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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYIT
OFFICE DES EAUX DU NUNAVUT

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NRCan File No.: NT-056
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TC File No.: 7184-17-5

October 5, 2011

Ryan Barry
Executive Director
Nunavut Impact Review Board
P.O. Box 1360 Cambridge Bay
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RE: NIRB File No. 08MN053 – Nunavut Water Board’s Technical Review Submission to the Nunavut Impact Review Board regarding Baffinland Iron Mines Corporation’s Draft Environmental Impact Statement

Dear Mr. Barry:

Please find attached the Nunavut Water Board’s (NWB or Board) technical review comments and recommendations relevant to Baffinland Iron Mines Corporation’s (BIMC) Draft Environmental Impact Statement (DEIS). The submission is in response to the Nunavut Impact Review Board’s (NIRB) correspondence dated July 5, 2011, in which interested parties were invited to review and provide submissions regarding the DEIS by September 6, 2011. The NIRB subsequently extended the deadline for submissions to October 5, 2011, in response to a request from the Qikiqtani Inuit Association (QIA).

In its review, the NWB placed particular emphasis on aspects of the DEIS aimed at fulfilling the Type-A water licensing requirements including the draft water licence application, environmental management plans and sections pertaining to water use and waste disposal activities. Comments and/or recommendations have been provided for certain sections of the DEIS.

The NWB is appreciative of this opportunity to comment on the contents of the DEIS at this stage in the NIRB's Review Process. The Board trust that recommendations provided will assist in preparing the information required for the Type-A water licence application that will accompany the final Environmental Impact Statement (FEIS).

With respect to the NIRB Technical Meeting and Pre-Hearing Conference scheduled for October and November 2011, respectively, the NWB will be represented by, at most, two participants for both the meeting and conference.

If you have any comments and or questions regarding the NWB's submission, please contact the undersigned at 867-360-6338 or at sjoseph@nunavutwaterboard.org or David Hohnstein, Director of Technical Services at 780-443-4406 or at dts@nunavutwaterboard.org.

Regards,

Original signed by:

Sean Joseph

Attachment: NWB Technical Review Submission



Nunavut Water Board

Nunavut Water Board's Technical Review Submission

to the

Nunavut Impact Review Board

Pertaining to

**Baffinland Iron Mines Corporation's Draft Environmental Impact
Statement for the Proposed Mary River Project**

October 2011

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Summary (English)

Baffinland Iron Mines Corporation (BIMC or Proponent) submitted to the Nunavut Impact Review Board (NIRB) a Draft Environmental Impact Statement (DEIS) containing a detailed project description and supporting information for various components and activities associated with the proposed Mary River Project, located on northern Baffin Island within the Qikiqtani Region of Nunavut. The DEIS is aimed at satisfying the information required under the project's Guidelines¹ issued by the NIRB. Section 1.4.2 of the Guidelines, identifies the condition under which the NIRB and the Nunavut Water Board (NWB) can coordinate the NIRB review process and the NWB water licensing process in accordance with the NIRB and NWB Detailed Coordinated Process Framework (DCPF)².

The DCPF allows the Proponent to include in the DEIS specific information required for either the NIRB process or the NWB process. It also provides an opportunity for the proponent to satisfy, where possible, information requirements of both the NIRB and NWB processes, simultaneously, by submitting the information to the NIRB at the initial stage(s) of the process. In addition, it provides directions to the NIRB and NWB concerning the approach that can be taken when conducting a joint review of the DEIS.

The NIRB distributed the DEIS and addendums to the DEIS to interested parties including the NWB for review and/or comments on July 5, 2011. The NWB has reviewed the sections of the DEIS and relevant addendums and provided comments specifically on items in volumes 1, 2, 3, 6, 7 and 10. Particular emphasis was placed on the concordance table with respect to the draft Type-A water licence application, environmental management plans, and studies, reports and research related to water use and waste disposal activities. Comments and recommendations are organized sequentially by the volume number, except where they apply to more than one volumes/sections of the DEIS. In such cases, the comments and/or recommendations are listed under the general comments section. The following is a summary list of general items identified during the review:

- Lack of and/or insufficient information included in some sections of the water licence application and/or over- reliance on information contained in other sections of the DEIS to satisfy information requirements that could be easily included on the application.
- Use within Concordance Table of website addresses as the source of information, but not including the information in the DEIS.
- Inconsistency in the scope of activities covered under some of the management plans and concerns surrounding functionality of some Plans.

¹ Guidelines for the Preparation of an Environmental Impact Statement for Baffinland Iron Mines Corporation's Mary River Project (NIRB File No. 08MN053), November 16, 2009.

² Nunavut Impact Review Board (NIRB) and Nunavut Water Board (NWB) Detailed coordinated process framework for NIRB Part 5 Review and NWB Licensing, September 2009.

- Considerable duplication of information contained in some environmental management plans.
- Design drawings submitted for some of the proposed facilities are preliminary or conceptual and would not necessarily satisfy NWB licence application requirements.

For the sections of the DEIS identified as lacking or containing insufficient information, recommendations have been provided concerning the information that should be included in revision of the appropriate sections of the DEIS. Recommendations have also been made with respect to the extent to which the scope of some plans should be expanded, as well as ways to consolidate and streamline management plans so as to increase functionality and reduce redundancies. It is believed that the comments and recommendations provided will assist in preparing the Type-A water licence application that will accompany the Final Environmental Impact Statement (FEIS).

Summary (Inuktitut)

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⁴ መጋቢት ፳፻፲፱ ዓ.ም. ስለተካሄደው ሪፖርት (GBH/NR353), ጳጳሳዊ 10, 2009.

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Introduction

On July 5, 2011, the Nunavut Impact Review Board (NIRB) invited interested parties to review and provide submissions pertaining to the Draft Environmental Impact Statement (DEIS), received by the NIRB on January 21, 2011 from Baffinland Iron Mines Corporation (BIMC) for the proposed Mary River Project. The Mary River Project involves the construction, operation, closure, and reclamation of open pit iron mine, capable of producing 18 million tonnes of ore per annum, on the northern Baffin Island, located within the Qikiqtaini Region of Nunavut. The entire lifespan of the proposed project, from construction to reclamation of the mine, is approximately thirty-three (33) years. Ore produced is expected to be shipped to markets in Europe.

