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2015 03 09

Mr. R. Matthews,
Manager, Water Use Licensing
Manitoba Conservation & Water Stewardship
Box 16 - 200 Saulteaux Crescent
Winnipeg MANITOBA R3J 3W3

Dear Mr. Matthews:

LAKE WINNIPEG REGULATION REPORT IN SUPPORT OF A REQUEST FOR A FINAL LICENCE UNDER THE WATER POWER ACT.

Enclosed are two copies of Manitoba Hydro report #PS&O 15/01 entitled "Lake Winnipeg Regulation Report in Support of a Request for a Final Licence under the Water Power Act and Regulations". This is supporting documentation in the Lake Winnipeg Regulation final licence process to assist the minister responsible for the Water Power Act.

Final licence drawings showing the severance line and lands of the Province required for the construction and operation of this project are also provided.

The report and drawings provided are in both paper and electronic (Adobe PDF) formats.

Yours truly,

Original signed by; *Wesley Penner*

W.V. Penner, P. Eng.
Manager
Hydraulic Operations Department

WVP/sl/ 00199-07311-0038_00
Att.

c. K.M. Tennenhouse

HYDRAULIC OPERATIONS DEPARTMENT
POWER SALES & OPERATIONS DIVISION
GENERATION OPERATIONS

LAKE WINNIPEG REGULATION
REPORT IN SUPPORT OF A REQUEST FOR A FINAL LICENCE UNDER THE WATER POWER ACT AND REGULATIONS

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DATE: 2015 – 03 – 09

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Executive Summary

This document provides supporting documentation that Manitoba Hydro is entitled to a Final Licence for the Lake Winnipeg Regulation (LWR) project pursuant to section 43(1) of the Water Power Regulation 25/88R. Details are included on the observances of all the terms and conditions under the Interim Licence and its subsequent authorizations as well as Regulation 25/88R pursuant to the Water Power Act. The documentation is provided to assist the minister responsible for the Water Power Act in the issuance of a Final Licence for LWR. Manitoba Hydro requested a Final Licence on December 22, 2010.

LWR was constructed under the authority of Interim and Supplementary Water Power Act Licences issued on November 18, 1970 and August 8, 1972 respectively. The project has been operated in accordance with these licences.

The LWR project is important for flood reduction on Lake Winnipeg and for downstream power production. Though a prolonged drought has not been experienced since LWR, the project would provide low water level support.

Section 1 of this document provides an overview of the project. This includes information about the physical works and the operating conditions. It also includes information about Manitoba Hydro's community involvements in the surrounding areas.

Section 2 of this document shows how Manitoba Hydro has fulfilled specific terms of these licences.

Section 3 of this report demonstrates how Manitoba Hydro has fulfilled the sections of Regulation 25/88R pursuant to the Water Power Act that are pertinent to an Interim Licensee and which require a statement indicating observance. The sections deemed to be pertinent was done by mutual agreement with Manitoba Conservation and Water Stewardship.

Manitoba Hydro continues to maintain and enhance its relationship with First Nations, communities and resource user groups affected by this project. Efforts include entering into formalized agreements to address adverse effects and a wide-range of activities and programs associated with resource harvesting, recreation, heritage resources, safe waterway travel, employment and training. Manitoba Hydro provides information about LWR and the process of requesting a Final Licence to First Nations, communities and resource user groups along LWR waterways.

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Section 1 – Introduction

The Lake Winnipeg Regulation (LWR) project on the Nelson River was authorized by an Interim Licence on November 18, 1970 with modifications issued in a Supplementary Interim Licence on August 8, 1972.

The Interim Licence provided for the regulation of Lake Winnipeg, Playgreen and Kiskittogisu with: (a) a diversion channel from Lake Winnipeg to Playgreen Lake (also known as the Two-Mile Channel); (b) a diversion channel from Playgreen Lake to Kiskittogisu Lake (also known as the Eight-Mile Channel); (c) river channel excavations at Metchanais Rapids and Ominawin Rapids; and (d) two gated control structures, across Metchanais Rapids and Ominawin Rapids.

Manitoba Hydro applied for a Supplementary Interim licence on January 20, 1972. The Supplementary Interim Licence relinquishes items (c) and (d) as described above and authorizes the right to construct alternative works including a control structure at Jenpeg, a river channel excavation at Kisipachewuk Rapids, a by-pass channel at Ominawin Rapids, a dam and dykes at the natural outlet of Kiskitto Lake, a diversion channel from Stan Creek to Kiskitto Lake, and a diversion channel from Kiskitto Lake to the Minago River drainage basin with a control structure.

The project was completed in August 1976.

Physical Works

The LWR project has 11 key features described below that are primarily located on the west channel of the Nelson River. The location of these works is shown on Figure 1. Dimensions listed below were obtained from the final construction plans. In some cases, these will differ from the dimensions listed in the 2010 request for a final LWR Water Power Act licence, which were taken from Manitoba Hydro's LWR Interim and Supplementary Interim Licence applications.

1) Jenpeg Control Structure:
   A five bay spillway structure with a discharge capacity of about 163,000 cfs (4,616 cms) at full supply level. The spillway consists of a 62 feet (18.9 metre) high control structure of reinforced concrete with five 40 feet (12.2 metre) wide gated openings across the peninsula on the left bank of the Nelson River just upstream of Cross Lake, with a rock fill dam on the west abutment and a river channel closure rock fill dam on the east abutment. This includes a reinforced concrete headblock situated adjacent to the control structure containing gated openings forming part of the control works. Figure 2 provides a photo of the Jenpeg Generating Station and Spillway Structure.

   The forebay extends from the Jenpeg Generating Station to the Kisipachewuk Channel. The Jenpeg forebay water level ranges from 702 feet (214.0 metres) to 714 feet (217.6 metres). Jenpeg regulates the outflow from the outlet lakes (Playgreen

Lake, North Playgreen Lake, and Kiskittogisu Lake) and Lake Winnipeg.

2) Jenpeg West Dykes (referred to as earthfill saddle dams in the 1972 licence application):
Four earthfill saddle dams with a total length of about 5,500 feet (1,676 m) across low ground on the west abutment within four miles southwesterly from the Jenpeg control structure. The dyke crests are 30 feet (9.1 metres) wide and built to an elevation of 720 feet (219.5 metres).

3) Jenpeg East Dyke (referred to as a saddle dam in the 1972 licence application):
A saddle dam about 6,200 feet (1,890 metres) in length across low ground within five kilometres southeasterly from the Jenpeg control structure. The dyke crest is 30 feet (9.1 metres) wide and built to an elevation of 720 feet (219.5 metres).

4) Kiskitto Dykes:
Intermittent earthfill dykes with crest elevations at about 719.5 feet (219.3 metres) totaling about 8.75 miles (14.1 kilometres) in length along the west side of Kiskittogisu Lake, the Kisipachewuk Rapids channel, and across the Kiskitto Lake outlet to high ground, having top widths of about 30 feet (9.1 metres).

5) Ominawin Rapids Bypass Channel
An excavation on the west side of the natural Ominawin Rapids channel with a centre dyke for about 70% of its length. The channel extends about 2.1 miles (3.4 km) with a total bottom width of about 1,300 feet (396 metres). The channel has a water surface width of about 1,400 feet (427 metres) and a depth of about 20 feet (6.1 metres). The centre dyke was built to promote a competent ice cover to maximize winter flows. The channel contributes to an increase in outflow capacity from Lake Winnipeg.

6) Kisipachewuk Channel Improvement:
A rapids channel located at one of the outlets to Kiskittogisu Lake. The channel flow capacity was improved by excavating rock obstructions within the natural channel over a distance of about 260 feet (79 metres) with a bottom width of about 200 feet (61 metres).

7) Kiskitto Dam and Inlet Control Structure:
A dam and structure to regulate flow from the Nelson River into Kiskitto Lake. Flow is regulated with one gate mounted in a concrete structure. The original Kiskitto Inlet Control Structure was replaced in 2003.

8) Kiskitto-Minago Drainage Channel and Black Duck Control Structure:
A drainage channel with an overflow stoplog weir control structure to drain Kiskitto Lake into Black Duck Creek and further into Drunken Lake on the Minago River. The channel is about 2.9 miles (4.7 kilometres) long and about 10 feet (3 m) wide at its base.

9) Stan Creek Diversion
A diversion which drains water from Stan Creek into Kiskitto Lake and is about 5,000 feet (1,524 metres) long and 10 feet (3 m) wide at its base. The natural drainage was blocked by dykes along the Nelson River.

10) Eight-mile Channel:
A diversion channel from Playgreen Lake to Kiskittogisu Lake that contributes to an increase in outflow capacity from Lake Winnipeg. The excavated portion of the channel is nominally 600 feet (183 metres) wide with natural sections up to 1,000 feet (305 metres). The water surface width ranges from about 700 to 1,200 feet (213 to 366 metres) and is about 20 feet (6.1 metres) deep. As its name indicates, the channel is about eight miles (12.9 km) in length.

11) Two-mile Channel:
A diversion channel from Lake Winnipeg to Playgreen Lake, which contributes to an increase in outflow capacity from Lake Winnipeg. The channel is about 400 feet (122 metres) wide at the base and improves the natural outflow capacity from Lake Winnipeg to Playgreen Lake. The water surface width ranges from about 600 to 700 feet (183 to 213 metres) and is about 30 feet (9.1 metres) deep. As its name indicates, the channel is about two miles (3.2 km) in length.

The project was fully operational on July 16, 1976.

Community Involvement

There are a total of six First Nations and six Northern Affairs Communities (NACs) downstream from Lake Winnipeg that have been identified as being most directly affected by LWR. The impacts experienced by each of the communities listed below vary in extent and nature.

First Nations	Northern Affairs Communities
- Norway House Cree Nation (NHCN)	- Norway House
- Cross Lake First Nation (CLFN)	- Cross Lake
- York Factory First Nation (YFFN)	- Wabowden
- Tataskweyak Cree Nation (TCN)	- Pikwitonei
- War Lake First Nation (WLFN)	- Ilford
- Fox Lake Cree Nation (FLCN)	- Thicket Portage

In an effort to resolve historic grievances, Manitoba Hydro has participated in various settlement processes. These include the Northern Flood Agreement (NFA), Comprehensive Implementation Agreements (CIAs), ongoing NFA implementation at CLFN, and other settlement agreements. In addition to these settlement arrangements, Manitoba Hydro has entered into individual settlements for personal property loss and damage.

Corporate programs are implemented throughout LWR waterways aimed at addressing environmental, transportation safety, as well as cultural and heritage effects. They

include the Waterways Management Program, the Coordinated Aquatic Monitoring Program, Water Level Forecast Notices, and archaeological programming. Additional programming is implemented as appropriate with individual communities.

Manitoba Hydro continues to work towards long-term relationships with downstream First Nations, communities and resource user groups along LWR waterways. Manitoba Hydro continues to engage with these First Nations, communities and resource user groups and has initiated additional public participation efforts with First Nations and communities adjacent to Lake Winnipeg and with LWR stakeholders in general.

Manitoba Hydro also collaborated with Cross Lake over a number of years to develop the weir which was built in 1991 at a cost of $9.5 million to mitigate the water level effects of LWR on Cross Lake.

Report Overview

The remaining part of this document provides details on how Manitoba Hydro fulfilled its obligations with respect to the Interim and Supplementary Interim Licences and Regulation 25/88R pursuant to the Water Power Act.

Section 2 demonstrates how Manitoba Hydro has fulfilled specific terms of these licences.

Section 3 demonstrates how Manitoba Hydro has fulfilled the sections of Regulation 25/88R pursuant to the Water Power Act that are pertinent to an Interim Licensee and which require a statement indicating observance.

Section 2 – Observance of Licence Conditions

This section of the report provides an evaluation of the observance of the Lake Winnipeg Regulation (LWR) Interim Licence on a term by term basis including the amendments as provided in the Supplementary Interim Licence.

1. **General Construction Plans**

   Licence Term – Interim Licence

   Prior to the construction of any works, plans therefor shall be submitted to the Director for approval, and the Licensee shall not commence construction of any works until the Director has approved the plans therefor.

   Observance

   Manitoba Hydro submitted plans of revised structure locations and a revision to the severance line to the Director on 1972 01 20 (Page 46) as part of the application to amend the Water Power Licence. A 1972 01 28 letter on page 46 from D. Cass-Beggs to S. Green, Minister of Mines, Resources and Environmental Management indicates that full information was provided.

2. **Reports May Be Required**

   Licence Term – Interim Licence

   For the purposes of considering plans submitted under Article 1 hereof, the Director may require the Licensee to obtain and submit to him such information, reports, and evidence as the Director deems necessary.

   Observance

   Manitoba Hydro has no record that the Director requested information, reports or evidence with respect to fulfilling the requirements of Article 1.

3. **Project Lands**

Licence Term - Supplementary Interim Licence

Subject to Article 1 hereof, the Licensee may enter upon, use and occupy for making surveys and investigations and constructing works as may be deemed necessary for the undertaking, such lands of the Province as may reasonably be required for the said purposes and may flood such lands as are designated on a plan identified as No. 39-2-1184 (Rev. 1), or as such plan may be amended and limited from time to time by the Minister provided that, when so requested in writing by the Director, following completion of the works and the commencement of the regulation of water levels, the Licensee shall cause a survey to be made and a plan prepared by a Manitoba Land Surveyor showing in detail the lands required to be occupied for the works and the lands required for flooding purposes only. Such survey shall be limited to include only such areas for the said purposes as the Director may approve and shall be prepared in accordance with Section 24 of the Regulations.

Observance

Manitoba Hydro has no record of a request by the Director for a survey to be made or a plan to be prepared. A new severance line plan defining the lands required for the project will be prepared pursuant to Section 44 (g) of the Water Power Regulation. The new severance line will encompass the works required for the project including flooded lands. The licence area under the interim licences is shown on plan 39-2-1184 (Rev. 1).

4. **Surveys**

Licence Term – Interim Licence

The Licensee shall also from time to time in accordance with Section 24 of the Regulations cause surveys to be made and plans prepared by a Manitoba Land Surveyor of all lands required as right-of-way for transmission lines, roads, railways, and other purposes of the undertaking, as the locations thereof become defined, as distinct from those purposes described in Article 3 hereof.

Observance

Surveys of rights-of-ways have been carried out in the vicinity of the Jenpeg facility, some of which have been formalized into registered plans. There are two plans showing the highway right-of-way and another plan defining the extent of the spillway.

5. **Construction of Principal Works**

Licence Term - Supplementary Interim Licence

Subject to approval of plans of the works under Article 1 hereof, the Licensee may construct the following works:

(a) Two diversion channels, one from Lake Winnipeg to Playgreen Lake and the other from Playgreen Lake to Kiskittogisu Lake.
(b) River channel excavation at the Kisipachewuk Rapids channel.
(c) A reinforced concrete control structure at a site known as Jenpeg on the west channel of the Nelson River with adjacent reinforced concrete headblock with gated openings forming part of the control works (which may be later utilized for a future generating station if so licensed under the Act), also with rockfill abutment and channel closure dams, and earthfill saddle closure dams.
(d) A by-pass channel at Ominawin Rapids.
(e) Intermittent earthfill dykes along the west side of Kiskittogisu Lake and the Kisipachewuk Rapids channel, and across the Kiskitto Lake outlet.
(f) A diversion channel from Stan Creek to Kiskitto Lake.
(g) A diversion channel from Kiskitto Lake to a tributary of the Minago River, with a small overflow weir or stop log control structure.
(h) All necessary machinery and equipment required for regulating water levels in Lakes Winnipeg, Playgreen, and Kiskittogisu.

Observance

Manitoba Hydro has constructed all of the items listed and has also built the Jenpeg Generating Station listed in the provisions of item (c) under a separate Water Power Act licence. See Figure 1 for location plan and Figures 3 and 4 for water level gauges. Manitoba Hydro does not have a record indicating that plans were approved, however it can be inferred that the requirements of the day were deemed satisfactory as construction was allowed to proceed.

6. **Licence Execution**

Licence Term – Interim Licence

The Licensee may regulate water levels in Lakes Winnipeg, Playgreen, and Kiskittogisu to and between the following elevations, all elevations being specified in feet above mean sea level, Canadian Geodetic Datum (with wind effect eliminated):

(a) Lake Winnipeg – maximum 715.0 and minimum 711.0,
(b) Playgreen Lake – maximum 714.9 and minimum 707.0, measured at the north end of Playgreen Lake,
(c) Kiskittogisu Lake – maximum 714.8 and minimum 706.0, subject, however, to the provisions of Section 72 of the Regulations, which reads as follows:

"72. Every license shall be deemed to have been executed on the express condition that the licensee shall –

(a) Divert, use or store the water authorized to be diverted, used, or stored by him in such a manner as not to interfere in the opinion of the Minister, with the maximum advantageous development of the power and other resources of the river or stream upon which his works are located;

(b) Conform to and comply with any orders in respect of the control or regulation of the flow of the waters of such river or stream as may be made from time to time by the Minister or any person authorized by the Minister in that behalf;

(c) At no time cause or permit the surface-level of the waters of such river or stream or of any storage reservoir operated by him to be raised or lowered beyond the limits which shall be fixed from time to time by the Minister or by a person authorized by the Minister in that behalf."

Observance

Manitoba Hydro has operated to comply with this licence term recognizing the provision in licence term seven. The following describes the operations surrounding the times when water levels were either above or below these ranges:

(a) Lake Winnipeg:

Wind eliminated levels are calculated based on a recommended method from the Ad Hoc Committee on Lake Winnipeg Datum[1]. The procedure weights the daily average water level data from the gauges around the lake, limits the daily water level change, and smoothes the data over a 21-day period. The Ad Hoc Committee was formed in 1971. The committee was chaired by a representative of Manitoba's Water Resources Branch with additional representation from Manitoba Hydro and Water Survey of Canada. The Director of the Water Resources Branch in a letter dated 1983 03 03 accepted the recommendations of the committee's report dated December 1982. A copy of the letter can be found on page 63 of this report. This data is also used in the Lake Winnipeg Monthly Mean Water Level chart.

Prior to 1983, Manitoba Hydro relied on gauges at Gimli and Berens River because they were available by telemetry, and used gauges at Victoria Beach, Pine Dock, Mission Point, and Montreal Point for subsequent study. This was indicated in a letter 1978 11 09 from P. Abel to R. Bowering of the Manitoba Water Resources Division as found on page 54 of this report.

The gauging stations currently used are listed below and their locations are shown in Figure 3:
- 05SD001 – Lake Winnipeg at Pine Dock
- 05SA003 – Lake Winnipeg at Victoria Beach
- 05SD002 – Lake Winnipeg at Matheson Island Landing
- 05SB006 – Lake Winnipeg at Gimli
- 05SG001 – Lake Winnipeg at Mission Point

[1] Ad Hoc Committee on Lake Winnipeg Datum (1982). Report on Lake Winnipeg Levels.

