APPENDIX F

Determination of Potential Rare Plant Sites

APPENDIX F

The first step in conducting the rare vascular plant modeling exercise was to obtain a list of rare species for Labrador. A list of 183 uncommon to very rare vascular plant species was provided by the Atlantic Canada Conservation Data Centre (ACCDC) (Table F-1).

Table F-1: Uncommon and Rare Vascular Plants of Labrador

Binomial	Common Name	S-rank
Acer spicatum	Mountain Maple	S1
Actaea rubra ssp. rubra	Red Baneberry	S3S4
Agrostis scabra var. septentrionalis	Rough Bentgrass	S2S3
Agrostis stolonifera	Spreading Bentgrass	S2S4
Ammophila breviligulata	American Beachgrass	S1S2
Anemone parviflora	Small-Flower Anemone	S3S4
Anemone richardsonii	Yellow Anemone	S1
Angelica lucida	Angelica	S1S2
Arabis drummondii	Drummond Rockcress	S1S2
Arctostaphylos uva-ursi	Bearberry	S2S3
Arethusa bulbosa	Swamp-Pink	S1
Armeria maritima ssp. sibirica	Sea Pink	S3S4
Asplenium trichomanes-ramosum	Green Spleenwort	S1
Astragalus eucosmus	Pretty Milk-Vetch	S1S2
Astragalus robbinsii var. fernaldii	Robbins' Milkvetch	S1
Astragalus robbinsii var. minor	Robbins' Milk-Vetch	S1S2
Athyrium americanum	Alpine Lady Fern	S1
Botrychium lanceolatum var. lanceolatum	Lance-Leaved Moonwort	S1
Botrychium matricariifolium	Chamomile Grape-Fern	S1
Botrychium multifidum	Leathery Grape-Fern	S1
Botrychium virginianum	Rattlesnake Fern	S1
Braya glabella	Smooth Rockcress	S2S3
Cakile edentula var. edentula	American Sea-Rocket	S2S3
Caltha palustris	Marsh Marigold	S1
Campanula uniflora	Arctic Harebell	S2S3?
Cardamine pensylvanica	Pennsylvania Bitter-Cress	S2S3
Carex adelostoma	A Sedge	S1S2
Carex aurea	Golden-Fruited Sedge	S1S2
Carex bipartita	Arctic Hare's-Foot Sedge	S3?
Carex buxbaumii	Buxbaum's Sedge	S3?
Carex capitata	Capitate Sedge	S3?
Carex castanea	Chestnut-Colored Sedge	S1S2
Carex chordorrhiza	Creeping Sedge	S3?
Carex concinna	Beautiful Sedge	S1S2
Carex crawfordii	Crawford Sedge	S1S2
Carex diandra	Lesser Panicled Sedge	S1S2
Carex foenea	Dry-Spike Sedge	S2S3
Carex glacialis	Alpine Sedge	S2S3
Carex intumescens	Bladder Sedge	S1S2
Carex leptonervia	Finely-Nerved Sedge	S2S3
Carex mackenziei	Mackenzie Sedge	S2S3
Carex macloviana	Falkland Island Sedge	S3?
Carex maritima	Seaside Sedge	S1S2

Table F-1: Uncommon and Rare Vascular Plants of Labrador		
Binomial	**Common Name**	**S-rank**
Carex membranacea	A Sedge	S1S2
Carex michauxiana	Michaux Sedge	S1S2
Carex microglochin	False Uncinia Sedge	S1S2
Carex misandra	Short-Leaf Sedge	S3?
Carex nardina	Nard Sedge	S1S2
Carex paleacea	Chaffy Sedge	S2S3
Carex praticola	Northern Meadow Sedge	S3?
Carex projecta	Necklace Sedge	S1S2
Carex rupestris	Rock Sedge	S2S3
Carex salina	Salt-Marsh Sedge	S1S2
Carex silicea	Sea-Beach Sedge	S1S2
Carex stipata	Stalk-Grain Sedge	S2S3
Carex umbellata	Hidden Sedge	S1S2
Carex ursina	Bear Sedge	S1S2
Carex viridula ssp. viridula	A Sedge	S1S2
Carex williamsii	A Sedge	S1
Catabrosa aquatica	Brook Grass	S1S2
Chrysosplenium tetrandrum	Northern Golden-Carpet	S1
Circaea alpina ssp. alpina	Small Enchanter's Nightshade	S3S4?
Comandra umbellata ssp. umbellata	Umbellate Bastard Toad-Flax	S1
Corydalis sempervirens	Pale Corydalis	S3S4
Crepis nana	Dwarf Alpine Hawksbeard	S1S2
Cryptogramma stelleri	Fragile Rockbrake	S2S3
Cystopteris montana	Mountain Bladder Fern	S1S2
Descurainia incana	Richardson Tansy-Mustard	S1S2
Draba alpina	Alpine Whitlow-Grass	S1S2
Draba aurea	Golden Draba	S3?
Draba cana	Hoary Draba	S1
Draba crassifolia	Snowbed Whitlow-Grass	S2S3
Draba fladnizensis var. fladnizensis	White Arctic Whitlow-Grass	S2S3
Draba lactea	Milky Whitlow-Grass	S3?
Dryopteris campyloptera	Mountain Wood-Fern	S3?
Dryopteris fragrans	Fragrant Cliff Wood-Fern	S2S4
Equisetum fluviatile	Water Horsetail	S1S3
Equisetum palustre	Marsh Horsetail	S1
Equisetum pratense	Meadow Horsetail	S1
Equisetum scirpoides	Dwarf Scouring Rush	S1
Equisetum variegatum var. variegatum	Variegated Horsetail	S2?
Eriocaulon aquaticum	Seven-Angled Pipewort	S1S2
Eutrema edwardsii	Edward Eutrema	S1S2
Festuca altaica	Northern Rough Fescue	S1S2
Festuca brachyphylla ssp. brachyphylla	Short-Leaved Fescue	S2S4
Festuca saximontana	Rocky Mountain Fescue	S1
Festuca vivipara	Viviparous Fescue	S1S2
Galium triflorum	Sweet-Scent Bedstraw	S2S3
Gentianella amarella ssp. acuta	Northern Gentian	S2?
Gentianella propinqua ssp. propinqua	Four-Part Gentian	S1
Geum rivale	Purple Avens	S1S2
Halenia deflexa	Spurred Gentian	S2S3
Hedysarum alpinum	Apline Sweet-Vetch	S1S2
Hutchinsia procumbens	Prostrate Hymenolobus	S1S2