In its request for submissions, the NIRB indicated that BIMC had requested a joint review for the proposal in accordance with the NIRB and NWB Detailed Coordinated Process Framework (DCPF) and that the NIRB and NWB have agreed to coordinate their review process. The DCPF allows the Proponent to include in the DEIS specific information required for either the NIRB process or the NWB process. It also provides an opportunity for the proponent to satisfy, where possible, information requirements of both the NIRB and NWB processes, simultaneously, by submitting the information to the NIRB at the initial stage(s) of the process. In addition, it provides directions to the NIRB and NWB concerning the approach that can be taken when conducting a joint review of the DEIS

Information provided in the DEIS associated with the water licensing process is contained within several volumes of the DEIS. The NWB has reviewed the relevant sections of the DEIS and compiled below a list of comments and/or recommendations arranged sequentially by volume, in order to assist the NIRB and BIMC in the preparation of a Final Environmental Impact Statement. Comments and/or recommendations that apply to more than one v are listed under the general comments section.

General comments

- Minimum set-back distance above the ordinary high water mark of freshwater bodies for situating proposed infrastructure is being listed as thirty (30) metres instead of thirty-one (31) metres in some of the plans and sections of the DEIS. It is recommended that the set-back distance in all plans and relevant sections of the DEIS be revised to thirty-one (31) metres, except in cases where authorized, to allow for consistency with that of Indian and Northern Affairs Canada's (INAC) Land Use guidelines and the NWB general licensing conditions.
- There are inconsistencies in the scope of activities covered under the various Plans. Some cover activities under the Bulk Sampling Program while other cover activities

proposed in the Draft EIS. It is suggested that that the where applicable all project activities be considered in each plan.

- Where applicable some of the plans should be streamlined as to reduce redundancies and increase the fluidity and to easily locate appropriate information when required.
- Consistency in the use of terms should be looked at when revising the plans. For example, the Milne Inlet bulk fuel storage facility and the Milne Port fuel facility appear to be synonymous as are the Mary River camp and the Mine camp.
- Some Plans rely solely or excessively on information contained in other Plans that should have been included in those Plans. To ensure that the users of those are able to access the information as readily as possible, it is suggested that attempts be made to decrease referencing other Plans for information that should and could be easily included in a specific plan.

Volume 1: Main Document, Draft Type-A Water Licence Application (Appendix 1C-3)

The draft Water Licence Application that submitted was for consideration under Appendix 1C-3 of the EIS was reviewed for completeness and consistency with NWB Guide 4⁵. The review determined that the following items should be addressed:

Block #4 of the Water Licence Application: Location of the Undertaking (

In response to the requirements of this item, inconsistent information is provide on the application form and in Volume 3, Table 3-1.1 and Figure 3-1.2 of the DEIS for proposed and/or existing camps. In order to ensure that the NWB captures water use and waste disposal activities associated with all existing and/or proposed camp facilities, it is recommended that the number of camps be confirmed provided in all sections of the DEIS including the water licence application. Once the information is confirmed and revised, it is recommended that Table 3-1.1 and Figure 3-1.2 be accordingly updated. Also, Figure 3-1.2 should depict the name of each camp next to the appropriate symbol on the map.

In addition, it should be noted that a Type-A licence and multiple Type-B licenses could be issued to a project, depending on the activities undertaken. It is therefore recommended that the water licence application identify the camps (i.e. temporary/permanent) requiring approval under the Type A application.

Block #5 of the Water Licence Application – Maps

To address the requirement in this section, a project location map and a location of project activities map, Figures 3-1.1 and 3-1.2, respectively, were provided to a scale other than that

⁵ Guide 4, Completing and Submitting a Water Licence Application for a New Licence, April 2010

specified by NWB in Guide 4, 1:50,000. It is recommended that appropriately scaled maps be provided to satisfy the requirement of Guide 4.

Block #6 of the Water Licence Application – Nature of Interest in the Land

Information on the expiry dates for some leases and authorizations are not included in the response to this item. Volume 2, Section 2.0 of the DEIS is referenced as containing information relevant to this item. Some dates that are excluded from the application form are included in Table 2-2.3 of the DEIS. It is suggested, in cases where limited information is required and available, that the information be included on the application for in addition to referencing appropriate sections of the DEIS.

Block #7 of the Water Licence Application – NPC Determination

As a response to this item, Volume 2, Section 2.2.1, of the DEIS is referenced. This section states that the Nunavut Planning Commission (NPC) views the railway as a proposal for a transportation corridor, which would possibly require an amendment to the North Baffin Regional Land Use Plan. For information purposes, it is recommended that an update be provided, if available, on the status of the potential amendment that the NPC appears to be contemplating.

Block #9 of the Water Licence Application – Description of the Undertaking

Volume 3 of the DEIS is being referenced as containing a detailed project description in response to this item. The information provided in Volume 3 is very comprehensive; however, many of the proposed activities do not necessarily fall under the NWB's mandate. It is therefore recommended that an executive summary in English and Inuktitut that specifically addresses the requirements of the water licence application be included as an attachment to the application. This will enable parties to consistently recognize which proposed activities and/or facilities are being considered when reviewing the water licence application and related documents.

Block #10 of the Water Licence Application – Options or Alternative Methods

To satisfy the requirement of this item, Volume 2, Section 6.0, of the DEIS is being referenced as containing information on alternative methods; however, the volume and section referenced contains information on definitions and abbreviations instead of information on alternative methods. It is recommended that the appropriate referencing be provided.

