APPENDIX H

2014 STREAM DIVERSION BARRIER MONITORING REPORT

MEMORANDUM

To:	Mr. James (Jim) Millard	Date:	February 24, 2015
Copy To:	Mr. Oliver Curran	File No.:	NB102-181/34-A.01
From:	Dale Klodnicki	Cont. No.:	NB14-00448
Re:	AEMP Stream Diversion Barrier Study - Summary of 2014 Monitoring		

1 – INTRODUCTION

The following memorandum presents monitoring data collected in 2014 as part of the initial stream diversion barrier study, a component monitoring program prescribed in Appendix H of the Aquatic Effects Monitoring Program (AEMP) for the Mary River Project (Knight Piésold, 2014; in Baffinland, 2014).

The Project has the potential to reduce flows in five mine site streams, once the 22.2 million tonne per annum (Mt/a) Approved Project (inclusive of the railway) is fully developed. Full development of the open pit, waste rock stockpile, and ore stockpiles are predicted to result in meaningful reductions in flow in the five mine site streams. The flow reductions are expected to have the potential to affect the ability of arctic char (primarily juveniles) to access small tributaries within the mine site area, particularly in the spring when arctic char move into the streams and in the fall when the fish return to the lakes to overwinter. These potential effects are described in the Final Environmental Impact Statement (FEIS; Baffinland, 2012).

At a lower production rate of 3.5 Mt/a, the current Early Revenue Phase (ERP) will have a negligible effect on flows in the first several years. The extent of the open pit and waste rock stockpile will be comparatively small in the first few years and will grow slowly at the lower production rate. Therefore, the initial 3-year monitoring program aims to further document existing baseline conditions, against which future monitoring can be compared when the open pit and stockpiles are more extensively developed and flows in the targeted streams are reduced as predicted in the FEIS.

2 – METHODOLOGY

Liz Ashby of Knight Piésold conducted a site visit between August 22 and 26, 2014. Activities during the site visit are summarized in Table 1. The survey of the five streams included the following tasks:

- The visual inspection of the streams of interest, starting from the lake outlets and travelling upstream to predefined fish barriers (Figure 1).
- Documentation of visual observations of fish during stream surveys. Fish observations within all five tributaries monitored (stream, number of fish observed, UTM coordinates, date and time and reference photos as well as relevant comments) are presented in Table A.1 (Appendix A).
- Collection of total water depth and point velocity measurements at locations that may be a barrier to fish passage. Tables A.2 through A.5 (Appendix A) list the potential fish barriers, the locations and water depth and velocity measurements, as well as referenced photographs taken at each potential barrier location.
- Collection of water depth and stream velocity measurements within streams not being gauged as part of the hydrology program. These measurements will allow flows to be derived in the future using flow data from nearby stream gauges. Tables A.6 and A.7 (Appendix A) present the water depth and velocity measurements along the surveyed reaches of the SDLT-9 and SDLT-12 tributaries. Streams SDLT-9 and SDLT-12 do not have stream gauges installed as part of Baffinland`s regular hydrology monitoring program.
- Photographing potential barriers and documenting conditions within the stream (Photos in Appendix B).

Table 1 Summary of Stream Survey Activities

Date	Stream Surveyed	Time of Survey	Start Point (UTM)	End Point (UTM)
26-Aug-2014	CLT-1	10:30 - 11:40	0557597 E 7914855 N	0558548 E 7915062 N
22-Aug-2014	CLT-2	17:00 - 18:00	0557522 E 7915456 N	0557330 E 7914921 N
26-Aug-2014	SDLT-1	16:25 - 18:20	0560309 E 7913480 N	0561569 E 7913503 N
26-Aug-2014	SDLT-9	15:00 - 15:38	0561745 E 7911792 N	0561873 E 7931934 N
26-Aug-2014	SDLT-12	13:30 - 14:30	0560930 E 7910985 N	0561287 E 7912714 N

The stream channels are generally characterized as shallow, clear and with relatively little cover, which allows for a visual assessment of the presence/absence of fish.

Potential fish barriers were assessed during the late August survey as one of the following:

- **Y** - Yes, a barrier to upstream movement of fish existed at the time of the survey.
- **P** - Possible, a barrier is judged to exist under lower flow conditions than observed at the time of the survey.

Assessment transects were stablished in areas where possible fish barriers were identified. This assessment is presented in Tables A.2 through A.5. Measurements within the CLT-1 tributary were not recorded, as potential fish barriers were not identified during the survey.

