code (Part III);
- Manitoba Hydro 66 kV and Below Overhead and Underground Standards;
- IEEE Std. 1307-2004 Standard for Fall Protection for Utility Work; and
- Manitoba Hydro Overhead Transmission Line Inspection Manual (2008b).

Additional design considerations are included in a May 1, 2009 trip report by Manitoba Hydro, Manitoba Conservation and Manitoba Infrastructure and Transportation representatives (Appendix A). The design considerations are listed below:

Location	Considerations
Lot 5, Beresford Lake	Distribution line to run down the main road towards the boat launch to turn 5 m behind the block 5 lots.
PR 314 at 4.9 km – road allowance = 91,44 m	Presently brushed approx. 5 m from shoulder of road. Locate poles 20m from edge of shoulder. MIT would be responsible for brushing of 15 m from shoulder.
PR 304 at 3.8 km entirely - road allowance = 6-.96 m up to Stu Jensen's	No brushing has been done at all, forest along entire route up to road. Locate poles 20 m from edge of shoulder. MIT responsible for brushing of 15 m from shoulder.
Long Lake Townsite - road allowance = 100 ft up to Block 2 - Lodge turn off	No brushing on private property. Prune trees wherever possible.
Block 3 Lot 8 - Stu Jensen	Pins located 13 m from the edge of the shoulder. Place the pole minimum 5 m offset from lot pin.
Block 3 Lot 4 - Allen's	Pole to be located north side of road 5 m from the shoulder.
Block 3 Lot 1 - Wiebe's	Hydro to finalize pole placement 5 m from shoulder.
Long Lake townsite - road allowance = 50 ft from Lodge to end of PR 304	
Block 2 Lot 2 - Dawson's	Pole to be 3 m from road. Block 0 to be fed across road. Trees pruned as required.
Block 1 lot 20-28 - Cul-de-sac	Poles to be located 3 m north side of 304
Block 1 Lot 6 - Apositle's	Distribution pole to be located 3 m north side of 304

Location	Considerations
	on the southeast corner of the lot and line to run east crossing PR 304 to pole located on the south side at the end of PR 304 on the access lane. Distribution line will turn north to pole located on the east side of the subdivision road to A & B division.
B Division	Locate pole on south side of the rock ridge access trail/road.

3.8. Design Mitigation

The design of the proposed power distribution project will incorporate applicable environmental legislation, guidelines and best practices including the following:

- Manitoba Infrastructure and Transportation brush clearing standards/guidelines;
- Manitoba Conservation Recommended Buffer Zones for Protecting Fish Resources in Lakes and Streams in Forest Cutting Areas (1990);
- Manitoba Conservation Timber Harvesting Practices for Forestry Operations in Manitoba (1996);
- Manitoba Conservation Forest Practice Guidelines Brochure (2003);
- Manitoba Conservation Bush Disposal Guidebook (2005);
- Manitoba Conservation Forest Management Guidelines for Riparian Management Areas (2008);
- Manitoba Conservation Forest Management Guidelines for Wildlife in Manitoba (Draft);
- Manitoba Natural Resources Consolidated Buffer Management Guidelines (1996)
- Manitoba Natural Resources and Department of Fisheries and Oceans Stream Crossing Guidelines for the Protection of Fish and Fish Habitat (1996);
- Manitoba Hydro Fur, Feathers and Transmission Lines, How Rights of Way Affect Wildlife (1995);
- Manitoba Hydro Hazardous Materials Management Handbook (2006);
- Manitoba Hydro Environmental Protection Guidelines, Construction, Operation and Decommissioning, Manitoba Hydro Work Sites and Operations (2006);
- Manitoba Hydro Guide to Environmental Legislation Applicable to Manitoba Hydro's Projects and Operations (2007);
- Manitoba Hydro Transmission Line and Station Vegetation Management Guidelines (2007b);
- Manitoba Hydro Generic Environmental Protection Plan for Transmission Line Construction and Maintenance (2007);
- Manitoba Hydro Generic Environmental Protection Plan for Distribution Supply Centres (2008);
- Manitoba Model Forest Guidelines for Environmentally Responsible Forestry Operations in Manitoba (1996); and
- Department of Fisheries and Oceans Guidelines for the Use of Explosives Near Waterbodies (1998);

3.9. Workforce

The Manitoba Hydro construction workforce for the proposed power distribution project is estimated to be 8 employees for constructing the DSC and placing poles, and 12 employees for

stringing conductors along the distribution line and to the cottage developments. It is estimated that the contracted workforce for clearing along the distribution line will be from 12 to 15. No additional staff will be required for the future operation and maintenance of the DSC and 25 kV distribution line at Long and Beresford lakes.

3.10. Equipment and Vehicles

Construction equipment and vehicles likely to be used during construction of the proposed power distribution project are listed in Table 3-2. The types of equipment and vehicles to be used for clearing the distribution line are not yet known but are likely to include those listed.

Table 3-2
Project Equipment and Vehicles

Project Activity	Equipment/Vehicle	Purpose
Surveying and Flagging	Pick-up Tucks	Crew/equipment transportation
	ATV (Quad)	Access
DSC Construction	Dozer	Clearing/levelling
	Digger	Pole removal/drilling
	Semi-trailers	DSC equipment transportation
	Dump truck	Aggregate supply/brush removal
	Concrete truck	DSC base
	Fuel truck/trailer	Fuelling equipment/vehicles
	Air compressor/drill	Rock anchoring
	Bucket truck	Elevated work
	Pick-up trucks	Crew/equipment transportation
	Hand tools	Cutting trees/brush
ROW Clearing	Feller-buncher	Tree cutting/limb removal
	Mower	Brush cutting
	Tracked vehicle	Access/dragging trees
	Dozer	Moving brush
	Dump truck	Aggregate supply/brush removal
	Semi-trailers	Tree transportation
	Loader	Loading trees
	Fuel truck/trailer	Fuelling equipment/vehicles
	Pick-up trucks	Crew/equipment transportation
	Hand tools	Cutting trees/brush
Placing Poles	Semi-trailers	Transporting power poles
	Back-hoe	Offloading/moving poles
	Tracked vehicle	Transporting/placing poles
	Air compressor/drill	Rock anchoring
	Fuel truck/trailer	Fuelling equipment/vehicles
	Digger	Drilling/placing poles
	Bucket truck	Elevated work
	Pick-up trucks	Crew/equipment transportation
Running Conductors	Tracked vehicles	Transporting/stringing conductors
	Fuel truck/trailer	Fuelling equipment/vehicles
	Bucket truck	Elevated work
	Pick-up trucks	Crew/equipment transportation
Operating and Maintaining	Mower	Brush cutting
	Sprayer	Brush killing
	Hand tools	Cutting brush
	Pick-up truck	Crew/equipment transportation

3.11. Construction Materials

Construction materials likely to be used for the construction of the proposed power distribution project are listed in Table 3-3.

Table 3-3
Project Construction Materials

Project Activity	Construction Materials	Type	Use
DSC Construction	Transformer	66 – 25 kV	Step down voltage
	Switches	Pole-mounted	System disconnection
	Poles	CCA	Running conductor
	Cross members	Cedar	Conductor suspension
	Insulators	Porcelain	Insulation
	Guy wire	Galvanized 9/32	Pole support
	Anchors	Galvanized screw/ rock set	Pole support
	Concrete	-	DSC base
Placing Poles	Poles	CCA	Running conductor
	Cross members	Cedar	Conductor suspension
	Guy wire	Galanized 9/32	Pole support
	Anchors	Galvanized screw/rock set	Pole setting – rock
	Culvert crib	Galvanized	Pole setting – wetland
Running Conductors	Conductor	2/0 AASC	Electrical transmission
	Insulators	Porcelain	Insulation
	Transformers	25 kV – 120/240 V	Step down voltage

3.12. Fuels and Hazardous Materials

Fuels and hazardous materials likely to be used during construction of the proposed power distribution project are listed in Table 3-4.

Table 3-4
Project Fuels and Hazardous Materials

Project Activity	Fuel/Materials	Purpose
DSC Construction	Diesel	Equipment/vehicle fuel
	Gasoline	Equipment/vehicle fuel
	Epoxy	Rock anchoring
	Solvent	Cleaning conductors
DSC Operation	Mineral oil	Insulation/arc dispersion
Placing Poles	Diesel	Equipment/vehicle fuel
	Gasoline	Equipment/vehicle fuel
	Epoxy	Rock anchoring
	Propane	Heaters
Running Conductors	Diesel	Equipment/vehicle fuel
	Gasoline	Equipment/vehicle fuel
	Propane	Heaters
	Solvent	Cleaning conductors
Operating and Maintaining	Diesel	Equipment/vehicle fuel
	Gasoline	Equipment/vehicle fuel

3.13. Potable Water

Potable water for the proposed project will be from existing sources and augmented as required by water trucked in to the project location.

3.14. Waste Disposal and Treatment

All merchantable timber from clearing the DSC, distribution line ROW and service lines will be provided for sale by the NNEPI. Waste materials from clearing the ROW will be windrowed, burned on site or removed to an approved waste disposal grounds.

Non-hazardous solid waste will be collected on site and transported to an approved waste disposal facility.

Existing domestic sewage collection and disposal facilities will be used. Porta-potties will be provided for field construction crews.

Any hazardous waste will be stored separately and transported in accordance to applicable transportation of dangerous goods legislation to a licensed disposal and/or treatment facility.

3.15. Schedule

The proposed schedule to achieve an in-service date of 30 September 2010 is summarized below:

Project Component	Start Date	Complete Date
Design	November 2009	January 2010
Line Clearing	January 2010	March 2010
DSC Construction	June 2010	July 2010
Pole Placement	July 2010	September 2010
Lines/Connections	August 2010	September 2010

Commencement of the design component is dependent upon receiving a work order for the project from Manitoba Conservation.

3.16. Budget

The total budget proposed for the power distribution project for Long and Beresford lakes is estimated to be $2.2M. Funding for the project is to be provided entirely by the NNEPI.

4. Environment Description

4.1. Overview

The proposed Long and Beresford lakes power distribution project is located in the north part of Nopiming Provincial Park the southeast quadrant of Manitoba. This chapter of the environmental assessment report provides a description of the existing environmental setting for the proposed project including the regulatory and ecological context, biophysical, socio-economic and cultural components of the environment.

4.2. Regulatory Context

4.2.1. Provincial Legislation

The proposed project is subject to the following environmental acts and regulations in Manitoba:

- *The Dangerous Goods Handling and Transportation Act*
  - Dangerous Goods Handling and Transportation Regulation
  - Environmental Accident Reporting Regulation
  - Storing and Handling of Petroleum Products and Allied Petroleum Products Regulation
- *The Endangered Species Act*
- *The Environment Act*
  - Classes of Development Regulation
  - Licensing Procedures Regulation
- *The Fisheries Act (Manitoba)*
- *The Forest Act*
- *The Heritage Resources Act*
- *The Highways and Transportation Act*
- *The Noxious Weeds Act*
- *The Provincial Parks Act*
  - Provincial Parks Designation Regulation
  - Park Districts Designation Regulation
  - Park Activities Regulation
- *The Public Health Act*
- *The Wildlife Act*
- *The Workplace Safety and Health Act*
  - Workplace Safety and Heath Regulation

While the proposal does not require a licences under *The Environment Act* the construction and operation of the proposed project is subject to all applicable provincial legislation, guidelines, codes and standards.

4.2.2. The Provincial Parks Act

Under *The Provincial Parks Act*, provincial parks are dedicated to the people of Manitoba and visitors to Manitoba and are to be maintained for the benefit of future generations in accordance

with the Act and regulations. In accordance with the park classifications and land use categories, the purposes of a provincial park system include the following:

- To conserve ecosystems and maintain biodiversity;
- To preserve unique and representative natural, cultural and heritage resources; and
- To provide outdoor recreational and educational opportunities and experiences in a natural setting.

Manitoba's provincial parks are classified as wilderness, natural, recreation and heritage as follows:

- Wilderness: the main purpose is to preserve representative areas of a natural region;
- Natural: the main purpose is both to preserve areas of a natural region and to accommodate a diversity of recreational opportunities and resource uses;
- Recreation: the main purpose is to provide recreational opportunities; and
- Heritage: the main purpose is to preserve an area of land containing a resource or resources of cultural or heritage value.

Land uses within Provincial Parks are categorized as wilderness, backcountry, resource management, recreational development, heritage and access categories as follows:

- Wilderness: the main purpose is to protect representative or unique natural landscapes in an undisturbed state and provide recreational opportunities that depend on a pristine environment;
- Backcountry: the main purpose is to protect examples of natural landscapes and provide basic facilities and trails for nature-oriented recreation in a largely undisturbed environment;
- Resource Management: the main purpose is to permit commercial resource development or extraction in a manner that does not compromise the main purpose of the park classification;
- Recreational Development: the main purpose is to accommodate recreational development;
- Heritage: the main purpose is to protect a unique or representative site containing a resource or resources of cultural or heritage value; and
- Access: the main purpose is to provide a point or route of access in a provincial park or a location for a lodge and associated facilities;

4.2.3. System Plan for Manitoba Parks

The System Plan for Manitoba Parks (1998) states that Nopiming is classified as a Natural Park with the purpose to "accommodate a diversity of recreational opportunities and resource uses". The Park purpose is to preserve areas that are representative of the Lac Seul Upland portion of the Precambrian Boreal Forest Natural Region; and accommodate a diversity of recreational opportunities and resource uses. The park will:

- Preserve areas of woodland caribou habitat;
- Provide nature-oriented recreational opportunities such as canoeing, hiking and mountain biking in a largely undisturbed environment;
- Provide high quality cottaging, camping, boating and fishing opportunities, and accommodate related facilities and services;

- Promote public appreciation and understanding of Nopiming's natural and cultural heritage; and
- Accommodate commercial resource uses such as forestry and mining where such activities do not compromise other park purposes.

The Land Use Categories (LUCs) are: Backcountry (19%), Recreational Development (19%), Resource Management (62), and Access (1%). Long and Beresford lakes in Nopiming Provincial Park are categorized as Recreation Development while the area between the two lakes is classified as Resource Management. There is no management plan for Nopiming Provincial Park.

Resource Development accommodates intensive recreational facilities such as campgrounds, commercial lodges, recreational staging areas, cottage subdivisions and non-profit camps, and permits commercial resource use while recognizing the recreational values of the park.

Resource Management permits commercial resource opportunities such as mining, wild rice and bait fish harvest, and provides recreational opportunities including fishing, canoe routes, trails, recreational roads, interpretive signs and pullovers, and existing remote cottages.

4.2.4. Interim Management Guidelines

Pending formulation of a management plan for Nopiming Provincial Park, interim management guidelines were established in 1982 and updated in 1988 for resource conservation and protection, improvement and development of recreational facilities and ongoing commercial use of the park's resources (Manitoba Mines, Natural Resources and Environment 1988). Resource management focuses on the need to maintain a natural setting for park recreational activities while recreational management focuses on road accessible camping and fishing opportunities. Nopiming is to provide:

- High quality sport fishing experiences;
- Parkway linkage to Whiteshell Provincial park and dispersed points for wilderness experiences within Nopiming;
- A network of canoe routes through a diverse landscape, offering a variety of experiences and links into adjacent areas;
- A transition zone between the highly developed Whiteshell and the wilderness setting of Atikaki; and
- Valuable nature and cultural features worthy of protection, appreciation and interpretation.

The major emphasis of Nopiming is resource conservation, recreation, interpretation and low-key commercial development. The interim management objectives and guidelines limit the number of cottage lots, require improved sewage treatment, protect woodland caribou habitat and set limits for park development and use prior to completion of the park management plan. The guidelines state that no major new development or land use commitments will be accommodated. The Long and Beresford lakes power distribution project is not viewed as a major development or a land use commitment since existing park and provincial road allowances will be followed.

4.2.5. Manitoba - Ontario Memorandum of Understanding

In 2008, Manitoba and Ontario signed a Memorandum of Understanding (MOU) Respecting an Interprovincial Wilderness Area that that includes Atikaki, Nopiming, and Woodland Caribou Provincial Parks and the Eagle-Snowshoe Conservation Reserve (Figure 4-1). Under this MOU Manitoba and Ontario agreed to conserve and preserve the unique ecological diversity of the area. Manitoba and Ontario agreed to cooperate and work jointly to:

- Encourage and support research within the area providing that the research is consistent with the objectives of the Interprovincial Wilderness Area;
- Coordinate resource management that is consistent with the role of the Interprovincial Wilderness Area;
- Promote a consistent theme relevant to the role of the Interprovincial Wilderness Area through marketing endeavours; and
- Manage and coordinate recreational opportunities that reflect the value of the Interprovincial Wilderness Area.

While the project assessment area is not covered by the MOU the larger park or regional assessment area is included within the Interprovincial Wilderness Area.

4.2.6. East Side Lake Winnipeg Planning

In July, 2000, Manitoba announced its acceptance of the Consultation On Sustainable Development Implementation (COSDI) Report. The report recommended that the implementation of sustainable development include the creation of Broad Area Plans across the province. In August of that year, Conservation Minister, Oscar Lathlin, announced that government would initiate Broad Area Planning on the east side of Lake Winnipeg as a pilot for Broad Area Planning across the province. At the time, the development of the Broad Area Plan for the east side of Lake Winnipeg was to be undertaken in two phases: 1. Preliminary discussions; and 2. Plan preparation and adoption.

An East Side Round Table (ESRT), consisting of 21 members from local communities, First Nations, Métis, industry, environmental and recreational organizations, and a First Nation Council, consisting of one Chief from each of the First Nations within the planning area, were commissioned to develop the Broad Area Plan (BAP). An East Side Advisory Committee, consisting of various stakeholder organizations, local governments, etc., was also assembled to provide input from their individual perspectives. A BAP status report, "Promises to Keep..." *Towards a* Broad Area Plan *for the East Side of Lake Winnipeg*, made over 100 recommendations. A MOU was also signed with First Nations on the east side of Lake Winnipeg. The MOU recognized a government to government relationship between east side First Nations and the Province and is a is a first step in ensuring that those First Nations have a strong say in land use decisions into the future.

The ESRT was replaced by the East Side First Nations Council, consisting of twenty-one members: sixteen East Side First Nation Chiefs or their designates, one representative from the Métis Nation government, or their designate, and four representatives nominated by the ESRT. The East Side First Nations Council later was renamed Wabanong Nakaygum Okimawin or WNO. While the development of the Broad Area Plan remains on-going, the WNO directed that future planning focus on the development of traditional area land use plans (TALUPs).