Table F-1: Uncommon and Rare Vascular Plants of Labrador		
Binomial	**Common Name**	**S-rank**
Iris versicolor	Blueflag	S2S3
Isoetes lacustris	Lake Quillwort	S1
Juncus balticus	Baltic Rush	S3
Juncus tenuis	Slender Rush	S1?
Juncus vaseyi	Vasey Rush	S1
Koenigia islandica	Island Koenigia	S2S3
Lathyrus japonicus	Beach Pea	S2S3
Lathyrus palustris	Vetchling Peavine	S1S2
Lesquerella arctica	Artic Bladderpod	S1S2
Limonium carolinianum	Sea-Lavender	S1
Limosella australis	Mudwort	S1
Lycopodiella inundata	Bog Clubmoss	S2S3
Lysimachia terrestris	Swamp Loosestrife	S1
Mentha canadensis	Canadian Mint	S2S3
Mitella nuda	Naked Bishop's-Cap	S2?
Monotropa uniflora	Indian-Pipe	S1S3?
Myriophyllum sibiricum	Common Water-Milfoil	S2S3
Myriophyllum tenellum	Slender Water-Milfoil	S1?
Nuphar lutea ssp. variegata	Yellow Cowlily	S3S4
Onoclea sensibilis	Sensitive Fern	S2S3?
Oryzopsis pungens	Slender Mountain-Ricegrass	S1S2
Osmunda claytoniana	Interrupted Fern	S2S4
Oxalis montana	White Wood-Sorrel	S1S3
Oxytropis campestris var. johannensis	St. John's Oxytrope	S1
Oxytropis podocarpa	Gray's Point-Vetch	S1S2
Parnassia kotzebuei	Kotzebue's Grass-of-Parnassus	S3S4
Pedicularis hirsuta	Hairy Lousewort	S2S4
Pentaphylloides floribunda	Shrubby Cinquefoil	S2S3
Phippsia algida	Ice Grass	S3?
Pinguicula villosa	Hairy Butterwort	S2S3
Pinus banksiana	Jack Pine	S1?
Platanthera obtusata	Small Northern Bog-Orchid	S3S4
Pleuropogon sabinei	Sabine-Grass	S1
Poa flexuosa	Wavy Bluegrass	S1
Polygonum buxiforme	Small's Knotweed	S1
Polygonum fowleri	Fowler Knotweed	S1
Polypodium virginianum	Rock Polypody	S2S3?
Polystichum braunii	Braun's Holly-Fern	S1
Populus balsamifera ssp. balsamifera	Balsam Poplar	S2S3
Populus tremuloides	Quaking Aspen	S2S3
Potamogeton confervoides	Algae-Like Pondweed	S1?
Potamogeton oakesianus	Oakes Pondweed	S1S3
Potamogeton obtusifolius	Blunt-Leaf Pondweed	S1?
Potamogeton praelongus	White-Stem Pondweed	S1
Potamogeton pusillus var. tenuissimus	Slender Pondweed	S1?
Potamogeton richardsonii	Redhead Grass	S1?
Potentilla nana	Arctic Cinquefoil	S2S3
Potentilla pulchella var. pulchella	Pretty Cinquefoil	S1S2
Primula egaliksensis	Greenland Primrose	S3S4
Primula laurentiana	Bird's-Eye Primrose	S3S4
Primula mistassinica	Bird's-Eye Primrose	S2

Table F-1: Uncommon and Rare Vascular Plants of Labrador		
Binomial	**Common Name**	**S-rank**
Prunus pensylvanica	Fire Cherry	S2S3
Pyrola chlorantha	Greenish-Flowered Wintergreen	S2S3
Ranunculus abortivus	Kidney-Leaved Buttercup	S2
Ranunculus allenii	Allen Buttercup	S2S3
Ranunculus hispidus var. caricetorum	Hispid Buttercup	S1
Ranunculus lapponicus	Lapland Buttercup	S2S3
Ranunculus nivalis	Snowy Buttercup	S2
Ranunculus pedatifidus var. affinis	Northern Buttercup	S2
Ranunculus pensylvanicus	Bristly Crowfoot	S1
Ranunculus pygmaeus	Dwarf Buttercup	S3
Ranunculus sulphureus	Sulphur Butter-Cup	S1S2?
Ribes lacustre	Bristly Black Currant	S2S3
Salix eriocephala	Heart-Leaved Willow	S1
Salix myricoides var. myricoides	Blue-Leaf Willow	S1
Sarracenia purpurea ssp. gibbosa	Northern Pitcher-Plant	S2S3
Saxifraga foliolosa	Leafy Saxifrage	S2S3
Saxifraga nivalis	Snow Saxifrage	S3
Saxifraga paniculata	White Mountain Saxifrage	S3S4
Saxifraga stellaris	Star Saxifrage	S1S2
Saxifraga tenuis	Ottertail Pass Saxifrage	S3
Saxifraga tricuspidata	Prickly Saxifrage	S1
Scheuchzeria palustris	Pod Grass	S3
Schizachne purpurascens	Purple Oat	S2S3
Scirpus microcarpus	Small-Fruit Bulrush	S2S3
Scutellaria galericulata	Hooded Skullcap	S2S3
Sparganium glomeratum	Northern Bur-Reed	S1?
Thalictrum alpinum	Alpine Meadow-Rue	S1
Tofieldia glutinosa	Sticky False-Asphodel	S1?
Urtica dioica ssp. gracilis	Stinging Nettle	S2?
Utricularia cornuta	Horned Bladderwort	S2S3
Valeriana dioica var. sylvatica	Wood Valerian	S1
Veronica scutellata	Marsh-Speedwell	S2S3
Viola blanda	Smooth White Violet	S1S3
Viola selkirkii	Great-Spurred Violet	S2S4
Woodsia alpina	Northern Woodsia	S1
Woodsia glabella	Smooth Woodsia	S3S4
Woodsia ilvensis	Rusty Woodsia	S3S4
Zostera marina	Sea-Wrack	S1S2
***Species Provincial S-Rank Brief Definitions**		
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 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 species 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 uncertainty about the exact rarity of the species (e.g., S1S2).		
? - 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).		

A two step process was undertaken to screen out species unlikely to be found in the vicinity of the highway. First, species distribution data for the identified uncommon or rare species were consulted to determine if the study area was outside of the known range. Range data were derived from Meades et al. (2000). Meades et al. (2000) divides Labrador into five regions: western, northern (north of the Churchill River Basin), central (Lake Melville/Churchill River Basin), southern (west and south of the Churchill River Basin, excluding the southeastern coastal area), and southeastern (southeastern corner of Labrador along the Strait of Belle Isle). The proposed highway is located within the central and southern regions, thus species not found in these regions were excluded from the ACCDC list. This process reduced the list of candidate species to 115.

The habitat preferences of the remaining 115 species were reviewed and compared to habitat data collected along the proposed highway route in order to determine if suitable habitat was present. The habitat preferences for these species were derived from a variety of sources, including Meades et al. (2000), Hinds (2000), Bouchard et al. (1991), Britton and Brown (1970), Hulten (1968), and Fernald (1950). Since habitat preferences of plant species can change with latitude, sources of habitat information derived from areas close to Labrador, were used preferentially over sources from more distant locations. Habitat preferences of the 115 uncommon and rare species are provided in Table F-2.

