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BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM
ENVIRONMENTAL SCREENING DOCUMENT
(REF. NO. NB102-00181/6-1)

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EXECUTIVE SUMMARY

Foreword

Knight Piésold Ltd. (Knight Piésold), on behalf of Baffinland Iron Mines Corporation (Baffinland), has prepared this screening document to support permit applications and environmental screening of a proposed bulk sampling program at the Mary River Project. The Mary River Project (the Project) is an iron ore exploration project located at approximately Latitude 71º20' north and Longitude 79º14' west, in the North Baffin region of Nunavut.

Baffinland is a Canadian mining company that is solely focused on its 100%-owned Mary River Project. Baffinland has been conducting mineral exploration on Federal Mineral Leases 2483, 2484 and 2485 on a seasonal basis since 2004, consisting of delineation drilling of known high-grade iron ore deposits (Deposit Nos. 1, 2, 3, 3A and 4) that were originally staked and explored in the 1960s. Current exploration facilities consist of an 80-person camp located near the Deposit No. 1 in the vicinity of the Mary River. Site access is by air, using two of the three airstrips constructed in the 1960s, and by an existing road connecting the Mary River Project site to Milne Inlet. The road is currently used in the late winter period to move supplies brought to Milne Inlet by conventional sealift into the site.

Project Description

Baffinland is proposing to undertake a bulk sampling program in 2007-2008, involving the extraction of 250,000 tonnes of iron ore from two small open pits in Deposit No. 1, and shipping the iron ore bulk sample off site to steel mills in Europe for testing. The bulk sampling program will allow Baffinland to conduct metallurgical testing as well as crusher tests to determine the proportion of iron ore that becomes lump (approximately cobble sized) compared with fines (sand sized). The proportion of lump to fines is a major parameter for iron ore projects because one product demands a higher price than the other. The bulk sampling program is also important in that it will allow Baffinland to provide potential customers with adequate ore to test in their steel mills, an important step in establishing marketing contracts that will support project financing.

Mining of the bulk sample will involve drilling, blasting and removing weathered rock at the two pit locations to a storage location adjacent to the two small ore pits. Ore will be extracted by blasting with pre-packaged explosives and will be excavated from the pits and crushed. The crushed ore will then be transported by truck over the existing tote road to Milne Inlet where it will be stockpiled. Ore will be loaded on barges and then transferred to ore-carrying ships in Milne Inlet. The ships will then deliver the cargo to ports in Europe.

This bulk sampling program will involve the following work:

- The delivery of contractor mining and crushing equipment, camp materials and fuel in 2 ship voyages to Milne Inlet in August 2007, in accordance with standard northeast arctic sealift procedures, using standard sealift ships based in the vicinity of Montreal
- Upgrade of the existing Milne Inlet tote road to allow all-weather use, including the quarrying and placement of fill on the road bed and the replacement/installation of a large number of culverts at watercourses
- Construction of a 100-person all-weather tent camp at Mary River, next to the existing seasonal exploration camp
- Establishment of temporary trailer camps at Milne Inlet and part-way along the Milne Inlet tote road
- Establishment of temporary fuel storage facilities at Milne Inlet, the roadside (Midway) camp and at Mary River
- The drilling, blasting and storing of 169,300 dry tonnes (t) of weathered surface rock on the top of Deposit No. 1 at Mary River over one or two months in late 2007 or early 2008
- The drilling, blasting, and crushing of 250,000 t of iron ore bulk sample from Deposit No. 1 at Mary River over three-to-five months, in early 2008
- Hauling the 250,000 t bulk sample from Mary River to Milne Inlet, over the course of the first half of 2008.
- Temporary stockpiling of the iron ore sample at Milne Inlet
- Loading of iron ore at Milne Inlet on 3 ships that will make a total of five voyages in August-September 2008 (two ships each make two voyages, one ship makes one voyage)

The main milestone dates of the bulk sampling program are as follows:

- November 2006 - Submit Environmental Screening Document and Permit Applications
- March 2007 - Screening completed and permits issued
- March 2007- Begin road and airstrip upgrades
- August 2007 - Mobilize camp and equipment for bulk sample
- November 2007 - Camp and infrastructure constructed, bulk sampling begins
- May 2008 - Bulk sampling program completed
- January 2008 - Start haulage of ore to Milne Inlet
- August/September 2008 - Ore loaded onto ships and delivered to market

Training opportunities for existing and potential Baffinland employees, especially those who reside in communities near Mary River, is an important aspect of the proposed program. Training will take the form of community-based classroom activities, on-site practical training, and job-shadowing. This training will develop skills necessary for new employees to participate in construction and operational activities, should the Mary River Project advance to these stages in the future.

Regulatory Context

The Mary River Project bulk sampling program will require several permits, licenses or authorizations, as follows:

- Inuit Land Use License III (Qikiqtani Inuit Association)
- Quarry Concession (Qikiqtani Inuit Association)
- Type B Water License (*Inland Waters Act*)
- Class A Land Use Permit (*Territorial Lands Act*)
- Fisheries Authorizations (*Fisheries Act*)
- Exemption/approvals under the *Navigable Waters Protection Act*

In addition to the above authorizations, the Project proposal will be checked for conformance to the North Baffin Regional Land Use Plan, and will undergo environmental screening by the Nunavut Impact Review Board pursuant to the Nunavut Land Claim Agreement (Article 12). In addition, an Environmental Screening is required under the *Canadian Environmental Assessment Act* before permits/authorizations may be issued by federal departments. This Environmental Screening Document has been prepared to provide agencies with sufficient supporting information to license this project.

Natural Environment

The Mary River Project is located on northern Baffin Island, which has a semi-arid arctic climate. The average temperature at Pond Inlet, the nearest location with a long-term climatic record, is -15.1 ºC. The mean annual precipitation at Pond Inlet is 190.8 mm, with 144.5 cm of snowfall and 85.4 mm falling as rain. Historical records show that snow can occur in any month, and rainfall may occur from April through November. Pond Inlet experiences 24-hour darkness (with less than 2 hours of twilight) from November 12 to January 29, and continuous sunshine from May 5 to August 7.

Surficial landforms and deposits are associated with recent, widespread glaciation on Baffin Island. Surficial geology consists of locally abundant Holocene glacio lacustrine sediments, fluvial sediments (alluvial deposits) and marine and glacio-marine deltaic sediments, end moraine till, and with occasional outcrops of pre-Quaternary bedrock and sedimentary rock formations. The North Baffin region and Mary River area lies within the Committee Belt, a granite-greenstone terrane mixed with rift basin sediments and volcanic rocks; Precambrian mountain to the east and Palaeozoic lowland plateau to the west. The Project lies within the zone of continuous permafrost, with an active layer thickness of up to two metres and a total permafrost depth of about a half kilometre.

The extremely cold temperatures of the region, combined with permafrost ground conditions result in a short period of runoff that typically occurs from June to September. All rivers and creeks, with perhaps the exception of the very largest systems, freeze completely solid during the winter months. The runoff coefficient is very high due to the combination of low temperatures, low

infiltration and minimal vegetative cover, and correspondingly, surface water is abundant, and the region is dotted with thousands of small lakes and streams.

Water quality in the region is neutral to slightly alkaline, with low to very low turbidity and low nutrients. Water within the Mary River area tends towards naturally pristine, despite the presence of highly mineralized deposits. Aluminum and copper appear to be naturally elevated in surface water in surface drainages near the Mary River iron ore deposits.

The vegetation of northern Baffin Island contains fewer species and typically less ground coverage, compared with more southerly tundra environments. Vegetation communities include upland areas recently emerged from under glacial ice; mixed tundra on lower slopes; heath tundra on drier slopes and sheltered banks; tundra polygons on expansive lacustrine or glacio-fluvial deposits; wetlands, and riparian associations.

Terrestrial wildlife in the region is comprised of the following nine species: caribou, wolf, wolverine, arctic fox, red fox, ermine, Brown and Pearyland Collared lemmings, and arctic hare. Caribou in the region are currently present at low densities, although existing trails, Inuit Qaujimajatuqangit (IQ) and harvest records indicate a much greater distribution and abundance of caribou in the past. IQ also indicates that there potentially are three different types of caribou that can occupy the region: migratory, resident and mainland. Caribou observations in May 2006 suggested southern concentration and resultant a south to north movement of primarily females sometimes accompanied by yearlings. Longer distance movements were observed in early June, along with the first sightings of males. The most extensive use of habitat by caribou appears to occur in spring, because of these directed movements to calving areas. In late June, a few new calves were seen in the vicinity of the Project. In July, caribou appear to use boulder fields and snow banks for insect relief. During the one fall regional survey, caribou were seen exclusively in a corridor extending from northwest to southeast through the Project, corresponding to high-value habitats within a natural corridor formed by river valleys and higher elevation terrain.

A low density of carnivore dens in relation to widespread potential denning habitat suggests a typical low density of foxes and wolves, and a depressed prey base.

Notable bird use in the area consists of some flyover of migratory birds (particularly geese) moving to and from Bylot Island, and an abundance of raptors and loons. Plenty of raptor nesting habitat exists throughout the region, and the Peregrine Falcon (subspecies *tundris*), which have been recovering from near extinction in the late 1960s and were upgraded from being 'threatened' to being a 'species of special concern' in 1992, are abundant throughout the region.

Baffin Island has fewer fish species in freshwater than are found on the adjacent Nunavut mainland and several islands in the western Arctic. Arctic char (*Salvelinus alpinus*) is the most abundant and widely distributed fish species in the lakes, rivers, and streams of Baffin Island.

During August and September, when shipping activities associated with the bulk sampling program are proposed, narwhal, bowhead whale, ringed seal, bearded seal, and harp seal are present within

the waters of Milne Inlet and Eclipse Sound. Beluga and killer whales may also occasionally occur in those waters during this time.

Socio-economic Environment

Nearby communities include Pond Inlet, Arctic Bay, Igloolik and Hall Beach. Baffinland will seek to involve these communities in employment and training during the bulk sampling program. Harvest data indicates that the Project areas of Milne Inlet and Mary River are used primarily by residents of Pond Inlet. Archaeological surveys conducted in 2006 show that the region has a rich heritage and the Phillips Creek / tote road corridor between Mary River and Milne Inlet is an established transportation corridor.

Impacts and Mitigation

Potential impacts on the physical and biological environment were identified with respect to:

- Air quality
- Noise
- Ground stability and permafrost
- Hydrology/Limnology
- Sediment, Soil and Water Quality
- Terrestrial wildlife (primarily caribou)
- Fish
- Birds
- Marine wildlife

The screening exercise identified a number of changes in project design, operational safeguards, or contingency plans to be applied to mitigate impacts to the above. In addition, the Project is expected to generate positive socio-economic benefits to local residents, primarily through the provision of employment and training. Highlights of the potential impacts and proposed mitigation include:

1. Monitoring dust fallout from the short-term mining, crushing, stockpiling and road traffic operations of the bulk sampling program, to understand potential air quality issues related to a full-scale monitoring operation
2. Reducing noise emissions arising from project-related air traffic between Mary River and Pond Inlet, in part though increased dependence on sealift and overland transport of materials, as well as the operation of scheduled air charters between Iqaluit and Mary River
3. Addressing impacts to permafrost and ground stability from land disturbance activities through avoidance of fragile landscapes (i.e., ice rich features) to the maximum extent possible, monitoring, and mitigation through drainage and filling measures, as required
4. Conducting additional studies in Sheardown Lake and Milne Inlet to ensure discharge of treated sewage effluent will not adversely affect biota, prior to confirming sewage effluent outfall designs

5. Protection of water, soil and sediment quality through implementation of a Construction Environmental Monitoring Plan (CEMP) as part of contractor requirements. The CEMP will identify regulatory requirements, standard mitigation measures and best practices, and contractor monitoring.
6. The potential for land-based fuel spills and releases into nearby watercourses will be addressed by operating in accordance with the work procedures established Environment, Health and Safety (EHS) Management System Standard to be implemented by Baffinland
7. Protection of vegetation by minimizing project footprint (including limiting project activities to existing disturbed areas), and implementing effective sediment and erosion control measures
8. Limit potential impacts to wildlife by limiting noise emissions to the extent possible, minimizing project footprint, and adherence to both the traffic management plan and the caribou protection measures outlined in the North Baffin Regional Land Use Plan
9. Rock quarry locations will avoid established raptor nests, and other nests or congregations of birds will be avoided to the maximum extent possible
10. Impacts to fisheries resources will be mitigated through sediment and erosion control, timing of culvert installations, and development of a *Fish Habitat Mitigation, Compensation, and Monitoring Plan*. Crossings have been avoided at Milne Inlet through the siting of project infrastructure of avoid use of a section of the existing road.
11. Impacts to marine resources will be protected from disturbance by minimizing ship traffic by using larger ships, and by minimizing barge and related traffic and shoreline disturbance
12. Potential for fuel spills or ballast water discharges in the marine environment will be addressed through compliance with existing prescriptive regulations and guidelines
13. The potential for human interactions with polar bears will be addressed through the development and implementation of a Human-Polar Bear Conflict Management Plan, which will be a component plan of the CEMP
14. Known archaeological sites at Milne Inlet will be avoided through concentration of project infrastructure in areas of low archaeological potential, and known sites near the Milne Inlet tote road will be mitigated if avoidance is not possible. Potential to affect archaeological sites will be addressed through additional detailed surveys and mitigation by a licensed archaeologist, in consultation with the Government of Nunavut Department of Culture, Language, Elders and Youth (CLEY) and the community of Pond Inlet. Additionally, the CEMP will inform contractors as to the legal requirements and protocols for the avoidance of known archaeological sites or discovery of new sites.
15. Impact to existing land uses in Milne Inlet will be minimized to the maximum extent possible through the positioning of project infrastructure away from areas typically used by the community of Pond Inlet
16. Impacts to hunting and tourism in Milne Inlet including Koluktoo Bay will be minimized to the maximum extent possible through advanced notification of shipping dates, to allow for re-scheduling or modification of travel plans if desired
17. The bulk sampling is expected to provide beneficial training and employment to the region, which will be enhanced through a human resources policy and EHS Management System; continued discussions on training with the Qikiqtani Inuit Association and local communities; the provision of scheduled charter service from the site to the communities, and reduction in air traffic and associated southern-based shift rotations through Pond Inlet.

Monitoring and Follow-up Programs

The proposed monitoring program has the following objectives:

- Detect unanticipated environmental impacts (if any)
- Assess the effectiveness of proposed mitigation and the need to modify the measures or implement contingency plans
- Ensure compliance with applicable regulations and requirements of environmental permits
- Continue ongoing collection of baseline environmental data, and monitoring data to assist in the planning and impact assessment of a future full-scale mining operation at Mary River

The following components of the bulk sampling program will be monitored:

- General construction and operation activities, for compliance with the terms and conditions of licenses, permits and authorizations, as well as commitments outlined in this screening report
- Construction activities in and around water, to ensure the protection of fish and fish habitat
- Terrestrial wildlife, in part as a continuation of baseline studies, but also to monitor response of wildlife to site activities
- Marine wildlife, to determine the response of narwhal and any changes in distribution of seals in Milne Inlet and environs
- Water sources for potable water consumption, treated sewage effluent prior to discharge, and receiving waters
- General site drainage in proximity to key site activities (i.e., mining, crushing, fuel storage)
- Final abandonment of the bulk sampling program, should the Project not proceed to the next phase within the foreseeable future
- Employment history and skills development of employees

Closure the Mary River Project has been addressed in an Abandonment & Restoration Plan, which will be implemented should the Project not proceed towards full-scale mining development, for which separate approvals are required.

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Knight Piésold Ltd. (Knight Piésold), ᑭᐃᖅᑐᐃᓪᓗᑎ Baffinland Iron ᐅᓴᖅᓂᐊᕐᒪᑦ ᔨᐊᐳᓱᓗᓂᒃ (Baffinland), ᐊᑐᐃᓐᓇᑭᐃᓯᒪᔪᑦ ᑕᕆᓯᒥᖏᓐᓄᑦ ᖃᐅᔨᓴᓂᕐᒧᑦ ᐸᐃᐸᔪᑎᑦ ᐃᓕᓴᕐᓯᓂᕐᒪᐊᕐᓂᐊᑐᑦ ᐊᖏᕈᔨᓂᖅ ᐱᔪᓐᓇᖅᑐᑦ ᐊᒪᓗ ᐊᐠᑎᓕᓴᓂᕐᒧᑦ ᖃᐅᔨᓴᓂᕐᒧᑦ ᐱᔪᒪᕆᐅᓯᒪᔪᒥ ᐊᖏᕈᔨᓂ ᖃᐅᔨᓴᓂᖅᑎ ᐱᓕᕆᔨᑦ ᐃᓚᓕ ᐱᓕᕆᐊᑎᑦ. ᐃᓚᓕᒃ ᐱᓕᕆᐊᖅ (ᐱᓕᕆᐊᖅ) ᓴᖅᑭᑦᓂ ᖃᐅᔨᓴᖅᓂᖅ ᐱᓕᕆᐊᖅ ᖃᐅᓂᒃᓱᒋᓚᐅᑦᑐᖅ Latitude 71º20’ ᐅᐊᓐᓇ ᐊᒪᒪ Longitude 79º14’ ᐱᖓᓐᓇᖅ, ᐅᐊᓐᓇᖓᓂ ᖁᑭᖅᑕᔭᐸ ᓄᓇᕗᒪᒥ.

Baffinland ᑲᓇᑕᒥᐅᑕᖅ ᐅᓴᖅᓂᐊᓂᕐᒧᑦ ᑎᒥᐅᔨᖅ ᐱᐟᔨᐁᐊᖃᐊᖅᑐᓂ 100%-ᓇᒪᒥᓂᕆᔪᖅ ᓄᓚᒃᑕ ᐱᓕᕆᐊᖅ. Baffinland ᖃᐅᔨᓴᖃᑦᑕᖅᑐᑦ ᐅᓴᖅᓂᐊᓂᕐᒥᑦ ᓴᕐᒪᑐᐃᖅᑲᓐᓂᓂᓂ ᐅᓴᖅᓂᐊᓂᕐᒧᑦ ᐊᑐᖅᑐᐊᕐᑕ 2483, 2484 ᐊᒪᒪ 2485 ᐊᐅᓂᒪᓕᕆᔨᒪᒪᑦ 2004_ᒥᓂᑦ, ᓇᓚᓇᐃᐅᓂᖅᓂᐊᓪᓚᑎᑐ >ᑐᖅᑕᐅᓂᐊᖅᑐᓂᑦ ᖃᐅᔨᒪᓴᐅᔨᓂᑦ ᓴᕐᑭᓴᓴᖃᖅᑎᓴᐅᖅᑐᓂᑦ (ᓴᙵᕆᓴᓴᖅᓴᓪᓕᑦ ᓯᓚᐅᑎᖏᓐᓄᑦ. 1, 2, 3, 3A ᐊᒪᒪ 4) ᓇᓚᓇᐃᐅᓂᖅᑕᐅᑎᓪᓕᐅᖅᑐᑦ ᐊᒪᒪ ᖃᐅᔨᓴᖅᑕᐅᓪᓚᑎᑐ 1960_ᖏᑎᓂᓂ. ᒪᓐᓇᐅᔨᒥᑦ ᖃᐅᔨᓴᓂᕐᒧᑦ ᐃᓪᓚᔨᑦ 80_ᓂᑦ ᐃᓄᖃᐅᓐᓇᖅᑐᖅ ᓇᔨᖅᑕᖓ ᖃᓂᑎᓴᖓᓂ ᓴᙵᕆᓴᓴᖅᓴᓪᓕᑦ 1 ᖃᓂᑎᓴᖓᓂ ᓄᓚᒃᑕ. ᓇᔨᖅᑕᐅᔨᖅ ᐅᐸᑲᓴᖅ ᖃᖓᓕᑕᒪᓂᖅᑐᑦ, ᐊᑐᖅᑐᑎ ᒪᖕᑭᓐᓂ ᒥᓐᓂᔨᓂ ᐱᖓᓕᑕᒪᓂᑦ ᒥᐦᓂ ᓴᓇᕆᐅᓪᓚᑎᓪᓕᐅᖅᑕᐅᓂᒃ 1960_ᖏᑎᓂᓂ, ᐊᒪᒪ ᐊᑐᓇᐊᖏᔨᖅ ᓄᓚᒃᑕ ᐱᓕᕆᐊᔪᖓᓇᖅᑐᖅ ᖁᓕᔪᐊᓂ. ᐊᑐᓇᐊᖏᔨᖅ ᐊᑐᖅᑕᐅᖃᑦᑕᕐᑐᖅᑐᖅ ᐅᑭᐅᒃᑯᑦ ᐅᓯᖃᑦᑕᖅᑐᑎ ᓯᓇᒃᑯᒋᑦᑐᑎᑦ.

ᐱᓕᕆᐊᖅ ᓇᓗᓇᐃᔪᖅᓯᒪᓂᖏᓐᓄᑦ

Baffinland ᐱᔨᓴᓯᒪᔨᑦ ᖃᐅᔨᓴᖅᓂᖅ ᐊᖏᕈᔭᐅᓂᒃ ᐱᓕᕆᐊᒥᑦ 2007_2008, ᖃᓄᖅᓂᖅ 250,000 ᑕᕐᓂᓂᒃ ᓴᖅᑭᑦᓂᐅᔨᓂᒃ ᒪᔪᐅᖅᑐᖅ ᒥᑭᐅᖅᑐᖅ ᒪᑐᐃᓐᓇᖃᖅᑐᖅ ᓴᖅᑭᑦᓂᐅᑕᖅᑕᓚᐅᑦ ᓯᓚᐅᑎᖏᓐᓄᑦ 1, ᐊᒪᒪ ᐊᐅᑦᓚᑎᑦᓂᐅᑦ ᓴᓇᕆᐅᓚᓕᐊᔨᓇᓂ ᑕᕆᐅᒃ ᐊᑭᐊᓇᓂ ᖃᐅᔨᓴᓴᖅᑕᐅᓂᐊᖏᒪᑕ. ᐊᖏᕈᔨᓂ ᖃᐅᔨᓴᖅᓂᐅᔨᖅ ᐃᒪᐃᑕᑎᑎᓂᔪᓐᓇᕐᓂᐊᓂᖅᑐᖅ Baffinland_ᔨᓐᓂ ᓴᖅᑭᑦᓂᐅᖅᑐᑦ ᖃᐅᔨᓴᓂᕐᒥᑦ ᐊᒪᒪᓗᑦᑕᐅᖅ ᓯᓴᔨᓚᐃᓐᔪᖅᑐᑦ ᖃᐅᔨᓴᖅᓴᓗᑦᑐᑦ ᐱᐅᓂᖓ ᓯᓴᔨᓚᖅᓯᒪᔪᑦ (ᐊᖏᓂᖓᖏᑦ ᐊᖏᑦᓗᐊᖏᑦᑐᑦ) ᓯᐅᑕᐅᔨᖅᑐᑦ ᓴᓂᐊᓂ. ᐊᖏᑦᓂᖅᓴᐅᔨᔪᑦ ᓯᐅᑕᕐᓂᖅᑎᖅᑐᑦᑕᑦ ᐊᑐᓚᑦᑕᐅᒪᒪᑦ ᓴᖅᑭᑦᓂᐅᓚᐅᑦᑐᑎᑦ ᐱᓕᕆᐊᓂᑦ ᐅᐱᓐᓇᕆᓂ ᐃᒪᓐᓇᐃᓐᓇᖅᑐᑦ ᐱᔨᓴᐅᓂᖅᓴᐅᔨᐅᓪᓚᑦᑕ ᐊᑭᑐᓂᖅᓴᐅᔨᓪᓚᑎᓪᓕᐅᖅᑐᑦ ᐊᓯᖏᓐᓂᓂ. ᖃᐅᔨᓴᓂᕐᒧᑦ ᐱᓕᕆᐊᖅ ᐱᓗᒪᓕᐅᓂᖅᓴᐅᔨᐅᓪᓚᑦᑕᖅᑐᑦ Baffinland_ᔨᓐᓂᑦ ᓂᐅᕐᖅᑎᖃᓪᓚᑎᑐ ᐅᓪᓚᔨᑦᑕᐅᓂᒃ ᓴᓇᕆᐅᓚᓕᐊᔨᓇᓂ ᖃᐅᔨᓴᖅᑕᐅᓂᐊᖏᓪᓗᑎᑦ ᐱᓕᕆᐊᓂᑦ ᐱᓗᒪᓕᐅᓂᖅᓴᐅᔨᐅᓪᓚᑦᑕᖅᑐᑦ ᐊᑭᑐᓂᖅᓴᐅᔨᓪᓚᑎᓪᓕᐅᖅᑐᑦ ᐊᓯᖏᓐᓂᓂ. ᖃᐅᔨᓴᖅᓂᐅᔨᓴᖅ ᐱᓗᒪᓕᐅᓂᖅᓴᐅᔨᐅᓪᓚᑦᑕᖅᑐᑦ ᐊᑭᑐᓂᖅᓴᐅᔨᓪᓚᑎᓪᓕᐅᖅᑐᑦ ᐊᓯᖏᓐᓂᓂ.

ᐅᓴᖅᓂᐊᓂᕐᒧᑦ ᖃᐅᔨᓴᖅᓂᐅᔨᖅ ᐅᑐᓚᓂᐊᖅᑐᑦ, ᖃᓄᖅᑎᑎᓂᖃᑦᑕᕐᓗᑎ ᐊᒪᒪ ᐱᓴᐃᓗᑎᑦ ᐅᓴᖅᑕᐃᑦ ᓄᓇᐅᑦ ᖃᓄᐃᓕᓂᑦᑕᑦ ᓴᖅᑭᑦᓂᐅᑕᖅᑕᓚᐅᑦ. ᓴᙵᕆᓴᓴᖅ

ᐱᖅᑕᐅᖅᑕᓂᐊᖅᑐᑦ ᖃᓄᖅᑕᕐᓂᓄᑦ ᐅᖅᓯᒪᔨᐸᑉᖅᑐᓂᒃ ᖃᖅᑕᕐᓂᒃ ᐊᒻᒪ ᖃᓄᕆᖅᑕᐅᓕᕆᓂᑐᒍ ᐊᒻᒪ ᓯᓂᓕᓪᓕᖅᑕᐅᓄᑦ. ᓯᓂᓕᓪᓕᖅᓯᒪᔨᖅ ᓴᐃᕆᐅᔪᖅ ᓄᓇᓯᐅᑎᖃᖅᑎᑕᐅᓂᐊᖅᑐᑦ ᒪᓐᓇᐅᔨᕈᑎ ᐊᑐᓚᐊᖏᑦ ᕿᓐᓄᐊᐊᓂ ᑕᐃᒃᓂ ᓄᐊᑕᐅᓂᐊᖅᑐᑦ. ᓴᐃᕆᐅᔪᖅ ᐅᓯᖅᑕᐅᑎᖃᓂᐊᖅᑐᑦ ᐊᒻᒪ ᐅᒥᐊᔨᐊᑦᑎᖅᑕᐅᓕᕆᑎ ᓴᐃᕆᐅᔪᖅᓂᑦ ᐅᓯᔪᓐᓇᖅᑐᓂ. ᐊᒻᒪ ᐅᒥᐊᖅᔨᐊᖅ ᑕᓚᐅᑦ ᐊᑭᓕᓪᓕᓂᓄᓂᑐᒍ ᑐᑭᓯᒪᓕᕆᓂᖅ.

ᑕᓐᓇ ᖃᐅᔨᓴᓂᐅᔨᖅ ᐃᒪᐃᑦᑐᓂ ᐃᖅᖃᓇᐃᔭᓚᐊᖃᓂᐊᖅᑐᑦ:

- ᐲᓐᑐᕋᖅᑎᓂᑦ ᐅᔭᕆᓐᓂᐊᓂᕐᒧᑦ ᐊᒻᒪ ᓯᓂᓕᓪᓕᐃᔭᔪᑎᑦ, ᐅᐱᕋᖅᑭᔨᖅᓯᐅᑎᑦ ᐊᒻᒪ ᐅᖅᓯᐊᓗ ᒪᕋᐅᓂ ᐅᒥᐊᕋᔨᐊᓂ ᕿᓐᓄᐊᐊᓂ ᐋᖅᑭᓯ 2007_ᒥᑦ, ᒪᓕᓪᓗᓯᑦ ᐅᐊᓐᓇᖅᓱᑕ ᖃᓇᓐᓇᖅᓂᓂ ᐅᑭᐅᑕᖅᑐᖅ ᐅᒥᐊᔨᖅᓄᑦ ᐊᑐᖅᑕᐅᔭᖅᓚᐊᓵᑦ, ᐅᒥᐊᕋᔨᐊᓂ ᐊᑐᕋᓗᑎ ᖃᑎᓂᔭᖅᓱᓵᓪᑕᑐᓂᑦ ᒪᓐᑐᓚᐅᒥᑦ
- ᐱᐅᓯᑎᑭᐊᕋᔪᒍ ᒪᓐᓇᐅᔨᕈᒥ ᕿᓐᓄᐊᐊᓇᓂ ᐊᑐᓚᐊᖅ ᐊᕋᓯᓕᒪᓕᖅᓄᑦ ᐊᑐᖅᑕᐅᔨᓐᓇᖅᑕᕐᓂᐊᖅᓪᓗᑦ, ᐱᖅᓯᐅᑎᓕᓪᓗᑎ ᖃᓄᖅᑐᓗᑎ ᐊᒻᒪ ᐊᓯᔭᕋᓕᒫᖅᑭᓕᓪᓕᑦ ᐊᒻᒪ ᐊᓯᔭᕋᓕᒫᖅᑭᓕᓪᓕᑦ ᐃᓄᓂ ᐃᐃᓴᖅᓱᐃᓂᑦ ᐊᓯᓂᔨᓂᑦ ᐃᖅᓄᑦ ᐃᑲᓚᐊᑦ
- ᓴᖅᓇᓂᖅ 100_ᓂ ᐃᓄᖅᑭᓐᓇᖅᑐᓂ ᑐᐱᕕᑦ ᓄᓚᓴ, ᓴᓂᐊᓂ ᖃᐅᔨᓴᓂᕕᑦ ᓇᔨᖅᑕᐅᔨᕈᑦ
- ᓴᖅᑭᑎᑦᑎᓚᑎ ᐃᓪᓚᓴᓪᓂᓂᑦ ᓇᔨᖅᑕᐅᓂᐊᖅᑐᓂᑦ ᕿᓐᓄᐊᐊᓂ ᐊᒻᒪ ᐊᖅᓄᓪᑕᓂ ᕿᓐᓄᐊᓇᓄ
- ᓴᖅᑭᑎᑦᑎᓚᑎ ᐅᖅᓯᐊᓚᖅᖃᕐᒪᐅᑲᐃᓐᓇᓂᐊᖅᑐᒥᑦ ᕿᓐᓄᐊᐊᓂ, ᐊᑐᓚᐊᖏᑦ (ᕿᑎᐸᓚᐊᓂ) ᐊᒻᒪ Milne Inlet_ᒥᑦ.
- ᐳᑐᓚᓂᖅ, ᖃᖅᑎᑌᓚᓂᖅ ᐊᒻᒪ ᓄᐊᑦᑎᓂᖅ 169,300 ᐸᓂᖅᑐᓂᑦ ᑕᓐᓴ (T) ᓄᓴᐅᐸ ᖃᓚᓱᓪᑕᓂᑦ ᐅᔭᕆᓐᓂᑦ ᓴᐃᕆᐅᔪᖅᓴᕐᑕᐅᔨᕈᒥᑦ 1 ᓄᓚᔭ ᑕᖅᕿᐅᓂᐊᖅᑐᓂᑦ ᐱᖓᓱᓂᑦ ᑕᑦᑕᒪᓄᑦ, ᐱᒋᐊᖅᓯᒋᐊᓂ 2008.
- ᐳᑐᓚᓂᖅ, ᖃᖅᑎᑌᓚᓂᖅ ᐊᒻᒪ ᓯᓂᓕᓪᓚᐃᓂᖅ 250_000 ᑕᓐᓴ ᓴᓇᕆᔪᖅᓴᑦ ᓴᓇᕆᔪᖅᓴᖅᑕᕐᓕᒥᒋ ᓰᓴᐅᑎᖅᓴ1 ᓄᓚᔭᓂ ᑕᖅᕿᐅᓂᐊᖅᑐᓂᑦ ᐱᖓᓱᓂᑦ ᑕᑦᑕᒪᓄᑦ, ᐱᒋᐊᖅᓯᒋᐊᓂ 2008.
- ᓄᑦᑎᑌᓚᖅ 250,000 ᑕᓐᓴ ᖃᐅᔨᓴᕆᔪᓴᐸᑦ ᓄᓚᔭᓂ ᕿᓐᓄᐊᓇᓄ, ᓯᐊᓕᑦᑕᕐᔾᔨᓚᓯᒋᐊᓂ ᑕᖅᕿᓂᑦ ᐊᖏᓪᓕᖅᓂᑦ 2008_ᒥᑦ.
- ᓄᐊᑦᑎᐅᓚᐃᓐᓇᖅᓂᒃ ᓴᓇᕆᔪᖅᓴᓂᑦ ᖃᐅᔨᓴᕆᑦᓴᓚᐃᑦ ᕿᓐᓄᐊᐊᓂ
- ᐱᓐᓯᓯᓄᑦ ᐅᒥᐊᖅᔨᐊᑦᑎᖅᑕᐅᓚᐅᒃ ᓴᓇᕆᔪᖅᓴᓚᐃᑦ ᕿᓐᓄᐊᐊᓂ ᐅᑎᑦᓗᓂᒃ ᑕᑦᑕᒪᓚᐃᕆᔪᖅᑐᓂᑦ ᐋᖅᑭᓯ_ᓯᑎᐱᓚᓇ 2008 (ᒪᓕᕐᒃ ᐅᒥᐊᖅᔨᐊᖅ ᒪᓕᕐᐊᑎᖅᓗᑎ, ᐊᑕᐅᓯᖅᓄᑦ ᐅᒥᐊᖅᔨᐊᖅᓄᑦ ᐊᑕᐅᓯᐊᖅᓗᓂ)

ᐅᑦᓗᓐᓂᑦ ᖃᐅᔨᓴᖅᑕᐅᓂᐊᖅᑐᑦ ᐊᓐᑎᔨᑎᑦ ᖃᐅᔨᓴᕆᔪᖅᓴᓚᐃᑦ ᐃᒪᐃᑦᑕᓐᓇᔨᔨᑦ:

- ᓄᓇᓚᓇ 2006 _ ᑐᓂᓯᓗᑎ ᐊᐢᑎᑦᑕᓇᓂᕐᒧᑦ ᖃᐅᔨᓴᓂᕐᒧᑦ ᐸᐃᑦᔨᓂᑦ ᐊᒻᒪ ᐱᔨᓐᓇᐅᑎᓂᑦ ᐱᔨᒪᔨᔨᑎᓂ.
- ᒪᑦᓯ 2007 _ ᖃᐅᔨᓴᖅᑕᐅᓂᖓ ᐱᖃᓗᖅᑕᖅ ᐊᒻᒪ ᐱᔨᓐᓇᐅᓐ ᑐᓂᖃᐅᓪᓗᓂ.
- ᒪᐅ 2007 _ ᐱᑎᐊᖅᓗᑎ ᐱᐅᓯᑎᑭᐊᕋᓂᐊᖅᑐᑦ ᐊᑐᓚᐊᑦᑕᑦ ᒥᐃᖓᑦᓗ
- ᐊᑎᓯ 2007 _ ᐃᖓᑎᓯᑎᓪᓗᑎ ᓀᔨᖅᑕᑐᐅᓂᐊᖅᑐᒍ ᐊᒻᒪ ᓯᓀᖅᑎᔨᐊᓂ ᖃᐅᔨᓴᕆᔪᖅᓴᓂᑦ

- ᑰᐟᐱᓗ 2007 _ ᓇᓯᖏᑕᐅᓂᐊᖏᑐᑦ ᐊᒻᒪ ᐱᖏᒪᑦ ᓴᓇᔨᐅᓗᑎ, ᐊᖓᕆᔨᓂᑦ ᖃᐅᔨᓴᓇᓕᕆᓪᓗᑎ
- ᒪᐃ 2008 _ ᐊᖓᕆᔨᓂ ᖃᐅᔨᓴᖏᓂᖅ ᐱᓕᓇᐊᖅ ᐱᓴᓰᖏᑐᖅ
- ᐅᖃᓗᐊᓇ 2008 _ ᑰᑦᑕᐅᕈᐊᕆᓪᓗᑎ ᓴᐃᓴᐅᖏᓴᐃᑦ ᖁᖓᒍᐊᓂ
- ᐊᒃᑕᓯ ᓯᑎᐱᓇ 2008 _ ᓴᐃᓴᐅᖏᓴᐃᑦ ᐅᒥᐊᖏᔪᒍᖏᑕᐅᔨᑦ ᓂᐅᔭᑕᐅᓪᓗᑎᑦᓗ

ᐃᓕᖅᓂᐊᕐᕿᓴᐃᑦ ᒥᖅᓇᐅᔨᒥ ᐃᖅᕿᓴᐃᐸᖅᑎᑦ ᐃᖅᕿᓇᐃᐸᖅᑎᐅᔨᖅᓇᑦᓗ Baffinland_ᒥᑦ, ᐱᓗᐊᖅᑐᒥ ᑕᐃᵇᑯᐊ ᓄᓇᖃᖅᑐᑦ ᓄᓇᓕᖅᓂ ᖃᓂᕐᔪᓐᓂ ᓄᓗᓴ, ᐱᓪᒪᓗᐅᖅᑕᐅᔨᖅ ᐱᓕᓗᐊᖅᔪᓚᔨᒪᔨᒥᑦ. ᐃᓕᖅᓂᐊᓂᐊᖅᑐᑦ ᓄᓇᓕᓪᒥ ᐃᓕᖅᓂᐊᖏᓂᐅᔨᒍ, ᐅᐸᕐᓂᓂᐊᓂᖅ ᐃᓕᖅᓂᐊᖏᓂᖅ, ᐊᒻᒪ ᐃᖅᕿᓄᐃᐸᖅᔪᐊᖅᐃᓇᖅᑐᑦ. ᑕᖅᓇ ᐃᓕᖅᓂᐊᑎᑦᑎᓂᖅ ᐃᓕᑦᑎᑦᑎᓂᐊᖏᑐᖅ ᓴᓇᔨᓇᓂᕆᑦ ᐱᑕᖅᓴᐊᓕᓵᑦ ᓄᓕᓂᑦ ᐃᖅᕿᓄᐃᐸᖅᑎᓂᑦ ᓴᓇᖅᑕᐅᔨᓇᓂᐊᖏᓪᓗᑕ ᐊᒻᒪ ᐊᐅᓚᐅᔭᐊᑎᖅᑐᓂᑦ, ᓄᓗᓴ ᐱᓕᓇᐊᖅ ᓯᑐᕐᓴᐊᖅᑐᓇᖅᓯᑦ ᓯᑐᓂᖅᓯᑦ.

ᒪᓕᑦᑕᐅᔭᓴᐊᖅᑐᖅᑐᓂᑦ ᐃᓗᓕᖅᑭᑦ

ᓄᓗᔭ ᐱᓕᓇᐊᖅ ᐊᖓᕆᔨᓂᑦ ᖃᐅᔨᓴᖏᓂᖅ ᐱᓕᓇᐊᖅ ᐊᒥᓯᒪᓕᖅᓂᑦ ᐱᔨᖅᓴᐅᑎᖃᓇᐊᖃᓂᐊᖅᑐᖅ, ᓕᐃᓴᖅᓯᓂᑦ ᐅᑉᐸᓂᖅᓂᑦ ᐱᔨᖅᓴᐅᑎᖅ, ᐅᓴᐅᓚᑦ.

- ᐃᓄᐃᑦ ᓄᓇᖅᑐᓂ ᐊᑐᕐᓴᐅᓇᐅᑦ ᓕᐃᓴᖅᓯ III (ᖁᑭᖅᑕᓂ ᐃᓄᐃᑦ ᑲᑐᔨᖃᑎᒌᖅᓂᖓᓚᑦ)
- ᐅᔭᕆᓂᓄᐊᓂᔪᑦ ᐊᑭᓕᓚᐊᓕᑦ (ᖁᑭᖅᑕᓂ ᐃᓄᐃᑦ ᑲᑐᔨᖃᑎᒌᖅᓂᖓᓚᑦ)
- ᖃᓄᐃᑦᑐᓂᓚᑦ B ᐃᒥᔪᑦ ᓕᐃᓴᖅᓯ (*ᓄᓇᖅᐸᓯᒪᒥ ᐃᒪᔪᓂᑦ ᒪᓕᓕᖅ*)
- ᖃᓄᐃᑦᑐᓂᓚᑦ A ᓄᓇᔪᑦ ᐊᑐᕐᓇᐅᑦ (*ᓄᓇᑉᐸᒪᒥ ᓄᓇᓄᑦ ᒪᓕᓕᖅ*)
- ᐃᖃᓗᓕᓕᓚᓂᔪᑦ ᐊᖓᕆᖅᑕᐅᓂᓚᑦ (*ᐃᖃᓗᓕᓕᓚᓂᔪᑦ ᒪᓕᓕᖅ*)
- ᐱᖅᑕᐅᔨᒪᔭᐊᖓᕆᖅᑕᐅᔨᑦ ᐊᑕᓂ *ᐊᖅᓂᔨᐅᔨᓂ ᐃᒪᔪᓂᑦ ᓴᓗᐳᓂᓚᔪᑦ ᒪᓕᓕᖅ*

ᐃᓕᒥᐊᖅᓗᑦ ᖅᓂᒋᓂ ᐊᖓᕆᖅᑕᐅᕈᐊᓕᓵᑦ, ᐱᓕᓇᐊᖅ ᐱᔨᒪᓕᒪᔨᑦ ᖃᐅᔨᕈᐊᖅᓗᑎ ᒪᓕᓪᓗᑎ ᐅᐊᓂᓚᓂᓄ ᖁᑭᖅᕿᓗᒃᑰᑦ ᐊᓐᑕᑐᖅᓴᒪᒪᔨᒍ ᓄᓇᒥᑦ ᐊᑐᓂᐊᖅᓚᔪᑦ ᐸᑦᑕᐅᖅᓯᒪᔨᓂᑦ, ᐊᒻᒪ ᐊᐊᓕᑎᑕᐅᓚᖅᓂᐊᖅᑐᓂᑦ ᐃᑎᒪᔨᓂᐅᓂᑦ ᓴᓇᔨᐅᓕᖅᑐᓂᑦ (ᐃᓕᓴᐃ 12). ᐃᓕᒥᐊᖅᓗᒍ, ᐊᐊᓐᑕᓚᓂᔪᑦ ᖃᐅᔨᓴᖏᓂᐅᔨᖅ ᐱᑕᖅᓴᐊᖅᑐᓂᐅᔨᖅ ᐊᑕᓂ *ᑲᓇᑕ ᐊᔪᑎᓚᓂᔪᑦ ᖃᐅᔨᓴᖏᓂᑦ ᒪᓕᓕᖅ* ᑐᓂᔪᐅᓕᐅᖅᑎᓇᒥᑦ ᐱᔨᓇᐅᑎᑦᐃᐊᖅᓯᒪᓂᕐᒥᑦ ᑲᐟᒪᑐᖅᐳᖅ ᐱᓕᓇᓱᖅᓂᐊᖅ. ᐊᐊᐊᓐᑕᓚᓂᔪᑦ ᖃᐅᔨᓴᖏᓂᔪᑦ ᐸᐃᓪᓕᖅ ᐱᓚᐅᔪᖅ ᑎᑎᐅᔨᑐᖏᓂᖅᓯᑦ ᓄᓕᒪᑐᖏᓂᖅ ᐅᒥᐅᑦᑐᖏᓂᖅᓯᑦ ᑕᓇᓂᑦ ᐱᓕᓇᐊᖅ.

ᐊᐊᑎ

ᓄᓗᔭ ᐱᓕᓇᐊᖅ ᐅᐊᓇᓚᓂᒋᑐᖅ ᖁᑭᖅᑕᐅᓗᑦ, ᓯᓪᓚᓂ ᐊᓯᔨᖃᖅᑕᓪᓂᖅ ᐅᑭᐅᑕᖅᑐᒥᓱᑦ. ᓂᑦᓪᓀᔭᓂᑎᔨᓪᓂᓚ ᒥᑎᒪᒪᓪᓕᒪᒥ, ᖃᓄᓪᓚᓂᔪᖅ -15.1 ºC. ᖃᓄᓕᕐᑕᓂᓚ ᒥᑎᒪᒪᓪᓕᒪᒥ 90.8 mm, 144.5 ᖃᒪ ᖃᓇᓄᖃᑕᑎᓄᓚᓂ ᐊᒻᒪ 85.4 mm ᓯᓪᓗᓵᖃᑕᑎᓄᓚᓂ. ᓇᓗᓇᐃᖅᓯᒪᔨᖅ ᖃᓚᔪᑐᐃᓇᓵᔪᖅᑐᑦ. ᒥᑎᒪᒪᓪᓕᒫ ᑕᓂᓇᓇᖃᑕᑎᓄᖅ ᐃᑲᖏᓂ 24_ᓄ (ᖃᐅᔨᒪᒪᓪᓚᖃᑕᑎᓄᓂ ᐃᑲᖏᓂ ᒪᑎᑐᓇ ᑐᓚᓂ) ᓄᐃᐱᓗ 12_ᒥᑦ ᐅᓇᓂᐊᓗ 29_ᒧᑦ ᐊᒻᒪ ᓯᖏᓇᓵᓇᖃᑕᑎᓄᓂ ᒪᐃ 5_ᒥᑦ ᐊᒃᑕᓯ 7_ᒧᑦ.

ᓄᓇᐅᐸ ᖃᓐᓇᓂᑦᑐᑦ ᐊᒪᒪ ᐃᑭᓐᓇᓂ ᐊᑦᑐᐊᓂᓗᑦ ᓂᓪᐅᑭᐅᓂᓐᓇᓄᑦ ᖁᑭᖅᑕᔪᒃ. ᓄᓇᐅᐸ ᖃᓐᓇᓂᑦ ᐅᓴᖅᑲᓪᓚᓂᕆᑦ ᐃᔪᓕᖃᖅᑐᑐ ᐊᒥᓱᓪᓗᑎᑎ Holocene glacio lacustrine sediments, fluvial sediments (alluvial deposits) ᐊᒪᒪ marine and glacio-marine deltaic sediments, end moraine till, ᐊᒪᒪ ᐃᓪᓗᓂᓂᔪᓪ pre-Quaternary bedrock ᐊᒪᒪ sedimentary ᐅᓴᕋᐃᑦ ᐁᖅᑭᖅᓭᒪᓂᖓᑦ. ᐅᐊᓂᓇᓐᓄ ᖁᑭᖅᑕᔪᒃ ᐊᒪᒪ ᓄᔪᒃ ᓇᓪᒥᔭᖅᑎᓪᓕ ᖁᔪᐊᕐᒥ, granite-greenstone ᓄᓇ ᑲᑎᓐᓴᖅᑎᖅᖅᑐᑎ ᒪᕐᕋᖅ ᐊᒪᒪ ᐊᐅᒪᒥᒃᓕᑦ ᐅᓴᕋᐃᑦ.; Precambrian ᖃᖅᖅᑲᐃᑦ ᑲᓇᓂᓴᓐᓇᓄ ᐊᒪᒪ Palaeozoic ᐊᑎᑎᑐᒥ ᐱᓐᓂᓇᓐᓄᓂ. ᐱᓪᓚᐊᖅ. ᐱᓪᓚᐊᖅ ᖃᔪᐊᖅᑭᑐᕐᖅ, ᐃᓕᔪᓂᖃᖅᑐᓂ 2 ᑭᑕᓂᑦ ᐊᒪᒪ ᐃᑭᑐᑐᔪ ᖃᔪᐊᔪᓂᓐᓄ ᖃᓂᑎᓐᓄᓂ ᓇᑦᐸᐊᓐᓄ ᑭᓪᑦᐸᓐᓄ ᑭᓪᑕᐊᓐ ᑭᓪᑕᑎᑕ.

ᓂᑦᓪᓕᓂᓂᓐᓄ, ᐱᖃᓕᐅᑎᑦᓪᓗᓂ ᖃᔪᐊᔪᓂᓐᓄ ᓄᓇ ᖁᓪᒥᒋᓪᓗᒃ ᐊᐅᓐᓂᖃᖃᑦᓪᓕᖅᑐᖅ ᔨᓂᒥ ᓯᑎᐱᓚᒧᑦ. ᐄᓪᒥᑦᑦ ᐊᒪᒪ ᐄᑲᓪᑦ, ᐱᖃᓕᐅᑎᓐᓇᑦᑦ ᐊᓐᑎᓂᖅᓴᐅᔨᑦ, ᖃᔪᐊᖃᑦᑦᓕᓂᖅᑐᖅ ᐅᑭᐅᖅᔪᑦ. ᐊᐅᓐᓂᓚᖓᓐᓄ ᐱᐅᔨᖅ ᐱᒃᔨᑎᑎᑦᓪᓗᒍ ᓂᑦᓪᓕᓂᓂᓐᓄᓇᓄ, ᓴᓪᒪᒪᐃᑦᑎᐊᓐᓄᓐᓂᓇᓄ ᐊᒪᒪ ᐱᕈᖅᑐᖅᓄᐅᑦᑎᐊᓐᓂᓇᓄ, ᐊᒪᒪ ᒪᓕᑦᑐᓂᒥ, ᓄᓇᐅᐸ ᖃᓐᓇ ᐃᒪᖃᑦᑎᐊᖅᑐᖅ, ᐊᒪᒪ ᐊᒥᔪᓂ ᑕᔪᖃᐅᖅᑐᓂ ᒥᑭᔨᓂᑦ ᐊᒪᒪ ᐄᑲᓪᑦᓂᑦ.

ᐃᒥᐅᐸ ᐱᐅᓂᓐᓇ alkaline_`ᖃᓴᔨᑦᑐᖅ, ᓭᕈᖅᓭᒪᑦᑎᐊᖅᓇᓂ. ᐃᒥᖅ ᐃᓕᐊᓂ ᓄᓕᓴ ᐱᐅᔨᒪᒪᓗᑦ, ᐊᒥᓱᑦᑕᕋᓕᐊᖅᒪᑕ ᐃᖅᑲᓐᓂᓪᓕᑦᑐᑦ. ᐊᓕᒥᓇᒪᒃ ᐊᒪᒪ ᐄᑲᓪᑦ, ᐱᖃᓕᐅᑎᓐᓇᑦᑦ ᐊᓐᓭᓂᖅᓴᐅᔨᑦ, ᕿᓕᒪᐃᑦᑎᐊᓐᓂᓇᓄ ᐊᒪᒪ ᐱᕈᖅᑐᖅᓄᐅᑦᑎᐊᓐᓂᓇᓄ, ᐊᒪᒪ ᒪᓕᑦᑐᓂᒥ, ᓄᓇᐅᐸ ᖃᓐᓇ ᐃᒪᖃᑦᑎᐊᖅᑐᖅ, ᐊᒪᒪ ᐊᒥᔪᓂ ᑕᔪᖃᐅᖅᑐᓂ ᒥᑭᔨᓂᑦ ᐊᒪᒪ ᐄᑲᓪᑦᓂᑦ.

ᖁᓕᓂᑦᑐᖅᑐᑦ ᐅᐊᓂᓐᓇ ᐊᓐᓂᓐᓇᓄ ᐅᐊᓐᓂᓚᓐᓇᓄ ᓄᓇᓕᒪᓐᓇᓄ ᐊᒪᒪ ᓄᓇᓕᐊᐃᓐᓇᐅᓂᖅᓴᐅᓂᖅᓴᖅ, ᐊᓪᔨᑎᓐᓇᒍᑎᓐᓂᓕᒍ ᓂᑎᕐᕕᒪᓂᓕᓂᑦ ᐊᓂᑎᓐᓇᓂ. ᐱᐅᖅᓯᒪᔪᓂᑦ ᐱᖃᓕᐅᑎᓐᓇᒃ ᓄᓇᓕᐊᐃᓐᓇᐅᓂᖅᓴᐅᓂᖅᓴᖅ, ᐊᒪᒪ ᓕᓂᑦᓂᓕ, ᓄᓇᐅᐸ ᖃᓐᓇ ᐃᓕᖃᑦᑎᐊᖅᑐᖅ, ᐊᒪᒪ ᐊᒥᓱᓂ ᑕᓱᖃᐅᖅᑐᓂᓕᓂᑦ ᒥᑭᔨᓂᑦ ᐊᒪᒪ ᐄᑲᓪᑦᓂᑦ.

ᐃᒥᐅᐸ ᐱᐅᓂᓐᓇ alkaline_`ᖃᓴᔨᑦᑐᖅᑐᑦ, ᓭᕈᖅᓭᒪᑦᑎᐊᖅᓇᓂ. ᐃᒥᖅ ᐃᓕᐊᓂ ᓄᓕᓴ ᐱᐅᔨᒪᒪᓗᑦ, ᐊᒥᓱᑦᑕᕋᓕᐊᖅᒪᑕ ᐃᖅᑲᓐᓂᓪᓕᑦᑐᑦ. ᐊᓕᒥᓇᒪᒃ ᐊᒪᒪ ᐄᑲᓪᑦ, ᐱᖃᓕᐅᑎᓐᓇᑦᑦ ᐊᓐᓭᓂᖅᓴᐅᔨᑦ, ᕿᓕᒪᐃᑦᑎᐊᓐᓂᓇᓄ ᐊᒪᒪ ᐄᑲᓪᑦᓂᑦ.

ᐱᐅᖅᑐᓂᓐᓇᓄ ᐊᐅᓐᓂᓚᓐᓇᓄ ᐅᐊᓐᓂᓚᓐᓇᓄ ᖁᑭᖅᑕᔪᒃ ᐊᒪᒪ ᓄᓇᑐᐃᓐᓇᐅᓐᓂᖅᓴᐅᓂᖅᓴᖅ, ᐊᓪᔨᑎᓐᓇᒍᑎᓐᓂᓕᒍ ᓂᑎᕐᕕᒪᓂᓕᓂᑦ ᐊᓂᑎᓐᓇᓂ. ᐱᐅᖅᑐᑕᓐᓂᑦ ᐱᖃᓕᐅᑎᓐᓇᒃ ᓄᓇᕕᒪᓐᓇᒃ ᐊᒪᒪ ᐃᓕᖃᑦᑎᐊᖅᑐᖅ, ᐊᒪᒪ ᒪᓕᑦᑐᓂᒥ, ᐊᐅᓐᓂᓚᓐᓇᓄ ᐊᒪᒪ ᐄᑲᓪᑦᓂᑦ. ᐱᐅᖅᑐᑕᓐᓂᑦ ᐱᖃᓕᐅᑎᓐᓇᒃ ᓄᓇᕕᒪᓐᓇᒃ ᐊᒪᒪ ᐃᓕᖃᑦᑎᐊᖅᑐᖅ, ᐊᒪᒪ ᒪᓕᑦᑐᓂᒥ, ᐊᐅᓐᓂᓚᓐᓇᓄ ᐊᒪᒪ ᐄᑲᓪᑦᓂᑦ.

ᓄᓇᒥᑦ ᓂᓪᔨᐸᑦ ᐊᐃᕐᑐᖅᓯᒪᔨᒥ 9-ᓴᒍᔨᑦ ᓂᓪᔨᐸᑦ: ᑐᑦᑐᐃᑦ, ᐊᒪᑭᐃᑦ, ᐊᒪᑭᕆᐃᑦ, ᑎᓪᓗᓂᓂᐊᑦ, ᑎᓪᓴᓗᓂᓂᐊᑦ ᐊᐅᐸᖅᑐᑦ, ᑎᓪᓴᐸᑦ, ᐊᐃᓴᓴᓗᐃᑦ ᐊᒪᒪ ᐅᑲᓐᓂ. ᑕᑦᑐᐃᑦ ᑕᒥᓂ ᒥᓐᓄᐅᔨᖅ ᐊᒥᓱᓂᐊᓴᑦᑑᑦᑐᑦ, ᐱᓯᔪᖅᑕ ᑕᐃᖅᓴᐅᔪᓕᓴᐊᑦ, ᐃᓄᐃᑦ ᖃᐅᔨᒪᑭᑐᑦᑐᖅᓴᖅ ᐊᒪᒪ ᐅᒪᔨᖅᑕᐅᔨᑦᑐᑦ ᐊᒥᓱᓂᐊᓴᑦᑑᑦᑐᑦ: ᐅᑎᖅᑕᖃᑦᑕᖅᑐᑦ, ᓄᑦᑐᐃᑦᑐᑦ ᐊᒪᒪ ᓄᓇᔨᑦᑕᖅᑐᑦ. ᑐᑦᑐᓂ ᖃᐅᔨᓴᓐᓂ ᒪᐃ 2006_ᒥ ᓂᓪᓕᓂ ᐊᒥᓱᓂᖅᓴᐅᓐᓄᑐᑎ ᐊᒪᒪ ᐅᑎᖅᑕᖃᖅᑕᖅᑐᑎ ᐅᐊᓂᓇᓐᓄ ᓂᓪᔨᒧᑦ ᐊᓴᓇᐅᑦᔨᑦᑐᑦ ᔨᓂᒥ ᐱᓪᒋᐊᓴᑦᑑᑦᑐᖅ, ᐱᖃᓕᐅᑎᓐᓚᓴᓐᓇᑎ ᐊᓐᓄᓂᑦ. ᐊᑐᖅᑕᐅᑦᔨᓄᓂᔭᖅ ᐅᑎᖅᑕᖅᑐᓇ ᑐᑦᑐᐃᑦ ᐅᐱᓴᓴᓂᖅᑐᖅ, ᐃᓕᔪᓂᖅᑐᑦᑐᓂ ᐅᐊᓐᓂᓚᓐᓇᓄ ᐱᓐᓇᓇᓐᓄ ᐱᓪᓚᓐᓇᖃᖅᑎᑦᑐᓂ, ᓇᔨᖃᑦᑕᖅᑕᓐᓂᑦ ᔨᖅ ᐊᒪᒪ ᖃᔪᓕᓂᓂᓴᖅᓴᓂ ᓄᓇᒥᑦ.

ᐊᒥᓱᖏᑦᑐᑦ ᓂᕆᑐᖅᑕᕐᖅᑐᓄᑦ ᑎᓯᑦ ᑎᓯᖅᐅᕐᓇᖅᑐᓂ ᑎᓪᓗᓂᐊᓄᑦ ᐊᒻᒪ ᐊᒪᕐᕿᓄᑦ, ᐊᒻᒪ ᓂᓪᖅᑕᕐᕆᖏᑦ.

ᖃᐅᔨᓴᖅᓴᐃᑦ ᑎᒻᒥᐊᑦ ᐃᓕᖏᑦ ᕿᑎᓕᐅᖅᑕᕐᖅᑐᑦ ᐅᑎᖅᑕᖅᑕᕐᖅᑐᑦ ᑎᒻᒥᐊᑦ (ᐱᓗᐊᖅᑐᒥᑦ ᓂᕿᓂᑦ) ᒥᑦᑎᒪᑕᓕᐅᕐᕼ ᐊᑭᐊᓇᖅᑐᑦ, ᐊᒻᒪ ᐊᒥᓱᓚᓕᐃᑦ ᓂᕆᑐᐃᓂᑦ ᐊᒻᒪ ᑐᑦᓂᑦ. ᐊᒥᓱᓚᓕᐅᔪᑦ ᐱᑭᐅᖃᖅᖁᔪᑦ ᓂᕆᑐᐃᓇᑦ ᐱᑕᖃᖅᑐᑦ ᐊᖏᑐᖅᓯᒪᔪᒥ, ᐊᒻᒪ ᑲᔪᑦ (ᐃᓕᖏᑦ *tundris*), ᐊᒥᓱᐃᕿᑦᓕᓕᐊᓱᒪᓕᖅᑐᑦ ᓇᖏᔪᑲᓕᐅᖅᑎᑦᓗᓂᑦ ᓇᖏᔪᖏᑐᓂ 1960 ᐊᒻᒪ ᕿᑯᓚᐊᖅᑎᑕᐅᓕᐅᖅᑐᑦ ᐊᑦᑕᓀᖅᑐᒥᑦᑐᑎ ᓂᕿᔪᒥᑦ ᐃᓱᒪᓕᑕᔪᑕᐅᔪᓂ 1992_ᒥ, ᐊᒥᓱᓂ ᐊᖏᑦᑐᖅᓯᒪᔪᒥ.

ᖁᑭᖅᑕᓗᒃ ᐊᒥᓱᖏᓂᖅᓴᐃᑦ ᐊᔨᑭᖏᑦᑐᑦ ᐃᖅᓗᐃᑦ ᐃᒪᑐᐃᑦ ᓇᓂᐅᐃᖅᑕᒥ ᓀᓂᔨᐅᔪᑦ ᐃᓕᓴᐅ ᓄᓇᕗᑦ ᐊᒻᒪ ᖁᑭᖅᑕᒪᓕᕆᔨᐅᔪᓂᖅᑕᑦ ᐱᖓᓱᖏᑦ ᐅᑭᐅᑕᖅᑐᒥ. ᐃᖅᓗᐱᐃ (*Salvelinus alpinus*) ᐊᒥᓱᓯᖓᔪᑦ ᐊᒻᒪ ᓭᐊᒪᖅᓭᒪᓂᖅᓴᐅᓪᓗᑎᑐ ᐃᖅᓗᓐᓂᑦ ᑕᓭᕐᓂᑦ, ᕆᓂᑦ, ᕆᑦᓯᓂᑦ ᖁᑭᖅᑕᓗᒥ.

ᐊᖏᑭᓭᒥ ᓭᑎᐱᓪᒥᓪᓗ, ᐅᒥᐊᔪᐊᖅᑕᖅᑕᖅᑕᓪᓕᖅᑎᓪᓗᔪᒍ ᐊᑦᑐᐊᓂᓯᑦ ᖃᐅᔨᓴᓂᕐᔪᑦ ᐱᓕᓪᐊᒥᑦ ᐱᔪᒪᔭᐅᓭᓭᔪᑦ, ᑐᐃᓯᑦ, ᐊᕐᕈᑦ, ᓇᑦᑎᑦ ᐊᒻᒪ ᖃᐅᔨᖅᑐᑦ ᐃᒪᓪᓕᖏᓐᓂᒃ ᖁᓕᓯᐊᓂ ᐊᒻᒪ ᑕᓭᐅᔭᔪᐊᐅ. ᖁᓕᓪᓚᓂᐃᑦ ᐊᒻᒪ ᕿᐊᓗᐃᑦ ᑕᔪᔭᐅᖃᐃᐅᓇᖅᑕᑭᓕᕐᓇᑦ ᑕᖃᔪᖅᓂ ᐃᒪᓕᒃᓂᑦ ᐱᓕᕆᓂ.

ᐊᐢᑎᓪᓚᓂᐊᓕᒻᒥᑦ ᑭᓇᐅᔭᓕᐅᕆᔨᐅᓂᒻᒥᑦ ᐊᐢᑎᓪᓚᓂᐊᓂᖅ

ᓄᓇᓕᑦ ᖃᓄᐅᔭᖏᑦ ᒥᑦᑎᒪᑕᓕᖅ, ᐃᐸᐱᐊᕐᔾᔨᖅ, ᐃᒡᓗᓕᖅ ᐊᒻᒪ ᓴᓂᕆᔭᖅ. Baffinland ᖁᓂᖅᓂᐊᕐᓵᑦᑕᖅᔪᓂ ᓄᓇᓕᐅᐅᔪᓂ ᐃᖅᑲᓇᐃᔭᖅᑎᑦᑎᓗᑎ ᐊᒻᒪ ᐃᓕᓴᐃᓂᐊᕐᑎᓗᑎ ᐊᖏᑦᔨᓂ ᖃᐅᔨᖅᑐᐃᓂᐊᕐᓂᖅ ᐊᐢᑎᓪᓚᓂᐊᓂᖅ ᐊᒻᒪ ᐃᓕᓴᐃᓂᐊᕐᓂᖅ ᐊᐢᑎᓪᓚᓂᐊᓂᖅ ᐊᖏᑦᔨᓂ

- ᐃᖃᓗᐃᑦ
- ᑎᒥᒋᑦ
- ᐃᓚᖏᐅᑕᐃᑦ ᓂᕆᔨᑎᑦ

ᖃᐅᔨᓴᓂᐅᔪᖅ ᓇᓗᓇᐃᖃᓕᕆᔨᐅᖅᑐᖅ ᐊᒥᓱᓕᓪᓂᑦ ᐊᓱᔨᕐᓇᐊᖃᖅᑕᒋᓂᑦ ᐱᓕᓇᐊᑦ ᓴᓇᕆᓚᖓᔪ, ᐊᐅᓪᓚᔪᑎᖅᑭᓪᓄ ᐊᑦᑕᓇᐃᕈᑎᑦ, ᐅᖓᓵᓐᓂᑦ ᓂᓇᐅᓇᖅᑭᑐᓂ ᕿᖏᐃᓂᖅ ᐱᖃᓱᐅᖅᓴᐅᓗᑎᒃ ᐱᐅᓱᑎᑎᐊᓂᐊᖏᒪᑦ ᐊᑦᑐᖅᑕᐅᓂᐅᔪᑦ ᖃᓄᓪᓕᑦᑐᑦ. ᐃᓕᒥᐊᖏᓗᒍ, ᐱᓕᓇᐊᖅ ᓂᓇᐅᑎᓴᐅᔪᖅ ᐱᐅᔪᒥ ᑭᓇᐅᔭᓕᓇᓂᑎᒍᑦ ᐱᓕᕐᓂᑦᑎᓂᐊᖅᑐᖅ ᓄᓇᓕᒥᒥᐅᑕᓄᑦ, ᐱᓗᓇᖅᑐᑦ ᐃᖃᓄᖅᑕᐅᔪᓐᓇᖅᑐᑦ. ᐃᓗᒥᐊᖏᓱᓓᓕᖅᑐᑦ ᐊᑦᑐᖅᑕᐅᔪᓐᓇᖅᑐᑦ ᐊᒪ ᐱᐅᓱᒥᐊᖃᓲᑦᑕᐅᔭᓕᕆᔨᑦ ᐃᕐᓱᓱᑎᒃ:

1. ᖃᐅᔨᓴᓂᖅ ᐳᔪᓂᑦ ᖃᓄᒥᐅᔪᒍᑦ ᐅᔾᕋᓐᓂᐊᓂᖏᑦ, ᓱᔪᓄᑦᓗᐃᓂᖏᑦ, ᓄᐊᑦᑎᓂᖏᑦ ᐊᒪᒪ ᐊᑐᓚᐊᖅ ᐊᑐᖅᑕᐅᖃᑦᑕᓂᖅᓴᒃ ᖃᐅᔨᓴᓂᐅᔪᒍᑦ, ᑐᐱᓱᓂᓗᐃᓂᖏᑦ, ᓄᐊᑦᑎᓂᖏᑦ ᐊᒪᒪ ᐊᑐᖅᑕᐅᖃᑦᑕᓂᖅᓴᒃ ᖃᐅᔨᓴᓂᐅᔪᒍᑦ
2. ᓂᐱᖃᖓᓂᖅᓴᐅᓗᓂ ᐱᓕᓚᐊᒧᑦ ᐊᑦᑐᐊᓂᓵᑦ ᖃᖓᓴᑕᓱᓂᑦ ᐊᔪᓂᖓᓂᓐᓂ ᓄᓗᒃ ᐊᒪᒪ ᒥᑎᒪᒪᑕᓚᒃ, ᐊᑐᓂᓂᖅᓴᐅᓂᐊᖅᑐᑦ ᓄᓇᒃᔪᓱᓂᑦ ᐅᓱᖃᑦᑕᕐᓴᑦᑕ ᓱᓇᒃᔪᑕᑦ, ᐊᒪᒪᓗᑦᑕᐅᖅ ᐊᐅᓚᓂᖓᓴ ᕿᑦᑕᖅᑕᐅᓱᒪᖃᑦᑕᖅᑐᑦ ᐊᔪᓂᖓᓂᓐᓂ ᐃᖃᓗᓂᓂᓂᓄᓂᖓᓂᑦ ᐊᔪᓂᖓᓂᓐᓂ ᐃᖃᓗᓂᓂᓂᓄᓂᖓᓂᑦ.
3. ᑲᒪᒋᓗᑦᑕ ᐊᑦᑐᖅᑕᐅᔨᑦ ᖃᔪᐊᖏᑦ ᐊᒪᒪ ᓄᓇ ᓇᖏᐊᖃᓇᖏᑦᓗᓂᓐ ᓄᓇ ᖃᓄᐃᓕᓴᐅᐅᓂᖓᓄᓕᑦ ᐊᑦᑐᖅᑕᐃᓕᓴᒪᓗᒋ ᐊᑦᑕᓇᖅᑐᑦ ᓄᓇᐃᑦ (ᓱᔪᓗ ᓂᓕᖃᑦᑎᐊᔪᓂᖓ) ᐱᐅᓪᓗᒍ ᐊᑐᕋᓱᐊᔪᓗᑎᒃ, ᐊᒪᒪ ᐱᐅᓱᑎᑦᑎᐊᔪᓂᖅ ᔪᐃᕐᐅᔨᓂ ᐊᒪᒪ ᔪᐃᕐᐅᓂᐊᖅᑐᑦ, ᐱᑕᖃᓚᐊᖃᖅᕋᐃᓐᓇᑦ
4. ᖃᐅᔨᓴᖃᓂᔪᓗᑎᒃ ᐳᓱᕈᓰᒍᑦᓂᐃᓴᓗ ᑕᓱᖏᑦ ᐊᒪᒪ ᕈᓰᔪᐊ ᐃᒥᖏᑦ ᐊᑐᐃᖅᓱᒪᒪᔨᓂ ᕈᓐᓇᓕᖅᑐᑦ ᐊᑦᑕᔪᖃᓂᐊᕐᓂᑎᑦᓂᓗᒍ ᐅᒪᔨᓂ ᐱᕈᖅᑐᓂᓐᓂᓗ, ᓇᓗᓇᐃᖅᑕᐅᓕᐅᖅᑎᓪᓗᒍ ᕈᓐᓇᓗᓴ ᐱᐅᓱᑎᑦᑎᓗᑎᒃ ᐊᒪᒪ ᓄᐊᓱᓕᕆᔨᒃᑯᓂᖅ ᐊᑦᑐᖅᑕᐅᓂᐊᖅᑐᑦ ᐊᑦᑕᔪᖃᓂᐊᕐᓂᑎᑦᓂᓗᒍ ᐅᒪᔨᓂ ᐱᕈᖅᑐᓂᓐᓂᓗᒍ ᐊᑦᑐᖅᑕᐅᓂᐊᖅᑐᑦ ᐊᒪᒪ ᐊᑦᑕᔪᖃᓂᐊᕐᓂᑎᑦᓂᓗᒍ ᐊᑦᑐᖅᑕᐅᓂᐊᖅᑐᑦ
5. ᓴᐳᔨᓂᖅ ᐃᓕᓴᓂᑦ, ᓄᓇᓂᑦ ᐊᒪᒪ ᐃᓕᐅᑦ ᐃᖅᑲᖅᓱᓂ ᐱᐅᓂᖏᑦ ᐊᑐᓕᖅᑎᑕᐅᓚᓂ ᐊᕐᕈᑎᓕᓪᓂᔪᓐᓇᑦ ᖃᐅᔨᓴᓂᔪᓐᓇᑦ ᕿᖏᑕᐅᔨᒥᑦ (CEMP) ᐃᓕᒥᓕᓚᓂᐅᑲ ᑲᓇᑐᖅᑎᑎᐅᑦ ᐱᕐᓕᑦᑐᖅᑐᑎᑦ. CEMP ᓇᓗᓇᐃᖅᓱᓂᐊᖅᑐᑦ ᒪᓕᒃᑕᐅᐅᓴᖅᓱᓕᕆᓂᖓᓂᑦ, ᐱᐅᓱᑎᑎᑦᑎᐊᓂᔪᓐᓇᑦ ᐊᑦᑐᖅᑕᐅᑲᔨᓱᒋᑦ ᐊᒪᒪ ᐱᐅᓪᓚᒥ ᐊᑦᑐᔪᓂᒍ, ᑲᓇᑐᖅᑐᓂᐊᖅᑐᑦ ᖃᐅᔨᓴᓂᔪᓐᓇᖅᑐᑦ.
6. ᔨᕐᔨᖃᑲᓕᓂᔪᓐᓇᑦ ᐅᖅᓱᐊᓗᒥᒥ ᓄᓇᒥᑦ ᐊᒪᒪ ᔨᕐᑎᑕᐅᔨᑦ ᖃᓂᒋᔭᖏᓚᓄ ᑲᒪᒋᔭᐅᓂᐊᖅᑐᑦ ᐊᐅᓪᓚᓂᖅᓴᓂᒍ ᒪᓕᓪᓂᒍ ᐃᖅᑲᖅᓱᐃᔭᖏᔨᐊᖅᑐᓂ ᓴᖅᑭᖅᑎᑕᐅᔨᑦ ᐊᕐᑎᓐ, ᙰᓂᐊᖅᑐᑦᓇᓂᖅᓴᖅ ᐊᒪᒪ ᐊᑦᑕᓇᖅᑕᐃᓕᓴᒪᓂᖅ (EHS) ᐊᐅᓪᓚᕆᓂᖅ ᐊᑐᖅᑕᐅᑲᔨᑦᑐᑦ ᐊᑐᓚᖅᑎᑕᐅᓂᐊᖅᑐᑦ Baffinland-ᓂᓐᓄ

7. ᓴᐳᔨᓂᖅ ᐱᐅᖅᑐᓂᑦ ᒥᑭᓪᓚᒥᐊᖅᑎᑦᑎᓂᓗᒍ ᐱᓕᓇᐊᒪ ᑐᒥᑦ (ᐱᖃᓱᐅᑎᔨ ᑭᓪᓚᖃᖅᑎᑦᑎᓂᓗᒍ ᖃᒪᐃᓗᑲᖅᑕᓂᑦ ᒪᓐᓇᐅᐅᕐᑕᐅᑐᑦᑐᓂᑦ), ᐊᒪᒪ ᐊᑐᓚᖅᑎᑦᑎᓂᖅ ᐃᖅᖃᖓᓂᓕᑦᑐᑦ ᐊᒪᒪ ᓄᓐᔪᐊᑦᑕᓚᓂᖓᓂ ᐊᐅᓚᓂᒍ
8. ᑭᓪᓚᖃᖅᑎᓪᓚᒥᑦ ᐊᑦᑐᖅᑕᐅᔨᓐᓇᖅᑐᑦ ᓂᓇᐊᑎᓄᑦ ᓂᐱᖃᓗᐊᖅᑎᑦᑎᐊᓂᑦᑎᓪᓚᒍ, ᑐᒥᖃᓗᐊᖅᑐᓂᒃ, ᐊᒪᒪ ᒪᓪᓚᒥᓗᒍ ᑕᒪᕆᑭᓄᓂᔪᑦ ᐊᐅᓪᓚᑎᑦᑎᓂᖅ ᕿᖏᐃᓂᖅ ᐊᐅᓪᓚᑎᑦᑎᓂᖅ ᐊᒪᒪ ᐃᓐᓇᐃᓐᓇᖅᑐᑦ ᐱᐅᓱᑎᑦᑎᓂᖅ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᑦ

ᐱᓕᓪᓚᐊᑎᓂᑎᓂᓄᖅ ᐃᖃᓗᐃᑦ ᓇᔨᖏᑦᑕᖏᑕᖅᑭᓐᓂ ᐱᐅᓯᑎᑭᓂᑎᓂᓪᓕ, ᕿᓇᐅᔭᖅᑕᑎᓂᑎᓂᓪᓕ, ᐊᒻᒪ ᖃᐅᔨᓴᓂᖏᓐᓇ ᐸᓪᓕᐊᓯᒪᔨᖅ. ᐃᑲᖃᑦᑕᖏᑕᑐᑦ ᖁᖓᓯᐊᐧ ᐅᔭᕆᓂᐅᐊᕐᒃᓯᑦ ᐃᓪᓗᖏᑦ ᐊᑐᓗᐊᖅᓂᐅᐊᖏᓕᒫᑦ ᐊᖅᓯᑎᑎᑦ ᕿᓂᓯᓚᖅ.

11. ᐊᑐᑐᖅᑕᐅᓂᑦ ᐃᒪᖏᑎᐅᑕᓄ ᐅᒪᔨᓄᑦ ᓴᓗᒥᑲᕆᐅᓂᐊᖅᑐᑦ ᕿᕐᓴᖅᑕᐅᖓᑦᓗᑎ ᐅᒥᐊᔨᐊᐊᖅᓗᐊᖓᑦᓗᓂ ᐊᖓᓂᓂᖅᓴᓂ ᐅᒥᐊᖏᔨᐊᓂ, ᐊᒻᒪ ᒥᐅᓪᓕᐊᔨᓗᑎ ᐅᓯᖅᑐᑕᐅᑎᑦ ᐊᒻᒪ ᐊᑐᑐᓂᓪᑦ ᐃᖓᑎᕆᓂᔨᑦ ᐊᒻᒪ ᓯᓗᒥ ᕿᕐᓴᐃᓂᖅ
12. ᐅᖅᓯᐊᓗᓕᒥ ᔨᕐᑲᓪᓂᕿᑦ ᐅᓵᔪᓂᓪᑦ ᐃᒥ ᐊᑐᐱᐱᖅᓯᒪᔨᑦ ᐃᒪᖏᑦ ᑲᒪᑎᐅᓂᐊᖅᑐᖅ ᒪᓕᓪᓗᑎ ᒧᐟᐅᓕᐅᔨᒥ ᐊᒻᒪ ᐊᑐᐱᐱᖅᓯᒪᔨᑦ ᐊᒻᒪ ᒪᓕᓪᑕᐅᑎᐊᓕᐟᓂᓪᑦ
13. ᑎᑭᖏᖅᑕᐅᔨᐟᓄᑲᓕᓂᓪᓕᑦ ᓇᓂᖏᓂᑦ ᑲᒪᑎᐅᓂᐊᖅᑐᖅ ᐱᓕᓪᓚᐊᑎᓂᑎᓂᓪᑲᔨᑦ ᐊᒻᒪ ᐊᑐᓪᖅᑎᓂᑎᓂᓪᑲᔨᑦ ᐃᓄᐃᑦᓂᓄᑦ ᐊᐅᓪᓚᐅᑎᓂᖓ ᐱᖓᓱᐊᐅᐊᖅᓯᒪᔨᖅ, ᐃᓕᒥᓂᐊᖅᑐᖅᓯᒪᔨᖅ CEMP
14. ᖃᐅᔨᒪᓴᐅᔨᑦ ᐃᑦᑕᖏᓕᕆᖃᖅᓯᑦ ᖁᔨᓴᐊᐧ ᐸᕕᕆᑦᑕᐅᐅᖅᑎᑕᑦ ᐱᓕᓚᐊᑦ ᐁᖅᑭᐅᓯᒪᓂᖓᓄᓐᓄᓂ ᐃᑦᑕᓂᕆᖃᑎᐊᖅᑎᑦᑕᖏᓂ, ᐊᒻᒪ ᖃᐅᔨᒪᓴᐅᔨᑦ ᖃᓂᐅᕗᖅᓱᓂ ᓕᓂᓗᕆᕈᑎ ᐊᑐᓪᖅᑎᓂ ᐱᐅᓯᑎᑭᓂᐅᐊᖅᑐᑦ ᐊᐱᑎᖃᕆᐊᖃᖅᑐᓂᖅ ᐊᔪᕕᖅᓯᑦ. ᐊᑐᑐᖅᑕᐅᓂᓚᐟᓇᖅᑕᖏᓕᑦ ᐃᑦᑕᓂᕆᖃᖅᓯᑦ ᖃᒪᑎᕐᐅᐊᖅᑐᑦ ᖃᐅᔨᒪᓴᖃᖅᑐᓂᑎ ᐊᒻᒪ ᐱᐅᓯᑎᑎᑭᓂᐊᖅᑎᒥ ᐃᑦᑕᓂᕆᓕᓂᓚᐅᓂᑦ, ᐅᖃᖃᑎᖃᓂᓗᑎ ᓄᓇᕐᑦ ᑲᕐᒪᓄᓐᖃᓂᓪ ᐱᓕᓚᐅᓐᖃ ᐱᖃᓄᐅᓚᐅᓂᖅᑐᑦ, ᐅᖃᐅᓯᓕᓂᓚᐅᓂᖅᑐᑦ, ᐃᓐᓇᑐᖃᓕᓂᓚᐅᓂᖅᑐᑦ ᐊᒻᒪ ᒪᓄᑦᑐᓕᓂᓚᐅᓂᖅᑐᑦ (CLEY) ᐊᒻᒪ ᓄᓇᓕᐅᔨᖅ ᒥᑎᒪᒋᓕᓕᒃ. ᐃᓕᒥᐊᔨᓗᐋ, ᕿᓚᓕᓴ ᖃᐅᔨᓴᖅᐃᓄᓕᐊᖅᑐᖅ ᑲᓇᑐᖅᑎᓂᓕ ᒪᓕᓴᖅᑎᐋᓕ ᐱᕈᖅᓱᐊᖅᖃᑐᓂᓕ ᐊᑎᖅᑕᐅᔨᕆᓚᐅᓕᓐᓄᑦ ᐊᒻᒪ ᐊᑐᖅᑕᐅᔨᓴᐅᓚᐅᓕᓐᓄᑦ ᕿᕐᓴᐅᑎᑦᑕᖏᓐᓇᒪᓕᒫᑦ ᐃᑦᑕᓂᕆᖃᖅᓯᑦ ᐅᖅᓯᒃ ᓄᓪᓗᑎᒃ ᑕᐃᒪᓐᓇᖅᑐᑦ ᒥᑎᒪᒋᓕᓕᒃ.
15. ᐊᑐᖅᑕᐅᖅᑐᑦ ᒪᓐᓇᐅᔨᔪᒥ ᓄᓇᐃᑦ ᐊᑐᑦᑕᐅᓂᖏᓐᓄᑐᓄ ᖁᔨᓴᐊᐧ ᒥᑭᓚᐅᑕᐅᓂᖏᓐᓇᒪᓕᒫᑦ ᐅᓂᒃᑑᐅᓕᓐᓂᔪᓐᓇᓐᓂᒪᓕᒫᑦ ᐃᓄᒥᕐᓴᖏᓐᓄᑦ ᐱᓕᓚᐊᒧᑦ ᐱᖁᔨᑎᑦ ᐅᓂᒃᑑᐱᑦᑎᓕᐊᑦᑕᐅᓂᖅᑐᑦ ᐊᑐᖅᑕᐅᑲᔨᑐᑐᓄ ᒥᑎᒪᒋᓕᓕᒃ.
16. ᐊᑐᖅᑕᐅᖅᑐᑦ ᐊᔨᔪᓂᓪᒧ ᐊᒻᒪ ᐳᓕᕋᖅᑐᓕᓚᓂᓪᒧᑦ ᖁᖓᓯᐊᐧ ᐱᖃᔨᐅᑎᔨ ᖁᓕᓵᖅᑐᒃ ᐸᐃ ᒥᑭᓚᐅᔭᓕᐅᑐᓂᐊᖅᑐᑦ ᔨᐳᓂᐊᒍᑦ ᖃᐅᔨᒪᓴᐅᓚᐅᓕᓐᓂᖅ ᐅᒥᐊᔨᐊᐊᖅᑐᑦᑕᖏᓂᐅᓂᐊᖅᑐᑦᑕᖏᓐᓇ ᐅᓪᓗᓂᖏᓂ, ᐊᔨᓂᐊᒍᑦ ᐁᖅᑭᔨᓴᐅᓂᐊᖅᑐᖅ ᐃᓄᒥᕐᓴᖏᓐᓄᑦ ᐊᑐᖅᑕᐅᑲᔨᑐᑐᓄ ᐃᓄᒥᕐᓴᖏᓐᓇᒪᓕᒫ

- ᑲᔪᓂᑦᓗᒍ ᓄᐊᕐᑎᓂᖅ ᐊᐢᑎᓪᓗᓂᔭᑦ ᑐᑭᓯᐊᖅᓂᑦ, ᐊᒻᒪ ᖃᐅᔨᓴᕆᑎᓄ ᑐᑭᓯᐊᖅᓂᑦ ᐃᑲᔪᓂᐊᖏᒡᑕ ᕿᖏᐃᓂᖅᑎᑦ ᐊᒻᒪ ᐊᑦᑐᖅᑕᐅᓂᖓᓄ ᖃᐅᔨᓴᓂᖅᑎᑦ ᓯᑲᓂᖅᓴᒥ ᐅᔾᔨᓴᓂᐊᓕᓪᓚᖅᑲᑕ ᒥᐅᓂ ᑯᖓᓂ

ᐅᑯᐊ ᐃᓗᓪᓚᐃᓂᐊᖅᑕᖏᑦ ᖃᐅᔨᓴᓂᔪᒧᑦ ᐱᓪᓚᐊᒥ ᖃᐅᔨᓴᖅᑕᐅᓂᐊᖅᑐᑦ:

- ᓴᓇᔾᐅᓂᖏᑦ ᐊᒻᒪ ᐊᐅᓪᓚᖏᓐᓄᓂ ᖃᓄᐃᓗᖅᑕᐅᔪᑦ, ᒪᓪᓕᓗᑎ ᐅᖃᖅᓯᒪᔪᓂ ᐊᒻᒪ ᖃᓄᐃᑎᐊᖃᓂᖏᓐᓄᓂ ᓪᓚᐃᓴᓐᓂᑦ, ᐱᔪᓐᓇᐅᑎᑦ ᐊᒻᒪ ᐊᖏᑦᑕᑕᐅᔾᔪᑎᑦ, ᐊᒻᒪᓗᑦᑕᐅᐅᖅ ᑲᔪᓂᖅᑕᐅᔪᑦ ᓇᓗᓇᐃᖅᓯᒪᔪᑦ ᑕᓐᓄ ᖃᐅᔨᓴᖅᑕᐅᔪᓂᖅᑐᑦ ᐱᓪᓚᐊᒥᐳ
- ᓴᓇᔾᐅᔪᑦ ᐃᒪᖏ ᐊᒻᒪ ᐊᐢᑎᖓᓂᓄ, ᐃᖃᓗᐃᑦ ᓴᓵᒥᐃᑦᑕᐅᓂᐊᖏᓪᓗᑎᑦ ᐊᒻᒪ ᓇᔪᖃᑦᑕᖃᖏᑦᑕᖏᑦ
- ᓄᓇᒥᐅᑕᐃᑦ ᓂᕐᔪᑎᑦ, ᐃᓕᓴᐅᓗᓄᐅᐳ ᑲᔪᓂᖅᑕᐅᐊᓂᖅ ᖃᐅᔨᓴᕐᓂᐅᔪᖅ, ᑭᓯᐊᓂ ᖃᐅᔨᓴᕐᓗᑕᑕᐅᖅ ᐅᒪᔪᐃᑦ ᖃᓄᐃᓕᓴᖏᑦ ᐅᔾᔨᓴᓂᐊᓂᖓᓗᑦ ᐱᓵᔪᑎᖃᖅᑐᓂᑦ
- ᐃᒪᖏᒥᐅᑕᐃᑦ ᓂᕐᔪᑎᑦ, ᓇᓗᓇᐃᕐᓗᑕᑦ ᑐᑭᓯᑦ ᐊᒻᒪ ᐊᓯᔾᔨᖅᑐᑦ ᓇᑦᑎᑦ ᓇᒧᓐᖓᖃᖅᑎᑕᖏᑦ ᖃᓄᐊᔪᓂᑦ ᐊᒻᒪ ᐊᐢᑎᑎᖓᓂ
- ᐃᒪᖏᕆᓂᖅᑐᓂᖅᑐᑦ ᐃᒥᖅᑐᐅᐃᓐᓇᓂᐊᖅᑐᓂᑦ, ᑭᑫᓇᓗᑦ ᓴᓐᓂᓚᑦ ᐊᒻᒪ ᐊᓯᔾᔨᖅᑐᑦ ᓇᑦᑎᑦ ᐊᐢᑎᑎᖓᓂ
- ᐃᒪᖏᖅᓴᐅᓂᐊᖅᑐᑦ ᐃᒥᖅᑐᐅᐃᓐᓇᓂᐊᖅᑐᓂᑦ, ᑭᑫᓇᓗᑦ ᓴᓵᒥᐃᑦᑕᐅᓂᐊᖅᑐᓂᑦ ᐱᔾᔪᑎᒃᑲᖅᑐᓂᑦ ᐊᒻᒪ ᐃᓕᓴᐅᓂᐊᖅᑐᓂᑦ ᐃᒥᖅᑐᐅᐃᓐᓇᓂᐊᖅᑐᓂᑦ ᐊᒻᒪ ᐃᓕᓴᐅᓂᐊᖅᑐᓂᑦ (ᓂᕿᓗ, ᐅᔾᔨᓴᓂᐊᓂᖅ, ᓯᕿᓂᓗᐃᓂᖅ, ᐅᖅᓯᐊᓗᒃᑯᖏᑦ)
- ᑭᖑᓪᓕᖅᓴᖅ ᖃᓪᓚᑦᑕᐅᓗᓂ ᖃᐅᔨᓴᓂᔪᒧᑦ ᐱᓕᓪᓚᐊᖅ, ᐱᓕᓪᓚᐊᖅ ᐅᔪᓯᑎᐊᖅᑲᖏᒪᓕᖑᖅ ᑭᖑᓪᓕᓂᖑᓂᓗᑦ ᓯᑲᓂᖅᓴᒧᐃᑦᑎᓐᓂᓂ
- ᐃᖅᑲᓇᐃᔾᓚᐅᖅᓯᒪᓂᖏᑦ ᐊᒻᒪ ᐃᓕᓴᒋᖏᑦ ᐃᖅᑲᓴᐃᔾᔨᖅᑎᑦ

ᒪᑐᕆᐅᓂᖓ ᒥᐅᓗ ᑯᐊ ᐱᓕᓪᓚᐊᖅ ᑲᒪᒋᔾᐅᓯᒪᔪᖅ ᐃᓗᐊᓂ ᖃᑭᒪᐃᓂᓪᓕᑦ ᐊᒻᒪ ᐅᑎᖅᑎᑕᑎᓂᓪᓕᑦ ᕿᖏᑕᐅᓯᒪᔪᒥ, ᐊᑐᓕᖅᑎᑕᐅᓂᐊᖅᑐᖅ ᐱᓕᓪᓚᐊᖅ ᑲᒪᒋᔾᐅᓯᒪᔪᖅᓴᐅᑦᑕᐳᑦ ᐅᔾᔨᓴᓂᐊᓂᔪᖅᑕᓂᓕᓪᓚᐊᓂᒃᑲᓂᑦ, ᐊᓯᖏᓐᓄᓕᑦ ᐊᖏᑦᑕᐅᓂᐊᖅᑐᖅ ᐱᓕᓪᓚᐊᖅ ᑲᒪᒋᔾᐅᓯᒪᔪᖅᓴᐅᑦᑕᐳᑦ.

