Environment

Labrador Iron Mines Limited

2011 Natural Environment Baseline Report – Gill Property

Prepared by:

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Project Number:

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Date:

July 6, 2012

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July 6, 2012

Larry LeDrew
Vice President Sustainable Development
Labrador Iron Mines Limited
220 Bay Street, Suite 700
Toronto, Ontario, Canada,
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Dear Mr. LeDrew:

Re: 2011 Natural Environment Baseline Report – Gill Property

We are pleased to provide you with the following FINAL 2011 Natural Environmental Baseline Report for the Labrador Iron Mines Limited, Gill Property. This report provides information required to satisfy regulatory requirements in support of the development of an iron ore mine at the subject property.

Should you have any questions, regarding the content of this report or any other matters concerning the property, do not hesitate to contact us.

Sincerely,
AECOM

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Jd:jd
Encl.
cc: File

Distribution List

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1	Yes	Labrador Iron Mines Ltd.

Revision Log

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2	J deMan, AECOM	June 29, 2012	Incorporating L. LeDrew's comments of Labrador Iron Mines Ltd.
3	G Epp, AECOM	July 6, 2012	QA/QC review and edits

AECOM Signatures

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1. Introduction

AECOM Canada Limited (AECOM) was retained by Labrador Iron Mines (LIM) to complete a Natural Environment Baseline Study for their Gill Property, part of the Schefferville Area Iron Ore Mine in Labrador. The Gill Property is a site of previous mining activities that LIM plans to reactivate. This report documents the baseline natural environment conditions for the Gill study area where high-grade haematite iron ore deposits are known to occur along the main ridge. Baseline work described in this report includes avifauna, terrestrial, aquatic and wildlife disciplines. The intent of this baseline work was to document existing environmental conditions of the Gill Property in support of a future proposed mining application.

Mining activities at the Gill Property will be conducted in a sequential manner using conventional open pit mining methods. Once the ore is mined, it will be washed, crushed and sorted (i.e. beneficiated) prior to being loaded onto rail cars. The mines will be producing lump and sinter ores for direct shipping to end users in Europe and/or Asia. As the deposit is a high-grade ore, with the exception of crushing and washing to be carried out in Labrador, no further processing will be conducted within Canada. Mining will initially be at a combined rate of one to two million tons per year at an estimated daily production rate less than 3,000 tonnes per day per mine location. This process will take advantage of the existing infrastructure such as the railway line between Schefferville and Sept-Iles, roads and electrical power. Some local upgrading of roads and of the railway may be necessary, no major improvements are anticipated and work will be conducted along the existing rail-beds at the Silver Yard property.

To aid in the assessment of the Gill Property, the following reports and information sources for the study area were reviewed:

- 2008. New Millennium Capital Group, Paul F. Wilkinson and Associates Inc. – Project Registration, Direct Shipping Ore Project.
- 2008. Registration Pursuant to Section 3 of the Newfoundland and Labrador Regulation 54/03, Environmental Assessment Regulations, 2003 Under The Environmental Protection Act (SNL 2002 Ce-14.2) For The Proposed Labrador Iron Mines Limited Schefferville Project.
- October 24, 2008. Guidelines for Environmental Impact Statement Schefferville Area Iron Ore Mine. Government of Newfoundland and Labrador.
- July 2010. Direction Des Évaluations Environmentales. Ministere du Développement durable de l'Environnement et des Parcs
- Traditional Knowledge with community members from Montagnais First Nations.
- 1973. The Ecological Land Classification of Labrador; A Reconnaissance. Ecological Land Classification Series, No. 4
- 2009. AECOM Baseline Reports – James, Redmond & Silver Yards
- 2011. AECOM Baseline Reports – Houston, Howse, Road Corridor

1.1 Study Area

The Gill study area is located in an area grosso modo between the latitudes 55°40' and 54°80' (N-S) and longitudes 66°40' and 67°45' (E-W). This area is characterized by an interweaving of Québec and Labrador territories. Within this territory, the 55th parallel delimits Southern Québec and Nunavik. The Schefferville area, which is approximately 3 km southwest from the Gill study area, is within the Côte-Nord provincial administrative region (region 09). Within this region, the MRC ("Municipalité régionale de comté") of Caniapiscau that groups the following local territories:

- 1 organized area: City of Schefferville with a surface area of 39.02 km^2;

- 1 unorganized area: Lac-Vacher covering 584.74 km^2.

Within the same boundaries, First Nations lands which do not come under the MRC's authority are also found:

- 1 First Nations reserves (Innu Nation): Matimekosh (0.65 km^2) and Lac-John (0.23 km^2);
- 1 category IA-N land: Kawawachikamach Naskapi land covering 41.44 km^2.

Appendix A presents a map of First Nation's land within Northern Quebec.

Access to the Gill study area is via existing mine routes that were established when the Iron Ore Company of Canada (IOC) had claims to the property, approximately 30 years ago. This property is a site that has been previously mined where vegetation has been cleared. The area where the ore body is located along a ridge called BFR.

The overall limits of the study area for the Gill study area were determined by Labrador Iron Mines prior to fieldwork commencing in 2011. Limits were determined based on inclusion of the ore bodies and a conservative estimate of the space required for mine development.

Figure 1-1 provides the limits of the study area.

1.2 Legislative Requirements

In order to determine the appropriate level of data collection for this baseline study, an understanding of the legislative requirements is needed. The legislative requirements are the key factors that determine the scope of this study.

Considering that the Gill study area is located within the Province of Newfoundland and Labrador, this document has been prepared to meet the provincial environmental and mining requirements, as well as the requirements for permitting within Canada.

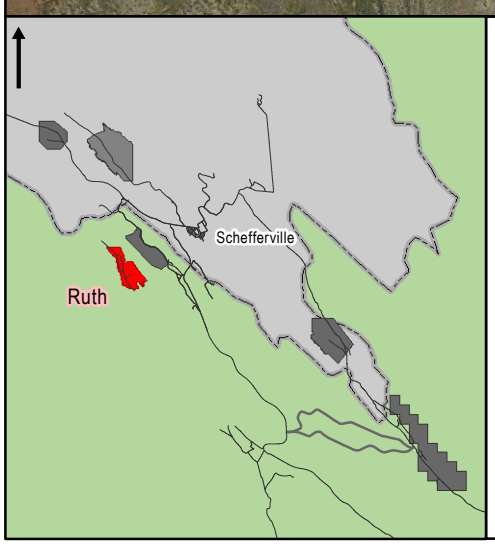
1.2.1 Newfoundland and Labrador Legislation

Within the Province of Newfoundland and Labrador, the Mines and Energy branch is responsible for administering legislation that govern the review and approval of mining projects. This is under the Department of Natural Resources. Of note, the Gill study area is not located within a native territory governed by the James Bay and Northern Québec Agreement, and therefore, does not require review or submittal to this agency. Since the regulatory framework could change in the future depending on the governmental structure in a given term, any references to legislation and/or Regulations within this document are provided on a technical basis. Legal counsel should be sought to confirm appropriate requirements for any property prior to determining the appropriate action related to provincial or federal legislation.

Table 1-1 provides a list of legislation and regulations from the Province of Newfoundland and Labrador that typically apply to mining projects.

BIG RIDGE

Ruth



- Roads
- Contours (5m)
- Streams/Rivers - Permanent Flow
- Streams/Rivers - Intermittent Flow
- Permanent Waterbodies
- Ore Bodies
- Gill Study Area

Labrador Iron Mines

Gill Study Area

June 2012	1:7,000	Datum: NAD27 Zone 19 Source: LIM
P#: 60221657	V#: 001	

AECOM

Figure 1-1

0 125 250 500
Meters

Table 1-1 Newfoundland and Labrador Environmental and Mining Legislation and Regulations that Typically Apply to Mining Projects

➢ Mining Act Guidelines to the Mining Act Mining Regulations Small Scale Operations Regulations
➢ Environmental Protection Act Guide to the Environmental Protection Act
➢ Forestry Act
➢ Historic Resources Act
➢ Lands Act Reservation of Minerals
➢ Occupational Health and Safety Act Mines Safety of Workers Regulations
➢ Labrador Inuit Land Claims Agreement Act Labrador Inuit Land Claims Agreement Act Labrador Inuit Land Claims Agreement Implications for Subsurface Exploration and Development
➢ Mining and Mineral Rights Tax Act
➢ Provincial Parks Act
➢ Water Resources Act
➢ Wilderness and Ecological Reserves Act

1.2.2 Federal Legislation

Within Canada, the Canadian Environmental Assessment Agency (CEA Agency) is responsible for the co-ordination and implementation of the federal environmental assessment process which is governed under the Canadian Environmental Assessment Act (CEAA). Under the CEAA, there are triggers based on the nature of the project that determine whether a project is subject to the requirements of the CEAA and whether an environmental assessment must be undertaken. With respect to mining projects, an EA is triggered if approval is required under the Fisheries Act, Navigable Water Protection Act or Explosives Act. Other triggers may include the use of federal funding, land or facilities.

The Department of Fisheries and Oceans (DFO) is responsible for managing fish habitat in Newfoundland and Labrador, and Québec under the provisions of the federal *Fisheries Act*. Section 35(1) of the *Fisheries Act* prohibits the harmful alteration, disruption or destruction (HADD) of fish habitat unless it is authorized by the Minister of Fisheries and Oceans under a Section 35(2) Authorization. The guiding principle of these Authorizations is *No Net Loss,* meaning that any unavoidable loss of habitat is balanced with habitat replacement. Avoidance of a HADD is the first step in the process, through project redesign, followed by mitigation. If a HADD is still unavoidable after appropriate mitigation measures, adequate compensation should be considered to achieve *No Net Loss* of fish habitat. Critical habitat or presence of species listed under the Species at Risk Act should also be considered when evaluating HADD and any proposed compensation.

The federal government also has a duty to consult when an action may have an adverse impact on an established or asserted Aboriginal or treaty right. Aboriginal communities' local knowledge of the land, as well as their values contribute to the environmental assessment process to allow for potential environmental effects to be assessed and evaluated appropriately.

Table 1-2 provides a list of legislation and regulations from the Federal Government that typically apply to mining projects.

Table 1-2 Federal Legislation that Typically Apply to Mining Projects

➢ Fisheries Act Policy for the management of fish habitat HADD authorization Schedule 2 Metal Mining Effluent Regulation for tailing, impoundments
➢ Migratory Birds Convention Act
➢ Species at Risk Act
➢ Navigable Waters Protection Act

1.3 Study Objectives

The objective of this study is to provide baseline environmental information to aid in the preparation of future approvals and permits in support of the extraction of iron ore at the Gill study area as part of the Schefferville Area Iron Ore Mine Project. Development of the Gill study area is scheduled to commence in 2013. Based on the legislative requirements outlined within Sections 1.2.1 and 1.2.2 above, the following sections describe the specific objectives for each discipline; aquatic, terrestrial, avifauna and wildlife. The results from this baseline study will be provided to the overall project study team to aid in the development of plans for the property, to avoid or minimize potential impacts of proposed mine operations, and for the development of recommendations for site restoration (as part of an overall Decommissioning Plan).

1.3.1 Aquatic Objectives

The intent of the aquatic program is to determine the location of surface water features and to assess their habitat value. An understanding of the aquatic features and their habitat value can aid in development of environmental strategies for best management practices and compliance for future permitting and approvals. In particular, mining operations may affect surface waters through dewatering, residue disposal, surface run-off from active mine areas, or destruction of areas to access/extract ore bodies.

More specifically, the objectives of this study are to:

- Describe and map existing aquatic conditions through characterization of all surface water features;
- Characterize fish communities within the study area;
- Analyze features to determine suitability of habitat for fish communities; and
- Determine if aquatic Species at Risk (SAR) are present within the study area.

1.3.2 Terrestrial Objectives

The intent of the terrestrial program is to determine and document the existing terrestrial conditions within the Gill study area. In addition, the terrestrial program is intended to identify any Species at Risk (SAR) and/or Endangered or Threatened species within the area.

More specifically, the objectives of this study are to:

- Describe and map existing terrestrial vegetation communities based on the Canadian Vegetation Classification System;

- Evaluate of wetlands using the Canadian Wetland Classification System; and
- Determine whether vegetation Species at Risk (SAR) are present within the study area.

1.3.3 Avifauna Objectives

The main purpose of the avifauna survey is to acquire baseline information for the avifauna community within the Gill study area. To obtain this information, the following specific objectives of this study are to:

- Record the list of breeding bird species and determine species richness;
- Calculate the index of breeding density;
- Determine bird distribution and relative abundance in different habitat types; and
- Determine if avifauna Species at Risk (SAR) are present within the study area.

1.3.4 Wildlife Objectives

The objective of the winter track survey was to provide *in situ* information on wildlife presence, relative abundance and habitat use. Potential species for winter transect monitoring and snow tracking included: Snowshoe Hare (*Lepus americanus*), Red Squirrel (*Tamiasciurus hudsonicus*), Northern Flying Squirrel (Glaucomy sabrinus), small mammals (mice and voles), American Porcupine (*Erethizon dorsatum*), Gray Wolf (*Canis lupus*), Red Fox (*Vulpes vulpes*), American marten (*Martes americana*), ermine (*Mustela erminea*), least weasel (*Mustela nivalis*), mink (*Mustela vison*), River Otter (*Lutra canadensis*), Canada Lynx (*Lynx canadensis*), Caribou (*Rangifer tarandus Caribou*), Rock Ptarmigan (*Lagopus mutus*) and Willow Ptarmigan (*Lagopus lagopus*), and Spruce Grouse (*Dendragapus canadensis*). Black Bear (*Ursus americanus*) was not included because their winter denning period coincided with the snow tracking period. However, incidental observations of Black Bear were documented during the survey that was conducted during the summer season.

The main purpose of the survey was to acquire baseline information on terrestrial wildlife in the project area. To obtain this information, the following specific objectives are to:

- Establish the list of terrestrial wildlife species that do not den or move under snow during winter;
- Calculate relative abundance of terrestrial wildlife and their distribution relative to different habitat types; and
- Determine if terrestrial wildlife Species at Risk (SAR) are present within the study area or if there is suitable habitat for SAR within the study area.

1.4 Study Team

The baseline study team was led by Jillian deMan and Yves Leblanc with the assistance of technical field staff.

Table 1-3 below provides a list of the project team.

Appendix B provides a brief biography of each team member.

Table 1-3 Project Study Team

Name	Role/Responsibility
Project Manager	Jillian deMan, B.Sc. (Hon) – Terrestrial and Wetland Ecologist and Project Manager Yves Leblanc, M.Sc. – Senior Wildlife Ecologist and Project Manager Gary Epp, Ph.D.– Senior Ecologist and Technical Reviewer
Aquatic	Nicola Lower, Ph.D. - Lead Aquatic Co-ordinator Valérie Tremblay, M.Sc. – Fisheries Biologist responsible for fieldwork and report writing Sarah Aitken, B.Sc. – Aquatic Ecologist responsible for fieldwork and aquatic report writing Félix-Antoine Boisland Dumontier – Ecological Technician
Terrestrial	Jillian deMan, B.Sc. (Hon) – Lead Terrestrial Co-ordinator Lucie Labbé, M.Sc – Senior Terrestrial Ecologist responsible for fieldwork and terrestrial report writing Daniel Lachance, Ph.D. – Senior Wetland Ecologist responsible for fieldwork and wetland analysis Sébastien Bouliane, B.Sc. – Terrestrial Ecologist responsible for fieldwork Sonia Labrecque, B.Sc. – Ecologist responsible for report writing
Avifauna	Yves Leblanc, M.Sc. – Lead Avifauna Co-ordinator responsible for report writing James Kamstra, M.Sc. – Senior Wildlife Ecologist responsible for fieldwork Samuel Denault, M.Sc – Field Ornithologist responsible for fieldwork
Wildlife	Yves Leblanc, M.Sc. – Lead Wildlife Co-ordinator responsible for report writing Mélanie Bouffard, M.Sc. – Wildlife Ecologist responsible for fieldwork Sylvain Daraiche, M.Sc. - Wildlife Ecologist responsible for fieldwork

2. Methods

For all disciplines, a combination of background review and fieldwork was conducted to determine the conditions of the Gill study area in a comprehensive manner. Prior to all fieldwork, detailed field maps using LiDAR (Light Detection and Ranging) imagery were prepared and interpreted. LiDAR is an optical remote sensing technology that uses pulses from a laser to produce contour mapping. LIDAR information for the property was provided by LIM. The following provides detail regarding the techniques and methods used during aquatic, terrestrial, avifauna and wildlife surveys, with explanations of on-site conditions, topographic and climatic limitations, and how these and other factors dictated the type of surveys conducted.

2.1 Aquatic Assessment

2.1.1 Field Maps

LiDAR maps were analysed and putative water features (river/streams, lakes and ponds) were overlaid for the Gill study area. This allowed field crews to focus the investigations at each site and to ground truth the existing conditions, updating the maps where appropriate. Further, the production and analysis of these maps provided the field crews with concise GPS co-ordinates to accurately locate the water features in remote locations.

Through this interpretation, it was anticipated that surface water features were unlikely to be present within the Gill study area.

2.1.2 Reconnaissance Surveys

Reconnaissance level surveys were completed for all of the possible water bodies identified from the LiDAR map interpretation. The location and presence/absence of water bodies were confirmed during this reconnaissance survey. Water bodies originally interpreted from aerial photo and found not to be present were documented and marked on the map. The physical characteristics of permanent water features were recorded, and if appropriate, a fish habitat assessment and fish collection surveys were completed. New water bodies that were identified through field investigations were marked on the LiDAR map and were assessed.

The results from these reconnaissance surveys confirmed the absence of any surface water features. Therefore, no formal fish habitat or community surveys were conducted.

2.2 Terrestrial Assessment

Vegetation communities result from complex interactions between plant species, soils, location and micro-climatic conditions. Therefore, identifying plant species alone can only give a partial portrait of vegetation communities. In order to adequately characterize those communities, field sampling must not only document the structure and composition of plant assemblages, but also describe the abiotic and spatial characteristics of the biotope.

This report provides precise information on the various plant communities existing within the study area. It lists the various species sampled and provides information on their location and abundance. It also describes soil characteristics, tree basal area, connectivity to streams and spatial positioning within the landscape. Finally, this report offers the various observations of the field personnel on the wetlands' health and ecological value.

Results presented in the following sections were obtained using a combination of aerial photo interpretation and field work.

