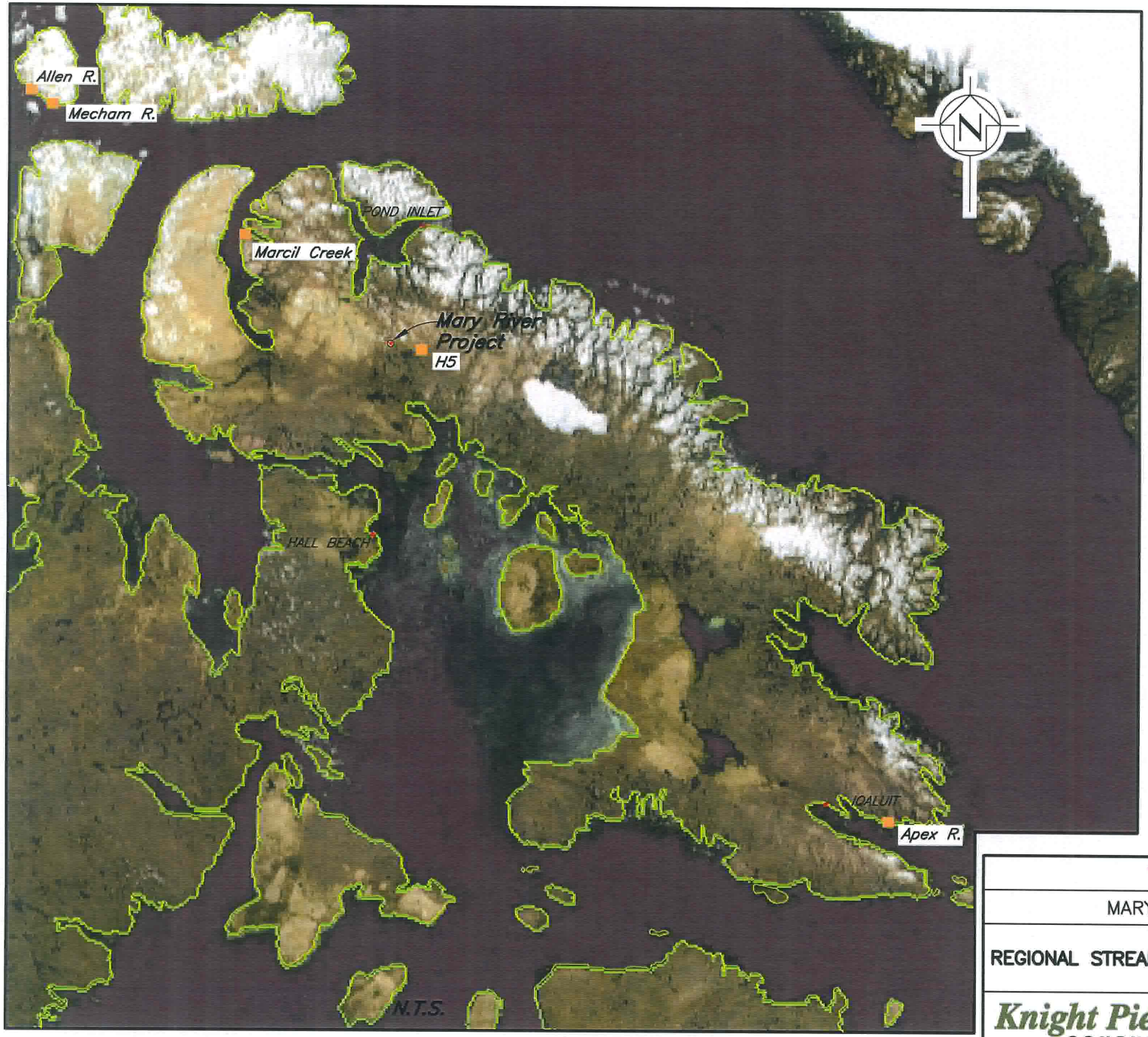
XREF FILE(S): IMAGE FILE(S): Baffinland logo-big corp Baffinland logo_new NUNUVUT NUNUVUT_BORDERS



LEGEND:

- *Streamflow Monitoring Station*

NOTES:

1. *Stream flow monitoring station locations provided by Water Survey of Canada.*
2. *Imagery provided by Google Earth (2005).*

NORTH BAY ON. CREATED BY: pjohnson SAVED: I:\102-00181-10\Assignment\Acad\Fig\A57R0. 10/25/2007 1:39:44 PM PRINTED: 10/25/2007 1:39:50 PM, Layout1, Bpark

Baffinland

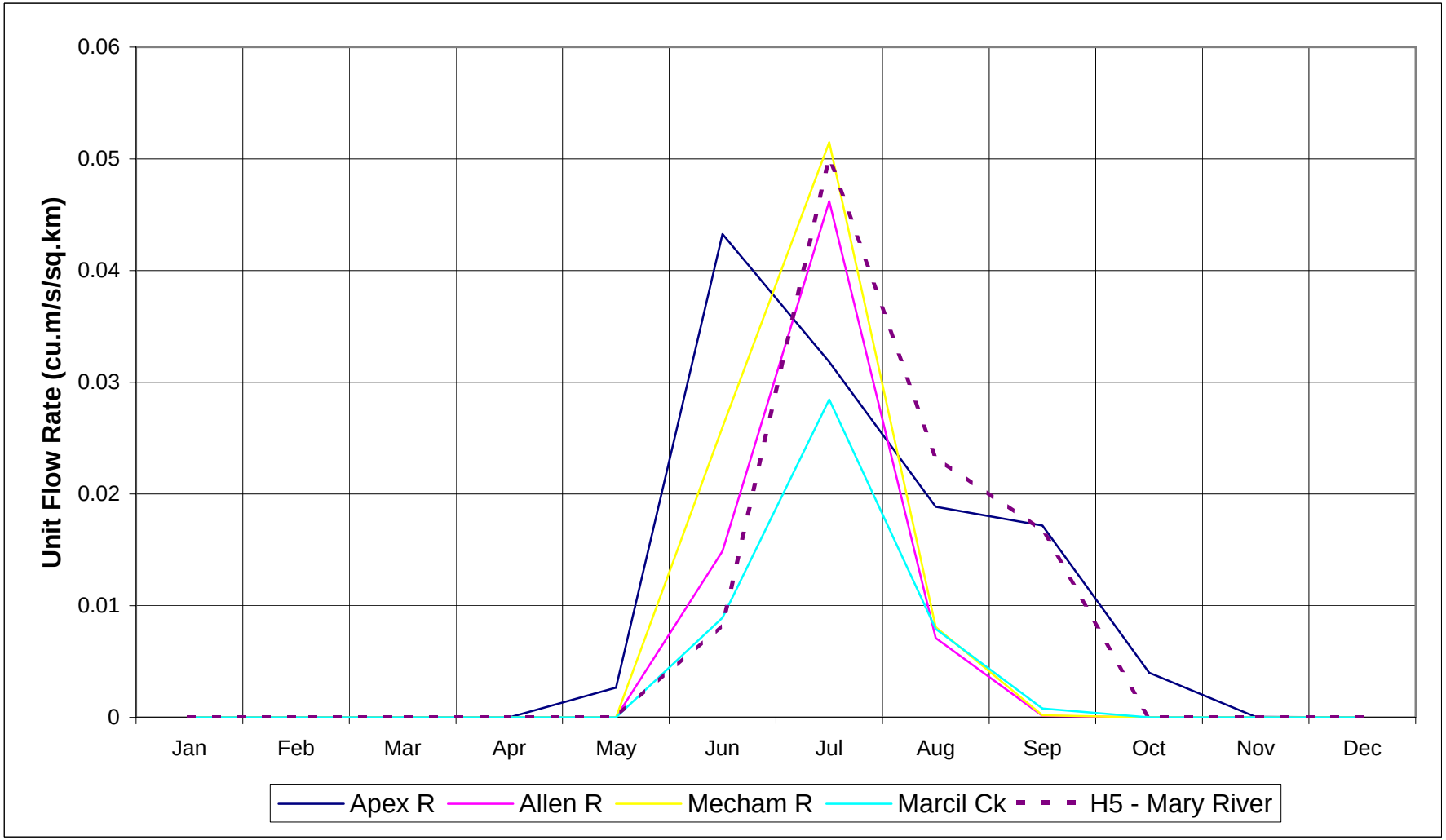
MARY RIVER PROJECT

REGIONAL STREAMFLOW MONITORING STATIONS

Knight Piésold CONSULTING

P/A NO.	REF.	REV.
NB102-00181/10	5	0

FIGURE 4.1



Notes:

1. Allen and Mecham Rivers are located near Resolute.
2. Apex River is located near Iqaluit.
3. Marcil Creek is located near Arctic Bay.

