



Pointe du Bois Spillway Replacement Project

Environmental Impact Statement | June 2011



EXECUTIVE SUMMARY

Introduction

Manitoba Hydro is proposing to undertake the Pointe du Bois Spillway Replacement Project (the Project), with new spillways and dams at the site of the Pointe du Bois Generating Station, in order to maintain public and dam safety and to provide a safer working environment for staff. With the improvements planned as part of the Project, the current Canadian Dam Association Dam Safety Guidelines (2007) will be addressed.

The Project will be constructed just downstream of the existing spillway and rockfill dam. It will consist of the following activities and components:

- ◆ Construction and operation of the following permanent structures:
 - Primary spillway including approach and discharge channels;
 - Secondary spillway;
 - Transition structures and wing walls; and
 - Earthfill dams.
- ◆ Construction and operation of the following permanent infrastructure:
 - Construction/permanent power; and
 - Townsite access roadway
- ◆ Construction and decommissioning of the following construction infrastructure:
 - Work areas;
 - Buildings;
 - Concrete batch plants and crushing operations;
 - Construction access (includes barge landings, winter ice roads and lower spillway shelf road);
 - Construction roadways;
 - Stabilization of the east gravity dam;
 - Material source areas;
 - Excavated material placement area;
 - Cofferdams;
 - Stormwater management ponds;
 - Water, wastewater and waste management;

- Fuel storage and transportation; and
- Explosives storage.
- ◆ Decommissioning of the following existing structures:
 - Existing spillway and water retaining structures (not including the powerhouse).

The existing powerhouse will continue to be operated and maintained. The operation and maintenance of the powerhouse is not within the scope of the Spillway Replacement Project.

Background

Manitoba Hydro has been assessing options to modernization at the Pointe du Bois Generating Station since acquiring the plant in 2002. In 2007, following consultations with Aboriginal groups and the public, Manitoba Hydro decided to proceed with an option to build a new powerhouse, spillway and dams, called the Rebuild Alternative. However, in 2009, as a result of rising construction costs and the change in the global economy, the scope of the modernization project was re-defined to the Spillway Replacement Project.

Design Criteria

Manitoba Hydro developed six primary criteria for evaluating general arrangements of the spillways at Pointe du Bois, as follows:

- ◆ Dam safety;
- ◆ Lake sturgeon habitat;
- ◆ Stakeholder effects;
- ◆ Constructability;
- ◆ Future powerhouse; and
- ◆ Cost

Noise, traffic and maintenance of flow characteristics immediately downstream of the new facility were among the concerns of local stakeholders. For lake sturgeon, it was important to avoid in-water work in known spawning areas, to maintain the flow over those spawning areas, to preserve turbulent flow on the east side of the spillway shelf, to maximize opportunities for adaptive management, and to maintain the location of the spillway on the upper portion of the shelf.

The final general arrangement for the Project addresses those needs while balancing requirements for the six primary criteria. In many cases, aspects of the Project were

designed to minimize or avoid adverse environmental effects before they occur. The following are examples:

- ◆ The configuration of the primary spillway was significantly influenced by the desire to maintain a healthy lake sturgeon spawning habitat downstream of the spillway shelf. The location and orientation of the primary spillway was chosen to provide flow characteristics similar to the existing spillway. The discharge channel elevation was chosen to be above the normal Pointe du Bois tailrace elevation. This decision provides the benefit that avoids the requirement for a cofferdam downstream of the spillway shelf (in lake sturgeon habitat) and to preserve the plunging characteristics of the existing spillway.
- ◆ The secondary spillway provides the ability to provide supplemental spillway capacity in the event of large floods. As well, if it is determined that the use of the primary spillway has resulted in a decrease to successful lake sturgeon spawning, one of the opportunities to improve the lake sturgeon spawning habitat would be the operation of the secondary spillway during the spawning period. The secondary spillway was located to provide an opportunity to direct flow that cascades over the spillway shelf in a similar fashion as the existing spillway. Its location at the upper portion of the spillway shelf was seen to maintain similar flow characteristics and provide aesthetic benefits to cottagers downstream by maintaining the spillway shelf.
- ◆ The Project will allow the Pointe du Bois Generating Station to maintain the historic water level and variation of the forebay, during and post-construction. The Pointe du Bois forebay elevation variation is characterized as being stable, which is beneficial for the users of the forebay.
- ◆ Material source areas have been identified on the east side of the Winnipeg River. The use of these materials will reduce the amount of traffic on PR 313 and other public roadways.
- ◆ As part of efforts to increase public safety by minimizing interactions between the public and construction activities, a new permanent road will be developed that modifies the route of PR 313 and the intersection with Glassco Avenue at Pointe du Bois. The new access road provides a means for the public and non-construction related Manitoba Hydro staff to travel around the work area to reach their destination.
- ◆ Horizontal direction drilling underneath the Winnipeg River will be used to provide power to the Project, providing aesthetic and aquatic benefits over alternative options (i.e., overhead or submerged cables).