- 05RD005 – Lake Winnipeg at Berens River
- 05RF001 – Lake Winnipeg at Montreal Point
- 05RE003 – Lake Winnipeg at George Island

In 2000, the Lake Winnipeg Shoreline Erosion Advisory Group commissioned an independent review of the Lake Winnipeg water level reporting procedures. "From the analysis carried out, it was determined that there are no significant irregularities in how the water level information is being determined and reported by Manitoba Hydro."[2]

Figure 5 shows the nine events between 1976 and 2013 when the lake rose above 715.0 feet (217.93 metres) including:
- May 27-August 3 1979
- May 4-June 4 1986
- May 9-July 25 1997
- May 28-October 6 2005
- July 28-August 9 2008
- May 14-September 3 2009
- July 4-December 19 2010
- April 26-October 1 2011
- July 10-21 2013

See licence term 7 on page 15 of this document for a statement of the operating conditions during these events. The water level of the lake has never been below 711 feet (216.71 metres) since this licence has been in effect.

(b) Playgreen Lake

Daily average water levels have been maintained within the licence limits with the exception of three events as shown on Figure 6. This licence term is part of original Interim Licence that provided for water control structures located further upstream. Those structures would have had more ability to influence the water level on Playgreen Lake. The Jenpeg location does not allow direct control of water levels on Playgreen Lake, though during low flow conditions the forebay can be held high to help support water levels.

The only time when water levels exceeded 714.9 feet (217.90 metres) was on June 30, 2011. This event occurred as a result of wind setup when Lake Winnipeg was at 716.8 feet (218.48 metres). Manitoba Hydro has no ability to control or prevent such events. A 2011 08 03 letter to Manitoba Conservation and Water Stewardship reported this as two events because it was based on provisional data. A copy of this letter can be found on page 74.

[2] Baird and Associates Coastal Engineers Ltd. (2000). Review of Lake Winnipeg Water Level Reporting Procedures.

There have also been two periods when water levels dropped below 707.0 feet (215.49 metres). Both events occurred over the winter (February-March 1991 and February 1992) as a result of a combination of very low Lake Winnipeg water levels and lower Jenpeg forebay operation in an attempt to maintain winter flows required for power production. No documents were found that recorded these events.

No smoothing technique has been used to determine a wind eliminated water level. For the purpose of this licence article, Playgreen Lake water level measurements have historically been obtained from Water Survey of Canada gauge 05UB704 upstream of Whiskey Jack Narrows. The gauge location is shown in Figure 4. For the period from August 1976 to September 1996, water level data was typically collected about once per month. From October 1996 to present, daily average water levels were reported based on hourly water level data.

(c) Kiskittogisu Lake

Daily average water levels have been maintained within the licence limits with the exception of four events as shown on Figure 7. This licence term is part of original Interim Licence that provided for water control structures located further upstream. One structure would have direct and the other, virtually direct, influence on Kiskittogisu Lake water levels. The Jenpeg location does not allow direct control of water levels on Kiskittogisu Lake, though during low flow conditions the forebay can be held high to help support water levels.

There were four events when the daily average water level exceeded 714.8 feet (217.87 metres) and no event when the water level declined below 706.0 feet (215.19 metres). No documents were found that recorded these events.

The first event occurred from September 14 to 16, 1985 when the level of Kiskittogisu Lake reached a maximum of 714.96 feet (217.92 metres). This appears to have been caused by wind that resulted in water levels at Montreal Point, on the north end of Lake Winnipeg, rising to 715 feet (217.93 metres). There was a corresponding one foot (0.3 metre) increase in the Jenpeg forebay level in the days leading up to the event. A temporary powerhouse outage on September 13 may have been a contributing factor.

The second event occurred August 8, 1992 when the level reached 714.82 feet (217.88 metres). At the time the spillway was not operating and all flow was going though the powerhouse. A temporary powerhouse outage on August 7, 1992 caused the Jenpeg forebay to increase and resulted in the high water level on Kiskittogisu Lake.

The third and fourth events occurred on July 23 and July 31, 1993 when water levels on Kiskittogisu Lake reached 714.92 feet (217.91 metres) and 714.88 feet

(217.90 metres) respectively. In these cases, wind on Lake Winnipeg caused water levels at Montreal Point to increase by 0.8 feet (0.24 metres) and 0.7 feet (0.21 metres) respectively in the days leading up to the two events. A wind driven seiche effect on Lake Winnipeg also caused water levels on Kiskittogisu Lake to decrease to 713.64 feet (217.52 metres) on July 26, 1993, the week that separated the two events.

No smoothing technique has been used to determine a wind eliminated water level. From 1976 to 1987, water level data is based on Water Survey of Canada gauge 05UB007 upstream of Metchanais Channel on Kiskittogisu Lake. From 1987 to present, water level data is based on Water Survey of Canada gauge 05UB017 at Whiskey Jack Landing on Kiskittogisu Lake. Both gauges are shown in Figure 4.

7. Operation when Lake Winnipeg is above 715 feet

Licence Term - Supplementary Interim Licence

The Licensee shall, during periods when the water level in Lake Winnipeg is above elevation 715.0 feet above mean sea level, Canadian Geodetic Datum, operate the said control structure at Jenpeg in such a manner as to effect the maximum discharge possible under the circumstances then prevailing until the water level of the said lake recedes to elevation 715.0 feet above mean sea level, Canadian Geodetic Datum.

Observance

The licence term recognizes that maximum discharge varies according to the circumstances prevailing at the time when Lake Winnipeg is above 715 feet.

Maximum discharge is accomplished by lowering the Jenpeg forebay to a minimum water level except for the freeze-up period. Lowering the forebay is achieved by sending water through the spillway and generating units until a physical minimum water level constraint is achieved. If some of the generating units are unavailable for operation, the absolute minimum level may not be achievable. The lowest water level that the forebay can be drawn down to avoid physical damage at Jenpeg is 702 feet (213.97 m) in summer and 703 feet (214.27 m) in winter. Although the target forebay elevation will be set at these levels, forebay variations occur due to local and upstream conditions. Wind can cause the forebay level to increase by about a foot and temporarily give the appearance that maximum discharge is not occurring. Flow constrictions upstream of Jenpeg vary seasonally and also contribute to variations in maximum discharges. Ice is the most significant cause of flow restrictions in the winter. The degree of these constrictions fluctuates during the course of a winter as well as from year to year. During freeze-up, flow is temporarily reduced, typically for a week or two, to permit the formation of a competent ice that improves the conveyance (flow) capacity during winter. This is known as the ice stabilization program. After this ice cover is formed, maximum discharge operations can be resumed if required.

Between 1976 and 2013, there were nine periods when the wind eliminated water level on Lake Winnipeg exceeded 715.0 feet (217.93 metres). The control structure at Jenpeg has been operated to maximize discharge under the prevailing circumstances with the exception of one authorized deviation.

This authorized deviation occurred from November 2 to 4, 2010 when flows were reduced temporarily each day to install the Jenpeg Ice Boom. A 2011 10 06 letter from S. Topping to W. Penner authorized this operation. A copy of the letter can be found on page 75.

8. **Minimum flow**

Licence Term - Supplementary Interim Licence

The Licensee shall operate the said control structure at Jenpeg in such a manner that the combined outflow of water from Lake Winnipeg through the natural and artificial channels at any time shall not be less than 25,000 cubic feet per second.

Observance

Manitoba Hydro observes this condition as stated in the Supplementary Interim Licence. The observance is based on a calculated daily average outflow (Jenpeg total outflow plus flow at Nelson River (East Channel) below Sea River Falls – 05UB008 as shown in Figure 4).

Figure 8 shows that Lake Winnipeg outflows are above the minimum outflow of 25,000 cubic feet per second (cfs) (708 cubic metres per second (cms)) 99.9% of the time.

Between May 5, 1981 and June 16 there were 13 days when the total Lake Winnipeg outflow dropped below 25,000 cfs (708 cms) with the lowest flow at 22,240 cfs (630 cms). During this time the wind-eliminated water level of Lake Winnipeg ranged between 712.6 and 712.8 feet (217.20 and 217.26 metres). For these events, the east channel outflows were reduced by a wind set-down at the north end of Lake Winnipeg. The daily average Jenpeg outflow varied by 1,580 cfs (45 cms) with a range from 14,960 to 13,380 cfs (424 to 379 cms). The daily average east channel flow varied by 5,010 cfs (142 cms) with a range from 13,000 to 7,990 cfs (368 to 226 cms). The low flows for this period are primarily attributable to wind during an attempt to conserve water on Lake Winnipeg. No document was found that recorded these events.

On August 28, 1988 the total calculated Lake Winnipeg outflow went below the 25,000 cfs (708 cms) by 185 cfs (5 cms). During this time the wind-eliminated water level of Lake Winnipeg was 712.2 feet (217.08 metres). In the preceding seven days Jenpeg daily average outflows decreased marginally by 2565 cfs (73 cms) with a range from to 18,775 to 16,210 cfs (532 to 459 cms). During this same time period, the daily average east channel flow decreased by 5,660 cfs (160 cms) with a range from 11,700 to 6,040 cfs (331 to 171 cms). As no outflow control

exists for the east channel, the low flow on August 28, 1988 was likely due to wind set-down at the north end of Lake Winnipeg during an attempt to conserve water on Lake Winnipeg. No document was found that recorded these events.

9. **Operations to maintain Lake Winnipeg above 711 feet**

Licence Term – Interim Licence

Subject to Article 8 hereof, and except as may be otherwise authorized by the minister under Section 72 of the Regulation, the Licensee shall regulate the water level of Lake Winnipeg so as to prevent the water level from receding below elevation 711.0 feet above mean sea level, Canadian Geodetic Datum.

Observance

The water level of Lake Winnipeg has never receded below 711.0 feet (216.71 metres) since regulation.

10. **Minister to direct operations when Lake Winnipeg is below 711 feet**

Licence Term - Supplementary Interim Licence

Notwithstanding any other terms or conditions of this Interim License, the Licensee shall, during periods when the water level in Lake Winnipeg is below elevation 711.0 feet above mean sea level, Canadian Geodetic Datum, operate the said control structure at Jenpeg as ordered by the Minister under Section 72 of the Regulations.

Observance

The Minister has never intervened in the operation of the Jenpeg Control Structure.

11. ***Monthly operating forecasts***

Licence Term - Supplementary Interim Licence

On the first day of each and every month, the Licensee shall submit a report to the Director showing the schedule for operating the said control structure at Jenpeg for the ensuing three month period, together with the expected daily discharges from, and water levels on, Lakes Winnipeg, Playgreen, and Kiskittogisu.

Observance

Monthly reports fulfilling this requirement have been sent to the appropriate Provincial authority.

12. **Maximum flow change**

Licence Term - Supplementary Interim Licence

Subject to Article 10 hereof, but notwithstanding any other terms or conditions of this Interim License, the Licensee shall operate the said control structure at Jenpeg in such a manner that any increase or decrease in the rate of the discharge therefrom during any 24 hour period shall not exceed 15,000 cubic feet per second.

Observance

Manitoba Hydro always attempts to comply with this licence condition, though there have been several circumstances and will likely continue to be times when this is not achieved. Figure 9 provides a chronological view of the 24 hour flow changes and As of 2007, specific information related to each exceedance event is included in the Annual Water Level and Flows Report. The primary reasons for exceeding this licence condition include unexpected powerhouse unit or transmission line outages, operator error during flow or generation adjustments, wind effects, ice jamming issues, and emergency situations. Although there will likely continue to be some unavoidable exceedance events, Manitoba Hydro has made efforts and has been successful in reducing the frequency. This improvement is partly attributable to a compliance monitoring program that was implemented in 2005 and to increased operator experience. Included in these events, is an authorized deviation that occurred in 2010 to install an ice boom as indicated in a 2011 10 06 letter, as shown on page 75 of this document.

12A. **Kiskitto Lake regulated to be within natural range**

The Licensee shall operate the said control structure on the Kiskitto-Minago diversion channel in such a manner as to regulate water levels in Kiskitto Lake within natural ranges subject to the orders of the Director.

Observance

Manitoba Hydro has always regulated water levels in Kiskitto Lake within the natural range, as shown in Figure 10. Water levels are based on records from gauge 05UB013 which is located on Kiskitto Lake, as shown in Figure 4

13. **Land Rentals**

Licence Term - Supplementary Interim Licence

During the term of this Interim License, the Licensee shall pay a rental for the use and occupation of those lands of the Province described in Articles 3 and 4 hereof which are situated within the Severance Line designated on a plan identified as No. 39-2-1183 (Rev. 1), in such amounts or at such rates as may be fixed by the Lieutenant Governor in Council.

Observance

Land rentals from the initial development to 1995 were paid pursuant to Order-In-Council 700/1979 at $25,000 per annum. Since 1996, land rentals have been paid on a rate per acre basis. From 1996 to 2010 the amount paid was $17,846.20 per annum and from 2011 to 2013 it was $32,123.16.

14. **Licence Plans**

Licence Term - Supplementary Interim Licence

The plans filed by the Licensee and made a part of this Interim License are as follows:

Manitoba Water Resources Branch File Number	*Licensee's File Number*	*Description*
39-3-1018	*0510-D-0172 (Rev. 1)*	*Location general arrangement and cross-sections of development*
39-2-1183 (Rev. 1)	--	*Map showing severance line specified in license issued to Manitoba Hydro under the Water-Power Act for regulating Lakes Winnipeg, Playgreen and Kiskittogisu*

Comment

No statement is required by Manitoba Hydro.

15. **Final Licence**

Licence Term - Supplementary Interim Licence

(The text under this licence term is a repetition of all the terms of the Supplementary Interim Licence.)

Comment

Manitoba Hydro requested a Final Licence on 2010 12 22. A copy of the letter of request is shown on page 65.

16. **Plans part of licence**

Licence Term – Interim Licence

All record plans filed with the Director and referred to in this Interim Licence are incorporated herewith and made a part hereof.

Comment

No statement is required by Manitoba Hydro.

17. **Licence subject to Regulations**

Licence Term – Interim Licence

This Interim Licence is issued upon the express condition that it shall be subject to the provisions of the Regulations and all amendments thereto.

Observance

Manitoba Hydro's adherence with the Regulations is addressed in Section 3 of this report.

Section 3 - Observance of Pertinent Water Power Act Regulation Sections

This purpose of this section is to demonstrate that Manitoba Hydro has fulfilled its obligations under Regulation 25/88R pursuant to the Water Power Act. Manitoba Conservation and Water Stewardship and Manitoba Hydro have jointly selected those sections of the Regulation that are pertinent to the Lake Winnipeg Regulation (LWR) Interim Licence. Each of the pertinent sections is shown in italics followed by a statement how Manitoba Hydro has fulfilled its obligations.

4 *All elevations given in connection with the plans or other information filed by the applicant should be referred, if possible, to mean sea level datum.*

Observance
Elevations for water levels on Lake Winnipeg, Playgreen Lake, Kiskittogisu Lake, and Kiskitto Lakes are based on the Lake Winnipeg Datum, a specific reference to mean sea level datum. Elevations on Jenpeg plans are based on the Jenpeg Datum, which is also referenced to mean sea level.

Change in plans
31 *Before making any material change in the general construction plans as approved, or in the works constructed or under construction in pursuance of his or her licence or in the location thereof authorized, the interim licensee shall submit a complete and satisfactory statement and plans of such proposed change to the director, and shall not proceed to carry out the change until authorized.*

Observance
No material changes have been made beyond those authorized under the Supplementary Interim Licence.

Final construction plans
35(1) *Within 90 days after the completion of the initial development in accordance with the general construction plans or with any authorized changes therein, and within 90 days after the completion of any additional unit of the power development or of the power system, the interim or final licensee, as the case may be, shall file with the director copies of the final construction plans.*

35(2) *The final construction plans, together with drawings and specifications accompanying them, shall show the works as actually constructed in such detail as would be required to be given to construction contractors for the purpose of constructing the works and shall show the precise areas of lands occupied so as to satisfy the requirements of section 24.*

35(3) *The said plans shall be on tracing film, and shall conform to the sizes specified in clause 3(l); the said specification shall be either printed or typed, and both plans and specifications shall be signed by a professional engineer of recognized standing in Canada satisfactory to the director, and shall in other respects satisfy the requirements of the director.*

35(4) *In no case shall the interim licensee be entitled to the issue of a final licence until the requirements of this section have been complied with insofar as they relate to the initial development.*

Observance for 35(1-4)
Manitoba Hydro transmitted the construction plans on November 27, 2014 in the absence of a record indicating that this had been previously fulfilled.

A copy of the letter of transmittal can be found in Appendix A, page 79.

Fixation of construction costs
36(1) *Upon completion of the initial development and upon the completion of any substantial addition thereto, a sum shall be fixed which shall represent the actual cost of such development or of such addition, or both, and in the event that the minister and the interim or final licensee, as the case may be, cannot agree upon the sum within 90 days after the completion of the development or of additions, or both, or within 90 days after the purchase of any lands or rights of way within the severance line, the minister shall refer the matter to the court for determination.*

Observance

Manitoba Hydro has determined that the capital cost of the project is $127.8 million dollars. In the absence of a record indicating that this had been previously communicated to the Province, a letter providing this was written on December 12, 2014. A copy of the letter can be found in Appendix A, page 82.

36(2) *In no case shall a final licence be issued to the interim licensee until such licensee has fully complied with the provisions of this section insofar as they relate to the completion of the initial development.*

Observance
Manitoba Hydro has completed the initial development and provided the capital cost of the project.

Operation under Interim Licence

37(1) *In the event that the works are put into operation before the issuance of the final licence, the interim licensee shall, pending the issuance of such final licence and until otherwise agreed upon, maintain and operate the same to the satisfaction of the director and shall at no time raise the level of the waters of any river, lake or other body of water or permit such level to be raised higher than the elevation which shall be fixed from time to time by the director and shall abide by all reasonable regulations which may from time to time be promulgated by the minister for the control of the flow of any waters for general conservation purposes.*

Observance

Manitoba Hydro assumes that the director is satisfied with the maintenance and operation of the project as it has not been notified otherwise. The minister has not requested that the project be operated beyond the conditions stated in the Interim and Supplementary Interim Licences and those granted at Manitoba Hydro's request. Observation of this Regulation was addressed in Section 2 of this report.

37(2) *The interim licensee shall in such case pay for any water used in the development of power prior to the issuance of the said final licence, such sum or such rate per horsepower as the minister may determine.*

Observance

No payment is required as this project does not develop power directly.

38 *In addition to any obligations specially imposed upon interim licensees in this part of this regulation, every interim licensee shall, insofar as his or her position with respect to the use and occupancy of lands and waters of the province, or the maintenance and operation of his or her works or the carrying on of his or her undertaking for the time being is similar to that of a final licensee, and subject to section 37, observe and comply with all the provisions of this regulation applicable to final licensees.*

Observance

Manitoba Hydro has observed and complied with all the provisions of this regulation as would be applicable to final licensees. It has not received direction from the Director or Minister to change its operations.

