November 4, 2019

Assol Kubeisinova
Technical Advisor, NWB
P.O. Box 119
Gjoa Haven, NU X0B 1J0

RE: Baffinland Response to Comments
2018 QIA & NWB Annual Report for Operations
Mary River Project, Type 'A' Water Licence - 2AM-MRY1325 - Amend. No. 1

Baffinland Iron Mines Corporation (Baffinland) has reviewed the comments and recommendations received from the Qikiqtani Inuit Association (QIA), Nunavut Water Board (NWB), Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) and Environment and Climate Change Canada (ECCC) in regards to Baffinland's 2018 QIA & NWB Annual Report for Operations.

Baffinland thanks all parties for their comments and reviews of the 2018 QIA & NWB Annual Report for Operations. Baffinland's responses to the comments and recommendations are provided in Attachment 1 of this letter.

Please do not hesitate to contact the undersigned should you have any remaining questions or comments.

Regards,

Christopher Murray
Environmental & Regulatory Compliance Manager

Attachments:

Attachment 1: Baffinland Response to Comments
Attachment 2: Baffinland Supporting Documents

Cc: Karén Kharatyan (NWB)
Chris Spencer, Jared Ottenhof (QIA)
Bridget Campbell, Godwin Okonkwo, Jonathan Mesher, Justin Hack (CIRNAC)
Gabriel Bernard-Lacaille (ECCC)
Megan Lord-Hoyle, Lou Kamermans, Tim Sewell, Shawn Stevens, Connor Devereaux, Amanda McKenzie (Baffinland)

Attachment 1

Baffinland Response to Comments

Table 1-1: Baffinland Responses to 2018 QIA-NWB Annual Report for Operations

No.	Intervener Recommendation / Concern	Baffinland Response	Due Dates Assigned by NWB
7-R13	Use a more effective approach to collecting flow measurements during low flow conditions.	As noted by CIRNAC, the 2018 Hydrometric Report indicates there was a discrepancy between the discharge measured at the H01 station and the discharge predicted by the rating curve. However, the difference was within the 15% uncertainty typically associated with dilution gauging techniques. It was suggested in the report that the uncertainty could be due to incomplete mixing of the dye in the stream. The flow measurement conducted at H01 in 2018 was obtained under mid-flow conditions. During these conditions, it can be challenging to ensure complete mixing of the dye at H01 due to the width of the channel upstream of the gauging station. However, dilution gauging is considered the best method for measuring flow and it would be difficult or impossible to use other methods (such as a current meter or ADCP) due to turbulent flow conditions and the difficulty in accurately measuring cross sectional area. Dilution gauging typically provides reliable estimates of flow and has in the past at H01. In the future, Baffinland will plan to obtain additional flow measurements to further reduce uncertainty, ideally during mid to high flow conditions. During low flow conditions, dilution gauging is not used at H01 and flow measurements have been conducted in the past using a wading current meter and the area-velocity technique (including during the 2019 hydrometric program). Baffinland understands the importance of measuring flow as accurately as possible in order to maintain reliable rating curves and strives to use the best possible methods for all sites and flow conditions.	March 31, 2020
8-R14	Provide justification for extrapolating beyond twice the highest measured flow against the recommendation of the Water Survey of Canada.	As noted by CIRNAC, the rating curves at H04 and H11 were extrapolated beyond the highest recorded discharge in the 2018 Hydrometric Report to accommodate the highest recorded stage. The Water Survey of Canada Hydrometric Manual (2012) suggests that rating curves should not be extrapolated beyond twice the highest measured discharge. The H04 and H11 rating curves were extended beyond twice the highest measured discharge. In general, rating curves are typically extrapolated to the maximum recorded stage to capture the range of observed water level relative to measured discharge. It is understood and noted in the 2018 Hydrometric Report that flow data estimated from extrapolated rating curves are less reliable. High flow conditions have not been measured at the H04 station since the shift in the rating curve. However, high flows measured in the past (that are part of the previous rating curve) are less than twice the extrapolated flow. The rating relationship at H04 is based on stream channel geometry and the updated rating curve is a similar shape to the previous rating curve. As such, it is likely that the relationship remains consistent for higher flows. Nonetheless, Baffinland aims to improve the confidence in the upper portion of the rating curve by obtaining higher flow measurements at H04 whenever possible. However, as measurement of high flow conditions can at times pose a significant hazard to field staff, the safety and wellbeing of Baffinland staff and contractors is paramount and may result in lack of high flow measurements should it not be safe to collect these data. The extrapolation of the rating curve at H11 was also done to estimate flow up to the maximum measured stage. As with H04, the uncertainty of the data in this range was noted. Cross section surveys of the channel geometry suggest that the rating relationship should be generally consistent to the maximum measured stage. However, additional high flow measurements will also be collected at H11 as often as possible to improve the confidence in the upper portion of the rating curve. The potential implications of the uncertainty of high flow measurements at H04 and H11 on the Aquatic Effects Monitoring Plan (AEMP) will be assessed.	November 1, 2019

