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# South Side Access Road Extension – Muskrat Falls Project

## Environmental Assessment Registration

Pursuant to the *Newfoundland and Labrador Environmental Protection Act*

February 19<sup>th</sup>, 2013

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### Figure 1: Muskrat Falls South Side Access Road Extension

### Appendix A: List of Permits, Licenses and Approvals Required

## 1.0 Introduction

### **Project Name:**

*South Side Access Road Extension- Muskrat Falls Project*

## 1.1 Proponent

### **Name of Corporate Body:**

Nalcor Energy (Nalcor)

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## 2.0 The Undertaking

### 2.1 Nature of the Undertaking

Nalcor is proposing to construct a 5.5 km extension to the approved south side access road to the Muskrat Falls hydroelectric generating facility. The access road is required to construct the Muskrat Falls dam, a component of the Lower Churchill Hydroelectric Generation Project. The access road will intersect the Trans Labrador Highway (TLH) approximately 2 km south of Blackrock Bridge. The road will require 4-8 stream crossings and borrow material will be obtained from approved locations.

### 2.2 Purpose/Rationale/Need for the Undertaking

Nalcor is an energy company owned by the province of Newfoundland and Labrador. Nalcor is developing an 824 megawatt hydroelectric generation facility at Muskrat Falls, on the lower Churchill River in Labrador. The project also includes transmission lines between Muskrat Falls and Churchill Falls.

Nalcor originally proposed an extension to the existing Caroline Brook forestry access road, located approximately 8 km south of Blackrock Bridge, to gain access to Muskrat Falls. However, field experience gained and surveys conducted during 2012 early works program indicate that the existing road is not adequate from a technical and safety perspective. The existing road is narrow with soft shoulders, blind hills, tight corners, and steep drop-offs. Major upgrades required to attain the necessary standard (RLU70) would include widening, regrading, realignment, and culvert removal and replacement. The loads to be carried over the road will be up to 250 tonnes which require at most six per cent grades. These efforts would incur substantial costs and create a logistical challenge to upgrade the road while construction is in progress. In addition, efficiencies will be gained with a higher quality road and decreased travel time from Happy Valley-Goose Bay.

In addition, efficient and safe access provided by the proposed extension would reduce travel times to the site and greenhouse gases from fuel consumption. It is estimated that the travel time from Happy Valley-Goose Bay would be reduced by approximately 15 minutes and eliminate 7 km from the overall journey. Also, the proposed route provides limited physical or environmental impediments to construction.

## 3.0 Description of the Undertaking

### 3.1 Geographical Location

The undertaking is to be located 2 km south of the Churchill River, with access from the TLH south from Happy Valley-Goose Bay. Figure 1 is a map showing this location.

The road will extend from the intersection at the TLH west 5.5 km to the south side access road presently under construction. The full length of the access road after construction will be 22 km to Muskrat Falls. Nalcor has sourced borrow materials along the south side access road right-of-way and may require further borrow deposits in the right-of-way of the proposed road.

## 3.2. Physical Features

### 3.2.1 Biophysical Environment

The land area of Labrador is approximately 295,000 km<sup>2</sup>, with most of this being wilderness. The climate influences the landscape with intense, low-pressure weather systems characterizing the fall, winter and early spring seasons, and strong winds and heavy snowfall and rainfall are common along the Churchill River valley. Occurrences of fog and strong winds decrease with distance inland from the coast. The lower Churchill River valley and associated watershed is an area of transition between Arctic and sub-Arctic climates. Vegetation in the river valley is typical of Boreal and Taiga ecosystems which are adapted to nutrient-poor conditions and extremes in weather. Black spruce coniferous forest is by far the most common habitat in the watershed; in some areas, it is intermixed with balsam fir, tamarack and hardwood species, most notably trembling aspen, white birch and heartleaf birch. Feathermoss, sphagnum moss and cladina lichen are the most common ground cover in these forests. The landscape also includes extensive bogs and fens.

#### 3.2.1.1 Wildlife

Of greatest concern within the lower Churchill River watershed is the RWM Herd, considered threatened under Schedule 1 of the *Species at Risk Act (SARA)*. This Herd was considered stable in the 1980s but declined dramatically to 151 animals by 1997, with a further decrease to less than 100 animals by 2003. The location of the proposed road does not considered primary habitat for this species.

Other large mammals in Labrador include moose, which are known to congregate in the lower Churchill River valley during winter, and black bear, which is the largest predator in the watershed. A variety of furbearers occur in the lower Churchill River watershed including wolf, coyote, red fox, lynx, marten, weasel, ermine, mink, river otter, snowshoe hare, Arctic hare, red squirrel and beaver. Porcupine are currently increasing in Labrador after several decades of apparent scarcity. Small mammals include red-backed vole, which occurs most frequently, meadow vole, masked shrew and meadow jumping mouse. The little brown bat and northern long-eared bat are also known to occur in Labrador.