Amending Interim Licence

39 *Subject to this regulation the terms of any interim licence may be amended by a supplementary licence entered into between the minister and the interim licensee, and plans and specifications previously approved may be amended with the consent in writing of the minister, but any such amendment shall affect only the portion specifically covered in such supplementary licence or writing, and shall in no case operate to alter or amend or in any way whatsoever be a waiver of any other part, condition or provision of the original interim licence.*

Observance

Manitoba Hydro requested and was granted a Supplementary Interim licence 1972 01 20 from the minister responsible for the Water Power Act. This authorized the right to construct a control structure at Jenpeg, a river channel excavation at Kisipachewuk Rapids, a by-pass channel at Ominawin Rapids, a dam and dykes at the natural outlet of Kiskitto Lake, a diversion channel from Stan Creek to Kiskitto Lake, and a diversion channel from Kiskitto Lake to the Minago River drainage basin with control structure. This relinquished the right to construct river channel excavations and control structures at Metchanais and Ominawin Rapids.

The operating conditions are consistent with those issued under the Interim Licence. This includes the water level limits for Kiskittogisu and Playgreen Lakes even though direct control is no longer possible with hydraulic control relocated downstream to Jenpeg.

Completion of works by Interim Licensee

42(1) *As soon as the interim licensee has completed the initial development and otherwise fulfilled the terms of the interim licence, he or she shall file in the office of the director written notice of such completion and fulfillment in the form supplied by the director.*

Observance

A 1978 02 16 letter from the Manitoba Department of Mines, Resources and Environmental Management, Water Resources Division to Manitoba Hydro advised that the project completion date of the initial development was 1976 08 01. A 1978 01 25 letter from Manitoba Hydro to the Manitoba Water Resources Division provided written notification of the completion. A copy of these letters can be found on pages 53 and page 51 respectively.

42(2) *Subject to subsection (3), the director shall thereupon cause an inspection, and if necessary a survey, of the works constructed or used and of the lands and waters used or occupied in connection with the undertaking to be made.*

Observance
Manitoba Conservation and Water Stewardship staff and other Manitoba government representatives have variously toured the Jenpeg site and other parts of the project area.

42(4) *Upon compliance on the part of the licensee with subsections (1) to (3), the director shall determine a date which, for the purposes of this regulation, shall be the date of completion of the initial development.*

Observance
In a 1978 02 16 letter, the Senior Assistant Deputy Minister, Manitoba Department of Mines, Resources and Environmental Management, Water Resources Division indicated that he determined 1976 08 01 to be the completion date of the initial development for licence and regulation purposes. A copy of this letter can be found on page 53.

Issuance of final licence
43(1) *Upon the completion of the initial development according to the plans previously approved, and upon fulfillment and compliance otherwise with all the terms and conditions of his or her interim licence and of this regulation, the interim licensee shall be entitled to a final licence authorizing one or more of diversion, use, or storage of water at the site in question, for the development of energy therefrom, for the utilization of such energy, for the occupation or use of the lands of the province or whichever one or more of these is, in the minister's opinion, required for the proper maintenance and operation of the works.*

Observance
Manitoba Hydro has no comment on this Section.

Licence rentals
48(1) *Subject to subsection (2), rentals are payable under this section from the date fixed in the original interim licence for the completion of the initial development, whether or not it is completed.*

Observance
Manitoba Hydro has paid land rentals in accordance with Supplementary Interim Licence term 13. See number 13 in Section 2 for an explanation of observance.

Water use rental statement
48(3.4) *A licensee shall, on or before March 1 following each rental period, submit all data required by the director for the determination of the annual water use rental for the rental period. On receipt of the required data, the director shall without delay prepare and provide to the licensee a statement of the water use rent payable by the licensee for the rental period.*

Observance
Water use rental charges are not applicable as the project does not produce electricity. Water use rental charges for the Jenpeg Generating Station are paid for under a separate Water Power Licence.

Time of payment of rentals
48(3.5) *The rent for each rental period is payable*
(a) in the case of land use rental, on January 2 of the rental period; and
(b) in the case of water use rental, within 60 days after receipt of the director's rental statement for the year for the rental period.

Observance
Manitoba Hydro has provided the payments as required.

51(4) *Every licensee shall, to the satisfaction of the minister, clear and keep clear, from timber, brush and other material, all lands which are to be flooded.*

Observance
Prior to the construction of the Project, Manitoba Hydro cleared lands as recommended by the Lake Winnipeg, Churchill and Nelson River Study Board. From the 1960s to the early 1990s, Manitoba Hydro undertook periodic efforts to remove woody debris from affected waterways, generally on a "station by station" basis. In the late 1990s, the scale of Manitoba Hydro's debris removal efforts increased and in 1998, Manitoba Hydro initiated more comprehensive debris removal efforts with Cross Lake First Nation in the Jenpeg Forebay.

In 2000, Manitoba Hydro's various debris removal efforts were consolidated into a system-wide Debris Management Program, which evolved into the Waterways Management Program. Today, Manitoba Hydro operates the Waterways Management Program along the Nelson, Churchill, Rat/Burntwood, and Saskatchewan River systems. The program includes three components - boat patrols, debris management, and safe ice trails. Manitoba Hydro works with local residents to implement the program, which includes determining the location of the safe ice trails and open water travel routes, and identifying and prioritizing sites for debris removal.

The on-shore debris management component of the Waterways Management Program is typically undertaken through contracts with First Nations, Community Councils, First

Nation-owned businesses, or resource users. The debris management contractors work on the shore, identifying debris work locations, and collecting and safely disposing of debris.

51(5) *Lands flooded or to be flooded in connection with any undertaking shall not be fenced or otherwise enclosed unless and until the minister's consent in writing has been obtained.*

Observance
Manitoba Hydro has never attempted to fence or enclose flooded lands.

Care of lands
54(1) *The interim or final licensee shall at all times maintain the lands, works and property held or used by the licensee in respect of his or her licence in a manner satisfactory to the minister, including the maintenance of all flooded or other areas in a sanitary condition and the improvement of the lands from the point of view of landscape architecture, and shall do all in his or her power to protect the lands and the interest of the Crown therein against injury by anyone engaged on or about the works, or by any other person.*

Observance
Manitoba Hydro's number one priority is safety of its staff and the public at Manitoba Hydro facilities. As such Manitoba Hydro implements a Public Water Safety Around Dams Program at all generating stations and control structures including Jenpeg. This program includes site specific public water safety management plans and maintenance programs to ensure the program objectives are met.

54(2) *Every interim or final licensee shall do everything reasonable within his or her power, both independently and on request of the minister to prevent and suppress fires on or near the lands to be occupied under the licence.*

Observance
Manitoba Hydro has properly maintained site lands to reduce the risk of fires. Fire suppression equipment is installed. Manitoba Hydro has a corporate fire prevention and protection program designed to eliminate risks of fire or explosion involving corporate property.

54(3) *For the purpose of limiting the spread of fires or for other reasonable purposes, every interim or final licensee shall clear and keep clear the lands of the province along his or her transmission lines for such width and in such manner as the minister may direct.*

Observance
No transmission rights-of-way are associated with the LWR Project.

54(4) *Every interim or final licensee shall, to the satisfaction of the minister, dispose of all brush, refuse or unused timber on lands of the province resulting from the construction and maintenance of the works, and shall keep the lands covered by his or her licence clear of unnecessary combustible material at all times.*

Observance
Manitoba Hydro has disposed of brush, refuse and timber resulting from the construction and maintenance of the works and cleared unnecessary combustible material.

56 *Every interim or final licensee shall protect all telephone, telegraph and power transmission lines in existence prior to the construction of his or her own lines where crossed by or in close proximity thereto to the satisfaction of the director or competent provincial authority if any, and shall operate, maintain and render safe to the public his or her own transmission, telephone and other lines to the satisfaction of the director or the said authority if any.*

Observance
No transmission rights-of-way are associated with the LWR Project.

57(1) *Except as expressly provided in this regulation, the interim or final licensee shall not erect any buildings or structures whatever upon any lands of the province without first submitting plans thereof to the director and securing the director's approval for such building or structure and the site thereof.*

Observance
No buildings or structures related to the LWR Project have been erected within the severance area without approval.

59 *Any lands desired by an interim or final licensee for subdivision for townsite or other purposes shall be set out in the application, interim or final licence separately from lands required for other purposes connected with the undertaking, and the promotion of any such townsite shall be subject to the approval of the minister and to such conditions with respect to town planning, landscape architecture and sanitation as the minister may impose.*

Observance
No townsite was developed as part of the LWR Project.

60 *Every interim or final licensee shall pay stumpage and royalty for any merchantable timber cut or removed from any forest reserve in the amount as may be fixed by the regulation governing the administration of forest reserves, and for any such timber cut or removed from any lands of the province other than forest reserves, as may be fixed by the regulation governing the granting of yearly licences and permits to cut timber on the lands, but the minister may remit the fees in respect of timber required to be removed from any water power site or lands to be flooded.*

Observance
Based upon a 1973 01 23 letter, it appears that fees were waived. A copy of this letter can be found on page 48.

Works, maintenance, and operation
62(1) *The licensee shall at all times install and use first class, modern, standard works, plant, and equipment, giving consideration to their requisite suitability of design, safety, strength, durability, efficiency, and all other relevant factors whatsoever, and shall maintain the same in good repair and condition, and shall exercise all due skill and diligence so as to secure satisfactory operation thereof.*

Observance
Manitoba Hydro has installed equipment that is appropriately reliable and or accurate, meets modern safety standards and facilitates efficient operations. It is in the corporation's best interest on a continuing basis to ensure equipment is running optimally to ensure cost effectiveness.

Manitoba Hydro's Dam Safety Program is designed to protect the public, the environment, our employees, and the Corporation from the effects of an uncontrolled release of the reservoir behind a dam. The program is based on the Canadian Dam Association "Dam Safety Guidelines 2007". Manitoba Hydro applies the principles of dam safety during all stages of the life cycle of a dam, including: planning, design, construction, operation and decommissioning. Both concrete and earth structures continue to be inspected at regular intervals for any anomalies or deficiencies. Routine inspections of Jenpeg's dams and dykes by Manitoba Hydro staff are performed monthly or biannually. Intermediate inspections of all water retaining structures are performed by specialists from Manitoba Hydro's Engineering Services Division annually. Data from

inspections, engineering analysis and instrumentation readings are used to perform a condition assessment of the structures annually.

A Dam Safety Review (DSR) inspection of all the structures at Jenpeg GS was performed by KGS Group in 2002. With the exception of Kiskitto Dyke 7-2, no significant dam safety concerns were identified. Kiskitto Dyke 7-2 was rehabilitated in 2003.

Manitoba Hydro provides an annual report to the province on major construction and maintenance activities.

64 *The licensee, before making any material change in any existing works or in their location, shall submit a complete and satisfactory statement and plans of such proposed change to the director, and shall not proceed to carry out the same until such proposed change has been authorized.*

Observance
The only material change has been the replacement of the Kiskitto Inlet Control Structure in 2003. The work was authorized in a 2003 04 07 letter from the director. A copy of this letter can be found on page 64.

65(1) *The director may require any licensee to install and maintain in good operating condition at such places and in such manner as the director shall approve, accurate meters, measuring weirs, gauges or other approved devices which shall be adequate for determining the amount of water used or power developed in the operation of the works, for determining the flow of the stream or streams from which water is or will be diverted, and for determining the amount of water held in or drawn from storage.*

Observance
Manitoba Hydro has installed, operated, and maintained a network of gauges to monitor flows and water levels to ensure that licence conditions are observed. This network meets the needs for licence adherence. The director has not required Manitoba Hydro to install additional gauges.

65(2) *The licensee shall keep accurate and satisfactory records of the determinations referred to in subsection (1) and shall from time to time make such returns, supported if necessary by statutory declaration, as the director may require.*

Observance
Manitoba Hydro has kept records of all gauge readings and has submitted these to the Province on a regular basis. All records are available to the Province.

Stream regulation and control

72 *Every licence shall be deemed to have been executed on the express condition that the licensee shall*

(a) *divert, use, or store the water authorized to be diverted, used, or stored by him in such a manner as not to interfere, in the opinion of the minister, with the maximum advantageous development of the power and other resources of the river or stream upon which the works are located;*

Observance

Manitoba Hydro operates the LWR project to enhance power development on the Nelson River while considering safety, system reliability, social interests, economics and the environment.

(b) *conform to and comply with any orders in respect of the control or regulation of the flow of the waters of such river or stream as may be made from time to time by the minister or any person authorized by the minister in that behalf; and*

Observance

Manitoba Hydro has no record of orders made by the minister in respect to the control and regulation of the project.

(c) *at no time cause or permit the surface level of the waters of such river or stream or of any storage reservoir operated by the licensee to be raised or lowered beyond the limits which shall be fixed from time to time by the minister or by a person authorized by the minister in that behalf.*

Observance

Section 2 of this report has addressed the observance of the specific terms of the Interim Licence including those pertaining to water level limits.

Accounting

78(1) *Every licensee shall keep a true and detailed account of all expenditures made in each calendar year in respect of the works, lands and properties and such other information as follows:*

(a) respecting the works:
- *(i) the actual cost thereof, giving separately each class of expenditures as indicated in the definition of "actual cost",*
- *(ii) amounts expended in that year for enlargements and permanent improvements authorized by the minister, and*
- *(iii) depreciation in value from any and all causes for that year;*

(b) respecting lands, tenements and appurtenances not included in clause (a), a statement setting out, in each case, the actual cost thereof in accordance with the provisions of section 36;

(c) respecting capital stock:
- *(i) the amount authorized and the number of shares into which it is divided,*

(ii) the number of shares subscribed for and allotted, the number of shares forfeited to date, and the owners, for the time being, of all outstanding shares,

(iii) the amount of calls made on each share, and the total amount received from shareholders in cash on account of stock,

(iv) the number of shares, if any, issued as fully paid up shares as consideration for any service rendered or otherwise, specifying in each case for what consideration such shares were issued, and

(v) the amounts of dividends declared and paid;

(d) respecting bonds or debentures:

(i) the amount authorized, and the period of redemption,

(ii) the amount sold (face value) and the rate of interest,

(iii) the amount realized from sales,

(iv) the annual amount set aside as sinking fund to meet bonded indebtedness, and date of commencement;

(e) the indebtedness other than stock and bonds, specifying the nature and amounts, and the rate of interest such indebtedness is bearing;

(f) a statement showing the total revenues of the undertaking, specifying the amount received from each and every source;

(g) the maintenance and operation expenditures, separating those expenditures which are incurred at or near the works from head office and other expenditures relating to general administration;

(h) the names of officers and the classification of employees, with salaries, expenses, or other remuneration paid or allowed;

(i) the proposed extensions during ensuing years;

(j) if a company, such annual return shall have attached thereto a copy of the bylaws of the company, showing all amendments thereto during the year covered by that return;

(k) *such other data as the minister may require.*

Observance

Manitoba Hydro's Annual Report includes each of the above items on a corporate wide basis. Details of the accounting for individual projects are available upon request.

78(2) *Every licensee shall file annually with the director on or before March 1 by a return for the year ending December 31 preceding a detailed summary of all information included under clauses 1(a) and (b).*

Observance

Manitoba Hydro provides an Annual Report to the minister to which the director is responsible.

87 *Notwithstanding any rights granted or approval given by any licence, every licensee shall comply fully with the provisions of the Navigable Waters Protection Act (Canada) and any rules and regulations promulgated thereunder, and shall also comply fully with the provisions of any provincial statutes or regulations governing the preservation of the purity of waters or governing logging, forestry, fishing, wildlife or other interests present or future which might be affected by any operations conducted under the licence and shall also observe and carry out any instructions of the minister concerning any of those matters not inconsistent with the said statutes and regulations.*

Observance

Manitoba Hydro received authorization under the Navigable Waters Protection Act in 1973. A copy of the authorization letter can be found on page 50.