Table 1-1: Baffinland Responses to 2018 QIA-NWB Annual Report for Operations

No.	Intervener Recommendation / Concern	Baffinland Response	Due Dates Assigned by NWB
8-R15	Adjust the flow-monitoring program to capture additional flow measurements to further refine/verify the rating	The peak flows at H04 and H11 tend to occur over a shorter time period than at other stations due to their relatively small watershed size. As such, the flow monitoring program will be adjusted to be accommodate rapidly changing flow conditions at these sites and high flow conditions will be targeted and measured as often as possible.	March 31, 2020
9-R16	Provide an explanation outlining why a single flow measurement was used and to demonstrate that changes to the watercourse/rating curve are not occurring.	The downstream controls at the H01, H05, H06, and H07 stations are well defined and inherently stable due to large boulders and/or bedrock and little unconsolidated material on the streambed. As such, single (or in some cases two to three) measurements have been used to verify the existing rating curves. Based on the nature of these sites, there is a high confidence that the rating relationship will remain consistent from year to year.	November 1, 2019
9-R17	Provide an explanation or discussion to explain why an updated rating curve was developed for stations H02, H04, and H11.	The H02 station is on a relatively large river and has a well-defined gauging pool and a seemingly stable downstream control. The cause of the shift in the rating relationship is not known. The updated rating curve is parallel to the previous rating curve which suggests that there was a systematic shift in the stage relative to discharge. Flow at the H02 station was monitored from 2006 to 2010 as part of baseline studies. The station was not installed in 2011 and re-commissioned in spring of 2012. Following re-installation, it is possible that the stage was measured in a different spot than during baseline studies. However, the stage has been measured in the same location since 2012 and the relationship has been consistent. Due to the parallel nature of the updated rating curve with the previous rating curve, and the nature of the downstream control, it is assumed that the rating relationship at H02 will remain stable. As such, flow has typically been measured once or twice during a season. As with the shift at H02, the change in the rating curve at H04 appears to be systematic with a lower stage relative to discharge. Cross section surveys of the gauging location suggest that the main geometry of the channel has been consistent since the onset of flow monitoring in 2006. However, there is potential that the relatively smaller rocks comprising the downstream control were shifted in 2012 during high flow conditions or inadvertently during flow gauging. The downstream control and channel appear to have been stable since 2013. Nonetheless, additional measurements will be obtained at H04 to further verify the revised rating curve, especially under higher flow conditions as noted above. The H11 station is located on a small stream with well-defined earthen channel and a relatively stable downstream control. However, in 2014 the channel immediately downstream of the station was modified by the placement of rocks. This resulted in a shift of the relationship between stage and discharge. The change did not affect the overall stability of the channel or control and the rating relationship has been stable since. Multiple measurements are typically made at H11 each season (three in 2018) and additional flow measurements will continue to be collected several times per year, especially during higher flows to further verify the upper portion of the rating curve.	November 1, 2019
10-R18	Incorporate information about effluent concentrations in receiving water bodies, or a reference to where this information can be found, into the Annual Reports.	Baffinland will work on incorporating information about effluent concentrations in receiving water bodies and the receiving water bodies' ability to assimilate effluent in future annual reports.	Subsequent annual reports

Table 1-1: Baffinland Responses to 2018 QIA-NWB Annual Report for Operations

No.	Intervener Recommendation / Concern	Baffinland Response	Due Dates Assigned by NWB
10-R19	Incorporate the findings and data from the Hydrometric Monitoring Program into other monitoring and mitigation programs to develop a holistic view of on-going environmental conditions, trends, and impact predictions.	Baffinland will investigate ways to incorporate data and observations from the hydrometric monitoring into other monitoring programs and in the interpretation of overall environmental conditions where possible.	Subsequent annual reports
11-R20	Update on the proposed method for collecting high flow measurements in the future.	Measuring peak flow at the sites on larger rivers (H01, H02, and H06) it is difficult to access suitable locations to conduct reliable dilution gauging. In addition, conducting the measurements safely is challenging due to the extremely turbulent flow conditions and hazards associated with working near swift water. When feasible and safe to do so, high flow has been measured successfully at these stations using dilution gauging. However, high flows can occur over short periods and it can be challenging to coordinate site visits by trained personnel with appropriate flow conditions at these stations. At the stations on smaller streams (H04, H05, H07, and H11), peak flows occur over a much shorter time period and can be difficult to capture. In 2019, Baffinland implemented protocols to better measure late spring and mid-summer high flow events at these stations. However, the summer of 2019 was drier than normal and peak flow conditions were not observed. In the future, the protocols and procedures will continue to be improved so that additional high flow measurements will be collected as often as is feasible and safe to do so.	November 1, 2019
12-R21	Quality Assurance and Quality Control of the Groundwater Monitoring Report notes that total aluminum, iron and titanium were above 3 times their respective maximum daily allowance. Provide clarification on the rationale for the elevated parameters and/or lessons learned.	In the 2018 Groundwater Report, Table 3 summarizes the relative percent differences (RPDs) between parameter results for the MS-LF-GW1 sample and its field duplicate (MS-LF-GW101). The relative percent difference for a parameter is calculated by dividing the absolute difference between the sample and its duplicate by the analytical result of the sample, and multiplying by 100. Bolded RPD values in Table 3 indicate parameters in which the RPD was greater than 30% and both analytical results were greater than 3 times the Method Detection Limit (MDL), not to be confused with the *Maximum Daily Allowance* as per comment 12-R21. All parameters had RPDs less than 30% with exception of total metals: aluminum, chromium, iron, and titanium. Of these total metals, only aluminum, iron and titanium were also above 3 times their respective MDL. Elevated RPDs for these three (3) parameters were most likely a result of the amount of solids collected in the sample and corresponding duplicate. This is evidenced by the fact that the RPDs greater than 30% were not observed for their corresponding dissolved metals fractions. To ensure the continued collection of representative, accurate and reliable water quality data at the Project, Baffinland will continue to require all personnel involved with water quality sampling to be experienced and fully trained in the Project's Standard Operating Procedures, QA/QC procedures and processes outlined in the Project's QA/QC Plan.	November 1, 2019
16-R25	Provide a detailed explanation of the method of determining monthly generated soil volumes, and why there is no 2018 monthly petroleum contaminated soil volume data for the Land farm at Milne Port.	As reported in Table 5.5 of the 2018 Annual Report, as of December 31, 2018, there was approximately 9,800 m^3 of soil stored at the Milne Port Landfarm Facility. Baffinland submits quarterly survey data for the Milne Port Landfarm to QIA within 30 days of the end of the quarter. Baffinland performs surveys with a drone to determine the additional volume of material deposited each month. All survey files (dxfs) are provided to QIA via the file sharing site IGLU. Based on the capacity of the landfarm, no additional contaminated soil was deposited in the facility between January - September 2018. This was reflected in the survey data provided to QIA for Q1, Q2 and Q3 of 2018.	November 1, 2019