Block #11 of the Water Licence Application – Classification of Primary Undertaking

According to the response to this item, the undertaking that is being applied for is classified as Mining and Milling (including exploration/drilling/exploration camp). In addition, the types of undertaking being applied for, in accordance with Schedule II of the *Northwest Territories Waters Regulations*, are described as follow: Hydrostatic Testing, Landfarm & On-site Storage of Hydrocarbon Contaminated Soil, Mineral Exploration/Remote Camp, Advance Exploration,

Mine Development, General Water Works, and Power. As part of the requirements of the water licence application, supplemental information pertaining to the types of undertaking must be provided with the application. It is recommended that the information requirements under this item be provided as an attachment to the water licence application and/or by referencing the appropriate volume(s) and/or section(s) of the DEIS.

Block #13 of the Water Licence Application – Quantity of Water Involved

Several sections of DEIS identified in the application contain the information required under this item. However to expand on the information provided, Volume 3, Table 3-1.1 and Volume 10, Appendix 10D-2, Table 4.4, of the DEIS, the following are recommended: Table 3-1.1 should include the combined annual water demand for all project sites and the overall water demand for the entire project for the term of the licence being contemplated. Table 4.4 should include the total annual water demand for all activities listed under each project site and the total water demand for the entire project for the term of the licence contemplated. In addition, both tables seem to suggest that the annual water demand for the Railway consists of the combined water requirements for the Mid-Rail, Ravn River, Tunnels and S. Cockburn camps. It is recommended that the water demand for each of those camps be included as a subset of the total demand for that of Railway.

Block #15 of the Water Licence Application: Quantity and Quality of Waste Involved

The information required under this item is contained in the sections referenced in the DEIS. To expand on the information provided, Volume 10, Appendix 10D-4, Table 3.2 should be revised to list the volume of waste generated by each of the camps associated with the railway as a subset of the combined volume of waste generated for Railway camps. In addition, Volume 10, Appendix 10D-4, Table 3.4, should include approximate quantities of hazardous waste generated and disposal method(s) for all hazardous wastes listed. Information should also be provided for all wastes generated by two emergency shelters.

Block #16 of the Water Licence Application: Other Authorizations

The appropriate section of the DEIS is referenced, Volume 2, Section 2.0, contains the information required under this item; however, some of the information is now outdated. It is suggested that the information referenced in the DEIS, including Table 2-2.3, be updated to include new, renewed, and pending authorizations, leases and permits.

Block #18 of the Water Licence Application: Water Rights of Existing and other Users of Water

The response to this item indicates that there are no known water users within the project area who will be affected by the proposed undertaking and, as such, matters related to compensation agreements are not applicable. Information should be provided to support this determination.

Block #19 of the Water Licence application: Inuit Water Rights

It is stated that there will be no “substantial effect” to the quality, quantity or flow of water through Inuit Owned Land (IOL) due to the undertaking. The term “substantial effect” should be qualified or explained; the inclusion of appropriate referencing to the DEIS is also suggested.

Block #21 of the Water Licence Application: Security Information (

The item requires that an estimate of the total financial cost for final reclamation be provided. Volume 3, Section 4.0, and Volume 10, Appendix 10G are referenced as containing the required information. However, the review of the information provided in Volume 3, Section 4.0, identifies information related to reclamation activities; however, no reclamation cost estimate has been provided. The review of the information contained in Volume 10, Appendix 10G-A, Sections 8.0 and 9.0, identified reclamation estimates; however, the estimate provided appears to be covering reclamation activities for components of the existing licence, 2BE-MRY1114, instead of the scope of activities proposed in this application. It is recommended that a revised reclamation cost estimate be provided using the most recent version of RECLAIM model.

Block #22 of the Water Licence Application: Financial Information

The response to this item states that financial information related to the BIMC is forthcoming. Prior to the issuance of a licence, assurance is needed that the potential licensee is committed and capable of accepting all financial responsibilities associated with the undertaking. It is suggested that the information required under this item be provided.

Block #23 of the Water Licence Application: Studies undertaken to date

As a response to this item, it is stated that a completed compilation of studies, reports and research is provided in the 2010 DEIS, without specifying which parts of the DEIS contains the information. Since all studies, reports and research contained in the DEIS are not related to the water licence application, it is recommended that a list of the ones relevant to the application be included on the application form in addition to appropriate referencing to the DEIS.

Block #24 of the Water Licence Application: Proposed Schedule

In response to this item Volume 3, Section 1.3 of the DEIS is being referenced. In addition to referencing the DEIS, it is suggested that tentative dates be included in the application as the schedule provided in the DEIS might not necessarily be consistent with the projected schedule for activities proposed in the water licence application.

Block #25 of the Water Licence Application: Proposed Term of Licence

Specifics are not provided with respect to the actual term for which the licence is required in the response to this item. Because the term of a licence plays a crucial role in the decision surrounding issuance of a water licence, it is suggested that a proposed term for the licence be provided.

Block #26 of the Water Licence Application: Annual Reporting

The response to this item states that the details on the content of the annual report for the project will be determined from future technical meeting. Even though future technical meetings will contribute to the final form and content required for technical reporting, there is a requirement for a proposed reporting outline or template to be included in the water licence application. It is suggested an outline or template for the annual report be provided as it may prove helpful during discussions related to reporting during the technical meetings.

Miscellaneous Items

As required by the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Northwest Territories Waters Regulations* (Regulations), a complete application shall include the Application Fee of \$30.00 CDN and a deposit equal to the Water Use Fee payable under subsection 9(1) of the Regulations, in respect of the first year of the licence that is being applied for, calculated using Indian and Northern Affairs Canada, Northern Affairs Organization, Land and Water Management, NCR, Water Use Fee Calculator, (Ver. 1.4).