FIGURES

Figure 1

Location Plan

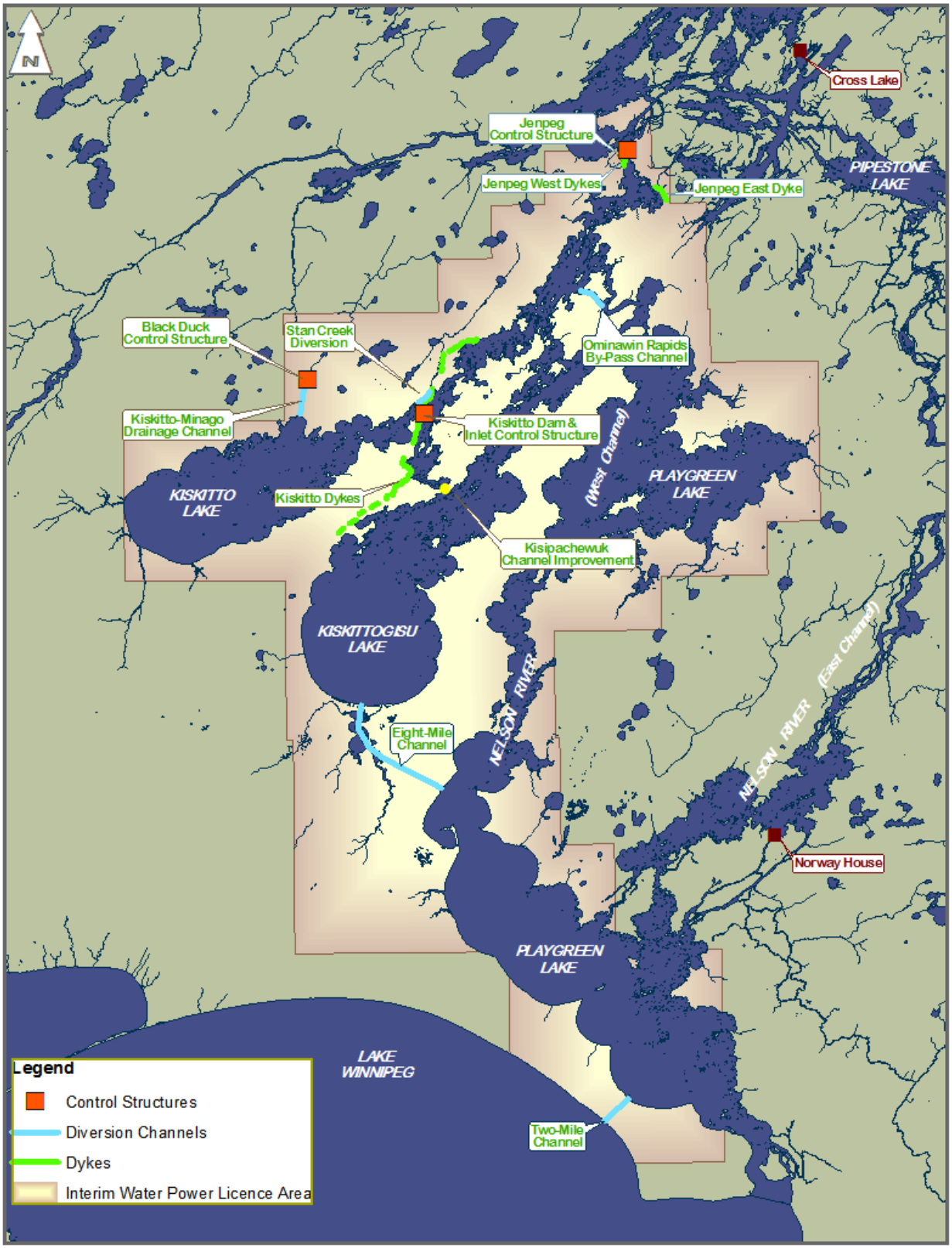


Figure 2

Jenpeg Generating Station and Spillway Structure Photo

Figure 3

Lake Winnipeg Water Level Gauges

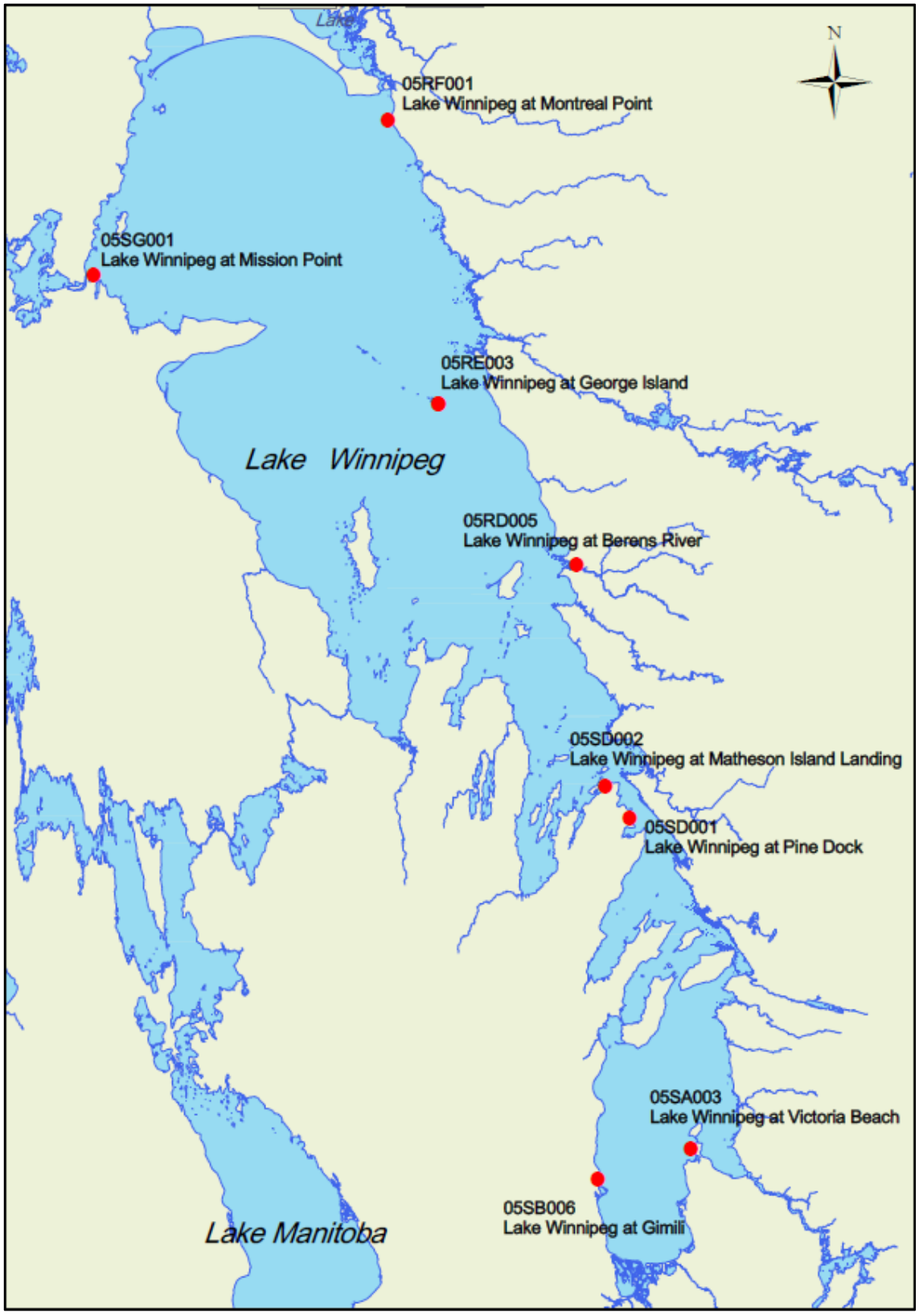


Figure 4

Outlet Lakes Area Water Level Gauges

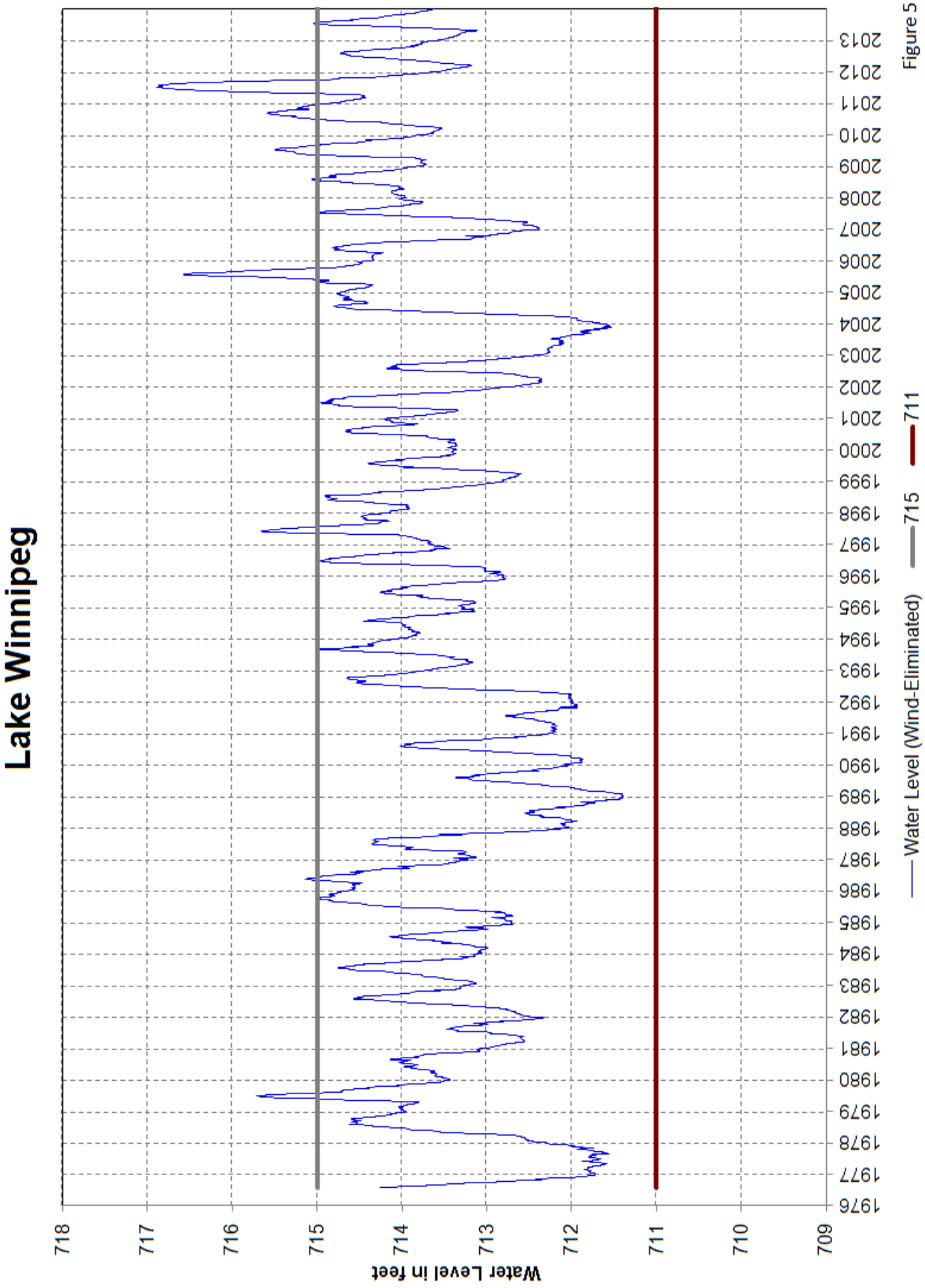

Lake Winnipeg
Water Level in feet
718
717
716
715
714
713
712
711
710
709
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Water Level (Wind-Eliminated)
715
711

Figure 5

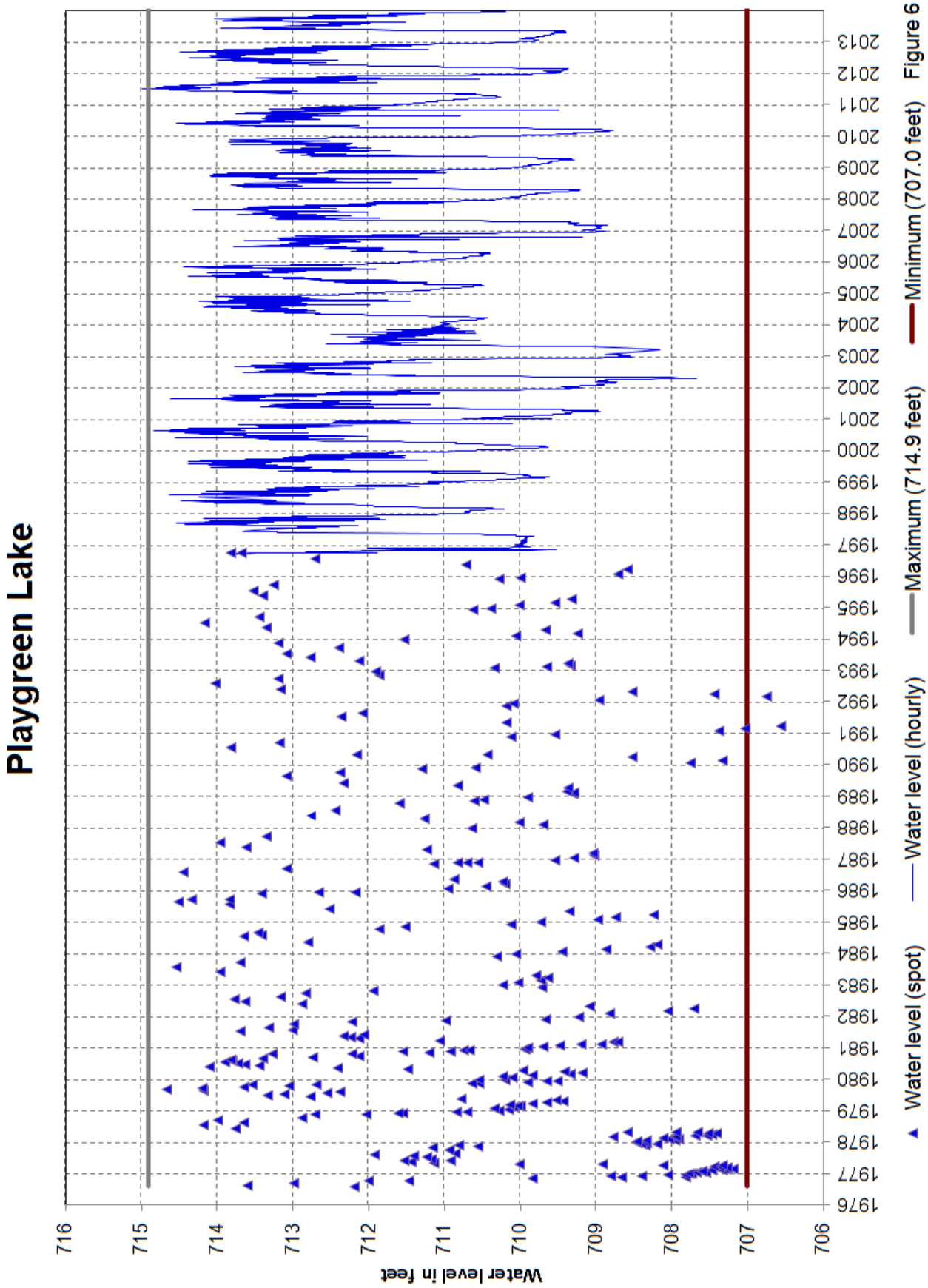

Playgreen Lake
Water level in feet
716
715
714
713
712
711
710
709
708
707
706
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Water level (spot)
Water level (hourly)
Maximum (714.9 feet)
Minimum (707.0 feet)

Figure 6

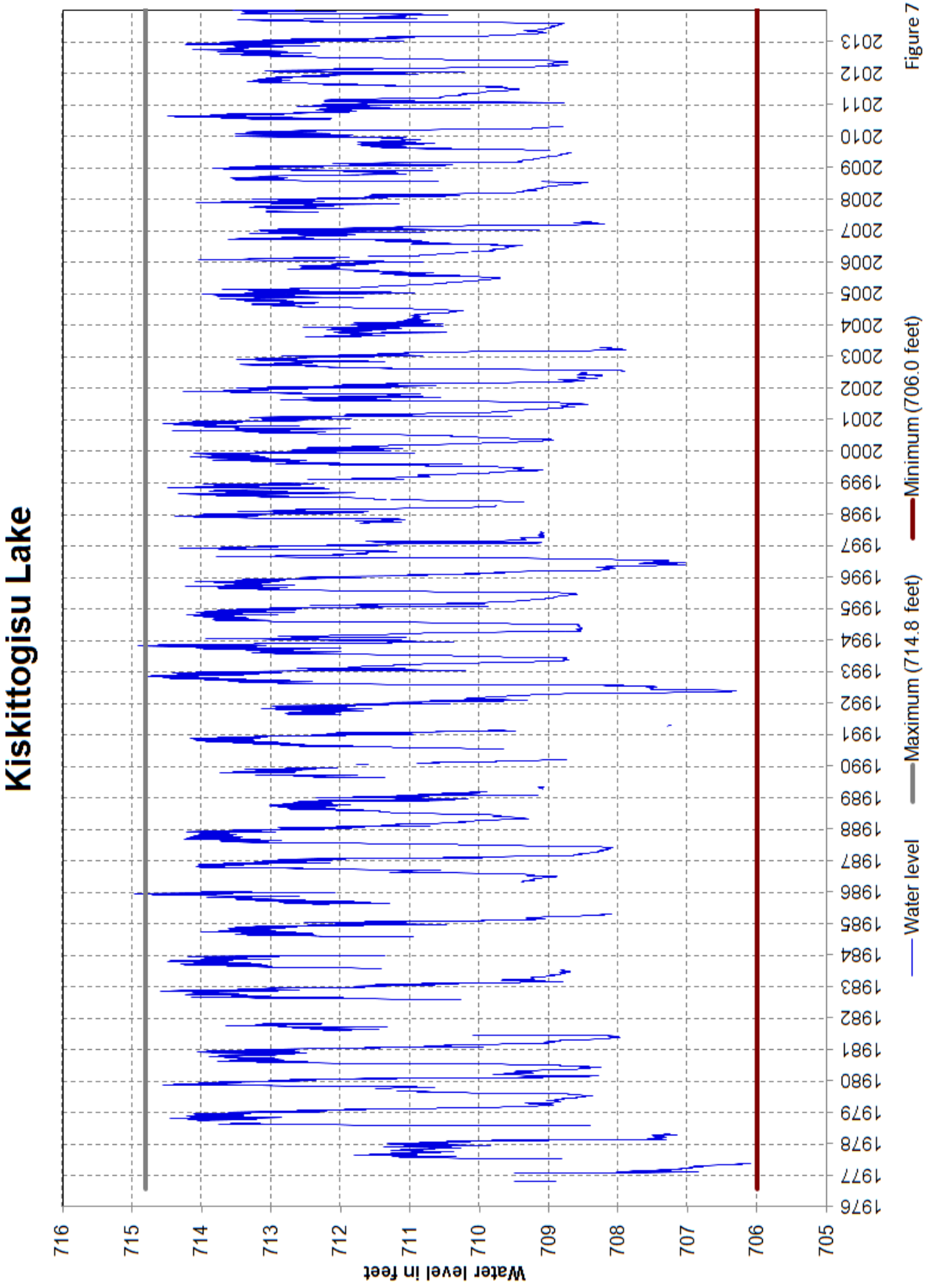

Kiskittogisu Lake
Water level in feet
716
715
714
713
712
711
710
709
708
707
706
705
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Water level
Maximum (714.8 feet)
Minimum (706.0 feet)

Figure 7

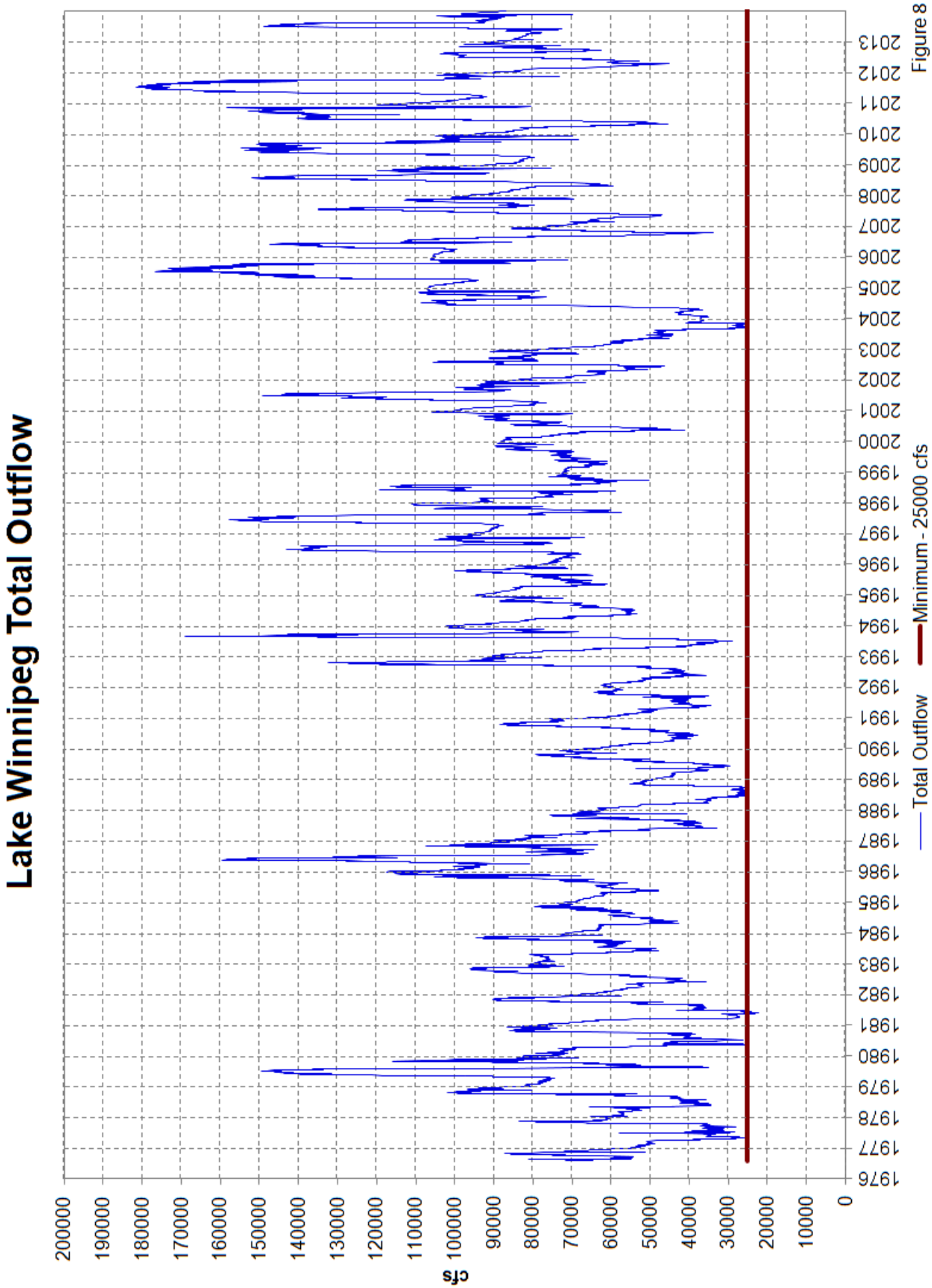

Lake Winnipeg Total Outflow
cfs
200000
190000
180000
170000
160000
150000
140000
130000
120000
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Total Outflow
Minimum - 25000 cfs

