

**Information Request Number: JRP.8**  
**Aquatic Vegetation**

**Requesting Organization – Joint Review Panel**

**Information Request No.: JRP.8**

**Subject - Aquatic Vegetation**

**References:**

EIS Guidelines, Section 4.4.4.2 (Description of the Existing Environment – Aquatic Environment)

EIS, Volume IIA, Section 2.3.3.1 (Existing Environment – Aquatic Environment)

AMEC Earth & Environmental Ltd. 2008. Lower Churchill Hydroelectric Generation Project Aquatic Vegetation Studies. Prepared for Newfoundland and Labrador Hydro, St. John's, NL. ii + 25 pp. + Appendices.

**Rationale:**

In its Aquatic Vegetation Survey, AMEC (2008) indicates that it has inventoried a number of aquatic plant species along the Churchill River that could be considered rare or potentially rare according to rankings by the Atlantic Canada Conservation Data Centre (ACCDC).

While none of the species inventoried is listed as Endangered or Threatened under Newfoundland and Labrador's *Endangered Species Act*, Canada's *Species at Risk Act* or by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), the EIS makes no reference in Section 2.3.3.1 to aquatic plant species given a rare or potentially rare ranking by the ACCDC, nor is a discussion provided on the effects of the Project on the status and integrity of these species.

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**Information Request:**

In order for the Panel to assess the effects of the Project on rare or potentially rare aquatic plants, the Proponent should confirm the presence and status of rare or potentially rare aquatic plant species identified by AMEC (2008) in the Lower Churchill, and provide an evaluation of the effects of the Project on the status and integrity of these species.

**Response:**

**1. Status of Species Identified by AMEC (2008)**

Species at risk listings are maintained by the Federal Government under the *Species at Risk Act* (SARA) and by the provincial government under the *Newfoundland and Labrador Endangered Species Act* (NLESA). Species listed as endangered or threatened under SARA and species listed as endangered, threatened or vulnerable under NLESA are subject to protection under each respective Act. The Atlantic Canada Conservation Data Centre (ACDC) also maintains a listing of species which it considers to be potentially rare, although it carries no regulatory authority.

No species found during the 2006 aquatic vegetation surveys in the lower Churchill River are listed under SARA or listed under the NLESA or have been designated as in danger of disappearing in Canada by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

**Species at Risk Act (SARA)**

The vascular plant species listed under Schedule 1 of SARA that have a range within Newfoundland and Labrador has not changed since 2007 (Table 1).

**Newfoundland and Labrador Endangered Species Act (NLESA)**

Two plant species were added to those species already listed in 2007: Crowded Wormseed Mustard (*Erysimum inconspicuum var. coarctatum*, Endangered), and Mountain Fern (*Thelypteris quelpaertensis*, Vulnerable) (Amendment 9/08 under the *Endangered Species List Regulations*, 2008). Both are only known to occur in Newfoundland and neither is an aquatic plant.

**Table 1 Floral Species at Risk in Newfoundland and Labrador (SARA<sup>1</sup>, COSEWIC<sup>2</sup>, NLESA<sup>3</sup>)\***

Scientific Name	Common Name	NLESA	SARA, Schedule 1	COSEWIC	Found during 2006 Aquatic Vegetation Survey?
<b>Vascular Plants</b>					
<i>Astragalus robbinsii var. fernaldii</i>	Fernald's Milk-vetch	Vulnerable	Special Concern	Special Concern	No
<i>Braya fernaldii</i>	Fernald's Braya	Threatened	Threatened	Threatened	No
<i>Braya longii</i>	Long's Braya	Endangered	Endangered	Endangered	No
<i>Erysimum inconspicuum var. coarctatum</i>	Crowded Wormseed Mustard	Endangered (New)	--	--	No
<i>Neotorularia humilis</i>	Low Northern Rockcross	Endangered	--	--	No

Scientific Name	Common Name	NLESA	SARA, Schedule 1	COSEWIC	Found during 2006 Aquatic Vegetation Survey?
<i>Polystichum scopulinum</i>	Mountain Holly Fern	--	Threatened	Threatened	No
<i>Thelypteris quelpaertensis</i>	Mountain Fern	Vulnerable (New)	--	--	No
<i>Salix jejuna</i>	Barren Willow	Endangered	Endangered	Endangered	No
<b>Non-Vascular Plants</b>					
<i>Erioderma pedicellatum</i>	Boreal Felt Lichen	Vulnerable	Special concern	Special Concern	No
<i>Mielichhoferia macrocarpa</i>	Porsild's Bryum	Threatened	--	Threatened	No

\* Data current as of May 11, 2009.