Volume 1: Main Document, Concordance Table (Appendix 1C-2)

The review of the information contained in the concordance table accompanying the water licence application has determined that the referencing to the DEIS provided are mostly valid. There are some instances, however, where no referencing is provided because the information was apparently not available for inclusion during the draft of the DEIS, and other instances where, instead of including the information in the DEIS, a website is being referenced. In order to ensure that the information related to the water licence application is consistent and readily accessible in the DEIS for consideration during the review process, it is recommended that the DEIS and the concordance table be updated accordingly in any revision of the DEIS:

- The section that applies to the “NIRB Determination” states that the required information is available on the NIRB website without actually including the information in the DEIS. For expediency and consistency reasons, it is suggested that the information be also included in the DEIS.
- The section that applies to “Financial Information” states that the required information is not applicable for the current phase of the project. This information should be included for review.
- The sections related to the “Proposed Term of Licence and “Annual Reporting” requirements should be addressed as they contribute to the decision process related to issuance of a licence.

Volume 2: Consultation, Regulatory Framework and Assessment Methodology

Section 2.2.5, Pg. 23, states that if it is determined through the environmental review process that the project activities are expected to substantially affect the quality, quantity, or flow of water on Inuit-owned lands, the proponent will be required to enter into a water compensation agreement with the QIA. Information on whether there is any existing compensation agreements related water use under the current type “B” Licence and how any existing water compensation agreement(s) could be affected should be provided.

Table 3-1.1, Pg. 26, Table, 2-2.3 lists current authorizations associated with exploration activities for the project. Some of the authorizations listed are expired and/or renewed, as well as new ones probably issued subsequent to submission of the DEIS. In order to ensure that the information in the table is as current as possible, it is suggested the table be with the most recent information.

Volume 3: Project Description

Table 3-1.1, Pg. 3-4, lists key facts about the project, including a useful break-down of quantities of certain types of resources that will be allocated during various phases of the projects. To add to the information contained in the table, it is recommended that the following changes be included in any revision:

- Under the “Treated (Sewage) Effluent” section, information is provided with respect to the combined volume of sewage generated by the Raven River, Cockburn Lake and Cockburn South camps. Sewage generated by these camps is intended to be treated offsite by at least two different wastewater treatment facilities. To assist in assessing whether contingency measures for sewage disposal are appropriate for each camp during any interruption in off-site treatment, it is therefore suggested that information related to the quantity of sewage generated by each camp be provided.
- Under the “Water Demand” section of the table, it appears that the water demand for the Railway encompasses the combined water demand for the Mid-Rail, Raven River, Cockburn Lake, and Cockburn South camps. To enable the NWB to assess the demand placed on the respective water source supplying each camp, it is recommended that the quantity of water for each camp facility be provided as a subset of the demand for the Railway.
- The emergency shelters at Tote Road site are included on the list of camps in table 3-1.1, however no information is provided with respect to the water demand and quantities of sewage generated by each of those facilities. It is suggested that this information be included.

- The “Fuel Storage” section provides information pertaining to an unspecified number of temporary 20,000-litre Iso-containers that may potentially be installed at the Milne Port, Tote Road, Railway, and Steensby sites. In order to easily confirm the quantity of fuel at a given time at each site, it is recommended that the number of Iso-containers at the various sites be included in the table.

Section 2.1.8, Pg. 22, states that a tank-farm consisting of two 30-ML tanks will be constructed at the Milne Port site. However, a modification requested for the Milne Inlet bulk fuel storage facility, dated June 2011 and approved by the NWB on August 12, 2011. indicates that the tank-farm will consist of four 10-ML tanks, one 5-ML, and one 3-ML tank. It is recommended that confirmation be provided on the number of fuel tanks that will be stored at the Milne Inlet site.

Volume 6: Terrestrial Environment

Section 2.1.4.1, Pg. 25, states that the current mine plan includes encapsulating Potential Acid Generating (PAG) rocks within the core of the waste rock pile, and that based on the Metal Leaching/Acid Rock Drainage (ML/ARD) study conducted, encapsulation appears to be viable option for minimizing any metal ML/ARD effects on the environment. However, additional geochemical studies including kinetic testing are continuing to evaluate and refine this option. It is recommended that information on alternatives to encapsulation be provided should further evaluations determine that encapsulation would not produce the required and/or desired runoff quality. The results of the continuing studies should also be provided once available.

Section 2.1.4.2, Pg. 26, states that a screening level ML/ARD assessment completed on quarries and borrow pits along the existing Milne Tote Road determined that proposed quarries and borrow pits along the area appear to have a low potential for ML/ARD and are therefore suitable as quarry or borrow sources. However, the density sampling conducted is insufficient and more sampling is planned. It is recommended that the timeline for conducting additional density sampling and results, once available, be provided.

Section 2.4.2, Pg. 48, states that no major eskers or wetlands within the Local Study Area (LSA) will be affected by the project. It is suggested that this section be expanded to include information on the factors used in determining what a major esker or wetland is. Information on wetlands not considered as being major should also be included.

Volume 7: Freshwater Environment

Section 1.2, Pg. 3, states that the methodology used assumes that an impact to freshwater may be fully mobile and able to move both upstream and downstream but the impacts are confined to the water and therefore cannot move from one watershed to another. An explanation should be

provided as to the types of impact being referred to and how those impacts are going to be confined to the initial watershed; even though, water is transferred between watersheds from the perspective of contaminants.

Section 1.2, Pg. 3, states that one baseline monitoring station located on a tributary of Phillips Creek monitors one-quarter of the entire Phillips Creek watershed, which is 900 km². It is assumed that because of similar watershed characteristics, the estimated annual distribution of stream flow can apply to the entire Phillips Creek watershed. It will be help to confirm whether the watershed characteristic is similar or consistent throughout the entire Phillip Creek watershed and the extrapolation made for using data for the Mean Annual Unit Runoff (MAUR) obtained from once monitoring station is justified.

Section 2.2.4, Pg. 19, refers to a storm water management plan that will be developed for the Mary River Freshwater RSA to address runoff from non-key areas including lay-down areas, camps, airstrip and other mine use areas. It is suggested that a storm water management plan be developed for other areas as well.