3 – RESULTS

3.1 CLT-1 STREAM

The CLT-1 stream is characterized by generally shallow water, with predominately cobble substrates (NSC, 2012). Fish observations are recorded on Table A.1, and observations and measurements at the six (6) transects shown on Figure 2 are presented in Table A.2. Photos 1 through 20 show flow conditions at the transect locations. The locations where fish were observed were documented on field sheets and the location was photographed. The photographs of CLT-1 fish observation locations are shown in Appendix B, Photos 100 through 102.

Observations made on August 26, 2014 indicated that there are several shallow areas of the stream (<0.2 m) that may act as fish barriers. Six fish were observed during three separate occasions. Five transects were identified as potential fish barriers under lower flow conditions. Fish were observed throughout the inspected reaches up to the permanent fish barrier previously identified in other surveys (CLT-1-6). Fish were also observed in a side channel (L2-03 stream), downstream of the last permanent fish barrier (CLT-1-6) and upstream of CLT-1-5.

3.2 CLT-2 STREAM

The CLT-2 stream is characterized by a moderate to steep gradient, coarse bed material and braided channels. The stream is known to be heavily utilized by arctic char. The visual inspection of August 26, 2014 observed one arctic char Table A.1 and Photo 99), perhaps as a result of the low flow conditions in the stream. No fish barriers were identified between the start point and the location of the permanent fish barrier on the CLT-1 stream (see start and end points in Table 1). For reference, photos were taken at locations within the stream where the lowest flow was identified, despite the absence of potential barriers (Photos 21 through 26; Appendix B).

3.3 SDLT-1 STREAM

SDLT-1 is the largest fish-bearing tributary of Sheardown Lake. SDLT-1 provides approximately 3 km of fish-bearing stream channel before reaching parts of the tributary that would not be passable to fish. The SDLT-1 stream is considered to have predominately riffle and riffle/pool habitat over a shallow cobble substrate. Fish observations are recorded on Table A.1. Observations and measurements at the seven (7) transects shown on Figure 3 are presented in Table A.3. Photos 27 through 54 show flow conditions at the transect locations, and Photos 103 through 111 show fish observations (Appendix B).

The high number of fish observed on August 26, 2014 suggests the SDLT-1 stream is the most heavily utilized of the five streams monitored for flow reductions. Forty-five (45) to fifty-one (51) fish were observed during nine different occasions. Four potential fish barriers (SDLT-1-1 through SDLT-1-4) were observed; however, fish were observed upstream of these transects.

3.4 SDLT-9 STREAM

The SDLT-9 stream is characterized by cascade/pool habitat over cobble with varying amounts of boulder, gravel and/or sand (NSC, 2012). SDLT-9 drains a small fish-bearing lake with overwintering habitat. Under low-flow conditions, it is suspected that there is a lack of connectivity to Sheardown Lake.

Observations and measurements at seven (7) transects shown on Figure 3 are presented in Table A.4. Photos 55 through 79 in Appendix B show flow conditions at the transect locations. Discharge measurements (water depth and velocity) at the time of the inspection are presented in Table A.6.

No fish were observed on August 26, 2014. Seven potential fish barriers were identified during the visual inspection (Table A.4). Transect SDLT-9-7 was likely a fish barrier at the observed flow conditions. Six of these are possible barriers under lower flow conditions, two of which were identified as a result of low flow conditions (SDLT-9-1 and SDLT-9-6). The remaining potential fish barriers are stepped rock with relatively high flow velocities that may be unpassable during very low flow conditions. The low flow conditions observed in SDLT-9 are expected to affect fish passage upstream and downstream between the lake and stream habitats.

3.5 SDLT-12 STREAM

The SDLT-12 stream morphology is similar to SDLT-9, and is characterized by cascade/pool habitat over cobble with varying amounts of boulder, gravel and/or sand. Observations and measurements at the five (5) transects shown on Figure 3 are presented in Table A.5. Photos 80 through 98 show flow conditions at the transect locations (Appendix B). Discharge measurements recorded within SDLT-12 at the time of the inspection are presented in Table A.7.

No fish were observed during the August 26, 2014 field visit. Four potential fish barriers were identified, two of which were likely barriers to fish passage at the observed flow conditions. The remaining two locations were possible barriers under lower flow conditions (Table A.5). The location of a ponded area that may provide refuge habitat was also documented (SDLT-12-3).

4 – CONCLUSIONS AND RECOMMENDATIONS

This technical memorandum presents data from the 2014 survey. The study was successfully undertaken on one occasion in late August 2014. The 2014 survey provides further documentation of pre-mining conditions when none of the subject streams have been meaningfully affected by the Project.