Table 1-1: Baffinland Responses to 2018 QIA-NWB Annual Report for Operations

No.	Intervener Recommendation / Concern	Baffinland Response	Due Dates Assigned by NWB
21-R31	Clarify why rutting by vehicles, environmental and wildlife concerns, and all soil stockpile parameters have been removed from the list of routine inspections.	In the update to the Surface Water and Aquatic Ecosystem Management Plan, Table 9-1 was amended to avoid duplication of existing routine inspections that are already captured in more suitable management plans and monitoring programs. To clarify, inspections related to rutting by vehicles, environmental and wildlife concerns, and soil stockpiles are still occurring. The following outlines the management plan(s) and relevant sections where the commitment to inspections can be found: 1) Rutting by vehichles – inspections related to this concern are captured under Section 2.3, of the Environmental Protection Plan. Rutting and land disturbance is minimized by following the protection measures outlined in the Operational Environment Standard: Land Disturbance. 2) Environmental and Wildlife concerns – inspections related to this concern are captured under Sections 2.10, 2.11, 2.12, and 2.13 of the Environmental Protection Plan as well as in the Terrestrial Environmental Mitigation and Monitoring Plan. 3) Soil stockpile – inspections related to this concern are captured under the Environmental Protection Plan through routine compliance inspections outlined in Section 2.25.2 of the Plan.	November 1, 2019
22-R32	Clarify why the section describing dust control measures has been removed from the *Surface Water and Aquatic Ecosystem Management Plan*.	In the update to the Surface Water and Aquatic Ecosystem Management Plan, Sections 4 and 7 were amended in an effort to avoid duplication of dust control measures in multiple management plans. It was determined that dust control measures such as use of dust suppressants and polymer flocculants, would best be captured in the Air Quality and Noise Abatement Management Plan. This was determined to be a more suitable management plan to house this information. To clarify, Baffinland has not removed any commitments to dust control measures, this amendment was simply to avoid repetition of information. Baffinland's Air Quality and Noise Abatement Management Plan provides guidance on the management of air emissions and noise from construction and operation activities. The plan also includes action to control airborne particulates and noise hazards. It also defines action to mitigate, prevent, or avoid to the extent practical noise nuisance to site personnel and nearby populations.	November 1, 2019
7	Can Baffinland confirm the volume of water exceeding Water Licence criteria, which was discharged into the receiving environment?	Based on a review of 2018 monitoring results reported to the NWB, CIRNAC and the QIA, exceedances of applicable discharge criteria in 2018 involved mainly surface water runoff and effluents with elevated total suspended solids (TSS) levels. In each case, appropriate control measures were implemented to restore TSS levels below applicable discharge criteria. Baffinland continues to assess and implement the appropriate corrective and mitigation measures to address ongoing sedimentation concerns at the Project. Table 5.2 provides the daily, monthly and annual quantities of effluent discharged from Project in 2018. Inline flow meters and pumping rate extrapolation were used to monitor volumes discharged to the receiving environment. Baffinland will continue to monitor required parameters at frequencies that are compliant with MDMER and the terms and conditions of the Type A Water Licence. Circumstances around the exceedances documented in 2018, are fully discussed in the 2018 QIA & NWB Annual Report for Operations.	November 1, 2019