Section 3.1, Pg. 112, refers to baseline data obtained for surface water and sediment quality prior to future development. However, during the baseline sampling program, it was not possible to collect data that could reflect pre-disturbed state in areas affected by the Milne Inlet Tote road Bulk Sampling Program associated infrastructure including wastewater treatment and discharge, water abstraction, etc. It is recommended that the information be provided on whether or not any analyses have been carried out to determine the extent to which the data collected differ from data that would have been obtained under pre-disturbed conditions.

Section 3.4.3.1, Pg. 145, indicates that given limitations in mitigation measures it is anticipated that total suspended solids (TSS) loading will occasionally exceed the CCME threshold of +5 mg/L relative to baseline conditions. It is also suggested that in the likely event that the effects of increased TSS coincide with freshet conditions, the magnitude of the potential effect will be mitigated due to added buffer capacity. It is suggested that actual measures proposed for implementation to prevent and/or mitigate exceedences be provided.

Section 3.4.3.1, Pg. 156, states that given the limitations of mitigation measure, it is anticipated that uncontrolled discharges of water from quarries and borrow sources may occasionally exceed applicable CCME thresholds. However, the exceedences are likely to coincide with freshet conditions during snow melt, which will likely mitigate potential effects. It is suggested that the proponent provide information on how these elevated levels of contaminants will be addressed not accounting for dilution factors associated with freshet.

Section 3.4.3.2, Pg. 176, mentions that an alternative that is being proposed for the project to deal with runoff water is to construct storm water management ponds over the permafrost, which

would provide a hydrogeological barrier that prevents vertical seepage from occurring and preclude the movement of mine contact water into the groundwater below the permafrost. It is suggested that details on the size, structure and treatment methods, and possible discharge points be provided.

Volume 10: Environmental, Health, and Safety Management Systems

Several Environmental Management Plans were submitted for consideration under Volume 10 of the DEIS. The NWB, however, has limited its review to plans or components thereof that directly affect the water licensing requirements and/or its mandate. The plans reviewed are as follows: Environmental Protection Plan, Environmental Spill Contingency Plan, Milne Port-Oil Pollution Emergency Plan, Steensby-Oil Pollution Emergency Plan, Explosive Management Plan, Surface Water and Aquatic Ecosystem Management Plan, Wastewater Management Plan, Waste Management Plan, Waste Rock Management Plan, Borrow Pit and Quarry Management Plan, Road Management Plan, Rail Management Plan, Preliminary Mine and Closure and Reclamation Plan. Comments specific to each plan are appropriately addressed under the section allocated for that plan

Appendix 10B: Environmental Protection Plan

The Environmental Protection Plan is developed as source of quick reference for project personnel to monitor compliance and to make suggestions for improvements. Although the document contains information required for the some activities proposed in the DEIS, most of the content in is aimed at the Bulk Sampling Program. It is recommended that the following sections be revised to include proposed activities covered in the p DEIS: 1.2, 1.4, 2.4, 2.5, 2.7, 2.9, 2.15-2.18, 2.20-2.22 and 3.0. Some of the specific items that should be addressed are as follow:

- Section 1.2 of the Plan states that the plan is designed to ensure that personnel understand and implement environmental protection procedures for both routine activities and unplanned events associated with the Bulk Sampling Program. Since the activities proposed in the Type A water licence application included in the DEIS as well as their potential environmental impacts are more extensive in scope than that allowed for under the Bulk Sampling Program, it is recommended that the objective of the Plans be broaden to include those activities.
- Section 1.4 provides information on environmental approvals. This section should be updated to reflect new and renewed permits and leases issued to the project subsequent to submission of the DEIS. In addition, information on pending permits and leases related to the project should also be included in this section.

- Section 2.4 provides information on water use for camps and drilling activities allowed for under the Bulk Sampling Program. It is recommended that this section be broadened to include water use for camps and mining and drilling activities proposed in the Type A water licence application listed in the DEIS.
- Section 2.7 refers to fuel storage and handling required for just the Bulk Sampling Program. It is suggested that the scope of this section be expanded to include fuel storage and handling requirements proposed in the DEIS.
- Information on hazardous substances, including waste oils and lubricants currently stored or proposed to be stored should be included in the Plan.
- Section 2.9 states that turbidity levels will be monitored by environmental monitors during and after construction of water courses. It is recommended that levels be monitored prior to construction to establish inherent or baseline turbidity levels.
- Section 2.15 should be expanded to include the volume of sewage generated and methods of treatment for all existing and/or proposed camp facilities in the draft EIS.
- Section 2.16 should be expanded to include Hazardous Materials generated by current activities and activities proposed in the DEIS.
- Section 3.0 should include procedures and forms for reconciling fuel, logs forms for water use, logs forms for sewage treated, logs forms for waste disposed of on-site, and an inspection form for the water treatment facilities.

Appendix 10C-1: Emergency and Spill Response Plan, SD-ERP-001 (Appendix 10C-1)

The objective of the Emergency and Spill Response and Spill Contingency Plan is to address and identify potential emergencies that could arise during construction and operation of the proposed mine. NWB review of the plan has identified the following items that should be addressed:

- Table 1.0 contains a list of organizations to which the spill contingency plan is distributed. It is suggested that copies of the revised plans be provided to Aboriginal Affairs and Northern Development Canada (AANDC) and Environment Canada (EC) as both organizations have a vested interest in the potential impacts of spills on the environment.
- Section 2.1, Pg. 11, states that a list of different spill kits and their content are provided in *Attachment 2*. However, Attachment 2 indicates that the information is contained in *Annex 4* (Resident Spill Response Equipment, Milne Port OPEP (SD-ERP-002)). *Annex 4*, however, is not included in the document referenced.
- Table 3.2, Pg. 15, contains information pertaining to the characterization of emergency related operational incidents/accident. The table seems to suggest that the assignment of a particular risk rating is dependent on the environmental impact created by a single event and not necessarily impacts created by multiple events occurring concurrently. It is recommended that an explanation be provided as to how multiple events, having a

cumulative risk rating equivalent to any of the single event outlined in Table 3.2, will be handled.