Transects were identified within each stream where potential fish barriers existed. This work was completed in a manner that was consistent with previous assessments. At current or lower than current flow conditions, fish were observed all five streams, except SDLT-9 or SDLT-12. Note that visual observations of fish are incidental, and do not provide definitive confirmation on the absence of fish within the stream. Within the CLT-1, CLT-2 and SDLT-1 streams, fish were identified above potential fish barriers at the observed water levels in late August. These observations suggest that fish passage did occur under higher flow conditions earlier in the season. These observations are consistent with previous observations during baseline studies.

The study design targeted two (2) spring surveys and three (3) fall surveys each year, subject to on-site resource availability. It is recommended that efforts be made to undertake the survey with this frequency in 2015. Ideally, a survey would be completed later in the season to verify whether or not fish observed above fish barriers during late summer become stranded near the end of the open water season. It is recommended that the same transects surveyed in 2014 be revisited in future years. Future surveys should also identify and survey any additional potential fish barriers that become apparent under lower flow conditions.

As per the initial study design, an interpretive report will be compiled at the end of three years of monitoring (2014, 2015 and 2016). This report will analyze the multi-year data and also relate the data to hydrographs for the three streams that are equipped with stream gauges (CLT-1, CLT-2 and SDLT-1). The stream gauge data will help us to understand how the field observations relate to typical, wet year and dry year conditions. The 3-year initial stream diversion study monitoring report will be presented with the AEMP Annual Monitoring Report in the first half of 2017. The report will also include recommendations on potential mitigation measures and future monitoring requirements. Continuation of the monitoring program beyond 2016 will depend upon the results of the initial 3-year study as well as the schedule and size of the Project.

5 – REFERENCES

Baffinland Iron Mines Corporation, 2012. *Mary River Project - Final Environmental Impact Statement.* February 2012.

Baffinland Iron Mines Corporation, 2014. *Aquatic Effects Monitoring Plan.* Doc. No. BAF-PH1-830-P16-0039, Rev. 0, dated June 27, 2014.

Knight Piésold Ltd., 2014. Memorandum to: Oliver Curran, Baffinland Iron Mines Corporation. Re: *Initial Stream Diversion Barrier Study, Rev. 0, Mary River Project - Aquatic Effects Monitoring Program.* June 25, 2014. Ref. No. NB14-00160.

North/South Consultants Inc., 2012. *Freshwater Aquatic Biota and Habitat Baseline Synthesis Report 2005-2011.* January 2012.

Prepared: _____
Dale Klodnicki, C.E.T., Environmental Technologist

Reviewed: _____
Richard Cook, P.Geo. (Ltd.), Senior Scientist

Approval that this document adheres to Knight Piésold Quality Systems: _____

Attachments:

Figure 1 Rev 0	Diversion Study Area Streams
Figure 2 Rev 0	Camp Lake Tributaries Subject to Monitoring
Figure 3 Rev 0	Sheardown Lake Tributaries Subject to Monitoring
Appendix A	Stream Observations and Measurements
Appendix B	Photos
	B1 - CLT-1 Photos
	B2 - CLT-2 Photos
	B3 - SDLT-1 Photos
	B4 - SDLT-9 Photos
	B5 - SDLT-12 Photos
	B6 - Fish Observation Photos