Table 1-1: Baffinland Responses to 2018 QIA-NWB Annual Report for Operations

No.	Intervener Recommendation / Concern	Baffinland Response	Due Dates Assigned by NWB
4	During its June 2018 inspection, the QIA observed that "Sample WRF_018_20180626 obtained from a Non-PAG (base layer of Non- PAG placed on existing ground) location tested and classified as PAG. Sample WRF_004_20180626 obtained from a slope that appears to be located outside the identified PAG boundaries". In response, Baffinland committed to "compare results to provided QIA data and communicate these results to QIA. Field evaluations of the identified non-conformance zones will be actioned to evaluate the extent of the non-conformance and a plan developed prior to August 30th." The NWB requests that the Licensee provide an explanation to the occurrence.	Attachment 2 includes correspondence between QIA and Baffinland on the Waste Rock Facility (WRF) Sampling Program: 1) Baffinland Letter to QIA "Interim Update – Waste Rock Facility" (September 21, 2018) 2) QIA Letter to Baffinland "Update October 3, 2018 Waste Rock Facility Sampling and Testing Program" (November 26, 2018). The correspondence provides an update to the sampling and testing performed by QIA in October 2018, following issuance of QIA's inspection report dated July 24, 2018. Two (2) samples from an area understood by QIA to be used for the storage of Non-Potential Acid Generating (Non-PAG) material at the WRF were identified as Potential Acid Generating (PAG) following the Mary River Mine WRF Sampling and Testing Program completed by QIA in June 2018. QIA and Baffinland held a meeting at the Mary River Mine site on September 11, 2018 during which Baffinland discussed proposed actions to investigate and/or address causes associated with the apparent anomalous results. Following the meeting, Baffinland summarized the discussions in a September 21, 2018 letter which can also be found in Attachment 2. In summary, the following outlines the actions concerning the two samples identified as PAG: For sample WRF_004_20180626, confirmatory sampling was conducted in order to further characterize the area associated with the sample and reduce any uncertainty associated with the sampling technique or analysis. QIA and Baffinland agreed that five (5) additional samples would be collected: one (1) at the initial sample location, and four (4) at a distance of 5 m in each cardinal direction of the initial sample location. The detailed laboratory test results indicate that all samples have a total sulphur content <0.2% and classified as Non-PAG based on the site-specific criteria. Based on these results, no further actions were required. For sample WRF_018_20180626 – Baffinland indicated and QIA was able to confirm that this sample was taken from the scree slope of the PAG material placement area. No further action was recommended for this sample location.	November 1, 2019

Attachment 2

Baffinland Supporting Documents

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Qikiqtani Inuit Association

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November 26, 2018

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Christopher Murray
Environmental & Regulatory Compliance Manager
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON L6H 0C3

Re: Update October 03, 2018 Waste Rock Facility Sampling and Testing Program

Dear Mr. Murray:

This letter provides an update to the sampling and testing performed by the Qikiqtani Inuit Association (QIA) at Baffinland Iron Mines Corporation's (Baffinland's) Mary River Mine – Waste Rock Facility (WRF) on October 3, 2018.

Two (2) samples from an area understood by QIA to be used for the storage of Non-Potential Acid Generating (Non-PAG) material at the WRF were identified as Potential Acid Generating (PAG) following the Mary River Mine WRF Sampling and Testing Program completed by QIA in June 2018[1]. QIA and Baffinland held a meeting at the Mary River Mine site on September 11, 2018 during which Baffinland discussed proposed actions to investigate and/or address causes associated with the apparent anomalous results. An update to the activities carried out by Baffinland in Summer 2018 in response to 2017 non-compliant discharges on Inuit Owned Land[2] were also provided. Following the meeting, Baffinland summarized the discussions in a September 21, 2018 letter[3].

The following outlines the actions concerning the two samples identified as PAG:

1. **Sample WRF_004_20180618** - Confirmatory sampling to further characterize the area associated with the sample and reduce any uncertainty associated with the sampling technique or analysis. QIA and Baffinland agreed that five (5) additional samples would be collected: one (1) at the initial sample location, and four (4) at a distance of 5 m in each cardinal direction of the initial sample location.

[1] QIA (2018). Baffinland Iron Mines Corporation's Mary River – Qikiqtani Inuit Association June 2018 Site Inspection, Findings and Recommendations, Appendix A. July 24, 2018.
[2] INAC (2017). 170509 Inspector's Direction 2AM-MRY1325. September 5, 2017
[3] Baffinland (2018). Interim Update –Waste Rock Facility. September 21, 2018

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2. **Sample (WRF_018_20180618)** – Baffinland indicated and QIA was able to confirm that this sample was taken from the scree slope of the PAG material placement area. No further action was recommended for this sample location.

Consistent with the above, on October 03, 2018, Fai Ndofor (QIA Regulatory Manager) and two Baffinland site personnel collected five (5) confirmatory rock samples; one (1) from the **Sample WRF_004_20180618** location and four (4) at a distance of 5 m in each cardinal direction of the initial sample location as depicted in Figure 1 of the September 21, 2018 letter. Each sample was split into two by Baffinland site laboratory staff. One of each half was retained by QIA and brought back to Iqaluit and the other halves retained by Baffinland. The samples retained by QIA were shipped to ALS Laboratory Ltd.'s North Vancouver laboratory for testing. All samples were analysed for modified Sobek Acid Base Accounting (ABA) using the siderite corrected method and total sulphur. The detailed laboratory test results attached in Appendix A indicate that all samples have a total sulphur content <0.2% and classified as Non-PAG based on the site-specific criteria. Based on these results, no further actions are required for now.

Baffinland in their September 21, 2018 letter stated that results from the **Sample WRF_004_20180618** location are indicative of the heterogeneity and variability associated with the source material. Because of these observations and the 2017 non-compliant discharges, QIA requires that a sampling and verification program be performed on an annual basis, at the minimum, to verify the success of PAG rock segregation and placement as stated in the June 2018 site inspection report. This program should be developed by Baffinland and submitted to QIA for approval, March 31, 2019, at the latest. It is recommended that these results including any subsequent verification test results be included in the NWB/QIA Annual report.