Communication and Consultation Program

Manitoba Hydro developed and initiated a public communication and consultation program in 2007, as part of its efforts to select an option at that time for modernizing the generating station. The communications and consultation program for the Spillway Replacement Project has built upon the efforts of that original program. The program has included open houses, meetings/presentations, and mailings to interested parties, including government (federal, provincial and municipal), Aboriginal groups, local property and cottage owners, local cottage and other associations, local businesses, the general public, and other interested parties.

Meetings/presentations concerning the Spillway Replacement Project were held with representatives of Sagkeeng First Nation, the Manitoba Metis Federation, the Black River First Nation, regulatory agencies, the Pointe du Bois Cottagers Association Modernization Committee, Whiteshell Cottagers Association, and some of the local lodges and outfitters.

A web site for the Project was set up to provide an overview of the components of the Spillway Replacement Project, the environmental assessment activities, consultation feedback and a contact regarding questions and/or concerns.

Overview of Environmental Studies

The environmental setting (baseline) for the assessment was characterized using existing information sources and environmental field studies. The environmental studies were commenced in 2006 with the decision to proceed with modernization of the facilities at Pointe du Bois. In late 2009, the project was redefined from a rebuild alternative to a spillway replacement project and the environmental studies were completed in 2010 on this basis. The information and studies addressed the physical, biological (aquatic, terrestrial) and socio-economic components of the environment. Considerable effort was also made in developing and discussing proposals with Sagkeeng First Nation and the MMF for them to conduct traditional use studies to provide information for the assessment. Unfortunately, agreement on proposals to proceed with the traditional use studies was not concluded in time for obtaining traditional use information for consideration in the assessment.

Summary of Environmental Effects

The potential environmental effects of the Project on the physical, aquatic, terrestrial and socio-economic components of the environment were considered in the assessment. In addition, to focus assessment considerations, valued environmental components were identified. Mitigation measures were identified for implementation and the significance of residual environmental effects remaining after application of the mitigation was determined.

Physical Environment

The physical environment components include: air quality, noise, climate, surface water regime; ice regime, physiography and landscape, erosion and sedimentation, woody debris and groundwater. There were no valued environmental components (VECs) identified for the physical environment.

The assessment concludes the following effects with respect to the physical environment:

- ◆ There will be no change to water levels in the reaches upstream or downstream of the generating station as a result of the Project;
- ◆ The Project has been designed to minimize changes to local water flow patterns;
- ◆ Residual effects on local air quality and noise are anticipated during construction. Mitigation measures have been identified and will be implemented to minimize the residual effects;
- ◆ The Project will change the local physiography and landscape as a result of construction activities. Sites cleared for work areas, material source and disposal areas and access roads not required for long-term operation of the station will be rehabilitated following construction;
- ◆ There will be essentially no change to ice processes or woody debris production as a result of the Project; and
- ◆ The Project is required for dam safety purposes. The Project also supports the on-going operation of the Pointe du Bois powerhouse, which produces an average of 580 GWh of renewable energy per year. This energy contributes to the Manitoba and regional energy supply. By displacing fossil fuelled generation (the most prevalent source of electrical energy in the mid-continental region), the Pointe du Bois GS contributes to annual emission reductions estimated to be 435,000 tonnes (CO_{2eq}).

Aquatic Environment

The aquatic environment components include: water quality, sediment quality, aquatic habitat, lower trophic levels, fish community, and fish quality. VECs identified were lake sturgeon, northern pike and walleye.

The assessment concludes the following with respect to aquatic environmental effects:

- ◆ The Project is expected to result in short-term, small to large, regional increases in total suspended solids in the Winnipeg River. The largest effects during construction are associated with the east gravity dam stabilization, cofferdam construction and operation, and commissioning of the primary spillway. As the estimated increases in total suspended solids (TSS) are within Manitoba Water

Quality Standards, Objectives and Guidelines for Protection of Aquatic Life, the magnitude of these increases is ranked as small. Nutrients and the concentrations of metals (notably aluminum, iron, and manganese) may increase in relation to Project-related increases in TSS. During operation, dissolved oxygen depletion is expected within the isolated larger ponds on the spillway shelf, notably under ice cover;