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM
ENVIRONMENTAL SCREENING DOCUMENT
(REF. NO. NB102-00181/6-1)

TABLE OF CONTENTS

PAGE

EXECUTIVE SUMMARY i

SECTION 1.0 - INTRODUCTION 1
1.1 PROPONENT INFORMATION AND AUTHORIZATIONS 1
1.2 APPLICABLE ACTS, REGULATIONS AND GUIDELINES 2
1.3 SCOPE OF THIS REPORT 3
1.4 REPORT CONTRIBUTIONS 3

SECTION 2.0 - PROJECT DESCRIPTION 5
2.1 SITE HISTORY 5
2.2 PROJECT LOCATION AND REGIONAL CONTEXT 5
2.3 TYPE OF EXPLORATION AND ACTIVITIES INVOLVED 6
2.4 PROJECT NEED AND PURPOSE 6
2.5 ALTERNATIVES TO THE PROJECT AND PROJECT COMPONENTS 7
2.5.1 Alternatives to the Project 7
2.5.2 Project Component 1 - Bulk Sample Size 8
2.5.3 Project Component 2 - Explosives Use 9
2.5.4 Project Component 3 - Crushing 9
2.5.5 Project Component 4 - Mary River Camp 10
2.5.6 Project Component 5 - Satellite Camps 10
2.5.7 Project Component 6 - Fuel Storage 11
2.5.8 Project Component 7 - Milne Inlet Road 12
2.5.9 Project Component 8 - Ship Sizes 13
2.6 RELATIONSHIP TO FULL-SCALE PRODUCTION 13
2.7 SCHEDULE 13
2.8 DRILLING 14
2.9 BULK SAMPLE 14
2.10 WASTE ROCK STORAGE AND DISPOSAL 15
2.11 STOCKPILES 16
2.12 AIRCRAFT ACCESS AND TRAFFIC 17
2.13 MARINE ACCESS AND TRAFFIC 17
2.14 ALL-WEATHER ROAD CONSTRUCTION AND OPERATION 19
2.14.1 Conceptual Road Upgrades Plan 19
2.14.2 2006 Field Investigations 19

2.14.3 Investigation Findings 20
2.14.4 Road Bed Design and Construction....22
2.14.5 Drainage Crossings Design and Construction 23
2.14.6 Assessment of Potential Navigability 25
2.14.7 Environmental Protection During Construction 25
2.14.8 Road Operations 25
2.14.9 Road Maintenance 27
2.15 BORROW PITS AND ROCK QUARRIES....27
2.15.1 Borrow Areas....27
2.15.2 Rock Quarries 29
2.16 CAMP AND RELATED FACILITIES 30
2.16.1 Mary River Camp 31
2.16.2 Milne Inlet Camp 32
2.16.3 Midway Camp....32
2.17 EQUIPMENT 33
2.18 FUEL STORAGE AND HANDLING 33
2.19 WASTE MANAGEMENT....34
2.19.1 Landfill Design Considerations....35
2.19.2 Proposed Landfill Design Parameters....36
2.19.3 Hazardous Materials Management 37
2.20 EXPLOSIVES USE 37
2.21 CONSTRUCTION OF A TEST RAIL EMBANKMENT 37

SECTION 3.0 - TRAINING AND EMPLOYMENT 39
3.1 HUMAN RESOURCE POLICY DEVELOPMENT 39
3.2 ENVIRONMENT, HEALTH AND SAFETY MANAGEMENT SYSTEM....39
3.3 TRAINING PROGRAM....39
3.4 EMPLOYMENT 40

SECTION 4.0 - PUBLIC INVOLVEMENT/ TRADITIONAL KNOWLEDGE....41
4.1 POND INLET PUBLIC MEETING REGARDING BULK SAMPLE 41
4.2 PISIKSIK IQ WORKING GROUP....41

SECTION 5.0 - DESCRIPTION OF THE EXISTING ENVIRONMENT....42
5.1 PHYSICAL ENVIRONMENT....42
5.1.1 Regional Setting....42
5.1.2 Proximity to Designated Environmental Areas....42
5.1.2.1 Parks and Conservation Areas 42
5.1.2.2 Bird Sanctuaries and Important Bird Areas....43
5.1.2.3 Critical Wildlife Areas 43
5.1.2.4 Caribou Protection Areas 44
5.1.3 Regional Surface Geology 44
5.1.4 Regional Bedrock Geology 45
5.1.5 Palaeontology....46

5.1.6 Mary River Iron Ore Deposits....46
5.1.7 Permafrost and Permafrost-related Features....46
5.1.8 Climate and Predicted Future Climate Trends....47
5.1.9 Unique or Fragile Landscapes....48
5.1.10 Hydrology....48
5.1.11 Tidal Processes, Bathymetry, Temperature and Salinity....49
5.1.12 Inland Water Quality....50
5.1.13 Soil Quality....55
5.1.14 Air Quality....56
5.1.15 Noise Levels....56
5.1.16 Other Physical Environment VECs....56
5.2 BIOLOGICAL ENVIRONMENT....56
5.2.1 Vegetation....56
5.2.2 Terrestrial Mammals....60
5.2.2.1 Barren-ground Caribou....61
5.2.2.2 Furbearers and Denning Habitat....62
5.2.2.3 Small Mammals and Hares....63
5.2.3 Birds....63
5.2.3.1 Raptors....67
5.2.3.2 Songbirds and Shorebirds....68
5.2.3.3 Loons, Ducks, and Geese....68
5.2.3.4 Seabirds....69
5.2.4 Freshwater Aquatic Life....70
5.2.4.1 Regional Data....70
5.2.4.2 Benthic Macroinvertebrates....72
5.2.4.3 Sediment....73
5.2.4.4 Fisheries - Mary River Project Site....74
5.2.4.5 Fisheries - Overview of Road Watercourse Crossings....75
5.2.4.6 Watercourse Crossings < 0.5 km^2....76
5.2.4.7 Watercourse Crossings 0.5-2.5 km^2....76
5.2.4.8 Watercourse Crossings 2.5-7.5 km^2....77
5.2.4.9 Watercourse Crossings 7.5-30 km^2....77
5.2.4.10 Watercourse Crossings >30 km^2....78
5.2.4.11 Unsampled Watercourse Crossings....78
5.2.5 Marine Wildlife....80
5.2.5.1 Coastal Habitat....80
5.2.5.2 Lower Trophic Levels....81
5.2.5.3 Fish....81
5.2.5.4 Marine Mammals....82
5.2.5.5 Project–related Marine Mammal Studies....84
5.2.6 Other Biological VECs....85
5.2.7 Species of Concern....85
5.3 SOCIO-ECONOMIC ENVIRONMENT....87
5.3.1 Archaeology and Culturally-Significant Sites....87

5.3.2 Land and Resource Use 89
5.3.2.1 Subsistence Harvesting 89
5.3.2.2 Soapstone Quarries 91
5.3.2.3 Non-Traditional Land Uses 91
5.3.3 Local and Regional Traffic Patterns 93
5.3.4 Brief Community Profiles 94
5.3.4.1 Pond Inlet 94
5.3.4.2 Igloolik 95
5.3.4.3 Arctic Bay 96
5.3.4.4 Hall Beach 96
5.3.5 Human Health 98
5.3.6 Other Valued Socio-economic Components 98

SECTION 6.0 - IDENTIFICATION OF IMPACTS AND PROPOSED MITIGATION 99
6.1 PHYSICAL ENVIRONMENT 99
6.1.1 Air Quality 99
6.1.1.1 Potential Impacts 99
6.1.1.2 Proposed Mitigation 100
6.1.2 Noise 100
6.1.2.1 Potential Impacts 100
6.1.2.2 Proposed Mitigation 101
6.1.3 Ground Stability and Permafrost 101
6.1.3.1 Potential Impacts 101
6.1.3.2 Proposed Mitigation 102
6.1.4 Hydrology/Limnology 102
6.1.4.1 Potential Impacts 102
6.1.4.2 Proposed Mitigation 106
6.1.5 Water Quality 106
6.1.5.1 Potential Impacts 106
6.1.5.2 Proposed Mitigation 108
6.1.6 Climate Conditions 109
6.1.7 Unique or Fragile Landscapes 109
6.1.7.1 Potential Impacts 109
6.1.7.2 Proposed Mitigation 109
6.1.8 Geology 109
6.1.9 Sediment and Soil Quality 109
6.1.9.1 Potential Impacts 109
6.1.9.2 Proposed Mitigation 110
6.1.10 Tidal Processes and Bathymetry 110
6.2 BIOLOGICAL ENVIRONMENT 110
6.2.1 Vegetation 110
6.2.1.1 Potential Impacts 110
6.2.1.2 Proposed Mitigation 111
6.2.2 Wildlife 112

6.2.2.1 Potential Impacts....112
6.2.2.2 Proposed Mitigation....114
6.2.3 Birds....115
6.2.3.1 Potential Impacts....116
6.2.3.2 Proposed Mitigation....117
6.2.4 Freshwater Fisheries....117
6.2.4.1 Potential Impacts....117
6.2.4.2 Proposed Mitigation....124
6.3 MARINE ENVIRONMENT....125
6.3.1 Noise....127
6.3.1.1 Potential Impacts....127
6.3.1.2 Proposed Mitigation....131
6.3.2 Ship Operations....132
6.3.2.1 Potential Impacts....132
6.3.2.2 Proposed Mitigation....133
6.3.3 Habitat Loss or Disruption....134
6.3.3.1 Potential Impacts....134
6.3.3.2 Proposed Mitigation....135
6.3.4 Introduction of Contaminants....135
6.3.4.1 Potential Impacts....136
6.3.4.2 Proposed Mitigation....141
6.3.5 Human Interactions with Marine Wildlife....142
6.3.5.1 Potential Impacts....142
6.3.5.2 Proposed Mitigation....142
6.3.6 Wildlife Protected Areas....143
6.3.6.1 Potential Impacts....143
6.3.6.2 Proposed Mitigation....143
6.3.7 Species of Concern....143
6.3.7.1 Potential Impacts....144
6.3.7.2 Proposed Mitigation....144
6.4 SOCIO-ECONOMIC ENVIRONMENT....145
6.4.1 Archaeology....145
6.4.1.1 Potential Impacts....145
6.4.1.2 Proposed Mitigation....146
6.4.2 Land and Resource Use....147
6.4.2.1 Potential Effects....147
6.4.2.2 Proposed Mitigation....148
6.4.3 Employment and Training....149
6.4.3.1 Potential Effects....149
6.4.3.2 Proposed Mitigation....150
6.5 POTENTIAL FOR TRANSBOUNDARY IMPACTS....151

SECTION 7.0 - CUMULATIVE EFFECTS....152

SECTION 8.0 - MONITORING PLAN....153
8.1 MONITORING OBJECTIVES....153
8.2 SCOPE....153
8.3 CONSTRUCTION ENVIRONMENTAL MONITORING PLAN....153
8.4 TERRESTRIAL VEGETATION AND WILDLIFE....154
8.4.1 Vegetation....154
8.4.2 Caribou....154
8.4.3 Carnivores....155
8.4.4 Lemmings....155
8.4.5 Birds....155
8.4.6 Wildlife Habitat Assessment....155
8.5 MARINE WILDLIFE....156
8.6 WATER QUALITY....156
8.6.1 Potable Water....156
8.6.2 Sewage Treatment Plant Effluent....157
8.6.3 Receiving Waters....157
8.6.4 General Site Drainage and Stormwater....157
8.7 PHYSICAL STABILITY....158
8.8 FINAL ABANDONMENT ACTIVITIES....158
8.9 SOCIO-ECONOMIC ASPECTS....158
8.9.1 Archaeology Resources....158
8.9.2 Employment and Training....158
8.10 REPORTING....159

SECTION 9.0 - REFERENCES....160
9.1 PERSONAL COMMUNICATIONS....168

SECTION 10.0 - CERTIFICATION....169

TABLES

Table 2.1 Rev. 0 Volumetric Calculation - Hematite Pit
Table 2.2 Rev. 0 Volumetric Calculation - Magnetite Pit
Table 2.3 Rev. 0 Summary of Drainage Crossing Categories
Table 2.4 Rev. 0 Summary of Drainage Crossings (Extra-Small)
Table 2.5 Rev. 0 Summary of Drainage Crossings (Small)
Table 2.6 Rev. 0 Summary of Drainage Crossings (Medium)
Table 2.7 Rev. 0 Summary of Drainage Crossings (Large)
Table 2.8 Rev. 0 Summary of Drainage Crossings (Extra-Large)
Table 2.9 Rev. 0 Preliminary Summary of Road Foundation Classifications
Table 2.10 Rev. 0 Summary of Category Small Drainage Crossings Details
Table 2.11 Rev. 0 Summary of Category Medium Drainage Crossings Details

Table 2.12	Rev. 0	Summary of Category Large Drainage Crossings Details
Table 2.13	Rev. 0	Summary of Category Extra-Large Drainage Crossings Details
Table 5.1	Rev. 0	Pond Inlet Climate Normals (1971 - 2000)
Table 5.2	Rev. 0	Exploration Property Water Quality - In Situ Parameters and CCME Specified Parameters
Table 5.3	Rev. 0	Exploration Property Water Quality - Non-CCME Specified General Parameters, Nutrients and Total and Dissolved Metals
Table 5.4	Rev. 0	Milne Inlet Road Water Quality - In Situ Parameters and CCME Specified Parameters
Table 5.5	Rev. 0	Milne Inlet Road Water Quality - Non-CCME Specified General Parameters, Nutrients and Total and Dissolved Metals
Table 5.6	Rev. 0	Soil Quality Results
Table 5.7	Rev. 0	Sediment Quality Results
Table 5.8	Rev. 0	Benthic Macroinvertebrate Analysis Summary
Table 5.9	Rev. 0	Benthic Macroinvertebrate Survey Summary
Table 5.10	Rev. 0	Watercourse Crossing Categorization and Fish Sampling Effort at Locations Along the Milne Inlet Tote Road
Table 5.11	Rev. 0	Fish Habitat Rankings of Sampled Watercourse Crossings Along the Milne Inlet Tote Road
Table 5.12	Rev. 0	Fish Habitat Rankings at Unsampled Watercourse Crossings Estimated from Site Photographs
Table 5.13	Rev. 0	Marine Mammal Species Occurring Within the Study Area
Table 5.14	Rev. 0	Archaeological Sites Identified in Relation to Proposed Bulk Sampling Program Facilities
Table 5.15	Rev. 0	Hunter Participation in the Nunavut Wildlife Harvest Study (1996-2001)
Table 5.16	Rev. 0	Total Number of Hunters by Community Harvesting Each Species (1996-2001)
Table 5.17	Rev. 0	Annual and 5-Year Mean Harvest Estimates by Community(1996-2001)
Table 6.1	Rev. 0	Identification of Environmental Impacts
Table 6.2	Rev. 0	Selected Water Quality Measurements Collected in Sheardown Lake
Table 6.3	Rev. 0	Summary of Selected Trophic Status Classification Schemes for Lakes
Table 6.4	Rev. 0	Fish Habitat Balance - Road Alignment
Table 8.1	Rev. 0	Proposed Water Quality Monitoring of Bulk Sampling Program Activities

FIGURES

Figure 1.1	Rev. 0	Project Location Map
Figure 1.2	Rev. 0	Existing Facilities and Land Tenure
Figure 1.3	Rev. 0	Project Site Facilities
Figure 2.1	Rev. 0	Site Layout of Bulk Sampling Program
Figure 2.2	Rev. 0	Bulk Sampling Program Schedule
Figure 2.3	Rev. 0	Ore Crushing Area
Figure 2.4	Rev. 0	Representative Photographs of the Deposit No. 1 Orebody
Figure 2.5	Rev. 0	Milne Inlet Site Layout

Figure 2.6	Rev. 0	2005 Sealift at Milne Inlet
Figure 2.7	Rev. 0	Ship-to-Shore Fuel Transfer Methods
Figure 2.8	Rev. 0	Typical Mining and Shipping Equipment
Figure 2.9	Rev. 0	Ore Loading Concept
Figure 2.10	Rev. 0	Long-Distance Truck and Trailer
Figure 2.11	Rev. 0	Existing Milne Inlet Tote Road Showing Borrow Sources (Sheet 1 of 2)
Figure 2.12	Rev. 0	Existing Milne Inlet Tote Road Showing Borrow Sources (Sheet 2 of 2)
Figure 2.13	Rev. 0	Existing Road Conditions
Figure 2.14	Rev. 0	Watercourse Crossings (All Classifications)
Figure 2.15	Rev. 0	Watercourse Crossings (Small)
Figure 2.16	Rev. 0	Watercourse Crossings (Medium)
Figure 2.17	Rev. 0	Watercourse Crossings (Large)
Figure 2.18	Rev. 0	Watercourse Crossings (Extra-Large)
Figure 2.19	Rev. 0	Conceptual Design for Category Small Crossings
Figure 2.20	Rev. 0	Conceptual Design for Category Medium Crossings
Figure 2.21	Rev. 0	Conceptual Design for Category Large Crossings
Figure 2.22	Rev. 0	Design for Extra-Large Crossing Site Station CV128
Figure 2.23	Rev. 0	Design for Extra-Large Crossing Site Station BG50
Figure 2.24	Rev. 0	Design for Extra-Large Crossing Site Station CV217
Figure 2.25	Rev. 0	Design for Extra-Large Crossing Site Station CV223
Figure 2.26	Rev. 0	Example Sea Container Crossing
Figure 2.27	Rev. 0	Borrow and Rock Sources near Milne Inlet
Figure 2.28	Rev. 0	Borrow Source Along Road
Figure 2.29	Rev. 0	Borrow and Rock Sources near Mary River
Figure 2.30	Rev. 0	Grain Size Analyses of All Borrow Source Samples
Figure 2.31	Rev. 0	Example All-Weather Camp
Figure 5.1	Rev. 0	Parks and Conservation Areas
Figure 5.2	Rev. 0	Site Hydrology
Figure 5.3	Rev. 0	Water Quality Sampling Locations
Figure 5.4	Rev. 0	Average Total Aluminum Concentrations in Surface Water
Figure 5.5	Rev. 0	Average Total Copper Concentrations in Surface Water
Figure 5.6	Rev. 0	Average In situ Specific Conductivity in Surface Water
Figure 5.7	Rev. 0	Total Iron Concentrations in Surface Water
Figure 5.8	Rev. 0	Soil, Sediment and Benthic Sample Locations
Figure 5.9	Rev. 0	Reported Caribou Harvest Locations (1996-2001)
Figure 5.10	Rev. 0	Reported Whale Harvest Locations (1996-2001)
Figure 5.11	Rev. 0	Reported Polar Bear Harvest Locations (1996-2001)
Figure 5.12	Rev. 0	Reported Waterfowl Harvest Locations (1996-2001)
Figure 5.13	Rev. 0	Reported Fish Harvest Locations (1996-2001)
Figure 5.14	Rev. 0	Reported Harvest Locations in April (1997-2001)
Figure 5.15	Rev. 0	Reported Harvest Locations in August (1996-2000)
Figure 5.16	Rev. 0	Known Cabins and Camping Areas

Figure 5.17	Rev. 0	Local Use of Milne Inlet
Figure 6.1	Rev. 0	Temperature-DO Profile of Sheardown Lake
Figure 8.1	Rev. 0	Monitoring Sites at Mary River
Figure 8.2	Rev. 0	Monitoring Sites at Milne Inlet

APPENDICES

Appendix A	NIRB Screening Forms
	A1 - Part 1 Form (English)
	A2 - Part 1 Form (Inuktitut)
	A3 - Non-technical Project Summary (English)
	A4 - Non-technical Project Summary (Inuktitut)
Appendix B	Raymac Brief on Fuel Bladders in Arctic Conditions
Appendix C	Drainage Crossing Photos Summary Sheets
	C1 - Small
	C2 - Medium
	C3 - Large
	C4 - Extra-Large
Appendix D	Extra-Large Drainage Crossings Data Sheets
Appendix E	Meeting Minutes
	E1 - Minutes of the September 6, 2006 Public Meeting in Pond Inlet
	E2 - Minutes of the September 7, 2006 Pisiksik Working Group Meeting
Appendix F	Watercourse Crossing Assessment Data Sheets
Appendix G	Watercourse Crossing Fisheries Sampling Data Tables
Appendix H	Emergency and Spill Response Plan
Appendix I	Construction Environmental Monitoring Plan – Draft Table of Contents
Appendix J	Abandonment and Restoration Plan

Knight Piésold CONSULTING

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM
ENVIRONMENTAL SCREENING DOCUMENT
(REF. NO. NB102-00181/6-1)

SECTION 1.0 - INTRODUCTION

Knight Piésold Ltd. (Knight Piésold), on behalf of Baffinland Iron Mines Corporation (Baffinland), has prepared this screening document to support permit applications and environmental screening of a proposed bulk sampling program at the Mary River Project. The Mary River Project (the Project) is an advanced exploration iron ore project located in the North Baffin region of Nunavut, as shown on Figure 1.1. Mary River camp coordinates are approximately Latitude 71 degrees 19' 35" north and Longitude 79 degrees 22' 30" west. The deposit coordinates are approximately Latitude 71°20' north and Longitude 79°33' west.

1.1 PROPONENT INFORMATION AND AUTHORIZATIONS

Baffinland is a Canadian mining company (TSX: BIM) that is solely focused on its 100%-owned Mary River Project. Company contact details are as follows:

Baffinland Iron Mines Corporation
Suite 1016, 120 Adelaide Street West
Toronto, Ontario M5H 1T1
Tel: (416) 364-8820
Fax: (416) 364-0193
Contact: Rodney (Rod) Cooper, P.Eng.
Vice President, Operations

Exploration is focused on Federal Mineral Leases 2483, 2484 and 2485, shown on Figure 1.2. The leases are in good standing until August 2013. The mineral leases, administered by the Department of Indian and Northern Affairs Canada (INAC), are surrounded by Inuit Owned Land that is administered by the Qikiqtani Inuit Association (QIA). Exploration has been ongoing on a seasonal basis since 2004, operating under the following licenses/permit:

Type of Authorization	Permit No.	Authorizing Agency	Governing Activity	Dates Valid
Water License (Type B)	NWB2MRY0406	Nunavut Water Board	Water use and waste disposal	Mar 10, 2004 to Dec 31, 2006
Inuit Land Use License	Q05L2C14	Qikiqtani Inuit Association	Exploration activities on Inuit Owned Lands	June 17, 2005 to Dec 31, 2006
Land Use Permit	N2004C0017	Department of Indian and Northern Affairs Canada	Exploration activities on Crown Land	June 29, 2004 to June 28, 2007

Baffinland has been operating a tent camp and related facilities at Mary River, as shown on Figure 1.3. The site is accessed by air utilizing existing airstrips, or by an approximately 100-km long road used only in winter. The road is referred to in the Nunavut Land Claims Agreement (NLCA) as the "Milne Inlet Tote Road", and Schedule 21-2 of the Agreement ensures that access to the corridor is unimpeded and that rents or leases on the corridor cannot be imposed by governments or other groups.

The Project's current exploration activities are subject to the terms and conditions of the above permits/licenses. Applications for renewal of the above authorizations were recently submitted to the respective agencies to allow for a continuation of exploration and geotechnical drilling activities.

1.2 APPLICABLE ACTS, REGULATIONS AND GUIDELINES

The following acts, regulations and guidelines apply to the Project:

- Nunavut Land Claims Agreement
- *Territorial Lands Act*, Territorial Lands Regulations, Territorial Land Use Regulations, and the Canada Mining Regulations
- *Nunavut Waters and Nunavut Surface Rights Tribunal Act*
- *Northwest Territories Waters Act*, and Northwest Territories Waters Regulations
- *Environmental Protection Act (Nunavut)*, and Spill Contingency Planning and Reporting Regulations
- *Public Health Act*, Camp Sanitation Regulations and Water Supply Regulations
- *Mine Health & Safety Act*, and Mine Health & Safety Regulations
- *Nunavut Safety Act*
- *Fisheries Act*
- *Explosives Use Act (Nunavut),* and Explosives Regulations

In addition, Baffinland's environmental consultant, Knight Piésold, have obtained the requisite research permits to carry out environmental and socio-economic baseline studies from the Nunavut Research Institute (*Scientist Act*), Government of Nunavut Department of Environment

(*Wildlife Act*), and the Federal Department of Fisheries and Oceans Canada (*Fisheries Act*). Points West Heritage Consulting Ltd., a Nunavut-licensed archaeologist sub-contracted by Knight Piésold, has obtained an archaeologist permit from the Government of Nunavut Department of Culture, Language, Elders and Youth (CLEY), pursuant to the *Nunavut Act*, Nunavut Archaeological and Palaeontological Sites Regulations.

1.3 SCOPE OF THIS REPORT

The following project description has been prepared to meet the information requirements of the Nunavut Impact Review Board's (NIRB's) Screening Part 2 Form Project Specific Information Requirements (PSIR) for:

- Advanced Exploration / Bulk Sampling
- All Weather Roads and Trails
- Pits and Quarries

In addition, NIRB's preliminary comments presented in a letter to Baffinland dated August 25, 2006 have also been addressed in this document (NIRB, 2006a). Completed NIRB Part 1 forms and non-technical project summaries, in both English and Inuktitut, are included in Appendix A.

This supporting document is intended to meet the information requirements for the application or renewal of each permit, license or authorization required for the bulk sampling program:

- Inuit Land Use License - Qikiqtani Inuit Association
- Quarry Concession on Inuit Owned Land - Qikiqtani Inuit Association
- Land Use Permit - Indian and Northern Affairs Canada
- Type B Water License - Nunavut Water Board
- *Fisheries Act* Authorization (if required) - Department of Fisheries and Oceans Canada
- *Navigable Waters Protection Act* Authorization/Exemption - Transport Canada

Applications for the above permits will be submitted individually to the respective agencies accompanied by this screening document.

1.4 REPORT CONTRIBUTIONS

Technical contributions to this report were made by the following individuals and companies:

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SECTION 2.0 - PROJECT DESCRIPTION

2.1 SITE HISTORY

The iron ore deposits at Nuluujaak Mountain were discovered by prospectors Murray Watts and Ron Sheardown in 1962. The mineral leases that now cover Baffinland's deposit areas were staked shortly thereafter and were assigned to a private company to hold the claims: Baffinland Iron Mines Limited (BIML). An exploration program was proposed and was contracted to Watts, Griffis and McOuat (WGM) of Toronto, of which Murray Watts was one of the founding principals. The program lasted from 1963 to 1966 and included geophysical surveys, geological mapping, drilling (3,319 m in about 30 holes) and trenching among other development efforts. The Project identified 143 Mt of resources grading 67.3% iron at Deposit No. 1. The Project became dormant shortly thereafter.

From 1971 to 1973, Hudson's Bay Mining and Smelting (HBM&S), one of the partners in the BIML syndicate, undertook a review and update of the Project comprised an economic review and metallurgical testwork, but included no new field work. Their study arrived at a capital cost requirement of CAD 134 million, for an annual production of 5 Mt. In 1992, and again in 2001, WGM reviewed the Project's economics and indicated that the Project could have a positive feasibility based on an annual production of 10 Mt. As a result, BIML was reconstituted as the publicly-traded company Baffinland Iron Mines Corporation (Baffinland) began operation and management of the deposits in 2004.

Exploration activities during the 1960s involved construction of three gravel airstrips, the 105-km Milne Inlet Tote Road, site access roads, and buildings at both the exploration site and at Milne Inlet. Other remnants of 1960s exploration activities include a wooden building next to Sheardown Lake, now utilized by the Mittimatalik Hunters and Trappers Organization (MHTO) of Pond Inlet, and various equipment and scrap metal at the site and at Milne Inlet, which Baffinland has been collecting for eventual disposal.

2.2 PROJECT LOCATION AND REGIONAL CONTEXT

The nearest settlement is Pond Inlet, which lies on the coast 160 km to the north of the site. Approximate distances from the Project site to other communities in the region are 270 km to Arctic Bay, 415 km to Clyde River, 230 km to Igloolik, and 290 km to Hall Beach (Figure 1.1).

Figure 1.3 shows the existing infrastructure at the Project site. Current exploration facilities consist of an 80-person camp of predominantly Weatherhaven™ tents, two steel Quonset huts as maintenance facilities, and numerous small wooden outbuildings, situated adjacent to Camp Lake.

The airstrips at the Project site and at Milne Inlet are used today, as are the roads to the drill sites in and around the deposit, and the Project traffic is restricted to existing disturbed areas nearly without exception.

2.3 TYPE OF EXPLORATION AND ACTIVITIES INVOLVED

Exploration at the Mary River Project site to date has consisted of delineation drilling within a known iron ore deposit. Drilling in 2004 and 2005 focused solely on Deposit No. 1 and in 2006 delineation drilling started on Deposits Nos. 2, 3, and 3A. Exploration drilling will continue over the next few years.

Baffinland is also proposing to undertake a bulk sampling program in 2007-2008. The bulk sampling program will involve extraction of about 250,000 tonnes of iron ore from two small open pits in Deposit No. 1. Figure 2.1 shows the proposed layout of the pits, access roads, stockpiles and facilities.

The bulk sampling program will include a number of components listed in the NIRB's PSIR (Section 1.3) for advanced exploration/bulk sampling, which are described in sections of this report as indicated:

- Drilling (Section 2.8)
- Waste rock storage (Section 2.10)
- Ore storage (Section 2.11)
- Road use and/or construction (Section 2.14)
- Airstrip use and/or construction (Section 2.12)
- Camp use and/or construction (Section 2.16)
- Fuel transport and storage (Section 2.18)
- Explosives transport and storage (Section 2.20)
- Chemical transport and storage (Section 2.19)
- Pit and quarry development (Section 2.15)
- Work within navigable waters (Section 2.14)
- On-site sample processing (Section 2.9)
- Landfilling (Section 2.19)
- Marine shipping (Section 2.13)

No geophysical surveys or underground activities are proposed as part of the bulk sampling program. The ore extracted as part of the bulk sampling program will be crushed and screened but no additional processing will be carried out; therefore no tailings will be generated.

2.4 PROJECT NEED AND PURPOSE

Mineral exploration to date has involved delineation of the iron ore body at Mary River using small-diameter rock coring drills. As with the evolution of any exploration project, it is necessary to confirm the consistency of the quality or grade of the ore, and often this is achieved through the collection of a large ore sample (bulk sample). The testing of the iron ore sample in blast furnaces located at several European steel mills has the following objectives:

- Carry out metallurgical testing on an ore sample that is large enough to establish key metallurgical parameters, primarily iron content, moisture content, handling characteristics and levels of impurities

- Study environmental characteristics of the ore, primarily the generation of gases, and the effect on slag production in various blast furnace processes, as well as the effect on the energy balance in the blast furnace processes

- Provide five blast furnace operators with sufficient material for approximately one month of production-scale testing in order to observe any variability in the behaviour of the ore in several blast furnaces

- Demonstrate to potential long-term customers the quality of Mary River ore in their blast furnace processes

- Provide data sufficient to negotiate marketing contracts with several customers

- Obtain marketing contracts to support project financing

A discussion of alternatives to the bulk sampling program, as well as aspects of the program, are discussed in the next section.

2.5 ALTERNATIVES TO THE PROJECT AND PROJECT COMPONENTS

2.5.1 Alternatives to the Project

The only alternative to conducting the bulk sampling program at the Mary River site is to attempt to advance the Project to development in the absence of a bulk sample and on the basis of small diameter delineation drilling of Deposit No. 1.

The “No Bulk Sample” option results in extreme uncertainty in securing long term sales contracts, extreme uncertainty concerning project financing, uncertainty with respect to moisture content and transportation costs, and uncertainty with respect to the value of the ore. The “No Bulk Sample” option is therefore not recommended.

In order to secure long term customers for Mary River iron ore, these customers, who are traditionally steelmakers operating blast furnaces, require a relatively low risk source of consistent and predictable ore, over a relatively long period of time, typically 10 years.

Without commitments from long term customers, it will be relatively difficult to secure financing for the Project.

Baffinland has been undertaking standard industry testing of its iron ore from Deposit No. 1 for two years, utilizing the services of reputable laboratories. This testwork has been made

available to potential customers and they have indicated the testwork is acceptable and results are encouraging.

These same potential customers have indicated that prior to entering into long term contracts which obligate them to purchase a substantial quantity of ore they require a "production-scale" test of the ore in their blast furnaces. Each ore is unique and each blast furnace operates with a unique mixture of ores, pellets and sinter feeds. As such, no laboratory test will truly represent the behaviour of a specific ore in a specific mix of products prepared as a blast furnace charge.

A bulk sample of at least 50,000 tonnes per potential customer is required for a minimum one-month production test at typical blast furnace capacities. Since the production of ore from Mary River is anticipated to be over 10 million tonnes per year, no one customer is likely to be able to purchase all of this production. As such, several potential customers will need to be offered bulk sample test ore in order to secure the required number of long term sales contracts to support financing. Selecting three-to-five potential customers with test periods of 30-to-60 days results in a minimum bulk sample size of 250,000 tonnes.

Two key parameters in determining the value of the ore are the moisture content of crushed ore and the proportion of lump ore compared to fine ore after the crushing and transporting process. In crushing this bulk sample at Mary River and transporting it under the typical weather conditions experienced at the site, these key variables can be measured in order to increase confidence in the estimates of transportation costs and sales revenues.

In summary, if Baffinland elects to not conduct a bulk sample, it will be very difficult to secure sales contracts. This will make financing of the Project very difficult. Without the crushing tests, the moisture content in transported ore will not be known with certainty, increasing the risk in assessing transportation costs. Without the crushing test, the proportion of Deposit No. 1 ore reporting as lump ore (-31.5 mm + 6.3 mm, or between 6.3 mm diameter and 31.5 mm diameter) can not be measured, increasing the risk in assessing the value of the ore and the potential revenue and cash flow from the Project.

2.5.2 Project Component 1 - Bulk Sample Size

As discussed above, the bulk sample size proposed is the minimum size required to provide 3-to-5 potential customers with sufficient blast furnace charge in their typical mixes for a 30-to-60 day test period. A smaller sample would not be sufficient to communicate with the required number of potential customers to support full production. Extraction and transportation of a smaller bulk sample is not recommended.

While a larger sample would allow for larger or longer production-scale tests with a greater number of potential customers, extracting a larger sample would require a longer period of time than that required for the proposed program. The proposed program is 15 months in duration. A larger bulk sample would take an additional year to extract and transport. Baffinland has designed a program of minimum size and duration in order to achieve the

program objectives with the minimum possible impact on the environment. All proposed facilities and equipment are temporary in nature, and all contactor equipment is planned to be demobilized at the end of the program. Extraction and transportation of a larger bulk sample is not recommended.

2.5.3 Project Component 2 - Explosives Use

Drilling and blasting is proposed for extraction of the bulk sample. The blasting will not occur adjacent to any fish habitat or raptor habitat. Explosive use (powder factor) has been minimized to reduce damage to the lump ore.

The ore at Deposit No. 1 outcrops so some broken ore is available at the surface to be recovered without blasting, however most of the exposed ore is weathered and highly oxidized, and therefore not representative of the freshly mineralized ore that makes up most of the deposit. The outcrop is also not sufficiently broken up to yield the full 250,000 t sample without blasting additional ore.

In order to be representative of the long term product that will be shipped, and in order to accurately determine the moisture content and lump ore proportion anticipated over the life of the mine, it is necessary to extract the sample using techniques that are typical of the production operations. Blasting is therefore required. There are no known alternatives to blasting, considering the observed high competency rock conditions; ripping or direct digging are not viable options.

It is recommended that conventional drilling and blasting techniques be used to extract the bulk sample. There are no known, viable alternatives to the use of explosives in this application.

2.5.4 Project Component 3 - Crushing

A conventional portable crusher and screening system are proposed. In order to be representative of the long term product that will be shipped, and in order to accurately determine moisture content and lump ore proportion anticipated over the life of the mine, it will be necessary to extract the sample using techniques that are typical of the production operations. The crusher is a temporary facility that requires only a gravel pad as a base foundation, and can be demobilized after completion of the sample.

Crushing at Milne Inlet instead of at Mary River is not recommended as this will increase the footprint of the operation at Milne and require the grading of additional areas and additional gravel use.

Crushing the ore at the customer destination is not possible as the trucks, barge loading systems and ship loading systems are not mechanically suitable for handling run-of-mine rock of considerable size. As well, unless the ore is crushed, stockpiled and transported in

the Mary River climate, an accurate assessment of moisture content cannot be accomplished.

Use of a portable crushing and screening system at Mary River is recommended.

2.5.5 Project Component 4 - Mary River Camp

The existing tent camp at Mary River was designed to accommodate approximately 80 people in comfort. During the 2006 field season, as many as 100 people were accommodated. The 2007 and 2008 exploration field seasons are anticipated to require a similar number of people at the camp, excluding the workers required for the bulk sample.

The bulk sampling program anticipates construction of a 100 person tent camp to supplement the existing camp. The combined accommodation would be adequate for 200 people, including those required for exploration, scientific endeavours related to environmental and geotechnical work, and for the workers engaged in the bulk sample. The new camp will include an approved sewage handling system properly sized for the combined camp population. Currently outhouses are used, which are not adequate for the number of people anticipated to be accommodated at the camp.

An alternative to tent-style accommodation would be trailer accommodation. The current market for remote camps is very competitive and larger trailer camps are difficult to obtain on short notice. A trailer camp of this size would cost nearly twice that of the proposed Weatherhaven™ camp.

A new or additional 100 person camp is recommended to accommodate the needs of the Project over the next two years. The camp is temporary, in keeping with the nature of the work programs. A permanent camp, complete with foundations, is not recommended at this stage in the Project.

2.5.6 Project Component 5 - Satellite Camps

In addition to a main camp at Mary River to support the bulk sampling program, for which there are no alternatives, the discussion below provides the rationale for construction of smaller camps at Milne Inlet and along the Milne Inlet tote road.

The proposed camp at Milne Inlet is necessary to accommodate the sea lift personnel, the workers trucking the ore from Mary River, and the workers loading the barges. The camp is temporary in nature, consisting of several trailers, and can easily be removed at the end of the Project. The camp is also a convenient location for first aid services in that staff would be readily at hand to respond to any medical or environmental emergency.

An alternative to using this temporary camp would be transporting all workers from the Mary River camp to Milne Inlet every shift. Baffinland has experienced prolonged periods of poor weather over the past three years that has prevented the movement of aircraft for

several days. A camp of some form is required to provide workers with nearby refuge, as movements by aircraft are unreliable. The alternative is to transport personnel by road between Milne Inlet and Mary River. There are several issues with using road travel for workers. First, the road will not be serviceable until months into the bulk sampling program. Second, this option would increase traffic on the road. Lastly, it is a time consuming and expensive alternative that would require the use of additional fuel to complete the program.

An alternative camp design at Milne Inlet is the installation of a barge-mounted camp at the beach at Milne Inlet. This alternative is not desirable as accommodation in such close proximity with the ocean would increase environmental and work safety risk when compared to a simple upland trailer camp.

A proposed camp near the half-way point along the Milne Inlet – Mary River road will be temporary in nature, consisting of several trailers, and can easily be removed at the end of the Project. The camp will serve as a communications, emergency medical and emergency environmental base. Workers engaged in maintaining the road will be based here, minimizing the travel time required to maintain the road.

Alternatives to using this camp would be accommodating road maintenance workers at either the Mary River camp, the Milne Inlet camp or both. These alternatives do not provide the same level of safety and security as the proposed camp, and would require the use of additional fuel in order to maintain the road. Installation of a temporary trailer camp near the half-way point along the road is recommended.

2.5.7 Project Component 6 - Fuel Storage

The Mary River Project has used fuel stored in steel drums for the past three field seasons. The quantity of fuel used in each season has typically been small – 200,000 to 400,000 litres. The proposed bulk sampling program requires 8 million litres (ML) of fuel. Storing and transporting this volume of fuel using bulk systems, rather than drums, is the most efficient, cost-effective and environmentally sound method. Manipulation of large quantities of barrels increases the risk of release into the environment and increases the time required to complete the bulk sampling program.

Bladder storage systems installed within lined containment structures that meet National Fire Code standards are proposed. These systems are proven in the arctic environment and require a great deal less time to transport, install and dismantle when compared to steel tanks. This is a temporary program and Baffinland would like to use simple, easily dismantled systems for storing fuel. Fourteen (14) 33,000 litre capacity bladder tanks can be packaged in a single 20 foot sea container. Technical specifications, a list of existing arctic installations, and references are included in a Brief prepared by the vendor, Raymac Environmental Services Ltd. in Appendix B.

The bladder system and containment liners proposed will be of new construction and will be installed with the assistance of professional supervisors provided by the vendor.

Use of fuel barrels for large volume applications is not recommended. Use of steel storage tanks is not recommended for temporary installations.

2.5.8 Project Component 7 - Milne Inlet Road

The current “road” is a gravel track constructed in the 1960s. It has been designated a public use road during the Nunavut Land Claims Agreement process and is found in the North Baffin Land Use Plan as such. In many places it is eroded and carved with gullies. Many stream crossings have make-shift culverts constructed of old drums installed, and many of these have caved in. Baffinland currently has land use permits that allow for the seasonal use along this transportation corridor from March to May, as a winter road.

The Project plan recommends cleanup of all existing drums and drum culverts along the road. Erosion areas will be repaired and re-graded to improve drainage. Corrugated galvanized steel culverts will be installed in stream crossings to improve water flow and to facilitate safe use of the road. Culverts installations will include sufficient erosion control measures to deal with high flow periods or freshets. Various thicknesses of gravel (up to 1 m) will be placed and compacted on areas with frost-susceptible soils, to improve the road surface. Signs will be placed every kilometre to denote location during road use.

Some work on the road is required even if it were to be used only for winter road traffic, in order to ensure operations can be conducted safely and in an environmentally sound manner.

If the road were used only as a winter road, rather than as an all-season road, the bulk sampling program would be extended by 12 months, to 27 months. The ore sample would then be shipped in 2009 rather than in 2008. If the sample is delayed by one year, the crushing data required confirming the assumptions for moisture content and lump ore proportion used in the feasibility study, scheduled for completion at the end of 2007, will not be available. This will increase the uncertainty of the transportation costs and the sales values used in the definitive feasibility study and make financing of the Project more difficult. As well, basic engineering planned for 2008 would have to proceed without clear measurement of moisture content or lump ore proportion, possibly resulting in extra costs as engineering systems are re-designed after the information is available.

Delay of the bulk sample delivery to the potential customers will delay negotiations for long-term sales contracts and delay the financing of the Project. In recent years, market conditions have been very favourable with respect to iron ore supply, demand and pricing. Markets conditions change over time and it is therefore highly desirable to conclude long-term sales and financing negotiations while market conditions remain favourable.

Upgrading of the road to all-season use is recommended to reduce the duration of the work and improve safety.

2.5.9 Project Component 8 - Ship Sizes

The Handymax size of vessel (approximately 55,000 Dry Weight Tonnes, or DWT) has been selected as it is the largest vessel commonly available on the time-charter market that is commonly equipped with self-loading grabs. This allows for the use of simple barges and tugs to transport the ore to the ship without the need for any permanent infrastructure such as docks, or extremely expensive loading vessels such as self-unloading barges, which are not common in the rental marketplace.

In selecting the largest common self-loading ship, the number of voyages into Milne Inlet has been minimized to only five. This will reduce to a minimum the vessel traffic and the impact on marine mammals and recreational use of the waterway. Smaller vessels would increase the amount of ship traffic. Larger vessels that are equipped with self-loading equipment would be difficult to secure for short term time-charters.

Use of time-chartered self-loading Handymax vessels is recommended. Use of smaller or larger vessels or non self-loading vessels is not recommended.

2.6 RELATIONSHIP TO FULL-SCALE PRODUCTION

It is Baffinland's intention to advance the Mary River Project to full-scale production in the future, and the bulk sampling program works toward this end. Nevertheless, the bulk sampling program has been designed as a temporary project.

Camp, mining and fuel storage facilities to be installed for the Project meet with the bulk sampling program's requirements and are of a temporary nature such that each may be dismantled and removed from site with relative ease. No permanent foundations or installations are proposed.

Road upgrades to all-weather capability will provide a sufficient road surface to support the equipment to be used for the program and will allow for completion of the bulk sampling program by October 2008. Alternatives to an all-weather road are discussed in Section 2.5.8. The schedule will allow Baffinland to secure the marketing contracts and financial backing necessary to construct a mine. The road upgrades have the added benefit of restoring proper drainage at many crossings where old barrel crossings have blocked drainage and have resulted in erosion of a new channel, by restoring drainage through the original path with appropriately sized and installed culverts. Road maintenance will continue until full-scale production was approved through an environmental review and permitting. Should the Project for whatever reason not move forward, then Baffinland would decommission the road in accordance with its abandonment and reclamation plan for the bulk sampling program.

2.7 SCHEDULE

A detailed schedule is provided as Figure 2.2. The main milestone dates are as follows:

- November 2006 Submit Environmental Screening Document and Permit Applications
- March 2007 Screening completed and permits issued
- March 2007 Begin road and airstrip upgrades
- August 2007 Mobilize camp and equipment for bulk sample
- November 2007 Camp and infrastructure constructed, bulk sampling begins
- May 2008 Mining of bulk sample completed
- January 2008 Start haulage of ore to Milne Inlet
- Aug/Sept 2008 Ore loaded onto ships and delivered to market

2.8 DRILLING

Delineation drilling has been undertaken since 2004 and will continue throughout the bulk sampling program. The drilling in 2004 through 2006 was 5,000 m, 8,073 m and 7,013 m, respectively. Drilling in 2007 will include both land-based drilling and on-ice drilling at potential port locations. Proposed drilling activities were described in earlier permit renewal applications, which are undergoing a separate environmental screening.

Drilling is conducted by a drilling contractor retained by Baffinland. In 2006, four drill rigs were in operation: 3-Longyear 38 and 1 – Longyear 70 drills. These are surface rock coring drills that obtain a continuous rock core sample. Because the Project site is located in continuous permafrost where the depth of permafrost is estimated to be in the order of 400 m, a salt brine is used as a fluid in drilling to prevent the drillhole from freezing. Powder form calcium chloride is added to drill water and mixed in a tub before being pumped into the drillhole. Drill water is recycled to the extent possible by collecting drill water returning to surface in a sump. Drill cuttings are covered or placed inside the sump upon completion of drilling to prevent migration.

Other drilling fluids used only occasionally include EZMud, a light petroleum distillate. Darina® drill grease is also applied to the threads of the drill rods.

Drillholes have a maximum diameter of less than 10 cm (<4 inches) with HQ-sized drill casings, or smaller if NQ drill casings are used. Upon completion of a hole in rock, the casing is removed. If overburden is present at surface, drill casing is left in place through the overburden. No other abandonment measures are deemed necessary to ensure safety.

2.9 BULK SAMPLE

The 250,000 t bulk sample will be taken from two pits, referred to the hematite pit and magnetite pits according to the nature of the iron ore material in each. A 125,000 t sample of fresh mineralized rock will be taken from each pit.

Aker Kvaerner E&C, a division of Aker Kvaerner Canada Inc. (Aker Kvaerner), is the engineering services company that is currently undertaking a definitive feasibility study of the Mary River Project. For the bulk sampling program, Aker Kvaerner has developed a bulk sample pit design for the two pits. The volumetric calculations within the hematite and magnetite pits, developed by Aker Kvaerner (2006) are shown on Tables 2.1 and 2.2, respectively.

Ore will be extracted by blasting with explosives and excavating at 5 m intervals. Rock excavation will be carried out from top to bottom in each pit, and access road and ramp elevation will be adjusted accordingly based on bench advance and progress in rock excavation. The total depths of the pits will be approximately 15 m.

The ore will be transported from the bulk sample pits to the ore crushing area using 50 t haul trucks (Caterpillar 773's). The crushing area, shown on Figure 2.3, is where the mined ore sample will be crushed using a portable crusher to produce both a lump ore product (-31.5 mm + 6.3 mm) and a fine ore product (6.3 mm minus). Crushing operations are expected to generate 75% lump and 25% fines. The lump ore and fine ore will be handled separately from this point on; separate temporary lump and fine ore stockpiles will be created next to the crusher and at Milne Inlet.

Acid rock drainage (ARD) and metal leaching (ML) testing is being conducted on the ore (fresh and weathered hematite and magnetite) and waste rock using drill core and surface samples from the exploration program. The samples have been submitted to SGS Lakefield Research Ltd. for the following tests:

- Static Acid Base Accounting (ABA) - modified sobek method
- ICP metal scan
- XRD (mineral content assessment - % mineralogy)
- SPLP 1312 - metal leaching
- TCLP 1311 - aggressive metal leaching
- Whole rock analysis

Complete results from the above tests are not yet available. However, preliminary results that are available suggest that ARD may not be produced and ML will be minor.

There was no evidence of ARD in the field. Surface water quality downstream of the orebody exhibits generally neutral pH conditions (between 6.2 and 7.9) and sulphate concentrations in the surface water downstream are very low from <0.5 mg/L to <5 mg/L (Section 5.1.12). Visually there was no evidence of iron staining caused by ARD or ML from the fresh ore. Weathered, oxidized ore did exhibit sulphide alteration but no evidence of ARD or ML was observed. Photographs of the orebody are shown in Figure 2.4.

The ore and waste rock do contain sulphides, mostly as pyrite in the magnetite with trace phyrrohtite. However, these sulphides are likely to be relatively slow to react if exposed to the atmosphere (oxygen) due to the cold and dry climatic conditions typical of the site. This reactivity of the sulphides and the ARD and ML potential of the ore and waste rock will be confirmed with on-site tests planned to commence in 2007.

2.10 WASTE ROCK STORAGE AND DISPOSAL

Two types of waste rock will be generated during the bulk sampling program: a very small volume of non-ore bearing waste rock, and weathered iron ore.

Non-ore bearing waste rock generated during the bulk sampling program: an estimated 550 t within the hematite pit and 9,630 t from within the magnetite pit. This material will be entirely consumed in the construction of a test rail embankment, as described in Section 2.21.

The bulk sample targets fresh mineralized iron ore that has not been exposed to the elements. The weathered ore is expected to have differing crushability (particularly the proportion of lump versus fines) as well as moisture content, such that it is deemed not entirely representative of the larger ore body. As such, it will be necessary to strip off and stockpile approximately a combined 169,000 t of weathered ore from the two pits. The weathered ore will be stockpiled at the location shown on Figure 2.1.

2.11 STOCKPILES

Stockpiles that will be created during the bulk sampling program include:

- A stockpile of weathered ore located on Deposit No. 1
- A temporary crusher feed stockpile
- Temporary lump ore and fines stockpiles next to the crusher and at Milne Inlet

Each pit is covered by weathered ore that will not be included in the bulk sample as it is not representative of the larger ore body. The hematite and magnetite pits are expected to generate approximately 102,000 t and 67,000 t of weathered ore, respectively, for a total volume of 169,000 t. Based on a density of 4.36 t/m^3 and a rough average bulking factor of 1.5, the stockpile volume will be approximately 60,000 m^3. The proposed weathered ore stockpile location is shown on Figure 2.1. The stockpile will be developed to an approximate height of 4 m, with maximum 2H:1V side slopes.

A very small crusher feed stockpile will be developed as rock trucks deliver ore from the bulk sample pits to the crusher. This feed stockpile will vary in size according to production from the pits and crusher operation, but is expected to be in the order of one to two days of production (15,000 to 30,000 t).

Temporary and separate lump ore and fine ore stockpiles will be constructed at two main locations: at the processing area and at Milne Inlet. The two temporary stockpiles at the crusher are shown on Figure 2.1 and the stockpile locations at Milne Inlet are shown on Figure 2.5.

The 250,000 t sample will translate into approximately 86,000 m^3, based on a density of 4.36 t/m^3 and a rough average bulking factor of 1.5. Based on an expected 75% lump to 25% fines proportion, and not accounting for differences in bulking factors, the lump and sinter ore stockpiles will have volumes in the order of 65,000 m^3 and 22,000 m^3, respectively. The temporary ore stockpiles will be constructed by end dumping of rock in a single lift without compaction, as it is desirable to handle the ore as little as possible, thereby preserving the proportion of lump ore to fines to be as representative of full-scale mining as possible. The stockpiles are expected to generate stable slopes during dumping as no lifts are proposed.

2.12 AIRCRAFT ACCESS AND TRAFFIC

The site is accessible by fixed-wing aircraft utilizing existing gravel airstrips at Mary River, Milne Inlet and an airstrip located part-way along the Milne Inlet tote road. Figure 1.2 shows the locations of each of these airstrips. These airstrips can provide nearly year-round access by fixed-wing aircraft, and have been used by Baffinland during the summer exploration seasons over the past three years to land a variety of aircraft including Twin-Otter, Shorts Skyvan, DC-3, and Hercules aircraft.

At present, none of the airstrips are equipped with lighting, so that landings must be undertaken during periods of daylight, which is 24-hours during summer months and very limited to non-existent for several winter months. Airstrip lighting will be installed at the Mary River and Milne Inlet airstrips to support year-round access to the site by air.

Some drainage problems have been experienced at both the Milne Inlet and Mary River airstrips, creating soft ground particularly during the spring. Minor improvements to the airstrips at Mary River and Milne Inlet are proposed, including surface crowning, ditching or culverts to provide positive drainage. A “stabilizing” polymer binding agent, called EK35, will be applied to the surface of the airstrips. This material is used by the Government of Nunavut airports division as dust control on various airstrips throughout Nunavut as an alternative to calcium chloride, which cannot be applied to airstrips because it is corrosive to aluminium on aircraft.

During the bulk sampling program, as in 2006, it is expected that at least one Shorts Skyvan aircraft will be stationed at Mary River full-time. The Skyvan is a 9-person capacity twin-engine plane with a rear cargo door and a 4500-kg cargo capacity, making the plane an excellent workhorse. This plane will be used to move personnel and equipment. In addition, a Dornier 228 operated also as a combined 8-passenger and cargo plane, will operate scheduled air charter movements from Iqaluit to Mary River several times per week. Additional aircraft including Hercules, Buffalos and Hawker 748 may be chartered to deliver cargo to Mary River from various southern destinations.

Air traffic will adhere to the recommended flight altitude of a minimum of 300 m, in accordance with the NIRB recommendation in Baffinland’s Land Use Permit #N2004C0017. Flying will occur at heights in excess of the minimum flight altitude, when feasible.

2.13 MARINE ACCESS AND TRAFFIC

Milne Inlet can be accessed by conventional non-ice class ships during the open water season of approximately early August to early October. In previous years, Baffinland has utilized the same sealift destined for Pond Inlet to deliver materials to Milne Inlet in late August or early September. Nunavut Sealink and Supply Inc. (NNSI) operates the Camilla and Cecilia Desgagnés, which entered Milne Inlet in 2006. Sealift operations have included off-loading to a shallow-draught barge powered by a tug, which comes ashore and unloads on the beach (Figure 2.6).

Bathymetric work has been completed by the Canadian Hydrographic Service (CHS) throughout Eclipse Sound and Milne Inlet (Section 5.1.11). Water depths in Milne Inlet range from 100 m to 400 m, with 50 m of water depth less than 50 m from shore at the head of the Inlet (Canadian Hydrographic Service, 2006).

Approximately 4,000 t of dry cargo, consisting of materials and equipment for the bulk sampling program, will be delivered in early August 2007 by a ship similar to that used for community sealifts, of approximate 7,000 to 16,000 DWT size. As in past sealift operations, materials will be offloaded from the ship onto shallow-draught barge powered by a tug, which comes ashore and can unload on the beach. Approximately 8,000 t (8 ML) of fuel will be delivered in late August by a 10,000 t (approximately 11 ML capacity) tanker operated by an arctic-experienced fuel sealift company. Fuel will be off-loaded from the ship into the bulk fuel storage facility at Milne Inlet through a floating hose, in accordance with Transport Canada's (1997) Arctic Waters Oil Transfer Guidelines, as shown on Figure 2.7.

In 2008, approximately 250,000 t of iron ore will be loaded into ships at Milne Inlet. Fednav has designated two-55,000 DWT capacity Handymax ships, each of which will conduct two voyages each. A third time-charter ship, with a cargo capacity of at least 30,000 DWT, will be organized by Fednav to transport the balance of the 250,000 t bulk sample. The maximum required draft of the 55,000 DWT ships is 12.5 m. The ships are Type D vessels in terms of ice class, according to Transport Canada's Arctic Ice Regime Shipping System (AIRSS) Standards (Transport Canada, 1998). The shipping season in this area (Zone 13 of the AIRSS standards) for these vessels is July 30 to September 30. All ship movements will take place during this same period.

Ships will be loaded using barges powered by tugs to transfer the ore from shore to ship. The ship, upon arriving at Milne Inlet, will be anchored at a safe depth allowing it to move around the anchor so the nose of the ship remains facing the wind. A small barge (referred to as a "spud barge") will be beached at shore and secured with four corner posts into the shallow water. The spud barge will allow for a conveyor to span from land onto one of four 2,000-t capacity barges which will shuttle between shore and the ship. Other smaller conveyors, referred to as "grasshopper conveyors", will transfer the ore from the stockpiles to the main conveyor loading the barges.

The barges will be shuttled to the ship by a tug. Each barge will be secured to the ship, and the ship's crane and grab will move the ore from the barge into the ship's hold. Photographs of a conveyor, ship grab, and a barge to ship transfer of ore at the Red Dog Mine in Alaska are shown on Figure 2.8. The ore loading operation, shown conceptually on Figure 2.9, will involve two tugs shuttling four barges. Each ship will take approximately 4-5 days to load.

Ships will exchange ballast water in accordance with The Canadian Ballast Water Management Guidelines (Transport Canada, 2001). The guidelines prescribe Canadian ships to exchange ballast water at sea in deep open seas away from coastal zones, ensuring that foreign harmful aquatic organisms or pathogens are not released in Canadian waters where they may colonize. The guidelines became mandatory on June 8, 2006 with the establishment of the Ballast Water Control and Management Regulations under the *Canada Shipping Act* (Canada Gazette, June 28, 2006).

2.14 ALL-WEATHER ROAD CONSTRUCTION AND OPERATION

The existing 105-km road from Milne Inlet into the Mary River site is referred to in the Nunavut Land Claims Agreement as the Milne Inlet tote road. Baffinland's water license currently permits the use of this road during the late winter period (March-April-May). Road upgrades are proposed to support the level of traffic that will be associated with the bulk sampling program.

In the fall of 2007, once the road upgrades are complete, an estimated 200 loads of dry cargo and an estimated 250 loads of fuel will be transported into site from Milne Inlet.

During mining, ore will be transported from the bulk sample pits on Deposit No. 1 along a 7-km haul road using 3 - 50 t mining trucks. A similar mining truck is shown as Photo 1 in Figure 2.8. Ore will be transported from Mary River to Milne Inlet using a fleet of 11 - 40 t haul trucks, which are more appropriate for the long-haul distance to Milne Inlet than the rock trucks. The haul trucks are conventional highway tri-axle trucks with a pup trailer, as shown on Figure 2.10.

2.14.1 Conceptual Road Upgrades Plan

The alignment of the Milne Inlet tote road is shown on Figures 2.11 and 2.12. The current road consists of a dozer trail and a large number of crossings over both fish-bearing waters as well as seasonal drainages, some of which still contain steel corrugated pipe or barrel culverts in various conditions. Typical conditions of the existing road are shown on Figure 2.13. The road will be repaired and upgraded to support all-season use for the level of traffic associated with the bulk sampling program to ensure the program's completion in September 2008. This will require replacement of existing culverts and installation of new culverts at watercourses and drainages, and the borrowing, quarrying and placement of engineered fill where existing ground conditions will not currently support project traffic.

It is Baffinland's intention to remain on the existing alignment to the extent possible, to minimize new disturbance and to enhance the existing public access on the road afforded in the NLCA.

2.14.2 2006 Field Investigations

Knight Piésold conducted engineering field investigations along the existing road in mid-2006, including an initial aerial review followed by detailed ground inspection. From the aerial review, the terrain was mapped and photographed. The detailed on-ground inspection involved traversing the entire route by ATV to make watercourse crossing measurements, identify areas with poor soil conditions, and identify potential borrow source locations. Soil samples were collected from shallow test pits and rock outcrops for materials testing.

Regional hydrology was reviewed for the purposes of sizing watercourse crossings, and drainages at crossings were identified and categorized based on catchment area, geometry and estimated peak flows.

In addition, fisheries investigations were conducted on representative watercourse crossings to obtain an understanding of fish and fish habitat conditions along the road where crossings would be replaced and/or installed (Section 5.2.4).

2.14.3 Investigation Findings

Watercourse Crossings

The existing road alignment shown on Figures 2.11 and 2.12 runs generally adjacent to the main regional drainage channel of Phillips Creek. During the review, 249 drainages were identified and categorized based on catchment area, geometry and estimated peak flows into five main categories:

- Extra-Small
- Small
- Medium
- Large
- Extra-Large

Seventy-five (75) of the drainage crossings are classified as small through extra-large, requiring installation of structures to pass the flows. Table 2.3 provides a summary of the drainage crossing categorization criteria and the number of crossings designated under each category.

One extra-small crossing (CV182), one medium crossing (CV181) and one extra-large crossing (CV183), all located at the Milne Inlet beach, have been removed from the scope of the Project because the crossings are not necessary, since project Infrastructure and activities have been concentrated near the existing airstrip on the west portion of the beach. Therefore the revised number of crossings of all sizes along the road alignment to be used is 246, rather than 249.

From the ground based inspection, it was observed that many of the extra-small drainage channels may not warrant installation of culverts, although potential maintenance issues may arise. These locations, termed “extra-small” are summarized on Table 2.4 and have been included on Figure 2.14 showing locations of all size categories. The extra-small drainages are generally ephemeral, and for much of the year do not receive flow. Pipes should be installed in the extra-small drainages for these as required during construction and operations of the road, otherwise minor maintenance of these areas may be required during construction and operations of the road. No site specific documentation is presented in this report for the extra-small crossing locations.

The details of the small through extra-large drainage crossings are provided on Tables 2.5 to 2.8, including approximate UTM coordinates (recorded with handheld GPS), chainage, field-assessed Estimated Flow Type (EFT), estimated stream and total span width and

approximate catchment area. The locations of the small, medium, large and extra-large crossings have been shown on Figures 2.15, 2.16, 2.17 and 2.18 for each of these crossing types respectively. Photo summary sheets for the drainage crossings designated small and above are included in Appendix C. Reference identifiers of the photo sheets for each crossing are included on Tables 2.5 to 2.8.

The majority of the crossings (i.e. small, medium and large) will be addressed through installations of a series of corrugated steel culvert pipes. However, there are four extra-large crossings along the alignment that will need to be addressed using a higher capacity crossing design. A system of reinforced sea containers has been designed to pass the flows and allow passage of the haul trucks. The location of the four "extra-large" crossings is shown on Figure 2.18 and photos are provided in Appendix D.

Roadbed Conditions

Poor soil conditions were identified along the existing road; areas overlain with a poorly graded silt material were found to have a very low bearing capacity. These portions of the road will require the placement of varying thicknesses of fill to support the haul truck traffic. This will allow the permafrost to rise into the road fill, thereby ensuring that the underlying soils with poor bearing capacity remain frozen.

The generalized geotechnical conditions, which were observed along the road with respect to frost/thaw susceptibility, are summarized on Table 2.9. Four categories of frost/thaw susceptibility have been used for this preliminary assessment. Each classification would be associated with a minimum cover (roadbed) thickness that would be required to maintain stable foundations. The classifications used and the preliminary recommended range of roadbed thickness to be used for each is summarized as follows:

- Non Susceptible - these materials are generally coarse in nature, primarily comprised of outwash or alluvial sand and gravel. It is anticipated that only minor fill will be required for road surfacing and grading.
- Potentially Susceptible - these materials have increased silt content. Often boulders and larger material present at surface. It is anticipated that approximately less than 30 cm of fill will be required over these areas. Potentially susceptible materials are also associated with wet areas on outwash type areas.
- Moderately Susceptible - these materials are primarily comprised of till with moderately high silt content. They are highly variable in nature, often with boulders and sorting of material at surface. It is anticipated that in the range of 30 to 60 cm of fill will be required over these areas.
- Highly Susceptible - these materials have very high clay and silt content. They are often identified by patterned ground with pockets of pure clay, silt and very fine sands and/or wet organics. During thawing of the active layer, materials have little to no strength due to high pore pressures and slow rate of dissipation (drainage). It is anticipated that greater than 1 m of fill will be required to support trucks during the spring season.

2.14.4 Road Bed Design and Construction

Upgrades to the road will include:

- Widening the existing 5 m wide road bed to 8-10 m accommodating one-way traffic
- Placement of engineered fill (compacted granular fill) to provide an adequate surface for travel and maintenance (i.e. snow clearing and grading)
- Adding fill placement in areas of low bearing capacity soils to provide a suitable bearing structure and to minimize thawing of thaw-susceptible soils in existing active layer
- Removal (replacement) of existing culvert and barrel-culverts and other historical debris
- Installation/replacement of culverts at water crossings
- Construction of turnout/passing areas along the route

The road bed will be constructed to a minimum crest width of approximately 8 to 10 m and possess approximately 1.5H:1V side slopes. Fill from identified borrow areas will be placed to form various roadbed thickness depending on the frost/thaw susceptibility of the underlying foundation soils. It is estimated that approximately 400,000 m^3 to 600,000 m^3 of fill will be required to accomplish this, depending upon the foundation conditions encountered. Road bed cover will require pitting of sand and gravel and three main borrow sources have been identified, as shown on Figures 2.11 and 2.12. Borrow pit plans are discussed in Section 2.15.

All fill will be placed in accordance with the requirements of the technical specifications. An example of the items that will be covered by technical specifications is summarized as follows:

- Borrow Area Development - borrow area management and sedimentation control measures to protect the quality of the material, the downstream receiving waters and ensure ease of operation during construction. Proper drainage shall be maintained at all times to ensure that material with the lowest possible moisture content is used in construction of the works.
- Foundation Preparation - for the road bed, this will be limited to minor grading and leveling prior to placement of new fill. Some areas may however require excavation and removal of poor quality or frost susceptible materials.
- Fill Placement - all soils used in road bed construction shall be of low ice/moisture content. Dry, cohesionless, non-frost susceptible soils shall be used to the maximum extent possible. Fill will be placed, spread, leveled and compacted according to the technical specifications. It may be necessary to re-compact some areas of the roadbed upon thawing in order to maximize the density and ultimate strength of the material.
- Insulation - may be used to reduce fill along some of the more frost/thaw sensitive foundation areas of the road alignment. This shall be placed in accordance with standard procedures for this type of application.
- QA/QC testing - will be carried out on the fill material in the borrow areas to assist with identification of suitable quality materials to be used in the work, with record keeping to

document the quality of the completed work. Testing will be carried out by Knight Piésold personnel and may include in situ density, moisture content, grain size and specific gravity determinations.

- Scheduling of construction, (i.e. work fronts) - will be dependent on available access across more significant drainages, prioritization due to foundation requirements and coordination with any environmental or archaeological requirements of the construction program.

Representatives from Knight Piésold will oversee the Quality Assurance/Quality Control (QA/QC) of the road upgrades on a full-time basis, also providing the required support for field fitting and ongoing design modifications/finalization based on the actual foundation materials and drainage crossing spatial limitations encountered at the time of construction. Office support will also be provided as required.

2.14.5 Drainage Crossings Design and Construction

Along the alignment, 73 drainage crossings will require installation of structures to pass runoff flows during operation of the road. For 69 of these crossings, corrugated steel culvert pipes will be used, and modified sea containers will be used for 4 of the crossings. Many of the crossings will require multiple culvert installations in order to provide the required capacity to pass the design flows.

The design of the bulk sample road requires sizing of culverts and other structures for the various stream crossings to safely pass a specified design storm event. Contact with various government agencies for Nunavut did not disclose any established requirements regarding hydrology design (design storm or flood return periods). Therefore, in lieu of established design criteria for Nunavut, the design requirements for hydrology provided in the Ministry of Natural Resources document "Guidelines And Criteria For Approvals – Under The Lakes And Rivers Improvement Act" (LRIA) were implemented for this project. The LRIA is an Ontario Government document that is used in Ontario to regulate design flood return periods for various road types and water crossing sizes. The design return period requirements as presented in the LRIA are provided below:

Crossing Size (Category)	Design Return Period (Years)
Small	1 in 10
Medium	1 in 10
Large	1 in 25
Extra-Large	1 in 25

Three major crossing types have been developed for application to the road, as follows:

- Conventional culvert crossings (single or multiple culverts) designed to pass the flows of the design return period
- Culvert crossings with a swale, which will accommodate flows during the flood condition
- Structurally-reinforced sea container crossings

Tables 2.10 through 2.12 provide a summary of the drainage crossings, from small to large, including preliminary estimates of culvert sizes and quantities at each. Conceptual culvert designs for small, medium and large crossings are shown on Figures 2.19, 2.20 and 2.21, respectively.

Site-specific designs have been developed for each of the five extra-large crossings that will be fitted with structurally-reinforced sea containers, shown on Figures 2.22 through 2.25. Standard 6 m (20 foot) sea containers, which will arrive containing materials for the bulk sampling program, will be utilized. A structural engineering firm is currently preparing a design for structural reinforcement measures that will be completed in the field but before installation at the crossings, which will support the weight of traffic associated with the bulk sample. Sea container crossings have been used at other remote industrial projects. Figure 2.26 shows a photograph of a sea container crossing used in Russia.

Table 2.13 provides a preliminary estimate of the number of sea containers required at the extra-large drainage crossings. Some of the crossings will also be constructed with a lower elevation "overflow section" to allow controlled overtopping of the crossing during higher runoff events. These areas are expected to require repair and maintenance in the event of their use. All culvert pipes shall be installed according to the technical specifications provided with the design. Typical technical requirements for culvert installation are summarized as follows:

- Foundation Preparation - for the culvert and sea container installations, will generally involve grading, leveling and preparation of a compacted pad onto which the structures will be installed. Some areas may require excavation and removal of poor quality materials as required by the Engineer.
- Culverts pipes and sea containers - will be installed as shown on the drawings and in accordance with the manufacturer's recommendations. The Site Supervisor/representative will have final say on any issues related to installation of these structures.
- Culvert Backfill - will be placed and compacted in accordance with the technical specifications for the work. Backfill around pipes (i.e. haunching, crown, etc.) shall be carefully placed in thin lifts and compacted using hand compaction equipment to prevent damage to the pipes from occurring.
- General Fill - all other fill shall be compacted using standard vibratory roller equipment.
- Rock Filled Gabion Baskets - may be required to construct wing walls to protect the abutment fill at the major crossings (i.e. ramps up to sea containers).
- Geogrid Soil Reinforcement - may be required to stabilize some of the higher abutments at the major crossings.

2.14.6 Assessment of Potential Navigability

An assessment of navigability will arise from Transport Canada, Navigable Waters Protection Program review of the screening document. To facilitate Transport Canada review, the calculated two-year return periods (Q2) are shown on the extra-large crossings preliminary designs presented as Figures 2.22 to 2.25.

Knight Piésold's assessment is that only the four extra-large category watercourses may be potentially navigable, and all such crossings are located substantially inland such that the proposed crossings are unlikely to interfere with navigation. Land use and travel patterns within the region are described in Sections 5.3.2 and 5.3.3, respectively. The sizes of vessels that reach Milne Inlet from Pond Inlet are too large to move up the Phillips Creek watershed, although it is conceivable that recreational craft such as kayaks could use Phillips Creek itself. All proposed crossings are on tributary streams that drain into Phillips Creek. Existing land use patterns do not dictate the mobilization of smaller vessels at a distance inland for subsistence hunting.

2.14.7 Environmental Protection During Construction

Environmental protection measures will be used in all aspects of the construction to ensure that impacts to the environment and receiving waters are protected from contaminated runoff and increased sediment loadings. A Construction Environmental Monitoring Plan (CEMP) will be prepared and must be adhered to throughout the construction of the works, including but not limited to:

- Borrow areas drainage, sediment control and post construction closure (i.e. slope regrading and stabilization)
- Sediment control during drainage crossing construction in areas with sensitive receiving waters
- On-site supervision of in-water works by an environmental monitor
- Use of preset haulage routes to minimize impacts to the landscape
- Proper handling and storage of fuels
- Allowance in scheduling of work fronts for archaeological documentation to be completed

The road contractor will be required to comply with the requirements of the CEMP. Further details on monitoring and application of the CEMP are provided in Section 8.3.

2.14.8 Road Operations

The road will be operated nearly year-round, except for a period of high flows in the summer when the ground is thawing. Camps will be established at Milne Inlet and along the road as shown on Figures 2.11 and 2.12.

Designated refuelling areas include fuelling stations located at each of the camps at Milne Inlet and Mary River, as well as at the processing area near Deposit No. 1.

The road will be single lane, with passing areas (wide road areas) approximately every 5 km. The ore haul trucks will be equipped with a GPS tracking system that can be monitored remotely by computer at the camps. This will serve as an emergency locator system.

Traffic management plan for the Milne Inlet tote road during the bulk sampling program consists of the following:

- Project-related traffic will be restricted to 30 km/hr. This can be monitored by tracking the arrival times of trucks at the Midway camp and final destination, as well as by road superintendents.
- Trucks will travel in convoys of two to four at a time, for safety of the trucks as well as the safety of other users.
- Signposts will be established at every kilometre along the road, with Milne Inlet at Kilometre 0 and Mary River at Kilometre 110.
- Radio towers will be established at Milne Inlet, the Midway camp and Mary River, and all vehicles on the road will be equipped with radios. All vehicles will call out on the radio their location, direction and type of vehicle for all other road users to hear (example: ore truck, loaded, kilometre 34, outbound).
- Wildlife has the right-of-way.
- Any substantial movements of caribou in the vicinity of the road during the spring (when the caribou are either migrating or possibly calving) will be reported to the road superintendent. In accordance with the DIAND caribou protection measures (Nunavut Planning Commission, 2000), activities will be suspended in any area with a high level of activity or occupancy of caribou during the period of May 15 to July 15.
- A strict no hunting policy will be implemented among employees of Baffinland and its contractors while at the work site.
- Road traffic updates will be provided on community radio. Community members will be encouraged not to discharge firearms within 1 km of the Milne Inlet tote road, for the 15-month duration of the bulk sampling program.

Provided the requisite permits are obtained, road upgrades may begin as early as the spring months of 2007 using the limited heavy equipment delivered to Milne Inlet on the 2006 sealift. An estimated 200 loads of dry cargo destined for Mary River will arrive on the 2007 sealift. Another approximately 285 loads of fuel will be delivered from Milne Inlet to Mary River using fuel trucks. This material will be transported into the Mary River site in the fall of 2007 so that the camp can be erected and mining infrastructure put in place to start mining in late 2007.

The 250,000 t bulk sample will be transported from the exploration site to Milne Inlet starting in the first quarter of 2008 through until the sealift operations are complete in August-September 2008. Using 40-t capacity haul trucks, a minimum of 5,600 transits will

be required to move the bulk sample over the road, over the period of January to September 2008.

The Milne Inlet tote road is used at various times of the year by hunters from Pond Inlet. During the open water season (i.e., late July through early September), a limited number of local people arrive in Milne Inlet by boat and unload all-terrain vehicles (ATVs) to travel inland to hunt. During the winter months, hunters travel by snowmobile over the sea ice to Milne Inlet and travel inland either along the road or a similar alignment. The road is not a public road like a road in the community, but the Nunavut Land Claim Agreement specifies that the right of public access shall be maintained. Therefore, the Project will expect to share the road with other users. Additional detail on existing land uses and travel patterns is provided in Sections 5.3.2 and 5.3.3.

A communications protocol will be established with the community of Pond Inlet that involves checking in and checking out with project security personnel when planning to use the road. Radios will be provided to public use people and the company will use best efforts to establish a bilingual radio broadcast person to assist with radio communications for local road users. ATV's and snowmobiles will be encouraged to use tracks adjacent to and parallel to the road during times of intense project usage.

2.14.9 Road Maintenance

The road is expected to require regular maintenance, from snow plowing during winter months to culvert and crossing maintenance in the summer.

The design of the watercourse crossings is such that, during summer, heavy flows may overtop some of the culvert crossings equipped with overflow swales. The road may be unavailable to haul traffic during a brief period in the summer, and minor repair to the crossings may be required.

2.15 BORROW PITS AND ROCK QUARRIES

2.15.1 Borrow Areas

Granular material borrow pits (sand and gravel and up to cobble sized materials) will be developed to support road upgrades for the bulk sampling program. Representative soil samples were collected from shallow test pits and the samples were tested for index geotechnical properties to determine their suitability as road construction material. Tests for moisture content and grain size were carried out in the Knight Piésold soils lab at the Mary River camp. The three areas have been designated from a combination of airphoto interpretation and ground-truthing, as follows:

- Borrow Location 1 near Milne Inlet - shown on Figure 2.27, this area consists of dry to damp coarse sand and gravel ranging to coarse to medium grained sand some gravel. There was negligible silt size particles in the samples tested from this area. Trace cobbles and boulders were also noted in this area.

- Borrow Location 2 near Midway camp - shown on Figure 2.28, this area consists of dry gravel and coarse sand ranging to medium grained sand with trace gravel and trace silt. Up to 15% cobbles with minor occurrences of boulders were also noted in the area.

- Borrow Location 3 near Mary River Camp - shown on Figure 2.29, this area consists of very dry to damp coarse gravel and well graded sand to fine sand. Trace cobbles were also noted in this area.

Figure 2.30 shows the grain size analyses of all borrow samples tested. The material ranges from fine sand to coarse-grained sand and gravel with some cobble and boulder content.

Other smaller potential deposits were encountered at various locations along the road alignment and are generally identified in discrete lenses of highly variable spatial continuity and consistency. In summary, the primary deposits generally range from clean poorly graded fine sand to well graded sand and gravel with minor cobbles. There appears to be no continuity and consistency that would indicate a predictable trend in the origin and location of this material; a deposit in one location will vary significantly from another only a few hundred metres away.

The borrow deposits were not drilled so the total depth of overburden and the depth to permafrost was not established, but each of the areas represent vast expanses of glacial-fluvial deposits. Boreholes and test pits completed in similar materials as part of feasibility study investigations at Mary River indicate that well drained materials have a active layer thickness in the order of 1.8 m.

The ice content of the permafrost ranges from low to very high; drilling and test pitting at Mary River identified varying degrees of ice content from none to massive ice in the order of several metres thick. Some frost heaving of the soil is evident by the development of tundra polygons in some locations. Polygons in sand and gravel are common and generally contain ice wedges under polygonal troughs. As photos on Figures 2.27 to 2.29 suggest, localized erosion does occur due to both the effects of runoff as well as melting of subsurface massive ice.

Shallow and broad stripping of the active layer during the summer and fall of 2007 is proposed without blasting. Removal and stockpiling of the upper 10-20 cm of soil will be completed to the extent possible, to facilitate in reclamation. To obtain the volume of material necessary for the bulk sampling roads, it will be necessary to excavate an area measuring approximately 33 hectares (33 ha) between the three borrow sources, assuming

an average excavation depth of 1.5 m. Effort will be made to concentrate borrow activities to limit the footprint; including multiple stripping at the same locations as the material thaws.

Some processing of the materials will be required to meet design specifications, including screening using a grizzly, and segregation of materials in temporary stockpiles.

Stripping of the active layer will result in a thawing of the underlying permafrost and eventually a re-establishment of a new active layer and permafrost depth. A release of excess moisture is expected with the thawing process, particularly if ice lenses are present. This thawing and release of moisture will be accompanied by settlement, the degree of which may vary from location to location based on the relative presence of ice lenses and topography.

Excavation will not occur within 30 m of a watercourse, and seasonal drainage ways will be re-established during pit development. Existing naturally-cut slopes in the area are approximately 1H:1V. The side slopes of the borrow pits will be made at approximately 1H:1V to 2H:1V, slightly more gentle than the slopes in the natural condition. Ditching and other drainage measures will be established as needed to limit erosion and maintain positive drainage to minimize water ponding. Contouring, ditching and silt fences will be applied as required to ensure sediment and erosion control, and these requirements will form part of the CEMP. Post-excavation monitoring of borrow pit areas will be undertaken so that the disturbed areas are free-draining to avoid excessive water ponding, and so that the areas will re-establish in a physically stable manner. Any stockpiled topsoil will be spread to assist in revegetation of the disturbed areas. The post-excavation monitoring will reduce potential sediment transport to nearby watercourses and will ensure conditions are suitable for the re-establishment of vegetative cover.

All potential borrow sources are within well drained areas elevated from the surrounding topography. Flooding is not anticipated and therefore no flood control measures are deemed required.

All three borrow sources have airphoto mapping coverage from 2005 airphoto surveys carried out on behalf of Baffinland. The airphotos were used to develop a digital elevation model (DEM) of the area, to 2.5 m contours. This DEM will serve as the pre-development survey of any borrow areas, and follow-up conventional surveying will be completed post-quarrying, to develop estimates of the in situ volumes of material removed for quarry concession fees.

2.15.2 Rock Quarries

Two rock quarries will likely be developed for various construction purposes, including rockfill for gabion baskets at sea container crossings, as well as for use as rip rap for sediment and erosion control applications. Representative rock samples were collected from the proposed locations for geomechanical testing as well as testing for ARD and metal leaching potential. Environmental testing results, as with the bulk sample ore, are pending.

The proposed rock quarry locations at Milne Inlet and Mary River are shown on Figures 2.27 and 2.29, respectively.

The total estimated volume of rock required is 15,000 to 30,000 m^3. The rock will be obtained through drilling and blasting techniques. Some processing of the materials will be required to meet design specifications, including crushing, screening, and segregation of materials in temporary stockpiles.

Any upper topsoil expected to be of value for reclamation will be salvaged and stockpiled. Depending on quality and frost/thaw susceptibility characteristics, overburden generated during quarrying will be used as general fill for road construction. Material not meeting the technical requirements of fill will be placed in designated waste area and re-graded.

Quarrying will not occur within 30 m of a watercourse, and drainage will be re-established during quarry development. Any rock faces will be inspected by a geotechnical engineer during quarry development to ensure physical stability. Ditching and other drainage measures will be established as needed to limit erosion and maintain positive drainage to minimize water ponding. Contouring, ditching and silt fences will be applied as required to ensure sediment and erosion control, and these requirements will form part of the CEMP. Any stockpiled topsoil will be spread to assist in revegetation of the disturbed areas. The post-excavation monitoring will reduce potential sediment transport to nearby watercourses and will ensure conditions are suitable for the re-establishment of vegetative cover.

All rock quarry areas are within well drained areas elevated from the surrounding topography. Flooding is not anticipated and therefore no flood control measures are deemed required.

The proposed rock quarries, in addition to being covered by airphotos and resultant digital elevation model (DEM) obtained in 2005, and were additionally subject to a LiDAR survey in 2006, which has provided a DEM based on 0.5 m contours. This LiDAR-based DEM will serve as the pre-development survey of the quarries, and follow-up conventional surveying will be completed post-quarrying, to estimate the in situ volumes of material removed for quarry concession fees.

2.16 CAMP AND RELATED FACILITIES

To support the bulk sampling program, three new camps are proposed:

- A new 100-person all-weather tent camp at Mary River
- A 30-person trailer camp at Milne Inlet
- A 12-person roadside trailer camp along the Milne Inlet tote road (Midway camp)

Details on each of the camps follow.

2.16.1 Mary River Camp

The existing 80-person exploration camp will be expanded to 100-person capacity in 2007, irrespective of the bulk sampling program, to allow for seasonal continuation of mineral exploration drilling, feasibility study-related engineering investigations and environmental studies. The layout of the existing camp is shown on Figure 1.3. Applications for renewal of the existing permits to allow for the non-bulk sampling related site activities were recently submitted to the applicable regulatory agencies.

A new 100-person Weatherhaven™ camp will be constructed adjacent to the existing camp to support the bulk sampling program activities. The camp will be designed for all-weather operation and will be complete with water supply and sewage treatment facilities. The location and layout of the camp in relation to the existing camp facilities is shown on Figure 1.3. Photographs of a similar Weatherhaven™ camp that was employed at an exploration project in western Nunavut are shown on Figure 2.31.

Power supply will be via a 700 kW generator, to be positioned next to the fuel storage facilities on the opposite side of the airstrip from the camp.

A new water supply and treatment system will be installed to supply both the new-100 person all-weather camp for the bulk sampling program as well as the seasonal requirements of the existing exploration camp. The existing water supply consists of an intake positioned in the near shore of adjacent Camp Lake and periodic operation of a pump to fill holding tanks, with ultra-violet (UV) disinfection prior to use. The existing intake will be placed further into the lake and will be protected for winter use. A floating dock will run the water line approximately 20-25 m into the lake. A submersible pump will be launched from the end of the dock, positioned at a depth of about 3 m to account for ice formation and equipped with a screen on the end of the intake to prevent the entrainment of fish. A small heated shelter will cover the intake at the end of the dock, and a 5 cm diameter insulated and heat-traced rigid pipeline will deliver the water to holding tanks in the camp. The system will be operated on demand with a flow meter installed to measure water intakes. UV disinfection will treat water prior to use.

The estimated water consumption of the combined exploration and bulk sampling camp has been calculated at a maximum of 50 m^3 per day, based on a maximum combined camp population of 200 persons and an estimated water consumption rate of 250 litres per person per day (L/p/d). Permit applications have conservatively specified the water take from Camp Lake for this purpose at 60 m^3 per day.

Sewage and greywater generated by both the existing and new Mary River camps will be treated using a package sewage treatment plant, called a Rotary Disk or Rotating Biological Contractor. The plant's design capacity (70 m^3/day) will be sufficient to treat the sewage of up to the 200 people at site (at 250 L/p/d) and still have residual capacity. The Rotary Disk treatment plant will be delivered by sealift in August 2007 and will be installed

at the new Mary River camp in September. Until the system is installed, the camp will continue to use the existing pit latrines.

The sewage plant is designed to meet effluent criteria for 5-day biological oxygen demand (BOD_5) of 20 mg/L and a total suspended solids (TSS) concentration of 20 mg/L. An approximately 2-km long heat-traced insulated pipeline will be constructed to discharge the treated effluent below the ice in Sheardown Lake, which is in a separate watershed from Camp Lake. Tertiary treatment for nitrification of ammonia and phosphorous removal are possible customizations of the plant that could be installed if required.

Combustible non-hazardous solid waste will be incinerated in a manufactured high efficiency diesel-fired incinerator installed in a shipping container. The incinerator has a double burner and will burn circulated exhaust, and the exhaust pipe is 6.7 m in height. This incinerator has a capacity of 4 garbage bags per hour.

Disposal of non-hazardous bulky inert wastes, such as steel, plastics and rubber, will be disposed of in an inert landfill, described further in Section 2.19. Empty drums will be shipped back to the vendor. Disposal of hazardous wastes, including waste oil, is discussed in Section 2.19.3.

2.16.2 Milne Inlet Camp

A temporary trailer camp with a 30-person capacity will be established at Milne Inlet, next to the existing airstrip, as shown on Figure 2.5. This camp will provide accommodation to workers involved in road construction and operation as well as shipping related activities. The camp will consist of 6 trailers and associated infrastructure. Power supply will be by a small generator.

The estimated water consumption of the Milne Inlet camp has been calculated at a maximum of 7.5 m^3 per day, based on 250 L/p/d. The water supply system will consist of a desalination system and associated heat-traced piping into the sea nearest the camp.

A package sewage treatment plant manufactured by Tanks a Lot, will treat the sewage and greywater. The system consists of a bioreactor for treatment, filtration then chlorination followed by dechlorination. Effluent will be discharged by a heat-traced pipeline into the sea.

Combustible non-hazardous solid wastes will be incinerated at Milne Inlet utilizing the incinerator currently servicing the Mary River exploration camp. Non-combustible wastes generated at Milne Inlet will be backhauled to Mary River for disposal in the boneyard.

2.16.3 Midway Camp

A temporary trailer camp with a 12-person capacity will be established at the location of an existing airstrip, approximately 27 km from Mary River. This camp will service road traffic

and provide a base to respond to any emergencies. The camp will consist of 4 trailers, small lined fuel storage, a small generator, and a staging/lay down area for trucks and equipment. In addition, the road contractor is expected to position two mobile trailers at this location for accommodation during road construction and maintenance.

The proposed location of the Midway camp is shown on Figure 2.28. Water will be delivered to the camp from Mary River and latrine toilets will be utilized. The collected sewage will be disposed of in the camp incinerator. Solid waste generated at the Midway camp will be collected in bags inside either fibreglass 1-tonne sacks or sealable containers and will be transported to Mary River for disposal.

2.17 EQUIPMENT

Equipment to be used during the bulk sampling program includes the following:

Baffinland	Road Contractor	Mining Contractor
Excavator (1)	Excavator (1)	50-t haul trucks (3)
Dozers (3)	Dozer (1)	40-t highway trucks (11)
Quads (4)	Front end loader (1)	Tractors with rock boxes
Boom truck and trailer	Vibratory compactor & screen	Front-end loaders (2)
1-t flatbed trucks (2)	Rock truck (1)	Dozer (1)
Articulated forklift truck (1)	Dump truck with plow (1)	Excavator (1)
Spill response units (4)	Housing trailers (2)	Grader (1)
Milne Inlet camp genset	Parts trailer	Service truck (1)
Midway camp genset	Supervisor truck (1)	Rock drills (2)
Mary River camp genset		Crusher with 750 kw genset
Sewage system – rotary disk		Blasting truck
Maintenance shop		Crew cab pick-up trucks (7)
Warehousing sea containers		Fuel Truck (1)
Office trailer		
16 explosive magazines		

The above equipment list will be confirmed with the contractors but is expected to be substantially correct. Photographs of some of the equipment to be used in the bulk sampling program are shown on Figure 2.8.

Equipment will be delivered by sealift to Milne Inlet, assembled if required, and will be either driven into Mary River (in the case of haul trucks) or will be brought in on the 40-t highway trucks.

2.18 FUEL STORAGE AND HANDLING

A total of 8 ML of fuel will be used during the bulk sampling program. Temporary fuel storage facilities are proposed at Milne Inlet, a small camp located part-way along the existing tote road (the “half-way camp”), the Mary River camp, and the bulk sample crusher area.