<sup>1</sup>Species at Risk Act

<sup>2</sup>Committee on the Status of Endangered Wildlife in Canada

<sup>3</sup>Newfoundland and Labrador Endangered Species Act

### **Atlantic Canada Conservation Data Centre**

The Atlantic Canada Conservation Data Centre (ACCDC) is a non-profit, registered charitable organization that assembles and provides information about species and ecological communities within Atlantic Canada. Data used to rank species by ACCDC is based on reported and confirmed occurrences of each species. Provincial and federal regulators may use the ACCDC data as a guidance tool to prioritize species for listing consideration under appropriate legislation (i.e. NLESA or SARA; however, it has no regulatory authority of its own).

Table 2 indicates the ACCDC ranking for each of the 83 species identified in the 2006 aquatic vegetation survey (AMEC, 2008). Numerous plants recorded during the 2006 survey have been ranked S1, S2 or S3 by ACCDC. Plants ranked S1, S2 or S3, or combinations thereof, are considered to be of conservation concern by ACCDC. Species ranked as S4 or S5 are relatively common within the province. Draft S ranks are the proposed ranks for species that have yet to be approved (A. Durocher, Newfoundland ACCDC, personal communication, 2009). These draft ranks will be adopted when the ACCDC list is updated in 2010 (ibidem).

The ACCDC ranking of species in Labrador is very much a work in progress. Labrador's vegetation is understudied and since ACCDC rankings depend on the reported and confirmed occurrences, many species newly recorded in Labrador will be initially ranked in one of the categories indicating conservation concern (S1, S2, S3 or combinations thereof eg. S1S2), until sufficient records exist. Continuing efforts at plant surveys in conjunction with various infrastructure projects contribute to the knowledge on vegetation species, abundance and distribution. Therefore, it can be expected that a number of species currently listed as "of conservation concern" by ACCDC will be removed from these categories.

## **2. Effect of the Project on Rare or Potentially Rare Aquatic Plants Species**

In order to assess the potential effect the Project may have on the status and integrity of the species considered rare or potentially rare by ACCDC, results from recent plant surveys in Labrador and a literature review was undertaken to better understand the species distribution.

Species ranked as S4, S5 or S4S5 by ACCDC are considered to be well established throughout the province and not of conservation concern. The status and integrity of these species are unlikely to be adversely affected by the Project due to their common nature within the province (Table 2). In total 13 of the 83 species encountered during the AMEC 2008 aquatic vegetation survey were either ranked S4, S5 or S4S5. Therefore these species are not assessed further.

**Table 2 Atlantic Canada Conservation Data Centre ranking of Species Identified in the Aquatic Vegetation Survey (AMEC 2008)**