Baffinland Iron Mines Corporation

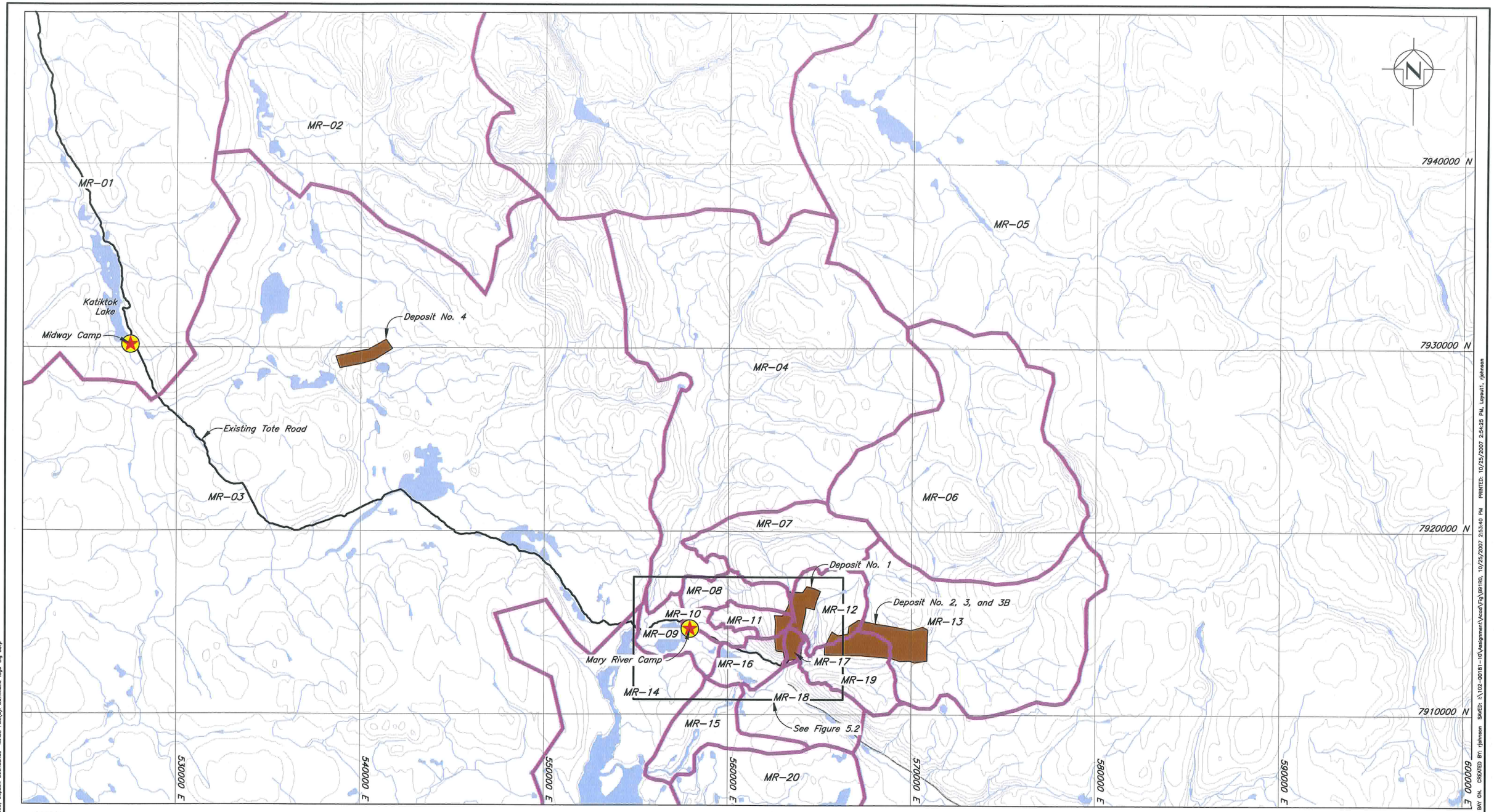
MARY RIVER PROJECT

REGIONAL SURFACE RUNOFF RATES

Knight Piésold CONSULTING

P/A NO.	REF.	REV.
NB102-00181/10	5	0

FIGURE 4.2



LEGEND:

- Water
- Mineral Lease Boundary
- River/Stream/Drainage
- Direction of surface water runoff
- Existing Tote Road
- Proposed South Rail Alignment
- Catchment Boundaries
- Catchment Boundaries
- Project Site Locations

NOTES:

1. Base Map © Her Majesty the Queen in Rights of Canada, Department of Natural Resources (2004). All rights reserved. (Government of Canada, 2006).
2. Coordinate grid is shown in UTM (NAD83) Zone 17 West and is in metres.
3. Contours are in metres. Contour interval varies.
4. Catchment areas calculated using Mapinfo.

Scale 2 1 0 2 4 6 8 10 Kilometres

CATCHMENT	AREA (km^2)
MR-01	874.5
MR-02	248.7
MR-03	6311
MR-04	217.5
MR-05	7663.4
MR-06	122.97
MR-07	30.40
MR-08	9.385
MR-09	10.45
MR-10	3.58

CATCHMENT	AREA (km^2)
MR-11	5.412
MR-12	14.70
MR-13	85.43
MR-14	114.2
MR-15	18.02
MR-16	8.61
MR-17	1.48
MR-18	21.75
MR-19	15.66
MR-20	73.02

Baffinland

MARY RIVER PROJECT

MARY RIVER AREA
– CATCHMENT AREAS

Knight Piésold CONSULTING

P/A NO. NB102-00181/10 | REF. 5 | REV. 0

FIGURE 5.1

XREF FILE(S): Base Map_Overall_RC; CATCHMENTS nad83; Deposit Boundaries IMAGE FILE(S): Baffinland logo-big corp

SAVED: L:\102-00181-10\Assignment\Acad\Fig\BB180, 10/25/2007 2:53:40 PM PRINTED: 10/25/2007 2:54:25 PM, Layout1, rjohnson

NORTH BAY ON. CREATED BY: rjohnson

MR-03
MR-04
MR-07
MR-08
MR-09
MR-10
MR-11
MR-12
MR-14
MR-15
MR-16
MR-17
MR-18
MR-19
Camp Lake
Sheardown Lake
Mary River Camp
Airstrip
Existing Tote Road
Approximate Location of Crusher and Stockpiles
Proposed Weathered Ore Stockpile Location
Proposed Magnetite Pit
Proposed Hematite Pit
Mineral Lease Boundaries
Deposit 1
Deposit 2, 3, and 3B
Mary River
Pump Station 2
Pump Station 3
7916000 N
7914000 N
7912000 N
7911000 N
558000 E
560000 E
562000 E
564000 E
566000 E

LEGEND:

- Water
- Mineral Lease Boundary
- River/Stream
- Direction of surface water runoff
- Drainage
- Pumping Station
- Existing Tote Road
- Catchment Boundaries

NOTES:

1. Topography provided by Eagle Mapping (2005).
2. Coordinate grid is shown in UTM (NAD 83) Zone 17 West and is in metres.
3. Contours are in metres. Contour interval varies.
4. Some infrastructure not shown for clarity.

