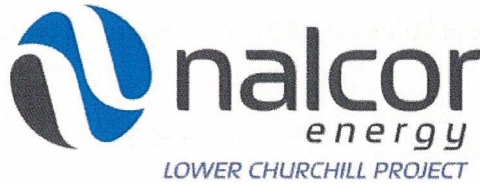


## Nalcor Energy – Lower Churchill Project



### LCP Annual Black Bear Encounter Report - 2013

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## 1 INTRODUCTION

As a part of the environmental effects monitoring program for the Lower Churchill Project (LCP), the LCP has committed to compiling the results of the On-Site Environmental Monitors' reports that reference sightings, encounters and consequences that relate to black bear interactions during construction and operations. This report fulfills that commitment to monitor activities and any potential effect on black bear as a result of the Project.

## 2 SCOPE

This report addresses the commitment by the LCP, to report on 2013 Black Bear interactions on the Project for the design, construction, and operation phases of the Lower Churchill Project (LCP) including Muskrat Falls Generation and the Labrador Transmission Assets.

## 3 INTERNAL REFERENCES

LCP-PT-ED-0000-EA-SY-0001-01	Environmental Impact Statement and Supporting Documentation for the Lower Churchill Hydroelectric Generation Project
LCP-PT-MD-0000-EV-PL-0006-01	LCP Black Bear Environmental Effects Monitoring Plan

## 4 PROJECT DESCRIPTION

### 4.1 MUSKRAT FALLS GENERATION

The Muskrat Falls Generation Project will include the following sub-components which are broken down under the five principal areas of the development (see Figure 4-1):

- 22 km of access roads, including upgrading and new construction, and temporary bridges;
- A 1,500 person accommodations complex (for the construction period); and
- A north roller compacted concrete overflow dam;
- A south rock fill dam;

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- River diversion during construction via the spillway;
- 5 vertical gate spillway;
- Reservoir preparation and reservoir clearing;
- Replacement fish and of terrestrial habitat;
- North spur stabilization works;
- A close coupled intake and powerhouse, including:
- 4 intakes with gates and trash racks;
- 4 turbine/generator units at approximately 206 MW each with associated ancillary electrical/mechanical and protection/control equipment;
- 5 power transformers (includes 1 spare), located on the draft tube deck of the powerhouse; and
- 2 overhead cranes each rated at 450 Tonnes



**Figure 4-1** Muskrat Falls Generating Facility

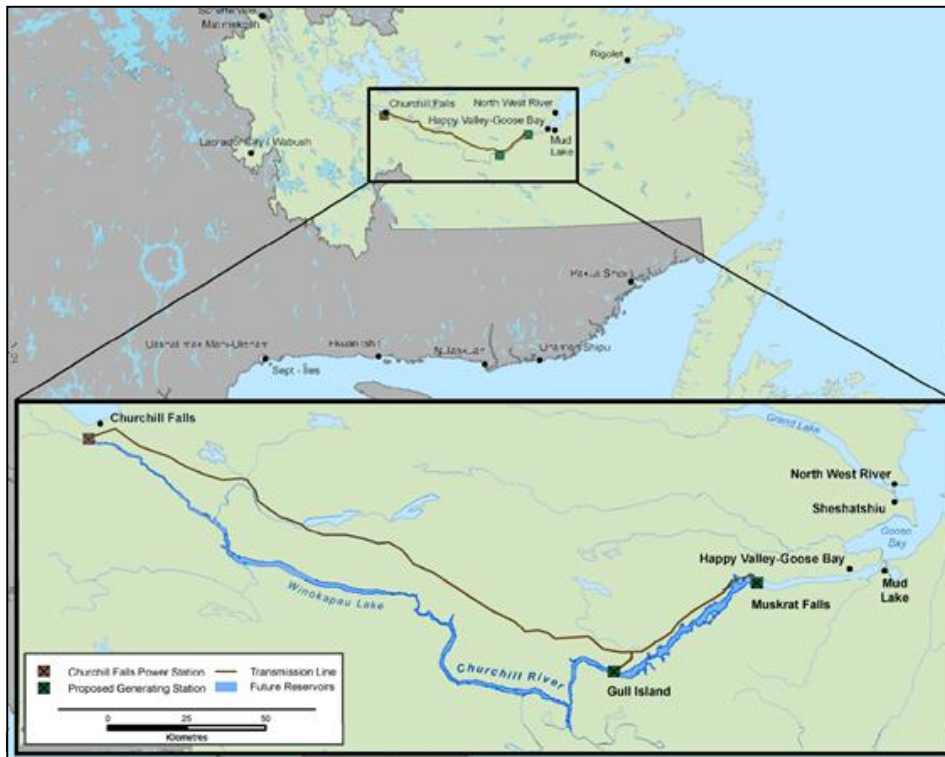
## 4.2 LABRADOR TRANSMISSION ASSET (LTA)

LTA consists of the ac transmission line system from Churchill Falls to Muskrat Falls (see Figure 4-2), specifically:

- Churchill Falls switchyard extension;

