

Manitoba Hydro Pointe du Bois Generating Station Licence Implementation Guide

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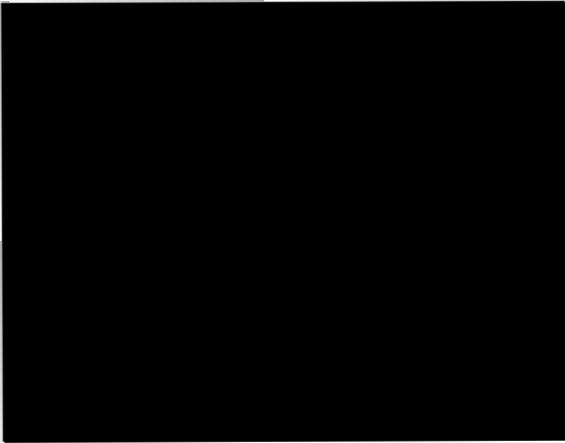
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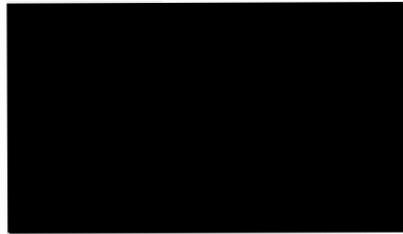
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Manitoba Hydro
Pointe du Bois Generating Station
Licence Implementation Guide



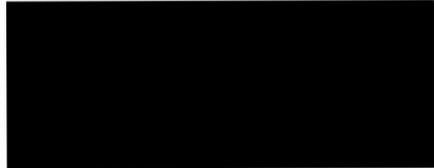
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Executive Summary

Introduction

Manitoba Hydro prepared this guide to document a common understanding of compliance with the water regime terms of the Pointe du Bois Water Power Act Licence. This document sets out the mutually understood and agreed to:

- 1) Methodology to be used for determining critical water levels;
- 2) Definition of licence compliance; and
- 3) Protocol for reporting.

Pointe du Bois Inner Forebay Water Level

The **Pointe du Bois Inner Forebay Water Level** is directly measured at the beginning of each hour at the generating station.

Compliance

Compliance with the Pointe du Bois Water Power Act Licence will be measured against the **Pointe du Bois Inner Forebay Water Level**.

Reporting

In the event that the **Pointe du Bois Inner Forebay Water Level** is not in compliance with the licence limit, Manitoba Hydro will notify Manitoba Environment, Climate and Parks within one week of the incident. A follow-up report on causes contributing to the event and changes to operations, if any are needed to prevent such an event in the future, will be provided to Manitoba Environment, Climate and Parks. A record of water levels and licence compliance will also be provided in an annual report.

Ongoing and Other Requirements

The Water Power Act Third Short-term Extension Licence and the associated cover letter from Manitoba specify a number of ongoing and other requirements that are not directly related to the day to day operation of the Pointe du Bois Generating Station. Manitoba Hydro will participate in and report on these additional requirements as directed.

Change Management

Proposed revisions to this guide will be drafted by Manitoba Hydro as required or directed by Manitoba Environment, Climate and Parks. Following review and approval of revisions by Manitoba Environment, Climate and Parks, a revised copy of this guide will be produced and distributed by Manitoba Hydro.

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1. Introduction

Pointe du Bois Generating Station is located on the Winnipeg River approximately 160 km northeast of Winnipeg by road.

The Pointe du Bois Generating Station was built by City Hydro, later known as Winnipeg Hydro, and was acquired by Manitoba Hydro in 2002. The in-service date for the first unit of the generating station was 1911. All 16 units were commissioned by 1926. This is currently the oldest power plant still in operation on the Winnipeg River. In 2015, the Pointe du Bois Spillway Replacement Project was completed and involved the replacement of the east gravity dam, spillway bays and rockfill dam with a new 7-bay spillway as well as main and south earthfill dams.

Manitoba Hydro currently operates the Pointe du Bois Generating Station under a Third Short-Term Extension Licence (STEL) issued in accordance with the provisions of The Water Power Act on December 31, 2021. The STEL is in effect until January 1, 2025. The operating terms of the STEL are identical to those of the final licence. The STEL states that the station has a total nameplate capacity of 85 MW (114,000 horsepower).