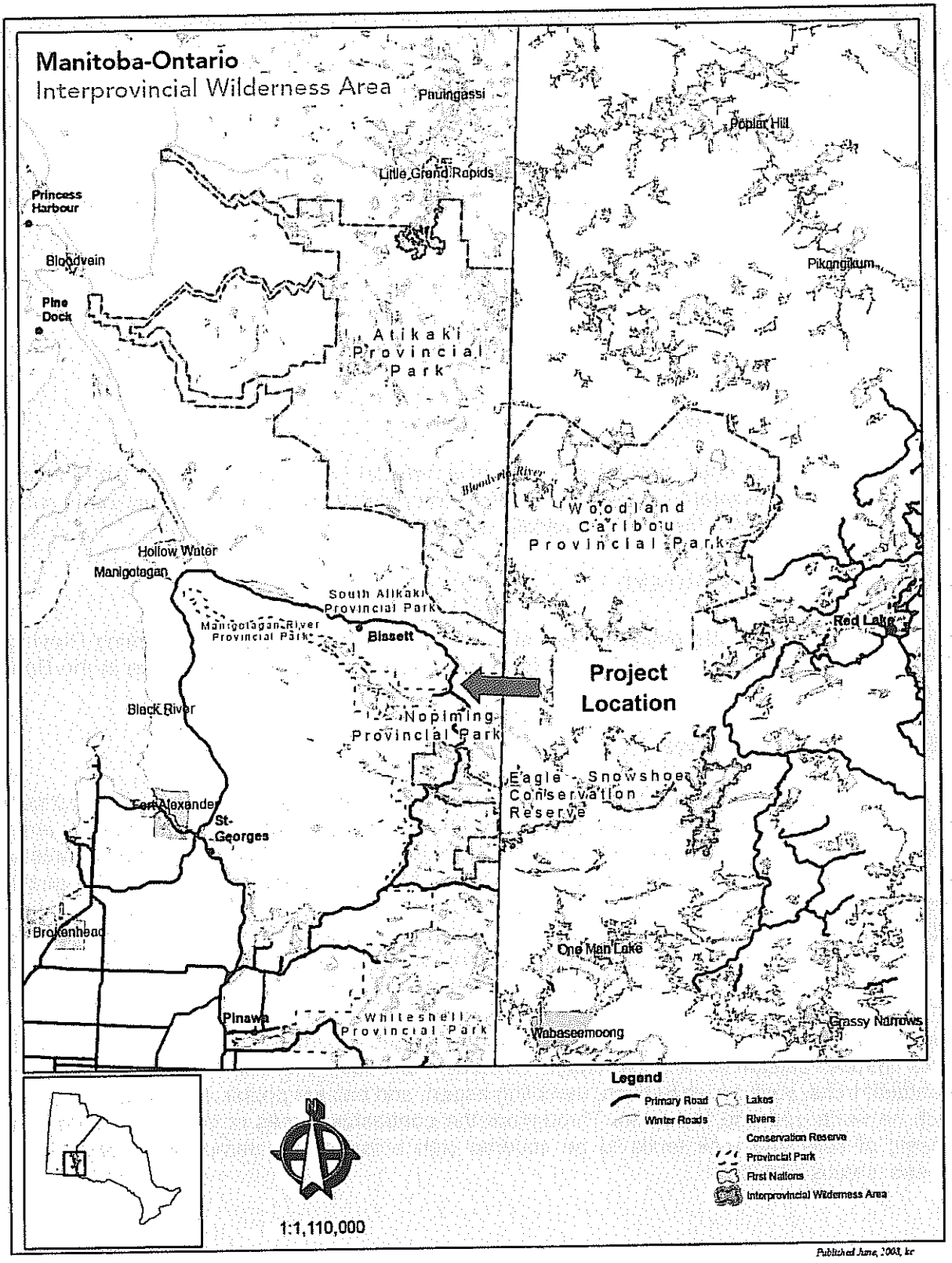

Figure 4-1. Parks and Conservation Areas Surrounding Nopiming.

On April 3, 2007, a landmark accord confirming a government-to-government relationship between the Wabanong Nakaygum Okimawin First Nation Governments and Government of Manitoba was signed, reinforcing the foundation for compressive traditional land use planning.

4.2.7. Federal Legislation

The proposed power distribution project is subject to the following Canadian environmental acts and regulations:

- *Canadian Environmental Assessment Act;*
- *Canadian Environmental Protection Act;*
- *Explosives Act;*
- *Fisheries Act;*
- *Migratory Birds Convention Act; and*
- *Species At Risk Act.*

While the proposal does not trigger an environmental assessment under the *Canadian Environmental Assessment Act* the construction and operation of the proposed project is subject to all applicable provincial legislation, guidelines, codes and standards.

4.3. Ecological Context

The proposed power distribution project at Long and Beresford lakes in Nopiming Provincial Park is located in the Nopiming Ecodistrict which part of the Lac Seul Ecoregion in the Boreal Shield Ecozone.

4.3.1. Boreal Shield Ecozone

The Boreal Shield is Canada's largest ecozone and it stretches 3,800 km from Newfoundland to Alberta, includes parts of six provinces, covers more than 1.8M km^2, and encompasses almost 20% of Canada land mass and 10% of its freshwater (Figure 4-2). The Boreal Shield presents the dominant image of an endless stretch of trees, flashing waters, and bedrock. Despite the fact that highways, railroads, and airports have made much of this ecozone accessible, there is still much that remains in a wilderness condition. Generally this ecozone has a strongly continental climate characterized by long cold winters and short warm summers but is modified by maritime conditions in its coastal margins in Atlantic Canada.

Over 80% forested, the ecozone is represented by closed stands of conifers, largely white and black spruce, balsam fir and tamarack. Towards the south, there is a wider distribution of broadleaf trees, such as white birch, trembling aspen, and balsam poplar, and needle-leaf trees, such as white, red and jack pine. Throughout the contrasting areas of exposed bedrock, this mosaic of soils and rock tends to be covered with a range of communities, dominated by lichens, shrubs and forbs.

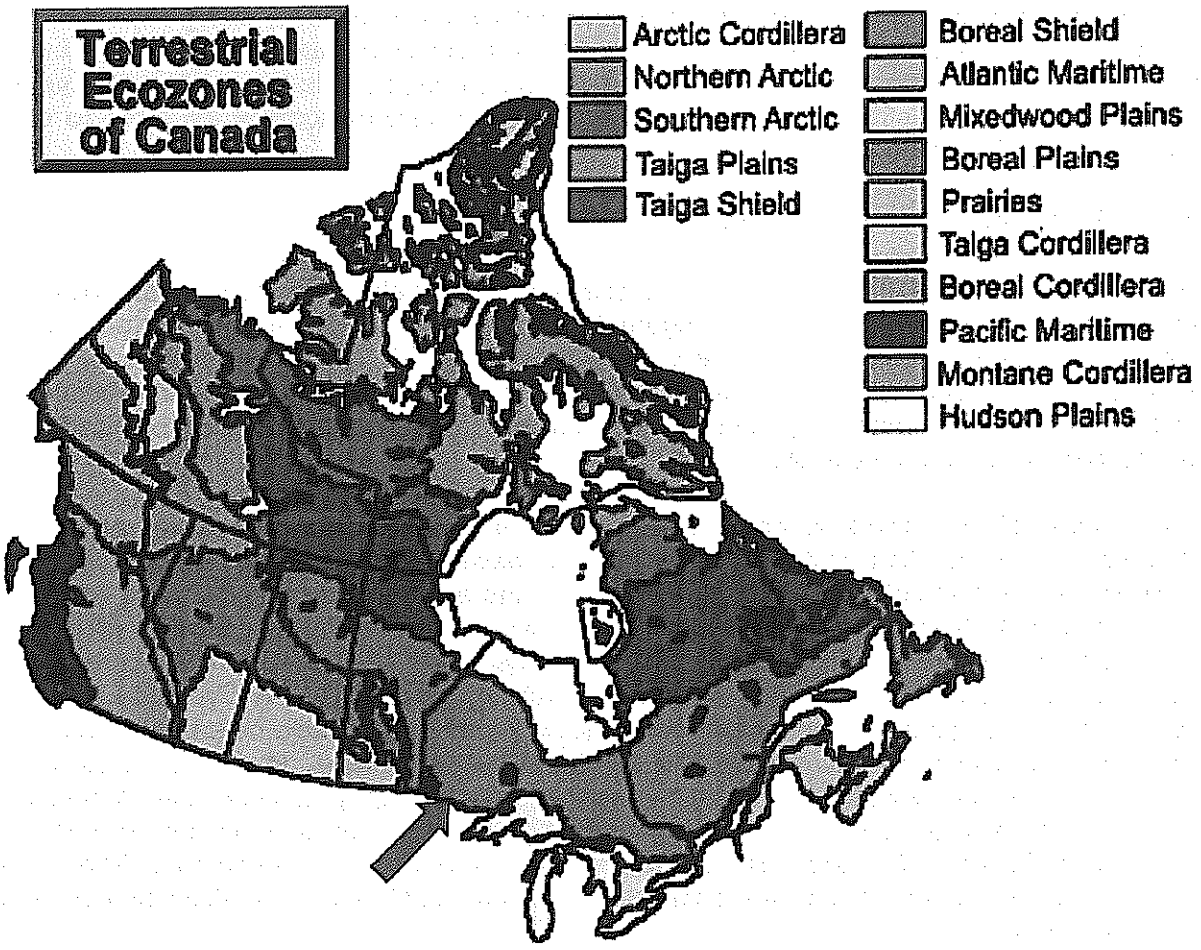

Figure 4-2. Boreal Forest Ecozone.

The ecozone is dominated by broadly rolling mosaic of uplands and associated wetlands. Precambrian granitic bedrock outcrops interspersed with ridged to hummocky, deposits of glacial moraine, fluvioglacial material (including numerous eskers), and colluvium are characteristic of its surface materials. Soils range from Humo-Ferric Podzols in the south to Brunisols in the north. Luvisols are found in limited areas of finer textured silts and clays. The landscape of the Boreal Shield ecozone is dotted with numerous small to medium-sized lakes. Peatlands with Organic soils are common in wetland areas and are particularly extensive in central Manitoba. The zone includes the headwaters of numerous large drainage basin systems, such as the Nelson and Churchill rivers in Manitoba.

Characteristic mammals include woodland caribou, white-tailed deer, moose, black bear, coyote, raccoon, marten, fisher, striped skunk, lynx, bobcat and eastern chipmunk. Representative birds include boreal and great horned owl, common loon, yellow rumped warbler, blue jay and evening grosbeak.

Settlements have developed around the rich natural resource base of the ecozone. Mining, forestry, hydropower, water-oriented recreation and tourist attractions, along with commercial and subsistence hunting, trapping, and fishing are the principal activities. Agriculture is limited to the few areas where the soil quality and microclimate are suitable. In terms of employment, the service, public administration and, wholesale and retail sectors account for close to 60% of employment in the zone.

4.3.2. Lac Seul Upland Ecoregion

The Lac Seul Upland Ecoregion extends eastward from Lake Winnipeg in Manitoba to the Albany River in northwestern Ontario (Figure 4-3). It is marked by warm summers and very cold winters. The mean annual temperature is approximately 0.5°C. The mean summer temperature is 14°C and the mean winter temperature is -14.5°C. The mean annual precipitation ranges from 450 mm in the northwest to 700 mm in the southeast. This ecoregion is classified as having a sub-humid mid-boreal ecoclimate.

The dominant land cover is coniferous forest with some limited areas of mixed forest. Characteristic vegetation includes white spruce, balsam fir, and black spruce with some trembling aspen and balsam poplar, although jack pine and black spruce are more common on moderately well- to imperfectly drained sites. Poorly drained areas are covered by fens and bogs and are dominated by black spruce. Wetlands cover over 25% of the ecoregion. The ecoregion is underlain with acidic, crystalline, Archean bedrock of the Canadian Shield that forms broadly sloping uplands and lowlands. Hummocky bedrock outcrops covered with discontinuous acidic, sandy, granitic tills dominate the landscape. However, portions of the central part of the ecoregion are dominated by undulating glaciolacustrine deposits with occasional hummocky bedrock ridges and knolls. Dystric Brunisolic soils are dominant, and Gray Luvisolic and Gleysolic soils occur on finer glaciolacustrine sediments. The western portion of the ecoregion is rockland-dominated with organic Mesisols and Fibrisols occurring to a lesser extent.

Wildlife includes wolf, coyote, lynx, ermine, fisher, mink, moose, black bear, woodland caribou, red squirrel and snowshoe hare. Bird species include the spruce grouse, herring gull and double-crested cormorant, as well as bald eagle, great horned owl, red-tailed hawk and waterfowl. Forestry, recreation, and hunting are the major land uses in this region. The main communities include Red Lake and Sioux Lookout. The population of the ecoregion is approximately 18,400.

4.3.3. Nopiming Ecodistrict

The Nopiming Ecodistrict covers 8,819 km^2 and straddles the border with Ontario, and extends from the southern boundary to close to the northern boundary of the Lac Seul Upland Ecoregion. Information on the ecodistrict is used in the next section to describe Nopiming Provincial Park.

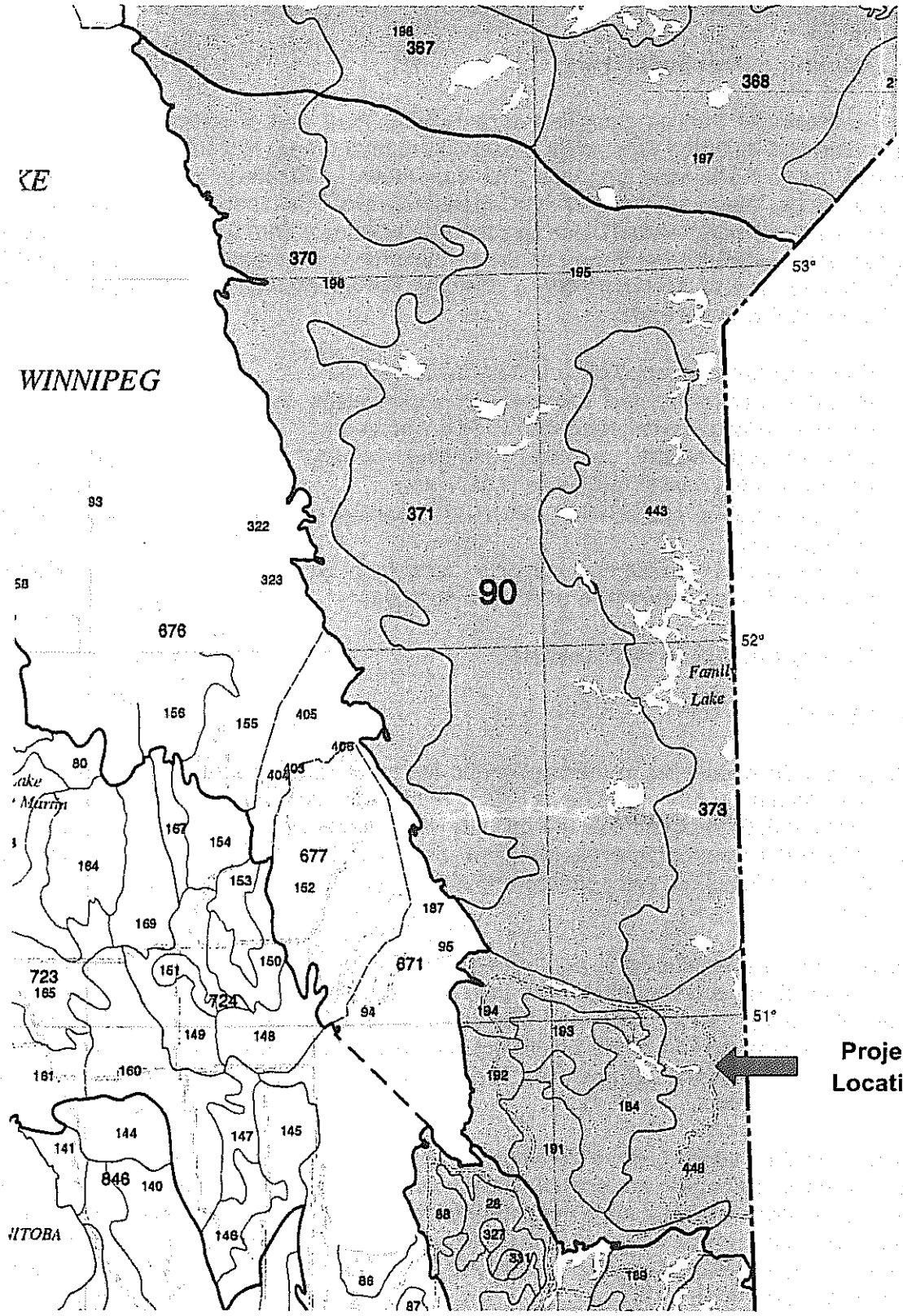

Figure 3-7. Lac Seul Upland Ecodistrict.

4.3.4. Nopiming Provincial Park

Nopiming Provincial Park is classified as a Natural Park and provides diverse recreational opportunities and resource uses while preserving natural areas. Nopiming means "entrance to wilderness" in the Anishinabe language. The Park totals 1,429 km^2 in size and is characterized by rock outcrops, lakes and rivers of the Canadian Shield. The landscape is dominated by jack pine with scattered marshes and black spruce/tamarack bogs. The park's purpose is to preserve areas that are representative of the Lac Seul Upland portion of the Precambrian Boreal Forest Natural Region, and to accommodate a diversity of recreational opportunities and resource uses. Nopiming Provincial Park:

- Preserves areas of woodland caribou habitat;
- Provides nature-oriented recreational opportunities such as canoeing, hiking and mountain biking in a largely undisturbed environment;
- Provides high quality cottaging, camping, boating and fishing opportunities, and accommodates related facilities and services;
- Promotes public appreciation and understanding of Nopiming's natural and cultural heritage; and
- Accommodates commercial resource uses such as forestry and mining where such activities do not compromise other park purposes.

4.4. Biophysical Environment

4.4.1. Climate

The Nopiming Ecodistrict lies in the cooler, and the most humid, sub-division of the Mid-Boreal Ecoclimatic Region in Manitoba. The climate is marked by short, warm summers and long, cold winters. Weir (1960) reported that the climate is characterized by warm summers and cold winters. Mean daily temperature is 19.4C for July and -20C for January. The mean annual temperature is 0.8C. The average growing season is 173 days with about 1,473 growing degree-days.

The mean annual precipitation is approximately 580 mm, of which about one-quarter falls as snow. Precipitation varies greatly from year to year, and is greatest from spring through summer. However, it should be noted that because of its north-south orientation, the climatic means for northern section of the ecodistrict will vary significantly from the means presented, which are for the district as a whole. The district has a cold to moderately cold, humid, Cryoboreal soil climate.

Hazardous weather conditions are common in Manitoba at all times of the year and can cause severe property damage and economic loss, and injure or kill many people. Potentially hazardous weather-related events include severe cold and heat, extreme wind chill factor, blowing dust and snow, fog, windstorms, blizzards, heavy snowfalls, flooding, freezing rain, drought, thunderstorm-related wind gusts and downbursts, lightning, hail, waterspouts, and tornadoes (Welsted et al. 1996).

There are no climate stations in the Manitoba portion of the ecodistrict. The data from the climate stations at Bissett Airport in the Wrong Lake Ecodistrict are relevant for the southern

portion of the Nopiming Ecodistrict. Canadian Climate Normal information for Bissett is provided in Appendix B.

4.4.2. Physiography

The Nopiming Ecodistrict is an area of prominent hummocky granitic rock outcrops thinly covered by stony, sandy glacial drift deposits, numerous wave-built sand and gravel bars and beaches marking ancient shorelines of glacial Lake Agassiz and numerous small and medium-sized lakes. The peat-covered depressions are usually underlain by clayey glaciolacustrine sediments. Elevations in the Manitoba part of the ecodistrict range from 305 masl along its lower western boundary, to 360 masl locally along the Manitoba-Ontario border. Slopes range from 15 to 30% and are from less than 50 m long, while in less steep terrain, slopes are between 50 and 150 m long. Slopes on peatlands are less than 1%.

4.4.3. Geology

Rock is a prominent feature of Nopiming Provincial Park, frequently appearing as hills and ridges, as outcrops in the middle of a forest, and as shoreline cliffs spotted with orange and black lichens. Where the rock is not visible, it is only a short distance beneath the surface. The Precambrian rocks formed more than 2.5B years ago and the area was once part of an immense mountain range. By about two billion years ago however, the mountains were eroded by the slow, persistent action of wind and water. The last Ice Age, which ended about 10,000 years ago, and the resulting glacial Lake Agassiz, put the finishing touches on the landscape. As the glacier melted, it deposited clay, gravel and small boulders on the bare rock.

Koonz (1979) reported that the geology of Nopiming Provincial Park is largely the product of tectonic and gradational forces acting since the Precambrian Era. The main body of the rock is made up of granite and granite-like rocks formed from the molten state. Included with the granite are relatively narrow sub-parallel belts of altered sediments and lavas which are the remnants of rocks which in very ancient times covered the surface. These ancient rocks were folded into mountain ranges and were intruded or largely replaced by granite. These mountain ranges were worn down to their bases by the process of erosion and are now exposed as belts of lava and sediments contained within the granite.