Figure 2.5 shows the proposed fuel storage facilities at Milne Inlet, which will consist of fuel storage facilities for 8 ML of diesel fuel, and 90,000 L of Jet-A fuel.

Fuel storage at the Midway camp will consist of a small cache of 200-L drums (about 20-30) inside a lined containment system.

Fuel storage areas will be established at Mary River as shown on Figures 2.1 and 2.3, consisting of one diesel fuel tank farm (1.4 ML) near the camp to supply the camp needs; a Jet-A tank farm (550,000 L) for aircraft; and a 1.25 ML diesel tank farm to supply the crusher and haul trucks.

Fuel will be stored in temporary bulk storage facilities consisting of fuel bladders within lined and bermed containment. The fuel bladders are identified in NIRB's Northern Remote Site Protocols document (Dillion, 1998) and have been used by both private industry and the federal government in Nunavut, Yukon and other arctic regions of the world. Appendix B contains an information brief prepared by the vendor who will supply the fuel bladders, which includes technical specifications and information and references from various operators of fuel bladders in arctic environments.

Containment for each fuel storage facility will consist of an earthen berm lined with a petroleum-resistant geomembrane liner (Hazgard HZ-500) that meets ULC/ORD-C58.9-1997 specifications for Underground and Aboveground flammable and combustible liquid storage tanks.

Each fuel storage facility will be equipped with dispensers consisting of electric pumps and shut-off valves, and fuelling procedures will require full-time attendance at all times. Fuel stations will consist of a lined pad backfilled with soil. Any fuel spills will be contained within this lined pad, which can be excavated, tested and treated if necessary at the end of the bulk sampling program.

2.19 WASTE MANAGEMENT

A landfill will be required at the Mary River Camp area as part of the bulk sampling program. The landfill will be used for disposal of non-combustible, non-hazardous, bulky waste with little to no salvage value. All combustible non-hazardous wastes (including human waste) will be incinerated on site and the ash residue will be placed in the landfill. Existing bulky wastes from the 1960s as well as equipment and materials associated with recent project activities, will be inspected for any hazardous contents and will also be placed into the new landfill. No organic or hazardous wastes will be disposed of in the landfill. The location of the landfill has not yet been determined, but will be selected based on a variety of factors, including:

- Size of the area available
- Suitable soil and foundation conditions
- Adequate surface drainage
- Topography
- Adequate distance from natural waterbodies or drainage courses
- Ground conditions to allow permafrost to act as the primary containment system

The volume of material to be landfilled will influence the size of the facilities and site selection process. The volume of material to be placed in the landfill is currently estimated to be 2,000 m^3.

Design considerations and proposed parameters for the new landfill are described in the following sections.

2.19.1 Landfill Design Considerations

The following general design considerations will be incorporated into the site selection and design of the landfill at Mary River.

- Waste Characterization - The waste material placed in the landfill will consist only of non-hazardous, non-organic materials, which includes metal wastes, empty crushed barrels, concrete and plastics. Existing bulky wastes from the 1960s, equipment and materials associated with recent project activities, will also be placed into the new facility. Oil pans and fuel tanks will be drained and the oil or fuel incinerated. Any remaining hazardous components such as batteries, tanks and filters will be stored and disposed of as described in Section 2.19.3.

- Surface water Run-on and Run-off Control - A site with sloping ground conditions will allow for easier diversion of surface water and avoid flooding by standing water. The final landfill surface shall be graded to shed runoff water such as to prevent ponding and minimize infiltration into the waste. The cover surface or outer berm slopes shall be established at suitable grades to minimize erosion of the materials.

- Soil/Permafrost Conditions - A site will be selected that is founded on non-frost/thaw susceptible soils that are generally free-draining. It may be necessary to place a layer of such material over the natural ground surface prior to placement of the waste. This will protect the natural cover and surficial soils from damage during landfill construction and filling, minimizing detrimental changes to the thermal regime.

- Leachate Control - the proposed landfill material will be inert non-hazardous, non-organic waste; therefore, leachate control measures and practices will be implemented, rather than collection and elimination of leachate. The following design factors will aid in the control of leachate for the new landfill:
  - The proposed landfill site will be located where the influence of natural overland runoff is expected to be minimal
  - The proposed landfill will be located a minimum of 30 m from any existing waterbodies of drainage courses
  - Only dry, non-organic, inert waste will be placed in the landfill
  - The short duration of the arctic summer limits the amount of time that water infiltration into the waste materials can occur
  - The compacted and graded shedding cover material will promote surface run-off and minimize water infiltration
  - Freezeback of the landfill will be promoted through the use of cover materials with suitable thermal properties and thicknesses

- Frost Jacking - Frost jacking of debris occurs when fills containing debris are subjected to seasonal freeze/thaw; the mineral soils used for fill are frost susceptible (i.e. fine grained); and there is free water available to feed the frost heave process. In order to prevent frost jacking, the landfill backfill material should be frost stable, and both groundwater and surface water must be controlled. Adequate cover will be established over waste materials to maintain frozen a state.

- Odour and Gas Control - Odour and methane gas generation are typical of most domestic landfills in the south and are the result of organic decomposition due to biological activity, fungi and bacteria. This is not considered to be a problem for the Mary River landfill given that:
  - All organic materials will be incinerated prior to placement into the landfill
  - Waste chemicals (hazardous wastes) will be diverted from the landfill
  - The low temperature of the waste and surrounding permafrost will limit decomposition and minimize gas generation

- Settlement of Landfill Surface - To reduce settlement and ground subsidence, the debris should be placed in relatively thin lifts with a prescribed earth fill graded over each lift of waste to fill the voids. The earth fill should be worked into the underlying debris to produce a good mix of waste and soil. This will reduce voids in the landfill and establish a generally homogeneous mass with similar thermal and strength characteristics.

2.19.2 Proposed Landfill Design Parameters

The landfill will be constructed on grade or above a constructed granular pad to reduce constructability issues and potential disturbance to the underlying permafrost. It is anticipated that the landfill will be constructed by first establishing containment berms around the perimeter of the landfill area. Maximum side slopes of 3H:1V on the outside and 1.5H:1V on the inside are recommended for the berms with a minimum crest width of 3.0 m.

To reduce settlement and ground subsidence, the debris should be placed in 0.5 m thick lifts with a minimum 0.15 m thick lift of non frost susceptible intermediate fill graded over each lift of waste. This fill will be worked into the underlying waste to fill the voids and produce a relatively homogenous mass onto which the next layer of waste can be placed. Quality assurance testing will be carried out to optimize the placement procedures. The maximum waste thickness (sum of all waste lifts) in the landfill should not exceed 3.0 m.

The landfill should be capped with a layer of fill compacted to 95% of the maximum density determined in the laboratory using standard effort (ASTM D698). The surface of the landfill should be graded to a slope between 2% and 4% to promote runoff, yet minimize erosion potential. The landfill should be contoured to blend in with the surrounding terrain. Most of the available cover materials are relatively free draining and posses thermal characteristics that result on relatively large thaw depths, however landfill freezeback can be achieved

using a thermally designed thickness of landfill cover. The freezeback design would significantly reduce the risk of moisture migration into and out of the landfill. Typically a landfill cap 1.0 m to 2.0 m thick is required.

2.19.3 Hazardous Materials Management

Hazardous materials (other than fuels) that will be used during the bulk sampling program will include oils, greases, antifreeze, calcium chloride salt, lead acid batteries, and cleaners.

Calcium chloride will continue to be stored at its present location, within 20 kg plastic bags that are within larger fibreglass tote bags. Up to 1,500 t of calcium chloride may be stored at the site. Bags of calcium chloride are slung by helicopter to drill water mixing sites as required, and are placed into the mixing basins by hand.

Approximately 100-200 L capacity drums of lubricating oils and less than 50-200 L drums of antifreeze will be on site for the program. Materials will be temporarily stored in their original sea containers at the proposed ore stockpile locations at Milne Inlet until transported to the Mary River site. At Mary River, bulk storage of most hazardous materials (including wastes) will continue to be within the sea containers at the laydown area shown on Figure 2.1, with smaller quantities in the proposed warehouse or existing steel Quonset workshop. Lubricating oils and antifreeze will be dispensed from drums using fitted taps.

2.20 EXPLOSIVES USE

The bulk sampling program will require the use of explosives to blast the rock at the bulk sample location. Approximately 240 t of pre-packaged emulsion and high explosives (Class A) will be used. The explosives will be stored in 16 explosives magazines; sea containers that will be surrounded by a chain-link fence and positioned more than 600 m away from any building or work area. The proposed location and construction of the explosives magazines meets the requirements of the *Explosives Use Act*, which refers to the British Table of Distances. The proposed location of the explosives magazines are shown on Figure 2.3.

Explosives use is also governed by the *NWT/Nunavut Occupational Health and Safety Act* and Regulations. Explosives and detonator magazine permits will be required and contractor employees using explosives will have the required certification and blasters certificates. Explosives will be transported by truck to the pits and quarries by the licensed explosives contractor, in accordance with applicable acts and regulations.

2.21 CONSTRUCTION OF A TEST RAIL EMBANKMENT

A rail line is being conceived in the Project's feasibility study as the means to transport iron ore from the Mary River site to a port on the coast, either at Milne Inlet or Steensby Inlet located approximately 120 km south of the project site. Test rail embankments are proposed to verify potential designs for permafrost protection in moist zones, and to observe the potential thermal effects on the permafrost of embankments which contain culverts. Culverts are a cost effective

approach to small and medium size water crossing, but their impact on the thermal regime at the toe of slope of the embankment needs a special study.

Test embankments will allow for the evaluation of:

- The effectiveness of different fill materials
- The effectiveness of culverts
- The impact of embankment geometry on accumulation of snow drifts

The test embankments will be instrumented with thermal sensors so that measurements of soil temperature can be taken and settlements will be measured optically.

The test embankments are not part of the bulk sampling program per se, but the bulk sampling program will provide the granular materials needed, including non-ore bearing rock generated during mining and quarrying, and the development of sand and gravel borrow sources. Two test embankments are proposed at the Mary River site, each embankment being approximately 100 m in length, 20 m in width, varying side slopes and will contain different fill materials. The location of the proposed test embankments is shown on Figure 2.1. The actual positioning of the embankments on the sites will be dependant upon both a site inspection of ground conditions and on determination of the prevailing wind direction.

SECTION 3.0 - TRAINING AND EMPLOYMENT

The bulk sampling program will be an opportunity for further exposure to mining and employment training in the region.

3.1 HUMAN RESOURCE POLICY DEVELOPMENT

Baffinland is committed to the development and implementation of a human resources policy to guide its bulk sampling program operations. The company views the bulk sampling program as an opportunity to develop and mature its policies and practices in human resources. A human resources director has been hired and will work towards the establishment of the human resources policy.

A zero-tolerance policy towards drug and alcohol use at the workplace will be one component of the human resources policy. Baffinland expects to develop a policy that also encourages and supports the hire and long-term employment of Inuit from the region. In the absence of a formal policy over the past three years, Baffinland has strived to maximize employment of Tununermiut people from Pond Inlet.

3.2 ENVIRONMENT, HEALTH AND SAFETY MANAGEMENT SYSTEM

Baffinland has been operating its exploration program under a health and safety plan that promotes a safe work environment at its current operations. During the 2006 exploration season, Baffinland contracted an external health and safety specialist to audit its operations.

An Environment, Health and Safety (EHS) Management System Standard is currently under development for the bulk sampling program. The EHS Management System Standard will be led by an EHS Policy, and will include a comprehensive site safety orientation, follow-up training programs, programs and procedures for all aspects of the management system (e.g., first aid to joint EHS committee, cold weather safety, helicopter safety, excavating and trenching, etc.) , and a system for auditing and continual improvement.

3.3 TRAINING PROGRAM

Baffinland is committing significant resources, upwards of $1M in 2007, to conduct training for the bulk sampling program in communities in the region. Baffinland is currently engaged in discussions with the Qikiqtani Inuit Association (QIA) regarding training and benefits for the bulk sampling program. The training program, as currently envisaged, will have the following four main components.

Introductory Meetings and Classroom Training in Communities

In May 2007, Baffinland proposes to host meetings in Pond Inlet, Igloolik and Arctic Bay to disseminate information on employment opportunities and human resources / employment policies to be enacted for the bulk sampling program. Brief training programs will be provided in First Aid,

Workplace Hazardous Materials Information System (WHMIS), and any other relevant aspects of the Project.

High school Site Visits

In June 2007 at the end of the school year, Baffinland would like to fly a number of graduating high school students into Mary River for a site visit. Details of how many students and how they may be selected have not been worked through but the overall intention is to expose recent graduates to the Project and the opportunities that may come available, as a way of generating interest in youth and assisting young people in formulating their career plans.

Mining Truck Simulator

The mining contractor for the bulk sampling program has a simulator that can be mobilized by Hercules aircraft to the Project site along with two trainers. Approximately 20 people will be identified for training on the simulator to obtain familiarization with the operation of open pit haulage trucks. Training certificates are provided to successful trainees.

Job Shadowing

Perhaps the most significant component of Baffinland's training program will be job shadowing. A number of trainees will cycle through a number of jobs during the bulk sampling program to receive exposure and training to a large range of jobs, from blasting, trucking, crushing, monitoring and supervision. This exposure will allow people to identify and pursue what most appeals to them.

3.4 EMPLOYMENT

In addition to the employment generated by the exploration, engineering and environmental studies (approximately 34 persons from Pond Inlet in 2006), the following summarizes the employment that will be generated by the bulk sampling program (excluding trainees):

Company	Average	Peak
Baffinland	6	12
Road Contractor	7	12
Mining Contractor	40	50
Catering/others	12	20
Total	65	90

The bulk sampling program is being planned as a 24-hour operation comprised of two 12-hour shifts per day. The planned crew schedule is 6 weeks on-site followed by 2 weeks off work (6 in/2 out). Aircraft will shuttle personnel from Pond Inlet, Igloolik and Arctic Bay on generally a weekly shift change, and southern-based employees and contractors will be flown on charter flights from Iqaluit directly to the site.

SECTION 4.0 - PUBLIC INVOLVEMENT/ TRADITIONAL KNOWLEDGE

4.1 POND INLET PUBLIC MEETING REGARDING BULK SAMPLE

Baffinland held two meetings in Pond Inlet in 2006. On April 22, 2006 a public meeting was held to update the community on both the progress and proposed exploration activities at Mary River. During this meeting, the concept of a bulk sampling program was raised as a possibility but details were not available for discussion.

On September 6, 2006 Baffinland held another public meeting that was solely focused on the bulk sampling program. Meeting minutes are included in Appendix E. One concern that was voiced during the meeting was the increased level of aircraft traffic in Pond Inlet, which Baffinland acknowledges is in good part related to the activities at Mary River, although there are other activities in the region that contribute to this. Under current operating conditions, nearly all personnel movements have been via the scheduled First Air flight to Pond Inlet. With the bulk sampling program, direct charter flights from Iqaluit to Mary River are planned several times per week. The charter flights should result in a decrease in the volume of Project-related flights through Pond Inlet. Pilots have been counselled to respect the community requests in terms of the path of air traffic in relation to land use.

Most of the comments and questions at the September 6, 2006 public meeting related to the potential mine at Mary River. Some questions related to potential for employment and training opportunities from the bulk sampling program.

Baffinland is committed to communicate frequently with the community during the Project to discuss/agree on road use restrictions and guidelines that will ensure public safety.

4.2 PISIKSIK IQ WORKING GROUP

Since February 2006, Baffinland and Knight Piésold have been working with the Pisiksik Working Group, a collection of community representatives established in Pond Inlet to design and conduct an Inuit Qaujimajatuqangit (IQ) study for the Mary River Project. Through numerous meetings, Pisiksik has developed and finalized a research agreement with Baffinland and have designed the study, including the development of approximately 170 interview questions and the identification of informants within the community. Interviews have recently begun with a trial interview of a Pisiksik elder. Pisiksik have also had discussions with Knight Piésold biologists regarding wildlife, land use and archaeology to assist with planning of field surveys.

The proposed bulk sampling program was discussed with the Pisiksik Working Group in several meetings over the period of July-September 2006, and on September 7 Knight Piésold held a more detailed discussion with Pisiksik that involved reviewing the various components of the program, obtaining feedback on both the potential effects of the proposed road upgrades and local use of Milne Inlet. Meeting minutes are included in Appendix E.

SECTION 5.0 - DESCRIPTION OF THE EXISTING ENVIRONMENT

5.1 PHYSICAL ENVIRONMENT

5.1.1 Regional Setting

The Mary River Project is located on northern Baffin Island, approximately 160 km southwest of Pond Inlet. The raised Canadian Shield forms a discontinuous longitudinal mountain range termed the Arctic Cordillera, part of which occurs along the northeast coast of Baffin Island. The Penny ice cap in the southeast and the Barnes ice cap on the central part of Baffin Island are the largest icefields on the island.

The North Baffin region is located within the Northern Arctic Ecozone, as delineated in the National Ecological Framework for Canada (Ecological Stratification Working Group, 1996). Mean annual temperatures for this Ecozone range from 3.5ºC to 6.5ºC. Frost-free conditions typically last from June to August though snow may occur at any time throughout the year. The climate is semi-arid with an average annual precipitation in the order of 200 mm. The soils found in this ecozone have a deep permafrost layer.

The region is characterized by long dark winters and short summers, with continuous daylight from approximately May to August, and continuous darkness from November through February. The ground is covered in snow from September to June and ice persists offshore throughout most of the year.

5.1.2 Proximity to Designated Environmental Areas

Designated environmental areas may include parks, heritage sites, and critical wildlife habitats such as bird sanctuaries. Figure 5.1 shows these areas within the North Baffin region.

5.1.2.1 Parks and Conservation Areas

Within the North Baffin Region there are two parks: Sirmilik National Park and Tamaarvik Territorial Park.

The Sirmilik National Park, established in 2001, consists of four separate land masses covering approximately 22,000 km^2, including all of Bylot Island and the Oliver Sound and Borden Peninsula on Baffin Island. The park boundaries do not coincide with watershed boundaries of the Mary River Project, although marine access to Mary River passes adjacent to the Park.

The Tamaarvik Territorial Park is a small campground park next to the community of Pond Inlet.

There are currently no established national wildlife areas, historic sites or heritage rivers in the North Baffin region.

5.1.2.2 Bird Sanctuaries and Important Bird Areas

Bylot Island, in addition to forming a portion of Sirmilik National Park, is important habitat for many breeding and migratory birds, and was designated a bird sanctuary in 1965. Bylot Island and Sirmilik National Park are home to more than 70 species of birds (Lepage et al., 1998) including large breeding colonies of Snow Geese (Bylot Island itself is home to Canada's largest breeding colony of Snow Geese), and seabirds such as Thick-billed Murres and Black-legged Kittiwakes and the endangered Ivory Gull on Brodeur Peninsula (Alexander et al., 1991). These two protected areas are amongst the most diverse avifaunas in the Canadian Arctic and have been well studied (i.e. Tuck and Lemieux 1959, Kempf et al. 1978, Nettleship and Gaston 1978, Lepage et al. 1998). Both areas are considered to be sensitive to disturbance and to marine pollution (Alexander et al. 1991) and have special federal and international protection under the Migratory Birds Sanctuary Regulations (1997), the *Migratory Birds Convention Act* (1917, 1994), and *Canada's National Parks Act* (2000).

Bird Studies Canada and other international conservation agencies identify areas that are important to birds and are recognized as ecologically sensitive, potentially requiring special conservation measures. No areas within the Project area have been designated as 'important bird habitat' or 'important bird areas'. However, this may be at least in part due to the lack of research that has taken place within this portion of Baffin Island.

At the southern end of the regional study area, but also outside of the Project boundaries at the north eastern end of Steensby Inlet, is an area that has been designated as 'Key Migratory Bird Habitat' by the Canadian Wildlife Service (Alexander et al., 1991). The area is a long stretch of productive, low-lying tundra that reaches east to Berlinguet Inlet and Bernier Bay. This area has been designated as 'Key Migratory Bird Habitat' by the Canadian Wildlife Service (Alexander et al. 1991) because it is used by thousands of breeding Snow Geese and Canada Geese (Giroux et al., 1984; Reed and Dupuis, 1980), seabirds, seaducks, shorebirds, and Peregrine Falcons (Kemper 1976, Reed and Dupuis 1980). This designation is used to identify areas that may require special conservation measures in the future but currently has no special protection status (Alexander et al. 1991).

5.1.2.3 Critical Wildlife Areas

Aside from protected areas such as parks or bird sanctuaries, there are currently two forms of protection in Nunavut: critical wildlife areas and caribou protected areas.

The Government of Nunavut, Department of Environment has designated critical wildlife areas within the territorial Critical Wildlife Areas Regulations of the *Wildlife Act*.

Three critical wildlife areas are situated within east-central Baffin Island, as shown on Figure 5.1, including the following (Setterington, 2005a):

- Baird Calving Area
- Dewar Calving Area
- Longstaff Calving Area

Each of these critical wildlife areas is of recognized importance for caribou calving. Each of the areas is removed from the Mary River study area but has ecological relevance with respect to the movement and populations of caribou across Baffin Island. No critical wildlife areas have been identified within North Baffin, although this may in part be a reflection of absence of information on wildlife and habitat within the region. The intent of the Critical Wildlife Habitat Regulations is to protect wildlife from incompatible land uses, and the regulations describe the geographic area and time period for designated uses.

5.1.2.4 Caribou Protection Areas

DIAND, under the *Territorial Lands Act*, has identified caribou protection areas within Nunavut. At present, only two such areas have been designated, and these are both located in the Kivalliq Region of Nunavut (Setterington, 2005a).

5.1.3 Regional Surface Geology

Surficial landforms and deposits are associated with recent, widespread glaciation on Baffin Island. The presence of permanent snow at high altitudes, vertical ice caps, and thick, undisturbed and unconsolidated deposits of till on slopes and hillsides is evidence of very recent glaciation.

The Milne Inlet tote road follows a northwest-trending valley along an unconformity. The road lies primarily on or around locally abundant Holocene glacio lacustrine sediments and early Holocene and Wisconsinan tills (Knight Piésold, 2006a). Other surficial units that the road crosses are Holocene fluvial sediments (alluvial deposits) and Marine and glacio-marine deltaic sediments, early Holocene and Wisconsinan end moraine till, and with occasional outcrops of pre-Quaternary bedrock (Knight Piésold, 2006a).

The Holocene glaciolacustrine sediments are 1 to 10 m thick, proglacial sand and gravel outwash. The sediments commonly form braided floodplains, terraces, and fans have been created around the area (Knight Piésold, 2006a).

The early Holocene and Wisconsinan tills are mainly veneers and blankets. Till veneers are 0.5 to 2 m thick and discontinuous. Some veneer surfaces are reinforced with boulders, due to washing by subglacial meltwater, and restrict outcrop exposures. Till blankets are undulating and 2 to 10 m thick with drumlins and ribbed moraines in places (Knight Piésold, 2006a).

5.1.4 Regional Bedrock Geology

The North Baffin region and Mary River area lies within the Committee Belt, a granite-greenstone terrane mixed with rift basin sediments and volcanic rocks. The belt lies within the Churchill Province, extending from Baker Lake to Greenland, and is divided into five major assemblages: the Archean, the Mary River Group, the Piling Group, the Bylot Supergroup, and the Turner Cliffs-Ship Point Formation (Aker Kvaerner, 2006).

The Archean-age rocks (3.7 to 2.85 billion years old (Ga)) are strongly metamorphosed banded granite migmatites plus at least three phases of gneissic granitic intrusions fingered with amphibolite dykes (Aker Kvaerner, 2006).

The Mary River Group rocks, late-Archean in age (2.76 to 2.72 Ga), are a group of metasedimentary and metavolcanics in narrow, folded greenstone belts that unconformably overlay the Archean (Aker Kvaerner, 2006). The Group experienced greenschist to amphibolite-facies metamorphism, was intruded by granitic plutons, and was subject to multiple phases of strong deformation. Metasediments are commonly quartzite, greywacke, iron silicate formation, banded iron formation, bedded amphibolite gneiss, amphibolites, and mica schists and gneisses (Watts, Griffis & McOuat, 1965). The greenstone belts themselves are metavolcanics overlain by metasedimentary/metavolcanic sequences including iron formation. The now sinuous, intermittent band of rocks is estimated at 65 km long and 5 km across (Aker Kvaerner, 2006). A steeply dipping syncline, tightly folded about the west-northwest axis hosts the iron formations (Aker Kvaerner, 2006).

The Piling Group rocks, Paleoprotorozoic in age (1.9 to 1.8 Ga), are medium-level metamorphosed metasedimentary/metavolcanic sequence including quartzites, marble, sulphidic iron formation, black schists, and mafic metavolcanics (Aker Kvaerner, 2006).

The Bylot Supergroup rocks, Mesoproterozoic in age (1.27 Ga), are low-level metamorphosed siliciclastics and carbonate sedimentary with some mafic volcanics. The Supergroup lies within the Borden Rift Basin (Aker Kvaerner, 2006).

The Turner Cliffs-Ship Point Formation rocks, early Paleozoic Cambro-Ordivician in age (400 to 500 Ma), are unmetamorphosed clastic and carbonate sedimentary locally preserved in northwesterly-trending grabens (Aker Kvaerner, 2006). The rocks dip westward at about 10° (Watts, Griffis & McOuat, 1965) and have a local thickness of about 90 to 150 m (Aker Kvaerner, 2006).

A major fault system extends hundreds of kilometres to the northwest and shows evidence of large vertical and horizontal displacements. The Central Borden Fault Zone passes about one kilometre south of the Mary River Deposits and separates the Mary River Group rocks from the Turner Cliffs-Ship Point Formation.

The Franklin dolerite dyke swarm follows the direction of major northwest-trending fault sets (Aker Kvaerner, 2006).

5.1.5 Palaeontology

In the Turner Cliffs-Ship Point Formation, the Ordovician rocks of the northwest-trending escarpment, fossils are relatively rare or common depending on location. Fossils are typical of an intertidal, shallow marine deposit with interbedded sub- and supra-tidal zones. They include bioturbation (borings), the high-spired gastropods Hormotoma and Maclurites, and, possibly, the cephalopod Tripteroceras and stromatolites (Stromatocerium). The Geological Survey of Canada (2000) has recorded fossil showings at various locations in the region, with a particular concentration of showings between Milne Inlet and Mary River near the existing road. One showing intersected by the existing road has been identified to date, although no systematic survey has been conducted for the Project.

5.1.6 Mary River Iron Ore Deposits

The Mary River area straddles two different geological units: the Precambrian mountains to the east (the Archean, Mary River Group, Piling Group, and Bylot Supergroup rocks) and Paleozoic lowland plateau to the west (the Turner Cliffs-Ship Point Formation rocks) (Watts, Griffis & McOuat, 1965). Four of the five deposits, 1, 2, 3, and 3A, occur within a 30 km^2 area and Deposit No. 4 is approximately 27 km northwest of the Mary River camp.

Deposit No. 1 is the largest of the five deposits with a total length of 3800 m. The high-grade iron forms the 2500 m long curved ridge of Nuluujaak Mountain (698 m elevation) and magnetic surveys suggest an additional 550 m extends to the south and 750 m to the north (Aker Kvaerner, 2006). The tightly folded, eastward plunging syncline has been characterized as a 105 to over 150 m thick tabular body within a chlorite-actinolite schist and garnetiferous amphibolite at the hanging wall and a quartz-mica schist and quartz-feldspar-mica gneiss at the footwall (Aker Kvaerner, 2006). Only portions of the iron formations reach a thickness, quality, and sufficient continuity to be economical. Typical ores include massive, layered and brecciated hematite, specularite, and magnetite and banded iron formations (Aker Kvaerner, 2006).

5.1.7 Permafrost and Permafrost-related Features

The Mary River Project is in a zone of continuous permafrost. The active layer through the Project area ranges from approximately 1 to 2 m, but may be greater in areas where there is loose, sandy soil at the edges of lakes or ponds (Knight Piésold, 2006a).

The depth of permafrost in the region is in the order of a half kilometre, based on ground temperature measurements at the former Nanisivik Mine located 270 km northwest of Mary River, where permafrost has been measured at depths greater than 430m (Gartner Lee, 2003). Boreholes located 450 km west and 450 km south of Pond Inlet had

measured depths of permafrost of 500 m and 400 m, respectively (Geological Survey of Canada, 2006).

Permafrost greatly increases ground stability at depth but at surface it can affect the rates of soil erosion through the formation of ice wedges and patterned ground, pingos and palsas, massive ground ice, thermokarst, and mass wasting (i.e. solifluction). All of these permafrost features have been observed at Mary River (Knight Piésold, 2006a).

5.1.8 Climate and Predicted Future Climate Trends

North Baffin Island has a semi-arid climate with relatively little precipitation. Pond Inlet experiences 24-hour darkness (with less than 2 hours of twilight) from November 12 to January 29, and continuous sunshine from May 5 to August 7.

Although Environment Canada has some limited data from 1958 to 1965, a long-term climatic record is not available for the Mary River Project site. A meteorological station was established at Mary River in the summer of 2005, and at Milne Inlet in 2006. Therefore reference is made to long-term regional climatic data from the surrounding community of Pond Inlet, presented on Table 5.1 and sourced from Environment Canada (2004). Differences in climate between Pond Inlet and Mary River are expected based on two factors: the maritime influence on Pond Inlet that would be muted somewhat at Mary River, and the mountainous terrain at Mary River which likely influences weather and particularly precipitation. The weather station at Pond Inlet is at approximately 55 m above sea level (masl) compared with the elevations of the camp (180-200 masl) and top of the deposit at Mary River (698 masl).

The yearly average temperature at Pond Inlet is -15.1 ºC (Environment Canada, 2004). The warmest month is July with a daily average temperature of 6ºC and a daily maximum temperature of 9.2 ºC and the coldest month is February with an average daily temperature of -30.6 ºC and an average daily minimum temperature of -37.5ºC. Frost-free conditions are short and are from late June to late August.

The mean annual precipitation at Pond Inlet is 190.8 mm, with 144.5 cm of snowfall (equivalent to 105.4 mm of rain) and 85.4 mm falling as rain (Environment Canada, 2004). Historical records show that snow can occur in any month, and rainfall may occur from April through November. The wettest month of the year is August, receiving an average 33.5 mm of rain. October is the snowiest month with an average snowfall of 32.4 cm.

The degree of which climate change is occurring or may occur in this particular region has not been investigated as part of this study. Increased temperatures would over time degrade permafrost and release moisture trapped in ice, ice rich soils would settle, and the incidence of permafrost-related phenomenon such as thermokarst and solifluction would presumably increase. The Arctic Climate Impact Assessment suggests that net high latitude precipitation will increase in proportion to increases in mean hemispheric temperature, and modeling in the same assessment suggests increases in winter and

spring runoff, which would increase the probability of extreme flooding (ACIA, 2005). It is expected therefore that in the long term, the frequency and magnitude of flooding would increase. Hydrological return periods would change and increased erosion would occur. Considering the short-term nature of the bulk sampling program, it is unlikely that these changes will have a meaningful effect during the life of this project.

5.1.9 Unique or Fragile Landscapes

The North Baffin region is characterized by distinct fiords and the presence of permanent snow at high altitudes and ice caps, with intersecting lowlands. The area of Milne Inlet is one such fiord, although the remaining glacial ice is found on Bylot Island, the Oliver Glacier, and the Barnes and Penny ice caps, with no surficial glacial ice present in areas affected by the bulk sampling program.

Various surficial landforms and deposits are evidence of the recent, widespread glaciation on Baffin Island. Landforms common to the areas affected by the bulk sampling program include, thick, undisturbed and unconsolidated deposits of till on slopes and hillsides, glacio lacustrine sediments associated with historic lakes or coastal regions, glaciofluvial and alluvial deposits along waterways in valley bottoms, marine and glacio-marine deltaic sediments, and lateral or end moraine till deposits.

These surficial landforms are not particularly unique in themselves, however subsequent periglacial processes (including the presence of and development of ground ice; and soil and rock weathering, mass movement and erosion) have been and continue to be the dominant forces shaping the landscape of the region. These processes result in ground ice accumulation; frost heaving; sorting of materials within the upper soil matrix; fracturing of the upper bedrock profile; and development of patterned ground (tundra polygons), drumlins and pingos.

The most fragile landscapes associated with the bulk sampling program are generally associated with frost/thaw sensitive till blankets and the presence of massive ground ice within galcio-fluvial deposits. Although no pingos have recently been identified in the Project area, Zoltai et al. (1983), in a natural resource inventory of the region, identified pingos that are associated with oversize polygon ridges, to be a unique feature not known to occur anywhere else. A number of significant polygons and areas of high potential for ground ice content are present along the existing tote road alignment and in the vicinity of the Mary River Camp.

5.1.10 Hydrology

Catchment areas around the Mary River Project site are shown on Figure 5.2. In 2006, a total of 9 stream gauges were installed at the locations shown on the figure. In addition, the Water Survey of Canada (WSC) was engaged to install a stream gauge on the Mary River at the outlet to Angajurjualuuk Lake, and at three other large river systems to the south of Mary River.

The extremely cold temperatures of the region, combined with permafrost ground conditions result in a short period of runoff that typically occurs from June to September. All rivers and creeks, with perhaps the exception of the very largest systems, freeze completely solid during the winter months. Even the Sylvia Grinnell River near Iqaluit, which is the largest system on the island that has been nearly continuously gauged by WSC (basin area of ~4000 km^2), freezes solid by April every year, when the active groundwater reserves are completely depleted or frozen. Streams and rivers usually begin to flow in late May with the melting of snow and ice, then peak in June or July with rising temperatures and corresponding snowmelt, before dropping steadily through to November when flows essentially cease. The peak runoff period is quite short and the volume of the annual hydrograph is low, relative to the rest of Canada, due the region's very low average annual precipitation of approximately 200 mm. The annual runoff coefficient is very high, however, due to the low temperatures (low evaporation) and the ground conditions of permafrost (low infiltration) and minimal vegetative cover (low transpiration). Correspondingly, surface water is abundant, and the region is dotted with thousands of small lakes and streams. The mean annual discharge in the area, based on a review of Water Survey of Canada (WSC) and Atmospheric Environment Service (AES) records of streamflow and precipitation, was estimated to be in the range of 4 to 8 $l/s/km^2$ (Knight Piésold, 2006b).

The ground conditions are conducive to a very rapid basin runoff response, and peak flows are correspondingly quite large relative to rates of snowmelt and rainfall. Annual peak flows are due to snowmelt, rainfall, or rain and snowmelt, and most commonly occur in July, but may occur at any time during the non-freeze period. Flood water levels in the streams and rivers typically rise and fall very quickly. Peak flows with a return period of 25 years can be estimated according to basin size with the equation $Q = 2.6 \times A^{0.75}$, with Q = peak instantaneous flow in m^3/s and A = drainage area in km^2. This equation is applicable for drainages ranging from approximately 0.5 km^2 to 1000 km^2.

5.1.11 Tidal Processes, Bathymetry, Temperature and Salinity

A gauging network established by Fisheries and Oceans Canada Hydrographic Service was established to provide the data required for hydrographic surveys, the production of nautical charts and publications, and the safety of navigation. Qikiqtarjuaq and Alert gauging stations located along the eastern coast of the Arctic are likely the water level gauging stations used to predict tides at Milne Inlet.

Milne Inlet has semi-diurnal tides. For August 2007 through to September 2007, the lowest tide ranges from 0.1 to 0.3 m. The highest tide for this period ranges from 2.2 to 2.4 m. The average maximum difference in tides during this period is 2.1 m (Department of Fisheries and Oceans, 2006). These tide height level fluctuations are low relative to some other parts of the Canadian coast, including the South Baffin which experiences some of the highest tides in the world.

Bathymetric work has been completed by the Canadian Hydrographic Service (CHS) throughout Eclipse Sound and Milne Inlet and is presented in CHS Chart 7212 *Bylot Island and Adjacent Channels*, produced in 1985 and corrected through Notices to Mariners 2006-03-31 (Canadian Hydrographic Service, 2006). The chart shows water depths in Milne Inlet ranging from 100 m to 400 m, with 50 m of water depth less than 50 m from shore at the head of the Inlet.

Current velocity within the Eclipse Sound area generally ranges from 15-35 cm/s (Buckley et al. 1987; Dickens et al. 1990).

Little temperature or salinity data specific to the marine environment near the Milne Inlet port site has been collected. However, data collected in Ragged Channel, located at Cape Hatt near the northern end of Milne Inlet, indicated that temperature and salinity characteristics at that site were typical of the region (Fissel et al. 1981; Buckley et al. 1987). During the winter when the area is covered in sea ice, temperature and salinity distribution are primarily controlled by cooling and freezing processes. In the ice-free season, freshwater inputs from snow melt and rain run off establish a strong surface layer characterized by lower salinity and higher water temperature, which ultimately is mixed with underlying cooler and more saline water by wind and currents. As the open water season progresses and freshwater inputs are reduced, the strength of the surface layer is reduced and thermal and saline stratification is reduced.

At Ragged Channel, water temperature during ice covered conditions (June, 1980) was -1.5^{o}C throughout the water column. During open water conditions in August, 1980, at the same location, water temperature was approximately 4^{o}C at the surface and declined to -1^{o}C by about 70 m depth (Buckley et al .1987). Similarly, salinity was uniform at ~32 parts per trillion (ppt) through the water column during June, but was stratified during August. At that time, surface salinity was about 24 ppt, and increased through the upper 10 m or so of the water column to about 30 ppt (Buckley et al. 1987).

Water chemistry information specific to Milne Inlet has not been collected, but some information collected in 1981 and 1982 in Ragged Channel at Cape Hatt is available (Bunch et al. 1985). This information can be used to provide a general description of water chemistry characteristics in the region. Water chemistry data will be collected in Milne Inlet during 2007 as part of baseline data collections for the overall Mary River Project.

5.1.12 Inland Water Quality

Spring, summer and fall water quality sampling campaigns were undertaken in 2005 and 2006, at locations around the Project site and along potential transportation corridors. Weekly sample sites were added into the 2006 sampling program within the exploration property. All sample locations are shown on Figure 5.3.

The results of the surface water quality analysis were compared to the guideline limits set in the Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life,

established by the Canadian Council of Ministers of the Environment (CCME, 2006a). The overall water quality at each sampling location was evaluated according to the Canadian CCME Water Quality Index 1.0 (CCME, 2001).

General Background Water Quality within the Exploration Property

The water quality data from the exploration property water quality sampling locations were attributed Water Quality Index (WQI) values that ranged from 86.1 to 100, with an average WQI of 97.5, indicative of excellent water quality that is "protected with a virtual absence of threat or impairment; conditions very close to natural or pristine levels" (CCME, 2001). The lower values, in the 80 to 94 range, are indicative of water quality that is "protected with only a minor degree of threat or impairment; conditions rarely depart from natural or desirable levels" (CCME, 2001). A small percentage of the samples had parameters that exceeded various CCME guidelines for the protection of aquatic life. Aluminum and copper were the two most frequently exceeded limits, with 23.7% of the samples failing to meet the guideline limits for total aluminum and 12.4% of the samples failing to meet the guideline limits for total copper. Aluminum and copper concentrations and guideline exceedances are shown on Figures 5.4 and 5.5. Summary statistics and WQI ratings for each site within the exploration property study area are provided on Tables 5.2 and 5.3.

In situ parameters were measured at each site whenever water quality samples were collected. Water temperatures were directly related to the ambient weather conditions, with measured temperatures, ranging from -0.11 to 14.25^{o}C. Dissolved oxygen (DO) concentrations varied inversely with temperature, with concentrations ranging from 6.06 to 17.65 mg/L. Specific conductance (SpC) values generally increased between early June and September, ranging from 0.006 to 0.301 mS/cm with an average value of 0.084 mS/cm. SpC values and the season changes for the exploration property are shown on Figure 5.6. pH values were generally neutral to slightly alkaline with a median concentration of 7.69, ranging from 6.26 to 8.39.

Alkalinity and hardness concentration were very similar, with both parameters increasing in concentration between early June and September. The alkalinity concentrations were within the 20 to 200 mg/L range typical of most freshwater systems, though 98% of the samples have concentrations below 100 mg/L $CaCO_3$, and alkalinity concentrations of 100 to 200 mg/L $CaCO_3$ are necessary to stabilize pH levels. The surface waters within the exploration property are generally soft to moderately hard, ranging from 5 to 136 mg/L $CaCO_3$. Turbidity and total dissolved solids (TDS) were low to very low; though a general increasing trend was noted from early June to September. Sulphate, chloride, bromide, nitrogen based compounds and phenol concentrations were also generally low to very low.

Concentrations of antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, mercury, nickel, selenium, thallium, tin, titanium, vanadium and zinc were generally at or below their respective method detection limits (MDLs), though it should be noted that the method detection limit (MDL) for cadmium continually exceeded the CCME guideline.

Aluminum concentrations increased between early June and late July, early August and decrease again in late August, early September, with few exceptions. Under generally neutral pH conditions the CCME guideline concentration for aluminum is 0.100 mg/L; 23.7% of the exploration property water quality samples exceeded this guideline limit, with the bulk of the exceedances occurring in late July, early August, in all reaches of the Mary River and in the Tom River. Total aluminum concentrations and guideline exceedances are shown on Figure 5.4.

Copper concentrations were notably higher in the D1 series of samples. The D1 drainage is a series of small headwater streams that originate out of the southwest side of Deposit No. 1, and combine to just above sample location D1-01 and drain into the two adjoining small lakes, which are adjacent to the original exploration camp site. Molybdenum concentrations were also noted to be higher at the majority of the D1 sample locations, though concentrations did not exceed the CCME guideline limits. Molybdenum concentrations were below the MDL in most of the remaining water quality samples. The majority of the samples from this sub-watershed exceed the CCME guidelines for both total and dissolved copper. Copper toxicity is dependent upon the natural hardness concentrations of the waters being tested. Measurable copper concentrations were generally low, though when combined with the naturally low hardness within the exploration property surface waters; the available copper is, as a result, more toxic. A few copper guideline exceedances were also noted at various locations throughout the exploration property as shown on Figure 5.5.

Iron concentrations were generally low throughout the exploration property surface waters, with only 1% of the samples exceeding the 0.3 mg/L CCME guideline limit. Iron concentrations and guideline exceedances are shown on Figure 5.7. Iron concentrations appear to peak during the late July, early August and are generally lower in early June and late August, early September.

Lead concentrations rarely exceeded the MDL, though three samples had concentrations that exceeded the CCME guideline limits. The measured concentrations are very near to the MDL and thus should be approached with caution, due to analytical uncertainty when dealing with concentrations that near to the detection limits.

Generally, the background water quality within the exploration property study area tends towards naturally pristine, despite the highly mineralized deposits which are situated throughout the property. CCME guideline exceedances were noted, though the concentrations detected rarely exceeded the limits by more than a few milligrams per litre.

Water Quality Immediately Downstream of Drilling Activities

A few isolated surface water sample locations were established in smaller first order tributaries to the Mary River, which, based on the water chemistry, appear to have become the natural run-off channels for the drill process water from the exploration drilling activities

at Deposit Nos. 1 and 2. The most obviously affected site is E3-01, which is also located immediately downstream of one of the freshwater salt mixing areas. Adjacent to this site is E4-01, although in very close proximity to E3-01, this site had much lower observed in situ SpC. Sample site F0-01 is located at the base of the valley that is situated between Deposit Nos. 1 and 2, this small stream is fed by many smaller streams that would likely be natural channels for runoff of drill process waters. The general water chemistry issues at each of these sites are summarized below.

Water chemistry at site E3-01 had a WQI of 56.1 (marginal) based on 2005 data and 74.3 (fair) in 2006. The average of these two values amounts to a WQI value of 65.3, or fair, which is indicative of water quality that "is usually protected but occasionally threatened or impaired; conditions sometimes depart from natural or desirable levels" (CCME, 2001). The water contained a very high SpC ranging from 0.512 to 8.058 mS/cm, as well as very high chloride and calcium concentrations, directly linked to the addition of CaCl salt to drill process water. Relatively high concentrations of magnesium, potassium, sodium and strontium were noted, and the water is very hard, ranging from 208 to 3340 mg/L $CaCO_3$, though alkalinity concentrations are much lower. The pH of the water was generally neutral. Individual metals concentrations were identified in 1-2 samples over two years, including aluminum, arsenic, copper, iron, selenium and zinc. The metals concentrations at site E3-01 were not consistently high, with great variability between individual sampling events.

Further downstream at E4-01, the WQI was 64.3 (marginal) based on 2005 data and 100 (excellent) in 2006. The average of these two values amounts to a WQI value of 82.2 (good) which is indicative of water quality that "is protected with only a minor degree of threat or impairment; conditions rarely depart from natural or desirable levels" (CCME, 2001). The water contained a high SpC, ranging from 0.053 to 1.757 mS/cm, as well as high concentrations of chloride and calcium and relatively high concentrations of magnesium, potassium, sodium and strontium. The water at this site is lower in hardness than at E3-01, ranging from 27 to 749 mg/L $CaCO_3$, and TDS is also lower. Total and dissolved cadmium concentrations were found at concentrations of 3 to 5 times greater than the CCME guideline limits in two sets of samples over two years. Total selenium concentrations were at or above the CCME limit in four of the six sets of samples analyzed at this site.

Water chemistry at F0-01, which is located in the adjacent tributary that has been unaffected by runoff from drilling, is quite different than at either E3-01 or E4-01, with no parameters exceeding any of the CCME guideline limits for the protection of aquatic life. SpC values were highly variable, ranging from 0.021 to 8.058 mS/cm. Although SpC values are still noted to be higher than normal the CCME WQI average for 2005 and 2006 was 98.9 or excellent for site F0-01, indicative of water quality that "is protected with a virtual absence of threat or impairment; conditions are very close to natural or pristine levels" (CCME, 2001).

The water quality site E0-03 is located in the Mary River, approximately 1 km downstream of where the waters from sites E3-01 and E4-01 drain into the Mary River. At this site the

SpC is greatly reduced, ranging from 0.018 to 0.301 mS/cm and chloride and calcium concentrations are also much closer to normal background levels. At this site total aluminum concentrations exceed the guideline limits in the majority of the samples, though this does not differ from those sites upstream of the influence of drill process water. The 2005/06 CCME WQI average for this site is 97.6 or excellent, indicative of water quality that "is close to natural or pristine levels." From these observations it can be assumed that the impacts resulting from effects of drill process water run-off are very localized with little to no observable impacts in the near downstream environment.

General Background Water Quality Along the Existing Milne Inlet Tote Road

The existing Milne Inlet tote road passes through the Phillips Creek and upper Ravn River catchments. The water quality data from the existing Milne Inlet tote road sample sites was run through the Canadian Council of Ministers of the Environment (CCME) Water Quality Index 1.0 (WQI), and all of the sites received a value of 100, the highest possible outcome, indicating excellent water quality that is "protected with a virtual absence of threat or impairment; conditions very close to natural or pristine levels" (CCME, 2001). Samples were collected during the summers of 2005 and 2006, with three sets of samples collected per year, representational of spring (early June), summer (late July, early August) and fall (late August, early September), within the Arctic setting. None of the measured parameters from the sites along the road exceeded any of the CCME guideline limits for the protection of aquatic life. The in situ and analytical data summary statistics for these sites are summarized on Tables 5.4 and 5.5.

In situ parameters were measured at each site whenever water quality samples were collected. Water temperatures are directly related to the ambient weather conditions, with measured temperatures ranging from -0.10 to 14.96^{o}C. Dissolved oxygen (DO) concentrations varied inversely with temperature and concentrations and were relatively high, ranging from 10.16 to 14.17 mg/L. SpC values generally increased between early June and September, during the two consecutive sampling seasons. Overall SpC values are low, ranging from 0.019 to 0.380 mS/cm. pH was generally neutral to slightly alkaline, ranging from 6.99 to 8.40.

Alkalinity and hardness concentrations generally increase between June and September, and as such the concentrations of calcium and magnesium, although low, tended to increase over this same time period. The alkalinity concentrations are typical of freshwater streams, though the majority of the samples had concentrations less than 100 mg/L $CaCO_3$, which suggest that some reaches of Phillips Creek and the upper Ravn River sub-catchment have little buffering capacity. Hardness concentrations covered the whole spectrum of soft (<60 mg/L $CaCO_3$), moderately soft (60 to 120 mg/L $CaCO_3$), and hard (>120 mg/L $CaCO_3$), with the lower hardness values tending to occur in the early summer samples. TDS were generally very low in the Milne Inlet road water quality samples; though a general increasing trend was noted from early June to September. Sulphate, chloride, bromide, nitrogen based compounds and phenol concentrations were generally

low to very low in all of the water quality samples from the sites along the existing Milne Inlet tote road.

Aluminium, barium, copper, iron, manganese, strontium and zinc concentrations in the majority of the samples were below their respective detection limits. Concentrations of aluminium were notably higher at sample location N1-110, and copper concentrations were notably higher at sample sites N1-100 and N1-020, though the concentrations of these parameters would not exceed the guideline limits unless they were 1.5 to 2 times higher than the existing concentrations for aluminium and copper, respectively. The following total and dissolved metals concentrations were consistently at or below their respective method detection limits in the samples obtained from the sites along the existing Milne Inlet tote road: antimony, arsenic, beryllium, bismuth, boron, cadmium, chromium, cobalt, lead, mercury, molybdenum, nickel, selenium, tin, titanium, thallium and vanadium.

5.1.13 Soil Quality

Soils in the Arctic where permafrost exists close to the surface are classified as Cryosols, which are characterized by a permafrost layer within the upper 2 m and a soil layer which has been subjected to a number of freeze-thaw (cryogenic) processes. These processes are driven by soil and water as the water migrates towards the frozen front along a thermal gradient (warm to cold) in the system. The movement of soil and water often results in a vertical mixing and horizontal sorting of the coarse fragments.

Ten soil samples were collected from shallow test pits (i.e., 0.15 m depth) within the Project area at the Mary River site in August 2006 to determine the nutrient and metal content of the soils and the potential variability of these parameters within the soils of different local environments. Soil sample locations are shown on Figure 5.8. Metal concentrations in the soil samples were compared to the Canadian Soil Quality Guidelines (CCME, 2006b) as shown on Table 5.6.

The range of pH in the ten samples analyzed was from 6.2 to 7.5. The soil was generally low in organic carbon and nutrients. Metal concentrations did not generally approach or exceed the soil quality criteria for agricultural and residential/parkland land use.

The exception is soil from Site 3, which is rich in both organic matter (as measured by Total Organic Carbon) and in total nitrogen, compared to the other 9 sample sites. The soil also contains elevated arsenic, cadmium, copper, lead, molybdenum and zinc compared to the other 9 sites. The copper concentration in the soil at Site 3 of 188 µg/g is approximately three times the agricultural/residential/parkland criterion of 63 µg/g. The elevated metals concentrations in the soil at Site 3 appear to coincide with the high organic content in the soil.

5.1.14 Air Quality

Baseline air quality conditions for the region have not yet been evaluated for the Project, but should be very good based on the distance from any emitters. Air quality conditions will be evaluated in 2007 as part of environmental baseline studies for the larger project.

Two types of vegetation were collected in 2006 and were analyzed for metals concentrations, as part of the larger baseline program. These samples may provide baseline for which to compare to in the future, as part of long-term air quality monitoring.

5.1.15 Noise Levels

Baseline noise levels for the region have not yet been evaluated. The main source of noise in the area is from the current exploration activities at Mary River, as well as possibly incidental air traffic from other exploration or scientific operations in the region. At Mary River, the main noise emission sources include the camp generator, drill rigs and aircraft. The camp generator has a very localized impact, and its position in the camp considers the well being of camp personnel. The drill rigs also have very localized impacts. The impact of noise from aircraft is also expected to be relatively localized, primarily from take off and landings at camp as well as helicopter landings at the drill rigs.

The anticipated impact of the bulk sampling program on noise levels is described in Section 6.1.2.

5.1.16 Other Physical Environment VECs

No other physical environment valued ecosystem components (VECs) were identified in community consultation or literature reviews.

5.2 BIOLOGICAL ENVIRONMENT

5.2.1 Vegetation

Background

Vegetation baseline studies were conducted during the summers of 2005 and 2006 jointly by Knight Piésold and Outcrop Ltd. In 2005, a total of 93 vegetation plots were studied primarily at and near the Project site. The 2006 studies were more detailed, and included 333 plots (north route: 143; infrastructure: 87; south route: 103).

Vegetation plots were approximately 5 m x 5 m, each located entirely within a single vegetation type. Data gathered included: date, plot number, GPS coordinates; terrain and microtopography; a narrative description of the vegetation, vascular species list and estimate of the percent cover in each plot by species, non-vascular plants including lichens; and wildlife and archaeological information as available on individual plots.

Plot data from 2005 is available online at http://clients.outcrop.com/3057-vegetation/ and the data from 2006 is currently being entered at http://clients.outcrop.com/3212-01/. Digital photos were taken of each plot and have been preserved.

For difficult groups such as the sedges, rushes, grasses, and willows, reference specimens were collected, pressed and dried, and have been sent to specialists for identification. Plots in the database will be updated with the names of these species when the identifications are received.

Development of a vegetation classification system for the area is underway. This will include descriptions of vegetation complexes as well as mappable vegetation units and descriptions of plant associations too small to map accurately. The classification system will be as simple and understandable as possible, using terms that enable residents of North Baffin to understand and recognize each type of vegetation based on their traditional knowledge of the land.

Overview

The vegetation of northern Baffin Island, especially of the area between Milne Inlet and Steensby Inlet, and specifically around the proposed mine infrastructure and along the proposed north road and rail routes, is quite unlike the vegetation of the mainland Kivalliq region and the central barrenlands where most present Nunavut mining projects are located.

In general, it is much less complicated. Many species which are common further south or on the mainland Arctic are absent here. The makeup of a plant association is determined by the chemical and physical composition of the soil, the amount of moisture available to plants and when it is available, and the exposure to the pruning effect of the wind.

The upland in places north and east of the Deposit No. 1 probably has only recently emerged from under icecaps or glacial ice. The soil in many places is quite wet, and occupied by far fewer plant species. Streams flow in a wide sheet across many areas, and have not yet cut distinct channels. The only thinly vegetated ice-shattered rock and ground moraine indicates the influence of ice on the land.

On the uplands, the vegetation varies from exposed bedrock with a few crustose lichens (map, rock tripe, sunburst, and bloodspot lichens) and few rooted plants to purple mountain saxifrage barrens where the flora is limited to purple mountain saxifrage (*Saxifraga oppositifolia*), two species of poppies *(Papaver radicatum* and *P. cornwallisensis*), woodrushes (*Luzula confusa* and *L. nivalis*), and a few small mustards (*Draba alpina*) and sandworts (*Minuartia rubella, M. rossii*). Mosses are scattered, most concentrated in the sheet flow of streams, and there are almost no soil lichens.

Lower slopes which have likely been out from under ice for a much longer period of time are covered in a damp mixed tundra community which is a combination of marsh and heath

species. Many areas are hummocky due to frost action, with mounds built up around cottongrass tussocks. These create many microhabitats with a wide range of moisture – the tops of each mound is dry so the mounds are crowned with heaths like white arctic heather (*Cassiope tetragona*) and blueberry (*Vaccinium uliginosum*) and purple mountain saxifrage plus some sedges (*Carex misandra* and *C. membranacea*) and mountain avens (*Dryas integrifolia*). Areas between the hummocks are much wetter and contain mosses plus cottongrasses (*Eriophorum scheuchzeri*) and wetland sedges (*Carex scirpoidea, C. aquatilis*).

Drier slopes and sheltered banks support a heath tundra community with low shrubs, sometimes amidst boulders. White arctic heather is the common indicator of this community, which may also include blueberry and arctic willow (*Salix arctica*) as well as woodrush (*Luzula nivalis*), mountain avens, yellow crazyweed (*Oxytropis maydelliana*), mouse-ear chickweed (*Cerastium alpinum*) and curly sedge (*Carex rupestris*). This community is rich in lichens, particularly *Cetraria nivalis*, *Alectoria nigricans*, *A. ochroleuca*, *Cladonia sp*., and *Stereocaulon tomentosa*.

Around the iron deposits, in the proposed mine infrastructure area, and along the north routes, there are extensive lacustrine or glacio-fluvial deposits forming terraces along the slopes of a large graben (downdrop block) and flat valley bottoms. This material shows extensive frost fissuring, is high in gravel, and forms flat areas with much patterned ground. Between the fissures, the land is dry, and often covered with Dryas barrens, mats of mountain avens, plus prostrate arctic willow and xeric sedges (*Carex rupestris* and *C. nardina*). The fissures hold more moisture and thus have more heather and sometimes blueberry, as well as a diverse association of plants including capitate lousewort (*Pedicularis capitata*), woodrushes, and sedges. Where the ground is sandy there may be mats of prickly saxifrage (*Saxifraga tricuspidata*) and blueberry. In addition, these flats include areas of calcareous gravels, mostly frost-shattered limestone, occupied by a flora that is able to grow on basic rock.

Wetlands are frequent where streams flow onto and across the flat valley floors. These are usually covered with sedge associations, including non-tussock sedges or cottongrasses such as *Carex aquatilis* and *Eriophorum angustifolium*, grasses, including *Arctagrostis latifolia* and *Dupontia fisherii*, and small rushes (*Juncus biglumis*), as well as prostrate willows (mostly *Salix arctica*) on moss mounds or tussocks of *Eriophorum vaginatum*. Sudetan lousewort (*Pedicularis sudetica*), yellow marsh saxifrage (*Saxifraga hirculus*), mastodon flower (*Senecio congestus*), *Saxifraga hieracifolia*, and bulblet saxifrage (*Saxifraga cernua*) are also common.

Some of the better-defined stream channels, especially those flowing over rocky substrates, exhibit a distinct riparian association, characterized by the presence of the shrubby Richardson's willow (*Salix richardsonii*), which sometimes grows to a height of about 50 cm. Along some lake edges and larger river courses there may be a mossy lakeshore association consisting of a raised ridge of mosses including some *Sphagnum sp.*, as well as *Arctagrostis latifolia*, *Dupontia fisherii*. In some areas with slow flow,

emergent semaphore grass (*Pleuropogon sabineii*) occurs in the shallow waters. Other species (including mountain avens and heaths) take root in the mossy ridges and mounds, so this association is quite diverse.

Some associations are too small to map yet quite distinct. These include snow bank associations, and sites where the vegetation has been disturbed by natural or human-generated means. Snow bank associations occur where the snow remains late in the summer and in this area, due to prevailing winds, usually are located on the north or northwest side of any raised landform. The snow drifts into the lee of the land, and tends to stay until late July or into August. Plants that occur here often cannot compete on more exposed sites, and must complete their reproductive cycle in a very short time. Snow bank associations are diverse, with many species and few individuals of each. White arctic heather, least willow (*Salix herbacea*), grey mealy lichen (*Stereocaulon tomentosum*), and mountain sorrel (*Oxyria digyna*) are the main indicators of this association, but it may also include many additional species including *Alopecurus alpina*, *Cerastium alpinum*, *Draba alpina* and other mustards, *Saxifraga caespitosa*, *Luzula confusa* and *L. nivalis*, net-veined willow (*Salix reticulata*). *Poa arctica*, *Potentilla hyparctica*, and often, *Ranunculus pygmaeus* and *R. nivalis* also are frequently found in this association. In some areas, dandelions, mostly *Taraxacum officinale ssp. ceratophorum*, are common.

Disturbed sites take several different forms and will be described more completely in the vegetation report. Natural disturbances include landslides, disruption of the soil due to animals making dens or burrows, and “bird stones” or places where raptors habitually perch, enriching the surrounding area with their droppings. Man-made disturbances vary from Inuit campsites to modern disturbances due to human factors, and include those that disrupt the vegetation by removing it or exposing the subsoil to grey-water outflows that enrich and add moisture to the surrounding vegetation, usually causing a lush growth of sedges.

Based on the literature, littoral communities were expected at both port sites, but were not, due to the terrain at the proposed port sites. Littoral communities in North Baffin include sand or silt flats with carpets of goosegrass (*Puccinellia phryganodes*), a marine star chickweed (*Stellaria humifusa*), and several halophytic sedges including *Carex subspathacea* and *C. ursina*. Or, they may include backshore associations on small sand dunes or sand flats with beach rye grass (*Leymus mollis*), seabeach sandwort (*Honckenya peploides*), or flat rosettes of seaside bluebells (*Mertensia maritima*). Rocky areas often support tufts of scurvy-grass (*Cochlearia officinalis*). A very sterile intertidal zone was found at the Milne Inlet port site with virtually no rooted vegetation at all.

A list of potential species that may be found in the area has been developed, based on the literature and species recorded for Sirmilik Park, northern Baffin Island in general, and for the Nanisivik Mine site near Arctic Bay. As species are encountered or identified the names are placed on a list of the species encountered.

None of the plants identified in 426 vegetation plots are listed by COSEWIC. Several species are not common in the area (example: *Empetrum nigrum*, crowberry) that are common elsewhere in the Arctic. One species, yellow mountain saxifrage, was not previously been recorded from North Baffin, but was identified at a number of sites.

5.2.2 Terrestrial Mammals

The terrestrial mammal fauna of North Baffin is comprised of the following nine species (scientific nomenclature follows Baker et al., 2003):

Artiodactyla (Ungulates)

- Caribou (*Rangifer tarandus groenlandicus*)

Carnivora

- Wolf (*Canis lupus manningi*)
- Wolverine (*Gulo gulo*)
- Arctic Fox (*Vulpes lagopus*)
- Red Fox (*Vulpes vulpes*)
- Ermine (*Mustela erminea*)

Rodentia

- Brown Lemming (*Lemmus trimucronatus*)
- PearyLand Collared Lemming (*Dicrostonyx groenlandicus*)

Lagomorpha

- Arctic Hare (*Lepus arcticus*)

There is little to no historic scientific survey information available for these species in the Project area. Compared to the marine environment of the region, terrestrial bird and mammal populations are of low diversity and density, and have not been heavily used by people. As a result, there hasn't been a conservation priority or management need to collect information. Studies have further been hampered by difficult access, high logistical costs and consistently bad weather, as past attempts to delineate the North Baffin caribou herd have shown. As a result, IQ will have paramount importance in documenting past distribution and helping us to understand the ecology of terrestrial mammals.

Field work to delineate terrestrial mammal use of the Project area was conducted over three periods during 2006, spring (May 25-June 6), summer (July 25-31) and fall (August 22-September 8). Inclement weather and logistical constraints hampered field work. A total of 11 (3 partial), 6 (3 partial) and 6 (4 partial) days were flown in spring, summer and fall periods, respectively. A full day consisted of a minimum 5 hours flying and a partial day from 1 to 4 hours. Results must be considered preliminary and incomplete, although these observations have augmented our understanding of wildlife movements, distribution and abundance.

Two study areas were delineated, a local study area 1,000 to 1,200 km^2 in size centred at the proposed mine site, and a regional study area 5,000 to 7,000 km^2 in size that extended from Milne Inlet to Steensby Inlet. The regional study area was selected to include a 40 km radius area centred on the deposit, and a 20 km radius area centred on each proposed port site. The existing tote road and the proposed railroad routes were buffered by 10 linear km on each side.

The primary survey method was flying systematic transects by helicopter to delineate caribou presence and distribution, and to identify potential denning habitat. Two-km wide east-west transects were flown in the local study area, and 10-km wide east-wide transects (placed on latitude lines) were flown in the regional study area. In spring, fresh tracks and trails in the snow were followed when intercepted until caribou were located or the trail was lost. Aerial surveys were augmented by on-the-ground observations in the vicinity of the existing camp, and where caribou was observed. An intensive low-level helicopter survey was flown over potential denning habitat in the existing tote road corridor. Small mammal trapping was conducted on the exploration property.

The survey area was modified depending on the seasonal distribution of caribou. In spring snow-tracking was used to stratify and survey areas where caribou were present and avoid high elevation habitats were they were absent. Similarly in fall, habitats devoid of vegetation were not used by caribou. As a result, survey boundaries and effort differed depending on the season, habitat, snow conditions, and the changing distribution of caribou. Survey areas will need to be modified yearly if caribou increase in numbers and their distribution expands.

5.2.2.1 Barren-ground Caribou

Caribou are a keystone species, because of their importance to people, and because they are the largest herbivore and only ungulate that occurs on Baffin Island. They have always been hunted for clothing and food, and play an important role in Inuit lives and culture. They have been studied little and North Baffin caribou are the least known of all arctic barren-ground caribou herds.

IQ tells us that there potentially are three different types of caribou within this herd, migratory, resident and mainland (MHTO and Pisiksik Working Group, pers. comms.). Migratory caribou travel back and forth from south Baffin while resident caribou have more localized movements. Mainland caribou cross over possibly from near Hall Beach, although when they cross and their length of stay on Baffin is not clear. The extent and size of these three groups is also not known, nor whether it is justified to call each group a separate population. From documented harvests, and observations of Pond Inlet hunters, we know that caribou numbers have been depressed from about 1998 and that caribou have been largely lacking from the North Baffin area since then. Existing trails and IQ indicate a much greater distribution and abundance of caribou than was observed in this year's work.

Caribou were seen during all 2006 surveys, but in low numbers and small groups. In May caribou were mainly found south of Mary River. All sightings were of females, at times accompanied by yearlings. All movements were from south to north, and appeared to be related to travelling to calving areas. IQ has suggested that habitats in the vicinity of Mary River are important for calving. Longer distance movements were observed in early June, along with the first sightings of males. As spring progressed, the numbers of caribou moving north from Steensby Inlet increased. The most extensive use of habitat in the Project area by caribou appears to occur in spring, because of these directed movements to calving areas. In late June, a few new calves were seen in the vicinity of the Project site.

Visibility of caribou in July was low, due to their dark summer coats and their use of boulder fields for insect relief. Few caribou were observed and an estimate of their distribution is not possible. Insect-relief habitat, high elevation and boulder fields, does not appear to be limiting for caribou in the Project area.

During the one fall regional survey, caribou were seen exclusively in a corridor extending from northwest to southeast through the Project site. This area corresponds to a natural corridor formed by river valleys and higher elevation terrain, and was also used by caribou in the spring. However, caribou use of areas in fall appears to be more closely linked to high-value habitats, as they are not motivated to reach calving areas, they are not forced by biting flies to seek relief in less optimal habitats. As a result, they can spend more time feeding. Caribou sign and caribou were observed on the existing tote road, which is located within this natural travel corridor.

Caribou can be expected at any location along the Milne Inlet tote road. Wildlife gravitates towards roads for easier travel, and caribou use gravel areas as well as snow banks for insect relief.

5.2.2.2 Furbearers and Denning Habitat

Ermine and their sign were noted during the 2006 field season and one was caught in lemming traps set at the Project site. Ermines are expected to be wide-spread in the Project area.

There is an abundance of potential denning habitat for foxes and wolves in the Project area, due to extensive glacial-fluvial, lacustrine and marine deposits. However, during aerial surveys only one den was located to the north of the Project site, a suspected fox den in the vicinity of the Tugaat River, 25 km east of the tote road. Given that dens are readily visible and can be used by carnivores for more than a century (MacPherson, 1969), their rarity suggests a typical low density of foxes and wolves, and a depressed prey base.

Both red and arctic foxes were occasionally observed in the Project area, especially at the camp and drill sites where they had access to human food. At least one wolf was food-conditioned as a result of feeding by drillers, or poor handling of food and garbage. Food-conditioning results in un-natural behaviour, can attract more dangerous carnivores

such as polar bears, and in the case of foxes, can lead to humans being bit by rabid foxes. The biggest challenge will be in avoiding habituation and food-conditioning of these carnivores. Education and surveillance will be necessary during construction and hauling periods.

Based on observations of wolves during mammal and bird aerial surveys, two or three breeding pairs are suspected to have used the Project area this year. Dens are suspected in the vicinity of Milne Inlet and the vicinity of Steensby Inlet, coinciding with the abundance of food in the form of marine mammal young and carcasses. A third wolf pair may have a den located in the vicinity of the Project site, but given the extensive movements of wolves, this could be the same pair that used Milne Inlet. The bulk-sample program is unlikely to affect wolves, unless an active den is located in the immediate vicinity of the tote road or project site. Given that wolf density may increase if caribou numbers increase, wolf denning activity will need to be monitored each spring.

Wolverines and their sign were not observed in the Project area during 2006.

5.2.2.3 Small Mammals and Hares

Lemmings are a key prey species in arctic ecosystems. Their abundance affects the behaviour, use of habitats and population dynamics of the species that prey on them. The objective of lemming monitoring is two-fold, to document the relative availability of prey, and for use as an indicator of habitat quality. Habitats adjacent to roads and mining activity are subject to disturbance and degradation because of dust due to construction, heavy equipment and road traffic. As primary consumers, lemmings can be used as indicators of the level of accumulation of heavy metals and other pollutants in forage plants.

A 50-trap grid of Sherman live-traps was established between the existing camp and the iron-ore deposit. Traps were placed in all available habitats, protected from the weather with plastic bags and rock covers, and baited with peanut butter and jam. Cotton balls were provided for bedding. The trapline was operated for a 2-week period in July of 2006. No lemmings were captured, likely because of the newness of the traps. The abundance of lemming sign, including animal sightings, winter nests, faecal pellets and remains in carnivore scats, and the frequent sightings of falcons, hawks and snowy owls, suggests that lemmings were abundant this year.

Arctic hares appear to be widespread in the Project area, based on sightings and distribution. Surveys specific to arctic hares were not conducted in 2006. The wildlife habitat assessment planned for 2007 will include an assessment of the importance and use of habitats by hares.

5.2.3 Birds

North Baffin Island is characterized by a wide variety of bird habitats and, therefore, is home to a large diversity of migratory species that use this area annually for breeding from

approximately June through September. These habitats include marine and coastal environments where several species of seabirds thrive, low-lying coastal plains, river deltas, and tundra that are used by various species of songbirds, shore birds, and geese, an extensive array of inland waterbodies (wetlands, large lakes, stream and rivers) that geese, ducks, and loons rely on, and rocky uplands and cliffs which raptors use for nesting.

Avian species diversity, abundance and distribution within North Baffin Island have been poorly studied, and as such a detailed species list was not available prior to studies completed for this project in 2006. An 18-year study on neighbouring Bylot Island provides a species list that should prove to be similar to this study due to the close proximity of Bylot Island, and its similar habitat structure (Lepage et al., 1998). This list is provided below, with birds observed in the 2006 Mary River Project surveys marked with a checkmark.

GAVIIFORMES (Loons)

√ Red-throated Loon (*Gavia stellata*) (B)
√ Pacific Loon (Gavia pacifica) (B)
√ Common Loon (Gavia immer) (B)
√ Yellow-billed Loon (Gavia adamsii)

PROCELLARIIFORMES (Fulmars)

- Northern Fulmar (*Fulmarus glacialis*)

ANSERIFORMES (Geese and Ducks)

- Tundra Swan (Cygnus columbianus) (B)
√ Greater White-fronted Goose (Anser albifrons)
- Ross's Goose (Chen rossii)
√ Snow Goose (Chen caerulescens) (B)
- Brant Goose (Branta bernicla) (B)
√ Canada Goose (Branta canadensis) (B)
- Northern Pintail (Anas acuta)
- American Wigeon (Anas Americana)
√ Common Eider (Somateria mollissima) (B)
√ King Eider (Somateria spectabilis) (B)
√ Long-tailed Duck (Clangula hyemalis) (B)
√ Red-breasted Merganser (Mergus serrator) (B)

FALCONIFORMES (Falcons and Hawks)

√ Rough-legged Hawk (Buteo lagopus) (B)
√ Peregrine Falcon (Falco peregrinus) (B)
√ Gyrfalcon (Falco rusticolus) (B)

GALLIFORMES (Upland Game Birds)

√ Rock Ptarmigan (Lagopus mutus) (B)

GRUIFORMES (Cranes)

√ Sandhill Crane (Grus canadensis) (B)

CHARADRIIFORMES (Shorebirds and Gulls)

√ Black-bellied Plover (Pluvialis squatarola) (B)
√ American Golden-Plover (Pluvialis dominica) (B)
√ Common Ringed Plover (Charadrius hiaticula) (B)
- Killdeer (*Charadrius vociferus*)
- Ruddy Turnstone (*Arenaria interpres*) (B)
- Red Knot (*Calidris canutus*) (B)
- Sanderling (*Calidris alba*) (B)
- Least Sandpiper (*Calidris minutilla*)
- White-rumped Sandpiper (*Calidris fuscicollis*) (B)

√ Baird's Sandpiper (Calidris bairdii) (B)
- Pectoral Sandpiper (*Calidris melanotos*) (B)
- Purple Sandpiper (*Calidris maritima*) (B)
- Dunlin (*Calidris alpine*)
- Red Phalarope (*Phalaropus fulicaria*) (B)
- Red-necked Phalarope (*Phalaropus lobatus*)
- Pomarine Jaeger (*Stercorarius pomarinus*) (B)
- Parasitic Jaeger (*Stercorarius parasiticus*) (B)
- Long-tailed Jaeger (*Stercorarius longicaudus*) (B)
- Great Skua (*Stercorarius skua*)
- Franklin's Gull (*Larus pipixcan*)
- Black-headed Gull (*Larus ridibundus*)
- Mew Gull (*Larus canus*)
- Thayer's Gull (*Larus thayeri*) (B)
- Iceland Gull (*Larus glaucoides*)

√ Glaucous Gull (Larus hyperboreus) (B)
- Great Black-backed Gull (*Larus marinus*)
- Black-legged Kittiwake (*Rissa tridactyla*) (B)

- Ross's Gull (*Rhodostethia rosea*)
- Sabine's Gull (*Xema sabini*) (B)

√ Ivory Gull (Pagophila eburnean)

√ Arctic Tern (Sterna paradisaea) (B)

- Dovekie (*Alle alle*)

√ Thick-billed Murre (Uria lomvia) (B)

- Black Guillemot (*Cepphus grille*) (B)
- Atlantic Puffin (*Fratercula arctica*)

STRIGIFORMES (Owls)

√ Snowy Owl (Nyctea scandiaca) (B)

PASSERIFORMES (Songbirds and Other 'Perching' Birds)

√ Horned Lark (Eremophila alpestris) (B)

- Tree Swallow (*Tachycineta bicolour*)
- Barn Swallow (*Hirundo rustica*)

√ Common Raven (Corvus corax) (B)

- Northern Wheatear (*Oenanthe oenanthe*) (B)

√ American Pipit (Anthus rubescens) (B)

- Yellow Warbler (*Dendroica petechia*)
- Northern Waterthrush (*Seiurus noveboracensis*)
- Savannah Sparrow (*Passerculuc sandwichensis*)

√ Lapland Longspur (Calcarius lapponicus) (B)

√ Snow Bunting (Plectrophenax nivalis) (B)

- Common Redpoll (*Cardualis flammea*)
- Hoary Redpoll (*Cardualis hornemanni*) (B)

Three bird species resident near the Project site are designated under the *Species at Risk Act* - SARA (Environment Canada, Canadian Wildlife Service, 2004). These species (and their designations) are:

- Ivory gull (special concern)
- Ross's gull (threatened)
- Tundra peregrine falcon (special concern)

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC), the body that reviews and assesses the status of wildlife in Canada, upgraded the Ivory Gull to "endangered" in April 2006 (COSEWIC, 2006) but this new designation has not been legislated under SARA. Neither of the gull species has identified ranges overlapping the Mary River Project site, potential travel corridors or port sites. Ivory Gulls are located outside of the study site on Bylot Island and likely migrate through the Project area in the spring and fall.

Peregrine Falcons (subspecies tundris) populations across northern Canada have been recovering from near extinction in the late 1960s and were upgraded from being 'threatened' to being a 'species of special concern' in 1992 (COSEWIC, 2006). Peregrine Falcons are abundant in the study area based on raptor surveys undertaken by Knight Piésold in 2006, and therefore, the area is an important breeding area for this species.

Bird surveys were conducted during the spring, summer and fall of 2006 at the Project site, along the existing Milne Inlet tote road, along candidate rail corridors under investigation in the feasibility study, as well as at port sites and adjacent marine areas. The following summarizes the findings of these surveys.

5.2.3.1 Raptors

Four species of raptors use this area for breeding (Peregrine Falcons, Rough-legged Hawks, Gyrfalcons, and Snowy Owls) and were observed in the Project area during the 2006 field survey. All four species primarily use tall, steep cliffs for nesting locations (although Snowy Owls are known to nest on the ground in areas lacking cliffs), and lowlands for foraging. The four species are known to defend the same territories, and use the same nest locations, year after year.

Several (six) intensive aerial and ground surveys were conducted on raptors around the proposed mine site(s), nearby infrastructure (south of the existing runway), and four control sites located within 30 km of the proposed mine site. These surveys were conducted during the spring migration period, the breeding season, and the end of the breeding season when young birds began to fledge from the nests. One Peregrine Falcon nest was found just downstream of the Mary River at the base of Deposit No. 1 and another pair was continually seen (indicating a defended territory and therefore, likely a nest) approximately 1 km further downstream. No other raptors nor raptor nests were seen near Deposit Nos. 1, 2, 3 and 3A.

Several intensive and systematic aerial surveys were conducted along the existing road to Milne Inlet and within a 2.5 km area on either side of the road. As well, every 20 km along the road a 10 km by 10 km (100 km^2) study plot was established and surveyed. Four 'control site' sample plots were randomly located (but between 10-30 km from the road) and surveyed in a similar fashion. All surveys were conducted during the spring migration period for these species, the breeding season, and the end of the breeding season when young birds began to fledge from the nests. Several Peregrine Falcon, Rough-legged Hawks, and two Snowy Owl nests were found through-out the road corridor and in the control area, indicating that the area is well used by these species. It was also noted that there was a consistently abundant supply of raptor habitat within the 30 km ranges on both sides of the road.

The survey techniques for raptors along Milne Inlet were identical to those performed along the existing road corridor. No raptor nests were found along the inlet's shorelines although there was an abundant supply of cliff-nesting habitat. The most likely reason is that these raptors nest more inland where they are able to hunt over land.

5.2.3.2 Songbirds and Shorebirds

Several species of song birds migrate to this area annually to breed, and are predominately found in the various types of lowland habitats (river deltas, coastal plains, tundra, wetlands) that offer an abundant source of insects and vegetation for food and nest concealment. Several species of plovers and sandpipers breed in this area, and like the songbirds, they rely heavily on the various types of lowland habitats for food and nesting habitat.

Several (10+) ground-based 'point-count' surveys were conducted on songbirds and shorebirds in and around Deposit Nos. 1, 2 and 3, and four control sites, during the spring migration, breeding season, and fall migration period for these species. Bird densities in and around the three deposits and four control sites were low compared to other areas like the road corridor and Milne Inlet. This is most likely a result of the rocky, sub-alpine and alpine environment of the three deposits and control sites. Species that were most common were Snow Buntings, American Pipits, and Lapland Longspurs. The only shorebirds seen in the area were Baird's Sandpipers and Common Ringed Plovers but these were scarce.

Several ground-based 'point-count' surveys were conducted on songbirds and shorebirds along the road corridor and in control sites adjacent to the corridor. These surveys were conducted during the spring migration, breeding season, and fall migration period for these species. Most of this area was low lying tundra habitat and is well known to be favourable habitat for many species of songbirds and shorebirds so population densities were high for Lapland Longspurs, Horned Larks, American Pipits, Baird's Sandpipers, American Golden Plovers, Black-bellied Plovers, and Common Ringed Plovers.

Several ground-based 'point-count' surveys were conducted on songbirds and shorebirds along the shoreline and adjacent areas of Milne Inlet, similar to those performed along the road corridor. Like the road corridor, most of this northern coastal area was low lying tundra habitat and actual shoreline so population densities were high for Lapland Longspurs, Horned Larks, American Pipits, Baird's Sandpipers, American Golden Plovers, Black-bellied Plovers, and Common Ringed Plovers.

5.2.3.3 Loons, Ducks, and Geese

There is an abundant supply of wetlands, streams, rivers, and waterbodies of various sizes (ranging from small shallow ponds up to large deep lakes) in the Project area and these are used by a high density, but low diversity, of water birds including geese, ducks, and loons.

All wetlands, streams, rivers, and lakes around Mary River site and four control sites were systematically surveyed on a weekly basis during the spring migration, breeding season,

and fall migration periods. Because these areas had only a few very small lakes (< 1 ha) no ducks, loons, nor geese were found nesting at the deposits or the four control sites. A pair of Red-throated Loons and a pair of Yellow-billed Loons nested on Sheardown Lake, located south of the current runway, and both nests were observed to have been depredated by Glaucous Gulls. Thousands of Snow Geese migrated over the area in the spring and fall, but none were found nesting in the area. This area did not appear to be a 'stop-over' area for migrating birds either, as very few were seen resting in the water or foraging on land.

All wetland areas and bodies of water (streams, rivers, and lakes) along the existing road corridor and within 10 km of either side of it were systematically surveyed on a weekly basis during the spring migration, breeding season, and fall migration periods. As well, every 20 km along the road a 10 km by 10 km (100 km^2) study plot was established and surveyed. Four 'control site' sample plots were randomly located (but between 10-30 km from the road) and surveyed in a similar fashion. Loon pair densities were high and most lakes had at least one pair on it. Four species of loon were seen, in descending order, Red-throated Loon, Arctic Loon (also known as the Pacific Loon), Yellow-billed Loon, and the Common Loon. Long-tailed Ducks were plentiful in the area and some Red-breasted Mergansers were seen in the rivers. Hundreds of King Eiders and Common Eiders migrated through the area but were not found nesting here. Thousands of Snow Geese also migrated over the area in the spring and fall, but less than 20 pairs were found nesting in the area. However, thousands of these geese stopped in various lakes along the road or in control sites to rest or to forage on-shore, before continuing their migration.

All wetland areas and bodies of water (streams, rivers, and lakes) around Milne Inlet were systematically surveyed on a weekly basis during the spring migration, breeding season, and fall migration periods. Similar to the road corridor, loon pair densities were high and most lakes had at least one pair. Four species of loon were seen, in descending order, Red-throated Loon, Arctic Loon (also known as the Pacific Loon), Yellow-billed Loon, and the Common Loon. Long-tailed Ducks were plentiful in the area and some Red-breasted Mergansers were seen in the rivers. Hundreds of King Eiders and Common Eiders migrated through the area but were not found nesting here. Thousands of Snow Geese also migrated over the area in the spring and fall, but less than 20 pairs were found nesting in the area. However, thousands of these geese stopped in various lakes along the road or in control sites to rest or to forage on-shore, before continuing their migration.

5.2.3.4 Seabirds

Bylot Island and the surrounding region have among the greatest abundance and diversity of birds in the Canadian High Arctic. Numerous studies of seabird distribution, ecology, and abundance in nearshore and offshore areas were conducted in the late 1970s, focusing on the vicinity of eastern Lancaster Sound, Baffin Bay, and Bylot Island. Since that time, long-term ecological and monitoring studies have continued on Bylot Island, and a long-term record of species presence and trends in abundance has been maintained (Lepage et al., 1998).

Currently, there are about 74 bird species (including birds associated primarily with terrestrial habitats (Section 5.2.3) that have been documented in the Bylot Island region, 45 of which are known to breed in the area. The region's avian community includes colonial nesting seabirds and waterfowl, as well as solitary nesting species such as loons or shorebirds. Within the Mary River study area, at least 55 bird species occur that are associated with marine waters for at least part of their annual cycle (Gaston, 1996). Most are generally associated with coastal waters, but several species, such as jaegers or the northern fulmar, spend large portions of their annual cycle in offshore areas.

Nettleship (1996) reported that approximately 180,000 pairs of colonial seabirds, comprised primarily of thick-billed murres and black-legged kittiwakes, nested in colonies located on Bylot Island. The majority of those occur at two large colonies located near Cape Hay at the mouth of Navy Board Inlet (known as Akpa North; Lepage et al., 1998) and Cape Graham Moore at the mouth of Pond Inlet (known as Akpa South; Lepage et al., 1998). The largest known colony of greater snow geese (~ 55,000 breeding adults) also occurs on the island.

Northern Baffin Island's coastline provides an abundant supply of cliff-nesting habitat that could potentially be used as nesting sites by a variety of seabird species. Two aerial surveys were conducted on seabirds around the shoreline and waters of Milne Inlet and nearby Koluktoo Bay, Eskimo Inlet, and Tremblay Sound in 2006. One survey was performed in the middle of the breeding season, and one near the end of it. Neither major seabird colonies nor large feeding flocks were seen in the area. Only a few (10-15) individual Thick-billed Murres were seen. Several Glaucous Gulls (100+ individuals), Herring Gulls (<100) and Iceland Gulls (>100) were seen using the area and two small colonies (less than 20 breeding pairs each) were also located on the cliffs along the inlet's shoreline.

5.2.4 Freshwater Aquatic Life

5.2.4.1 Regional Data

Twenty-eight different species of fish from ten families occur in the freshwater ecosystems of the Southern Arctic, Northern Arctic, and Arctic Cordillera Ecozones of northern Canada (Hebert and Wearing-Wilde, 2002; Wiken, 1986). Some of these fish species are anadromous, spending part of their life history at sea but breeding in freshwater. In contrast, one hundred and nineteen species of fishes from thirty-two families reproduce in the marine waters of Canada's Arctic (Hebert and Wearing-Wilde, 2002). Low water temperature is one of the most important physical factors that limit fish species diversity in the Arctic region.

The amount of existing information that was identified for fish species and other freshwater aquatic life that occurs in freshwater on Baffin Island is small relative to the size of its land base and the abundance of freshwater. The factors that have contributed to the lack of this

information on Baffin Island include its remoteness, harsh climate, low human population density, and limited resource development relative to other areas of Canada. The main sources of information for fish species that occur in freshwater on Baffin Island originate from traditional knowledge, management of the Arctic char fishery, aquatic research initiatives through Canadian Universities and Federal/Territorial Governments, the Nanisivik Mine, and several development proposals.

Baffin Island has fewer fish species in freshwater than are found on the adjacent Nunavut mainland and several islands in the western Arctic. Arctic char (*Salvelinus alpinus*) are the most abundant and widely distributed fish species in the lakes, rivers, and streams of Baffin Island. Four other fish species that are reported to occur on Baffin Island in freshwater include:

- Lake trout (*Salvelinus namaycush*) are reported from three localities along the southwest coast of Baffin Island adjacent to the Melville Peninsula (Scott and Crossman, 1973)
- threespine stickleback (*Gasterosteus aculeatus*) are reported from southern Baffin Island (Scott and Crossman, 1973)
- ninespine stickleback (*Pungitius pungitius*) are thought to be widely distributed on Baffin Island (Scott and Crossman, 1973)
- landlocked populations of Atlantic cod (*Gadus morhua*) are known from coastal lakes in Frobisher Bay (Ogac Lake) and Cumberland Sound (Qasigialiminiq and Tariujarusiq Lakes) (Hardie, 2004)

Arctic char have been a vital food source for the Inuit for centuries, and only in recent decades has the fishery been expanded to include commercial and recreational uses. The resource is presently managed through an area-based quota system to minimize the potential for over-exploitation of individual stocks. The annual harvest of Arctic char in Nunavut generally exceeds 500,000 kg, with about 80% of this total utilized for domestic use, and about 20% on average allocated to commercial quotas after subsistence needs of local communities have been met (Government of Nunavut, 2005). The 2005 quota for Baffin Island was 161,500 sea-run and 35,100 land-locked Arctic char allocated over 60 different waterbodies, comprising about 29% of the overall Arctic char quota for Nunavut.

The management of the Arctic char fishery has been supported by stock assessment initiatives throughout Nunavut, including river systems that drain to Steensby Inlet, Tay Sound, and Milne Inlet on northern Baffin Island. Kroeker (1986) collected comprehensive biological data from sea-run Arctic char sampled at the mouth of ten rivers that drain to the Steensby Inlet area in 1985-1986, as part of a gill-net test fishery to determine the potential for a local commercial fishery. The total number of Arctic char sampled during the 1986 test fishery was 3,939 adults with a mean weight of 2.71 kg and mean age exceeding 18 yrs. The oldest fish based on analysis of otolith samples was 31 yrs, while the largest fish weighed 5.75 kg and had a fork length of 859 mm. Run timing based on daily catch-effort was generally initiated in mid-August and peaked in the first few days of

September. The Ravn River, Rowley River, and Isortoq River were determined to have the highest potential to support a commercial fishery for Arctic char. No other fish species were reported.

Read (2003) summarized the results of several stock assessment initiatives in the Ikaluit River at the head of Tay Sound. A fish weir installed near the mouth of the river in 1989 resulted in a total of 282,564 Arctic char being counted passing upstream through the Ikaluit River weir from August 6 to 27, 1989, with a peak daily migration of 45,612 fish (16.1%) counted on August 23. The mean length and weight of fish collected from a 2,615 fish sub-sample were 460 mm and 1.46 kg, respectively. Fish age determined from 78 Arctic char from Ikaluit Lake in 1974 ranged from 9 to 22 years; the mean length and weight of fish collected were 640 mm and 2.92 kg, respectively. No other fish species were reported.

Read (2004) summarized the results of a similar stock assessment on the Tugaat River near the head of Milne Inlet. A fish weir installed near the mouth of the river in 1992 resulted in a total of 6,534 Arctic char being counted passing upstream through the Tugaat River weir from August 9 to 28, 1992, with a peak daily migration comprising 18% of the total counted on August 19. The mean length and weight of fish collected from a 3,896 fish sub-sample were 395 mm and 1.06 kg, respectively. Fish age determined from a 149 Arctic char sub-sample from the weir in 1992 ranged from 3 to 19 years; the mean length and weight of fish collected were 383 mm and 0.91 kg, respectively. No other fish species were reported.

Stephenson (2003) summarized the results of gill-net sampling in Kuhulu Lake on the Borden Peninsula to collect samples for fish tissue analysis as part of an environmental site assessment of the Nanisivik Mine. The land-locked char in Kuhulu Lake ranged in fork length from 324 mm to 410 mm (n=9) and in weight from 0.23 kg to 0.60 kg. No other fish species were reported from Kuhulu Lake.

Nettilling Lake is the largest body of freshwater in the Canadian Arctic Archipelago and empties into the Koukdjuak River, which flows west to discharge into the Foxe Basin. The most northerly recorded population of threespine stickleback in Canada inhabits the cold waters of Nettilling Lake along with Arctic char and ninespine stickleback (Land and Bourque, 1974; Hebert and Wearing-Wilde, 2002).