- Section 3.2.1.4, Pg. 17, states that, if necessary, fresh water will be trucked from alternative sources if the ones that are approved for use are compromised. It is recommended that a list of potential alternative sources and withdrawal rate(s) be included in the Plan. This information will assist the NWB in determining whether potential alternative sources will be capable of meeting potential demand. In addition, it should be noted that NWB's approval is required prior to using water sources not approved for use under a particular Licence.
- Section 3.2.1.6, Pg. 17, indicates that in the event of sewage system failure latrine toilet may be used as an alternative to disposing sewage. The plan should note that if latrine toilets are not approved for use under the licence, NWB approval will be required prior to constructing and using such facilities.
- Section 3.2.3.1, Pg.18, includes information in relation to the impact that floods can have on the roads and railway. Since the impact of floods may not necessarily be confined to the roads and railway, it is recommended that other project related infrastructure that could be affected by floods be included in this section.
- Section 3.2.4.2, Pg.20, states that appropriate mitigation and preventative programs will be developed subsequent to incidents involving ground instability. It is suggested that a more proactive approach, involving the development of preventive and mitigation measures, be considered prior to the occurrence of such events and effectiveness of measures developed and assessed after first event.
- Section 6.1.1.2, Pg. 31, addresses spill scenario involving Day Tanks/Temporary Storage Areas. However, no information is included on the number of such facilities that are proposed. It is recommended that inventory of the aforementioned facilities, existing and/or proposed, be included in the Plan.
- Section 6.3, Pg.35, Table 6.4, provides information with respect to sewage generated, treated and discharged by temporary and permanent camp facilities. Based on the information, it is unclear how much sewage will be generated from each camp. It is suggested that each camp be listed along with sewage storage facilities and/or treatment facilities and the amount of sewage generated. In addition, this section should include spill response procedures for addressing broken/dislodged sewer lines.
- Section 7.0, Pg. 37, states that *Schedule B* contains reportable quantities of hazardous substances; however, the schedule appears to be missing from the Plan.
- The contact person for the Department of Fisheries and Ocean Canada in Section 7.0, Table 7.1 of Plan should be updated as the person listed is no longer employed with DFO.
- The Plan should include an inventory of all hazardous substances stored on site.
- Procedures for responding to spills involving the rail and fuel transport truck should be included in the Plan.

- Actual copies of the MSDS for all hazardous substances stored on site should be included in the Plan.
- A site map that is specifically designed to emphasize spill response elements should be provided. The map should depict spill response equipment, fuel caches, nearby water bodies, camp infrastructures, and other relevant information.
- Responses to the spill incidents involving on-site wastewater storage facilities should be included in the Plan.

Appendix 10C-2: Milne Port – Oil Pollution Emergencies Plan, SD-ERP-02

Although the Milne Port Oil Pollution Emergencies Plan is developed to assist in the implementation of measures to protect the marine environment, there are certain sections of the Plan that are aimed at addressing land related spills. The NWB has reviewed those sections and identified the following items, which should be addressed:

- Section 3.2, Pg. 6, provides information about the existing bulk fuel storage facility at Milne Inlet, which consists of fuel bladders. The section does not address the proposed bulk fuel storage facility and temporary fuel storage facility identified in the project description of the DEIS. To ensure that all fuel storage facilities associated with the Milne Inlet site are documented in the Plan, it is suggested that this section be revised to include all existing and proposed fuel storage facilities.
- Section 4.1, Pg. 10, refers to ship-to-shore fuel transfer procedures associated with the existing Bulk Fuel Storage Facility only. It is suggested that the scope of this section be expanded to include the proposed tank farm facility in the DEIS.
- Section 5.1, Pg. 11, states that copies of the relevant Material Safety Data Sheets (MSDS) are provided in *Annex 8*; however, *Annex 8* appears to be absent from the document.
- Section 5.5, Pg. 18, Table 5.2, the contact person for DFO-Iqaluit should be updated as the contact is no longer employed with DFO.
- Section 6.3, Pg. 24, Table 6.3, should be expanded to include spill response scenarios for spills occurring within the tank farm facility.
- Section 7.1 Pg. 26, references section 7.1.1 of the same Plan for information pertaining to training. However section 7.1.1 appears incorrectly labeled in the Plan
- It is suggested that proposed procedures and/or information related to hydrostatic testing for the proposed bulk fuel storage facility be included in the Plan.
- It is recommended that the appendices, *Annexes 1 to 10*, be included in the Plan.
- Information on overfill protection devices, such as, level sensors and backflow prevention devices that can assist in preventing spills and should be included in the Plan.

Appendix 10-C: Steensby Port – Oil Pollution Emergencies Plan, SD-ERP-02

The Steensby Port Oil Pollution Emergencies Plan is developed to assist in the implementation of measures aimed at protecting the marine environment. Nevertheless, there are aspects of the Plan that are geared to addressing spills on land. The NWB reviewed those sections and identified the following items, which should be addressed:

- Section 3.2, Pg. 11, provides information related to proposed permanent fuel storage facilities. It is suggested that the Plan address all fuel storage facilities, including any current temporary fuel storage facility associated with the site.
- Section 5.1, Pg. 16, states that copies of the Material Safety Data Sheets (MSDS) for substances stored on site are provided in *Annex 8*; however, *Annex 8* appears to be absent from the document.
- Section 5.5, Pg. 23, Table 5.2, the contact person for DFO-Iqaluit should be updated as the contact is no longer employed with DFO.
- Information on overflow protection devices, such as, level sensors and backflow prevention devices that can assist in preventing spills should be included in the Plan.
- Section 6.5, Pg. 28, states that spills less than 5m³ will be handled by response personnel in accordance with the Plan. For spills larger than 5m³, it is stated that the onsite coordinator will determine the response level required without actually specifying procedures for dealing with spills larger than 5m³. It is recommended that any revision of the Plan should include actual procedures for dealing with large spills.
- Section 7.1, Pg. 29-30, contains two sub-sections, 1.1.1-Training Content and 1.1.2-Short-Notice Training, which appear to be improperly labeled.
- It is suggested that proposed procedures and/or information related to hydrostatic testing for the proposed fuel storage facility be included in the Plan.
- It is recommended that the appendices, *Annexes 1 to 10*, be included in the Plan.
- If the guidelines for the DEIS do not require separate plans, it is suggested, that both Oil Pollution Emergencies Plans be combined since there are significant overlaps in the information provided in each Plan. A combined Plan may help to increase effectiveness and functionality of the Plans.
- There appears to be some ambiguities concerning where the Oil Pollution Emergency Plan starts and ends and where the Emergency and Spill Contingency Plan begins. This can potentially impact the functionality of both plans. Even though there is the recognition that overlaps should and do exist between the two it is recommended that a more precise separation, with respect to the contents and usage of the plans, be established.