Scale 300 150 0 300 600 900 1200 1500 Metres

Baffinland Iron Mines Corporation

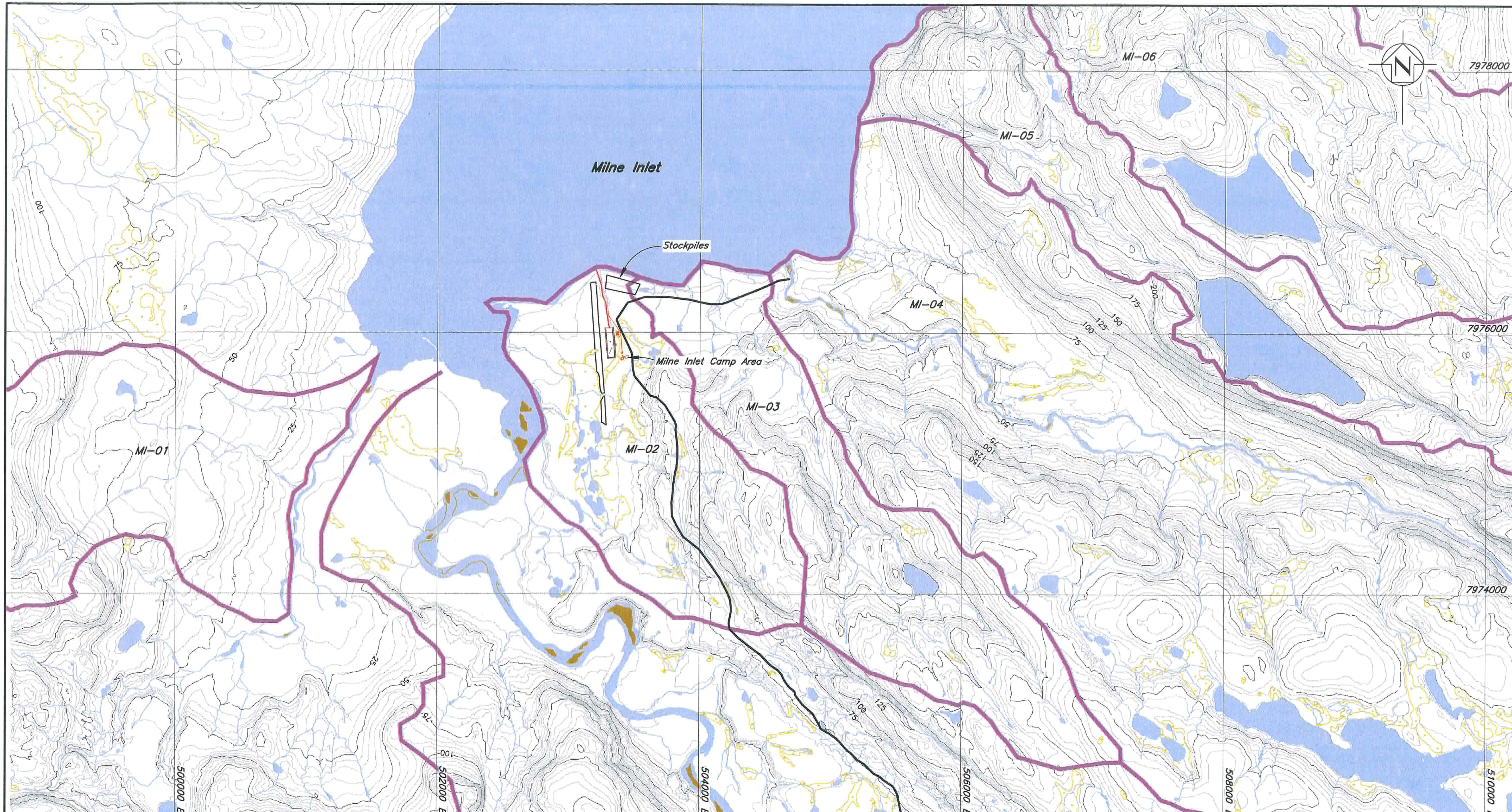
MARY RIVER PROJECT

MARY RIVER DRILLING AREA – CATCHMENT AREAS

Knight Piésold CONSULTING

P/A NO.	REF.	REV.
NB102-00181/10	5	0

FIGURE 5.2



LEGEND:

- Water
- River/Stream/Drainage
- Direction of surface water runoff
- Existing Tote Road
- Catchment Boundaries

NOTES:

1. Topography provided by Eagle Mapping (2005).
2. Coordinate grid is shown in UTM (NAD83) Zone 17 West and is in metres.
3. Contours are in metres. Contour interval is 5 metres.
4. Catchment areas calculated using Mapinfo.

CATCHMENT	AREA (km^2)
MI-01	5.27
MI-02	3.59
MI-03	4.11
MI-04	62.32
MI-05	5.61
MI-06	7.96

Scale 300 150 0 300 600 900 1200 1500 Metres

Baffinland

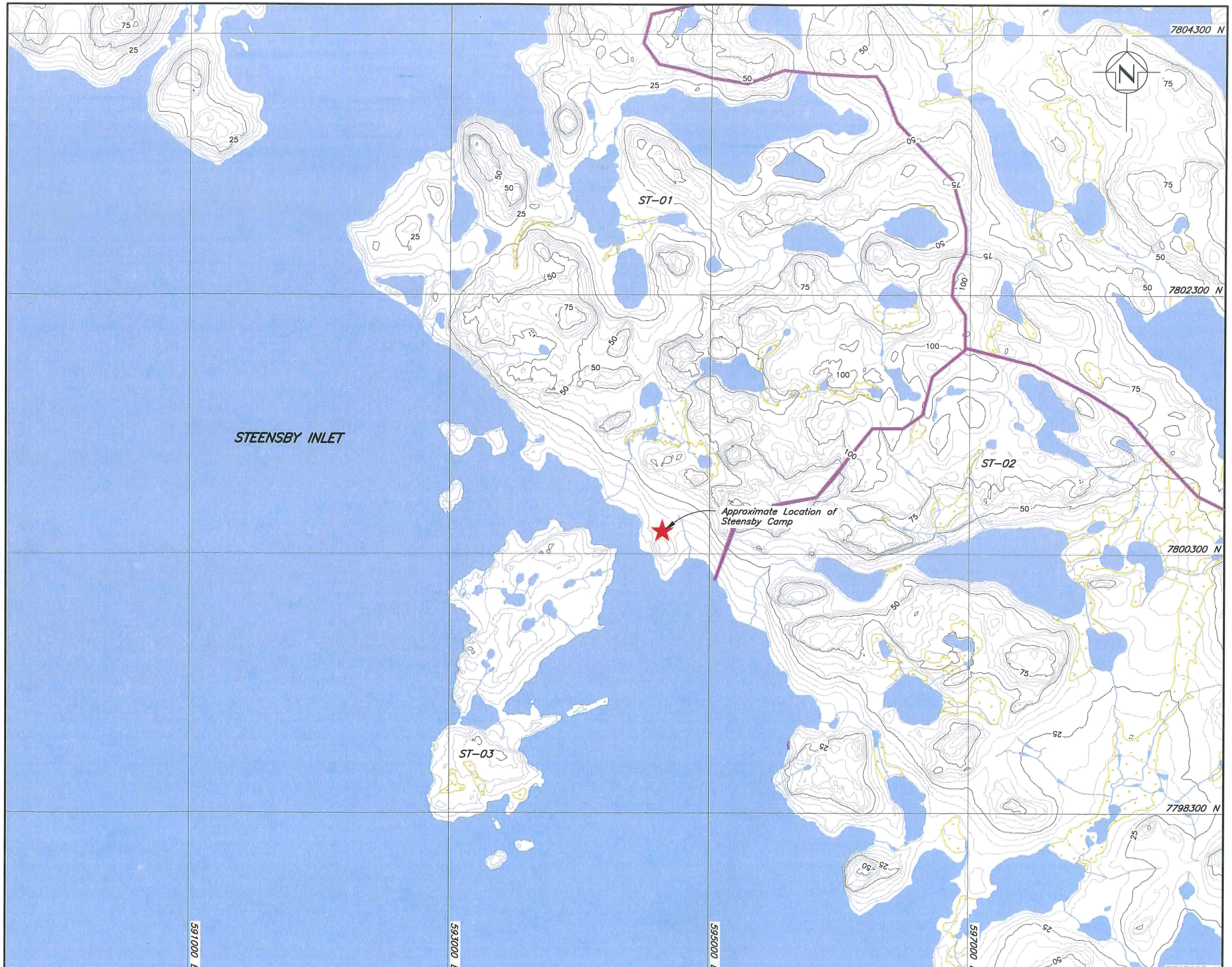
MARY RIVER PROJECT

MILNE INLET AREA
– CATCHMENT AREAS

Knight Piésold CONSULTING

P/A NO.	REF.	REV.
NB102-00181/10	5	0

FIGURE 5.3



LEGEND:

- Water
- Swamp
- River/Stream
- Direction of surface water runoff
- Catchment Boundaries

NOTES:

1. Topography provided by Eagle Mapping (2005).
2. Coordinate grid is shown in UTM (NAD 83) Zone 17 West and is in metres.
3. Contours are in metres. Contour interval is 5 metres.
4. Catchment areas calculated in Mapinfo.