Scientific Name	Common Name	ACCDC S-Rank <sup>1</sup>
<b>Submergent</b>		
<i>Potamogeton sp.</i>	A Pondweed	S? <sup>3</sup>
<i>Potamogeton alpinus</i>	Alpine Pondweed	S3S4
<i>Potamogeton alpinus ssp. tenuifolius</i>	Alpine Pondweed	Included in <i>P. alpinus</i> <sup>3</sup>
<i>Potamogeton epihydrus</i>	Ribbonleaf Pondweed	S?
<i>Potamogeton gramineus</i>	Variableleaf Pondweed	S?
<i>Potamogeton pusillus ssp. pusillus</i>	Slender Pondweed	SRF
<i>Potamogeton richardsonii</i>	Richardson's Pondweed	SH
<i>Sparganium sp.</i>	A Burreed	S? <sup>3</sup>
<i>Sparganium cf. americanum</i>	American Burreed	S? <sup>3</sup>
<i>Sparganium cf. emersum</i>	Unbranched Burreed	SU
<i>Sparganium cf. emersum ssp. emersum</i>	Green-fruited Burreed	S? <sup>3</sup>
<i>Sparganium cf. emersum ssp. acaule</i>	Stemless Burreed	Included in <i>S. emersum</i> <sup>3</sup>
<i>Callitriche verna</i>	Vernal Waterstarwort	S?
<i>Eleocharis acicularis</i>	Least Spikerush	S?
<i>Hippuris vulgaris</i>	Common Mare's Tail	(S4S5)
<i>Myriophyllum sp.</i>	Water Milfoil	
<i>Myriophyllum cf. alterniflorum</i>	Alternate-flowered Water Milfoil	(SR)
<i>Ranunculus flammula var. reptans</i>	Greater Creeping Spearwort	(S5)
<i>R. aquatilis var. diffusus (=R. trichophyllus)</i>	White Water-crowfoot	S?
<i>Subularia aquatica</i>	Water Awlwort	(S3S5)
<i>Utricularia vulgaris= U. macrorhiza</i>	Common Bladderwort	S?
<i>Utricularia intermedia</i>	Flatleaf Bladderwort	S3S5
<i>Utricularia cf. minor</i>	Small Bladderwort	S?
Large Green Algae (e.g. <i>Chara sp.</i> , <i>Nitella sp.</i> )		S? <sup>3</sup>
Filamentous 'algae'		S? <sup>3</sup>
Moss		S? <sup>3</sup>
<b>Floating-Leafed</b>		
<i>Sagittaria cuneata</i>	Wapato, Arrowhead	SU
<b>Emergent</b>		
<i>Calamagrostis canadensis</i>	Blue Joint	(S? var. <i>langsдорffii</i> ; S3S5 var. <i>Canadensis</i> )
<i>Calamagrostis neglecta</i>	Bentgrass	Included in <i>C. stricta</i> <sup>3</sup>
<i>Calamagrostis stricta</i>	Slim-Stem Bog (Northern) Reedgrass	(S? - all three subspecies)
<i>Carex sp.</i>	A Sedge	S? <sup>3</sup>
<i>Carex crawfordii</i>	Crawford's Sedge	(S1S2S)
<i>Carex nigra</i>	Black Sedge	(S3S5)
<i>Carex projecta</i>	Necklace Sedge	(S1S2)
<i>Carex rostrata</i>	Beaked Sedge	(S3S5)
<i>Carex stipata</i>	Stalk-grain Sedge, Awl-fruit S.	(S2S3)
<i>Carex cf. tenera</i>	Slender Sedge	S? <sup>3</sup>

**Table 2 Atlantic Canada Conservation Data Centre ranking of Species Identified in the Aquatic Vegetation Survey (AMEC 2008) cont.**

Scientific Name	Common Name	ACCDC S-Rank <sup>1</sup>
<i>Scientific Name</i>	Common Name	ACCDC S-Rank1
<i>Carex utriculata</i>	Bottle Sedge	S?
<i>Carex vesicaria</i>	Inflated Sedge	(S3S5)
<i>Equisetum fluviatile*</i>	Water-horsetail	S1S3
<i>Equisetum cf. litorale</i>	Shore Horsetail	S?
<i>Equisetum cf. palustre</i>	Marsh Horsetail	S1
<i>Juncus sp.</i>	A Rush	S? <sup>3</sup>
<i>Juncus cf. arcticus</i>	Baltic Rush	(S3S4 var. balticus; SU var. alaskanus)
<i>Juncus brevicaudatus*</i>	Narrow-panicled Rush	S3
<i>Juncus effusus</i>	Soft Rush	-
<i>Juncus filiformis</i>	Thread Rush	S4S5
<i>Glyceria borealis</i>	Northern Manna-grass	S?
<i>Scirpus sp.</i>	A Bulrush	S? <sup>3</sup>
<i>Scirpus atrocinctus</i>	Black-Girdle Bulrush	S?
<i>Scirpus microcarpus*</i>	Red-tinge Bulrush	(S2S3)
<i>Trichophorum cespitosum</i>	Tufted Clubrush	(S3S5)
<b>Shoreline and High Shore</b>		
<i>Iris sp.</i>		S? <sup>3</sup>
<i>Iris setosa</i>	Beach-head Iris	S4
<i>Agrostis scabra</i>	Twin Bent Grass	(S2S3 var. geminata; S3S5 var. scabra)
<i>Cicuta bulbifera</i>	Bulbous Water-hemlock	S?
<i>Galium sp.</i>	A Bedstraw	S? <sup>3</sup>
<i>Galium labradoricum</i>	Bog Bedstraw	S?
<i>Galium trifidum</i>	Three-petaled Bedstraw, Dyer's Cleavers	S?
<i>Galium triflorum*</i>	Sweet-scent Bedstraw	(S2S3)
<i>Lycopus uniflorus</i>	Bugleweed, horehound	(S3S5)
<i>Lysimachia terrestris</i>	Yellow Loosestrife, Swamp Loosestrife, Swamp Candles	(S1)
<i>Ranunculus pensylvanicus</i>	Bristly Crowfoot	(S1)
<i>Salix sp.</i>	A Willow	S? <sup>3</sup>
<i>Salix bebbiana</i>	Bebb's Willow	S?
<i>Salix lucida</i>	Shining Willow	(S? ssp. Lucida)
<i>Sanguisorba canadensis</i>	Canada Burnett	(S3S5 ssp. canadensis)
<i>Riccia sp., a liverwort</i>		S? <sup>3</sup>
<i>Viola sp.</i>	A Violet	S? <sup>3</sup>
<i>Achillea millefolium var. lanulosum</i>	Yarrow	(S3S5 var. lanulosa; SE var. millefolium)
<i>Alnus incana subsp. rugosa</i>	Speckled Alder	(S3S5)
<i>Artemisia canadensis (syn. A. campestre)</i>	Field Wormwood	(S? ssp. borealis; S3S5 ssp. canadensis)
<i>Astragalus alpinus</i>	Alpine Milkvetch	(S3S5)
<i>Cornus sericea</i>	Red Osier Dogwood	S3S5
<i>Chamerion latifolium</i>	River Beauty	(S4)