The Bissett region is part of the great Superior Province, a terrain of large granitic masses separated by greenstone belts, which consist of rocks of volcanic and sedimentary origin. The greenstone belt in this case is the Rice Lake greenstone belt, which hosts numerous deposits and occurrences of gold, but few significant occurrences of base metals. The same is true of the nearest similar body to the east: the Red Lake greenstone belt. The greenstone belts contain two groups of supracrustal (volcanic and sedimentary) rocks, one older and one younger. The older group is termed "Mesoarchean", and radiometric dating has established that the rocks of this group are 2.85 to 3.0 Ga years old. The younger group is termed "Neoarchean", and its age has been pegged at 2.73 - 2.69 Ga. Most of the surrounding granitic rocks have ages similar to the Neoarchean rock sequences, although there are some "basement rocks" with ages of about 3.0 Ga or older. The distinction between Mesoarchean and Neoarchean supracrustal rocks is relatively recent, and has come about through U-Pb dating since 1995.

4.4.4. Soils

The Nopiming Ecodistrict, which consists mainly of bedrock-dominated terrain, is composed of a mixture of exposed bedrock, shallow to very shallow till, and large and small peatlands in bedrock-controlled depressions. Mineral soils are dominantly well to excessively drained Dystric Brunisols developed on the acidic, sandy and stony, water-worked glacial till deposits. Gray Luvisols are found on local glaciolacustrine, calcareous clay deposits. Most of the soils in peat-filled depressions are a complex of very poorly drained Typic (deep) and Terric (shallow) Fibrisolic and Mesisolic Organic soils overlying loamy to clayey glaciolacustrine sediments. Lack of rooting depth to bedrock, excessive cobbles and stones, coarse surface textures and poor water-holding capacity and nutrient retention severely constrain the use of mineral soil on glacial till. Poor natural drainage and heat conductance properties limit the usefulness of organic soils.

Soils in Nopiming Provincial Park are reported to be primarily shallow podzols and brown podzolic profiles usually 0 to several centimetres in depth. Some isolated sections are bolder strewn with glacial debris while isolated boulder, clay, sand and gravel deposits exist as remnants of post glacial rivers (Rowe 1972). In the transitional zone, lacustrine clay and silt deposits from Lake Agassiz, as well as peat deposits, cover much of the bedrock and glacial drift.

4.4.5. Vegetation

The vegetation reflects in part the nature of the soils and the occurrence of bedrock at or near the surface. As large tracts of the Nopiming Ecodistrict are well to excessively drained, the ecodistrict if very prone to fires. As a result, the forest cover is very fragmented, both with respect to species and age distribution. Jack pine is the dominant species on shallow sandy soils (till) and on bedrock outcrops. Understories are generally low ericaceous shrubs with a ground cover of lichens and mosses. On deeper sandy soils, black spruce is more prevalent, but jack pine often appears as pure stands or in association with spruce. Fine textured soils tend to support black spruce. Peatlands are dominantly deep basin bogs and support black spruce stands that vary from very open and stunted stands to stands with relatively good growth. Ericaceous shrubs and feather mosses or sphagnum mosses are associated. On deeper soils, especially along rivers and lakes, white spruce, balsam fir and trembling aspen of good growth may be found.

Vegetative zones present in Nopiming Provincial Park are described in Scoggan (1957). Koonz (1979) reported that Nopiming lies within the lower English River and Northern Coniferous Forest section of the Boreal Forest Region. Rocky outcrops are primarily covered with jack pine, while many of the low-lying muskeg areas are vegetated by a mixture of black spruce and tamarack stands. Due to recurring fires, jack pine has become more prevalent. Although trembling aspen is common throughout the park, most notably at the north end, it is generally associated with other tree species such as jack pine and white spruce. Due to drainage conditions, soils and topographic features in the park, homogenous forest communities of over 20 ha are seldom encountered. Koonz (1979) reported that over 200 plant species have been identified in Nopiming. The major cover types in the park as determined from forest inventory maps include jack pine (47%), black spruce (13%) and trembling aspen (7%). Paper birch is also prevalent while other species such as bur oak, mountain ash and black ash are less prevalent. The underbrush is largely hazel, alder and mountain maple. Some of the poorly drained, low-lying places are covered with stands of black spruce.

Jack pine stands are typically homogenous and even-aged, indicating a fire history. In stands growing over sand, glacial till or other soils with considerable depth, trees are dense and straight with only the tops till green. Shrub zones under jack pine forest are poorly developed due largely to inhibited light penetration on the forest floor. Balsam fir is the only tree species recorded in the shrub zone. The ground surface under Nopiming jack pine forests is often covered by a layer of mosses. Some 20 species of vascular plants in the ground cover included five species of wintergreen and prince's pine.

While black spruce is considered to dominate the climax forest in Nopiming Provincial Park, Koonz (1979) reported that it covered less than 15% of the park area due to fires and logging. Many of the bogs contain mixed black spruce and tamarack. Dwarf birch and leatherleaf also occurs in the shrub zone. Ground cover is typically dominated by sphagnum moss with herbs such as buckbean, swamp pink and sundew occurring in open areas.

Trembling aspen is a common species throughout Nopiming, occurring mostly in isolated blocks in associations dominated by other forest cover types (Koonz 1979). These are usually in small blocks, typically on well-developed soil profiles, glacial till, clay or sand deposits occurring on slopes or along streams, rivers or lakeshores. Aspen is generally associated with other tree species such as jack pine, white spruce and balsam poplar. Dewberry, wild sarsaparilla, wild strawberry and grasses are the dominant cover species.

Vegetation to be cleared for the DSC, distribution lines and services lines is generally representative of the Nopiming areas. Dominant tree species include black and white spruce, jack pine, balsam fir, trembling aspen, paper birch and balsam poplar. Shrub species include hazel, alder, dogwood and mountain maple (Photos in Appendix C).

4.4.6. Water

Drainage

The Nopiming Ecodistrict contains a large number of small and medium lakes as well as a few large to very large lakes. Of the large number of rivers and tributary streams that flow from east to west, the Bloodvein, Pidgeon, Poplar and Manigotagan rivers are the largest. The ecodistrict contains sections of the Manigotogan, Bloodvein, Berens and Poplar river watersheds that drain westward to Lake Winnipeg over terrain that falls at about 1.0 to 2.0 m/km. These watersheds form part of the Nelson River drainage system which flows north into Hudson Bay. Nopiming Provincial Park has more than a hundred lakes of varying sizes and depths, with shorelines of rock cliffs, spruce bogs and sand beaches.

Lakes

Long Lake is located in the northern portion of Nopiming Provincial Park about 18 km southeast of Bissett (Tp. 22, Rge. 15 EPM) (Figure 3-4). The lake is accessible by park road some 5 km southwest of PR 304. The lake area is about 756 ha with 29 islands (6 large) and measures about 10 km long (east west) and about 2 km wide (north-south) at its widest point. Long Lake is bordered by Precambrian Shield rock outcrops with Podsolic soils where soil is present. Typical shoreline vegetation is jack pine, aspen and white spruce. Cottage development and Wind Sock Lodge are on the north shore of the lake.

Beresford Lake is located in the northern portion of Nopiming Provincial Park about 31 km southeast of Bissett, MB (Tp. 22, Rge. 17 EPM) (Figure 3-5). The lake is accessible 2.5 km east

of PR 314 by park road. The lake area is about 275 ha with four main island and measures about 4.5 km long (north-south) and about 1 km wide (east-west) at its widest point. Beresford Lake is bordered by Precambrian Shield rock outcrops with Podsolic soils where soil is present. Typical shoreline vegetation is jack pine, poplar, black spruce and paper birch. Cottage development and the Beresford Campground are on the west shore of the lake.

The proposed distribution line follows provincial and park road allowances along the north shore of the eastern part of Long Lake and along southwest part of the western shore of Beresford Lake. The line is located well back from Long and Beresford lakes and does not pass in close proximity to any other lakes in the project assessment area. The distribution line would pass through or adjacent to wetland along the road allowances at several locations including the north shore of Long Lake, along PR 314 between Long and Beresford lakes, and the park road leading to Beresford Lake where the most extensive wetland area is located.

Rivers

Long Lake is in the upper region of the Manigotagan River watershed (5RA-K) with inflow from the Manigotagan River and several small creeks, and outflow into the Manigotagan River at the west end of the Lake. The Manigotagan River flows into Manigotagan Lake which continues through Quesnell Lake on its way to Lake Winnipeg. Beresford Lake is in the Garner Lake watershed (5RA-L) with inflow from Moose Creek and three small creeks, and outflow to the Garner River at the south end of the lake. The Garner River flows into Grassy Rice Lake which empties into the Manigotagan River.

The proposed distribution line crosses two small unnamed creeks and several minor drainage areas in the project assessment area. One creek is located along the park road on the north shore of Long Lake (Figure 4-4). It drains a wetland area to the north and flows into a wetland area to the south before entering Long Lake. The creek was observed to carry a moderate flow on October 1, 2009 at the culvert crossing (Photos in Appendix C). No fish passage is possible at the culvert location due to the relative steep terrain. The other creek is located along PR 314 between Long and Beresford lakes (Figure 4-4). It drains a wetland area to the north originating at Wentworth Lake and drains into Stormy Lake to the south which does not have a discernable outlet. Fish passage at this culvert location is possible the presence of large-bodied fish is unlikely.

Trophic Status

Hughes (1983) reported on the tropic status of Bird, Beresford, Booster and Long lakes in Nopiming Provincial Park based on chlorophyll *a* concentrations and Secchi disc readings. Long and Beresford were determined to have similar summer chlorophyll *a* and Secchi disc results and were determined to be moderately enriched being midway between mesotrphic and eutropic in character.

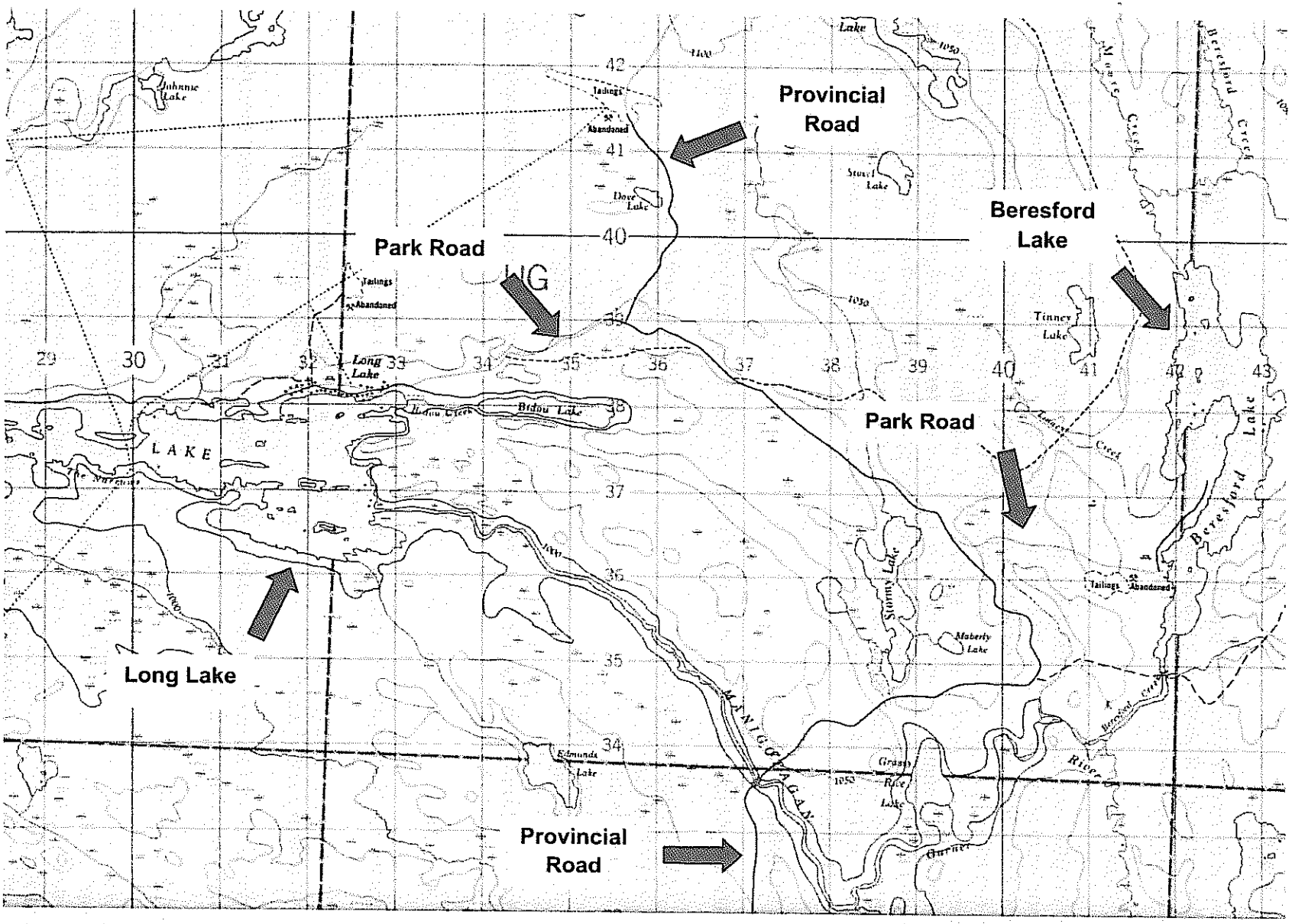

Figure 4-4. Topographic Map of Long and Beresford Lakes.

Water Quality

Gould (1966) reported on a biological survey of Beresford Lake in Nopiming Provincial Park. Dissolved oxygen, alkalinity and pH were determined to be within acceptable limits. No other water quality information was reviewed as part of this assessment.

4.4.7. Fish

Gould (1966) reported on a biological survey of Beresford Lake in Nopiming Provincial Park. Common sucker, yellow perch, lake cisco, northern pike and walleye were determined to be present from gill nets sets (Scientific names for the common names of species used in this report are listed in Appendix D). These fish species were confirmed by Pearce and Tyler (1976). Hagenson and O'Connor (1976) reported on a fisheries survey of 14 lakes in Nopiming Provincial Park including Beresford Lake to ensure effective management of the fisheries resource and provide baseline information fishing opportunity improvement. The report provides information on lake characteristics, productivity, fish species and resource management opportunities. Fish species present in Long Lake are expected to be the same as those in Beresford Lake.

4.4.8. Amphibians

Up to ten amphibian species are expected to occur in Nopiming Provincial Park as follows:

- Blue spotted salamander
- American toad
- Canadian toad
- Northern spring peeper
- Grey treefrog
- Boreal chorus frog
- Wood frog
- Green frog
- Mink frog
- Leopard frog

No evidence of amphibian species was observed in the project assessment area during a site visit on October 1, 2009.

4.4.9. Reptiles

Four reptile species expected to occur Nopiming Provincial Park include:

- Common snapping turtle
- Western painted turtle
- Red-sided garter snake
- Northern redbelly snake

No evidence of reptile species and habitats was observed in the project assessment area during a site visit on October 1, 2009.

4.4.10. Mammals

Twenty-six of 47 known or suspected mammal species for Nopiming Provincial Park were identified by Koonz (1979). Typical mammal species include woodland caribou, moose, white-tailed deer, black bear, timber wolf, coyote, lynx, otter, marten and fisher. The eastern chipmunk, observed at Long Lake, was the only species exceeding its known range. Wolves

have been recorded in the Manigotagan River and Long Lake areas, and black bears are common.

Woodland caribou, moose and white-tailed deer are known to inhabit Nopiming Provincial Park. Koonz (1979) reported that caribou inhabited the climax forest areas where terrestrial and arboreal lichens are present. Moose have been reported to exist in low densities throughout the park and occur in areas of deciduous regeneration, extensive willow, bog fringes and forest openings where accessible browse occurs. The Long Lake area is reported to have the highest concentrations of moose in the eastern region of the province. The areas to the south of Long and Beresford lakes are reported to favourable moose habitat (Figure 4-5). White-tailed deer are scattered throughout the regions, avoiding dense black spruce, balsam fir, mature jack pine and bog areas. Deer utilize edge habitats, and recently burned and harvested areas.

Nopiming is part of the range of Manitoba's southern-most herd of woodland caribou, named the Owl Lake herd which consists of about 50 to 60 animals (Figure 4-5). The caribou forage for lichens, in mature stands of jack pine and black spruce. Calving sites have been identified as islands in lakes or islands of upland habitat in bog areas. Mortality is due to wolf predation, disease, accidents and illegal harvest. Hunting of caribou is prohibited. Monitoring of caribou with radio collars is continuing with the cooperation of local wildlife groups. The Owl Lake Woodland Caribou Management Strategy (2005) identifies a winter zone (zone 1) and a core use area (zone 1A) for caribou. These zones are located west of Long and Beresford lakes and are west of Quesnel and Manigotagan lakes.

Small mammals reported in jack pine forest of Nopiming included red-backed vole, masked shrews and flying squirrel. Deer mice, red-back vole and masked shrews occurred in trembling aspen areas while masked shrew, meadow vole and red-back vole were observed in black spruce stands.

One coyote was observed on the road at Johnson's Cabin near Beresford Lake a during a site visit on October 1, 2009. Evidence of white-tailed deer, black bear and badger presence was also observed.

4.4.11. Birds

Koonz (1979) reported that over 140 bird species occur in Nopiming Provincial Park. Species that approached or exceeded their known northern breeding range in Manitoba included morning dove, black-billed cuckoo, ruby-throated hummingbird, red-headed woodpecker, great crested flycatcher, eastern wood pewee, house wren, veery, northern parula, northern oriole, scarlet tanager and indigo bunting. American woodcock and a wood thrush have also been observed. Colonial nesting birds are reported to be rare with observations of terns on Quesnel Lake and herring gulls on Shoe Lake (Koonz 1979). Bald eagles and ospreys are also common in the park.

Song birds reported in the jack pine forest of Nopiming included yellow-bellied flycatcher, chipping sparrow, yellow-rumped warbler and Nashville warbler (Koonz 1979). Ovenbirds, least flycatchers and red-eyed vireos are reported to be common in trembling aspen areas. Common species in open black spruce bog areas included palm warbler, Savannah sparrow, Connecticut warbler and Lincoln's sparrow while cape may warbler, red-breasted nuthatch, and golden-crowned and ruby-crowned kinglet were common in drier mature black spruce stands.

Bird species observed in the project assessment area during a site visit on October 1, 2009 included gray jay, common crow, Canada geese herring gull, sparrows, juncos and warblers.

More recent information on birds from the Nopiming Provincial Park area is available from the Manitoba Model Forest (http://www.manitobamodelforest.net/, Reports by R. Berger).