QIA is available to discuss contents of this letter at a time that is mutually agreeable.

Sincerely,

Fai Ndofor
Regulatory Manager

Attachment: APPENDIX A: October 3, 2018 WRF Rock Samples Laboratory Test Results

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Qikiqtani Inuit Association

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Sanikiluaq

APPENDIX A: October 3, 2018 WRF Rock Samples Laboratory Test Results

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com/geochemistry

To: **QIKIQTANI INUIT ASSOCIATION**
PO BOX 1340
IQALUIT NU X0A 0H0

Finalized Date: 21- NOV- 2018
Account: QIANIC

CERTIFICATE VA18269121

Project: Mary River Mine- WRF

This report is for 5 Rock samples submitted to our lab in Vancouver, BC, Canada on 25- OCT- 2018.

The following have access to data associated with this certificate:

FAI NDOFOR

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
CRU- 31	Fine crushing - 70% < 2mm
SPL- 21	Split sample - riffle splitter
PUL- 31	Pulverize split to 85% < 75 um
PUL- QC	Pulverizing QC Test

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S- IR08	Total Sulphur (Leco)	LECO
OA- VOL08s	Siderite NP	

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com/geochemistry

To: **QIKIQTANI INUIT ASSOCIATION**
PO BOX 1340
IQALUIT NU X0A 0H0

Finalized Date: 21- NOV- 2018
Account: QIANIC

Project: Mary River Mine- WRF

CERTIFICATE OF ANALYSIS VA18269121

Sample Description	Method / Analyte / Units / LOD	WEI- 21 Recvd Wt. kg 0.02	S- IR08 S % 0.01	OA- VOL08s FIZZ RAT Unity 1	OA- VOL08s NP tCaCO3/1Kt 1	OA- VOL08s MPA tCaCO3/1Kt 0.3	OA- VOL08s NNP tCaCO3/1Kt 1	OA- VOL08s Ratio (N Unity 0.01
WRF_004_20182018 1003- Center		0.56	0.03	1	19	0.9	18	20.27
WRF_004_20182018 1003- North		0.74	0.19	1	2	5.9	-4	0.34
WRF_004_20182018 1003- South		0.96	0.02	1	10	0.6	9	16.00
WRF_004_20182018 1003- East		1.08	0.01	1	3	0.3	3	9.60
WRF_004_20182018 1003- West		0.36	0.02	1	2	0.6	1	3.20

***** See Appendix Page for comments regarding this certificate *****

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To: **QIKIQTANI INUIT ASSOCIATION**
PO BOX 1340
IQALUIT NU X0A 0H0

Project: Mary River Mine- WRF

CERTIFICATE OF ANALYSIS VA18269121

CERTIFICATE COMMENTS

LABORATORY ADDRESSES

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method:			
CRU- 31	LOG- 22	OA- VOL08s	PUL- 31
PUL- QC	S- IR08	SPL- 21	WEI- 21

21 September 2018

Fai Ndofor
Regulatory Manager
Qikiqtani Inuit Association
P.O. Box 1340
Nunavut, NU X0A 0H0

RE: Interim Update – Waste Rock Facility

Baffinland Iron Mines Corporation (Baffinland) provides the following update to the Qikiqtani Inuit Association (QIA) in follow up to the discussions held during the 2018 Environmental Audit, and in response to the Mary River Mine Waste Rock Facility Sampling and Testing Program[1] completed during the June 2018 Site Inspection conducted by QIA.

MS-08 Liner Inspection & Repair

In response to the seepage identified at the Waste Rock Facility (WRF) pond (MS-08) in August 2017, Baffinland communicated[2] a plan to inspect and perform repairs to the pond liner during the summer of 2018.

Baffinland expended considerable efforts to mobilize and commission the water treatment facility to aid in the dewatering of the pond to facilitate inspection. A combination of delays in commissioning the WRF Water Treatment Plant, delays in the delivery of chemical reagents, and an abnormally wet summer delayed emptying the pond until mid-August. At that stage, the pond could not be emptied completely as the water contained within was required for a sub-lethal test to satisfy MDMER requirements, which had been scheduled 6 months prior. Nevertheless, approximately two thirds of the pond liner was exposed at that time, and it was inspected by both a Golder Associates engineer as well as a Layfield technician who originally installed the liner. Both these experts could not identify the source of the leak over the exposed area, suggesting that the leak is likely in the bottom section of the pond still covered by the remaining water in the pond.

Following the inspection, pumping continued until early September at which stage it was halted as a precaution due to the observation of changing water parameters. By September 11th, 2018, pumping ceased for the season with the onset of freezing conditions, prior to the source of the leak being identified. While it is regrettable that a full inspection of the liner could not be completed prior to the onset of freezing conditions, the delays encountered during summer 2018 were the result of unpredictable

[1] QIA (2018). Baffinland Iron Mines Corporation's, Mary River Mine – Qikiqtani Inuit Association June 2018 Site Inspection, Findings, and Recommendations, Appendix A. 24 July 2018
[2] Baffinland (2018) Re: Email Request of March 1 from INAC, 2018 concerning the Waste Rock Stockpile Facility Strategy for 2018. Letter to INAC, dated 13 March 2018

external factors which were outside of Baffinland's control, and all reasonable efforts were made to execute the inspection as intended. Two options that are currently being considered to address the leak:

1. Welding a section of liner over the entire area where the leak is suspected (feasible in principle and awaiting guidance from engineering firm on how / if to proceed); or
2. Waiting until summer 2019 and completely emptying the pond once the weather permits (expected to be completed early July 2019 now that the WRF water treatment plant is fully commissioned) to clean and repair the liner.