5.2.4.2 Benthic Macroinvertebrates

Benthic macroinvertebrates are non-backboned animals inhabiting bottom sediments in aquatic systems. As the most important primary consumers in stream ecosystems, benthic macroinvertebrates also form an extremely important food source for fish. Hydrology, water quality, substrate type, creek morphology and climatic conditions constitute habitat variables in any given section of creek. The benthic communities that develop reflect the relative success of the various species that have adapted to suit these environments. As habitat conditions change during yearly cycles or from disturbances, the community

structure also changes. Benthic macroinvertebrates exhibit varying degrees of sensitivity to environmental pollutants/conditions and can be used as reliable indicators of water quality.

Benthic macroinvertebrate samples were collected from ten surface water sampling sites in and around the Mary River site in August 2005, shown on Figure 5.8. The results of the benthic macroinvertebrate analysis are provided on Table 5.8 and the summary population statistics are provided on Table 5.9.

The benthic communities within the Mary River area are represented by very few individual taxa, which ultimately indicate low community complexity and generally a less stable community structure. Higher population densities were found in the samples at C0-01 and D1-01, and lower densities were found at E0-03, D0-01, and J0-01, though the total number of taxa found at these sites were not proportionally equal; an increase in population density resulted in an overall decrease in community diversity and complexity. Higher population densities were found in the lower reaches of the rivers and streams, where nutrient availability was greater.

The samples were collected from within a one-week period during August 2005 as a late summer index of benthic species diversity and abundance, and the results do not account for temporal variation in the study area. For example, benthic diversity and abundance are likely affected by changing climatic conditions throughout the year, and the late summer index sampling period may have followed or preceded the apex of the summer growing season for benthic macroinvertebrates. Further investigations would be required to assess temporal variability.

The diversity index values indicated that the stability or equitability of the benthic communities is highly varied throughout the exploration property, the overall community richness is relatively low throughout the site, as is the diversity.

5.2.4.3 Sediment

Sediment sampling is conducted in recognition that water quality can be highly variable and as a single indicator it is insufficient to characterize local environmental conditions. Sediment quality provides a better integrator of environmental conditions over time, as it is more representative of long-term water quality. Sediment analysis provides insight into the baseline benthic macroinvertebrate habitat quality as well as providing a baseline characterization of sediment quality for future reference and monitoring purposes.

Sediment samples were collected within the exploration property in August 2005, at all benthic macroinvertebrate sample locations, show on Figure 5.8. The results of the sediment analyses were compared to the guideline limits set by CCME (2002). The guidelines refer to the Interim Sediment Quality Guidelines (ISQG) and the Probable Effects Level (PEL) which are defined as follows:

- The ISQG are conservative values that correspond to threshold level effects below which adverse biological effects are not expected and above which adverse effects have been observed
- PEL is the concentration above which adverse effects have been frequently observed

The results of the sediment analysis are summarised on Table 5.7 along with the CCME SQG.

Sediment metals concentrations were generally low throughout the exploration property samples sites, with none of the sample parameters exceeding any of the CCME PEL or ISQG limits for sediments. Site FS-01 is the exception, at this site copper concentrations were 64 µg/g, exceeding the ISQG 35.7 µg/g limit but not the 197 µg/g limit. Generally the metals concentrations were higher in the sediment sample from FS-01 than in the other samples. Chromium concentrations approached the 37.3 µg/g limit at FS-01, with a measured concentration of 30 µg/g.

The predominant metals in each of the samples were aluminium, calcium, iron and magnesium, with significant but lesser amounts of potassium, manganese, sodium, phosphorus and titanium. Total organic carbon (TOC) concentrations were generally low to below detection and nitrite and nitrate concentrations were below the limits of detection in all of the samples.

5.2.4.4 Fisheries - Mary River Project Site

Fisheries investigations carried out in the vicinity of the Mary River area in 2005 and 2006 found Arctic char and ninespine stickleback in the Mary River watershed. Arctic char were sampled by angling, gillnetting, and minnow trapping, while ninespine stickleback were captured in minnow traps.

Arctic char were recorded throughout the study area with the exception of stream reaches above fish migration barriers and intermittent first order headwater streams. Fry and juveniles were abundant in first and second order stream reaches that are accessible from nearby lakes and were also frequently observed along lake margins. Adult Arctic char were captured in the Mary River, Mary Lake, and in several small unnamed lakes in the study area. Ninespine stickleback were sampled from a small pothole lake east of the exploration camp.

It is likely that the Arctic char in the study area are lake resident populations that spawn in the fall on gravel lake substrates. In the spring a portion of the fry and juvenile Arctic char population undertake short distance migrations to rear in adjacent streams over the summer. Adult char were abundant in medium sized lakes and in the lower Mary River based on sampling and direct observations.

5.2.4.5 Fisheries - Overview of Road Watercourse Crossings

A total of 249 watercourses were initially identified along the Milne Inlet tote road connecting the Mary River site to Milne Inlet, however, the section of road to be used will cross 246 watercourses (Section 2.14.3). These crossings were subdivided into size categories based on catchment area, as presented on Table 5.10. Representative sites within each category were sampled during early August 2006 for fish presence/absence and key habitat characteristics, with emphasis placed on medium and larger sized watercourses. A total of thirty 30 crossings were sampled on the road alignment overall.

Sixty-nine Arctic char and one ninespine stickleback were captured in the Phillips Creek catchment with no mortalities. Forty-one Arctic char and four ninespine stickleback were captured in the Upper Ravn River catchment. One Arctic char and one unidentified sculpin species (likely genus *Myxocephalus*) were sampled at site CV-183 near the mouth of an unnamed tributary to Milne Inlet, although a crossing is no longer proposed at this location.

Habitat ratings were applied to the 249 watercourses along the road alignment based on data collected from 30 crossings, as presented on Tables 5.11 and 5.12. Watercourse crossing assessment data and photos from the 30 sites are presented in Appendix F.

The extra-small watercourse crossings with catchment areas less than 0.5 km, which comprise 174 of the 249 crossings, were found to have very limited fish habitat capability. The assessment identified 3 crossings as important, 37 crossings as marginal, and 129 crossings as containing no fish habitat. These streams are typically fed by spring runoff and become dewatered during late summer. Some of the small and medium sized streams were also spring runoff streams.

The small to medium sized streams where the greatest number of young Arctic char were observed/captured had a relatively low gradient, slow flow, and abundant pool habitat with cover (cut banks or cobble or larger substrate), as well as being situated a short distance upstream from a larger river or lake. The small watercourses with these characteristics were ranked as important. The medium sized watercourses identified as important or marginal are likely used primarily as rearing habitat for young char.

Large watercourses identified as marginal tended to have a greater proportion of riffle habitat than pool habitat and no fish were observed. The important habitat, where char were caught, consisted of pool habitat with some boulders.

All of the extra-large watercourses contained important fish habitat. Ninespine stickleback were captured in one or the largest rivers containing exclusively run habitat and a relatively high turbidity.

5.2.4.6 Watercourse Crossings < 0.5 km^2

None of the examined extra small watercourse crossings smaller than 0.5 km^2 (BG-16, BG-28, CV-55, CV-95, and CV-156) contained suitable fish habitat at the time of sampling (Table 5.11). Fish were not captured or observed during fisheries studies of these waterbodies (Appendix G). Two of these streams (BG-28, CV95) were completely dry while two others (CV55, CV156) had small flows but also had impassable barriers downstream preventing access to the area near the proposed crossing. The fifth extra small waterbody (BG-16), although watered and accessible from a nearby creek (BG-17) known to contain juvenile char, was highly turbid (>23 FTU), shallow, had primarily sand/silt substrate, and contained rusted, empty fuel drums.

Based on comparisons of catches with habitat type in other waterbodies within the study area these characteristics are generally unsuitable for juvenile char or spawning adults. Char spawn on rock, gravel, and occasionally sand substrates in water 1.0-4.5 m deep (McPhail and Lindsey 1970, Scott and Crossman 1973, Stewart and MacDonald 1981) though areas with predominantly cobble or larger substrate appear less suitable (Dempson and Green 1985). Ninespine stickleback are more likely to be found in turbid habitat though this species was also not observed in BG-16. Of the five crossings, BG-16 is the most likely to provide some marginal fish habitat throughout the open water season. The others may provide marginal habitat during early spring when water levels are highest though use is likely limited to juvenile feeding and refuge habitat in the lower reaches immediately upstream of larger waterbodies such as Phillips Creek.

No extra small waterbody on the road alignment provides suitable spawning habitat. In the north, Arctic char generally spawn exclusively in lakes or large rivers (Johnson 1980, Dempson and Green 1985, Cunjak et al. 1986, MacDonnell 1996, 1997) since smaller rivers freeze completely. In addition, there are no waterbodies upstream of these crossings with suitable fish habitat so there is little to no migratory use of these streams by char. It is therefore suggested that there is little, if any, use of these habitats by fish.

5.2.4.7 Watercourse Crossings 0.5-2.5 km^2

Three of five small watercourses sampled contained probable fish habitat (Table 5.11). Two crossings (CV-57 and CV-187) were identified as important fish habitat. Several juvenile char were captured or observed during fisheries investigations of these streams (Appendix G). CV-57 is relatively easily accessible from downstream Katiktok Lake in the Phillips Creek system while CV-187 is part of the Mary River system both of which provide abundant fish habitat. Habitat characteristics at the proposed crossings, in particular depth (0.6 m or less), are generally unsuitable for use by adults during summer for feeding or migration and since they both would completely freeze during winter spawning is unlikely during fall. However, both provide ideal refuge/nursery habitat for young-of-the-year (YOY) and juvenile char as they migrate out of larger waterbodies during spring and summer. It is therefore important for survival of these life history stages and ultimately for recruitment levels into adult populations.

The gradient and mesohabitat of BG-27 likely limits use to temporary juvenile nursery habitat during higher water periods in spring. No fish were captured or observed during fisheries investigations though the site is accessible from a nearby downstream lake. It was, therefore, determined that use by char was marginal and ephemeral at best. Habitat is almost certainly unsuitable for spawning or migration of adults. The remaining two small crossings (CV-93 and CV-146) were identified as containing no fish habitat. CV-93 was waterless when sampled and, at best, provides only marginal nursery habitat during highest water levels in spring. CV-146 has suitable habitat for juveniles but the area near the crossing is inaccessible to fish further downstream due to a set of falls. The importance of small-sized waterbodies to char within the bulk road study area is therefore largely dependant on accessibility from larger waterbodies downstream of the crossings and water levels throughout the open water period. Use likely remains limited to juveniles.

5.2.4.8 Watercourse Crossings 2.5-7.5 km^2

One medium-sized watercourse (CV-92) was dry with typical runoff stream characteristics at the time of sampling. Like with other ephemeral streams in the study area, this waterbody may provide marginal habitat in its lower reaches during spring but provides no habitat the remainder of the year. There is no use by adult char and limited, if any, use by juveniles. Potential crossings of CV-104 and CV-114 have marginal fish habitat. Though juveniles were observed in these waterbodies (Appendix G), high water velocities and absence of pool mesohabitat likely limits potential use. Juveniles seem to require at least some slow-water areas for refuge as evidenced from fisheries investigations in the study area. Shallow depths and complete freezing during winter limit use by adults year-round.

Four medium-sized waterbodies (BG-1, BG-24, CV-60, CV-224) and were identified as containing important fish habitat (Table 5.11). Each of these crossings has sufficient suitable substrate (gravel and cobble) and mesohabitat (at least 5% pools) for nursing juvenile char. Several char were captured or observed in each of these waterbodies during fisheries investigations. However, these waterbodies all still likely freeze completely during winter and are not used by spawning adults. There are also no large waterbodies upstream of the crossings so migratory use is also limited. These watercourses are likely used primarily as rearing habitat for young char, particularly those that share the same characteristics as small watercourses with marginal or important fish habitat. The importance of medium-sized waterbodies to Arctic char within the bulk road study area is therefore largely dependant on accessibility from larger waterbodies downstream of the crossings and water levels throughout the open water period.

5.2.4.9 Watercourse Crossings 7.5-30 km^2

Large watercourses were identified as containing either marginal or important fish habitat (Table 5.11). Three sites (CV-40, CV-87, CV-216) were identified as marginal fish habitat and not important based on limited availability of pool habitat and/or large substrate sizes (cobble/boulder) for cover. Char were not captured or observed at any of these three sites

(Appendix G), however, they are generally accessible from larger waterbodies for at least part of the open water season and should, therefore, provide some nursery habitat for juveniles. Adult char use of these waterbodies is probably limited to some spring foraging. Water levels are still insufficient to prevent complete freezing over winter. The remaining large-sized waterbodies (BG-17, CV-49, CV-78, CV-99, CV-225) all contain important fish habitat, particularly for rearing juveniles. Though most habitat characteristics in these streams are suitable for spawning char, overwinter freezing is again likely a limiting factor in adult use of these areas. Adult use is probably restricted to spring feeding. In general, all large-sized waterbodies in the study area should provide at least marginal habitat for young Arctic char with some potential limited use by adults.

5.2.4.10 Watercourse Crossings >30 km^2

All extra large watercourses were sampled (BG-50, CV-128, CV-183, CV-217, CV-223) and all contained important fish habitat (Table 5.11). Only a few fish were captured or observed from these locations (Appendix G) but that is likely more a reflection of the sampling effort relative to the size of the watercourses than actual fish usage. All locations provide suitable rearing habitat for juveniles, though CV-217 may lack sufficient cover to be ideal. CV-217 provides suitable ninespine stickleback habitat and, combined with fisheries investigations of other tributaries of the same, unnamed lake, suggests that this may be one of the few important locations for stickleback in the study area. Migration and feeding of adults is likely in the lower reaches of most of these waterbodies. However, all except possibly CV-217 freeze completely during winter so spawning is unlikely at these locations. Of all crossings sampled, CV-217 is most likely to have nearby spawning habitat that could be potentially impacted by road construction. These extra large watercourses are likely the most important to the most life history stages of both char and stickleback within the study area and should, therefore, be monitored closely for any potential impacts.

5.2.4.11 Unsampled Watercourse Crossings

Habitat rankings were obtained for unsampled watercourse crossings by examining photos taken along the proposed route in late June and early July 2006 (Table 5.12). Identifiable characteristics (water depth, substrate, gradient, etc.) from the photos were compared to direct observations at the 30 sampled sites. Some assumptions were required to estimate habitat quality. For example, photographs often do not reveal the presence of any impassable barriers between the crossing and larger fish-bearing waterbodies downstream. Appendix G describes the justification for estimated habitat rankings at unsampled watercourses.

Three of 169 unsampled watercourse crossings smaller than 0.5 km^2 may have suitable conditions to provide important fish habitat at least during spring high water levels. These three sites all have cobble/gravel/sand substrate with riffle-pool habitat and are short distances upstream from larger waterbodies (e.g. Phillips Creek) in which char may spawn. It is possible that YOY and juveniles use these streams for rearing and refuge in the spring. However, it is unlikely that water levels will remain high enough to provide suitable habitat

throughout the summer as evidenced from sites at which measurements were taken in August. These sites may provide at least marginal habitat throughout the open water season. An additional nine sites may provide marginal fish habitat during spring and summer. Utilization of these sites may be limited by low water levels, high gradients or reduced pool habitat (a seemingly important requirement from fisheries studies at other sites). It is expected, however, that as long as no barriers to fish passage are present downstream of these sites that there could be at least some habitat utilization during spring and possibly the summer.

A total of 37 crossings smaller than 0.5 km^2 have only marginal habitat at best and typically during spring run-off periods. A lack of water is probably the major factor limiting use of these streams and even during spring these areas may be unsuitable for juvenile or larval char. Unknown barriers, less than optimal habitat, relatively high gradients and other factors are also limiting. A total of 129 crossings smaller than 0.5 km^2 appear to provide no fish habitat at any time of the year due to insufficient water levels and/or observed barriers to fish passage. Any of these extra small watercourses that provide at least marginal fish habitat at some point during the year are likely suitable only as temporary rearing areas for larval and small juvenile char. Large juvenile and adult char most likely do not use streams of this size for any life history function.

Seven small crossings were identified as providing important fish habitat particularly during spring but likely throughout the open water season (Table 5.12). These sites all had sufficient water levels, abundant pool habitat, low gradient, and were a relatively short distance upstream of larger waterbodies. They were similar in appearance to small sites identified as important during fisheries investigations in August (see Section 5.2.4.5). An additional 22 sites had similar important characteristics but may be limited by decreasing water levels during summer as were thus ranked as marginal fish habitat. Three of these sites appear to provide marginal habitat throughout the open water season limited largely by water levels and potential, but unconfirmed, downstream barriers.

Nine small watercourses provide marginal habitat at best during high water and are likely fishless the remainder of the year. These fishless sites may have some suitable characteristics (cobble/gravel substrate for e.g.) but also tend to have high gradient, limited amount of pool habitat, low water levels, and/or large distances upstream from major waterbodies. There may also be potential barriers at some of these locations. One small fishless watercourse has a high gradient resulting in a primarily cascade morphology and appears to have an impassably steep drop a short distance downstream from the proposed crossing. Four small watercourses were not photographed. Fish-bearing small watercourses likely provide only nursery habitat for young char.

Three medium-sized watercourses appear to provide important fish habitat unless downstream barriers prevent access (Table 5.12). They all have riffle-pool morphology, cobble/gravel/sand substrate, some undercut banks, sufficient water levels, and the crossing locations are all relatively short distances upstream from larger watercourses. One site (BG-4) may even function as a migratory route for some larger char, particularly during

spring. The main use of these streams is still likely nursery habitat for immature char. Three additional medium-sized watercourses could potentially provide important fish habitat at least during spring but low water levels may limit use later in the year.

Five of the six unsampled large-sized watercourses appear to provide important fish habitat during the open water season (Table 5.12). Riffle-pool morphology, cobble/gravel/sand substrate, high water levels, and close proximity to larger watercourses are all characteristic. One additional large watercourse (CV-094) may be limited in importance only by low water levels. All of these sites provide suitable nursery habitat and potential migratory routes for larger fish but none likely have depths during fall to provide spawning habitat that will not freeze completely during winter.

5.2.5 Marine Wildlife

The following sections provide a brief description of the marine environment in the Milne Inlet area and along the shipping route. Because of the diverse aspect of possible impacts (e.g., accidental fuel spills vs. noise generated by the passage of a ship) and the large geographic area over which shipping will occur, the spatial scale at which the description presented here varies between different environmental components. For example, discussion of lower trophic levels and fish, which are more likely to be affected at the port site through a possible accidental fuel spill than in Baffin Bay because of ship-generated noise, is restricted to the vicinity of the port site, whereas discussion of seabirds would encompass a larger geographic area to include known nesting colonies.

Little data specific to the marine biotic environment in the immediate vicinity of the proposed port site has been collected. In general, there is a paucity of information regarding oceanography and water quality, lower trophic level components (primary producers, plankton and benthic invertebrates) and fish. More and recent information regarding the distribution of seabirds (Section 5.2.3.4) and marine mammals is available.

5.2.5.1 Coastal Habitat

Dickens et al., (1990) characterized the coastline at the head of Milne Inlet and Koluktoo Bay as predominantly cliffs and talus shores, interspersed with raised beaches and coastal flats in the vicinity of the Tugaat River and estuarine delta habitat along the west coast of Koluktoo Bay. The shoreline in the immediate vicinity of the proposed port site is comprised of gravel and sand beaches interspersed with numerous small freshwater tributaries. Phillips Creek also enters into Milne Inlet immediately adjacent to the existing airstrip. Water depth increases abruptly offshore, creating a narrow littoral zone with gravel and cobble substrate. Finer sediment deposition occurs in areas of freshwater input.

Information documenting the presence/distribution of periphyton or aquatic macrophytes at the Milne Inlet port site has not been collected to date, but will be collected during 2007 as part of baseline data collections for the overall Mary River Project.

5.2.5.2 Lower Trophic Levels

Information describing lower trophic level communities (plants, zooplankton, pelagic and benthic invertebrates) specific to Milne Inlet has yet not been collected. Information regarding those communities was collected in various levels of effort over a four year period in Ragged Channel at Cape Hatt is available (Bunch 1987; Cross and Thomson, 1987; Cross et al., 1987a,b). This information can be used to provide a general description of lower trophic communities, but information specific to Milne Inlet would be required to assess and project-related impacts. Information to describe those communities will be collected in Milne Inlet during 2007 as part of baseline collections for the overall Mary River Project.

5.2.5.3 Fish

Marine fish community information in the Lancaster Sound/Baffin Bay area is sparsely reported, and little fish community data specific to the Milne Inlet area has been collected to date. A list of known or suspected species occurrences in the region is provided below (LGL Ltd., 1983).

Family **Scientific Name**	**Common Name**
Squalidae	
Somniosus microcephalus	Greenland Shark
Rajidae	
Raja hyperborea	darkbelly skate
Salmonidae	
Salvelinus alpinus	Arctic char
Gadidade	
Arctogadus glacialis	polar cod
Boreogadus saida	Arctic cod
Gadus ogac	Greenland cod
Macrouridae	
Coryphaenoides ruprestris	rock grenadier
Zoarcidae	
Gymnelis viridis	fish doctor
Lycodes mucosus	safddled eelpout
Lycodes polaris	polar eelpout
Agonidae	
Agonus decagonus	sea poacher
Cottidae	
Artediellus scaber	rough hookear
Gymnocanthus tricuspis	Arctic staghorn
Icelus bicornis	twohorn sculpin
Icelus spatula	spatulate sculpin
Triglops pingelii	ribbed sculpin

Family Scientific Name	Common Name
Cyclopteridae	
Cyclopteropsis jordani	smooth lumpfish
Eumicroremus derjugini	leatherfin lumpsucker
Eumicroremus spinosus	Atlantic spiny lumpsucker
Liparis tunicatus	Greenland seasnail
Liparis gibbus	dusky snailfish
Liparis fabricii	gelatinous seasnail
Pleuronectidae	
Reinardtius hippoglossoides	
Gonostomatidae	
Cyclothone microdon	veiled anglemouth
Scorpaenidae	

The distribution and abundance of most of the listed species are poorly documented within the region as a whole, and most species are known by only a few recorded occurrences. Species known to occur in Eclipse Sound and Milne Inlet that are of ecological significance or are of domestic or economic significance to people from Pond Inlet include Arctic cod (ecological significance), Arctic char and Greenland halibut (economic or domestic importance).

Anadromous Arctic char winter in fresh or brackish water, but move into marine environments to feed from spring through fall. They occur throughout the Milne Inlet area during the summer (Milton Freeman, 1976; Landcaster Sound Regional Land Use Planning Commission, 1991) and likely winter in tributaries such as Phillips Creek and the Robertson and Tuugat rivers (LSRLUPC, 1991). Char are taken during sport and domestic fishing activities throughout the area.

Arctic cod are the most ecologically important marine fish in Lancaster Sound and adjacent waterbodies. They are one of the most abundant and widespread fishes in Arctic marine waters, and are a critical link in Arctic marine food webs, providing one of the major conduits through which energy is passed from zooplankton to upper trophic level organisms (Hobson and Welch, 1992; Welch et al., 1992). Although known to occur in the Pond Inlet area, the distribution of Arctic cod in the Milne Inlet area is not well documented, nor is its abundance in relation to other parts of its range.

5.2.5.4 Marine Mammals

Twenty-one species of marine mammals occur either year-round or seasonally in the vicinity of the Milne Inlet port site or along the proposed shipping corridor for the bulk sampling program. A number of those are species that may only move into areas along the southern portions of the shipping route during part of the year, while other species are year-round residents throughout the study area, or are seasonally abundant in Milne Inlet and Eclipse Sound. Table 5.13 provides a list of species and a qualitative assessment of their

distribution and abundance during August and September in relation to the proposed shipping route.

The proposed shipping route for the bulk sampling program was divided into three regions to provide some indication of the distribution of marine mammals along the shipping corridor.

During August and September, when shipping activities associated with the bulk sampling program are proposed, narwhal, bowhead whale, ringed seal, bearded seal, and harp seal occur within the waters of Milne Inlet and Eclipse Sound. Beluga and killer whales may also occasionally occur in those waters during that time.

Large numbers of beluga that winter along the west coast of Greenland and in the North Water polynya, located at the north end of Baffin Bay, migrate past Bylot Island during spring to summering areas concentrated near Somerset Island. Only a small number of animals move into areas inland of Bylot Island, ostensibly for calving and feeding. A limited amount of harvest occurs in the Pond Inlet area, but considerable hunting takes place along the west coast of Greenland during winter.

Large numbers of narwhal summer in Milne Inlet and nearby Koluktoo Bay, Tremblay Sound, and Eclipse Sound, using the general area for feeding and calf-rearing and possibly for predator avoidance. Kingsley et al. (1994) conducted aerial surveys of narwhal in this area from 1987 to 1993 and recorded up to 600 narwhal per survey (unadjusted for animals not observed because they were diving). They suggested that narwhal distribution in the area appeared to be influenced by the distribution of sea ice and the presence of killer whales.

Bowhead whales occur in Eclipse Sound and Milne Inlet through the open water period in most years. The area appears to be used mostly as nursery and feeding habitat by females with calves. Commercial hunting reduced bowhead whale numbers in the north Baffin region to near extirpation by about 1900, but the number of bowhead using Eclipse Sound and Milne Inlet appears to have been increasing in recent years.

A small number of killer whales appear to move into the Canadian Arctic from the north Atlantic during ice break up, and retreat south with ice formation in fall. They are frequently observed in small numbers in Eclipse Sound and Milne Inlet, likely because of the abundance of other marine mammal species in the area.

Ringed seals are year-round residents in the Arctic and are generally associated with fast ice habitats through most of the year. They are distributed throughout Baffin Bay and Lancaster Sound, and waters inland of Bylot Island provide important habitat during winter for feeding, pupping, mating, and molting. Ringed seals are actively harvested by community members from Pond Inlet and are of great domestic importance to the community.

Harp seals are seasonal migrants into waters along both shipping routes. They move north from wintering and pupping areas off the coast of Labrador, Newfoundland, and the Gulf of St. Lawrence to feed during summer in coastal areas in Lancaster Sound, northern Hudson Bay, and Foxe Basin. Harp seals arrive in the Lancaster Sound area in July and move westward past Navy Board Inlet following the south shore of Lancaster Sound. Return eastward migrations out of Lancaster Sound begin in September and follow the south shore of Devon Island. Harp seals concentrate at the mouth of Navy Board Inlet and occasionally within Eclipse Sound throughout August and September, where small numbers are harvested by hunters from Pond Inlet.

Bearded seals are found throughout most of the Canadian Arctic, and occur in small numbers along the proposed bulk sample shipping route and in waters near Milne Inlet. Bearded seals are less abundant than ringed seals, but are actively harvested along the Pond inlet floe edge and waters inland of Bylot Island by Pond Inlet hunters.

Atlantic walrus winter in the North Water and other polynyas among the Canadian arctic islands, as well as along the west coast of Greenland. They move westward along the southern coast of Devon Island during spring to summering areas in the Canadian Arctic islands. A small number of walrus used to haul out on Wollaston Island in the mouth of Navy Board Inlet, but this appears to be abandoned in recent years, and now only a few animals are harvested or observed in Navy Board Inlet, Eclipse Sound, and Pond Inlet. In April 2006, COSEWIC assigned a designation of “Special Concern” to Atlantic walrus because of the lack of knowledge about population structure, size, and composition, seasonal movement patterns, vital population parameters such as fecundity, and the uncertainty surrounding the sustainability of current harvest levels, particularly in Greenland waters.

Polar bears are year-round residents in most Arctic areas, occupying terrestrial habitats during summer in locations where the sea ice melts, and marine habitats when the sea ice forms. They occur throughout the Mary River project area, and have been observed at the head of Milne Inlet and in close proximity to the Mary River Camp. Polar bears are important to northern people, and are taken in sport and domestic hunts by people from Pond Inlet. Polar bears are currently listed as a species of “Special Concern” by COSEWIC because, due their low reproductive rate, populations are extremely vulnerable to over-harvest of adult females and because they are particularly vulnerable to climate warming.

5.2.5.5 Project–related Marine Mammal Studies

Replicate aerial surveys were undertaken in late June 2006, to document the distribution and abundance of ringed seals in Milne Inlet, Eclipse Sound, Pond inlet and Navy Board Inlet. Additional snowmobile-based surveys were conducted in Milne Inlet to provide additional information regarding the abundance of ringed seals in that area. Information from the aerial surveys have not yet been fully analyzed, but data indicated that ringed seals were distributed throughout the area. Seal density appeared to be highest along the

lower portion of Milne Inlet and within Koluktoo Bay. The density of seals observed hauled out on the sea ice between the Milne Inlet port site and the entrance to Koluktoo Bay ranged from 2.8-3.3 seals/km^2, at the upper range of seal densities reported elsewhere (Reeves, 1998).

No other species of marine mammal were observed in the vicinity of Milne Inlet during the snowmobile surveys, although narwhal, beluga, and polar bear were observed along the Pond Inlet and Navy Board Inlet flow edges during the aerial surveys.

5.2.6 Other Biological VECs

The biological valued ecosystem components identified through community consultation include the components discussed above, namely vegetation, terrestrial mammals, birds, fisheries and marine mammals.

5.2.7 Species of Concern

NIRB (2006) defines "Species of Concern" as identified by federal or territorial agencies, including any wildlife species listed under the *Species at Risk Act* (SARA), its critical habitat or the residences of individuals of the species.

Species of Concern include any wildlife species listed under the *Species at Risk Act* (SARA), and those species identified by The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as at risk that are not legislated at risk under SARA. These are species which are designated as endangered, threatened, or of special concern due to their sensitivity and population status. These species are very carefully considered during project planning and execution.

Four species resident near the Project site are designated under SARA (Environment Canada, Canadian Wildlife Service, 2004). These species (and their designations) are:

- Ivory gull (special concern)
- Ross's gull (threatened)
- Tundra peregrine falcon (special concern)
- Atlantic Blue Whale (endangered)

The COSEWIC, the body that reviews and assesses the status of wildlife in Canada, upgraded the Ivory Gull to "endangered" in April 2006 (COSEWIC, 2006) but this new designation has not been legislated under SARA.

Neither of the gull species has an identified range overlapping the Mary River Project site, potential travel corridors or port sites. Ivory Gulls are located outside of the study site on Bylot Island and likely migrate through the Project area in the spring and fall.

Peregrine Falcons (subspecies *tundris*) populations across northern Canada have been recovering from near extinction in the late 1960s and were upgraded from being 'threatened' to being a 'species of special concern' in 1992 (COSEWIC, 2006). Peregrine Falcons are abundant in the study area based on raptor surveys undertaken by Knight Piésold in 2006, and therefore, the area is an important breeding area for this species.

Commercial whaling reduced the population of the Atlantic blue whale to near-extirpation. Blues whales are found globally and occur in most oceans. Known summer areas of concentration for the Atlantic blue whale include waters in Davis Strait along the south west coast of Greenland, outside of the proposed shipping route bulk sample ships will follow. Wintering areas occur in waters farther south, but are not well known. A very small population and low rate of reproduction make this population of whales highly vulnerable. Current threats to blue whales include ship strikes (discussed in Section 6.3.2), disturbance during whale watching activities, entanglement in fishing gear, and pollution. They may also be vulnerable to climate change-driven shifts in food base.

COSEWIC has also assessed additional species in the Project area and assigned status categories (COSEWIC, 2006). These are:

- Polar Bear (special concern)
- Beluga Whale (see below)
- Walrus (special concern)

Polar bears occur throughout the Mary River project area, and have been observed at the head of Milne Inlet and in close proximity to the Mary River Camp. The polar bear was proposed as an addition to SARA, but was not included due to concerns raised by the Nunavut Wildlife Management Board. Intensive management planning is currently underway for polar bears through the Polar Bear Technical Committee.

The bulk sample program, through the associated shipping activities, could potentially interact with beluga from two of four identified beluga populations that occur within the Mary River study area. These include

- Cumberland Sound population (endangered)
- Eastern High Arctic/Baffin Bay population (special concern)

The Cumberland Sound population of beluga appears to spend the entire year within the confines of Cumberland Sound. They are listed as "endangered" because of over hunting that occurred until about 1979. The current level of harvest on this population appears to be sustainable, but increased small vessel traffic and associated noise, as well as fishery removals of Greenland cod (food for beluga) are current concerns. Ships from Mary River will not be entering into Cumberland Sound and, consequently should not be a disturbance to members of this population.

The Eastern High Arctic/Baffin Bay population winters in the NorthWater polynya area of north Baffin Bay and along the west coast of Greenland. Spring (June and July) and fall migrations (late September) occur through Lancaster Sound between wintering areas and summering areas concentrated around Somerset Island. Small numbers of this population occasionally enter into Eclipse Sound during the summer. Over exploitation along the west Greenland coast is of serious concern for this population. Most spring and fall migration by beluga from this population occurs outside of the shipping period proposed for the bulk sample program and, consequently, most whales from this population will at summering areas away from the propose shipping route. There may be some interaction with the small number of whales that move into Eclipse Sound during summer.

Atlantic walrus winter in the North Water and other polynyas among the Canadian arctic islands, as well as along the west coast of Greenland. They move westward along the southern coast of Devon Island during spring to summering areas in the Canadian Arctic islands. A small number of walrus used to haul out on Wollaston Island in the mouth of Navy Board Inlet, but local information suggests this haul out appears to have been be abandoned in recent years. Only a few animals are now harvested or observed in Navy Board Inlet, Eclipse Sound, and Pond Inlet. In April 2006, COSEWIC assigned a designation of “Special Concern” to Atlantic walrus because of the lack of knowledge about population structure, size, and composition, seasonal movement patterns, vital population parameters such as fecundity, and the uncertainty surrounding the sustainability of current harvest levels, particularly in Greenland waters. There likely will be little or no interaction between ships from Mary River and walrus.

5.3 SOCIO-ECONOMIC ENVIRONMENT

5.3.1 Archaeology and Culturally-Significant Sites

An archaeological survey of the Mary River area was undertaken by Gabriella Prager of Points West Heritage Consulting Ltd. (Points West) in August 2006, with particular focus on potential activity areas related to the proposed bulk sampling program. The following archaeological investigations specific to the proposed bulk sampling program were completed:

1. Overview assessment of an approximately 100 m wide corridor along the existing road between Mary River and Milne Inlet.
2. Ground reconnaissance of selected portions of a corridor extending approximately 20 m to either side of the existing road.
3. Preliminary overview assessments of three large areas identified as possible gravel sources.
4. Overview assessment and preliminary ground assessment of those portions of Milne Inlet that are proposed for use during the bulk sampling program.
5. Ground reconnaissance of the area proposed for Mary River camp and mine facilities that are required during the bulk sampling program.

Overview assessments completed using low level helicopter over flight were aimed at rating the potential of the terrain to contain archaeological features and determining the consequent level of archaeological investigation necessary. Ground reconnaissance was completed of selected portions by pedestrian survey generally using transects spaced 5 to 10 m apart.

Findings - Milne Inlet

The shoreline of Milne Inlet is rated as high potential for archaeological sites. During the initial surface survey, three sites were recorded, at least one of which is of high scientific significance. Additional sites may also be identified with more intensive assessment of the entire inlet.

The proposed stockpile location received only an overview assessment that indicated a low potential for archaeological remains, and a detailed assessment will be required prior to any project activities.

Findings - Milne Inlet Tote Road

This corridor has high archaeological potential since it has undoubtedly served as a common travel route throughout human use of this region. A total of 18 sites were recorded during the 2006 survey along the existing road alignment. One additional site was located in an area adjacent to the airstrip at the south end of Katiktok Lake, and two more sites were found in a large section of sand and gravel deposits at the opening into Milne Inlet identified as possible borrow source. Numerous other features were observed in the vicinity of the road, but were not recorded since they are situated further from the existing road than is currently thought will be affected. Two stone circles were observed that were either partly under the road edge or just on the edge. Six of the recorded sites, comprising those that are located less than 10 m from the existing road, were staked and flagged to facilitate avoidance during the limited use of the road in March to May 2007.

Findings - Mary River Camp and Bulk Sample Facilities

The full extent of this area was viewed from the road heading up the mountain as well as by low level helicopter over flight. Transects walked through selected portions, focusing on the higher potential section near a large unnamed lake (referred to by the Project as Sheardown Lake). Much of this area is covered by cobbles and boulders of various sizes, suggesting generally low potential for archaeological resources. Two archaeological sites were recorded, both near Sheardown Lake along the southern edge of the Project area. These sites are well removed from currently proposed infrastructure and no impacts are anticipated.

Summary and Conclusions

A total of 26 archaeological sites (Table 5.14) were recorded during investigations of project components for the bulk sampling program. Three sites were recorded in Milne Inlet, 21 sites along the road and associated facilities, and two in the Mary River Project area. Almost all the sites contain stone circles, and various types of stone structures such as caches, cairns, and traps. Two sites contain lithic remains from stone tool manufacture.

This preliminary archaeological assessment has identified the requirement for more investigations, before some components of the bulk sampling program can proceed. Numerous archaeological features were observed at some distance from the immediate areas assessed; additional archaeological sites can be expected as more detailed ground reconnaissance is completed. Potential impacts and proposed mitigation is described in Section 6.4.1.

5.3.2 Land and Resource Use

5.3.2.1 Subsistence Harvesting

Contemporary land and resource use in the area, focusing primarily on the traditional land use activities of hunting, fishing, trapping and gathering, is described in the Nunavut Wildlife Harvest Study (Priest and Usher, 2004). The harvest study involved the identification of and monthly interviews with hunters in each community to identify wildlife harvest numbers and locations over a five year period from June 1996 to May 2001. The purpose of the study was to document the basic needs of Inuit throughout Nunavut. Now over five years old, the study still represents the best representation of land and resource use in the region, which is changing as demographics in the communities also shift.

Table 5.15 summarizes the number of hunters who registered and reported harvests as part of the study, for the five communities of Arctic Bay, Clyde River, Hall Beach, Igloolik and Pond Inlet. For comparison purposes, the 2001 population of each community is also shown. Comparing the number of registered hunters against the 2001 population for each community suggests that about one-quarter to one-third (24 to 33.5%) of people in the region were identified as occasional, active or intensive hunters. The high percentage of hunters in Arctic Bay and Nanisivik of 43% may be due in part to the large proportion of employees residing at the Nanisivik town site at that time who were working age (compared with children or elderly) and more likely to engage in hunting. It is also possible that there was a higher hunter participation in the study, as a representative of the Mittimatilik Hunters and Trappers Organization suggested that the census of hunters in Pond Inlet was not complete and there were hunters who did not participate in the study (Alooloo, 2006).

The number of registered hunters in each community was also compared to the number who harvested at least once during the year. This may be viewed as a crude gauge of the participation rate in harvesting under the assumption that everyone who hunts is

successful. About 75% to 90% of registered hunters harvested within the year, suggesting a high participation rate (and perhaps success rate).

Reported harvest data from the study has been plotted on Figures 5.9 to 5.13 to show harvest locations of caribou, whales (narwhal, beluga and walrus), polar bears, waterfowl and fish. All data from the five year study is shown on the figures with the harvests colour coded according to the originating community of the hunter at the time of the study.

The harvest locations have been colour-coded by community as a means to show where hunting activities are concentrated relative to the community from which the hunters live. It is believed that for whales, polar bear, waterfowl and fish harvest locations (and thus land use related to these activities) would not change substantially from year to year. Caribou, however, move around Baffin Island over the course of a number of years and during the study period were quite abundant in the North Baffin region. Harvest patterns for caribou are therefore dependent upon the relative abundance and location of caribou.

The data suggests that the areas to be used by the Project during the bulk sampling program, the inland area of Mary River and the existing Milne Inlet road as well as Milne Inlet and Eclipse Sound area, is primarily used by the people of Pond Inlet.

A total of 49 wildlife species were reported as harvested by at least one of the five North Baffin communities shown, during the study period. This included caribou, polar bear, wolves, two fox species (arctic and coloured), four species of seals, walrus, narwhal, beluga, a large number of waterfowl and bird eggs, and a small variety of fish and seafood. The total number of registered hunters in each community harvesting a given species is shown on Table 5.16. Annual harvest numbers for each species, by community for each of the five years of the study period as well as a 5-year mean, is presented are Table 5.17.

There are several limitations to interpretation of this data set, however. First, the data reported in the study show that ringed-seal was the most harvested mammal in all communities, yet seal harvest locations were not reported. Thus a key harvesting activity is not represented in the figures. Secondly, through the duration of harvest study, caribou were in relatively high abundance. In 2006, however, caribou are found in low densities and this will likely persist for some time until the vegetation recovers in the North Baffin (Pisiksik Working Group, 2006: Mittimatilik Hunters and Trappers Organization, 2006). Caribou reside in the North Baffin region in high abundance for several years every several decades, with the last period of abundance being in the 1930s (Pisiksik Working Group, 2006). It is likely that during periods of high caribou abundance, including the harvest study period of the late 1990s, harvest activities shift accordingly. Therefore, harvest activities shown on the figures need to be interpreted recognizing that a shift to harvest of other wildlife may have occurred since caribou have declined to low densities, and the reliance on other species (i.e., seals, narwhal, fish, etc.) may have increased.

To further illustrate both harvesting patterns between seasons, as well as changing harvesting patterns over the course of the five year study period of June 1996 to May 2001,

the reported harvest locations in April and August are shown on Figures 5.14 and 5.15, respectively. April is an active month for hunting when overland travel by snowmobile is possible and activities have not yet been diverted to the floe edges. A large number of caribou harvests were reported in and around Pond Inlet in April 1998 and April 1999, and by 2001 very few caribou harvests were reported. It is inferred that this reflects the decline or re-distribution of caribou populations over this period. Few caribou appear to have been harvested from the Milne Inlet – Mary River area during the study period, possibly because caribou were more abundant closer to the community. Anecdotal information from Pisiksik Working Group (2006) and the Mittimatilik Hunters and Trappers Organization (2006) suggests that the inland areas in and around Mary River have increased in importance with caribou hunting since the animals have become less abundant closer to the community.

Review of caribou harvest locations from August 1996 to August 2000, shown on Figure 5.15, suggest a decline in harvest numbers over the study period and a corresponding shift in harvesting locations from primarily the nearby fiords between Pond Inlet and Mary River to more inland harvests, particularly along the Milne Inlet tote road. The April and August harvesting patterns similarly suggest a declining caribou population over the study period and increased inland hunting activity in the Mary River area.

5.3.2.2 Soapstone Quarries

North Baffin communities, like much of Nunavut, have a long heritage of carving using natural materials such as stone, including soapstone, as well as bone from animals. These material+ls had historical utility to Inuit and today individual carvers sell their work to local tourists and to the local co-operative. Carving stone is often difficult to obtain and thus known deposits are important to the community, and there is always an interest in identifying new deposits of carving stone. Because of this, Article 19 of the NLCA (1993) includes provisions regarding Inuit access to carving stone deposits. A number of carving stone deposits within the North Baffin region were identified during a review of INAC files in Iqaluit (Government of the Northwest Territories, 1972; INAC, 1976). One soapstone deposit was identified several kilometres southeast of the Mary River Project. Members of the Pisiksik Working Group in Pond Inlet have indicated that these soapstone deposits are still actively used by the community (Pisiksik Working Group, 2006).

5.3.2.3 Non-Traditional Land Uses

Non-traditional land use in the region is generally limited to mineral exploration, re-supply operations, and tourism.

Mineral exploration includes the Mary River Project and other projects that are currently at an early grassroots stage. There are currently no operating mines in the eastern arctic. The Nanisivik Mine, located about 20 km from Arctic Bay, closed in 2003 and reclamation is underway.

Lancaster Sound is known to contain oil and gas deposits, but up to now, exploration has been limited to geophysical surveys and no wells have been drilled.

All Nunavut communities rely on an annual re-supply of non-perishable goods and fuel by marine shipping, locally referred to as the “sea-lift”. Sea-lift generally occurs through August and September, and each community might receive several ships in a season.

With respect to tourism, the Government of Nunavut estimated in 2000 that 18,000 people visit Nunavut annually (Government of Nunavut, 2000), with a range of tourism activities including eco-tourism, sport hunting and fishing, and cultural, adventure and educational tourism activities. In the North Baffin area, community-based adventure tourism (floe edge tours, kayaking, etc.), and other activities that have loosely been defined as tourism-related (i.e., film documentaries) occur based in Pond Inlet.

Adventure tourism is a fledgling and growing industry. Tourism activities in the North Baffin region include dog sledding, skiing, snowmobiling, floe edge tours, whale watching, bird watching, hiking, sea kayaking, hunting and fishing. April through August are the busiest periods for adventure tourism in Nunavut, with little tourism activity normally occurring in November through January when the northern regions experience 24-hour (or near 24-hour) darkness. Tourism activities during the ice-covered months focus on the floe edges. Winter-based tourism activities include skiing, snowmobiling, dog sledding, and wildlife viewing at the floe edges. Break-up of the land-fast ice occurs in July and most open water activities take place during August. Open water tourism opportunities include sea kayaking, hiking, and wildlife viewing (including whales and birds).

Nunavut Tourism (2006) identifies 13 outfitters with a fixed address within a North Baffin community, two of which are located in Pond Inlet. A total of 11 outfitters, some of which are southern-based, indicated their area of service to include Pond Inlet.

Overall, adventure tourism activities in the area focus on the two main floe edges previously mentioned, as well as in Eclipse Sound, Bylot Island, Navy Board Inlet area, and the south-trending deep fiords that branch off Eclipse Sound such as Oliver Sound and Milne Inlet. Each year a local outfitter operates at lest one summer kayaking tour to Koluktoo Bay to view narwhal. Tours are not restricted to these locations, however, with local operators utilizing much of the North Baffin region including Devon Island, Lancaster Sound, the Borden Peninsula and the high arctic islands.

In addition, increasing numbers of cruise ships are visiting the area and the community of Pond Inlet. According to a Nunavut Tourism study conducted in 2003, the main tour companies active in the region include Adventure Canada, Peregrine Adventures, and Quark Expeditions, and these tour companies book space on any of five ships that travel into the region (Elverum, 2006). Cruises operate their eastern arctic tours from late July through to mid-September, with one to eight ships coming to shore at Pond Inlet each summer (Elverum, 2006). The cruise ships are usually equipped with zodiacs to facilitate

trips to shore to visit communities or an archaeological site, go hiking, or to view wildlife (Vlessides, 2004).

With respect to hunting and fishing, in some communities the local Hunters and Trappers Organizations (HTOs), who are responsible to allocate tags based on annual quotas for polar bears or whales, in some cases also act as an outfitter and guide. Sport fishing in this region appears to be generally opportunistic, undertaken while pursuing other tourism activities.

5.3.3 Local and Regional Traffic Patterns

In April 2006, Knight Piésold met with the Mittimatalik Hunters and Trappers Organization to discuss proposed marine and terrestrial wildlife surveys, as well as to obtain information on land use in the Eclipse Sound area. Figure 5.16 shows the locations of cabins and typical camping areas.

On September 7, 2006 Knight Piésold held a detailed discussion with Pisiksik that involved reviewing the various components of the bulk sampling program, obtaining feedback on both the potential effects of the proposed road upgrades and local use of Milne Inlet. Figure 5.17 summarizes the land use information for Milne Inlet, collected during that discussion.

Local traffic patterns in the study area are seasonally-dependent, broadly described within the following categories:

- Travel over ice - in late November through late June, considerable snowmobile-based travel occurs throughout the land-fast ice area of Eclipse Sound and adjacent fiords, Pond Inlet, Navy Board Inlet, and Milne Inlet. Throughout the winter period these areas are traversed for seal hunting, and during the months of May and June, activities concentrate to some degree at the floe edge at the entrance of Pond Inlet (adjacent Button Point at the southeast of Bylot Island) and to a lesser degree at the floe edge that forms at the top of Navy Board Inlet.
- Travel over land, facilitated by ice - certain inland areas become accessible during periods of ice cover. Main areas include the Mary River area, a travel route through Tremblay Sound at the top of Milne Inlet to Arctic Bay, and select ice fishing locations on inland lakes. The season for inland travel by snowmobile generally concludes before break-up of the sea ice due to lose of snow cover on the land. Loss of snow cover varies by location but generally occurs in May.
- Travel over open water - travel by boat during the open water season of mainly August and September occurs throughout the same area of Eclipse Sound and adjacent fiords, Pond Inlet, Navy Board Inlet, and Milne Inlet. Figure 5.16 shows the location of cabins and camping areas as an indication of where people of Pond Inlet travel during this period of the year.
- Travel over land, facilitated by boat - most land access by marine boating is for coastal use, although some people load all-terrain vehicles (ATVs) into boats, to be able to

access areas further inland for primarily caribou hunting. The Phillips Creek watershed and Mary River area is accessed in this way from Milne Inlet. People generally camp at Milne Inlet near to the existing cabin and in close proximity to the adjacent stream for to have a nearby source of drinking water. If boats are to be left unattended, they are anchored at the mouth of Phillips Creek, sheltered from storms by the spit of land that reaches into the river mouth.

Regional traffic patterns are dominated by snowmobile movements during the winter months. Travel between Arctic Bay and Pond Inlet occurs via an overland route across the Borden Peninsula through Tremblay Sound. Travel between Igloolik and Pond Inlet generally follows an overland route over North Baffin that passes through or near to the Mary River area and roughly follows the existing road to Milne Inlet.

Other regional traffic includes sealift and cruise ship operations, which visit Pond Inlet and area each summer, as well as scheduled and chartered air services to support local exploration, a goose research camp on Bylot Island, and the Polar Continental Shelf Project.

5.3.4 Brief Community Profiles

Pond Inlet is the nearest community, located 160 km from the Mary River Project site. Residents of Pond Inlet regularly utilize the Milne Inlet and Mary River areas for hunting. Other communities in the region within several hundred kilometres of the Mary River area include Igloolik, Arctic Bay and Hall Beach. Current plans are to draw from the communities of Pond Inlet, Arctic Bay and Igloolik to staff the bulk sampling program (Section 3).

5.3.4.1 Pond Inlet

The most recent census available (2001) recorded a total population in Pond Inlet of 1,220, with an Inuit representation of 1,150 persons, equivalent to more than 94% of the population (Statistics Canada, 2004). Between 1996 and 2001, the growth rate was 5.7%.

The community relies on hunting both within the marine environment of Eclipse Sound/Milne Inlet as well as caribou hunting through the Mary River area. In 2001, 55% of adult Pond Inlet residents hunted for food, 55% fished for food, and 49% gathered wild plants for food. These are similar statistics to those of all of the Territory of Nunavut; 57% of adult residents hunted for food, 63% fished for food, 46% gathered wild plants for food, and 9% trapped (Statistics Canada, 2004).

The wage economy in Pond Inlet is substantially derived from government employment, sales and service, and trades. In the most recent census (2001), the number of residents aged 15 and over with income was 625. Their mean total income was $14,160 and 76.3% of this income represents earnings. This is prior to the relocation of Government of Nunavut departments of Education and Environment to Pond Inlet in 2001/2002. The average

household income in 2003, after decentralization, was calculated by the Government of Nunavut (2005) to be $41,632.

Examples of some of the registered Inuit firms in Pond Inlet are a cleaning service, a bed and breakfast, a hotel, a taxi service, a translation service, construction services, an electrical company, a business service, and retail services (NTI, 2006).

In the most recent census available, 20% of income of the 625 persons aged 15 years and older consisted of government transfer payments (Statistics Canada, 2004). The Government of Nunavut (2005) calculated based on 2003 data that 162 people (12.5% of the population) in Pond Inlet required income support. The number of people who require income support has been steadily increasing over the period from 2001 to 2003 by about 15% per year; 20 people in 2002 and 17 people in 2001 (Government of Nunavut, 2005).

5.3.4.2 Igloolik

The 2001 census recorded a total population in Igloolik of 1,286, with an Inuit representation of 1,225 persons, equivalent to more than 95% of the population (Statistics Canada, 2004). Between 1996 and 2001, the growth rate was 9.5%. The Government of Nunavut (2005) estimated the 2003 population at 1,457.

Igloolik historically used the area to the south of Mary River for hunting caribou, and the Mary River-Milne Inlet corridor is a transportation corridor between Igloolik and Pond Inlet, of particular historical importance prior to the establishment of permanent settlements in the region, when Pond Inlet was the nearest trading post for Igloolingmiut (people from the Igloolik area).

In the most recent census (2001), 64% of adult Igloolik residents hunted for food, 66% fished for food, and 33% gathered wild plants for food. These are similar statistics to those of all of the Territory of Nunavut.

The wage economy in Igloolik is substantially derived from government employment, sales and service, trades, and business. Examples of some of the registered firms in Igloolik are a co-op which hosts retail services, a café, a cable television service provider, Canada Post, and telephone service provider. Other local registered Inuit firms include a retail store and general contracting and construction services (NTI, 2006).

In the most recent census, the number of residents aged 15 and over with income was 635 (Statistics Canada, 2004). The mean total income was $13,144, with 72.8% of this income representing earnings. Igloolik also became a decentralized community in 2001/2002, and the average household income in 2003 was $35,904 (Government of Nunavut, 2005). Considerable mineral exploration activities have based out of Igloolik over the past several years but it is not known how this has contributed to the local economy and employment.

In the most recent census, 25% of income of the 635 persons aged 15 years and older consisted of government transfer payments (Statistics Canada, 2004), whereas in 2003 this decreased to an estimated 207 people, or 14% of the population (Government of Nunavut, 2005).

5.3.4.3 Arctic Bay

The most recent census available recorded a total population in Arctic Bay of 645, with an Inuit representation of 610 persons, equivalent to more than 94% of the population (Statistics Canada, 2004). Between 1996 and 2001, the population change was 1.1%. The Government of Nunavut estimated the population in 2003 to be 751 (Government of Nunavut, 2005).

Arctic Bay is located 280 km from the Mary River site. Review of harvest patterns presented in the Nunavut Wildlife Harvest Study suggest that contemporary land use is primarily focused within Admiralty Inlet, although Arctic Bay residents fish near the head of Tremblay Sound (Priest and Usher, 2004). There are family connections between Arctic Bay and Pond Inlet, and consequently there is winter travel between the two communities by an overland route through Tremblay Sound. Historic land use data (i.e., Milton Freeman, 1976; Schwartz, 1982) show that Arctic Bay residents at one time moved throughout the Mary River site and transportation corridors.

In the most recent census (2001), 66% of adult Arctic Bay residents hunted for food, 63% fished for food, and 39% gathered wild plants for food; a slightly higher proportion of people from Arctic Bay hunt compared with Nunavut-wide averages.

Arctic Bay, as host to the now-closed Nanisivik Mine, is an obvious regional source of human resources for the Project, as there are people within the community with a familiarity of mining and matching skill sets.

The number of residents in 2001 aged 15 and over with income was 355, with a corresponding mean total income of $12,064 (Statistics Canada, 2004). Of this income, 74.7% represented earnings and 18.5% consisted of government transfer payments (Statistics Canada, 2004). The Government of Nunavut (2005) determined that in 2003, 132 people or 17.5% of the population in Arctic Bay, required income support. Possibly because mine reclamation was still ongoing in 2003, the number of persons requiring government support did not increase immediately after the closure of the Nanisivik Mine.

Examples of some of the registered Inuit firms in Arctic Bay are taxi services, rental services, a bed and breakfast, construction, bookkeeping, and retail (NTI, 2006).

5.3.4.4 Hall Beach

The most recent census available (2001) recorded a total population in Hall Beach of 609, with an Inuit representation of 585 persons, equivalent to more than 96% of the population.

Between 1996 and 2001, the population change was 12.2%. The Government of Nunavut estimated the population in 2003 to be 668 (Government of Nunavut, 2005).

Hall Beach is located 288 km from the Project site, a similar distance to that of Arctic Bay from the Project site and slightly further removed than Igloolik. Hall Beach in many respects is a satellite community 70 km south of the larger community of Igloolik, established in the mid-1950s as a Distant Early Warning (DEW) Line site. As with other DEW-Line sites, many Inuit concentrated in its vicinity because of opportunities for wage employment and supplies, as well as a nursing station, and eventually a federal day school. Hall Beach residents are Iglulingmiut, and considerable family ties exist between the people in Hall Beach and Igloolik.

Harvest patterns of the residents of Hall Beach would have been one in the same of Igloolik residents until the late 1950s or 1960s. More recent harvest data (Priest and Usher, 2004) demonstrates harvesting patterns distinct from Igloolik, with a concentration of marine harvesting predominantly centred on the Hall Beach area, and some hunting on Baffin Island intermixed with Igloolik hunting but directly north of Igloolik and Hall Beach, as opposed to more easterly towards Steensby Inlet. This recent harvest data does not show Hall Beach hunters harvesting wildlife within the vicinity of Steensby Inlet.

The wage economy in Hall Beach is substantially derived from government employment, sales and service, trades, and business. In the most recent census (2001), the number of residents aged 15 and over with income was 315. Their mean total income was $10,016. 72.5% of this income represents earnings. Average household income was $34,688 in 2001.

In the most recent census (2001), 45% of adult Hall Beach residents hunted for food, 61% fished for food, 24% gathered wild plants for food, and 12% trapped. These are similar statistics to those of all of the Territory of Nunavut.

In the most recent census (2001), Hall Beach's total experienced labour force was 180, of which 53% were male and 47% were female. The participation rate was 57.1%, the employment rate was 41.4%, and the unemployment rate was 25.0%. Over 38% of those employed worked in other services (including government), 22% worked in health and education, 17% in wholesale and retail trade, 6% in manufacturing and construction, 8% in business services, none in finance, and 8% in resource-based industries. Current activities in Hall Beach include cleanup of a military site and mineral exploration.

In 2003, 77 people (11.5% of the population) in Hall Beach required income support. The number of people who require income support had decreased from 2002 to 2003 by about 20%, 51 people. In 2001, 98 people required income support (Government of Nunavut, 2005). In the most recent census available (2001), 26.3% of income of the 315 persons aged 15 years and older consisted of government transfer payments.

5.3.5 Human Health

Human health is broadly defined as a complete state of well being, including physical, social, psychological, and spiritual (NIRB, 2006b). Socio-economic studies to collect information on human health of the people in the region are currently underway as part of the environmental baseline studies for the Mary River Project.

5.3.6 Other Valued Socio-economic Components

Work is underway to identify valued socio-economic components (VSECs) that would apply to a future full-scale mining operation at Mary River, but this exercise is not yet complete.

SECTION 6.0 - IDENTIFICATION OF IMPACTS AND PROPOSED MITIGATION

A summary of identified impacts, based on NIRB's Table 1 forming part of the screening application, is attached as Table 6.1. The table identifies project activities and potential impacts on various components of the environment, as follows:

P = Positive impact
N = Negative and non-mitigatable impact
M = Negative and mitigatable impact
U = Unknown impact
Blank cell indicates no impact expected

The methodology employed in the table does not reflect the magnitude, duration and frequency of an impact. As such, minimal to negligible negative impacts to environmental components for which no mitigation is proposed or justified receive an "N" rating. For example, air emissions from combustion engines have a very modest negative impact but receive an "N" rating for activities involving the operation of equipment.

6.1 PHYSICAL ENVIRONMENT

6.1.1 Air Quality

6.1.1.1 Potential Impacts

Potential project-related impacts to air quality include:

- Vehicle, aircraft and equipment engine exhaust emissions
- Fugitive dust emissions from the mining/blasting; crusher, conveyors and stockpiling activities
- Fugitive dust emissions from road traffic
- Greenhouse gas emissions

Combustion of fuel in generators, mining equipment, haul truck and aircraft will generate air emissions, primarily airborne particulates, sulphur dioxide and nitrogen oxides.

Fugitive dust emissions will also result from various operations, including mining and blasting, crusher operation, and to a lesser extent from operation of conveyor systems at Milne Inlet. Dust generated from these sources will contain fine particulate from the iron ore sample, which has a very high specific gravity (4.36 t/m^3) that will not become easily airborne (compared with sand and gravel material, for example, with a specific gravity of 2 to 2.5 t/m^3). The duration each of these activities is short-term (in the order of several months) and localized.

Fugitive dust emissions will arise to some degree from vehicle traffic on roads during the brief summer months. Dust from the road bed, consisting of local sand and gravel, may be blown into the air and deposit on nearby soils and vegetation.

The Project, through combustion of approximately 8 ML of fuel, will generate roughly 22,000 t of greenhouse gases over a two year period. This represents 0.0016% of Canada's (potentially former) target CO_2 emission reduction rate of 240 Mt/a.

6.1.1.2 Proposed Mitigation

Mitigation is not proposed to address air emissions from fuel combustion, although by necessity due to the high cost of fuel to operate in the region, there is a motivation to be as efficient as possible with vehicle and aircraft movements.

Ore geochemistry results are pending and will provide some indication as to the likely chemical nature of airborne particulate released from the crusher and conveyors. Ore dust emissions, to the extent that they occur, will be over a relatively short time, so no mitigation is proposed. The program does provide an excellent opportunity to monitor emissions loadings over a discrete period of time, so that the potential for longer-term effects on soil and vegetation that may be associated with a full-scale mining operation can be extrapolated. Proposed monitoring is discussed in Section 8.0.

6.1.2 Noise

6.1.2.1 Potential Impacts

Sources of noise from the Project include:

- Vehicles, aircraft and equipment
- Blasting during mining
- Crusher and conveyors

Noise emissions will primarily be concentrated at Mary River and at Milne Inlet, with noise arising from construction and traffic on the road as well. Noise at Mary River will consist of periodic blasting, equipment operation, and aircraft. At Milne Inlet, the ship loading (operation of conveyors) will be the largest noise emitter. Noise at Mary River and Milne Inlet will be localized and, while removed from local communities and heavy use areas, some localized disturbance to wildlife is probable.

Noise during construction along the road will be more intense yet more sporadic and short-term then the passage of regular truck traffic. Road noise may also have a small effect on the distribution of wildlife in the area, which in turn may require hunters using the road to go further afield when hunting caribou, for the short duration of the bulk sampling program, although this will be balanced somewhat by the benefits of improved access and availability of assistance in emergencies.

6.1.2.2 Proposed Mitigation

All mining and road construction equipment that will be used during the bulk sampling program is very modern to new, and are equipped with appropriate mufflers. The period of mining/blasting and of use of crushers and conveyors is relatively short-term, in the order of several months compared with the length of the bulk sampling program. The focus of any mitigation at Mary River will be on ensuring a safe work environment, including the provision of comfortable accommodations. Options for further mitigation are limited, and impacts are relatively modest and short-term. Therefore, no other mitigation is proposed for land-based equipment.

Potential noise impacts to both people and wildlife from aircraft will be mitigated by flying above prescribed heights. Routing flights between Pond Inlet and Mary River around the fiords used by the community, and operating direct flights from Iqaluit to Mary River, will reduce the amount of air traffic landing and taking off at Pond Inlet and air traffic between these points.

6.1.3 Ground Stability and Permafrost

6.1.3.1 Potential Impacts

The Project involves ground disturbances at watercourse crossings, cut and fill locations on the Milne Inlet tote road, and borrow areas where excavation of sand and gravel will occur (an area up to 33 ha in size). These activities will result in a change in the thermal regime of the ground, as a new active layer is created. Modification to the thermal regime may induce melting of any ground ice present, resulting in thaw settlement. Depressions caused by these settlements could form leading to erosion and possibly ponding of water.

Where thicker layers of engineered fill are placed on the road, the permafrost will rise over time, possibly creating a damming effect in the seepage through the active layer that results in ponding behind the road bed. This would not be expected to occur at well drained locations but may occur at low-lying sections that form natural drainage courses.

These induced effects are balanced somewhat by virtue that permafrost-related phenomenon, mass wasting and erosion are occurring under natural conditions.

The three borrow sources delineated for potential extraction (borrow sources No. 1, No. 2 and No. 3) cover areas of 347 ha, 332 ha and 350 ha, respectively, for a total area of 1029 ha. Extraction activities will be concentrated on a maximum of 33 ha to obtain the necessary material, representing approximately 3.2% of the identified area as potential borrow material. The areas of glacio-fluvial deposits in the area are extensive and disruption will be limited to a small portion of the total area.

6.1.3.2 Proposed Mitigation

Cut and fill areas will be stabilized by constructing gentle slopes less prone to erosion, and through implementation of sediment and erosion control measures including compaction, silt fences and erosion control blankets. Cut and fill areas are expected to be relatively small in horizontal and vertical extent, however many will be located near watercourse crossings, creating the need for sediment and erosion control measures to prevent siltation of the watercourses.

At low lying areas where roadbed fill is in the order of 1 m and the permafrost can be expected to rise to a meaningful degree, swales or culverts can be installed as part of road maintenance to prevent the ponding of water that may arise from the damming effect of the raised permafrost level in the road bed. To address this issue upon closure, swales can be left in place, or alternatively, the road bed can be breached to allow drainage.

The area impacted from borrowing of materials will be more extensive by comparison. Efforts will be made to concentrate borrow activities to limit the area of disturbance. This will be accomplished by removing the thawed active layer of an area, and returning some time later to remove subsequently thawed layers.

Regular inspection of borrow locations will identify problem areas followed by regrading of unstable slopes, eliminating depressions, and re-establishing natural drainage patterns to mitigate the impacts of any thaw settlement which has occurred. The ground surface will re-establish thermal equilibrium and will be suitable for re-colonization over time of natural vegetation. Since the resultant effects will take place over many seasons, ongoing monitoring will be necessary in the years following the bulk sampling program, and mitigation will be implemented as required.

6.1.4 Hydrology/Limnology

6.1.4.1 Potential Impacts

Water taking activities and the discharge of effluents have the potential to impact on hydrology and limnology. Impacts to hydrology include a reduction in flows which translate into lower water levels and possibly a reduction in available aquatic habitat. Discharge of effluents could potentially affect limnology, including the physical and biological features of lakes.

Water Taking

Water takes associated with the bulk sampling program include withdrawals of water for camp water supplies, 50 m^3/day from Camp Lake for the Mary River camp, and up to 7.5 m^3/day from Philip's Creek or an Unnamed Lake along the Milne Inlet tote road.

Camp lake has a surface area of approximately 1,920,000 m^2 or 192 ha, and while detailed bathymetry has not yet been completed, but the lake has steep sides and based on spot measurements across the lake during water quality sampling the lake has a relatively flat bottom with an average depth of about 16 m. A back of the envelope calculation shows that with a highly conservative average water depth of 10 m, the annual water take would change the lake water level by 0.011 m (or 1.1 cm), without any regard to replenishment by runoff. Therefore, no environmental effects are expected from the water take at Camp Lake.

A similar calculation has not been made regarding the 7.5 m^3/day water take from Phillip's Creek, a relatively large river with a large catchment, nor with the unnamed lake along the Milne Inlet road. The water takes from these locations are also deemed insignificant.

Discharge of Treated Sewage Effluent on Sheardown Lake

Baseline Water Quality and Limnology of Sheardown Lake

Water quality was measured on one occasion (August 1) at one site in Sheardown Lake in 2006. Samples were collected at 1 m below the surface and 1 m above the bottom. Additionally, depth profiles of dissolved oxygen (DO) and temperature were collected in August and September 2006. A summary of these data are provided on Table 6.2.

Sheardown Lake exhibited vertical differences in temperature in August, but temperature was uniform across depth in September, as shown on Figure 6.1. There was no indication of dissolved oxygen depletion at depth in either sampling period; concentrations were near saturation in August (mean across depth of 91% saturation) and somewhat lower in September (mean across depth of 76% saturation). There is insufficient information to determine whether or not the lake experiences low DO at depth under ice cover.

Sheardown Lake is a relatively clear lake (low turbidity and high Secchi Disk depth), is alkaline (pH > 8), soft (hardness 50 mg/L), and contains a relatively low concentration of dissolved solids (61 mg/L). The lake is also characterized by a relatively low concentration of nutrients; total phosphorus was 0.02 and <0.01 mg/L at the upper and lower sampling depths in August. Concentrations of nitrate, nitrite, and ammonia were also low (at or below the analytical detection limits) in August 2006.

Several lake trophic classification schemes are presented on Table 6.3. According to the CCME phosphorus guidance framework, Sheardown Lake would be classified as oligotrophic – mesotrophic on the basis of total phosphorus.[1] Similarly, Secchi disk depths reflect oligotrophic – mesotrophic conditions. However, there is no information available on phytoplankton of Sheardown Lake (i.e., Chlorophyll *a* concentrations), which is very useful

[1] Trophic categorizations should be based on seasonal means of total phosphorus concentrations. Additional measurements may result in a refinement of this categorization.

in defining the actual productivity of a lake as the relationship between nutrient concentrations and algal biomass may vary considerably between systems.

Levels of nitrate, nitrite, ammonia, and pH from the samples collected in August were all within the CCME water quality guidelines for the protection of aquatic life. Dissolved oxygen guidelines were met in August (all values were greater than > 9.5 mg/L), but concentrations in September indicate that the guideline for protection of early life stages of cold-water species (9.5 mg/L) may not be met in this ecosystem when early life stages of cold-water fish species are present.

Potential Issues Associated with Discharge of Treated Sewage Effluent on Sheardown Lake

Treated sewage effluent is proposed to be discharged to Sheardown Lake (northwest end of the lake) at a discharge rate of up to 50 m^3/day. It is anticipated that biochemical oxygen demand (BOD) and total suspended solids (TSS) concentrations will be 20 mg/L. Other effluent quality data are currently not available.

Typical potential issues associated with discharge of treated sewage effluent to aquatic ecosystems include:

- Elevated TSS may affect water clarity, aquatic life (e.g., reduced foraging success, reduced fish egg and larval survival), and fish habitat (through alterations to substrate composition and/or sedimentation)
- Release of BOD may lead to dissolved oxygen depletion which may in turn affect the quality of the waters for aquatic life
- Release of nutrients (nitrogen and phosphorus) may affect the productivity of aquatic ecosystems and can lead to eutrophication and associated issues (e.g., dissolved oxygen depletion associated with algal respiration and bloom senescence, nuisance plant and/or algal growth, cyanobacterial blooms)
- Nitrate and ammonia may be toxic to aquatic life
- Thermal effluent may alter the temperature regime of receiving environments and, subsequently, affect aquatic biota
- Release of microbiological organisms (e.g., faecal coliform bacteria) may affect the suitability of water for recreation and as a drinking water source

As Sheardown Lake is characterized by relatively low nutrients and is likely similarly characterized by low to moderate primary productivity, it may be particularly susceptible to nutrient enrichment. Similarly, the long period of ice cover experienced in this region may also predispose the lake to depletion of dissolved oxygen; additions of BOD may cause or contribute to depletion to critically low levels of DO. As Sheardown Lake exhibits a low turbidity, discharge of TSS in effluent may lead to localized issues associated with direct effects to biota and/or issues associated with sedimentation and effects to fish habitat.

As the location(s) of arctic char spawning site(s) in the lake is currently unknown, risks to early life stages of fish can not be readily ascertained at this time. As indicated in the following sections, follow-up studies and/or mitigation options will be considered to address this, and other, data gaps.

Although some water quality data have been collected on Sheardown Lake, additional information is required to characterize the existing environment and to assist in assessing potential impacts. Additional study is required to more accurately define average conditions in the open-water season, to characterize conditions under ice cover (particularly stratification and dissolved oxygen), and information on algae (i.e. Chlorophyll *a*) to characterize the trophic condition of the lake.

Once additional information on effluent quality and water quality and primary production in the lake is made available, a more thorough assessment of potential impacts to Sheardown Lake can be undertaken. Required effluent quality information includes estimates of concentrations of:

- Nitrate, nitrate and total Kjeldahl nitrogen
- Total phosphorus
- Temperature
- Dissolved Oxygen
- pH

Additionally, information will be collected to define lake bathymetry (and thus water volume and water residence time) and, ultimately, to provide supporting hydrological information required to assess potential impacts to water quality (e.g., water quality modelling). Additional information needs include inflow and outflow data for the lake to determine water residence times.

A spawning survey will determine whether the proposed effluent outfall location would pose a risk to early life stages of arctic char. Other information describing the resident biota will further assist in identifying the presence of known receptors and potentially sensitive species.

Potential Issues and Impacts Associated with Discharge of Treated Sewage Effluent on Milne Inlet

Treated sewage effluent is proposed to be discharged to Milne Inlet at an estimated rate of 7.5 m^3/day. It is anticipated that biochemical oxygen demand (BOD) and total suspended solids (TSS) concentrations will be 20 mg/L. Other effluent quality data are currently not available.

Typical potential issues associated with discharge of treated sewage effluent are similar to those listed for effluent discharge to Sheardown Lake. Although there are no baseline data to describe the receiving environment, with respect to water quality, oceanography, and

primary productivity, it is likely that potential impacts will be localized and/or negligible to small, owing to rapid dilution and the low rate of effluent discharge that is anticipated. However, further assessment of potential impacts will be undertaken upon receipt of additional information describing the existing environment and effluent quality.

As there is no water quality and primary productivity information to characterize the existing environment of Milne Inlet and limited information on effluent quality, an assessment of potential impacts is limited. Once additional information on effluent quality and water quality and primary production is made available, a more thorough assessment of potential impacts will be undertaken.

Potential Construction Impacts

Construction of an effluent outfall at Sheardown Lake and Milne Inlet may lead to introduction of TSS and/or resuspension of sediments (e.g., lake bottom). Consideration will be given to a floating discharge system from a small barge, to avoid in-water works and disruption of bottom sediment. These potential impacts may be at least partially mitigated and managed through the design of a sediment management plan and implementation of sediment and erosion control measures and/or monitoring (where required). Additionally, the outfalls may harmfully alter or disrupt aquatic habitat, at a minimum through their actual footprint.

6.1.4.2 Proposed Mitigation

Mitigation and follow-up options will be identified as additional information is compiled to address the identified data gaps and as the Project description is refined. Mitigation options may include:

- Considerations of the outfall design (i.e., to assist in mixing and dilution)
- Consideration to alternate locations of the outfall (i.e., consideration may be granted to an alternate outfall location if the proposed location is adjacent to critical aquatic habitat)
- Other treatment options may be considered to address issues that may be identified with additional information

Follow-up may include monitoring of the effluent quality and receiving environment (water quality and primary productivity).

6.1.5 Water Quality

6.1.5.1 Potential Impacts

Potential project-related impacts to water quality include:

- Release of runoff from road fill and excavated borrow areas
- Release of runoff from bulk sampling pits
- Release of runoff from ore stockpiles
- Potential accidental releases of fuels

Separate discussions of these potential impacts are presented below.

Release of Runoff from Road Fill and Excavated Borrow Areas

Ground disturbance, particularly at road construction and borrow areas, has the potential to release sediment-laden runoff into nearby fish-bearing watercourses, affecting water quality as well as fisheries resources.

Release of Runoff from Bulk Sampling Pits

The bulk sampling pits will be located near the top of Deposit No. 1, which is situated next to a headwater tributary of the Mary River. If the ore is found to generate acid or leach metals, runoff from the mining areas that will drain to the headwater tributary may adversely affect the water quality in the stream. Preliminary results and visual observations indicate that the bulk sample iron ore is unlikely to generate acid. Results are still pending on metal leaching potential.

Ammonia is typically contained in the mine water of open pit operations, from the use of ammonium nitrate fuel oil (ANFO) explosives for blasting rock. In full-scale mining operations, ANFO is mixed on site and consists of ammonium nitrate in solid (powder) form. A key contributor to ammonia in runoff is spillage which occurs more frequently in the handling of powder materials. The potential exists for ammonia from mining operations to be released as runoff to nearby watercourses, ammonia being toxic to fish at certain concentrations.

Blasting operations at the bulk sample pits at Mary River will be carried out using ammonia-based pre-packaged explosives to blast rock. A total of 240 t of explosives, consisting of up to a maximum of 85% ammonium nitrate, will be used to blast a 420,000 t of ore (including weathered and fresh ore). Estimating the average ammonium nitrate concentration to be 85%, and assuming all explosives are consumed during the bulk sampling program, up to approximately 200 t of ammonium nitrate will be detonated during bulk sample mining operations. Residual ammonia from blasting will eventually reach the headwater tributary of the Mary River adjacent to Deposit No. 1.

There are several factors regarding the proposed mining operations that will reduce the potential for ammonia runoff. First, emulsion type explosives such as those to be used at Mary River will not be in powder form, nor will it be readily available from onsite manufacture. Thus the potential for spillage is greatly reduced. All mining will occur during the winter period, and therefore any residual ammonia-nitrogen generated from blasting will fall on snow. The mining areas are at about El. 645 m where conditions are very

wind-swept. It is expected that a meaningful portion of the ammonia-nitrogen will be dispersed with blowing snow by the high winds. It is not unreasonable that half of the snow pack in a given area is blown away, and this would be particularly true for at the top of Deposit No. 1. The remainder will form part of the snow pack that does not blow away. This snow pack will be subject to considerable sunlight during the spring months, before snow begins to melt in May, which will assist in the volatilization of ammonia in the snow pack. Any remaining ammonia will run off the Deposit and enter the headwater tributary below.

Release of Runoff from Ore Stockpiles

A weathered ore stockpile will be situated on Deposit No. 1 near the two bulk sample pits, and temporary ore stockpiles will be located near the crusher and at the Milne Inlet beach. The temporary ore stockpiles will exist at their respective locations in the order of 6 to 8 months, from mid to late winter through until August or September. Runoff may occur during freshet, carrying sediment derived from any very fine materials in the ore. As mentioned with respect to the bulk sample pits, ore geochemistry results are pending.

Potential Accidental Releases of Fuels

Fuel spills have the potential to adversely affect water quality if they occur at or near watercourses.

6.1.5.2 Proposed Mitigation

Sediment laden runoff from roads, borrow areas and stockpiles will be contained through the employment of sediment and erosion control measures, including silt fences. At borrow areas, re-establishment of drainage patterns to near the natural condition will be an important mitigation measure.

With respect to the potential for the ore to generate acid or leach metals at bulk sample pits, the pits will be constructed to be free-draining as to avoid the ponding of water. Should monitoring of the pit walls and floor indicate potential acid generation and/or metal leaching (or if pending rock geochemistry results suggest this to be probable), contingency mitigation is planned involving the quarrying of nearby dolomitic or calcareous sandstone, and placement of a layer of the material inside the pit, to neutralize and attenuate any acid or metals. An escarpment of the calcareous sandstone, with a limited cover of till, is located to the southwest of Sheardown Lake in close proximity and easy access to the mining and stockpiling areas at Mary River.

Similar mitigation is proposed for ore stockpiles. Only the weathered ore stockpile is permanent and all other stockpiles temporary. The calcareous sandstone may be placed beneath the stockpile or can be mixed into the stockpile.

The potential for fuel spills near watercourses can be addressed through the implementation of Baffinland's Environment Health and Safety (EHS) System, and response to any such spills will be implemented according to the Emergency and Spill Response Plan in Appendix H.

6.1.6 Climate Conditions

No impacts to climate conditions are envisaged from the Project.

6.1.7 Unique or Fragile Landscapes

6.1.7.1 Potential Impacts

Impacts to fiords or glacial deposits will not occur as a result of the Project. The Project will involve the disturbance of surficial landforms through cut and fill operations associated with road, and excavation of sand and gravel from borrow sources.

The road crosses patterned ground but is not known to intersect any ice-rich unique periglacial features such as drumlins, pingos or ribbed moraines. If any such features exist on the current alignment, the Project activities will incrementally increase disturbance to these features, which is preferred over disturbance of new areas by developing of an alternative alignment.

6.1.7.2 Proposed Mitigation

Unique and fragile landscapes in the region, including periglacial features, will be avoided to the extent possible. Any impacts to periglacial features, such as thaw settlement, will be mitigated through contouring, ditching and silt fences, to ensure sediment and erosion control and re-establishment of physically stable land surface. Requirements for mitigation will form part of the contractor environmental monitoring plan. Post-excavation monitoring of borrow pit areas will be undertaken so that the disturbed areas are free-draining to avoid excessive water ponding, and so that the areas will re-establish in a physically stable manner. The post-excavation monitoring will reduce potential sediment transport to nearby watercourses and will ensure conditions are suitable for the re-establishment of vegetative cover.

6.1.8 Geology

Potential impacts to geology may include disturbance to unique or fragile landscapes. This is discussed in Section 6.1.7.

6.1.9 Sediment and Soil Quality

6.1.9.1 Potential Impacts

Potential impacts to sediment quality may include the following:

- Sediment entering watercourses from ground disturbance activities
- Fuel from accidental spills entering watercourses
- Acidic or metal-containing runoff from stockpiles and mining areas

Potential impacts to sediment quality are similar to those discussed for water quality, discussed in Section 6.1.5.

Soil quality can be affected by accidental fuel spills or contaminated runoff from stockpiles or mining areas.

6.1.9.2 Proposed Mitigation

Sediment and erosion control measures will address the potential for sediment to enter watercourses. The potential for fuel spills will be addressed through operational standards in the Environment Health and Safety System, and response to and clean up of spills is addressed in the Emergency and Spill Response Plan (Appendix H).

Contingency mitigation to address any unexpected acid generation or metal runoff from mining areas and stockpiles will be implemented to protect sediment and soil quality, as described in Section 6.1.5.2.

6.1.10 Tidal Processes and Bathymetry

No impacts to tidal processes or bathymetry are envisaged.

6.2 BIOLOGICAL ENVIRONMENT

6.2.1 Vegetation

6.2.1.1 Potential Impacts

Potential environmental effects of the Mary River Project on vegetation include the following:

- Loss of vegetation from the construction of roads and building areas
- Accidental chemical and particulate releases
- Altering drainage, changing the micro-climate (moisture, etc.)
- Introduction of new species

Any activity that breaks the surface of the land has the potential to affect the vegetation in that area. Disruptions to the land will be concentrated around construction and vehicular activities during borrow pit excavations, road widening, and placement of project infrastructure such as camps, the crusher, fuel storage areas, and explosives magazines. There is a relative paucity of vegetation both in plant density and species diversity in this

high arctic region, compared lower latitude tundra environments. Most areas disturbed during exploration activities in the 1960s, particularly upland areas have only lightly re-colonized. Wetland areas, on the other hand, have recovered through re-colonization of primarily sedges. These areas provide an indication of the slow rate of recovery of the land from disturbance.

Run-off from building materials has the potential to deposit materials onto the adjacent soil and vegetation. This is a potential concern if large amounts of crushed rock are being utilized; it would be necessary to evaluate the geochemical properties of such materials. Road bed and work pads will be constructed using local sand and gravel. Unlike freshly crushed aggregate, the sand and gravel has existed in a fine material form for some time. Naturally occurring sands and gravels typically do not generate acid or leach metals, as these processes will have already occurred some time ago. Nevertheless, sand and gravel samples from the borrow sources have been submitted for geochemical testing, and if results suggest that acid generation or metal leaching is possible, mitigation or identification of alternate borrow sources can be undertaken.

Air emissions from crushers and conveyors, and fugitive emissions from road traffic during the snow-free period, have the potential to affect vegetation, particularly if these materials are elevated in metals or have other characteristics (i.e., acid generating, high salinity). Indications are that the ore is unlikely to generate acid, and pending geochemistry results will confirm this and provide an indication as to the potential of the ore to leach metals. Long term exposure may result in uptake of the contaminants into the vegetation tissue. However, the bulk sampling program is of short duration (less than 2 years), and the various component site activities (i.e. crushing, haulage, ship loading) will occur over even shorter time horizons, on the order of several months each. The quantity of air emissions (dust) that may be deposited on vegetation at each location will be limited.

Any activity that changes the flow of water on the land can affect downstream vegetation by changing the moisture regime, by either adding or removing water. Changing water flow may also affect vegetation through erosion or deposition of sediment. This effect on vegetation is possible along the Milne Inlet tote road, which intersects numerous drainages, and at borrow areas, which will alter the ground surface and consequently the drainage patterns of contiguous areas. Changing moisture regimes affecting vegetation is a localized effect.

Seeds are easily transported in and on vehicles, equipment and other materials, and can add alien plants to the environment. Aircraft are less likely to introduce new species because they are kept clean and the slipstream removes most seeds.

6.2.1.2 Proposed Mitigation

The most effective mitigation for the loss of vegetation from construction of roads and building areas is to minimize the area of disturbance. This includes minimizing the footprint of development areas, and restricting vehicular and foot traffic to existing disturbed areas.

Since 2004, Baffinland has made a conscious effort to minimize its disturbance by remaining on roads and areas already disturbed by exploration activities in the 1960s. The bulk sampling program will by necessity have a larger footprint, and effort has been expended at designing a project footprint that is as small as reasonably possible.

Pending geochemistry results will provide further indication as to the likelihood of metal leaching potential in the ore, and the consequent potential impacts of air emissions from crushers and conveyors. No mitigation is proposed to address dust emissions, considering the short-term nature of the Project. The bulk sampling program does, however, afford an excellent opportunity to monitor the nature and levels of air emissions from these sources, with a view of understanding the potential long term impacts of a future full scale mining operation. Snow fall monitoring and vegetation sampling will be conducted in proximity to the crusher at Mary River, which is expected to be the largest potential emitter of ore dust. Proposed monitoring is discussed further in Section 8.

Effects on vegetation from changing moisture availability due to land disturbance will be mitigated through the maintenance or re-establishment of drainage, both along the road and at borrow sites. Sediment and erosion control measures will be implemented at areas of disturbance and to mitigate unexpected erosion.

Prior to transport to site, all used vehicles, equipment and other materials will be thoroughly washed to remove the seeds of alien plants.

6.2.2 Wildlife

Wildlife includes the nine terrestrial wildlife species listed and described in Section 5.2.2.

6.2.2.1 Potential Impacts

The potential impacts to terrestrial wildlife include the following:

- Loss of habitat
- Noise disturbance
- Animal-vehicle interactions (or carnivore-people interactions)
- Increased access by hunters (caribou)

Carnivores

It is possible that road construction and borrow excavations near carnivore dens could cause the foxes or wolves and their pups to abandon their dens. This is more likely true for wolves, as foxes have been shown to be extremely tolerant of disturbance. The occurrence of fox and wolf dens in the road corridor is unlikely given the intensive aerial investigations to date, thus impacts to denning habitat are not expected from road activities. Broad aerial surveys of proposed borrow sites did not locate any dens but more detailed ground-searching will be required at specific borrow locations before excavating, as the

borrow areas identified and surveyed in 2006 were very large areas for which detailed surveys were not practical.

Perhaps the greatest impact to carnivores is food-conditioning, which has been identified as an issue at the Mary River camp and at drill sites. Red and arctic foxes, and at least one wolf were identified as food-conditioned as a result of feeding or poor handling of food and garbage.

Arctic Hares and Small Mammals

Arctic hares and ermine both appear to be widely distributed. These species are not expected to be negatively affected by the proposed bulk sampling program, except for the potential of mortality, i.e., road kills, on the tote road.

Potential localized effects on lemmings may occur but are not in themselves meaningful to the overall population. However, monitoring lemming abundance will indicate the availability of prey for the rarer carnivorous species, and lemmings can serve as indicators of habitat quality, for instance, the level of accumulation of heavy metals and other pollutants in forage plants.

Caribou

Habitat loss will occur with the disturbance of the ground surface and vegetation that provide forage and shelter for wildlife, including caribou. Habitat will become available again at the end of the bulk sampling program if the Project does not advance to the development of a mine, and revegetation will occur over time. A greater effect for caribou is potential disturbance due to noise and traffic. Noise will be associated with activities at Mary River, Milne Inlet, and along the road both during construction and with road traffic during operations. Noise at Mary River and Milne Inlet will be emitted primarily from stationary point sources with a relatively localized and predicable effect. Localized disturbance to wildlife is expected, and caribou may avoid these areas. There is also the potential of road traffic to collide with caribou, as with other wildlife species.

Areas surrounding sites of disturbance, such as roads, will be affected by dust fall-out on the adjacent land and vegetation. The extent of area affected is a factor of prevailing wind conditions and will require monitoring. Where necessary, dust suppression measures including watering will be implemented. The areas to be used during the bulk sampling program represent a relatively small overall footprint on a regional scale, and restoration of areas upon final abandonment will return these areas to productive use and allow for natural re-vegetation over time.

An issue concerning the improved tote road on caribou and other wildlife is the impact of improved access for hunters. Inuit from Pond Inlet traditionally and currently hunt in the Mary River area, traveling by snowmobile in the winter and in the summer by boat and ATV. Access is not possible during break-up and freeze-up.

It is expected that hunting within the area is unlikely to increase substantially as a result of road improvements. The Milne Inlet tote road is located roughly 150 km over sea ice or water from Pond Inlet, translating into approximately 6 hours travel in a boat or 6 to 12 hours in a snowmobile, depending upon ice conditions. In winter, the presence of the road does not currently facilitate improved access; discussions with Pisiksik (2006) suggest that snowmobile traffic inland from Milne Inlet does not preferentially follow the existing road alignment but follows overlapping and parallel routes inland, in part seeking areas with better snow conditions for snowmobile traffic. However, the existing road is located within a natural travel corridor for wildlife and people, and this route will continue to be used by hunters. Snowmobile access becomes difficult however when overland snow conditions deteriorate in the spring.

In the summer, access to the area by ATV will be improved with the removal of potential barriers at major watercourses. This will allow hunters to reach further inland and hunt more area in less time, potentially resulting in increased caribou harvests. It is uncertain if an increased number of people will access the Mary River area during summer to hunt. However, the landing point at Milne Inlet is separated from Pond Inlet only by a 4 to 6 hour boat ride, and there is a certain portion of the community that owns or has access to the required equipment (i.e., boat and ATV) to hunt the Mary River area.

Increased hunting may result as a consequence of people from the community working at the site, and being more aware of caribou movements in the area. This effect has already been observed at Mary River. This appears to coincide with what appears to have been a pre-existing trend towards increased use of the Mary River for caribou hunting, independent of and prior to resumption of exploration activities in 2004, since caribou have became less abundant at locations closer to the community (Section 5.3.2.1).

Increased caribou harvests owing to communication between community hunters and Inuit site personnel is not an issue specific to the bulk sampling program, but increased project-related traffic along the road may increase sightings being reported to the community. Increased hunting in the region provides socio-economic benefits, but could impact on the current low density caribou population, potentially limiting or prolonging recovery.

6.2.2.2 Proposed Mitigation

General Mitigating Measures for Wildlife

Mitigation for habitat loss includes minimizing the footprint of operations and restricting activities to existing disturbed areas, to the extent possible.

As previously mentioned all mining and road construction equipment that will be used during the program is properly equipped with appropriate mufflers, to minimize noise. The periods of use of crushers and conveyors is relatively short-term, in the order of several months compared with the length of the bulk sampling program. Options for further

mitigation are limited, and impacts are relatively localized and short-term. Therefore, no other mitigation is proposed for land-based equipment.

Potential noise impacts to both people and wildlife from aircraft will be mitigated by flying above prescribed heights. Flights between Pond Inlet and Mary River will be routed around the fiords used by the community, and direct flights will be operated from Iqaluit to Mary River. These measures will reduce the amount of air traffic landing and taking off at Pond Inlet and air traffic between these points.