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- Muskrat Falls switchyard;
- Transmission lines from Muskrat Falls to Churchill Falls: double-circuit 315 kV ac, 3 phase lines, double bundle conductor, single circuit galvanized lattice steel guyed suspension and rigid angle towers; 247 km long; and
- 735 kV Transmission Line at Churchill Falls interconnecting the existing and the new Churchill Falls switchyards;



## 5 EXISTING INFORMATION

As outlined in the EIS (Nalcor 2009), the black bear in Labrador is a forest-dwelling animal; however, its presence has been confirmed throughout the Quebec-Labrador peninsula, including forest, sea ice, coastal islands and barrens, reflecting their opportunistic foraging on any edible material (Veitch and Krizan 1996; VBNC 1997; Chaulk et al. 2005). Forest, barren and sea-ice habitats are commonly used areas during spring, while forest, barrens and river habitats are important during the summer and fall. Bears were not found in recent burns but did occur in other open habitat areas (Jacques Whitford 1997).

Estimates of black bear density in Labrador vary dramatically in forested regions (0.45 to 0.52 bears/km<sup>2</sup>), or non-forested regions (0.05 bears/km<sup>2</sup>) (VBNC 1997). The provincial population of

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black bear is estimated at 6,000 to 10,000 (NLDEC 2013, internet site) and is considered to be stable.

In Labrador, the primary food source during spring (from April to June) is the residual berry crops of *Vaccinium* spp. and *Empetrum* spp. from the previous year, combined with the occasional hunt and scavenge for caribou, moose or other prey. Veitch and Krizan (1996) and Chaulk et al. (2005) reported observations of black bear predation on large vertebrates (e.g., caribou and/or moose). During summer, the primary food source is fresh vegetation such as sedges and grasses, until the new crops of berries emerge during August (Jacques Whitford 1997d; VBNC 1997). Fish is not a primary component of the black bear diet in Labrador, and observations of black bear obtaining fish from river systems are rare (Veitch and Krizan 1996).

Home ranges are difficult to delineate and require several years of continuous data on movement and habitat selection. Resource abundance and gender are likely to have the greatest effect on black bear dispersal patterns (e.g., Lee and Vaughan 2003; Moyer et al. 2006). Although home ranges may overlap in Labrador (Jacques Whitford 1997), perhaps related to resource availability, there is often temporal separation in such cases (Moyer et al. 2006).

Habitat use by black bear in the lower Churchill River watershed varies by season. During winter, from approximately early November to late April, black bears are in dens. From late summer through early fall, black spruce and mixed fir and spruce forests are suitable areas for foraging, finding shelter and building up fat reserves in preparation for winter denning (Nalcor 2009).

Primary habitats are relatively mature, contiguous forests with openings and abundant understory vegetation, especially berry-producing shrubs. Also, in spring and early summer riparian habitat is primary habitat because it provides early access to fresh vegetation, while in late summer and fall mixed wood and hardwood forests provide enough food resources to qualify as primary habitat (Nalcor 2009).

Secondary habitat differs from primary habitat in that it provides an abundance of one or two of the three elements (or marginal amounts of all) for black bear habitat, which are food, protection, or resting and denning habitat. Essentially, all forested and riparian areas that are not primary habitat are secondary habitat (Nalcor 2009).

Due to the omnivorous diet of black bear and its adaptability to a wide variety of physical and structural environments, most natural terrestrial environments are primary or secondary. Only gravel bars and areas of anthropogenic disturbance are considered tertiary. Tertiary habitat occupies more than 35.6 km<sup>2</sup> (2.2 percent) of the lower Churchill River valley both in spring and early summer and late summer and fall (Nalcor 2009).

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Black bear have few natural predators in Labrador and generally die of old age. Bears have parasites and diseases, but rarely die from them (Kolenosky 1992, internet site). However, McBurney et al. (2000) documented bacterial valvular endocarditis caused by *Staphylococcus aureus* in a collared black bear from northern Labrador in 1991.

## 6 METHODOLOGY

The LCP has compiled the results of the On-Site Environmental Monitors' reports that reference sightings, encounters and consequences that relate to black bear interactions during the 2013 construction year. Details of these interactions include:

- date;
- interaction type – brief description of the type of interaction: sighting, human/animal conflict, vehicle/animal conflict;
- behavior at the time of the interaction;
- interaction details - explanation of the nature of the interaction;
- issue resolution - explanation of the action(s) undertaken to resolve the interaction;
- interaction consequence – description of the outcome (animal was scared away; animal was killed); and
- additional actions undertaken – details of actions undertaken by the LCP (e.g., no additional actions required; report sent to Wildlife Division) and notes on regulatory compliance.

These interactions have been submitted to the NLDEC-WD on a weekly basis throughout the year.

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## 7 RESULTS - ENCOUNTERS

The following table lists the sightings and encounters with black bear for the 2013 construction year, and identified if a deterrent was used and the location.