2.2.1 Field Preparation

Prior to fieldwork, vegetation communities were delineated using the most recent LiDAR imagery of the Gill study area (1:8000). This imagery was imported into ArcGIS 10.0 and classified using the Canadian Vegetation Classification System (National Vegetation Working Group, 1990) through aerial photographic interpretation. In order to capture the overall characteristics of the Gill study area, field sampling effort should be proportional to the community species richness. For example, sampling effort should be within areas that most represent the site. Within the Gill study area, vegetation communities consist of mature communities with few areas that are undergoing early successional change. Therefore, more emphasis was placed on sampling those communities which were more mature.

Perron *et al.*. (2009) and Québec's ministère du Développement durable de l'Environnement et des Parcs (MDDEP, 2012) recommend that two sampling stations be placed per hectare of continuous habitat. This is typical for vegetation communities that are within the southern half of Québec as they tend to be more diverse and smaller in size. However, within the Schefferville area, vegetation communities are large and relatively homogenous. So for this study, it was deemed that a single station per 5 hectares of upland habitat and 2 hectares of wetland habitat was appropriate. These stations were identified prior to field work, using a geographical information system (GIS). They were subsequently transferred to handheld global positioning system (GPS) devices. Botanists could, therefore, easily locate the predetermined sampling stations when in the field. This procedure ensures that each continuous tract of habitat is visited at least once.

2.2.2 Field Sampling

All the pre-established sampling stations were visited from August 4th to 18th by two teams of two botanists. Some stations were abandoned when in-field investigations revealed that the vegetation present was similar to that of previous stations of the same tract of habitat. In the field, additional sampling stations were added in areas that were missed through aerial photograph interpretation, typically smaller wetland areas. In total, 21 sampling stations were described at the Gill study area.

To determine existing vegetation communities within the Gill study area, detailed ecological plots were conducted within each sample station. Plots were located within areas of varying species composition and consisted of a combination of plot topography (aspect, drainage conditions), soil profile examinations and multi-layer flora strata (canopy, sub-canopy, and groundcover) vegetation inventories. To examine the soil profile at each plot, soil pits were dug using a peat corer. The depth and texture of each soil horizon were noted along with root abundance, presence/absence of mottling and/or gleying and presence/absence of coarse fragments, or gravel/cobble. Essentially at a given area, soil texture dictates the composition of plant species. A vegetation inventory was also conducted within a 10m^2 area of the soil pit where the abundance of individual plant species along with their location within the flora strata and relative abundance was also noted. The abundance of each vegetation species was described using the Braun-Blanquet classification system (Braun-Blanquet, 1932).

At the center of each plot, botanists identified each tree stem selected with a prism (factor of 2) to calculate tree basal area (Bitterlich, 1984). Tree basal area is used as an indicator of a forest's productivity and growth rate. In the vicinity of each sampling point, traces of disturbance, such as stumps or other woodcutting evidences, all-terrain-vehicle tracks, were noted. GPS coordinates of all the plots as well as representative photographs were taken and recorded in a field book.

Wetland sampling stations also included a description of its class (marsh, swamp, peatland, or other), form (basin, drainageway, riverine), and hydrological links.

Following field work, borders of the plant communities obtained by photo-interpretation were adjusted manually, to reflect more closely field observations.

2.2.3 Vegetation Community Classification

Using the field data from each plot, vegetation communities were classified and delineated according to the Canadian Vegetation Classification System (CVCS; National Vegetation Working Group, 1990). Based on the CVCS, a community was classified as a treed, shrub, herbaceous or non-vascular type. A treed community is one with greater than 10% cover of trees. A shrub community is one with tree cover less than 10% and shrub cover greater than 10% if shrub species observed were the tallest stratum or if shrub cover was greater than 50% of total vegetation if a similar height to other specie within the stand. An herbaceous community is one that contains greater than 2% cover of herb species. A non-vascular type is one that contains greater than 2% cover of species such as mosses or lichens.

Table 2-1 presents a summary of the Canadian Vegetation Classification System, including a summary of the above physiognomic types.

Table 2-1 Summary of Canadian Vegetation Classification System (National Vegetation Working Group, 1990)

Physiognomic Type	Growth Form	Stand Cover (%)	Height (m)				
Tree	Evergreen Deciduous Mixed	Closed (>60%), Open (25-60%), Sparse (10-25%)	Very Tall (>25m)	Tall (>15-25m)	Intermediate (>3-15m)	Low (≤3 due to age)	Dwarf (≤3m due to age and environment)
Shrub	Evergreen Deciduous Mixed	Closed (>60%), Open (25-60%), Sparse (10-25%)	Very Tall (>5m)	Tall (>3-5m)	Intermediate (>1-3m)	Low (>0.2-1m)	Very Low (≤0.2m))
Herb	Forb Graminoid Mixed	Closed (>60%), Open (25-60%), Sparse (2-25%)	N/a	Tall (>3-5m)	Intermediate (>1-3m)	Low (>0.2-1m)	Very Low (≤0.2m))
NonVascular	Lichen Bryophyte Mixed	Closed (>60%), Open (25-60%), Sparse (2-25%)	N/a				

Disturbed areas are those which contain several levels of disturbance, ranging from smaller areas that have recently been disturbed (e.g. exploration sites) to larger areas that have been historically disturbed by mining activities.

2.2.1 Wetland Classification and Evaluation

Wetland communities were classified according to the Canadian Wetland Classification System. Wetlands identified within the study area were evaluated based on Environment Canada's, "Wetland Evaluation Guide, Issues Paper No. 1992-1". This evaluation is based on an approach to provide land use planners, administrators and developers with an opportunity to examine the relative value of wetlands. This general analysis sets out a process of easily identifying hydrological, biogeochemical and habitat functions or the wetlands found in a definite area. It is based on the subjective appreciation of wetland biologists on whether or not wetlands contribute to the various functions usually associated with this type of ecosystem. This general analysis is provided in this report document.

Typically during an Environmental Impact Study, a more detailed analysis is completed to identify and quantify all functions of a particular wetland that are of value to society, to determine which of these values would be significantly disrupted or impaired by the proposed development, and to allow decision makers to examine the environmental impact, to identify

attenuation procedures and plan for an appropriate compensation plan. An emphasis is placed on the precise calculation of measurable variables, all of which have been demonstrated as being indicative of a particular ecological function. For example, the number of streams connecting to a wetland is a clear indicator of water flow regulation (hydrological function) and export of organic carbon (biogeochemical function). This analysis requires extensive mathematical and GIS (Geographical Information System) work. It also requires a precise description of proposed development. Therefore, this detailed analysis is reserved for future Ecological Impact Studies.

Although the *Wetland Evaluation Guide* (Environment Canada, 1992) provides the background for our wetland evaluation, stage one (General Analysis) has been actualized in order to reflect the more up-to-date recommendations of the "*Wetland Ecological Functions Assessment"* guide (Environment Canada, 2008). In particular, the criteria used in stage one have been updated to reflect hydrological, biogeochemical and habitat functions in accordance with the hydrogeomorphic (HGM) approach.

The HGM approach, detailed in "*Wetland Ecological Functions Assessment*", is a widely accepted wetland functions assessment method. It compares the characteristics of study wetlands with those of local reference wetlands in relation to hydrological, biogeochemical and habitat functions at a watershed scale. The characteristics of the wetlands evaluated are specific to the wetland type. Although there is no established reference wetland for the Schefferville area, applying the method will nonetheless allow comparison *between* our wetlands.

Therefore, based on experience and field sampling, wetlands biologists must establish if a particular wetland has any of the functions usually associated with its type, according to the HGM approach. Those functions are described in "*Wetland Ecological Functions Assessment*". Some of them, however, had to be abandoned, since they can't be identified by field sampling and experience alone. The functions used in this study are:

<u>Hydrological Functions</u>

Because of their low topographic position relative to uplands (e.g., isolated depressions, floodplains), wetlands store and slowly release surface water, rain, snowmelt, groundwater and flood waters. In this regard, peatlands (bogs and fens) are especially important, since their peat deposit can usually store vast quantities of water. Furthermore, placement within the watershed is also important, since head wetlands will influence the whole watershed while downstream wetlands will have a more limited impact.

Because of their position on the landscape, wetlands at the margins of lakes, rivers and bays help protect shorelines and stream banks against erosion. Wetland plants hold the soil in place with their roots, absorb the energy of waves, and break up the flow of stream or river currents. Again, placement within the watershed is also important, since downstream wetlands will receive higher quantities of water. On the other hand, isolated wetlands (no stream connection) will not contribute to erosion protection.

<u>Biogeochemical Functions</u>

Wetlands improve water quality by intercepting surface runoff and removing or retaining inorganic nutrients, processing organic wastes, and reducing suspended sediments before they reach open water. As runoff water passes through wetlands, they retain or process excess nitrogen and phosphorus, decompose organic pollutants, and trap suspended sediments that would otherwise clog waterways and affect fish and amphibian egg development. Again, isolated wetlands will not contribute much to water quality treatment.

Carbon sequestration and storage is an important function of peatlands (bogs and fens) since these are ecosystems where dead organic matter accumulates faster than it decomposes, thus creating a peat deposit. Peatlands are therefore significant sinks of carbon.

Habitat functions

Peatlands play a substantial role in supporting regional biodiversity. Since they offer unique conditions (low pH, varying nutrient availability, fluctuating water table, etc.), peatlands often harbor typical plant communities not found elsewhere. Many plant species are confined to these ecosystems. This fact is exacerbated in northern regions, where peatlands are often found in low topographic locations. They consequently enjoy milder microclimatic conditions. This fact also explains why many rare or endangered species are often confined to wetlands in these regions.

2.2.2 Species at Risk

Prior to fieldwork, representatives of the province of Quebec (Ministere des Ressources naturelles et de la Faune) and Newfoundland and Labrador (Atlantic Canada Conservation Data Centre) were contacted to conduct a search of significant species observed on or near the study area. The search range was completed to an extent of 5 kilometres from the study area. Rare species identified for the area were noted and habitat requirements determined prior to field surveys. Plant species that were unknowns during field surveys were photographed and sampled. The identification of these unknown species were completed at the Montreal Botanical Gardens by two AECOM terrestrial ecologists and Frédéric Coursol , senior botanist at the Botanical Gardens.

2.3 Avifauna Assessment

Abundance and species composition of birds were documented by the point count survey method. A total of 7 census points were located in the survey area using a systematic sampling plan. The point count method is consistent with Canadian Wildlife Service guidelines. Efforts have been made to ensure that point counts were conducted in acceptable weather conditions for data gathering (i.e. no rain, light winds, and good visibility). The field team consisted of 2 bird specialists that walked to the census (survey) points in the morning (from 5 to 11am) between the 5th and the 12th of July for maximum detectability of breeding pairs. On site, the census points were located with a compass and a GPS.

Upon arrival at each point count location, a flag was placed at a distance of 50 m from the sampling point to estimate bird distances to the observer. Then, observers waited five minutes before conducting the survey for 10 minutes. At each census point, every bird heard singing or seen within a 50 m radius area around the census point was noted on a data sheet. Every bird seen or heard outside of the 50 m radius area was also recorded as being outside the 50 m radius. A survey field sheet was filled in, indicating the approximate location of bird observations within the 50 m radius circle using a unique four letter code for species identification. For each census point, a brief habitat description was conducted in the limits of the limited radius count (LRC). Only bird observations from within the 50 m radius were used in the data analysis to estimate bird densities.

Figure 2-1 presents the location of the sampling points.

2.3.1 Data Analysis and QA/QC

The limited radius count (LRC) included only birds seen or heard within the 50 m radius circle while the unlimited distance index (UDI) data incorporated all bird seen or heard during the point count survey. Both indexes were used to calculate the total and the average specific richness at each site. Total specific richness represents the total number of species that were observed at each site, whereas average species richness represents the average number of species seen or heard at each point count of a site.

G7
G5
G6
G3
G4
G2
G1
BIG RIDGE
Ruth
Gill
Schefferville
Bird Point Count Locations
Roads
Streams / Rivers - Perminant Flow
Streams / Rivers - Intermittent Flow
Marsh
Contours (5m)
Ore Bodies
Gill Study Area
Labrador Iron Mines
Bird Point Count Locations - Gill
June 2012
1:7,000
Datum: NAD27 Zone 19
Source: LIM
P#: 60218933
V#: 001
AECOM
Figure 2-1
0 125 250 500
Meters

The Shannon Diversity Index of each site was determined using the limited radius count (LRC) data. The Shannon diversity index represents the distribution of the observations through different categories (Magurran, 1988). The index varies according to two parameters: richness (number of species recorded) and uniformity (similar abundance among species). If both richness and uniformity are high, the diversity of the avian community is rated higher.

The limited radius count (LRC) data were also used to calculate a constancy index for each species within a site, which corresponds to the proportion of point counts where a species has been observed. Finally, because the limited radius count (LRC) method allows calculation of a sampling surface area in which breeding pairs were counted, density of each species observed at a site as well as total density of a site were also estimated.

2.3.2 Incidental Observation

During all surveys and trips between the census points and the Town of Schefferville, wildlife sightings were recorded opportunistically (as opposed to systematically) and locations were recorded using GPS units.

2.4 Wildlife Assessment

The winter use of the study area by terrestrial fauna, whose tracks are visible on the snow, was characterized using a winter track survey.The abundance and species composition were documented by 500 m transects survey approach. Transects were established along the longest axis of the deposits (G-1) and a control site on the property (G-C), across the southern deposit D-3, and at a control site (D-C) (Refer to **Figure 2-2**). Efforts have been made to ensure that transects were surveyed in acceptable weather conditions for data gathering (i.e. no or low precipitation, at least 24 hours after 5 cm snowfall, and good visibility). The field team consisted of 2 biologists that snowmobiled and/or walked the transects.

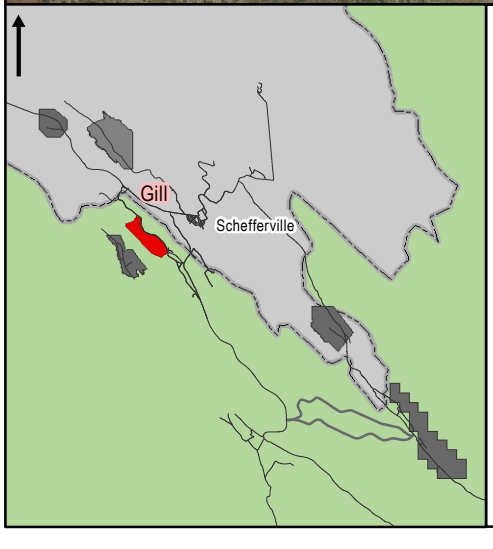
The survey conditions, including weather data (temperature, wind, sunlight, and precipitation), snow texture (powder, swept or crusty), and visibility of tracks in the snow were recorded daily. Elapsed time (hours) since the end of the last snowfall was also recorded. Wherever possible, the inventories were conducted at least 24 hours after a significant snowfall (5 cm) to allow species to move and leave visible traces on the snow. The azimuth was predetermined for each transect, so the field team rallied to the starting point using a GPS unit and then used a compass and visual cues, walked 500 m (measured with a hip chain). A hip chain was used to measure distance and get chaining points of vegetation cover and topography changes. Observers identified and noted (with the chaining and GPS locations) all tracks crossing the transect, other signs of animal

G-C

G-1

BIG RIDGE

Ruth



- Winter Tracks Transects Start/End Point
- Winter Tracks Transects
- Roads
- Streams / Rivers - Perminant Flow
- Streams / Rivers - Intermittent Flow
- Marsh
- Contours (5m)
- Ore Bodies
- Gill Study Area

Vegetation

- Tree Communities
- Shrub Communities
- Wetland
- Herb Communities
- Disturbed Communities (No Veg)
- Water

Labrador Iron Mines

Winter Tracks Transects - Gill

June 2012	1:7,000	Datum: NAD27 Zone 19 Source: LIM
P#: 60218933	V#: 001	**Figure 2-2**

AECOM

0 125 250 500
Meters

presence (i.e. shelter, browse, predation pits, Porcupine scars, small mammals or grouse holes in the snow, urine or feces or live specimens).

2.4.1 Data Analysis and QA/QC

To compare properties and to take into account the elapsed time effect, every track has been weighted with hours since last snowfall. The track abundance is always treated with the mean weighted index (WI).

2.4.2 Incidental Observation

During all surveys and trips between the census points and the Town of Schefferville, wildlife sightings were recorded opportunistically (as opposed to systematically) and locations were recorded using GPS units. In some cases, wildlife observations were reported by other biological field teams that visited the Property in 2011.

2.5 Traditional Knowledge

During field surveys, any traditional knowledge that was provided by field guides or collected through conversations with local First Nation's people was documented. This information does not constitute a full traditional knowledge assessment and is meant for information purposes only.

3. Results

The following provides results from the background document review and field investigations establishing a comprehensive natural environment baseline for the Gill study area.

3.1 Climate and Ecological Site Context

From a Canada-wide perspective, the Gill study area lies within the Taiga Shield Ecozone (Parks Canada, 2009). The climate is subarctic continental where precipitation is low (175mm to 200mm). The mean daily temperatures during the month of January range from -17.5°C to -27.5 °C, with mean daily temperatures in July ranging from 7.5 °C to 17.5 °C. The central portion of this ecozone commonly consists of stunted coniferous and deciduous stands, including open stunted black spruce, in association with alders, willows and tamarack in fens and bogs, and open mixed wood associations of white spruce and balsam fir.

Regionally, black spruce (*Picea mariana*) is the dominant tree species; other species include white spruce (*Picea glauca*) and tamarack (*Larix laricina*). Open stands of lichen-spruce woodland with an understory of moss are also dominant. Fen wetlands occur throughout. On well-drained sites, closed canopy forest stands of black spruce mixed with balsam fir (*Abies balsamea*) and white spruce also occur. The general aspect of the region is a rolling plain with numerous lakes and isolated rugged hills composed of Achaean granites, gneisses and acidic intrusives that stand about 150 m above the general surface. Humo-Ferric Podzolic soils are dominant with significant inclusions of Ferro-Humic Podzols, Mesisols, and Organic Cryosols.

3.2 Aquatic Assessment Results

3.2.1 Reconnaissance Survey

The Gill study area is situated along a large ridge that runs within a north/south direction and is the dominant topographical feature within the landscape. The ridge is high and the slope steep where lands at its toe have been extensively disturbed from previous mining activity including cleared areas, and a road network. There were cuts and grooves along the top of the ridge which likely direct water movement during storm events, however, a channel was not present and these areas were dominated by dwarf birch shrubs. Therefore, as a result of reconnaissance surveys, no surface water features were present within the Gill study area.