Food-conditioning and habituation of carnivores will be addressed through implementation and strict enforcement of Baffinland's Environmental Health and Safety (EHS) System. The system specifies work procedures and safety issues. All on-site workers will receive training, quizzes and disciplinary action for non-conformance.

Mitigating Measures Specific to Caribou

With respect to road traffic, disturbance can be mitigated and road kills prevented through the traffic management plan which dictates speed limits and gives wildlife the right of way (Section 2.14.8). As calving is the most sensitive period for caribou, it will be necessary to limit or avoid construction activity and road traffic if evidence of migrating cows and/or calving are present within the road corridor or in vicinity of bulk-sampling locations. Management actions will be in accordance with the Caribou Protection Measures outlined in the North Baffin Regional Land Use Plan (Nunavut Planning Commission, 2000).

Employees will not be permitted to hunt while they are at Mary River for work; they will be returned to the community between shift rotations and will not be permitted to stay in the area to hunt as part of their shift rotations. A restriction on hunting within 1 km of the road and the camps is also proposed for the duration of the bulk sampling program for safety reasons. This restriction is not expected to limit caribou harvests, understanding that hunters do not travel solely along the existing road.

Increased caribou harvests because of communication between community hunters and Inuit site personnel is not an issue specific to the bulk sampling program. This issue requires further dialogue between the Project representatives, the community, and the Government of Nunavut. Baffinland will engage these parties in discussion on this subject as the Project continues to move forward. No mitigation is proposed for the bulk sampling program to limit communications or restrict hunting in the region.

6.2.3 Birds

6.2.3.1 Potential Impacts

Potential impacts to birds include the following:

- Disruption of raptor nesting near Deposit No. 1 or at quarrying locations
- Disruption of loon and goose nesting and molting habitat
- Disruption of migrating birds, particularly geese, along the road corridor
- Disruption of shorebirds due to site activities adjacent lakes and at Milne Inlet

Potential impacts to seabirds are discussed in Section 6.3.

Disruption to Raptors

The potential exists to disrupt raptors nesting on cliffs, either in proximity to mining activities at Deposit No. 1 or from quarrying. As discussed on Section 5.2.3.1, a peregrine falcon nest was located at the base of Deposit No. 1 and another pair was continually seen (indicating a defended territory and therefore, likely a nest) approximately 1 km further downstream. Breeding peregrine falcons have demonstrated tolerance to mining and blasting activities, as evidenced by opportunistic nesting of peregrine falcons on the open pit walls at the EKATI™ mine in the Northwest Territories (Banci, 2006). Nevertheless, mining of the bulk sample should be completed before the falcons return to begin nesting in mid-May.

Known raptor nests have been plotted relative to proposed rock quarry and borrow source locations, on Figures 2.27 to 2.29. Conflicts were identified and the proposed quarry and borrow sources for the bulk sampling program have been selected on the basis of avoiding direct conflicts with established raptor nests.

Disruption to Loons and Geese

The Phillips Creek watershed, with an abundant supply of wetlands, streams, rivers, and waterbodies of various sizes (ranging from small shallow ponds up to large deep lakes), are used by a high density, but low diversity, of water birds including geese, ducks, and loons.

Pairs of loons were identified on most lakes (Section 5.2.3.3) within the study area, and can be expected to nest on the shorelines or small islands of lakes and ponds. Activities should not directly infringe on lakes or immediate shorelines where nests may be located, but loons may be disrupted by noise and disturbance from construction. This will likely cause loons to abandon the areas directly adjacent to the mine site and road corridor and move to seemingly suitable habitat nearby to the west.

The area is also an important flight pathway in spring and fall for thousands of migrating birds which appear to use the area to either refuel on tundra vegetation or rest on the various waterbodies. It is possible that the thousands of geese migrating through in the spring (late May to early June) and fall (early September) may change their flight pathways

in response to noise and disturbance along the road during construction, which will take place to a limited extent in the spring and will be concentrated in the late summer and fall period.

While the valley isn't used by a significant number (colonies) of geese for nesting, the geese appear to relocate to the area to molt, possibly from Bylot Island which does not offer many lush waterbodies that offer food. Molting is very demanding energetically, and the birds need to prepare for the fall migration, so it is necessary for the birds to go onto land to feed while in a flightless condition. Loons molt while they raise their young and feeding on fish in the water, and are somewhat protected by virtue of isolation on the waterbody.

Disruption of shorebirds due to site activities adjacent lakes and at Milne Inlet

Extensive activities in close proximity to waterbodies are not anticipated with the exception of Milne Inlet. Shorebird surveys in Milne Inlet identified low population densities of Lapland Longspurs, Horned Larks, American Pipits, Baird's Sandpipers, American Golden Plovers, Black-bellied Plovers, and Common Ringed Plovers (Section 5.2.3.2). It is expected that at such low densities the birds have sufficient nearby habitat to relocate.

6.2.3.2 Proposed Mitigation

Universal mitigation that will be applied includes avoidance of known nests, or territorial behaviour indicative of a nearby nest, by project personnel and equipment to the extent possible. If nests such as ground nests are identified in a work area (such as a section of road), the nest will not be destroyed, as this would contravene the *Migratory Birds Convention Act*. Environmental staff will be contacted and further mitigation planned, such as relocation of a road. No other mitigation is proposed.

A monitoring program is proposed that includes raptors, loons and geese, and terrestrial birds, as both a continuation of baseline work as well as to monitor the effects of noise and disturbance on bird distributions.

6.2.4 Freshwater Fisheries

6.2.4.1 Potential Impacts

Background

Fisheries and Oceans Canada (DFO) is responsible for the administration of the fish habitat protection provisions of the Federal *Fisheries Act*. In general terms, subsection 35(1) of the *Fisheries Act* states that no person shall carry on any work or undertaking that results in the Harmful Alteration, Disruption, or Destruction (HADD) of fish habitat unless the person is authorized to do so by DFO. Fish habitat managers within DFO will review development proposals according to its *Decision Framework for the Determination and Authorization of*

HADD of Fish Habitat (DFO, 1998); and conclude whether or not a HADD of fish habitat is likely to result.

The policy objectives, goals, and strategies for the management of fish habitat by DFO are defined in its *Policy for the Management of Fish Habitat* (DFO, 1986). The no net loss principle of this policy balances unavoidable habitat losses with habitat replacement on a project-by-project basis to maintain productive capacity. The first priority of no net loss is to avoid or reduce the potential for a HADD of fish habitat through relocation, redesign, or the application of appropriate mitigation measures. If a HADD is likely to result, DFO will determine if it can be compensated for as close as possible to the impacted area. The procedural steps for DFO to achieve no net loss of productive capacity and its hierarchy of preferences during its review of development proposals are described in DFO (1986).

Methodology

The approach anticipates the DFO information requirements under Step II, examination by DFO, which is step two of the six procedural steps to achieve no net loss utilized by DFO during its review of development proposals. The components of Step II are as follows:

- Assess potential impact on fisheries and habitat
- Assess alternative siting and other options and discuss with proponent
- Assess mitigation options
- Assess compensation options (if compensation is determined feasible)

To assess the potential impacts on fisheries and habitat encroachments were identified in relation to the layout of project components based on mapped waterbodies and air photos, followed by field visits to assess site-specific habitat conditions. Watercourse crossings were categorized based on channel width and upstream catchment area as described in Section 5.2.4. The breakdown of the 246 watercourse crossings identified on the road alignment is as follows:

- 173 extra-small crossings with upstream watershed areas of less than 0.5 km^2
- 43 small crossings with upstream watershed areas between 0.5 km^2 and 2.5 km^2
- 12 medium crossings with upstream watershed areas between 2.5 km^2 and 7.5 km^2
- 14 large crossings with upstream watershed areas between 7.5 km^2 and 30 km^2
- 4 extra-large crossings with upstream watershed areas greater than 30 km^2 (four of which will be utilized for the Project)

Extra-small crossing CV-182, Medium crossing CV-181, and extra-large crossing CV-183, which are located on unnamed tributaries to Milne Inlet, were included in fisheries and engineering investigations but have since been excluded from the scope of the bulk sampling program, because all project infrastructure as well as the proposed barge landing has been relocated and concentrated towards the west end of the beach near the airstrip. Therefore, construction of crossings at these watercourses will not be necessary.

The Milne Inlet tote road transits two main river systems: across the upper reaches of the Ravn/Mary River system at the Mary River exploration property to the headwaters of Phillips Creek which it parallels to Milne Inlet.

The most abundant fish species in freshwater in the region is Arctic Char (*Salvelinus alpinus*). Arctic char occur in the study area, and may be found in rivers, lakes, estuaries, and marine environments throughout their life cycle. They exhibit both anadromous and freshwater resident lacustrine as well as riverine life histories (Evans, 2002). The life history of Arctic char is important when the assessing potential impacts of the road, since it is possible to predict timing and life stage habitat utilization based on physical habitat characteristics, in addition to fish sampling information gathered from field studies, as described in Section 5.2.4.

Anadromous Arctic char make minimal use of rivers, mainly as migration routes, although some populations appear to spawn in larger rivers (Evans, 2002). They overwinter in lakes and migrate downstream in the spring during the ice break-up. These char do not always return to the same river and may immigrate to other river systems. During annual migration to the sea, adult char may remain in warmer brackish waters of arctic estuaries for a significant portion of the summer, before migrating out to sea. These fish spawn every two to five years, in September and October. In northern areas spawning occurs exclusively in lakes on cobble and gravel substrates at depths of 0.5 to 1.5 meters, and sometimes 2 to 6 metres. The females deposit their eggs in redds created in loose gravel. After spawning, the fish stay over winter in the lakes, and migrate downstream in the spring. The eggs hatch in late March to early April and emerge around ice break-up. Young-of-the-year may be found amongst rocks within the littoral zone and these young fish remain in freshwater systems usually for 4-5 years before first migrating to the sea, usually in early July after the adults. Anadromous char reach sexual maturity at 12-13 years of age (Richardson, 2001).

Freshwater resident Arctic char occupy the pelagic zones of lakes during the summer and the benthic/littoral areas in the fall. These fish are usually found in less than 5 m of water over boulder, rubble and cobble substrates, but can be found at a variety of other depths as well. They grow much slower than anadromous forms. Like anadromous fish, freshwater residents spawn in September and October. They deposit their eggs in redds in gravel and cobble substrates (2-10 m water) or silt, mud, and clay (0.5-2 m water). The eggs incubate over winter and hatch in March and April, but may not emerge until mid-July. The young fish are usually found in nearshore shallow water areas, and sometimes pelagic habitats. The young-of-the-year and juvenile fish use cobble, rubble, and boulder substrates as cover. Juveniles are most often found in deeper benthic habitats of lakes at depths greater than 5 meters, but as they mature they shift from benthic to pelagic habitats. Landlocked populations reach maturity at 2-9 years of age (Richardson, 2001).

Some generalizations concerning Arctic char life history and seasonal habitat use are as follows:

- Arctic char typically overwinter in lakes or large rivers - due to harsh overwintering conditions they are absent or infrequent in small streams during winter
- Arctic char typically spawn during the fall in lakes or large rivers - due to harsh egg incubation conditions they do not spawn in small streams during the fall
- Arctic char fry and juveniles are known to move from lake and large river habitats to rear in nearby small streams over the summer
- Anadromous populations are present in the lower reaches of river systems that flow directly to the sea below barriers - adults start to move upstream from mid to late August.

On the bulk sample road alignment the 129 extra-small watercourse crossings are predicted to contain no fish habitat, while 3 important and 37 marginal watercourses were identified in close proximity to large fish-bearing waterbodies. These 40 watercourses are likely colonized by Arctic char fry and juveniles during the spring and early summer. No spawning or overwintering habitat is present in these streams, many of which are dry or intermittent during mid to late summer.

The 43 watercourses associated with small crossings on the Milne Inlet road alignment are likely to support limited Arctic char fry and juvenile rearing during summer, with no spawning or overwintering habitat present. Many of these streams are also dry or intermittent during late summer.

The 13 medium sized crossings have a higher potential to support fry and juvenile rearing during summer due to their constant flow and more suitable rearing depths. Spawning in these watercourses is possible but unlikely. No overwintering habitat is present.

The 14 large crossings have a higher potential to provide both summer rearing and fall spawning habitat due to increased water depths and flow volumes. Upstream migration to summer rearing habitats is likely while upstream migration by adults to spawning sites is unlikely. The presence of overwintering habitat beneath the snow in winter is considered unlikely. In terms of relative habitat quality all large crossings are rated as important or marginal.

The four extra-large crossings are used for summer rearing and overwintering and in some cases may have spawning habitat present. In terms of relative habitat quality all extra large crossings are rated as important.

Alternative Analysis - Access Road

Alternatives to the Milne Inlet Road are discussed in Section 5.2.4. The current “road” is a gravel track constructed in the 1960s. It has been designated a public use road during the Nunavut Land Claims Agreement process and is found in the North Baffin Land Use Plan as such. The present road is in poor condition – many of the crossing structures have failed while others are degraded resulting in ongoing erosion and sediment transport. Reinstating the road with modern crossing structures, road resurfacing, and appropriate

mitigation will rehabilitate the existing road and minimize the effects of ongoing erosion. The existing road alignment has been followed to maintain road reconstruction within the existing area of disturbance and because the road is designated under the North Baffin Land Use Plan as a public use road and transportation corridor.

Potential Impacts - General

The construction of watercourse crossings has the potential to negatively affect fish and fish habitat from construction of the crossing structures or post-construction influence of the completed structures on fish habitat. In general potential impacts may include:

- Increased suspended or depositional sediment loading
- Direct alteration and removal fish habitat, including streambank and riparian vegetation
- Changes in channel shape or processes
- Modifications in flow leading to blockage of fish passage
- Releases of deleterious substances to the watercourse

Elevated levels of suspended sediment are the primary change in water quality due to bridges or culverts. Construction activities typically result in short-term effects, while long term effects can arise through erosion of ditches and slopes if not mitigated. Sediment sources related to construction activities include equipment crossings, excavation, blasting, installation of bank protection measures (riprap), erosion from ditches and steep slopes, erosion from exposed areas on the right-of-way, and increased bed scour or bank erosion due to changes in downstream flow patterns. Regardless of how sediment enters the water, the effects are the same. Sediment levels may have little effect on adults but can harm eggs and juveniles.

Culverts can also result in long-term sediment-related impacts through undersized culverts washing out and the displacement of embankment fill and bed material to downstream habitats. If a culvert is installed at a gradient higher than the streambed downstream scour is likely along with blocked upstream fish passage.

Road and watercourse crossing maintenance may also introduce sediment into watercourses. Maintenance activities should be conducted using best management practices (BMPs) and other measures that minimize the introduction of sediment into watercourses. Ditches and slopes must be regularly inspected and maintained to ensure that erosion is controlled.

The construction of bridge abutments, bank protection measures, and the installation of culverts can potentially results in the loss or alteration of the fish habitat in the footprint of these structures on the bed and banks of watercourses. Channel margins are important habitat for fry and juvenile Arctic char for feeding and to escape predation. Encroachment of bridge abutments and piers in these areas results in their permanent loss. Changes in channel morphology due to construction and maintenance of watercourse crossings can

result in changes to bed material which potentially affects food production, cover, and spawning.

Positive impacts can also result from proper culvert placement where it is correctly sized, allows upstream fish passage, provides cover, and maintains a portion of the natural bed material. Typically a scour pool will form on the downstream side of culverts or any crossing structure that constrains the channel. Watercourse crossings can act as a habitat feature in watercourses where habitat is uniform and instream cover such as pools is not abundant. If the type of habitat affected by the crossing is abundant throughout the stream and therefore not limiting to fish there is a very low probability that it will result in a negative impacts, and may in fact provide a positive impact by artificially creating some habitat heterogeneity at the site.

Potential Impacts - Extra Small Crossings

Provided culverts are correctly sized and installed at small crossings then the potential for negative effects is negligible with the appropriate mitigation measures in place, and in consideration that the majority of these watercourse crossings are fishless. The major issue is to minimize sediment mobilization to the stream when constructing the crossings. It is expected that many of the small crossings will be constructed in the dry. Due to the low flow volumes and small channel size that characterize these streams the potential impacts can be fully mitigated.

Potential Impacts - Small Crossings

Provided culverts are correctly sized and installed at small crossings then the potential for negative effects is negligible with the appropriate mitigation measures in place, and in consideration that fish use at the majority of these crossings is limited to summer rearing. The major issue is to minimize sediment mobilization to the stream when constructing the crossings. It is expected that many of the small crossings will be constructed in the dry. Due to the low flow volumes and small channel size that characterize these streams the potential impacts can be fully mitigated.

Potential Impacts - Medium Crossings

Provided culverts are correctly sized and installed at medium crossings then the potential for negative effects is negligible with the appropriate mitigation measures in place, and in consideration that the majority of these crossings are either marginal habitat or fishless. The major issue is to minimize sediment mobilization to the stream when constructing the crossings. Further many of the medium crossings will be constructed in the dry. Due to the low flow volumes and small channel size that characterize these streams the potential impacts can be fully mitigated.

Potential Impacts - Large Crossings

Provided culverts are correctly sized and installed at large crossings then the potential for negative effects is negligible with the appropriate mitigation measures in place. The major issues are to minimize sediment mobilization to the watercourse when constructing the crossings, and the footprint of the road prism on fish habitat. The short term effects of the habitat encroachment will be minimized to the extent possible by implementing BMPs during construction. The longer term effect of the crossing on channel morphology and erosion will be minimized by incorporating bank protection measures and overflow swales to pass high flood flows.

Potential Impacts - Extra-Large Crossings

These crossings will typically utilize multiple sea containers in concert with roadfill encroachments from both banks as approaches to the mod-channel sea container/bridge crossings. The major issues are to minimize sediment mobilization to the stream when constructing the crossings, and the footprint of the road prism on fish habitat. The effects of the habitat encroachment will be minimized to the extent possible by implementing BMPs during construction. The longer term effect of the crossing on channel morphology and erosion will be minimized by incorporating bank protection measures and overflow swales to pass high flood flows.

Potential Impacts - Exploration Site Facilities

The infrastructure and activities required to support the bulk sample program near the exploration property have been sited away from fish-bearing watercourses and lakes, such that there are no direct habitat footprint impacts anticipated from these facilities. The major issues are to contain any potential releases of deleterious substances to adjacent watercourses; and to treat any planned releases (e.g. sewage) so they are within safe limits.

Potential Impacts - Milne Inlet Facilities

The infrastructure and activities required to support the bulk sample program near Milne Inlet have been sited away from fish-bearing streams and lakes, such that there are no direct habitat footprint impacts from these facilities anticipated. The major issues are to contain any potential releases of deleterious substances to adjacent watercourses; and to treat any planned releases (e.g. sewage) so they are within safe limits.

Habitat Balance - Road Alignment

Habitat balance calculations of predicted pre and post-disturbance channel areas associated with works related to the road alignment were completed to identify the locations and amount of habitat encroachment related to road construction. The purpose of this assessment is to recommend a shortlist series of habitat encroachments as candidate

HADD sites for consideration by DFO, and a preliminary area estimate for mitigation/compensation.

We assumed the potential area associated with harmful alteration as being equal to one-half of the channel encroachment area at the Extra Large and Large watercourse crossings. Due to the low flow volumes and small channel sizes that characterize Extra-Small, Small, and Medium sized crossings we assumed the potential impacts could be fully mitigated and harmful alteration would not occur.

The results of the habitat balance assessment are presented on Table 6.4. The results confirm that the proposed culvert and sea container crossings encroach on the pre-disturbance channel width. The habitat encroachment for all crossings including fishless watercourses is 9,290 m^2, and the recommended area to be considered as a potential HADD of fish habitat is 2,390 m^2.

6.2.4.2 Proposed Mitigation

Mitigation - Nunavut Operational Statements

Fisheries and Oceans Canada provides recommendations for mitigation measures at watercourse crossings in Nunavut through its Nunavut Operational Statements, the most relevant of which to this project are the Clearspan Bridges and Culvert Maintenance Operational Statements. These mitigation measures will be incorporated to the Construction Environmental Management Plan and implemented during construction.

Timing windows for in-water work and the protection of fish and fish habitat are provided in the Nunavut Operational Statements – Timing Windows document. The least risk window for Zone 1 is July 1 to August 31. Impacts to fish and fish habitat through in-water construction are minimized by constructing during this period, although an extended timing window is likely justified for sites that are fishless, have very limited or marginal fish habitat, and where no spawning habitat or activity is expected. In-water works outside of the timing window will be required to complete the project on schedule.

Introduction of sediment to streams is a primary cause of concern during the construction, maintenance and operation of watercourse crossings. Reducing the amount of sediment released to a stream reduces the potential for adverse effects on fish, fish habitat and the aquatic community. Controlling sediment at the source and preventing it from entering the receiving watercourse is a key mitigation strategy.

The footprint of the road prism encroaches on the stream channel at all crossings, and unavoidable habitat loss may result by constructing these crossings. The unmitigable habitat impacts resulting from habitat encroachments at watercourse crossing will be mitigated through fish habitat compensation, resulting in no net residual effects.

The type of fish habitat compensation may involve increasing the complexity of instream habitat by adding boulders near affected crossing sites or constructing fish passage structures pending feedback from DFO.

Baffinland will complete a *Fish Habitat Mitigation, Compensation, and Monitoring Plan* pending feedback from the regulatory process and completion of the detailed design for the bulk sample road. The Plan will address fish habitat loss, and include detailed rationale and prescriptions for the sizing and construction of compensatory habitat to maintain no net loss of productive capacity. This document will be completed to the satisfaction of DFO and used to support the HADD authorization requirements for discrete aspects of the project works.

Habitat loss for the bulk sampling program has been avoided or minimized through relocation, redesign, and mitigation; and potential residual fish habitat impacts are addressable through technically feasible compensation, such that there is no net residual impact. Consequently there is no justified technical reason from a fish and fish habitat impact perspective that the Project should not proceed to construction, subject to the condition that the proponent complete a *Fish Habitat Mitigation, Compensation, and Monitoring Plan* to the satisfaction of DFO and that project proceeds in consideration of the guidelines referenced above.

6.3 MARINE ENVIRONMENT

The marine environment, as described in this section, includes:

- Lower trophic levels
- Fish
- Seabirds
- Marine mammals

This section has been structured based on potential impact rather than by trophic level, as the effects and mitigation are either similar or identical irrespective of trophic level.

Operations associated with the proposed bulk sampling that could have an impact on the marine environment arise primarily from the construction and operation of the proposed camp facilities at Milne Inlet, and from ship traffic for the provision of materials and transport of the ore sample. More specifically, the following project components have been identified through which the proposed bulk sample operation may have an impact on the marine environment.

Construction and Operation of the Milne Inlet Camp

While construction of an actual port facility is not proposed for the purposes of the bulk sampling program, a small camp will be established at the port site to house workers and equipment. A small amount of construction, including the provision of a wastewater treatment facility will occur. It is anticipated that construction and operation of a camp at the Milne Inlet site would have little effect

on the local marine environment, but could potentially affect the marine environment through the following linkages:

- Underwater and airborne noise due to construction-related activities from supply ships and barges
- Possible habitat alterations due to positioning of spud and landing barges at Milne Inlet
- Accidental introduction of hydrocarbons or other deleterious substances into the marine environment
- Human interactions with wildlife

Barge Loading/Unloading Operations

Ship loading and unloading operations at Milne Inlet could affect the marine environment through the following linkages:

- Underwater and airborne noise due to barge and small craft traffic
- Alteration or disruption of benthic habitat at the barge landing site
- Possible introduction of ore dust into marine waters due to ship loading operations
- Potential for the accidental introduction of hydrocarbons and other deleterious substances into marine waters

Ship Traffic

Potential shipping-related impacts could occur at all spatial scales, and would be most likely relate to seabirds and marine mammal concerns. Effects may be expressed through several linkages, including the following:

- Underwater and airborne noise associated disturbances due to ship traffic. At the Milne Inlet port site, this would include noise from ships, tugs and barges
- Directly through physical linkages (e.g., whales being struck by ships)
- Indirectly through behavioural responses by animals to ship traffic (e.g., beluga or narwhal leaving an important feeding area, a polar bear running away from a ship, seabirds flying away from a ship's path)
- Indirectly through potential changes to water quality and subsequent effects to food chains (e.g., ship discharges into Milne Inlet)

In the above, some of the identified disturbance sources occur under each of the primary project components (e.g., noise). In the following sections, potential impacts to the marine environment are considered on the basis of the disturbance type, regardless of the number of project components through which the disturbance may arise. For example, noise disturbance is discussed just once, although different aspects of the proposed project will contribute towards the overall increase in underwater and airborne noise generated by the project.

6.3.1 Noise

6.3.1.1 Potential Impacts

Sources of underwater and airborne noise from the project will include:

- Ship operations, including barge and other small vessel traffic
- Conveyors for loading ships
- Aircraft traffic into the Milne Inlet camp
- Onshore activities related to camp operations and creation of the temporary stock pile of ore at the camp

The majority of noise will be generated at the head of Milne Inlet, where the camp will be situated and ships will be loaded and unloaded, but some underwater noise will be generated along the entire shipping route due to the passage of the ships. The amount of noise generated at Milne Inlet will be variable, depending upon camp activities, shore-based vehicle traffic, and whether any ship loading/unloading activities are occurring. It is expected that the most underwater noise will be generated during times when a ship is entering or departing the area, or when ore is being loaded onto the ore carriers. Noise along the shipping route will be localized around the ship as it travels along its route.

It is expected that underwater and airborne noise from ship traffic, loading activities, and onshore activities at the Milne Inlet camp would have some effect on marine biota in the immediate area, and to a lesser extent, along the entire shipping route.

It is expected that the largest impact that the bulk sample program may have on the marine environment will be a possible displacement of narwhal and bowhead out of the Milne Inlet area, at least temporarily, as ships enter Milne Inlet in August and September. The spatial and temporal extent of the displacement is unknown. However, anecdotal information suggests that upon the arrival of the single sealift into Milne Inlet for the Mary River Project in 2006, that narwhal in Koluktoo Bay vacated the area temporarily (Polar Sea Adventures, 2006). These and other effects to marine biota are discussed in the following sections.

Lower Trophic Levels

Underwater or airborne noise is not expected to have any direct or indirect impact on lower trophic level communities either at Milne Inlet or along the shipping route.

Fish

Underwater noise from ship traffic or noise in proximity to nearshore habitat may cause short-term behavioural changes (e.g., cessation of feeding activity) or localized displacement of fish. This is not expected to have consequential effects along the shipping route and only limited effects along the shore in the immediate vicinity of the Milne Inlet camp. Arctic char enter into tributaries and streams, including Phillips Creek, during August

and September to spawn and access overwintering habitat in upstream freshwater areas. It is unlikely that noise generated at the camp and during ship loading activities would be sufficient to interfere with char movements into nearby creeks.

Birds

No major seabird colonies or large feeding flocks were identified around the shoreline and waters of Milne Inlet and nearby Koluktoo Bay, Eskimo Inlet, and Tremblay Sound in 2006. Glaucous Gulls (100+ individuals), Herring Gulls (<100) and Iceland Gulls (>100) were seen using the area and two small colonies (less than 20 breeding pairs each) were also located on the cliffs along the inlet's shoreline. No impacts are envisaged from the ship traffic and associated loading and unloading operations.

Ships entering into Baffin Bay from Eclipse Sound must by necessity pass within close proximity to the large seabird colony at Cape Graham Moore, on Bylot Island. There does not appear to be any literature discussing bird responses to ship-generated noise disturbance at nesting colonies, when large portions of the population would be vulnerable to disturbance. However, ships have long been entering into Pond Inlet and Navy Board Inlet, and there appears to have been no major impact to seabird colonies on Bylot Island. It is doubtful whether increased ship traffic due the bulk sample program would have an effect on those colonies.

Marine Mammals

Underwater noise generated during the bulk sample program may have an effect on marine mammals. The following provides a brief discussion of underwater noise and how it may affect marine mammals, followed by an assessment of project-related impacts to selected marine mammal species that occur within the Mary River study area.

Human activities introduce sound into the sea in many ways, including offshore oil exploration and development, geophysical surveying, small vessel and ship traffic, and construction-related activities such as dredging and blasting. The possibility of negative effects due to the addition of human-generated sound on marine mammals is of concern because, as Richardson et al. (2001) point out, man-made noise could interfere with a marine mammal's ability to detect other, important natural sounds in its environment (masking) and cause a behavioural reaction due to noise disturbance (disturbance response).

In general, marine mammal responses to noise disturbance vary depending upon many factors, including the magnitude of the disturbance, their ability to detect the noise disturbance, and their tolerance to it, among others. A wide range of behavioural reactions have been documented, including little or no response, alterations in vocalization rate, changes in dive behaviour or feeding activity, or fleeing from the area. Behavioural reactions to repeated or long-term disturbance by individuals can change through either becoming habituated or sensitized to the disturbance. Habituation is said to occur when

behavioural responses to a repeated or ongoing noise or other stimulus decline because there is no substantial consequence to the animal. Sensitization is the opposite of habituation; animals show an increased behavioural response to a particular stimulus through repeated or long-term exposure.

For the purposes here, noise generated by the proposed bulk sample program has been split into three components to facilitate the assessment of project-related effects. These include:

- Ship generated noise along the entire shipping route
- Noise generated at Milne Inlet during August and September, when ships will be loaded
- Noise generated at Milne Inlet when ship loading is not occurring (i.e., year-round, excluding August and September)

Along the Shipping Route

Ships moving from Milne Inlet along the shipping route to Europe may interact with some or all of the marine mammal species listed on Table 5.13. In general, ship traffic in open water produces a short-term disturbance to marine mammals that may result in a localized displacement of the animal away from the ship's path. A small number of ship passages are planned for the bulk sample program and, therefore, the potential for disturbances to individuals is small. It is expected that the effects of noise generated by ships moving along the shipping route will have inconsequential effects to marine mammals because of the short-term nature of the effect and limited exposure of individuals to the noise disturbance.

Milne Inlet during August and September

Milne Inlet, Koluktoo Bay, Tremblay Sound, and Eclipse Sound are important summering areas for large aggregations of narwhal and a smaller number of bowhead, as well as providing year-round habitat for ringed seals.

Noise disturbance to narwhal will occur in Milne Inlet as well as along the entire route wherever ships and narwhal interact. Little information is available regarding narwhal responses to ship traffic in predominantly open water, or to other types of noise disturbance (land or water based construction activities, aircraft traffic, etc) that may be expected at Milne Inlet. The limited information regarding narwhal response to ship traffic suggests that they are highly sensitive to noise disturbance during spring, and may respond to ice breaking ships that are up to 50 km away (Finley et al. 1990; Cosens and Dueck 1993). Narwhal responses observed in those studies included a cessation of vocalizations and, in some cases, movement considerable distances away from the location where they first detected the ship (Finley et al. 1990; Cosens and Dueck 1993). There are no plans for ice breaking for the shipping component of the bulk sampling program.

Bowhead behavioural responses to ship traffic have received considerable study in the western Beaufort Sea, where oil and gas development activities have occurred for several decades. Studies there indicate that bowheads generally react to nearby ship traffic by altering their heading, increasing swimming speeds, and decreasing surfacing rates and patterns (see Richardson and Malme 1993). Bowheads tend to be more tolerant of vessels moving slowly or in directions not at them (Richardson and Finley 1989), but may react to vessels up to 4 km away. They generally cease their fleeing response once the vessel has moved a few kilometres away (Richardson et al. 1995). Similar movements away from stationary noise disturbances have been reported. Richardson et al. (2003) showed that migrating bowheads were deflected 2-5 km farther offshore when passing the NorthStar oil and gas production island, located in the Alaskan Beaufort Sea, when noise production at the island was at its maximum.

Ringed seal responses to ship traffic have been little studied, and most descriptions of response behaviour are anecdotal in nature. In general, however, the limited amount of evidence suggests that most pinniped species appear to be highly tolerant of ship traffic in open water (Richardson et al. 1995). Ringed seals also appear to be tolerant to stationary and longer-term noise disturbances. Blackwell et al. (2003) reported that ringed seals displayed little reaction to pile driving activities at the NorthStar oil production island, located in the Alaskan Beaufort Sea, and were often observed within tens of meters of active pile driving. Further, Moulton et al. (2005) reported that construction and operation of the NorthStar Island had little effect on the distribution of basking ringed seals in the immediate area, at least in the short-term. They further suggested that effects due to construction of NorthStar were small compared to the effects of natural environmental factors.

Although some information is available regarding marine mammal responses to various noise disturbances, most has been collected from large and open bodies of water. Little information regarding marine mammal responses to noise in fjord-like environments such as Milne Inlet is available. It is not well known how sound will propagate in such an environment, nor is it known how a more enclosed environment may affect the behavioural responses by marine mammals, in this case narwhal and bowhead, particularly.

Information regarding background noise levels (airborne or underwater) that is specific to Milne Inlet has not yet been collected, nor are the noise level increases expected at Milne Inlet due to bulk sample activities known. More information regarding noise levels from project operations and narwhal and bowhead response behaviour is required before confidently assessing the effects that repeated shipping through Milne Inlet may have on animals summering in the area. It is likely that there will be a decreased use of portions of Milne Inlet by narwhal and bowhead, or perhaps an abandonment of the area, but the duration and spatial extent of displacement are not known.

Milne Inlet in the Absence of Shipping

Shipping related to the Project is scheduled to occur during August and September. Ringed seals are the only marine mammal species present in the Milne Inlet area in any numbers throughout the remainder of the year. In the absence of shipping, noise generated by bulk sample activities will be primarily restricted to shore-based airborne noise. Ringed seals give birth to their pups in subnivean lairs excavated on the sea ice and may be vulnerable to disturbance during this critical period. However, information collected at the NorthStar oil production island indicated that construction and operation had little detectable effect on ringed seals in the area. Thus, noise generated at the Milne Inlet camp is expected to have little effect on ringed seals (Moulton et al 2005). There may be a small scale distributional shift away from the immediate vicinity of the camp, but this would be expected to be inconsequential to seals.

6.3.1.2 Proposed Mitigation

There are no anticipated noise-associated impacts to lower trophic levels and, consequently, no mitigation is required. Although there may be a slight displacement of fish due to noise, it is expected that this will be inconsequential and no mitigation will be required.

Birds

Although noise disturbance is not expected to have consequential impacts on seabirds, a monitoring program is proposed that also includes raptors, loons and geese, and terrestrial birds. This will serve as both a continuation of baseline work as well as function to monitor the effects of noise and disturbance on bird distributions.

Marine Mammals

It is proposed that the bulk sampling program be used as an opportunity to document the behavioural responses of marine mammals to construction activity and noise in the Milne Inlet area, to examine the impact that repeated shipping may have on marine mammal use of the area during the open water period, and to collect ambient noise data that may be used to build a baseline from which future projects may be assessed.

Continuation of the ringed seal surveys conducted in 2006 can be used to monitor any change in seal distribution in the immediate area of the Milne Inlet camp that may arise due to camp operations.

6.3.2 Ship Operations

6.3.2.1 Potential Impacts

Impacts arising from ship operations considered here include all ship-related activities or disturbances that may impact the marine environment, with the exception of ship-generated noise, which has been dealt with in the preceding section. These types of impacts include:

- Operation and deployment of ship-based vehicles (helicopters, smaller boats, snowmobiles)
- The handling of garbage and discharge of emissions such as greywater and sewage, oily water from the bilges, and exhaust fumes
- The discharge of ballast water
- Collisions with marine wildlife (whales)

Ship-based Vehicles

Ship-based craft would be a disturbance to marine biota primarily through noise-associated disturbances and discharges, in the same fashion as the mother ship. Excluding barges and tugs that will be involved with the loading and off-loading of supplies, it is expected that ships delivering supplies or removing ore from Milne Inlet will have little requirement for these types of activities, and consequently there will be little or no effect to the marine environment.

Impacts to the marine environment that service vessels associated with the loading and unloading of ships may have will mostly be through the generation of underwater noise (Section 6.3.1) or emissions and discharges.

Garbage Handling, Greywater, Bilge water, and Emissions

The handling of garbage and emissions of discharges such as oily water and greywater can have localized effects on the quality or receiving waters, which in turn can directly affect marine biota such as invertebrates and seabirds. These types of discharges from ships are regulated by the regulations under the *Arctic Shipping Pollution Prevention Act* and the *Canada Shipping Act*, and guidelines are in place to minimize environmental impacts resulting from those activities. Adherence to those guidelines will minimize adverse effects.

Ballast Water Discharge

The discharge of ballast water from ships has the potential to cause localized changes in water quality which in turn may affect lower trophic level organisms such as phytoplankton. These effects can be either of short or longer duration depending upon the volume of water and rate at which it is discharged into the receiving environment. In geographically confined waters, such as Milne Inlet, the introduction of large volumes of ballast water could have measurable effects on water quality and perhaps lower trophic levels.

Perhaps the greatest concern associated with the discharge of ballast water from ships is the potential to introduce non-indigenous (not native to the area) biota into the marine environment. Ships take on ballast water to provide stabilization while in transit. This water is often taken on at one port location and may be discharged or exchanged at another.

Many national and international governing bodies have established regulations and guidelines to control the discharge of ballast water from ships in order to reduce the transfer of aquatic species between regions. In Canadian waters, Transport Canada has produced The Canadian Ballast Water Management Guidelines (Transport Canada, 2001). The Guidelines are enforced under the *Canada Shipping Act* and dictate that ships may discharge ballast water only in open ocean areas away from coastal areas.

Adherence to these guidelines will minimize the potential for adverse effects on water quality and minimize the risks associated with the introduction of foreign species that might otherwise arise at Milne Inlet due to the discharge of ballast water.

Ship Collisions with Marine Wildlife

Collisions between ships and whales should they occur, may result in injury to whales and whale mortalities. Most whales summering in Davis Strait and Baffin Bay occur along the west coast of Greenland, in waters away from the route that ships traveling to and from Milne Inlet will use. Within the confines of Eclipse Sound and Milne Inlet, there may be a greater risk of this occurring because of the higher concentration of narwhal and the occurrence of bowhead.

It is expected that, based on the small number of ship passages associated with the bulk sampling program, and the avoidance response that ship noise would elicit in whales present in the area, the likelihood of ships striking a whale while traveling between Milne Inlet and other ports will be remote.

6.3.2.2 Proposed Mitigation

Ship-based Vehicles

It is expected that here will be little requirement to use ship-based vehicles during the bulk sampling program and, consequently, there will be little or no adverse effects to the marine environment. Consequently, no mitigation is proposed.

Garbage, Greywater, Bilge water, and Emissions

Adherence to guidelines stipulated in the Arctic Shipping Pollution Prevention Regulations will help to minimize adverse effects due to ship discharge. Additional requirements may be stipulated to provide further protection.

Ballast Water Discharge

Ships will exchange ballast water in accordance with The Canadian Ballast Water Management Guidelines (Transport Canada, 2001). The guidelines prescribe Canadian ships to exchange ballast water at sea in deep open seas away from coastal zones, ensuring that foreign harmful aquatic organisms or pathogens are not released in Canadian waters where they may colonize. The guidelines became mandatory on June 8, 2006 with the establishment of the Ballast Water Control and Management Regulations under the *Canada Shipping Act* (Canada Gazette, June 2006).

Ship Collisions with Marine Wildlife

It is expected that the likelihood of ships striking a whale while traveling between Milne Inlet and other ports will be remote because of the small number of ship passages associated with the bulk sampling program, because of the likely avoidance response of whales present, and because the ship route does not pass through known summer concentrations for most species.

Within the confines of Eclipse Sound and Milne Inlet where narwhal and bowhead concentrate, there is a greater potential for a ship to strike a whale. Laist et al. (2001) indicated that during most ship/whale collisions, the ship was traveling in excess of about 26 km/hr. By restricting ships to slower speeds, the potential for a ship to strike a whale in Eclipse Sound and Milne Inlet could be reduced.

6.3.3 Habitat Loss or Disruption

6.3.3.1 Potential Impacts

Marine habitat loss or disruption to due to bulk sample activities is expected to be minimal during the construction and operation of the Milne Inlet camp and during material supply and ore transfers between shore and the ship. Iron ore will be loaded onto transport barges moored against a spud barge, the transport barge will be towed to the ship using a tug, and the ore loaded to the ship using a ship grab (Figure 2.9). When ore is not being transferred, the transport barges will be tied against the shore.

It is expected that substrate beneath the spud barge will be disrupted/altered and the benthic invertebrate community will be lost for the duration of time that the barge is in place. Also, it is expected that there will be some disruption of habitat when transfer barges are moored to the shore when not loading ships. This will result in some temporary additional habitat disruption and benthic invertebrate community loss. Additionally, there may be some small level of sediment re-suspension that may result in the smothering additional benthic invertebrates and localized TSS increases in the water while the transport barges are moored against shore. The loss of benthic invertebrates in the nearshore environment would result in a localized reduction in forage for fish and birds such as wading shorebirds or waterfowl.

The barges will operate only during the 4-5 days required to load/unload a ship, for the number of ship voyages each season (two or possibly three in 2007 and five in 2008), though the August-September shipping season. A single tug and barge will be used for sealift delivery, and two tugs and four barges will be used during ore loading in 2008. Once the barges are removed, it is expected that the benthic invertebrate community will re-establish itself in the following years.

The exact spatial extent of habitat disruption is roughly estimated to be less 0.2 ha, based upon the size of barges that will be used. Information describing the benthic invertebrate community composition and abundance in nearshore areas at the Milne Inlet camp site has not been collected, so it is not possible to quantify the expected loss of benthic invertebrates. We note that much of the physical disturbance will be in an area that is annually subjected to ice scour, and consequently there are a smaller number of benthic invertebrates that could be affected. Site-specific information will be collected during 2007.

Nonetheless, the area encompassed by the landing site comprises only a small portion of coastal habitat in the Milne Inlet area (far less than 1%). The temporary loss of a small portion of available habitat is not expected to have detectable negative effects on benthic invertebrate communities in the area, and consequently, on the fish and birds that may feed upon them.

6.3.3.2 Proposed Mitigation

The use of a landing barge will result in an unavoidable disruption of nearshore habitat and the loss of a small number of benthic organisms. It is expected that the habitat and community will re-establish once the barge operations are complete following 2008.

Habitat loss will minimized by confining barge activity at the shoreline to as small an area as possible.

6.3.4 Introduction of Contaminants

It is expected that contaminants could be introduced into the marine environment through the following pathways:

- Introduction of ore dust into the atmosphere and subsequently into marine environment during ship loading operations
- Runoff from temporary stockpiles at the Milne Inlet Camp
- Accidental introduction of hydrocarbons into the marine environment

6.3.4.1 Potential Impacts

Ore Dust

The transfer of ore between the temporary stockpiles onto ships may introduce ore dust into the atmosphere, which ultimately will end up in the marine environment. The potential for ore dust to affect the marine environment will depend upon the amount of dust that is introduced, and the geochemical composition of the ore dust. The amount of dust transfer is not known, and laboratory analysis of the ore's geochemical composition has not yet been completed. Land based monitoring of seepage and dustfall is proposed around the stockpiles at the beach (Sub-sections 8.6.4 and 8.4.1, respectively). It is expected that any deposition of dust during barge to ship transfer in the water will be inconsequential.

Runoff from Stockpiles

Temporary ore stockpiles will be located near the Milne Inlet beach, and will be in place from mid- to late winter until August or September. Runoff may occur during the spring thaw, carrying sediment derived from any very fine materials in the ore and ultimately enter marine waters. Geochemical results of the ore from Mary River is pending, but if the ore is found is found to generate acid or leach metals, runoff from the stockpiles could cause localized changes to water quality in the vicinity of its entry point into the marine system. Monitoring is proposed around the stockpiles as described above.

Fuel spills

A bulk fuel storage facility, consisting of fuel bladders within lined containment, will be located at Milne Inlet to store 8 ML of diesel fuel and 90,000 L of Jet A fuel. The facility will receive a single fuel delivery by a 10,000 t (approximately 11 ML) capacity tanker in late August 2008.

An accidental fuel release could affect the marine environment, depending upon the size. Several potential fuel spill scenarios have been considered:

- Spills during ship to shore fuel transfer by floating hose
- Catastrophic damage to tanker hull
- Accidental release from the bulk fuel storage facility

The accidental release from the bulk fuel storage facility, for example from a ruptured bladder due to overfilling or damage, is not considered a credible spill scenario that would affect the marine environment, as each of the 125,000 L fuel bladders are located within a lined containment. Lined containment is a legal requirement and an operational safeguard with demonstrated effectiveness.

Catastrophic damage could possibly occur to a tanker delivering fuel, or to the fuel storage compartment of a bulk carrier hauling the iron ore sample. The grounding of the tanker/ship

within the shipping route is not deemed a credible scenario, as these ships are equipped with advanced navigation systems including sounding alarms. Perhaps more conceivable is a ship collision with an iceberg, which could result in the release of one entire fuel compartment (0.9 ML). However, even this spill scenario is considered very unlikely, given the well-established arctic fuel shipping regime of ship classes and shipping seasons, and other operational safeguards described in the mitigation section.

It is possible that a fuel release could occur during the ship to shore fuel transfer. This is a practice that is utilized extensively throughout Nunavut for fuel resupply to communities, for which the Arctic Waters Oil Transfer Guidelines (Transport Canada, 1997a) prescribes very detailed procedures.

During the bulk sampling program, such a spill could occur in the near shore environment at Milne Inlet, such as at the fuel line manifold at the beach or along the floating hose to the ship anchored off shore. Based on a maximum pumping rate of 300 m^3/hr or 300,000 L/hr and 20 seconds until an emergency stop button is applied, and loss of the entire contents of a 250 m long floating hose (20 cm diameter), the credible spill volume is 9,520 L.

The accidental introduction of diesel or Jet A fuel can have harmful effects on the marine environment. While it is anticipated that the likelihood of a spill is low, a brief discussion of possible impacts is provided considering a hypothetical 10,000 L diesel spill event at Milne Inlet.

Natural Weathering Processes

Diesel is lighter than water (specific gravity of 0.85 kg/L compared to 1.03 kg/L for seawater) and will initially form a thin layer on the surface of the water if spilled. It will not collect as pooled oil as will crude oil. Diesel fuel undergoes a series of physical and chemical changes when spilled in a marine environment, which together are termed oil weathering (NOAA, 2002):

- Evaporation: the conversion of liquid fuel to gaseous fuel that typically occurs in first five days. In 18 hours, 37% of an instantaneous release of approximately 16,000 L of diesel fuel evaporated under conditions of 10 knot winds and a water temperature of 20°C. This process would be slowed in colder water and accelerated in higher winds.

- Emulsification: wave action causes very small water droplets to mix with the fuel, which slows down other mixing processes. This process occurs at any time of vigorous wave conditions.

- Natural dispersion: small droplets of fuel are mixed into the water, removing fuel from the water surface (typically occurs during the first five days)

- Dissolution: a minor weathering process whereby water soluble components of the fuel are mixed into the water (typically occurs in the first five days)

- Sedimentation: fuel adheres to suspended particles in the water column. In turbulent waters having a high sediment load (4,000 mg/L) sedimentation can transfer oil through the water column in hours

- Biodegradation: breakdown of fuel by microbes into other compounds, and eventually into water and carbon dioxide. This process occurs over weeks to years, depending on type of oil, temperature, nutrients present, oxygen and quantity of hydrocarbons spilled.

Fate of the Spilled Fuel

Assuming that the spill cleanup procedures would be only 50% effective, 5,000 L of diesel fuel would remain on the surface of the water, and weathering processes could further reduce this volume by one-third, leaving approximately 3,300 L on or in the water. It is possible that the outflow of Phillips Creek in to Milne Inlet could further disperse the spill within Milne Inlet. Water soluble fractions (WSF) of the fuel will dissolve in the water column. Over time, lower concentrations of fuel in the water column could affect the sediment and benthic communities along shorelines, including the sandy beach of Milne Inlet.

Impacts to Biota

Lower Trophic Levels and Fish

The introduction of diesel fuel into the marine environment could have a harmful effect on plankton, benthos and fish. In open water, toxicology issues would likely focus on acute toxicity within the first few days after a spill. Acute toxicity appears to be related to the WSF of the fuel (McCarthy et al., 1985; Yapa and Shen, 1994) and due to the concentration of aromatic constituents of the fuel, rather than the aliphatic compounds (Doerffer, 1992). Lethal concentrations of WSF vary between species, life cycle stages (eggs and larval stages are most sensitive), and physical environment parameters (water temperature).

In the event of a surface spill during fuel transfer, plankton living in the surface waters at the spill site would be particularly vulnerable because they would be exposed to the highest concentrations of WSF constituents. Organisms or certain life history stages of organisms with no or limited locomotory abilities such as fish eggs, larvae, and benthic invertebrates would also be vulnerable. In contrast, adult fish would be less vulnerable because they are generally able to avoid areas affected by the spill by swimming away.

Craddock (1977) provided a summary of acutely lethal concentration (standardized for a continuous 96 hour exposure) ranges for the water soluble fraction of diesel fuel for a variety of marine biota as follows: fin fish, 5-50 mg/L; larvae and eggs, 0.1-1 mg/L; pelagic crustacean 1-10 mg/L; benthic crustacean 1-10 mg/L; gastropods 10-100 mg/L; bivalves, 5-500 mg/L; other benthic invertebrates, 1-10 mg/L.

From this information, any spill that resulted in WSF concentrations greater than about 0.1 mg/L would be of concern if it occurred at a time when larval fish or eggs were present. This would likely have no acute lethal effects to juvenile and adult fish because it is below the reported lethal range of concentrations (5-50 mg/L) for fin fish. Also, it is highly unlikely that fish would be exposed to that concentration for 96 hours, the duration of exposure at which acute lethal concentrations are determined. Most activity that could result in an accidental introduction of diesel into the marine environment during the bulk sampling program would occur during August, when most fish species are not spawning. Arctic char spawn during fall, but this takes place in freshwater and, consequently, their eggs (the more sensitive stages) would not be exposed to a fuel spill into the marine environment.

There may be some acute lethal effects to some plankton groups in the initial spill area because the expected initial WSF concentration may fall within the reported range of lethal values (1-10 mg/L). However, the WSF concentration is expected to be quickly diluted, resulting in exposure to acutely lethal concentrations for only a short period. Plankton in the initial spill area would quickly re-establish (within perhaps a week - see Silva et al., 1997). It is expected that such a short-term reduction in zooplankton abundance over a small area would not have substantial effects to other ecosystem components. Similarly, the introduction of low concentrations of weathered oil to the sediment over most of the affected area would have little effect to benthic biota.

In addition to toxicity issues, the introduction of diesel or Jet A fuel could negatively impact domestic fisheries by tainting fish that are targeted for human consumption. Arctic char exposed to crude oil in a laboratory setting quickly accumulated an oily off-flavour. This eventually cleared, but at a much slower rate than it was acquired (Lockhart et al., 2002). Results of those experiments suggest that exposure of fish of edible size to concentrations of oil around 3 mg/L for periods of a few hours would be of concern for tainting. However, the small area affected and short duration of exposure to oil at the concentrations described in our example spill indicates that tainting would be a very localized problem. Sport and domestic fishing for Arctic char occurs in the Robertson River entering into Koluktoo Bay, and throughout most coastal areas of Milne Inlet and Eclipse Sound. Fuel from an accidental fuel spill of the size discussed here is expected to disperse over an area within the bulbous head of Milne Inlet and would not reach Koluktoo Bay or areas farther from the head of Milne Inlet. Although anadromous char can move large distances from their overwintering stream while feeding in coastal marine environments, they return to their natal streams during August and September to spawn and access overwintering areas in freshwater areas. Consequently, it is thought that the only char in the immediate vicinity of the Milne Inlet camp during August and September and would be susceptible to tainting in the advent of an accidental oil spill would be those fish that would move into Phillips Creek. The capture of tainted fish in the area could be avoided by closing it to fishing and compensating fishers for loss of opportunity to harvest for the season in which the incident occurred.

Seabirds

Birds are vulnerable to oil exposure through contamination of their plumage and through the ingestion of oil contaminated food. Oiled plumage can result in the loss of isolative capacity leading to hypothermia, or the loss of buoyancy, which in turn could result in drowning. Ingestion of oil can lead to changes in physiology, internal tissue damage, or death. Birds that feed at the water surface, along the shoreline, or dive into the surface waters to feed are all highly vulnerable to exposure in the event of a spill. Colonial nesting species and species that form large feeding aggregations are also highly vulnerable.

Major seabird and waterfowl colonies are located on Bylot Island, but neither large seabird colonies nor large feeding flocks were seen during aerial surveys conducted in the Milne Inlet area during the middle and end of the breeding season in 2006 (Section 5.2.3.4). Only a few individual Thick-billed Murres, as well as Glaucous Gulls, Herring Gulls and Iceland Gulls were seen using the area and two small colonies (less than 20 breeding pairs each) were also located on the cliffs along the inlet's shoreline. An accidental spill would have no effect on birds nesting and feeding in the vicinity of Bylot Island but could have some effect on the small number of seabirds and other birds in the immediate vicinity of Milne Inlet.

Marine Mammals

Whales are generally not at great risk to hydrocarbon fuel spills because they rely on a layer of blubber for insulation, and oiling of the skin does not appear to have adverse thermoregulatory effects (Kooyman et al. 1976; 1977; Geraci 1990; St. Aubin 1990). There is a possibility that the baleen of bowhead whales could be contaminated, thereby reducing filtration efficiency, though these effects are expected to be minimal and reversible (Geraci 1990). There is no irrefutable evidence that links hydrocarbon spills with cetacean mortalities.

Seals can be sensitive to exposure to oil at certain times during their life history, particularly during times of natural stress such as during their annual moult or pupping periods (Dickens et al., 1990). A number of sublethal effects to oil exposure or the consumption of oil-contaminated prey have been documented for seals, including changes in behaviour and physiology, but there is little evidence to irrevocably link seal mortalities to oil exposure. Similarly, polar bears can be affected by the consumption of oil-contaminated prey, direct ingestion due to cleaning oil from their fur, of suffer from adverse effect thermal insulation (Dickens et al., 1990).

During August and September, when shipping is expected to occur, narwhal, bowhead, ringed seals, and harp seals are common in the waters of Milne Inlet and Eclipse Sound. Narwhal routinely move to the head of Milne Inlet, but bowheads and harp seals tend to remain in waters north of Koluktoo Bay. Ringed seals are likely present near the head of Milne Inlet through the summer. If it is assumed that the trajectory of a 10,000 L spill is 10 km^2, the area affected would include about a third of the marine area between the head

of Milne Inlet and Koluktoo Bay. Under such a scenario, it is doubtful that bowhead or harp seals would be exposed to the slick. Narwhal and ringed seals may be within the area of the slick, but exposure would be short-term in nature because of anticipated rapid dilution of the fuel and because general disturbance associated with the clean up operations would likely cause animals to leave the area.

6.3.4.2 Proposed Mitigation

Ore dust

Considering the short-term nature of the Project, and the relatively small volume of material to be handled, mitigation is not proposed to address potential impacts from ore dust. A monitoring program is proposed, however, to better understand the potential long-term effects of both wind-blown ore dust on the beach as well as seepage from the stockpiles.

Run off from Stockpiles

Stockpiles will be constructed to be free draining to minimize the ponding of water. However, if laboratory results indicate that there is some potential for acid generation and/or metal leaching from the ore, contingency mitigation would be to place the stock pile on top of a dolomitic or calcareous sandstone base to neutralize and attenuate any metals. Further mitigation may be to place a calcareous berm around the stockpile to prevent water from draining retained water.

Fuel spills

Mitigation to address the potential for fuel spills to the marine environment includes ensuring shippers operate in compliance with the stringent regulations and guidelines established for the transport of fuel in arctic waters north of 60º latitude. The following regulations and guidelines have been established under the *Canadian Shipping Act* and *Arctic Waters Pollution Prevention Act*:

- Guidelines for the Operation of Tankers and Barges in Canadian Arctic Waters (Interim): provide an increased standard of protection (above other Canadian waters) from oil spills. The guidelines address the construction of vessels, operation, crew training, required oil cleanup equipment, and the need for an Emergency Response Plan that requires approval by the Canadian Coast Guard (Transport Canada, 1997a)

- Arctic Waters Oil Transfer Guidelines: describe the approved procedures for transferring petroleum products in arctic waters, including requirements for safety, fire fighting and emergency equipment, assessment of weather conditions, responsibilities, communication, emergency stop procedures and spill response equipment (Transport Canada, 1997b)

- Arctic Shipping Pollution Preventions Regulations: sets out shipping requirements through the arctic, including vessel construction requirements

- Arctic Waters Pollution Prevention Regulations: defines equipment standards, inspections transfer operations requirements, and shipboard emergency plans

- Oil Pollution Prevention Regulations: indicates liability associated with the deposit of waste in arctic waters

- Response Organizations and Oil Handling Regulations: oil tankers must engage a spill response organization if larger than 150 gross registered tonnage

The vessels must also have on board an Oil Pollution Emergency Plan, and the shipping companies are required to maintain an arrangement with a certified response organization, such as the Eastern Canada Response Corporation for eastern Canada.

Although still in the concept stage with no firm plans, Baffinland and the Canadian Coast Guard (CCG) have discussed the possibility of a CCG-coordinated arctic spill response training exercise during the fuel delivery to Milne Inlet in 2007. The CCG would practice the deployment of a mock spill response plan during the fuel transfer operations at Milne Inlet. The CCG regularly conducts training to response to marine spills in the high arctic, and such an exercise would allow the CCG to apply their response training during a commercial fuel transfer operation. The Project would benefit from participating in the exercise and the additional onsite resources in the unlikely event that a spill did occur.

6.3.5 Human Interactions with Marine Wildlife

6.3.5.1 Potential Impacts

Construction and operation of the Milne Inlet camp, the tote road camp, and the Mary River Camp may result in human interactions with curious polar bears. Because the sea ice largely melts for a short period in the north Baffin region, polar bears are forced to summer on land. Most bears remain along the coast in areas where sea ice will form soonest in fall, but some bears will move to inland areas or wander along coastlines. In 2006, a polar bear approached the Mary River Camp, indicating some potential for human-bear interactions.

6.3.5.2 Proposed Mitigation

It will be difficult to deter bears from approaching any of the camps if the bear decides to do so. A Human-Polar Bear Conflict Management Plan will form a component of the CEMP, so that if a bear does enter the camp or a work area, staff will know how to respond. The Management Plan will be prepared by qualified wildlife control experts. This mitigation should help to reduce the likelihood of interactions between humans and bears and would allow staff to be better prepared in the event of a surprise encounter. Dedicated bear monitors will be employed at coastal locations during times of expected peak bear activity.

6.3.6 Wildlife Protected Areas

6.3.6.1 Potential Impacts

There are not currently any wildlife protected areas in the near vicinity of activities related to the bulk sampling program.

Marine shipping associated with the Project, including two sealifts in 2007 and five bulk carrier voyages in 2008, will enter Pond Inlet, Eclipse Sound and Milne Inlet, past the Bylot Island Migratory Bird Sanctuary, and through key marine bird habitat off of Cape Graham Moore as designated by the Canadian Wildlife Service (1991), also designated as an International Biological Programme (IBP) Site, as shown on Figure 5.1. These designations do not have protection status, but identify the biological importance of the area to migratory birds, particularly colonies of Thick-Billed Murres and Black-Legged Kittiwakes. This area is particularly important to migratory birds during the early spring as one of the first areas of open sea water, although seabirds remain in the area into October. The marine traffic proposed for the Project is similar to the current marine traffic into Pond Inlet for sealift operations and by cruise ships.

6.3.6.2 Proposed Mitigation

Ships will abide by the requirements of the *Canada Shipping Act* and associated regulations.

6.3.7 Species of Concern

Species of concern, as legislated under SARA or identified by COSEWIC, found within the region include (Section 5.2.7):

- Ivory gull
- Ross's gull
- Tundra peregrine falcon
- Polar Bear
- Atlantic Blue Whale
- Beluga Whale
- Walrus

Potential impacts and mitigation are discussed below, or references are provided where impacts and mitigation regarding these species are discussed elsewhere.

6.3.7.1 Potential Impacts

Potential impacts to avian species of concern include the following:

- Disturbance to migrating Ivory gulls
- Disruption of peregrine falcon nesting

As previously mentioned, the area is an important pathway for migrating birds. Ivory Gulls nest on Bylot Island and Brodeur Peninsula and may also migrate through. A potential issue is disturbance from mining, quarrying and construction activities as they migrate through the area.

Knight Piésold's wildlife surveys have found that peregrine falcons and their habitat are abundant and well distributed within the cliffs of the Project site (Section 5.2.3.1). A potential issue is disruption of peregrine falcons during mining, quarrying and construction activities. Potential disruption of raptor nesting is discussed in Section 6.2.3.

Potential impacts to marine mammals include:

- Disturbance to beluga whale summering in Eclipse Sound
- Disturbance to summering Atlantic blue whale
- Increased incidence of human/polar bear interactions

Potential effects to beluga whale would primarily be noise-associated disturbance associated with ship passage through Eclipse Sound during August and September. It is thought that possible impacts associated with the bulk sample program would be limited to a short-term and localized disturbance to a few individual beluga. Noise disturbance to marine mammals is discussed in Section 6.3.1.
The bulk sample program could affect blues whales through ship related noise disturbance, which could result in a localized and short-term displacement away fro the ship's path, or through a ship/whale collision, which could result in injury or mortality to the whale. Known summer areas of concentration for the Atlantic blue whale include waters in Davis Strait along the south west coast of Greenland, outside of the proposed shipping route bulk sample ships will follow. It is expected that a temporary displacement due to the passage of a ship would have little effect on individual blue whales, and the likelihood of a collision is expected to be remote (see Section 6.3.2.2).

The biggest potential impact that the bulk sample program will have on polar bears is through a potential increase in human/bear interactions and the resultant possibility that a bear may need to be killed to protect people or equipment.

6.3.7.2 Proposed Mitigation

As described in Section 6.2.3, the universal mitigation to be applied to birds includes avoidance of known nests or territorial behaviour indicative of a nearby nest by personnel

and equipment. Possible ground nests of migratory birds will be reported to environmental staff and further mitigation will be planned.

A monitoring program is proposed that includes raptors, loons and geese, and terrestrial birds, as both a continuation of baseline work as well as to monitor the effects of noise and disturbance on bird distributions.

It is expected that conduct of the bulk sample program will have little or no effect on beluga, walrus, or blue whales and, consequently, no mitigation is required. The implementation of a Human-Polar Bear Conflict Management Plan will for a component of the CEMP, and should help to reduce the likelihood of interactions between humans and bears and would allow staff to be better prepared in the event of a surprise encounter (see Section 6.3.5.2).

6.4 SOCIO-ECONOMIC ENVIRONMENT

Potential socio-economic impacts of the Project include:

- Effects to archaeological resources
- Disruption of existing land and resource uses
- Employment and training

Potential impacts of the Project on the socio-economic environment may be both positive and negative.

6.4.1 Archaeology

6.4.1.1 Potential Impacts

The following project components have the potential to affect archaeological remains:

- Ground disturbance associated with project infrastructure, stockpiles and ship loading activities at Milne Inlet, which has been identified has having high potential with sites already identified
- Encroachment on archaeological sites in close proximity to the existing alignment of the Milne Inlet tote road
- Ground disturbance associated with borrow extraction activities

The findings of 2006 archaeological surveys are discussed in Section 5.3.1. Detailed surveys of the currently proposed development areas at the Mary River site indicated the impacts are not expected, although final infrastructure locations will be confirmed with the archaeologist prior to construction, and supplemental surveys completed if required.

With respect to potential to impact archaeological resources at Milne Inlet, the original area to be surveyed was quite large such that in 2006, detailed surveys were carried out in some areas whereas other areas of the beach area received overview assessments or no

assessment at all. Overall, the Milne Inlet beach has been given a high rating for archaeological potential. The camp and fuel storage areas along the east side of the airstrip were rated as having a low archaeological potential. The proposed location of the ore stockpiles on the lower beach is expected to be low potential, primarily because any remains will more likely have been destroyed. This is to be confirmed by detailed assessment.

The Milne Inlet tote road is within a corridor that has high overall archaeological potential, since it has undoubtedly served as a common travel route throughout human use of this region. Without mitigation, archaeological sites within a 30 m buffer zone on either side of the road ("the construction disturbance zone") could be impacted during proposed road construction activities. Archaeological sites within the construction disturbance zone, through avoidance, protection, or other means, will be required.

Excavation of sand and gravel within proposed borrow source areas also has the potential to impact on yet unidentified archaeological sites.

6.4.1.2 Proposed Mitigation

The general mitigation strategy for archaeological resources involves additional detailed surveys, followed by relocation of project infrastructure where possible, maintaining a 30 m buffer zone, in accordance with Section 10(a) of the Territorial Land Use Regulations, pursuant to the *Territorial Lands Act*. The regulation states that land use operations are not be conducted within 30 m of a known monument or a known or suspected archaeological site or burial ground without expressed written consent from an inspector.

Alternatively, assessment and mitigation of the archaeological resource may be required, which can include temporary protection, or delineation and careful documentation of the archaeological site prior to disturbance. Avoidance of sites is the preferred option, followed by mitigation.

With respect to Milne Inlet, the ratings of low archaeological potential at the proposed camp, fuel storage and stockpile locations will be verified with additional detailed surveys. An alternate location for the camp and fuel storage is the area immediately south of the currently proposed position, remaining along the east side of the airstrip. An alternate stockpile location has also been identified as shown on Figure 2.5.

Planned mitigation to address the known archaeological sites within close proximity of the Milne Inlet tote road includes relocating the road slightly to avoid the sites with the 30 m buffer zone. Some sites may require temporary protection measures during construction. Deviations from the existing road alignment will be investigated by the archaeology team and cleared before construction begins.

At borrow source locations, project or contractor personnel will work with the archaeologists to identify areas suitable for excavation where no archaeological sites exist. The borrow

areas are of sufficient size compared with the required sand and gravel volumes such that avoidance should be possible.

If all options for avoidance of impacts to archaeological sites are exhausted, the licensed archaeologists working on the Project will assess and mitigate the sites in the summer of 2007, in consultation with the Chief Archaeologist at the Government of Nunavut, Department of Culture, Language, Elders and Youth (CLEY). Mitigation in this case will involve some form of systematic data recovery. Consultation with the community of Pond Inlet regarding archaeology will be undertaken in the first half of 2007 to inform the community of the archaeological findings and proposed plans, and community members will be identified to accompany and assist the archaeologists during their field programs in 2007.

Should an archaeological site be discovered as work is undertaken, appropriate actions will be taken in accordance with the Territorial Land Use Regulations, including suspension of land use operations, and notification of the land use inspector and CLEY of the location of the site and nature of any unearthed materials, structures or artifacts.

The archaeological surveys (and potentially, mitigation) will require significant archaeologist resources in a short period of time next year. Plans are being made to ensure the necessary resources are in place to carry out the additional detailed surveys and contingency mitigation required for the Project to proceed.

6.4.2 Land and Resource Use

6.4.2.1 Potential Effects

Potential effects of the Project on existing land and resources include the following:

- Interruption of camping and hunting activities in Milne Inlet
- Interruption of narwhal hunting or tourism activities in Koluktoo Bay due to ship traffic through Milne Inlet
- Effects to inland hunting in the Mary River area

Potential effects on land and resource use in the area are primarily related to Milne Inlet and the nearby marine environment, and to a lesser degree the inland area of Mary River. Residents of Pond Inlet camp at the Milne Inlet beach, either to access the inland area of Mary River, or to hunt within the marine area, or usually both. Hunting in Milne Inlet and adjacent Koluktoo Bay may include both narwhals and seals.

The site layout at Milne Inlet has been designed to be as compact as possible, and considers information collected thus far on where camping typically occurs, so direct conflict with land use on the beach is not expected. People are likely to camp at Milne Inlet over the course of the bulk sampling program, and noise from site operations will likely affect the aesthetic enjoyment of these users for the duration of the bulk sampling program.

Conversely, some land users may enjoy the presence of a camp and other people at Milne Inlet for the additional security that is afforded, should emergencies arise.

Ship traffic and unloading may have a localized effect on the distribution of both seals and narwhal. The degree to which this may affect hunting is not well understood, although the bulk sampling program provides a unique opportunity to monitor such responses. Two to three ships will enter Milne Inlet in 2007 and another five ships in 2008. Anecdotal information suggests that upon the arrival of the sealift into Milne Inlet for the Mary River Project in 2006, that narwhal of Koluktoo Bay vacated the area temporarily (Polar Sea Adventures, 2006). Project-related ship traffic during the bulk sampling program will be occasional and short-term, but there nevertheless will be an effect on whales and subsequently their availability to local community members for hunting and to tourism operators for viewing.

With respect to upgrades to the Milne Inlet tote road and its effects on land and resource use, the general feedback from the community of Pond Inlet is that road improvements are a positive benefit. The potential for road improvements to affect community use has been considered for both winter and summer seasons, when access is afforded by different means.

With respect to increases in hunting at various times of the year, discussions with Pisiksik (2006) suggest that snowmobile traffic inland from Milne Inlet does not preferentially follow the existing road alignment but follows overlapping and parallel routes inland, in part seeking areas with better snow conditions for snowmobile traffic, particularly in the spring as overland snow conditions deteriorate. With upgrades to and operation of the road in winter, snowmobile traffic may find it advantageous to follow the road alignment because of easier travel, particularly if this allows hunters a faster route to more inland locations. Conversely, hunters may prefer to avoid the road route and the localized effect the traffic may have on caribou distribution, opting instead to avoid the immediate road corridor in hopes to come upon caribou.

In the summer, access to the area by ATV will be improved with the removal of potential barriers at major watercourses. This will allow hunters to reach further inland and hunt more area in less time, potentially resulting in increased caribou harvests. It is uncertain if an increased number of people will access the Mary River area during summer to hunt, since the starting point at Milne Inlet is separated from Pond Inlet from about a 4-6 hour boat ride, and there is a certain portion of the community that owns or have access to the required equipment (i.e., boat and ATV) to hunt the Mary River area.

6.4.2.2 Proposed Mitigation

Mitigation will involve attempts to minimize disturbance to current land use patterns for the duration of the bulk sampling program, to the extent possible, through advanced notification of shipping dates. This will allow other land users (hunters, tourist operators) to re-schedule or modify travel plans, if desired.

Records of land use and any disruptions to land use by others will be recorded, including complaints, so that this information can be considered in subsequent phases of project development.

6.4.3 Employment and Training

6.4.3.1 Potential Effects

Baffinland's proposed training program, as well as expected employment from local communities, is described in Section 3.0. It is Baffinland's intention to maximize the training and employment benefits to local communities to the extent possible, with a view that the bulk sampling program is an excellent opportunity to generate interest and skills in the region to support the development of a mine at Mary River in the future.

The bulk sampling program will require an average of 65 positions up to a peak of 90 positions, a portion of which will be filled through employment from local communities. This is in addition to the approximately 34 positions currently associated with exploration activities that will continue, as well as additional job shadowing positions. The communities of Pond Inlet, Arctic Bay and Igloolik will be drawn upon for employees during the program. The community of Pond Inlet has been drawn upon for employment and local purchases for three years, and through existing employment and public meetings, the community is familiar with the Mary River Project. Employment from Arctic Bay is intended to draw primarily upon those individuals who have relevant work experience at Nanisivik; involvement in the Mary River Project will allow the skills and experience of these people to be further utilized. Igloolik has had limited exposure to the Project to date, with the exception of company meetings with the Hamlet leadership, but Igloolik residents have been active participants in the considerable amount of grassroots mineral exploration that has taken place in the region based out of Igloolik.

Generally, the impacts of employment and training will be positive, through increased income and the development of skills. The impact will last for the approximately 20 month duration of the bulk sampling program, with a view that the ultimate goal of Baffinland is to develop the Project into a full-scale mining operation in the future. Participation in wage earning over a period of less than two years is not expected to result in a meaningful decline in traditional lifestyles, and may provide the earnings to allow for the purchase of equipment and supplies to facilitate more traditional pursuits such as hunting. Brubacher & Associates (2002) documented this aspect of Arctic Bay employment at Nanisivik, as well as the strengthening of social networks of sharing of equipment and resources due to employment income. Anecdotal information through informal discussions between Knight Piésold and several community members in Pond Inlet revealed that a barrier to participation in traditional pursuits is the means to earn money to purchase the necessary equipment and supplies.

The bulk sampling program will provide youth in the communities with exposure to mining and associated careers. Training and information sessions at the onset of the program will provide prospective employees with an orientation to the work environment and the expectations of employers. The human resource policy to be developed by Baffinland for the bulk sampling program can work to ensure that adequate training, support and exposure to various jobs is provided to employees to ensure a positive work experience.

Indirect negative effects of employment on individual well-being is likely to occur to some degree, including a short-term temporary disparity in income that will be created in the communities, and the potential for individuals to make poor decisions with respect to the purchase and misuse of alcohol and use if illicit drugs. For the bulk sampling program, these effects are short-term, although it is likely that these indirect negative effects already occur to some degree as a result of employment at the current exploration camp.

6.4.3.2 Proposed Mitigation

Plans to maximize the benefits of training and employment and mitigate any negative effects will start with the development of a human resources policy for the Project. The policy will set the framework from which training programs are designed and other employee focused policies and procedures are developed, such as a policy on alcohol and drug use; how employees are hired, trained, promoted, or demoted; and how issues related to work performance or attendance will be addressed. The aim will be to develop policies and procedures that are culturally appropriate and work to the mutual benefit of all involved.

Regular air charter service is proposed between Mary River and each of the communities from which employees will be sourced. This will facilitate local employment on the Project.

Shift rotations for southern-based employees and contractors will no longer take place through Pond Inlet, and instead will use the scheduled charter flights originating in Iqaluit. This will address concerns in Pond Inlet over the level of project-related air traffic experienced in the last couple of years.

Recognizing that drugs and alcohol reach the communities independent of exploration and mining operations, the avoidance of shift rotations through Pond Inlet as well as a formalized means of screening workers for drugs or alcohol, will help to reduce the potential for drugs and alcohol to reach the communities as a result of the Project.

Baffinland has initiated discussions with the Qikiqtani Inuit Association (QIA) regarding an Inuit Impact and Benefit Agreement for a future full-scale mine at Mary River. In recent discussions, the QIA expressed a strong desire to work with Baffinland on the training and employment aspects of the bulk sampling program. The ultimate direction these discussions may take is not yet established, but the expectation is that the regional Inuit association with have meaningful input and contribution into the development of training programs for the bulk sampling program that will benefit its representatives.

6.5 POTENTIAL FOR TRANSBOUNDARY IMPACTS

Transboundary impacts are defined by NIRB as “environmental effects / impacts which occur across provincial, territorial, or international boundaries” (NIRB, 2006b).

The Project will involve marine shipping in and out of Nunavut during sealift delivery of materials at the beginning of the program in 2007 and when the bulk sample ore is shipped in 2008. In addition, five voyages will ship ore from Milne Inlet out of the country. The Project-related shipping represents an incremental increase in marine shipping traffic in the region and outside of Nunavut.

Potential transboundary effects include the introduction of foreign aquatic organisms through the deposit of foreign ballast water. The potential impact is mitigated by the legislated requirement for ships to exchange ballast water in the deep sea, thereby preventing the colonization of foreign aquatic organisms (Transport Canada, 2001).

SECTION 7.0 - CUMULATIVE EFFECTS

To focus a discussion on cumulative effects, reference is made to the definition outlined by NIRB (2006b) for Cumulative Effects Assessment:

"The assessment of impacts on the biophysical and socio-economic environment that results from the incremental effects of a development when added to other past, present, and reasonably foreseeable future developments, regardless of what agency or person undertakes such other developments. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

There is no currently operating mine or other industrial development in the North Baffin region, nor is there any mineral exploration in the region at an advanced stage of development, other than the Mary River Project.

Potential cumulative effects can be considered from the Mary River Project itself, and the various components. Concurrent with the bulk sampling program will be ongoing exploration, limited to Deposit Nos. 1, 2, 3 and 3A at Mary River in 2007, but likely expanding to include Deposit No. 4 in 2008, which is near to the Milne Inlet tote road approximately 27 km north of the Mary River site. Geotechnical investigations will be undertaken on a seasonal basis at Milne Inlet, Steensby Inlet and along potential transportation corridors under evaluation as part of the definitive feasibility study underway for the Mary River Project. The camp and drill sites span a geographically expansive area, in the order of 250 km. The placement of camps and their respective activities do not collectively have a meaningful impact on the region.

Each of the activities associated with the Project, however, require air support. Collectively, there will be up to 5 rotary aircraft and 1-2 fixed-wing aircrafts operating throughout the region when both bulk sampling program and exploration/geotechnical activities are underway during the late spring and summer period. Cumulatively, the air traffic associated with the Project warrants consideration.

The potential impacts of air traffic include disruption to wildlife, people out on the land, and in the communities. The following mitigation will address the issue of cumulative air traffic:

- Scheduled charter flights will operate between Iqaluit and Mary River for the bulk sampling program, thereby avoiding the associated air traffic into Pond Inlet associated with staging personnel via scheduled air service from Pond Inlet
- Use of bulk fuel storage delivered by ship to Milne Inlet, eliminating the need to shuttle fuel drums from Pond Inlet to Mary River
- Upgrade of the Milne Inlet tote road to allow transport of equipment and materials to site overland, thereby reducing air traffic
- Flying at heights in excess of the minimum flight altitude of 300 m specified in land use permits and licenses, when feasible

The above mitigation is expected to alleviate the potential impacts associated with Project-related air traffic in the region.

SECTION 8.0 - MONITORING PLAN

8.1 MONITORING OBJECTIVES

The objectives of the monitoring during the bulk sampling program are to:

- Detect unanticipated environmental impacts (if any)
- Assess the effectiveness of proposed mitigation and the need to modify the measures or implement contingency plans
- Ensure compliance with applicable regulations and requirements of environmental permits
- Continue ongoing collection of baseline environmental data

The bulk sampling program also provides an opportunity to "truth" environmental effects for a future full-scale mining operation at Mary River. An example is the evaluation of dust fall out from the short-term operation of a crusher of a new ore product; this monitoring will provide real information on the chemical characteristics and loading of any dust fall out, allowing for improved impact assessment and mitigation plans to be developed for a long-term and larger scale mining operation in the future.

8.2 SCOPE

The following components of the bulk sampling program will be monitored:

- General construction and operation activities, for compliance with the terms and conditions of licenses, permits and authorizations, as well as commitments outlined in this screening report
- Construction activities in and around water, to ensure the protection of fish and fish habitat
- Terrestrial wildlife, in part as a continuation of baseline studies but also to monitor response of wildlife to site activities
- Marine wildlife, to determine the response of narwhal and any changes in distribution of seals in Milne Inlet and environs
- Water sources for potable water consumption, treated sewage effluent prior to discharge, and receiving waters
- General site drainage in proximity to key site activities (i.e., mining, crushing, fuel storage)
- Final abandonment of the bulk sampling program, should the Project not proceed to the next phase within the foreseeable future
- Employment history and skills development of employees

Each of the above components of the monitoring plan is described in the sections that follow.

8.3 CONSTRUCTION ENVIRONMENTAL MONITORING PLAN

A Construction Environmental Monitoring Plan (CEMP) will be developed for the Project, with the following objectives:

- Embody the implementation of the environmental screening
- Outline environmental commitments, requirements and best practices
- Ensure all contractors are aware of environmental commitments and requirements and understand their role in meeting these obligations

On a more tangible level, this involves ensuring the following:

- Environmental protection procedures are in place
- Control sediment and erosion
- Prevent the release of deleterious substances
- Protect fish and fish habitat
- Protect archaeological resources

The CEMP is a tool that Knight Piésold has implemented successfully on other industrial construction projects. The CEMP will form part of the business contract between contractors and Baffinland, thereby ensuring its implementation and adherence.

A draft table of contents of the CEMP for the bulk sampling program is included as Appendix I.

8.4 TERRESTRIAL VEGETATION AND WILDLIFE

8.4.1 Vegetation

Monitoring is planned to sample metals concentrations in vegetation in proximity to the crusher as well as the Milne Inlet tote road, similar to the snowfall sampling that is proposed. Vegetation monitoring will be carried out in tandem with lemming monitoring. The objective is to understand the potential for dust fallout from a short-term crusher operation, to understand the potential issues (if any) relating to operation of a large-scale crusher in a mining operation.

Vegetation and the upper soil layer (which should contain dormant seeds) will be removed and stockpiled where most excavations will occur (primarily the borrow areas). This material will be applied to disturbed areas once work is complete. Areas covered by topsoil will be compared to areas not covered during reclamation, to help understand the effectiveness of this measure in re-vegetation, with a view to applications at a future mine. The exercise should indicate, even qualitatively, which plants most readily re-colonize.

8.4.2 Caribou

The most effective method of monitoring caribou distribution in spring and fall is by aerial survey. These surveys are conducted in a local and intensive study area, which focuses on areas of development including the road, and a regional study area which extends from Milne to Steensby Inlet. Immediate feedback can be provided to site managers and protection measures implemented, if caribou are migrating or calving in the vicinity of the bulk sample and road.

Summer surveys are not effective because of the difficulty in spotting caribou without the benefit of snow cover and tracking. However, if caribou are seen in vicinity of proposed activity during summer, they will be monitored to ensure their safety is not compromised. Consideration is being given to conducting a winter survey for caribou, likely by snowmachine in collaboration with local hunters. Lastly, the possibility of cooperating in a regional caribou collaring program initiated by the Government of Nunavut is being investigated. Such a study would assist in understanding caribou movements through the region as well as habitat use on a much smaller scale. Being able to monitor collared caribou would also enable us to determine their location and proximity to all mining activity during any season.

8.4.3 Carnivores

The focus for carnivores will be on the survey for and identification of dens, particularly for wolves. Any active dens that are found, especially if in proximity to disturbance, will be monitored.

8.4.4 Lemmings

The existing trapline adjacent to the project centre is proposed as a long-term monitoring site for small mammals, in part to assess the potential impact of dust on vegetation and wildlife. Additional traplines are planned adjacent to areas of disturbance, including the Milne Inlet tote road and a control site. Trapline sites will coincide with proposed long-term vegetation monitoring locations.

8.4.5 Birds

Point counts will be carried out at established monitoring sites, in the vicinity of the Mary River site as well as along the road and at Milne Inlet. Effort will be made to identify signs of disturbance. Loons, being particularly sensitive to disturbance and given their abundance and distribution, will be a particularly key species for this monitoring. Geese will also be monitored, given their use of the area during migration and molting.

8.4.6 Wildlife Habitat Assessment

Wildlife monitoring in North Baffin is difficult, given the variability and low densities of species, especially for terrestrial wildlife, and the typically uncertain weather. The key in monitoring terrestrial wildlife, and long-term management, will be the wildlife habitat assessment. Beginning in 2007, habitats will be rated for their value to key wildlife species. Rating is based on known wildlife-habitat relationships. As more information becomes available from baseline and other studies, the relationships can be better defined, and wildlife-habitat models will increase in precision.

This information will subsequently be built into a GIS, with the habitat mapping as the baseline. Once identified, high value habitats can be monitored during key seasons to

ensure they have not been degraded by mining activity. The wildlife habitat assessment is independent of the presence of animals. For example, if sedge wetlands are identified as key fall habitats for caribou, we can ensure that these habitats are not altered or degraded, whether caribou happen to be present in the project area or not.

8.5 MARINE WILDLIFE

Baseline studies of the marine environment will continue through 2007 and beyond, and will involve a continuation of ringed-seal surveys. Continuation of the ringed seal surveys conducted in 2006 can be used to monitor any change in seal distribution in the immediate area of the Milne Inlet camp that may arise due to camp operations.

In 2007, site-specific investigations of the local marine environment at Milne Inlet will be conducted, including sediment quality, benthos, fisheries and water quality. This information will be used to consider impacts of a potential port facility at this location, as part of the feasibility study being undertaken for the Mary River Project. The same studies will be conducted at Steensby Inlet in northern Foxe Basin, which is the other port location being evaluated in the feasibility study.

The bulk sampling program can be used as opportunity to document the behavioural responses of marine mammals to construction activity and noise in the Milne Inlet area, to examine the impact that repeated shipping may have on marine mammal use of the area during the open water period, and to collect ambient noise data that may be used to build a baseline from which future projects may be assessed.

8.6 WATER QUALITY

The objectives of the water monitoring programs are to:

- Ensure drinking water sources are suitable for human consumption, and that water treatment/disinfection is functioning effectively
- Ensure sewage treatment facilities are meeting effluent quality requirements and that receiving waters are not being negatively influenced
- Ensure that site drainage and runoff are not being adversely affected by site activities

Proposed water quality monitoring is described below, and is summarized on Table 8.1.

8.6.1 Potable Water

A potable water treatment system installed at the Mary River camp will treat raw water drawn from Camp Lake. The treatment system will consist of holding tanks, UV disinfection and filtration. A similar system will treat water drawn from Phillips Creek or an unnamed lake in the immediate vicinity of the Milne Inlet camp. The quantity of water used will be monitored and recorded using flow meters. Source water will be sampled in accordance with the *Public Health Act*, which includes monthly sampling for bacteria, turbidity, metals and general chemistry. In recognition of the long transit times to the laboratory, and the

resultant lack of reliability of the bacteriological results, the source water will also be tested on a regular basis using a test kit that detects the presence of coliform.

The above testing program, or similar, is expected to form conditions of Baffinland's water license.

8.6.2 Sewage Treatment Plant Effluent

The quantity of treated sewage effluent discharged from the package sewage treatment plants at Mary River and Milne Inlet will be monitored and recorded using inline flow monitors. The quality of the treated effluent will be monitored on a monthly basis to confirm that effluent quality meets the requirements of the Water License, and is acceptable for release into Sheardown Lake or Milne Inlet, as appropriate.

Proposed monitoring program, or as otherwise established during the permitting process:

- Quantity of sewage treated (continuous);
- Quantity of sludge generated (tabulated); and,
- Sample raw sewage and final effluent quality (monthly) as follows:
  - BOD_5 (biological oxygen demand)
  - Ammonia plus ammonium nitrogen
  - Total suspended solids
  - Total phosphorus

Data will be reported as required by the water license and other relevant approvals.

8.6.3 Receiving Waters

Receiving waters will be monitored upstream and downstream of the sewage effluent discharges at Sheardown Lake and Milne Inlet, for the same parameters as the treated sewage effluent.

8.6.4 General Site Drainage and Stormwater

A number of water quality monitoring stations were established throughout the Project area to collect baseline water quality. Many of these sites will prove valuable in monitoring water quality within local creeks or drainages, both upstream and downstream of mining, crushing, stockpiling and fuel storage locations. Several additional monitoring stations have been identified to supplement the existing monitoring network to monitor bulk sampling program activities. The existing and proposed water quality sampling stations at Mary River and Milne Inlet are shown on Figures 8.1 and 8.2, respectively.

Precipitation will collect in the fuel tank farm containment area. The collected water will be inspected for oil and grease prior to discharge to the environment. If contamination is suspected such as by an oily sheen on the water, the collected liquid will be either sampled

and analyzed for hydrocarbon content and treated if needed prior to release to the environment, or assumed to be contaminated and treated to meet the requirements for direct discharge to the environment.

Snowfall monitoring is also proposed, both in the vicinity of open pit activities as well as near the crusher at Mary River and stockpiles at Milne Inlet. Sampling locations will be selected based on field judgment, with consideration to prevailing winds and any obvious signs of dust fallout. While meaningful impacts are not expected from dust fallout from site activities given the short-term nature of the bulk sampling program, the information will be useful when considering a future full-scale mining operation. The objective of the snowfall monitoring is to understand what issues, if any, exist with the crushing of the ore. The proposed sampling program is intended to help answer how much dust is created by the activities, and what is the chemical nature of the crushed ore.

8.7 PHYSICAL STABILITY

Various components of the Project will be inspected on a regular basis to ensure physically stable conditions. This will include inspecting disturbed areas including the effectiveness of sediment and erosion control measures, the physical stability of open pit slopes and stockpiles.

8.8 FINAL ABANDONMENT ACTIVITIES

Monitoring during restoration activities and post-closure will be undertaken in accordance with the Abandonment & Restoration Plan (A&R Plan) developed for the bulk sampling program, included in Appendix J.

8.9 SOCIO-ECONOMIC ASPECTS

8.9.1 Archaeology Resources

Archaeologists retained for the Project will be on-site conducting detailed surveys at various areas, and will be available for consultation if the location of proposed project facilities deviates from the original plans.

Compliance with the provisions of the Territorial Land Use Regulations and the *Territorial Lands Act* will be enforced as part of the Construction Environmental Monitoring Plan. Known or suspected archaeological features will be avoided by applying a 30 m buffer, and work will be stopped if archaeological resources are identified.

8.9.2 Employment and Training

The bulk sampling program will be an opportunity to collect and organize information on employment, such as an inventory of skills and abilities, and the duration of employment of the workforce (i.e., short-term versus for the duration of the program). This information will assist Baffinland and its consultants in understanding the “workforce ecology” of the participating communities in the region, provide a basis employee database, and enhance

human resource strategies for a future full-scale mining operation. Records of successful completion of training will also be retained.

8.10 REPORTING

Reporting will consist of submitting an annual report on water use and waste disposal, as required by the water license. Any other regulatory requirements for reporting will be complied with. Monitoring results will also be compiled in environmental baseline reports, summaries of which will be provided to local communities.

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SECTION 10.0 - CERTIFICATION

This report was prepared, reviewed and approved by the undersigned.

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TABLE 2.1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

VOLUMETRIC CALCULATION - HEMATITE PIT

Bench (m el.)	Volume (kbm^3)	Density	Tonnage (kt)	%Iron	%Phosphorus	%Sulfur	$\%SiO_2$	Al_2O_3
Fresh Rock								
645	0.16	4.36	0.68	67.10	0.01	0.04	0.37	0.89
640	5.93	4.36	25.85	67.17	0.01	0.04	0.37	0.9
635	9.54	4.36	41.60	67.40	0.01	0.04	0.41	0.87
630	13.85	4.36	60.38	67.72	0.01	0.04	0.43	0.84
SUBTOTAL	**29.47**	**4.36**	**128.51**	**67.50**	**0.01**	**0.04**	**0.41**	**0.86**
Weathered Rock								
645	5.84	4.36	25.45	67.17	0.01	0.04	0.37	0.90
640	4.84	4.36	21.11	67.39	0.01	0.04	0.39	0.88
635	8.55	4.36	37.28	67.90	0.01	0.04	0.42	0.84
630	4.23	4.36	18.46	67.90	0.01	0.04	0.47	0.82
SUBTOTAL	**23.46**	**4.36**	**102.30**	**67.61**	**0.01**	**0.04**	**0.41**	**0.86**
Waste	0.18	3.00	0.55					
TOTAL	**53.12**		**231.35**					

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30-Nov-06

Note:
1. Data from Aker Kvaerner, 2006.