Scale 300 150 0 300 600 900 1200 1500 Metres

CATCHMENT	AREA (km^2)
ST-01	13.68
ST-02	21.77
ST-03	1.99

Baffinland Iron Mines Corporation

MARY RIVER PROJECT

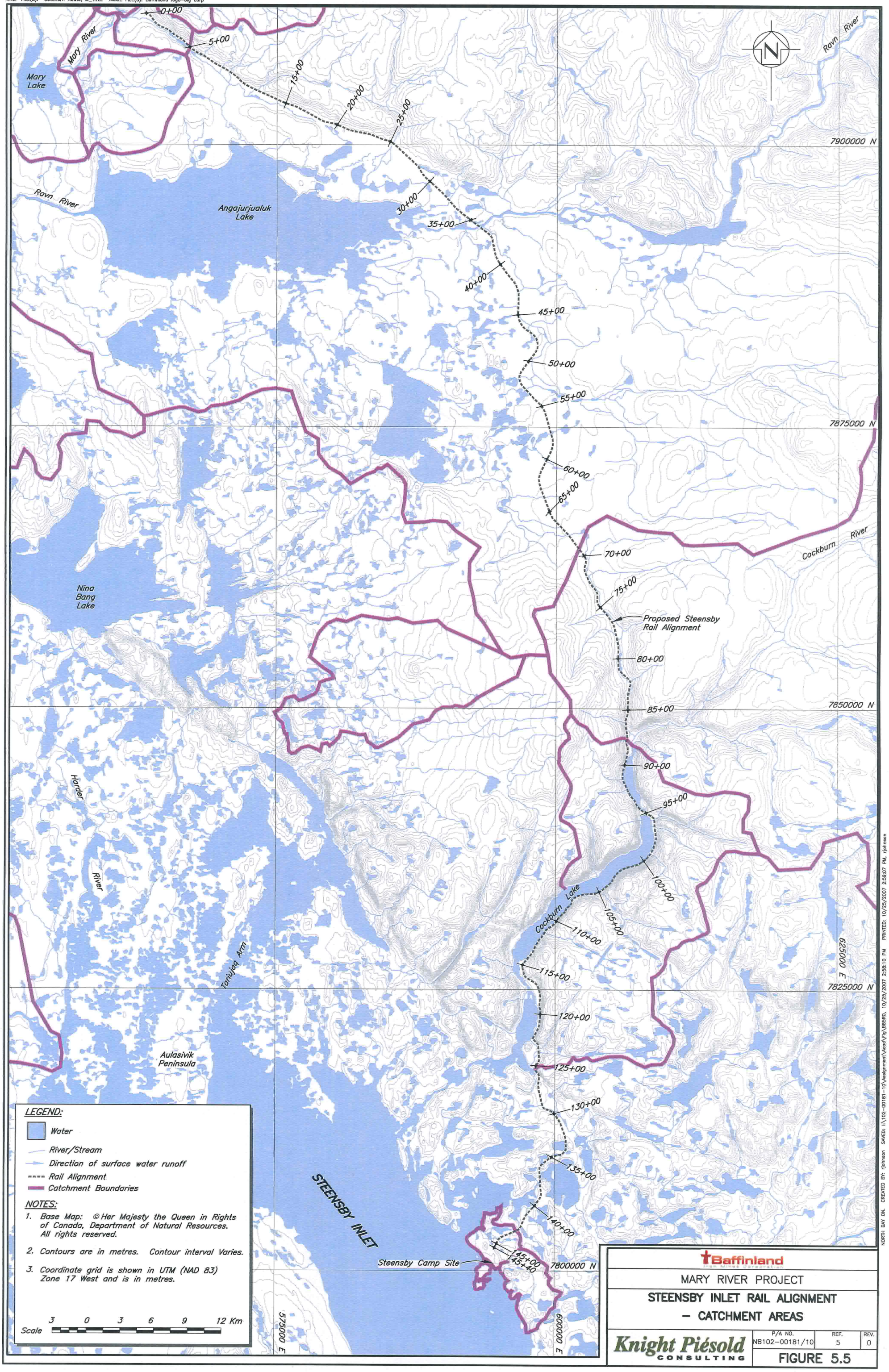
STEENSBY INLET AREA – CATCHMENT AREAS

Knight Piésold CONSULTING

P/A NO.	REF.	REV.
NB102-00181/10	5	0

FIGURE 5.4

XREF FILE(S): Southern Route; M_TITLE IMAGE FILE(S): Baffinland logo-big corp



LEGEND:

- Water
- River/Stream
- Direction of surface water runoff
- Rail Alignment
- Catchment Boundaries

NOTES:

1. Base Map: © Her Majesty the Queen in Rights of Canada, Department of Natural Resources. All rights reserved.
2. Contours are in metres. Contour interval Varies.
3. Coordinate grid is shown in UTM (NAD 83) Zone 17 West and is in metres.

Scale 3 0 3 6 9 12 Km

Baffinland

MARY RIVER PROJECT

STEENSBY INLET RAIL ALIGNMENT – CATCHMENT AREAS

Knight Piésold CONSULTING

P/A NO.	REF.	REV.
NB102-00181/10	5	0

FIGURE 5.5

NORTH BAY ON. CREATED BY: rjohnson SAVED: i:\102-00181-10\Assignment\Acad\Fig\B85R0, 10/25/2007 2:58:10 PM PRINTED: 10/25/2007 2:59:07 PM, rjohnson

Milne Inlet
Rock Quarry Location
Primary Borrow Source Location
0 Km
5 Km
Milne Inlet Camp
10 Km
15 Km
20 Km
25 Km
30 Km
35 Km
40 Km
45 Km
50 Km
55 Km
60 Km
Primary Borrow Source Location
Proposed Midway Camp
65 Km
70 Km
75 Km
80 Km
85 Km
90 Km
95 Km
100 Km
Mary River Camp
105 109 Km
Rock Quarry Location
480000 E
490000 E
500000 E
510000 E
520000 E
530000 E
540000 E
550000 E
560000 E
570000 E
580000 E
7990000 N
7980000 N
7970000 N
7960000 N
7950000 N
7940000 N
7930000 N
7920000 N
7910000 N
7900000 N

LEGEND:

- Water
- Small Catchment
- Medium Catchment
- Large Catchment
- Extra-Large Catchment
- River/Stream/Drainage
- Existing Tote Road
- Primary Borrow Sources and Rock Quarries

NOTES:

1. Base Map: © Her Majesty the Queen in Rights of Canada, Department of Natural Resources (2004). All rights reserved. (Government of Canada, 2006)
2. Coordinate grid is shown in UTM (NAD83) Zone 17 West and is in metres.
3. Contours are in metres. Contour interval varies.
4. Existing Tote Road surveyed by Knight Piesold (2006).
5. Catchments based on July 2006 inspections.

Baffinland
Iron Ore Mine Corporation

MARY RIVER PROJECT

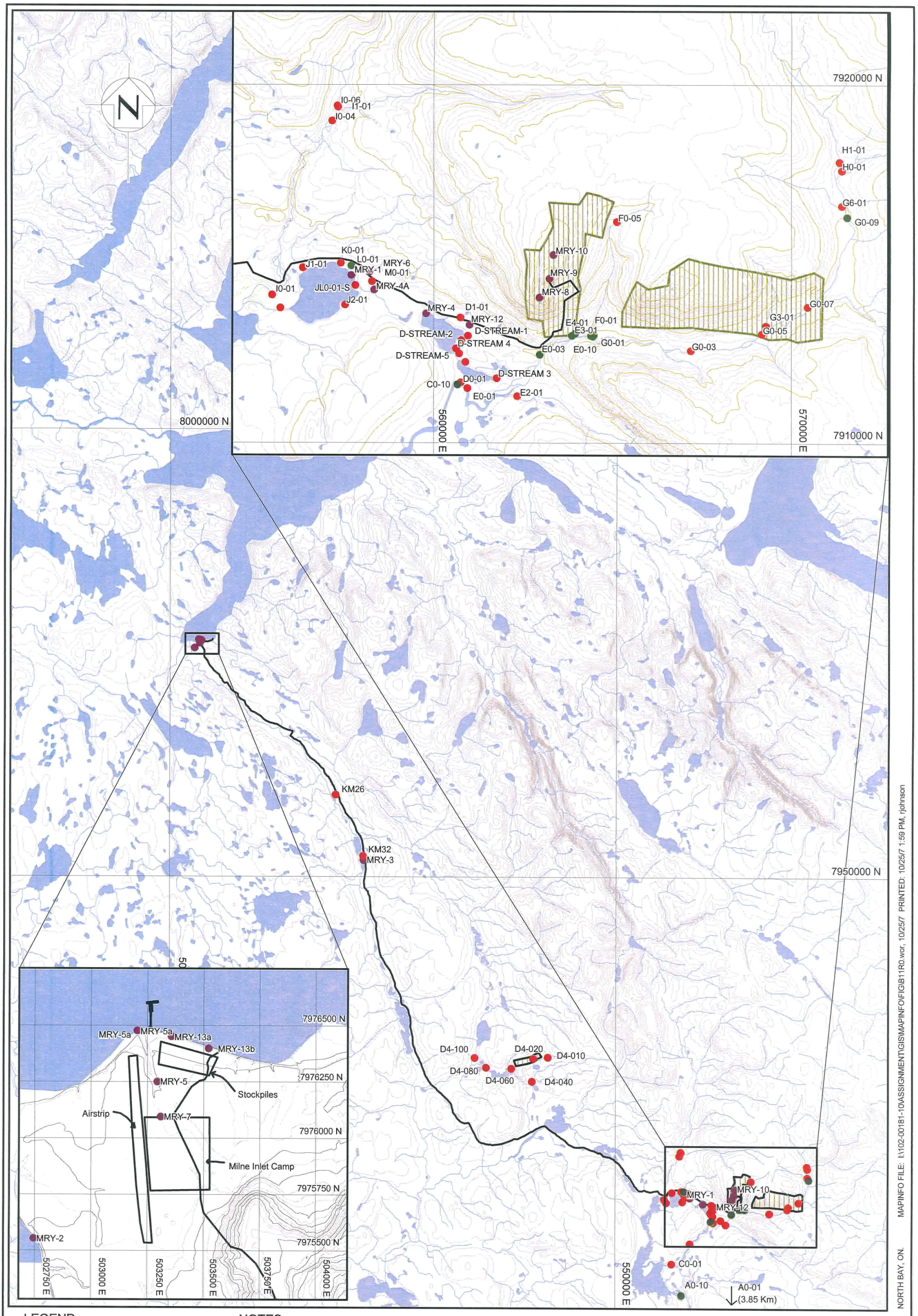
TOTE ROAD - CATCHMENT AREAS

Knight Piésold CONSULTING

P/A NO.	REF.	REV.
NB102-00181/10	5	0

FIGURE 5.6

CREATED BY: rjohnson SAVED: I:\102-00181-10\ASSIGNMENT\GIS\MAP\NFO\FIGB15.wor, 10/25/7 11:52 AM PRINTED: 10/25/7 12:08 PM, rjohnson
NORTH BAY, ON.