Further options may be proposed by Baffinland's expert engineers in addition to the options considered above. Both of the options above are considered low risk, given that seepage from the WRF pond is captured in the emergency ditch and pumped back into the main pond, and as a result there have been no uncontrolled releases into the environment during 2018.

WRF Characterization

Regarding thermal characterization of the waste dump, the work initially scheduled for the summer of 2018 has been delayed to the fall. The delays come from identification of the appropriate instruments from the consulting engineering firm, and the required lead time to manufacture and ship those instruments. All the material has now been ordered and manufactured, and is currently on route to the site. The target date for thermistor installation is approximately mid-October 2018 to mid-November 2018. Baffinland recognizes this information is critical to understand the long term geochemical stability of the WRF based on the ability to encapsulate PAG material in permafrost.

WRF Sampling Program

Baffinland completed split sampling concurrent with QIA during the Site inspection dated 26 June 2018. One large sample was collected from each location identified by QIA, characterized, and split into three equal parts for analysis. A summary of analytical results as collected by Baffinland and submitted to ALS Laboratories is presented in Attachment A, and laboratory certificates of analysis are presented in Attachment B.

From QIA's inspection report dated 24 July 2018, two (2) samples were identified as Potentially Acid Generating (PAG) in an area understood by QIA to be used for storage of Non-PAG (NPAG) material. The samples were identified as:

- **WRF_004_20180626**
  - The split sample analyzed by Baffinland identified the same sample as NPAG. Given that these samples were split from the same rock, this is indicative of the heterogeniety and variability associated with the source material. Confirmatory sampling is required, as outlined further below.
- **WRF_018_20180626**
  - The split sample analyzed by Baffinland identified the same sample as PAG. Baffinland anticipated this sample to be characterized as PAG, as the location of the sample is on the scree slope of the PAG material placement area. No further action is required.

In order to further characterize the area associated with sample ID WRF_004_20180626, and reduce any uncertainty associated with the sampling technique or analysis, confirmatory sampling will be conducted to support the previous evaluation. A total of five (5) additional samples will be collected; one (1) at the initial sample location, and four (4) at a distance of 5m in each cardinal direction, as depicted in Figure 1.

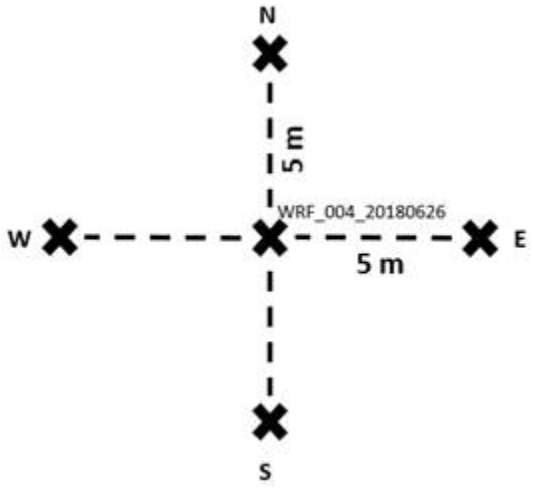

Figure 1 – Proposed Confirmatory Sampling Locations

Baffinland will work with QIA to find a suitable date for this sampling to be completed, such that a representative from QIA may be present to observe the sampling and/or collect paired samples.

Should there be any questions or concerns regarding the provided information, please do not hesitate to contact the undersigned for clarification.

Regards,

Christopher Murray
Environmental & Regulatory Compliance Manager

Cc: Sean Joseph (QIA)
Megan Lord-Hoyle, Tim Sewell, Simon Fleury, Trevor Brisco, Connor Devereaux, William Bowden, Andrew Vermeer (Baffinland)

Attachments
Attachment A – WRF Sampling Results
Attachment B – Laboratory Certificates of Analysis

ATTACHMENT A

Baffinland

Table 1 - Summary of Results
Total Sulphur and Acid Base Accounting
Waste Rock Facility Sampling - 26 June 2018