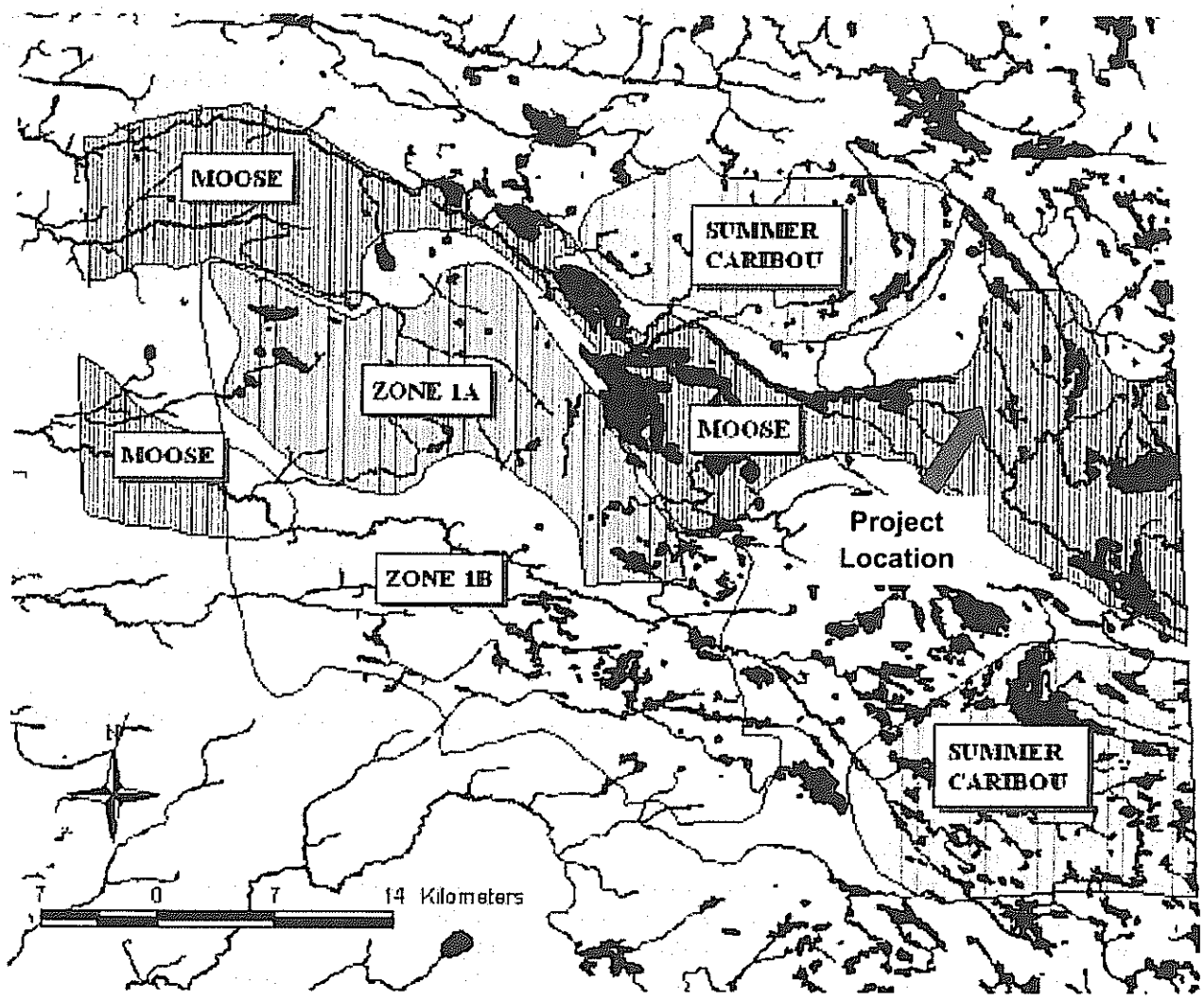

Figure 4-5. Owl Lake Woodland Caribou Distribution.

4.4.12. Species at Risk

Manitoba

The Conservation Data Centre reported that four species of conservation concern are likely to occur in the local assessment area (Appendix E). These species are the woodland caribou (boreal population), barred owl, green frog and mink frog. Data rankings are listed in Table 4-1.

Woodland Caribou (boreal population)

The boreal population of woodland caribou is listed under *The Endangered Species Act* (Manitoba) as "threatened" and is ranked as G5T4 S4 which means that globally the species is demonstrably widespread and abundant but the sub-species is less widespread and abundant in Manitoba and there is an element of long-term concern. Woodland caribou populations are widespread ranging across the boreal forest of northern Canada. Populations have decreased throughout most of the range. The populations are threatened from habitat loss and increased predation, the latter possibly facilitated by human activities.

In winter, woodland caribou use mature and old-growth coniferous forests that contain large quantities of terrestrial and arboreal (tree-inhabiting) lichens. These forests are generally associated with marshes, bogs, lakes and rivers. In summer, the caribou occasionally feed in young stands, after fire or logging. Many subpopulations of the woodland caribou, boreal population show a preference for peatlands; they generally avoid clear cuts, shrub-rich habitat, and aspen-poplar dominated sites. The most common tree species in preferred habitats are black spruce, white spruce and tamarack.

Manitoba's Conservation and Recovery Strategy for Boreal Woodland Caribou (Manitoba Conservation 2005) sets the goals and objectives for this species in Manitoba and will be followed by action plans for those ranges which are currently considered 'high risk. Recovery goals are for self-sustaining boreal woodland caribou populations on all existing ranges in Manitoba, and management of caribou habitat on all ranges to support and sustain populations inhabiting those ranges

The Conservation Data Centre reported that the woodland caribou occur in the Owl-Flintstone Range which lies within the regional assessment area. Summer and winter ranges of the Owl Lake herd are shown in Figure 4-5. While the project assessment area does constitute good woodland caribou habitat, individuals may move through the local assessment area when migrating between summer and winter ranges.

The landscape management strategy for the Owl Lake boreal woodland caribou herd in eastern Manitoba (Manitoba Model Forest 2005) describes the woodland caribou population in the Owl Lake area and outlines strategies for its future management. The goal of the management strategy is to "*Maintain or increase the Owl Lake woodland caribou population numbers on their current range(s), recognizing the dynamics of forest succession and habitat changes that may influence changes in distribution*". The benefits of integrated resource management practices are recognized as an inherent component of this goal. The following management objectives are defined in the 2005 management strategy:

1. "*To secure the long-term viability of the Owl Lake woodland caribou population by ensuring the continuity of an adequate supply of each of the habitats required by the herd*".

These habitats will include important winter and summer areas, and those areas required for calving and calf rearing, rutting and staging, as well as travel corridors offering contiguous forested areas and connectivity between summer and winter ranges. This objective will be realized through forest management practices creating both site-specific and landscape-scale forest disturbances, as well through the application of protective land use designations that are adaptive in nature.

2. "*To minimise the direct and indirect impacts of human activity on woodland caribou mortality through the cooperative development of both site-specific and landscape-scale resource management prescriptions*". Specific priorities include:

- Existing access and access development will be restricted/minimized within the Owl Lake range to reduce the potential for detrimental impacts associated with predator intrusion and illegal hunting; and
- Forest harvest and renewal prescriptions within the Owl Lake range will be specifically designed to avoid enhancement of habitat for white-tailed deer and moose.

Barred Owl

The barred owl is ranked as G5 S3S4 which means that globally the species is demonstrably widespread and abundant through it range while in Manitoba it is widespread to demonstrably widespread, abundant and apparently secure to secure to throughout its range. The Conservation Data Centre reported one occurrence in the local assessment area. The barred owl occurs in suitable habitat in south-eastern North America, but over the past 30 years, its range has expanded across central Canada to the northwest. It can be found anywhere from the southern swamps to the dense, mixed forests of the north. It is normally a nocturnal owl and is non-migratory on its range, but in the northern edge of its range, it will move further south during the winter months if food is scarce. The diet of barred owls consists mostly of mice but also feeds on rabbits chipmunks, foxes, amphibians, invertebrates and sometimes birds. It hunts near dawn, dusk or cloudy days by waiting on a high perch or flying through the woods and swooping down on prey. The barred owl nests in large tree cavities, hollows, broken snags, and old hawk, squirrel or crow nests. The female lays and incubates 2-3 white eggs and is fed by the male during the incubation period. The male continues to feed both the female and the young. The young take flight at about 6 weeks. Barred owls may occur in the local assessment area due to suitable habitat and also because they are reported to adapt well to residential development (Mazur and James 2000).

Green Frog

The green frog is ranked as G5 S1S2 which means that globally the species is demonstrably widespread and abundant throughout its range while in Manitoba it is very rare to rare and the species may be vulnerable to extirpation. The Conservation Data Centre reported two occurrences in the local assessment area. The green frog is usually found near water, along lakes, ponds, streams or in other wetlands. This frog occurs in eastern central North America and is found in the southeast corner of Manitoba. The green frog spends most of its time in or near the water. It is most active at night and hides near water plants or along the water edge by day. Green frogs spend winter on the bottom of ponds, streams or lakes. It is possible that the green frog may occur in the project assessment area due to the presence of several wetland areas along the line ROW.

Mink Frog

The mink frog is ranked as G5 S3 which means that globally the species is demonstrably widespread and abundant throughout its range while in Manitoba it is uncommon. The Conservation Data Centre reported three occurrences in the local assessment area. Mink frogs are found in the central part of eastern North America where the inhabit edges of streams, large ponds and small lakes. In Manitoba, they occur in the southeast corner around Whiteshell Provincial Park. Mink frogs spend most of their time in the water or close to the water's edge.

The species rests on lily pads or other objects sticking out of the water. They hunt mostly at night and hide during the day. Mink frogs spend winter on the bottom of rivers, ponds or lakes. It is unlikely that mink frog occur in the project assessment area due to the absence of suitable habitats.

Table 4-1
Manitoba Conservation Data Centre Rankings

Rank/Code	Definition
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.
H	Historically known; may be rediscovered.
X	Believed to be extinct; historical records only, continue search.
T	Rank for sub-specific taxon (subspecies, variety, or population); appended to the global rank for the full species.
SNR	A species not ranked. A rank has not yet assigned or the species has not been evaluated.
SNA	A conservation status rank is not applicable to the element.
G#G# S#S#	Numeric range rank: A range between two of the numeric ranks. Denotes range of uncertainty about the exact rarity of the species.

Species of conservation concern in the Lac Seul Upland Ecoregion are listed in Appendix F.

Canada

There are two species listed on Schedule 1 of the *Species at Risk Act* with distributions reported to include the Nopiming Provincial Park area. These species are the woodland caribou (boreal population) and the eastern wolf. See above for information on woodland caribou. The eastern wolf is listed as "special concern" and is found mainly in the Great Lakes and St. Lawrence regions of Quebec and Ontario. Both listed species are expected to avoid the project assessment area due its developed nature and the presence of humans. The range of the monarch butterfly, a species of "special concern", is located immediately south of the project area and is not likely to be affected by the proposed project.

4.5. Socio-Economic Environment

4.5.1. Communities

Non-Aboriginal communities in the vicinity of the proposed Long and Beresford lakes distribution project in Nopiming Provincial Park include Bissett, Seymourville and Manigotagan River.

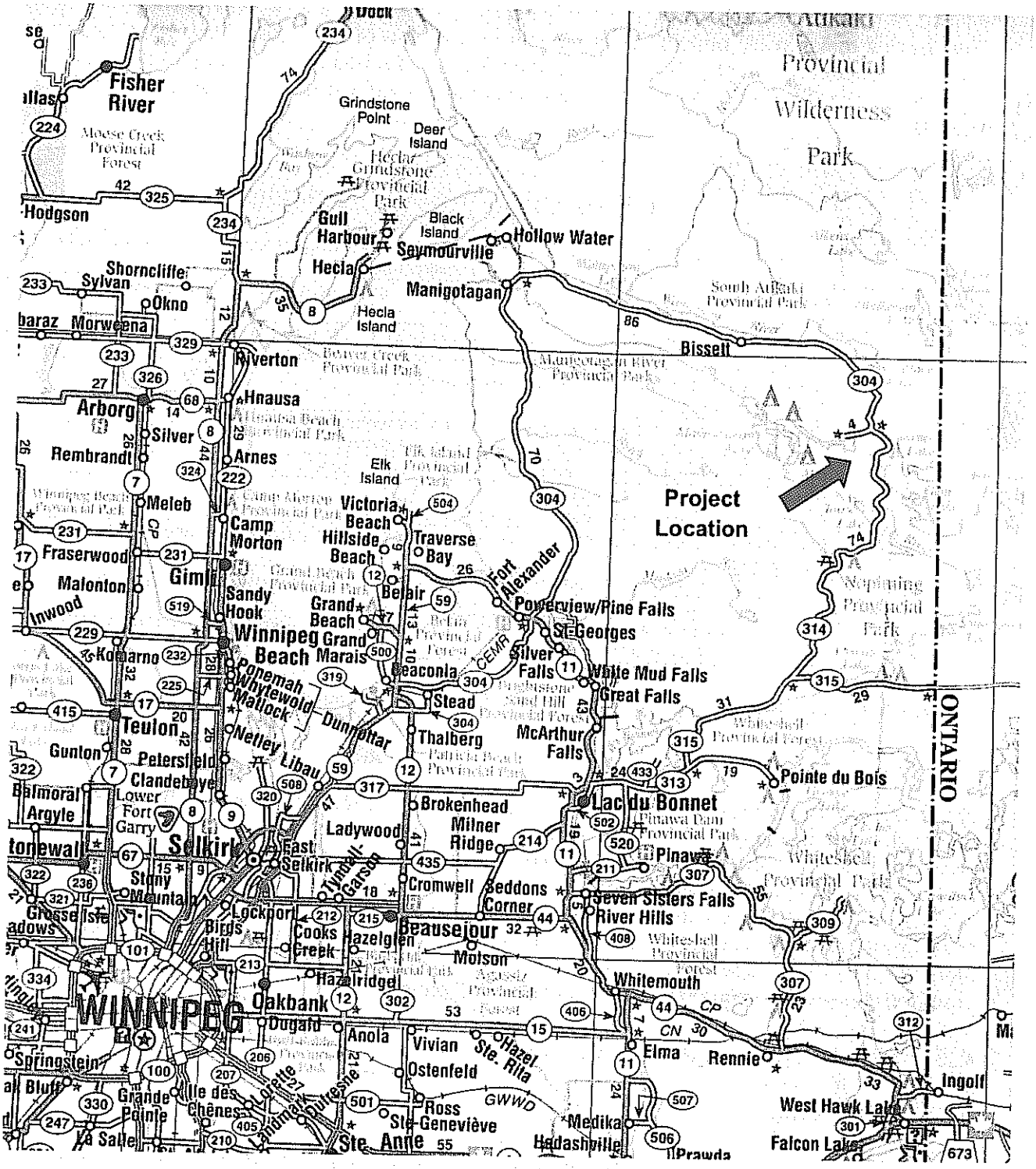

Figure 4-6. Regional Map Showing Communities and Protected Areas.

Bissett

The community of Bissett is located on PR 304 about 256 km northeast of Winnipeg (Figure 4-6). This highway extends into Provincial Nopiming Park and Wallace Lake some 32 km to the east and southward through the park to Bird River Road. The community has existed since 1911 but was not recognized until 1972. It is now represented by a mayor and council under *The Northern Affairs Act*. Bissett has an estimated population of 243 (2001) with about 60 housing units. It is located on the shore of Rice Lake.

It was home to the San Antonio mine, a successful gold mine that operated for more than 35 years before shutting down in 1968. The mine reopened briefly in 1980, 1996 and 1998, and is currently in operation.

Fire fighting capability is based on a pumper truck from the community fire hall. Vehicles and portable forestry equipment are also available for grass and brush fires. Police services are based in Powerview - Pine Falls, about 1.5 hours away. The RCMP has trailer facilities for overnight accommodation. Medical facilities include a public health worker and the community ambulance. Water source is Rice Lake. In 1987 an upgraded intake line was installed. Treatment consists of a nanofiltration system followed by chlorination. Water is then distributed by line system to all of the community. The community has a solid waste disposal site a few kilometres away which includes a liquid lagoon. Sewage is transported to the lagoon by low-pressure collection system or truck haul. Hotel San Antonio has rooms, restaurant and pub.

Bissett originally acted as the service centre to the San Antonio gold mine. During the 25 years, 1943 to 1968, some 200 employees produced 38,272.13 grams of gold and 6,108.62 grams of silver. The mine was closed down as being uneconomical. It reopened briefly in 1980-81, closed again in 1982-83, opened again in 1996-97 and again closed.

Forestry, trapping, mining and wild rice are the major contributors to the local economy. Tourism and the local services also provide income to the community. Forested areas surrounding the community are included in provincial forestry management unit 34. Substantial harvesting is done in the area, with the wood being delivered to Tembec Inc. at Pine Falls. About 10 small private sawmills have their own quotas for saw logs in addition to their contracts with Pine Falls Paper Company. Both Pine Falls Paper Company and the sawmills hire locally to fill the contracts. Trapping is largely confined to registered traplines in the Hole River and Lac du Bonnet RTL zones. Bissett shares this RTL zone with other nearby communities. Commercial fishing is not a large contributor to the local economy.

The community formed the Bissett Development Corporation, which is responsible for encouraging economic development. Some tourism, as well as the local service sector, contributes income to the economy of the community.

Seymourville

Seymourville is one of a group of four communities including Manigotagan, Hollow Water Reserve and Aghaming. The community lies on the southeast boundary of the reserve and is about 70 km by road from Pine Falls (Figure 4-6). Seymourville is governed by a mayor and council under *The Northern Affairs Act.* The population is estimated to be 135 (2001) with 41 housing units.

Fire fighting capability is based on a small "fastattack" vehicle with limited water supply, hoses and equipment. Additional portable forestry-style equipment, including a water trailer, is available for grass and brush fires. Additional support is also available from the nearby community of Manigotagan. Police response is from the Powerview detachment, RCMP and the community has a community constable. Medical response for the community is based on ambulance service from either Bissett. The nearest accommodation is the North Star Hotel or the Woodn" Bell Motel in Manigotagan.

Water is drawn from Lake Winnipeg into the Pumphouse where a chemical feed treatment plant treats the water and distributes water throughout the community by means of a piped distribution system. Seymourville shares a solid-waste disposal site with Manigotagan. Sewage is collected by a low-pressure sewage line and pumped into a lagoon for treatment.

The community is located within the Precambrian shield region of the province, an area of granitegneissic rock with little or no soil cover. A large deposit of silica sand has been identified but no development has taken place yet. Economic activity in the area includes fishing, trapping, logging, wild rice harvesting and limited tourism support. Fishers from Seymourville deliver their

Manigotagan River

Manigotagan River on the east shore of Lake Winnipeg about 70 km north of Pine Falls on PR 304 (Figure 4-6). Manigotagan is one of a four community complex that also comprises the Hollow Water Indian Reserve, Seymourville and Aghaming. Manigotagan was originally founded to provide access to the sawlogs and timber resources in the area. Today it is governed by a mayor and council under *The Northern Affairs Act*. The population is estimated to be 192 (2001) with about 83 housing units.

Fire fighting capability is based on a pumper truck and equipment from the community fire hall. Portable forestry equipment is also available for grass and brush fires. Police are on call from Powerview detachment, RCMP. The community also has a part time community constable. Medical response is based on ambulance service from Pine Falls or Bissett. The nearest hospital is in Pine Falls.

Water is pumped from the Manigotagan River to the treatment plant, receives nanofiltration and is piped to the individual residences. A shared solid-waste disposal site is located between Manigotagan and Seymourville. Sewage from 90% of the community is piped to a Sewage Batch Reactor (SBR) plant. The balance is handled by commercial sewage pumpout truck and delivered for treatment to the SBR plant. The North Star Hotel provides limited overnight accommodation and meals. The Woodn' Bell Motel provides rooms.

The community is located within the Precambrian Shield region of the province, an area of granitegnessic rock with little or no soil cover. Within the community boundary there is some clay cover, with rock outcrops, supporting soft and hard wood forest cover. People from the community work in the production of pulpwood for Pine Falls Paper Co. and some sawlogs for private saw mills. Additional economic activity includes commercial fishing, trapping, hunting, wild rice harvesting and tourism. Fishermen deliver their catches to the Wanipigow fish station. Trapping is organized under the Hole River and Lac du Bonnet Registered Trap Line Zones. Wild rice planting and harvesting occur along the Manigotagan River to Turtle Lake and surrounding area. Tourism is focused on the North Star Hotel, the Woodn' Bell Motel, English Brook campground and Manigotagan campground facilities. Local guides are available for hunting and fishing parties.

4.5.2. First Nations

Manitoba First Nations in the vicinity of the proposed power distribution project in Nopiming Provincial Park include Sagkeeng, Little Black River and Hollow Water.

Sagkeeng First Nation

The Fort Alexander or Sagkeeng First Nation (Reserve No. 3) is situated about 145 km northeast of Winnipeg on PTH 11 and PR 122 km via PTH 59 (Figure 4-6). The community is divided in to north and south parts by the Winnipeg River. The First Nation is signatory to Treaty 1 which was signed in 1871. The native language is Ojibway.

The on-reserve population is 2,986 and the off-reserve population is 3,255 for a total population of 6,242 (Statistics Canada, regional population statistics, 2003). The First Nation has an outstanding Treaty land entitlement claim. There are three First Nation operated schools on-reserve and a post-secondary program which are administered by the Sagkeeng Education Authority. There is a health centre, three community health representatives and two public health nurses, all located on-reserve. The nearest hospital is located in Pine Falls.