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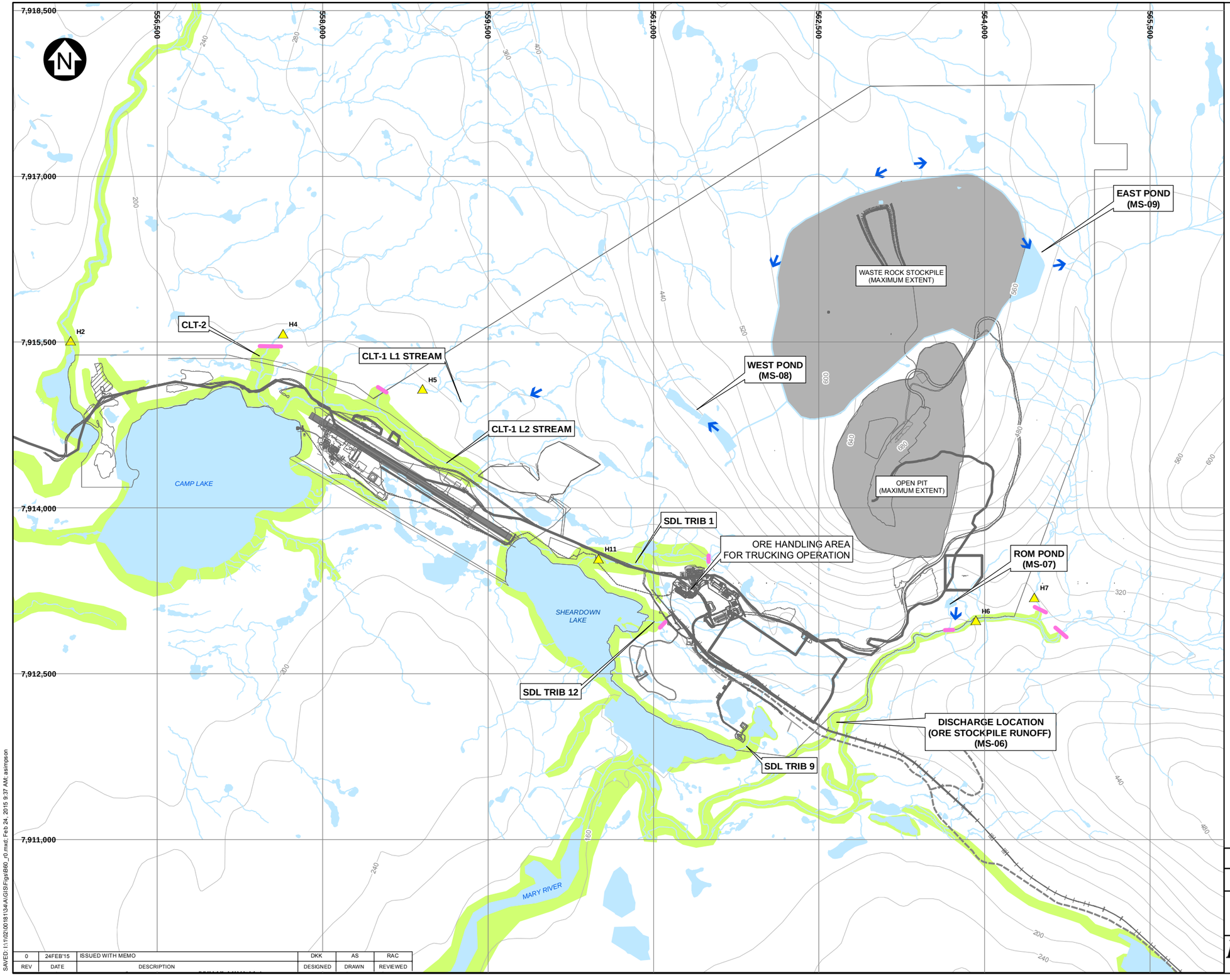

LEGEND:

- STREAM FLOW GAUGING STATION
- FISH BARRIER
- EXISTING TOTE ROAD
- PROPOSED RAILWAY ALIGNMENT
- PROPOSED CONSTRUCTION ACCESS ROAD
- PROPOSED SITE INFRASTRUCTURE
- RIVER/STREAM/DRAINAGE
- WATER
- CONFIRMED ARCTIC CHAR HABITAT

NOTES:

1. BASE MAP: © HER MAJESTY THE QUEEN IN RIGHTS OF CANADA, DEPARTMENT OF NATURAL RESOURCES (2004). ALL RIGHTS RESERVED.
2. COORDINATE GRID IS UTM NAD83 ZONE17.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL VARIES.
4. INFRASTRUCTURE INFORMATION PROVIDED BY HATCH ON JANUARY 31, 2014.
5. ARCTIC CHAR HABITAT (PRESENCE) FROM NSC, 2012 MARY RIVER PROJECT FRESHWATER AQUATIC BASELINE SYNTHESIS. REPORT: 2005-2011.