3.3 Terrestrial Assessment Results

The topography at Gill study area is characteristic of the Mid Subarctic Forest Ecoregion where the surrounding landscape contains a series of ridges and valleys. The Gill area has been disturbed in the past from mining works including exploration, blasting and clearing of vegetation. Considering this, Gill study area's vegetation is principally an expanse of shrub land with dwarf birch (*Betula glandulosa*) and green alter (*Alnus viridus*) as the dominant shrub species.

A total of twenty-one (21) plots were completed within the Gill study area. Plots surveyed indicated a broad spectrum of vegetation types. Communities have been characterized into three upper level designations: Disturbed, Upland and Wetland. These were refined further into classifications based on the Canadian Vegetation Classification System (Ecological Land Classification Series, No. 25). All communities observed within the study area are typical and common to Labrador. **Table 3-1** provides the area and percent coverage of the upper level designations.

Table 3-1 Area of Vegetation Community Cover within Gill study area

Vegetation Type	Area (ha)	Percent Cover
Disturbed	39.26	23.05%
Upland	130.54	76.63%
Wetland	0.53	0.31%
TOTAL	**170.33**	**100%**

The total amount of land space within the Gill study area is 170.33 ha. Of this, approximately 77% is comprised of upland communities and 0.3% is wetland and 23% is disturbed. Within these areas, a total of 17 vegetation communities were classified using the Canadian Classification System (National Working Group, 1990).

Table 3-2 provides a summary of each of vegetation communities. **Figure 3-1** presents a representative profile of the Gill study area.

Table 3-2 Vegetation Community Summary

	Physiognomic Type	Map Code[1]	Vegetation Community Name	Community Description	Total Area (ha)
Upland	Treed	TEOI	Open Spruce with Moss Woodland	This community is dominated by either black spruce (*Picea mariana*) or white spruce (*Picea glauca*) trees with associates such as tamarack (*Larix laracina*). Groundcover consists of moss (*Pleurozium schreberi*) species. Shrubs consist of Labrador tea (*Rhododendron groenlandicum*), dwarf birch (*Betula glandulosa*) and crowberry (*Empetrum nigrum*) and blueberries (*Vaccinium sp*). Tree cover is between 25 and 60%.	6.4
		TESI	Sparse White Spruce with Moss Woodland	Containing similar species associations with TEOI above, this community is also dominated by white spruce (*Picea glauca*) trees with associates such as tamarack (*Larix laracina*), or black spruce (*Picea mariana*). Groundcover consists of moss species. Tree cover is between 10 and 25%.	7.71
	Shrub	SDCI	Closed Dwarf Birch Deciduous Shrub Stand	This community is dominated by dwarf birch shrubs. Dwarf birch shrubs occur over a range of soil moisture regimes and can be found in most community types.	79.79
		SDOT	Open Labrador Tea Deciduous Shrub Stand	This community is dominated by Labrador tea and bunchberry (*Cornus canadensis*). Shrub cover is between 25 and 60%. The overall structure of this community is of tall shrub species over 3m tall.	6.70
		SDOL	Open Crowberry Deciduous Shrub Stand	This community is dominated by crowberry and a variety of blueberry species (*Vaccinium sp*). These species are relatively low in height.	4.09

	Physiognomic Type	Map Code[1]	Vegetation Community Name	Community Description	Total Area (ha)
	Non-Vascular	NVBC	Closed Moss Stand	This community is dominated by polytrichum species amongst exposed soils/rock.	10.89
				Total	**130.54**
Wetland	Shrub	SDCI	Closed Willow Deciduous Swamp with Sedges	This community is dominated by prairie willow (*Salix humilis*) species as the canopy and a variety of sedge and sphagnum species within the groundcover.	0.39
		SDCL	Closed Willow Deciduous Swamp with Moss	This community is dominated by willow species within the canopy and moss species within the groundcover.	0.14
				Total	**170.28**

1. Map Code corresponds with Figure 3-3

3.3.1 Vegetation Species

A total of one hundred and seventy-four (174) floral species were observed within the Gill study area limits. All species observed were both federally and provincially common. Dominant flora associated with each terrestrial and wetland community is presented in Table 3-2. No rare flora or fauna were identified within or near the Gill study area.

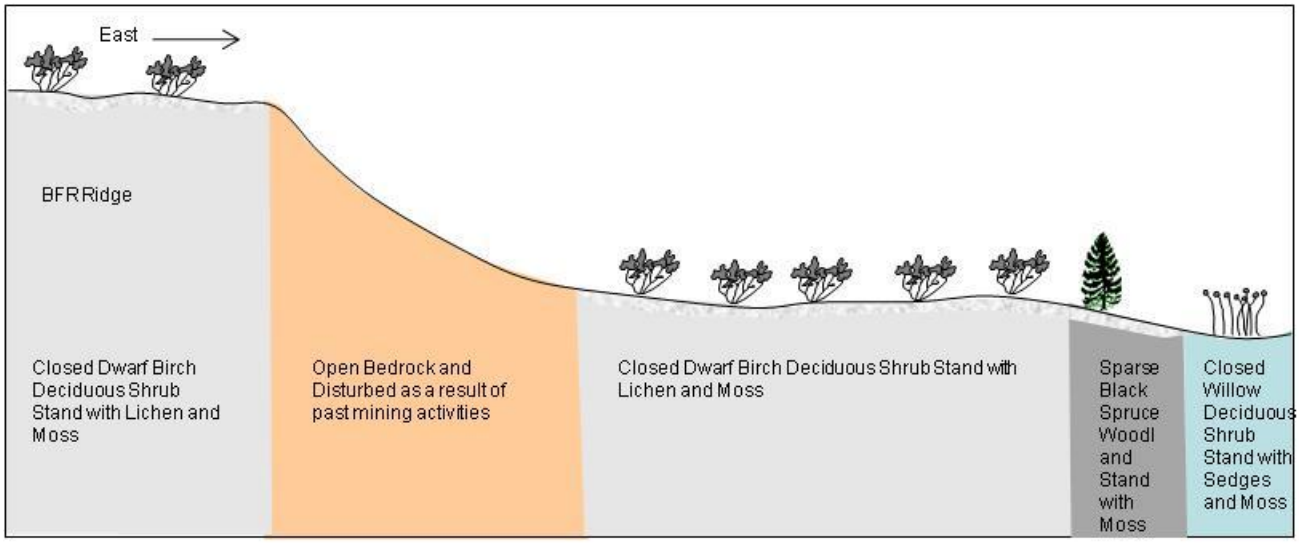


Figure 3-1 Conceptual Profile of Gill study area

Figure 3-2, Photographs 1 through 6 below represents the typical communities encountered within the Gill study area. The corresponding data for each community can be found in **Appendix C**. A plant species list can be found in **Appendix D.**

Figure 3-3 presents the vegetation communities within Gill study area.

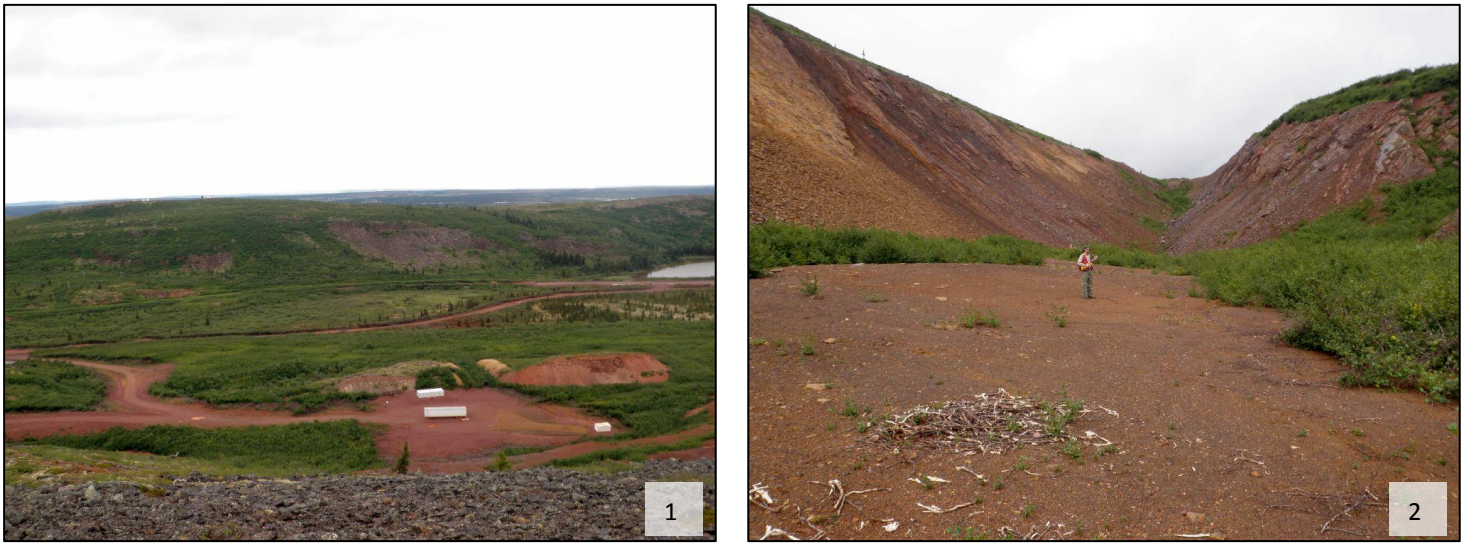
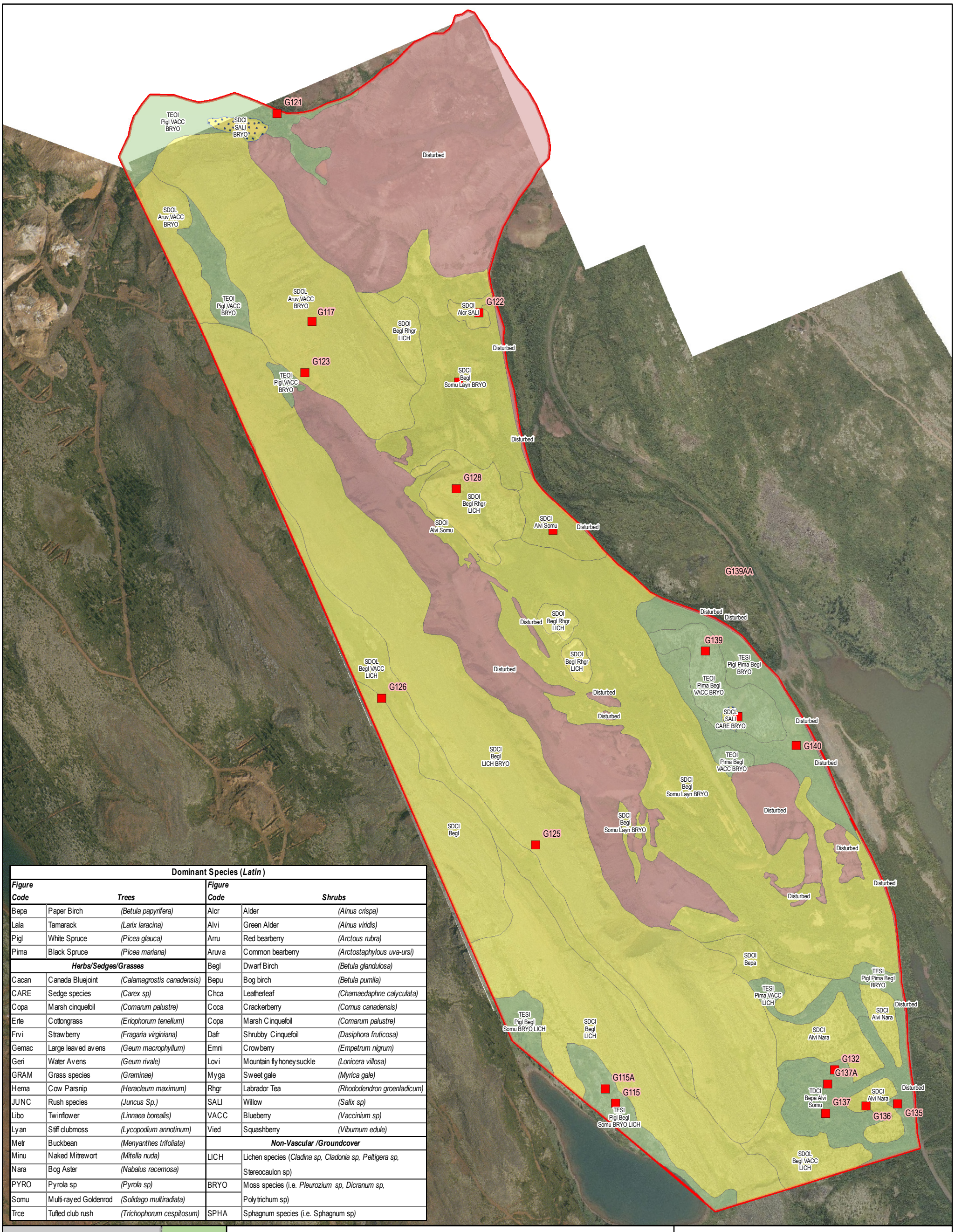
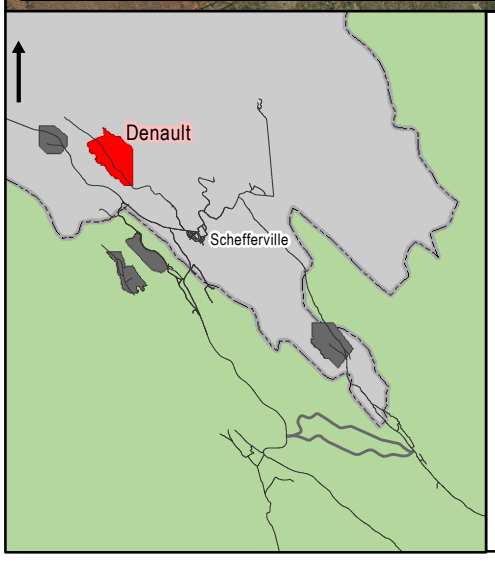


Figure 3-2 Typical vegetation communities found within the Gill study area. 1) taken from the top of the ridge looking east. 2) base of the ridge



Dominant Species (*Latin*)					
Figure Code		***Trees***	***Figure Code***		***Shrubs***
Bepa	Paper Birch	*(Betula papyrifera)*	Alcr	Alder	*(Alnus crispa)*
Lala	Tamarack	*(Larix laracina)*	Alvi	Green Alder	*(Alnus viridis)*
Pigl	White Spruce	*(Picea glauca)*	Arru	Red bearberry	*(Arctous rubra)*
Pima	Black Spruce	*(Picea mariana)*	Aruva	Common bearberry	*(Arctostaphylous uva-ursi)*
	Herbs/Sedges/Grasses		Begl	Dwarf Birch	*(Betula glandulosa)*
Cacan	Canada Bluejoint	*(Calamagrostis canadensis)*	Bepu	Bog birch	*(Betula pumila)*
CARE	Sedge species	*(Carex sp)*	Chca	Leatherleaf	*(Chamaedaphne calyculata)*
Copa	Marsh cinquefoil	*(Comarum palustre)*	Coca	Crackerberry	*(Cornus canadensis)*
Erte	Cottongrass	*(Eriophorum tenellum)*	Copa	Marsh Cinquefoil	*(Comarum palustre)*
Frvi	Strawberry	*(Fragaria virginiana)*	Dafr	Shrubby Cinquefoil	*(Dasiphora fruticosa)*
Gemac	Large leaved avens	*(Geum macrophyllum)*	Emni	Crowberry	*(Empetrum nigrum)*
Geri	Water Avens	*(Geum rivale)*	Lovi	Mountain fly honeysuckle	*(Lonicera villosa)*
GRAM	Grass species	*(Graminae)*	Myga	Sweet gale	*(Myrica gale)*
Hema	Cow Parsnip	*(Heracleum maximum)*	Rhgr	Labrador Tea	*(Rhododendron groenladicum)*
JUNC	Rush species	*(Juncus Sp.)*	SALI	Willow	*(Salix sp)*
Libo	Twinflower	*(Linnaea borealis)*	VACC	Blueberry	*(Vaccinium sp)*
Lyan	Stiff clubmoss	*(Lycopodium annotinum)*	Vied	Squashberry	*(Viburnum edule)*
Metr	Buckbean	*(Menyanthes trifoliata)*		***Non-Vascular /Groundcover***	
Minu	Naked Mitrewort	*(Mitella nuda)*	LICH	Lichen species (*Cladina sp, Cladonia sp, Peltigera sp,*	
Nara	Bog Aster	*(Nabalus racemosa)*		*Stereocaulon sp)*	
PYRO	Pyrola sp	*(Pyrola sp)*	BRYO	Moss species (i.e. *Pleurozium sp, Dicranum sp,*	
Somu	Multi-rayed Goldenrod	*(Solidago multiradiata)*		*Polytrichum sp)*	
Trce	Tufted club rush	*(Trichophorum cespitosum)*	SPHA	Sphagnum species (i.e. Sphagnum sp)	



Roads
Streams / Rivers - Perminant Flow
Streams / Rivers - Intermittent Flow
Marsh
Ore Bodies
Gill Study Area

Vegetation
Tree Communities
Shrub Communities
Wetland
Herb Communities

Disturbed Communities (No Veg)
Water

Vegetation Classification System

Physiognomic Type / Growth Form / Stand Cover / Height

T E O T

Pima Pigl Lala

Dominant Species

Classification System			
Physiognomic Type	***Growth Form***	***Stand Cover***	***Height***
Tree (T)	Deciduous (D)	Closed (C)	Tall (T)
Shrub (S)	Evergreen (E)	Open (O)	Intermediate (I)
Herb (H)	Mixed (M)	Sparse (S)	Low (L)
Non-Vascular (NV)	Graminoide (G)		Very Low (VL)
			Dwarf (D)

Labrador Iron Mines

Vegetation Community Classification - Gill

April 2012	1:7,258	Datum: NAD 27 Zone 19 Source: LIM
P#: 60218933	V#: 001	**Figure 3-3**

AECOM

0 125 250 500
Meters

3.3.2 Wetlands

Wetland communities are those that are saturated with water long enough to promote hydric soils, hydrophytic vegetation and various kinds of biological activity that are adapted to wet environments. These communities generally occur within isolated depressions or within the lower elevations of the property, especially to the northeast, where lower elevations and a gentler slope combine to offer a suitable topography.

Only one type of wetland is found within the Gill property: a swamp dominated by green alder. Swamps are wetlands dominated by trees or tall shrubs. They are characterized by tall woody vegetation cover and a wood-rich peat provided by the dominating vegetation. The soils of these wetlands are either mineral or organic and are influenced by minerotrophic groundwater.