SAMPLE NUMBER	SAMPLE DATE	SAMPLE ID	Total Sulphur	Acid Base Accounting				Acid Base Accounting - Siderite Corrected			
				NP	MPA	NNP	Ratio (NP:MPA)	NP	MPA	NNP	Ratio (NP:MPA)
			%	tCaCO3/1Kt	tCaCO3/1Kt	tCaCO3/1Kt	Unity	tCaCO3/1Kt	tCaCO3/1Kt	tCaCO3/1Kt	Unity
R787355	2018-06-26	WRF_001-20180627	0.01	1	0.3	1	6.4	2	0.3	2	12.8
R787353	2018-06-26	WRF_002-20180627	0.01	13	0.3	13	83.2	17	0.3	17	108.8
R787354	2018-06-26	WRF_003-20180627	0.19	13	5.9	7	2.19	15	5.9	9	2.53
R787361	2018-06-26	WRF_004-20180627	0.18	10	5.6	4	1.78	10	5.6	4	1.78
R787358	2018-06-26	WRF_005-20180627	**2.77**	5	86.6	-82	**0.06**	6	86.6	-81	**0.07**
R787359	2018-06-26	WRF_006-20180627	0.02	18	0.6	17	28.8	23	0.6	22	36.8
R787360	2018-06-26	WRF_007-20180627	**13.65**	5	426.6	-422	**0.01**	8	427	-419	**0.02**
R787357	2018-06-26	WRF_008-20180627	0.06	3	1.9	1	1.6	5	1.9	3	2.67
R787365	2018-06-26	WRF_009-20180627	0.02	5	0.6	4	8	8	0.6	7	12.8
R787363	2018-06-26	WRF_010-20180627	0.01	18	0.3	18	57.6	17	0.3	17	54.4
R787362	2018-06-26	WRF_011-20180627	0.13	3	4.1	-1	0.74	5	4.1	1	1.23
R787370	2018-06-26	WRF_012-20180627	**0.41**	6	12.8	-7	**0.47**	12	12.8	-1	**0.94**
R787364	2018-06-26	WRF_013-20180627	0.01	14	0.3	14	89.6	14	0.3	14	89.6
R787372	2018-06-26	WRF_014-20180627	0.02	11	0.6	10	17.6	11	0.6	10	17.6
R787368	2018-06-26	WRF_015-20180627	0.01	12	0.3	12	38.4	10	0.3	10	32
R787356	2018-06-26	WRF_016-20180627	0.06	10	1.9	8	5.33	11	1.9	9	5.87
R787366	2018-06-26	WRF_017-20180627	0.01	12	0.3	12	76.8	14	0.3	14	89.6
R787371	2018-06-26	WRF_018-20180627	**0.23**	14	7.2	7	**1.95**	11	7.2	4	**1.53**
R787369	2018-06-26	WRF_019-20180627	0.01	3	0.3	3	19.2	4	0.3	4	25.6
R787367	2018-06-26	WRF_020-20180627	0.01	10	0.3	10	64	11	0.3	11	70.4

Notes:

2.77 Denotes samples identified as PAG (S>0.2%, NPR<2)

ATTACHMENT B

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To: BAFFINLAND IRON MINES CORPORATION
2275 UPPER MIDDLE ROAD EAST
SUITE 300
OAKVILLE ON L6H 0C3

Finalized Date: 7- AUG- 2018
Account: BIMCIO

CERTIFICATE SD18183871

Project: QIA Waste Rock Inspection

P.O. No.: 4500039334

This report is for 20 Rock samples submitted to our lab in Baffinland, NU, Canada on 30- JUL- 2018.

The following have access to data associated with this certificate:

TREVOR BRISCO	DAVE HAMILTON	JORDON MARSH
FRANK PILECKI	DALE PITTMAN	HAYLEY POTHIER
STEPHEN TILLEY	ANDY TOPILAK	MATTHEW TRACEY
WARRICK WILLIAMS		

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
DRY- 21	High Temperature Drying
CRU- QC	Crushing QC Test
PUL- QC	Pulverizing QC Test
LOG- 22	Sample login - Rcd w/o BarCode
CRU- 31	Fine crushing - 70% < 2mm
SPL- 21	Split sample - riffle splitter
PUL- 31	Pulverize split to 85% < 75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	
OA- VOL08	Basic Acid Base Accounting	
OA- GRA05x	LOI for XRF	WST- SEQ
OA- VOL08s	Siderite NP	
ME- XRF21bf	BF - Iron Ore by XRF Fusion	XRF
S- IR08	Total Sulphur (Leco)	LECO
C- IR07	Total Carbon (Leco)	LECO

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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CERTIFICATE OF ANALYSIS SD18183871