Appendix 10C-4: Explosives Management Plan, SD-ERP-04

An Explosives Management Plan is developed in response to the NIRB and NWB directives. Although the plan is conceptual at this stage, the NWB has reviewed it and identified the following items, which should be addressed:

- Section 3.0, Pg. 6, provides information concerning temporary and permanent explosive storage facilities, without actually elaborating on the number of day-use magazines sites that will be in operation along the railway site at a given time. It is suggested that this information be included in the Plan.
- Section 3.3, Pg. 8, states that run-off water associated with ammonium nitrate storage will be allowed to drain and will be pumped out as needed. Information should be provided on where the pumped out water will be disposed of and what steps will be taken to ensure that it meets discharge criteria before being released.
- Section 4.3, Pg. 10, states that an Explosives Management Plan will be developed by the contractor to handle incidents such as fire, explosions, etc. To prevent redundancies and promote consistency between the contractor's Plan and this Plan, it is suggested that the contractor's Explosives Management Plan be incorporated into this Plan.
- Section 4.3.1, Pg. 11, refers to a Blasting Plan that will be developed by a contractor for use during blasting activities proximal to water bodies. It is suggested that the Blasting Plan be incorporated into the Explosives Management Plan for increased functionality.
- Section 4.4, Pg. 11, refers to additives that might be used to increase the storage life of diesel fuel, if necessary. It is suggested that these substances be included in the inventory of the Emergency and Spill Response Plan if they are going to be stored on site.
- Section 4.6.2, Pg. 15, provides disposal methods for explosive materials without precisely stating which of the methods are preferred and/or will likely be used. It is recommended that the methods of disposal be ranked in order of increase preference so that interested parties can comment accordingly.
- Copies of the Material Safety Data Sheets (MSDS) and/or appropriate referencing should be included in the Plan.
- A site map depicting the locations of existing and/or proposed Explosive Management facilities should be included in the Plan.

Appendix 10D: Surface Water and Aquatic Ecosystems Management Plan, SD-EMMP-002

The surface Water and Aquatic Ecosystems Management Plan is designed to document the quality and quantity of water that will interact with project components over the life of the Project. The Plan was reviewed, and the following items identified be addressed:

- Section 1.2, Pg. 1, contains information related to regulatory requirements including the requirements for water and wastewater generated by the Type “B” Licence. Since the Aquatic Management Plan is aimed at addressing potential impacts to surface water and aquatic ecosystem associated with the entire project, it is suggested that the scope of the Plan be expanded to include potential impacts associated with activities proposed in the DEIS.
- Section 1.2, Pg. 4, states that grey water sumps, waste disposal areas and latrines will be situated at a minimum of thirty (30) metres for the ordinary high water mark. It is recommended that the distance be revised to thirty-one (31) metres so as to reflect general water licensing conditions.
- Section 4.4, Pg. 26, seems to suggest that the temperature of surface and subsurface conditions will be solely relied upon to ensure that potential acid-forming reactions are prevented. It is recommended that contingency measures be developed for situations where weather combined with operational conditions do not favor the prevention of such reactions.
- Table 4.4, Pg. 28, provides a breakdown of various activities for which water will be required. It is suggested that the total annual water demand for the various phases of the project be included in the Plan.

Appendix 10D-3: Wastewater Management Plan, SD-EMMP-003

The Wastewater Management Plan is developed to fulfill the requirements of the water licence issued for the Bulk Sampling Program. As such, the Plan does not necessarily address waste water management and related issues identified in the DEIS. It is therefore recommended that the scope of the plan be expanded to cover both existing facilities and/or facilities proposed in the DEIS.

Appendix 10D-4: Waste Management Plan, SD-EMMP-004

The Waste Management Plan is designed to ensure that a sound waste management program which focuses on the principles of reduction/recovery/reuse/recycling is implemented. The NWB has reviewed and identified the following items, which should be addressed:

- Section 3.2, Pg. 13, states that after waste minimization techniques are applied the remaining waste will be handled in a practical and environmentally sensible manner. It is suggested that the information be provided about actual techniques that will be used to minimize waste.
- Section 3.3, Pg. 13, refers to permanent waste facilities that will be constructed at Steenby Port and the Mine site without providing details on the types and number of those facilities. It is suggested that a detailed inventory of all waste management

facilities proposed for construction at the Steensby Port, Mine Site and other project sites be included in the Plan.

- Section 3.8, Pg. 20, states that water affected by hydro-carbons will be treated using the appropriate technology without elaborating on the treatment options being contemplated. It is suggested that the proposed method(s) for treating hydrocarbon-contaminated water be included in the Plan.
- All relevant engineering design drawings, facility design and operation and maintenance plans provided for waste storage and disposal facilities should be accordingly referenced in this Plan.
- Information for preventing wildlife from accessing waste storage and treatment facilities should be included in the Plan.