Table F-2: Habitat preferences of uncommon and rare vascular plants foundin south and central Labrador.

Species	Habitat	Source
Actaea rubra ssp. rubra	Woods and thickets	Fernald 1950
Agrostis scabra var. septentrionalis	Wet sands, peats and barrens	Fernald 1950
Agrostis stolonifera	Damp thickets, swales, shores, etc. and fields and roadsides	Fernald 1950
Anemone parviflora	In wet or dry calcareous soil (Fernald 1950); Meadows, heaths, stony slopes and snow beds (Hultén 1968)	Fernald 1950; Hultén 1968
Angelica lucida	Rocky and gravelly coast, subalpine meadows	Fernald 1950
Arabis drummondii	Basic or circumneutral ledges, gravels and thickets (Fernald 1950); Dry, rocky slopes (Hultén 1968)	Fernald 1950; Hultén 1968
Arctostaphylos uva-ursi	On exposed rocks and sands (Fernald 1950); Dry, sandy places (Hultén 1968)	Fernald 1950; Hultén 1968
Arethusa bulbosa	Sphagnum bogs and peaty meadows	Fernald 1950
Armeria maritima ssp. sibirica	Common on cliffs along the sea, rare inland	Hultén 1968
Asplenium trichomanes-ramosum	Shaded, often calcareous, rock-crevices	Fernald 1950
Astragalus robbinsii var. fernaldii	Calcareous cliffs and talus, river gravels, sandy beach	Meades et al. 2000
Botrychium lanceolatum var. lanceolatum	Meadows, peaty slopes, clearings (Fernald 1950); Dryish meadow slopes (Bouchard et al. 1991)	Fernald 1950; Bouchard et al. 1991
Botrychium multifidum	Peaty, loamy or gravelly slopes, plains, thickets and clearings (Fernald 1950); Sandy meadows and woods (Hultén 1968)	Fernald 1950; Hultén 1968
Botrychium virginianum	Rich deciduous or mixed woods (Fernald 1950); Woods and meadows with a preference for calcareous soil (Hultén 1968)	Fernald 1950; Hultén 1968
Caltha palustris	Swamps, wet meadows, and wet woods (Fernald 1950); Moist places (Hultén 1968)	Fernald 1950
Campanula uniflora	Arctic region to calcareous alpine areas	Fernald 1950
Cardamine pensylvanica	Springs, rills, wet clearings, etc., "our commonest species"	Fernald 1950

Table F-2: Habitat preferences of uncommon and rare vascular plants foundin south and central Labrador.		
Species	**Habitat**	**Source**
Carex adelostoma	Boggy Marshes	Meades et al. 2000
Carex aurea	Meadows, springy banks, and damp shores (chiefly calcareous)	Fernald 1950
Carex bipartita	Slopes of slaty and quatzite hills	Bouchard et al. 1991
Carex buxbaumii	Wet shores, swamps and bogs	Fernald 1950
Carex capitata	Peaty margins of pools in limestone barrens	Bouchard et al. 1991
Carex castanea	Calcareous woods, thickets, shores and meadows	Fernald 1950
Carex chordorrhiza	Sedge marshes along the coast	Bouchard et al. 1991
Carex crawfordii	Damp dry open ground, rarely in woods	Bouchard et al. 1991
Carex diandra	Peaty bogs, swamps, etc., oftenest calcareous (Fernald 1950); Swamps, mires, bogs, borders of ponds (Hultén 1968)	Fernald 1950; Hultén 1968
Carex foenea	Dry open soil (Fernald 1950); Woods, riverbeds, sandy soil (Hultén 1968)	Fernald 1950; Hultén 1968
Carex intumescens	Alluvial woods, meadows, swales	Fernald 1950
Carex leptonervia	Low woods, clearings, and thickets	Fernald 1950
Carex macloviana	Greenland to Labrador to alpine meadows (Fernald 1950) ; meadows, gravelly shores (Hultén 1968)	Fernald 1950; Hultén 1968
Carex membranacea	Wet places	Hultén 1968
Carex michauxiana	Acid peats, wet sands	Fernald 1950
Carex microglochin	Springy fens and turfy limestone barrens	Bouchard et al. 1991
Carex misandra	Sandy and stony places in mountains, marshes	Hultén 1968
Carex praticola	Open woods, meadows, prairies and clearings	Fernald 1950
Carex projecta	Swales, thickets and damp woods	Fernald 1950
Carex stipata	Low grounds (Fernald 1950) ; swamps and meadows (Hultén 1968)	Fernald 1950; Hultén 1968
Carex umbellata	Exposed, barren siliceous summits, gravelly terraces along rivers (Bouchard et al. 1991); Dry sandy, argillaceous or rocky soil (Fernald 1950)	Bouchard et al. 1991; Fernald 1950
Carex viridula ssp. viridula	Damp, often calcareous, gravels, shores, muddy spots, and springy places	Fernald 1950
Circaea alpina ssp. alpina	Cool moist woods and openings	Fernald 1950
Corydalis sempervirens	Rocky places and recent clearings (Fernald 1950); Rocky places, roadsides, occurs sometimes as a weed (Hultén 1968)	Fernald 1950; Hultén 1968
Cystopteris montana	Mossy glades in spruce thickets on limestone	Bouchard et al. 1991
Descurainia incana	On riverbanks	Hinds 2000
Draba cana	Calcareous cliffs and slopes	Fernald 1950
Dryopteris campyloptera	Cool woods and thickets	Fernald 1950
Dryopteris fragrans	Dry cliffs and rocky banks (Fernald 1950); sunny rocky slopes (Hultén 1968)	Fernald 1950; Hultén 1968
Equisetum fluviatile	Shallow water, wet shores, and swales	Fernald 1950
Equisetum palustre	Marshes, wet woods, meadows, wet shores, etc, often in calcareous soil (Fernald 1950); Wet, moist places, ponds, rare along shores, more common inland (Hultén 1968)	Fernald 1950; Hultén 1968
Equisetum pratense	Common in woods of the interior	Hultén 1968

