Dear [Redacted]:

Re: Your request for access to information under Part II of the Access to Information and Protection of Privacy Act (File # NR-102-2019) NR/97/2019

On May 15, 2019, the Department of Natural Resources received your request for access to the following records/information:

In today's Telegram there is a story regarding the CCC and the North Spur. In the story Dwight Ball refers to reviewing the science around the North Spur. Does DNR have any recent (last 12 months) reports, studies, briefings, etc regarding science and safety issues about the North Spur? If so, please provide.

The Department of Natural Resources is providing access to the most information possible but have made redactions in accordance with Sections 29(1)(a) as follows:

29. (1)(a) The head of a public body may refuse to disclose to an applicant information that would reveal advice, proposals, recommendations, analyses or policy options developed by or for a public body or minister;

There are 2 Nalcor reports online that may also be of interest to you, they are:

SNC Lavalin North Spur Post Construction Assessment Report:

SNC Lavalin North Spur Slope Stability Sensitivity Memo May 2019:
As set out in section 42 of the Act you may ask the Information and Privacy Commissioner to review the department’s decision to provide access to the requested information. A request to the Commissioner must be made in writing within 15 business days of the date of this letter or within a longer period that may be allowed by the Commissioner. Your request should identify your concerns with the department’s response and why you are requesting a review.

The request for review may be addressed to the Information and Privacy Commissioner as follows:

Office of the Information and Privacy Commissioner
2 Canada Drive
P.O. Box 13004, Stn. A
St. John’s, NL A1B 3V8
Telephone: (709) 729-6309
Toll-Free: 1-877-729-6309
Facsimile: (709) 729-6500

Pursuant to section 52 of the Act, you may also appeal directly to the Supreme Court Trial Division within 15 business days after receiving the department’s decision.

Please be advised that responsive records will be published following a 72 hour period after the response is sent electronically to you or five business days in the case where records are mailed to you. It is the goal to have the responsive records posted to the Completed Access to Information Requests website within one business day following the applicable period of time. Please note that requests for personal information will not be posted online.

For further details about how an access to information request is processed, please refer to the Access to Information Policy and Procedures Manual at http://www.atipp.gov.nl.ca/info/index.html.

If you have any questions, please feel free to contact me at 709-729-0463 or rhynes@gov.nl.ca.

Sincerely,

Rod Hynes

Rod Hynes
ATIPP Coordinator
Corey,

I have reviewed the letter. There have been many similar letters in the past challenging the design and stability of North Spur. For your reference I am attaching a CDA paper on this.

Please provide a brief response.

Some of my suggestions for your consideration are:

The Department of Municipal Affairs and Environment (MAE) takes its mandate for dam safety under Sections 43 and 44 of the Water Resources Act, 2002 with due consideration given the potential risks posed by such developments. The Lower Churchill Project is a massive undertaking with inherent risk involved; however, that risk can be managed through meeting regulatory requirements and following the best practices of the Canadian Dam Association (CDA) Dam Safety Guidelines.

The North Spur engineering design has been reviewed by three different independent third parties. Opinion from these reviews is that the current design is adequate. It should be noted that catastrophic progressive failure of the North Spur during construction was not identified as an issue as part of these reviews.

MAE can confirm that stabilization work on the North Spur began in March 2015. The engineering design for the North spur was undertaken by qualified geotechnical engineers with SNC Lavalin, and has had the benefit of extensive field investigations to support the engineering design. The design includes several preventative barriers that will help to address the issue of the stability of the North Spur. It is important to note that all improvement works on the North Spur will incrementally improve the safety and stability of the area.

The CDA Dam Safety Guidelines require evaluation of the failure scenario that would result in the worst case consequences. Monolithic failure of the North Roller Compacted Concrete (RCC) Dam by overturning or sliding has been identified as the worst case scenario. This scenario involves the rapid failure of the North RCC Dam with the breach to be fully formed within one hour.

A complete progressive failure of the North Spur during construction is not considered probable. Modelling work of North Spur has indicated that even a seismic event with an annual exceedance probability of 1:10,000 will not result in liquefaction of the area.

I would like to reiterate that over and above the regulatory dam safety provisions as outlined in the Water Resources Act and CD Dam Safety Guidelines, appropriate due diligence is being practiced with respect to the safety of downstream residents and protection of the environment by NALCOR as the owner and operator of the Lower Churchill Project and the Department of Municipal Affairs and Environment as the regulator.
Hi Haseen,

Please find attached a technical letter from hydropower consultant Jim Gordon regarding the NorthSpur.