The main groups of birds expected to occur in the lower Churchill River valley include raptors, waterfowl, forest songbirds, shorebirds and upland game birds. Species may be resident year round or migrate seasonally and occupy essentially all habitats.

Raptor species in the region include Osprey, which in Labrador tend to nest near water bodies, at the top of dominant white or black spruce, or occasionally on large rocks. Cliff-nesting species in this watershed include Golden Eagle, Red-tailed Hawk, Rough-legged Hawk, Merlin, and Great Horned Owl. Red-tailed Hawk, Merlin and Great Horned Owl also nest at or near the tops of trees, as do Sharp-shinned Hawk and Northern Goshawk. Bald Eagles typically build their nests in large, mature trees but, in Labrador, they also use large rocks for nest sites.

Given the expanse of wetland habitat throughout Labrador, the large numbers of waterfowl that breed here contribute substantially to the fall flight along the Atlantic Flyway. Waterfowl in central Labrador can be subdivided into an early-nesting group, comprising dabbling ducks and geese, and a late-nesting group, comprising sea ducks and diving ducks. The most common of the early-nesting waterfowl in the watershed are Canada Goose, American Black Duck and American Green-winged Teal. These species are associated with marshes and other well-vegetated wetlands. They may stage briefly in spring, but quickly move on to breeding sites.

Late-nesting waterfowl most commonly found breeding along the lower Churchill River are Common Goldeneye and Common and Red-breasted Merganser. Several tributaries of the lower Churchill River support Harlequin Duck. The eastern population found in Nunavut, Quebec and Atlantic Canada was designated as a Species of Special Concern by SARA in 2001. Other species breeding in the watershed are Lesser and Greater Scaup, Ringnecked Duck and Surf Scoter. The status of Barrow’s Goldeneye, designated as a Species of Special Concern by SARA in 2000, is unclear, but breeding has not been confirmed in the watershed. All these species are typically associated with relatively deep open water, although many nest among vegetation in relatively shallow wetlands. Most of these species stage in spring along open parts of the lower Churchill River prior to dispersing to breeding sites.

Songbirds in the watershed include members of the flycatcher, corvid, thrush, warbler, finch and sparrow families. Collectively, they occupy the full range of terrestrial habitat from riparian areas to burns to mature forest. Species of special status include Rusty Blackbird (Species of Special Concern according to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)), Olive-sided Flycatcher (Threatened according to COSEWIC) and Grey-cheeked Thrush (Vulnerable according to the Newfoundland and Labrador *Endangered Species Act (NLESA)*). While not considered a songbird, Common Nighthawk (threatened according to COSEWIC) also breeds in this watershed.

Upland game birds occupy a wide variety of habitats throughout Labrador - Spruce Grouse, Ruffed Grouse, Willow Ptarmigan and Rock Ptarmigan. All these species are hunted by residents who often collectively refer to them as partridge.

**3.2.1.2 Fish and Fish Habitat**

Twenty-two fish species use freshwater habitat in the Lake Melville area for at least a portion of their life history. In general, total standing stock and productivity are low and typical of northern watersheds, reflecting low nutrient input, as well as the key limiting conditions imposed (on stream systems in particular) by winter freezing temperatures and reduced surface flow. See Table 1, Section 1 for likely fish assemblage in the area of the proposed road.

**Table 1:** Summary of fish species captured/sampled in lower Churchill River, Goose Bay Estuary and western Lake Melville since 1998

River Section (going west)	Species Captured
Lake Melville	American Plaice, Arctic Cod, Arctic Staghorn Sculpin, Atlantic Poacher, Tomcod, Capelin, Greenland Cod, Rainbow Smelt, Snakeblenny, Thorny Skate, Threespine, Stickleback, White Flounder, Brook Trout

Goose Bay Estuary	Longnose Sucker, American Plaice, Sand Lance, Arctic Cod, Atlantic Poacher, Tomcod, Longnose Dace, Lake Chub, Lake Whitefish, Dwarf lake Whitefish, Round Whitefish, Greenland Cod, Rainbow Smelt, Rock Cod, Snakeblenny, Threespine Stickleback, White Flounder, Brook Trout
<b>Section #1 (Goose Bay to Muskrat Falls)</b>	<b>Longnose Sucker, White Sucker, Brook Trout, Lake Whitefish, Dwarf Lake Whitefish, Northern Pike, Lake Chub, Lake Trout, Burbot, Ouananiche/Atlantic Salmon, Three Spine Stickleback, Sculpin</b>
Section #2 (Muskrat Falls reservoir – Muskrat Falls to Gull Island Rapids)	Longnose Sucker, White Sucker, Brook Trout, Lake Whitefish, Round Whitefish, Northern Pike, Longnose Dace, Lake Chub, Burbot, Ouananiche
Section #3 (Gull Island Rapids to Winokapau Lake)	Longnose Sucker, Longnose Dace, White Sucker, Brook Trout, Ouananiche, Lake Trout, Northern Pike, Lake Whitefish, Lake Chub, Round Whitefish, Burbot, Mottled Sculpin, Slimy Sculpin, Three Spine Stickleback
Section #4 (Winokapau Lake)	Longnose Sucker, White Sucker, Brook Trout, Ouananiche, Lake Whitefish, Lake Chub, Dwarf Lake Whitefish, Round Whitefish, Lake Trout, Longnose Dace, Burbot
Section #5 (Winokapau Lake to Churchill Falls tailrace)	Longnose Sucker, Longnose Dace, White Sucker, Brook Trout, Ouananiche, Lake Whitefish, Round Whitefish