Table F-2: Habitat preferences of uncommon and rare vascular plants foundin south and central Labrador.		
Species	**Habitat**	**Source**
Equisetum scirpoides	Woods, thickets, mossy knolls or springy banks, often partly buried in humus (Fernald 1950); Coniferous woods, tundra (Hultén 1968)	Fernald 1950; Hultén 1968
Equisetum variegatum var. variegatum	Damp, often calcareous sands, shores and marly bogs (Fernald 1950); Woods and tundra, scree slopes, in alpine zone (Hultén 1968)	Fernald 1950
Eriocaulon aquaticum	Common in shallow water of ponds and lakes	Hinds 2000
Festuca brachyphylla ssp. brachyphylla	Arctic region to rocky summit and slopes	Fernald 1950
Festuca frederikseniae (F.viviparia excl)	Sandy, rocky places on tundra (Hinds 2000); Limestone crests, ledges and gravelly barrens (Bouchard et al. 1991)	Hinds 2000; Bouchard et al. 1991
Galium triflorum	Woods and thickets	Fernald 1950
Gentianella amarella ssp. acuta	In moist dunes, borders of abandoned dirt roads, hollows, and calcareous ledges	Hinds 2000
Gentianella propinqua ssp. propinqua	Coastal turfy limestone barrens	Bouchard et al. 1991
Geum rivale	Wet meadows, bogs and peaty slopes	Fernald 1950
Halenia deflexa	Damp and cool woods	Fernald 1950
Hedysarum alpinum	Calcareous rocks and gravels (Fernald 1950); Rocky slopes, spruce forests, gravel bars (Hultén 1968)	Fernald 1950; Hultén 1968
Iris versicolor	Marshes, meadows, ditches and turfy shores	Fernald 1950
Isoetes lacustris	In 1o - 5o of water; submerged or rarely above water in dry seasons	Britton and Brown 1970
Juncus balticus	Sandy brackish to fresh shores	Fernald 1950
Juncus tenuis	Roadsides, open ground	Hultén 1968
Juncus vaseyi	Damp thickets, shores, etc.	Fernald 1950
Lathyrus palustris	Shores, damp thickets and meadows	Fernald 1950
Lycopodiella inundata	Bogs and wet shores in lowlands	Hultén 1968
Lysimachia terrestris	Low grounds and wet shores	Fernald 1950
Mentha canadensis	Damp open soils, shores, etc.	Fernald 1950
Mitella nuda	Cool or mossy woods or swamps (Fernald 1950); Along streams, bogs (Hultén 1968)	Fernald 1950; Hultén 1968
Monotropa uniflora	Woodland humus (Fernald 1950); Woods (Hultén 1968)	Fernald 1950; Hultén 1968
Myriophyllum sibiricum	Shallow ponds on limestone	Bourchard et al. 1991
Myriophyllum tenellum	Shallow margins of ponds and pools in sand, granite gravel, mud, and peat	Fernald 1950
Nuphar lutea ssp. variegata	Ponds and low streams	Hultén 1968
Onoclea sensibilis	Low open ground, alluvial thickets and low woods, most often fruiting in the open	Fernald 1950
Oryzopsis pungens=P	Rocky sandy peaty soil (Fernald 1950); Sandy or rocky soil (Hultén 1968)	Fernald 1950; Hultén 1968
Osmunda claytoniana	Moist woods and thickets	Fernald 1950
Oxalis montana	Alder-maple thickets and balsam fir forests in sheltered river (Bouchard et al. 1991); Damp woods (Fernald 1950)	Bourchard et al. 1991; Fernald 1950
Oxytropis campestris var. johannensis	Calcareous cliffs and flats, shorelines and meadows	Meades et al. 2000
Parnassia kotzebuei	Moist cliffs, alpine ravines, and snowbeds	Bouchard et al. 1991
Pentaphylloides floribunda	Both wet and dry ground, forests, heaths, muskeg & skree slopes	Hultén 1968
Phippsia algida	Bogs and wet places, snow beds, mostly on tundra	Hultén 1968

Table F-2: Habitat preferences of uncommon and rare vascular plants foundin south and central Labrador.		
Species	**Habitat**	**Source**
Platanthera obtusata	Mossy forests and wet places	Fernald 1950
Poa flexuosa	Rocky ground, cliffs, and alpine slopes.	Meades et al. 2000
Polypodium virginianum	On rocks, crests of ledges, bases of trees, and rocky slopes	Fernald 1950
Populus balsamifera ssp. balsamifera	River banks or gravels	Fernald 1950
Populus tremuloides	Dry open woods and recent burns	Fernald 1950
Potamogeton confervoides	Mountain lakes (Medes et al. 2000); Sandy or peaty ponds and pools on mountains (Fernald 1950)	Meades et al. 2000; Fernald 1950
Potamogeton oakesianus	Acid peaty-, sandy- or rocky bottomed pools	Fernald 1950
Potamogeton obtusifolius	Pools and shallow ponds (Bouchard et al. 1991); Cold streams, springs and lakes (Fernald 1950)	Bouchard et al. 1991; Fernald 1950
Potamogeton pusillus var. tenuissimus	Basic or alkaline waters	Fernald 1950
Potamogeton richardsonii	Lakes and rivers, frequently brackish or alkaline (Fernald 1950); Lakes (Hultén 1968)	Fernald 1950; Hultén 1968
Primula laurentiana	Ledges, cliffs and meadows, chiefly calcareous	Fernald 1950
Primula mistassinica	Calcareous or argillaceous rock, shores and meadows (Fernald 1950); Meadows, along streams (Hultén 1968)	Fernald 1950; Hultén 1968
Prunus pensylvanica	Dry woods, recent burns and openings	Fernald 1950
Pyrola chlorantha	Dry or dryish coniferous woods and thickets (Fernald 1950); Woods (Hultén 1968)	Fernald 1950; Hultén 1968
Ranunculus abortivus	Low woods, thickets, clearings, and damp slopes	Fernald 1950
Ranunculus lapponicus	Boggy plateau	Bouchard et al. 1991
Ranunculus pensylvanicus	Alluvial shores and swales	Bouchard et al. 1991
Ribes lacustre	Cold woods and swamps	Fernald 1950
Salix eriocephala	In swamps and moist hillsides	Britton and Brown 1970
Sarracenia purpurea ssp. gibbosa	Sphagnous bogs and peaty barrens	Fernald 1950
Scheuchzeria palustris	Bogs, quagmires and peaty shores	Fernald 1950
Scirpus microcarpus	Wet places	Hultén 1968
Scutellaria galericulata	Gravelly, sandy or rocky shores, meadows, swampy thickets (Fernald 1950); Wet meadows (Hultén 1968)	Fernald 1950; Hultén 1968
Sparganium glomeratum	Shallow pools	Meades et al. 2000
Tofieldia glutinosa	Calcareous marshes, damp ledges and shores	Fernald 1950
Urtica dioica ssp. gracilis	Waste places, roadsides, etc.	Fernald 1950
Utricularia cornuta	Wet peaty, sandy or muddy shores or bogs	Fernald 1950
Valeriana dioica var. sylvatica	Bogs, mossy woods and brooksides on limestone	Bouchard et al. 1991
Veronica scutellata	Wet places, shores and swamps	Fernald 1950
Viola blanda	Rich, chiefly deciduous woods	Fernald 1950
Viola selkirkii	Rich woods, shaded or cool rocky (often calcareous) slopes	Fernald 1950
Woodsia alpina	Crevices of limestone cliffs (Bouchard et al. 1991, Meades et al. 2000); Artic region south to shaded or exposed, damp to dry calcareous rocky banks of Newfoundland (Fernald 1950)	Bouchard et al. 1991; Meades et al. 2000; Fernald 1950
Woodsia glabella	Crevices of limestone cliffs (Bouchard et al. 1991); In thin moss or humus on calcareous rocks, often at crests of shaded cliffs (Fernald 1950)	Bouchard et al. 1991; Fernald 1950
Woodsia ilvensis	Dry, mostly sterile rocks, cliffs and talus, frequently exposed situations	Fernald 1950

In order to facilitate further analysis, the habitat preferences of the plant species were organized into 16 habitat types, each discernable on available mapping or aerial photography (Table F-3).