Sample Description	Method	WEI-21	ME-XRF21bf	ME-XRF21bf	ME-XRF21bf	ME-XRF21bf	ME-XRF21bf	ME-XRF21bf	ME-XRF21bf	ME-XRF21bf	ME-XRF21bf	OA-GRA05x	C-IR07	S-IR08	OA-VOL08	OA-VOL08
	Analyte	Recvd Wt.	Al2O3	CaO	Fe	Fe2O3	K2O	Mn	Na2O	P	SiO2	LOI 1000	C	S	FIZZ RAT	NP
	Units	kg	%	%	%	%	%	%	%	%	%	%	%	%	Unity	tCaCO3/1Kt
	LOD	0.02	0.1	0.01	0.1	0.1	0.003	0.01	0.05	0.002	0.1	0.01	0.01	0.01	1	1
R787353		1.61	19.2	0.16	8.8	12.6	2.70	0.09	0.12	0.043	52.7	4.39	<0.01	<0.01	1	13
R787354		1.03	19.9	0.13	8.9	12.7	2.73	0.06	0.08	0.039	49.5	5.47	<0.01	0.19	1	13
R787355		1.42	0.3	0.01	69.1	98.8	0.013	0.04	<0.05	0.046	0.4	0.31	<0.01	<0.01	1	1
R787356		1.00	16.7	0.28	4.8	6.9	3.50	0.02	0.28	0.102	65.1	2.45	<0.01	0.06	1	10
R787357		1.70	2.6	<0.01	65.5	93.6	0.012	0.11	<0.05	0.004	2.8	-0.89	<0.01	0.06	1	3
R787358		2.10	14.2	<0.01	22.7	32.5	<0.003	0.10	<0.05	0.010	31.5	8.16	<0.01	2.77	1	5
R787359		0.72	15.0	0.05	13.0	18.6	0.114	0.03	0.08	0.017	32.7	9.72	<0.01	0.02	1	18
R787360		1.34	14.8	0.10	31.1	44.5	1.220	1.62	0.24	0.010	17.3	13.25	<0.01	13.65	1	5
R787361		1.53	15.3	0.05	6.9	9.9	3.27	0.04	0.13	0.024	64.5	1.56	<0.01	0.18	1	10
R787362		2.53	1.7	<0.01	65.9	94.2	0.036	0.09	<0.05	0.004	3.9	-1.39	<0.01	0.13	1	3
R787363		1.49	20.8	0.39	12.5	17.9	2.58	0.06	0.09	0.126	41.7	5.00	0.01	0.01	1	18
R787364		1.85	16.8	3.17	3.4	4.9	4.63	0.06	2.14	0.087	63.5	0.51	0.01	<0.01	1	14
R787365		1.25	0.9	<0.01	68.7	98.2	0.031	0.14	<0.05	0.006	1.3	-1.82	<0.01	0.02	1	5
R787366		0.93	19.4	0.13	6.8	9.8	2.77	0.05	0.08	0.045	56.2	4.35	0.01	<0.01	1	12
R787367		2.39	15.6	3.44	3.9	5.6	1.585	0.06	4.55	0.072	66.3	0.13	0.01	<0.01	1	10
R787368		1.62	22.6	0.27	21.1	30.2	0.008	0.97	0.05	0.070	26.0	6.59	<0.01	0.01	1	12
R787369		2.18	0.8	0.01	70.1	100.3	0.006	0.13	<0.05	0.004	0.8	-2.49	0.01	<0.01	1	3
R787370		1.44	19.3	<0.01	26.2	37.4	1.260	0.11	0.11	0.022	23.4	8.34	0.01	0.41	1	6
R787371		2.47	14.0	0.73	33.5	48.0	0.017	3.19	<0.05	0.122	20.3	3.11	<0.01	0.23	1	14
R787372		1.46	18.2	2.44	3.4	4.8	4.19	0.06	2.49	0.050	62.5	1.45	<0.01	0.02	1	11

***** See Appendix Page for comments regarding this certificate *****

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OAKVILLE ON L6H 0C3

Finalized Date: 7- AUG- 2018
Account: BIMCIO

Project: QIA Waste Rock Inspection

CERTIFICATE OF ANALYSIS SD18183871

Sample Description	Method Analyte Units LOD	OA- VOL08 MPA tCaCO3/1Kt 0.3	OA- VOL08 NNP tCaCO3/1Kt 1	OA- VOL08 Ratio (N Unity 0.01	CRU- QC Pass2mm % 0.01	PUL- QC Pass75um % 0.01	OA- VOL08s FIZZ RAT Unity 1	OA- VOL08s NP tCaCO3/1Kt 1	OA- VOL08s MPA tCaCO3/1Kt 0.3	OA- VOL08s NNP tCaCO3/1Kt 1	OA- VOL08s Ratio (N Unity 0.01
R787353		<0.3	13	83.20	73.1	87.2	1	17	<0.3	17	108.80
R787354		5.9	7	2.19		90.8	1	15	5.9	9	2.53
R787355		<0.3	1	6.40			1	2	<0.3	2	12.80
R787356		1.9	8	5.33			1	11	1.9	9	5.87
R787357		1.9	1	1.60	88.9		1	5	1.9	3	2.67
R787358		86.6	-82	0.06			1	6	86.6	-81	0.07
R787359		0.6	17	28.80			1	23	0.6	22	36.80
R787360		426.6	-422	0.01			1	8	427	-419	0.02
R787361		5.6	4	1.78			1	10	5.6	4	1.78
R787362		4.1	-1	0.74			1	5	4.1	1	1.23
R787363		0.3	18	57.60		85.0	1	17	0.3	17	54.40
R787364		<0.3	14	89.60		97.2	1	14	<0.3	14	89.60
R787365		0.6	4	8.00			1	8	0.6	7	12.80
R787366		<0.3	12	76.80			1	14	<0.3	14	89.60
R787367		<0.3	10	64.00			1	11	<0.3	11	70.40
R787368		0.3	12	38.40			1	10	0.3	10	32.00
R787369		<0.3	3	19.20			1	4	<0.3	4	25.60
R787370		12.8	-7	0.47			1	12	12.8	-1	0.94
R787371		7.2	7	1.95			1	11	7.2	4	1.53
R787372		0.6	10	17.60			1	11	0.6	10	17.60

***** See Appendix Page for comments regarding this certificate *****

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Project: QIA Waste Rock Inspection

CERTIFICATE OF ANALYSIS SD18183871

CERTIFICATE COMMENTS

LABORATORY ADDRESSES

Processed at ALS Sudbury located at 1351- B Kelly Lake Road, Unit #1, Sudbury, ON, Canada.

Applies to Method:				
	CRU- 31	CRU- QC	DRY- 21	LOG- 22
	PUL- 31	PUL- QC	SPL- 21	WEI- 21

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method:				
	C- IR07	ME- XRF21bf	OA- GRA05x	OA- VOL08
	OA- VOL08s	S- IR08		