Table 3-3 below provides a list of the wetland communities designated using the Canadian Wetland Classification System.

Table 3-3 Wetland Communities found within the Gill Property

Wetland Communities		
	Type	**Characterization**
Swamp wetland	Riparian Swamp	Occurs along the banks of continuous or intermittent water courses.
	Basin Swamp	Occurs in well-defined basins in glacial deposits or bedrock.

Wetland boundaries can be found on **Figure 3-4**.

3.3.2.1 Wetland Evaluation

This section presents the results of wetland evaluations completed for those areas where potential effects are anticipated. Evaluation methods follow the guidelines outlined in Environment Canada's, "Wetland Evaluation Guide, Issues Paper No. 1992-1" and, "Wetland Ecological Functions Assessment" (Environment Canada, 1992 and Environment Canada, 2008). The following provides a discussion of the hydrological, biogeochemical and habitat functions of the wetland communities within Gill study area.

Sw1

Sw2

Denault

Schefferville

Roads

Streams / Rivers - Perminant Flow

Streams / Rivers - Intermittent Flow

Marsh

Contours (5m)

Water

Wetland (Wetland Unit Number)

Ore Bodies

Gill Study Area

Labrador Iron Mines

Wetland Mapping - Gill

July 2012	1:7,000	Datum: NAD 27 Zone 19 Source: LIM
P#: 60218933	V#: 001	**Figure 3-4**

AECOM

0 125 250 500

Meters

Hydrological Evaluation

Swamp Sw2 receives significant amounts of water from a small stream that crosses most of the northern part of the study area, but it has no visible output. Therefore, the contribution of swamp Sw2 to water flow moderation and erosion protection is not significant due to its position in the Property and the fact that it occupies a small area.

Swamp Sw1 is located in a basin between two mining stockpiles and it seems reasonable to think that it owes its existence to them. Swamp Sw1 no doubt accumulates and stores a certain amount of water. In periods of important precipitation, it must overflow in the neighboring stream. Therefore, Sw1 can be considered as having a mild effect on water flow moderation.

Biogeochemical Evaluation

Both swamps are in a position where they can store and process water. However, swamp Sw1 is small (less than 0,15 ha) and its watershed is limited to neighbouring stockpiles. Therefore, the amount of water stored and processed must be so small that Sw1's contribution to water quality treatment can be considered insignificant. Furthermore, water flowing from aged and re-vegetated stockpiles such as these is generally of good quality. Processing by Sw1 is therefore unnecessary.

Swamp Sw2 is also rather small (less than 0,2 ha) but it receives significant amounts of water from a small stream that crosses most of the northern part of the study area. Therefore, swamp Sw2 has a more important water quality treatment function, as it processes water before it trickles down to the water table.

Swamps present in the Gill Property do not have a significant peat deposit and therefore cannot be considered as having a significant contribution to carbon sequestration.

Habitat Evaluation

There has been ample human disturbance in the Gill area in the past 30 years (Table 10). This disturbance is located throughout the property and seems to have resulted in the creation of Sw1. This is validated by the presence of a few dryland species within the limits of the wetland. As for Sw2, it exhibits pristine and representative plant communities.

No rare or endangered species have been found in any of the wetlands of the Gill Property.

Appendix E provides a summary of the wetland evaluation.

3.4 Avifauna Assessment Results

Weather conditions during the songbird survey were good at the Gill Property. Air temperature ranged from 8 to 16°C and wind speeds varied from 0 to 11 km/h. The cloud cover during the survey varied between 80 to 95% and no precipitation was noted. A total of 2.5 hours of surveying was used to complete the Gill survey.

A total of 19 species were observed during the Avifauna survey at the Gill Property. Of that number, 12 were observed using the limited radius count (LRC) method (Table 3-4). A total of 7 additional species were observed using the unlimited distance index (UDI) method.

A mean density of 4.18 breeding pairs per ha (BP/ha) was obtained using the data from the LRC method (Table 3-4). The Gill Property had the highest Shannon Diversity Index (1.11) among other properties studied around Schefferville in 2011. It had also one of the highest bird density (4.18 BP/ha) (Table 3-4) compared to other properties surveyed in the vicinity of Schefferville.

Table 3-4 Richness, diversity and mean density of breeding pairs based on the survey of 7 points counts at the Gill Property, July 2011

Species	Method	Tot	Avg	Std
Richness	LRC	12	3.50	2.07
	UDI	19	6.00	3.79
Shannon Diversity Index (LRC)	LRC	-	1.11	0.53
Density (BP/ha)	LRC	-	4.18	3.35

The most abundant species were the Fox Sparrow (0.91 BP/ha) and the White-crowned Sparrow (0.91 BP/ha) (Table 15). The Fox Sparrow (0.57) and the White-crowned Sparrow (0.57) had also the highest constancy (Table 3-5). One woodpecker (Northern Flicker) was observed during the survey. All other bird species were passerines. The breeding status of all species observed was classified as either possible (8 individuals) or probable (11 individuals).

Table 3-5 Constancy, richness and mean density of breeding pairs per species at the Gill Property, July 2011 (n = 7)

Species	Constancy	Richness				Density (BP/ha)	
		LRC (Breeding Pairs)		UDI (Breeding Pairs)			
	(LRC)	Avg	Std	Avg	Std	Avg	Std
Fox Sparrow	0.57	0.71	0.76	1.71	1.70	0.91	0.96
White-crowned Sparrow	0.57	0.71	0.76	1.71	1.11	0.91	0.96
Northern Waterthrush	0.29	0.29	0.49	1.14	1.57	0.36	0.62
Alder Flycatcher	0.29	0.29	0.49	0.43	0.79	0.36	0.62
Blackpoll Warbler	0.29	0.29	0.49	0.43	0.53	0.36	0.62
White-throated Sparrow	0.14	0.14	0.38	0.86	0.69	0.18	0.48
Swainson's Thrush	0.14	0.14	0.38	0.29	0.49	0.18	0.48
American Robin	0.14	0.14	0.38	0.29	0.49	0.18	0.48
Tennessee Warbler	0.14	0.14	0.38	0.29	0.76	0.18	0.48
Wilson's Warbler	0.14	0.14	0.38	0.29	0.49	0.18	0.48
Common Redpoll	0.14	0.14	0.38	0.29	0.49	0.18	0.48
Gray Jay	0.14	0.14	0.38	0.14	0.38	0.18	0.48
Common Raven	0.00	0.00	0.00	0.43	0.53	0.00	0.00
Northern Flicker	0.00	0.00	0.00	0.14	0.38	0.00	0.00
Yellow-bellied Flycatcher	0.00	0.00	0.00	0.14	0.38	0.00	0.00
Gray-cheeked Thrush	0.00	0.00	0.00	0.14	0.38	0.00	0.00
American Pipit	0.00	0.00	0.00	0.14	0.38	0.00	0.00
Yellow Warbler	0.00	0.00	0.00	0.14	0.38	0.00	0.00
Dark-eyed Junco	0.00	0.00	0.00	0.14	0.38	0.00	0.00

3.4.1 Habitat Description

A total of six habitat types were observed at the point counts. Point counts were mostly located in open habitats composed of bedrock covered by lichens and low shrubs. No wetlands were observed in the 50m radius of census points. One point count was located on a patch of burned land and was the only point count with dead standing trees (26 to 100). Very few if any human or natural disturbances were detected at the point count locations. On average, point count locations had four or five vertical vegetation strata, no dead standing trees and few fallen logs within the 50 m radius.

3.4.2 Species at Risk

Only one Species at Risk, the Gray-cheeked Thrush, was observed during the surveys. The Gray-cheeked Thrush is considered vulnerable by the Newfoundland and Labrador Department of Environment and Conservation (Department of Environment and Conservation 2011). The Gray-cheeked Thrush does not have a status in Quebec.
The preferred breeding habitat for the Gray-cheeked Thrush found in Newfoundland, Labrador and Northern Quebec is primarily coniferous stands of boreal forest region. It also inhabits tall shrubs communities in enclaves of the taiga or above tree line, as well as mature coniferous stands (Ouellet 1993).

No nests of Golden Eagle or Bald Eagle were found in the vicinity of the Gill Property although observations of flying birds were made within 20 km of the site.

3.5 Wildlife Assessment Results

The Gill Property was surveyed for wildlife on February 29th, after a Mine Security Meeting given by Grey Rock Mining operating this area. Prior to this survey, the last snowfall was on the 26th of February and surveys were conducted in a partly powdered (30%) and mostly swept (60%) snow containing some crusty parts (10%) with an average of 40 cm in depth, and a plain sun, no precipitation and moderate wind speeds and a -29°C temperature at 8 AM. Little more than 1 hour of survey was needed to do 2 transects (average 32 min). The Gill transect and the control were all located on a slope exposed to northeast.

Wildlife tracks were seen in all transects and belonged to 4 different species or species group: Red Fox, Snowshoe Hare, small mustelids and Ptarmigan sp. The Red Fox was the most frequent species detected with a total of 11 tracks overall and a mean weighed index (WI) of 0.0746 per transect (Table 17). This is a high track density of fox compared with other properties within the LIM Schefferville survey area for February 2012. The WI was more than 3 times higher than the mean WI of all surveys. The red fox WI for Gill is 7 times higher than that observed in the wooded areas of the headwaters of the Romaine River (Massé *et al.*, 2000). All tracks in G-1 transects might have been produced by only one or two individuals trying to climb the abrupt slope.
The next species group in abundance was the ptarmigan (Willow Ptarmigan or Rock Ptarmigan; but most likely Willow Ptarmigan) with a mean WI of 0.0600, which was roughly 2 times higher than the mean WI for LIM properties in February 2012 and the relative abundance found around the upper Romaine River Area (Massé *et al.*, 2000).

One Snowshoe Hare track was observed in the G-1 transect among a lot of fox tracks. The Snowshoe Hare WI (0.0068; Table 17) is among the lowest of the Schefferville survey areas of February 2012 and reach 7% of the mean WI of that entire area. The relative abundance of Snowshoe Hares in Gill Property is also much less than the one of the Upper Romaine River area in 2000. However, the Romaine River surveys were done during an abundance peak of snowshoe hare of a 9- to 10-year cycle (Massé *et al.*, 2000; Smith, 1983; Fox, 1978).

A small mustelid track was observed in the control transect. The resulting WI for the Gill area tallied to 0.0067, which was more than 8 times higher than the mean value obtained for the Schefferville area and about 20% of the relative abundance observed in the Upper Romaine River area during the winter 2000 (Massé *et al*., 2000).

Although, no small mammal tracks were observed in Gill Property, different species of small mammals (microtines) potentially present in the study area include the Masked Shrew (*Sorex cinerus*), the Pygmy Shrew (*Microsorex hoyi*), the Northern Water Shrew (*Sorex palustris*), the Black-backed Shrew (*Sorex acrticus*), the Mountain Phenacomys (*Phenacomys intermedius*), as well as one species that is likely to be designated as threatened or vulnerable in Québec – the Rock Vole (*Microtus chrotorrhinus*). In addition, the Star-nosed Mole (*Condylura cristata*), the Deer Mouse (*Peromyscus maniculatus*), the Southern Red-backed Vole (*Clethrionomys gapperi*), the Meadow Vole (*Microtus pennsylvanicus*), the Northern Bog Lemming (*Synaptomys borealis*), the Meadow Jumping Mouse (*Zapus hudsonius*) and the Woodland Jumping Mouse (*Napaeozapus insignis*) may be present. These species cannot be distinguished by their tracks in the snow and most of them dwell under the snow cover during winter, making tacking surveys rather inadequate to assess the abundance of small mammals in the winter.

Incidental sightings of a family group of five Canada Lynx were made in the area through the Town of Shefferville the day before the survey team arrival. However no Lynx tracks were detected during transects or on the transits.

Table 1Weighted Mean Abundance Index per Species or Group of Species in the Gill Transects (n = 2), February 2012

Species or Species Group	Weighted Mean Index	Standard Deviation
Ptarmigan sp.[1]	0.0600	0.0849
Snowshoe hare	0.0068	0.0097
Red Fox	0.0746	0.0301
Small mustelids[2]	0.0067	0.0094
Total	**0.1481**	**0.0545**
1. Include willow and rock ptarmigan. 2. Include ermine and least weasel.		

3.5.1 Habitat Use

Differences in abundance and richness of species were noted among the 2 transects completed at Gill Property. The G-1 transect (Figure 2-2) presented evidence for foxes and Snowshoe Hares while the control transect was used by Red Foxes, Ptarmigan and small mustelids. The control transect had a higher combined index of wildlife tracks (0.1867, 14 tracks). They were mostly produced by Ptarmigan (9 individuals) and Red Fox (4 individuals). The control transect also presents shrubland which is a different habitat.

Three habitat types were observed in the Gill transects : open mature black spruce stand, shrubland and barren disturbed land (Table 3-7). The WI and the number of species detected were higher in the control transect than on the study transect. This is not surprising since habitat type in transect G-1 was entirely modified by human activities compared to the control transect where some shrubs thickets and open black spruce stands were found (Table 3-7). The Gill Property was mostly located in disturbed and very open habitats composed of rocks with some willow and alder shrubs along a creek (photographs 17 to19).
Including all surveyed transects in 2012 near the Town of Schefferville, the total number of tracks (WI) observed in the 27 transects was positively correlated with the presence of dense mature black spruce stands ($r = 0.313$, $p = 0.112$).

Table 3-6 Proportion of Habitat Types in Transects at the Gill Property, February 2012

Transect	Habitat Type (%)			Total Weighted Index	Number of different species or group
	Open Mature Black Spruce Stand	Shrubland	Barren Disturbed Land		
G-1	-	-	100	0.1096	2
G-C (control)	23	70	7	0.1867	3
Mean	**11**	**35**	**54**	**0.1481** Std Dev. **0.0545**	**2.5 Total = 4 species or group**

3

Figure 3-5 Photograph 1) General Habitat and Observed in Transect G-1, February 29, 2012. 2) Gray Wolf Track Observed in Transect R-1, March 1st, 2012. 3) Ptarmigan Tracks Observed in G-C, February 29, 2012.

Table 3-7 Correlation Coefficients between the Weighted Index and Habitat Types Present in all Transects near the Town of Schefferville (n = 27), February 2012

Proportion in Transects	Ptarmigan sp.[1]	Snowshoe Hare	Squirrels sp.[2]	Small Mammals[3]	Gray Wolf	Red Fox	American Marten	Mink	Small Mustelids[4]	River Otter	Mammals	All Species
Dense Mature Black Spruce Stand		0.533					0.332				0.365	0.313
Open Mature Black Spruce Stand			0.383		-0.344	-0.493						
Young and Open Black Spruce Stand		-0.317	-0.317		0.800	0.344			-			
Old Burn along a creek								0.997		0.997		
Shrub land	0.413					0.435			0.500			
Wetland	0.387											
Open barren or disturbed land						0.599						

1. Include Willow and Rock Ptarmigan.
2. Include Red Squirrel and Northern Flying Squirrel.
3. Include Soricidae et Cricetidae species.
4. Include Ermine and Least Weasel.

The correlation is significant at the 0.01 level (bilateral).
The correlation is significant at the 0.05 level (bilateral).

3.5.1.1 Ptarmigan

Ptarmigan tracks abundance and shrub land were positively and significantly correlated (Table 3-8; p = 0.032). The presence of wetlands was also correlated to ptarmigan abundance (Table 3-8; p = 0.046) and it was linked to the presence of riparian shrubs. Ptarmigan are known to feed on willow and other shrub buds during winter time.

3.5.1.2 Snowshoe Hare

Surveys in the vicinity of Schefferville in 2012 showed that Snowshoe Hare presence was positively correlated with the abundance of dense black spruce stand (Table 3-8; p = 0.004) and with the abundance of tree cover in the transect (Spearman r = 0.695, p = 0.001). Inversely, open lands did not seem to be use by snowshoe hare. The same results were found in the upper Romaine River area where open black spruce and open mixed forests with coniferous trees were selected while burns were avoided (Massé *et al*., 2000). In the Upper Sainte-Marguerite River, the tree cover was also positively correlated with Snowshoe Hare tracks (Consortium Roche/Dessau, 1995). Preferred habitat of snowshoe hare may also vary following the abundance cycle of the species: only best habitats are used when populations are in the low level years of abundance (Wolff, 1980). Snowshoe Hare tracks were observed at Gill Property despite the lack of dense forest stands.

3.5.1.3 Red Fox

Spearman correlations between Red Fox tracks (WI) and habitat type show that fox tend to use shrub land (Table 3-8; p = 0.023) and barren or disturbed land (Table 3-8; p = 0.001) but tend also to avoid treed habitats (Table 3-8; p = 0.009). Its abundance was also negatively related with the cover percentage in transects (Spearman r = -0.373, p = 0.055). That was

probably the reason why fox tracks were seen so often in Gill transects. Generally, red foxes are found in varied habitats, from open to dense forest stands (Prescott and Richard, 2004; Banfield, 1977). In this study, treed habitats containing deeper and powdered snow might have made it difficult to walk and to search for preys compared to wind-blown areas of open lands. As it is also the case for marten, the large home range of red foxes may make it difficult to properly establish relative abundance with 500-m transects (see Thompson *et al.,* 1989).

3.5.1.4 Small Mustelids

Very few (2) small mustelids tracks were seen in LIM Schefferville February surveys making correlation analysis unsuitable. Ermine and least weasel were probably the species involved as they are known to live in various types of habitat: bush, wet meadows, regrowth, mixed and boreal forests and to feed on small mammals in their narrow home range (Banfield, 1979; Prescott and Richard, 2004).

3.5.2 Species at Risk

The Woodland Caribou (boreal population) was the only species at risk that could be present in the area and detected by track surveys around Schefferville. In Canada since May 2000, the threatened designation applies only to a widespread population ranging across the boreal forests of northern Canada (COSEWIC, 2011). The same status has been given in 2002 by the Newfoundland and Labrador Department of Environment and Conservation (2011). In Quebec it was designed as vulnerable species in 2005 (Ministère des Ressources Naturelles et de la Faune du Québec, 2010). The boreal population has decreased throughout most of the range and is threatened from habitat loss and increased predation, the latter possibly facilitated by human activities (Festa-Bianchet *et al*., 2011). Caribou from the northern migratory tundra herds can also be using the Schefferville area during winter (Bergerud *et al*., 2006).