### 3.3 Construction

Project construction will include the construction of the access road extension, potential development of borrow pits and the installation of culverts and bridges, where necessary. Nalcor will ensure compliance with the existing Project-Wide Environmental Protection Plan (Components 1 and 4b) previously reviewed by all applicable regulatory agencies. In addition, Nalcor will require all contractors to provide a contractor-specific Environmental Protection Plan for each aspect of construction. Outlined in these plans will be the mitigation measures to be implemented and regulatory guidance to be followed to minimize environmental effects. Nalcor will obtain Letters of Advice from DFO under the *Fisheries Act*, and complete the Minor Waters Assessment under the *Navigable Waters Protection Act*, as required. Nalcor will conduct the required level of assessment to determine historic resources potential in consultation with the Provincial Archaeology Office.

Vertical grades on the road shall not exceed six per cent and all vertical and sag curves shall meet a RLU70 design standard, (Rural Local Undivided with a design speed of 70 km/hr), as defined in the Transportation Association of Canada, (TAC), “Geometric Design Guide for Canadian Roads”.

All culverts will be designed as per specifications stipulated in regulatory approvals for the installation of these structures. Culvert installations will adhere to construction and mitigation guidance provided by DFO to ensure minimal disturbance to fish and fish habitat. The stream crossing methods chosen during the detailed design and construction phases will be based on stream surveys previously conducted.

Fording and temporary crossing structures may be used during construction in the short term. Nalcor will follow DFO guidance to minimize impacts and ford at optimal locations identified during the stream survey program. Mitigation measures will reduce erosion and entry of silt into water bodies.

Where possible, borrow material will be sourced from previously approved locations. In the case where new sites are required, permits will be acquired from the Department of Natural resources and 100 m buffers from water bodies will be maintained.

### 3.4 Operation

Operation will include access to the Muskrat Falls construction site and permanent access to the hydroelectric facility following construction. The installations on the road will be inspected periodically to ensure proper drainage.

### 3.5 Decommissioning

The road will provide permanent access to the site and therefore not be decommissioned. All laydown areas and quarry sites will be rehabilitated as per the project's rehabilitation plan to be submitted to the Government of Newfoundland and Labrador for approval.

### 3.6 Occupations

**Table 2:** Summary of Occupations for Road Construction

Occupation	No. of Personnel
Project Manager	1
Technicians	5
Foreperson	1
Surveyor	2
Labourer	3
Operators	5
Environmental Monitor	1
Safety Coordinator	1

## 4.0 Project Related Documents

The Lower Churchill Hydroelectric Generation Project has undergone a Provincial/Federal Joint Review Panel Environmental Assessment. The extensive documentation associated with this process can be found at the following link:

<http://nalcorenergy.com/lower-churchill-project-environmental-assessment.asp>



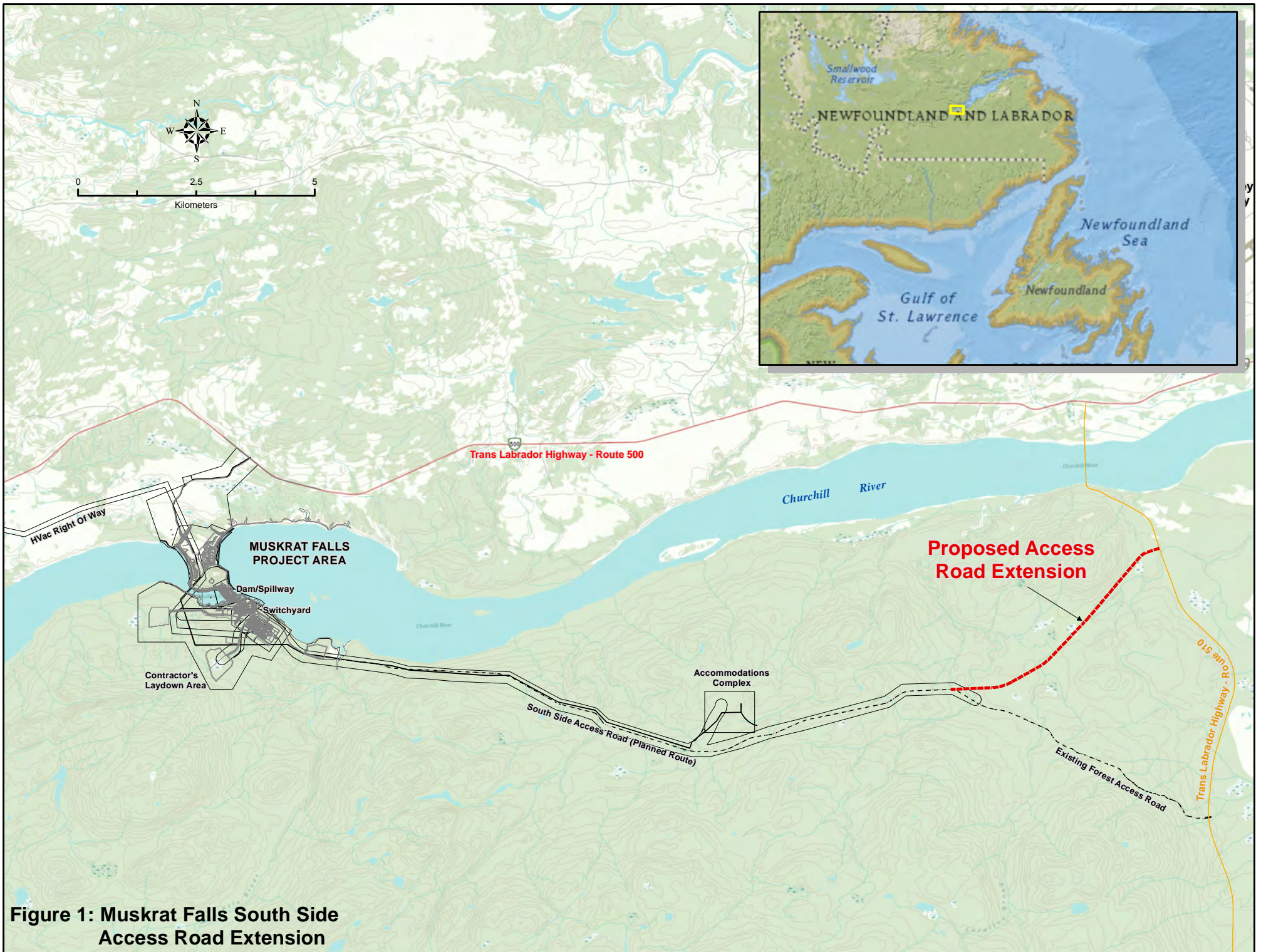
## 5.0 Approval of the Undertaking

A list of permits/authorizations, approvals and letters of advice that may be required is in Appendix A.

## 6.0 Schedule

The road is scheduled to commence construction at the time of approval and will continue for approximately six weeks.

Registration	February 19 <sup>th</sup> , 2013
Government Review and Decision	April 5 <sup>th</sup> , 2013
Road Construction	April 15 <sup>th</sup> , 2013
Road Completion	June 15 <sup>th</sup> , 2013



**Figure 1: Muskrat Falls South Side Access Road Extension**

## Appendix A

### List of Permits, Licenses and Approvals Required

Approval	Activity	Legislation	Agency
<b>Government of Canada</b>			
Letters of Advice	Fording and construction of watercourse crossings	<i>Fisheries Act, Section 35(2)</i>	Fisheries and Oceans Canada
Permit For Construction within Navigable Waters	Construction of watercourse crossings	<i>Navigable Waters Protection Act and Regulations</i>	Transport Canada
<b>Government of Newfoundland and Labrador</b>			
Environmental Assessment Project Registration	Construction of access road	<i>Environmental Protection Act</i>	Environmental Assessment Division, Environment and Conservation
Alteration of a Body of Water	Any road construction activities in or within 15m of a watercourse	<i>Water Resources Act</i>	Water Resources Management Division, Environment and Conservation
Water Use Authorization	Dust suppression	<i>Water Resources Act</i>	Water Resources Management Division, Environment and Conservation
Commercial Cutting/Operating Permit	Vegetation removal	<i>Forestry Act, Fire Prevention Act, and Fire Prevention Regulations</i>	Forestry Services Branch, Department of Natural Resources
Quarry Permit	Road construction materials	<i>Quarry Materials Act and Regulations</i>	Mineral Lands Division, Department of Natural Resources
Highway Access Permit	Access from the Trans-Labrador Highway	<i>Urban and Rural Planning Act, 2000, Protected Road Zoning Regulations , and Works, Services and Transportation Act</i>	Transportation and Works