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TABLE 2.2

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

VOLUMETRIC CALCULATION - MAGNETITE PIT

Bench (m el.)	Volume (kbm^3)	Density	Tonnage (kt)	%Iron	%Phosphorus	%Sulfur	$\%SiO_2$	Al_2O_3
Fresh Rock								
685	-	-	-	-	-	-	-	-
680	0.40	4.36	1.73	66.55	0.07	0.10	1.81	0.98
675	2.23	4.36	9.70	66.64	0.07	0.10	1.76	0.98
670	5.22	4.36	22.78	66.49	0.07	0.10	1.83	0.98
665	8.98	4.36	39.17	66.50	0.08	0.10	1.84	0.98
660	12.02	4.36	52.41	66.20	0.08	0.10	1.98	1.00
SUBTOTAL	**28.85**	4.36	**125.79**	**66.38**	**0.08**	**0.10**	**1.89**	**0.99**
Weathered Rock								
685	1.09	4.36	4.76	66.68	0.07	0.10	1.72	0.98
680	1.15	4.36	5.02	66.67	0.07	0.10	1.72	0.99
675	3.62	4.36	15.77	66.43	0.08	0.10	1.85	0.99
670	2.08	4.36	9.06	66.21	0.09	0.11	1.95	1.02
665	4.84	4.36	21.09	65.74	0.10	0.11	2.20	1.04
660	2.59	4.36	11.29	65.29	0.11	0.12	2.46	1.13
SUBTOTAL	**15.37**	**4.36**	**66.99**	**66.03**	**0.09**	**0.11**	**2.06**	**1.04**
Hematite	1.59	4.36	6.95	68.18	0.02	0.05	0.76	0.49
Waste	2.76	3.49	9.63					
TOTAL	**48.57**		**209.36**					

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30-Nov-06

Note:

1. Data from Aker Kvaerner, 2006.

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TABLE 2.3

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF DRAINAGE CROSSING CATEGORIES

Crossing Category	Catchment Area (km^2)	Number of Crossings
Extra-Small	<0.5	174 (173)
Small	0.5 - 2.5	43
Medium	2.5 - 7.5	13 (12)
Large	7.5 - 30.0	14
Extra-Large	>30.0	5 (4)
Total		**249 (246)**

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1-Dec-06

Notes:
1. Number of crossings refers to all crossings on the Milne Inlet tote road from the east side of the Milne Inlet beach to Deposit No. 1 at Mary River.
2. Numbers indicated in brackets indicate number of crossings to be used in the Project.

TABLE 2.4

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF DRAINAGE CROSSINGS (EXTRA-SMALL

Site Number	Northing (m)	Easting (m)	Station (km)	EFT (field assessment)	Area (m^2)
CV182	504231.04	7976243.78	0.480	2	80,988
CV180	503924.7	7976249.43	0.796	2	156,490
CV179	503390.27	7976034.83	1.507	2.5	54,584
CV178	503491.97	7975786.53	1.776	2.5	19,695
CV177	503818.03	7975265.42	2.427	3	20,626
CV175	503798.67	7974830.82	2.867	3	251,232
CV174	504169.14	7974099.39	3.734	3	217,731
CV173	504464.58	7973535.11	4.425	3	345,032
CV172	504663.35	7973320.87	4.722	2	6,412
CV171	504750.27	7973209.81	4.867	2.5	35,079
CV169	505134.21	7972812.9	5.427	2.5	126,587
CV168	505484.88	7972533.95	5.882	2.5	13,193
CV167	505518.72	7972462	5.960	3	312,940
CV164	506376.25	7971646.84	7.299	2	65,706
CV163	506615.65	7971286.87	7.832	2	174,488
CV162	506670.1	7971223.7	7.922	2	119,128
CV161	506801.62	7970956.06	8.230	3	38,484
CV159	506908.82	7970829.97	8.407	2.5	356,027
CV158	507091.2	7970679.81	8.648	3	47,781
CV156	507580.15	7970388.92	9.223	2.5	65,702
CV155	507574.96	7970284.39	9.328	2.5	141,213
CV150	508342.64	7969539.86	10.507	2	16,709
CV149	508516.98	7969146.22	10.954	2.5	28,689
CV148	508682.64	7968996.13	11.180	2.5	376,915
CV147	508703.79	7968978.1	11.208	2.5	24,609
CV145	509069.58	7968519.58	11.832	2	26,368
CV144	509407.72	7968376.83	12.205	2	13,403
CV143	509428.68	7968362.47	12.236	2	21,228
CV142	509465.79	7968350.77	12.266	2	31,011
CV141	509624.88	7968254.83	12.453	2	38,859
CV140	509663.26	7968225.95	12.501	2	59,190
CV139	509810.75	7968128.13	12.679	2	43,687
CV138	509910.84	7968083.4	12.784	2	59,552
CV137	510127.23	7967945.2	13.042	2.5	29,967
CV136	510395.87	7967676.78	13.425	3	219,013
CV135	510584.64	7967522.13	13.675	2	72,713
CV134	510884.73	7967356.97	14.014	2.5	333,205
CV133	511044.61	7967273.25	14.201	2	90,089
CV132	511448.65	7967156.75	14.625	2	415,155
CV131	511528.65	7967128.47	14.709	3	53,277
CV195	511818.27	7967066.58	15.008	2	106,757
CV130	512008.38	7967027.19	15.202	2	125,366
CV196	512531.18	7966681.61	15.839	2	178,699
CV127	513910.86	7965371.83	18.279	1	56,415
CV126	514688.7	7964866.92	19.243	1	15,734
CV124	515389.77	7963690.11	20.626	2	30,076
CV123	515917.55	7963156.31	21.399	2	130,034
CV122	516314.61	7962858.86	21.949	2	127,652
CV121	517208.41	7962003.31	23.199	2	38,902
CV197	518425.22	7959973.03	25.633	2	199,620
CV118	518495.3	7959742.02	25.878	2	134,950
CV198	518764.32	7959243.53	26.444	2	206,238
CV199	518863.16	7959067.9	26.658	2	380,360
CV116	519056.63	7958370.11	27.388	2.5	67,193
CV200	519721.53	7957106.72	28.938	2	331,200
CV201	520675.7	7955818.02	30.483	2	308,294
CV110	521448.79	7954310.09	32.220	2	29,314
CV109	521520.83	7954105.39	32.441	2	110,038
CV108	521546.81	7954036.98	32.513	2	34,421
CV107	521656.97	7953470.95	33.091	2	100,976

TABLE 2.4

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF DRAINAGE CROSSINGS (EXTRA-SMALL)

Site Number	Northing (m)	Easting (m)	Station (km)	EFT (field assessment)	Area (m^2)
CV105	521659.9	7953255.25	33.307	2	126,551
CV204	521937.79	7951457.73	35.154	2	306,610
CV103	521957.72	7950732.35	35.885	2.5	95,983
CV101	521779.16	7949679.93	36.954	2.5	196,560
CV100	521754.97	7949585.1	37.052	2.5	139,548
CV097	522382.67	7947851.64	39.028	2.5	23,722
CV096	522547.5	7945982.33	40.967	2.5	179,374
CV095	522617.56	7945798.84	43.871	2	118,786
CV205	523226.48	7943292.18	43.871	1	57,203
CV089	523413.12	7942158.09	45.016	2	239,967
CV088	523619.22	7941257.52	45.991	3	91,768
CV084	524107.87	7940357.37	47.045	2	471,996
CV206	525054.99	7938639.17	49.031	2	365,026
CV081	525273.03	7938000.8	49.792	2.5	423,249
CV080	525249.07	7937865.5	49.929	2	434,996
CV207	525651.82	7937137.59	50.762	2	266,070
CV077	525986.35	7935924.01	52.091	2	434,346
CV074	526849.78	7934679.08	53.764	2	42,150
CV073	526884.83	7934609.12	53.842	2.5	33,235
CV071	526987.32	7934326.81	54.144	2	123,620
CV070	526993.88	7934298.58	54.173	1	145,910
CV069	527016.74	7933814.37	54.669	1	90,396
CV068	527044.7	7933624.15	54.861	2	212,521
CV067	526983.85	7933300.66	55.197	2	50,375
CV066	527022.74	7933124.57	55.383	2	35,137
CV065	527027.48	7933108.31	55.401	2	41,478
CV064	527049.79	7933045.14	55.469	2.5	204,219
CV063	527057.19	7932992.79	55.524	3	48,951
CV062	527107.28	7932830.36	55.692	2.5	469,509
CV061	527282.87	7931335.88	57.761	2.5	188,579
CV056	528788.77	7927661.63	61.810	2	60,374
CV055	528841.98	7927584.43	61.904	2	35,504
CV054	528899.34	7927487.15	62.018	2	73,733
CV053	528956.1	7927407.93	62.117	2	113,073
CV052	529053.82	7927219.5	62.332	2	188,747
CV051	529088.22	7927173.01	62.390	2	101,002
CV050	529158.64	7927095.62	62.495	5	54,677
CV208	530646.96	7925619.13	64.672	1	25,243
CV209	530749.59	7925520.29	64.847	1	27,493
CV045	531782.3	7923900.34	66.873	2	20,227
CV044	531789.6	7923743.62	67.036	2.5	172,035
CV042	533480.89	7922556.5	69.294	2	52,532
CV041	533555.54	7922562.77	69.369	2	79,790
CV210	534811.02	7920420.81	71.871	1	20,344
CV039	535736.15	7920177.01	72.845	2.5	198,520
CV038	535827.66	7920145.38	72.943	2	8,508
CV037	535987.01	7920170.67	73.105	2.5	121,318
CV036	536217.88	7920086.7	73.351	2.5	134,874
CV211	536641.88	7920141.22	73.779	2	118,745
CV212	537265.32	7920232.45	74.410	2	186,829
CV033	538548.38	7920713.04	75.783	1	40,190
BG33	539714.92	7921098.07	77.025	4	137,985
CV031	539887.8	7921171.26	77.219	2	19,603
CV032	539978.16	7921242.54	77.343	1	227,500
CV213	540937.54	7921775.86	78.401	2	298,279
CV214	541272.07	7921954.52	78.877	2	508,349
BG31	543923.9	7920872.36	82.076	3	110,999
CV022	546467.08	7919876.68	85.062	1	74,497
CV021	546481.24	7919868.69	85.079	2	155,091
CV020	546969.56	7919663.42	85.614	2	10,208

TABLE 2.4

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF DRAINAGE CROSSINGS (EXTRA-SMALL)

Site Number	Northing (m)	Easting (m)	Station (km)	EFT (field assessment)	Area (m^2)
CV019	547094.6	7919587.84	85.763	2	27,975
CV018	547144.58	7919587.36	85.813	1	19,645
CV017	547219.67	7919573.34	85.891	1	18,075
BG28	547566.54	7919479.3	86.263	2	166,313
CV016	547719.41	7919400.79	86.434	1	131,605
CV015	548006.11	7919254.86	86.765	1	54,063
CV014	548063.52	7919216.96	86.834	1	70,770
CV013	548167.06	7919228.63	86.934	1	33,480
BG26	548211.32	7919237.1	86.978	1	7,358
BG25	548283.88	7919255.24	87.054	1	8,123
CV218	548673.53	7918882.92	87.617	2	83,623
BG23	548836.56	7918861.96	87.784	2	17,545
CV012	549211.35	7918781.18	88.171	1	31,874
CV011	549270.85	7918769.55	88.232	1	45,102
CV010	549354.87	7918763.2	88.316	1	69,417
CV009	549846.13	7918510.59	88.896	1	167,728
BG22	550103.67	7918239.01	89.275	1	143,009
BG21	550224.36	7918169.58	89.415	1	38,538
BG20	550313.06	7918142.54	89.512	1	22,953
CV008	550414.35	7917991.59	89.696	1	69,359
BG19	550489.19	7917911.98	89.815	3	186,840
BG18	550645.63	7917687.91	90.092	2	44,177
BG16	550741.53	7917611.16	90.218	2	64,358
BG15	550811.67	7917522.52	90.331	2	16,913
BG14	550838.52	7917471.3	90.389	2	9,293
CV007	550966.72	7917222.74	90.670	2	32,251
BG13	551137.14	7916951.98	90.995	1	30,438
CV006	551178	7916866	91.092	2	63,216
BG12	551430.78	7916708.62	91.394	2	52,003
CV005	551502.19	7916614.72	91.513	1	58,766
BG11	551526.62	7916531.52	91.601	2	51,524
BG10	551603.71	7916466.75	91.705	2	40,653
BG09	551715.37	7916333.51	91.890	2	46,985
CV219	551809.74	7916153.47	92.093	2	49,021
CV220	551866.77	7916054.63	92.207	2	47,272
CV221	551908.59	7915986.2	92.288	1	35,799
BG08	552020.68	7915790.66	92.514	2	82,395
CV004	552074.49	7915654.61	92.660	2	92,446
CV003	552227.79	7915462.51	92.908	2	73,626
BG07	552368.91	7915300.69	93.123	2	79,624
CV002	552423.27	7915249	93.199	2	85,879
CV222	554254.23	7914968.3	95.216	1	18,915
BG03	554762.98	7915030.61	95.735	2	442,141
BG02	554920.51	7914770.99	96.041	2	71,081
CV184	559535.53	7913934.58	101.557	1	12,281
CV185	559739.52	7913898.17	101.764	1	12,653
CV186	560704.68	7913498	102.812	2	95,384
CV188	562392.8	7912843.07	104.701	2	126,261
CV189	562972.63	7912668.37	105.342	1	12,435
CV190	563023.24	7912739.43	105.454	1	10,241
CV191	563304.65	7912982.45	106.047	1	38,087
CV192	563355.28	7913104.52	106.189	2	43,139
CV193	563378.08	7913118.64	106.216	1	16,367
CV194	563577.28	7913171.5	106.430	1	31,915

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1-Dec-06

Note:
1. Shaded cells indicate that the crossing is not included in the Project proposal.

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TABLE 2.5

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF DRAINAGE CROSSINGS (SMALL)

Site Number	Northing (m)	Easting (m)	Station (km)	EFT (field assessment)	Stream Width (m)	Span Width (m)	Area (m^2)	Appendix Photo Reference
BG27	7,919,342	547,876	86.606	2	0.5	10	552,935	C1.1
BG29	7,919,877	546,229	84.805	3	2	10	976,757	C1.2
BG30	7,919,858	546,070	84.636	2	0.5	4	1,059,612	C1.3
CV001	7,914,922	553,782	94.728	1	0.5	2	1,637,753	C1.4
CV023	7,920,201	544,739	83.169	2	0.5	5	1,102,251	C1.5
CV030	7,921,310	540,123	77.503	4	1.5	15	1,265,589	C1.6
CV043	7,923,419	532,044	67.472	2	1	7	1,518,447	C1.7
CV046	7,924,265	531,686	66.489	4	4	10	2,286,224	C1.8
CV057	7,928,657	528,379	60.714	2	0.25	10	562,839	C1.9
CV058	7,928,839	528,322	60.523	3	2	10	2,424,180	C1.10
CV059	7,929,356	528,102	59.960	3	2	10	749,651	C1.11
CV075	7,935,078	526,767	53.336	2	1	5	1,061,023	C1.12
CV076	7,935,335	526,617	53.028	3	7	15	1,187,687	C1.13
CV082	7,938,131	525,254	49.656	2	0.75	10	530,673	C1.14
CV083	7,939,876	524,454	47.644	3	1.5	10	955,051	C1.15
CV085	7,940,898	523,827	46.424	3	1	10	882,744	C1.16
CV086	7,940,983	523,746	46.300	2	2	5	591,709	C1.17
CV090	7,942,336	523,389	44.832	2	0.5	5	863,100	C1.18
CV093	7,944,890	523,116	42.215	2	1	15	879,951	C1.19
CV102	7,950,591	521,934	36.029	3	2	10	1,932,365	C1.20
CV106	7,953,392	521,663	33.170	3	1	7	752,112	C1.21
CV112	7,954,935	521,033	31.446	3	2	5	2,279,159	C1.22
CV113	7,955,659	520,747	30.656	2	0.5	7	771,664	C1.23
CV115	7,958,135	519,222	27.686	3	1	10	1,414,903	C1.24
CV117	7,958,681	519,010	27.074	2	0.75	5	1,268,581	C1.25
CV119	7,961,153	517,762	24.264	2	3	10	1,168,163	C1.26
CV120	7,961,707	517,294	23.510	3	2	15	1,893,702	C1.27
CV125	7,963,841	515,296	20.448	2	1.5	5	1,189,650	C1.28
CV146	7,968,870	508,786	11.347	2	0.4	5	1,020,550	C1.29

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TABLE 2.5

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF DRAINAGE CROSSINGS (SMALL)

Site Number	Northing (m)	Easting (m)	Station (km)	EFT (field assessment)	Stream Width (m)	Span Width (m)	Area (m^2)	Appendix Photo Reference
CV151	7,969,584	508,341	10.460	3	1	10	586,477	C1.30
CV152	7,969,684	508,201	10.282	3	4	15	1,045,843	C1.31
CV153	7,969,718	508,152	10.219	3	2	10	1,060,947	C1.32
CV154	7,970,076	507,620	9.570	3	2	10	1,360,439	C1.33
CV157	7,970,538	507,374	8.960	3	2	10	1,467,596	C1.34
CV165	7,971,635	506,128	7.038	3	3	15	1,128,876	C1.35
CV166	7,972,370	505,538	6.055	3	1	5	818,859	C1.36
CV170	7,972,923	505,015	5.268	3	1.5	5	523,156	C1.37
CV176	7,975,057	503,834	2.637	3	3	10	522,093	C1.38
CV187	7,913,414	560,957	103.078	3	2	6	906,835	C1.39
CV202	7,953,731	521,603	32.825	3	3	4	673,298	C1.40
CV203	7,952,435	521,782	34.150	3	2.5	5	649,588	C1.41
CV215	7,922,217	541,930	79.575	3	4	4	760,446	C1.42
CV226	7,913,553	560,458	102.569	3	3	10	1,550,999	C1.43

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1-Dec-06

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TABLE 2.6

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF DRAINAGE CROSSINGS (MEDIUM)

Site Number	Northing (m)	Easting (m)	Station (km)	EFT (field assessment)	Stream Width (m)	Span Width (m)	Area (m^2)	Appendix Photo Reference
BG01	7,914,919	557,991	99.676	4	4	15	5,611,782	C2.1
BG04	7,915,113	553,250	94.148	2	3	10	6,847,505	C2.2
BG24	7,918,878	548,766	87.710	4	3	5	5,505,790	C2.3
CV047	7,924,326	531,667	66.427	3	2	5	4,111,108	C2.4
CV060	7,930,342	527,622	58.853	3	1	10	5,256,834	C2.5
CV091	7,944,176	523,111	42.962	2	1	5	3,452,918	C2.6
CV092	7,944,187	523,107	42.949	2	1	5	3,452,918	C2.7
CV098	7,948,306	522,197	38.525	3	5	10	2,840,586	C2.8
CV104	7,952,788	521,732	33.794	3	1	5	5,198,489	C2.9
CV111	7,954,524	521,355	31.991	3	3	10	3,115,619	C2.10
CV114	7,956,528	520,278	29.648	3	4	10	3,144,617	C2.11
CV181	7,976,216	504,133	0.583	3	1	5	3,298,442	C2.12
CV224	7,915,044	556,238	97.758	4	3	4	2,834,518	C2.13

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1-Dec-06

Note:
1. Shaded cells indicate that the crossing is not included in the Project proposal.

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TABLE 2.7

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF DRAINAGE CROSSINGS (LARGE)

Site Number	Northing (m)	Easting (m)	Station (km)	EFT (field assessment)	Stream Width (m)	Span Width (m)	Area (m^2)	Appendix Photo Reference
BG17	7,917,643	550,703	90.168	3	3	10	13,766,712	C3.1
BG32	7,921,622	540,706	78.163	5	10	20	11,470,152	C3.2
CV040	7,920,305	535,175	72.263	5	7	15	12,020,780	C3.3
CV048	7,925,875	530,415	64.312	4	4	10	8,542,258	C3.4
CV049	7,926,542	529,677	63.303	5	7	15	11,983,534	C3.5
CV072	7,934,576	526,897	53.878	4	4	8	13,495,782	C3.6
CV078	7,936,787	525,852	51.172	5	8	15	19,439,928	C3.7
CV079	7,937,276	525,562	50.599	4	3	200	13,497,190	C3.8
CV087	7,941,040	523,704	46.225	2	0.75	5	9,872,768	C3.9
CV094	7,945,397	522,805	41.613	3	1.5	7	10,006,204	C3.10
CV099	7,948,820	521,811	37.840	5	6	15	28,559,286	C3.11
CV129	7,966,783	512,381	15.651	5	7	12	10,622,786	C3.12
CV216	7,921,700	542,774	80.647	5	7	8	13,318,478	C3.13
CV225	7,915,138	557,407	99.033	5	8	10	12,179,754	C3.14

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1-Dec-06

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TABLE 2.8

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF DRAINAGE CROSSINGS (EXTRA-LARGE)

Site Number	Northing (m)	Easting (m)	Station (km)	EFT (field assessment)	Stream Width (m)	Span Width (m)	Area (m^2)	Appendix Photo Reference
BG50	7,926,846	529,334	62.836	6	15	30	197,800,000	C4.1
CV128	7,965,895	513,545	17.683	6	30	200	473,400,000	C4.2
CV183	7,976,417	504,696	0.145	6	10	20	59,896,826	C4.3
CV217	7,922,158	542,219	79.824	6	40	60	194,100,000	C4.4
CV223	7,914,691	555,818	97.230	6	45	100	244,100,000	C4.5

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1-Dec-06

Note:
1. Shaded cells indicate that the crossing is not included in the Project proposal.

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TABLE 2.9

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

PRELIMINARY SUMMARY OF ROAD FOUNDATION CLASSIFICATIONS

From Station (km)	To Station (km)	Frost/Thaw Susceptibility	Distance (km)				Comments
			Non Susceptible	Potentially Susceptible	Moderately Susceptible	Highly Susceptible	
0.0	10.0	Non Susceptible	10				
10.0	12.5	Potentially Susceptible		2.5			
12.5	15.0	Highly Susceptible				2.5	
15.0	17.5	Potentially Susceptible		2.5			
17.5	22.5	Non Susceptible	5				
22.5	30.0	Potentially Susceptible		7.5			Potentially Susceptible or Wet Conditions
30.0	42.5	Highly Susceptible				12.5	
42.5	52.5	Potentially Susceptible		10			Potentially Susceptible or Wet Conditions
52.5	55.0	Moderately Susceptible			2.5		
55.0	57.5	Highly Susceptible				2.5	
57.5	60.0	Moderately Susceptible			2.5		
60.0	62.5	Non Susceptible	2.5				
62.5	72.5	Highly Susceptible				10.0	
72.5	80.0	Moderately Susceptible			7.5		
80.0	95.0	Potentially Susceptible		15			Potentially Susceptible or Wet Conditions
95.0	105.0	Non Susceptible	10				
			27.5	**37.5**	**12.5**	**27.5**	

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01-Dec-06

Note:
1. The following classifications are preliminary.

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TABLE 2.10

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF CATEGORY SMALL DRAINAGE CROSSINGS DETAILS

Site Number	Northing	Easting	Crossing Type	Approximate Span Width	Catchment Area	Crossing Details		
						CSP Culverts		
	(m)	(m)		(m)	(m^2)	Ø = 1.2 m	Ø = 1.0 m	Ø = 0.5 m
BG27	7,919,342	547,876	B	10	552,935	-	-	3
BG29	7,919,877	546,229	A	10	976,757	-	1	-
BG30	7,919,858	546,070	A	4	1,059,612	-	1	-
CV001	7,914,922	553,782	C	2	1,637,753	-	1	2
CV023	7,920,201	544,739	A	5	1,102,251	-	1	-
CV030	7,921,310	540,123	C	15	1,265,589	-	1	1
CV043	7,923,419	532,044	C	7	1,518,447	-	1	2
CV046	7,924,265	531,686	C	10	2,286,224	-	1	4
CV057	7,928,657	528,379	B	10	562,839	-	-	3
CV058	7,928,839	528,322	C	10	2,424,180	1	-	1
CV059	7,929,356	528,102	B	10	749,651	-	-	4
CV075	7,935,078	526,767	B	5	1,061,023	-	-	5
CV076	7,935,335	526,617	A	15	1,187,687	-	1	-
CV082	7,938,131	525,254	B	10	530,673	-	-	4
CV083	7,939,876	524,454	B	10	955,051	-	-	5
CV085	7,940,898	523,827	B	10	882,744	-	-	5
CV086	7,940,983	523,746	B	5	591,709	-	-	4
CV090	7,942,336	523,389	B	5	863,100	-	-	5
CV093	7,944,890	523,116	B	15	879,951	-	-	5
CV102	7,950,591	521,934	C	10	1,932,365	-	1	3
CV106	7,953,392	521,663	B	7	752,112	-	-	4
CV112	7,954,935	521,033	C	5	2,279,159	1	-	1
CV113	7,955,659	520,747	B	7	771,664	-	-	4
CV115	7,958,135	519,222	C	10	1,414,903	-	1	1
CV117	7,958,681	519,010	C	5	1,268,581	-	1	1
CV119	7,961,153	517,762	A	10	1,168,163	-	1	-
CV120	7,961,707	517,294	C	15	1,893,702	-	1	3
CV125	7,963,841	515,296	A	5	1,189,650	-	1	-
CV146	7,968,870	508,786	B	5	1,020,550	-	-	5
CV151	7,969,584	508,341	B	10	586,477	-	-	4
CV152	7,969,684	508,201	B	15	1,045,843	-	-	5
CV153	7,969,718	508,152	B	10	1,060,947	-	-	5
CV154	7,970,076	507,620	C	10	1,360,439	-	1	1
CV157	7,970,538	507,374	C	10	1,467,596	-	1	1
CV165	7,971,635	506,128	A	15	1,128,876	-	1	-
CV166	7,972,370	505,538	B	5	818,859	-	-	5
CV170	7,972,923	505,015	B	5	523,156	-	-	3
CV176	7,975,057	503,834	B	10	522,093	-	-	3
CV187	7,913,414	560,957	B	6	906,835	-	-	5
CV202	7,953,731	521,603	B	4	673,298	-	-	4
CV203	7,952,435	521,782	B	5	649,588	-	-	4
CV215	7,922,217	541,930	B	4	760,446	-	-	4
CV226	7,913,553	560,458	C	10	1,550,999	-	1	2

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 2.10 to 2.13 Culvert Summary Tables.xls]Table 2.10 Small 10 yr return

01-Dec-06

Notes:

1. Crossings designed for peak flow from the 1:10 yr return storm.
2. Span width based on initial site assessment.
3. Crossing Type: A - single culvert; B - multiple culvert; C - multiple culvert and multiple diameters.

Knight Piésold CONSULTING

TABLE 2.11

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF CATEGORY MEDIUM DRAINAGE CROSSINGS DETAILS

Site Number	Northing (m)	Easting (m)	Crossing Type	Approximate Span Width (m)	Catchment Area (m^2)	Crossing Details		
						CSP Culverts		Emergency Overflow Swale Required?
						Ø = 1.2 m	Ø = 1.0 m	
BG01	7,914,919	557,991	B	15	5,611,782	1	-	yes
BG04	7,915,113	553,250	C	10	6,847,505	2	-	yes
BG24	7,918,878	548,766	A	5	5,505,790	3	-	-
CV047	7,924,326	531,667	A	5	4,111,108	2	-	-
CV060	7,930,342	527,622	C	10	5,256,834	-	2	yes
CV091	7,944,176	523,111	A	5	3,452,918	-	3	-
CV092	7,944,187	523,107	A	5	3,452,918	-	3	-
CV098	7,948,306	522,197	B	10	2,840,586	-	1	yes
CV104	7,952,788	521,732	A	5	5,198,489	2	-	-
CV111	7,954,524	521,355	B	10	3,115,619	-	1	yes
CV114	7,956,528	520,278	B	10	3,144,617	-	1	yes
CV181	7,976,216	504,133	A	5	3,298,442			
CV224	7,915,044	556,238	A	4	2,834,518	-	2	-

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 2.10 to 2.13 Culvert Summary Tables.xls]Table 2.11 Medium 10 yr return
01-Dec-06

Notes:
1. Crossings designed for peak flow from the 1:10 yr return storm.
2. Span width based on initial site assessment.
3. Crossing Type: A - multiple culvert; B - single culvert with swale; C - multiple culvert with swale.

Knight Piésold CONSULTING

TABLE 2.12

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF CATEGORY LARGE DRAINAGE CROSSINGS DETAILS

Site Number	Northing (m)	Easting (m)	Crossing Type	Approximate Span Width (m)	Catchment Area (m^2)	Crossing Details	
						CSP Culverts Ø = 1.2 m	Emergency Overflow Swale Required?
BG17	7,917,643	550,703	B	10	13,766,712	2	yes
BG32	7,921,622	540,706	B	20	11,470,152	2	yes
CV040	7,920,305	535,175	B	15	12,020,780	2	yes
CV048	7,925,875	530,415	B	10	8,542,258	2	yes
CV049	7,926,542	529,677	B	15	11,983,534	2	yes
CV072	7,934,576	526,897	B	8	13,495,782	3	yes
CV078	7,936,787	525,852	A	15	19,439,928	1	yes
CV079	7,937,276	525,562	B	200	13,497,190	2	yes
CV087	7,941,040	523,704	A	5	9,872,768	3	-
CV094	7,945,397	522,805	A	7	10,006,204	1	yes
CV099	7,948,820	521,811	B	15	28,559,286	3	yes
CV129	7,966,783	512,381	A	12	10,622,786	1	yes
CV216	7,921,700	542,774	B	8	13,318,478	3	yes
CV225	7,915,138	557,407	A	10	12,179,754	1	yes

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 2.10 to 2.13 Culvert Summary Tables.xls]Table 2.12 Large 25 yr return

01-Dec-06

Notes:

1. Crossings designed for peak flow from the 1:25 yr return storm.
2. Span width based on initial site assessment
3. Crossing Type: A - single culvert with swale; B - multiple culvert with swale.

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TABLE 2.13

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF CATEGORY EXTRA-LARGE DRAINAGE CROSSINGS DETAILS

Site Number	Northing (m)	Easting (m)	Approximate Span Width (m)	Catchment Area (m^2)	Crossing Details		
					Sea Containers 2.4 m x 2.9 m x 12.1 m	CSP Culverts Ø = 1.2 m	Emergency Overflow Swale Required?
BG50	7,926,846	529,334	30	197,800,000	13	2	-
CV128	7,965,895	513,545	200	473,400,000	20	1	yes
CV183	7,976,417	504,696	20	59,896,826			
CV217	7,922,158	542,219	60	194,100,000	14	1	-
CV223	7,914,691	555,818	100	244,100,000	16	2	-

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 2.10 to 2.13 Culvert Summary Tables.xls]Table 2.13 Ex Large 25yr return
01-Dec-06

Notes:
1. Crossings designed for peak flow from the 1:25 yr return storm.
2. Span width based on initial site assessment.

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TABLE 5.1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLE PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

POND INLET CLIMATE NORMALS (1971-2000)

Temperature	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Daily Average (°C)	-32.4	-34.1	-30.3	-22.1	-9.9	1.8	6	4.2	-1.4	-11.4	-22.4	-28.7	-15.1
Daily Maximum (°C)	-28.8	-30.6	-26.4	-17.7	-5.8	4.7	9.8	7.2	1.2	-8	-18.5	-25	-11.5
Daily Minimum (°C)	-35.9	-37.5	-33.9	-26.5	-13.9	-1.1	2.1	1.2	-4	-14.7	-26.1	-32.4	-18.6
Precipitation:													
Rainfall (mm)	0	0	0	0	0.2	11.7	30.5	32.9	8.4	1.3	0.4	0	
Snowfall (cm)	7.3	5.6	10.1	13.9	14.2	5.3	0.5	3.9	16.7	32.8	22.4	11.8	
Precipitation (mm)	5.7	4.3	8	10.7	9.6	15.8	31.1	36.9	20.8	23.4	16.1	8.4	
Average Snow Depth (cm)	19	18	20	22	23	6	0	0	2	10	16	17	13
Median Snow Depth (cm)	18	18	20	22	23	6	0	0	1	10	15	17	13
Days with Maximum Temperature													
<= 0 °C	30.9	28.3	31	29.9	26.4	2.9	0	0.11	11.4	29.6	30	31	
> 0 °C	0.13	0.05	0.04	0.14	4.7	27.1	31	30.9	18.6	1.5	0	0	
> 10 °C	0	0.05	0.04	0	0.1	1.7	12.8	4.3	0.05	0	0	0	
> 20 °C	0	0.05	0.04	0	0	0	0.15	0	0	0	0	0	
Days with Minimum Temperature													
> 0 °C	0	0	0	0	0.08	12	25.5	19.8	3.4	0.04	0	0	
<= 2 °C	29.9	27.3	30	28.7	29.5	25.9	16.1	19.9	27.4	29.3	28.7	29.6	
<= 0 °C	29.9	27.3	30	28.7	29.4	16.8	3.9	9.6	24.8	29.3	28.7	29.6	
< -2 °C	29.9	27.3	30	28.6	28.7	7.9	0.67	2.4	18.8	29.1	28.7	29.6	
< -10 °C	29.9	27.3	30	28.1	20.4	0.63	0	0	2	22	28.3	29.6	
< -20 °C	29.3	27.2	29	23.4	4.8	0	0	0	0	5.8	22.9	28	
< - 30 °C	25.5	24.3	22.3	8.3	0	0	0	0	0	0.04	8.7	20.1	
Wind:													
Mean Wind Speed (km/h)	7.1	6.4	7.1	7.8	8.6	8.6	9.7	10.3	11.7	13.8	9.5	7.8	
Most Frequent Direction	S	S	S	S	S	SW	NE	NE	SE	SE	S	S	
Maximum Hourly Speed	76	70	65	74	70	63	70	70	74	74	91	93	
Degree Days:													
Above 15 °C	0	0	0	0	0	0	0.1	0	0	0	0	0	
Above 10 °C	0	0	0	0	0	0.2	4	0.4	0	0	0	0	
Above 5 °C	0	0	0	0	0.1	6.2	46.5	18.1	0.5	0	0	0	
Above 0 °C	0	0	0	0	1.9	73.7	184.9	130.6	24.5	0.3	0	0	
Below 0 °C	1004.1	960.3	935.7	662.9	307.2	19.9	0	0.7	64.5	352.8	671.4	890.2	
Below 5 °C	1159.1	1101.8	1090.7	812.8	460.3	102.4	16.6	43.2	190.5	507.5	821.4	1045.2	
Below 10 °C	1314.1	1243.3	1245.7	962.8	615.3	246.4	129.1	180.5	340	662.5	971.4	1200.2	
Below 18 °C	1562.1	1469.7	1493.7	1202.8	863.3	486.2	373.1	428.1	580	910.5	1211.4	1448.2	

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Table 5.1.xls]Table 5.1
1-Dec-06

Note:
1. Environment Canada, 2004.

Knight Piésold CONSULTING

TABLE 5.2

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

EXPLORATION PROPERTY WATER QUALITY - IN SITU PARAMETERS AND CCME SPECIFIED PARAMETERS

		In Situ				General Parameters and Nutrients				Total and Dissolved Metals and Non-Metals																						CCME WQI[2]	
		Temp	SpC	DO	pH	NH_3+NH_4	NO_2^-	NO_3^-	Phenols	Aluminum		Arsenic		Cadmium		Copper		Iron		Lead		Mercury	Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc			
										Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	2005	2006
		(°C)	(mS/cm)	mg/L		mg/L N	mg/L N	mg/L N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
CCME Guideline Limits[1]					6.5 - 9.0	0.054-184.8[3]	0.06	13	0.0040	0.005 - 0.100[4]		0.0050		0.000017[5]		0.002-0.004[6]		0.3		0.001-0.007[7]		2.6E-05	0.073		0.025-0.150[8]		0.0010		0.0001		0.0008		0.03			
A0-01	Number of samples	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	2	4	4		
	Minimum	-0.01	0.043	11.15	7.28	0.03	0.005	0.05	0.001	0.016	0.005	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.04	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	9.12	0.058	14.47	7.66	1.10	0.060	0.10	0.001	0.070	0.009	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.06	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	4.490	0.0503	12.723	7.518	0.498	0.0345	0.075	0.0010	0.0402	0.0073	0.0030	0.0030	0.00010	0.00010	0.00090	0.00090	0.045	0.025	0.00060	0.00060	0.0001	0.00265	0.00265	0.0030	0.0030	0.0030	0.0030	0.00010	0.00010	0.0002	0.0002	0.0055	0.0058	Excellent	Excellent
	Median	4.425	0.0500	12.635	7.565	0.430	0.0365	0.075	0.0010	0.0375	0.0075	0.0030	0.0030	0.00010	0.00010	0.00090	0.00090	0.040	0.025	0.00060	0.00060	0.0001	0.00265	0.00265	0.0030	0.0030	0.0030	0.0030	0.00010	0.00010	0.0002	0.0002	0.0055	0.0060		
	SD	3.9030	0.00695	1.3609	0.1670	0.537	0.0296	0.0289	0	0.0223	0.0017	0.0023	0.0023	0.00000	0.00000	0.00012	0.00012	0.0100	0.0058	0.00046	0.00046	0	0.00271	0.00271	0.00231	0.00231	0.00231	0.00231	0	0	0	0	0.0052	0.0049		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
A0-10	Number of samples	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	3	3	11	11		
	Minimum	1.06	0.04	10.81	6.60	0.02	0.005	0.05	0.001	0.004	0.005	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.03	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	8.81	0.134	14.75	7.61	0.60	0.060	0.10	0.001	0.088	0.014	0.005	0.005	0.0001	0.0001	0.0040	0.0010	0.15	0.22	0.0080	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0006	0.0001	0.0002	0.0002	0.010	0.010	100	93.0
	Mean	3.802	0.0577	12.722	7.298	0.119	0.0211	0.086	0.0010	0.0389	0.0070	0.0021	0.0021	0.00010	0.00010	0.00122	0.00095	0.063	0.052	0.00142	0.00078	0.0001	0.00372	0.00372	0.0039	0.0039	0.0021	0.0021	0.00015	0.00010	0.0002	0.0002	0.0084	0.0078	Excellent	Good
	Median	3.020	0.0500	12.830	7.330	0.030	0.0050	0.100	0.0010	0.0400	0.0060	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.050	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010	0.0002	0.0002	0.0100	0.0100		
	SD	2.5019	0.02618	1.3136	0.2815	0.173	0.0252	0.0234	0	0.0278	0.0029	0.0019	0.0019	0.00000	0.00000	0.00093	0.00009	0.0393	0.0588	0.00221	0.00037	0	0.00220	0.00220	0.00187	0.00187	0.00187	0.00187	0.00015	0	0	0	0.0036	0.0038		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**	-	-	-	**1**	-	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-		
BL0-01-S	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	12.33	0.093	9.76	8.26	0.04	0.005	0.10	0.001	0.144	0.009	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.18	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	12.33	0.093	9.76	8.26	0.04	0.005	0.10	0.001	0.144	0.009	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.18	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	97.0
	Mean	12.330	0.0930	9.760	8.260	0.040	0.0050	0.100	0.0010	0.1440	0.0090	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.180	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	12.330	0.0930	9.760	8.260	0.040	0.0050	0.100	0.0010	0.1440	0.0090	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.180	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
BL0-01-D	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	9.12	0.082	10.52	8.07	0.03	0.005	0.10	0.001	0.191	0.010	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.25	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	9.12	0.082	10.52	8.07	0.03	0.005	0.10	0.001	0.191	0.010	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.25	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	96.6
	Mean	9.120	0.0820	10.520	8.070	0.030	0.0050	0.100	0.0010	0.1910	0.0100	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.250	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	9.120	0.0820	10.520	8.070	0.030	0.0050	0.100	0.0010	0.1910	0.0100	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.250	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
BL0-05-S	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	8.47	0.05	10.79	7.72	0.09	0.005	0.10	0.001	0.107	0.011	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.10	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	8.47	0.05	10.79	7.72	0.09	0.005	0.10	0.001	0.107	0.011	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.10	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	97.1
	Mean	8.470	0.0500	10.790	7.720	0.090	0.0050	0.100	0.0010	0.1070	0.0110	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.100	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	8.470	0.0500	10.790	7.720	0.090	0.0050	0.100	0.0010	0.1070	0.0110	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.100	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
BL0-05-D	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	5.90	0.046	10.55	7.52	0.04	0.005	0.10	0.001	0.094	0.009	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.09	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	5.90	0.046	10.55	7.52	0.04	0.005	0.10	0.001	0.094	0.009	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.09	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	100
	Mean	5.900	0.0460	10.550	7.520	0.040	0.0050	0.100	0.0010	0.0940	0.0090	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.090	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	5.900	0.0460	10.550	7.520	0.040	0.0050	0.100	0.0010	0.0940	0.0090	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.090	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C0-01	Number of samples	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	3	3	7	7		
	Minimum	0.11	0.059	9.52	7.20	0.02	0.005	0.05	0.001	0.016	0.005	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.05	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	11.91	0.173	15.65	7.79	0.60	0.060	0.10	0.002	0.251	0.020	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.25	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	97.8	97.3
	Mean	4.430	0.0789	13.003	7.611	0.223	0.0346	0.079	0.0011	0.1050	0.0101	0.0027	0.0027	0.00010	0.00010	0.00094	0.00091	0.127	0.034	0.00067	0.00066	0.0001	0.00299	0.00299	0.0033	0.0033	0.0027	0.0027	0.00010	0.00010	0.0002	0.0002	0.0069	0.0063	Excellent	Excellent
	Median	1.620	0.0610	13.170	7.690	0.060	0.0350	0.100	0.0010	0.0680	0.0060	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.080	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010	0.0002	0.0002	0.0100	0.0100		
	SD	4.6750	0.04176	1.8302	0.2125	0.245	0.0258	0.0267	0.00038	0.1030	0.0067	0.0021	0.0021	0	0	0.00008	0.00011	0.0842	0.0127	0.00041	0.00043	0	0.00251	0.00251	0.00214	0.00214	0.00214	0.00214	0	0	0	0	0.0043	0.0046		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
C0-10	Number of samples	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9			9	9		
	Minimum	1.40	0.016	6.62	6.82	0.02	0.005	0.10	0.001	0.012	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.05	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	13.36	0.106	13.85	7.93	0.05	0.021	0.10	0.001	0.295	0.020	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.22	0.09	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0004	0.0001			0.010	0.010	-	95.2
	Mean	6.669	0.0604	11.331	7.534	0.029	0.0088	0.100	0.0010	0.1472	0.0127	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.136	0.038	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00013	0.00010			0.0100	0.0100	-	Excellent
	Median	6.390	0.0650	12.150	7.640	0.030	0.0050	0.100	0.0010	0.1210	0.0120	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.140	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD	4.6008	0.03018	2.4844	0.3793	0.009	0.0070	0.0000	0	0.1043	0.0057	0.0000	0.0000	0	0	0.00000	0.00000	0.0564	0.0199	0.00000	0	0	0	0	0	0	0	0	0	0.00010	0			0.0000	0.0000		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**	-	-	-	-		
D0-01	Number of samples	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	3	3		
	Minimum	2.83	0.066	10.06	7.49	0.02	0.005	0.05	0.001	0.005	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0004	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	9.37	0.103	12.75	8.10	0.80	0.060	0.10	0.001	0.243	0.024	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.22	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	97.3
	Mean	5.313	0.0880	11.520	7.820	0.293	0.0283	0.083	0.0010	0.0870	0.0110	0.0023	0.0023	0.00010	0.00010	0.00093	0.00093	0.090	0.027	0.00073	0.00073	0.0001	0.00343	0.00347	0.0037	0.0037	0.0023	0.0023	0.00010	0.00010	0.0002	0.0002	0.0070	0.0070	Excellent	Excellent
	Median	3.740	0.0950	11.750	7.870	0.060	0.0200	0.100	0.0010	0.0130	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010	0.0002	0.0002	0.0100	0.0100		
	SD	3.5425	0.01947	1.3597	0.3081	0.439	0.0284	0.0289	0	0.1352	0.0113	0.0023	0.0023	0	0	0.00012	0.00012	0.1127	0.0058	0.00046	0.00046	0	0.00271	0.00266	0.00231	0.00231	0.00231	0.00231	0	0			0.0052	0.0052		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Knight Piésold CONSULTING

TABLE 5.2

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

EXPLORATION PROPERTY WATER QUALITY - IN SITU PARAMETERS AND CCME SPECIFIED PARAMETERS

		In Situ				General Parameters and Nutrients				Total and Dissolved Metals and Non-Metals																						CCME WQI[2]	
		Temp	SpC	DO	pH	NH_3+NH_4	NO_2^-	NO_3^-	Phenols	Aluminum		Arsenic		Cadmium		Copper		Iron		Lead		Mercury	Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc			
										Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.		
		(°C)	(mS/cm)	mg/L		mg/L N	mg/L N	mg/L N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	2005	2006
CCME Guideline Limits[1]					6.5 - 9.0	0.054-184.8[3]	0.06	13	0.0040	0.005 - 0.100[4]		0.0050		0.000017[5]		0.002-0.004[6]		0.3		0.001-0.007[7]		2.6E-05	0.073		0.025-0.150[8]		0.0010		0.0001		0.0008		0.03			
D1-01	Number of samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	1.07	0.071	8.91	7.48	0.02	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0010	0.0018	0.03	0.03	0.0002	0.0002	0.0001	0.0008	0.0008	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.002		
	Maximum	14.25	0.183	13.64	8.21	0.20	0.060	0.10	0.001	0.081	0.017	0.005	0.005	0.0001	0.0001	0.0030	0.0030	0.11	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	95.0	95.3
	Mean	7.042	0.1230	11.624	7.830	0.096	0.0388	0.070	0.0010	0.0324	0.0070	0.0034	0.0034	0.00010	0.00010	0.00224	0.00238	0.066	0.040	0.00052	0.00052	0.0001	0.00274	0.00266	0.0028	0.0030	0.0034	0.0034	0.00010	0.00010	0.0002	0.0002	0.0050	0.0064	Excellent	Excellent
	Median	7.880	0.1250	11.820	7.810	0.100	0.0600	0.050	0.0010	0.0160	0.0050	0.0050	0.0050	0.00010	0.00010	0.00260	0.00230	0.060	0.040	0.00020	0.00020	0.0001	0.00150	0.00130	0.0020	0.0020	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0020	0.0060		
	SD	5.3564	0.05101	1.8264	0.2626	0.067	0.0291	0.0274	0	0.0334	0.0056	0.0022	0.0022	0	0	0.00080	0.00051	0.0288	0.0100	0.00044	0.00044	0	0.00208	0.00214	0.00205	0.00187	0.00219	0.00219	0	0	0	0	0.0046	0.0036		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
D1-03	Number of samples	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
	Minimum	0.06	0.097	12.46	7.52	0.20	0.060	0.05	0.001	0.026	0.004	0.005	0.005	0.0001	0.0001	0.0026	0.0025	0.02	0.02	0.0002	0.0002	0.0001	0.0012	0.0015	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	6.12	0.214	15.16	7.98	0.40	0.060	0.08	0.001	0.720	0.055	0.005	0.005	0.0001	0.0001	0.0070	0.0055	0.81	0.05	0.0007	0.0002	0.0001	0.0022	0.0022	0.004	0.002	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.002	0.002	88.0	-
	Mean	3.500	0.1643	13.360	7.850	0.300	0.0600	0.062	0.0010	0.2133	0.0168	0.0050	0.0050	0.00010	0.00010	0.00410	0.00367	0.223	0.028	0.00038	0.00020	0.0001	0.00173	0.00170	0.0020	0.0013	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0015	0.0015	Good	-
	Median	3.910	0.1730	12.910	7.950	0.300	0.0600	0.060	0.0010	0.0535	0.0040	0.0050	0.0050	0.00010	0.00010	0.00340	0.00335	0.030	0.020	0.00030	0.00020	0.0001	0.00175	0.00155	0.0015	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0015	0.0015		
	SD	3.0985	0.04882	1.2728	0.2205	0.082	0.0000	0.0150	0	0.3381	0.0255	0.0000	0.0000	0	0	0.00197	0.00128	0.3917	0.0150	0.00022	0	0	0.00041	0.00034	0.00141	0.00050	0	0	0	0	0	0	0.0006	0.0006		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	**4**	**4**	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
D1-05	Number of samples	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
	Minimum	1.28	0.052	11.49	7.31	0.10	0.060	0.05	0.001	0.006	0.004	0.005	0.005	0.0001	0.0001	0.0025	0.0027	0.02	0.02	0.0002	0.0002	0.0001	0.0006	0.0006	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.002		
	Maximum	7.74	0.145	13.67	7.79	0.40	0.060	0.06	0.001	0.012	0.008	0.005	0.005	0.0001	0.0001	0.0031	0.0030	0.05	0.05	0.0002	0.0002	0.0001	0.0016	0.0016	0.002	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.002	0.002	93.9	-
	Mean	3.963	0.1043	12.783	7.547	0.267	0.0600	0.053	0.0010	0.0097	0.0057	0.0050	0.0050	0.00010	0.00010	0.00287	0.00290	0.030	0.030	0.00020	0.00020	0.0001	0.00120	0.00113	0.0013	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0013	0.0020	Good	-
	Median	2.870	0.1160	13.190	7.540	0.300	0.0600	0.050	0.0010	0.0110	0.0050	0.0050	0.0050	0.00010	0.00010	0.00300	0.00300	0.020	0.020	0.00020	0.00020	0.0001	0.00140	0.00120	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0020		
	SD	3.3659	0.04759	1.1455	0.2401	0.153	0.0000	0.0058	0	0.0032	0.0021	0.0000	0.0000	0	0	0.00032	0.00017	0.0173	0.0173	0.00000	0	0	0.00053	0.00050	0.00058	0	0	0	0	0	0	0	0.0006	0		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
D1-07	Number of samples	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
	Minimum	0.05	0.054	13.99	7.33	0.10	0.060	0.05	0.001	0.014	0.006	0.005	0.005	0.0001	0.0001	0.0031	0.0028	0.02	0.02	0.0002	0.0002	0.0001	0.0005	0.0005	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	4.28	0.139	15.20	8.30	0.50	0.060	0.05	0.001	0.057	0.014	0.005	0.005	0.0001	0.0001	0.0032	0.0032	0.07	0.05	0.0008	0.0005	0.0001	0.0013	0.0013	0.002	0.002	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.006	93.8	-
	Mean	1.563	0.1007	14.510	7.807	0.267	0.0600	0.050	0.0010	0.0287	0.0090	0.0050	0.0050	0.00010	0.00010	0.00313	0.00300	0.037	0.030	0.00040	0.00030	0.0001	0.00097	0.00090	0.0013	0.0013	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0027	Good	-
	Median	0.360	0.1090	14.340	7.790	0.200	0.0600	0.050	0.0010	0.0150	0.0070	0.0050	0.0050	0.00010	0.00010	0.00310	0.00300	0.020	0.020	0.00020	0.00020	0.0001	0.00110	0.00090	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0010		
	SD	2.3578	0.04311	0.6227	0.4852	0.208	0.0000	0.0000	0	0.0245	0.0044	0.0000	0.0000	0	0	0.00006	0.00020	0.0289	0.0173	0.00035	0.00017	0	0.00042	0.00040	0.00058	0.00058	0	0	0	0	0	0	0	0.0029		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
D1-10	Number of samples	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
	Minimum	0.19	0.039	13.51	6.78	0.40	0.060	0.05	0.001	0.006	0.004	0.005	0.005	0.0001	0.0001	0.0021	0.0022	0.02	0.02	0.0002	0.0002	0.0001	0.0017	0.0018	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.002		
	Maximum	4.04	0.135	13.82	7.41	0.70	0.060	0.09	0.001	0.016	0.008	0.005	0.005	0.0001	0.0001	0.0026	0.0027	0.05	0.05	0.0002	0.0002	0.0001	0.0073	0.0073	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.003	0.003	94.1	-
	Mean	2.040	0.0940	13.653	7.150	0.500	0.0600	0.067	0.0010	0.0113	0.0057	0.0050	0.0050	0.00010	0.00010	0.00230	0.00243	0.030	0.030	0.00020	0.00020	0.0001	0.00507	0.00473	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0017	0.0027	Good	-
	Median	1.890	0.1080	13.630	7.260	0.400	0.0600	0.060	0.0010	0.0120	0.0050	0.0050	0.0050	0.00010	0.00010	0.00220	0.00240	0.020	0.020	0.00020	0.00020	0.0001	0.00620	0.00510	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0030		
	SD	1.9294	0.04951	0.1563	0.3291	0.173	0.0000	0.0208	0	0.0050	0.0021	0.0000	0.0000	0	0	0.00026	0.00025	0.0173	0.0173	0.00000	0	0	0.00297	0.00277	0	0	0	0	0	0	0	0	0.0012	0.0006		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
DL0-01-S	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	10.83	0.092	10.62	8.24	0.02	0.005	0.10	0.001	0.020	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	10.83	0.092	10.62	8.24	0.02	0.005	0.10	0.001	0.020	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	100
	Mean	10.830	0.0920	10.620	8.240	0.020	0.0050	0.100	0.0010	0.0200	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	10.830	0.0920	10.620	8.240	0.020	0.0050	0.100	0.0010	0.0200	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
DL0-01-D	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	7.77	0.09	10.74	8.15	0.02	0.005	0.10	0.001	0.021	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	7.77	0.09	10.74	8.15	0.02	0.005	0.10	0.001	0.021	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	100
	Mean	7.770	0.0900	10.740	8.150	0.020	0.0050	0.100	0.0010	0.0210	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	7.770	0.0900	10.740	8.150	0.020	0.0050	0.100	0.0010	0.0210	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
DL0-02-S	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	11.58	0.086	10.18	8.32	0.03	0.005	0.10	0.001	0.062	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.06	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	11.58	0.086	10.18	8.32	0.03	0.005	0.10	0.001	0.062	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.06	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	100
	Mean	11.580	0.0860	10.180	8.320	0.030	0.0050	0.100	0.0010	0.0620	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.060	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	11.580	0.0860	10.180	8.320	0.030	0.0050	0.100	0.0010	0.0620	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.060	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
DL0-02-D	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	8.48	0.086	9.73	8.12	0.04	0.005	0.10	0.001	0.062	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.07	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	8.48	0.086	9.73	8.12	0.04	0.005	0.10	0.001	0.062	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.07	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	100
	Mean	8.480	0.0860	9.730	8.120	0.040	0.0050	0.100	0.0010	0.0620	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.070	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	8.480	0.0860	9.730	8.120	0.040	0.0050	0.100	0.0010	0.0620	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.070	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0	0			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Knight Piésold CONSULTING

TABLE 5.2

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

EXPLORATION PROPERTY WATER QUALITY - IN SITU PARAMETERS AND CCME SPECIFIED PARAMETERS

		In Situ				General Parameters and Nutrients				Total and Dissolved Metals and Non-Metals																						CCME WQI[2]	
		Temp	SpC	DO	pH	NH_3+NH_4	NO_2^-	NO_3^-	Phenols	Aluminum		Arsenic		Cadmium		Copper		Iron		Lead		Mercury	Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc			
										Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	2005	2006
		(°C)	(mS/cm)	mg/L		mg/L N	mg/L N	mg/L N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
CCME Guideline Limits[1]					6.5 - 9.0	0.054-184.8[3]	0.06	13	0.0040	0.005 - 0.100[4]		0.0050		0.000017[5]		0.002-0.004[6]		0.3		0.001-0.007[7]		2.6E-05	0.073		0.025-0.150[8]		0.0010		0.0001		0.0008		0.03			
E0-01	Number of samples	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	0.25	0.0066	9.28	7.34	0.03	0.005	0.05	0.001	0.015	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.04	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	12.65	0.219	14.49	7.99	0.90	0.060	0.10	0.002	0.235	0.025	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.22	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	97.8	97.3
	Mean	4.890	0.0943	12.376	7.706	0.440	0.0410	0.070	0.0013	0.0878	0.0100	0.0034	0.0034	0.00010	0.00010	0.00090	0.00088	0.096	0.030	0.00054	0.00052	0.0001	0.00220	0.00220	0.0026	0.0026	0.0034	0.0034	0.00010	0.00010	0.0002	0.0002	0.0046	0.0048	Excellent	Excellent
	Median	1.620	0.0800	13.260	7.810	0.600	0.0600	0.050	0.0010	0.0440	0.0050	0.0050	0.0050	0.00010	0.00010	0.00090	0.00080	0.050	0.030	0.00030	0.00020	0.0001	0.00040	0.00040	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0020		
	SD	5.7789	0.07724	2.1450	0.2616	0.377	0.0266	0.0274	0.0005	0.0928	0.0088	0.0022	0.0022	0	0	0.00010	0.00011	0.0764	0.0122	0.00042	0.00044	0	0.00256	0.00256	0.00219	0.00219	0.00219	0.00219	0	0	0	0	0.0049	0.0048		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
E0-03	Number of samples	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	3	3	11	11		
	Minimum	0.07	0.014	9.12	6.75	0.02	0.005	0.05	0.001	0.038	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.03	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	12.94	0.301	15.77	8.39	0.60	0.060	0.10	0.001	0.267	0.027	0.005	0.005	0.0001	0.0001	0.0020	0.0010	0.27	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	97.8	97.3
	Mean	3.695	0.0769	12.727	7.524	0.166	0.0230	0.090	0.0010	0.1243	0.0125	0.0021	0.0021	0.00010	0.00010	0.00106	0.00095	0.124	0.030	0.00082	0.00078	0.0001	0.00375	0.00375	0.0039	0.0039	0.0021	0.0021	0.00010	0.00010	0.0002	0.0002	0.0080	0.0076	Excellent	Excellent
	Median	0.710	0.0430	13.820	7.570	0.030	0.0050	0.100	0.0010	0.1160	0.0120	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.110	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010	0.0002	0.0002	0.0100	0.0100		
	SD	4.7880	0.07990	2.2658	0.4360	0.241	0.0254	0.0200	0	0.0656	0.0059	0.0019	0.0019	0	0	0.00032	0.00009	0.0673	0.0077	0.00032	0.00037	0	0.00213	0.00215	0.00187	0.00187	0.00187	0.00187	0	0	0	0	0.0037	0.0041		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**7**	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-		
E2-01	Number of samples	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	4	4	6	6		
	Minimum	0.28	0.081	8.99	7.45	0.03	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.03	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	12.96	0.137	14.09	7.98	0.50	0.060	0.10	0.004	0.270	0.019	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.22	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	97.1
	Mean	6.303	0.1023	11.523	7.762	0.165	0.0437	0.067	0.0015	0.0583	0.0067	0.0037	0.0037	0.00010	0.00010	0.00092	0.00088	0.070	0.033	0.00047	0.00047	0.0001	0.00187	0.00187	0.0027	0.0023	0.0037	0.0037	0.00010	0.00010	0.0002	0.0002	0.0048	0.0048	Excellent	Excellent
	Median	5.480	0.0990	11.925	7.800	0.100	0.0600	0.050	0.0010	0.0160	0.0040	0.0050	0.0050	0.00010	0.00010	0.00095	0.00085	0.040	0.030	0.00020	0.00020	0.0001	0.00030	0.00030	0.0020	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0035	0.0030		
	SD	6.1153	0.02335	2.2554	0.2346	0.174	0.0256	0.0258	0.00122	0.1046	0.0061	0.0021	0.0021	0	0	0.00010	0.00010	0.0746	0.0137	0.00041	0.00041	0	0.00243	0.00243	0.00186	0.00207	0.00207	0.00207	0	0	0	0	0.0042	0.0041		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
E2-03	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Minimum	7.93	0.068	12.36	7.48	0.40	0.060	0.05	0.001	0.004	0.004	0.005	0.005	0.0001	0.0001	0.0012	0.0011	0.05	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.003	0.003	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.004		
	Maximum	7.93	0.068	12.36	7.48	0.40	0.060	0.05	0.001	0.004	0.004	0.005	0.005	0.0001	0.0001	0.0012	0.0011	0.05	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.003	0.003	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.004	100	-
	Mean	7.930	0.0680	12.360	7.480	0.400	0.0600	0.050	0.0010	0.0040	0.0040	0.0050	0.0050	0.00010	0.00010	0.00120	0.00110	0.050	0.050	0.00020	0.00020	0.0001	0.00030	0.00030	0.0030	0.0030	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0040	Excellent	-
	Median	7.930	0.0680	12.360	7.480	0.400	0.0600	0.050	0.0010	0.0040	0.0040	0.0050	0.0050	0.00010	0.00010	0.00120	0.00110	0.050	0.050	0.00020	0.00020	0.0001	0.00030	0.00030	0.0030	0.0030	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0040		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
E2-05	Number of samples	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
	Minimum	1.02	0.07	8.87	7.51	0.30	0.060	0.05	0.001	0.004	0.004	0.005	0.005	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	11.19	0.113	15.06	7.92	1.50	0.060	0.05	0.001	0.010	0.004	0.005	0.005	0.0001	0.0001	0.0012	0.0010	0.05	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.002	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.003	0.002	100	-
	Mean	5.383	0.0930	11.580	7.740	1.000	0.0600	0.050	0.0010	0.0073	0.0040	0.0050	0.0050	0.00010	0.00010	0.00100	0.00087	0.033	0.030	0.00020	0.00020	0.0001	0.00030	0.00030	0.0013	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0017	0.0013	Excellent	-
	Median	3.940	0.0960	10.810	7.790	1.200	0.0600	0.050	0.0010	0.0080	0.0040	0.0050	0.0050	0.00010	0.00010	0.00100	0.00080	0.030	0.020	0.00020	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0010		
	SD	5.2364	0.02166	3.1660	0.2095	0.624	0.0000	0.0000	0	0.0031	0.0000	0.0000	0.0000	0	0	0.00020	0.00012	0.0153	0.0173	0	0	0	0	0	0.00058	0	0	0	0	0	0	0	0	0.0012	0.0006		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
E2-08	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Minimum	0.48	0.016	15.61	6.27	0.40	0.060	0.05	0.001	0.025	0.017	0.005	0.005	0.0001	0.0001	0.0010	0.0009	0.05	0.05	0.0005	0.0003	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.003	0.002		
	Maximum	0.48	0.016	15.61	6.27	0.40	0.060	0.05	0.001	0.025	0.017	0.005	0.005	0.0001	0.0001	0.0010	0.0009	0.05	0.05	0.0005	0.0003	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.003	0.002	86.1	-
	Mean	0.480	0.0160	15.610	6.270	0.400	0.0600	0.050	0.0010	0.0250	0.0170	0.0050	0.0050	0.00010	0.00010	0.00100	0.00090	0.050	0.050	0.00050	0.00030	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0030	0.0020	Good	-
	Median	0.480	0.0160	15.610	6.270	0.400	0.0600	0.050	0.0010	0.0250	0.0170	0.0050	0.0050	0.00010	0.00010	0.00100	0.00090	0.050	0.050	0.00050	0.00030	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0030	0.0020		
	SD																																		
	Guideline Exceedances	-	-	-	**1**	-	-	-	-	**1**	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
E3-01	Number of samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	0.14	0.512	11.14	6.14	0.05	0.060	0.05	0.001	0.004	0.004	0.002	0.002	0.0001	0.0001	0.0009	0.0009	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.003	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.003		
	Maximum	8.96	8.058	15.50	7.85	0.70	0.100	0.34	0.001	2.140	0.016	0.012	0.013	0.0001	0.0001	0.0070	0.0017	2.96	0.05	0.0050	0.0010	0.0001	0.0050	0.0050	0.022	0.022	0.085	0.013	0.0001	0.0001	0.0002	0.0002	0.052	0.010	56.1	74.3
	Mean	4.128	3.2000	13.120	7.346	0.284	0.0760	0.174	0.0010	0.8106	0.0068	0.0058	0.0060	0.00010	0.00010	0.00302	0.00114	1.070	0.032	0.00178	0.00052	0.0001	0.00218	0.00218	0.0144	0.0092	0.0350	0.0062	0.00010	0.00010	0.0002	0.0002	0.0148	0.0062	Marginal	Fair
	Median	2.710	2.9400	12.730	7.800	0.200	0.0600	0.160	0.0010	0.0550	0.0050	0.0050	0.0050	0.00010	0.00010	0.00120	0.00100	0.100	0.030	0.00100	0.00020	0.0001	0.00030	0.00030	0.0210	0.0050	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0100	0.0050		
	SD	4.1099	3.06965	1.7029	0.7448	0.249	0.0219	0.1126	0	1.0863	0.0052	0.0037	0.0041	0	0	0.00281	0.00032	1.4239	0.0130	0.00203	0.00044	0	0.00257	0.00257	0.00996	0.00896	0.04477	0.00438	0	0	0	0	0.0213	0.0036		
	Guideline Exceedances	-	-	-	**1**	-	-	-	-	**2**	-	**1**	**1**	-	-	**2**	-	**2**	-	-	-	-	-	-	-	-	**2**	**2**	-	-	-	-	**1**	-		
E3-03	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Minimum	0.05	0.303	13.35	7.50	0.20	0.060	0.05	0.001	0.089	0.004	0.005	0.005	0.0001	0.0001	0.0011	0.0011	0.23	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.002	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.002	0.003		
	Maximum	0.05	0.303	13.35	7.50	0.20	0.060	0.05	0.001	0.089	0.004	0.005	0.005	0.0001	0.0001	0.0011	0.0011	0.23	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.002	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.002	0.003	100	-
	Mean	0.050	0.3030	13.350	7.500	0.200	0.0600	0.050	0.0010	0.0890	0.0040	0.0050	0.0050	0.00010	0.00010	0.00110	0.00110	0.230	0.050	0.00020	0.00020	0.0001	0.00030	0.00030	0.0020	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0020	0.0030	Excellent	-
	Median	0.050	0.3030	13.350	7.500	0.200	0.0600	0.050	0.0010	0.0890	0.0040	0.0050	0.0050	0.00010	0.00010	0.00110	0.00110	0.230	0.050	0.00020	0.00020	0.0001	0.00030	0.00030	0.0020	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0020	0.0030		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
E3-08	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Minimum	0.08	0.915	13.24	7.61	0.50	0.060	0.06	0.001	0.613	0.004	0.005	0.005	0.0001	0.0001	0.0041	0.0036	1.51	0.05	0.0002	0.0002	0.0001	0.0012	0.0015	0.003	0.002	0.005	0.005	0.0003	0.0001	0.0002	0.0002	0.006	0.006		
	Maximum	0.08	0.915	13.24	7.61	0.50	0.060	0.06	0.001	0.613	0.004	0.005	0.005	0.0001	0.0001	0.0041	0.0036	1.51	0.05	0.0002	0.0002	0.0001	0.0012	0.0015	0.003	0.002	0.005	0.005	0.0003	0.0001	0.0002	0.0002	0.006	0.006	79.8	-
	Mean	0.080	0.9150	13.240	7.610	0.500	0.0600	0.060	0.0010	0.6130	0.0040	0.0050	0.0050	0.00010	0.00010	0.00410	0.00360	1.510	0.050	0.00020	0.00020	0.0001	0.00120	0.00150	0.0030	0.0020	0.0050	0.0050	0.00030	0.00010	0.0002	0.0002	0.0060	0.0060	Fair	-
	Median	0.080	0.9150	13.240	7.610	0.500	0.0600	0.060	0.0010	0.6130	0.0040	0.0050	0.0050	0.00010	0.00010	0.00410	0.00360	1.510	0.050	0.00020	0.00020	0.0001	0.00120	0.00150	0.0030	0.0020	0.0050	0.0050	0.00030	0.00010	0.0002	0.0002	0.0060	0.0060		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	**1**	-	**1**	-	-	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-		

Knight Piésold CONSULTING

TABLE 5.2

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

EXPLORATION PROPERTY WATER QUALITY - IN SITU PARAMETERS AND CCME SPECIFIED PARAMETERS

		In Situ				General Parameters and Nutrients				Total and Dissolved Metals and Non-Metals																						CCME WQI[2]	
		Temp	SpC	DO	pH	NH_3+NH_4	NO_2^-	NO_3^-	Phenols	Aluminum		Arsenic		Cadmium		Copper		Iron		Lead		Mercury	Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc			
										Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	2005	2006
		(°C)	(mS/cm)	mg/L		mg/L N	mg/L N	mg/L N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
CCME Guideline Limits[1]					6.5 - 9.0	0.054-184.8[3]	0.06	13	0.0040	0.005 - 0.100[4]		0.0050		0.000017[5]		0.002-0.004[6]		0.3		0.001-0.007[7]		2.6E-05	0.073		0.025-0.150[8]		0.0010		0.0001		0.0008		0.03			
E4-01	Number of samples	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	4	4	7	7		
	Minimum	-0.10	0.053	12.74	7.18	0.03	0.009	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	5.58	1.757	15.74	8.02	0.50	0.100	0.41	0.001	0.026	0.005	0.005	0.005	0.0005	0.0005	0.0015	0.0014	0.05	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.006	0.020	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	64.3	100
	Mean	2.603	0.7639	13.599	7.737	0.241	0.0513	0.126	0.0010	0.0134	0.0046	0.0033	0.0033	0.00024	0.00024	0.00116	0.00114	0.029	0.029	0.00054	0.00054	0.0001	0.00231	0.00231	0.0044	0.0043	0.0056	0.0033	0.00010	0.00010	0.0002	0.0002	0.0051	0.0057	Marginal	Excellent
	Median	1.400	0.3370	13.250	7.700	0.200	0.0600	0.100	0.0010	0.0160	0.0050	0.0050	0.0050	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00020	0.00020	0.0001	0.00030	0.00030	0.0050	0.0050	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0020	0.0040		
	SD	2.4784	0.75448	1.1305	0.2945	0.222	0.0321	0.1273	0	0.0090	0.0005	0.0021	0.0021	0.00019	0.00019	0.00027	0.00025	0.0107	0.0107	0.00043	0.00043	0	0.00251	0.00251	0.00151	0.00160	0.00673	0.00214	0	0	0	0	0.0046	0.0041		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	**3**	**3**	-	-	-	-	-	-	-	-	-	-	-	**4**	**2**	-	-	-	-	-	-		
E0-10	Number of samples	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0	8	8		
	Minimum	-0.09	0.018	7.30	6.88	0.02	0.005	0.10	0.001	0.018	0.008	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	11.99	0.09	17.65	7.88	0.06	0.038	0.10	0.001	0.248	0.027	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.28	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	97.8
	Mean	3.623	0.0475	12.893	7.570	0.031	0.0094	0.100	0.0010	0.0993	0.0130	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.098	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	1.460	0.0460	13.455	7.620	0.025	0.0050	0.100	0.0010	0.0795	0.0100	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.080	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD	4.6395	0.02300	3.2566	0.3318	0.016	0.0116	0.0000	0	0.0763	0.0065	0.0000	0.0000	0	0	0.00000	0.00000	0.0800	0.0000	0.00000	0	0	0	0	0	0	0	0	0	0			0	0		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
F0-01	Number of samples	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	3	3	11	11		
	Minimum	-0.09	0.021	8.28	6.14	0.02	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	8.25	8.058	15.50	8.12	0.60	0.060	0.10	0.001	0.051	0.013	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.06	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	97.8	100
	Mean	3.077	1.1987	12.890	7.514	0.157	0.0205	0.094	0.0010	0.0194	0.0059	0.0021	0.0021	0.00010	0.00010	0.00095	0.00095	0.033	0.030	0.00078	0.00078	0.0001	0.00372	0.00372	0.0039	0.0039	0.0021	0.0021	0.00010	0.00010	0.0002	0.0002	0.0075	0.0077	Excellent	Excellent
	Median	1.860	0.0910	13.540	7.690	0.030	0.0050	0.100	0.0010	0.0120	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010	0.0002	0.0002	0.0100	0.0100		
	SD	3.5395	2.53468	2.2591	0.5824	0.225	0.0254	0.0157	0	0.0149	0.0027	0.0019	0.0019	0	0	0.00009	0.00009	0.0119	0.0077	0.00037	0.00037	0	0.00220	0.00220	0.00187	0.00187	0.00187	0.00187	0	0	0	0	0.0042	0.0039		
	Guideline Exceedances	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
F0-05	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	8.87	0.129	8.78	8.11	0.02	0.005	0.14	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	8.87	0.129	8.78	8.11	0.02	0.005	0.14	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	100
	Mean	8.870	0.1290	8.780	8.110	0.020	0.0050	0.140	0.0010	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	8.870	0.1290	8.780	8.110	0.020	0.0050	0.140	0.0010	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
G0-01	Number of samples	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	3	3	10	10		
	Minimum	-0.09	0.021	8.32	6.98	0.02	0.005	0.05	0.001	0.022	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.03	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	11.30	0.127	19.67	7.90	0.90	0.060	0.10	0.001	0.249	0.044	0.005	0.005	0.0001	0.0001	0.0011	0.0010	0.29	0.07	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	97.5	97.6
	Mean	3.643	0.0552	13.094	7.410	0.197	0.0257	0.087	0.0010	0.1040	0.0150	0.0022	0.0022	0.00010	0.00010	0.00097	0.00094	0.100	0.035	0.00078	0.00076	0.0001	0.00359	0.00359	0.0038	0.0038	0.0022	0.0022	0.00010	0.00010	0.0002	0.0002	0.0073	0.0075	Excellent	Excellent
	Median	2.380	0.0560	13.030	7.360	0.040	0.0065	0.100	0.0010	0.0935	0.0120	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.085	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010	0.0002	0.0002	0.0100	0.0100		
	SD	4.0697	0.03334	3.1894	0.2861	0.290	0.0265	0.0216	0	0.0747	0.0110	0.0019	0.0019	0	0	0.00009	0.00010	0.0757	0.0143	0.00036	0.00039	0	0.00227	0.00227	0.00193	0.00193	0.00193	0.00193	0	0	0	0	0.0043	0.0041		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
G0-03	Number of samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	-0.10	0.025	9.36	6.26	0.03	0.005	0.05	0.001	0.010	0.006	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.03	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	8.34	0.121	15.12	7.74	0.90	0.100	0.10	0.002	0.139	0.017	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.17	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	93.1	97.7
	Mean	3.032	0.0604	12.770	7.140	0.384	0.0570	0.070	0.0012	0.0740	0.0124	0.0034	0.0034	0.00010	0.00010	0.00092	0.00088	0.088	0.030	0.00056	0.00052	0.0001	0.00218	0.00218	0.0026	0.0026	0.0034	0.0034	0.00010	0.00010	0.0002	0.0002	0.0056	0.0050	Good	Excellent
	Median	2.190	0.0580	13.090	7.180	0.400	0.0600	0.050	0.0010	0.0870	0.0140	0.0050	0.0050	0.00010	0.00010	0.00090	0.00080	0.060	0.030	0.00040	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0040	0.0020		
	SD	3.5332	0.03953	2.1229	0.5486	0.351	0.0338	0.0274	0.00045	0.0562	0.0047	0.0022	0.0022	0	0	0.00008	0.00011	0.0593	0.0122	0.00041	0.00044	0	0.00257	0.00257	0.00219	0.00219	0.00219	0.00219	0.00000	0.00000	0	0	0.0042	0.0046		
	Guideline Exceedances	-	-	-	**1**	-	-	-	-	**3**	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
G0-05	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	8.88	0.068	8.92	7.89	0.02	0.005	0.10	0.001	0.137	0.056	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.13	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	8.88	0.068	8.92	7.89	0.02	0.005	0.10	0.001	0.137	0.056	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.13	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	97.0
	Mean	8.880	0.0680	8.920	7.890	0.020	0.0050	0.100	0.0010	0.1370	0.0560	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.130	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	8.880	0.0680	8.920	7.890	0.020	0.0050	0.100	0.0010	0.1370	0.0560	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.130	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
G3-01	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	8.20	0.063	9.35	7.82	0.02	0.005	0.10	0.001	0.144	0.016	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.10	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	8.20	0.063	9.35	7.82	0.02	0.005	0.10	0.001	0.144	0.016	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.10	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	97.0
	Mean	8.200	0.0630	9.350	7.820	0.020	0.0050	0.100	0.0010	0.1440	0.0160	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.100	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	8.200	0.0630	9.350	7.820	0.020	0.0050	0.100	0.0010	0.1440	0.0160	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.100	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
G0-07	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	8.57	0.068	8.99	7.74	0.02	0.005	0.10	0.001	0.157	0.026	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.19	0.03	0.0010	0.0020	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	8.57	0.068	8.99	7.74	0.02	0.005	0.10	0.001	0.157	0.026	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.19	0.03	0.0010	0.0020	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	93.4
	Mean	8.570	0.0680	8.990	7.740	0.020	0.0050	0.100	0.0010	0.1570	0.0260	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.190	0.030	0.00100	0.00200	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Good
	Median	8.570	0.0680	8.990	7.740	0.020	0.0050	0.100	0.0010	0.1570	0.0260	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.190	0.030	0.00100	0.00200	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-		

Knight Piésold CONSULTING

TABLE 5.2

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

EXPLORATION PROPERTY WATER QUALITY - IN SITU PARAMETERS AND CCME SPECIFIED PARAMETERS

		In Situ				General Parameters and Nutrients				Total and Dissolved Metals and Non-Metals																						CCME WQI[2]	
		Temp	SpC	DO	pH	NH_3+NH_4	NO_2^-	NO_3^-	Phenols	Aluminum		Arsenic		Cadmium		Copper		Iron		Lead		Mercury	Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc			
										Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	2005	2006
		(°C)	(mS/cm)	mg/L		mg/L N	mg/L N	mg/L N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
CCME Guideline Limits[1]					6.5 - 9.0	0.054-184.8[3]	0.06	13	0.0040	0.005 - 0.100[4]		0.0050		0.000017[5]		0.002-0.004[6]		0.3		0.001-0.007[7]		2.6E-05	0.073		0.025-0.150[8]		0.0010		0.0001		0.0008		0.03			
G0-09	Number of samples	7	7	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	0	0	7	7		
	Minimum	-0.10	0.011	10.34	6.92	0.02	0.005	0.10	0.001	0.057	0.011	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.04	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	7.59	0.079	13.89	7.87	0.06	0.051	0.10	0.001	0.230	0.036	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.33	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	95.7
	Mean	3.527	0.0337	12.548	7.361	0.033	0.0120	0.100	0.0010	0.1181	0.0211	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.147	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	3.370	0.0230	13.100	7.420	0.030	0.0050	0.100	0.0010	0.0940	0.0190	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.100	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD	3.5850	0.02449	1.3800	0.3294	0.016	0.0172	0	0	0.0641	0.0093	0.0000	0.0000	0	0	0.00000	0.00000	0.1125	0.0000	0.00000	0	0	0	0	0	0	0	0	0	0	0			0	0		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**3**	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
G6-01	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	10.63	0.116	8.20	8.08	0.02	0.005	0.10	0.001	0.052	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	10.63	0.116	8.20	8.08	0.02	0.005	0.10	0.001	0.052	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	100
	Mean	10.630	0.1160	8.200	8.080	0.020	0.0050	0.100	0.0010	0.0520	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	10.630	0.1160	8.200	8.080	0.020	0.0050	0.100	0.0010	0.0520	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																				
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
H0-01	Number of samples	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	2	4	4		
	Minimum	4.97	0.055	8.95	7.23	0.02	0.006	0.05	0.001	0.111	0.007	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.10	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	8.37	0.121	12.38	7.71	0.80	0.060	0.10	0.001	0.199	0.035	0.005	0.005	0.0001	0.0001	0.0020	0.0010	0.24	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	97.0	96.5
	Mean	7.455	0.0745	10.118	7.503	0.260	0.0333	0.075	0.0010	0.1670	0.0228	0.0030	0.0030	0.00010	0.00010	0.00117	0.00090	0.183	0.025	0.00065	0.00060	0.0001	0.00265	0.00265	0.0030	0.0030	0.0030	0.0030	0.0010	0.0010	0.0002	0.0002	0.0060	0.0055	Excellent	Excellent
	Median	8.240	0.0610	9.570	7.535	0.110	0.0335	0.075	0.0010	0.1790	0.0245	0.0030	0.0030	0.00010	0.00010	0.00095	0.00090	0.195	0.025	0.00070	0.00060	0.0001	0.00265	0.00265	0.0030	0.0030	0.0030	0.0030	0.00010	0.00010	0.0002	0.0002	0.0065	0.0055		
	SD	1.6578	0.03113	1.6176	0.2454	0.370	0.0309	0.0289	0	0.0402	0.0135	0.0023	0.0023	0	0	0.00056	0.00012	0.0695	0.0058	0.00041	0.00046	0	0.00271	0.00271	0.00231	0.00231	0.00231	0.00231	0	0	0	0	0.0047	0.0052		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**4**	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
H1-01	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	9.62	0.102	8.97	8.06	0.02	0.005	0.10	0.001	0.158	0.014	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.15	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	9.62	0.102	8.97	8.06	0.02	0.005	0.10	0.001	0.158	0.014	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.15	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	96.9
	Mean	9.620	0.1020	8.970	8.060	0.020	0.0050	0.100	0.0010	0.1580	0.0140	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.150	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	9.620	0.1020	8.970	8.060	0.020	0.0050	0.100	0.0010	0.1580	0.0140	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.150	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																				
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
I0-01	Number of samples	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2		
	Minimum	2.05	0.068	12.50	7.79	0.02	0.005	0.10	0.001	0.011	0.006	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	10.21	0.086	13.64	7.99	0.08	0.032	0.10	0.001	0.195	0.009	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.26	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	97.5
	Mean	6.130	0.0770	13.070	7.890	0.050	0.0185	0.100	0.0010	0.1030	0.0075	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.145	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	6.130	0.0770	13.070	7.890	0.050	0.0185	0.100	0.0010	0.1030	0.0075	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.145	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD	5.7700	0.01273	0.8061	0.1414	0.042	0.0191	0.0000	0	0.1301	0.0021	0.0000	0.0000	0	0	0	0	0.1626	0.0000	0.00000	0	0	0	0	0	0	0	0	0	0	0			0	0		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
I0-04	Number of samples	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2		
	Minimum	-0.07	0.046	12.58	7.53	0.03	0.027	0.10	0.001	0.024	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	9.02	0.09	13.92	7.96	0.05	0.100	0.10	0.001	0.159	0.009	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.20	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	97.6
	Mean	4.475	0.0680	13.250	7.745	0.040	0.0635	0.100	0.0010	0.0915	0.0070	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.115	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	4.475	0.0680	13.250	7.745	0.040	0.0635	0.100	0.0010	0.0915	0.0070	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.115	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD	6.4276	0.03111	0.9475	0.3041	0.014	0.0516	0.0000	0	0.0955	0.0028	0.0000	0.0000	0	0	0	0	0.1202	0.0000	0.00000	0.00000	0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0	0			0	0		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
I0-06	Number of samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	0.05	0.043	9.60	6.90	0.02	0.044	0.05	0.001	0.007	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	11.34	0.157	15.36	7.88	0.60	0.100	0.10	0.001	0.219	0.009	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.29	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	97.4
	Mean	5.160	0.0844	12.666	7.512	0.232	0.0648	0.070	0.0010	0.0612	0.0066	0.0034	0.0034	0.00010	0.00010	0.00090	0.00088	0.082	0.030	0.00054	0.00052	0.0001	0.00218	0.00218	0.0026	0.0026	0.0034	0.0034	0.00010	0.00010	0.0002	0.0002	0.0048	0.0066	Excellent	Excellent
	Median	4.630	0.0850	12.630	7.570	0.100	0.0600	0.050	0.0010	0.0210	0.0060	0.0050	0.0050	0.00010	0.00010	0.00090	0.00080	0.030	0.030	0.00030	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0020	0.0090		
	SD	5.2633	0.04611	2.0787	0.3717	0.256	0.0209	0.0274	0	0.0891	0.0023	0.0022	0.0022	0	0	0.00010	0.00011	0.1169	0.0122	0.00042	0.00044	0	0.00257	0.00257	0.00219	0.00219	0.00219	0.00219	0	0	0	0	0.0048	0.0043		
	Guideline Exceedances	-	-	-	-	-	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
I1-01	Number of samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	-0.10	0.042	10.62	7.33	0.02	0.014	0.05	0.001	0.006	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	8.65	0.177	15.77	7.89	0.30	0.100	0.10	0.001	0.071	0.015	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.09	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	3.956	0.0940	13.190	7.654	0.134	0.0588	0.076	0.0010	0.0360	0.0066	0.0034	0.0034	0.00010	0.00010	0.00090	0.00090	0.042	0.030	0.00054	0.00052	0.0001	0.00218	0.00218	0.0026	0.0026	0.0034	0.0034	0.00010	0.00010	0.0002	0.0002	0.0048	0.0050	Excellent	Excellent
	Median	3.830	0.1000	13.350	7.640	0.100	0.0600	0.070	0.0010	0.0320	0.0050	0.0050	0.0050	0.00010	0.00010	0.00090	0.00090	0.030	0.030	0.00030	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0020	0.0030		
	SD	4.0307	0.05412	1.8339	0.2384	0.115	0.0304	0.0230	0	0.0236	0.0047	0.0022	0.0022	0	0	0.00010	0.00010	0.0295	0.0122	0.00042	0.00044	0	0.00257	0.00257	0.00219	0.00219	0.00219	0.00219	0	0	0	0	0.0048	0.0046		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
J0-01	Number of samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	0.89	0.092	10.93	6.92	0.05	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	7.85	0.099	14.14	7.87	0.60	0.060	0.26	0.001	0.008	0.005	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.05	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	5.154	0.0958	12.610	7.532	0.346	0.0398	0.102	0.0010	0.0052	0.0044	0.0034	0.0034	0.00010	0.00010	0.00094	0.00090	0.030	0.030	0.00052	0.00052	0.0001	0.00218	0.00218	0.0026	0.0026	0.0034	0.0034	0.00010	0.00010	0.0002	0.0002	0.0054	0.0052	Excellent	Excellent
	Median	6.640	0.0960	12.960	7.750	0.400	0.0600	0.050	0.0010	0.0050	0.0040	0.0050	0.0050	0.00010	0.00010	0.00100	0.00090	0.030	0.030	0.00020	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0040	0.0030		
	SD	3.0183	0.00259	1.5420	0.3930	0.269	0.0278	0.0909	0	0.0016	0.0005	0.0022	0.0022	0	0	0.00009	0.00010	0.0122	0.0122	0.00044	0.00044	0	0.00257	0.00257	0.00219	0.00219	0.00219	0.00219	0	0	0	0	0.0043	0.0044		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Knight Piésold CONSULTING

TABLE 5.2

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

EXPLORATION PROPERTY WATER QUALITY - IN SITU PARAMETERS AND CCME SPECIFIED PARAMETERS

		In Situ				General Parameters and Nutrients				Total and Dissolved Metals and Non-Metals																						CCME WQI[2]	
		Temp	SpC	DO	pH	NH_3+NH_4	NO_2^-	NO_3^-	Phenols	Aluminum		Arsenic		Cadmium		Copper		Iron		Lead		Mercury	Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc			
										Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	2005	2006
		(°C)	(mS/cm)	mg/L		mg/L N	mg/L N	mg/L N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
CCME Guideline Limits[1]					6.5 - 9.0	0.054-184.8[3]	0.06	13	0.0040	0.005 - 0.100[4]		0.0050		0.000017[5]		0.002-0.004[6]		0.3		0.001-0.007[7]		2.6E-05	0.073		0.025-0.150[8]		0.0010		0.0001		0.0008		0.03			
J1-01	Number of samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Minimum	0.04	0.034	9.96	6.58	0.02	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.002		
	Maximum	10.32	0.23	16.03	8.16	0.20	0.060	0.10	0.001	0.014	0.005	0.005	0.005	0.0001	0.0001	0.0018	0.0018	0.05	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	4.698	0.1316	12.394	7.660	0.092	0.0398	0.070	0.0010	0.0092	0.0044	0.0034	0.0034	0.00010	0.00010	0.00128	0.00128	0.030	0.030	0.00052	0.00052	0.0001	0.00218	0.00218	0.0028	0.0028	0.0034	0.0034	0.00010	0.00010	0.0002	0.0002	0.0046	0.0052	Excellent	Excellent
	Median	5.680	0.1570	12.130	7.840	0.100	0.0600	0.050	0.0010	0.0090	0.0040	0.0050	0.0050	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00020	0.00020	0.0001	0.00030	0.00030	0.0020	0.0020	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0020		
	SD	4.2664	0.08050	2.4177	0.6273	0.070	0.0278	0.0274	0	0.0043	0.0005	0.0022	0.0022	0	0	0.00048	0.00048	0.0122	0.0122	0.00044	0.00044	0	0.00257	0.00257	0.00205	0.00205	0.00219	0.00219	0	0	0	0	0.0049	0.0044		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
J2-01	Number of samples	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2		
	Minimum	-0.11	0.049	11.62	7.64	0.02	0.005	0.10	0.001	0.019	0.006	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	3.89	0.147	14.02	8.06	0.06	0.013	0.10	0.001	0.021	0.011	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	100
	Mean	1.890	0.0980	12.820	7.850	0.040	0.0090	0.100	0.0010	0.0200	0.0085	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	1.890	0.0980	12.820	7.850	0.040	0.0090	0.100	0.0010	0.0200	0.0085	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD	2.8284	0.06930	1.6971	0.2970	0.028	0.0057	0.0000	0	0.0014	0.0035	0.0000	0.0000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0.0000	0.0000		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
JL0-01-S	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	8.60	0.092	10.93	8.08	0.04	0.005	0.10	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010		
	Maximum	8.60	0.092	10.93	8.08	0.04	0.005	0.10	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.001	0.001	0.0001	0.0001			0.010	0.010	-	100
	Mean	8.600	0.0920	10.930	8.080	0.040	0.0050	0.100	0.0010	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100	-	Excellent
	Median	8.600	0.0920	10.930	8.080	0.040	0.0050	0.100	0.0010	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010			0.0100	0.0100		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
K0-01	Number of samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	0.29	0.051	10.13	6.98	0.02	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	9.83	0.195	16.51	8.01	0.60	0.060	0.10	0.001	0.018	0.011	0.005	0.005	0.0001	0.0001	0.0011	0.0012	0.05	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	4.496	0.1110	12.958	7.696	0.270	0.0394	0.070	0.0010	0.0096	0.0056	0.0034	0.0034	0.00010	0.00010	0.00100	0.00102	0.030	0.030	0.00052	0.00052	0.0001	0.00218	0.00218	0.0026	0.0026	0.0034	0.0034	0.00010	0.00010	0.0002	0.0002	0.0050	0.0050	Excellent	Excellent
	Median	5.200	0.1130	12.440	7.790	0.300	0.0600	0.050	0.0010	0.0070	0.0040	0.0050	0.0050	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00020	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0030	0.0030		
	SD	3.7684	0.05557	2.3106	0.4124	0.248	0.0283	0.0274	0	0.0055	0.0030	0.0022	0.0022	0	0	0.00012	0.00015	0.0122	0.0122	0.00044	0.00044	0	0.00257	0.00257	0.00219	0.00219	0.00219	0.00219	0	0	0	0	0.0046	0.0046		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
K0-05	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Minimum	2.49	0.068	13.56	7.40	0.40	0.060	0.05	0.001	0.008	0.004	0.005	0.005	0.0001	0.0001	0.0008	0.0008	0.05	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.004		
	Maximum	2.49	0.068	13.56	7.40	0.40	0.060	0.05	0.001	0.008	0.004	0.005	0.005	0.0001	0.0001	0.0008	0.0008	0.05	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.004	100	-
	Mean	2.490	0.0680	13.560	7.400	0.400	0.0600	0.050	0.0010	0.0080	0.0040	0.0050	0.0050	0.00010	0.00010	0.00080	0.00080	0.050	0.050	0.00020	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0040	Excellent	-
	Median	2.490	0.0680	13.560	7.400	0.400	0.0600	0.050	0.0010	0.0080	0.0040	0.0050	0.0050	0.00010	0.00010	0.00080	0.00080	0.050	0.050	0.00020	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0040		
	SD																																		
	Guideline Exceedances	-	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
L0-01	Number of samples	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	3	3	17	17		
	Minimum	1.68	0.042	6.06	7.17	0.02	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0010	0.0008	0.03	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	13.83	0.193	15.03	8.16	0.80	0.060	0.10	0.001	0.033	0.006	0.005	0.005	0.0001	0.0001	0.0020	0.0040	0.07	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	97.9
	Mean	6.020	0.0861	11.879	7.838	0.159	0.0155	0.091	0.0010	0.0116	0.0050	0.0017	0.0017	0.00010	0.00010	0.00118	0.00129	0.036	0.031	0.00086	0.00086	0.0001	0.00418	0.00418	0.0043	0.0043	0.0017	0.0017	0.00010	0.00010	0.0002	0.0002	0.0086	0.0086	Excellent	Excellent
	Median	6.070	0.0740	12.160	7.930	0.040	0.0050	0.100	0.0010	0.0070	0.0050	0.0010	0.0010	0.00010	0.00010	0.00100	0.00100	0.030	0.030	0.00100	0.00100	0.0001	0.00500	0.00500	0.0050	0.0050	0.0010	0.0010	0.00010	0.00010	0.0002	0.0002	0.0100	0.0100		
	SD	3.6966	0.04689	2.0601	0.2491	0.278	0.0214	0.0196	0	0.0086	0.0005	0.0016	0.0016	0	0	0.00036	0.00076	0.0122	0.0060	0.00031	0.00031	0	0.00183	0.00183	0.00157	0.00157	0.00157	0.00157	0	0	0	0	0.0032	0.0032		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2**	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
L1-02	Number of samples	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
	Minimum	0.15	0.035	10.87	6.75	0.20	0.060	0.05	0.001	0.004	0.004	0.005	0.005	0.0001	0.0001	0.0012	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	7.21	0.166	16.04	7.88	0.60	0.060	0.05	0.001	0.030	0.007	0.005	0.005	0.0001	0.0001	0.0017	0.0016	0.05	0.05	0.0002	0.0002	0.0001	0.0005	0.0005	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.003	0.002	100	-
	Mean	2.115	0.0870	14.170	7.268	0.400	0.0600	0.050	0.0010	0.0182	0.0055	0.0050	0.0050	0.00010	0.00010	0.00145	0.00122	0.035	0.035	0.00020	0.00020	0.0001	0.00035	0.00038	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0015	0.0013	Excellent	-
	Median	0.550	0.0735	14.885	7.220	0.400	0.0600	0.050	0.0010	0.0195	0.0055	0.0050	0.0050	0.00010	0.00010	0.00145	0.00125	0.035	0.035	0.00020	0.00020	0.0001	0.00030	0.00035	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0010		
	SD	3.4175	0.06396	2.4548	0.6026	0.163	0	0	0	0.0132	0.0017	0.0000	0.0000	0	0	0.00021	0.00043	0.0173	0.0173	0	0	0	0.00010	0.00010	0	0	0	0	0	0	0	0	0.0010	0.0005		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
L1-06	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Minimum	2.34	0.049	14.57	6.93	0.20	0.060	0.05	0.001	0.007	0.006	0.005	0.005	0.0001	0.0001	0.0015	0.0015	0.05	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.005		
	Maximum	2.34	0.049	14.57	6.93	0.20	0.060	0.05	0.001	0.007	0.006	0.005	0.005	0.0001	0.0001	0.0015	0.0015	0.05	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.005	100	-
	Mean	2.340	0.0490	14.570	6.930	0.200	0.0600	0.050	0.0010	0.0070	0.0060	0.0050	0.0050	0.00010	0.00010	0.00150	0.00150	0.050	0.050	0.00020	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0050	Excellent	-
	Median	2.340	0.0490	14.570	6.930	0.200	0.0600	0.050	0.0010	0.0070	0.0060	0.0050	0.0050	0.00010	0.00010	0.00150	0.00150	0.050	0.050	0.00020	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0050		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
L1-08	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Minimum	0.10	0.025	14.76	6.27	0.10	0.060	0.09	0.001	0.019	0.013	0.005	0.005	0.0001	0.0001	0.0013	0.0011	0.05	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	0.10	0.025	14.76	6.27	0.10	0.060	0.09	0.001	0.019	0.013	0.005	0.005	0.0001	0.0001	0.0013	0.0011	0.05	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.001	88.2	-
	Mean	0.100	0.0250	14.760	6.270	0.100	0.0600	0.090	0.0010	0.0190	0.0130	0.0050	0.0050	0.00010	0.00010	0.00130	0.00110	0.050	0.050	0.00020	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0010	Good	-
	Median	0.100	0.0250	14.760	6.270	0.100	0.0600	0.090	0.0010	0.0190	0.0130	0.0050	0.0050	0.00010	0.00010	0.00130	0.00110	0.050	0.050	0.00020	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0010	0.0010		
	SD																																		
	Guideline Exceedances	-	-	-	**1**	-	-	-	-	**1**	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Knight Piésold CONSULTING

TABLE 5.2

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

EXPLORATION PROPERTY WATER QUALITY - IN SITU PARAMETERS AND CCME SPECIFIED PARAMETERS

		In Situ				General Parameters and Nutrients				Total and Dissolved Metals and Non-Metals																						CCME WQI[2]	
		Temp	SpC	DO	pH	NH_3+NH_4	NO_2^-	NO_3^-	Phenols	Aluminum		Arsenic		Cadmium		Copper		Iron		Lead		Mercury	Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc			
										Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	2005	2006
		(°C)	(mS/cm)	mg/L		mg/L N	mg/L N	mg/L N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
CCME Guideline Limits[1]					6.5 - 9.0	0.054-184.8[3]	0.06	13	0.0040	0.005 - 0.100[4]		0.0050		0.000017[5]		0.002-0.004[6]		0.3		0.001-0.007[7]		2.6E-05	0.073		0.025-0.150[8]		0.0010		0.0001		0.0008		0.03			
L2-03	Number of samples	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
	Minimum	1.54	0.075	9.22	7.35	0.10	0.060	0.05	0.001	0.007	0.004	0.005	0.005	0.0001	0.0001	0.0008	0.0008	0.08	0.05	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.005		
	Maximum	11.93	0.202	13.16	7.82	0.50	0.060	0.05	0.002	0.016	0.004	0.005	0.005	0.0001	0.0001	0.0016	0.0010	0.17	0.10	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.003	0.008	100	-
	Mean	9.118	0.1593	10.593	7.693	0.200	0.0600	0.050	0.0013	0.0115	0.0040	0.0050	0.0050	0.00010	0.00010	0.00105	0.00090	0.133	0.083	0.00020	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0020	0.0065	Excellent	-
	Median	11.500	0.1800	9.995	7.800	0.100	0.0600	0.050	0.0010	0.0115	0.0040	0.0050	0.0050	0.00010	0.00010	0.00090	0.00090	0.140	0.090	0.00020	0.00020	0.0001	0.00030	0.00030	0.0010	0.0010	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0020	0.0065		
	SD	5.0557	0.05712	1.8611	0.2291	0.200	0.0000	0.0000	0.0005	0.0039	0.0000	0.0000	0.0000	0	0	0.00038	0.00012	0.0386	0.0236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0012	0.0013		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
M0-01	Number of samples	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5	5	7	7		
	Minimum	0.06	0.041	9.58	6.33	0.04	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	11.14	0.189	16.18	8.00	0.60	0.060	0.10	0.001	0.032	0.005	0.005	0.005	0.0001	0.0001	0.0030	0.0018	0.11	0.06	0.0020	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.017	95.8	95.1
	Mean	5.084	0.1429	12.156	7.671	0.269	0.0449	0.073	0.0010	0.0117	0.0043	0.0039	0.0039	0.00010	0.00010	0.00151	0.00120	0.056	0.033	0.00059	0.00043	0.0001	0.00164	0.00164	0.0033	0.0031	0.0039	0.0039	0.00010	0.00010	0.0002	0.0002	0.0040	0.0063	Excellent	Excellent
	Median	4.790	0.1790	12.040	7.880	0.200	0.0600	0.070	0.0010	0.0090	0.0040	0.0050	0.0050	0.00010	0.00010	0.00120	0.00100	0.040	0.030	0.00020	0.00020	0.0001	0.00030	0.00030	0.0040	0.0030	0.0050	0.0050	0.00010	0.00010	0.0002	0.0002	0.0020	0.0030		
	SD	5.0012	0.06475	2.3311	0.5988	0.230	0.0259	0.0236	0	0.0102	0.0005	0.0020	0.0020	0	0	0.00077	0.00039	0.0331	0.0160	0.00069	0.00039	0	0.00229	0.00229	0.00160	0.00157	0.00195	0.00195	0	0	0	0	0.0042	0.0062		
	Guideline Exceedances	-	-	-	**1**	-	-	-	-	**1**	-	-	-	-	-	**3**	**2**	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-		

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 5.2 to 5.9.xls]Table 5.2 EP CCME
1-Dec-06

Notes:
1. Freshwater Guidelines for the Protection of Aquatic Life - Canadian Council of Ministers of the Environment (CCME), Canadian Environmental Guideline (CCME, 2006a).
2. CCME WQI - Canadian Water Quality Guidelines for the Protection of Aquatic Life, CCME Water Quality Index (CCME, 2001).
3. Water quality guideline limits for total ammonia are dependent upon both temperature and pH, see the CCME guidelines for more details.
4. Aluminum (Al) guideline limits are dependent upon pH. The lower limit of 0.005 mg/L corresponds to a pH <6.5, the upper limit of 0.1 mg/L corresponds to a pH ≥6.5.
5. Cadmium (Cd) guideline limits are 0.000017 mg/L, or calculated via the following formula: Cd=10^(0.86(log(hardness))-3.2).
6. Copper (Cu) guideline limits are hardness (mg/L $CaCO_3$) dependent: 0.002 mg/L corresponds to a hardness <120 mg/L; 0.003 mg/L corresponds to a hardness between 120 and 180 mg/L; 0.004 mg/L corresponds to a hardness >180 mg/L.
7. Nickel (Ni) guideline limits are hardness (mg/L $CaCO_3$) dependent: 0.025 mg/L corresponds to a hardness < 60 mg/L; 0.065 mg/L corresponds to a hardness between 60 and 120 mg/L; 0.110 mg/L corresponds to a hardness between 120 and 180 mg/L; and 0.150 mg/L corresponds to a hardness >180 mg/L.
8. Lead (Pb) guideline limits are hardness (mg/L $CaCO_3$) dependent: 0.001 mg/L corresponds to a hardness < 60 mg/L; 0.002 mg/L corresponds to a hardness between 60 and 120 mg/L; 0.004 mg/L corresponds to a hardness between 120 and 180 mg/L; and 0.007 mg/L corresponds to a hardness >180 mg/L.