Unlike most other wildlife species, winter track surveys are not an efficient way to survey caribou and obtain adequate population estimate and distribution because of their large home size. Aerial surveys are the proper approach and it was done over the entire area and beyond in 2009 and 2010 (Courtois *et al*., 2001). They found no evidence that the study area was used by sedentary Woodland Caribou of the boreal population during the pre-calving period in recent years (D'Astous *et al*., 2009; D'Astous *et al*., 2010).). The only caribou seen during these surveys was equipped with a radio-collar and belonged the migratory George River caribou herd which is not considered at risk although its population is declining and reaching extremely low levels since 1990 (Simard, 2010).

Wolverine (*Gulo gulo*) was designated endangered in Canada and in Newfoundland and Labrador in May 2003. In Québec, it has been considered a threatened species since 2000. The Wolverine has not been found in wilder environments despite specific surveys done for the project of the Kuururjuaq Park around the Torngat Mountains and Koroc River (Fortin, 2004). In addition, Inuits from Kangiqsulluajjuaq mentioned that they had not seen this animal since at least 30 years (Fortin, 2004).

The Least Weasel is likely to be designated vulnerable or threatened in Québec. Although its distribution remains vast, it is considered as rare throughout its range. One small mustelid track was observed in Gill area, but it was not possible to determine if it was made by an ermine or a least weasel.

3.6 Traditional Knowledge

This section summarizes traditional knowledge that was obtained incidentally during the 2011 and 2012 natural environmental field surveys. The area was searched for carving trees (i.e. paper birch), berry harvest areas and bear dens. A stand of carving trees were located within the study area (refer to Appendix F).

4. Summary and Conclusions

The 2011 Natural Environment Baseline Report documented herein has been prepared in support of a mining application for Labrador Iron Mines, Gill study area. This report has been prepared in accordance with the requirements of the Government of Newfoundland and Labrador.

4.1 Aquatic

Based on aquatic reconnaissance assessments, no surface water features were present within the Gill study area.

4.2 Terrestrial

Based on terrestrial surveys and assessments conducted on the Gill study area in 2011, the following conclusions are provided with respect to vegetation communities:

- Due to the disturbed nature of the site, vegetation communities comprised of ones mostly dominated by shrubs. All communities within the study area are considered common and typical of the Province of Newfoundland and Labrador.
- Less than 0.5ha of wetland occurs within the study area. These wetland communities are not significant.
- No rare flora was observed during the 2011 investigations.

4.3 Avifauna

Based on avifauna surveys and assessments conducted on the Gill Property in 2011, the following conclusions are made with regards to avifauna:

- A total of 19 bird species were observed during the Gill avifauna survey. One woodpecker and 18 passerines were seen or heard during the avifauna survey. The most abundant species identified during the survey were the Fox and the White-crowned Sparrows.

- The Gill area has the highest diversity of bird species and the second highest density compared to other sites surveyed in 2011 in the vicinity of Schefferville.

- The presence of one Species at Risk was confirmed in the study area. The Gray-cheeked Thrush is considered vulnerable by the Newfoundland and Labrador Department of Environment and Conservation. This species does not have a status in Quebec.

4.4 Wildlife

From the surveys and assessment conducted in the Gill Property in 2012, the following conclusions are made with regards to wildlife:

- A total of at least 4 terrestrial animal species (Ptarmigan (likely willow ptarmigan), Snowshoe Hare, Red Fox and small mustelids (ermine or least weasel) were detected during the winter tracks survey at Gill Property. Fox tracks were ubiquitous in the open and disturbed land found in many areas at the Gill Property. The control transect contained few more tracks and species as it was mostly located in a shrubland habitat.

- No caribou and no species at risk were detected in the area encompassing the Gill Property.

4.5 Traditional Knowledge

The area was searched for carving trees (i.e. paper birch), berry harvest areas and bear dens. A stand of carving trees were located within the study area (refer to Appendix F).

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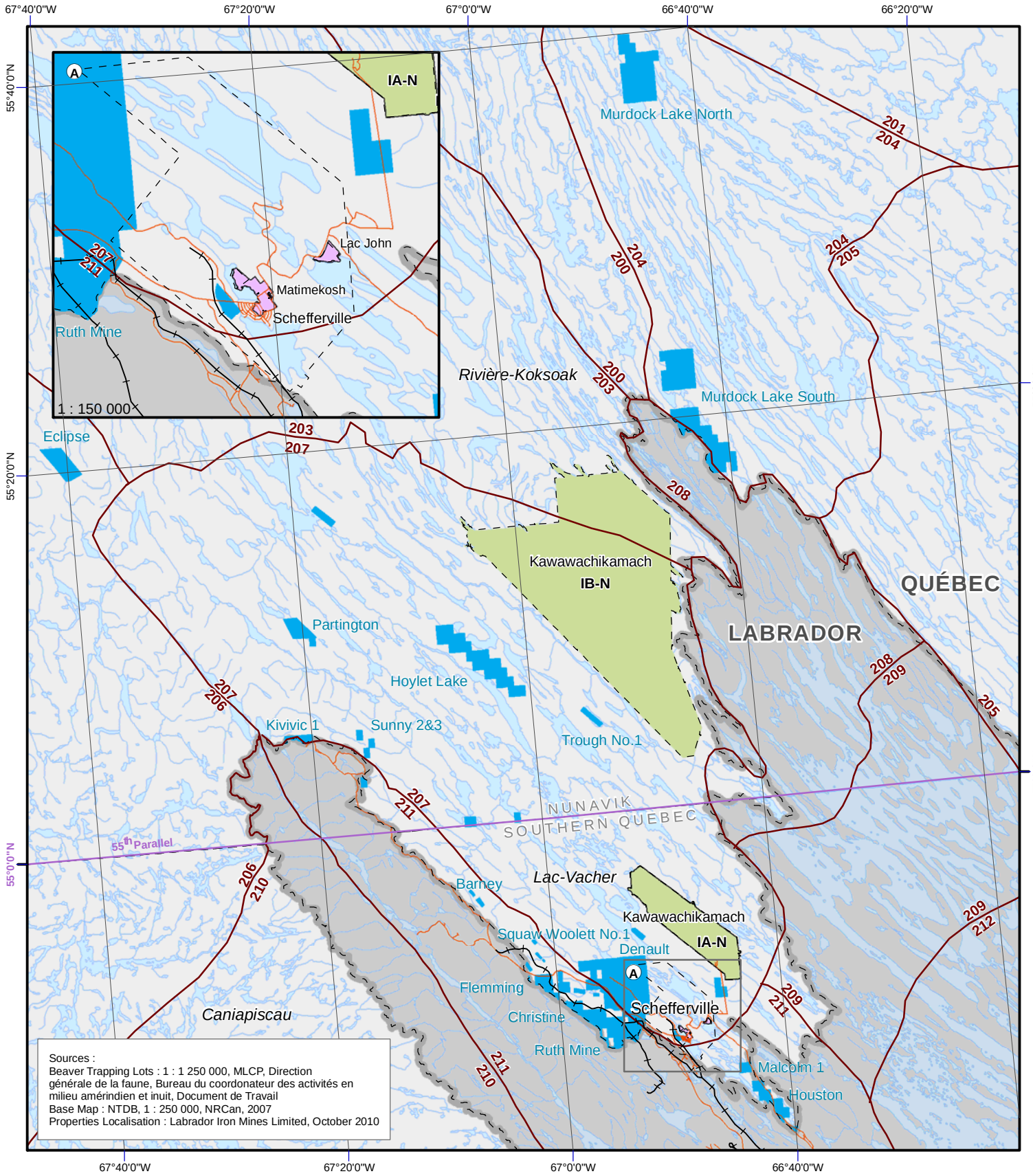
Appendix A – Map showing First Nations Land within Schefferville Area



Sources :
Beaver Trapping Lots : 1 : 1 250 000, MLCP, Direction générale de la faune, Bureau du coordonateur des activités en milieu amérindien et inuit, Document de Travail
Base Map : NTDB, 1 : 250 000, NRCan, 2007
Properties Localisation : Labrador Iron Mines Limited, October 2010

- Labrador Iron Mines Properties
- Provincial Boundary
- Municipal Boundary
- Lac-Vacher Unorganized Areas
- Indian Reserves
- Reserved Land (JBNQA and NEQA)
  - IA-N Land reserved for the Naskapi
  - IB-N Naskapi Village
- 205 Beaver Trapping Lots

N

0 10 20
Kilometers
1 : 500 000

Date : October 2010
Map Projection: UTM NAD27 Zone 19N

Labrador Iron Mines Limited

Quebec Environmental Assessment and Approval Process

Map 1 : Territorial Elements for the Environmental Legal Framework

AECOM

K:\05\20\600\00520694 Lab Iron Mines - Env\07_Plans\09_produit\Map_1_22_10_2010_cp.mxd

Appendix B – Team Biographies

Team Members for 2011 Natural Environment Baseline Study

Project Management and Senior Review

Jillian deMan, H.B.Sc. – Project Manager and Terrestrial & Wetland Ecologist

Ms. deMan is based out of AECOM's Kitchener office and is a Terrestrial and Wetland Ecologist. She is the Project Manager for the 2011 Baseline work and lead for the Terrestrial work. With AECOM for over 15 years, her expertise has a wide range of scope as part of the environmental sector. More specifically, she is one of AEOCM's leading wetlands/terrestrial experts and is involved in numerous projects that incorporate natural heritage issues/planning and restoration involving skills such as wetland boundary delineation, soils identification, multi-scale vegetation inventories, amphibian surveys, wetland evaluations, wetland monitoring, wetland planting recommendations and wetland construction. She has successfully undertaken field and baseline ecological work for Labrador Iron Mines currently and in the past.

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Since he joined AECOM, Mr. Lachance has worked on various environmental assessments submitted to the provincial government. These projects are the rehabilitation of wetlands on hydroelectric reservoir margins, various residential or industrial developments. His latest project was concerned with the large-scale ecological assessment of wetlands for conservation purposes. This work is being completed in collaboration with Québec's Ministère du Développement durable, de l'Environnement et des Parcs (MDDEP).

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Mapping and GIS Specialist

Rayna Carmichael, B.A.H. – GIS Specialist

Rayna Carmichael is based out of AECOM's Kitchener, Ontario office and provided mapping services for the entire 2011 Baseline work program. Rayna is a GIS Specialist, whose work has a specific focus on water resource management and aerial photograph interpretation for the purpose of natural environment work. She is proficient in various computer programs, including GIS software, ArcGIS, MapInfo, Idrisi (Raster), MicroStation and database management systems. She has worked on subwatershed studies, stormwater audits, floodplain mapping, reconstruction of municipal facilities, land use analysis and classification systems and other water / wastewater projects. Rayna has also successfully completed mapping requirements for all of the 2009 baseline data which AECOM undertook.

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Mapping and GIS Specialist

Rayna Carmichael, B.A.H. – GIS Specialist

Rayna Carmichael is based out of AECOM's Kitchener, Ontario office and provided mapping services for the entire 2011 Baseline work program. Rayna is a GIS Specialist, whose work has a specific focus on water resource management and aerial photograph interpretation for the purpose of natural environment work. She is proficient in various computer programs, including GIS software, ArcGIS, MapInfo, Idrisi (Raster), MicroStation and database management systems. She has worked on subwatershed studies, stormwater audits, floodplain mapping, reconstruction of municipal facilities, land use analysis and classification systems and other water / wastewater projects. Rayna has also successfully completed mapping requirements for all of the 2009 baseline data which AECOM undertook.

Team Members for 2011 Natural Environment Baseline Study

Project Management and Senior Review

Jillian deMan, H.B.Sc. – Project Manager and Terrestrial & Wetland Ecologist

Ms. deMan is based out of AECOM's Kitchener office and is a Terrestrial and Wetland Ecologist. She is the Project Manager for the 2011 Baseline work and lead for the Terrestrial work. With AECOM for over 15 years, her expertise has a wide range of scope as part of the environmental sector. More specifically, she is one of AEOCM's leading wetlands/terrestrial experts and is involved in numerous projects that incorporate natural heritage issues/planning and restoration involving skills such as wetland boundary delineation, soils identification, multi-scale vegetation inventories, amphibian surveys, wetland evaluations, wetland monitoring, wetland planting recommendations and wetland construction. She has successfully undertaken field and baseline ecological work for Labrador Iron Mines currently and in the past.

Gary Epp, BSc, MSc, Ph.D –Senior Ecologist

Dr. Gary Epp, AECOM's Ecological Services Manager for Ontario Western District, is the technical lead and responsible for technical review. As head of the Ecological Services Group, Dr. Epp is directly responsible for the management and coordination of a wide range of assignments, including natural heritage studies, environmental impact studies, watershed management plans, aquatic & terrestrial habitat studies, wetland evaluations & assessments, restoration plans, and natural resources screening. Dr. Epp has successfully completed numerous natural heritage studies, significant woodland evaluations, and environmental impact studies throughout Ontario. *Dr. Epp was a principal reviewer of the Province of Ontario's "Natural Heritage Reference Manual", the supporting documentation to the Provincial Policy Statement's (PPS) Natural Heritage Policies*. Dr. Epp provided expertise to the definition of natural heritage features and the implementation of Environmental Impact Studies. Dr. Epp is recognized as an expert in ecological assessment and natural heritage planning by the Ontario Municipal and Ontario Environmental Assessment Boards. Dr. Epp also has considerable experience in consultation with municipalities, regulatory agencies, the public, and stakeholder groups.

Yves Leblanc, B.Sc., M. Sc. Senior Terrestrial Ecologist

Yves Leblanc is based out of AECOM's Québec City office and is the technical lead for the 2011 Baseline work providing incite to the wildlife, avifauna and technical review. He is a senior wildlife research biologist and project manager. Yves specializes in wildlife studies related to hydroelectric projects in northern Québec with Hydro-Québec and transport projects (roads, highways). He and his team of wildlife biologists and technicians have been under contract with Hydro-Québec for numerous hydroelectric projects in Northern Québec to assess, reduce and monitor project impacts on caribou, moose, waterfowl, furbearers and small game before, during and after construction using a variety of survey methods including aerial surveys, telemetry and habitat evaluation techniques. Mr.Leblanc speaks French and English.

Christen Audet, Ph.D., VEA – Senior Ecologist

Christen Audet is based out of AECOM's Montreal office and is the technical lead and provided insight to the field programs and technical review. Mr. Christen Audet is a Senior Registered Professional Forester/Forest Engineer in AECOM's Montreal office, specialized in applied ecology and human interaction with the environment. He has over 20 years of experience as a manager in numerous environmental assessments in Canada and abroad in natural resources (mining, forestry). In the mining sector, he has advised clients such as Rio Tinto on steps to meet sustainable stewardship for vast land holdings - in consideration of both biological values and stakeholders. He also takes a lead in Due Diligence reviews of major projects and properties, including coordination of remediation action plans for financing transactions. In fact, Dr. Audet is a Certified Environmental Auditor with sustainable mining accreditation and experience extending to Fortune 500 companies as well as internationally-funded projects.

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Systems Advisory Committee for the City of Guelph. Nicola has worked with mining sector clients in providing Environmental Effects Monitoring reports (Liberty Mines Inc.), as well as environmental regulatory advice and baseline surveys for Billiken Management Inc. Dr Lower is skilled at coordinating and bringing environmental teams together for the purpose of providing clients with a comprehensive study integrated with all relevant disciplines

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Ms. Tremblay works as an aquatic biologist. Since obtaining her Master's degree specializing in the eel's reproductive strategy in the St. Lawrence drainage basin, she has contributed a special expertise to the firm and has sought interprovincial cooperation in Eastern Canada, and even an international discussion on eel-related issues. Since joining the AECOM team, her main responsibilities involve environmental studies and assessments, environmental site characterizations, authorization certificate requests, environmental follow-ups and impact studies of various projects that are likely to cause damage to fish habitat. Such studies dealing with ichthyological fauna required to characterize and examine potential damage to fish habitat and its aquatic communities, and to evaluate threats on species whose status is precarious.

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Since he joined AECOM, Mr. Lachance has worked on various environmental assessments submitted to the provincial government. These projects are the rehabilitation of wetlands on hydroelectric reservoir margins, various residential or industrial developments. His latest project was concerned with the large-scale ecological assessment of wetlands for conservation purposes. This work is being completed in collaboration with Québec's Ministère du Développement durable, de l'Environnement et des Parcs (MDDEP).

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Rayna Carmichael is based out of AECOM's Kitchener, Ontario office and provided mapping services for the entire 2011 Baseline work program. Rayna is a GIS Specialist, whose work has a specific focus on water resource management and aerial photograph interpretation for the purpose of natural environment work. She is proficient in various computer programs, including GIS software, ArcGIS, MapInfo, Idrisi (Raster), MicroStation and database management systems. She has worked on subwatershed studies, stormwater audits, floodplain mapping, reconstruction of municipal facilities, land use analysis and classification systems and other water / wastewater projects. Rayna has also successfully completed mapping requirements for all of the 2009 baseline data which AECOM undertook.

Team Members for 2011 Natural Environment Baseline Study

Project Management and Senior Review

Jillian deMan, H.B.Sc. – Project Manager and Terrestrial & Wetland Ecologist

Ms. deMan is based out of AECOM's Kitchener office and is a Terrestrial and Wetland Ecologist. She is the Project Manager for the 2011 Baseline work and lead for the Terrestrial work. With AECOM for over 15 years, her expertise has a wide range of scope as part of the environmental sector. More specifically, she is one of AEOCM's leading wetlands/terrestrial experts and is involved in numerous projects that incorporate natural heritage issues/planning and restoration involving skills such as wetland boundary delineation, soils identification, multi-scale vegetation inventories, amphibian surveys, wetland evaluations, wetland monitoring, wetland planting recommendations and wetland construction. She has successfully undertaken field and baseline ecological work for Labrador Iron Mines currently and in the past.

Gary Epp, BSc, MSc, Ph.D –Senior Ecologist

Dr. Gary Epp, AECOM's Ecological Services Manager for Ontario Western District, is the technical lead and responsible for technical review. As head of the Ecological Services Group, Dr. Epp is directly responsible for the management and coordination of a wide range of assignments, including natural heritage studies, environmental impact studies, watershed management plans, aquatic & terrestrial habitat studies, wetland evaluations & assessments, restoration plans, and natural resources screening. Dr. Epp has successfully completed numerous natural heritage studies, significant woodland evaluations, and environmental impact studies throughout Ontario. *Dr. Epp was a principal reviewer of the Province of Ontario's "Natural Heritage Reference Manual", the supporting documentation to the Provincial Policy Statement's (PPS) Natural Heritage Policies*. Dr. Epp provided expertise to the definition of natural heritage features and the implementation of Environmental Impact Studies. Dr. Epp is recognized as an expert in ecological assessment and natural heritage planning by the Ontario Municipal and Ontario Environmental Assessment Boards. Dr. Epp also has considerable experience in consultation with municipalities, regulatory agencies, the public, and stakeholder groups.