The licence history of this generating includes a final licence and four renewal licences. The final licence was issued under the Dominion Water Power Act for a term of 20 years computed from November 1, 1911. Subsequently, four renewal licences were issued under The Water Power Act for a further term of 20 years each effective from January 1, 1932, January 1, 1952, January 1, 1972, and January 1, 1992 respectively.

1.1 Definitions

For the purposes of this guide, unless the context otherwise requires, the following terms shall have the respective meanings set out below and grammatical variations of such terms shall have corresponding meanings:

ASL means above sea level

Controlling Benchmark means Geological Survey of Canada (GS of C) benchmark 19K. Benchmark 19K is a brass cap in bedrock located on the right bank in the inner forebay about 750 feet upstream from the powerhouse.

Pointe du Bois Inner Forebay Gauge refers to a transducer in a stilling well located in the powerhouse.

Pointe du Bois Outer Forebay Gauge refers to a transducer in a stilling well located in a small shelter upstream of the spillway access bridge.

Pointe du Bois Inner Forebay Water Level means the hourly water level as measured by the **Pointe du Bois Inner Forebay Gauge**.

Pointe du Bois Outer Forebay Water Level means the hourly water level as measured by the **Pointe du Bois Outer Forebay Gauge**.

1.2 Datum

Article 5 of the Pointe du Bois Water Power Act Licence limits the water level elevation at the powerhouse based on the Dominion Water Power Survey Datum. However, water level information for the operation of the Pointe du Bois Project is measured in terms of elevations **ASL**, GS of C, Canadian Government Vertical Datum (CGVD) 1928, 1929 Local Adjustment. To convert water levels measured on the Dominion Water Power Survey Datum to the GS of C CGVD 1928, 1929 Local Adjustment a 0.5 foot correction must be added.

1.3 Quality Control

1.3.1 Benchmarks

Vertical control surveys have been performed to establish appropriate local benchmarks at the Pointe du Bois Generating Station.

Pointe du Bois benchmarks were established by level transfer from **Controlling Benchmarks** using spirit levelling methods.

1.3.2 Direct Water Level Measurements

Staff monitor the **Pointe du Bois Inner Forebay Gauge** and **Pointe du Bois Outer Forebay Gauge** equipment as required to maintain gauge performance. Direct water level measurements are taken during these checks and compared to the level indicated by the water level gauge. Direct water level measurements that differ by more than 0.1 feet are reported and repaired.

1.3.3 Gauge Readings

The inner and outer forebay gauges consist of transducers in stilling wells. The inner forebay gauge is located in the north-east section of the powerhouse upstream of the Unit 1 intake, while the outer forebay gauge is located in a shelter upstream of the spillway access bridge. Water levels at both gauges are measured and recorded using an ultrasonic transducer and a data logger.

1.4 Quality Assurance Procedure for Water Level Data

Pointe du Bois Plant Data

Data is collected on site and signed off by the operating supervisor. Data is then sent to the Energy Operations Planning Department of Manitoba Hydro, uploaded into a database and checked for errors. Data errors are then corrected or verified by plant operating staff with technical assistance from Energy Operations Planning staff as needed. Once data has been verified, it may be used for operations planning, studies, model development and reporting.

2. Pointe du Bois Forebay Water Level

Article 4 of the Pointe du Bois Water Power Act Licence places a limit on the **Pointe du Bois Inner Forebay Water Level**. The forebay at Pointe du Bois consists of two parts: the inner forebay, located between the spillway access bridge and the powerhouse; and the outer forebay, extending upstream of the spillway access bridge to Lamprey Falls. The inner forebay elevation is subject to rapid changes due to flow changes and operations. The outer forebay encompasses a larger area and does not experience the same rapid changes as the inner forebay. Water levels are largely influenced by the operation of the Pointe du Bois Generating Station and local meteorological events. Due to the size of the forebay and the location of gauges, wind effects on the **Pointe du Bois Inner Forebay Water Level** and **Pointe du Bois Outer Forebay Water Level** are negligible. A map showing the locations of the **Pointe du Bois Inner Forebay Gauge** and **Pointe du Bois Outer Forebay Gauge** is provided in Appendix A.

Manitoba Hydro operates based on the **Pointe du Bois Outer Forebay Water Level** with sufficient buffer that the licence limit on the **Pointe du Bois Inner Forebay Water Level** is not exceeded. **Pointe du Bois Inner Forebay Water Level** and **Pointe du Bois Outer Forebay Water Level** measurements are taken continuously and recorded at the beginning of each hour and reported to Manitoba Hydro's System Control Centre.