SCALE 250 125 0 250 500 750 1,000 1,250 1,500 m

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MARY RIVER PROJECT

DIVERSION STUDY AREA STREAMS

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FIGURE 1 | REV 0

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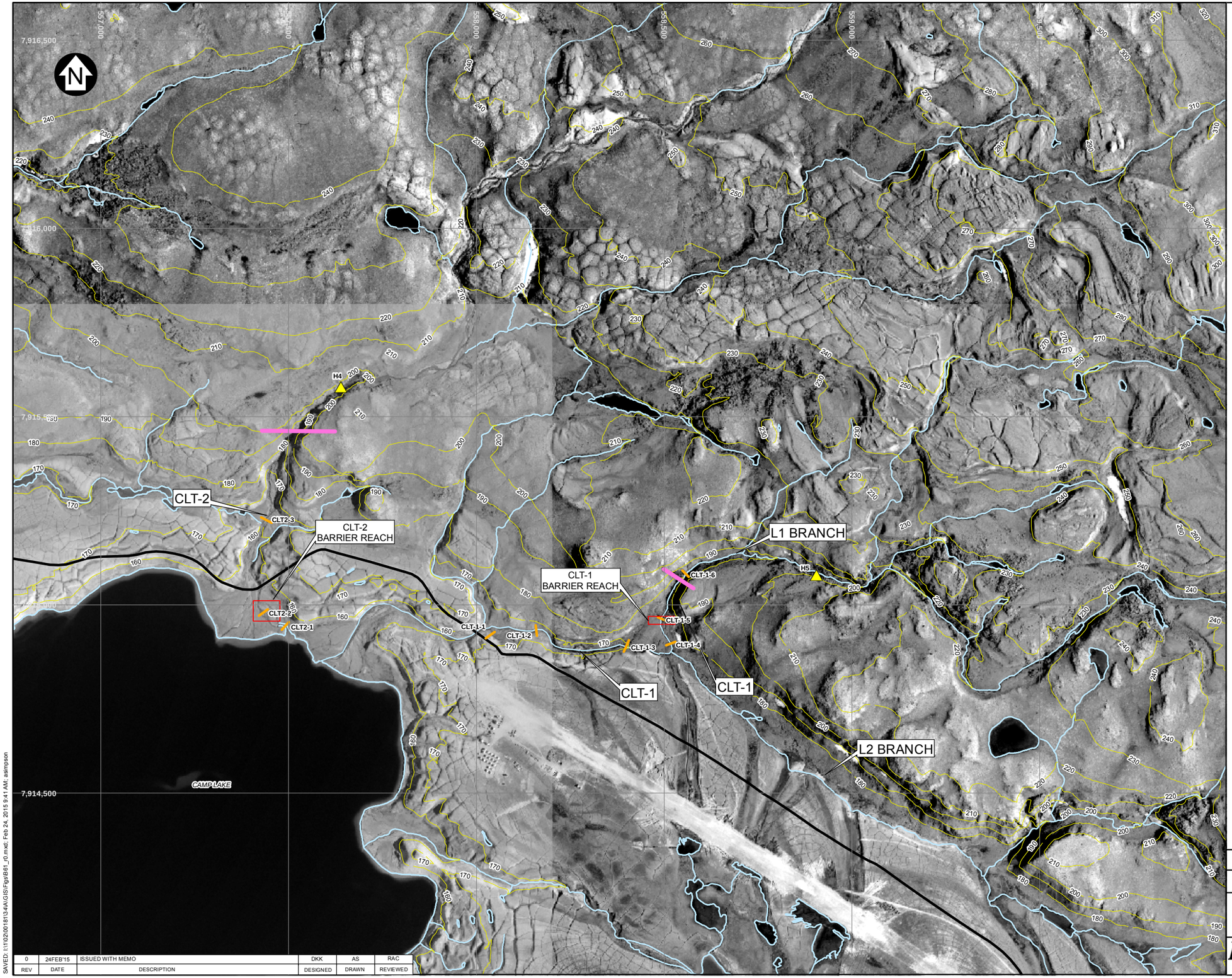

LEGEND:

- STREAM FLOW GAUGING STATION
- 2014 STREAM DIVERSION POTENTIAL BARRIER
- FISH BARRIER
- MILNE INLET TOTE ROAD
- CONTOUR

NOTES:

1. TOPOGRAPHY AND ORTHOPHOTOS PROVIDED BY EAGLE MAPPING (2005).
2. COORDINATE GRID IS IN METRES.
   COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N.
3. CONTOUR INTERVAL IS 10 METRES.