Figure 8

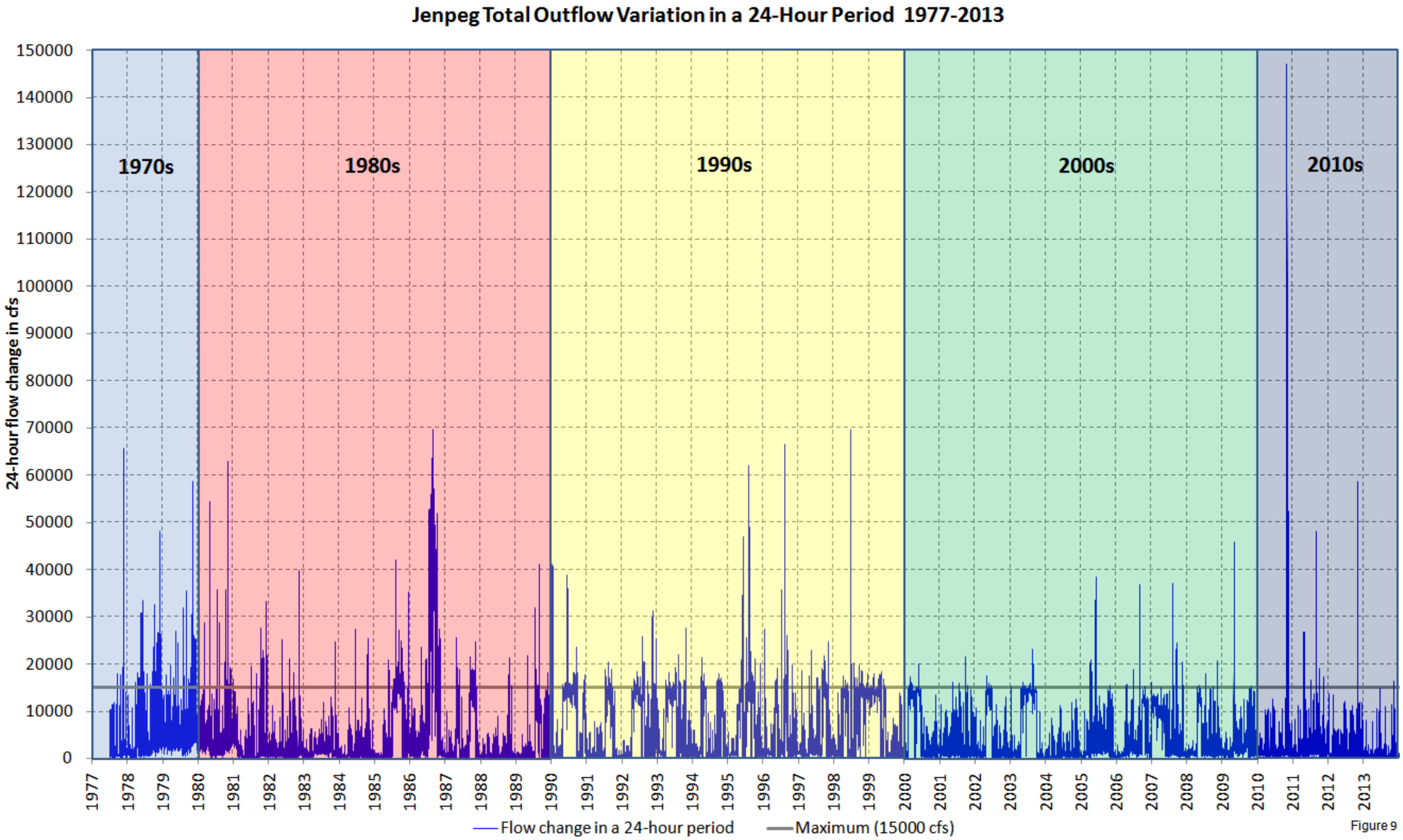

Jenpeg Total Outflow Variation in a 24-Hour Period 1977-2013
1970s
1980s
1990s
2000s
2010s
24-hour flow change in cfs
150000
140000
130000
120000
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Flow change in a 24-hour period
Maximum (15000 cfs)

Figure 9

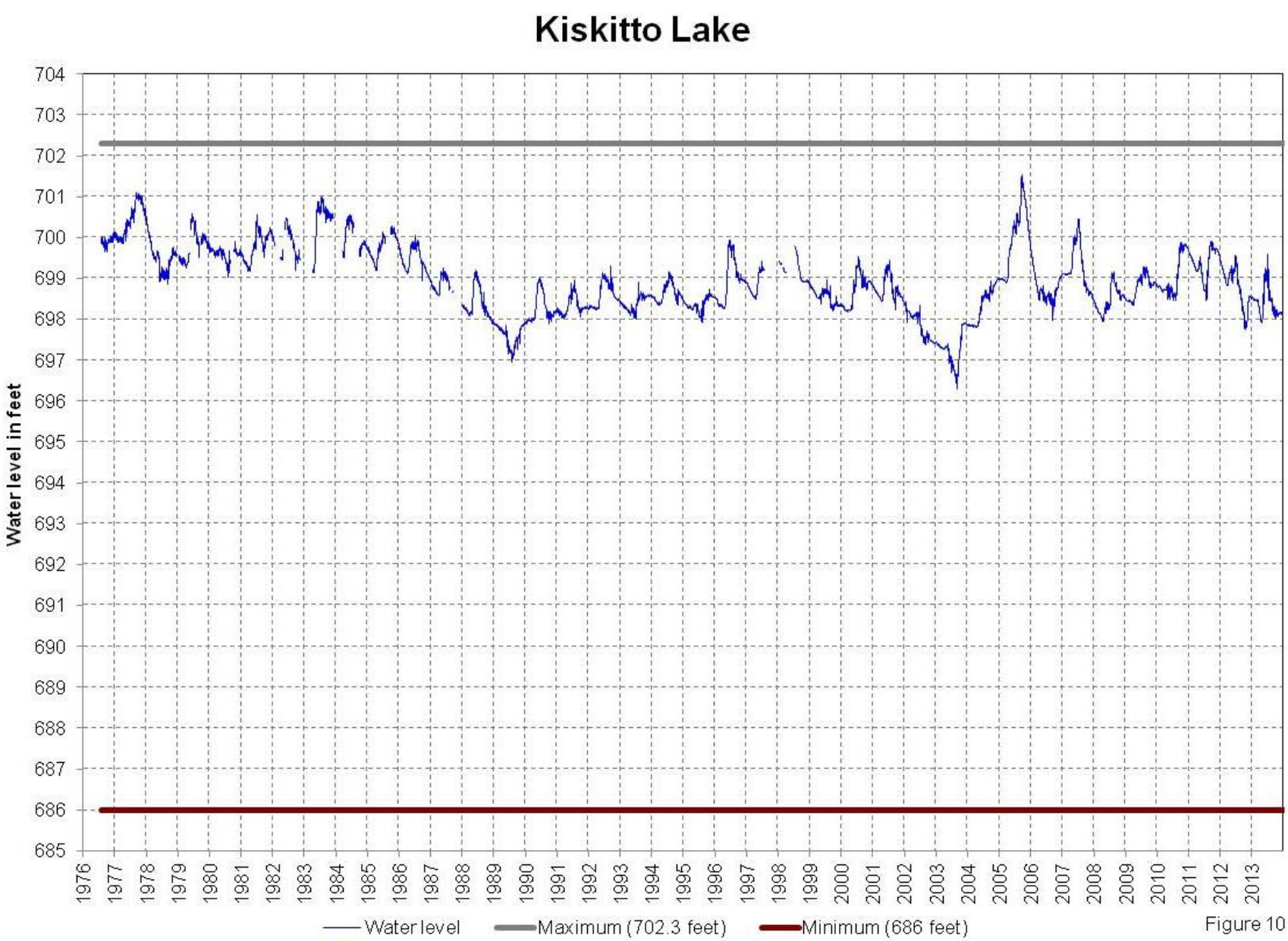

Kiskitto Lake
Water level in feet
704
703
702
701
700
699
698
697
696
695
694
693
692
691
690
689
688
687
686
685
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Water level
Maximum (702.3 feet)
Minimum (686 feet)

Figure 10

APPENDIX A – REFERENCE CORRESPONDENCE

This appendix provides reference correspondence for Sections 2, and 3 in chronological order.

Copies of documents within this appendix are as follows:

R3C 2P4

January 20, 1972

Our File: 13E16
Your File: 30.2.2

Mr. T. E. Weber, P. Eng.
Director General
Water Resources Branch
Dept. of Mines, Resources and Environmental Management
693 Taylor Avenue
Winnipeg, Manitoba
R3M 2K2

Dear Mr. Weber:

Re: Application for Amendment of Water Power License

Further to your letter of January 10, 1972, and our telephone conversation, I am now enclosing an application by Manitoba Hydro for an amendment to the license for the construction of control works to regulate Lake Winnipeg. As a decision has now been made to locate these works at the Jenpeg site, it is necessary to amend the existing license to reflect this decision.

Also enclosed is a mylar print of Manitoba Hydro's Drawing No. 0510-D-9172 Rev. 1, showing the revised locations.

Also enclosed is a print of Water Resources Branch Drawing No. 39-2-1183 on which we have marked the present severance line by a solid red line and have indicated the requested revision in the severance line by a broken red line.

If you have any questions concerning this application or the enclosed drawings, please advise me. It would be appreciated if a supplementary license could be issued at an early date.

Yours very truly,

J. F. Funnell
General Counsel and Secretary

JFF/ac
encl.

R3C 2P4

January 28th, 1972.

The Honourable Sidney Green, Q.C.,
Minister of Mines, Resources and
Environmental Management,
Province of Manitoba,
Legislative Building,
Winnipeg, Manitoba.
R3C 0V8

Dear Mr. Green:

This will acknowledge and thank you for your letter of January 7th, 1972, on the subject of the interim license that was issued to Manitoba Hydro for the construction of an undertaking under The Water Power Act for the regulation of Lake Winnipeg on November 18th, 1970.

We have now submitted to the Director of the Water Resources Branch full information on the revised location for the control works and the channel excavations involved and at the same time have submitted a separate application for a license for the generation of power at the site of the control structure, namely the Jenpeg site. These were submitted at the end of last week.

It should be noted that included in the request for a license for power generation is a reference to a control structure on the east branch of the Nelson River which is desirable for the purpose of maximizing the flow through the Jenpeg Plant for power production. This would be a gated structure downstream of Norway House and upstream of Sea River Falls. While its use would reduce the flow of water below the control structure, no levels would be raised and we do not anticipate any damage claims or interference with the environment provided sufficient water is released to maintain conditions in the lower stretch of the East Channel. No doubt any license issued would cover any such requirement. However, we are not making a formal application at this time, although for design purposes we are taking the additional flow into account. An application will be forthcoming after the appropriate investigations, including ecological factors, have been completed.

Yours sincerely,

David Cass-Beggs,
Chairman.

DC-B/MD

R3C 2P4
January 23, 1973

Mr. K. Burron, Secretary
The Pas Chamber of Commerce
P. O. Box 996
The Pas, Manitoba

FILE No. 423 LWR
Destroy

Dear Mr. Burron:

Your letter of January 9, 1973, which expressed concern about the amount of usable timber being destroyed in the Jenpeg Forebay Area, has been reviewed.

Manitoba Hydro and the Department of Mines, Resources and Environmental Management had extensive discussions during 1972 on the extent of clearing to be carried out in the area which will be affected by the water levels above the Jenpeg Generating Station. Subsequently a policy was formulated and agreed upon by bothpparties. Neither party wanted merchantable timber submerged as a result of higher water levels.

We will be clearing approximately 12 to 14 thousand acres, including all merchantable timber below elevation 715', above Jenpeg Generating Station. The areas of merchantable timber were defined by the Department of Mines, Resources and Environmental Management. As you probably realize, while this timber may be of the size and density to classify it as merchantable, it may not be economical to remove the timber and transport it to a location where it can be utilized. The decision of whether the timber should be transported to a location where it can be utilized, or whether the timber should be piled and burned has been left to the contractor. If the contractor feels that it can be economically utilized, he no doubt will take advantage of this possibility.

We do not have the information to answer your question pertaining to the quantity and value of timber destroyed or burned. Such information, as well as the timing of the latest timber cruise for pulp and paper, may be available from the Department of Mines, Resources and Environmental Management.

.....

Manitoba Hydro has met with at least one pulp and paper company regarding the potential purchase of this timber and has also discussed with the clearing contractors the possibility of timber salvage. It appears that some subsidy is required to make it economically feasible to transport the timber to a location where it can be utilized.

We believe that our responsibilities have been met in this matter.

Yours very truly,

Originally signed Geo. Reid

JEC
GR*IM

Geo. Reid
General Manager

cc The Honourable Ronald McBryde
Mr. M. Kaye, Chief of Forestry Research

CANADA
MINISTRY OF TRANSPORT

FORM 1

8212-297 (OMA)

NAVIGABLE WATERS PROTECTION ACT, PART I
Application in re: Section 5(1) of the Act.

APPROVAL

Applicant:	Manitoba Hydro, Box 815, Winnipeg, Manitoba, R3C 2P4.
Work:	a) Diversion channel, b) diversion channel, c) diversion channel, d) channel excavation, e) rock fill dam, f) small inlet structure, g) diversion channel, h) diversion channel and control weir, i) rock fill dam, j) powerhouse and excavated channel and ancillary dykes to contain the forebay, k) temporary control structure if required during summers of 1973 and 1974.
Site - Location:	a) from Lake Winnipeg to Playgreen Lake (near the outlet to Lake Winnipeg) b) from Playgreen Lake to Kiskittogisu Lake, c) bypassing Ominawin Rapids, d) at Kisipachewuk Rapids, e) at the outlet of Kiskitto Lake, f) between the Nelson River West Channel and Stan Creek, g) from Stan Creek to Kiskitto Lake, h) between Kiskitto Lake and Black Duck Creek, i) across the Nelson River West Channel at Jenpeg, j) across the Jenpeg peninsula between the Nelson River West Channel and Gross Lake, k) in Ominawin Channel. All in Water Lots 1 to 7, in Unsurveyed Territory, Province of Manitoba.
IMPORTANT NOTICE:	This document is not a building permit under municipal law and does not constitute authority to occupy land.

WHEREAS, the above-named applicant has made application to the Minister of Transport under the Navigable Waters Protection Act for approval of the above-described work at the above-referred to site in accordance with the plans submitted by the applicant;

WHEREAS, it is considered advisable to approve the said work at the said site and plans thereof for a period of 50 years, subject to the following term(s) and condition(s):

The owner or person in possession is required to:

a) Maintain between levels 711 and 715 feet for Lake Winnipeg during the navigation season.

b) Maintain existing navigation channels in Playgreen Lake and at the Lake Winnipeg entrance to Playgreen Lake to present depths if silting occurs due to reduced flows.

c) Cut timber and clear land below flood level as required.

.../2

d) Finance the placing of obstruction markers on Cross Lake, where the need arises.

e) Construct a new wharf or maintain a dredged channel in the event the Government wharf at Whiskey Jack Portage is rendered unusable by low water.

THEREFORE, the Minister of Transport, pursuant to the provisions of the Navigable Waters Protection Act, Revised Statutes of Canada, 1970, Chapter N-19, hereby approves the said work at the said site and plans thereof for the period of time aforesaid providing:

a) the construction of the work is commenced within six (6) months and completed within three (3) years of the date hereof;

b) the work is built, placed and maintained in accordance with the plans, the Navigable Waters Works Regulations and the aforesaid term(s) and condition(s).

Ottawa, MAY 15 1973

Originally signed Jean Marchand

Jean Marchand,
Minister of Transport.

January 25, 1978

Mr. T. E. Weber, P. Eng.
Senior Assistant Deputy Minister
Water Resources Division
Dublin Building
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

Dear Mr. Weber:

Re: Lake Winnipeg Regulation Licence
Our File No. 13E

Article 42. (1) and 42.(4) of the Water Power Regulation state:

"42.(1) As soon as the interim licensee has completed his initial development and otherwise fulfilled the terms of his interim licence he shall file in the office of the Director written notice of such completion and fulfillment ..."

"42.(4) Upon compliance on the part of the licensee with the requirements of the foregoing subsections, the Director shall determine a date which, for the purposes of these regulations, shall be the date of completion of the initial development."

Manitoba Hydro hereby files written notice that all the works described in the Interim and Supplementary Interim Licences, respectively dated November 18, 1970 and August 8, 1972, and for which those licences were issued, for the "Regulation of Water Levels for Water Power Purposes, Lakes Winnipeg, Playgreen and Kiskittogisu" have been completed. These works were completed, and Manitoba Hydro was in a position to operate them effectively for the said regulation of Lakes Winnipeg, Playgreen and Kiskittogisu on July 16, 1976. Manitoba Hydro's Corporate Accounting and Financial Planning Department placed the completion of the project in the capital accounts on August 1, 1976. We would recommend this date for your consideration under the requirements of Article 42.(4) of the Water Power Regulations.