Yves Leblanc, B.Sc., M. Sc. Senior Terrestrial Ecologist

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Christen Audet, Ph.D., VEA – Senior Ecologist

Christen Audet is based out of AECOM's Montreal office and is the technical lead and provided insight to the field programs and technical review. Mr. Christen Audet is a Senior Registered Professional Forester/Forest Engineer in AECOM's Montreal office, specialized in applied ecology and human interaction with the environment. He has over 20 years of experience as a manager in numerous environmental assessments in Canada and abroad in natural resources (mining, forestry). In the mining sector, he has advised clients such as Rio Tinto on steps to meet sustainable stewardship for vast land holdings - in consideration of both biological values and stakeholders. He also takes a lead in Due Diligence reviews of major projects and properties, including coordination of remediation action plans for financing transactions. In fact, Dr. Audet is a Certified Environmental Auditor with sustainable mining accreditation and experience extending to Fortune 500 companies as well as internationally-funded projects.

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Systems Advisory Committee for the City of Guelph. Nicola has worked with mining sector clients in providing Environmental Effects Monitoring reports (Liberty Mines Inc.), as well as environmental regulatory advice and baseline surveys for Billiken Management Inc. Dr Lower is skilled at coordinating and bringing environmental teams together for the purpose of providing clients with a comprehensive study integrated with all relevant disciplines

Sarah Aitken, **B.Sc. (Hons.) – Fisheries Biologist**

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Valérie Tremblay, M.Sc – Aquatic Biologist

Ms. Tremblay works as an aquatic biologist. Since obtaining her Master's degree specializing in the eel's reproductive strategy in the St. Lawrence drainage basin, she has contributed a special expertise to the firm and has sought interprovincial cooperation in Eastern Canada, and even an international discussion on eel-related issues. Since joining the AECOM team, her main responsibilities involve environmental studies and assessments, environmental site characterizations, authorization certificate requests, environmental follow-ups and impact studies of various projects that are likely to cause damage to fish habitat. Such studies dealing with ichthyological fauna required to characterize and examine potential damage to fish habitat and its aquatic communities, and to evaluate threats on species whose status is precarious.

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Mr. Lachance co-lead the terrestrial team and ensured collection of data for legislative requirements in Québec. Mr Lachance is an ecologist with degrees in both land planning and biology. As a Ph.D. student, Mr Lachance's work concerned with the impact of human disturbances on isolated wetlands. This work led to various and well-received publications in renowned journals. As a member of the Peatland Ecology Research Group (PERG), Mr Lachance also got involved in restoration ecology, as he participated in the whole-ecosystem restoration project of the Bois-des-bel peatland, in southeastern Québec. In recent years, Mr Lachance worked both for private corporations and the public administration on various projects concerning wetland conservation and land-use planning at various scales. For example, he drafted the conservation plans for the Villeroy, Shannon and Manicouagan River peninsula's peatlands. As a result of these past experiences, Mr Lachance is known today as an expert in the fields of landscape planning and wetland ecology and management.

Since he joined AECOM, Mr. Lachance has worked on various environmental assessments submitted to the provincial government. These projects are the rehabilitation of wetlands on hydroelectric reservoir margins, various residential or industrial developments. His latest project was concerned with the large-scale ecological assessment of wetlands for conservation purposes. This work is being completed in collaboration with Québec's Ministère du Développement durable, de l'Environnement et des Parcs (MDDEP).

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James Kamstra, B.Sc., M.E.S – Senior Terrestrial Ecologist

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Appendix C – Vegetation Community Data

		G137A	G121	G139	G115	G132	G135	G140	G137
		G137a	G121	G139	G115	G132	G135	G140	G137
Surveyors		L, JM	L, JM	L, JM	JD, SB	L, JM	L, JM	JD, SB	L, JM
Date		17-08-2011	17-08-2011	15-08-2011	17-08-2011	17-08-2011	17-08-2011	15-08-2011	17-08-2011
Photos		2496-97	2403-04	2432-33	621-622	2500-01	2485-86	535-536	2490-91 + 2493-94
Type		Betulaie à papier et à aulnes	pessière blanche à vaccinum et mousses	Pessière ouverte à vaccinium et mousses		Pessière noire ouverte à BEGL et mousses	Pessière noire ouverte à ?		Aulnaie
Vegetation		Upland	Upland	Upland	Upland	Upland	Upland	Upland	Upland
Classification		TDCI	TEOI	TEOI	~~TESI~~ SDCI	TESI	TESI	TESI	SDCT
Dominant Woody		Bepa Alvi	Pigl VACC	Pima Begl	~~Pigl~~ Begl	Begl Rhgr	Pima VACC	Pigl Pima Begl	Alvi ~~Somu~~
Dominant Herbaceous		Somu		VACC	Somu				SOMU
Dominant Groundcover			BRYO	BRYO	BRYO LICH	BRYO	LICH	BRYO	
Structure		A5/C4	A6/C3	B6/D4	A5	A6/E4	B6/E4	E4	A4
% Tree		50	55	40	2	20	25	25	0
% Shrub		110	90	70	85	95	60	80-90	100
% Herb		100	20	7	30	10	5	5	85
% Moss		5	90	70	20	90	20	95	2
% lichen		0	5	30	25	1	75	2	0
% Rock		0	0	0	0	0	0	0	0
% Water		0	0	0	0	0	0	0	0
% exposed soils		0	0	0	5	0	10	3	0
Thickness of organic layer (cm)		5	6	3	3.5	5	3	2	1
Thickness of mineral layer (cm)		15	15	15	2.5	15	18	11	inconnu
Texture		red sand + sub-angular gravel	coarse silty sand + gravel sub-angular	red silty sand + gravel	S S with gravel	coarse sand + gravel	coarse silty sand + gravel sub-angular/ silty red sand + gravel sub-angular	S S with gravel	red sand + sub-angular gravel
Remarks		Woody debris 2%	Woody debris 10%	Woody debris 1%	Woody debris 5% / litter 10%	Woody debris 2%		Litter 5%	Woody debris 1%

G118	G119	G126A	G136	G123	G122	G128	G117	G126	G115A	G127	G138	St 133
G118	G119	G126A	G136	G123	G122	G128	G117	G126	G115a	G127	G138	
L, JM	JD, SB	JD, SB	L, JM	L, JM	L, JM	JD, SB	L, JM	JD, SB	JD, SB	JD, SB	JD, SB	17-08-2011
15-08-2011	15-08-2011	17-08-2011	17-08-2011	17-08-2011	15-08-2011	15-08-2011	17-08-2011	17-08-2011	17-08-2011	15-08-2011	15-08-2011	L, JM
2423-24	531-532	615-616	2488-89	2512-14	2419-20	525-526	2508-10	611-612	620-621	533-534	537-539	
Bétulaie			Aulnaie				Arbustaie à vaccinium					idem à G132 with more LEGR and lichen
Upland	Upland	Upland	Upland	Upland	Upland	Upland	Upland	Upland	Upland	Wetland	Wetland	
SDCI	SDCI	SDCI	SDCI	SDCL	SDOI	SDOI	SDOL	SDOL	SDCL	SDCI	SDCL	
Begl	ALVI	Begl	Alvi ~~Nara~~	Begl	Alvi SALI	Begl Rhgr EMNI	Aruv VACC	~~Begl~~ ARUV EMNI VACC	~~Pigl~~ VAVI VAUL Begl	SALI	SALI	
Somu Lyan	~~Alvi~~ Somu		NARA								CARE	
BRYO		LICH BRYO		BRYO		LICH		LICH	LICH	BRYO	BRYO	
A5	A5	A5	A5	A6	D5	-	B6	C6	B6/B9	A5	B6	
3	0	2	0	3	0	0	0	0	-	0	1	
95	90	85	98	90	35	60	40	50	-	100	70	
80	15	2	80	10	10	1	0	0	-	10	40	
30	10	40	3	40	10	15	0	1	-	10	80	
0	0	40	0	0	0	65	2	25	-	0	5	
0	0	20	0	0	0	10	0	50	10	0	0	
0	10	0	0	0	0	0	0	0	0	0	0	
0	45	0	0	0	65	7.5	60	1	2	50	10	
0	0	5	1	1	0	2	0	0	0	0	0	
11	15	0	?	15	20	13	20	12	20	15	11	
silty sand with gravel/red coarse silty sand + gravel	Sifs with gravel, sub-angular		red sand + sub-angular gravel	fine silty sand + gravel sub-angular	silty red sand + gravel	S S with gravel	red sand + gravel + silt with roots	Sand + gravel	sand + gravel	Sand	gravel sub-angular	
	Woody debris 5% /litter 10-15%	Woody debris 2% /litter 6%		Woody debris 1%	Litter 20%	Woody debris 10%	Woody debris 1%	mostly rock/Woody debris 3%	Woody debris 15%	Woody debris 10% /litter 50%		

Appendix D – Plant Species List

Code	Historical Latin Name	Nom latin	French Name	English Name	Type	Wetness Status	G137A	G121	G139	G115	G132	G135	G140	G137	G118	G119
BEPA		Betula papyrifera	Bouleau blanc	Paper birch	Tree	Terrestrial	62.5									
pigl		Picea glauca	Épinette blanche	White spruce	Tree	Terrestrial		62.5		2.5			37.5		2.5	
PIMA		Picea mariana	Épinette noire	Black spruce	Tree	Facultative	0.5		37.5		15	15	15			
ALVI		Alnus viridis ssp. crispa	Aulne crispé	American green alder	Shrub	Terrestrial	62.5			15		15		87.5		87.5
ARUV		Arctostaphylos uva-ursi	Raisin d'ours	Commun bearberry	Shrub	Terrestrial										
BEGL		Betula glandulosa	Bouleau glanduleux	Glandular birch	Shrub	Facultative	2.5	15	37.5	37.5	62.5	15	62.5		87.5	2.5
coca		Cornus canadensis	Cornouiller du Canada	Bunchberry	Shrub	Terrestrial	2.5	37.5	15	2.5	15	2.5	2.5		2.5	2.5
EMNI		Empetrum nigrum	Camarine noire	Black crowberry	Shrub	Terrestrial		2.5	2.5	2.5	2.5	2.5	15			2.5
JUCO		Juniperus communis	Génévrier commun	Common juniper	Shrub	Terrestrial		2.5								
phca		Phyllodoce caerulea	Phyllodoce bleue	Purple mountain heather	Shrub	Terrestrial										
rhgr		Rhododendron groenlandicum	Thé du Labrador	Common Labrador tea	Shrub	Obligate	0.5	15	15	2.5	37.5	15	2.5		2.5	
RIGL		Ribes glandulosum	Gadellier glanduleux	Skunk current	Shrub	Facultative				2.5						2.5
RITR		Ribes triste	Gadellier amer	Swamp red currant	Shrub	Obligate	37.5				0.5			15		
RUAL		Rubus allegheniensis	Ronce des Alléghanys	Alleghaney blackberry	Shrub	Terrestrial										
RUPU		Rubus pubescens	Ronce pubescente	Dewberry	Shrub	Facultative										
rubsp		Rubus sp.	Ronce sp.	Dewberry sp.	Shrub	-	15									
SAAR		Salix argyrocarpa	Saule à fruits argentés	Labrador willow	Shrub	Terrestrial										
SAHU		Salix humilis	Saule humble	Prairie willow	Shrub	Terrestrial	2.5		15		2.5	2.5				
sasp		Salix sp.	Saule sp.	Willow sp.	Shrub	-										
vaan		Vaccinium angustifolium	Airelle à feuilles étroites	Early lowbush blueberry	Shrub	Terrestrial		62.5	37.5		2.5	37.5	15		2.5	
vacsp		Vaccinium sp.	Airelle sp.	Blueberry sp.	Shrub	-										
VAUL		Vaccinium uliginosum	Airelle des marécages	Alpine bilberry	Shrub	-		15			2.5	2.5	2.5			
vavi		Vaccinium vitis-idaea	Airelle rouge	Mountain cranberry	Shrub	Terrestrial		2.5	2.5	15	2.5	2.5	2.5		0.5	
VIED		Viburnum edule	Viorne comestible	Squashberry	Shrub	Facultative						2.5				
ACMI		Achillea millefolium	Achillée millefeuille	Common yarrow	Herb	Terrestrial										
agme		Agrostis mertensii	Agrostide de Mertens	Northern bentgrass	Herb	Terrestrial										
agsp		Agrostis sp.	Agrostide sp.	Bentgrass sp.	Herb	-		2.5	2.5		2.5	2.5			2.5	
HIAL		Anthoxanthum monticola ssp. alpinum	Hiérocloé alpine	Alpine sweetgrass	Herb	Terrestrial										
cacan		Calamagrostis canadensis	Calamagrostide du Canada	Bluejoint reedgrass	Herb	Facultative							0.5			
CAINT		Carex interior	Carex continental	Inland sedge	Herb	Obligate										
CALI		Carex limosa	Carex des bourbiers	Mud sedge	Herb	Obligate										

Code	Historical Latin Name	Nom latin	French Name	English Name	Type	Wetness Status	G137A	G121	G139	G115	G132	G135	G140	G137	G118	G119
epan	Epilobium angustifolium	Chamerion angustifolium subsp. angustifolium	Épilobe à feuilles étroites	Fireweed	Herb	Terrestrial		2.5	2.5	2.5		2.5	2.5		2.5	
COTR		Coptis trifolia	Savoyane	Goldthread	Herb	Terrestrial							2.5			
DEFL		Deschampsia flexuosa	Deschampsie flexueuse	Wavy hairgrass	Herb	Terrestrial		0.5		0.5		0.5				
LYCO	Lycopodium complanatum	Diaphasiastrum complanatum	Lycopode aplati	Northern ground-cedar	Herb	Terrestrial		15								
DRSP	Dryopteris spinulosa	Dryopteris carthusiana	Dryoptère spinuleuse	Spinulose wood fern	Herb	Terrestrial								15		
EQPR		Equisetum pratense	Prêle des prés	Meadow horsetail	Herb	Facultative										2.5
COLI	Comandra livida	Geocaulon lividum	Comandre livide	Northern comandra	Herb	Terrestrial		2.5					15			
GRSP		Graminées sp.	Graminées sp.	Grass sp.	Herb	-				2.5			2.5			2.5
HEMA		Heracleum maximum	Berce laineuse	Commun cow parsnip	Herb	Terrestrial										
HUSE		Huperzia selago	Lycopode sélagine	Northern firmoss	Herb	Terrestrial										
inc10		Inconnu 10	Inconnu 10	Unknow 10	Herb	-										2.5
libo		Linnaea borealis	Linnée boréale	Twinflower	Herb	Terrestrial		2.5				2.5	2.5		2.5	2.5
LUPAR		Luzula parviflora	Luzule parviflore	Small-flowered woodrush	Herb	Terrestrial										
lyan		Lycopodium annotinum	Lycopode innovant	Stiff clubmoss	Herb	Terrestrial	37.5	2.5	15		15	2.5	2.5		37.5	2.5
LYCOSP		Lycopodium sp.	Lycopode sp.	Clubmoss sp.	Herb	-										
minu		Mitella nuda	Mitrelle nue	Naked mitrewort	Herb	Facultative										
nara		Nabalus racemosus	Prenanthe à grappes	Glaucous rattlesnakeroot	Herb	Facultative										
PEPA	Petasites palmatus	Petasites frigidus var. palmatus	Pétasite palmé	Palmate coltsfoot	Herb	Facultative										2.5
somu		Solidago multiradiata	Verge d'or à rayons nombreux	Multi-rayed goldenrod	Herb	Terrestrial	87.5	15	2.5	37.5	0.5	2.5	2.5	62.5	37.5	15
stca		Stellaria calycantha	Stellaire calycanthe	Northern starwort	Herb	Obligate										
taof		Taraxacum officinale	Pissenlit officinal	Common dandelion	Herb	Terrestrial										
tasp		Taraxacum sp.	Pissenlit	Dandelion	Herb	-									0.5	
TRBO		Trientalis borealis	Trientale boréale	Northern starflower	Herb	Terrestrial	0.5	2.5			0.5					
VIOLA		Viola sp.	Violette sp.	Violet sp.	Herb	-	2.5					0.5				
LICH		LICHEN			Lichens			15	37.5	15	2.5	62.5	2.5			
CLMI		Cladina mitis			Lichens			p	p	p		p				
CLRA		Cladina rangiferina			Lichens					p						
clst		Cladina stellaris			Lichens			p	p	p	p	p	p			
CLASP		Cladonia sp			Lichens					p		p	p			
pelsp		Peltigera sp.			Lichens			p		p		p				
RHSP		Rhizocarpon sp.			Lichens											
UMSP		Umbilicaria sp.			Lichens											
bryo		BRYOPHYTES			Moss		2.5	87.5	62.5	15	87.5	15	87.5	2.5	37.5	15
AUPA		Aulacomnium palustre			Moss			p								

Code	Historical Latin Name	Nom latin	French Name	English Name	Type	Wetness Status	G137A	G121	G139	G115	G132	G135	G140	G137	G118	G119
DIPO		Dicranum polysetum			Moss							p				
DISP		Dicranum sp.			Moss					p						p
DIUN		Dicranum undulatum			Moss						p	p				
plsc		Pleurozium schreberi			Moss		p	p	p	p	p	p	p	p	p	p
POCOM		Polytrichum commune			Moss					p						p
post		Polytrichum strictum			Moss					p	p		p			p
PTCR		Ptilium crista-castrensis			Moss								p			
spfa		Sphagnum fallax			Moss										p	p
SPHSP		Sphagnum sp.			Moss											