- ◆ Upon conclusion of the Project, there will be a net gain in aquatic habitat area in the Pointe du Bois forebay. Gains will occur immediately upstream of the new dam and spillway approach channel. A loss of permanently and intermittently connected aquatic habitat will occur on the spillway rapids. These habitats serve primarily as corridors for downstream fish movement and as sources of lower trophic productivity for downstream fish habitat. There will be no change to the amount of aquatic habitat located downstream of the spillway rapids and powerhouse. Changes in bottom substrates are expected to occur in relation to redistribution of flows in localized areas immediately upstream and downstream of the spillway;
- ◆ Residual effects to lower trophic levels as a result of the Project are considered to be small;
- ◆ Construction activities, including blasting and water use, and increases in recreational fishing pressure are not expected to have residual effects on VEC fish species or the fish community. Changes in substrates in localized areas immediately upstream and downstream of the spillway are not expected to have a negative effect on VEC fish species. Habitat suitability models indicate that habitat changes associated with concentration and redirection of spilled flows will have only minor effects on fish habitat. No residual effects on VEC fish species are anticipated. Proposed habitat compensation is expected to result in a net gain in the productive capacity of fish habitats following the Project; and
- ◆ No residual effects to fish quality are anticipated.

Terrestrial Environment

The terrestrial environment components include: wetland vegetation, terrestrial vegetation and rare plants, invertebrates, amphibians and reptiles, birds, and mammals. VECs identified were - Merritt Fernald's sedge, white wood aster, eagle, osprey, Canada warbler, monarch butterfly, northern leopard frog, and common snapping turtle.

The assessment concludes the following with respect to the terrestrial environment:

- ◆ Residual effects to wetlands include the potential loss of plants species of concern, loss of wetlands, temporary reduction and change in vegetation diversity, and fragmentation of vegetation for sites that have been cleared for project activities. A modification of wetland habitats will occur for Project

footprints where substrate material and/or vegetation will be removed to develop material sources and ancillary facilities;

- ◆ Residual effects to terrestrial vegetation and rare plants include the potential loss of plants species of concern, loss of native forest vegetation, temporary reduction and change in vegetation diversity, and fragmentation of vegetation for sites that have been cleared for project activities. A modification of terrestrial vegetation will occur for Project footprints where substrate material and/or vegetation will be removed to develop material sources and ancillary facilities. Adjacent to Project activities, native vegetation will be altered along newly created forest edges; and
- ◆ Residual effects to invertebrates, amphibians and reptiles, birds and mammals are considered to be small.

Socio-Economic Environment

The socio-economic environment components include: economy, property ownership and land use, infrastructure and services, personal, family and community life, municipal and local government district controls, commercial resource use, recreational use and tourism, and heritage resources. VECs identified were – employment, business opportunities and enjoyment of local area.

The assessment concludes the following with respect to the socio-economic environment:

- ◆ The Project will provide for employment and training and business opportunities during construction and operation. The opportunities are positive and moderate in magnitude;
- ◆ The Project will result in residual effects related to increased traffic (truck and personal vehicles) on PR 313, the Slave Falls road and local roadways, noise, safety, and general disruption to the enjoyment of the local area. The residual effects are moderate in magnitude, and will last the duration of the construction;
- ◆ Residual effects to recreation and tourism are anticipated in relation to no access to boathouses and the Manitoba Hydro boat launch during construction. The effect will be for the duration of the construction period;
- ◆ Residual effects on land use related to the new access road and east side construction area are small; and
- ◆ Residual effects on property ownership, commercial resource use, and heritage resources as a result of the Project are not anticipated.

Cumulative Effects

The effects of the Project combined with the effects of other projects on the VECS are not expected.

Conclusion

Based on the assessment outlined in the EIS, the Spillway Replacement Project will result in general disruption to the enjoyment of the local area during construction; however, the Project is not anticipated to result in any significant adverse environmental effects.

CONCORDANCE TABLE

Pointe du Bois Spillway Replacement Project Concordance of Environmental Impact Statement with August 2010 Environmental Assessment Scoping Document	
Information outlined in Scoping Document	Environmental Impact Statement Location
1.0: Introduction	N/A
◆ 1.1: Purpose of the Scoping Document	N/A
◆ 1.2: Background and Need for the Project	Chapter 1.0: Introduction
2.0: Regulatory Framework	Chapter 4.0: Regulatory Framework
3.0: Environmental Assessment Consultation	Chapter 5.0: Consultation and Communication
4.0: Aboriginal and Local Knowledge	Not addressed
5.0 Project Description/Scope of Project	Chapter 3.0: Project Description
6.0: Scope of Assessment	Chapter 6.0: Assessment Approach
6.1: Factors to be Addressed in the Assessment	
◆ Need and purpose	Chapter 1.0: Section 1.1
◆ Alternatives considered	Chapter 2.0: Alternatives To and Alternative Means
◆ Alternative means to carry-out	Chapter 2.0: Alternatives To and Alternative Means
◆ Environmental effects	Chapter 8.0: Potential Environmental Effects and Mitigation
◆ Aboriginal groups and stakeholder comments	Chapter 5.0: Consultation and Communication
◆ Mitigation measures	Chapter 8.0: Potential Environmental Effects and Mitigation
◆ Significance	Chapter 8.0: Potential Environmental Effects and Mitigation, Tables 8.2 and 8.3