Article 13 of the Supplementary Interim Licence states: -

"13. During the term of this Interim Licence, the Licensee shall pay rental for the use and occupation of those lands of the Province described in Articles 3 and 4 hereof which are situated within the Severance Line designated on a plan identified as No. 39-2-1183 (Rev. 1), in such amounts or at such rates as may be fixed by the Lieutenant Governor in Council."

Assuming for the moment that August 1, 1976 is selected as the date for the purposes of the Regulations, and since land rentals are normally paid in advance, Manitoba Hydro would now be subject to the payment of five months rental for 1976, twelve months rental for 1977, and twelve months rental for 1978. We wish to have the amount due for this land rental fixed by Order-in-Council as soon as it is convenient to do so. We recognize that you may require certain pertinent data, such as a reliable calculation of the area of flooded lands of the Province. We note that in the study by R. H. Lamont and M. Kaye, entitled: "Forest Resources Outlet Lakes Area" February 1973, contained in Technical Report Appendix 3, section B, pp 20 and 21, the total flooded area is calculated to be 22,928 acres, including excavated channels. These calculations were based on the 715' contour derived from aerial photographs with a scale of 4 inches to the mile. Contours so derived are often found to be in error. In order to arrive at a more reliable figure, it will be necessary to wait until Lake Winnipeg again reaches an elevation of 715.0 with minimum outflows at Jenpeg, at which time we would have a set of aerial photos taken, which will then show the actual areas covered by water.

Article 43.(1) of the Regulations states: -

"43.(1) Upon the completion of the initial development ... the interim licensee shall be entitled to the issue in his favour by the Minister of a final licence ....."

We would like to recommend to you that there is no urgency to the issue of this final licence, and that its issue might be usefully delayed. We would suggest to you that there are several areas of the final licence which ought to read differently than the format for the final licence given in the interim licence. For example, the list of works involved is incomplete; Drawing No. 39-2-1183 has already gone to its third revision, and should go to a fourth; the Kiskitto Lake Regulation Committee has now issued its final report; the Lake Winnipeg Datum Committee is expected to deliver its final report very shortly; there are one or two articles which are ambiguous and require clarification; there are at least two cases where certain operating rules are in conflict with each other; it is probable that absolute adherence to other operating rules will work an unnecessary hardship to the downstream communities of Cross Lake, Split Lake and York Landing. We would welcome an opportunity to discuss these matters with you in detail before you issue the final licence.

Yours very truly,

J. F. Funnell
General Counsel &
Secretary

PMA/rdc

MANITOBA
DEPARTMENT OF MINES, RESOURCES & ENVIRONMENTAL MANAGEMENT

Water Resources Division
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

78 February 16
File: 30.2.2

Mr. J. F. Funnell,
General Counsel & Secretary,
Manitoba Hydro,
P. O. Box 815,
Winnipeg, Manitoba.
R3C 2P4

Dear Mr. Funnell:

RE: Lake Winnipeg Regulation Interim Water Power Licence.

This will acknowledge receipt of your letter of January 25, 1978 in connection with the Interim and Supplementary Interim Licences, respectively issued on November 18, 1970 and August 8, 1972, for the regulation of water levels in Lakes Winnipeg, Playgreen and Kiskittogisu.

In accordance with Section 42 of the Water Power Regulations, I hereby advise that I have determined August 1, 1976 to be the date of completion of the initial development for the purposes of the Regulations.

A recommendation shall be submitted to the Minister of this Department in due course in regard to the fixing of rates or amounts by the Lieutenant Governor in Council, for rental for the use and occupation of Crown lands, in accordance with Article 13 of the said Licences. When these rates have been fixed I shall recommend to my Minister that a Final Licence be issued for the regulation of water levels in Lakes Winnipeg, Playgreen and Kiskittogisu in accordance with Section 43 of the Regulations.

There are a number of matters which should be resolved, however, before issuance of a Final Licence, as you have discussed in your letter. I would suggest that you arrange with my Director of Planning, Mr. N. Mudry, for a meeting to discuss these matters.

Yours truly,
Originally signed T.E. Weber

T. E. Weber, P. Eng.,
Senior Assistant Deputy Minister.

78 02 21 - XC to W. J. Tishinski

1978 11 09

Our File No. 73D5

Mr. R. Bowering
Water Resources Division
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

Dear Mr. Bowering:

Re: Gauging Stations operated by Manitoba Hydro

In reply to your request for a comprehensive list of gauging stations operated by Manitoba Hydro, we have compiled the following:

Winnipeg River

Automatic recording gauges – there are automatic recording gauges for the six Winnipeg River plants in both forebay and tailrace, namely, Pine Falls, Great Falls, McArthur, Seven Sisters and the two plants owned by Winnipeg Hydro at Pointe du Bois and Slave Falls.

Staff gauges – there are 47 gauges from below Pine Falls to the Ontario boundary, (numbered 1 to 46 plus 22A) generally above and below each channel obstruction. These consist of bench marks which can be used for reference with a surveyor's level. They are read only intermittently, usually during major floods, at which time temporary staff gauges are placed. See nine sheets attached for locations.

Flow Metering – Flows are recorded hourly at each of the six stations. There are, in addition, flow metering cross sections equipped with A frames and cables: (a) just above Slave Falls, (b) Seven Sisters tailrace channel, (c) White Mud Cut Channel below Great Falls, though none of these have been used in a number of years. We also meter flows on the Pinawa Channel just below the Pinawa Control Dam, or at the old Pinawa powerhouse about once every five years, to check on the rate of leakage through the control dam.

Assiniboine and Red Rivers

Automatic recording gauges – Manitoba Hydro has only two automatic recording gauges: (a) in the cooling water Pumphouse at Brandon, recording Assiniboine River levels, and (b) in the cooling water Pumphouse at Selkirk, recording Red River levels.

We operate no staff gauges in the Red – Assiniboine basin. The only streamflow metering we keep is the cooling water flow at Brandon and Selkirk all of which is returned to their respective rivers, Brandon immediately, and Selkirk via Cook's Creek. We also record raw water pumped permanently from the Assiniboine River at Brandon. Selkirk is supplied by two deep well pumps, which are also fully recorded.

We rely on a number of government elevation and flow gauges: Lake of the Prairies – 05MD009, Rivers Reservoir, – 05MF020, Assiniboine R. near Brandon – 05MH013, and Red River near Lockport – 05OS010, for current operations; and a number of other stations for subsequent hydraulic study, such as Red River Emerson and Ste. Agathe, Roseau River near Dominion City, Rat River near Otterburn, Riviere Sale near Sanford, Assiniboine River near Portage la Prairie, and Headingly, Cook's Creek near East Selkirk, Fairford River near Fairford, Berens River at outlet of Long Lake, and Pigeon River at outlet of Round Lake.

Lake Winnipeg

Manitoba Hydro operates no gauges of any kind on Lake Winnipeg, but relies on the government gauges at Gimli and Berens River which are currently available by Telemark, and Victoria Beach, Pine Dock, Mission Point and Montreal Point for subsequent study. We are interested in having the Mission Point gauge relocated and equipped with Telemark, and have considered the same for some of the other gauges, though we may have to resort to satellite platforms.

Saskatchewan River

Automatic Recording Gauges – there are three recording gauges operated by Manitoba Hydro: (a) the Grand Rapids tailrace, (b) the G.R. "inner forebay," and (c) the level of Cross Lake at the G.R. spillway, or "outer forebay."

Staff Gauges – during commissioning days, Manitoba Hydro operated over 30 staff gauges between The Pas and Grand Rapids, but virtually all of the bench marks have been lost, and none has been read for over ten years. There are staff gauges at Red Earth dam currently read by Ducks Unlimited for their purposes.

Flow Metering – flows have been metered irregularly on Moose Lake Creek.

Manitoba Hydro relies on government elevation gauges at Easterville, Moose Lake Settlement, and on both sides of the Moose Narrows Control structure. The settlement gauge would not be necessary if the south side structure gauge were reliable. We are pleased to know that I.W.B. is installing a satellite platform at Moose Narrows. We have requested estimates for a Telemark at Easterville. We do not use Oleson's Point. Manitoba Hydro also relies on the government gauge at The Pas which we record daily and translate into flow using stage-discharge curves, augmented by the regular flow meterings carried out every two or three weeks.

Nelson River from Warren Landing to Cross Lake

Automatic recording gauges - See Dwgs. 0199-C-0222, 0199-B-9102 rev. 2, and 0199-B-9103 rev. 3.

(a) Jenpeg Generating Station forebay (at headblock)
(b) Jenpeg Generating Station tailrace (at tailblock)
(c) A1 - Cross Lake downstream of main dam - U47AB
(d) A2 - Jenpeg Pumphouse ½ mile above plant - U47AA
(e) A3 - Ominawin Landing - U35F
(f) A4 - Upstream of Ominawin Bypass - U50D
(g) A5 - Downstream of 8-Mile Channel - P7K
(h) A6 - Upstream of 8-Mile Channel - P7
(i) A7 - Entrance to East Channel of Nelson - E12
(j) A8 - Downstream of 2-Mile Channel - P6
(k) A9 - Upstream of 2-Mile Channel - P6A

In addition, we rely on data from the following government recording gauges; we have requested a Telemark at Cross Lake settlement and have been considering telemetry from either Norway House or Sea River Falls in order to obtain a continuous reliable record of East Channel flow.

(a) Warren Landing - 05UB003
(b) Norway House - 05UB001
(c) Sea River Falls - 05UB008
(d) Metchanais Island - 05UB007
(e) Kiskitto Lake - 05UB013
(f) Cross Lake Settlement - 05UD001
(g) Bladder Rapids - 05UD004

Staff gauges - operated by Manitoba Hydro, and currently read bi-weekly or once a month:

(a) Evans Point - BM#5
(b) Upstream Sea River Falls - ~~P9 - E9B~~ [redacted] (E 8A)
(c) Tait Island - north end Playgreen Lake - P4
(d) Whiskey Jack Landing - P5
(e) Downstream of Ominawin Bypass - U35C
(f) Upstream of Metchanais Channel - U40A
(g) Downstream of Metchamais Channel - U38B
(h) Upstream of Kisipachewuk Channel - U42A
(i) Downstream of Kisipachewuk Channel - U44C
(j) Downstream of Lower Ominawin Channel - U35D
(k) Downstream of Saskatchewan Rapids - U36D
(l) Minago River Crossing - upstream and downstream from BM#74M141
(m) Kiskitto - Minago Control Structure - upstream
(n) Two Mile Channel - P6A
(o) Two Mile Channel - P6B

(p) Two Mile Channel - P6C PCD
(q) Two Mile Channel - P6
(r) Eight-Mile Channel - P7
(s) Eight-Mile Channel - P7A
(t) Eight-Mile Channel - P7B
(u) Eight-Mile Channel - P7C
(v) Eight-Mile Channel - P7D
(w) Eight-Mile Channel - P7E
(x) Eight-Mile Channel - P7F
(y) Eight-Mile Channel - P7G
(z) Eight-Mile Channel - P7H
(A) Eight-Mile Channel - P7I
(B) Eight-Mile Channel - P7J
(C) Eight-Mile Channel - P7K
(D) Ominawin Bypass - Station 95 + 00
(E) Ominawin Bypass - Station 125 + 00
(F) Ominawin Bypass - Station 152 + 00
(G) Ominawin Bypass - Station 170 + 00
(H) Ominawin Bypass - Station U350

Flow Metering: - carried out by Manitoba Hydro approximately once a month: -

(a) Ominawin Bypass
(b) Eight-Mile Channel
(c) Two-Mile Channel
(d) East Channel of Nelson River at Sea River Falls
(e) West Channel of Nelson upstream of Jenpeg pumphouse
(f) Lower Ominawin Channel
(g) Upper Ominawin Channel
(h) Metchanais Channel
(i) Kisipachewuk Channel
(j) Kiskittogisu Narrows (note direction of flow which is normally south)
(k) Conduit flow at Kiskitto Dam
(l) Kiskitto-Minago control structure
(m) Minago River at Highway Crossing

In addition the flow is recorded at the Jenpeg Generating Station on an hourly basis.

The flow measurements recorded by the Inland Waters Branch at Bladder Rapids are of use to us, but create a quandary in that they are consistently different to anything we meter upstream or downstream along the Nelson River; they are generally somewhat higher.

Nelson River from Sipiwesk Lake to Split Lake

Automatic recording gauges - are operated by Manitoba Hydro only at the Kelsey forebay and tailrace on an hourly basis.

We rely on the government recording gauges at the Forestry Dock on Sipiwesk Lake (05UD006) and at Split Lake settlement (05UF003). We have requested a Telemark for Split Lake, and may consider a satellite platform at the Forestry Dock or at Sipiwesk Landing, where we operate a staff gauge, with readings once a month. Sipiwesk Landing is at the extreme west end of Sipiwesk Lake. We have also used Grass River above Standing Stone Falls -05TD001, Gunisao River above Diamond Rapids - 05UA003.

Laurie River

Automatic Recording gauges - are located to read the forebay and tailrace of each of the two Laurie River plants.

We do not use the government gauge data from "Laurie River below Laurie River Hydro Plant: - 06EB005, and wonder why it was installed. We did not request it.

Staff gauges - we operate staff gauges regularly every two to four weeks at (a) Russell Reservoir above the dam and (b) Eager Reservoir above the dam. There are also staff gauges at (c) Loon dam upstream side and (d) Kamuchawie Lake above dam, but neither of these two gauges has been read in five years by Manitoba Hydro. There is a staff gauge also at McGavock Lake at the Laurie River Lodge, not currently being read.

Churchill River

Automatic Recording gauges - Manitoba Hydro operates the following:

(a) Missi forebay - L2 continuously telemetered.
(b) Missi tailrace - L3 continuously telemetered.
(c) Southern Indian Lake Narrows north of settlement (AG8)
(d) Opaskuanau Lake - AG9 (SIL)
(e) Pumphouse at Town of Churchill

A sixth gauge was to have been installed at (f) Southern Indian Lake above Missi Falls - L1, but remains in its shipping case in Thompson at the present moment, because it was believed that L-2 in the Missi forebay did the job well enough. But this is still not settled. We are considering a Telemark for AG8 and a sattelite platform for AG9.

Automatic gauges operated by the government of considerable use to Manitoba Hydro are:

(a) Above Granville Falls – 06EA006
(b) Granville Lake at Pickerel Narrows – 06EB002
(c) Above Leaf Rapids – 06EB004
(d) At South Bay – 06EC003 – we had indicated to you over the telephone in reply to your question as to whether this gauge was needed that we had a gauge as well, but ours is only a staff gauge read every two weeks.
(e) South of South Indian Settlement – 06EC001 – this gauge is not as useful to us as our own recording gauge at AG3 north of the settlement.
(f) Below Fidler Lake – 06FB001
(g) Above Red Head Rapids – 06FD001
(h) Reindeer Lake at Brochet – 06DB001 – This gauge is useful only for after-the-fact studies; we receive daily data on a weekly basis direct from the Churchill River Power Co. as measured at Rocky Falls, as well as discharges both at the Whitesand DAm and Island Falls. If studies show that the elevation at Rocky Falls is misleading, we may consider a platform at Brochet.
(i) Cochrane River near Brochet – 06DA002
(j) Barrington River below First Rapids – 06EB003, where we may consider a satellite platform if there is a good stage-discharge relationship.

Staff gauges – The only staff gauges read regularly are at South Bay – L5 and downstream of Leaf Rapids – I.L.S.488, which have been read weekly in the past, but every second week currently.

In addition there are staff gauges at the following lakes, read from time to time:

(a) Partridge Breast Lake
(b) Northern Indian Lake
(c) Thorsteinson Lake
(d) Fidler Lake
(e) Billard Lake

Flow metering – Flows are recorded regularly at Missi Falls. We are not currently metering anywhere else on the Churchill River, but rely on the flow records from the government gauges at (a) Granville Falls, (b) Leaf Rapids, (c) Fidler Lake and (d) Red Head Rapids.

Rat River – Burntwood River

Automatic recording gauges – Manitoba Hydro operates the following: (subscript 'a' means relocation).

(a) AG1a – Downstream of Notigi tailrace (L15A)

(b) AG2a – Wapisu Lake – (L16)
(c) AG3a – Wuskwatim Lake – (L20A)
(d) AG4 – Upstream of Manasan Falls – (S7)
(e) AG6a– Upstream of First Rapids – (FR-1)
(f) AG7a – Downstream of First Rapids – (SPL45)
(g) AG10 – Footprint Lake – (L17A)
(h) AG11 – Burntwood River upstream of Snake Rapids – (L44)
(i) AG12 – Rat Lake – (L10A)
(j) AG13 – Thompson Pumphouse – (L22)
(k) AG14 – Downstream Thompson seaplane base – (L23A)
(l) Notigi Forebay (telemetered) – (L13)

Staff gauges – The following have been read weekly in the past, but every second week currently:

(a) L6 – Issett Lake
(b) L12 – Notigi Lake
(c) L19 – Upstream of God's Rapids
(d) L29 – Apussigamasi Lake
(e) L24D – Upstream of Third Rapids
(f) L25 – Ospwagan Lake
(g) L26 – Kepuche Falls
(h) L27 – Birchtree Pumphouse
(i) L31 – Burntwood River upstream of Threepoint Lake
(j) L32 – Downstream of God's Rapids
(k) L38 – Downstream of Second Rapids
(l) L39 – Odei River near mouth
(m) L45 – Upstream of Taskinigup Rapids
(n) L46 – Downstream of Taskinigup Rapids
(o) SPL45 – Downstream of First Rapids
(p) FR-1 – Upstream of First Rapids

Flow metering – these are carried out monthly:

(a) South Bay Channel (open water only – we have not succeeded in doing a metering in the winter.)
(b) Burntwood River above Snake Rapids
(c) Burntwood River upstream of Wuskwatim Lake
(d) Burntwood River below Wuskwatim Lake
(e) Burntwood River upstream of Manasan Falls
(f) Burntwood River at Thompson pumphouse – this metering section is done twice monthly.
(g) Burntwood River upstream of Third Rapids

Government operated stations of use to us for comparative studies are:
(a) Burntwood River above Three Point Lake – 05TE001 (a duplicate of our AG11);
(b) Burntwood River near Thompson – 05TG001 (a duplicate of our AG13);
(c) Rat River below Notigi Control Structure – 05TF003 (a duplicate of our AG1a);
(d) Footprint River above Footprint Lake – 05TF002;
(e) Footprint Lake at Nelson House – 05TF001, which we interrogate once weekly, and should be doing more often; and
(f) Taylor River near Thompson – 05TG002.

We have requested Telemarks at Nelson House and would like a Telemark at one of the recording gauges at Thompson, wherever the best stage – discharge relation exists. We may consider a satellite platform for Snake Rapids. We have been considering a satellite platform at the South Bay Channel for a flow meter, the first that we will have ever considered.