On-reserve facilities include a skating rink, baseball facilities, community hall, pow-wow grounds, beach facilities, playgrounds and a recreational complex. Two water treatment plants located on the north and south shores provide piped water to three schools, the majority of the community buildings and 285 houses. There is one, two-celled lagoon located on the north shore and one three-cell lagoon on the south shore. Two garbage trucks provide regular garbage pick-up to all of residences and buildings. Garbage is disposed of at two landfill sites located on the north and south shores.

The First Nation has two fire halls with two fire trucks and 23 volunteers in the department as well as 72 volunteer forest firefighters. The nearest RCMP detachment is in Powerview and there are two First Nation constables. The economic base consists of fishing, trapping, hunting, government services and commercial businesses.

Little Black River First Nation

The Little Black River First Nation (Reserve No. 9) is located on the banks of the O'Hanley and Black rivers, along the east shore of Lake Winnipeg, 12 km north of Pine Falls and 150 km north of Winnipeg (Figure 4-6). The First Nation is signatory to Treaty 5 in 1875.

According to the regional population statistics of 2003 the First Nation has an on-reserve population of 599 and an off-reserve population of 244 for a total population of 843. It has no outstanding treaty land entitlement. The primary language used is Ojibway. Members attend the Little Black River School, which offers K4-5 and has an enrolment of 126.There is a health office and a community health representative located on-reserve and the nearest hospital and health centre is located in Pine Falls.

On-reserve community facilities include an administration office and a multi-purpose building. The community obtains water from the Little Black River. The water is treated and distributed to the community through a piped distribution system. The community is served by a piped sewage collection system and sewage is treated in a two-cell lagoon which discharges into Wendigo Creek. One landfill site is maintained on-reserve. The nearest RCMP detachment is

located in Powerview and one First Nation constable is employed. There is a fire pumper truck, ancillary equipment and a volunteer fire department.

Trapping, agricultural development, wild rice harvesting, hunting and commercial fishing form the economic base for the community.

Hollow Water First Nation

The Hollow Water First Nation (Reserve No. 10) is located 75 km north of Pine Falls off PR 304, approximately 190 km north of Winnipeg and within the Precambrian Shield region of Manitoba (Figure 4-6). The First Nation is signatory to Treaty 5 signed in 1875.

The First Nation has an on-reserve population of 831 and an off-reserve population of 571 for a total population of 1,402 (Statistics Canada, regional population statistics, 2003). Hollow Water does not have any outstanding treaty land entitlement. Members attend the Wanipigow School, which offers K4-S4 as well as off-reserve schools. There is a health office and one community health representative located on-reserve. The nearest hospital is located in Pine Falls. Transportation and Community Health Nurse van is also provided.

On-reserve community services include a First Nation government office, community hall, ice rink and gymnasium. The community obtains water from the Wanipigow River which is treated and distributed to the community through a piped distribution system. A small number of homes receive treated water by a trucked delivery system. The community is served by a piped sewage collection system. The sewage is treated in a two-cell lagoon which discharges to the Wanipigow River. One landfill site is maintained on-reserve.

The nearest RCMP detachment is located in Powerview and one First Nation constable is employed. There is a fire pumper truck, ancillary equipment and a volunteer fire department. Fishing, hunting, trapping and wild rice harvesting constitute the economic base for the community.

4.5.3. Land/Resource Use

Parks and Protected Areas

Nopiming Provincial Park is almost surrounded by protected areas including Whiteshell, Atikaki and Manigotagan River provincial parks in Manitoba and Woodland Caribou Provincial Park and the Eagle-Snowshoe Conservation Reserve in Ontario (Figure 4-1).

Whiteshell Provincial Park

Whiteshell Provincial Park (2,721 km^2) in Manitoba is located immediately south of Nopiming and is characterized by numerous lakes, rivers and rugged Canadian Shield. Forested areas are typically boreal forest of black spruce, white spruce and balsam fir, intermixed with trembling aspen, balsam poplar, and poorly drained tamarack or black spruce fens and bogs. The park purpose is to preserve areas that are representative of the Lake of the Woods portion of the Manitoba Lowlands Natural Region; and accommodate a diversity of recreational opportunities and resource uses. The park provides nature-oriented recreational opportunities; provides high-quality cottaging, camping, boating and fishing opportunities; protects and profile historical, cultural and archaeological sites; promotes public appreciation and understanding of the park's

natural features; and accommodates commercial resource uses such as mining and wild rice harvesting where such activities do not compromise other purposes.

Atikaki Provincial Park

Atikaki Provincial Park in Manitoba is located to the north of Nopiming and covers 3,981 km^2, characterized by a landscape of rock outcrops and granite cliffs interspersed with a complex of bogs, fens, marshes, rivers and river bottom forest. The park features three river corridors and associated shorelines, including the Manitoba portion of the Bloodvein Canadian Heritage River. The purpose of Atikaki is to preserve physical features and biological communities representative of the Lac Seul Upland portion of the Precambrian Boreal Forest Natural Region. The park provides opportunities for a range of outdoor recreational experiences from canoeing and white-water rafting that depend on a pristine environment, to lodges and out-camps, and promotes public appreciation and understanding of the park's natural features and cultural heritage. South Atikaki Park Reserve is located at the south end of Atikaki and was established to provide an interim designation on a piece of land so that all interested parties may consider the implications of such a land designation in advance of a more permanent designation and land use allocation.

Manigotagan River Provincial Park

Manigotagan River Provincial Park is located to the west of Nopiming along the Manigotagan River and is one of eastern Manitoba's most valuable canoe routes due to its easy accessibility, close proximity to Winnipeg, variety of navigable rapids and wilderness experience. The park extends from Big Clearwater Lake at the northeast corner of Nopiming Provincial Park to the PR 304 river crossing just east of the community of Manigotagan. The corridor includes the river and a 750-m setback from each shore. Total park area is 74.3 km^2. The purpose of the park is to maintain the backcountry canoeing experience along the Manigotagan River, preserve the river's water quality and protect the intact natural condition of areas representative of the Lac Seul Upland portion of the Precambrian Boreal Forest Natural Region.

Woodland Caribou Provincial Park

Woodland Caribou Provincial Park, located immediately east of Nopiming in Ontario, is a wilderness park that covers 450,000 ha, making it the largest component of the Woodland Caribou Signature Site. Characteristics of the Park include critical woodland caribou habitat, significant earth and life science features, important cultural sites, excellent remote tourism opportunities, and many scenic canoe routes, including the Bloodvein Canadian Heritage River. Woodland Caribou Provincial Park provides a wide range of tourism, recreation and economic benefits for the surrounding communities.

Eagle – Snowshoe Conservation Reserve

The Eagle – Snowshoe Conservation Reserve is located immediately east of Nopiming and south of Woodland Caribou Provincial Park in Ontario. It is approximately 95 km northwest of the City of Kenora. This protected area includes the area from Snowshoe Lake along the Ontario-Manitoba border, and northeast along a chain of lakes including Chase Lake and Midway Lake, and then ends at Eagle Lake where it meets the Woodland Caribou Provincial Park boundary. It is part of the Woodland Caribou Signature Site and will contribute to ensuring the ecological integrity of the area. Eagle-Snowshoe Conservation Reserve was selected for

protection through *Ontario's Living Legacy Land Use Strategy*. Conservation Reserves are established and regulated under the Public Lands Act.

Nopiming Provincial Park

Nopiming Provincial Park was created in 1973. Prior to this date, the area now included in the park had a rich history of use by both Aboriginal and European cultures. Resource extraction was carried out in the park since the earliest arrival of European culture in the region, and to a less extent by the Aboriginal cultures beforehand. Trapping of fur-bearing animals was carried out by Aboriginal people for subsistence purposes and later at the behest of Europeans. Wild rice harvesting occurred for subsistence use and was later carried out commercially to provide food for the voyageurs.

Gold mining started near Quesnell Lake in the late 1900s. The gold was embedded in the bedrock and required underground mining techniques. Several gold mines were operating in the park until the mid-1970s. Mining for other minerals also occurred including lithium near Cat Lake. Gold mining continues today at Bissett located outside the park. The presence of mines in the region provided a major incentive to improve transportation routes to link the area with larger urban centres. Transportation in the area started with boat traffic across Lake Winnipeg and up the Manigotagan or Wanipigow rivers to Quesnell Lake. Dams were built on Quesnell Lake to facilitate barge traffic. The first roads were built in the Bissett area. A southern entry started as mining and logging roads from Lac du Bonnet as far north as Cat Lake. A rough one-lane cart track (Nopiming Trail) existed through the park are by 1970. A formal road was built in 1978 and was upgrade to PR 314 in 1988.

Cottages were originally built as housing for employees of the mining operations. In 1945, cottages were built on Bird, Davidson, Beresford and Long lakes. A provincial lottery for the allocation of recreational cottage sites on these lakes started in the 1970s. Today, the most significant conflict between resource extraction and recreational use in Nopiming involves forestry. Logging operations in the park area started in the 1940s and continue today at lower levels. The wood harvested from the park is hauled to the pulp mill located at Pine Falls on the eastern shore of Lake Winnipeg. The mill is not currently in operation.

Pearce and Tyler (1976) reported on natural resource and use conflicts for eight selected lakes in Nopiming Provincial Park including Long and Beresford lakes. Long Lake was reported to have a recreational index of 24.1 and a water quality class of 6. Beresford Lake was reported to have a recreational index of 8.4 which made the lake moderately acceptable for recreational development from an aesthetic aspect. This factor coupled with the approximate waster quality class of 6 made it well-suited for development.

Mining

Mining is the second largest primary resource sector of the Manitoba economy. The 2008 value of production for Manitoba's mineral industry totaled $2.5B, comprising metallic minerals (61%) including nickel (28.6%), zinc (7.9%), copper (15.6%), gold (4.5%), and other metals (4.8%), industrial minerals (5.6%), and petroleum (33%). In 2008, the mineral industry accounted for approximately 6% of provincial GDP and 10% of total exports. Employment in Manitoba's mineral industry averaged 5,200 in 2008, an increase of 2% from 2007.

The Bissett hare has a rich history of mining and related industries where gold mineralization is associated with rocks of the Rice Lake greenstone belt. Gold occurs in quartz veins and

stringers that occupy fractures within the rocks. Most of the deposits were staked between 1911 and 1926. Thirteen mines located in the region supplied mo re than 65% of Manitoba's primary gold to the end of 1986. One mine, the San Antonio gold mine at Bissett was the largest in the province in terms of gold production. It operated from 1982 to 1983, producing more than 42,000 kg of gold.

In 1900, J.B. Tyrell of the Geological Survey of Canada published a report that indicated that the Bissett area had potential for gold mineralization. It was not till March 1911 that E.A Pelletier who was prospecting became interested in the area while working for the Royal North West Mounted Police. Exploration was carried out but it was not until 1922 when J.A Reid's work stimulated enough interest to form the Wanipigow Syndicate. Underground development was started and by 1927 Wanipigow Mines Ltd. was incorporated. The first gold brick was poured at the site of the Poundmaker mine, in 1923 which came from a two- compartment shaft and small stamp mill. Prospecting activity spread to the Beresford lake area with the commencement of gold production by Central Manitoba Mines Ltd. in 1927 which continued for 10 years.

In 2006, San Gold Corporation reopened the gold mine at Bissett where the mining history of the region's mineral-rich Rice Lake gold belt dates back to 1911. The Company's Rice Lake Gold Project includes two mines: the deep underground, high-grade Rice Lake mine and the nearby near-surface, ramp accessed San Gold #1 (SG-1) deposit. Both mines feed the 1250 ton per day Rice Lake mill which will be expanded to 1900 tons per day by the end of 2009. Both mines are in development and are anticipated to be producing a total of approximately 800 tons per day during 2009. In 2006, the Cartwright gold deposit was discovered 800 metres west of the Rice Lake mine and in early 2008 the high grade Hinge gold zone was discovered one kilometre east of the Rice Lake mine. Twin declines (ramps) are currently being excavated to access the new discoveries, with the near term emphasis on accessing the Hinge zone before the end of 2008, to be followed by development mining in early 2009.

Forestry

Manitoba's forests have played a crucial role in developing our economy and society. Early in history, the Aboriginal people depended on the forest for food, shelter and spiritual well being. Later, pioneers from Europe considered forested land to be a barrier to agriculture, yet they depended on trees for building materials and fuel. During the Twentieth Century, Manitoba developed a successful forest industry that produces a variety of wood products for local and export use. And today, Manitoba's forest industry is the fifth largest manufacturing sector in the province.

In 1997, forestry contributed $418M in gross domestic product (GDP) to Manitoba's economy. Approximately 9,000 people are employed directly by the forest industry. More than 2.6M m^3 of softwoods and 1.3M m^3 of hardwoods are currently allocated via Forest Management License (FML) agreements with forest products companies or through quotas to small forestry companies and individuals. Today, Manitoba's primary forest sector which includes logging and paper manufacturing is responsible for approximately$259M of Manitoba's GDP. The forest industry employs Manitobans in approximately 2,500 direct jobs in logging, paper product manufacturing and related support activities.

Manitoba is not a major primary forestry jurisdiction compare to other northern regions of similar size, but it remains a desirable destination for secondary forest product development. Of Manitoba's forested lands, about 94% are owned by the province, 1% is owned by the federal government and the remaining 5% is privately owned. The annual allowable harvest limit for

timber on Manitoba's Open Crown Lands is just under 8.9M m^3, while the actual harvest in 1996 was 2.1M m^3, on 15,342 ha of land.

The Northern Coniferous or boreal forest is Manitoba's largest forest zone. It covers a broad swath across the north-central and central part of the province, dipping down to extend across our eastern border into Ontario. Major tree species include black spruce in the lowland bogs and fens, and jack pine, poplar and white spruce on the uplands. The boreal forests support the majority of the province's forest industry, providing resources for Kraft paper, lumber and newsprint. This region is important for mining and its large rivers provide hydro electricity for 3domestic use and export. First Nations' communities are found throughout the boreal forest and the area is an important tourist destination.

The Nopiming area was a hub of logging activity in 1927 with the creation of Manitoba's first pulp and paper mill in Pine Falls by the Manitoba Pulp and Paper Company. Manitoba entered into Forest Management Licence No. 1 with Abitibi-Price in 1979 which was later take over by Tembec Inc. in 1999. Under FML No. 1 Tembec controlled 9,000 km^2 of Manitoba's forest which included 62% of Nopiming Provincial Park. The Pine Falls mill has been closed since September 2009. Effective April 2008 forestry was prohibited in Nopiming Provincial Park as well as most other provincial parks in Manitoba.

Established at the beginning of the Model Forest Program in 1992, the Manitoba Model Forest area is located in eastern Manitoba. The Manitoba Model Forest Inc. is a not-for-profit non-government organization representing a diverse partnership of those with a vested interest in the wise management of natural resources and the sustainability of rural communities in forested regions of Manitoba. Objectives include engaging new partners in the MMF program, providing enhanced opportunities in training/education and developing a diverse economy by facilitating opportunities for local level participation in sustainable forest management. The Manitoba Model Forest area is located approximately 100 km northeast of the City of Winnipeg and is bounded on the west by Lake Winnipeg and on the east by the Manitoba/Ontario border. The area is 1,047,069 ha in size and includes part of the Tembec-Pine Falls operations Forest Management License 01 (the only forestry tenure holder in the region), multi-use provincial parks (Nopiming, Whiteshell and Pinawa Dam) and protected areas. Also found within the boundaries of the Manitoba Model Forest area is privately held land (predominantly in the southern part) and First Nation reserve lands.

4.5.4. History

The first scientific evidence of gold potential in the Bissett area came to light in the 1900 Geological Survey of Canada report by J.B. Tyrell. On March 6, 1911, gold was discovered on the north shore of Rice Lake. The resulting claims became the San Antonio Mine. Gold was not the only valuable product of this venture. The eventual establishment of Bissett is where the real value lies. The town grew and prospered under the management of the Mine. A road was built from Pine Falls to Bissett in 1957. Prior to that time, Bissett had been isolated from the outside world. The road brought with it the transient nature to Bissett but also a permanent home to many who still remain today.

The surface hoist burned down in June of 1968 and the "San Antone" went into receivership. Ties with Bissett were also burned as well, in that the mine no longer owned or operated the community. The Department of Northern Affairs assisted the community and in 1972 Bissett became a community complete with a mayor and council.

Bissett has been the site for gold exploration under different mining companies from San Antonio Mines, Ltd, New Forty Four, REA Gold Corp, Harmony Gold and currently by Rice Lake Gold Corporation. At the peak of the gold mining successes 250 people lived and worked in the town. The mine has most recently been acquired by the San Gold Corporation.

"Boom and Bust" are trademarks of a mining community. The community has had to face many changes and challenges throughout the years. The history of Bissett will continue long after the mine comes and goes. Bissett is no longer "a mine with a town but a town with a mine". No matter what the future holds the community will likely survive with tourism, forestry and mining exploration opportunities in the region.

4.5.5. Culture

For the most part, Nopiming's lakes are wide portions of the numerous rivers which connect the park to Manitoba's historic waterways, the Winnipeg River and Lake Winnipeg. Rivers like the Bird (Oiseau), Maskwa, Black and Manigotagan are the traditional routes into the wilderness. Age-old portages allow canoe travel between lakes or different river systems. Archaeological research in the vicinity of Nopiming has provided evidence that various groups of Native people lived there for at least the last 8,000 years. One location produced evidence of a "workshop" where tools were fashioned from native copper some 4,000 years ago. Fragments of pottery constructed about 1,500 years ago, show that early inhabitants used local clay for their work. Their decorative signs tell of an important human quality-for a craftsperson who takes time to add a touch of beauty, creates something more than a utilitarian object. Some of the cutting and scraping tools were made from the local white quartz. Other tools made from special rocks found in distant places such as South Dakota and near Lake Superior, suggest that there was extensive travel and trade with other people. A great variety of bones at old campsites indicate that these Aboriginal people made their living hunting, gathering and fishing.

Since about 1800, most of the area east of Lake Winnipeg was the land of the Anishinabe (Saulteaux), a branch of the Ojibway nation, who migrated westward from Sault Ste. Marie. Today, their descendants live on the east shore of Lake Winnipeg. In past years, it was their custom to fish at the river mouths during spring and summer. The waters were alive with goldeye, whitefish and mammoth sturgeon attempting to leave the lake in order to spawn. In late fall, people moved upstream where the necessities of life were more readily available. Like today, many of the shallower lakes abounded with wild rice, and a good harvest helped them through winter's harshness. Moose and caribou were more easily hunted in winter. Clothing and blankets were made from the hides of these and smaller fur-bearing animals like beaver and muskrat.

4.5.6. Economy

Manitoba

Manitoba's high degree of economic diversification provides exceptional economic stability, as cyclical events in any individual industry are typically offset by other industries. The result has been that Manitoba's economy is one of the most stable in Canada. Manitoba's population grew by nearly 16,000 people as of September 2009. Driving this record-breaking growth were people moving to Manitoba from other jurisdictions, the minister said. Manitoba reported a net gain of 10,562 individuals coming to Manitoba from other regions of Canada and around the world, which is a 38-year high net gain.

According to Statistics Canada (September 2009), Manitoba's population stood at 1,222,000 as of July 1. This is 15,864 more people since July 1, 2008, for an increase of 1.32 per cent, which is well above Canada's growth rate of 1.24 per cent. Much of the growth during the last several years can be attributed to the success of the Provincial Nominee Program, Allan said. This program has resulted in historic growth in Manitoba's immigration population. Of the more than 13,000 individuals who arrived in Manitoba during the last 12 months, three-quarters were provincial nominees.

Statistics Canada estimates that Manitoba's real GDP grew 2.4% in 2008 above the Canadian growth of 0.4. The Manitoba Budget Bureau estimated that the real Gross Domestic Product (GDP) increased by 2.2% for 2008. In 2009, the Manitoba economy is forecast to outperform all provinces according to major forecasters while in 2010 the Manitoba economy is forecast to grow slightly above Canada's growth.

In the first eight months of 2009, the Manitoba Consumer Price Index (CPI) increased 0.8% above the 0.3% national increase. Food (7.0%) has the highest increase while energy has declined 13.7%. In 2008, the Manitoba CPI increased 2.3%, the same as the national increase. Energy, shelter and food were the major contributors to the increase.