Code	Historical Latin Name	Nom latin	French Name	English Name	Type	Wetness Status	G126A	G136	G123	G122	G128	G117	G126	G115A	G127	G138
BEPA		Betula papyrifera	Bouleau blanc	Paper birch	Tree	Terrestrial			2.5							
pigl		Picea glauca	Épinette blanche	White spruce	Tree	Terrestrial	0.5		2.5					2.5		0.5
PIMA		Picea mariana	Épinette noire	Black spruce	Tree	Facultative										
ALVI		Alnus viridis ssp. crispa	Aulne crispé	American green alder	Shrub	Terrestrial		87.5	2.5	37.5						2.5
ARUV		Arctostaphylos uva-ursi	Raisin d'ours	Commun bearberry	Shrub	Terrestrial						37.5	15			
BEGL		Betula glandulosa	Bouleau glanduleux	Glandular birch	Shrub	Facultative	87.5		87.5		15	2.5	0.5	15		
coca		Cornus canadensis	Cornouiller du Canada	Bunchberry	Shrub	Terrestrial			2.5					2.5	2.5	
EMNI		Empetrum nigrum	Camarine noire	Black crowberry	Shrub	Terrestrial	15				15	2.5	15			2.5
JUCO		Juniperus communis	Génévrier commun	Common juniper	Shrub	Terrestrial										
phca		Phyllodoce caerulea	Phyllodoce bleue	Purple mountain heather	Shrub	Terrestrial			15		2.5	15	2.5			
rhgr		Rhododendron groenlandicum	Thé du Labrador	Common Labrador tea	Shrub	Obligate			2.5		15		0.5	2.5		2.5
RIGL		Ribes glandulosum	Gadellier glanduleux	Skunk current	Shrub	Facultative									2.5	
RITR		Ribes triste	Gadellier amer	Swamp red currant	Shrub	Obligate		15								
RUAL		Rubus allegheniensis	Ronce des Alléghanys	Alleghaney blackberry	Shrub	Terrestrial									15	
RUPU		Rubus pubescens	Ronce pubescente	Dewberry	Shrub	Facultative									2.5	
rubsp		Rubus sp.	Ronce sp.	Dewberry sp.	Shrub	-										
SAAR		Salix argyrocarpa	Saule à fruits argentés	Labrador willow	Shrub	Terrestrial			2.5							
SAHU		Salix humilis	Saule humble	Prairie willow	Shrub	Terrestrial			15	15	2.5					37.5
sasp		Salix sp.	Saule sp.	Willow sp.	Shrub	-									62.5	
vaan		Vaccinium angustifolium	Airelle à feuilles étroites	Early lowbush blueberry	Shrub	Terrestrial	15		2.5							
vacsp		Vaccinium sp.	Airelle sp.	Blueberry sp.	Shrub	-								0.5		
VAUL		Vaccinium uliginosum	Airelle des marécages	Alpine bilberry	Shrub	-	2.5		2.5		15	15	15	15		2.5
vavi		Vaccinium vitis-idaea	Airelle rouge	Mountain cranberry	Shrub	Terrestrial	2.5				15		2.5	62.5		2.5
VIED		Viburnum edule	Viorne comestible	Squashberry	Shrub	Facultative										
ACMI		Achillea millefolium	Achillée millefeuille	Common yarrow	Herb	Terrestrial				2.5						0.5
agme		Agrostis mertensii	Agrostide de Mertens	Northern bentgrass	Herb	Terrestrial				15						
agsp		Agrostis sp.	Agrostide sp.	Bentgrass sp.	Herb	-			2.5							
HIAL		Anthoxanthum monticola ssp. alpinum	Hiérocloé alpine	Alpine sweetgrass	Herb	Terrestrial				2.5						
cacan		Calamagrostis canadensis	Calamagrostide du Canada	Bluejoint reedgrass	Herb	Facultative									2.5	2.5
CAINT		Carex interior	Carex continental	Inland sedge	Herb	Obligate										0.5
CALI		Carex limosa	Carex des bourbiers	Mud sedge	Herb	Obligate										37.5

Code	Historical Latin Name	Nom latin	French Name	English Name	Type	Wetness Status	G126A	G136	G123	G122	G128	G117	G126	G115A	G127	G138
epan	Epilobium angustifolium	Chamerion angustifolium subsp. angustifolium	Épilobe à feuilles étroites	Fireweed	Herb	Terrestrial	0.5		2.5	2.5	0.5			0.5		2.5
COTR		Coptis trifolia	Savoyane	Goldthread	Herb	Terrestrial										
DEFL		Deschampsia flexuosa	Deschampsie flexueuse	Wavy hairgrass	Herb	Terrestrial	0.5									0.5
LYCO	Lycopodium complanatum	Diaphasiastrum complanatum	Lycopode aplati	Northern ground-cedar	Herb	Terrestrial										
DRSP	Dryopteris spinulosa	Dryopteris carthusiana	Dryoptère spinuleuse	Spinulose wood fern	Herb	Terrestrial										
EQPR		Equisetum pratense	Prêle des prés	Meadow horsetail	Herb	Facultative										
COLI	Comandra livida	Geocaulon lividum	Comandre livide	Northern comandra	Herb	Terrestrial										
GRSP		Graminées sp.	Graminées sp.	Grass sp.	Herb	-	2.5									
HEMA		Heracleum maximum	Berce laineuse	Commun cow parsnip	Herb	Terrestrial									15	
HUSE		Huperzia selago	Lycopode sélagine	Northern firmoss	Herb	Terrestrial										
inc10		Inconnu 10	Inconnu 10	Unknow 10	Herb	-										
libo		Linnaea borealis	Linnée boréale	Twinflower	Herb	Terrestrial										
LUPAR		Luzula parviflora	Luzule parviflore	Small-flowered woodrush	Herb	Terrestrial				0.5						
lyan		Lycopodium annotinum	Lycopode innovant	Stiff clubmoss	Herb	Terrestrial										
LYCOSP		Lycopodium sp.	Lycopode sp.	Clubmoss sp.	Herb	-										
minu		Mitella nuda	Mitrelle nue	Naked mitrewort	Herb	Facultative									2.5	2.5
nara		Nabalus racemosus	Prenanthe à grappes	Glaucous rattlesnakeroot	Herb	Facultative		37.5								
PEPA	Petasites palmatus	Petasites frigidus var. palmatus	Pétasite palmé	Palmate coltsfoot	Herb	Facultative									2.5	2.5
somu		Solidago multiradiata	Verge d'or à rayons nombreux	Multi-rayed goldenrod	Herb	Terrestrial	2.5		15	0.5	0.5				2.5	2.5
stca		Stellaria calycantha	Stellaire calycanthe	Northern starwort	Herb	Obligate				2.5						
taof		Taraxacum officinale	Pissenlit officinal	Common dandelion	Herb	Terrestrial				0.5						
tasp		Taraxacum sp.	Pissenlit	Dandelion	Herb	-										
TRBO		Trientalis borealis	Trientale boréale	Northern starflower	Herb	Terrestrial	2.5	0.5	2.5							
VIOLA		Viola sp.	Violette sp.	Violet sp.	Herb	-										
LICH		LICHEN			Lichens		37.5				62.5		15	37.5		15
CLMI		Cladina mitis			Lichens		p						p	p		p
CLRA		Cladina rangiferina			Lichens		p							p		p
clst		Cladina stellaris			Lichens		p				p	p	p	p		p
CLASP		Cladonia sp			Lichens						p		p	p		p
pelsp		Peltigera sp.			Lichens		p									p
RHSP		Rhizocarpon sp.			Lichens								p			
UMSP		Umbilicaria sp.			Lichens						p		p			
bryo		BRYOPHYTES			Moss		37.5	37.5	37.5	15	15				15	87.5
AUPA		Aulacomnium palustre			Moss				p							

Code	Historical Latin Name	Nom latin	French Name	English Name	Type	Wetness Status	G126A	G136	G123	G122	G128	G117	G126	G115A	G127	G138
DIPO		Dicranum polysetum			Moss											
DISP		Dicranum sp.			Moss		p				p					
DIUN		Dicranum undulatum			Moss				p							p
plsc		Pleurozium schreberi			Moss		p	p	p	p	p			p	p	p
POCOM		Polytrichum commune			Moss		p	p			p					p
post		Polytrichum strictum			Moss		p			p				p		
PTCR		Ptilium crista-castrensis			Moss											
spfa		Sphagnum fallax			Moss											
SPHSP		Sphagnum sp.			Moss											p

Appendix E - Wetland Evaluation

Appendix: Wetland General Analysis – Gill Area

Wetland	1	2
Form	Basin Swamp	Riparian Swamp
Hydrological Functions		
Contribution to Water Flow Moderation	1	0
Contribution to Erosion Protection	0	0
Biogeochemical Functions		
Contribution to Water Quality Treatment	0	1
Contribution to Carbon Sequestration	0	0
Habitat Functions		
Presence of Representative Plant Communities	1	2
Presence of Rare or Endangered Species	0	0
Total	**2**	**3**

0: no significant function

1: some function – relating more to ecosystem's intrinsic value than to significant and perceivable function

2: a significant and perceivable function

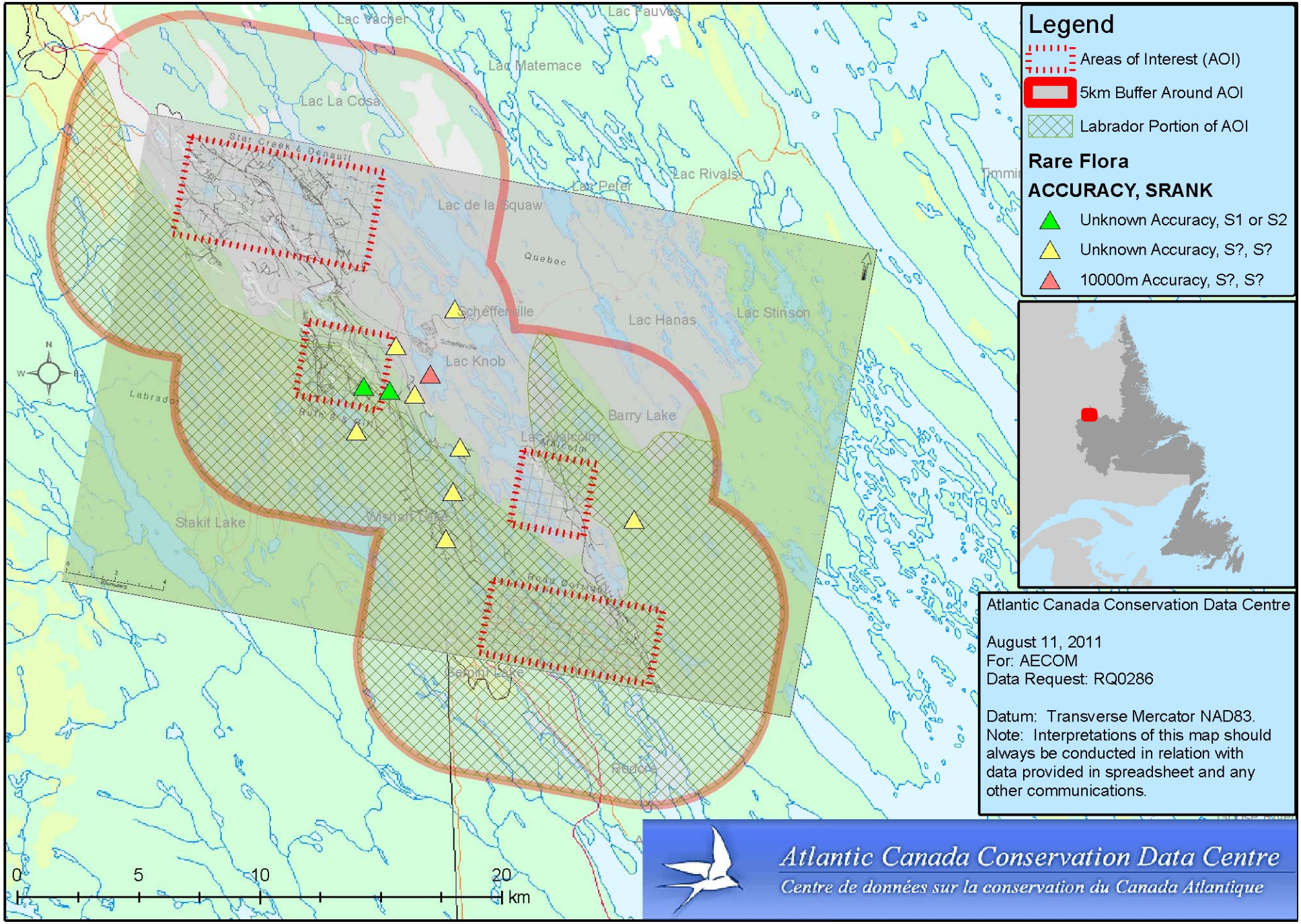
Appendix F – Agency Correspondence regarding rare floral species

List of Rare Plants from ACCDC within Schefferville Area

GNAME	GCOMNAME	OBSERVER	MONTH	DAY	YEAR	SRANK	CONSULTANT	NRANK	GRANK	GENERAL_STATUS_RANK	FAMILY	DESCR_HABITAT	ACCURACY_METRES	SYNAME	SITE_NAME	SURVEYSITE	ACRONYMS_O	SOURCES	IDNUM	EST_LB_ID
Abietinella abietina	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S2?		NNR	G4G5		Thuidiaceae		0		24	Schefferville area,east shore of Slimy Lake.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59792	742024
Bryum pallescens	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S1?		NNR	G5		Bryaceae		0		24	Schefferville area,east shore of Slimy Lake.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59713	741769
Dicranum acutifolium	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S2?		NNR	G5?		Dicranaceae		0		23	Schefferville area,Ruth Ridge.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59646	741810
Dicranum scoparium	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S1?		NNR	G5		Dicranaceae		0		22	Schefferville area,east slope of Ruth Ridge.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59663	741818
Encalypta procera	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S1		NNR	G4G5		Encalyptaceae		0		24	Schefferville area,east shore of Slimy Lake.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59676	741835
Encalypta rhaptocarpa	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S2		NNR	G4G5		Encalyptaceae		0		24	Schefferville area,east shore of Slimy Lake.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59677	741836
Hypnum recurvatum	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S1		NNR	G3G5		Hypnaceae		0		24	Schefferville area,east shore of Slimy Lake.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59861	741876
Hypnum vaucheri	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S1		N3N5	G3G5		Hypnaceae		0		24	Schefferville area,east shore of Slimy Lake.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59863	741875
Myurella tenerrima	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S1		NNR	G3G4		Pterigynandraceae		0		24	Schefferville area,east shore of Slimy Lake.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59789	741896
Tortella tortuosa	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S2?		NNR	G5		Pottiaceae		0		23	Schefferville area,Ruth Ridge.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59678	742004
Tortella tortuosa	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S2?		NNR	G5		Pottiaceae		0		24	Schefferville area,east shore of Slimy Lake.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59679	742004
Tortula ruralis	a Moss	Kallio, P.; HeikkilΣ, H.	7	9	1967	S2?		NNR	G5		Pottiaceae		0		24	Schefferville area,east shore of Slimy Lake.	CAN	Ireland et al. 1980. Canadian Journal of Botany. 58: 321-329.	SP59683	742006
Packera pauciflora	Alpine ragwort; Alpine groundsel	Hustich, I.; Kallio, P.	8	12	1963	S?	S?	NNR	G4G5	Secure	Asteraceae		0	Senecio pauciflorus; S. aureus var. discoideus ; S. discoideus; S. lembertii; S. aureus; S. discoides	Attikamagen(NF)		CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP54720	742234
Salix pedicellaris	bog willow	Hustich, I.	6	26	1967	S?	S?	NNR	G5	Sensitive	Salicaceae		0	Salix myrtilloides; S. pedicellaris var. hypoglauca; S. fuscenscens var. hebecarpa; S. hebecarpa; S. myrtilloides var. pedicellaris; S. pedicellaris var. tenuescens	Hope Lake(NF)		CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53292	743136
Packera aurea	Golden ragwort, swamp squawweed	Hustich, I.; Kallio, P.	8	3	1963	S?	S?	NNR	G5	Undetermined	Asteraceae		0	Senecio aureus; S. aureus var. aquilonius; S. aureus var. ashei; S. aureus var. aurantiacus; S. aureus var. gracilis; S. aureus var. intercursus; S. gracilis	Knob Lake(NF)		CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP54712	742230
Salix vestita	hariy willow, rock willow	Beschel	6	26	1965	S?	S?	NNR	G5	Secure	Salicaceae	Till ridge, burned upland	0	Salix fernaldii; S. leiolepis; S. reticulata var. vestita; S. vestita sbusp. leiolepis; S. vestita var. erecta; S. vestita var. humilior; S. vestita var. psilophylla; S. vestita forma mensalis;	Schefferville(NF)	8km S of Schefferville. Menihek Road	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP52546	743150
Salix argyrocarpa	Labrador willow, silver willow	Harper, Francis	8	8	1953	S?	S?	N4	G4	Secure	Salicaceae	Extensive thicket on mossy low ground in opening among spruce woods	0	Salix labradorica; S. argyrocarpa var. denudata; S. labradorica var. pumila	Slimy Lake(NF)	1/2 mi SE	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53046	743113
Salix argyrocarpa	Labrador willow, silver willow	Hustich, I.; Kallio, P.	8	3	1963	S?	S?	N4	G4	Secure	Salicaceae		0	Salix labradorica; S. argyrocarpa var. denudata; S. labradorica var. pumila	Knob Lake(NF)		CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53048	743113
Salix argyrocarpa	Labrador willow, silver willow	Hustich, I.; Kallio, P.	8	13	1963	S?	S?	N4	G4	Secure	Salicaceae	Sunny mountain	0	Salix labradorica; S. argyrocarpa var. denudata; S. labradorica var. pumila	Schefferville(QC)		CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53074	743113
Salix argyrocarpa	Labrador willow, silver willow	MΣkinen, Yrj÷	7	9	1967	S?	S?	N4	G4	Secure	Salicaceae	moist places near the shore	0	Salix labradorica; S. argyrocarpa var. denudata; S. labradorica var. pumila	Ruth Lake(NF)	East Shore	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53319	743113
Salix argyrocarpa	Labrador willow, silver willow	Beschel	7	1	1965	S?	S?	N4	G4	Secure	Salicaceae	roadside ditch	0	Salix labradorica; S. argyrocarpa var. denudata; S. labradorica var. pumila	Schefferville(NF)	E of airstrip	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53317	743113
Salix argyrocarpa	Labrador willow, silver willow	Sangster, J.	6	21	1961	S?	S?	N4	G4	Secure	Salicaceae	Sedge meadow, firm, wet; no shade.	0	Salix labradorica; S. argyrocarpa var. denudata; S. labradorica var. pumila	Schefferville(NF)	E. of airstrip	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53316	743113
Salix argyrocarpa	Labrador willow, silver willow	Sangster, J.	7	7	1961	S?	S?	N4	G4	Secure	Salicaceae	Gravel, shrubs (disturbed)	0	Salix labradorica; S. argyrocarpa var. denudata; S. labradorica var. pumila	Schefferville(NF)		CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53073	743113
Salix argyrocarpa	Labrador willow, silver willow	Harris, Ross	7	3	1977	S?	S?	N4	G4	Secure	Salicaceae	in the willow thickets growing along the river shoreline	0	Salix labradorica; S. argyrocarpa var. denudata; S. labradorica var. pumila	Schefferville(NF)	12 miles south of Schefferville. Junction of Howell's Road and road to Menihek Lake.; 19 UFL 4556	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53072	743113