Table F-3: Matrix of uncommon and rare vascular plant species found in central and southern Labrador and their habitat preferences.

Species	S-rank (Labrador)	Mixed Woods and Thickets	Coniferous Forest	Recent Burns/Disturbance/Clearings	Sub-Alpine Meadow/Alpine Meadow	Rocky Meadow Slope	Sandy Substrates/Open Soils	Barrens	Riparian	Lacustrine	Swamps	Marshes	Fens	Bogs	Cliffs/Talus Slopes	Rock outcrop	Calcareous[1]
Actaea rubra ssp. rubra	S3S4	X							X								
Agrostis scabra var. septentrionalis	S2S3						X	X	X								
Agrostis stolonifera	S2S4			X					X	X							
Anemone parviflora	S3S4																X
Angelica lucida	S1S2				X												
Arabis drummondii	S1S2								X								X
Arctostaphylos uva-ursi	S2S3						X	X									
Arethusa bulbosa	S1												X	X			
Armeria maritima ssp. sibirica	S3S4														X		
Asplenium trichomanes-ramosum	S1														X		
Astragalus robbinsii var. fernaldii	S1																X
Botrychium lanceolatum var. lanceolatum	S1					X	X										
Botrychium multifidum	S1	X					X										
Botrychium virginianum	S1	X							X								
Caltha palustris	S1								X	X	X						
Cardamine pensylvanica	S2S3								X		X						
Carex adelostoma	S1S2											X	X				
Carex aurea	S1S2								X	X							X
Carex bipartita	S3?					X											
Carex buxbaumii	S3?									X	X			X			
Carex capitata	S3?							X									X
Carex castanea	S1S2	X							X	X							X
Carex chordorrhiza	S3?										X						
Carex crawfordii	S1S2				X			X									
Carex diandra	S1S2										X			X			X
Carex foenea	S2S3						X		X								
Carex intumescens	S1S2								X								
Carex leptonervia	S2S3			X					X								
Carex macloviana	S3?				X												
Carex membranacea	S1S2								X	X	X	X	X				X
Carex michauxiana	S1S2													X	X		
Carex microglochin	S1S2							X						X			X
Carex misandra	S3?					X	X					X					X

Table F-3: Matrix of uncommon and rare vascular plant species found in central and southern Labrador and their habitat preferences.

Species	S-rank (Labrador)	Mixed Woods and Thickets	Coniferous Forest	Recent Burns/Disturbance/Clearings	Sub-Alpine Meadow/Alpine Meadow	Rocky Meadow Slope	Sandy Substrates/Open Soils	Barrens	Riparian	Lacustrine	Swamps	Marshes	Fens	Bogs	Cliffs/Talus Slopes	Rock outcrop	Calcareous[1]
Carex praticola	S3?				X		X										
Carex projecta	S1S2								X			X					
Carex stipata	S2S3										X		X				
Carex umbellata	S1S2								X								
Carex viridula ssp. viridula	S1S2								X	X							X
Circaea alpina ssp. alpina	S3S4?	X	X							X							
Corydalis sempervirens	S3S4			X												X	
Cystopteris montana	S1S2		X														X
Descurainia incana	S1S2								X								X
Draba cana	S1														X		X
Dryopteris campyloptera	S3?	X	X														
Dryopteris fragrans	S2S4					X									X		
Equisetum fluviatile	S1S3									X		X					
Equisetum palustre	S1								X	X		X					X
Equisetum pratense	S1	X	X						X								
Equisetum scirpoides	S1	X	X						X								
Equisetum variegatum var. variegatum	S2?								X	X				X			
Eriocaulon aquaticum	S1S2									X							
Festuca brachyphylla ssp. brachyphylla	S2S4					X											
Festuca frederikseniae (F.viviparia excl)	S1S2						X	X									X
Galium triflorum	S2S3	X						X									
Gentianella amarella ssp. acuta	S2?			X											X		X
Gentianella propinqua ssp. propinqua	S1							X									X
Geum rivale	S1S2								X					X			
Halenia deflexa	S2S3	X															
Hedysarum alpinum	S1S2								X	X							X
Iris versicolor	S2S3								X	X	X	X					
Isoetes lacustris	S1									X							
Juncus balticus	S3								X	X							
Juncus tenuis	S1?						X		X	X							
Juncus vaseyi	S1								X	X							
Lathyrus palustris	S1S2								X	X							
Lycopodiella inundata	S2S3								X	X				X			
Lysimachia terrestris	S1								X	X							
Mentha canadensis	S2S3								X	X	X						

Table F-3: Matrix of uncommon and rare vascular plant species found in central and southern Labrador and their habitat preferences.

Species	S-rank (Labrador)	Mixed Woods and Thickets	Coniferous Forest	Recent Burns/Disturbance/Clearings	Sub-Alpine Meadow/Alpine Meadow	Rocky Meadow Slope	Sandy Substrates/Open Soils	Barrens	Riparian	Lacustrine	Swamps	Marshes	Fens	Bogs	Cliffs/Talus Slopes	Rock outcrop	Calcareous[1]
Mitella nuda	S2?		X								X			X			
Monotropa uniflora	S1S3?	X	X														
Myriophyllum sibiricum	S2S3									X							X
Myriophyllum tenellum	S1?									X							
Nuphar lutea ssp. variegata	S3S4								X	X							
Onoclea sensibilis	S2S3?								X		X						
Oryzopsis pungens=P	S1S2					X	X										
Osmunda claytoniana	S2S4	X							X								
Oxalis montana	S1S3	X	X						X								
Oxytropis campestris var. johannensis	S1							X	X	X					X		X
Parnassia kotzebuei	S3S4														X		X
Pentaphylloides floribunda	S2S3		X					X									X
Phippsia algida	S3?												X	X			
Platanthera obtusata	S3S4	X	X								X						
Poa flexuosa	S1					X									X		
Polypodium virginianum	S2S3?	X	X													X	
Populus balsamifera ssp. balsamifera	S2S3								X								
Populus tremuloides	S2S3		X	X			X										
Potamogeton confervoides	S1?									X							
Potamogeton oakesianus	S1S3									X							
Potamogeton obtusifolius	S1?								X	X							
Potamogeton pusillus var. tenuissimus	S1?									X							X
Potamogeton richardsonii	S1?								X	X							X
Primula laurentiana	S3S4					X									X		X
Primula mistassinica	S2					X			X	X					X		X
Prunus pensylvanica	S2S3			X			X										
Pyrola chlorantha	S2S3		X														
Ranunculus abortivus	S2	X							X								
Ranunculus lapponicus	S2S3													X			
Ranunculus pensylvanicus	S1								X		X	X					
Ribes lacustre	S2S3										X						
Salix eriocephala	S1										X						
Sarracenia purpurea ssp. gibbosa	S2S3							X						X			
Scheuchzeria palustris	S3									X				X			
Scirpus microcarpus	S2S3								X	X		X					

Table F-3: Matrix of uncommon and rare vascular plant species found in central and southern Labrador and their habitat preferences.