MAPINFO FILE: I:\102-00181-10\ASSIGNMENT\GIS\MAPINFO\FIG\B11R0.wor, 10/25/7 PRINTED: 10/25/7 1:59 PM, rjohnson

NORTH BAY, ON.

LEGEND:

- Seasonal Water Quality Sample Sites
- Weekly Water Quality Sample Sites
- Proposed Water Quality Monitoring Locations for Bulk Sampling Program
- Existing Tote Road
- Mining Lease Boundaries

NOTES:

1. Base Map: © Her Majesty the Queen in Rights of Canada, Department of Natural Resources (2004). All rights reserved. (Government of Canada, 2006)
2. Coordinate grid is shown in UTM (NAD83) Zone 17 West and is in metres.
3. Contours are in metres. Contour interval varies.

Scale: 0 5 10 Km

Baffinland Iron Mines Corporation

MARY RIVER PROJECT

SURFACE WATER SAMPLING LOCATIONS

Knight Piésold CONSULTING

P/A NO.	REF.	REV.
NB102-00181/10	5	0

FIGURE 6.1

Knight Piésold
CONSULTING

APPENDIX A

SURFACE WATER SAMPLING PROGRAM - QUALITY ASSURANCE & QUALITY CONTROL PLAN (REF. NO. NB102-00181/10-7)

- Report 40 pages

ISO 9001:2000
FS 87377

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

SURFACE WATER SAMPLING PROGRAM
QUALITY ASSURANCE AND QUALITY CONTROL PLAN
(REF. NO. NB102-00181/10-7)

Rev. No.	Revision	Date	Approved
0	Issued in Final	October 25, 2007	MF.

Knight Piésold Ltd.
1650 Main Street West
North Bay, Ontario Canada P1B 8G5
Telephone: (705) 476-2165
Facsimile: (705) 474-8095
E-mail: northbay@knightpiesold.com

Knight Piésold
CONSULTING

Knight Piésold CONSULTING

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

SURFACE WATER SAMPLING PROGRAM QUALITY ASSURANCE AND QUALITY CONTROL PLAN (REF. NO. NB102-00181/10-7)

EXECUTIVE SUMMARY

This Quality Assurance and Quality Control (QA/QC) Plan has been prepared to fulfill the requirement of Part I, Item 9 of License No. 2BB-MRY0710 issued by the Nunavut Water Board to Baffinland Iron Mines Corporation (Baffinland) on July 27, 2007. In accordance with the stipulations of the Water License, this Surface Water Quality Sampling Program QA/QC Plan was prepared following the general recommendations presented in *Quality Assurance (QA) and Quality Control (QC) Guidelines for use by Class "B" Licensees in Collecting Representative Water Samples in the Field and for Submission of a QA/QC Plan* (INAC, 1996).

The QA/QC best practices outlined in this document are designed to provide guidance to field staff and analytical laboratories in order to maintain a high level of confidence in the water quality data generated from the Mary River Project. This QA/QC plan addresses water samples collected from lakes, streams and rivers, treated wastewater effluent, drinking water and site drainage.

Best practice methods for water sample collection will focus on: i) avoiding sample contamination during collection, ii) ensuring that correct sample preservatives are used, and iii) if feasible, samples for analysis of dissolved parameters will be filtered in the field (alternatively, filtration at the analytical laboratory will be used). Due to the logistics of getting water samples to the analytical laboratory, for time sensitive parameters a range of holding times are presented (preferred and maximum). Vertical profile sampling in lakes and rivers will be carried out after the stratified temperature profile has been established using an appropriate sampler (e.g. a 'Van Dorn', 'Kemmerer', etc.) suitable for collection of samples for ultra low metals analyses.

Ten percent of all water samples will consist of field QA/QC samples, which will include field blanks, trip blanks and field replicates. These QA/QC data, along with the results of in-house laboratory QA/QC testing, will be reviewed on a regular basis.

Field staff will be responsible for monitoring a range of field parameters, including pH, conductivity, redox potential, dissolved oxygen, etc. Field staff will be responsible for monitoring probe maintenance and for ensuring that monitoring probes are regularly calibrated and stored as per manufacturers' instructions.

All water samples will be submitted to the analytical laboratory along with chain of custody documentation listing sampling date, sampler name, project ID, requested analyses, total number of bottles per sample, information on whether the sample has been filtered, and urgency of requested analyses.

Water sample analyses are currently being carried out by two accredited analytical laboratories: i) Accutest located in Nepean, Ontario, and ii) ALS laboratory Group located in Vancouver, BC. Analytical methods used by the analytical laboratories generally conform to the standard methods outlined in *Standard Methods for the Examination of Water and Wastewater* (APHA et al, 1989). Details of alternative methods used by the laboratories are provided. Baffinland will advise the Nunavut Water Board in advance of any changes in the laboratories chosen to provide this support service.

Accutest and ALS carry out their own routine in-house QA/QC checks, which include: i) use of calibration check standards and drift control standards, ii) use of surrogate standards and internal standards, iii) replicate analyses on submitted samples, and iv) use of standard reference materials (SRM's) and matrix spikes.

All water quality data collected from the various environmental programs will be stored electronically in a spreadsheet database or other suitable electronic format. A suitably qualified person will act as Water Quality Database Manager ('WQDM'). The WQDM will be responsible for all aspects of database management including review of new results received from the laboratories and QA/QC checks on data entered into the database.

All documents prepared by Baffinland or their designate for submission to the regulators will be reviewed by senior staff and Baffinland prior to issue, as per the company's standard practice and quality management system.

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

SURFACE WATER SAMPLING PROGRAM
QUALITY ASSURANCE AND QUALITY CONTROL PLAN
(REF. NO. NB102-00181/10-7)

EXECUTIVE SUMMARY

ᑖᓇ ᐃᒥᐅᑦ ᐱᐅᓂᖓᓂᒃ ᐱᐅᖏᓐᓇᕐᑎᑦᑎᓂᕐᒧᓪᓗ ᐸᕐᓇᐅᑎᐅᔪᖅ ᐊᕿᒃᓱᕐᑕᐅᔪ ᐱᔭᕇᐊᖃᕐᓂᖓ ᒪᓕᒃᓗᒍ ᑎᑎᕋᕐᓯᒪᔪᒥ 1 ᐃᓚᖓᓂ 9 ᐃᒥᕐᒧᑦ ᐱᔪᓐᓇᐅᑎᖓᓂ ᓚᐃᓯᓯᖓᓂ No. 2BB-MRY0710 ᑐᓂᔭᐅᓯᒪᔪᖅ ᓄᓈᔫᓂ ᐅᔭᖅᓂᐊᕐᑐᓄᑦ Baffinland Iron Mines Corporation (Baffinland) ᓄᓇᕗᑦᒥ ᐃᒥᓕᕆᔨᒃᑯᓐᓄᑦ ᑲᑎᒪᔩᖏᓐᓄᑦ. ᐸᕐᓇᐅᑎᐅᔪᖅ ᑎᑎᕋᕐᓯᒪᔪᖅ ᖃᓄᕐ ᐃᒥᕐ ᖃᐅᔨᓴᕐᑕᐅᖃᑦᑕᕐᓂᐊᕐᒪᖔᑦ ᖃᓄᕐᓗ ᐱᔭᐅᖃᑦᑕᕐᓂᐊᕐᒪᖔᑦ, ᖃᐅᔨᓴᕐᕕᒃᒥᓗ ᖃᓄᕐ ᖃᐅᔨᓇᓱᒃᑕᐅᖃᑦᑕᕐᓂᐊᕐᒪᖔᑦ ᓱᓕᔪᒃᑯᑦ ᐱᑕᖃᕐᑐᓂᒃᓗ ᖃᐅᔨᑎᑦᑎᓇᓱᒃᓗᑎᒃ ᐃᖃᓇᐃᔭᕐᕕᐅᓂᐊᕐᑐᓂ.

ᐊᑐᕐᑕᐅᔪᓐᓇᕐᑐᑦ ᐊᑐᐊᓗᐅᓂᐊᕐᑐᑦ ᑎᑎᕋᕐᓯᒪᔪᑦ ᑕᕙᓂ ᐊᕿᒃᓯᒪᔪᖅ ᐃᑲᔪᕐᑕᐅᓇᓱᒃᓗᓂ ᐃᖃᓇᐃᔭᕐᑎᐅᔪᓄᑦ ᐊᑐᕐᑕᐅᓂᐊᕐᓗᓂ ᐱᐅᓚᖑᔪᒃᑯᑦ ᐃᒥᕐᒥᒃ ᐊᑐᕋᓱᒃᓂᖏᓐᓄᑦ ᓄᓈᔫᓂ ᐅᔭᖅᓂᐊᕐᑎᓪᓗᒋᑦ. ᑖᓇ ᐃᒥᐅᑦ ᐱᐅᓂᖓᓂᒃ ᖃᐅᔨᓴᕐᓂᖅ ᐸᕐᓇᐅᑎ ᑎᑎᕋᕐᓯᒪᔪᖅ ᖃᓄᕐ ᐱᔭᐅᓗᔭᕐᒪᖔᑕ ᐃᒥᑦ ᑕᓯᕐᓂᑦ, ᑯᒃᓂᑦ, ᐊᒻᒪᓗ ᑯᕕᔭᐅᕙᓪᓕᐊᔪᓂᑦ, ᐃᒥᕆᔭᐅᔪᓂᒃᓗ ᐊᒻᒪᓗ ᐊᑐᕐᑕᐅᕙᓪᓕᐊᔪᓂᒃ.