**Table 2 Atlantic Canada Conservation Data Centre ranking of Species Identified in the Aquatic Vegetation Survey (AMEC 2008) cont.**

Scientific Name	Common Name	ACCDC S-Rank <sup>1</sup>
<i>Equisetum arvense</i>	Field Horsetail	S4S5
<i>Myrica gale</i>	Sweet Gale	(S4S5)
<i>Onoclea sensibilis*</i>	Sensitive Fern	S2S3
<i>Phleum pratense</i>	Timothy	S?
<i>Symphyotrichum novi-belgii</i>	New York Aster	(S3S5 var. novi-belgii)
<i>Thalictrum pubescens</i>	Tall Meadow-Rue	(S? var. pubescens)
<i>Athyrium filix-femina</i>	Lady Fern	S3S5
<i>Veronica scutellata*</i>	Marsh Speedwell	(S2S3)

<sup>1</sup> Draft ACCDC ranks are in brackets. These will become adopted when the list is updated un 2010.

<sup>2</sup> These species are synonyms of other species and have been combined.

<sup>3</sup> No ranking provided by ACCDC, assumed to be S?

\* Species will be removed from rare status with next update (C. Hanel, NLDEC, personal communication, July 03, 2007)

Grey shading: potentially new Records for Labrador

Definitions of Provincial (subnational) ranks – SRANKS (ACCDC, 2009)

- S1** Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.
- S2** Rare throughout its range in the province (6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.
- S3** Uncommon throughout its range in the province, or found only in a restricted range, even if abundant in at some locations. (21 to 100 occurrences).
- S4** Usually widespread, fairly common throughout its range in the province, and apparently secure with many occurrences, but the Element is of long-term concern (e.g. watch list). (100+ occurrences).
- S5** Demonstrably widespread, abundant, and secure throughout its range in the province, and essentially ineradicable under present conditions.
- S#S#** Numeric range rank: A range between two consecutive numeric ranks. Denotes range of uncertainty about the exact rarity of the Element (e.g., S1S2).
- SH** Historical: Element occurred historically throughout its range in the province (with expectation that it may be rediscovered), perhaps having not been verified in the past 20 - 70 years (depending on the species), and suspected to be still extant.
- SU** Unrankable: Possibly in peril throughout its range in the province, but status uncertain; need more information.
- S?** Unranked: Element is not yet ranked.
- SR** Reported: Element reported in the province but without persuasive documentation which would provide a basis for either accepting or rejecting (e.g., misidentified specimen) the report.
- SRF** Reported falsely: Element erroneously reported in the province and the error has persisted in the literature.
- ?** Inexact or uncertain: for numeric ranks, denotes inexactness, e.g., SE? denotes uncertainty of exotic status. (The “?” qualifies the character immediately preceding it in the SRANK).