In the first eight months of 2009, Manitoba's employment increased by 1,200 compared to a national decrease of 251,400. Manitoba's full-time employment was up 0.5% while part-time decreased 1.1%. In the first eight months of 2009, Manitoba's unemployment rate was 5.0% second lowest behind Saskatchewan. The youth unemployment rate was 9.6%, lowest in Canada. From 1998 to 2008, Manitoba has had the lowest unemployment rate among provinces five times, and the second lowest rate four times,

As of April 1, 2009, Manitoba's population stood at 1,217,163, a one-year increase of 14,007 persons. This 1.2% increase was fifth best among provinces. In the year ending April 1, 2009, 9,288 more people moved to Manitoba than left. During the same period, net international in-migration totalled 11,095, more than the net inter-provincial out-migration of 1,807.

In the first seven months of 2009, Manitoba manufacturing sales decreased 8.2% to $8.7B. Canadian sales declined -20.8%. In the first seven months of 2009, nine industries have declines in the value of sales with primary metals, wood, printing and other non-durables leading the losses. In 2008, Manitoba's manufacturing sales increased 1.3% to $16.4B, Canadian sales declined 0.7%.

In the first seven months of 2009, Manitoba retail sales declined 2.9% better than the 5.3% decline in Canada. The decline in 2009 retail sales is led by declines in gasoline (-15.4%), motor vehicle dealer (-12.6%), and furniture and electronics (-7.3%) sales. Pharmacies (8.2%), other stores (7.3%) and food and beverage stores (5.4%) have the largest increases. In 2008, Manitoba retail sales increased 7.2%, above the 3.4% in Canada and third highest among provinces.

Statistics Canada's private and public investment survey from February 2009 shows that Manitoba's 2008 capital investment increased 16.7%, second highest among provinces. Canada's increase was 5.2%. The survey shows that Manitoba's private investment increased 15.2% while public investment increased 20.1%. In 2008, private capital investment accounts for approximately 70% of capital investment in Manitoba. In 2009, capital investment is projected to decrease 2.6%. Only three provinces are projected to have increases and investment in Canada will decline 5.4%.

North Eastman Region

The Nopiming Provincial Park area including Bissett and vicinity is not organized and there is no current economic summary information available. The North Eastman Region of Manitoba includes the rural municipalities immediately south of Nopiming including the RM of Alexander, Town and RM of Lac du Bonnet, Town of Pine Falls, Village of Powerview and other municipalities, towns and villages. The region provides current economic information that may be applied to the Nopiming area.

The North Eastman Region is ripe with economic opportunity. The vast natural resources of the area make North Eastman the perfect place for many industries, especially those who require cheap hydro-electric power or water. There are industries here ranging from mining, agriculture and forestry to high tech R&D. These natural resources also make for breath-taking scenery. North Eastman is already Manitoba's premier vacation destination, and its reputation for beautiful landscapes and abundant lakes and rivers has spread internationally. The scenery, outdoor recreation, fishing, golf, and hunting have made Eastern Manitoba a burgeoning hot spot for the tourism industry. And of course, with abundant resources, beautiful surroundings, and an extremely low cost of living, the North Eastman Region is a great place to live. The Region boasts a skilled and diverse labour force, and there is plenty of room to grow. With a major urban centre about an hour away, Eastern Manitoba provides the best of all worlds – convenience, affordability, and stunning surroundings.

Rural Municipality of Alexander

There is a wide variety of industries in the RM of Alexander. Three of the six generating plants on the Winnipeg River lie within this municipality, making it the hydro power center of Manitoba. Other dominant industries in the RM of Alexander are forestry (Tembec), agriculture, and tourism. Commercial fishing done on Lake Winnipeg and mining to the north in the Bird River area at Bernic Lake are other minor economic activities in the area. Sod and peat moss produced in Stead are distributed as far south as Texas. Wild rice farming is popular in the RM, in addition to Manitoba's traditional agricultural production. Tourism in the RM of Alexander can be attributed to the many cottagers who spend their summers enjoying water sports, cycling and hiking and their winters cross-country skiing and snowmobiling. Wildlife such as moose, deer, foxes, wolves, coyotes, bears and both snowy and gray owls also draws nature lovers to the area. The annual 4P Festival on the Labour Day Weekend celebrates Paper, Pea, Power, and Pickerel. The RM, along with other regional Municipalities, has joined in as partners in the building of the Trans-Canada Trail.

Southeast Community Futures Corporation

The Southeast Community Futures Corporation (SCFDC) is a community-based organization that provides loans and financial services to small businesses that are otherwise unable to obtain financing. It was originally established by Bloodvein, Brokenhead Ojibway Nation, Little Grand Rapids, Buffalo Point, Hollow Water, Black River, Berens River, Poplar River and Paungassi First Nations for small businesses within these member nations and their members. SCFDC was incorporated in 1985 as a not-for-profit organization and was originally funded through Human Resource Development Canada (HRDC). At the time HRDC made available $1.5 million to be used specifically as a loan fund. SCFDC is one of several Business Development corporations in Manitoba funded by Western Economic Diversification and has accessed $990,245 to date. The community futures programs operate across rural and northern

Canada as a grass-roots driven program created to strengthen rural economies by enabling entrepreneurship and assisting in community economic development.

Bissett

Forestry, trapping, mining and wild rice are the major contributors to Bissett's local economy. Tourism and the local services also provide income to the community. Trapping is largely confined to registered traplines in the Hole River and Lac du Bonnet RTL zones. Bissett shares this RTL zone with other nearby communities. Commercial fishing is not a large contributor to the local economy. The Bissett Gold Mine has been the largest employer in Bissett and the area. Conservation is the second largest employer in the area with the local helicopter base located right in the community. Forestry and logging are also in close proximity of the community. The continued development and encouragement of tourism in Bissett and the area is also necessary for the survival of the community. The community formed the Bissett Development Corporation, which is responsible for encouraging economic development. Some tourism, as well as the local service sector, contributes income to the economy of the community.

4.6. Valued Environmental Components

Valued Environmental Components or VECs are elements of the environment that is identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance. The value of an environmental component may be determined on the basis of ecosystem value, scientific concern, cultural ideals or economic importance. VECs that have the potential to be adversely affected by project activities receive special consideration in the assessment of environmental effects.

VECs identified for the proposed power distribution project in Nopiming Provincial Park include the following:

- **Boreal forest** – The proposed power distribution project is located in the Nopiming Ecodistrict of the Lac Seul Upland Ecoregion in the Boreal Forest Ecozone of Canada. The Ecodistrict represents characteristics of the boreal forest that are of value to land and resource users, regional residents, First Nations and Manitobans.
- **Woodland caribou** – The boreal population of woodland caribou is a threatened species protected by legislation under *The Manitoba Endangered Species Act* and the *Species at Risk Act* and a regional population exists in Nopiming Provincial Park.
- **Provincial park values** – The proposed power distribution project is located in Nopiming Provincial Park which has enhanced resource protection and management responsibilities for resource users and developers.
- **Aesthetic values** – The local assessment area includes cottage developments, campgrounds, recreational areas and other that possess aesthetic values requiring special consideration in the design, construction and operation the proposed power distribution project.
- **Personal well-being** – Cottage owners, recreational users, nature enthusiasts, etc derive individual or personal well-being from the park, aesthetic and another values offered by Nopiming which deserve respect during all phases of the proposed project.

5. Environmental Effects Assessment

5.1. Environmental Assessment Approach

5.1.1. Methods

The environmental assessment of the proposed power distribution project on Long and Beresford lakes in Nopiming Provincial Park was carried out based on information provided by Manitoba Hydro, Selkirk Office and reference materials obtained from Manitoba Conservation and Manitoba Hydro libraries, literature and internet searches, and personal reference collections.

Requirements of *The Environment Act* (Manitoba) and the *Canadian Environmental Assessment Act* and regulations, guidelines and policy statements were considered in the environmental assessment of the proposed power distribution project. Canadian and international best environmental assessment practices were followed including those of the International Association for Impact Assessment.

The environmental effects of the proposed power distribution project were identified using a checklist, interaction matrix, linkage diagrams and professional judgement. The interaction matrix and example linkage diagrams are provided in Appendices G and H. The adversity of biophysical and socio-economic effects was determined based on the categories in Table 5-1. The Provincial Parks Act, System Plan for Manitoba's Provincial Parks (1988), Nopiming park information and the presence of protected species were also considered in the assessment of adversity.

Table 5-1
Categories of Adverse Biophysical and Socio-economic Effects

Adversity Category	Biophysical Effects	Socio-Economic Effects
Beneficial	Net improvement to the biophysical environment expected.	Net improvement of social and economic well-being expected.
Adverse	Net impairment to the biophysical environment expected.	Net impairment of social and economic well-being expected.
High	Effect on an entire region, population or habitat in sufficient magnitude and over a sufficient period to cause a decline in abundance and/or adverse change in distribution beyond which natural irregularities would cause. Reversibility time for population is several generations.	Effect is either long duration or affecting an entire group of people in sufficient magnitude to cause significant changes in social and economic well-being. Reversibility time to baseline conditions expected to be several generations.
Moderate	Effect on a portion of the region, population or habitat is localized, but that results in a change in abundance and/or adverse distribution over one or more generations dependent upon it, but does not change the integrity of any population as a whole.	Effect is either limited to one or two generations but affects a moderate portion of the population while not necessarily affecting the integrity of the population as a whole.
Low	Effect on a local area, specific group of individuals or habitat in the project area and/or over a short period (one generation or less), but do not affect other trophic levels or integrity of population as a whole.	Effect either short-term or affects a specific group of people in the local area but does not necessarily affect the integrity of the entire group as a whole.

Table 5-2 Criteria and Ratings for Evaluating Significance			
Criteria	Rating		
	1	2	3
a) Societal value of the affected environmental components – includes nature and degree of protection provided	Low – no formal designation	Moderate – protected locally, regionally or provincially but not by legislation	High – designated or protected provincially, nationally or internationally by legislation
b) Ecological value – includes rarity and uniqueness, fragility, importance within ecosystem, importance to scientific studies	Low – no protected species or habitats, important features, scientific value	Moderate – species of concern, important features, resilient ecosystems, scientific value	High – threatened or endangered species, significant features, fragile ecosystems, scientific value
c) Magnitude – predicted disturbance compared to existing conditions	Low – no measurable disturbance in project assessment area (LT 1% of feature)	Moderate – measurable disturbance in local assessment area (1 – 25% of feature)	High – Measurable disturbance into regional assessment area (GT 25% of feature)
d) Geographic extent – area over which the effect will occur	Small – project or footprint assessment area	Moderate – local assessment area	Large – regional assessment area or larger
e) Frequency – rate of reoccurrence of the project activity causing the effect	Occurs once – during project construction or operation	Sporadic – during project constriction or operation	Continuous – during project construction or operation
f) Duration – length of time the project activity will last	Short-term – several days during project construction	Moderate- term – during project construction	Long-term – after project construction
g) Reversibility – time the environmental component will take to recover after the source of the effect ceases	Reversible – within 25 years	N/A	Not reversible – after 25 years

The significance of the residual environmental effects for the proposed power distribution project was evaluated using factors adapted from the Canadian Environmental Assessment Agency (1994, 1995) and the Canadian Standards Association draft environmental assessment standard (1999). Significance was evaluated based on the criteria and ratings in Table 5-2.

5.1.2. Site Visits

Manitoba Hydro, Manitoba Conservation and Manitoba Infrastructure Representatives carried out a site visit to the project location in Nopiming Provincial Park. Notes and general comments from this site visit are provided in Appendix A.

The assessor and three Manitoba Hydro employees from the Winnipeg (Taylor Avenue) and Selkirk offices visited the project location in Nopiming Provincial Park on October 1, 2009. The site visit was reconnaissance in nature and included inspections of the DSC location and proposed distribution line ROW adjacent to and between Long and Beresford lakes. Photographs were taken during the site visit (Appendix C).

5.1.3. Consultations

Public consultations were not carried out as part of the environmental assessment of the proposed power distribution project. Meetings and discussions were held with Manitoba Hydro staff in Winnipeg and Selkirk regarding the project and the environmental assessment report.

Contact was made with the Conservation Data Centre of Manitoba Conservation to identify the presence of species and habitats of conservation concern. Manitoba Conservation is responsible for consulting with First Nations in accordance the *Constitution Act.*

5.2. Biophysical Effects

5.2.1. Microclimate

The proposed power distribution project in Nopiming Provincial Park may result in potential microclimate effects due to clearing along the line ROW. The effects were determined to be adverse. No specific mitigation measures or follow-up are proposed. The residual effects were determined to be low in magnitude, small in geographic extent, occur once, long-term, reversible, and not significant. The environmental effects analysis for microclimate is summarized in Table 5-3.

Table 5-3
Environmental Effects Analysis for Microclimate

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Change in microclimate due to clearing along line ROW	• No specific measures	• Modified microclimate regime along line ROW	Low magnitude, small geographic extent, occurs once, long-term and reversible.

5.2.2. Air Quality

The proposed power distribution project in Nopiming Provincial Park may result in potential adverse effects on air quality including increased fugitive dust, increased NO_x, SO_2, GHG and VOC emissions, and decreased CO_2 absorption. Proposed mitigation measures included using approved dust control agents, using low-sulphur fuels, limiting unnecessary idling, limiting tree and shrub removal and planting trees. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low in magnitude, small to moderate in geographic area, sporadic to continuous, short to long-term and reversible. The environmental effects analysis for air quality is summarized in Table 5-4.

Table 5-4
Environmental Effects Analysis for Air Quality

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Increased fugitive dust levels in local assessment area from equipment and vehicles during construction	• Use approved dust control agents as required	• Minor elevated particulate levels in local assessment area during construction	Low magnitude, small geographic extent, sporadic, short-term and reversible.
Increased NO_x and SO_2 emissions in local assessment area from equipment and vehicles during construction and operation	• Limit unnecessary idling • Use low-sulphur fuels to extent possible • Adhere to Manitoba Hydro generic EnvPP practices	• Minor localized increases in the local assessment area	Low magnitude, small geographic extent, sporadic, short-term and reversible.
Increased GHG emissions from equipment and vehicles in regional assessment area during construction and operation	• Limit unnecessary idling • Adhere to Manitoba Hydro generic EnvPP practices	• Negligible increases in GHG in the regional assessment area	Low magnitude, moderate geographic extent, sporadic, short-term and reversible.

Table 5-4 Environmental Effects Analysis for Air Quality			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
Increased VOC emissions in local assessment area from fuelling activities during construction	• Adhere to Manitoba Hydro generic EnvPP practices	• Minor localized increases in the local assessment area	Low magnitude, small geographic extent, sporadic, short-term and reversible.

5.2.3. Noise and Vibration

The proposed power distribution project in Nopiming Provincial Park may result in potentially adverse noise and vibration effects from construction and operation activities including drilling and the possible use of explosives. Proposed mitigation measures included undertaking clearing during the winter months, prohibiting blasting adjacent to waterbodies, providing information to local cottage owners and adhering to applicable legislation and guidelines. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low in magnitude, small in geographic area, sporadic, short-term and reversible. The environmental effects analysis for noise and vibration is summarized in Table 5-5.

Table 5-5 Environmental Effects Analysis for Noise and Vibration			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
Increased noise and vibration in the local assessment area from construction activities	• Undertake construction activities during winter months to the extent possible • Adhere to Manitoba Hydro generic EnvPP practices	• Minor localized increases in the local assessment area	Low magnitude, small geographic extent, sporadic, short-term and reversible.
Local noise and vibration increase in the local assessment area from bedrock drilling	• Undertake drilling during winter months where possible • Adhere to Manitoba Hydro generic EnvPP practices	• Minor localized increases in the local assessment area	Low magnitude, small geographic extent, sporadic, short-term and reversible.
Noise and vibration pulses in the local assessment area from bedrock blasting	• Prohibit blasting within 100 m of waterbodies • Undertake blasting during winter months where possible • Adhere to explosive use regulations • Adhere to Manitoba Hydro safe construction guidelines • Provide information on blasting to local residents • Adhere to Manitoba Hydro generic EnvPP practices	• Sporadic noise and vibration occurrences in the local assessment area	Low magnitude, small geographic extent, sporadic, short-term and reversible.

5.2.4. Surface Water

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on surface water including modified surface water flows and drainage patterns from construction activities and impaired water quality from construction activities including clearing and grading, pole placement, use of herbicides and accidental releases of hazardous substances. Proposed mitigation included winter clearing, prohibiting in-stream activities, using hand methods adjacent to waterbodies, using low-pressure tires and tracked vehicles, providing erosion protection and sediment control, maintaining vegetation buffers, and adhering to applicable legislation and guidelines. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low to potentially high in magnitude, small to moderate in geographic area, sporadic to continuous, short- to long- term and reversible. The environmental effects analysis for surface water is summarized in Table 5-6.

Table 5-6
Environmental Effects Analysis for Surface Water

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Change in natural water flows at creek crossings during construction	• Prohibit in-stream construction activities • Maintain 10-m vegetated buffer areas adjacent to creeks • Use hand methods to clear trees and brush adjacent to creeks • Remove fallen trees from creeks that hinder natural flows • Undertake clearing during winter months • Adhere to Manitoba Hydro generic EnvPP practices	• No changes to natural water flows	N/A
Change in natural surface water drainage and runoff patterns at DSC and along line ROW during construction	• Maintain natural grades at DSC and along line ROW where possible • Remove trees and brush from line ROW • Remove brush from low areas along line ROW • Adhere to Manitoba Hydro generic EnvPP practices	• Temporary, minor changes to surface water drainage and runoff possible	Low magnitude, small geographic extent, continuous, short-term and reversible.
Impaired quality of surface water quality at stream crossings during construction	• Maintain 10-m vegetated buffer areas adjacent to creeks • Use hand methods to clear trees and brush adjacent to creeks • Provide erosion protection and sediment control measures for disturbed surface areas • Use equipment and vehicles with low-impact treads or tires • Undertake clearing during winter months • Adhere to Manitoba Hydro generic EnvPP practices	• Negligible impairment of surface water quality	Low magnitude, small geographic extent, continuous, short-term and reversible.
Impaired quality of surface water drainage and runoff at DSC and along line	• Limit surface disturbance (grubbing, scarifying, etc.) adjacent to DSC and along line	• Negligible impairment of surface water quality	Low magnitude, small geographic extent, continuous,

Table 5-6
Environmental Effects Analysis for Surface Water

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
ROW during construction	ROW • Maintain 10-m vegetated buffer areas adjacent to creeks • Use hand methods to clear trees and brush adjacent to creeks • Provide erosion protection and sediment control measures for disturbed surface areas • Use equipment and vehicles with low-impact treads or tires • Undertake clearing during winter months • Adhere to Manitoba Hydro generic EnvPP practices		short-term and reversible.
Impaired surface water quality from pole placement in wetland areas during construction	• Limit the extent of the area disturbed • Adhere to Manitoba Hydro generic EnvPP practices	• Minor, localized impairment of surface water quality	Low magnitude, small geographic extent, continuous, long-term and reversible.
Impaired surface water quality in the local assessment area from leaks, spills and releases of hazardous substances during construction and operation	• Ensure vehicles and equipment are free of fuel and fluid leaks • Prohibit on-site fuelling of vehicles and equipment • Limit on-site use and storage of hazardous substances • Provide approved storage for hazardous substances • Provide hazardous substances list and WHMIS MSDSs • Prepare emergency response plan to include hazardous substances • Ensure that staff and contractors are trained/licensed in WHMIS and dangerous goods transportation • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal risk of impaired surface water quality	Potential high magnitude, moderate geographic extent, sporadic, long-term and reversible.

5.2.5. Groundwater

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on groundwater including modified groundwater regime from construction activities and impaired groundwater quality from construction activities including pole placement, use of herbicides and accidental releases of hazardous substances. Proposed mitigation included disposal of hazardous wastes and adhering to applicable legislation and guidelines. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low to potentially high in magnitude, small to moderate in geographic area, sporadic to continuous, short- to long- term and reversible. The environmental effects analysis for groundwater is summarized in Table 5-7.