ᐱᐅᓚᖑᔪᒃᑯᑦ ᐊᑐᕐᑕᐅᒐᔭᕐᑐᑦ ᐃᒥᕐᒥᒃ ᖃᐅᔨᓴᕐᓗᑎᒃ ᐅᑯᓂᖓ ᐱᓕᕆᐊᖃᕐᓂᐊᕐᑐᑦ: ᐃ) ᓱᕈᕐᑕᐅᑕᐃᓕᒪᓗᑎᒃ ᖃᐅᔨᓴᕐᑕᐅᔪᑦ ᐱ) ᐃᒥᕐᒧᑦ ᖃᐅᔨᓴᐅᑕᐅᔪᑦ ᓱᕋᒃᑕᐅᑦᑕᐃᓕᒪᓗᑎᒃ ᐊᒻᒪᓗ ᑎ) ᐊᔪᕐᓇᖏᒃᑯᓂ ᓴᓗᒻᒪᖅᓴᕐᑕᐅᓯᒪᔪᒥᒃ ᐃᓗᓕᖏᓐᓂᒃ ᖃᐅᔨᓴᕐᓯᒪᔪᓂᒃ (ᐅᑯᓗᓐᓂᑦ ᓴᓗᒻᒪᖅᓴᐅᑎᒃᑯᕐᓗᓂ ᐃᒥᕐ ᖃᐅᔨᓴᕐᕕᒃᒥ ᐱᔭᐅᒐᔭᕐᓗᓂ). ᐃᒥᕐ ᐊᐅᓪᓚᕐᑎᓐᓇᓱᒃᓗᒍ ᐱᔭᕇᑐᒐᔭᕐᓂᖓᓄᑦ, ᐊᑯᓂᐅᓂᖓ ᒪᓕᒃᓗᒍ ᕿᓚᒻᒥᐅᔪᒃᑯᑦ ᐱᔭᐅᔭᕇᐊᖃᖅᓯᔭᕐᓂᖓᓄᑦ (ᐊᑯᓂᐅᓚᖑᔪᓐᓇᕐᑐᖅ ᐊᒻᒪᓗ ᓇᓚᒋᔭᐅᔪᒃᑯᑦ). ᐃᑎᓂᖏᓐᓂᒃ ᖃᐅᔨᓴᕐᓂᖃᓂᐊᕐᑐᑦ ᑕᓯᕐᓂᒃ ᑯᒃᓂᒃᓗ ᐊᑐᕐᓗᑎᒃ ᖃᐅᔨᓴᐅᑕᐅᔪᓂᒃ ᓴᕕᖅᓴᖃᐅᕐᓂᖏᓐᓂᒃ ᖃᐅᔨᓴᐅᑕᐅᔪᓂᒃ ᐃᒥᕐᒧᑦ (ᓱᕐᓗ. 'Van Dorn', Kemmerer' ᐊᓯᖏᓪᓗ.) ᓇᒪᒋᔭᐅᔪᒃᑯᑦ ᐃᒥᕐᒧᑦ ᖃᐅᔨᓴᐅᑎᓂᒃ ᓴᕕᒃᓴᖃᖏᓐᓂᖏᑦ ᖃᐅᔨᓴᕐᑕᐅᔪᑕᐅᓱᑦ.

10%-ᐳᓴᖓ ᐃᒥᐅᑦ ᖃᐅᔨᓴᕐᑕᐅᔪᑦ ᐃᖃᓇᐃᔭᕐᕕᐅᔪᒥᖓᕐᓂᐊᕐᑐᑦ, ᐃᖃᓇᐃᔭᕐᕕᐅᔪᑦ ᐃᓂᖏᓐᓂ, ᐅᐸᒃᑕᐅᖃᑦᑕᕐᑐᓪᓗ, ᐊᒻᒪᓗ ᐃᖃᓇᐃᔭᕐᕕᐅᓚᕐᑐᑦ. ᑖᒃᑯᐊ ᖃᐅᔨᓴᕐᑕᐅᔪᑦ ᑎᑎᕋᕐᑕᐅᔪᑦ, ᐊᒻᒪᓗ ᖃᐅᔨᓴᕐᕕᒃᒥ ᑎᑎᕋᕐᑕᐅᔪᑦ ᕿᒥᕈᔭᐅᖃᑦᑕᕐᓂᐊᕐᑐᑦ ᖃᖓᒍᑦᓴᖓ.

ᐃᖃᓇᐃᔭᕐᑎᐅᔪᑦ ᑲᒪᒋᔭᖃᕐᓂᐊᕐᑐᑦ ᖃᐅᔨᓴᕐᓗᑎᒃ ᐊᐳᕆᖏᑦᑐᓂᒃ ᖃᐅᔨᓴᐅᑕᐅᔪᓂᒃ, ᐱᖃᓯᐅᑎᓗᒋᑦ ᐅᑯᐊ, ᓱᕈᕐᓇᕐᑐᖃᕐᓂᖏᑦ, ᓴᕕᒃᓴᖃᕐᓂᖏᓪᓗ, ᓂᐱᖃᕐᓇᒃᑯᖓᔪᓂᒃ, ᐊᓂᕐᑎᕆᔭᕗᑦ ᐃᓗᐊᓂᓐᓂᖓ, ᐊᓯᖏᓪᓗ ᐃᓗᓕᖏᑦ ᐃᒥᐅᑦ ᖃᐅᔨᓴᕐᑕᐅᒐᔭᕐᑐᑦ. ᐃᖃᓇᐃᔭᕐᑎᐅᔪᑦ ᑲᒪᒋᔭᖃᕐᓂᐊᕐᑐᑦ ᖃᐅᔨᓴᐅᑎᑦ ᐃᓕᑦᑎᐊᕐᓯᒪᒃᒪᖔᑕ ᑲᒪᒋᔭᐅᓗᑎᒃ ᐊᒻᒪᓗ ᐊᑐᕐᑕᐅᓂᖏᑦ ᒪᓕᒃᓯᒪᓗᑎᒃ ᐊᑐᓇᐊᖅᑐᓂᒃ ᖃᐅᔨᓴᐅᑎᓂᒃ ᓴᓇᓯᒪᔪᓄᑦ.

ᑕᒪᕐᒥᒃ ᐃᒥᕐᒧᑦ ᖃᐅᔨᓴᐅᑕᐅᔪᑦ ᑐᓂᔭᐅᖃᑦᑕᕐᓂᐊᕐᑐᑦ ᖃᐅᔨᓴᕐᕕᒃᒧᑦ ᑎᑎᕋᕐᓯᒪᓗᑎᒃᓗ ᐅᓪᓗᖏᑦ ᖃᖓ ᐱᔭᐅᓚᐅᕐᒪᖔᑕ, ᑭᓇᒧᓪᓗ ᐱᔭᐅᓚᐅᕐᒪᖔᑦ, ᐃᖃᓇᐃᔭᕐᕕᐅᔪᓪᓗ ᐊᑎᖓ, ᐱᔭᐅᔪᒪᔪᓪᓗ ᑭᓯᓂᖏᑦ, ᐃᒥᒃᑯᕕᓪᓗ ᖃᓯᐅᓂᖏᓐᓂᒃ, ᐊᒻᒪᓗ ᐃᒥᕐ ᓴᓗᒻᒪᖅᓴᕐᑕᐅᓯᒪᒃᒪᖔᑦ ᑯᕕᕕᒃᑯᕐᓗᓂ, ᐊᒻᒪᓗ ᕿᓚᒻᒥᐅᔪᒃᑯᑦ ᖃᐅᔨᔭᐅᔪᒪᓂᖏᑦ.

ᐃᒥᕐᒧᑦ ᖃᐅᔨᓴᕐᓂᖅ ᖃᐅᔨᓴᕐᑕᐅᔪᖅ ᒪᕈᒃᓄᑦ ᖃᐅᔨᓴᕐᕕᐅᔪᒃᓄᑦ ᐊᒻᒪᓗ i) Accutest ᓂᐊᐱᐊᓐ ᐋᓐᑎᐅᓕᐅᒥ Nepean, Ontario, ii) ALS laboratory Group ᕚᒃᑰᕙᒥ Vancouver, BC. ᖃᐅᔨᓴᐅᑕᐅᔪᑦ ᐊᑐᕐᑕᐅᔪᑦ ᖃᐅᔨᓴᕐᕕᒃᒥ ᒪᓕᒃᓯᒪᔪᑦ ᒪᓕᒐᐅᔪᓂᒃ ᑎᑎᕋᕐᓯᒪᔪᓂᒃ *ᒪᓕᒐᐅᔪᑦ ᐊᑐᕐᑕᐅᔭᓇᐊᓕᑦ ᐃᒥᕐᒧᑦ ᐊᒻᒪᓗ ᑯᕕᔭᐅᔪᓄᑦ* (APHA et al, 1989). ᐊᓯᖏᑎᒍᑦ ᖃᐅᔨᓴᐅᑎᖃᕈᑎᒃ ᐅᖃᕐᓯᒪᒐᔭᕐᑐᑦ.