Species	S-rank (Labrador)	Mixed Woods and Thickets	Coniferous Forest	Recent Burns/Disturbance/Clearings	Sub-Alpine Meadow/Alpine Meadow	Rocky Meadow Slope	Sandy Substrates/Open Soils	Barrens	Riparian	Lacustrine	Swamps	Marshes	Fens	Bogs	Cliffs/Talus Slopes	Rock outcrop	Calcareous[1]
Scutellaria galericulata	S2S3								X	X	X	X					
Sparganium glomeratum	S1?									X	X	X					
Tofieldia glutinosa	S1?									X	X		X				X
Urtica dioica ssp. gracilis	S2?			X													
Utricularia cornuta	S2S3								X	X	X		X	X			
Valeriana dioica var. sylvatica	S1		X						X					X			X
Veronica scutellata	S2S3								X	X	X	X					
Viola blanda	S1S3	X															
Viola selkirkii	S2S4	X				X											X
Woodsia alpina	S1														X		X
Woodsia glabella	S3S4														X		X
Woodsia ilvensis	S3S4														X	X	

[1]Note that the calcareous habitat is used as a descriptor that can be applied to other habitat types.

For example, Drummond rockcress (*Arabis drummondii*) is found in riparian areas on calcareous substrates.

It would not be expected to occur in riparian areas on acidic substrates.

A habitat assessment was conducted along the proposed highway route to determine which of the 16 habitat types were present. Sources used for the assessment included 1:250,000 scale topographic, surficial geology, and geological maps, black-and-white aerial photography (various scales), data from numerous aerial flights along the highway route, and habitat descriptions compiled at 39 wetland sites, found within 100 m of the proposed highway right-of-way.

Habitats found within 100 m of the proposed highway right-of-way included mixed woods and thickets, coniferous forest, recent burns/disturbance/clearings, sandy substrates/open soils, riparian areas, lacustrine areas, swamps, marshes, fens, and bogs. Uncommon or rare species associated with these habitat types could be found along the proposed highway route. Habitats not found along the route included sub-alpine meadows/alpine meadow, rocky meadow slope, barrens, cliffs/talus slopes, rock outcrop, and calcareous substrates. Species associated with these habitat types are unlikely to be present along the proposed highway route and were eliminated from the final list of rare or uncommon species potentially present. The number of species potentially encountered along the proposed highway right-of-way is 73 (Table F-4). Note that species characteristic of calcareous substrates have been eliminated from the list regardless of the other habitat types they may be associated with. For example, mountain

bladder fern (*Cystopteris montana*) is associated with coniferous forest growing on calcareous substrates. Coniferous forest is plentiful along the route, however, no calcareous substrates are present so it is unlikely that this species would occur.

Table F-4: Uncommon and rare vascular plant species potentially present along the highway RoW and the habitats they are typically found in.

Species	S-rank (Labrador)	Mixed Woods and Thickets	Coniferous Forest	Recent Burns/Disturbance/Clearing	Sandy Substrates/Open Soils	Riparian	Lacustrine	Swamps	Marshes	Fens	Bogs
Actaea rubra ssp. rubra	S3S4	X				X					
Agrostis scabra var. septentrionalis	S2S3				X	X					
Agrostis stolonifera	S2S4			X		X	X				
Arctostaphylos uva-ursi	S2S3				X						
Arethusa bulbosa	S1									X	X
Botrychium lanceolatum var. lanceolatum	S1				X						
Botrychium multifidum	S1	X			X						
Botrychium virginianum	S1	X				X					
Caltha palustris	S1					X	X	X			
Cardamine pensylvanica	S2S3					X		X			
Carex adelostoma	S1S2								X	X	
Carex buxbaumii	S3?						X	X			X
Carex chordorrhiza	S3?							X			
Carex foenea	S2S3				X	X					
Carex intumescens	S1S2					X					
Carex leptonervia	S2S3			X		X					
Carex michauxiana	S1S2										X
Carex praticola	S3?				X						
Carex projecta	S1S2					X			X		
Carex stipata	S2S3							X		X	
Carex umbellata	S1S2					X					
Circaea alpina ssp. alpina	S3S4?	X	X				X				
Corydalis sempervirens	S3S4			X							
Dryopteris campyloptera	S3?	X	X								
Equisetum fluviatile	S1S3						X		X		
Equisetum pratense	S1	X	X			X					
Equisetum scirpoides	S1	X	X			X					
Equisetum variegatum var. variegatum	S2?					X	X				X
Eriocaulon aquaticum	S1S2						X				
Galium triflorum	S2S3	X									
Geum rivale	S1S2					X					X
Halenia deflexa	S2S3	X									
Iris versicolor	S2S3					X	X	X	X		
Isoetes lacustris	S1						X				
Juncus balticus	S3					X	X				

Table F-4: Uncommon and rare vascular plant species potentially present along the highway RoW and the habitats they are typically found in.

Species	S-rank (Labrador)	Mixed Woods and Thickets	Coniferous Forest	Recent Burns/Disturbance/Clearing	Sandy Substrates/Open Soils	Riparian	Lacustrine	Swamps	Marshes	Fens	Bogs
Juncus tenuis	S1?				X	X	X				
Juncus vaseyi	S1					X	X				
Lathyrus palustris	S1S2					X	X				
Lycopodiella inundata	S2S3					X	X				X
Lysimachia terrestris	S1					X	X				
Mentha canadensis	S2S3					X	X	X			
Mitella nuda	S2?		X					X			X
Monotropa uniflora	S1S3?	X	X								
Myriophyllum tenellum	S1?						X				
Nuphar lutea ssp. variegata	S3S4					X	X				
Onoclea sensibilis	S2S3?					X		X			
Oryzopsis pungens=P	S1S2				X						
Osmunda claytoniana	S2S4	X				X					
Oxalis montana	S1S3	X	X			X					
Phippsia algida	S3?									X	X
Platanthera obtusata	S3S4	X	X					X			
Polypodium virginianum	S2S3?	X	X								
Populus balsamifera ssp. balsamifera	S2S3					X					
Populus tremuloides	S2S3		X	X	X						
Potamogeton confervoides	S1?						X				
Potamogeton oakesianus	S1S3						X				
Potamogeton obtusifolius	S1?					X	X				
Prunus pensylvanica	S2S3			X	X						
Pyrola chlorantha	S2S3		X								
Ranunculus abortivus	S2	X				X					
Ranunculus lapponicus	S2S3										X
Ranunculus pensylvanicus	S1					X		X	X		
Ribes lacustre	S2S3							X			
Salix eriocephala	S1							X			
Sarracenia purpurea ssp. gibbosa	S2S3										X
Scheuchzeria palustris	S3						X				X
Scirpus microcarpus	S2S3					X	X		X		
Scutellaria galericulata	S2S3					X	X	X	X		
Sparganium glomeratum	S1?						X	X	X		
Urtica dioica ssp. gracilis	S2?			X							
Utricularia cornuta	S2S3					X	X	X		X	X
Veronica scutellata	S2S3					X	X	X	X		
Viola blanda	S1S3	X									
Total Number of Species		16	11	6	10	35	27	17	9	5	12