3. Compliance

3.1 Pointe du Bois Water Power Act Licensing Requirement

Maximum Water Level

Article 5 of the licence stipulates that:

“The Licensee shall not raise the headwater of the development, as measured at the powerhouse, to an elevation higher than 981.1 feet above mean sea level, Dominion Water Power Survey Datum (with wind effect eliminated). A higher elevation may be created only with written permission by the Director and in accordance with Section 72 of the Regulation.”

As described in Section 1.2, water levels at Pointe du Bois are measured in terms of elevations ASL, GS of C, CGVD 1928, 1929 Local Adjustment. To convert from the Dominion Water Power Survey Datum to the GS of C CGVD 1928, 1929 Local Adjustment a 0.5 foot correction is added. Therefore the maximum level allowed by licence is 981.6 feet, GS of C, CGVD 1928, 1929 Local Adjustment.

Manitoba Hydro, and previously Winnipeg Hydro, operates with a maximum **Pointe du Bois Outer Forebay Water Level** of 981.3 feet. This limit on the outer forebay provides sufficient buffer that water levels in the inner forebay remain in compliance with the licence. Local stakeholders are familiar with this forebay level.

The forebay water level shall be in compliance with the limit described above if the hourly **Pointe du Bois Inner Forebay Water Level:**

- a) does not exceed 981.6 feet by more than 0.1 feet; and
- b) does not exceed 981.6 feet more than two times or for more than two consecutive hours in any 24-hour period.

Based on the accuracy and location of the **Pointe du Bois Inner Forebay Gauge**, Manitoba Hydro defines instances where the licence limit is exceeded by 0.1 feet as reportable events.

To simplify compliance reporting at this location, Manitoba Hydro recommends that future Pointe du Bois Water Power Act Licences base elevations on the more commonly used GS of C, CGVD 1928, 1929 Local Adjustment Datum and that the measurement location be moved from the powerhouse to the outer forebay.

3.2 Reporting

3.2.1 Compliance Reporting

In the event that the **Pointe du Bois Inner Forebay Water Level** is not in compliance with the licence limit as described in Section 3.1, notification shall be made to Manitoba Environment, Climate and Parks within one week of the incident. A follow-up report on causes contributing to the event and changes to operations, if any are required to prevent such an event in the future, will be provided to Manitoba Environment, Climate and Parks.

3.2.2 Maintenance and Emergencies

During maintenance and emergencies there may be times when Manitoba Hydro is required to deviate from a licence condition for safety or other purposes. Manitoba Hydro will be considered compliant with the licence as long as:

1. Advanced notification is provided to Manitoba Environment, Climate and Parks of the upcoming licence deviation together with the reason. This will include a description of the operating plan, details of the expected licence deviation, a summary of anticipated impacts to stakeholders, and confirmation that stakeholders will also be notified; and
2. Advanced notification is provided to stakeholders of pertinent impacts to flow and water levels; and
3. Following the deviation, notification by letter is provided to Manitoba Environment, Climate and Parks on the details of the operation(s).

3.2.3 Regular Annual Reporting

Water levels and licence compliance will be reported annually to Manitoba Environment, Climate and Parks.

4. Ongoing and Other Requirements

4.1 Large Area Planning, Studies, and other Initiatives

The Water Power Act Third Short-term Extension Licence cover letter from the Province of Manitoba instructs Manitoba Hydro to:

“Participate in any future large area planning initiative that may include studies in areas impacted by hydroelectric development, along with affected communities with other stakeholders.”

Term 5 of the Water Power Act Third Short-term Extension Licence stipulates that:

“The Licensee shall participate in future planning, studies and other initiatives as instructed by the Minister, in areas impacted by the Undertaking along with affected communities and other stakeholders.”

Manitoba Hydro will participate in any future large area planning or other studies and initiatives as directed by the Minister. Progress updates will be provided as required in the Annual Water Levels and Flows Compliance Report.