Nelson River Downstream of Split Lake

Automatic Gauges

(a) Kettle Generating Station forebay – hourly
(b) Kettle Generating Station tailrace – hourly
(c) Long Spruce Generating Station forebay – hourly
(d) Long Spruce Generating Station tailrace – hourly
(e) Below LimestoneeRapids – G37
(f) Near Sundance townsite – G38
(g) Above Limestone cofferdam
(h) Nelson River above Angling River – G52
(i) Below Gillam Island – G57

Staff Gauges – read twice a week during ice staging and immediately after, but discontinued under stable conditions:

(a) 5 km above Limestone – CAE9
(b) 8 km above Limestone – CAE12
(c) 10 km above Limestone – CAE15
(d) Below Lower Limestone Rapids – G41
(e) At Conawapa axis – G45
(f) 2 km below Conawapa – G46
(g) 7 km below Conawapa – G47
(h) 10 km below Conawapa – G51
(i) 22 km below Conawapa – G53
(j) 2 km above Gillam Island axis – G54C
(k) At Gillam Island axis – G54
(l) Above Gillam Island – G56

aff gauging in the Gull Rapids reach, undertaken in previous years, has been suspended. St

Flow metering - Hourly flows are recorded at both Kettle Rapids Generating Station and at Long Spruce Generating Station.

There are no government operated level or flow gauging stations along this reach of the Nelson River proper, but three on tributaries of passing interest: (a) Kettle River near Gillam - 05 UF004, (b) Limestone River near Bird - 05UG001, and (c) Weir River above the mouth - 05UH002.

Yours very truly,

ORIGINAL SIGNED BY
P. M. ABEL

P. M. Abel, P. Eng.
Reservoir & Energy Resources Engineer
System Operations Division

PMA/rm
Encl.

MANITOBA

DEPARTMENT OF NATURAL RESOURCES
Water Resources Branch
1577 Dublin Avenue
Winnipeg, Manitoba
R3E 3J5

March 3, 1983

File: 31.1.7

RECEIVED
MAR 0 9 1983
ASST GENERAL MGR.
SYSTEM PLANNING &
OPERATIONS

Mr. W. Tishinski,
Acting Assistant General Manager,
System Planning and Operations,
Manitoba Hydro,
P.O. Box 815,
Winnipeg, Manitoba,
R3C 2P4

Dear Mr. Tishinski:

Attached is a copy of the "Report on Lake Winnipeg Levels" which was prepared by the Ad Hoc Committee on Lake Winnipeg Datum. This report contains the results of a study which was initiated in response to a letter from Mr. Bateman, then Assistant General Manager – Engineering and Chief Engineer dated April 21, 1971 requesting clarification of the datum referenced in the Interim Licence for Lake Winnipeg. The Ad Hoc Committee on Lake Winnipeg Datum was composed of representatives from Manitoba Hydro, the Federal Water Resources Branch and the Provincial Water Resources Branch.

We are prepared to accept the recommendations contained in the report. These include establishing a Lake Winnipeg Datum referenced to a master bench mark number 78M079 at Berens River having a fixed elevation of 223.162 metres (732.15 feet). Also we plan to implement the recommended procedure for estimating the wind effect eliminated level of Lake Winnipeg on an operational basis.

We trust that you will concur with this clarification of the datum referenced in the Interim Licence for Lake Winnipeg.

Yours truly,

Originally signed T.E. Weber

T. E. Weber, P. Eng.,
Director.

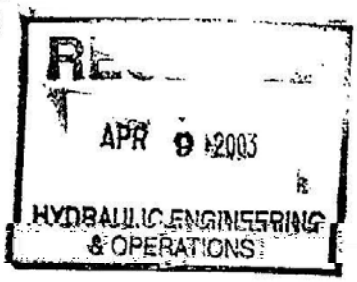
Attachment.

Manitoba

Conservation

Water Branch
Box 11, 200 Saulteaux Crescent
WINNIPEG MB R3J 3W3
Phone: (204)945-7488
Fax: (204)945-7419

April 7, 2003
FILE: 30.2.2



Ms. H. S. Zbigniewicz, P. Eng.
Manager, Hydraulic Engineering
& Operations Division
Manitoba Hydro
P. O. Box 815
Winnipeg, Manitoba, R3C 2P4

Dear: Ms. Zbigniewicz:

RE: KISKITTO LAKE INLET CONTROL STRUCTURE (DYKE 7-2), LAKE WINNIPEG REGULATION PROJECT

This is in response to your letter dated March 6, 2003, submitting revised final construction drawings (1-00198-DE-21918-0004 to 0015, inclusive) for the rehabilitation works on Dyke 7-2 for review by the Water Branch.

The rehabilitation works are needed to remedy a depression found atop the dyke crest. The depression was discovered on a routine inspection conducted in the fall of 2001.

I note from previous correspondence that the drawing revisions were required to address a site situation where bedrock was found to be located below expected levels.

The Water Branch has examined the drawings as required under S. 64 of the Water Power Regulation and has determined that they comply with the Regulation. Manitoba Hydro may consider this letter as approval of the revised construction drawings for licensing purposes.

Manitoba Hydro is hereby authorized under S. 64 of the Regulation to commence the construction of the proposed rehabilitation works on Dyke 7-2. At the completion of the rehabilitation works, please submit as-built drawings for our review.

Yours truly,

Originally signed Steven D. Topping

Steven D. Topping, P. Eng.
Director

Manitoba Hydro

PO Box 815 Stn Main · Winnipeg Manitoba Canada · R3C 2P4
Telephone / N° de téléphone : (204) 360-3018 · Fax / N° de télécopieur : (204) 360-3136
wvpenner@hydro.mb.ca

2010 12 22

Our file #00199-07311-0005_00

Mr. S.D. Topping, P. Eng.
Executive Director
Regulatory & Operational Services
Manitoba Water Stewardship
Box 11, 200 Saulteaux Cresc.
Winnipeg MB R3J 3W3

Dear Mr. Topping:

Re: **LAKE WINNIPEG REGULATION WATER POWER ACT LICENCE**

Manitoba Hydro hereby requests a Final Licence for Lake Winnipeg Regulation under the provisions of Water Power Regulation being Manitoba Regulation 25/88R. Subsection 43(1) of this Regulation and condition 18 of the Interim Licence provides for the issuance of a Final Licence upon completion of the project and observance of the Interim Licence conditions.

The Province of Manitoba issued the Interim Licence for Lake Winnipeg Regulation (LWR) on 1970 11 18 and a Supplementary Interim Licence on 1972 08 08. Manitoba Hydro completed project construction in 1976.

Before requesting the final licence, Manitoba Hydro resolved outstanding LWR issues with First Nations, communities and resource user groups inhabiting the area along the LWR waterways through agreement, remedial works, and on-going programming and processes. These accommodations were often reached in collaboration with the federal and provincial governments in tripartite and four-party arrangements.

The Cross Lake First Nation is committed to addressing LWR issues through the four-party Northern Flood Agreement of 1976 and the NFA Implementation Action Plan process currently in effect. The Norway House Cree Nation ratified a four-party Comprehensive Implementation Agreement (CIA) in 1997. An agreement based on the CIA model was reached with the Cross Lake Community Council in 2010 and is being finalized with the Norway House Community Council. Manitoba Hydro recognizes that the effects of LWR extend beyond the Water Power Act licence area, and are cumulative to the effects of other hydro-electric developments. Accordingly, the Corporation has entered into agreements and

processes to address adverse effects with First Nations, communities and resource user groups throughout the Nelson River. In addition to adverse effects agreements, Corporate programming is

implemented throughout the LWR area to address environmental, transportation safety, and cultural and heritage features including the Waterways Management Program, the Coordinated Aquatic Monitoring Program, Water Level Forecast Notices, and archaeological programming.

Manitoba Hydro has longstanding working relationships with First Nations, communities and resource user groups along LWR waterways. As part of the final licensing process, Manitoba Hydro will carry out additional public involvement with these local people, and LWR stakeholders in general.

Lake Winnipeg Regulation is integral to Manitoba Hydro generation and transmission investments as it enhances power production for all generating stations on the Nelson River. The project also provides flood reduction and low level water support for Lake Winnipeg residents and communities.

Should you have any inquires on this matter or additional process requirements, please contact me at 360-3018.

Yours truly,

Original signed by:

Wesley Penner

W.V. Penner, P.Eng.
Manager
Hydraulic Operations

HJE/ljm/00199-07311-0005_00.doc
Att.

Copies as per attached list.

DISTRIBUTION LIST

Mayor Clarence Smith & Council
Cross Lake Community Council
Box 208
Cross Lake, MB R0B 0J0

Chief Garrison Settee & Council
Cross Lake First Nation
PO Box 10
Cross Lake, MB R0B 0J0

Chief Shirley Neepin & Council
Fox Lake Cree Nation
PO Box 369
Gillam, MB R0B 0L0

Mayor Cristo Spiess & Council
Norway House Community Council
Box 5100
Norway House, MB R0B 1B0

Chief Eric Apetagon & Council
Norway House Cree Nation
PO Box 250
Norway House, MB R0B 1B0

Mayor Martha Chartrand & Council
Pikwitonei Community Council
General Delivery
Pikwitonei, MB R0B 1E0

Chief Duke Beardy & Council
Tataskweyak Cree Nation
General Delivery
Split Lake, MB ROB 1P0

Mayor Donald Pronteau & Council
Thicket Portage Community Council
Box 80
Thicket Portage, MB R0B 1R0

Mayor Reg Meade & Council
Wabowden Community Council
Box 130
Wabowden, MB R0B 1S0

Chief Betsy Kennedy & Council
War Lake First Nation
General Delivery
Ilford, MB R0B 0S0

Chief Louisa Constant & Council
York Factory First Nation
General Delivery
York Landing, MB ROB 2BO

Request for a Final Lake Winnipeg Regulation Water Power Act Licence December 2010

Submitted To:
Regulatory and Operational Services
Water Stewardship

Manitoba Hydro hereby requests a final licence for the Lake Winnipeg Regulation project. This project provides for the regulation of outflows from Lake Winnipeg and of water levels on Playgreen, Kiskittogisu and Kiskitto Lakes. Regulation is for the benefit of water power development on the Nelson River and for flood damage reduction and low level support on Lake Winnipeg.

The principal works of the project are the Two-Mile, Eight-Mile and Ominawin Bypass Channels, the Kiskitto Dam and Inlet Control Structure, the Black Duck Control Structure, the Cross Lake Weir, the Jenpeg Control Structure and associated dykes, and all necessary machinery and equipment required for controlling the flow of water for the development of water power.

The physical works of the undertaking were completed on July 16, 1976. These works are being operated for the development of water power and to provide flood relief and low level support for Lake Winnipeg. A weir known as the Cross Lake Weir was completed in October 1991 and was built to mitigate the water level effects of the project on Cross Lake.

The following is requested under the provisions of Sections 44 and 45 of the Water Power Regulation 25/88R.

a. Applicant:
Manitoba Hydro

b. Address:
360 Portage Avenue
P.O. Box 815 Stn Main
Winnipeg, Manitoba
R3C 2P4

Occupation:
Electric and Gas Utility

c. Name of undertaking:
The name of the undertaking is known as Lake Winnipeg Regulation. The project enables the regulation of outflows from Lake Winnipeg with increased outflow capability.

d. Interim and Supplementary Licence authorizing the undertaking:
The interim and supplementary licence authorizing the existing works are dated 1970 11 18 and 1972 08 08 respectively. The descriptions of these licences are INTERIM or SUPPLEMENTARY LICENSE FOR THE REGULATION OF WATER LEVELS FOR WATER POWER PURPOSES Lake Winnipeg, Playgreen, and Kiskittogisu.

e. Observance of conditions:
Manitoba Hydro submits that it has observed and fulfilled all the requirements necessary for the issuance of a Final Licence. Upon the direction of Water Stewardship, a report can be prepared to support this statement.

f. Water Quantity:
The project has increased the Lake Winnipeg outflow capability between 40 to 50 percent depending primarily on the level of Lake Winnipeg. Approximately 85% of the water from Lake Winnipeg flows into the west Nelson River. This water is regulated and is released into the Nelson River at Cross Lake. A very small percentage of this water is diverted into Kiskitto Lake and then returned to the Nelson River via the Minago River. The remaining water from Lake Winnipeg flows into the east Nelson River which is uncontrolled.

g. Place:
The Two-Mile Channel excavation connects Lake Winnipeg to Playgreen Lake near Warren Landing and is located at approximately latitude 53° 50' and longitude 98° 05'. The Eight-Mile Channel excavation connects Playgreen Lake approximately 43 kilometers northwest of Warren Landing to Kiskittogisu Lake via the Kiskittogisu River and is located at approximately latitude 54° 00' and longitude 98° 05'. The Ominawin Bypass Channel excavation of approximately three kilometers in length is located at approximately latitude 54° 25' and longitude 99° 05'. In addition, an excavation of rock at the head of Kisipachewuk Rapids which connects Kiskittogisu Lake to the Nelson River is located at latitude 54° 16' and longitude 98° 17'.

Outflow from Lake Winnipeg is regulated by a control structure at a site known as Jenpeg located just upstream of Cross Lake at approximately latitude 54° 32' and longitude 98° 02'. Intermittent dyke sections connect pieces of high ground upstream from the west abutment of the control structure to a point between Kiskittogisu Lake and Kiskitto Lake approximately 48 kilometres away. A saddle dam connects to high ground upstream of the east abutment of the control structure over a distance of approximately 1,525 metres. A small diversion channel to Kiskitto Lake provides drainage for Stan Creek upstream of the west dyke location. A small diversion channel to the Minago River plus a small stoplog control structure provide an outlet for Kiskitto Lake upstream of the west dyke location.

Cross Lake Weir is located at two of the three outlets of Cross Lake located at approximately latitude 54° 42' and longitude 97° 54'.

h. Requested Final Licence Operating Conditions:
Manitoba Hydro requests the same operating conditions as stated in the Supplementary Interim Licence.

i. Datum:
References to water surface elevations are based on Geodetic Survey of Canada (GS of C). Water surface measurements on Playgreen and Kiskittogisu lakes are based on

GS of C 1969 Local Adjustment and those on Lake Winnipeg are based on GS of C 1960 Local Adjustment (as measured at Berens River, Manitoba).

j. Principal Works:

1) Jenpeg Control Structure:
An 18.3 metre high control structure of reinforced concrete with five 12.2 metre wide gated openings across the peninsula on the left bank of the West Channel of the Nelson River just upstream of Cross Lake, with a rock fill dam on the west abutment and a river channel closure rock fill dam on the east abutment. This includes a reinforced concrete headblock situated adjacent to the control structure containing gated openings forming part of the control works.
2) Jenpeg Saddle Dams:
Four earthfill saddle dams, of up to 975 metres in length each, across low ground on the west abutment within four miles southwesterly from the Jenpeg control structure, having 7.3 metre wide crests from 219.4 to 220.1 metres (720 to 722 feet) in elevation.
3) Dykes:
Intermittent earthfill dykes with crest elevations between 219.4 to 220.1 metres (720 to 722 feet) totaling approximately 6.4 kilometres in length along the west side of Kiskittogisu Lake, the Kisipachewuk Rapids channel, and across the Kiskitto Lake outlet to high ground, having a top width 7.3 metres.
4) Saddle Dam:
A saddle dam of approximately 1,525 metres in length across low ground on the right bank of the west channel within five kilometers southeasterly from the Jenpeg control structure, having a 7.9 metre wide crest at elevation 219.4 metres (720 feet).
5) Ominawin By-pass Channel
Ominawin By-pass Channel excavation on the west side of the Ominawin Rapids channel, over a distance of approximately 3,350 metres with a total bottom width of approximately 395 metres.
6) Kisipachewuk Channel Improvements
Channel excavation at the head of Kisipachewuk Rapids over a distance of approximately 91 metres with a bottom width of approximately 61 metres.
7) Kiskitto Lake Inlet Control Structure
The Kiskitto Lake Inlet Control Structure regulates flow from the Nelson River into Kiskitto Lake. Flow is regulated with one gate mounted in a concrete structure.
8) Black Duck Control Structure and Stan Creek Diversion
An overflow stoplog weir control structure and drainage channel to drain Kiskitto Lake into Black Duck Creek and further into Drunken Lake on the Minago River.
9) Eight-Mile Channel
A channel to improve flow between Playgreen Lake and Kiskittogisu Lake having a nominal length of approximately 12,800 metres, a bottom width varying from approximately 120 to 305 metres and an invert varying from approximately elevation 208.5 to 211.8 metres (684 to 695 feet). The channel extends

approximately 1,525 metres into Playgreen Lake and approximately 610 metres into Kiskittogisu Lake with a total excavated length of approximately 14,900 metres.

10) Two-Mile Channel
A channel to improve flow between Lake Winnipeg and Playgreen Lake. The nominal length is approximately 3,660 metres, the bottom width is approximately 125 metres with its invert varying from approximately 208.6 to 208.9 metres (684.3 to 685.3 feet) in elevation. The excavation extends approximately 2,135 metres into Playgreen Lake and approximately 760 metres into Lake Winnipeg. The total length of excavation is approximately 6,550 metres.

11) Cross Lake Weir
A weir built across two of the three outlets of Cross Lake to support low water levels and reduce high water levels resulting from flows from the regulation of Lake Winnipeg. One outlet channel of the Nelson River was partially filled and another channel was enlarged.

k. Description of Lands Required:

Lands of the Province required for entering, occupation, maintenance and operation of the undertaking are broadly described as located between Lake Winnipeg and the Jenpeg site. These lands are indicated on Plan Nos. 39-2-1183 (Rev. 1) and comprise an estimated 7,222 hectares (17,846 acres) as follows:

(i) Lands of the province not covered by water required for main diverting works, powerhouse, etc., comprise 684.7 hectares (1,692 acres).

(ii) Lands of the province covered by water required for main diverting works, powerhouse, etc., comprise 299.5 hectares (740 acres).

(iii) Lands of the province required only to be flooded in connection with the storage or pondage of water, comprise 6,237.8 hectares (15,414 acres).

(iv) Lands of the province required only for transmission line right-of-ways, comprise 0 hectares (0 acres).

(v) Lands of the province required only for other right-of-ways, comprise 0 hectares (0 acres).