Accutest and ALS ᖃᐅᔨᓴᕐᕕᐅᔪᒃ ᑕᒃᑯᐊ ᒪᓕᒃᓂᐊᕐᑐᒃ ᓇᒻᒥᓂᕐ ᒪᓕᒐᕆᔭᕐᒥᓂᒃ ᐊᐅᓚᑕᒥᓂᒃ ᑕᕝᕙ ᐃᖃᓇᐃᔭᕐᕕᐅᔪᓂᑦ ᖃᐅᔨᓴᒐᒃᓴᓂᒃ ᖃᐅᔨᓴᕐᓗᑎᒃ, ᐅᑯᐊᖑᒐᔭᕐᒥᔪᑦ: ᐃ) ᖃᓄᑎᒋᕐᓂᖓᓂᒃ ᓱᒃᑲᓂᖓᓂᒃ, ᑯᒃᐸᓪᓕᐊᓂᖓᓂᒃ ᐊᓯᖏᓐᓂᒃᓗ ᐃᓗᓕᖏᓐᓂᒃ ᖃᐅᔨᓴᕐᓂᕐᒧᑦ ᒪᓕᒐᓂᒃ ᐱ) ᒪᓕᒐᖃᕐᓗᑎᒃ ᖃᐅᔨᓴᐅᑕᐅᔪᓂᒃ ᐊᑐᕐᑕᐅᓱᓂᒃ ᑎ) ᐊᔨᖃᕐᒪᖓᓪᓗ ᖃᐅᔨᓴᕐᑕᐅᓪᓗᓂ ᖃᐅᔨᓴᕐᑕᐅᓯᒪᔪᓂᑦ ᐊᒻᒪᓗ ᑭ) ᒪᓕᒐᐅᔪᑦ ᖃᐅᔨᓴᐅᑎᓄᑦ ᐊᑐᕐᑕᐅᕙᒃᑐᑦ ᐊᒻᒪᓗ ᐃᓗᓕᖏᓐᓂᒃ ᖃᐅᔨᓴᕆᑕᐅᓱᓂᒃ.

ᑕᒪᕐᒥᒃ ᐃᒥᕐᒧᑦ ᐱᐅᓂᖓᓂᒃ ᖃᐅᔨᓴᐅᑕᐅᔪᑦ ᐱᔪᕝᕙᓪᓕᐊᔪᑦ ᐊᔨᒋᖏᑦᑐᓂᖓᕐᓂᐊᕐᑐᑦ ᐃᖃᓇᐃᔭᕐᕕᐅᔪᓂᑦ ᐊᕙᑎᖓᓄᑦ ᖃᐅᔨᓴᕐᑕᐅᔪᓂᑦ ᑎᑎᕋᕐᑕᐅᔪᓪᓗ ᖃᕋᓴᐅᔭᒃᑯᑦ ᑎᑎᕋᕐᓯᒪᓂᐊᕐᓗᑎᒃ. ᐃᓕᓯᒪᔪᓂᒃ ᖃᐅᔨᓴᕐᓂᕐᒥᒃ ᐊᖓᔪᖃᖃᕐᓂᐊᕐᑐᑦ ᐃᒥᐅᑦ ᐱᕐᑯᓂᖓᓂᒃ ᖃᐅᔨᓴᓕᕐᐸᑕ ('WQDM'). ᐊᖓᔪᖃᖑᔪᖅ WQDM ᑲᒪᒋᔭᖃᕐᓂᐊᕐᑐᖅ ᖃᐅᔨᓴᕐᑕᐅᔪᓕᒪᓂᒃ ᐱᖃᓯᐅᑎᓗᒍ ᕿᒥᕈᔭᓇᐊᖃᕐᑐᓂᒃ ᖃᐅᔨᓴᕐᕕᒃᒥᖓᕐᑐᓂᒃ ᐊᒻᒪᓗ ᐃᖃᓇᐃᔭᕐᕕᒃᓂ ᖃᐅᔨᓴᕐᑕᐅᔪᓂᒃ ᖃᕋᓴᐅᔭᕐᒧᐊᕐᓯᕙᓪᓕᐊᓗᓂᓗ.

ᑕᒪᕐᒥᒃ ᑎᑎᕋᕐᑕᐅᔪᑦ ᓄᓘᔮᓂ ᐅᔭᕋᖕᓂᐊᕐᑐᓄᑦ Baffinland ᐅᕙᓗᓐᓂᑦ ᑎᓕᓯᒪᔭᖏᓐᓄᑦ ᐱᕐᑯᔭᑎᒍ ᐱᔭᕆᐊᖃᕐᑐᓄᑦ ᕿᒥᕈᔭᐅᖃᑦᑕᕐᓂᐊᕐᑐᑦ ᐊᖓᔪᖃᖑᔪᓄᑦ ᓄᓘᔮᓂ ᐅᔭᕋᖕᓂᐊᕐᑐᓄᑦ ᑐᓂᔭᐅᓚᐅᖏᓐᓂᖏᓐᓂ ᐊᖏᕐᑕᐅᓇᓱᓚᐅᖏᓐᓂᖏᓐᓂ ᒪᓕᒃᓗᒋᑦ ᑲᒪᑦᑎᐊᕐᓱᒃᓂᕐᒧᑦ ᒪᓕᒐᐅᔪᑦ ᐊᑐᕐᑕᐅᔪᑦ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ.

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

SURFACE WATER SAMPLING PROGRAM
QUALITY ASSURANCE AND QUALITY CONTROL PLAN
(REF. NO. NB102-00181/10-7)

TABLE OF CONTENTS

PAGE

TABLES

APPENDICES

Knight Piésold CONSULTING

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

SURFACE WATER SAMPLING PROGRAM QUALITY ASSURANCE AND QUALITY CONTROL PLAN (REF. NO. NB102-00181/10-7)

SECTION 1.0 - INTRODUCTION

1.1 INTRODUCTION

This Quality Assurance and Quality Control (QA/QC) Plan has been prepared to fulfill the requirement of Part I, Item 9 of License No. 2BB-MRY0710 issued by the Nunavut Water Board to Baffinland Iron Mines Corporation (Baffinland) on July 27, 2007.

Part I, Item 9 of the Water License states:

> *The Licensee shall submit a Quality Assurance/Quality Control Plan, prepared in accordance with the INAC document "Quality Assurance (QA) and Quality Control (QC) Guidelines for use by Class "B" Licensees in Collecting Representative Water Samples in the Field, 1996" to an Analyst for approval within ninety (90) days of the issuance of the license (amendment). The plan shall include analysis of field blanks and certified reference material, and replicate sampling in order to assess accuracy, precision and field contamination.*

In accordance with the stipulations of the Water License, this Surface Water Quality Sampling Program QA/QC Plan has been prepared following the general recommendations presented in *Quality Assurance (QA) and Quality Control (QC) Guidelines for use by Class "B" Licensees in Collecting Representative Water Samples in the Field and for Submission of a QA/QC Plan* (INAC, 1996).

1.2 QA/QC PLAN OBJECTIVES

For the purposes of this report, QA/QC is defined as:

- ***Quality Assurance*** - System of activities used to achieve quality control.
- ***Quality Control*** - Set of best practice methods and procedures used to ensure quality of data in terms of precision, accuracy and reliability.

The QA/QC best practices outlined in this document are designed to provide guidance to field staff and analytical laboratories in order to maintain a high level of confidence in the water quality data generated from the Mary River Project.

SECTION 2.0 - SAMPLE COLLECTION

2.1 WATER QUALITY MONITORING LOCATIONS

The QA/QC Plan addresses the collection of freshwater surface water quality samples related to monitoring programs being carried out in support of Baffinland's Mary River Project, namely:

1. Collection of environmental surface water samples from area lakes, streams and rivers
2. Collection of effluent samples from the current and future wastewater treatment facilities located at Mary River and Milne Inlet
3. Collection of drinking water samples from camp potable water sources
4. Collection of surface water discharges from future ore stockpiles and waste rock dumps
5. Collection of surface water discharges from future bulk sample open pits
6. Measurement of water sample field parameters (e.g. pH, conductivity etc.)

Exact locations and sampling frequency for designated monitoring stations are presented in the Site Water Management Plan (Knight Piésold, 2007).