Appendix 10D-5: Waste Rock Management Plan, SD-EMMP-005

The Waste Rock Management Plan is designed to address issues related to sitting, deposition of waste rock, inspection, potential release of contaminants to receiving environment, geochemical stability and closure considerations. The review of the Plan has identified the following issues:

- Section 3.5, Pg. 11, states that ore will be stored in a Run-of-Mine (ROM) stockpile located near the crusher and that following crushing and screening, four temporary ore stockpiles will be used for storing crushed and screened ore. Other than stating that the drainage will be controlled there is insufficient information pertaining to how the ore storage and associated drainage areas will be constructed.
- Section 3.6.1, Pg. 11, provides the basis by which the proposed runoff management system for the waste rock storage area consisting of berms around the stockpile perimeter and two separately sized surface water management ponds will operate. It is suggested that information related to intermediate and final discharge points be included in this section of the plan.
- The Plan is more or less conceptual and, as such, it includes in some cases more than one proposed option for addressing components like runoff water treatment. It is suggested that, as the details become available, more definite options be presented.

Appendix 10D-6: Borrow Pit and Quarry Management Plan, SD-EMMP-006

The Borrow Pit and Quarry Management Plan is developed to set out objectives and measures to maintain and enhance environmental performance of quarries so as to avoid, remedy and mitigate adverse environmental effects associated with quarrying. The NWB has identified the following items that should be addressed:

- Section 3.1, Pg. 7, states that there is the requirement for a thirty (30) metre setback from streams to ensure that impacts of pit/quarry operation on surface water quality are

minimal. It is suggested that the setback distance be changed to thirty-one (31) metres so as to be consistent with NWB general licensing conditions.

- Section 3.3, Pg. 8, mentions that a detailed Development Plan will be provided prior to extracting materials from borrow pits or quarries. It is suggested that the development Plan be incorporated into the Borrow Pit and Quarry Management Plan.
- Section 3.6, Pg. 10, provide a brief outline on activities related to closure of borrow pits and quarries. It is recommended that the scope of this section be expanded to include monitoring, follow-up inspections and other activities in support of complete reclamation of these sites.
- The Plan is limited in the sense that it does not contain information related to the development of borrow pits and quarries which is one of the most critical aspects involving these activities.

Appendix 10D-8: Road Management Plan, SD-EMMP-006

The Road Management Plan is aimed at establishing policies and guideline for road use within the Project Area. In the reviewing the Plan, the NWB has identified the following items to be addressed:

- Section 3.1, Pg. 7, mentions that roads will be designed to minimize the potential erosion, ponding of water, etc., without providing detailing on what preventative strategies and/or measures that will be implemented. It is recommended that the actual measure and strategies for managing runoff and controlling road erosion be included in the plan.
- Section 3.1.2, Pg. 7, references the Surface Water and Aquatic Ecosystem Management Plan under Appendix 10D-2 for details on mitigation measures related to protecting surface water quality and fish habitat. Although it is acknowledged that some overlaps may exist between this Plan and the one referenced, it is recommended that at least a summary of the mitigation measures be included in this Plan instead of relying solely on the Surface Water and Aquatic Ecosystem Management Plan to provide this information.
- Section 3.2.1, Pg. 8, states that water or dust suppressants might be used on roads as required. It is recommended that information be provided on the names and/or types of all dust suppressants that might be used so that the Board can assess the potential impact of these substances.
- Section 3.2.1, Pg. 8, includes information on road closure during unsafe conditions. It is recommended that information on abandonment and closure of roads be included in the Plan.
- Section 6.1, Pg. 10, states that roads will be inspected regularly. It is recommended that the frequency and type of inspections be included in the Plan.

Appendix 10D-9: Railway Management Plan

The Rail Management Plan is developed to address procedures and guidance for operation of the railway between the mine site and Steensby Port. NWB's review of the Plan has identified the following items to be addressed:

- Section 1.1, Pg 2, states that there are operating rules and standard procedures for inspection and maintenance of both rolling stock and infrastructure mentioned in the Plan. It recommended that the operational rules and standard procedures mentioned be incorporated into this Plan.
- Section 3.6, Pg. 10, provides information on containing spills involving the railway. It is recommended that this section be expanded to include the response measures for railway spills or referencing where in the DEIS this information can be obtained.
- It is suggested that an inventory of potential materials and/or substances that will be transported by the Railway be included in the Plan.
- It is recommended that information related to abandonment and restoration of facilities associated with the railway and/or where the information could be found be included in the Plan.
- It is suggested that procedures for responding to and reporting the spill and other related incidents should be included in the Plan.

Appendix 10G: Preliminary Mine Closure and Reclamation Plan

The Preliminary Mine Closure and Reclamation Plan is designed to support the environmental Impact Statement. The review of the plan has identified the following to be addressed:

- It is recommended that the Preliminary Mine Closure and Reclamation Plan and the 2010 Abandonment and Reclamation Plan (Appendix A) be amalgamated and streamlined so as to increase functionality and comprehensively capture existing and proposed facilities associated with the project.
- The Preliminary Mine Closure and Reclamation Plan under Appendix 10G does not include information on financial security for activities proposed in the DEIS. The 2010 Abandonment and Reclamation Plan (Appendix A) does include financial security information; however, the information concerns activities covered under the current Licence issued for the Bulk Sampling Program.
- Section 5.1 should provide information about all progressive rehabilitation activities at all project sites.
- Section 8.1 of the Plan should include actual procedures for determining whether or not the drainage water from open pits will require treatment.

Other Plans

- Monitoring Plan – Sections of the various management plans under Appendix D in the DEIS address monitoring requirements for water use and waste disposal in a limited way. It is recommended that a comprehensive, stand-alone monitoring plan be submitted with the FEIS to address monitoring requirements specific to water use and waste disposal activities.

Design Drawings and Operation and Maintenance (O&M) Plans

Conceptual and preliminary design drawings were submitted for some of the facility proposed in the DEIS. As part of the water licence application, the NWB generally requires for- construction drawings stamped and signed by an engineer for all facilities associated with the use of water and the deposit of waste into water.

In addition, an Operation and Maintenance (O&M) Plan for each of the relevant facility identified in Table 3-2.1, Section 2.17, Volume 3, of the DEIS, should accompany the application.