4.2 Indigenous Engagement Report

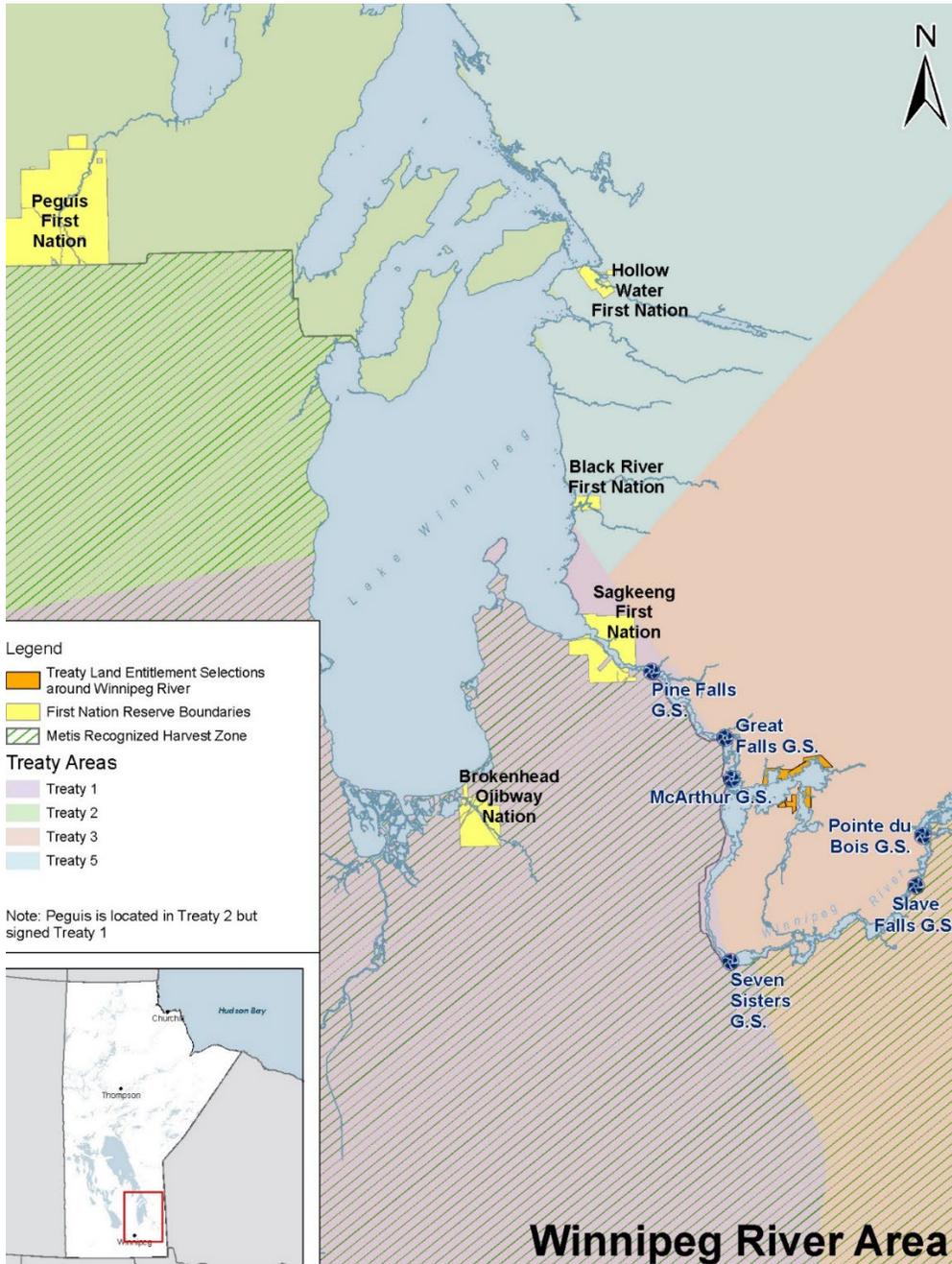
Term 6 of the Water Power Act Third Short-term Extension Licence stipulates that:

“The Licensee shall within 6 months of the issuance of this Third Short-term Extension Licence, and annually thereafter submit a report to the Director documenting the Licensee’s engagement with Indigenous communities on the continued operation of the Undertaking.”

Manitoba Hydro will submit an annual report by June 30 each year that provides an overview of the forums, programs, and activities through which it has engaged with Indigenous communities on the continued operation of generating stations on the Winnipeg River, including the Pointe du Bois Generating Station. Map 1 shows the location of First Nations, Treaty Land Entitlement selections and the Métis Recognized Harvest Zone in the Winnipeg River Region. The annual report will identify engagement activities with:

- Black River First Nation
- Brokenhead Ojibway Nation

- Hollow Water First Nation
- Peguis First Nation
- Sagkeeng First Nation
- The Manitoba Métis Federation



Map 1: Community Interests in the Winnipeg River Region

4.3 Licence Modernization Processes

The Water Power Act Third Short-term Extension Licence cover letter from the Province of Manitoba instructs Manitoba Hydro to:

“Participate in the future licence modernization processes directed by the Province of Manitoba. The Province intends to evaluate the Water Power Act and Regulation to determine what amendments may be required for modernization”

Manitoba Hydro will participate in any future licence modernization processes as directed by Manitoba. Progress updates will be provided as required in the Annual Water Levels and Flows Compliance Report.