GNAME	GCOMNAME	OBSERVER	MONTH	DAY	YEAR	SRANK	CONSULTANT	NRANK	GRANK	GENERAL_STATUS_RANK	FAMILY	DESCR_HABITAT	ACCURACY_METRES	SYNAME	SITE_NAME	SURVEYSITE	ACRONYMS_O	SOURCES	IDNUM	EST_LB_ID
Salix arctophila	northern willow, eastern arctic willow	Hustich, I.; Kallio, P.	8	12	1963	S?	S?	NNR	G5	Secure	Salicaceae		0	Salix arctica; S. arctophila var. lejocarpa; S. groenlandica; S. groenlandica var. lejocarpa; S. arctophila forma lejocarpa;	Attikamagen(NF)		CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP52993	743112
Salix arctophila	northern willow, eastern arctic willow	Hustich, I.; Kallio, P.	8	12	1963	S?	S?	NNR	G5	Secure	Salicaceae		0	Salix arctica; S. arctophila var. lejocarpa; S. groenlandica; S. groenlandica var. lejocarpa; S. arctophila forma lejocarpa;	Attikamagen(NF)		CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP52994	743112
Salix arctophila	northern willow, eastern arctic willow	MΣkinen, Yrj÷	7	8	1967	S?	S?	NNR	G5	Secure	Salicaceae	creeping in a muddy bog at roadside	0	Salix arctica; S. arctophila var. lejocarpa; S. groenlandica; S. groenlandica var. lejocarpa; S. arctophila forma lejocarpa;	Schefferville(NF)	N. side of Schefferville airfield	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP52999	743112
Salix arctophila	northern willow, eastern arctic willow	MΣkinen, Yrj÷	7	8	1967	S?	S?	NNR	G5	Secure	Salicaceae	roadside bog	0	Salix arctica; S. arctophila var. lejocarpa; S. groenlandica; S. groenlandica var. lejocarpa; S. arctophila forma lejocarpa;	Schefferville(NF)	N. side of Schefferville airfield	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP52990	743112
Salix arctophila	northern willow, eastern arctic willow	Beschel	6	27	1965	S?	S?	NNR	G5	Secure	Salicaceae	Tamarack bog.	0	Salix arctica; S. arctophila var. lejocarpa; S. groenlandica; S. groenlandica var. lejocarpa; S. arctophila forma lejocarpa;	Schefferville(NF)	3 km S of Schefferville	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP52973	743112
Salix arctophila	northern willow, eastern arctic willow	Harris, Ross	7	8	1977	S?	S?	NNR	G5	Secure	Salicaceae	alpine tundra	0	Salix arctica; S. arctophila var. lejocarpa; S. groenlandica; S. groenlandica var. lejocarpa; S. arctophila forma lejocarpa;	Schefferville(NF)	28 miles northwest of Schefferville; by Green Mountain; 19 UFM 1103; This location may be near Green Lake 5447 6652 in Nfld and Lab Gazeteer	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP52998	743112
Salix planifolia	tealeaf willow, flatleaf willow	Harper, Francis	6	8	1953	S?	S?	NNR	G5	Secure	Salicaceae	Boggy ground	0	Salix chlorophylla; S. phylicifolia subsp. planifolia; S. phylicifolia var. planifolia;	Labrador(NF)	N. side; Abel Lake	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53409	743141
Salix planifolia	tealeaf willow, flatleaf willow	Hustich, I.	6	26	1967	S?	S?	NNR	G5	Secure	Salicaceae		0	Salix chlorophylla; S. phylicifolia subsp. planifolia; S. phylicifolia var. planifolia;	Hope Lake(NF)		CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53280	743141
Salix planifolia	tealeaf willow, flatleaf willow	Powell, J.M.	6	22	1957	S?	S?	NNR	G5	Secure	Salicaceae	Stony, well drained hillside.	10000	Salix chlorophylla; S. phylicifolia subsp. planifolia; S. phylicifolia var. planifolia;	Knob Lake(NF)	vicinity of Knob Lake	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53400	743141
Salix planifolia	tealeaf willow, flatleaf willow	Powell, J.M.	6	22	1957	S?	S?	NNR	G5	Secure	Salicaceae	Stony, well drained hillside.	10000	Salix chlorophylla; S. phylicifolia subsp. planifolia; S. phylicifolia var. planifolia;	Knob Lake(NF)	vicinity of Knob Lake	CAN	Herbarium Data Entry, CAN, Candian Museum of Nature	SP53401	743141

GIS Scan of Rare and Provincially/Federally Listed Species in the Schefferville Area



Ministère du
Développement durable,
de l'Environnement
et des Parcs
Québec

Direction régionale de l'analyse et de l'expertise
de la Côte-Nord

Sept-Îles, le 21 juillet 2011

Madame Valérie Tremblay
AECOM
2, rue Fusey
Trois-Rivières (Québec) G8T 2T1

Objet : CDPNQ - Schefferville

Madame,

En réponse à votre demande d'information du 21 juillet 2011 concernant les espèces floristiques menacées ou vulnérables de la région de Schefferville, veuillez prendre connaissance de ce qui suit.

Le Centre de données sur le patrimoine naturel du Québec (CDPNQ) est un outil servant à colliger, analyser et diffuser l'information sur les espèces menacées. Les données provenant de différentes sources (spécimens d'herbiers et de musées, littérature scientifique, inventaires récents, etc.) sont intégrées graduellement et ce, depuis 1988. Une partie des données existantes n'est toujours pas incorporée au centre si bien que l'information fournie peut s'avérer incomplète. Une revue des données à être incorporées au centre et des recherches sur le terrain s'avèrent essentielles pour obtenir un portrait général des espèces menacées du territoire à l'étude. De plus, la banque de données ne fait pas de distinction entre les portions de territoires reconnues comme étant dépourvues de telles espèces et celles non inventoriées. **Pour ces raisons, l'avis du CDPNQ concernant la présence, l'absence ou l'état des espèces menacées d'un territoire particulier n'est jamais définitif et ne doit pas être considéré comme un substitut aux inventaires de terrain requis dans le cadre des évaluations environnementales.**

Vous trouverez ci-joints les fichiers qui identifient les occurrences retrouvées dans la région de Schefferville. Ces espèces sont susceptibles d'être retrouvées sur les zones à l'étude telles q'identifiées sur la carte annexée à votre courriel du 21 juillet 2011. Veuillez noter les renseignements suivants pour les champs « PRÉCISIONS » et « LATITUDE » « LONGITUDE » :

...2

20, boulevard Comeau, bureau 2.12
Baie-Comeau (Québec) G4Z 3A8
Téléphone : (418) 294-8888
Télécopieur : (418) 294-8018

818, boulevard Laure
Sept-Îles (Québec) G4R 1Y8
Téléphone : (418) 964-8888
Télécopieur : (418) 964-8023
Internet : http://www.mddep.gouv.qc.ca

PRÉCISION : La précision de cette occurrence [4 possibilités : "S", i.e. dans un rayon de 100 m; "M", i.e. dans un rayon de 1,5 km; "G", i.e. dans un rayon de 8 km et "U", i.e. trop imprécis pour être cartographié].

LAT et LONG : Les coordonnées latitude et longitude de l'occurrence telle que cartographiée au Centre de données sur le patrimoine naturel du Québec (degré minute seconde, NAD 83). **Ces coordonnées doivent nécessairement être interprétées conjointement avec le degré de précision de l'occurrence.**

Ces informations vous sont transmises à titre confidentiel. Nous vous demandons d'utiliser ces données uniquement pour des fins de conservation et de gestion du territoire et de ne pas les divulguer. Cette requête vous est formulée de manière à mieux protéger ces espèces, notamment de la récolte.

Afin de faire du CDPNQ l'outil le plus complet possible, il nous serait utile de recevoir vos données relatives aux espèces menacées issues d'inventaires reliés à ce projet. Veuillez noter que les données pour les nouvelles occurrences nous intéressent particulièrement mais que les mises à jour d'occurrences déjà connues sont toutes aussi importantes.

En vous remerciant de l'intérêt que vous portez au Centre de données sur le patrimoine naturel du Québec, nous demeurons disponibles pour répondre à vos questions.

ML/jm

Michel Levasseur
biologiste

p. j. (1)

EFMVS - Région de Schefferville

Nom latin - (no. d'occurrence)	Rang de priorité G / N / S	Description	Latitude - Longitude
Nom commun	Qualité (Précision)	*Aire(s) protégée(s)*	Dernière observation
Statut de l'espèce au Québec	Indice de biodiversité		
Site d'inventaire	Cible de conservation		
Localisation			

Flore

Arnica chamissonis - (11148)	G5 / NNR / SH	Environ 800 individus	54 48 00 -66 50 02
arnica de Chamisso	Di (M)		1999-07-27
susceptible d'être désignée	-		
Schefferville	Non		

Schefferville, sites d'anciennes maisons démolies au NE de l'agglomération

Meilleure source : Blondeau, M. et N. Dignard 2001. Rapport d'herborisation à Fermont, Québec: liste des espèces vasculaires et analyse sommaire de la flore (incluant quelques extensions d'aire dans la MRC de Caniapiscau). Notices floristiques No 4. Ministère des Ressources naturelles, Forêt Québec, Direction de la recherche forestière, Herbier du Québec. 29 p..

Geum macrophyllum var. perincisum - (16834)	G5T5 / N5 / S2	Aucune caractérisation.	54 47 59 -66 40 00
benoîte à folioles incisées	H (M)		1963-07-04
susceptible d'être désignée	B5.04		
	Non		

MRC Caniapiscau: environs de Schefferville, Knob-Lake.

Meilleure source : Blondeau, M. 2000. Statut et répartition au Québec du Geum macrophyllum Willd. var. perincisum (Rydb.) Raup (Rosaceae). Ludoviciana 29 : 54-62..

Geum macrophyllum var. perincisum - (16835)	G5T5 / N5 / S2	Aucune caractérisation.	54 49 00 -66 40 00
benoîte à folioles incisées	H (M)		1963-08-15
susceptible d'être désignée	B5.04		
	Non		

Environs de Shefferville, Burnt Creek.

Meilleure source : Blondeau, M. 2000. Statut et répartition au Québec du Geum macrophyllum Willd. var. perincisum (Rydb.) Raup (Rosaceae). Ludoviciana 29 : 54-62..

Geum macrophyllum var. perincisum - (16836)	G5T5 / N5 / S2	Aucune caractérisation	54 48 00 -66 50 01
benoîte à folioles incisées	E (M)		1999-07-28
susceptible d'être désignée	B5.04		
	Non		

Nom latin - (no. d'occurrence)	Rang de priorité G / N / S	Description	Latitude - Longitude
Nom commun	Qualité (Précision)	*Aire(s) protégée(s)*	Dernière observation
Statut de l'espèce au Québec	Indice de biodiversité		
Site d'inventaire	Cible de conservation		
Localisation			

Environs de Shefferville.

Meilleure source : Blondeau, M. 2000. Statut et répartition au Québec du Geum macrophyllum Willd. var. perincisum (Rydb.) Raup (Rosaceae). Ludoviciana 29 : 54-62..

Omalotheca norvegica -p01, p09, p11 - (4179)	G5.T2 / N2N3 / S2	Près d'un petit ruisseau; pleine floraison la troisième semaine d'août.	54 47 26 -66 47 54
gnaphale de Norvège	H (G)		1953-08-15
susceptible d'être désignée	-		
	Non		

Lac Knob (ancien nom de Schefferville), près d'un petit ruisseau.

Meilleure source : HERBIERS 2001 -. Banque de données sur les spécimens d'herbier, active depuis 2001; continuellement mise à jour. Centre de données sur le patrimoine naturel du Québec (CDPNQ). Gouvernement du Québec, ministère du Développement durable, de l'Environnement et des Parcs, Direction du patrimoine écologique et des parcs. Québec, Québec. . Harper M. Francis (1953) SFS

* Pour l'information sensible, communiquer avec le CDPNQ

Nombre total d'occurrences pour cette requête : 5

Nombre total d'espèces pour cette requête : 3

Signification des termes et symboles utilisés

Rang de priorité : Rang décroissant de priorité pour la conservation (de 1 à 5), déterminé selon trois échelles : G (globale; l'aire de répartition totale) N (nationale; le pays) et S (subnationale; la province ou l'État) en tenant compte principalement de la fréquence et de l'abondance de l'élément. Seuls les rangs 1 à 3 traduisent un certain degré de précarité. Dans certains cas, les rangs numériques sont remplacés ou nuancés par les cotes suivantes:

B : population animale reproductrice (breeding); H : non observé au cours des 20 dernières années (sud du Québec) ou des 40 dernières années (nord du Québec); M : population animale migratrice (migrant); N : population animale non reproductrice (non-breeding); NA : existant, sans occurrence répertoriée / exotique / hybride / présence accidentelle / présence rapportée mais non caractérisée / présence rapportée mais douteuse / présence signalée par erreur (reported falsely) / synonymie de la nomenclature; NR : rang non attribué (not ranked); P : présence potentielle; Q : statut taxinomique douteux; T : caractérise un taxon infra-spécifique ou une population isolée; U : rang impossible à déterminer (unrankable); X : taxon apparemment éteint ou extirpé; ? : indique une incertitude (ex : S1?)

Qualité des occurrences : A : excellente; B : bonne; C : passable; D : faible; E : à caractériser; F : non retrouvée; H : historique; X : extirpée; I : introduite

Présicion des occurrences : S : 150 m de rayon; M : 1,5 km de rayon; G : 8 km de rayon; U : > 8 km de rayon

Indice de biodiversité : B1: Exceptionnel; B2: Très élevé; B3: Élevé; B4: Modéré; B5: Marginal; B6: Indéterminé

Valeur relative pour la conservation, calculée à partir du nombre d'occurrences de l'élément au Québec; des rangs de priorité globaux (G) et subnationaux (S); de l'endémisme juridirectionnel et de la qualité des occurrences

Cible de conservation : L'étiquette " cible de conservation " identifie les occurrences d'espèces légalement protégées pour lesquelles des actions prioritaires sont définies au plan de conservation.

CRITÈRES POUR L'ATTRIBUTION D'UN INDICE DE BIODIVERSITÉ À UNE OCCURRENCE

(adapté de The Nature Conservancy 1994 et 1996)

Indice	Sous-indice	Critères
B1	.01	Unique occurrence au monde d'un élément G1
	.02	Unique occurrence au Québec d'un élément G1
	.03	Unique occurrence au Québec d'un élément G2
	.04	Unique occurrence au Québec d'un élément G3
	.05	Occurrence d'excellente qualité d'un élément G1
	.07	Unique occurrence viable au Québec d'un élément S1
B2	.01	Occurrence autre que d'excellente qualité d'un élément G1
	.02	Occurrence d'excellente à bonne qualité d'un élément G2
	.03	Occurrence d'excellente qualité d'un élément G3
	.04	Occurrence d'excellente qualité d'un élément S1
B3	.01	Occurrence de qualité passable d'un élément G2
	.02	Occurrence de bonne qualité d'un élément G3
	.03	Occurrence de bonne qualité d'un élément S1
	.05	Occurrence d'excellente qualité d'une espèce S2 ou d'excellente qualité de toute communauté naturelle
	.11	Occurrence de bonne qualité d'un élément S2
B4	.01	Occurrence de qualité passable d'un élément G3
	.02	Occurrence de qualité passable d'un élément S1
	.03	Occurrence d'excellente qualité d'un élément S3
	.05	Occurrence de bonne qualité de toute communauté naturelle S3, S4 ou S5
	.07	Occurrence de bonne qualité d'un élément S3
B5	.01	Occurrence de qualité passable d'un élément S2
	.03	Occurrence de qualité passable d'un élément S3
	.04	Occurrence parmi les cas suivants : qualité faible, historique, présence contrôlée (existant)

Indice de biodiversité

L'indice de biodiversité est évalué pour les éléments les plus importants de la diversité biologique (espèces, communautés naturelles) selon les critères indiqués dans le tableau. Pour fins de calcul, les rangs de priorité des sous-espèces et variétés (rangs T associés au rangs G) ainsi que ceux des populations (rangs T associés au rangs S) sont assimilés aux rangs de base (G ou S). L'indice met l'emphase sur le ou les éléments les plus rares. Le nombre d'éléments représentés intervient en second. De même, une plus grande importance est accordée aux rangs de priorité à l'échelle globale. Seules les occurrences relativement précises (niveau de précision supérieur à 1,5 km) sont considérées.

Les occurrences de valeur indéterminée (E) ou historique (H) ont un poids très faible sur le plan de la conservation du territoire visé. Cependant, elles sont prioritaires sur le plan de l'acquisition de connaissances.

Intérêt pour la conservation

Les territoires avec un indice de biodiversité de B1 à B3 sont considérés comme d'intérêt le plus significatif pour la conservation.

Références

The Nature Conservancy, 1994. The Nature Conservancy, Conservation Science Division, in association with the Network of Natural Heritage Programs and Conservation Data Centers. 1992. Biological and Conservation Data System (Supplement 2+, released March, 1994). Arlington, Virginia.

The Nature Conservancy, 1996. The Nature Conservancy Conservation Systems Department. Element Rank Rounding and Sequencing. Arlington, Virginia.

Appendix G – Tree carving locations

LIM project - 0521742

Birch's occurrences on Gill property

Birch (*Betula papyrifera*) was observed in three different locations, mostly near the eastern limit of the property and in one plot in the north-western side of the property.

1. GPS 042 (near G136 plot), a thicket of birch was found beside G137 plot. One of them was about 20-25 cm in diameter (photo 2493) while the others were between 6-8 cm in diameter (photo 2494).
2. GPS 043 at G137A plot where several multi-stems of *Betula papyrifera* cover between 51-75% of the plot (photo 2475). Each stem had a diameter of about 15 cm.
3. A birch seedling was found in G123 plot, in the north-western part of the property.

RUTH8 & GILL

- Birch
- O. Bl. Spruce w Lichen
- O. Bl. Spruce w Moss
- Wetland
- Bedrock w Lichen
- Disturbed
- Green Alder

0 120 240 m

1:6 000

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