Knight Piésold CONSULTING

TABLE 5.3

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

EXPLORATION PROPERTY WATER QUALITY - NON-CCME SPECIFIED GENERAL PARAMETERS, NUTRIENTS AND TOTAL AND DISSOLVED METALS

		General Parameters and Nutrients											Total and Dissolved Metals and Non-Metals																													
		Alkalinity	Br^-	Cl^-	Conductivity	NO_2+NO_3	SO_4	TDS	Hardness	Phosphorus		Turbidity	Calcium		Magnesium		Potassium		Sodium		Antimony		Barium		Beryllium		Bismuth		Boron		Chromium		Cobalt		Manganese		Strontium		Tin		Titanium		Vanadium	
		mg/L $CaCO_3$	mg/L	mg/L	uS/cm	mg/L N	mg/L	mg/L	mg/L $CaCO_3$	Tot. mg/L	Diss. mg/L	NTU	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L
A0-01	Number of samples	4	4	4	4	4	4	4	4	4	2	4	4	4	4	4	4	4	4	4	2	2	4	4	2	2	2	2	4	4	4	4	4	4	4	4	4	4	2	2	4	4
	Minimum	22	0.05	1	45	0.06	0.5	29	18	0.01	0.10	0.61	4.00	4.00	2.00	2.00	0.34	0.34	0.36	0.38	0.0004	0.0004	0.003	0.003	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0010	0.0007	0.0050	0.0050	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	27	0.30	2	59	0.10	2.0	38	32	0.10	0.10	2.40	6.28	6.00	3.38	4.00	0.44	0.48	0.50	0.55	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0003	0.0003	0.0100	0.0100	0.0083	0.0077	0.010	0.010	0.003	0.003	0.0010	0.0010
	Mean	25.5	0.175	1.6	55.0	0.080	1.25	31.8	27.3	0.060	0.100	1.123	5.640	5.428	2.940	3.068	0.398	0.397	0.425	0.435	0.0004	0.0004	0.0065	0.0065	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00025	0.00025	0.005525	0.005350	0.00740	0.00683	0.0055	0.0055	0.003	0.003	0.00095	0.00095
	Median	26.5	0.175	1.7	58.0	0.080	1.25	30.0	29.6	0.065	0.100	0.740	6.140	5.855	3.190	3.135	0.405	0.385	0.420	0.405	0.0004	0.0004	0.0065	0.0065	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00025	0.00025	0.005550	0.005350	0.00815	0.00730	0.0055	0.0055	0.003	0.003	0.00095	0.00095
	SD	2.38	0.1443	0.42	6.68	0.0231	0.866	4.19	6.30	0.0469	0.0000	0.8553	1.101	0.954	0.652	0.820	0.042	0.059	0.057	0.078	0	0	0.0040	0.0040	0	0	0	0	0.0000	0.0000	0.0000	0.0000	5.8E-05	5.8E-05	0.005167	0.005369	0.00161	0.00126	0.00520	0.00520	0	0	5.8E-05	5.8E-05
A0-10	Number of samples	11	11	11	11	11	11	11	11	11	3	11	11	11	11	11	11	11	11	11	3	3	11	11	3	3	3	3	11	11	11	11	11	11	11	11	11	11	3	3	11	11
	Minimum	21	0.05	1	42	0.06	0.5	27	18	0.01	0.02	0.30	4.00	4.00	2.00	2.00	0.33	0.32	0.33	0.30	0.0004	0.0004	0.003	0.002	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0013	0.0007	0.0050	0.0048	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	68	0.30	2	136	0.10	2.0	77	73	0.10	0.10	2.70	14.60	13.20	8.78	9.04	0.97	1.00	1.17	1.18	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0302	0.0328	0.0100	0.0120	0.010	0.010	0.004	0.003	0.0010	0.0012
	Mean	29.0	0.118	1.4	61.1	0.089	1.44	38.9	29.2	0.022	0.047	1.340	6.223	5.775	3.407	3.324	0.445	0.445	0.475	0.465	0.0004	0.0004	0.0085	0.0084	0.005	0.005	0.0003	0.0003	0.015	0.014	0.0010	0.0010	0.00023	0.00023	0.010336	0.010382	0.00743	0.00745	0.0076	0.0075	0.003	0.003	0.00097	0.00100
	Median	25.0	0.050	1.0	55.0	0.100	2.00	36.0	25.0	0.010	0.020	1.300	5.000	5.000	3.000	3.000	0.380	0.380	0.380	0.380	0.0004	0.0004	0.0100	0.0100	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00700	0.00700	0.0100	0.0100	0.003	0.003	0.00100	0.00100
	SD	13.25	0.1168	0.47	25.91	0.0187	0.667	13.57	14.91	0.0268	0.0462	0.8073	2.974	2.555	1.816	1.939	0.188	0.201	0.252	0.256	0	0	0.0028	0.0030	0	0	0	0	0.0151	0.0121	0.0000	0.0000	4.7E-05	4.7E-05	0.007371	0.008314	0.00179	0.00223	0.00406	0.00420	0.0006	0.0000	4.7E-05	7.7E-05
BL0-01-S	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1
	Minimum	50	0.05	1	95	0.10	1.0	62	50	0.02		6.30	10.00	10.00	6.00	6.00	0.60	0.56	0.62	0.64			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0070	0.0070	0.010	0.010			0.0010	0.0010
	Maximum	50	0.05	1	95	0.10	1.0	62	50	0.02		6.30	10.00	10.00	6.00	6.00	0.60	0.56	0.62	0.64			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0070	0.0070	0.010	0.010			0.0010	0.0010
	Mean	50.0	0.050	1.0	95.0	0.100	1.00	62.0	50.0	0.020		6.300	10.000	10.000	6.000	6.000	0.600	0.560	0.620	0.640			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00700	0.00700	0.0100	0.0100			0.00100	0.00100
	Median	50.0	0.050	1.0	95.0	0.100	1.00	62.0	50.0	0.020		6.300	10.000	10.000	6.000	6.000	0.600	0.560	0.620	0.640			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00700	0.00700	0.0100	0.0100			0.00100	0.00100
	SD																																									
BL0-01-D	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1
	Minimum	44	0.05	1	84	0.10	1.0	55	43	0.02		8.90	9.00	9.00	5.00	5.00	0.55	0.48	0.44	0.53			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0060	0.0060	0.010	0.010			0.0010	0.0010
	Maximum	44	0.05	1	84	0.10	1.0	55	43	0.02		8.90	9.00	9.00	5.00	5.00	0.55	0.48	0.44	0.53			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0060	0.0060	0.010	0.010			0.0010	0.0010
	Mean	44.0	0.050	1.0	84.0	0.100	1.00	55.0	43.0	0.020		8.900	9.000	9.000	5.000	5.000	0.550	0.480	0.440	0.530			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00600	0.00600	0.0100	0.0100			0.00100	0.00100
	Median	44.0	0.050	1.0	84.0	0.100	1.00	55.0	43.0	0.020		8.900	9.000	9.000	5.000	5.000	0.550	0.480	0.440	0.530			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00600	0.00600	0.0100	0.0100			0.00100	0.00100
	SD																																									
BL0-05-S	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1
	Minimum	27	0.05	2	54	0.10	1.0	35	25	0.01		2.80	6.00	5.00	3.00	3.00	0.40	0.38	0.41	0.39			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0070	0.0070	0.010	0.010			0.0010	0.0010
	Maximum	27	0.05	2	54	0.10	1.0	35	25	0.01		2.80	6.00	5.00	3.00	3.00	0.40	0.38	0.41	0.39			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0070	0.0070	0.010	0.010			0.0010	0.0010
	Mean	27.0	0.050	2.0	54.0	0.100	1.00	35.0	25.0	0.010		2.800	6.000	5.000	3.000	3.000	0.400	0.380	0.410	0.390			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00700	0.00700	0.0100	0.0100			0.00100	0.00100
	Median	27.0	0.050	2.0	54.0	0.100	1.00	35.0	25.0	0.010		2.800	6.000	5.000	3.000	3.000	0.400	0.380	0.410	0.390			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00700	0.00700	0.0100	0.0100			0.00100	0.00100
	SD																																									
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BL0-05-D	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1
	Minimum	25	0.05	2	50	0.10	1.0	33	25	0.01		2.30	5.00	5.00	3.00	3.00	0.39	0.36	0.36	0.39			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0070	0.0070	0.010	0.010			0.0010	0.0010
	Maximum	25	0.05	2	50	0.10	1.0	33	25	0.01		2.30	5.00	5.00	3.00	3.00	0.39	0.36	0.36	0.39			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0070	0.0070	0.010	0.010			0.0010	0.0010
	Mean	25.0	0.050	2.0	50.0	0.100	1.00	33.0	25.0	0.010		2.300	5.000	5.000	3.000	3.000	0.390	0.360	0.360	0.390			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00700	0.00700	0.0100	0.0100			0.00100	0.00100
	Median	25.0	0.050	2.0	50.0	0.100	1.00	33.0	25.0	0.010		2.300	5.000	5.000	3.000	3.000	0.390	0.360	0.360	0.390			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00700	0.00700	0.0100	0.0100			0.00100	0.00100
	SD																																									
C0-01	Number of samples	7	7	7	7	7	7	7	7	7	3	7	7	7	7	7	7	7	7	7	3	3	7	7	3	3	3	3	7	7	7	7	7	7	7	7	7	7	3	3	7	7
	Minimum	26	0.05	2	62	0.06	0.5	40	27	0.01	0.02	0.56	6.00	6.00	3.00	3.00	0.53	0.43	0.42	0.40	0.0004	0.0004	0.004	0.004	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0019	0.0007	0.0057	0.0057	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	62	0.30	13	169	0.10	2.0	80	86	0.10	0.10	17.60	19.40	17.50	9.10	8.13	0.89	0.82	1.16	1.10	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.013	0.0003	0.0003	0.0121	0.0105	0.0537	0.0485	0.010	0.010	0.007	0.003	0.0010	0.0010
	Mean	34.6	0.157	4.4	80.1	0.083	1.53	51.3	40.2	0.041	0.047	5.531	8.401	8.414	4.227	4.391	0.620	0.577	0.547	0.549	0.0004	0.0004	0.0084	0.0084	0.005	0.005	0.0003	0.0003	0.017	0.016	0.0010	0.0029	0.00024	0.00024	0.008029	0.007486	0.01594	0.01507	0.0061	0.0061	0.004	0.003	0.00096	0.00097
	Median	29.0	0.050	3.0	65.0	0.100	2.00	42.0	34.0	0.020	0.020	1.080	6.000	7.000	3.000	4.000	0.540	0.540	0.430	0.480	0.0004	0.0004	0.0100	0.0100	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.01000	0.01000	0.0100	0.0100	0.003	0.003	0.00100	0.00100
	SD	12.96	0.1336	3.80	39.33	0.0214	0.663	16.29	20.54	0.0353	0.0462	7.0771	4.923	4.073	2.228	1.742	0.132	0.138	0.272	0.246	0	0	0.0027	0.0027	0	0	0	0	0.0189	0.0151	0	0.0045	5.3E-05	5.3E-05	0.004156	0.004471	0.01676	0.01486	0.00481	0.00481	0.0023	0.0000	5.3E-05	4.9E-05
C0-10	Number of samples	9	9	9	9	9	9	9	9	9	0	9	9	9	9	9	9	9	9	9	0	0	9	9	0	0	0	0	9	9	9	9	9	9	9	9	9	9	0	0	9	9
	Minimum	5	0.05	1	16	0.10	1.0	10	6	0.01		0.60	2.00	1.00	1.00	0.86	0.26	0.18	0.18	0.18			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0010	0.0010	0.0030	0.0020	0.010	0.010			0.0010	0.0010
	Maximum	47	0.05	6	111	0.10	2.0	72	55	0.06		7.10	12.00	12.00	6.00	6.00	0.72	0.74	0.85	0.85			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0190	0.0190	0.010	0.010			0.0010	0.0010
	Mean	26.3	0.050	3.4	62.8	0.100	1.67	40.8	29.0	0.016		3.989	6.444	6.444	3.222	3.096	0.498	0.478	0.438	0.461			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.01067	0.01078	0.0100	0.0100			0.00100	0.00100
	Median	29.0	0.050	4.0	66.0	0.100	2.00	43.0	30.0	0.010		3.900	7.000	7.000	4.000	3.000	0.540	0.550	0.380	0.390			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.01200	0.01300	0.0100	0.0100			0.00100	0.00100
	SD	15.09	0.0000	2.01	32.52	0.0000	0.500	21.13	15.97	0.0167		2.5438	3.206	3.468	1.787	1.785	0.190	0.197	0.224	0.248			0.0000	0.0000					0	0	0	0	0	0	0	0	0.00529	0.00559	0	0			0	0
D0-01	Number of samples	3	3	3	3	3	3	3	3	3	1	3	3	3	3	3	3	3	3	3	1	1	3	3	1	1	1	1	3	3	3	3	3	3	3	3	3	3	1	1	3	3
	Minimum	30	0.05	2	72	0.06	0.7	37	30	0.01	0.10	0.41	7.00	7.00	3.00	3.00	0.62	0.48	0.45	0.44	0.0004	0.0004	0.004	0.004	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0027	0.0009	0.0099	0.0093	0.001	0.001	0.003	0.003	0.0009	0.0010
	Maximum	55	0.30	4	113	0.10	2.0	74	63	0.10	0.10	13.40	11.00	12.00	6.00	8.00	0.70	0.70	0.53	0.59	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0003	0.0003	0.0100	0.0100	0.0120	0.0120	0.010	0.010	0.003	0.003	0.0010	0.0010
	Mean	44.3	0.133	2.6	95.0	0.087	1.57	52.7	47.6	0.040	0.100	4.803	9.367	9.497	4.987	5.523	0.647	0.597	0.490	0.490	0.0004	0.0004	0.0080	0.0080	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00023	0.00023	0.007567	0.006967	0.01097	0.01077	0.0070	0.0070	0.003	0.003	0.00097	0.00100
	Median	48.0	0.050	2.0	100.0	0.100	2.00	47.0	49.7	0.010	0.100	0.600	10.100	9.490	5.960	5.570	0.620	0.610	0.490	0.440	0.0004	0.0004	0.0100	0.0100	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.01100	0.01100	0.0100	0.0100	0.003	0.003	0.00100	0.00100
	SD	12.90	0.1443	1.22	20.95	0.0231	0.751	19.14	16.60	0.0520		7.4455	2.098	2.500	1.721	2.500	0.046	0.111	0.040	0.087	0	0	0.0035	0.0035					0	0	0	0	0.00006	0.00006	0.004215	0.005254	0.00105	0.00137	0.00520	0.00520			5.8E-05	2.7E-11
D1-01	Number of samples	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5	5	3	3	5	5	3	3	3	3	5	5	5	5	5	5	5	5	5	5	3	3	5	5
	Minimum	35	0.05	1	72	0.06	1.1	46	38	0.01	0.02	0.19	7.00	7.26	4.76	4.86	0.84	0.82	0.32	0.36	0.0004	0.0004	0.005	0.005	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0023	0.0021	0.0048	0.0047	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	90	0.30	1	181	0.10	2.0	130	98	0.10	0.10	1.75	18.80	18.10	12.50	11.50	1.62	1.67	0.75	0.72	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.007	0.0003	0.0003	0.0100	0.0100	0.0108	0.0099	0.010	0.010	0.004	0.003	0.0010	0.0022
	Mean	63.0	0.200	1.1	128.0	0.076	1.70	76.2	66.5	0.032	0.047	0.902	12.392	12.772	8.212	8.352	1.228	1.298	0.560	0.550	0.0004	0.0004	0.0082	0.0086	0.005	0.005	0.0003	0.0003	0.018	0.018	0.0010	0.0022	0.00026	0.00026	0.006200	0.005740	0.00774	0.00746	0.0046	0.0046	0.003	0.003	0.00094	0.00142
	Median	66.0	0.300	1.0	131.0	0.060	2.00	69.0	63.0	0.020	0.020	0.700	12.000	12.000	8.000	8.000	1.130	1.350	0.590	0.520	0.0004	0.0004	0.0080	0.0090	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00030	0.00030	0.005300	0.003400	0.00800	0.00800	0.0010	0.0010	0.003	0.003	0.00090	0.00100
	SD	25.87	0.1369	0.19	52.33	0.0219	0.424	33.80	25.61	0.0383	0.0462	0.6906	5.363	4.898	3.441	3.043	0.343	0.350	0.155	0.137	0	0	0.0020	0.0021	0	0	0	0	0.0179	0.0179	0	0.0027	0.00005	0.00005	0.003631	0.003920	0.00279	0.00250	0.00493	0.00493	0.0006	0	5.5E-05	0.00063
D1-03	Number of samples	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Minimum	45	0.30	2	97	0.06	2.9	66	52	0.02	0.02	0.48	9.76	9.42	6.79	6.39	1.95	1.63	1.25	1.28	0.0004	0.0004	0.009	0.005	0.005	0.005	0.0003	0.0003	0.01	0.02	0.001	0.001	0.0003	0.0003	0.0007	0.0007	0.0103	0.0098	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	95	0.30	5	211	0.08	4.1	140	106	0.10	0.10	15.80	20.30	19.30	13.40	12.60	2.74	2.72	2.51	2.52	0.0004	0.0004	0.013	0.013	0.005	0.005	0.0003	0.0003	0.05	0.05	0.003	0.007	0.0008	0.0003	0.0104	0.0008	0.0249	0.0234	0.001	0.001	0.036	0.003	0.0024	0.0024
	Mean	75.5	0.300	3.4	170.0	0.067	3.35	107.8	83.9	0.042	0.040	4.808	16.190	16.155	10.547	10.423	2.478	2.440	1.788	1.825	0.0004	0.0004	0.0115	0.0105	0.005	0.005	0.0003	0.0003	0.020	0.027	0.0015	0.0040	0.00042	0.00030	0.003125	0.000725	0.01913	0.01795	0.0010	0.0010	0.011	0.003	0.00128	0.00195
	Median	81.0	0.300	3.6	186.0	0.065	3.20	112.5	88.7	0.025	0.020	1.475	17.350	17.950	11.000	11.350	2.610	2.705	1.695	1.750	0.0004	0.0004	0.0120	0.0120	0.005	0.005	0.0003	0.0003	0.010	0.020	0.0010	0.0040	0.00030	0.00030	0.000700	0.000700	0.02065	0.01930	0.0010	0.0010	0.003	0.003	0.00090	0.00225
	SD	21.38	0.0000	1.49	50.07	0.0096	0.574	30.73	22.60	0.0386	0.0400	7.3435	4.507	4.535	2.749	2.752	0.358	0.540	0.525	0.514	0	0	0.0017	0.0037	0	0	0	0	0.0200	0.0150

Knight Piésold CONSULTING

TABLE 5.3

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

EXPLORATION PROPERTY WATER QUALITY - NON-CCME SPECIFIED GENERAL PARAMETERS, NUTRIENTS AND TOTAL AND DISSOLVED METALS

		General Parameters and Nutrients										Total and Dissolved Metals and Non-Metals																											
		Alkalinity	Br^-	Cl^-	Conductivity	NO_2+NO_3	SO_4	TDS	Hardness	Phosphorus		Turbidity	Calcium		Magnesium		Potassium		Sodium		Antimony		Barium		Beryllium		Bismuth		Boron		Chromium		Cobalt		Manganese		Strontium		Tin		Titanium		Vanadium	
		mg/L $CaCO_3$	mg/L	mg/L	uS/cm	mg/L N	mg/L	mg/L	mg/L $CaCO_3$	Tot. mg/L	Diss. mg/L	NTU	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L
DL0-01-D	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1
	Minimum	47	0.05	1	93	0.10	1.0	61	50	0.01		0.70	9.00	10.00	6.00	6.00	0.66	0.69	0.47	0.49			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0070	0.0070	0.010	0.010			0.0010	0.0010
	Maximum	47	0.05	1	93	0.10	1.0	61	50	0.01		0.70	9.00	10.00	6.00	6.00	0.66	0.69	0.47	0.49			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0070	0.0070	0.010	0.010			0.0010	0.0010
	Mean	47.0	0.050	1.0	93.0	0.100	1.00	61.0	50.0	0.010		0.700	9.000	10.000	6.000	6.000	0.660	0.690	0.470	0.490			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00700	0.00700	0.0100	0.0100			0.00100	0.00100
	Median	47.0	0.050	1.0	93.0	0.100	1.00	61.0	50.0	0.010		0.700	9.000	10.000	6.000	6.000	0.660	0.690	0.470	0.490			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00700	0.00700	0.0100	0.0100			0.00100	0.00100
	SD																																									
DL0-02-S	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1
	Minimum	44	0.05	2	89	0.10	1.0	58	43	0.01		1.70	9.00	9.00	5.00	5.00	0.61	0.61	0.48	0.48			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0090	0.0080	0.010	0.010			0.0010	0.0010
	Maximum	44	0.05	2	89	0.10	1.0	58	43	0.01		1.70	9.00	9.00	5.00	5.00	0.61	0.61	0.48	0.48			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0090	0.0080	0.010	0.010			0.0010	0.0010
	Mean	44.0	0.050	2.0	89.0	0.100	1.00	58.0	43.0	0.010		1.700	9.000	9.000	5.000	5.000	0.610	0.610	0.480	0.480			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00900	0.00800	0.0100	0.0100			0.00100	0.00100
	Median	44.0	0.050	2.0	89.0	0.100	1.00	58.0	43.0	0.010		1.700	9.000	9.000	5.000	5.000	0.610	0.610	0.480	0.480			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00900	0.00800	0.0100	0.0100			0.00100	0.00100
	SD																																									
DL0-02-D	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1
	Minimum	44	0.05	2	89	0.10	1.0	58	43	0.01		1.70	9.00	9.00	5.00	5.00	0.63	0.63	0.47	0.45			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0080	0.0080	0.010	0.010			0.0010	0.0010
	Maximum	44	0.05	2	89	0.10	1.0	58	43	0.01		1.70	9.00	9.00	5.00	5.00	0.63	0.63	0.47	0.45			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0080	0.0080	0.010	0.010			0.0010	0.0010
	Mean	44.0	0.050	2.0	89.0	0.100	1.00	58.0	43.0	0.010		1.700	9.000	9.000	5.000	5.000	0.630	0.630	0.470	0.450			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00800	0.00800	0.0100	0.0100			0.00100	0.00100
	Median	44.0	0.050	2.0	89.0	0.100	1.00	58.0	43.0	0.010		1.700	9.000	9.000	5.000	5.000	0.630	0.630	0.470	0.450			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00800	0.00800	0.0100	0.0100			0.00100	0.00100
	SD																																									
E0-01	Number of samples	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5	5	3	3	5	5	3	3	3	3	5	5	5	5	5	5	5	5	5	5	3	3	5	5
	Minimum	30	0.05	3	69	0.06	0.5	30	30	0.01	0.02	0.57	7.00	7.00	3.00	3.00	0.53	0.47	0.37	0.43	0.0004	0.0004	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0011	0.0007	0.0120	0.0120	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	68	0.30	23	213	0.10	2.0	91	107	0.10	0.10	12.50	25.20	23.30	10.70	9.73	0.98	0.93	1.27	1.23	0.0004	0.0004	0.012	0.012	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.002	0.0006	0.0003	0.0114	0.0103	0.0905	0.0839	0.010	0.010	0.007	0.003	0.0010	0.0012
	Mean	41.4	0.200	7.9	106.0	0.076	1.40	55.6	54.2	0.034	0.047	3.828	11.666	11.784	5.612	5.688	0.672	0.642	0.614	0.622	0.0004	0.0004	0.0086	0.0080	0.005	0.005	0.0003	0.0003	0.018	0.018	0.0010	0.0012	0.00032	0.00026	0.006860	0.006340	0.03028	0.02894	0.0046	0.0046	0.004	0.003	0.00094	0.00100
	Median	36.0	0.300	4.0	85.0	0.060	1.70	55.0	47.0	0.020	0.020	0.700	8.030	10.000	5.000	5.460	0.600	0.590	0.480	0.490	0.0004	0.0004	0.0100	0.0100	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00030	0.00030	0.010000	0.010000	0.01360	0.01400	0.0010	0.0010	0.003	0.003	0.00090	0.00100
	SD	15.13	0.1369	8.50	60.58	0.0219	0.704	22.49	30.60	0.0378	0.0462	5.1501	7.649	6.567	2.982	2.539	0.178	0.176	0.370	0.341	0	0	0.0030	0.0037	0	0	0	0	0.0179	0.0179	0	0.0004	1.6E-04	5.5E-05	0.004978	0.005150	0.03392	0.03095	0.00493	0.00493	0.0023	0	5.5E-05	0.00012
E0-03	Number of samples	11	11	11	11	11	11	11	11	11	3	11	11	11	11	11	11	11	11	11	3	3	11	11	3	3	3	3	11	11	11	11	11	11	11	11	11	11	3	3	11	11
	Minimum	5	0.05	1	13	0.06	0.5	8	5	0.01	0.02	0.62	1.00	1.00	0.83	0.68	0.23	0.14	0.18	0.17	0.0004	0.0004	0.004	0.003	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0007	0.0007	0.0030	0.0020	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	70	0.70	42	287	0.10	2.0	130	136	0.10	0.10	15.10	34.60	32.60	12.00	11.20	1.15	1.13	1.62	1.63	0.0004	0.0004	0.017	0.018	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.002	0.0003	0.0003	0.0100	0.0100	0.1660	0.1560	0.010	0.010	0.006	0.003	0.0010	0.0015
	Mean	26.0	0.160	8.5	80.8	0.092	1.46	48.5	37.7	0.024	0.047	4.304	8.762	8.472	3.910	3.807	0.563	0.535	0.564	0.560	0.0004	0.0004	0.0097	0.0096	0.005	0.005	0.0003	0.0003	0.015	0.014	0.0010	0.0011	0.00023	0.00023	0.007945	0.007700	0.02735	0.02669	0.0075	0.0075	0.004	0.003	0.00097	0.00103
	Median	21.0	0.050	4.0	70.0	0.100	1.80	40.0	34.0	0.010	0.020	4.130	7.000	7.000	3.920	3.850	0.550	0.590	0.480	0.480	0.0004	0.0004	0.0100	0.0100	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.01300	0.01400	0.0100	0.0100	0.004	0.003	0.00100	0.00100
	SD	19.19	0.2045	11.79	75.91	0.0160	0.597	35.53	36.37	0.0269	0.0462	3.9275	9.288	8.781	3.163	2.975	0.276	0.279	0.411	0.414	0	0	0.0032	0.0037	0	0	0	0	0.0151	0.0121	0	0.0003	4.7E-05	4.7E-05	0.003679	0.003996	0.04678	0.04390	0.00420	0.00420	0.0015	0	4.7E-05	0.00016
E2-01	Number of samples	6	6	6	6	6	6	6	6	6	4	6	6	6	6	6	6	6	6	6	4	4	6	6	4	4	4	4	6	6	6	6	6	6	6	6	6	6	4	4	6	6
	Minimum	39	0.05	1	84	0.06	1.0	55	37	0.01	0.02	0.20	8.00	8.00	4.00	4.00	0.54	0.52	0.31	0.35	0.0004	0.0004	0.005	0.004	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0026	0.0018	0.0041	0.0043	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	71	0.50	3	132	0.10	2.0	69	75	0.10	0.10	10.80	14.60	14.00	9.45	8.97	0.73	0.72	0.48	0.44	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.06	0.05	0.002	0.004	0.0003	0.0003	0.0176	0.0154	0.0120	0.0110	0.010	0.010	0.003	0.003	0.0010	0.0013
	Mean	50.8	0.250	1.1	98.0	0.073	1.45	61.5	53.1	0.032	0.040	2.108	10.242	10.447	6.375	6.580	0.638	0.625	0.380	0.390	0.0004	0.0004	0.0070	0.0068	0.005	0.005	0.0003	0.0003	0.027	0.023	0.0012	0.0015	0.00027	0.00027	0.010017	0.008867	0.00647	0.00625	0.0040	0.0040	0.003	0.003	0.00093	0.00103
	Median	46.5	0.300	0.7	90.0	0.060	1.35	61.0	49.5	0.020	0.020	0.415	8.950	9.545	5.770	6.370	0.635	0.645	0.375	0.395	0.0004	0.0004	0.0060	0.0065	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00030	0.00030	0.010000	0.010000	0.00570	0.00550	0.0010	0.0010	0.003	0.003	0.00090	0.00100
	SD	11.97	0.1732	0.95	18.60	0.0207	0.481	5.43	14.28	0.0337	0.0400	4.2599	2.641	2.373	1.954	1.805	0.061	0.079	0.057	0.032	0	0	0.0024	0.0027	0	0	0	0	0.0258	0.0207	0.0004	0.0012	5.2E-05	5.2E-05	0.006642	0.005892	0.00296	0.00252	0.00465	0.00465	0	0	5.2E-05	0.00015
E2-03	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	33	0.80	1	66	0.06	0.5	34	36	0.02	0.02	0.42	7.28	7.89	4.31	4.48	0.65	0.67	0.25	0.27	0.0004	0.0004	0.005	0.004	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0099	0.0088	0.0029	0.0032	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	33	0.80	1	66	0.06	0.5	34	36	0.02	0.02	0.42	7.28	7.89	4.31	4.48	0.65	0.67	0.25	0.27	0.0004	0.0004	0.005	0.004	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0099	0.0088	0.0029	0.0032	0.001	0.001	0.003	0.003	0.0009	0.0009
	Mean	33.0	0.800	0.6	66.0	0.060	0.50	34.0	35.9	0.020	0.020	0.420	7.280	7.890	4.310	4.480	0.650	0.670	0.250	0.270	0.0004	0.0004	0.0050	0.0040	0.005	0.005	0.0003	0.0003	0.060	0.050	0.0010	0.0010	0.00030	0.00030	0.009900	0.008800	0.00290	0.00320	0.0010	0.0010	0.003	0.003	0.00090	0.00090
	Median	33.0	0.800	0.6	66.0	0.060	0.50	34.0	35.9	0.020	0.020	0.420	7.280	7.890	4.310	4.480	0.650	0.670	0.250	0.270	0.0004	0.0004	0.0050	0.0040	0.005	0.005	0.0003	0.0003	0.060	0.050	0.0010	0.0010	0.00030	0.00030	0.009900	0.008800	0.00290	0.00320	0.0010	0.0010	0.003	0.003	0.00090	0.00090
	SD																																									
E2-05	Number of samples	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Minimum	34	0.30	0	73	0.06	1.4	34	37	0.02	0.02	0.22	7.24	7.08	4.59	4.56	0.59	0.62	0.35	0.34	0.0004	0.0004	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0003	0.0003	0.0029	0.0008	0.0036	0.0034	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	57	0.30	1	112	0.06	2.0	49	58	0.10	0.10	0.35	11.20	11.20	7.24	7.14	0.66	0.66	0.38	0.39	0.0004	0.0004	0.006	0.006	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0039	0.0022	0.0056	0.0055	0.001	0.001	0.003	0.003	0.0009	0.0011
	Mean	49.0	0.300	0.5	95.7	0.060	1.60	44.0	48.1	0.047	0.047	0.293	9.343	9.400	6.000	6.050	0.617	0.637	0.360	0.367	0.0004	0.0004	0.0053	0.0053	0.005	0.005	0.0003	0.0003	0.027	0.023	0.0010	0.0010	0.00030	0.00030	0.003467	0.001667	0.00483	0.00473	0.0010	0.0010	0.003	0.003	0.00090	0.00097
	Median	56.0	0.300	0.5	102.0	0.060	1.40	49.0	49.3	0.020	0.020	0.310	9.590	9.920	6.170	6.450	0.600	0.630	0.350	0.370	0.0004	0.0004	0.0050	0.0050	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00030	0.00030	0.003600	0.002000	0.00530	0.00530	0.0010	0.0010	0.003	0.003	0.00090	0.00090
	SD	13.00	0.0000	0.15	20.26	0.0000	0.346	8.66	10.50	0.0462	0.0462	0.0666	1.991	2.109	1.333	1.336	0.038	0.021	0.017	0.025	0	0	0.0006	0.0006	0	0	0	0	0.0289	0.0231	0	0	0	0	0.000513	0.000757	0.00108	0.00116	0	0	0	0	1.3E-19	0.00012
E2-08	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	6	0.30	1	19	0.06	0.8	40	8	0.02	0.02	0.38	1.62	1.65	0.94	0.95	0.36	0.37	0.32	0.33	0.0004	0.0004	0.001	0.001	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0037	0.0027	0.0011	0.0010	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	6	0.30	1	19	0.06	0.8	40	8	0.02	0.02	0.38	1.62	1.65	0.94	0.95	0.36	0.37	0.32	0.33	0.0004	0.0004	0.001	0.001	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0037	0.0027	0.0011	0.0010	0.001	0.001	0.003	0.003	0.0009	0.0009
	Mean	6.0	0.300	0.7	19.0	0.060	0.80	40.0	7.9	0.020	0.020	0.380	1.620	1.650	0.938	0.947	0.360	0.370	0.320	0.330	0.0004	0.0004	0.0010	0.0010	0.005	0.005	0.0003	0.0003	0.060	0.050	0.0010	0.0010	0.00030	0.00030	0.003700	0.002700	0.00110	0.00100	0.0010	0.0010	0.003	0.003	0.00090	0.00090
	Median	6.0	0.300	0.7	19.0	0.060	0.80	40.0	7.9	0.020	0.020	0.380	1.620	1.650	0.938	0.947	0.360	0.370	0.320	0.330	0.0004	0.0004	0.0010	0.0010	0.005	0.005	0.0003	0.0003	0.060	0.050	0.0010	0.0010	0.00030	0.00030	0.003700	0.002700	0.00110	0.00100	0.0010	0.0010	0.003	0.003	0.00090	0.00090
	SD																																									
E3-01	Number of samples	5	5	5	5	5	5	5	5	5	3	4	5	5	5	5	5	5	5	5	3	3	5	5	3	3	3	3	5	5	5	5	5	5	5	5	5	5	3	3	5	5
	Minimum	28	2.20	139	552	0.06	0.9	359	208	0.01	0.02	0.11	72.00	62.00	19.00	13.00	3.00	3.00	3.38	3.28	0.0004	0.0004	0.030	0.020	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0004	0.0002	0.0007	0.0007	0.2690	0.3750	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	65	39.00	2600	7490	0.34	5.0	5050	3340	0.19	0.10	21.20	1130.00	1150.00	167.00	169.00	22.50	19.70	42.70	42.20	0.0004	0.0005	0.510	0.554	0.005	0.005	0.0003	0.0003	0.08	0.05	0.012	0.005	0.0031	0.0006	0.1230	0.0305	7.8700	7.1400	0.010	0.010	0.132	0.003	0.0054	0.0013
	Mean	47.0	14.248	1008.2	3141.6	0.176	2.82	2147.0	1316.4	0.086	0.047	5.830	427.480	427.360	70.060	70.560	9.028	8.378	17.596	17.896	0.0004	0.00043	0.1900	0.1950	0.005	0.005	0.0003	0.0003	0.032	0.030	0.0046	0.0028	0.00146	0.00036	0.055180	0.014600	2.85820	2.82180	0.0048	0.0046	0.046	0.003	0.00284	0.00102
	Median	51.0	8.800	922.0	3030.0	0.160	3.00	1970.0	1250.0	0.100	0.020	1.005	406.000	413.000	52.000	54.000	6.000	6.000	16.900	18.000	0.0004	0.0004	0.1500	0.1500	0.005	0.005	0.0003	0.0003	0.030	0.030	0.0010	0.0020	0.00050	0.00030	0.030000	0.010000	2.57000	2.62000	0.0020	0.0010	0.003	0.003	0.00100	0.00100
	SD	16.78	15.446	1002.4	2862.57	0.1099	1.524	1902.66	1265.48	0.0737	0.0462	10.2814	430.491	442.291	61.256	64.756	7.889	6.863	16.041	15.924	0	5.8E-05	0.1975	0.2199	0	0	0	0	0.0286	0.0158	0.0051	0.0020	1.4E-03	1.5E-04	0.061665	0.014732	3.09767	2.79032	0.00476	0.00493	0.0745	0	0.00234	0.00016
E3-03	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	27	1.90	160	612	0.06	0.6	634	253	0.03	0.02	1.27	78.30	79.60	14.00	13.50	3.06	3.02	3.20	3.29	0.0004	0.0004	0.025	0.024	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.004	0.0003	0.0003	0.0431	0.0170	0.6490	0.7120	0.001	0.001	0.004	0.003	0.0009	0.0009
	Maximum	27	1.90	160	612	0.06	0.6	634	253	0.03	0.02	1.27	78.30	79.60	14.00	13.50	3.06	3.02	3.20	3.29	0.0004	0.0004	0.025	0.024	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.004	0.0003	0.0003	0.0431	0.0170	0.6490	0.7120	0.001	0.001	0.004	0.003	0.0009	0.0009
	Mean	27.0	1.900	160.0	612.0	0.060	0.60	634.0	253.0	0.030	0.020	1.270	78.300	79.600	14.000	13.500	3.060	3.020	3.200	3.290	0.0004	0.0004	0.0250	0.0240	0.005	0.005	0.0003	0.0003	0.050	0.050	0.0010	0.0040	0.00030	0.00030	0.043100	0.017000	0.64900	0.71200	0.0010	0.0010	0.004	0.003	0.00090	0.00090
	Median	27.0	1.900	160.0	612.0	0.060	0.60	634.0	253.0	0.030	0.020	1.270	78.300	79.600	14.000	13.500	3.060	3.020	3.200	3.290	0.0004	0.0004	0.0250	0.0240	0.005	0.005	0.0003	0.0003	0.050	0.050	0.0010	0.0040	0.00030	0.00030	0.043100	0.017000	0.64900	0.71200	0.0010	0.0010	0.004	0.003	0.00090	0.00090
	SD																																			

Knight Piésold CONSULTING

TABLE 5.3

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

EXPLORATION PROPERTY WATER QUALITY - NON-CCME SPECIFIED GENERAL PARAMETERS, NUTRIENTS AND TOTAL AND DISSOLVED METALS

		General Parameters and Nutrients										Total and Dissolved Metals and Non-Metals																							
		Alkalinity	Br^-	Cl^-	Conductivity	NO_2+NO_3	SO_4	TDS	Hardness	Phosphorus		Turbidity	Calcium		Magnesium		Potassium		Sodium		Antimony		Barium		Beryllium		Bismuth		Boron		Chromium		Cobalt		Manganese		Strontium		Tin		Titanium		Vanadium	
		mg/L $CaCO_3$	mg/L	mg/L	uS/cm	mg/L N	mg/L	mg/L	mg/L $CaCO_3$	Tot. mg/L	Diss. mg/L	NTU	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L
F0-05	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1
	Minimum	72	0.05	1	137	0.14	1.0	89	70	0.01		0.20	15.00	15.00	8.00	8.00	0.53	0.39	0.30	0.25			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0070	0.0080	0.010	0.010			0.0010	0.0010		
	Maximum	72	0.05	1	137	0.14	1.0	89	70	0.01		0.20	15.00	15.00	8.00	8.00	0.53	0.39	0.30	0.25			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0070	0.0080	0.010	0.010			0.0010	0.0010		
	Mean	72.0	0.050	1.0	137.0	0.140	1.00	89.0	70.0	0.010		0.200	15.000	15.000	8.000	8.000	0.530	0.390	0.300	0.250			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00700	0.00800	0.0100	0.0100			0.00100	0.00100		
	Median	72.0	0.050	1.0	137.0	0.140	1.00	89.0	70.0	0.010		0.200	15.000	15.000	8.000	8.000	0.530	0.390	0.300	0.250			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00700	0.00800	0.0100	0.0100			0.00100	0.00100		
	SD																																											
G0-01	Number of samples	10	10	10	10	10	10	10	10	10	3	10	10	10	10	10	10	10	10	10	3	3	10	10	3	3	3	3	10	10	10	10	10	10	10	10	10	10	3	3	10	10		
	Minimum	8	0.05	0	23	0.06	0.5	15	9	0.01	0.02	0.60	2.00	2.00	1.00	1.00	0.25	0.23	0.17	0.17	0.0004	0.0004	0.002	0.002	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0007	0.0007	0.0020	0.0020	0.001	0.001	0.003	0.003	0.0009	0.0009		
	Maximum	60	0.30	2	125	0.10	2.0	63	67	0.10	0.10	17.80	13.80	12.90	7.90	7.37	0.87	0.80	1.14	1.10	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.06	0.05	0.003	0.001	0.0003	0.0003	0.0100	0.0100	0.0115	0.0107	0.010	0.010	0.008	0.003	0.0010	0.0019		
	Mean	25.9	0.125	1.2	55.2	0.089	1.39	35.3	27.0	0.021	0.047	4.111	5.423	5.477	3.190	3.147	0.514	0.494	0.478	0.472	0.0004	0.0004	0.0085	0.0083	0.005	0.005	0.0003	0.0003	0.015	0.014	0.0012	0.0010	0.00023	0.00023	0.007600	0.007430	0.00469	0.00440	0.0073	0.0073	0.005	0.003	0.00097	0.00107		
	Median	22.5	0.050	1.0	49.0	0.100	1.30	34.5	23.4	0.010	0.020	2.550	4.980	5.110	2.720	2.735	0.520	0.500	0.330	0.340	0.0004	0.0004	0.0100	0.0100	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00350	0.00300	0.0100	0.0100	0.004	0.003	0.00100	0.00100		
	SD	17.15	0.1208	0.52	33.88	0.0179	0.590	18.54	17.73	0.0281	0.0462	5.1161	3.770	3.456	2.089	1.960	0.201	0.192	0.308	0.298	0	0	0.0028	0.0031	0	0	0	0	0.0158	0.0126	0.0006	0	4.8E-05	4.8E-05	0.003926	0.004181	0.00332	0.00301	0.00435	0.00435	0.0026	0.0000	4.8E-05	0.00029		
G0-03	Number of samples	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5	5	3	3	5	5	3	3	3	3	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	9	0.05	0	26	0.06	0.5	18	9	0.01	0.02	0.28	2.00	2.00	1.00	1.00	0.46	0.44	0.36	0.34	0.0004	0.0004	0.001	0.001	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0007	0.0007	0.0015	0.0015	0.001	0.001	0.003	0.003	0.0009	0.0009		
	Maximum	57	0.30	2	118	0.10	2.0	51	64	0.10	0.10	9.80	13.10	12.30	7.49	6.98	0.84	0.80	1.17	1.15	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.001	0.0003	0.0003	0.0100	0.0100	0.0113	0.0106	0.010	0.010	0.007	0.003	0.0010	0.0018		
	Mean	30.0	0.200	1.0	62.8	0.076	1.18	37.6	29.4	0.032	0.047	3.398	6.084	5.992	3.454	3.390	0.608	0.550	0.616	0.586	0.0004	0.0004	0.0068	0.0064	0.005	0.005	0.0003	0.0003	0.018	0.018	0.0010	0.0010	0.00026	0.00026	0.005620	0.005320	0.00544	0.00518	0.0046	0.0046	0.004	0.003	0.00094	0.00112		
	Median	36.0	0.300	1.0	67.0	0.060	1.00	40.0	28.2	0.020	0.020	1.610	5.940	6.280	3.260	3.410	0.540	0.500	0.460	0.480	0.0004	0.0004	0.0080	0.0080	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00030	0.00030	0.005600	0.005200	0.00540	0.00480	0.0010	0.0010	0.003	0.003	0.00090	0.00100		
	SD	20.78	0.1369	0.46	38.01	0.0219	0.646	13.76	21.78	0.0383	0.0462	4.0357	4.486	4.179	2.568	2.362	0.153	0.142	0.345	0.336	0	0	0.0038	0.0042	0	0	0	0	0.0179	0.0179	0	0	5.5E-05	5.5E-05	0.004392	0.004650	0.00400	0.00376	0.00493	0.00493	0.0023	0.0000	5.5E-05	0.00038		
G0-05	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	38	0.05	1	73	0.10	1.0	48	34	0.01		6.00	7.00	7.00	4.00	4.00	0.62	0.70	0.54	0.56			0.010	0.010					0.01	0.01	0.001	0.002	0.0002	0.0002	0.0100	0.0100	0.0060	0.0070	0.010	0.010			0.0010	0.0010		
	Maximum	38	0.05	1	73	0.10	1.0	48	34	0.01		6.00	7.00	7.00	4.00	4.00	0.62	0.70	0.54	0.56			0.010	0.010					0.01	0.01	0.001	0.002	0.0002	0.0002	0.0100	0.0100	0.0060	0.0070	0.010	0.010			0.0010	0.0010		
	Mean	38.0	0.050	1.0	73.0	0.100	1.00	48.0	34.0	0.010		6.000	7.000	7.000	4.000	4.000	0.620	0.700	0.540	0.560			0.0100	0.0100					0.010	0.010	0.0010	0.0020	0.00020	0.00020	0.010000	0.010000	0.00600	0.00700	0.0100	0.0100			0.00100	0.00100		
	Median	38.0	0.050	1.0	73.0	0.100	1.00	48.0	34.0	0.010		6.000	7.000	7.000	4.000	4.000	0.620	0.700	0.540	0.560			0.0100	0.0100					0.010	0.010	0.0010	0.0020	0.00020	0.00020	0.010000	0.010000	0.00600	0.00700	0.0100	0.0100			0.00100	0.00100		
	SD																																											
G3-01	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	36	0.05	1	66	0.10	1.0	43	34	0.01		4.60	7.00	7.00	4.00	4.00	0.57	0.43	0.27	0.25			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0050	0.0050	0.010	0.010			0.0010	0.0010		
	Maximum	36	0.05	1	66	0.10	1.0	43	34	0.01		4.60	7.00	7.00	4.00	4.00	0.57	0.43	0.27	0.25			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0050	0.0050	0.010	0.010			0.0010	0.0010		
	Mean	36.0	0.050	1.0	66.0	0.100	1.00	43.0	34.0	0.010		4.600	7.000	7.000	4.000	4.000	0.570	0.430	0.270	0.250			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00500	0.00500	0.0100	0.0100			0.00100	0.00100		
	Median	36.0	0.050	1.0	66.0	0.100	1.00	43.0	34.0	0.010		4.600	7.000	7.000	4.000	4.000	0.570	0.430	0.270	0.250			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00500	0.00500	0.0100	0.0100			0.00100	0.00100		
	SD																																											
G0-07	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	37	0.05	1	72	0.10	1.0	47	34	0.02		11.40	7.00	7.00	4.00	4.00	0.70	0.58	0.86	0.77			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0080	0.0080	0.010	0.010			0.0010	0.0010		
	Maximum	37	0.05	1	72	0.10	1.0	47	34	0.02		11.40	7.00	7.00	4.00	4.00	0.70	0.58	0.86	0.77			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0080	0.0080	0.010	0.010			0.0010	0.0010		
	Mean	37.0	0.050	1.0	72.0	0.100	1.00	47.0	34.0	0.020		11.400	7.000	7.000	4.000	4.000	0.700	0.580	0.860	0.770			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00800	0.00800	0.0100	0.0100			0.00100	0.00100		
	Median	37.0	0.050	1.0	72.0	0.100	1.00	47.0	34.0	0.020		11.400	7.000	7.000	4.000	4.000	0.700	0.580	0.860	0.770			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00800	0.00800	0.0100	0.0100			0.00100	0.00100		
	SD																																											
G0-09	Number of samples	7	7	7	7	7	7	7	7	7	0	7	7	7	7	7	7	7	7	7	0	0	7	7	0	0	0	0	7	7	7	7	7	7	7	7	7	7	0	0	7	7		
	Minimum	5	0.05	1	11	0.10	1.0	7	5	0.01		1.20	0.90	0.90	0.54	0.90	0.19	0.12	0.15	0.15			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0010	0.0010	0.010	0.010			0.0010	0.0010		
	Maximum	39	0.05	1	82	0.10	2.0	53	37	0.04		20.30	8.00	8.00	5.00	4.00	0.75	0.78	1.01	1.05			0.010	0.010					0.01	0.01	0.005	0.016	0.0002	0.0002	0.0100	0.0100	0.0090	0.0090	0.010	0.010			0.0010	0.0010		
	Mean	16.3	0.050	1.0	35.1	0.100	1.43	22.7	15.0	0.017		6.457	3.414	3.414	1.783	1.693	0.426	0.399	0.480	0.444			0.0100	0.0100					0.010	0.010	0.0016	0.0031	0.00020	0.00020	0.010000	0.010000	0.00371	0.00357	0.0100	0.0100			0.00100	0.00100		
	Median	11.0	0.050	1.0	23.0	0.100	1.00	15.0	9.0	0.010		2.700	2.000	2.000	1.000	1.000	0.370	0.410	0.360	0.370			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00300	0.00200	0.0100	0.0100			0.00100	0.00100		
	SD	12.75	0.0000	0.00	25.61	0	0.535	16.54	12.18	0.0125		6.9351	2.589	2.589	1.629	1.268	0.220	0.225	0.331	0.328			0.0000	0.0000					0	0	0.0015	0.0057	2.9E-20	2.9E-20	0	0	0.00281	0.00288	0	0			0	0		
G6-01	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	64	0.05	1	122	0.10	1.0	79	61	0.01		2.30	14.00	13.00	7.00	7.00	0.71	0.54	0.56	0.51			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0100	0.0100	0.010	0.010			0.0010	0.0010		
	Maximum	64	0.05	1	122	0.10	1.0	79	61	0.01		2.30	14.00	13.00	7.00	7.00	0.71	0.54	0.56	0.51			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0100	0.0100	0.010	0.010			0.0010	0.0010		
	Mean	64.0	0.050	1.0	122.0	0.100	1.00	79.0	61.0	0.010		2.300	14.000	13.000	7.000	7.000	0.710	0.540	0.560	0.510			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.01000	0.01000	0.0100	0.0100			0.00100	0.00100		
	Median	64.0	0.050	1.0	122.0	0.100	1.00	79.0	61.0	0.010		2.300	14.000	13.000	7.000	7.000	0.710	0.540	0.560	0.510			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.01000	0.01000	0.0100	0.0100			0.00100	0.00100		
	SD																																											
H0-01	Number of samples	4	4	4	4	4	4	4	4	4	2	4	4	4	4	4	4	4	4	4	2	2	4	4	2	2	2	2	4	4	4	4	4	4	4	4	4	4	2	2	4	4		
	Minimum	30	0.05	1	61	0.06	0.6	30	29	0.01	0.02	0.20	5.96	5.90	3.00	3.16	0.65	0.52	0.62	0.60	0.0004	0.0004	0.005	0.004	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0011	0.0007	0.0062	0.0062	0.001	0.001	0.006	0.003	0.0009	0.0010		
	Maximum	55	0.30	3	120	0.10	2.4	43	61	0.10	0.10	14.40	12.70	11.80	7.17	6.61	0.95	0.89	1.69	1.67	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.001	0.0003	0.0003	0.0100	0.0100	0.0132	0.0122	0.032	0.010	0.008	0.003	0.0010	0.0011		
	Mean	37.3	0.175	1.3	77.5	0.080	1.25	37.0	38.5	0.038	0.060	6.310	7.665	7.425	4.363	4.443	0.747	0.632	1.030	0.957	0.0004	0.0004	0.0080	0.0078	0.005	0.005	0.0003	0.0003	0.020	0.020	0.0010	0.0010	0.00025	0.00025	0.005800	0.005350	0.00835	0.00835	0.0133	0.0055	0.007	0.003	0.00095	0.00103		
	Median	32.0	0.175	1.0	64.5	0.080	1.00	37.5	32.0	0.020	0.060	5.320	6.000	6.000	3.640	4.000	0.695	0.560	0.905	0.780	0.0004	0.0004	0.0085	0.0085	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00025	0.00025	0.006050	0.005350	0.00700	0.00750	0.0100	0.0055	0.007	0.003	0.00095	0.00100		
	SD	11.90	0.1443	1.01	28.41	0.0231	0.790	6.06	15.10	0.0419	0.0566	6.4541	3.357	2.917	1.918	1.498	0.137	0.173	0.460	0.483	0	0	0.0024	0.0029	0	0	0	0	0.0200	0.0200	0	0	5.8E-05	5.8E-05	0.004867	0.005369	0.00326	0.00267	0.01320	0.00520	0.0014	0.0000	5.8E-05	5E-05		
H1-01	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	55	0.05	1	106	0.10	1.0	69	52	0.02		9.60	11.00	11.00	6.00	6.00	0.79	0.59	0.87	0.74			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0100	0.0100	0.010	0.010			0.0010	0.0010		
	Maximum	55	0.05	1	106	0.10	1.0	69	52	0.02		9.60	11.00	11.00	6.00	6.00	0.79	0.59	0.87	0.74			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0100	0.0100	0.010	0.010			0.0010	0.0010		
	Mean	55.0	0.050	1.0	106.0	0.100	1.00	69.0	52.0	0.020		9.600	11.000	11.000	6.000	6.000	0.790	0.590	0.870	0.740			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.01000	0.01000	0.0100	0.0100			0.00100	0.00100		
	Median	55.0	0.050	1.0	106.0	0.100	1.00	69.0	52.0	0.020		9.600	11.000	11.000	6.000	6.000	0.790	0.590	0.870	0.740			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.01000	0.01000	0.0100	0.0100			0.00100	0.00100		
	SD																																											
I0-01	Number of samples	2	2	2	2	2	2	2	2	2	0	2	2	2	2	2	2	2	2	2	0	0	2	2	0	0	0	0	2	2	2	2	2	2	2	2	2	2	0	0	2	2		
	Minimum	38	0.05	1	78	0.10	2.0	51	34	0.03		0.50	7.00	7.00	4.00	4.00	0.62	0.55	0.44	0.43			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0050	0.0050	0.010	0.010			0.0010	0.0010		
	Maximum	47	0.05	1	89	0.10	2.0	58	43	0.06		15.30	9.00	9.00	6.00	5.00	0.62	0.61	0.57	0.56			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0070	0.0060	0.010	0.010			0.0010	0.0010		
	Mean	42.5	0.050	1.0	83.5	0.100	2.00	54.5	38.5	0.045		7.900	8.000	8.000	5.000	4.500	0.620	0.580	0.505	0.495			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.01000	0.01000	0.00600	0.00550	0.0100	0.0100			0.00100	0.00100		
	Median	42.5	0.050	1.0	83.5	0.100	2.00	54.5	38.5	0.045		7.900	8.000	8.000	5.000	4.500	0.620	0.580	0.505	0.495			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.01000	0.01000	0.00600	0.00550	0.0100	0.0100			0.00100	0.00100		
	SD	6.36	0.0000	0.00	7.78	0.0000	0.000	4.95	6.36	0.0212		10.4652	1.414	1.414	1.414	0.707	0.000	0.042	0.092	0.092			0.0000	0.0000					0	0	0	0	0	0	0	0	0.00141	0.00071	0	0			0	0		
I0-04	Number of samples	2	2	2	2	2	2	2	2	2	0	2	2	2	2	2	2	2	2	2	0	0	2	2	0	0	0	0	2	2	2	2	2	2	2	2	2	2	0	0	2	2		
	Minimum	26	0.05	1	53	0.10	2.0	35	25	0.01		0.70	5.00	5.00	3.00	3.00	0.49	0.48	0.39	0.39			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0030	0.0030	0.010	0.010			0.0010	0.0010		
	Maximum	49	0.05	1	93	0.10	5.0	61	50	0.01		10.70	10.00	10.00	6.00	6.00	0.61	0.51	0.49	0.49			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0060	0.0060	0.010	0.010			0.0010	0.0010		
	Mean	37.5	0.050	1.0	73.0	0.100	3.50	48.0	37.5	0.010		5.700	7.500	7.500	4.500	4.500	0.550	0.495	0.440	0.440			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.01000	0.01000	0.00450	0.00450	0.0100	0.0100			0.00100	0.00100		
	Median	37.5	0.050	1.0	73.0	0.100	3.50	48.0	37.5	0.010		5.700	7.500	7.500	4.500	4.500	0.550	0.495	0.

Knight Piésold CONSULTING

TABLE 5.3

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

EXPLORATION PROPERTY WATER QUALITY - NON-CCME SPECIFIED GENERAL PARAMETERS, NUTRIENTS AND TOTAL AND DISSOLVED METALS

		General Parameters and Nutrients										Total and Dissolved Metals and Non-Metals																													
		Alkalinity	Br^-	Cl^-	Conductivity	NO_2+NO_3	SO_4	TDS	Hardness	Phosphorus		Turbidity	Calcium		Magnesium		Potassium		Sodium		Antimony		Barium		Beryllium		Bismuth		Boron		Chromium		Cobalt		Manganese		Strontium		Tin		Titanium		Vanadium	
		mg/L $CaCO_3$	mg/L	mg/L	uS/cm	mg/L N	mg/L	mg/L	mg/L $CaCO_3$	Tot. mg/L	Diss. mg/L	NTU	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L
J1-01	Number of samples	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	3	3	3	3	5	5	3	3	3	3	5	5	5	5	5	5	5	5	3	3	5	5				
	Minimum	16	0.05	0	38	0.06	0.5	30	19	0.01	0.02	0.15	3.82	3.69	2.39	2.37	0.51	0.49	0.28	0.27	0.0004	0.0004	0.002	0.002	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0007	0.0007	0.0019	0.0018	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	117	0.30	1	224	0.10	2.0	106	134	0.11	0.10	0.60	26.30	23.80	16.50	14.80	1.44	1.36	0.76	0.73	0.0004	0.0004	0.011	0.011	0.005	0.005	0.0003	0.0003	0.05	0.05	0.004	0.008	0.0003	0.0003	0.0100	0.0100	0.0132	0.0122	0.010	0.010	0.003	0.003	0.0010	0.0022
	Mean	69.2	0.200	0.8	136.2	0.076	1.22	77.6	73.1	0.054	0.047	0.334	14.704	14.098	8.938	8.674	0.878	0.864	0.494	0.454	0.0004	0.0004	0.0084	0.0084	0.005	0.005	0.0003	0.0003	0.018	0.018	0.0018	0.0024	0.00026	0.00026	0.005600	0.005440	0.00780	0.00726	0.0048	0.0046	0.003	0.003	0.00094	0.00144
	Median	86.0	0.300	0.8	163.0	0.060	1.10	100.0	81.0	0.030	0.020	0.320	17.000	16.000	10.000	10.000	0.860	0.850	0.490	0.470	0.0004	0.0004	0.0100	0.0100	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00030	0.00030	0.006600	0.005800	0.00990	0.00900	0.0020	0.0010	0.003	0.003	0.00090	0.00100
	SD	42.09	0.1369	0.29	78.59	0.0219	0.753	36.67	46.81	0.0472	0.0462	0.1783	9.214	8.534	5.783	5.322	0.391	0.378	0.202	0.184	0	0	0.0036	0.0036	0	0	0	0	0.0179	0.0179	0.0013	0.0031	5.5E-05	5.5E-05	0.004683	0.004654	0.00468	0.00424	0.00476	0.00493	0	0	5.5E-05	0.00065
J2-01	Number of samples	2	2	2	2	2	2	2	2	2	0	2	2	2	2	2	2	2	2	2	0	0	2	2	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
	Minimum	25	0.05	1	52	0.10	2.0	34	32	0.01		0.60	5.00	6.00	3.00	4.00	0.37	0.39	0.25	0.30			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0030	0.0030	0.010	0.010			0.0010	0.0010
	Maximum	81	0.05	1	154	0.10	2.0	100	77	0.03		0.60	16.00	16.00	9.00	9.00	0.54	0.54	0.44	0.34			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0090	0.0090	0.010	0.010			0.0010	0.0010
	Mean	53.0	0.050	1.0	103.0	0.100	2.00	67.0	54.5	0.020		0.600	10.500	11.000	6.000	6.500	0.455	0.465	0.345	0.320			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00600	0.00600	0.0100	0.0100			0.00100	0.00100
	Median	53.0	0.050	1.0	103.0	0.100	2.00	67.0	54.5	0.020		0.600	10.500	11.000	6.000	6.500	0.455	0.465	0.345	0.320			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00600	0.00600	0.0100	0.0100			0.00100	0.00100
	SD	39.60	0.0000	0.00	72.12	0.0000	0.000	46.67	31.82	0.0141		0.0000	7.778	7.071	4.243	3.536	0.120	0.106	0.134	0.028			0.0000	0					0	0	0	0	0	0	0	0	0.00424	0.00424	0	0			0	0
JL0-01-S	Number of samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1
	Minimum	50	0.05	1	93	0.10	1.0	61	50	0.01		1.30	10.00	10.00	6.00	6.00	0.59	0.58	0.47	0.44			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0060	0.0060	0.010	0.010			0.0010	0.0010
	Maximum	50	0.05	1	93	0.10	1.0	61	50	0.01		1.30	10.00	10.00	6.00	6.00	0.59	0.58	0.47	0.44			0.010	0.010					0.01	0.01	0.001	0.001	0.0002	0.0002	0.0100	0.0100	0.0060	0.0060	0.010	0.010			0.0010	0.0010
	Mean	50.0	0.050	1.0	93.0	0.100	1.00	61.0	50.0	0.010		1.300	10.000	10.000	6.000	6.000	0.590	0.580	0.470	0.440			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00600	0.00600	0.0100	0.0100			0.00100	0.00100
	Median	50.0	0.050	1.0	93.0	0.100	1.00	61.0	50.0	0.010		1.300	10.000	10.000	6.000	6.000	0.590	0.580	0.470	0.440			0.0100	0.0100					0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00600	0.00600	0.0100	0.0100			0.00100	0.00100
	SD																																										
K0-01	Number of samples	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5	5	3	3	5	5	3	3	3	3	5	5	5	5	5	5	5	5	5	5	3	3	5	5
	Minimum	28	0.05	0	53	0.06	0.5	40	28	0.02	0.02	0.13	5.64	5.70	3.34	3.49	0.54	0.52	0.25	0.22	0.0004	0.0004	0.003	0.002	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0007	0.0007	0.0025	0.0024	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	99	0.30	1	192	0.10	2.0	77	107	0.10	0.10	0.60	21.60	20.40	12.90	12.10	1.19	1.18	0.69	0.69	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.007	0.005	0.0003	0.0003	0.0100	0.0100	0.0107	0.0102	0.010	0.010	0.003	0.003	0.0010	0.0019
	Mean	58.8	0.200	0.8	111.8	0.076	1.30	62.0	60.4	0.040	0.047	0.330	11.968	12.040	7.258	7.188	0.768	0.772	0.388	0.396	0.0004	0.0004	0.0074	0.0074	0.005	0.005	0.0003	0.0003	0.018	0.018	0.0022	0.0018	0.00026	0.00026	0.005540	0.005160	0.00598	0.00582	0.0046	0.0046	0.003	0.003	0.00094	0.00126
	Median	62.0	0.300	1.0	117.0	0.060	1.50	71.0	59.0	0.020	0.020	0.300	12.000	12.000	7.000	7.000	0.680	0.680	0.360	0.380	0.0004	0.0004	0.0080	0.0090	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00030	0.00030	0.006300	0.004400	0.00600	0.00600	0.0010	0.0010	0.003	0.003	0.00090	0.00100
	SD	27.47	0.1369	0.35	52.70	0.0219	0.758	15.75	30.24	0.0346	0.0462	0.1785	6.328	5.715	3.639	3.316	0.265	0.270	0.177	0.183	0	0	0.0030	0.0034	0	0	0	0	0.0179	0.0179	0.0027	0.0018	5.5E-05	5.5E-05	0.004669	0.004669	0.00312	0.00294	0.00493	0.00493	0	0	5.5E-05	0.00043
K0-05	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	35	0.40	1	68	0.06	0.5	54	36	0.02	0.02	0.37	7.36	7.23	4.29	4.28	0.72	0.73	0.27	0.30	0.0004	0.0004	0.003	0.003	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0041	0.0034	0.0031	0.0033	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	35	0.40	1	68	0.06	0.5	54	36	0.02	0.02	0.37	7.36	7.23	4.29	4.28	0.72	0.73	0.27	0.30	0.0004	0.0004	0.003	0.003	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0041	0.0034	0.0031	0.0033	0.001	0.001	0.003	0.003	0.0009	0.0009
	Mean	35.0	0.400	0.6	68.0	0.060	0.50	54.0	36.0	0.020	0.020	0.370	7.360	7.230	4.290	4.280	0.720	0.730	0.270	0.300	0.0004	0.0004	0.0030	0.0030	0.005	0.005	0.0003	0.0003	0.060	0.050	0.0010	0.0010	0.00030	0.00030	0.004100	0.003400	0.00310	0.00330	0.0010	0.0010	0.003	0.003	0.00090	0.00090
	Median	35.0	0.400	0.6	68.0	0.060	0.50	54.0	36.0	0.020	0.020	0.370	7.360	7.230	4.290	4.280	0.720	0.730	0.270	0.300	0.0004	0.0004	0.0030	0.0030	0.005	0.005	0.0003	0.0003	0.060	0.050	0.0010	0.0010	0.00030	0.00030	0.004100	0.003400	0.00310	0.00330	0.0010	0.0010	0.003	0.003	0.00090	0.00090
	SD																																										
L0-01	Number of samples	17	17	17	17	17	17	17	17	17	3	17	17	17	17	17	17	17	17	17	3	3	17	17	3	3	3	3	17	17	17	17	17	17	17	17	17	17	3	3	17	17
	Minimum	21	0.05	0	42	0.06	0.5	27	18	0.01	0.02	0.20	4.00	4.00	2.00	2.00	0.49	0.47	0.18	0.18	0.0004	0.0004	0.003	0.003	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0011	0.0007	0.0030	0.0030	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	99	0.30	1	188	0.10	2.0	118	106	0.10	0.10	1.10	21.00	19.40	13.00	11.90	1.38	1.33	0.61	0.59	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.006	0.0003	0.0003	0.0130	0.0106	0.0100	0.0110	0.010	0.010	0.003	0.003	0.0010	0.0019
	Mean	45.9	0.094	1.0	88.9	0.093	1.48	55.2	45.1	0.020	0.047	0.471	8.846	8.875	5.458	5.499	0.750	0.745	0.324	0.327	0.0004	0.0004	0.0094	0.0094	0.005	0.005	0.0003	0.0003	0.012	0.012	0.0010	0.0013	0.00022	0.00022	0.009135	0.008959	0.00522	0.00526	0.0084	0.0084	0.003	0.003	0.00098	0.00109
	Median	40.0	0.050	1.0	81.0	0.100	2.00	53.0	41.0	0.010	0.020	0.470	7.000	8.000	5.000	5.000	0.660	0.660	0.310	0.320	0.0004	0.0004	0.0100	0.0100	0.005	0.005	0.0003	0.0003	0.010	0.010	0.0010	0.0010	0.00020	0.00020	0.010000	0.010000	0.00500	0.00500	0.0100	0.0100	0.003	0.003	0.00100	0.00100
	SD	24.35	0.0982	0.15	46.25	0.0157	0.591	25.75	26.08	0.0224	0.0462	0.2178	5.260	5.133	3.172	3.002	0.262	0.275	0.129	0.129	0	0	0.0018	0.0018	0	0	0	0	0.0097	0.0097	0	0.0012	3.9E-05	3.9E-05	0.003092	0.003056	0.00236	0.00239	0.00354	0.00354	0	0	3.9E-05	0.00027
L1-02	Number of samples	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Minimum	15	0.30	0	36	0.06	0.6	37	18	0.02	0.02	0.12	3.58	3.45	2.18	2.13	0.60	0.57	0.33	0.33	0.0004	0.0004	0.002	0.002	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0003	0.0003	0.0007	0.0007	0.0016	0.0017	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	82	0.30	1	164	0.06	1.4	80	88	0.10	0.10	0.43	17.50	16.50	10.80	10.10	1.39	1.37	0.53	0.52	0.0004	0.0004	0.009	0.009	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0042	0.0028	0.0077	0.0073	0.001	0.001	0.003	0.003	0.0009	0.0021
	Mean	43.0	0.300	0.7	89.3	0.060	0.83	51.5	46.1	0.040	0.040	0.265	9.147	8.832	5.643	5.418	0.935	0.915	0.390	0.385	0.0004	0.0004	0.0052	0.0050	0.005	0.005	0.0003	0.0003	0.045	0.040	0.0010	0.0010	0.00030	0.00030	0.002450	0.001725	0.00412	0.00415	0.0010	0.0010	0.003	0.003	0.00090	0.00148
	Median	37.5	0.300	0.8	78.5	0.060	0.65	44.5	39.1	0.020	0.020	0.255	7.755	7.690	4.795	4.720	0.875	0.860	0.350	0.345	0.0004	0.0004	0.0050	0.0045	0.005	0.005	0.0003	0.0003	0.055	0.050	0.0010	0.0010	0.00030	0.00030	0.002450	0.001700	0.00360	0.00380	0.0010	0.0010	0.003	0.003	0.00090	0.00145
	SD	33.56	0.0000	0.34	63.51	0	0.386	19.36	34.40	0.0400	0.0400	0.1580	6.807	6.476	4.231	3.959	0.399	0.404	0.094	0.090	0	0	0.0033	0.0036	0	0	0	0	0.0238	0.0200	0	0	0	0	0.002021	0.001184	0.00304	0.00289	0	0	0	0	0	0.00067
L1-06	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	25	0.30	1	50	0.06	0.5	43	26	0.02	0.02	0.31	5.31	5.19	3.12	3.09	0.66	0.65	0.27	0.26	0.0004	0.0004	0.003	0.003	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0018	0.0014	0.0023	0.0024	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	25	0.30	1	50	0.06	0.5	43	26	0.02	0.02	0.31	5.31	5.19	3.12	3.09	0.66	0.65	0.27	0.26	0.0004	0.0004	0.003	0.003	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0018	0.0014	0.0023	0.0024	0.001	0.001	0.003	0.003	0.0009	0.0009
	Mean	25.0	0.300	0.6	50.0	0.060	0.50	43.0	26.1	0.020	0.020	0.310	5.310	5.190	3.120	3.090	0.660	0.650	0.270	0.260	0.0004	0.0004	0.0030	0.0030	0.005	0.005	0.0003	0.0003	0.060	0.050	0.0010	0.0010	0.00030	0.00030	0.001800	0.001400	0.00230	0.00240	0.0010	0.0010	0.003	0.003	0.00090	0.00090
	Median	25.0	0.300	0.6	50.0	0.060	0.50	43.0	26.1	0.020	0.020	0.310	5.310	5.190	3.120	3.090	0.660	0.650	0.270	0.260	0.0004	0.0004	0.0030	0.0030	0.005	0.005	0.0003	0.0003	0.060	0.050	0.0010	0.0010	0.00030	0.00030	0.001800	0.001400	0.00230	0.00240	0.0010	0.0010	0.003	0.003	0.00090	0.00090
	SD																																										
L1-08	Number of samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Minimum	9	0.30	1	26	0.09	0.9	31	12	0.02	0.02	0.31	2.27	2.31	1.41	1.38	0.52	0.50	0.43	0.41	0.0004	0.0004	0.002	0.002	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0018	0.0012	0.0013	0.0013	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	9	0.30	1	26	0.09	0.9	31	12	0.02	0.02	0.31	2.27	2.31	1.41	1.38	0.52	0.50	0.43	0.41	0.0004	0.0004	0.002	0.002	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.001	0.0003	0.0003	0.0018	0.0012	0.0013	0.0013	0.001	0.001	0.003	0.003	0.0009	0.0009
	Mean	9.0	0.300	1.0	26.0	0.090	0.90	31.0	11.5	0.020	0.020	0.310	2.270	2.310	1.410	1.380	0.520	0.500	0.430	0.410	0.0004	0.0004	0.0020	0.0020	0.005	0.005	0.0003	0.0003	0.060	0.050	0.0010	0.0010	0.00030	0.00030	0.001800	0.001200	0.00130	0.00130	0.0010	0.0010	0.003	0.003	0.00090	0.00090
	Median	9.0	0.300	1.0	26.0	0.090	0.90	31.0	11.5	0.020	0.020	0.310	2.270	2.310	1.410	1.380	0.520	0.500	0.430	0.410	0.0004	0.0004	0.0020	0.0020	0.005	0.005	0.0003	0.0003	0.060	0.050	0.0010	0.0010	0.00030	0.00030	0.001800	0.001200	0.00130	0.00130	0.0010	0.0010	0.003	0.003	0.00090	0.00090
	SD																																										
L2-03	Number of samples	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Minimum	37	0.30	1	74	0.06	0.5	30	39	0.02	0.02	0.41	7.96	8.08	4.66	4.88	0.69	0.69	0.35	0.34	0.0004	0.0004	0.003	0.003	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0003	0.0003	0.0055	0.0038	0.0036	0.0036	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	102	0.30	1	200	0.06	0.6	91	108	0.10	0.10	0.62	21.40	20.60	13.30	12.70	1.00	1.00	0.63	0.63	0.0004	0.0004	0.007	0.006	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.002	0.0003	0.0003	0.0098	0.0099	0.0099	0.0098	0.001	0.001	0.003	0.003	0.0009	0.0033
	Mean	81.5	0.300	0.7	161.8	0.060	0.53	73.3	85.3	0.042	0.040	0.513	16.940	16.945	10.340	10.270	0.858	0.858	0.508	0.502	0.0004	0.0004	0.0055	0.0053	0.005	0.005	0.0003	0.0003	0.040	0.040	0.0010	0.0013	0.00030	0.00030	0.007575	0.007300	0.00800	0.00792	0.0010	0.0010	0.003	0.003	0.00090	0.00243
	Median	93.5	0.300	0.7	186.5	0.060	0.50	86.0	97.1	0.025	0.020	0.510	19.200	19.550	11.700	11.750	0.870	0.870	0.525	0.520	0.0004	0.0004	0.0060	0.0060	0.005	0.005	0.0003	0.0003	0.050	0.050	0.0010	0.0010	0.00030	0.00030	0.007500	0.007750	0.00925	0.00915	0.0010	0.0010	0.003	0.003	0.00090	0.00275
	SD	29.94	0.0000	0.12	58.85	0.0000	0.050	29.03	31.40	0.0386	0.0400	0.0892	6.111	5.931	3.883	3.621	0.131	0.127	0.118	0.120	0	0	0.0017	0.0015	0	0	0	0	0.0200	0.0200	0	0.0005	0	0	0.002190	0.003045	0.00295	0.00290	0	0	0	0	0	0.00109
M0-01	Number of samples	7	7	7	7	7	7	7	7	7	5	7	7	7	7	7	7	7	7	7	5	5	7	7	5	5	5	5	7	7	7	7	7	7	7	7	7	7	5	5	7	7
	Minimum	21	0.05	0	44	0.06	0.5	41	22	0.01	0.02	0.14	4.17	4.13	2.79	2.82	0.39	0.37	0.18	0.19	0.0004	0.0004	0.002	0.001	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0011	0.0007	0.0018	0.0019	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	99	0.30	1	188	0.10	2.0	113	106	0.10	0.10	1.30	21.00	20.90	13.00	13.00	0.85	0.85	0.40	0.34	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.06	0.05	0.001	0.007	0.0003	0.0003	0.0198	0.0177	0.0100	0.0100	0.010	0.010	0.003	0.003	0.0010	0.0024
	Mean	75.3	0.229	0.6	141.7	0.077	1.10	83.4	79.6	0.040	0.052	0.507	15.667	15.476	9.670	9.703	0.663	0.653	0.313	0.307	0.0004	0.0004	0.0069	0.0067	0.005	0.005	0.0003	0.0003	0.017	0.016	0.0010	0.0027	0.00027	0.00027	0.007157	0.006629	0.00750