Note: ACCDC has not assigned ranks to non-vascular plants yet, such as *Riccia sp.*, or green algae.

To better understand the relative distribution of species ranked as S1, S2, S3 or ranking combinations that included these classes by ACCDC, a literature review was conducted to better understand the species presence elsewhere in Labrador.

Of the remaining 56 vascular plant species, 40 have been identified as present within surveys outside the proposed reservoir area in other recent plant surveys in Labrador (see AMEC 2000; AMEC 2005; Minaskuat 2008). Table 3 presents a summary of the locations of additional records. Many of the species were found at numerous locations and an adverse effect on their status and integrity is not likely due to the extended distribution beyond the proposed reservoir area.

Of the remaining 16 species, three are synonymous with species found during the AMEC 2000, AMEC 2005 and Minaskuat 2008 plant surveys. A literature review of the remaining 13 species was undertaken to determine if the species distribution extends beyond the proposed reservoir area. A brief description of the distribution of each species and an assessment of the effect of the Project on the species is outlined below.

**Artemisia canadensis**

*Artemisia campestris* a synonym of *A. canadensis* has been indicated by Meades et al. (2000) to be distributed throughout Labrador and western, northwestern and central Newfoundland. Distribution indicates that this species is widespread and adverse effects on status and integrity of the species due to Project activities are unlikely.

**Table 3 Species Encountered during Vegetation Surveys in Labrador**

Species	TLH II – Red bay to Cartwright <sup>1</sup>	TLH III – Cartwright to Goose Bay <sup>2</sup>	Lower Churchill River Basin <sup>3</sup>	Goose River <sup>3</sup>
<i>Achillea millefolium</i> var. <i>lanulosum</i>		X	X	X
<i>Agrostis scabra</i>			X	X
<i>Alnus incana</i> subsp. <i>rugosa</i>	X	X	X	X
<i>Astragalus alpinus</i>			X	
<i>Athyrium filix-femina</i>	X		X	X
<i>Calamagrostis canadensis</i>	X	X	X	X
<i>Calamagrostis stricta</i>			X	X
<i>Callatriche verna</i>				X
<i>Carex crawfordii</i>			X	
<i>Carex nigra</i>			X	X
<i>Carex projecta</i>			X	X
<i>Carex rostrata</i>	X		X	X
<i>Carex stipata</i>	X		X	X
<i>Carex utriculata</i>			X	X
<i>Carex vesicaria</i>			X	X
<i>Chamerion latifolium</i>		X	X	X
<i>Cicuta bulbifera</i>	X			X
<i>Cornus sericea</i>	X	X	X	X
<i>Eleocharis acicularis</i>			X	X
<i>Equisetum arvense</i>			X	X
<i>Equisetum fluviatile</i>		X	X	X
<i>Equisetum litorale</i>				X
<i>Equisetum palustre</i>			X	X
<i>Galium labradoricum</i>	X			X
<i>Galium trifidum</i>		X	X	X
<i>Galium triflorum</i>		X	X	X
<i>Glyceria borealis</i>			X	X
<i>Hippuris vulgaris</i>			X	
<i>Iris setosa</i>	X			
<i>Juncus arcticus</i>	X			X
<i>Juncus brevicaudatus</i>		X	X	X
<i>Juncus filiformis</i>		X	X	X
<i>Lycopus uniflorus</i>	X		X	X
<i>Lysimachia terrestris</i>		X	X	X
<i>Myrica gale</i>	X	X	X	X
<i>Onoclea sensibilis</i>		X		
<i>Potamogeton epihydrus</i>			X	X



