



Government of Newfoundland and Labrador
Department of Environment and Conservation
Water Resources Management Division

August 28, 2014

Mr. Peter Madden
Regulatory Compliance Lead (Muskrat Falls and LTA)
Nalcor Energy
500 Columbus Drive
P.O. Box 12800
St. John's NL A1B 0C9

Dear Mr. Madden:

Re: Information Requirements Concerning the Lower Churchill-Muskrat Falls Project

Thank you for your response to our July 31, 2014 request for documents on landslide related studies in relation to the Lower Churchill Project at Muskrat Falls. Information from the studies indicates the location of past landslides, the location of several potential areas for landslide occurrence, the presence of “quick clay”, that the most critical time for landslide events is generally associated with initial filling of the reservoir and for a period of up to two years after completion, and that most landslides occur at pre-existing landslide features.

ENVC has reviewed these documents and has the following observations:

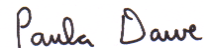
1. The study on Landslide Generated Waves in the Muskrat Falls Reservoir (SNC Lavalin, June 2013) recommends that during the Winter Diversion Phase, the upstream cofferdam’s crest elevation be raised from 26.0 m to 26.7 m, as a large-scale landslide generated wave would overtop the upstream cofferdam by 0.2 m and flood the working area. Has this recommendation been accepted? If not, for what reasons, and if so, what are NALCORs plans to accommodate this? Would any other dams/cofferdams currently designed for an elevation of 26.0 m or less have to be raised?
2. Both the study on Bank Stability Assessment (AMEC, June 2011) and Landslide Generated Waves in the Muskrat Falls Reservoir (SNC Lavalin, June 2013) make recommendations on landslide monitoring. Have these various recommendation been accepted? If not, for what reasons, and if so, what are NALCORs plans to accommodate these recommendations? Is landslide or slope stability monitoring to be incorporated into the planned Operation, Maintenance and Surveillance (OMS) Manual? Will there be anything in the Emergency Preparedness Plan to address landslide occurrence?
3. Does the design of upstream slope protection work on the North Spur take into account landslide-generated waves during both construction phases and the operational phase?
4. Has NALCOR examined possible landslide protection measures as recommended in the study on Landslide Generated Waves in the Muskrat Falls Reservoir (SNC Lavalin, June 2013)?

Other observations:

1. Given the significant ice conditions experienced in the winter of 2013-14, does the height of any of the cofferdams during construction phases need to be reevaluated?
2. Have dam failure studies been finalized? ENVC was informed in the spring of 2014 that there would be further dam failure work undertaken, including an evaluation of possible North Spur failure.
3. What is the status of the Emergency Preparedness Plan (EPP) for the Lower Churchill-Muskrat Falls dam facility? What is the status of the working group which was to be formed for the preparation of the EPP? This document is required prior to reservoir filling.
4. What is the status of the Operation, Maintenance and Surveillance (OMS) Manual for the Lower Churchill-Muskrat Falls dam facility? This document is required prior to reservoir filling.
5. What other technical studies relating to the Lower Churchill-Muskrat Falls dam have been completed since July of 2013 when the permit ALT6933 (Lower Churchill Muskrat Falls- Dams, Powerhouse, Spillway and North Spur Stabilization) was originally issued and which may have some bearing on the design of various phases of the muskrat falls project? Can these be provided to ENVC?
6. Please confirm the expected start date for initial diversion of the Churchill River and the start of reservoir filling for the next phase of construction during which the water level is expected to be raised to an elevation of 25.0 m. ENVC considers this to be the start of reservoir filling.

I look forward to your response to these items. If you have any questions or need any further clarification on items listed, please feel free to contact me at 729-4048 or pauladawe@gov.nl.ca.

Sincerely,



Paula Dawe, P.Eng
Water Resources Engineer