



360 Portage Ave (17) • Winnipeg Manitoba Canada • R3C 0G8
Telephone / N° de téléphone : 204-360-4773 • Fax / N° de télécopieur : 204-360-6138
dbowen@hydro.mb.ca

2015 06 10

Tracey Braun
Director
Environmental Approvals Branch
Manitoba Conservation and Water Stewardship
160-123 Main Street
Winnipeg, MB R3C 1A5

Dear Ms. Braun:

**RE: KEYYASK GENERATION PROJECT – ALTERATION REQUEST, CENTRAL DAM
COFFERDAM EXTENSION TO TIE INTO THE POWERHOUSE COFFERDAM
ENVIRONMENT ACT LICENCE NO. 3107, CLIENT FILE 5550.00**

Manitoba Hydro, in its delegated authority to manage construction of the Keeyask Generation Project on behalf of the Keeyask Hydropower Limited Partnership, is requesting an alteration to Environment Act Licence (EAL) No. 3107 to extend the Central Dam Cofferdam north to tie into the Powerhouse Cofferdam beyond the limits identified as “Disturbed Footprint” in the Environmental Protection Plan.

To protect the Central Dam and Powerhouse work areas from high water levels should portions of the ice boom fail again, it has been determined that there is a requirement to extend the Central Dam Cofferdam north so it ties into the Powerhouse Cofferdam. The water lot is owned by The Keeyask Hydropower Limited Partnership. A portion of this structure falls within the “Disturbed Footprint Area” as identified in the Environmental Protection Plan. Approximately 0.55 hectares is outside of the “Disturbed Footprint Area”. Attached is a description of construction and the potential incremental environmental effects.

The anticipated start date of construction that is beyond the existing limits defined in the Environmental Protection Plan is July 16, 2015. If there are any questions or concerns with this request, please feel free to contact Jodine MacDuff at 204-360-5539.

Yours truly,

A handwritten signature in blue ink, appearing to read 'Dave Bowen'.

Dave Bowen, P. Eng, M.Sc
Keeyask Project Manager
Major Capital Projects

Att.

**Keeyask Generation Project – Request to Extend the Central Dam Cofferdam to tie into the
Powerhouse Cofferdam
Description of Construction and Potential Environmental Effects**

To protect the Central Dam and Powerhouse work areas from high water levels should portions of the ice boom fail again, it has been determined that there is a requirement to extend the Central Dam Cofferdam north so that it ties into the Powerhouse Cofferdam. The water lot is owned by The Keeyask Hydropower Limited Partnership. A portion of this structure falls within the “Disturbed Footprint Area” as identified in the Environmental Protection Plan. Approximately 0.55 hectares is outside of the “Disturbed Footprint Area”, as identified on the attached figure.

Background

The construction design flood (CDF) was established for each temporary structure so that the design provided a reasonable degree of protection against high flows that could occur during the construction phase of the Project. The Project temporary structures were designed to withstand flows and water levels associated with a flood expected to have a 5-10% probability of occurring each year or a frequency of once every 10-20 years on average. It should be noted that the CDF water levels were based on a stable ice cover forming upstream of Gull Rapids (to ensure this would occur, an ice boom was installed).

A test ice boom was installed in Fall 2013 for a one year test period. The anchor system failed at the end of the spring breakup season (May 2014) due to a stronger than normal ice cover (due to the cold winter and late spring) and the very high spring flows arriving from the south in late May. Design modifications were incorporated to improve the effectiveness of the ice boom in developing a stable ice cover upstream of the construction site. This included a realignment of the boom to a location slightly upstream of the test location. The boom was installed in the summer of 2014. On November 10, 2014, there was a partial failure of the ice boom. This resulted in no stable ice cover formation upstream of Gull Rapids and portions of the Nelson River remained open from Gull Rapids to Split Lake until late January 2015. As a result, the partially constructed Central Dam Cofferdam was overtopped.

During the winter of 2014/15, additional analysis of the hydraulic and ice conditions occurred and it has been determined that two ice booms are required at locations further upstream from the original sites, it is anticipated that these ice booms will be installed in the summer of 2015. As well, it was determined that widening of the Central Dam Cofferdam would be required. This widening, identified on attached figure, was within the “Disturbed Footprint Area” identified in the Environmental Protection Plan.

Description of Proposed Work

To protect the Central Dam and Powerhouse work areas from high water levels should portions of the ice boom fail again, it has been determined that there is a requirement to extend the Central Dam Cofferdam north so that it ties into the Powerhouse Cofferdam. The design of the north extension would

enable the cofferdam to be raised in the future to provide winter protection. Construction methods will follow those described in the Environmental Impact Statement (Section 3.4.4 of the Physical Environment Supporting Volume). In-stream work on this structure is proposed to start on July 16, 2015. As with the other cofferdams associated with the project (Section 2.4.2 of the Physical Environment Supporting Volume), a portion of the extension will be removed and the remnants incorporated into other permanent structures.

Potential Environmental Effects and Mitigation

Water Quality

As noted above, construction methods will follow those described in the EIS and mitigation measures as described in the Environmental Protection Plan will be followed. Incremental effects on water quality as a result of the proposed extension are not expected.

Aquatic Habitat and Fish

In-stream work on this structure is proposed to start on July 16, 2015. The additional in-stream footprint as a result of this extension is approximately 0.55 hectares, the structure falls within the area identified in the Fisheries Act authorization as Permanent alteration of habitat (permanently dewatered area and altered flows).

Incremental effects on aquatic habitat and fish as a result of the proposed extension are not expected.



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File Location: Z:\05\Keeeyask\Keeeyask_Construction_Hatch\CentralDam_Cofferdam_Stage I - Cofferdam - Island.dwg, Date: 09-JUN-15, Project: Keeeyask Dam, Client: Manitoba Hydro, Project Manager: Jason Johnson, Project: Keeeyask Dam, Date: 09-JUN-15



DATA SOURCE: Manitoba Hydro; Government of Manitoba; Government of Canada; Worldview 2 Image (Color, 50cm, Sept 2014)		
CREATED BY: Manitoba Hydro - GIS Studies		
COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 05-JUN-15	REVISION DATE: 09-JUN-15
	VERSION NO.: 1.0	QA/QC:

Legend

- Central Dam/Powerhouse Cofferdam Tie-In
- Original Design

Central Dam Cofferdam Extension
Proposed Modification
Additional Footprint

DRAFT: For Discussion Purposes Only

Imagery September 2014



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DATA SOURCE: Manitoba Hydro; Government of Manitoba; Government of Canada; Worldview 2 Image (Color, 50cm, Sept 2014)		
CREATED BY: Manitoba Hydro - GIS Studies		
COORDINATE SYSTEM: UTM NAD 1983 Z15N	DATE CREATED: 05-JUN-15	REVISION DATE: 05-JUN-15
0 0.15 0.3 Kilometres 0 0.1 0.2 Miles	VERSION NO: 1.0	QA/QC:

Legend
 Updated Design
 Original Design

Central Dam Cofferdam

Proposed Modification

DRAFT: For Discussion Purposes Only