5. Change Management

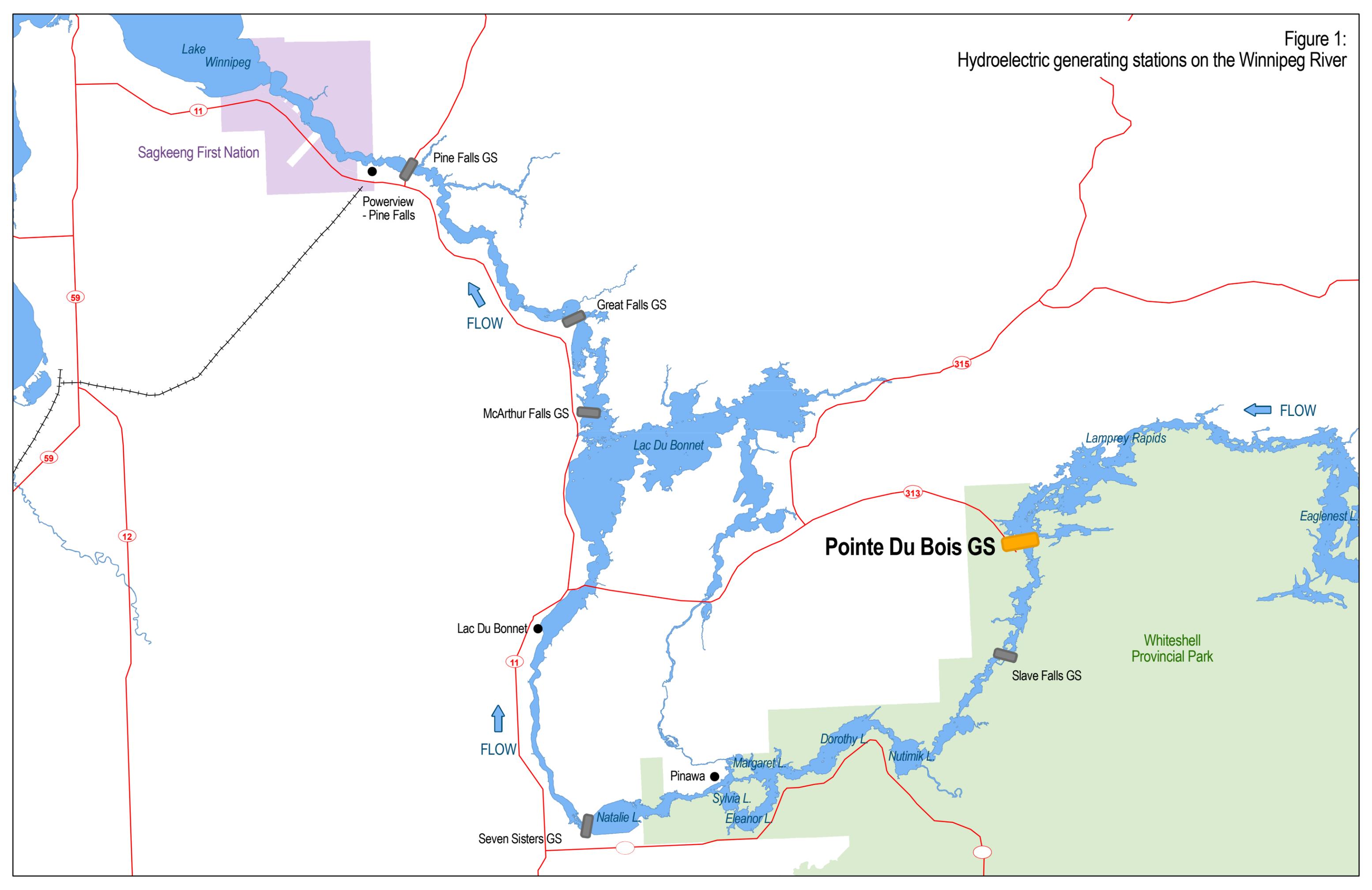
5.1 Regular Updates

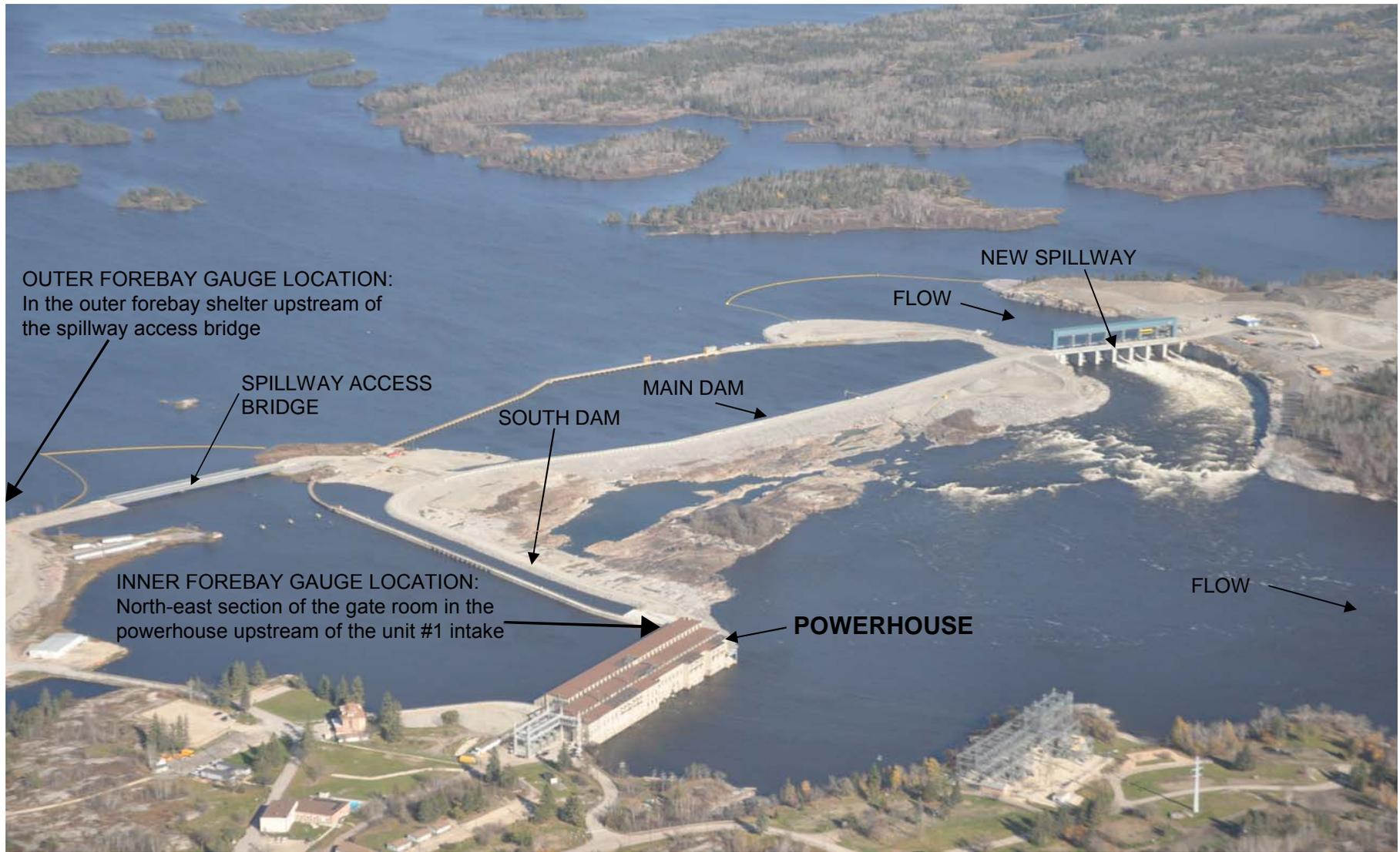
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Appendix A

Forebay Water Level Gauge Location

Figure 1:
Hydroelectric generating stations on the Winnipeg River





	MANITOBA HYDRO	
	HYDRAULIC OPERATIONS DEPARTMENT	
	POINTE DU BOIS GENERATING STATION	
DRAWN BY PGC	FOREBAY WATER LEVEL GAUGE LOCATION	
YEAR 2017	PROJECT LICENCE IMPLEMENTATION GUIDE	FIGURE 2