The quantum of lands required for the project will be re-assessed.

l. Undertaking:

The purpose of the project is to regulate the flow of water from Lake Winnipeg for power production purposes for existing and future generating stations on Nelson River. The project increases the magnitude and reliability of outflows from Lake Winnipeg particularly in the winter months. This increase in reliable flow results in additional dependable and surplus power and energy used to satisfy the licensee's obligations under the Manitoba Hydro Act, including both those in Manitoba and in the electricity export markets. The increase in outflow capacity is also useful in reducing the number and severity of flood events on Lake Winnipeg. The ability to regulate outflows and store water in Lake Winnipeg also provides for water level support during drought conditions.

m. Land Rentals and request for adjustment:
Land rentals from the initial development to 1995 were paid pursuant to Order-In-Council 700/1979 at $25,000 per annum. Since 1996, land rentals have been paid at $17,846.20 per annum pursuant to Order-In-Council 597/1995.

n. Severance line:
Manitoba Hydro anticipates that the area encumbered by the severance line under the interim and supplementary interim licence can be reduced. The severance line will be determined by mutual agreement in accordance with the Water Power Regulation.

o. Term of Licence:
Manitoba Hydro requests the terms of this Final Licence to be 50 years as stated in Article 15 (j) and 15 (k) of the Interim and Supplementary Interim licences respectively and as permitted under Section 45 of the Regulation. This will result in a Final Licence expiration date of 2026 07 16.

Manitoba Hydro

P.O. Box 815 Stn Main • Winnipeg Manitoba Canada • R3C 2P4
Telephone / *N° de téléphone :* (204) 360-3018 • Fax / *N° de télécopieur :* (204) 360-6136
wvpenner@hydro.mb.ca

2011 08 03

Our file: 00199-09600-0013_00

Mr. S.D. Topping, P.Eng.
Executive Director, Regulatory & Operational Services
Manitoba Water Stewardship
Box 11 - 200 Saulteaux Crescent
Winnipeg, MB R3J 3W3

Dear Mr. Topping:

Re: **LAKE WINNIPEG REGULATION WATER POWER ACT LICENCE – PLAYGREEN LAKE WATER LEVEL ABOVE LICENCE LIMITS**

On two occasions from June 29 to July 2, 2011 and from July 14 to July 16, 2011, strong southerly winds combined with very high Lake Winnipeg water levels caused the water levels on Playgreen Lake to exceed the licence limit specified in Article 6 of the Lake Winnipeg Regulation Water Power Act licence.

During the period from June 29, 2011 to July 2, 2011 the wind-eliminated water level of Lake Winnipeg was between 716.80 and 716.86 feet. Jenpeg forebay levels were between 703.70 and 704.16 feet. Near 13:00 on June 29, the wind increased from 21-24 km/hr to 35-41 km/hr in a southerly direction. These higher wind speeds persisted throughout the June 29 to June 30 period before deceasing near midnight on June 30. The attached figure shows that Playgreen Lake water level rose from 714.89 feet to a peak of 715.28 feet before declining to 714.8 feet.

During the second incident, from July 14 to July 16, 2011, the wind-eliminated water level of Lake Winnipeg was between 716.82 and 716.81 feet. Jenpeg forebay levels were between 703.20 and 703.79 feet. Near 15:00 of July 14, the winds increased from 9-13 km/hr to 17-30 km/hr in southerly direction. These higher winds persisted until near midnight on July 16. The attached figure shows that Playgreen Lake water level rose from 714.87 feet to a peak of 715.09 feet before declining to 714.82 feet.

Local wind setup combined with the high Lake Winnipeg water levels and Nelson River flow caused the licence limit on Playgreen Lake to be exceeded. These contributing factors will persist into the fall and additional exceedances of this licence limit may occur. Manitoba Hydro cannot operate to avoid future licence limit exceedances at this location.

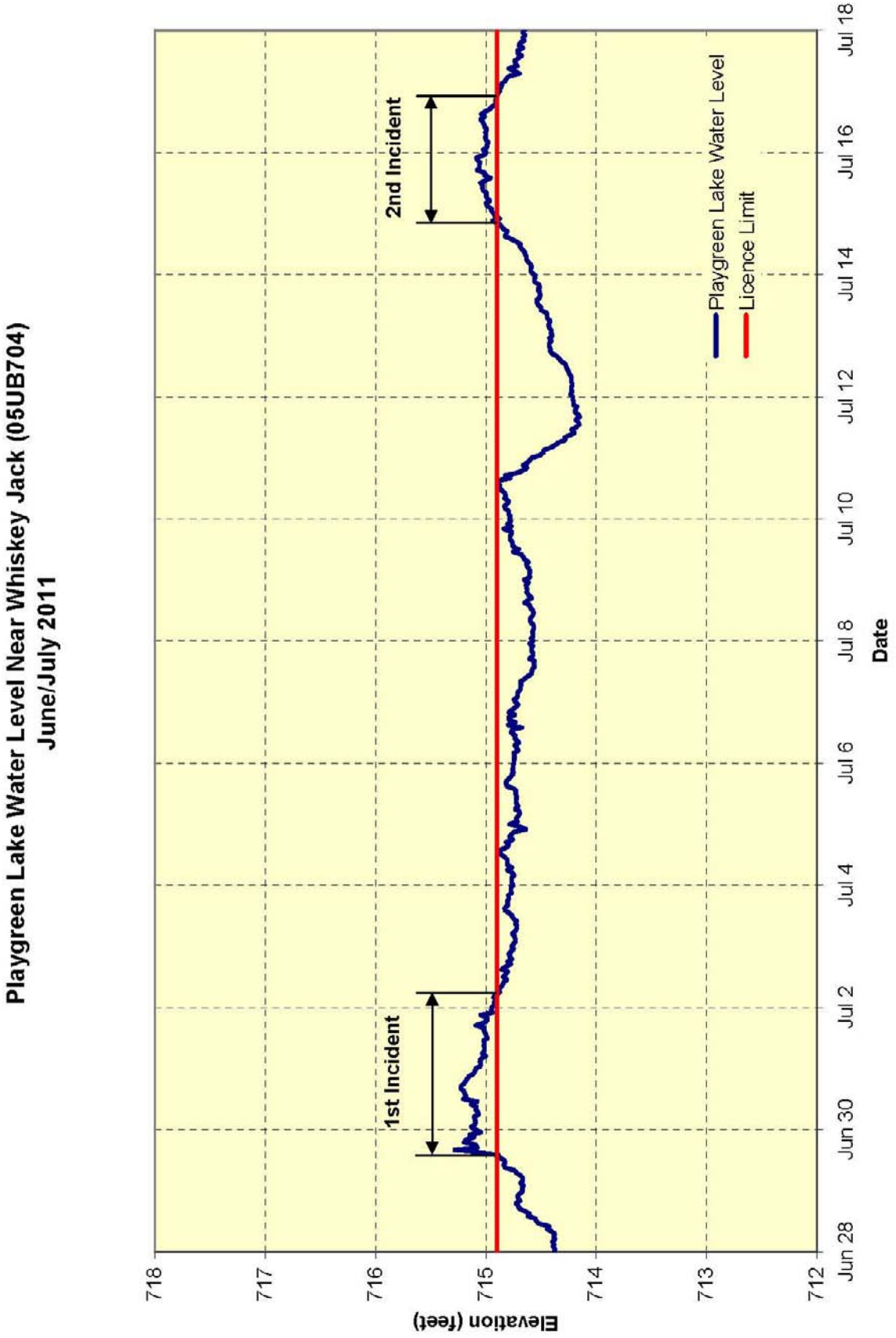
If you have any questions related to this matter, please call me at 360-3018.

Yours truly,

Original signed by: *Wesley Penner*

W.V. Penner, P.Eng.
Manager
Hydraulic Operations Department

SST/ljm/00199-09600-0013_00.docx
Att.


Playgreen Lake Water Level Near Whiskey Jack (05UB704)
June/July 2011
2nd Incident
1st Incident
Playgreen Lake Water Level
Licence Limit
Elevation (feet)
Date
718
717
716
715
714
713
712
Jun 28
Jun 30
Jul 2
Jul 4
Jul 6
Jul 8
Jul 10
Jul 12
Jul 14
Jul 16
Jul 18

Manitoba

Water Stewardship
Executive Director
Regulatory and Operational Services
Box 11, 200 Saulteaux Crescent
Winnipeg, Manitoba, Canada R3J 3W3
T 204-945-7488 F 204-945-7419
Steve.Topping@gov.mb.ca

Files: 51.1.11 / 30.2.2; ED 11-16

October 6, 2011

W. V. Penner, P. Eng.
Manager
Hydraulic Operations Department
Manitoba Hydro
P.O. Box 815
Winnipeg MB R3C 2P4

Dear Mr. Penner:

RE: Jenpeg Generating Station – Report on November 2010 Ice Boom Installation

This correspondence is in response to your report dated August 16, 2011 regarding the procedures taken to install an ice boom at Jenpeg Generating Station from November 2 to 4, 2010. I understand that the ice boom, installed immediately upstream of the Jenpeg GS, effectively traps ice flows to prevent the mass accumulation of ice in front of the intake structure resulting in the release of improved Lake Winnipeg outflows for the given forebay elevation. It is understood that Manitoba Hydro needed to deviate from Article 7 and Article 12 of the Interim Lake Winnipeg Regulation Water Power Act (WPA) licence in order to install the ice boom.

Manitoba Hydro received authorization from Manitoba Water Stewardship on November 1, 2010 to deviate from Article 7 and Article 12 of the Water Power Act licence and proceeded with the proposed operation plan. The operating plan for ice boom installation began on November 2, 2010 with the following procedure for each day required for installation:

At approximately 8:00 – reduce flows from 125,000 cfs to 35,000 cfs
At approximately 16:00 – increase flows from 35,000 cfs to 125,000 cfs.

I understand that the boom was successfully installed in a three day period from November 2 to 4, 2010.

It is noted that a storm event (referred to in the media reports as "The Weather Bomb") on October 26 to 28, 2010 brought significant amounts of precipitation and well above average runoff conditions causing deviations between observed and Manitoba Hydro's predicted water levels on both sides of the Jenpeg GS. However, operations during the installation of the ice boom had limited impact on Lake Winnipeg and Cross Lake water levels.

Thank you for providing an update of the installation of the ice boom at Jenpeg Generating Station.

Yours truly,

Originally signed Steven D. Topping

Steven D. Topping, P. Eng.
Executive Director
Regulatory and Operational Services

Manitoba Hydro

360 Portage Ave (16) • Winnipeg Manitoba Canada • R3C 0G8
Telephone / *N° de téléphone :* 204-360-3018 • Fax / *N° de télécopieur :* 204-360-6136
wpenner@hydro.mb.ca

2014 11 27

Mr. R. Matthews, P.Geo.
Manager, Water Use Licensing
Manitoba Conservation and Water Stewardship
Box 16-200 Saulteaux Crescent
Winnipeg MB. R3J 3W3

Dear Mr. Matthews:

LAKE WNIINIPEG REGULATION - CONSTRUCTION PLANS

Manitoba Hydro cannot locate a record of having transmitted final construction plans to the director as required under article 35(1) of the Regulation. To ensure that this has been fulfilled, we are providing the drawing listed in the attachment. The drawings are considered to be "as built" plans.

Plans showing the severance line and lands of the province required for the project will be prepared in consultation with your staff.

If you have any questions related to this matter, please call me at 204-360-3018.

Yours truly,

Original Signed by; *Wesley Penner*

W.V. Penner, P. Eng.
Manager
Hydraulic Operations Department

PGC/sl/ 00199-07311-0029_00
Att.

LIST OF FINAL CONSTUCTION PLANS

Water Branch Drawing No.	Licensee's Drawing Number	Description
---------- General ----------		
	1-00199-C-00401 00412 (Sheet 1 of 1)	Lake Winnipeg Regulation - General Location Plan
---------- Two-Mile Channel ----------		
	1-00199-B-00329 (Sheet 1 of 1)	Location of Reference Cross Sections
	1-00199-D-00326 (Sheets 1 to 3)	Reference Cross Sections
---------- Eight-Mile Channel ----------		
	1-00199-B-00328 (Sheet 1 of 1)	Location of Reference Cross Sections
	1-00199-D-00327 (Sheets 1 to 5)	Reference Cross Sections
---------- Ominawin Bypass Channel ----------		
	1-00199-E-09305 (Sheets 1 and 2)	Layout
	1-00199-E-09302 (Sheets 1 to 8)	Cross Sections and Centre Line Profile
---------- Kisipachewuk Channel ----------		
	1-00199-E-09406 (Sheet 1 of 1)	Channel Improvement Excavation Details
---------- Kiskitto Dam, Inlet and Outlet Control Structures ----------		
	1-00199-E-03902 (Sheets 1 to 3)	Kiskitto Dam and Dykes – Location Plan
	1-00199-D-03946 (Sheets 1 to 18)	Kiskitto Dykes – As Built Details
	1-00199-C-01101 (Sheet 1 of 1)	Kiskitto Lake Outlet Structure – Concrete Details
	1-00199-E-09501 (Sheets 1 to 3)	Kiskitto-Minago Drainage Channel - Plan
	1-00199-E-09503 (Sheet 1 of 1)	Stan Creek Diversion Channel – Plan and Profile

---------- Kiskitto Inlet Control Structure Replacement ----------		
	1-00199-DE-21918-0004 (Sheet 1 of 1)	Final General Arrangement
---------- Jenpeg Control Structure ----------		
	1-00198-DB-20021-0001 (Sheet 1 of 1)	General Arrangement
	1-00198-DB-20021-0002 (Sheet 1 of 1)	Main Dam Plan and Sections
	1-00198-DB-20021-0003 (Sheet 1 of 1)	West Dykes 1 & 1A Plan and Sections
	1-00198-DB-20021-0004 (Sheet 1 of 1)	West Dykes 1B Plan and Sections
	1-00198-DB-20021-0005 (Sheet 1 of 1)	West Dykes 2 & 3 Plan and Sections
	1-00198-DB-20021-0006 (Sheet 1 of 1)	East Dyke Plan and Sections
	1-00198-E-03012 (Sheets 1 and 2)	Spillway – General Arrangement

Manitoba Hydro

360 Portage Ave (16) • Winnipeg Manitoba Canada • R3C 0G8
Telephone / *N° de téléphone :* 204-360-3018 • Fax / *N° de télécopieur :* 204-360-6136
wpenner@hydro.mb.ca

2014 12 12

Mr. R. Matthews, Manager
Water Use Licensing
Manitoba Conservation & Water Stewardship
Box 16 - 200 Saulteaux Crescent
Winnipeg MANITOBA R3J 3W3

Dear Mr. Matthews:

LAKE WINNIPEG RUGULATION - CAPITAL COSTS

Manitoba Hydro cannot locate a record of having formally transmitted the capital cost of the Lake Winnipeg Regulation project as required under Article 36(1) of the Water Power Regulation. The cost of the project has recently been reviewed as being $127.8 million as of 2014.

If you have any questions related to this matter, please call me at 204-360-3018.

Yours truly,

Original Signed by; *Wesley Penner*

W.V. Penner, P. Eng.
Manager
Hydraulic Operations Department

HJE/sl/ 00199-07311-0032_00

APPENDIX B – LIST OF FINAL CONSTUCTION AND LICENCE PLANS

Licensor's Drawing No.	Licensee's Drawing Number	Description
---------- General ----------		
WULS-1-00199-PE-07311-0001 (0001 to 0004)	1-00199-PE-07311-0001 (0001 to 0004)	Severance Line and Lands Required for Flooding and Other Purposes
WULS-1-00199-C-00412 (Sheet 1 of 1)	1-00199-C-00412 (Sheet 1 of 1)	Lake Winnipeg Regulation - General Location Plan
---------- Two-Mile Channel ----------		
WULS-1-00199-B-00329 (Sheet 1 of 1)	1-00199-B-00329 (Sheet 1 of 1)	Location of Reference Cross Sections
WULS-1-00199-D-00326 (Sheets 1 to 3)	1-00199-D-00326 (Sheets 1 to 3)	Reference Cross Sections
---------- Eight-Mile Channel ----------		
WULS-1-00199-B-00328 (Sheet 1 of 1)	1-00199-B-00328 (Sheet 1 of 1)	Location of Reference Cross Sections
WULS-1-00199-D-00327 (Sheets 1 to 5)	1-00199-D-00327 (Sheets 1 to 5)	Reference Cross Sections
---------- Ominawin Bypass Channel ----------		
WULS-1-00199-E-9305 (Sheets 1 and 2)	1-00199-E-9305 (Sheets 1 and 2)	Layout
WULS-1-00199-E-9302 (Sheets 1 to 8)	1-00199-E-9302 (Sheets 1 to 8)	Cross Sections and Centre Line Profile
---------- Kisipachewuk Channel ----------		
WULS-1-00199-E-09406 (Sheet 1 of 1)	1-00199-E-09406 (Sheet 1 of 1)	Channel Improvement Excavation Details
---------- Kiskitto Dam, Inlet and Outlet Control Structures ----------		
WULS-1-00199-E-3902 (Sheets 1 to 3)	1-00199-E-3902 (Sheets 1 to 3)	Kiskitto Dam and Dykes – Location Plan
WULS-1-00199-D-03946 (Sheets 1 to 18)	1-00199-D-03946 (Sheets 1 to 18)	Kiskitto Dykes – As Built Details
WULS-1-00199-C-01101 (Sheet 1 of 1)	1-00199-C-01101 (Sheet 1 of 1)	Kiskitto Lake Outlet Structure – Concrete Details
WULS-1-00199-E-09501 (Sheets 1 to 3)	1-00199-E-09501 (Sheets 1 to 3)	Kiskitto-Minago Drainage Channel - Plan
WULS-1-00199-E-09503 WULS- (Sheet 1 of 1)	1-00199-E-09503 (Sheet 1 of 1)	Stan Creek Diversion Channel – Plan and Profile

Licensor's Drawing No.	Licensee's Drawing Number	Description
---------- Kiskitto Inlet Control Structure Replacement ----------		
WULS-1-00199-DE-21918-0004 (Sheet 1 of 1)	1-00199-DE-21918-0004 (Sheet 1 of 1)	Final General Arrangement
---------- Jenpeg Control Structure ----------		
WULS-1-00198-DB-20021-0001 (Sheet 1 of 1)	1-00198-DB-20021-0001 (Sheet 1 of 1)	General Arrangement
WULS-1-00198-DB-20021-0002 (Sheet 1 of 1)	1-00198-DB-20021-0002 (Sheet 1 of 1)	Main Dam Plan and Sections
WULS-1-00198-DB-20021-0003 (Sheet 1 of 1)	1-00198-DB-20021-0003 (Sheet 1 of 1)	West Dykes 1 & 1A Plan and Sections
WULS-1-00198-DB-20021-0004 (Sheet 1 of 1)	1-00198-DB-20021-0004 (Sheet 1 of 1)	West Dykes 1B Plan and Sections
WULS-1-00198-DB-20021-0005 (Sheet 1 of 1)	1-00198-DB-20021-0005 (Sheet 1 of 1)	West Dykes 2 & 3 Plan and Sections
WULS-1-00198-DB-20021-0006 (Sheet 1 of 1)	1-00198-DB-20021-0006 (Sheet 1 of 1)	East Dyke Plan and Sections
WULS-1-00198-E-03012 (Sheets 1 and 2)	1-00198-E-03012 (Sheets 1 and 2)	Spillway – General Arrangement