Knight Piésold CONSULTING

TABLE 5.4

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

MILNE INLET ROAD WATER QUALITY - IN SITU PARAMETERS AND CCME SPECIFIED PARAMETERS

		In Situ				General Parameters and Nutrients				Total and Dissolved Metals and Non-Metals																						CCME WQI[2]	
		Temp	SpC	DO	pH	NH_3+NH_4	NO_2^-	NO_3^-	Phenols	Aluminum		Arsenic		Cadmium		Copper		Iron		Lead		Mercury	Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc			
										Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.		
		(°C)	(mS/cm)	mg/L		mg/L N	mg/L N	mg/L N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	2005	2006
CCME Guideline Limits[1]					6.5 - 9.0	0.054-184.8[3]	0.06	13	0.0040	0.005 - 0.100[4]		0.0050		0.000017[5]		0.002-0.004[6]		0.3		0.001-0.007[7]		2.6E-05	0.073		0.025-0.150[8]		0.0010		0.0001		0.0008		0.03			
N1-020	Number of Samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	0.16	0.098	11.31	7.16	0.08	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	11.38	0.163	13.94	8.31	0.40	0.060	0.10	0.001	0.042	0.007	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.07	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	5.13	0.135	12.42	7.67	0.22	0.038	0.07	0.001	0.023	0.005	0.003	0.003	0.0001	0.0001	0.0009	0.0009	0.03	0.02	0.0005	0.0005	0.0001	0.0022	0.0022	0.003	0.003	0.003	0.003	0.0001	0.0001	0.0002	0.0002	0.005	0.005	Excellent	Excellent
	Median	5.15	0.138	12.30	7.52	0.20	0.060	0.05	0.001	0.027	0.005	0.005	0.005	0.0001	0.0001	0.0010	0.0008	0.03	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.003	0.002		
	SD	5.012	0.0234	1.160	0.493	0.1331	0.0301	0.027	0	0.0151	0.0012	0.0022	0.0022	0	0	0.00011	0.00011	0.021	0.005	0.00044	0.00044	0	0.00257	0.00257	0.0022	0.0022	0.0022	0.0022	0	0	0	0	0.0046	0.0046		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N1-025	Number of Samples	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2		
	Minimum	0.32	0.122	11.71	8.12	0.03	0.005	0.10	0.001	0.006	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01		
	Maximum	10.41	0.133	13.02	8.18	0.10	0.005	0.10	0.001	0.014	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01	-	100
	Mean	5.37	0.128	12.37	8.15	0.065	0.005	0.10	0.001	0.010	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01	-	Excellent
	Median	5.37	0.128	12.37	8.15	0.065	0.005	0.10	0.001	0.010	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01		
	SD	7.135	0.0078	0.926	0.042	0.0495	0	0	0	0.0057	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N1-030	Number of Samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	0.37	0.077	11.14	7.25	0.03	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	9.45	0.146	13.31	8.21	0.70	0.060	0.10	0.001	0.020	0.005	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	4.65	0.120	12.40	7.84	0.36	0.038	0.07	0.001	0.012	0.004	0.003	0.003	0.0001	0.0001	0.0009	0.0009	0.03	0.02	0.0005	0.0005	0.0001	0.0022	0.0022	0.003	0.003	0.003	0.003	0.0001	0.0001	0.0002	0.0002	0.005	0.006	Excellent	Excellent
	Median	4.25	0.120	12.57	8.00	0.40	0.060	0.05	0.001	0.010	0.004	0.005	0.005	0.0001	0.0001	0.0008	0.0008	0.03	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.005		
	SD	4.327	0.0286	0.915	0.369	0.3032	0.0301	0.027	0	0.0064	0.0005	0.0022	0.0022	0	0	0.00011	0.00011	0.005	0.005	0.00044	0.00044	0	0.00257	0.00257	0.0022	0.0022	0.0022	0.0022	0	0	0	0	0.0049	0.0041		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N1-040	Number of Samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	0.06	0.130	10.47	7.30	0.02	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	10.62	0.159	13.11	8.18	0.60	0.060	0.10	0.001	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.05	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	5.49	0.147	11.88	7.94	0.21	0.038	0.07	0.001	0.005	0.004	0.003	0.003	0.0001	0.0001	0.0009	0.0009	0.03	0.03	0.0005	0.0005	0.0001	0.0022	0.0022	0.003	0.003	0.003	0.003	0.0001	0.0001	0.0002	0.0002	0.006	0.005	Excellent	Excellent
	Median	5.55	0.149	11.85	8.06	0.11	0.060	0.05	0.001	0.005	0.004	0.005	0.005	0.0001	0.0001	0.0008	0.0008	0.03	0.03	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.005	0.002		
	SD	4.867	0.0111	1.173	0.362	0.2293	0.0301	0.027	0	0.0005	0.0005	0.0022	0.0022	0	0	0.00011	0.00011	0.012	0.012	0.00044	0.00044	0	0.00257	0.00257	0.0022	0.0022	0.0022	0.0022	0	0	0	0	0.0039	0.0048		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N1-050	Number of Samples	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	4	4	6	6		
	Minimum	0.04	0.104	10.95	7.54	0.04	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	9.36	0.308	13.80	8.36	0.60	0.060	0.10	0.001	0.026	0.005	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.05	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	4.35	0.218	12.66	8.09	0.27	0.042	0.07	0.001	0.010	0.004	0.004	0.004	0.0001	0.0001	0.0009	0.0009	0.03	0.03	0.0005	0.0005	0.0001	0.0019	0.0019	0.002	0.002	0.004	0.004	0.0001	0.0001	0.0002	0.0002	0.004	0.006	Excellent	Excellent
	Median	4.13	0.237	12.74	8.12	0.25	0.060	0.05	0.001	0.005	0.004	0.005	0.005	0.0001	0.0001	0.0008	0.0008	0.03	0.03	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.002	0.005		
	SD	3.935	0.0914	1.068	0.294	0.2083	0.0284	0.026	0	0.0090	0.0005	0.0021	0.0021	0	0	0.00010	0.00010	0.012	0.012	0.00041	0.00041	0	0.00243	0.00243	0.0021	0.0021	0.0021	0.0021	0	0	0	0	0.0045	0.0044		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N1-053	Number of Samples	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0	0	3	3		
	Minimum	-0.08	0.148	10.81	8.15	0.02	0.005	0.10	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01		
	Maximum	9.96	0.160	13.70	8.32	0.08	0.005	0.10	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01	-	100
	Mean	6.61	0.156	11.77	8.21	0.05	0.005	0.10	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01	-	Excellent
	Median	9.96	0.160	10.81	8.15	0.04	0.005	0.10	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01		
	SD	5.797	0.0069	1.669	0.098	0.0306	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N1-058	Number of Samples	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1		
	Minimum	9.58	0.135	12.99	8.11	0.06	0.005	0.10	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01		
	Maximum	9.58	0.135	12.99	8.11	0.06	0.005	0.10	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01	-	100
	Mean	9.58	0.135	12.99	8.11	0.06	0.005	0.10	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01	-	Excellent
	Median	9.58	0.135	12.99	8.11	0.06	0.005	0.10	0.001	0.005	0.005	0.001	0.001	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.001	0.001	0.0001	0.005	0.005	0.005	0.005	0.001	0.001	0.0001	0.0001			0.01	0.01		
	SD																																		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N1-060	Number of Samples	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	4	4	6	6		
	Minimum	-0.06	0.079	10.95	7.36	0.02	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	13.05	0.284	14.17	8.30	0.80	0.060	0.10	0.001	0.006	0.005	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.05	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	5.97	0.190	12.28	8.07	0.32	0.042	0.07	0.001	0.005	0.004	0.004	0.004	0.0001	0.0001	0.0009	0.0009	0.03	0.03	0.0005	0.0005	0.0001	0.0019	0.0019	0.002	0.002	0.004	0.004	0.0001	0.0001	0.0002	0.0002	0.005	0.004	Excellent	Excellent
	Median	6.65	0.222	12.08	8.24	0.25	0.060	0.05	0.001	0.005	0.004	0.005	0.005	0.0001	0.0001	0.0008	0.0008	0.03	0.03	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.003	0.002		
	SD	5.390	0.0825	1.376	0.369	0.3173	0.0284	0.026	0	0.0010	0.0005	0.0021	0.0021	0	0	0.00010	0.00010	0.012	0.012	0.00041	0.00041	0	0.00243	0.00243	0.0021	0.0021	0.0021	0.0021	0	0	0	0	0.0044	0.0044		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N1-070	Number of Samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	-0.05	0.067	10.32	7.58	0.04	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.002		
	Maximum	13.74	0.145	13.58	8.10	0.20	0.060	0.10	0.001	0.008	0.005	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	5.95	0.120	11.91	7.89	0.11	0.038	0.07	0.001	0.005	0.004	0.003	0.003	0.0001	0.0001	0.0009	0.0009	0.02	0.02	0.0005	0.0005	0.0001	0.0022	0.0022	0.003	0.003	0.003	0.003	0.0001	0.0001	0.0002	0.0002	0.005	0.007	Excellent	Excellent
	Median	6.05	0.137	11.89	8.02	0.10	0.060	0.06	0.001	0.005	0.004	0.005	0.005	0.0001	0.0001	0.0009	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.001	0.009		
	SD	5.990	0.0322	1.421	0.231	0.0574	0.0301	0.026	0	0.0016	0.0005	0.0022	0.0022	0	0	0.00010	0.00011	0.005	0.005	0.00044	0.00044	0	0.00257	0.00257	0.0022	0.0022	0.0022	0.0022	0	0	0	0	0.0049	0.0040		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

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TABLE 5.4

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

MILNE INLET ROAD WATER QUALITY - IN SITU PARAMETERS AND CCME SPECIFIED PARAMETERS

		In Situ				General Parameters and Nutrients				Total and Dissolved Metals and Non-Metals																						CCME WQI[2]	
		Temp	SpC	DO	pH	NH_3+NH_4	NO_2^-	NO_3^-	Phenols	Aluminum		Arsenic		Cadmium		Copper		Iron		Lead		Mercury	Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc			
										Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	Tot.	Diss.	2005	2006
		(°C)	(mS/cm)	mg/L		mg/L N	mg/L N	mg/L N	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
CCME Guideline Limits[1]					6.5 - 9.0	0.054-184.8[3]	0.06	13	0.0040	0.005 - 0.100[4]		0.0050		0.000017[5]		0.002-0.004[6]		0.3		0.001-0.007[7]		2.6E-05	0.073		0.025-0.150[8]		0.0010		0.0001		0.0008		0.03			
N1-080	Number of Samples	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	4	4	8	8		
	Minimum	-0.10	0.047	10.39	6.99	0.04	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	14.96	0.318	13.65	8.39	0.60	0.060	0.10	0.001	0.007	0.005	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.05	0.05	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	5.68	0.169	12.29	7.89	0.22	0.033	0.08	0.001	0.005	0.005	0.003	0.003	0.0001	0.0001	0.0009	0.0009	0.03	0.03	0.0006	0.0006	0.0001	0.0027	0.0027	0.003	0.003	0.003	0.003	0.0001	0.0001	0.0002	0.0002	0.006	0.006	Excellent	Excellent
	Median	2.43	0.164	13.11	8.01	0.15	0.033	0.08	0.001	0.005	0.005	0.003	0.003	0.0001	0.0001	0.0009	0.0009	0.03	0.03	0.0006	0.0006	0.0001	0.0027	0.0027	0.003	0.003	0.003	0.003	0.0001	0.0001	0.0002	0.0002	0.006	0.007		
	SD	6.856	0.1134	1.560	0.582	0.2173	0.0294	0.027	0	0.0010	0.0005	0.0021	0.0021	0	0	0.00011	0.00011	0.012	0.012	0.00043	0.00043	0	0.00251	0.00251	0.0021	0.0021	0.0021	0.0021	0	0	0	0	0.0048	0.0043		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N1-090	Number of Samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	1.45	0.094	10.16	7.53	0.03	0.005	0.05	0.001	0.004	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.002		
	Maximum	14.69	0.380	12.78	8.40	0.20	0.060	0.10	0.001	0.011	0.005	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.03	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	6.46	0.254	11.57	7.95	0.13	0.038	0.07	0.001	0.006	0.004	0.003	0.003	0.0001	0.0001	0.0009	0.0009	0.02	0.02	0.0005	0.0005	0.0001	0.0022	0.0022	0.003	0.003	0.003	0.003	0.0001	0.0001	0.0002	0.0002	0.005	0.006	Excellent	Excellent
	Median	4.90	0.293	12.09	7.98	0.20	0.060	0.05	0.001	0.005	0.004	0.005	0.005	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.003	0.004		
	SD	5.722	0.1192	1.109	0.335	0.0904	0.0301	0.027	0	0.0028	0.0005	0.0022	0.0022	0	0	0.00011	0.00011	0.005	0.005	0.00044	0.00044	0	0.00257	0.00257	0.0022	0.0022	0.0022	0.0022	0	0	0	0	0.0046	0.0041		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N1-100	Number of Samples	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5		
	Minimum	0.74	0.019	11.62	7.02	0.04	0.005	0.05	0.001	0.020	0.004	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.001		
	Maximum	9.35	0.088	13.40	7.60	0.50	0.060	0.10	0.001	0.043	0.013	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.07	0.06	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	5.12	0.060	12.54	7.36	0.22	0.041	0.07	0.001	0.030	0.007	0.003	0.003	0.0001	0.0001	0.0009	0.0009	0.04	0.03	0.0005	0.0005	0.0001	0.0022	0.0022	0.003	0.003	0.003	0.003	0.0001	0.0001	0.0002	0.0002	0.005	0.005	Excellent	Excellent
	Median	6.59	0.081	12.71	7.38	0.10	0.060	0.05	0.001	0.025	0.006	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.04	0.03	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.002	0.002		
	SD	3.773	0.0327	0.681	0.251	0.2159	0.0270	0.027	0	0.0103	0.0036	0.0022	0.0022	0	0	0.00009	0.00009	0.019	0.017	0.00044	0.00044	0	0.00257	0.00257	0.0022	0.0022	0.0022	0.0022	0	0	0	0	0.0046	0.0046		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
N1-110	Number of Samples	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	4	4	6	6		
	Minimum	1.99	0.019	10.40	7.02	0.02	0.005	0.05	0.001	0.010	0.005	0.001	0.001	0.0001	0.0001	0.0008	0.0008	0.02	0.02	0.0002	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.001	0.001	0.0001	0.0001	0.0002	0.0002	0.001	0.002		
	Maximum	9.54	0.082	13.55	8.07	0.70	0.060	0.12	0.003	0.075	0.011	0.005	0.005	0.0001	0.0001	0.0010	0.0010	0.06	0.03	0.0010	0.0010	0.0001	0.0050	0.0050	0.005	0.005	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.010	0.010	100	100
	Mean	5.53	0.058	11.63	7.63	0.37	0.044	0.09	0.001	0.044	0.008	0.004	0.004	0.0001	0.0001	0.0009	0.0009	0.04	0.02	0.0005	0.0005	0.0001	0.0019	0.0019	0.002	0.002	0.004	0.004	0.0001	0.0001	0.0002	0.0002	0.005	0.005	Excellent	Excellent
	Median	5.38	0.076	11.31	7.57	0.45	0.060	0.10	0.001	0.045	0.008	0.005	0.005	0.0001	0.0001	0.0008	0.0008	0.04	0.02	0.0003	0.0002	0.0001	0.0003	0.0003	0.001	0.001	0.005	0.005	0.0001	0.0001	0.0002	0.0002	0.003	0.004		
	SD	2.812	0.0306	1.312	0.396	0.2914	0.0256	0.031	0.0008	0.0322	0.0026	0.0021	0.0021	0	0	0.00010	0.00010	0.017	0.005	0.00039	0.00041	0	0.00243	0.00243	0.0021	0.0021	0.0021	0.0021	0	0	0	0	0.0041	0.0037		
	Guideline Exceedances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 5.2 to 5.9.xls]Table 5.4 Milne CCME
01-Dec-06

Notes:
1. Freshwater Guidelines for the Protection of Aquatic Life - Canadian Council of Ministers of the Environment (CCME), Canadian Environmental Guideline (CCME, 2006a).
2. CCME WQI - Canadian Water Quality Guidelines for the Protection of Aquatic Life, CCME Water Quality Index (CCME, 2001).
3. Water quality guideline limits for total ammonia are dependent upon both temperature and pH, see the CCME guidelines for more details.
4. Aluminum (Al) guideline limits are dependent upon pH. The lower limit of 0.005 mg/L corresponds to a pH <6.5, the upper limit of 0.1 mg/L corresponds to a pH >6.5.
5. Cadmium (Cd) guideline limits are 0.000017 mg/L, or calculated via the following formula: Cd=10^(0.86(log(hardness))-3.2).
6. Copper (Cu) guideline limits are hardness (mg/L $CaCO_3$) dependent: 0.002 mg/L corresponds to a hardness <120 mg/L; 0.003 mg/L corresponds to a hardness between 120 and 180 mg/L; 0.004 mg/L corresponds to a hardness >180 mg/L.
7. Nickel (Ni) guideline limits are hardness (mg/L $CaCO_3$) dependent: 0.025 mg/L corresponds to a hardness < 60 mg/L; 0.065 mg/L corresponds to a hardness between 60 and 120 mg/L; 0.110 mg/L corresponds to a hardness between 120 and 180 mg/L; and 0.150 mg/L corresponds to a hardness >180 mg/L.
8. Lead (Pb) guideline limits are hardness (mg/L $CaCO_3$) dependent: 0.001 mg/L corresponds to a hardness < 60 mg/L; 0.002 mg/L corresponds to a hardness between 60 and 120 mg/L; 0.004 mg/L corresponds to a hardness between 120 and 180 mg/L; and 0.007 mg/L corresponds to a hardness >180 mg/L.

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TABLE 5.5

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

MILNE INLET ROAD WATER QUALITY - NON-CCME SPECIFIED GENERAL PARAMETERS, NUTRIENTS AND TOTAL AND DISSOLVED METALS

		General Parameters and Nutrients											Total and Dissolved Metals and Non-Metals																											
		Alkalinity	Br	Cl	Conductivity	NO_2+NO_3	SO_4	TDS	Hardness	Phosphorus		Turbidity	Calcium		Magnesium		Potassium		Sodium		Antimony		Barium		Beryllium		Bismuth		Boron		Chromium		Cobalt		Manganese		Strontium		Tin		Titanium		Vanadium	
		mg/L $CaCO_3$	mg/L	mg/L	uS/cm	mg/L N	mg/L	mg/L	mg/L $CaCO_3$	Tot. mg/L	Diss. mg/L	NTU	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L	Tot. mg/L	Diss. mg/L
N1-020	Number of Samples	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5	5	5	3	3	5	5	3	3	3	3	5	5	5	5	5	5	5	5	3	3	5	5
	Minimum	48	0.05	0.5	103	0.06	0.7	57	53.1	0.01	0.02	0.14	12.8	12.1	5.15	5.37	0.30	0.22	0.35	0.35	0.0004	0.0004	0.002	0.002	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0007	0.0007	0.0067	0.0070	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	84	0.30	4.0	168	0.10	2.0	110	90.2	0.10	0.10	5.30	25.3	25.0	6.68	6.50	0.66	0.68	1.68	1.67	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.001	0.0003	0.0003	0.0163	0.0154	0.0195	0.0195	0.010	0.010	0.003	0.003	0.0010	0.0029
	Mean	70.8	0.20	1.82	142.4	0.076	1.22	83.0	73.96	0.032	0.047	1.530	19.94	19.28	6.076	6.054	0.402	0.390	0.798	0.800	0.0004	0.0004	0.0056	0.0054	0.005	0.005	0.0003	0.0003	0.018	0.020	0.001	0.001	0.00026	0.00026	0.00758	0.00736	0.01368	0.01402	0.0046	0.0046	0.003	0.003	0.00094	0.00172
	Median	73.0	0.30	1.40	151.0	0.060	1.00	90.0	75.00	0.020	0.020	0.500	20.00	20.00	6.000	6.000	0.310	0.310	0.720	0.730	0.0004	0.0004	0.0030	0.0030	0.005	0.005	0.0003	0.0003	0.010	0.010	0.001	0.001	0.00030	0.00030	0.01000	0.01000	0.01320	0.01400	0.0010	0.0010	0.003	0.003	0.00090	0.00100
	SD	13.7	0.137	1.368	24.33	0.0219	0.526	23.49	13.897	0.0383	0.0462	2.1628	4.541	4.757	0.6038	0.4451	0.1559	0.1803	0.5275	0.5352	0	0	0.0040	0.0042	0	0	0	0	0.0179	0.0173	0	0	5.5E-05	5.5E-05	0.00670	0.00647	0.00471	0.00457	0.00493	0.00493	0	0	5.5E-05	0.00103
N1-025	Number of Samples	2	2	2	2	2	2	2	2	2	0	2	2	2	2	2	2	2	2	2	0	0	2	2	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
	Minimum	67	0.05	1	125	0.1	1.0	81	65.0	0.01		0.60	16.0	16.0	6.00	6.00	0.35	0.26	0.34	0.28			0.01	0.01					0.01	0.01	0.001	0.001	0.0002	0.0002	0.01	0.01	0.0100	0.0110	0.01	0.01			0.001	0.001
	Maximum	72	0.05	1	145	0.1	2.0	94	73.0	0.01		0.70	17.0	16.0	7.00	8.00	0.51	0.52	0.61	0.64			0.01	0.01					0.01	0.01	0.001	0.001	0.0002	0.0002	0.01	0.01	0.0120	0.0120	0.01	0.01			0.001	0.001
	Mean	69.5	0.05	1	135.0	0.1	1.50	87.5	69.00	0.01		0.650	16.50	16.00	6.500	7.000	0.430	0.390	0.475	0.460			0.01	0.01					0.010	0.010	0.001	0.001	0.0002	0.0002	0.01	0.01	0.01100	0.01150	0.01	0.01			0.001	0.001
	Median	69.5	0.05	1	135.0	0.1	1.50	87.5	69.00	0.01		0.650	16.50	16.00	6.500	7.000	0.430	0.390	0.475	0.460			0.01	0.01					0.010	0.010	0.001	0.001	0.0002	0.0002	0.01	0.01	0.01100	0.01150	0.01	0.01			0.001	0.001
	SD	3.5	0	0	14.14	0	0.707	9.19	5.657	0		0.0707	0.707	0.000	0.7071	1.4142	0.1131	0.1838	0.1909	0.2546			0	0					0	0	0	0	0	0	0	0	0.00141	0.00071	0	0			0	0
N1-030	Number of Samples	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5	5	3	3	5	5	3	3	3	3	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5
	Minimum	39	0.05	0.3	83	0.06	0.5	60	39.8	0.01	0.02	0.14	8.7	9.5	4.37	4.64	0.41	0.29	0.30	0.27	0.0004	0.0004	0.002	0.002	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0008	0.0007	0.0038	0.0041	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	81	0.30	1.1	159	0.10	2.0	103	82.0	0.10	0.10	1.00	19.0	18.0	9.00	9.00	0.65	0.70	0.53	0.59	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.001	0.0003	0.0003	0.0157	0.0145	0.0110	0.0110	0.010	0.010	0.003	0.003	0.0010	0.0026
	Mean	64.6	0.20	0.80	126.2	0.076	0.92	77.8	65.76	0.034	0.047	0.516	15.11	14.64	7.072	6.950	0.508	0.500	0.372	0.380	0.0004	0.0004	0.0062	0.0062	0.005	0.005	0.0003	0.0003	0.018	0.020	0.001	0.001	0.00026	0.00026	0.00756	0.00722	0.00794	0.00788	0.0046	0.0046	0.003	0.003	0.00094	0.00158
	Median	68.0	0.30	1.00	132.0	0.060	0.60	75.0	68.70	0.020	0.020	0.450	15.60	15.70	7.250	7.260	0.470	0.460	0.330	0.360	0.0004	0.0004	0.0050	0.0050	0.005	0.005	0.0003	0.0003	0.010	0.010	0.001	0.001	0.00030	0.00030	0.01000	0.01000	0.00800	0.00800	0.0010	0.0010	0.003	0.003	0.00090	0.00100
	SD	15.9	0.137	0.339	28.94	0.0219	0.638	15.90	17.780	0.0371	0.0462	0.3174	4.084	3.424	1.9353	1.6843	0.1031	0.1620	0.0950	0.1255	0	0	0.0036	0.0036	0	0	0	0	0.0179	0.0173	0	0	5.5E-05	5.5E-05	0.00638	0.00614	0.00264	0.00248	0.00493	0.00493	0	0	5.5E-05	0.00084
N1-040	Number of Samples	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5	5	3	3	5	5	3	3	3	3	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5
	Minimum	70	0.05	0.4	140	0.06	1.0	66	75.0	0.01	0.02	0.13	20.0	20.0	5.00	5.00	0.15	0.14	0.23	0.23	0.0004	0.0004	0.001	0.001	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0007	0.0007	0.0150	0.0150	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	81	0.30	1.0	161	0.10	2.0	99	92.1	0.10	0.10	0.40	26.0	24.2	6.59	6.66	0.39	0.36	0.36	0.41	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.001	0.0003	0.0003	0.0100	0.0100	0.0178	0.0180	0.010	0.010	0.003	0.003	0.0010	0.0028
	Mean	76.8	0.20	0.74	151.6	0.076	1.50	82.0	82.08	0.044	0.047	0.270	23.42	22.90	5.518	5.688	0.252	0.238	0.284	0.290	0.0004	0.0004	0.0048	0.0048	0.005	0.005	0.0003	0.0003	0.018	0.020	0.001	0.001	0.00026	0.00026	0.00512	0.00486	0.01678	0.01696	0.0046	0.0046	0.003	0.003	0.00094	0.00158
	Median	77.0	0.30	0.80	152.0	0.060	1.50	80.0	82.10	0.030	0.020	0.300	24.00	23.10	5.400	5.450	0.190	0.180	0.240	0.240	0.0004	0.0004	0.0020	0.0020	0.005	0.005	0.0003	0.0003	0.010	0.010	0.001	0.001	0.00030	0.00030	0.00402	0.00290	0.01700	0.01720	0.0010	0.0010	0.003	0.003	0.00090	0.00100
	SD	4.3	0.137	0.279	7.70	0.0219	0.374	13.17	6.489	0.0365	0.0462	0.1058	2.198	1.720	0.6532	0.6520	0.1096	0.1035	0.0650	0.0815	0	0	0.0048	0.0048	0	0	0	0	0.0179	0.0173	0	0	5.5E-05	5.5E-05	0.00464	0.00478	0.00106	0.00115	0.00493	0.00493	0	0	5.5E-05	0.00087
N1-050	Number of Samples	6	6	6	6	6	6	6	6	6	4	6	6	6	6	6	6	6	6	6	4	4	6	6	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	4	4	6	6
	Minimum	52	0.05	0.6	105	0.06	0.6	57	54.2	0.01	0.02	0.10	13.0	12.3	5.29	5.67	0.34	0.34	0.37	0.34	0.0004	0.0004	0.002	0.002	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0007	0.0007	0.0068	0.0070	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	156	0.30	1.9	298	0.10	2.5	170	177.0	0.10	0.10	0.90	39.8	37.4	18.70	17.30	0.54	0.52	1.15	1.10	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.002	0.0003	0.0003	0.0100	0.0100	0.0198	0.0190	0.010	0.010	0.003	0.003	0.0010	0.0046
	Mean	116.5	0.22	1.25	219.2	0.073	1.78	126.2	122.37	0.043	0.060	0.395	28.38	27.37	12.698	12.378	0.482	0.475	0.725	0.715	0.0004	0.0004	0.0060	0.0060	0.005	0.005	0.0003	0.0003	0.017	0.018	0.001	0.0015	0.00027	0.00027	0.00500	0.00468	0.01458	0.01448	0.0040	0.0040	0.003	0.003	0.00093	0.00275
	Median	137.5	0.30	1.05	247.0	0.060	2.00	141.5	136.00	0.020	0.060	0.215	31.65	31.35	14.100	14.150	0.515	0.515	0.670	0.675	0.0004	0.0004	0.0050	0.0050	0.005	0.005	0.0003	0.0003	0.010	0.010	0.001	0.0015	0.00030	0.00030	0.00430	0.00335	0.01600	0.01655	0.0010	0.0010	0.003	0.003	0.00090	0.00270
	SD	47.3	0.129	0.532	85.36	0.0207	0.773	48.65	52.821	0.0441	0.0462	0.3721	11.394	11.016	5.8211	5.2724	0.0763	0.0731	0.3363	0.3201	0	0	0.0033	0.0033	0	0	0	0	0.0163	0.0160	0	0.0005	5.2E-05	5.2E-05	0.00477	0.00460	0.00528	0.00530	0.00465	0.00465	0	0	5.2E-05	0.00196
N1-053	Number of Samples	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3	3	3	3	0	0	3	3	0	0	0	0	3	3	3	3	3	3	3	3	3	3	3	0	0	3	3
	Minimum	80	0.05	1	161	0.1	2.0	105	85.0	0.01		0.20	24.0	24.0	5.00	5.00	0.15	0.15	0.22	0.24			0.01	0.01					0.01	0.01	0.001	0.001	0.0002	0.0002	0.01	0.01	0.0180	0.0180	0.01	0.01			0.001	0.001
	Maximum	85	0.05	1	165	0.1	3.0	107	86.0	0.01		0.50	26.0	26.0	6.00	6.00	0.24	0.24	0.34	0.32			0.01	0.01					0.01	0.01	0.001	0.001	0.0002	0.0002	0.01	0.01	0.0190	0.0190	0.01	0.01			0.001	0.001
	Mean	83.3	0.05	1	163.3	0.1	2.33	106.3	85.67	0.010		0.300	25.00	25.33	5.333	5.333	0.180	0.180	0.263	0.267			0.01	0.01					0.010	0.010	0.001	0.001	0.0002	0.0002	0.01	0.01	0.01833	0.01867	0.01	0.01			0.001	0.001
	Median	85.0	0.05	1	164.0	0.1	2.00	107.0	86.00	0.010		0.200	25.00	26.00	5.000	5.000	0.150	0.150	0.230	0.240			0.01	0.01					0.010	0.010	0.001	0.001	0.0002	0.0002	0.01	0.01	0.01800	0.01900	0.01	0.01			0.001	0.001
	SD	2.9	0.000	0	2.08	0	0.577	1.15	0.577	0.0000		0.1732	1.000	1.155	0.5774	0.5774	0.0520	0.0520	0.0666	0.0462			0	0					0	0	0	0	0	0	0	0	0.00058	0.00058	0	0			0	0
N1-058	Number of Samples	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1
	Minimum	73	0.05	1	139	0.10	1	90	71	0.01		0.7	22	22	4.00	4.00	0.16	0.15	0.25	0.23			0.01	0.01					0.01	0.01	0.001	0.001	0.0002	0.0002	0.01	0.01	0.016	0.015	0.01	0.01			0.001	0.001
	Maximum	73	0.05	1	139	0.10	1	90	71	0.01		0.7	22	22	4.00	4.00	0.16	0.15	0.25	0.23			0.01	0.01					0.01	0.01	0.001	0.001	0.0002	0.0002	0.01	0.01	0.016	0.015	0.01	0.01			0.001	0.001
	Mean	73.0	0.05	1	139.0	0.100	1	90	71	0.01		0.7	22	22	4.000	4.000	0.160	0.150	0.250	0.230			0.01	0.01					0.01	0.01	0.001	0.001	0.0002	0.0002	0.01	0.01	0.016	0.015	0.01	0.01			0.001	0.001
	Median	73.0	0.05	1	139.0	0.100	1	90	71	0.01		0.7	22	22	4.000	4.000	0.160	0.150	0.250	0.230			0.01	0.01					0.01	0.01	0.001	0.001	0.0002	0.0002	0.01	0.01	0.016	0.015	0.01	0.01			0.001	0.001
	SD																																										
N1-060	Number of Samples	6	6	6	6	6	6	6	6	6	4	5	6	6	6	6	6	6	6	6	4	4	6	6	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	4	4	6	6
	Minimum	40	0.05	0.2	83	0.06	0.6	63	41.0	0.01	0.02	0.10	13.2	13.1	1.91	2.09	0.22	0.20	0.27	0.27	0.0004	0.0004	0.001	0.001	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0007	0.0007	0.0098	0.0099	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	141	0.30	1.0	269	0.10	2.0	159	160.0	0.10	0.10	0.50	44.7	42.4	11.70	11.00	0.28	0.28	0.36	0.34	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.002	0.0003	0.0004	0.0100	0.0100	0.0293	0.0281	0.010	0.010	0.003	0.003	0.0010	0.0044
	Mean	100.5	0.22	0.65	195.0	0.073	1.18	109.8	106.67	0.030	0.040	0.274	31.23	31.08	7.200	7.243	0.260	0.258	0.305	0.298	0.0004	0.0004	0.0048	0.0047	0.005	0.005	0.0003	0.0003	0.017	0.020	0.001	0.0013	0.00027	0.00028	0.00395	0.00390	0.02125	0.02127	0.0040	0.0040	0.003	0.003	0.00093	0.00263
	Median	119.5	0.30	0.75	235.0	0.060	0.90	121.5	125.00	0.020	0.020	0.270	35.75	37.50	8.795	9.090	0.265	0.265	0.310	0.300	0.0004	0.0004	0.0030	0.0025	0.005	0.005	0.0003	0.0003	0.010	0.015	0.001	0.0010	0.00030	0.00030	0.00115	0.00100	0.02320	0.02480	0.0010	0.0010	0.003	0.003	0.00090	0.00260
	SD	43.5	0.129	0.378	79.88	0.0207	0.608	37.15	48.455	0.0346	0.0400	0.1785	13.003	12.968	3.8525	3.7229	0.0210	0.0299	0.0333	0.0240	0	0	0.0041	0.0042	0	0	0	0	0.0163	0.0155	0	0.0005	5.2E-05	7.5E-05	0.00470	0.00473	0.00815	0.00815	0.00465	0.00465	0	0	5.2E-05	0.00183
N1-070	Number of Samples	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5	5	3	3	5	5	3	3	3	3	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5
	Minimum	33	0.05	0.8	72	0.06	0.5	54	32.4	0.01	0.02	0.16	8.9	9.6	2.49	2.67	0.45	0.46	0.30	0.34	0.0004	0.0004	0.001	0.001	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0009	0.0007	0.0057	0.0061	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	74	0.30	1.0	149	0.10	2.0	91	82.0	0.10	0.10	0.50	18.5	18.3	8.71	8.24	0.62	0.61	0.54	0.52	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.001	0.0003	0.0003	0.0100	0.0100	0.0100	0.0100	0.010	0.010	0.003	0.003	0.0010	0.0027
	Mean	62.8	0.20	0.92	125.6	0.076	0.96	77.2	65.98	0.032	0.047	0.308	15.33	15.02	6.886	6.742	0.506	0.512	0.478	0.476	0.0004	0.0004	0.0058	0.0058	0.005	0.005	0.0003	0.0003	0.018	0.020	0.001	0.001	0.00026	0.00026	0.00580	0.00564	0.00878	0.00866	0.0046	0.0046	0.003	0.003	0.00094	0.00156
	Median	71.0	0.30	0.90	140.0	0.060	0.70	81.0	75.00	0.020	0.020	0.300	17.00	17.00	8.000	7.800	0.490	0.490	0.520	0.510	0.0004	0.0004	0.0040	0.0040	0.005	0.005	0.0003	0.0003	0.010	0.010	0.001	0.001	0.00030	0.00030	0.00710	0.00680	0.00940	0.00920	0.0010	0.0010	0.003	0.003	0.00090	0.00100
	SD	17.4	0.137	0.084	31.36	0.0219	0.611	14.41	20.452	0.0383	0.0462	0.1252	4.040	3.629	2.5354	2.3234	0.0666	0.0589	0.1006	0.0770	0	0	0.0040	0.0040	0	0	0	0	0.0179	0.0173	0	0	5.5E-05	5.5E-05	0.00458	0.00469	0.00176	0.00165	0.00493	0.00493	0	0	5.5E-05	0.00083
N1-080	Number of Samples	8	8	8	8	8	8	8	8	8	4	8	8	8	8	8	8	8	8	8	4	4	8	8	4	4	4	4	8	8	8	8	8	8	8	8	8	8	8	4	4	8	8
	Minimum	23	0.05	0.7	49	0.06	0.5	31	24.7	0.01	0.02	0.10	6.0	6.1	2.38	2.47	0.38	0.39	0.31	0.29	0.0004	0.0004	0.001	0.001	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0007	0.0007	0.0026	0.0027	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	167	0.30	2.4	303	0.10	2.1	200	178.0	0.10	0.10	0.60	42.9	40.5	17.20	16.00	0.78	0.76	2.04	1.96	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003	0.05	0.05	0.001	0.002	0.0003	0.0003	0.0100	0.0100	0.0235	0.0230	0.010	0.010	0.003	0.003	0.0010	0.0047
	Mean	91.0	0.18	1.11	174.4	0.080	1.25	109.9	95.35	0.030	0.040	0.354	23.36	23.23	9.111	8.909	0.605	0.616	0.938	0.928	0.0004	0.0004	0.0069	0.0068	0.005	0.005	0.0003	0.0003	0.020	0.021	0.001	0.0013	0.00025	0.00025	0.00589	0.00574	0.01294	0.01291	0.0055	0.0055	0.003	0.003	0.00095	0.00187
	Median	87.5	0.18	1.00	175.0	0.080	1.00	93.5	93.00	0.015	0.020	0.385	22.45	23.00	8.950	9.000	0.645	0.665	0.810	0.855	0.0004	0.0004	0.0085	0.0085	0.005	0.005	0.0003	0.0003	0.010	0.010	0.001	0.0010	0.00025	0.00025	0.00645	0.00615	0.01185	0.01210	0.0055	0.0055	0.003	0.003	0.00095	0.00100
	SD	62.0	0.134	0.530	111.25	0.0214	0.672	68.36	64.538	0.0316	0.0400	0.1903	16.160	15.828	5.9953	5.6734	0.1477	0.1512	0.6607	0.6367	0	0	0.0039	0.0040	0	0	0	0	0.0185	0.0181	0	0.00046	5.3E-05	5.3E-05	0.00447	0.00459	0.00989	0.00972	0.00481	0.00481	0	0	5.3E-05	0.00168
N1-090	Number of Samples	5	5	5	5	5	5	5	5	5	3	5	5	5	5	5	5	5	5	5	3	3	5	5	3	3	3	3	5	5	5	5	5	5	5	5	5	5	5	3	3	5	5
	Minimum	50	0.05	0.4	105	0.06	0.5	63	54.9	0.01	0.02	0.10	14.8	14.1	4.38	4.69	0.27	0.28	0.28	0.28	0.0004	0.0004	0.002	0.001	0.005	0.005	0.0003	0.0003	0.01	0.01	0.001	0.001	0.0002	0.0002	0.0007	0.0007	0.0076	0.0078	0.001	0.001	0.003	0.003	0.0009	0.0009
	Maximum	195	0.30	1.2	361	0.10	1.0	224	209.0	0.10	0.10	0.50	53.0	52.0	18.80	17.70	0.92	0.99	0.60	0.59	0.0004	0.0004	0.010	0.010	0.005	0.005	0.0003	0.0003

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TABLE 5.6

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SOIL QUALITY RESULTS

Sample No.	Electrical Conductivity (mS/cm)	pH	SAR[1]	Total Kjeldahl N (%)	TOC[2] (%)	As (µg/g)	Ba (µg/g)	Cd (µg/g)	Cµ (µg/g)	Fe (µg/g)	Pb (µg/g)	Mn (µg/g)	Hg (µg/g)	Mb (µg/g)	S (%)	Zn (µg/g)	P[3] (ppm)	K[4] (ppm)	Mg[4] (ppm)	Na[4] (ppm)	Ca[4] (ppm)
Guidelines[5]	**2**	**6 to 8**	**5**		**n/a**	**12**	**750**	**1.4**	**63**	**n/a**	**70**		**6.6**	**5**		**200**					
Guidelines[6]	**2**	**6 to 8**	**5**		**n/a**	**12**	**500**	**10**	**63**	**n/a**	**140**		**6.6**	**10**		**200**					
MDL[7]	**0.01**		**0.01**	**0.01**	**0.01**	**1**	**1**	**0.5**	**1**	**1**	**1**	**1**	**0.1**	**1**	**0.01**	**1**	**1**	**1**	**5**	**1**	**10**
1	0.03	7.0	0.41	0.06	1.39	<1.0	15	<0.5	8	8620	7	137	<0.1	<1	<0.01	17	4	42	143	48	831
2	0.09	6.8	0.31	0.63	5.38	<1.0	17	<0.5	6	5640	4	94	<0.1	<1	0.03	15	5	36	336	51	1490
3	0.13	6.4	0.37	1.71	29.00	5.5	83	0.80	**188**	17400	26	305	0.1	**7**	0.29	63	4	61	227	52	1100
4	0.03	7.5	0.32	0.03	0.40	<1.0	30	<0.5	55	21600	12	303	<0.1	2	<0.01	52	1	24	136	33	566
11	0.02	7.2	0.54	0.01	0.15	<1.0	22	<0.5	6	18600	6	225	<0.1	2	<0.01	21	2	15	80	44	364
6	0.06	7.1	0.23	0.19	3.02	<1.0	10	<.05	4	4900	4	100	<0.1	<1	0.02	13	4	36	303	37	1520
7	0.03	6.7	0.34	0.10	1.35	1.6	20	<.05	7	16400	6	296	<0.1	<1	0.02	21	3	26	219	42	809
8	0.02	7.4	0.66	0.02	0.21	<1.0	5	<.05	2	3010	2	48	<0.1	<1	<0.01	7	1	15	67	49	309
9	0.05	6.2	0.26	0.50	3.17	<1.0	29	<.05	6	12100	3	255	<0.1	<1	0.03	12	4	24	383	33	598
10	0.05	6.7	0.30	0.19	3.18	<1.0	18	<.05	8	6790	5	124	<0.1	<1	0.03	14	2	35	325	49	1450

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Table 5.6.xls]Soil Results
1-Dec-06

Notes:
1. SAR = Sodium Absorption Ratio.
2. TOC = Total Organic Carbon.
3. $NaHCO_3$ Extractable.
4. NH_4 Acetate Extractable.
5. Canadian Soil Quality Guidelines - Agricultural (CCME, 2006b).
6. Canadian Soil Quality Guidelines - Residential/Parkland (CCME, 2006b).
7. Method Detection Limit.
8. Bold indicates that the sample is in excess of the Canadian Soil Quality Guidelines Limit for that parameter.

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TABLE 5.7

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SEDIMENT QUALITY RESULTS

Sample ID	Sample Date	Moisture %	TOC leco %	NO_2 %	NO_3 %	NO_2+NO_3 as N %	Hg µg/g	Ag µg/g	Al µg/g	As µg/g	B µg/g	Ba µg/g	Be µg/g	Bi µg/g	Ca µg/g	Cd µg/g	Co µg/g	Cr µg/g	Cu µg/g	Fe µg/g	K µg/g	Mg µg/g	Mn µg/g	Mo µg/g	Na µg/g	Ni µg/g	P µg/g	Pb µg/g	Sb µg/g	Se µg/g	Sn µg/g	Sr µg/g	Ti µg/g	Tl µg/g	V µg/g	Zn µg/g
CCME[1]	ISQG						0.17			5.9						0.6		37.3	35.7									35								123
	PEL						0.486			17						3.5		90	197									91.3								315
Streams that drain into Camp Lake																																			
FS-01	10-Aug-05	24.8	0.53	< 0.01	< 0.01	< 0.01	< 0.1	< 0.1	7000	0.38	4	17	0.3	< 0.3	1900	0.059	7.3	30	**64**	12000	880	8800	170	0.5	39	27	240	4.8	0.9	0.2	9	2.0	430	< 0.2	27	20
K0-01	13-Aug-05	10.2	0.06	< 0.01	< 0.01	< 0.01	< 0.1	< 0.1	1003	0.74	< 3	3.8	< 5	< 0.3	660	0.018	1.4	5	3.2	2600	170	1200	35	< 0.3	10	4.4	120	1.2	< 0.4	< 1	< 1	1.0	101	< 0.2	4.6	3.2
J0-01	12-Aug-05	19.0	< 0.05	< 0.01	< 0.01	< 0.01	< 0.1	< 0.1	402	0.58	< 3	2.0	< 0.1	< 0.3	283	< 0.006	0.8	2.8	0.8	2100	79	800	28	< 0.3	4	5	47	0.9	< 0.4	< 0.2	1	0.7	37	< 0.2	2.6	2.5
Streams that run into and out of Sheardown Lake																																			
D1-01	11-Aug-05	27.8	0.57	< 0.01	< 0.01	< 0.01	< 0.1	< 0.1	1900	0.83	< 3	9.8	0.1	< 0.3	1300	0.11	2.9	9.8	7.3	6100	370	2300	90	0.5	13	14	200	3.1	< 0.4	0.5	1	1.7	140	< 0.2	8.2	11
D0-01	11-Aug-05	19.7	< 0.05	< 0.01	< 0.01	< 0.01	< 0.1	< 0.1	1400	0.12	< 3	6.9	< 0.1	< 0.3	1900	0.023	2.3	12	6.4	8500	240	2100	58	< 0.3	15	11	390	2.6	< 0.4	< 0.2	1	2.4	220	< 0.2	15	6.6
Mary River Drainage Basin																																			
Mainstream of Mary River, adjacent to Deposits 1, 2 and 3																																			
H0-01	12-Aug-05	19.2	< 0.05	< 0.01	< 0.01	< 0.01	< 0.1	< 0.1	1000	0.56	< 3	5.7	< 0.1	< 0.3	709	0.011	1.0	7.0	1.7	2400	260	1100	31	< 0.3	14	4	120	1.3	< 0.4	0.5	< 1	1.3	130	< 0.2	4.5	4.5
E0-03	11-Aug-05	22.0	< 0.05	< 0.01	< 0.01	< 0.01	< 0.1	< 0.1	581	0.34	< 3	3.6	< 0.1	< 0.3	780	< 0.006	1.0	4.5	0.8	4400	120	720	22	< 0.3	6	4	240	1.4	< 0.4	0.3	1	1.4	120	< 0.2	8.3	2.8
South Fork Mary River																																			
E2-01	11-Aug-05	23.3	< 0.05	< 0.01	< 0.01	< 0.01	< 0.1	< 0.1	927	0.71	< 3	4.4	< 0.1	< 0.3	703	0.046	1.3	4.8	1.3	3100	170	1200	29	< 0.3	8	6	220	1.4	< 0.4	0.4	2	1.4	120	< 0.2	4.7	4.2
Mainstream Mary River, both above and below Mary Lake																																			
C0-01	11-Aug-05	23.6	< 0.05	< 0.01	< 0.01	< 0.01	< 0.1	< 0.1	674	0.68	< 3	3.6	< 0.1	< 0.3	1200	< 0.006	1.3	5.2	6.6	4900	120	800	26	< 0.3	7	4	450	1.6	< 0.4	0.2	1	2.2	120	< 0.2	8.3	3.3
A0-01	14-Aug-05	16.5	< 0.05	< 0.01	< 0.01	< 0.01	< 0.1	< 0.1	360	0.36	< 3	2.2	< 5	< 0.3	350	< 0.006	0.5	3	0.9	1500	92	320	13	< 0.3	5	1.3	130	0.94	< 0.4	< 1	< 1	1.4	69	< 0.2	2.8	1.5

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 5.2 to 5.9.xls]Table 5.7 Sediment
01-Dec-06

Notes:
1. Canadian Sediment Quality Guidelines for the Protection of Aquatic Life (CCME, 2002).
2. ISQG = Interim Sediment Quality Guidelines.
3. PEL = Probable Effect Level.
4. Bold indicates that the sample is in excess of the CCME limit for that parameter.

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TABLE 5.8

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

BENTHIC MACROINVERTEBRATE ANALYSIS SUMMARY

Sample Site	FS-01	C0-01	J0-01	E2-01	E0-03	K0-01	D1-01	D0-01	H0-01	A0-01
ROUNDWORMS										
P. Nemata	-	11	-	3	-	-	5	1	-	2
ANNELIDS										
P. Annelida										
WORMS										
Cl. Oligochaeta										
F. Enchytraeidae	2	6	1	1	-	-	9	-	-	1
F. Tubificidae										
Limnodrilus udekemianus	-	-	-	-	-	-	-	-	1	-
F. Lumbriculidae	-	1	-	-	-	-	-	-	-	-
ARTHROPODS										
P. Arthropoda										
MITES										
Cl. Arachnida										
O. Acarina	28	25	-	5	13	3	13	-	-	6
SEED SHRIMPS										
Cl. Ostracoda	-	-	-	2	-	-	1	1	-	1
SPRINGTAILS										
Cl. Entognatha										
O. Collembola	1	-	-	-	1	-	-	-	-	-
INSECTS										
Cl. Insecta										
BEETLES										
O. Coleoptera										
F. Dytiscidae										
Agabus	-	-	-	-	-	1	-	-	-	-
MAYFLIES										
O. Ephemeroptera										
F. Baetidae										
Acentrella	1	2	-	3	-	8	-	1	-	1
STONEFLIES										
O. Plecoptera										
F. Capniidae										
indeterminate	-	-	-	-	-	11	-	-	-	-
TRUE FLIES										
O. Diptera										
MIDGES										
F. Chironomidae										
chironomid pupae	**13**	**9**	**4**	**8**	**3**	**4**	**61**	**3**	**42**	**8**
S.F. Chironominae										
Cryptochironomus	-	1	-	-	-	-	-	-	-	-
S.F. Diamesinae										
Diamesa	2	-	3	-	-	5	-	-	71	-
Pseudokiefferiella	8	658	-	8	1	3	40	1	2	1
S.F. Orthocladiinae										
Chaetocladius	-	-	-	-	-	1	-	-	-	-
Cricotopus	15	24	-	10	-	-	41	-	-	-
Cricotopus/Orthocladius	-	4	1	-	2	-	-	1	13	2
Krenosmittia	1	-	-	-	-	-	-	-	-	-
Limnophyes	-	3	-	-	-	2	-	-	-	-
Orthocladius (Euorthocladius)	1	-	-	6	-	-	-	-	-	-
Pseudosmittia	1	-	-	4	-	-	20	-	-	-
Thienemanniella	1	-	-	-	-	-	-	-	-	-
Tokunagaia	15	8	-	7	2	-	-	-	-	14
Tvetenia	130	50	9	40	1	3	74	3	-	11
? Zalutschia	-	-	-	-	-	-	-	-	-	2
indeterminate	7	-	-	3	-	-	1	3	-	4
S.F. Tanypodinae										
Procladius	-	-	-	-	-	-	1	-	-	-
indeterminate	-	-	-	-	-	-	4	-	-	-
F. Simuliidae	7	24	1	27	5	6	4	5	20	50
F. Tipulidae										
Tipula	18	4	-	5	4	6	21	3	-	-
TOTAL NUMBER OF ORGANISMS	251	830	19	132	32	53	295	22	149	103
TOTAL NUMBER OF TAXA	16	14	5	14	8	11	13	9	5	12

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 5.2 to 5.9.xls]Table 5.8 Benthic Results
01-Dec-06

Note:
1. Bold entries excluded from taxa count.

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TABLE 5.9

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

BENTHIC MACROINVERTEBRATE SURVEY SUMMARY

	Sample Locations									
	J Lake Catchment			D Catchment		Mainstream of Mary River		South Fork Mary River	Mainstream Mary River	Mainstream of Mary River
	FS-O1	K0-01	J0-01	D1-01	D0-01	Upstream Control H0-01	Below Exploration E0-03	E2-01	Upstream of Mary Lake C0-01	Downstream of Mary Lake A0-01
Sample Area Per Station (m^2)	0.485	0.485	0.485	0.485	0.485	0.485	0.485	0.485	0.485	0.485
Organisms/m^2	414	103	39	569	37	307	35	235	1621	155
Taxa/Sample	14	11	6	11	8	6	7	11	12	8
SPECIES COMPOSITION										
% Ephemeroptera	0.50%	17.39%	0.00%	0.00%	7.14%	0.00%	0.00%	2.94%	0.26%	1.54%
% Chironomids	85.57%	30.43%	85.71%	82.05%	28.57%	77.66%	16.67%	62.75%	95.21%	18.46%
TOLERANCE CATEGORIES										
% Sensitive Fauna	4.98%	47.83%	0.00%	20.51%	14.29%	2.13%	8.33%	10.78%	85.38%	3.08%
% Facultative Fauna	93.53%	47.83%	92.86%	73.85%	78.57%	96.81%	83.33%	86.27%	13.32%	93.85%
% Tolerant Fauna	1.49%	4.35%	7.14%	5.64%	7.14%	1.06%	8.33%	2.94%	1.29%	3.08%
INDICES										
Shannon-Wiener Diversity Index	1.36	2.19	1.44	1.91	1.89	1.28	1.76	1.91	0.73	1.12
Margalef Richness Index	2.45	2.56	1.70	1.78	2.42	1.00	2.12	2.11	1.65	1.62
Pielou's Equitability Index	0.52	0.91	0.80	0.80	0.91	0.72	0.90	0.80	0.29	0.54

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 5.2 to 5.9.xls]Table 5.9 Benthic Stats
01-Dec-06

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TABLE 5.10

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

WATERCOURSE CROSSING CATEGORIZATION AND FISH SAMPLING EFFORT AT LOCATIONS ALONG THE MILNE INLET TOTE ROAD

Crossing Category	Catchment Area (km^2)	Number of Crossings	Number of Crossings Sampled	Proportion Sampled (%)
Extra-Small	< 0.5	174 (173)	5	2.9
Small	0.5-2.5	43	5	11.6
Medium	2.5-7.5	13 (12)	7	53.8
Large	7.5-30.0	14	8	57.1
Extra-Large	>30	5 (4)	5	100
TOTALS	**-**	**249 (246)**	**30**	**12**

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 5.10 and 5.11.xls]Summary
1-Dec-06

Notes:
1. Number of crossings refers to all crossings on the Milne Inlet tote road from the east side of the Milne Inlet beach to Deposit No. 1 at Mary River.
2. Numbers indicated in brackets indicate number of crossings to be used in the Project.

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TABLE 5.11

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

FISH HABITAT RANKINGS OF SAMPLED WATERCOURSE CROSSINGS ALONG THE MILNE INLET TOTE ROAD

Crossing Category	Number of Crossings				
	Critical	Important	Marginal	No Fish Habitat	Totals
Extra-Small	0	0	0	5	5
Small	0	2	1	2	5
Medium	0	4	2	1	7
Large	0	5	3	0	8
Extra-Large	0	5 (4)	0	0	5
TOTALS	**0**	**16 (15)**	**6**	**8**	**30**

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 5.10 and 5.11.xls]Habitat Rating
1-Dec-06

Notes:

1. Number of crossings refers to all crossings on the Milne Inlet tote road from the east side of the Milne Inlet beach to Deposit No. 1 at Mary River.
2. Numbers indicated in brackets indicate number of crossings to be used in the Project.

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TABLE 5.12

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

FISH HABITAT RANKINGS AT UNSAMPLED WATERCOURSE CROSSINGS ESTIMATED FROM SITE PHOTOGRAPHS

Crossing Category	Number of Unsampled Crossings by Habitat Ranking Category				
	Critical	Important	Marginal	None	Totals
Extra-Small	0	3	37	129	169
Small	0	7	22	9	38
Medium	0	3	3	0	6
Large	0	5	1	0	6
Extra-Large	0	0	0	0	0
TOTALS	**0**	**18**	**63**	**138**	**219**

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Table 5.12.xls]Table 5.12
1-Dec-06

Note:
1. These are estimates based on photos from the sites that may not reveal potential downstream barriers or other factors influencing habitat utilization.

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TABLE 5.13

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

MARINE MAMMAL SPECIES OCCURRING WITHIN THE STUDY AREA

Species	Region		
	Labrador Sea	Davis Strait, Baffin Bay, and Lancaster Sound	Milne Inlet, Eclipse Sound, Pond Inlet, and Navy Board Inlet
TOOTHED WHALES (ODONTOCETES)			
Narwhal (*Monodon monoceros*)	abundant	abundant	abundant
Beluga (*Delphinapterus leucas*)	abundant	abundant	uncommon
Killer whale (*Orcinus orca*)	present	uncommon	uncommon
Northern Bottlenose whale (*Hyperoodon ampullatus*)	present	absent	absent
Sperm whale (*Physeter catodon*)	abundant	absent	absent
White-beaked dolphin (*Lagenorhynchus albirostris*)	present	absent	absent
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	present	absent	absent
Harbour porpoise (*Phocoena phocoena*)	present	absent	absent
Pilot whale (*Globicephala melaena*)	abundant	absent	absent
BALEEN WHALES (MYSTICETES)			
Bowhead (*Balaena mysticetus*)	present	present	present
Blue whale (*Balaenoptera musculus*)	present	absent	absent
Fin whale (*Balaenoptera physalus*)	present	absent	absent
Sei whale (*Balaenoptera borealis*)	present	absent	absent
Minke whale (*Balaenoptera acutorostrata*)	present	absent	absent
Humpback whale (*Megaptera novaeangliae*)	present	absent	absent
PHOCID SEALS			
Ringed seal (*Phoca hispida*)	abundant	abundant	abundant
Harbour seal (*Phoca vitulina concolor*)	present	uncommon	absent
Harp seals (*Phoca groenlandica*)	abundant	abundant	abundant
Bearded seal (*Erignathus barbatus*)	abundant	abundant	common
WALRUS (ODOBENIDS)			
Atlantic walrus (*Odobenus rosmarus rosmarus*)	present	present	common
BEARS (URSIDS)			
Polar bear (*Ursus maritimus*)	present	present	present

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Table 5.13.xls]marine mammals
01-Dec-06

Notes:

1. The proposed shipping route for the bulk sample program was divided into three regions to provide some indication of the distribution of marine mammals along the shipping corridor.
2. Most species occur only during times of open water; only ringed seals and polar bears are year-round residents.

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TABLE 5.14

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROJECT ENVIRONMENTAL SCREENING DOCUMENT

ARCHAEOLOGICAL SITES IDENTIFIED IN RELATION TO PROPOSED BULK SAMPLING PROGRAM FACILITIES

Bordon No.	Project Component	Type (No. of Features)	Estimated Size (N-SxE-W)
OhFv-1	Mary River area	Stone circles (2)	12x10m
OhFv-2	as above	Stone circles (4)	40x10m
OiFx-1	North road (16m)	Stone circles (5)	25x10m
OiHa-1	Midway camp area	Stone circles (6)	125m(NE-SW)x60m
OiHa-2	North road (50m)*	Stone circles (3)/alignment	15x20m
OiHa-3**	North road (3m)	Stone circle/semi-circle	10x8m
OiHa-4**	North road (at edge)	Stone circles (3)	35x15m
OiHa-5	North road (52m)	Stone circles (2)	12x6m
OjHa-1	North road (above edge)	Stone circles (3)	110x15m
OjHa-1S**	North road (at edge)	Stone circles (2)	
OjHb-1	North road (9m)	Stone circle	4x5m
OjHb-2	North road (20m)	Stone circles (4)	10x12m
OjHb-3	North road (35/12m)	Stone circle/cairn-possible circle partly under road	75x50m
OkHb-1	North road (22m)	Stone circles (~10)	50x40m
OkHb-2	North road (2m - recent)	Stone circles (9)	82x40m
OkHb-3	North road (25m)	Stone circle/cache	5x15m
OkHb-4	North road (25m)	Stone circles (2)/ inukshuk	20m(NW-SE)x10m
OkHb-5	North road (42m)	Stone circles (3-4)	90x25m
OkHb-6**	North road	Stone circles (4-5)	60x20m
OkHc-1**	North road (7m)	Stone circles(2)/ alignment /inukshuk	8mx10m
OkHc-2	North road (15m)	Stone circles (2)	20x10m
OlHc-1**	North road (3m)*	Stone circles (2)	15x10m
OlHc-2	Milne Inlet	Stone circle/ lithics	30x40m
OlHc-3	North road borrow	Stone circle	4x5m
OlHc-4	Milne Inlet	Lithic scatter	30x50m
OlHc-5	Milne Inlet	Stone circles/cairns/	110m(NE-SW)x110m
OlHc-6	North road borrow	Stone circles/ cache?/inukshuk	25x20m

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1-Dec-06

Notes:

1. * = closest point of sites to road.
2. ** = Flagged sites.

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TABLE 5.15

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

HUNTER PARTICIPATION IN THE NUNAVUT WILDLIFE HARVEST STUDY (1996-2001)

Hunter Response Categories	Arctic Bay & Nanisivik	Clyde River	Hall Beach	Igloolik	Pond Inlet
Hunters Registered(1) (at least once during the year)	310	245	181	307	408
Total Hunters (registered(1) and estimated not registered(2))	318	246	184	307	409
Hunters Interviewed[1] (at least once during the year)	300	240	179	292	395
Harvested[1] (at least once during the year)	240	217	164	254	312
Mean Monthly Response Rate(1) (%)	98	97	88	90	85
Statistics Canada Reported Population (2001)(4)	723	785	609	1286	1220
Analysis (Calculated)					
Percentage of Population Who Hunt (%)	43	31	30	24	33.5
Percentage of Hunters who harvested (%)	77.4	88.6	90.6	82.7	76.5

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1-Dec-06

Notes:

1. Information extracted from Table 32 (Arctic Bay), Table 76 (Clyde River), Table 124 (Hall Beach), Table 148 (Igloolik), and Table 240 (Pond Inlet) of the Nunavut Wildlife Harvest Study (Priest and Usher, 2004).
2. Table 10 of the Nunavut Wildlife Harvest Study (Priest and Usher, 2004) reports estimates for the number of unregistered hunters.
3. Totals represent mean values over the five-year study period of June 1996 through May 2001.
4. Population based on 2001 Census by Statistics Canada (2006).

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TABLE 5.16

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

TOTAL NUMBER OF HUNTERS BY COMMUNITY HARVESTING EACH SPECIES (1996-2001)

Species	Arctic Bay & Nanisivik	Clyde River	Hall Beach	Igloolik	Pond Inlet
Caribou	131	106	128	205	240
Musk-ox	5	n/a	1	n/a	3
Polar bear	n/d	n/d	23	n/d	n/d
Wolf	17	10	9	27	21
Arctic fox	31	36	47	42	35
Coloured fox	1	10	4	n/a	41
Wolverine	n/a	n/a	7	2	n/a
Arctic hare	82	74	34	42	109
Arctic ground squirrel	n/a	n/a	7	1	n/a
Seals (unspecified)	n/a	4	n/a	n/a	1
Ringed seal	195	190	125	210	270
Bearded seal	26	47	77	102	59
Harp seal	22	43	18	17	49
Hooded seal	n/a	1	n/a	n/a	8
Walrus	10	1	82	117	13
Narwhal	75	37	11	21	110
Beluga	31	1	11	31	4
Geese (unspecified)	n/a	n/a	12	n/a	n/a
Snow goose	105	63	67	106	157
Canada goose	4	54	14	29	7
Brant goose	6	2	3	n/a	1
White-fronted goose	n/a	n/a	n/a	n/a	3
Old squaw	1	1	3	3	1
Pintail	n/a	n/a	n/a	4	n/a
Eider duck	20	81	70	76	38
Red-breasted merganser	n/a	n/a	n/a	n/a	1
Tundra swan	n/a	n/a	3	4	n/a
Greater scaup	n/a	n/a	1	n/a	n/a
Common loon	2	1	n/a	n/a	n/a
Arctic loon	1	n/a	2	n/a	n/a
Red-throated loon	1	7	11	4	2
Black guillemot	3	1	3	n/a	6
Thick-billed murre	4	4	n/a	n/a	8
Ptarmigan	96	131	71	86	157
Sandhill crane	3	2	n/a	1	6
Eggs (unspecified)	n/a	1	3	2	n/a
Goose eggs	43	57	38	122	65
Duck eggs	1	5	23	58	2
Arctic tern eggs	n/a	6	21	40	n/a
Seagull eggs	12	19	6	10	1
Black guillemot eggs	n/a	n/a	3	1	n/a
Thick-billed murre eggs	n/a	n/a	n/a	n/a	33
Fish (unspecified)	n/a	n/a	6	n/a	n/a
Arctic char	175	174	143	213	244
Lake trout	10	n/a	126	67	n/a
Burbot	n/a	1	n/a	n/a	n/a
Arctic cisco	n/a	4	20	n/a	n/a
Least cisco	n/a	1	n/a	n/a	n/a
Cod	12	59	3	8	4
Sculpin	22	109	n/a	6	15
Turbot	n/a	1	n/a	n/a	n/a
Clams	3	51	10	1	1
Mussels	n/a	n/a	2	n/a	n/a

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1-Dec-06

Notes:

1. Information extracted from Table 34 (Arctic Bay), Table 78 (Clyde River), Table 126 (Hall Beach), Table 150 (Igloolik), and Table 242 (Pond Inlet) of the Nunavut Wildlife Harvest Study (Priest and Usher, 2004).
2. Totals represent mean values over the five-year study period of June 1996 through May 2001.
3. n/d = no data available.
4. n/a = not applicable; information on this species was not requested from hunters, likely because the species is not hunted in the area.

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TABLE 5.17

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

ANNUAL AND 5-YEAR MEAN HARVEST ESTIMATES BY COMMUNITY (1996-2001)

Species	Arctic Bay & Nanisivik						Clyde River						Hall Beach						Igloolik						Pond Inlet					
	1996/97	1997/98	1998/99	1999/00	2000/01	5-Yr Mean	1996/97	1997/98	1998/99	1999/2000	2000/01	5-Yr Mean	1996/97	1997/98	1998/99	1999/2000	2000/01	5-Yr Mean	1996/97	1997/98	1998/99	1999/2000	2000/01	5-Yr Mean	1996/97	1997/98	1998/99	1999/2000	2000/01	5-Yr Mean
Caribou	1246	855	760	568	463	778	381	387	354	400	222	349	1055	791	838	699	665	810	1916	1486	1897	1785	1421	1701	2169	2534	1847	1466	1123	1828
Musk-ox	1	0	2	0	3	1	n/a	n/a	n/a	n/a	n/a	n/a	1	0	0	0	0	<1	n/a	n/a	n/a	n/a	n/a	n/a	0	0	2	0	2	1
Polar bear	13	12	12	10	8	11	11	13	0	12	10	9	6	7	8	6	5	6	12	9	6	10	11	10	16	22	20	17	15	18
Wolf	7	13	15	16	15	13	2	6	2	1	4	3	8	0	2	3	0	3	13	5	18	24	8	14	20	8	20	16	1	13
Arctic fox	200	160	23	8	178	114	92	38	6	21	22	36	334	282	175	27	195	203	248	266	40	81	346	196	150	18	7	1	15	38
Coloured fox	1	1	0	0	2	1	2	5	3	3	3	3	0	0	0	0	4	1	n/a	n/a	n/a	n/a	n/a	n/a	32	9	14	12	20	17
Wolverine	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	2	4	0	1	2	0	0	1	0	1	<1	n/a	n/a	n/a	n/a	n/a	n/a
Arctic hare	207	108	131	104	129	136	40	55	63	53	65	55	70	16	4	9	18	23	80	12	42	13	24	34	139	110	147	63	64	105
Arctic ground squirrel	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	0	2	3	5	2	3	0	0	0	0	1	n/a	n/a	n/a	n/a	n/a	n/a
Seals (unspecified)	n/a	n/a	n/a	n/a	n/a	n/a	8	0	0	1	0	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	1	0	0
Ringed seal	1544	1199	1366	1502	1639	1450	2764	2235	1437	1884	1700	2004	837	690	622	702	435	657	2138	1790	1538	1894	1633	1799	2311	1938	1702	2436	2178	2113
Bearded seal	15	21	6	18	10	14	26	18	20	22	10	19	52	67	81	74	63	67	77	68	63	103	97	82	23	46	10	29	30	28
Harp seal	8	8	18	14	2	10	9	8	26	10	11	13	13	18	8	9	3	10	7	3	2	29	0	8	23	50	19	11	43	29
Hooded seal	n/a	n/a	n/a	n/a	n/a	n/a	0	0	1	0	0	<1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	7	0	0	0	2
Walrus	3	5	2	1	3	3	1	0	0	0	0	<1	88	108	80	113	87	95	159	139	121	174	168	152	7	2	8	1	5	5
Narwhal	77	67	71	82	73	74	8	11	20	5	55	20	3	3	7	0	3	3	2	0	23	7	2	7	127	71	75	145	176	119
Beluga	27	3	8	6	24	14	0	1	0	0	0	<1	0	10	2	6	11	6	14	10	41	0	4	14	6	1	0	0	0	1
Geese (unspecified)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	723	0	0	0	0	145	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Snow goose	635	243	304	160	610	390	100	149	41	31	121	88	66	133	149	66	249	133	385	275	323	123	377	297	634	785	332	318	610	536
Canada goose	1	1	0	2	0	1	24	36	47	34	53	39	3	3	16	25	20	13	45	32	14	44	39	35	0	4	0	10	2	3
Brant goose	0	4	9	1	9	5	0	3	0	0	0	1	0	31	0	1	3	7	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	2	0	<1
White-fronted goose	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	5	52	11
Old squaw	0	3	0	0	0	1	0	0	0	0	4	1	0	0	4	0	9	3	0	1	1	1	0	1	0	0	0	1	0	<1
Pintail	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4	0	2	0	0	1	n/a	n/a	n/a	n/a	n/a	n/a
Eider duck	19	21	10	11	19	16	250	76	86	79	172	133	244	217	198	116	154	186	262	73	131	186	234	177	53	22	13	30	33	30
Red-breasted merganser	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	1	0	<1
Tundra swan	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	2	0	0	3	1	2	2	2	0	0	1	n/a	n/a	n/a	n/a	n/a	n/a
Greater scaup	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0	10	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Common loon	0	2	0	0	0	<1	1	0	0	0	0	<1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Arctic loon	0	0	0	1	0	<1	n/a	n/a	n/a	n/a	n/a	n/a	0	0	8	0	0	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Red-throated loon	3	0	0	0	0	1	19	7	4	2	2	7	0	7	3	18	13	8	0	0	6	13	0	4	0	0	0	4	0	1
Black guillemot	0	0	3	0	0	1	0	0	0	0	1	<1	5	1	0	0	1	1	n/a	n/a	n/a	n/a	n/a	n/a	5	2	2	0	2	2
Thick-billed murre	0	3	4	0	2	2	0	1	4	0	0	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	9	2	4	2	3
Ptarmigan	718	831	461	493	351	571	1159	1818	1434	531	1129	1214	686	230	128	257	149	290	777	194	224	406	209	362	1269	1039	860	645	817	926
Sandhill crane	0	0	1	0	2	1	0	0	1	0	1	<1	n/a	n/a	n/a	n/a	n/a	n/a	0	0	1	0	0	<1	3	2	0	3	1	2
Eggs (unspecified)	n/a	n/a	n/a	n/a	n/a	n/a	1	0	0	0	0	<1	947	0	0	0	0	189	0	0	0	0	20	4	n/a	n/a	n/a	n/a	n/a	n/a
Goose eggs	629	108	1241	83	717	556	423	318	48	41	787	323	0	313	809	859	1613	719	0	2257	3814	335	6094	2500	444	1838	1155	1224	2811	1494
Duck eggs	0	0	0	0	1	<1	0	12	25	5	0	8	0	138	852	271	560	364	0	457	482	515	686	428	0	0	0	3	1	1
Arctic tern eggs	n/a	n/a	n/a	n/a	n/a	n/a	24	11	3	1	8	9	0	38	20	434	150	128	0	638	271	404	490	361	n/a	n/a	n/a	n/a	n/a	n/a
Seagull eggs	14	4	21	12	112	33	20	22	33	73	18	33	0	6	49	26	90	34	0	3	34	6	122	33	0	0	10	0	0	2
Black guillemot eggs	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	4	0	48	16	14	0	0	0	0	27	5	n/a	n/a	n/a	n/a	n/a	n/a
Thick-billed murre eggs	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2665	0	264	10077	0	2601
Fish (unspecified)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	442	0	0	0	0	88	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Arctic char	8874	11101	8579	10842	11789	10237	6951	8682	10442	9382	6860	8463	9524	5834	6081	6151	5449	6608	10315	13165	14240	15495	15997	13842	10344	10632	11369	16012	12214	12114
Lake trout	4	6	32	0	0	8	n/a	n/a	n/a	n/a	n/a	n/a	617	363	504	752	539	555	25	31	49	183	281	114	n/a	n/a	n/a	n/a	n/a	n/a
Burbot	n/a	n/a	n/a	n/a	n/a	n/a	0	0	1	0	0	<1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Arctic cisco	n/a	n/a	n/a	n/a	n/a	n/a	0	0	40	3	0	9	0	318	9	0	1	66	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Least cisco	n/a	n/a	n/a	n/a	n/a	n/a	0	1	0	0	0	<1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Cod	157	160	72	370	3	152	33	143	241	713	332	292	0	0	0	130	78	42	0	0	284	140	31	91	5	3	0	19	1	6
Sculpin	67	18	52	32	2	34	589	5376	1325	908	694	1778	n/a	n/a	n/a	n/a	n/a	n/a	0	0	336	61	0	79	38	18	4	132	43	47
Turbot	n/a	n/a	n/a	n/a	n/a	n/a	109	189	89	12	43	88	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Clams	0	29	25	203	0	51	6971	14066	9795	15057	766	9331	0	13	0	90	219	64	114	0	0	0	0	23	3	0	0	0	0	1
Mussels	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	69	42	22	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 5.15 to 5.17.xls]Table 5.17
1-Dec-06

Notes:
1. Information extracted from Table 31 (Arctic Bay), Table 75 (Clyde River), Table 123 (Hall Beach), Table 147 (Igloolik), and Table 239 (Pond Inlet) of the Nunavut Wildlife Harvest Study (Priest and Usher, 2004)
2. n/a = not applicable; information on this species was not requested from hunters, likely because the species is not hunted in the are
3. Feedback on reported harvest results were obtained during community visits and the original NWHS should be consulted. For example, community response in Arctic Bay suggests that hunters may have under reported; Pond Inlet's fish harvest is expected to partially represent commercial fishing as well as subsistence harvests; e
4. Some harvesting reported was conducted outside the community or region of the hunter. For example, musk-ox reported for Hall Beach were harvested when a Hall Beach hunter visited the Kitikmeot Regio

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TABLE 6.1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

IDENTIFICATION OF ENVIRONMENTAL IMPACTS

		ENVIRONMENTAL COMPONENTS	PHYSICAL	Designated environmental areas (i.e. Parks, Wildlife Protected areas)	Ground stability	Permafrost	Hydrology limnology	Water quality	Climate conditions	Eskers and other unique or fragile landscapes	Surface and bedrock geology	Sediment and soil quality	Tidal processes and bathymetry	Air quality	Noise levels	BIOLOGICAL	Vegetation	Wildlife, including habitat and migration patterns	Birds, including habitat and migration patterns	Aquatic species, incl. habitat and migration/spawning	Wildlife protected areas	Other VEC: Marine Mammals	SOCIO-ECONOMIC	Archaeological and cultural historic sites	Employment	Community wellness	Community infrastructure	Human health	Other VSEC: Traditional Land Use
	PROJECT ACTIVITIES																												
CONSTRUCTION	**Road and Camp Construction Activities**																												
	Road widening, cuts and fills				P	M	M	M		N					N		M							M	P	P	P		P
	Borrow pit development				M	M		M		N		M			N		M	M						M	P	P			
	Quarry development				M	M		M				M			N		M	M						M	P	P			
	Damaged culvert replacement				P		P	M				M			N					P					P	P	P		P
	New culvert installation							M				M			N					M				M	P	P	P		P
	Sea container crossing installation							M				M			N					M				M	P	P	P		P
	Equipment refuelling							M				M			N		M												
	Camp and infrastructure construction					M	M	M							N		M	M	M					M	P	P			
	Airstrip improvements (lighting and grading)				P	M						M			N										P	P	P		
	Sewage treatment plant and outfall				M	M	M	M				M			N		M			M				M					
	Landfill construction				M	M	M					M			N														
	Crusher/explosives magazine installations											M					M							M	P	P			
	Delivery of Supplies																												
	Barge unloading of dry cargo														N					M		N			P	P			N
	Ship to shore fuel transfer							M				M			N							N							
	Overland transport													N	N														
OPERATION	**Milne Inlet Tote Road**																												
	Fuel haulage							M						N	N			M											
	Bulk cargo and ore haulage				M			M						N	N			M											
	Road maintenance				M	M	M	M		M		M		N	N			M	M						P	P	P		P
	Mining																												
	Drilling, blasting and excavation				M			M						N	N		N								P	P			
	Crusher operation							M							N										P	P			
	Weathered ore stockpile				M			M				M																	
	Temporary ore stockpiles				M			M				M																	
	Camp Operation																												
	Vehicular and foot traffic							M				M		N	N			M	M	M					P	P			
	Waste incineration													N											P	P			
	Water taking						M													M					P	P			
	Fuel storage							M				M													P	P			
	Water/waste water treatment																												
	Milne Inlet																												
	Ore stockpiles				M			M				M																	
	Barge loading							M				M		N	N					M		U			P	P			M
	Barge to ship ore transfer							M				M		N	N							U			P	P			M
	Shipping through Milne Inlet							M						N	N							U			P	P			M
DECOMMISSIONING	**Milne Inlet Tote Road**																												
	Breach and stabilize as required				P			P				P		N	N		P	P							P	P			
	Ground restoration							M				M													P	P			
	Borrow area decommissioning				P	P		P		P		P		N	N										P	P			P
	Camp Dismantling and Removal																												
	Camp Dismantling and Removal													N	N		P	P	P						P	P			P
	Waste incineration													N											P	P			
	Landfill closure																												
	Ground restoration				P	P		P				P		N	N		P	P	P						P	P			P
	Excavation and removal of contaminated soils				M	M		P						N	N										P	P			P
	Milne Inlet																												
	Dismantling and removal of infrastructure													N	N		P	P	P						P	P			P
	Ground restoration				P	P		P				P		N	N		P	P	P						P	P			P
	Sealift removal of equipment and materials																					U							

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Table 6.1.xls]Table 6.1
1-Dec-06

Notes:
1. P = Positive impact.
2. N = Negative and non-mitigatable impact.
3. M = Negative and mitigatable impact.
4. U = Unknown impact.
5. Blank cell indicates no impact expected.

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TABLE 6.2

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLE PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SELECTED WATER QUALITY MEASUREMENTS COLLECTED IN SHEARDOWN LAKE

	Parameter	Unit	Site		CCME Guidelines for the Protection of Aquatic Life[1]
			DL0-01-S (1 m from surface)	DL0-01-D (1 m from bottom)	
In Situ Measurements	Temperature	(^oC)	10.83	7.77	-
	Specific Conductance	(mS/cm)	0.092	0.09	-
	DO	(mg/L)	10.62	10.74	6.5 and 9.5
	pH	-	8.24	8.15	6.5 - 9.0
	Secchi Disk Depth	(m)	2	4.1	-
Laboratory Measurements	NH_3+NH_4	(mg/L N)	<0.02	0.02	0.054-184.8(2)
	NO_2^-	(mg/L N)	<0.005	<0.005	0.06
	NO_3^-	(mg/L N)	<0.10	<0.10	2.93
	NO_2+NO_3	(mg/L N)	<0.10	<0.10	-
	TP	(mg/L)	0.02	<0.01	-
	Alkalinity	(mg/L as $CaCO_3$)	49	47	-
	Conductivity	(µS/cm)	94	93	-
	TDS	(mg/L)	61	61	-
	Hardness	(mg/L as $CaCO_3$)	50	50	-
	Turbidity	(NTU)	0.6	0.7	-
CCME WQI[3]	Value	-	100	100	-
	Ranking	-	Excellent	Excellent	-

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 6.2 & 6.3.xls]Table 6.2
1-Dec-06

Notes:
1. Sample collected on August 1, 2006.
2. Freshwater Guidelines for the Protection of Aquatic Life - Canadian Council of Ministers of the Environment (CCME), Canadian Environmental Guideline, Updated October 2005.
3. Water quality guidelines for total ammonia are dependent upon both temperature and pH, see the CCME guidelines for more details.
4. Water Quality Index 1.0 (CCME, 2001).

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TABLE 6.3

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLE PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

SUMMARY OF SELECTED TROPHIC STATUS CLASSIFICATION SCHEMES FOR LAKES

Lake Trophic Status							Reference
Ultra-oligotrophic	**Oligotrophic**	**Oligo-mesotrophic**	**Mesotrophic**	**Meso-eutrophic**	**Eutrophic**	**Hypereutrophic**	
Total Phosphorus (µg/L)							
-	<10	-	Oct-35	-	35-100	>100	OECD (1982)
<4	04-Oct	-	Oct-20	20-35	35-100	>100	CCME (1999)
-	<5	-	Oct-30	-	-	>100	Chambers et al. (2001)
<5	-	05-Oct	-	Oct-30	30-100	>100	Wetzel (1983)
-	<10	-	Oct-30	-	-	>100	Nürnberg (1996)
Chlorophyll *a* (µg/L)							
-	<2.5	-	2. -8	-	Aug-25	>25	OECD (1982)
0.0 -0.5	0.3-3	-	Feb-15	-	10-500	-	Wetzel (1983)
-	<3.5	-	3.5-9	-	9.1-25	>25	Nürnberg (1996)
Secchi Depth (m)							
-	> 6	-	03-Jun	-	<1.5	-	OECD (1982)
-	> 4	-	02-Apr	-	1-2.1	<1	Nürnberg (1996)
Total Nitrogen (µg/L)							
-	<350	-	350-650	-	651-1,200	>1,200	Nürnberg (1996)
<1-250	-	250-600	-	500-1,100	-	500->15,000	Wetzel (1983)
Inorganic Nitrogen (µg/L)							
<200	-	200-400	-	300-650	500-1,500	>1,500	Wetzel (1983)

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Tables 6.2 & 6.3.xls]Table 6.3
1-Dec-06

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TABLE 6.4

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM ENVIRONMENTAL SCREENING DOCUMENT

FISH HABITAT BALANCE - ROAD ALIGNMENT

Location Code	Road Chainage (km)	Catchment Area Size Reference	Fish Habitat Classification[7]									Existing Structure	Proposed Structure	Nunavut Operational Statement Used			Potential HADD	Habitat Encroachment Footprint		Potential HADD Area (m^2)	Mitigation Measures	Net Residual Impact After Mitigation
			Habitat Type	Ch. Width (m)	Spawning	Migration	Sum. Rearing	Overwintering	Critical	Important	Marginal	None			Name	Level of Compliance	Amendments		Description	Approximate Footprint Area (m^2)			
CV223	97.230	Extra Large	River	100	P	P	Y	N		X			Open Channel, Structure Failed	Multi-Sea Container Culvert	Small Clearspan Bridges	Partial	1,2	Yes	Road approaches to sea container crossing, secondary channel csp	300	150	3,4,5,6	No
CV217	79.824	Extra Large	River	60	U	Y	P	P		X			Open Channel, Structure Failed	Multi-Sea Container Culvert	Small Clearspan Bridges	Partial	1,2	Yes	Road approaches to sea container crossing, secondary channel csp	300	150	3,4,5,6	No
BG50	62.836	Extra Large	River	77	P	P	Y	N		X			Open Channel, Structure Failed	Multi-Sea Container Culvert	Small Clearspan Bridges	Partial	1,2	Yes	Road approaches to sea container crossing, secondary channel csp	300	150	3,4,5,6	No
CV128	17.683	Extra Large	River	80	P	P	Y	U		X			Open Channel, Structure Failed	Multi-Sea Container Culvert	Small Clearspan Bridges	Partial	1,2	Yes	Road approaches to sea container crossing	300	150	3,4,5,6	No
CV225	99.033	Large	Stream	15	U	U	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	150	75	3,4,6	No
BG17	90.168	Large	Stream	9	N	P	P	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	90	45	3,4,5,6	No
CV216	80.647	Large	Stream	10	U	U	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	100	50	3,4,6	No
BG32	78.163	Large	Stream	20	N	N	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	200	100	3,4,6	No
CV040	72.263	Large	Stream	15	U	U	P	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	150	75	3,4,6	No
CV048	64.312	Large	Stream	10	U	U	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	100	50	3,4,6	No
CV049	63.303	Large	Stream	15	P	P	P	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	150	75	3,4,6	No
CV072	53.878	Large	Stream	8	U	U	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	80	40	3,4,6	No
CV078	51.172	Large	Stream	14	P	P	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	140	70	3,4,6	No
CV079	50.599	Large	Stream	200	U	U	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	2000	1000	3,4,6	No
CV087	46.225	Large	Stream	7	N	N	N	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	70	35	3,4,6	No
CV094	41.613	Large	Stream	15	U	U	Y	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	150	75	3,4,6	No
CV099	37.840	Large	Stream	12	P	P	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	120	60	3,4,6	No
CV129	15.651	Large	Stream	8	U	U	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	Yes	Road prism with csp culvert crossing	80	40	3,4,6	No
BG01	99.676	Medium	Stream	10	U	U	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV224	97.758	Medium	Stream	5	U	U	U	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
BG04	94.148	Medium	Stream	5	U	U	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
BG24	87.710	Medium	Stream	5	U	U	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV047	66.427	Medium	Stream	10	U	U	Y	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV060	58.853	Medium	Stream	5	U	U	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV091	42.962	Medium	Stream	5	U	U	Y	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV092	42.949	Medium	Stream	10	N	N	N	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV098	38.525	Medium	Stream	5	N	N	Y	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV104	33.794	Medium	Stream	10	U	U	U	U			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV111	31.991	Medium	Stream	10	N	N	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV114	29.648	Medium	Stream	5	U	U	U	U			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV187	103.078	Small	Stream	6	N	N	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	60	0	3,4,6	No
CV226	102.569	Small	Stream	10	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV001	94.728	Small	Stream	2	N	N	U	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	20	0	3,4,6	No
BG27	86.606	Small	Stream	10	U	U	Y	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
BG29	84.805	Small	Stream	10	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
BG30	84.636	Small	Stream	4	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	40	0	3,4,6	No
CV023	83.169	Small	Stream	5	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV215	79.575	Small	Stream	4	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	40	0	3,4,6	No
CV030	77.503	Small	Stream	15	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	150	0	3,4,6	No
CV043	67.472	Small	Stream	7	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	70	0	3,4,6	No
CV046	66.489	Small	Stream	10	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV057	60.714	Small	Stream	10	U	U	Y	N		X			Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV058	60.523	Small	Stream	10	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV059	59.960	Small	Stream	10	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV075	53.336	Small	Stream	5	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV076	53.028	Small	Stream	15	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	150	0	3,4,6	No
CV082	49.656	Small	Stream	10	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV083	47.644	Small	Stream	10	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV085	46.424	Small	Stream	10	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV086	46.300	Small	Stream	5	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV090	44.832	Small	Stream	5	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV093	42.215	Small	Stream	15	N	N	N	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	150	0	3,4,6	No
CV102	36.029	Small	Stream	10	N	N	U	N	X				Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV203	34.150	Small	Stream	5	N	N	U	N	X				Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV106	33.170	Small	Stream	7	N	N	Y	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	70	0	3,4,6	No
CV202	32.825	Small	Stream	4	N	N	U	N	X				Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	40	0	3,4,6	No
CV112	31.446	Small	Stream	5	N	N	Y	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV113	30.656	Small	Stream	7	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	70	0	3,4,6	No
CV115	27.686	Small	Stream	10	N	N	Y	N	X				Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV117	27.074	Small	Stream	5	N	N	U	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV119	24.264	Small	Stream	10	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV120	23.510	Small	Stream	15	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	150	0	3,4,6	No
CV125	20.448	Small	Stream	5	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV146	11.347	Small	Stream	5	N	N	N	N				X	Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV151	10.460	Small	Stream	10	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV152	10.282	Small	Stream	15	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	150	0	3,4,6	No
CV153	10.219	Small	Stream	10	N	N	U	N			X		Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV154	9.570	Small	Stream	10	N	N	U	N	X				Open Channel, Structure Failed	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV157	8.960	Small	Stream	10	N	N	U	N			X		Corrugated Steel Pipe	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
CV165	7.038	Small	Stream	15	N	N	U	N			X		Corrugated Steel Pipe	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	150	0	3,4,6	No
CV166	6.055	Small	Stream	5	N	N	U	N			X		Corrugated Steel Pipe	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV170	5.268	Small	Stream	5	N	N	U	N			X		Corrugated Steel Pipe	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	50	0	3,4,6	No
CV176	2.637	Small	Stream	10	N	N	U	N			X		Corrugated Steel Pipe	Corrugated Steel Pipe	Small Clearspan Bridges	Partial	1,2	No	Road prism with csp culvert crossing	100	0	3,4,6	No
74 Crossings		Extra Small	Stream	-	N	N	U	N		3	37	134	Open channel, some CSPs intact	Corrugated Steel Pipe	Culvert Maintenance		1,2	No	Road prism with csp culvert crossing	3480	0	3	No
Totals:																				**9290**	**2390**		

I:\102-00181-6\Assignment\Report\Report 1, Rev. 0 - Screening Report\Tables\[Table 6.4.xls]Habitat Balance - Road
1-Dec-06

Notes:
1. Clearspan watercourse crossing structure not feasible.
2. Instream works will be required to construct crossing structure.
3. Mitigation in addition to the DFO Operational Statement used and FPC Fish Stream Crossing Guidebook is presented in the Construction Environmental Management Plan (CEMP).
4. The Environmental Monitor may require additional site specific mitigation measures beyond those described in Note 2 above.
5. Site specific work plans will be developed in addition to the requirements in Notes 2,3, and 4 above.
6. Fish habitat compensation plans will de developed to address potential HADDs identified by DFO.
7. U = unlikely; P = possible; Y = yes; N = None.

Knight Piésold CONSULTING

TABLE 8.1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

BULK SAMPLING PROGRAM
ENVIRONMENTAL SCREENING DOCUMENT

PROPOSED WATER QUALITY MONITORING OF BULK SAMPLING PROGRAM ACTIVITIES

Activity	Sample Locations	Description	Parameters	Frequency	Duration	Monitoring Program Requirements
Mary River						
Fuel storage	L2-03, L1-02, L1-06, L1-08	Upstream	BTEX[1], total petroleum hydrocarbons	Monthly	When open water exists	Operational monitoring requirement
	L0-01	Downstream	BTEX[1], total petroleum hydrocarbons	Monthly	When open water exists	Operational monitoring requirement
Mining	G0-01, F0-01, F0-05, E0-10	Upstream	TSS, ammonia, metals, general chemistry	Monthly	When open water exists	Operational monitoring requirement
	E0-03	Downstream	TSS, ammonia, metals, general chemistry	Monthly	When open water exists	Operational monitoring requirement
	E3-08, E3-03, E4-01, E3-01	Spring runoff	TSS, ammonia, metals, general chemistry	Monthly	When open water exists	Operational monitoring requirement
	Downwind of each pit	Snowfall/vegetation	TSS, ammonia, metals, general chemistry	Monthly	When open water exists	Operational monitoring requirement
Water supply	BSP-03	Intake	Bacteria[2], turbidity, metals general chemistry	Monthly	When open water exists	*Public Health Act*
Sewage treatment	BSP-04	Effluent	BOD5, Fecal Coliform, TSS	Once every four weeks	When open water exists	Water license Part I Amend Item 1.ii.
	BSP-01-S, D	Discharge	BOD5, Fecal Coliform, TSS	Once every four weeks	When open water exists	Water license Part I Amend Item 1.ii.
Crusher area	D1-03, D1-05, D1-07, D1-10	Upstream	TSS, metals, general chemistry	Monthly	When open water exists	Operational monitoring requirement
	BSP-02, D1-01, DL0-01-S, D	Downstream	TSS, metals, general chemistry	Monthly	When open water exists	Operational monitoring requirement
	Downwind of crusher	Snowfall/vegetation	TSS, metals, general chemistry	Monthly	When open water exists	Operational monitoring requirement
Milne Inlet						
Fuel storage	BSP-06	Downstream	BTEX[1], total petroleum hydrocarbons	Monthly	When open water exists	Operational monitoring requirement
	BSP-05	Upstream	BTEX[1], total petroleum hydrocarbons	Monthly	When open water exists	Operational monitoring requirement
Sewage treatment	-	Effluent	BOD5, Fecal Coliform, TSS	Once every four weeks	When open water exists	Water license Part I Amend Item 1.ii.
	BSP-10	Discharge	BOD5, Fecal Coliform, TSS	Once every four weeks	When open water exists	Water license Part I Amend Item 1.ii.
Stockpiles	BSP-07	Lump ore	TSS, metals, general chemistry	Monthly	When open water exists	Operational monitoring requirement
	BSP-08	Fines	TSS, metals, general chemistry	Monthly	When open water exists	Operational monitoring requirement
	Downwind of stockpiles	Snowfall/vegetation	TSS, metals, general chemistry	Monthly		Operational monitoring requirement
Water supply	BSP-09	Intake	Bacteria[2], turbidity, metals, general chemistry	Monthly	When open water exists	*Public Health Act*
Road Construction						
Major crossings	-	Upstream	Turbidity, TSS, metals, general chemistry	Seasonal (3 times/year)	Pre- and post-construction	Construction Environmental Monitoring Plan
	-	Downstream	Turbidity, TSS, metals, general chemistry	Seasonal (3 times/year)	Pre- and post-construction	Construction Environmental Monitoring Plan

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01-Dec-06

Notes:
1. BTEX - Benzene, Toluene, Ethylbenzene and Xylenes
2. Bacteria parameters - Total coliforms, Escherichia coli, Heterotrophic plate count, Faecal coliforms and Faecal streptococcus
3. Site remoteness presents difficulties in sending bacteriological samples to a certified laboratory; on-site test kits may supplement laboratory testing