2.2 SAMPLING METHODS AND EQUIPMENT

A summary of recommended water sample containers, sample volumes, required analytical laboratory, method detection limits (MDL), sample preservatives and maximum sample hold times is presented in Table 2.1. Laboratory parameters such as pH, BOD, nitrite, nitrate, orthophosphate, fecal colliforms, chlorophyll and phenophytin typically have maximum sample storage times varying from 4 to 48 hours. Due to the remoteness of the site, it may not always be possible to get laboratory analysis done within the sample holding time window. During the preparation of this document the analytical laboratories were consulted with respect to maximum sample holding times. As a result, Table 2.1 presents a preferred and a maximum holding time for time sensitive parameters. Every effort will be made to get samples analysed within the preferred holding time window. If this is not possible, then the maximum holding time will apply.

Every effort will be made to prevent accidental freezing of bacteriological water samples (due to on-site climatic conditions) which could affect analytical results for these parameters.

For a complete list of the required sample analyses at each monitoring station, please refer to the Site Water Management Plan (Knight Piésold, 2007).

2.2.1 General Sampling Procedures

Generally, sampling procedures will consist of the following:

1. Sampler will wear a fresh pair of disposable nitrile gloves for each sampling event
2. Sample bottles and preservative will be stored under clean conditions on site. Sample bottles will have the appropriate volume of preservative added in the field (or

alternatively, sample bottles will be supplied by the analytical laboratory with preservatives already added).

3. A fresh sample bottle(s) will be used at each monitoring station. Sample bottles will *not* be re-used.
4. Sampling will be carried out by either: i) rinsing the sample bottle with source water three times before immersing the sample bottle to fill it (after which preservative is added, as required), or ii) if the sample bottles are provided pre-charged with preservatives then it is generally convenient to transfer water samples from the source to the sample bottle using a 1-2L plastic jug. Plastic jugs will be rinsed in the source water three times before filling the sample bottle. A dedicated jug will be used for different sample types (e.g. sewage effluent, fuel contaminated drainage and receiving waters). Sample jugs will be replaced on a regular basis before they become stained.
5. Prior to collecting the sample, the sampling jug will be rinsed in the source water three times. Rinse water will be disposed of so that it does not contaminate the source water where the sample will be collected.
6. Care will be taken to avoid disturbance of sediments and inclusion of disturbed suspended solids in the sample
7. For samples *not requiring preservatives*, the sample bottle will be rinsed three times with source water before filling the bottle to the top
8. For samples *requiring preservatives*, the sample bottle will be filled to the top (or to the indicator line marked on the bottle) and securely sealed. Note that for some volatile contaminants (e.g. BTEX), the sample bottle must be filled with zero headspace.
9. Sample details e.g. date, sample ID and analysis will be clearly marked on the bottle in indelible ink
10. For *dissolved metals* analyses, if possible, the water sample will be filtered in the field immediately after sampling using a 0.45µm disposable filter and syringe. A fresh syringe and filters must be used at each monitoring station. Alternatively, sample filtration can be carried out by the analytical laboratory.
11. All samples will be placed in an iced cooler as soon as possible after collection

2.2.2 Lake Sampling

For monitoring of water quality arising from vertical stratification in lakes, a depth sampler will be used (e.g. a 'Van Dorn' or 'Kemmerer'). Generally, depth samplers consist of a clear polycarbonate sample tube with two spring mounted rubber bungs, one located at each end. The depth sampler is lowered to the correct depth attached to a cord, whereupon a metal weight is released. The weight slides down the cord and strikes a release mechanism button which releases the two bungs which then seal both ends of the tube. The water sample is then pulled back to the surface.

Regardless of the brand, water samplers that are used will be suitable for collection of water samples for ultra low metals analyses i.e. will have acrylic or PVC construction and silicone seals.

For depth sampling, the following considerations will be taken into account to ensure sample QA/QC:

1. Sampling station locations will be dependent upon the monitoring program objectives and the lake dimensions. Map coordinates for all lake sampling station locations will be recorded using a GPS unit.
2. The vertical stratification profile will be determined using a temperature probe equipped with a long cord with metre intervals marked on it.
3. The vertical temperature profile will be established by slowly lowering the temperature probe and recording the temperature change with depth.
4. Depending upon the purpose of the monitoring program, water quality samples may be collected from the different stratified layers. The depth sampler must be slowly lowered in the 'open' position (i.e. to let water enter it) until it reaches the required depth.
5. The depth sampler will be held at this depth for a few minutes to allow flushing of water inside it.
6. The metal weight (messenger) will be released (to activate the closing mechanism) and the depth sampler will be pulled back to the surface. Field measurements can be taken at depth or by filling a bottle with the sampled water and taking measurements from that immediately after sampling.
7. When collecting samples close to the lake bed care must be taken to ensure that the depth sampler does not disturb lake bed sediments (which could contaminate the sample).
8. Depending upon the lake area and depth, multiple sampling stations will likely be required to adequately characterize lake water quality.

2.2.3 River Sampling

Depending upon the size of the water body, river sampling methods are the same as those presented in Sections 2.2.1 and 2.2.2. To avoid inclusion of floating detritus in the sample, the sample bottle must be fully immersed in the river water. Care will be taken to ensure that disturbed sediments are not included in the sample.

When selecting water quality monitoring station locations on rivers, care will be taken where a tributary joins a river, since complete mixing of the two waters may not be achieved within several hundred metres downstream of the confluence (or further). When in doubt, vertical profile monitoring across the river's width using a field parameter such as pH, temperature or conductivity will be used to assess if complete mixing has occurred.

2.2.4 Sampling for Toxicity Testing

Sampling for sub-lethal toxicity testing is a condition of Environmental Effects Monitoring (EEM). Typically, a 4L effluent sample is sufficient. Depending upon the objectives of the toxicity testing, variables that will require confirmation prior to testing include:

- Type of effluent sample to be collected e.g. instantaneous grab sample, or composite sample collected over a period of time;
- Type of dilution water to be used by the testing laboratory e.g. standard synthetic laboratory dilution water, receiving water collected upstream of the discharge etc.; and
- Preferred test organism.

For further details concerning acute lethality testing refer to Environment Canada (2002) and USEPA (2002).

2.3 QA/QC SAMPLES

For monitoring of QA/QC during sample collection and shipping, a set of QA/QC samples will be routinely submitted for analysis, as summarised in Table 2.2. Ten percent of all samples will comprise QA/QC samples, which will consist of duplicate samples, field blanks and trip blanks.

In the interest of transparency, the analytical laboratories will also be instructed to report the results of their own in-house QA/QC testing (e.g. results of random replicate analyses of submitted samples).

The results of QA/QC analyses will be routinely reviewed by Baffinland or their designate, and any anomalous results will be promptly investigated with the assistance of the analytical laboratory. Once the reason for the anomalous results is identified, Baffinland will ensure that operating procedures of field staff and/or the analytical laboratory will be altered in order to rectify the problem. Compliance monitoring and data management for water license sampling will be conducted by Baffinland, with the assistance of a designate as required.

2.4 MEASUREMENT OF FIELD PARAMETERS

Measurement of field parameters (e.g. temperature, pH, conductivity, redox potential, dissolved oxygen, etc.) will be carried out for each sample at the time of sampling. The required set of field parameters will vary according to sample type and monitoring objectives. For a complete list of required parameters please refer to the Site Water Management Plan (Knight Piésold, 2007). The exact methods used for monitoring field parameters will depend upon the type of monitoring probes being used. Field staff will read and be familiar with the instruction manual for the equipment being used on site.

Field staff will rinse the monitoring probe three times with the water to be monitored before immersing the probe in the water. Generally, the user will ensure that the probe being used has had sufficient time to equilibrate in the water before the reading is taken. This is generally regarded as the point at which the reading has stabilized.

Field parameter data will be recorded in notebooks, or preferably in a custom form designed for this purpose (see example in Appendix A). A copy of the data should be retained on site.

2.4.1 Monitoring Probe Calibration

Monitoring probes will be stored and calibrated in accordance with manufacturers' instructions. All probes will be calibrated before each sampling event and a written record of the calibration results will be maintained on site. Field staff will ensure that calibration solutions are of the correct specification and that they have not passed their expiry date (if applicable). Monitoring probes will be stored as per manufacturers' recommendations.

SECTION 3.0 - SAMPLE MANAGEMENT

3.1 SAMPLE SHIPPING AND CHAIN OF CUSTODY

Samples will be placed in iced coolers and shipped to the analytical laboratory as soon as possible after collection. Care will be taken to ensure that bottles are stored upright and are packed securely within the cooler. Preferably, leak-proof ice packs will be used for cooling the samples. If loose ice is used then this should be securely sealed in plastic bags to prevent leakage of melt water.

A chain of custody (COC) form will accompany the samples (see example presented in Appendix A). At a minimum, the COC form will list:

1. Project name and project assignment number.
2. Address of analytical laboratory, name of contact person and contact details.
3. Contact details and name of sampler.
4. Date and time of sampling.
5. Whether the sample has been filtered, or whether laboratory filtration is required.
6. List of sample I.D.'s, sample type (e.g. lake water, sewage effluent, etc.), number of sample bottles per sample and analysis requested.
7. Urgency of analysis (e.g. rush or normal). For rush samples the analytical laboratory should be notified ahead of time.
8. Whether sample contains preservative and if so, what preservative.