SCALE 100 50 0 100 200 300 400 500 m

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MARY RIVER PROJECT

CAMP LAKE TRIBUTARIES SUBJECT TO MONITORING

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REF NO. NB14-00448

FIGURE 2

REV 0

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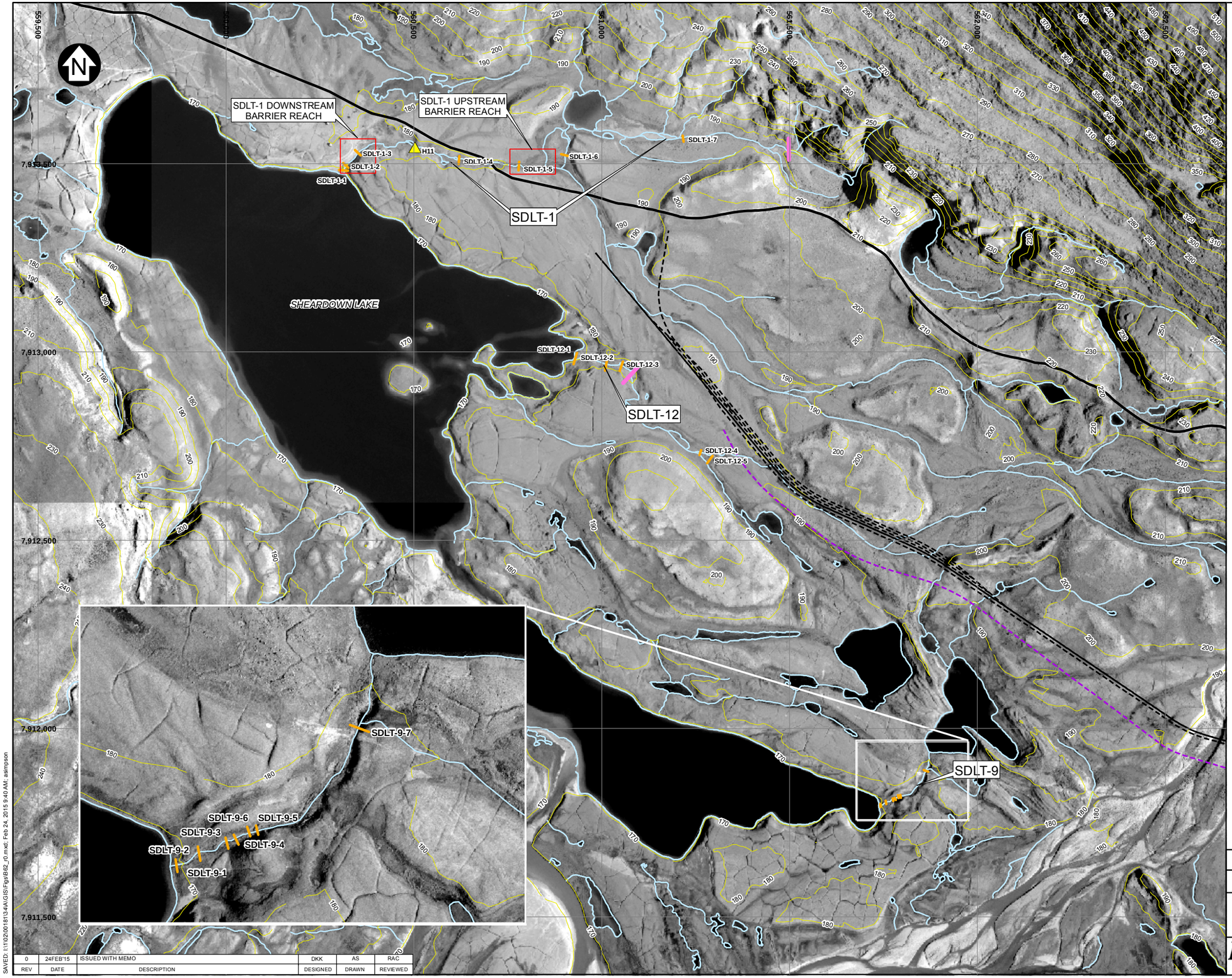

LEGEND:

- STREAM FLOW GAUGING STATION
- 2014 STREAM DIVERSION POTENTIAL BARRIER
- FISH BARRIER
- MILNE INLET TOTE ROAD
- PROPOSED RAILWAY ALIGNMENT
- PROPOSED CONSTRUCTION ACCESS ROAD
- CONTOUR

NOTES:

1. TOPOGRAPHY AND ORTHOPHOTOS PROVIDED BY EAGLE MAPPING (2005).
2. COORDINATE GRID IS IN METRES.
   COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N.
3. CONTOUR INTERVAL IS 10 METRES.
4. RAILWAY ALIGNMENT PROVIDED BY CANARAIL CONSULTANTS INC. (AUGUST, 2010).

SCALE 100 50 0 100 200 300 400 500 m

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MARY RIVER PROJECT

SHEARDOWN LAKE TRIBUTARIES SUBJECT TO MONITORING

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NB102-181/34	NB14-00448

FIGURE 3 REV 0

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APPENDIX A

STREAM OBSERVATIONS AND MEASUREMENTS

(Pages A-1 to A-7)

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TABLE A.1

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

AEMP STREAM DIVERSION BARRIER STUDY - SUMMARY OF 2014 MONITORING
FISH OBSERVATION SUMMARY - ALL STREAMS

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Stream	No. Fish Observed	Comments	UTM Easting (m)	UTM Northing (m)	Date and Time	Photo No.
CLT-1	3	Upstream of culvert	558014	7914929	26/08/2014 10:27	100
CLT-1	1	Only one individual	558344	7914882	26/08/2014 11:00	101
CLT-1	1	One individual in sidechannel	558489	7914972	26/08/2014 11:34	102
CLT-2	2	Upstream of culvert	558000	7914926	22/08/2014 17:41	99
SDLT-1	9	Two individuals; one school of seven	560382	7913552	26/08/2014 16:45	103
SDLT-1	3		560408	7913561	26/08/2014 16:50	104
SDLT-1	4		560431	7913546	26/08/2014 16:52	105
SDLT-1	10 to 16	One individual; school of 10-15 juveniles	560480	7913555	26/08/2014 15:58	106
SDLT-1	5		560503	7913545	26/08/2014 17:00	107
SDLT-1	2	Two juveniles	560524	7913545	26/08/2014 17:01	108
SDLT-1	8	School of eight	560620	7913509	26/08/2014 17:03	109
SDLT-1	3		560681	7913497	26/08/2014 17:09	110
SDLT-1	1		560770	7913491	26/08/2014 17:14	111