**Pointe du Bois Spillway Replacement Project
Concordance of Environmental Impact Statement with August 2010
Environmental Assessment Scoping Document**

Information outlined in Scoping Document	Environmental Impact Statement Location
7.0: Existing Environmental Setting	Chapter 7.0: Existing Environmental Setting
7.1: Study Area	Chapter 7.0: Section 7.2, Figure 7.1
7.2: Physical Environment	Chapter 7.0: Section 7.3
◆ 7.2.1: Climate/General Environment	Chapter 7.0: Section 7.3.3
◆ 7.2.2: Water Regime	Chapter 7.0: Section 7.3.4
◆ 7.2.3: Physiography and Landscape	Chapter 7.0: Section 7.3.6
◆ 7.2.4: Erosion and Sedimentation	Chapter 7.0: Sections 7.3.7 and 7.3.8
7.3: Aquatic Environment	Chapter 7.0: Section 7.4
◆ 7.3.1: Water and Sediment Quality	Chapter 7.0: Sections 7.4.1 and 7.4.2
◆ 7.3.2: Lower Trophic Levels	Chapter 7.0: Section 7.4.4
◆ 7.3.3: Fish Communities and Fish Habitat	Chapter 7.0: Sections 7.4.5 and 7.4.3
7.4: Terrestrial Environment	Chapter 7.0: Section 7.5
◆ 7.4.1: Vegetation and Terrestrial Habitat	Chapter 7.0: Sections 7.5.1 and 7.5.2
◆ 7.4.2: Invertebrates	Chapter 7.0: Section 7.5.3
◆ 7.4.3: Amphibians and Reptiles	Chapter 7.0: Section 7.5.4
◆ 7.4.4: Birds	Chapter 7.0: Section 7.5.5
◆ 7.4.5: Mammals	Chapter 7.0: Section 7.5.6
7.5: Socio-Economic Environment	Chapter 7.0: Section 7.6
◆ 7.5.1: Economy	Chapter 7.0: Section 7.6.2

**Pointe du Bois Spillway Replacement Project
Concordance of Environmental Impact Statement with August 2010
Environmental Assessment Scoping Document**

Information outlined in Scoping Document	Environmental Impact Statement Location
◆ 7.5.2: Property Ownership	Chapter 7.0: Section 7.6.3
◆ 7.5.3: Infrastructure and Services	Chapter 7.0: Section 7.6.4
◆ 7.5.4: Personal, Family and Community Life	Chapter 7.0: Section 7.6.5
◆ 7.5.5: Aboriginal Resource Use	Not addressed
◆ 7.5.6: Commercial Resource Use	Chapter 7.0: Section 7.6.7
◆ 7.5.7: Recreational Resource Use and Tourism	Chapter 7.0: Section 7.6.8
◆ 7.5.8: Heritage Resources	Chapter 7.0: Section 7.6.9
8.0: Effects Assessment Approach	Chapter 6.0: Assessment Approach
8.1: Effects Assessment Principles and Objectives	Chapter 6.0: Section 6.1
8.2: Effects Assessment Process	Chapter 6.0 Section 6.2
◆ 8.2.1: Mitigation, Compensation and Residual Effects	Chapter 8.0: Potential Environmental Effects and Mitigation
◆ 8.2.2: Determination of Significance	Chapter 6.0: Section 6.11 Chapter 8.0: Potential Environmental Effects and Mitigation
8.3: Cumulative Effects Assessment	Chapter 9.0: Cumulative Effects
8.4: Sustainability Assessment	Chapter 10.0: Sustainability Assessment
9.0: Monitoring and Follow-up	Chapter 11.0: Monitoring and Follow-up Programs

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- Attachment 4.2: August 3, 2010 Director Response to EAPF and Draft Scoping Document
- Attachment 4.3: August 30, 2010 Manitoba Hydro Response to Provincial and Federal Comments on Draft Scoping Document
- Attachment 4.4: September 1, 2010 Director Letter indicating Final Scoping Document was placed on Public Registry
- Attachment 4.5: March 22, 2011 Federal Project Agreement
- Attachment 5.1: What We Heard – A Report on the Public Consultation on Modernization Alternatives for the Pointe du Bois Generating Station
- Attachment 5.2: What We Heard – Environmental Assessment Consultation on the Rebuild Alternative for the Pointe du Bois Generating Station
- Attachment 5.3: What We Heard – Environmental Assessment Consultation Open Houses on the Spillway Replacement Project for the Pointe du Bois Generating Station