**Table 7-1** Black Bear Encounter Log - 2013

Date	Wildlife Encountered	Deterrent Used?	Location
8 Jun-13	Black Bear	No	East perimeter of Camp Pad
26 Jun-13	Black Bear	No	East perimeter of Camp Pad near STP
19 Jul-13	Black Bear (sow and cub)	No	East side of McKenzie River
20 Jul-13	Black Bear	No	West perimeter of Camp Pad
20-Jul-13	Black Bear	No	West side of McKenzie River Bridge
28-Jul-13	Black Bear	No	West Side of McKenzie River Bridge
8-Aug-13	Black Bear	No	West Side of McKenzie River Bridge
30-Aug-13	Black Bear	No	West Side of McKenzie River Bridge
02-Sept-13	Black Bear	Yes	East perimeter of Camp Pad
02-Oct-13	Black Bear	Yes	North perimeter of Company Laydown
29-Oct-13	Black Bear	No	North perimeter of Camp Pad
3-Nov-13	Black Bear Cub	No	Station 22 (Laydown G)
5-Nov-13	Black Bear	Yes	East perimeter of Camp Pad near STP
6-Nov-13	Black Bear	Yes	East perimeter of Camp Pad near STP
7-Nov-13	Black Bear	Yes	East perimeter of Camp Pad near STP
8-Nov-13	Black Bear	Yes	East perimeter of Camp Pad near STP
9-Nov-13	Black Bear	Yes	East perimeter of Camp Pad near STP
10-Nov-13	Black Bear	Yes	East perimeter of Camp Pad near STP
12-Nov-13	Black Bear	Yes (Banger)	Outside East perimeter fence of Camp near STP
13-Nov-13	Black Bear	Yes	East perimeter of Camp Pad near STP
14-Nov-13	Black Bear	Yes	East perimeter of Camp Pad near STP
15-Nov-13	Black Bear	Yes (Trapped)	East perimeter of Camp Pad near STP

A total of 22 encounters of black bear were logged in 2013. Of these 22, 10 (45%) did not require deterrents to encourage the animal to leave the site. Eleven interactions (50%), did require a deterrent such as a bear banger, to encourage the bear to leave the Project area. One encounter (5%) required the assistance of the NLDEC-WD to trap and remove the bear from the Project site.

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## 8 ENVIRONMENTAL EFFECTS MANAGEMENT PLAN

The effects management plans (i.e., mitigation measures outlined in the EIS [Nalcor 2009] and the Generation and LTA EPP (LCP 2013) and the commitments made by the LCP during the Information Request responses and the hearings include:

- Critical habitats shall be identified on site plans or plan profiles for roads and transmission lines for C-SEPP.
- Construction activities shall be scheduled considering any sensitive areas of fish and wildlife habitat and critical periods in fish and wildlife cycles, and considering additional mitigation measures that may be required. Annual timing of migration, spawning and calving in the vicinity of the site shall be considered at all times.
- Personal pets shall not be brought to the construction site to prevent harassment of wildlife;
- Buffer zones shall be implemented to protect wildlife at the site, see Section 8.18 (of the EPP) for the buffer zones for helicopter traffic at the site;
- Fishing and hunting are prohibited at or near the construction site. All project participants shall be prohibited from fishing and hunting at or near the construction site while working on the project.
- Antifreeze will not be used as a form of pest control near camps, as it attracts other wildlife in addition to the targeted animals;
- Under no circumstances are wildlife to be fed and all measures shall be taken to avoid inadvertent feeding;
- Wildlife shall not be chased, caught, diverted, followed or otherwise harassed by project participants;
- All Wildlife sightings and nuisance wildlife shall be reported to the On-Site Environmental Monitor (OSEM);
- The Forestry Branch shall be contacted and updated with regards to nuisance wildlife and wildlife encounters;
- Equipment and vehicles shall yield the right-of-way to wildlife and adhere to construction site speed limits;
- Environmental awareness training, with regular briefings, shall be implemented for all personnel.
- All persons on site shall be made aware of the potential for encounters with black bears and instructed to report all sightings the OSEM.

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- Black bear deterrent measures such as bear bangers, bear spray, and electric fencing may be used, and translocation of bears shall be undertaken before any lethal means are considered. Firearms shall not be permitted on site, with exception of approved bear monitors.
- Black bear protection permits shall be obtained for each black bear monitor. Permits shall be signed by the individual that the permit is issued to.
- The OSEM will survey the immediate area of a blast site within one hour of the blast and curtailed if wildlife (e.g., black bear den) is identified within 500 m of the blast site.
- Proper waste management procedures such as use of bear-proof containers and proper food and storage practices will be adhered to.
- When Project construction ends, all roads not essential to long-term maintenance must be decommissioned, and habitat must be restored and access shall be restricted.

## 9 SUMMARY

Based on observations and interactions with black bear in or around the Project activities, in 2013, the effects of the Project were minimal.

For 2014, black bear sightings, interactions and consequences will be reported to the On-Site Environmental Monitor and the information distributed to crews to increase their level of awareness and caution when this species is in the Project vicinity.

Based on the results prescribed in this report, no changes are proposed to the environmental effects management measures described in Section 8.0 at this time.

## 10 EXTERNAL REFERENCES

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