I:\1\02\00181\34\A\Correspondence\NB14-00448 - 2014 Stream Diversion Study Summary\FINAL\[NB14-00448 Tables_20141117 RAC Rev.xlsx]Table A.1 Fish Observations

NOTES:
1. ALL FISH OBSERVED WERE IDENTIFIED AS ARCTIC CHAR, BASED ON SIZE AND COLORING.
2. FISH WERE OBSERVED BY TWO INDIVIDUALS ON FOOT FOR DURATIONS NOTED ON TABLES A.2, A.3, A.4 AND A.5.

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TABLE A.2

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

AEMP STREAM DIVERSION BARRIER STUDY - SUMMARY OF 2014 MONITORING
CLT-1 STREAM

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Potential Fish Barrier	Date and Time	UTM Easting (m)	UTM Northing (m)	Point Depth (m)	Point Velocity (m/s)	Wetted Width (m)	Bankfull Height (m)	Fish Barrier (Y,P)	Photo No.
CLT-1-1	22/08/2014 10:30	558038	7914921	<0.02	0.34	12	0.1	P	1 to 4
CLT-1-2	22/08/2014 10:42	558160	7914929	0.04	0.36	15	0.15	P	5 to 7
CLT-1-3	22/08/2014 11:07	558398	7914889	0.16	1.62	4.4	NA	P	8 to 10
CLT-1-4	22/08/2014 11:21	558518	7915224	0.12	0.68	5.9	0.2	P	11 to 13
CLT-1-5	22/08/2014 11:33	558491	7914963	0.1	0.42	18	NA	P	14 to 16
CLT-1-6	22/08/2014 11:42	558557	7915082	0.14	NA	2.4	0.5	Y	17 to 20

I:\1\02\00181\34\A\Correspondence\NB14-00448 - 2014 Stream Diversion Study Summary\FINAL\[NB14-00448 Tables_20141117 RAC Rev.xlsx]Table A. 2 CLT-1 Transect

NOTES:

1. TRANSECT LOCATIONS RECORDED FROM A HANDHELD GPS UNIT IN THE FIELD, UTM ZONE 17W.
2. FISH BARRIERS WERE DEFINED AS: Y (YES, UNDER CURRENT FLOW CONDITIONS) OR P (POSSIBLE, BUT NO UNDER CURRENT FLOW CONDITIONS). ONLY AREAS WITH THE POSSIBILITY TO BE FISH BARRIERS WERE SAMPLED.

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TABLE A.3

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

AEMP STREAM DIVERSION BARRIER STUDY - SUMMARY OF 2014 MONITORING
SDLT-1 STREAM

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Transect	Date and Time	UTM Easting (m)	UTM Northing (m)	Point Depth (m)	Point Velocity (m/s)	Wetted Width (m)	Bankfull Height (m)	Fish Barrier (Y,P)	Photo No.
SDLT-1-1	26/08/2014 16:28	560313	7913483	0.1	0.73	5.83	n/a	P	27 to 30
SDLT-1-2	26/08/2014 16:35	560318	7913496	0.1	0.37	3.55	n/a	P	31 to 34
SDLT-1-3	26/08/2014 16:41	560350	7913530	0.06	0.35	0.06	0.1	P	35 to 38
SDLT-1-4	26/08/2014 17:05	560620	7913509	0.08	0.62	8.34	0.12	P	39 to 42
SDLT-1-5	26/08/2014 17:18	560779	7913489	0.1	0.39	8	0.2	P	43 to 46
SDLT-1-6	26/08/2014 17:28	560900	7913523	0.08	0.57	6.3	0.45	P	47 to 50
SDLT-1-7	26/08/2014 17:36	561217	7913568	0.12	0.28	NA	0.4	Y	51 to 54

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NOTES:
1. TRANSECT LOCATIONS RECORDED FROM A HANDHELD GPS UNIT IN THE FIELD, UTM ZONE 17W.
2. FISH BARRIERS WERE DEFINED AS: Y (YES, UNDER CURRENT FLOW CONDITIONS) OR P (POSSIBLE, BUT NO UNDER CURRENT FLOW CONDITIONS). ONLY AREAS WITH THE POSSIBILITY TO BE FISH BARRIERS WERE SAMPLED.
3. BANKFULL HEIGHT COULD NOT BE MEASURED FOR THESE AREAS BECAUSE THE BANKFULL DID NOT EXIST, ONLY BOULDERS.