The habitat types varied substantially in the number of rare species associated with them. Riparian, lacustrine and swamp habitats support the largest number of species while fens, recent burns, and marshes support the lowest number of species (Table F-4).

Identification of areas having high potential to support rare plants was initially determined by recording the distribution of the habitat types along the highway route that have been associated with rare species. The potential distribution of rare plants along the route is widespread since almost all habitat types present along the route have the potential to harbour rare plant species. Using this criterion for selection, approximately 450 sites with the potential to support rare plants were identified. It is highly unlikely that rare species would be found at all of these locations. Therefore, further analyses were undertaken to select the sites having the highest potential to support rare species. The strategy employed to select the sites having the highest potential varied with habitat type.

Some habitat types such as mixed woods and thickets, recent burns/disturbance/clearings, sandy substrates/open soils, and marshes, are relatively uncommon along the proposed highway route. Mixed woods and thickets are restricted to the eastern terminus of the road at Cartwright Junction. Recent burns are also found only at the eastern end of the route between kilometre post (KP) 221 and 247. Sandy substrates are found at three locations along the route, at the Churchill River, at the eastern end of the route, and along an esker which extends from KP 192 to 202. Marsh habitats were found at only five locations along the route. Three of the marshes are associated with the above noted esker. Rare plants are generally associated with rare habitat types. Consequently, these areas were selected as sampling sites due to the high potential they have to harbour rare plant species.

The remaining six habitats are relatively common on the landscape. Coniferous forest is the most common habitat type along the route, occupying at least 50 percent of the landscape. Wetlands, particularly bogs, swamps and fens, are also abundant along the route, particularly along the central portion of the route. Riparian habitats are numerous although they do not account for a sizeable portion of the landscape. Only a small subset of these habitats will support rare plant species. In order to identify which of these sites is most likely to support rare plant species, it is necessary to identify habitat that contain features with the potential to provide niches for rare plants.

Some plant species require fertile sites in order to persist, others may be adapted to surviving in extremely infertile sites or in the presence of toxic concentrations of compounds such as metals or salts. Some species are at the northern or southern limits of distribution and may require special conditions in order to persist. For example, species characteristic of more northern areas may survive on mountain summits or north facing slopes while southern species may persist in sheltered areas with southern exposures. Similarly, the flood plains of large rivers often contain fertile fluvial deposits that can provide habitat for species characteristic of rich sites. River valleys are often sheltered from extremes of weather and may support species characteristic of more southern areas.

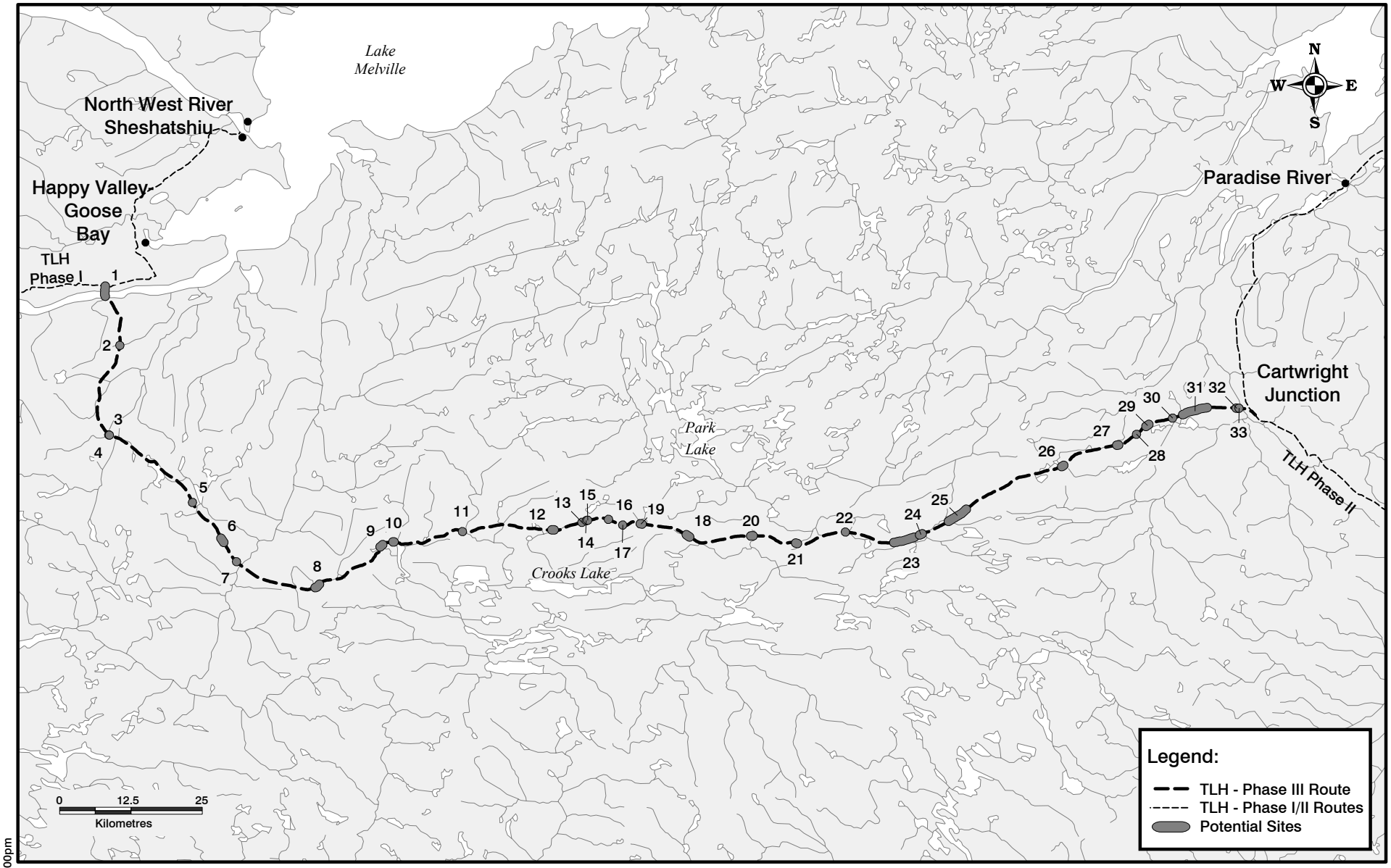
Wetlands found along the route have been subdivided into various wetland types depending on the structure and location of the wetland. There are five types of bog (dome bog, string bog, basin bog, shore bog, and slope bog) and three types of fen (Atlantic ribbed fen, stream fen and slope fen). Only one type of marsh (kettle marsh) and swamp (stream swamp) are present along the route. These wetland types have developed in response to a variety of environmental factors such as the availability of nutrients, basin morphology, topography, and climatic conditions. Rare plant species may be present as a result of various combinations of these environmental factors. The more uncommon wetland types can be expected to have a higher probability of harbouring rare plant species since they may represent an unusual combination of environmental factors. The most uncommon wetland types along the route are dome bog, kettle marsh, stream fen, and Atlantic ribbed fen.