Table 5-7
Environmental Effects Analysis for Groundwater

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Modified groundwater regime in the local assessment area from drilling holes for placement of power poles	• None identified	• Negligible modification of groundwater regime	Low magnitude, small geographic extent, continuous, long-term and reversible.
Impaired groundwater quality in the local assessment area from use of treated power poles	• Where possible use only CCA pressure- treated wood poles • Dispose of waste pressure-treated wood as hazardous waste • Adhere to Manitoba Hydro generic EnvPP practices	• Localized impairment of groundwater quality	Low magnitude, small geographic extent, continuous, long-term and reversible.
Impaired groundwater quality in the local assessment area from leaks, spills and releases of hazardous substances during construction	• Ensure vehicles and equipment are free of fuel and fluid leaks • Prohibit on-site fuelling of vehicles and equipment • Limit on-site use and storage of hazardous substances • Provide approved storage for hazardous substances • Provide hazardous substances list and WHMIS MSDSs • Prepare emergency response plan to include hazardous substances • Ensure that staff and contractors are trained/licensed in WHMIS and dangerous goods transportation • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal risk of impaired groundwater quality	Potential high magnitude, moderate geographic extent, sporadic, long-term and reversible.

5.2.6. Soil

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on soil including disturbance of surface soils, soil erosion, use of herbicides and accidental releases of hazardous substances. Proposed mitigation included minimizing extent of soil disturbance, using low impact tires or treads, carrying out clearing during winter months, providing erosion protection and sediment control, disposal of hazardous wastes and adhering to applicable legislation and guidelines. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices. Residual effects were determined to be low to potentially high in magnitude, small in geographic area, sporadic to continuous, short- to long-term and reversible. The environmental effects analysis for soil is summarized in Table 5-8.

Table 5-8
Environmental Effects Analysis for Soil

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Disturbance of soil in the project assessment area	• Minimize extent of soil disturbance	• Minimal disturbance of soil integrity	Low magnitude, small geographic extent,

Table 5-8
Environmental Effects Analysis for Soil

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
from construction of DSC	• Limit surface disturbance (grubbing, scarifying, etc.) adjacent to DSC • Re-vegetate disturbed areas		continuous, long-term and reversible.
Disturbance of soil in the project assessment area from drilling to place power poles	• Compact excavated soil around pole and distribute excess soil around pole location • Use equipment and vehicles with low-impact treads or tires • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal disturbance of soil integrity	Low magnitude, small geographic extent, continuous, long-term and reversible.
Disturbance of surface soils along distribution line ROW during construction	• Minimize extent of soil disturbance • Limit equipment and vehicle use to the line ROW • Limit surface disturbance (grubbing, scarifying, etc.) along line ROW • Use equipment and vehicles with low-impact treads or tires • Provide erosion protection and sediment control measures for disturbed surface areas • Undertake clearing during winter months • Adhere to Manitoba Hydro generic EnvPP practices	• Limited disturbance of surface soils	Low magnitude, small geographic extent, continuous, moderate-term and reversible.
Disturbance of surface soils along distribution line ROW during operation	• Use equipment and vehicles with low-impact treads or tires • Undertake maintenance during winter months to extent possible • Adhere to Manitoba Hydro generic EnvPP practices	• Limited disturbance of surface soils	Low magnitude, small geographic extent, sporadic, long-term and reversible.
Increased soil erosion at DSC and along line ROW during construction and operation	• Minimize extent of soil disturbance • Provide erosion protection and sediment control measures for disturbed surface areas • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal risk of soil erosion	Low magnitude, small geographic extent, continuous, long-term and reversible.
Impaired soil quality in the project assessment area from CCA pressure-treated power poles	• Use only CCA pressure- treated wood poles • Dispose of waste pressure-treated wood as hazardous waste • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal impairment of soil quality	Low magnitude, small geographic extent, continuous, long-term and reversible.
Impaired soil quality in the project assessment area from leaks, spills and releases of hazardous substances during construction and operation	• Ensure vehicles and equipment are free of fuel and fluid leaks • Prohibit on-site fuelling of vehicles and equipment • Limit on-site use and storage of hazardous substances • Provide approved storage for	• Minimal risk of impaired soil quality	Potential high magnitude, small geographic extent, sporadic, long-term and reversible.

Table 5-8 Environmental Effects Analysis for Soil			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
	hazardous substances • Provide hazardous substances list and WHMIS MSDSs • Prepare emergency response plan to include hazardous substances • Ensure that staff and contractors are trained/licensed in WHMIS and dangerous goods transportation • Adhere to Manitoba Hydro generic EnvPP practices		

5.2.7. Vegetation

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on vegetation including loss of trees and shrubs from clearing, introduction of invasive plant species, risk of forest fires, mortality from herbicides, risk to protected species and accidental releases of hazardous substances. Proposed mitigation included minimizing extent of vegetation clearing, protecting roots of vegetation adjacent to corridor, carrying out clearing and burning during winter months, mowing vegetation, removal of accumulated fuels, washing of construction vehicles and equipment, disposal of hazardous wastes and adhering to applicable legislation and guidelines. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low to potentially high in magnitude, small to large in geographic area, sporadic to continuous, long-term and reversible. The environmental effects analysis for vegetation is summarized in Table 5-9.

Table 5-9 Environmental Effects Analysis for Vegetation			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
Loss of trees and shrubs around DSC and along line ROW	• Limit vegetation removal to conform to tower protection and safety standards • Beneficial use of trees • Cutting trees using hand tools adjacent to sensitive areas • Provide re-vegetation plan for site decommissioning • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal of trees and shrubs	Low magnitude, small geographic extent, continuous, long-term and reversible.
Increased risk of tree blow-down adjacent to DSC and along line ROW	• Prevent damage to roots of adjacent trees adjacent to DSC and line ROW • Remove danger trees along edge of line ROW that are likely to be blown or fall down • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal risk of tree blow-down	Low magnitude, small geographic extent, continuous, long-term and reversible.

Table 5-9
Environmental Effects Analysis for Vegetation

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Increased risk of invasive plant species introduction in the local assessment area	• Wash down equipment and vehicles outside park prior to undertaking construction and operation/maintenance activities • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal risk of invasive plant species	Moderate magnitude, small geographic extent, continuous, long-term and not reversible.
Increased risk of forest fire in the local assessment area	• Remove trees, shrubs and accumulated fuel from around DSC and along line ROW • Windrow brush within line ROW away from adjacent vegetation • Burn brush during winter months • Limit equipment and vehicle use along line ROW during spring and summer when fire hazard is high • Regular mowing/killing of vegetation along line ROW • Prepare fire prevention plan • Prepare emergency response plan that includes forest fire • Adhere to Manitoba Hydro generic EnvPP practices	• Reduced risk of forest fire	Potential high magnitude, large geographic extent, continuous, long-term and reversible.
Loss/disturbance of protected plant species in the project assessment area	• No additional mitigation measures • Adhere to Manitoba Hydro generic EnvPP practices	• No loss/disturbance of protected plant species	Potential high magnitude, small geographic extent, continuous, long-term and reversible.
Vegetation mortality/ stress from use of herbicides along line ROW	• Control vegetation using mechanical means to the extent possible • Use approved herbicides that do not persist or bioaccumulate in the environment • Limit herbicide use to the line ROW • Prevent overspray onto adjacent vegetation • Curtain spraying during high wind events • Adhere to Manitoba Hydro generic EnvPP practices	• Vegetation mortality confined to line ROW	Low magnitude, small geographic extent, sporadic, long-term and reversible.
Vegetation mortality/ stress in the project assessment area from leaks, spills and releases of hazardous substances during construction and operation	• Ensure vehicles and equipment are free of fuel and fluid leaks • Prohibit on-site fuelling of vehicles and equipment • Limit on-site use and storage of hazardous substances • Provide approved storage for hazardous substances • Provide hazardous substances list and WHMIS MSDSs • Prepare emergency response plan to include hazardous substances	• Minimal risk of vegetation mortality/ stress	Potential high magnitude, small geographic extent, sporadic, long-term and reversible.

Table 5-9 Environmental Effects Analysis for Vegetation			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
	• Ensure that staff and contractors are trained/licensed in WHMIS and dangerous goods transportation • Adhere to Manitoba Hydro generic EnvPP practices		

5.2.8. Mammals and Mammal Habitat

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on mammals and mammal habitat including, loss of mammal habitat, displacement of mammal species, attraction of mammal species, disturbance from snowmobiles/ATVs, mortality from predators, hunting and collisions, and risk to protected mammal species. The local area is reported to be important for moose hunting and furbearers are trapped in region. It is possible that moose may be attracted to the project assessment area while furbearers may avoid the area during construction. Proposed mitigation included minimizing extent of vegetation clearing, avoiding sensitive times of year, mowing vegetation along ROW, posting warning signs, educating park visitors and cottagers, and adhering to applicable legislation and guidelines. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices. Residual effects were determined to be low to potentially high in magnitude, small to moderate in geographic area, sporadic to continuous, long-term and reversible. The environmental effects analysis for mammals and mammal habitat is summarized in Table 5-10.

Table 5-10 Environmental Effects Analysis for Mammals and Mammal Habitat			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
Loss of mammal habitat in the project assessment area	• Limit vegetation clearing to the line ROW • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal loss of mammal habitat	Low magnitude, small geographic extent, continuous, long-term and reversible.
Displacement of mammal species to adjacent areas in the local assessment area due to loss of habitat	• None proposed • Adhere to Manitoba Hydro generic EnvPP practices	• Limited displacement of mammal species	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Disturbance to mammal species in adjacent areas due to noise and vibration during construction and operation	• Schedule clearing work during winter months • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal disturbance to mammal species	Low magnitude, moderate geographic extent, continuous, long-term and reversible.

Table 5-10
Environmental Effects Analysis for Mammals and Mammal Habitat

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Attraction of mammal species to the line ROW due to new vegetation growth	• Regular mowing/killing of vegetation along line ROW • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal attraction of mammal species	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Attraction of mammal species to the line ROW due to presence of prey species	• Regular mowing/killing of vegetation along line ROW • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal attraction of mammal species	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Mammal mortality and disturbance in the local assessment area from construction crews	• Provide instructions to contractors and employees about respect of natural and cultural resources • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal mammal mortality	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Decreased mammal-vehicle collisions due to increased visibility along road allowances	• None proposed	• N/A	N/A
Loss/disturbance/avoidance of protected mammal species (woodland caribou) along line ROW	• No additional measures identified	• Negligible loss/ disturbance of woodland caribou	Potential high magnitude, small geographic extent, continuous, long-term and reversible.

5.2.9. Birds and Bird Habitat

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on birds and bird habitat including, loss of mammal habitat, displacement of bird species, attraction of bird species, disturbance from snowmobiles/ATVs, mortality from predators, hunting and collisions, and risk to protected bird species. Proposed mitigation included minimizing extent of vegetation clearing, avoiding sensitive times of year, mowing vegetation along ROW, posting warning signs, and adhering to applicable legislation and guidelines. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low to moderate in magnitude, small to moderate in geographic area, sporadic to continuous, long-term and reversible. The environmental effects analysis for birds and bird habitat is summarized in Table 5-11.

Table 5-11
Environmental Effects Analysis for Birds and Bird Habitat

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Loss of bird habitat in the project assessment area	• Limit vegetation clearing to the line ROW • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal loss of bird habitat	Low magnitude, small geographic extent, continuous, long-term and reversible.

Table 5-11 Environmental Effects Analysis for Birds and Bird Habitat			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
Loss of bird habitat in the project assessment area	• Limit vegetation clearing to the line ROW • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal loss of bird habitat	Low magnitude, small geographic extent, continuous, long-term and reversible.
Displacement of bird species to adjacent areas due to loss of habitat	• None proposed • Adhere to Manitoba Hydro generic EnvPP practices	• Limited displacement of bird species	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Disturbance to bird species in adjacent areas due to noise and vibration during construction and operation	• Limit construction and operating activities during spring/summer bird breeding period • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal disturbance of bird species	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Bird mortality and disturbance in the local assessment area from construction crews	• Provide instructions to contractors and employees about respect of natural and cultural resources • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal bird mortality	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Decreased bird-vehicle collisions due to increased visibility along road allowances	• None proposed	• N/A	N/A
Loss/disturbance of protected bird species along line ROW	• No additional measures identified	• Negligible loss/ disturbance of protected species	Moderate magnitude, small geographic extent, continuous, long-term and reversible.

5.2.10.Fish and Fish Habitat

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on fish and fish habitat including impaired water quality, increased fishing pressure and risk to protected fish species. Proposed mitigation included maintaining vegetation buffers, clearing during winter months, using hand methods adjacent to waterbodies, providing erosion protection and sediment control, prohibiting fishing during working hours and adhering to applicable legislation and guidelines. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low in magnitude, small to moderate in geographic area, sporadic to continuous, moderate- to long-term and reversible. The environmental effects analysis for fish and fish habitat is summarized in Table 5-12.

Table 5-12 Environmental Effects Analysis for Fish and Fish Habitat			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
Increased suspended sediments in creeks crossed by the distribution line in the	• Maintain 10-m vegetated buffer areas adjacent to creeks • Use hand methods to clear	• Negligible increase in suspended sediments	Low magnitude, small geographic extent, continuous, long-term and reversible.

Table 5-12 Environmental Effects Analysis for Fish and Fish Habitat			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
project assessment area during construction and operation	trees and brush adjacent to creeks • Provide erosion protection and sediment control measures for disturbed surface areas • Use equipment and vehicles with low-impact treads or tires • Undertake clearing during winter months • Adhere to Manitoba Hydro generic EnvPP practices		
Increased suspended sediments in surface water drainage/runoff entering waterbodies in the local assessment area during construction and operation	• Provide erosion protection and sediment control measures for disturbed surface areas • Use equipment and vehicles with low-impact treads or tires • Undertake clearing during winter months • Adhere to Manitoba Hydro generic EnvPP practices	• Negligible increase in suspended sediments	Low magnitude, small geographic extent, continuous, long-term and reversible.
Increased fishing pressure on Long and Beresford lakes during construction	• Provide information to construction workers • Prohibit fishing during working hours	• Negligible increase in fishing pressure	Low magnitude, moderate geographic extent, sporadic, moderate-term and reversible.
Risk to protected species	• No additional measures identified	• No loss/disturbance of protected species	N/A

5.2.11.Amphibians

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on amphibians including loss and impairment of amphibian habitat, displacement of amphibian species and risk to protected amphibian species. Proposed mitigation included limiting clearing to corridor ROE, minimizing wetland disturbance, maintaining vegetation buffers, winter clearing, using low-impact tires and treads, and adhering to applicable legislation and guidelines. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low in magnitude, small to moderate in geographic area, continuous, long-term and reversible. The environmental effects analysis for amphibians is summarized in Table 5-13.

Table 5-13 Environmental Effects Analysis for Amphibians			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
Loss of amphibian habitat along distribution line ROW	• Limit clearing to corridor ROW • Use equipment and vehicles with low-impact treads or tires	• Negligible loss of amphibian habitat	Low magnitude, small geographic extent, continuous, long-term and

Table 5-13 Environmental Effects Analysis for Amphibians			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
	• Undertake clearing during winter months • Adhere to Manitoba Hydro generic EnvPP practices		reversible.
Displacement of amphibian species into surrounding areas	• None proposed • Adhere to Manitoba Hydro generic EnvPP practices	• Negligible displacement of amphibian species	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Impairment of amphibian habitat in the project assessment area from placement of power poles in wetland areas	• Minimize extent of wetland areas disturbed • Use equipment and vehicles with low-impact treads or tires • Undertake clearing during winter months • Adhere to Manitoba Hydro generic EnvPP practices	• Minor impairment of amphibian habitat	Low magnitude, small geographic extent, continuous, long-term and reversible.
Risk to protected species	• No additional measures identified	• N/A	N/A

5.2.12.Reptiles

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on reptiles including loss and impairment of reptile habitat, and displacement of reptile species. Proposed mitigation included limiting clearing to corridor ROE, winter clearing, use of low-impact tires and treads, and adhering to applicable legislation and guidelines. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low in magnitude, small to moderate in geographic area, continuous, long-term and reversible. The environmental effects analysis for reptiles is summarized in Table 5-14.

Table 5-14 Environmental Effects Analysis for Reptiles			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
Loss of reptile habitat along distribution line ROW	• Limit clearing to corridor ROW • Use equipment and vehicles with low-impact treads or tires • Undertake clearing during winter months • Adhere to Manitoba Hydro generic EnvPP practices	• Negligible loss of reptile habitat	Low magnitude, small geographic extent, continuous, long-term and reversible.
Displacement of reptile species into surrounding areas	• None proposed • Adhere to Manitoba Hydro generic EnvPP practices	• Negligible displacement of reptile species	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Risk to protected species	• No additional measures identified	• N/A	N/A

5.2.13.Invertebrates

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on invertebrates including loss and impairment of reptile habitat, and displacement of reptile species. Proposed mitigation included limiting clearing to corridor ROE, winter clearing, use of low-impact tires and treads, and adhering to applicable legislation and guidelines. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low in magnitude, small to moderate in geographic area, continuous, long-term and reversible. The environmental effects analysis for invertebrates is summarized in Table 5-15.

Table 5-15
Environmental Effects Analysis for Invertebrates

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Loss of invertebrate habitat along distribution line ROW	• Limit clearing to corridor ROW • Minimize extent of excavations • Use equipment and vehicles with low-impact treads or tires • Undertake clearing during winter months • Adhere to Manitoba Hydro generic EnvPP practices	• Minimal los/disturbance of invertebrate species	Low magnitude, small geographic extent, continuous, long-term and reversible.
Risk to protected species	• No additional measures identified	• N/A	N/A

5.2.14.Species at Risk

Woodland Caribou

While proposed power distribution project is not located in important woodland caribou habitat, the summer range for the Owl-Flintstone caribou population is located to the north and south of the proposed project while its winter range is located to the south and southwest (Figure 4-5). It is therefore possible for woodland caribou to move through the project and local assessment areas during spring and fall migrations. Power line ROWs through forested areas typically serve as corridors for migrating large mammal species which can modify movement patters and make the species more susceptible to predation by wolves and hunting. However, since the proposed project will result in a widening of existing road allowances it is unlikely that there will be any measureable change in caribou behaviour, movements or mortality rates. Also, clearing activities will be carried out during the winter months. It is unlikely that the proposed project will have a significant effect on the woodland caribou population.

Barred Owl

Barred owls can be expected to occur in the local assessment areas due to the presence of suitable forest habitat and the species tolerance of developed areas. It is possible that mature trees with cavities suitable for nesting will be cleared along the line ROW and removed adjacent to the line ROW. As a year-round resident the species may be displaced into the project assessment area during winter clearing activities. Foraging habitat and hunting success for

small mammals may be enhanced by the ROW clearing. However, it is not likely that the proposed project will have a significant effect on barred owls or their habitat.

Mink Frog

Mink frogs spend most of their time in the water or close to the water's edge. Since there is very little open water along the line ROW and no surface water will be affected, it is unlikely that the proposed project will have a significant effect on mink frogs or their habitat. Construction activities taking place during the summer will avoid wetland areas.

Green Frog

The green frog is usually found near water, along lakes, ponds, streams or in other wetlands. While several wetland areas along the line ROW may provide suitable habitat for the species it is unlikely that the proposed project will have a significant effect on green frogs or their habitat. Construction activities taking place during the summer will avoid wetland areas.

Monarch Butterfly

The northern limit of the range for monarch is reported to be immediately south of the proposed power distribution project in Nopiming. However, it is possible for this species to occur in the local assessment area from time to time during the summer months, particularly during a warming climate trend. It is possible that the line ROW will provide foraging habitat for the species. However, it is unlikely that the proposed Project will have any detectible effect on monarch butterfly populations.