Can you please review and let me know when we can discuss? I want to be sure I understand his technical language before beginning to address his concerns.

- Corey

Corey Snook
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Information Note
Department of Natural Resources

Title: SNC-Lavalin North Spur Post Construction Assessment

Issue: To provide a summary of SNC-Lavalin’s Engineering Report to Nalcor Energy entitled North Spur – Post Construction Assessment.

Background and Current Status:
- The North Spur is a deposit of various sediments which provides a partial closure of the Churchill River valley at the Muskrat Falls site. It is approximately one kilometer long between a rock knoll in the south and a series of lakes in the north and is important as part of the reservoir retention works. Maintaining the integrity of the North Spur is fundamental to the project.

- Raising of water levels and changes in the downstream flow regime of the Muskrat Falls hydro-electric development required stabilization works which first began to be considered in 1965. The design of these works has since evolved to arrive at the current design. Construction of the stabilization works was completed in 2017 and subsequent work on the project has allowed a planned increase in the reservoir to its current level of 23 metres.

- SNC-Lavalin is now providing a post-construction report to present its observations and recommendations for any additional work that should be undertaken prior to raising the reservoir to the Full Supply Level of 39 metres.

- Instability in sensitive deposits comprising the North Spur are related to a high ground water table (or other instances of high pore pressures) and are initiated primarily by erosion at the toe of the slopes. As such, stabilization works include:
  - Lower the ground water table and reduce pore pressures in the soil mass;
  - Limit the ingress of seepage from the reservoir;
  - Flatten critical slopes and add embankment fill; and,
  - Protect the toe against erosion.

- To address these requirements, stabilization works undertaken on the upstream side of the North Spur include a lower cement-bentonite cut-off wall and an upper inclined till blanket. On the downstream side slopes were flattened, a system of internal drainage was created to capture and evacuate seepage, and the toe area was protected against erosion using rockfill. Additional regrading and stabilization of slopes was also undertaken in the area of the lakes at the north of North Spur.

- In addition to these stabilization works, monitoring equipment including piezometers, inclinometers, and a flowmeter have been placed at the North Spur.

Analysis:
- SNC-Lavalin concludes that the stabilization works "...were carried out in accordance with the design intent and the performance to date with the reservoir at the interim level of 23.0 m is satisfactory."

- SNC-Lavalin also notes that no changes to the conclusions of any specific studies carried out prior to construction are warranted. Furthermore, the Factor of Safety for all stabilized slopes..."
was found to be satisfactory and adequate instrumentation is in place to ensure conditions are being monitored. Relief wells are likely not a requirement although SNC-Lavalin indicates that a final assessment on that point should be made after final impoundment.

- In its current configuration, SNC-Lavalin concludes that the North Spur is fit-for-purpose and reservoir raising may proceed at the planned filling rate, with the current surveillance plan and normal precautions in place.

- A draft of SNC-Lavalin’s report was first completed in April 2018. Recommendations made at that time have been acted upon and include:
  - Installation of two additional piezometers in the northern sector of the downstream slope where an increase in pore pressure could potentially reduce the Factor of Safety.
  - Assessment and maintenance of the pumpwell system to determine the extent of work required for full refurbishment should it be required.
  - Inspection of the North Spur by the geotechnical team following winter and correction of any surface erosion.

- Additional recommendations now being put forward by SNC-Lavalin include:
  - The existing surveillance plan will need to be updated for the impoundment period and function as the operational surveillance plan once the reservoir has been raised to 39 metres.
  - Following impoundment, instrumentation readings at the North Spur may take some time to stabilize. Continued review of observations should take place to determine if changes to the frequency of observations or the number and location of instruments is required. This will also help develop triggers or indicators of concern that would require a response to the raising of the reservoir.
  - The North Spur be treated as a dam and that access to the structure by the public be limited without precluding recreational access.
  - Prior to impoundment and for the first few years thereafter, a visual inspection of the North Spur be carried out by qualified dam safety engineers and any deficiencies addressed prior to the following winter.

Action Being Taken:
- Report provided by SNC-Lavalin to Nalcor for information purposes only. No action required.

Prepared/Approved by: R. Bates/
Ministerial Approval: For Divisional Use Only

March 26, 2019