Mapping and aerial photography was reviewed in concert with a consideration of environmental factors such as those outlined above in order to select sites having the highest potential to support rare plant species. A total of 33 sites were identified along the proposed highway route (Table F-5 and Figure F-1). Two of these sites, the floodplain of the Churchill River and the esker located between KP 192 and 202, have particularly high potential for rare vascular plants.

The Churchill River floodplain contains a number of features that increase the probability of finding rare species. The floodplain is located at low elevation, and near the shores of Lake Melville, where winter conditions are likely not as severe as in the surrounding landscape. As such, there is greater potential to find disjunct populations of southern species at this site. Also, as the floodplain is underlain by sand, species characteristic of sandy soils may be present. The flood plain of the river is also traversed by a series of flood channels that support wetlands and provide an abundance of habitat for riparian plant species. Within the highway right-of-way in this area, three shore bogs are present and elsewhere along these channels there are rich marsh and swamp habitats, suggesting that the soils of the floodplain are relatively rich. During the summer months, when water levels are low, large expanses of exposed sandbars are present along the river. These exposed sandbars are not found anywhere else along the highway route and may support rare species characteristic of sandy soils and/or riparian habitats.

The esker also contains a variety of features that may support rare plant species. It is one of only three sites along the route that is underlain by sandy or gravelly soils. Although no large areas of exposed sand or gravel were observed during aerial surveys, small patches of exposed soil may be present along the crest of the esker or along the banks of streams that traverse or drain the esker. These areas have high potential to support rare plant species such as bearberry (*Arctostaphylos uva-ursi*) or slender rush (*Juncus tenuis*). There are a number of wetland types present along the esker, including string bog, basin bog, slope bog, shore bog, stream fen, stream swamp and kettle marsh. Of particular interest are the kettle marshes found in this area. Three of the five kettle marshes identified along the route are found along this particular esker. Riparian and lacustrine habitats are also present at the base of the esker.

Table F-5: Sites With High Potential to Support Rare Vascular Plant Species.			
Site	**Kilometre Point/ Range**	**Air Photo Number**	**Habitats Present**
1	0-1.8	88-A20583	Coniferous forest, sandy substrates, riparian area of a large river (Churchill River), shore bogs (3)
2	11.5	A21891-159	Coniferous forest, stream fen
3	29	A21891-78	Coniferous forests, riparian area of a large river
4	29.1	A21891-78	Kettle marsh
5	48.5	195-A20581	Coniferous forest, riparian area of medium river, shore bog
6	56.7-57.6	19-A20582	Coniferous forest, riparian area of streams (3), stream swamp (3),
7	61.7	A21900-107	Coniferous forest, riparian area of a large river
8	76.7-77.7	44-A20582	Coniferous forest, stream swamp, kettle marsh, slope fen, basin bog
9	91.0-91.6	A21900-112	Coniferous forest, riparian area of stream, lacustrine habitat
10	93.5-93.7	A21900-112	Coniferous forest, riparian area of a stream, lacustrine habitat
11	106.5	28-A20582	Coniferous forest, riparian area of a large river, stream swamp
12	122.5-122.9	A22924-17	Coniferous forest, riparian area of a medium river, stream swamp, string bog, slope bog
13	128.0	A22924-15	Coniferous forest, Atlantic ribbed fen
14	128.8	A22924-15	Stream swamp, Atlantic ribbed fen
15	129.1	A22924-15	Coniferous forest, possible rock outcrop /open soils
16	132.8	A22924-15	Coniferous forest, Atlantic ribbed fen
17	135.5	A22924-15	Coniferous forest, riparian area of a stream, Atlantic ribbed fen
18	138.8-139.1	A22924-14	Coniferous forest, riparian area of a stream, lacustrine habitat, (A slope bog and slope fen are nearby.)
19	147.2-147.9	137-A20581	Coniferous forest, slope fen (2) including rich slope fen, slope bog
20	159.0-159.4	141-A20581	Coniferous forest, riparian areas of a medium river and a stream, stream swamp, string bog
21	167.2-167.5	143-A20581	Coniferous forest, riparian area of a large river, basin bog
22	176.5	143-A20581	Coniferous forest, riparian area of a medium river, lacustrine habitat, string bog
23	185.3—189.0	147-A20581	Coniferous forest, esker (sandy substrates), lacustrine habitat (3 sections), slope bog (2), string bog (4), basin bog (3)
24	190.0-190.5	147-A20581	Riparian area of a medium river, string bog
25	195.0-199.4	147-A20581	Coniferous forest, esker (sandy substrates), riparian area of a medium river, lacustrine habitat (4), stream swamp, kettle marshes (3), shore bog (7), slope bog, basin bog, string bog
26	218.0-218.4	161-A20851	Recent burns, riparian area of stream, string fen/Atlantic ribbed fen
27	228.7-229.0	160-A20851	Coniferous forest, riparian area of a medium river, stream fen, string bog
28	232.7	A21891-117	Coniferous forest, recent burns, riparian area of a stream, stream fen
29	234.8-235.5	A21891-117	Coniferous forest, recent burns, riparian area of streams (2), lacustrine habitat, stream fen, shore bog
30	239.8	A21891-119	Coniferous woods, Atlantic ribbed fen
31	241.7-246.2	A21891-119	Recent burns, riparian areas of streams (2), stream swamp, stream fen, Atlantic Ribbed fen, slope Bog
32	251.3-251.5	A21900-4	Coniferous forest, riparian area of a large river, slope bog
33	251.8	A21900-4	Coniferous forest, riparian area of a stream, dome bog



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Jacques Whitford
Environment Limited
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Consulting Engineers

Figure F-1

Sites with Potential to Support Rare or Uncommon Vascular Plants