5.3. Socio-Economic Environment

5.3.1. Social Effects

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on social conditions including impaired aesthetic and provincial park values, decreased visitor experience quality, decreased individual well-being and increased public safety risk as well as potential beneficial effects including increased individual well-being, increased public safety risk and improved recreational opportunities. Proposed mitigation included locating distribution line away from cottages, minimizing extent of clearing, providing buffers adjacent to properties, winter clearing, locating poles away from road allowance, providing warning signs along road and providing information to park visitors and cottage owners. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low in magnitude, moderate to large in geographic area, sporadic to continuous, moderate to long-term and reversible. The environmental effects analysis for social conditions is summarized in Table 5-16.

Table 5-16
Environmental Effects Analysis for Social Conditions

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Impaired aesthetic values in local assessment area due to presence of DSC and distribution line	• Locate distribution line away from cottages to the extent possible • Minimize extent of clearing • Provide buffers adjacent to cottages to the extent possible • Restore surface damage adjacent to road and cottages	• Minor impairment of aesthetic values	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Impaired provincial park values in local assessment area values due to presence of DSC and distribution line	• Minimize extent of clearing • Provide buffers adjacent to roads if feasible	• Minor impairment of provincial park values	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Decreased visitor experience quality due to impaired aesthetic and park values	• Minimize impairment of aesthetic and park values	• Minor decrease in visitor experience	Low magnitude, large geographic extent, continuous, long-term and reversible.
Increased visitor experience due to benefits of electrical service	• None proposed	• N/A	N/A
Decreased individual well-being in the local assessment area due to noise and vibration from construction activities	• Undertake clearing activities during winter months • Limit clearing activities during spring summer months • Adhere to Manitoba Hydro generic EnvPP practices	• Minor decrease in well-being	Low magnitude, moderate geographic extent, continuous, moderate-term and reversible.
Decreased individual well-being due to power distribution project	• Provide information to park visitors and cottage owners	• Residual well-being impairment by non-supporters of project	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Decreased individual well-being due to perceived risk of EMF	• Provide information to cottage owners	• Residual well-being impairment	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Increased individual well-being due to benefits of electrical service	• None proposed	• N/A	N/A
Increased recreational opportunities with distribution line ROW	• None proposed	• N/A	N/A
Increased public safety risk during construction	• Provide information to park visitors and cottage owners • Provide warning signage, speed control, flag persons • Adhere to provincial highway safety regulations and codes • Adhere to Manitoba Hydro safe construction guidelines	• Minimal risk to public safety	Low magnitude, moderate geographic extent, continuous, moderate-term and reversible.
Worker safety risk during construction	• Adhere to provincial safety and health regulations and codes • Adhere to Manitoba Hydro safe working guidelines	• Minimal risk to worker safety	Low magnitude, moderate geographic extent, continuous, moderate term and reversible.

5.3.2. Economic Effects

The proposed power distribution project in Nopiming Provincial Park may have potential adverse effects on economic conditions including the initial cost of service and increased property values as well as potential beneficial effects including increased property values and increased contract, employment and revenue opportunities. No specific mitigation measures area proposed. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. Residual effects were determined to be low to high in magnitude, small to large in geographic area, sporadic to continuous, short to long-term and reversible. The environmental effects analysis for economic conditions is summarized in Table 5-17.

Table 5-17
Environmental Effects Analysis for Economic Conditions

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Initial cost of electrical service	• None proposed	• N/A	High magnitude, small geographic extent, short-term and reversible.
Increased local property values due to electrical service	• None proposed	• N/A	Low magnitude, moderate geographic extent, continuous, long-term and reversible.
Contract opportunity and regional employment from line clearing and debris disposal	• None proposed	• N/A	Moderate magnitude, large geographic extent, sporadic, long-term and reversible.
Regional revenue from accommodation of construction crews	• None proposed	• N/A	Moderate magnitude, large geographic extent, sporadic, long-term and reversible.
Regional revenue from purchase of equipment and supplies	• None proposed	• N/A	Moderate magnitude, large geographic extent, sporadic, long-term and reversible.
Regional employment for line maintenance and repair	• None proposed	• N/A	Moderate magnitude, large geographic extent, sporadic, long-term and reversible.

5.4. Heritage Resource Effects

There is little potential for heritage resources in the project assessment area to be adversely effected by construction of the proposed distribution line. Limited excavation will be required for the DSC pad and holes will be drilled in the soil (2.4 m deep) for the power poles. The DSC will be located in a disturbed area in which fill has been placed from previous activities and the distribution line ROW will run along the road allowance which has been cleared previously along much of its length. The potential effects of the proposed power distribution project on cultural resources in the assessment area were determined to be negligible to low. Mitigation measures identified to avoid or minimize adverse effects included identifying and reporting any surface cultural resources during surveying, flagging and clearing, and reporting any buried cultural resources exposed during excavating for the DSC and drilling for the power poles. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices and guidelines. The

residual effects on cultural resources were determined to be small in magnitude and geographic extent, low in frequency (occur once), long-term in duration and irreversible. The environmental effects analysis for cultural resources potentially affected by the proposed power distribution project is summarized in Table 5-18.

Table 5-18
Environmental Effects Analysis for Heritage Resources

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Increased risk of damage to known historic resources in the local assessment area from construction workers	• Provide instructions to contractors and employees about respect of natural and cultural resources	• None identified	Low magnitude, moderate geographic extent, sporadic, moderate-term and not reversible.
Loss or damage to cultural resources in the project assessment area due to excavating for DSC base and drilling for pole placement	• Limit extent of excavations • Report heritage resources and human remains to Historic Resources Branch immediately • Stop work until clearance is given by Historic Resources Branch • Adhere to Manitoba Hydro generic EnvPP practices	• None indentified	Low magnitude, small geographic extent, sporadic, moderate-term and not reversible.

5.5. Effects of Accidents and Malfunctions

The proposed power distribution project in Nopiming Provincial Park may result in increased risk of vehicle accidents, electrocution to workers, fuel spills and forest fires during construction and operation. Mitigation measures proposed include adhering to provincial highway safety regulations, Manitoba Hydro safe work procedures, posting warning signs and reflectors, regular mowing of vegetation, removing accumulate fuel from ROW and preparing an emergency response plan. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices. Residual effects were determined to be low to in magnitude, small in geographic area, sporadic, short to moderate-term and not reversible. However, project fuel spills and fires could have potentially significant environmental effects. Environmental effects analysis for accidents and malfunctions is summarized in Table 5-19.

Table 5-19
Environmental Effects Analysis for Accidents and Malfunctions

Environmental Effects	Mitigation Measures	Residual Environmental Effects	Evaluation
Increased risk of vehicle accidents during construction	• Adhere to provincial highway safety regulations and codes • Adhere to Manitoba Hydro safe working guidelines	Minimal risk of vehicle accidents	Low magnitude, small geographic extent, sporadic, moderate-term and not reversible.
Increased risk of vehicle accident during operation	• Provide warning signage as required for wildlife	Minimal risk of vehicle accidents	Low magnitude, small geographic extent, sporadic, moderate-term and not reversible.
Risk of electrocution to workers during construction and operation	• Adhere to electrical codes • Adhere to Manitoba Hydro safe working guidelines	Minimal risk of electrocution	Low magnitude, small geographic extent, sporadic, long-term and not reversible.

Table 5-19 Environmental Effects Analysis for Accidents and Malfunctions			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
Risk of fuel spill during construction	• Adhere to provincial fuel storage and handling regulations and guidelines • Prepare emergency response plan that includes fuel spills • Adhere to Manitoba Hydro generic EnvPP practices	Minimal risk of fuel spill	Low magnitude, small geographic extent, sporadic, moderate-term and not reversible.
Risk of fire during construction	• Conduct clearing during winter months • Adhere to Manitoba Hydro generic EnvPP practices	Minimal risk of fire during construction	Low magnitude, small geographic extent, sporadic, moderate-term and not reversible.
Risk of forest fire during operation	• Remove accumulated fuel materials from line ROW • Conduct line ROW inspections and undertake required brush mowing • Prepare emergency response plan that includes forest fires • Adhere to Manitoba Hydro generic EnvPP practices	Minimal risk of fire during operation	Low magnitude, small geographic extent, sporadic, long-term and not reversible.
Risk of falling trees during operation	• Conduct line ROW inspections and undertake required maintenance	Minimal risk of falling trees	Low magnitude, small geographic extent, sporadic, long-term and not reversible.

5.6. Effects of the Environment on the Project

The proposed power distribution project in Nopiming Provincial Park will be subject to damage from extreme weather events and forest fires resulting in power outages. Climate change will increase the risk over time of extreme weather events and forest fires. Mitigation measures proposed include removing trees adjacent to the ROW that pose a risk, coordinating emergency procedures with local cottage owners, removing accumulated fuel from ROW and preparing an emergency response plan. Follow-up indentified includes adherence to Manitoba Hydro generic EnvPP practices. Residual effects were determined to be potentially high in magnitude, moderate in geographic area, sporadic, short-term and not reversible. However, accidental fuel spills and wild fires caused by others could have potentially significant environmental effects. Environmental effects analysis for accidents and malfunctions is summarized in Table 5-20.

Table 5-20 Environmental Effects Analysis for Effects of the Environment on the Project			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
Risk of power outages from line damage due to extreme weather events – high winds, ice storms	• Remove trees adjacent to line ROW that pose risk during weather events • Coordinate contingency procedures with local cottage owners • Prepare emergency response plan that includes extreme	Minimal risk of power outages	Potential high magnitude, moderate geographic extent, sporadic, short-term and not reversible.

Table 5-20 Environmental Effects Analysis for Effects of the Environment on the Project			
Environmental Effects	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
	weather events		
Risk of power outages from line damage due to forest fires	• Remove accumulated fuel materials from line ROW • Coordinate contingency procedures with local cottage owners • Prepare emergency response plan that includes forest fires	Minimal risk of power outages	Potential high magnitude, moderate geographic extent, sporadic, short-term and not reversible.

5.7. Cumulative Environmental Effects

Cumulative environmental effects are the environmental effects that are likely to result from a project in combination with the environmental effects of other past, existing and future projects or activities. The Canadian Environmental Assessment Agency Operational Statement (2007) provides guidance on how cumulative environmental effects should be considered under the Canadian Environmental Assessment Act and the Agency's Practitioner's Guide (1999) outlines a five-step environmental assessment process for cumulative environmental effects that includes: 1. Scoping; 2. Analysis of effects; 3. Identification of mitigation; 4. Evaluation of significance; and 5. Follow-up.

5.7.1. Scoping

Regional Issues

Regional issues of concern for the assessment of cumulative effects were determined to include natural and wilderness value protection, woodland caribou protection, east side road development, forestry management, mining and reclamation, Aboriginal land claims, cottage development and services, and economic opportunities.

Regional Valued Environmental Components

Regional VECs relevant to the cumulative effects assessment were determined to be:

- Boreal forest land and resource;
- Provincial park natural/wilderness values;
- Wilderness values;
- Aesthetic values;
- Woodland caribou;
- Traditional lands and resources;
- Personal well-being; and
- Regional economy.

Spatial and Temporal Boundaries

Spatial boundaries are generally greater and temporal boundaries are often longer for a cumulative effects assessment since the effects of other projects and activities may occur over a wider area and extend before and after the project boundaries. The spatial boundary identified for the cumulative effects assessment area is an 80 by 80 km block (6,400 km2) centered on Long and Beresford lakes including Bissett, Nopiming Provincial Park and parts of Atikaki and Manigotagan provincial parks in Manitoba and Woodland Caribou Provincial Park and Eagle-

Snowshoe Conservation Reserve in Ontario. The temporal boundary for the cumulative effects assessment was determined to extend over an approximate 50-year period from park establishment in 1976 to 25 years in the future.

Other Actions

Other actions that may affect the same VECs were determined to include:

- Forest harvesting and revegetation;
- Mining exploration and development;
- Transmission line decommissioning
- Off-road vehicle (snowmobile, ATV) use;
- Backcountry park use;
- Traditional resource use;
- Recreation hunting;
- Future road development;
- Future cottage development; and
- Future power distribution projects.

Potential Effects

The potential environmental effects due to the proposed project and other projects and activities in the cumulative effects assessment area for the reasonably foreseeable future are shown as interactions in Table 5-21.

Table 5-21
Potential Cumulative Environmental Effects Identification

Projects and Activities	Regional VECs							
	Boreal forest	Provincial park values	Wilderness values	Aesthetic values	Woodland caribou	Traditional lands and resources	Personal well-being	Regional economy
Proposed Project								
Activities causing effects	X	X	X	X	X	X	X	X
Other Projects and Activities								
Forest harvest/revegetation	X	X	X	X	X	X	X	X
Mining exploration/development	X	X	X	X	X	X	X	X
Transmission line decommission	X	X	X	X	X	X	X	X
Off-road vehicle use		X	X	X	X	X	X	
Backcountry park use					X	X	X	
Traditional land/resource use					X	X	X	
Recreational hunting		X	X	X	X	X	X	X
Future road development	X	X	X	X	X	X	X	X
Future cottage development	X	X	X	X	X	X	X	X
Future power distribution projects	X	X	X	X	X	X	X	X

5.7.2. Analysis of Effects

The potential cumulative environmental effects of the proposed project in combination with other projects and activities in the assessment area are analyzed in Table 5-22. Potential cumulative effects include incremental reduction of boreal forest, impaired wilderness values, decline in woodland caribou population, loss of traditional land and resource activities, and improved regional economy over the longer term. The effects of the proposed power distribution project in

relation to the effects of other projects and activities were determined to be not significant.

Table 5-22
Potential Cumulative Environmental Effects Analysis

Potential Cumulative Effect Category	Evaluation Criteria and Rating (Table 5-2)							Significant
	Ecological Value	Societal Value	Magnitude	Geographic Extent	Frequency	Duration	Reversibility	
Boreal forest	High	High	Low	Mod	Con	LT	R	No
Provincial park values	NA	High	Mod	Sm	S	LT	R	No
Wilderness values	NA	High	Mod	Mod	Con	LT	NR	No
Aesthetic values	NA	Mod	Mod	Sm	S	MT	R	No
Woodland caribou	High	High	Mod	Mod	Con	LT	R	No
Traditional land and resource	Mod	High	Mod	Mod	Con	LT	R	No
Personal well-being	NA	Mod	Mod	Sm	S	ST	R	No
Regional economy	NA	High	Mod	Mod	Con	LT	NR	No

5.7.3. Identification of Mitigation

No additional mitigation measures are required for any potential cumulative environmental effects.

5.7.4. Evaluation of Significance

No significant cumulative environmental effects were identified for the propose project in combination with environmental effects of other projects and activities in the assessment area for the reasonably foreseeable future.

5.7.5. Follow-up

No additional follow-up is required for any potential cumulative environmental effects.

6. Environmental Protection

6.1. Manitoba Hydro Commitment

Manitoba Hydro supports the need to protect and preserve the natural environment and heritage resources affected by its projects and facilities. This goal can only be achieved with the full commitment of Manitoba Hydro employees, consultants and contractors at all stages of projects, from planning and design through construction and operational phases.

As stated in the Corporate Environmental Management Policy:

Manitoba Hydro is committed to protecting the environment. In full recognition of the fact that corporate facilities and activities affect the environment, Manitoba Hydro integrates environmentally responsible practices into its businesses, thereby:

- *preventing or minimizing any adverse impacts, including pollution, on the environment, and enhancing positive impacts;*
- *continually improving our Environmental Management System;*
- *meeting or surpassing regulatory requirements and other commitments;*
- *considering the interests and utilizing the knowledge of our customers, employees, communities, and stakeholders who may be affected by our actions;*
- *reviewing our environment objectives and targets annually to ensure improvement in our environmental performance; and*
- *documenting and reporting our activities and environmental performance.*

Manitoba Hydro's environmental management policy is reflected in the environmental protection plans for the proposed power development project. The use of environmental protection plans is a practical and direct implementation of mitigation measures and follow-up actions outlined in the self assessment report and Manitoba Hydro's commitment to responsible environmental stewardship.

6.2. Environmental Protection Program

6.2.1. Environmental Protection Plans

Environmental Protection Plans (EnvPPs) are project management tools that supplement project design specifications to prevent or minimize potential adverse environmental effects arising during the construction, operation and maintenance phases of a project. EnvPPs prescribe measures to meet regulatory requirements for environmental protection that are specific to the project. EnvPPs are specifically designed and organized for use as reference documents by field construction and operation/maintenance personnel.

6.2.1.1. Transmission Line Construction and Maintenance

Environmental protection requirements related to site preparation, construction, operation and maintenance of the distribution line component of the proposed Project are outlined in the generic EnvPP for transmission line construction and maintenance (Manitoba Hydro 2007). Environmental protection provisions outlined in this EnvPP will be followed by Manitoba Hydro during site preparation and line construction as well as during line operations and maintenance.

The provisions will also apply to clearing of the ROW by the NNEPI. Generic plan provisions will be augmented by project-specific mitigation measures and follow-up requirements outlined in this environmental assessment report.

6.2.1.2. Distribution Supply Center

Environmental protection requirements related to site preparation, construction, operation and maintenance of the distribution supply centre component of the proposed project are outlined in the generic EnvPP for distribution supply centres (Manitoba Hydro 2008). The generic EnvPP outlines regulatory requirements, design mitigation, enforcement and environmental protection measures applicable to distribution supply centres. Environmental protection provisions outlined in this EnvPP will be followed by Manitoba Hydro during site preparation, construction, operation and maintenance. Generic plan provisions will be augmented by project-specific mitigation measures and follow-up requirements outlined in this environmental assessment report.

6.2.2. Environmental Protection Guidelines

Environmental protection guidelines for construction, operation and decommissioning Manitoba Hydro work sites and facilities (Manitoba Hydro 2006) provides guidance how to implement environmental protection provisions outlined in EnvPPs. The purpose of the guidelines is to ensure that Manitoba Hydro employees and contractors are aware of their responsibilities in protecting the environment at work sites and facilities. The guideline report contains relevant environmental legislation and guidance materials, environmental protection specifications, reporting requirements and reference documents.

7. Summary and Conclusion

The environmental assessment of the proposed power distribution project at Long and Beresford lakes in Nopiming Provincial was carried out during October 2009 and reported on during November 2009. The assessment included contacts with Manitoba Conservation and Manitoba Hydro staff and a site visit to the project location with Manitoba Hydro representatives on October 1, 2009.

The proposed power distribution project involves the pre-construction, construction, operation and maintenance and eventual decommissioning of an 18 km 25 kV AC distribution line to service cottages and other facilities on Long and Beresford lakes in Nopiming Provincial Park. A new DSC would be constructed adjacent to an existing 66 kV transmission line. The new distribution line would run along existing road allowances to service cottages and other facilities on Long and Beresford lakes. The project would be designed, constructed and operated by Manitoba Hydro, and funded by the NNEPI. The NNEPI will also be responsible for clearing the ROW for the distribution line. Cottage and other land owners would be responsible for clearing vegetation and making their premises ready for electrical connections on their properties.

The assessment of the proposed power distribution project was conducted based on information provided by Manitoba Hydro, Winnipeg and Selkirk offices and reference materials obtained from Manitoba Conservation, Provincial Archives and City of Winnipeg libraries, literature and internet searches, and personal collections. Requirements of *The Environment Act* (Manitoba) and the *Canadian Environmental Assessment Act* and regulations, guidelines and policy statements were considered. Canadian and international best environmental assessment practices were followed including those of the International Association for Impact Assessment.

The environmental effects of the proposed power distribution project were identified using a checklist, an interaction matrix, linkage diagrams and professional judgement. Adversity of biophysical and socio-economic effects was assessed based on predetermined categories. *The Provincial Parks Act,* System Plan for Manitoba's Provincial Parks (1988), Nopiming park information and the presence of protected species were also considered in the assessment of adversity.The significance of the residual environmental effects was evaluated using factors and criteria adapted from the Canadian Environmental Assessment Agency (1994, 1995) and the Canadian Standards Association draft environmental assessment standard (1999).

Based upon the information presented and the analyses performed in this environmental assessment report, the proposed power distribution project would not likely result in any significant environmental effects with the application of the mitigation measures identified and the implementation of the follow-up actions proposed.

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