**Table 3 Species Encountered during Vegetation Surveys in Labrador** cont.

Species	TLH II – Red bay to Cartwright <sup>1</sup>	TLH III – Cartwright to Goose Bay <sup>2</sup>	Lower Churchill River Basin <sup>3</sup>	Goose River <sup>3</sup>
<i>Potamogeton gramineus</i>	X		X	X
<i>Ranunculus flammula var. reptans</i>			X	X
<i>Ranunculus pensylvanicus</i>				X
<i>Salix bebbiana</i>		X	X	X
<i>Salix lucida</i>		X	X	X
<i>Sanguisorba canadensis</i>			X	X
<i>Scirpus atrocinctus</i>		X	X	X
<i>Scirpus microcarpus</i>		X	X	X
<i>Sparganium emersum</i>		X	X	X
<i>Symphiotrichum novi-belgii</i>			X	X
<i>Thalictrum pubescens</i>		X	X	X
<i>Trichophorum cespitosum</i>	X		X	X
<i>Utricularia minor</i>			X	
<i>Utricularia intermedia</i>			X	X
<i>Utricularia vulgaris</i>			X	
<i>Veronica scutellata</i>			X	X

<sup>1</sup> Rare plant assessment conducted by AMEC prior to the construction of the Trans Labrador Highway Phase II

<sup>2</sup> Rare plant assessment conducted by AMEC prior to the construction of the Trans Labrador Highway Phase III

<sup>3</sup> Rare plant assessment conducted by Minaskuat (2008) within the Lower Churchill River Valley

### ***Carex cf. tenera***

The species has a distribution in Canada extending through Quebec, the Maritime Provinces, and westward to British Columbia. However, the specimen found during the 2006 aquatic vegetation surveys is likely a new record for Labrador, since it is not ranked by ACCDC, there is no record in Meades et al. (2009) and the species is not shown to be distributed within the province (USDA 2009). The Project may affect the status and integrity of this species within Labrador as no other records are known, however it is unlikely to affect its species status and integrity in Canada.

### ***Juncus effusus***

The species is reported by Rousseau (1974) along the western portion of the Quebec North Shore, along the Gaspé Peninsula, and elsewhere in southwestern Quebec. Meades et al. (2000) indicate that the species is also located throughout Newfoundland. However, the specimen found during the 2006 aquatic vegetation surveys is likely a new record for Labrador, since this species is not ranked by ACCDC and there is no record in Meades et al. (2009). The Project may affect the status and integrity of this species within Labrador as no other records are known, however it is unlikely to affect its species status and integrity in Canada.

### ***Myriophyllum cf. alternifolium***

Rousseau (1974) has indicated that the species is distributed in numerous places in Labrador and Quebec. In particular, records were indicated for the species at the mouth of the Churchill River; western Labrador (Schefferville area); Quebec North Shore; Gaspé Peninsula; and a number of additional locations within central and western Quebec. Meades et al. (2000) report the species throughout western, northwestern, central and eastern Newfoundland and indicate the species has been reported within Labrador but requires confirmation. Observations of this species in Labrador outside of the proposed reservoir area of the Project have been recently confirmed (M. Sensen, AMEC, pers. comm., 2009). The distribution indicates that this species is widespread, though frequency may be low. Adverse effects on the status and integrity of this species in Labrador or in Canada are unlikely.

***Phleum pratense***

The species is widespread with a distribution that stretches from Newfoundland and Labrador across to the west coast of Canada (USDA 2009). Furthermore the USDA (2009) indicates that the species is distributed throughout the continental United States and northward into Alaska, Greenland and the Yukon and Northwest Territories. In addition, Day (1999) indicates that the species is found near the mouth of the Churchill River. The species is also noted to be an introduced species of European descent which occurs throughout the island portion of the province and extends north to central Labrador (Meades et al. 2000). Adverse effects on status and integrity of the species are not likely.

***Potamogeton alpinus***

The Flora of North America indicates that the species *Potamogeton alpinus* has a distribution throughout central Labrador from the western portion of Lake Melville, westward to the Quebec-Labrador border and northward to Ungava Bay (Flora of North America 2009). In addition, the species is also distributed in western, southern and throughout the Avalon Peninsula of the island portion of the province. Overall, the species range extends from the southwest tip of Greenland, across Canada, into the northwestern United States and northward into Alaska. In addition, Day (1999) indicated a record of the species from northern Labrador in the vicinity of Ramah Bay. Meades et al. (2000) describe a distribution North to northern Labrador. Adverse effects on the status and integrity of this species due to Project activities are unlikely.

***Potamogeton pusillus ssp pusillus***

Meades et al. (2000) do not indicate records for this subspecies in Labrador nor in Newfoundland, and there is no ACCDC ranking. However, the author is aware of a recent observation of this sub species outside of the potential flood zone of the Project. Therefore, the Project may have an adverse effect on the status and integrity of this subspecies within Labrador, but not across Canada. The subspecies does occur elsewhere in Canada, and south to Florida (Hinds 2000).

***Potamogeton richardsonii***

The species *Potamogeton richardsonii* was shown by the USDA PLANTS Database to have a distribution throughout both the mainland (Labrador) and island (Newfoundland) portion of the province (USDA 2009). Furthermore the distribution extends across Canada and throughout the northern United States (USDA 2009). In addition, Day (1999) has indicated the presence of the species near the mouth of the Churchill River. Meades et al. (2000) indicate a distribution in Labrador north to central Labrador. The species appears to be widespread, though the number of individuals and/or populations may be small. Adverse effects on the status and integrity of this species in Labrador or in Canada are unlikely.

***Ranunculus aquatilis var diffusus***

*Ranunculus trichophyllum* a synonym of *R. aquatilis var diffusus* is indicated by Meades et al. (2000) to be distributed throughout the mainland and island portion of the province. Furthermore Day (1999) indicated that there were specimens recorded from an area near the mouth of the Churchill River, Seven Islands Bay and near the northern tip of Labrador. Observations of this species in Labrador outside of the proposed reservoir area of the Project have been recently confirmed (M. Sensen, AMEC, pers. comm., 2009). The distribution and observed distribution indicate that this species is widespread. Adverse effects on the status and integrity of this species due to Project activities are unlikely.

***Sagittaria cuneata***

*Sagittaria cuneata* has been shown to be distributed throughout Labrador (USDA 2009). In addition, Rousseau (1974) has indicated the presence of the species within the Gaspé peninsula, along the Quebec North Shore, and along the Quebec-New Brunswick and Quebec-Ontario borders. The species has a distribution north to central Labrador (Meades et al. 2000). Also, the author is aware of one recent confirmed observation of this species in Labrador outside of the reservoir area of the Project. The species appears to be widespread, though the frequency may be low. Adverse effects on the status and integrity of this species are unlikely.

***Sparganium cf. americanum***

The species is reported to have a distribution within temperate North America with a provincial distribution throughout all but northwestern Newfoundland (Meades et al. 2000). Meades et al. (2000) do not indicate records for Labrador. The Project may affect the status and integrity of this species within Labrador, as no other records are known, however it is unlikely to affect its species status in Newfoundland or within Canada.

***Sparganium cf. emersum ssp. emersum***

The subspecies has a distribution across North America, and is considered to be fairly common (Hinds 2000). However, Meades et al. (2000) do not indicate records for this subspecies in Labrador nor Newfoundland unless the lack of records is due to consideration of plant systematics (as indicated by the fact that another subspecies is considered to be synonymous with the species (Meades et al. 2000)). The Project may affect the status and integrity of this species within Labrador, as no other records are known, however it is unlikely to affect its species status in Canada.

***Subularia aquatica***

*Subularia aquatica* has been shown to be distributed throughout the province (USDA 2009). Day (1999) has provided locations near the mouth of the Churchill River and Blanc Sablon-Forteau area where specimens were recorded. Rousseau (1974) has also indicated that the species is distributed in numerous places in Labrador and Quebec. In particular, records were indicated for the species at the mouth of the Churchill River; Blanc Sablon-Forteau area; Quebec North Shore; western Labrador (near Schefferville); near Ungava Bay; a number of areas along Hudson Bay; and a number of additional locations within central and western Quebec (Rousseau 1974). Meades et al. (2000) indicate that the species is distributed throughout western, central, southern and eastern Newfoundland and north to central Labrador with specific records indicated for Goose Bay and Indian Harbour. Adverse effects on status and integrity of the species due to Project activities are unlikely.

**3. Summary**

While none of the species inventoried are listed as endangered or threatened under Canada's *Species at Risk Act* or Newfoundland and Labrador's *Endangered Species Act*, there are a total of five species/subspecies recorded within the reservoir area that have previously not been recorded in Labrador. This may be due to a lack of surveying as stated previously; however, in order to further delineate their distribution and status Nalcor will conduct additional sampling in consultation with regulatory authorities before construction begins. Nalcor will develop plans to deal with the species in question if they are found to be in danger of extirpation because of the Project.

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