REV	DATE	DESCRIPTION	PREP'D	REV'D
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TABLE A.4

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

AEMP STREAM DIVERSION BARRIER STUDY - SUMMARY OF 2014 MONITORING
SDLT-9 STREAM

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Transect	Date and Time	UTM Easting (m)	UTM Northing (m)	Point Depth (m)	Point Velocity (m/s)	Wetted Width (m)	Bankfull Height (cm)	Fish Barrier (Y,P)	Photo No.
SDLT-9-1	26/08/2014 15:05	561742	7911795	0.02	0.45	6.55	n/a	P	55 to 58
SDLT-9-2	26/08/2014 15:08	561757	7911803	0.06	0.51	0.35	0.03	P	59 to 62
SDLT-9-3	26/08/2014 15:11	561776	7911811	0.04	0.2	0.25	0.05	P	63 to 65
SDLT-9-4	26/08/2014 15:15	561783	7911811	0.18	0.27	0.32	0.05	P	66 to 69
SDLT-9-5	26/08/2014 15:18	561796	7911820	0.18	0.37	1.2	0.05	P	70 to 73
SDLT-9-6	26/08/2014 15:20	561790	7911820	0.02	0.64	0.42	0.1	P	74 to 76
SDLT-9-7	26/08/2014 15:25	561864	7911886	<0.05	0.02	0.5	n/a	Y	77 to 79

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NOTES:

1. TRANSECT LOCATIONS RECORDED FROM A HANDHELD GPS UNIT IN THE FIELD, UTM ZONE 17W.
2. FISH BARRIERS WERE DEFINED AS: Y (YES, UNDER CURRENT FLOW CONDITIONS) OR P (POSSIBLE, BUT NO UNDER CURRENT FLOW CONDITIONS). ONLY AREAS WITH THE POSSIBILITY TO BE FISH BARRIERS WERE SAMPLED.

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TABLE A.5

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

AEMP STREAM DIVERSION BARRIER STUDY - SUMMARY OF 2014 MONITORING
SDLT-12 STREAM

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Transect	Date and Time	UTM Easting (m)	UTM Northing (m)	Point Depth (m)	Point Velocity (m/s)	Wetted Width (m)	Bankfull Height (m)	Fish Barrier (Y,P)	Photo No.
SDLT-12-1	26/08/2014 13:30	560930	7912985	0.02 to <0.02	0.07	2.9	n/a	P	80 to 83
SDLT-12-2	26/08/2014 13:45	561011	7912964	0.01	n/a	3.5	0.05	P	84 to 86
SDLT-12-3	26/08/2014 13:48	561052	7912961	~0.1	n/a	12	n/a	N	87 to 90
SDLT-12-4	26/08/2014 14:00	561262	7912733	<0.05	n/a	1.2	n/a	Y	91 to 94
SDLT-12-5	26/08/2014 14:30	561287	7912714	<0.03	n/a	10	0.08	Y	95 to 98

I:\1\02\00181\34\A\Correspondence\NB14-00448 - 2014 Stream Diversion Study Summary\FINAL\[NB14-00448 Tables_20141117 RAC Rev.xlsx]Table A.5 SDLT-12 Transect

NOTES:

1. TRANSECT LOCATIONS RECORDED FROM A HANDHELD GPS UNIT IN THE FIELD, UTM ZONE 17W.
2. FISH BARRIERS WERE DEFINED AS: Y (YES, UNDER CURRENT FLOW CONDITIONS) OR P (POSSIBLE, BUT NOT UNDER CURRENT FLOW CONDITIONS). ONLY AREAS WITH THE POSSIBILITY TO BE FISH BARRIERS WERE SAMPLED.
3. AT SDLT-12-2 THROUGH SDLT-12-5, THE DEPTH WAS TOO SHALLOW TO MEASURE A VELOCITY.
4. BOULDER SUBSTRATE AT SDLT-12-1, SDLT-12-3 AND SDLT-12-4 PREVENTED MEASUREMENT OF BANKFULL HEIGHT.

REV	DATE	DESCRIPTION	PREP'D	REV'D
0	24FEB'15	ISSUED WITH MEMO NB14-00448	EJA	RAC

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TABLE A.6

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

AEMP STREAM DIVERSION BARRIER STUDY - SUMMARY OF 2014 MONITORING
SDLT-9 DISCHARGE MEASUREMENT

Print Feb/24/15 9:57:12

Chainage (m)	Depth (m)	Velocity (m/s)
1	LWW	LWW
1.05	0.04	0.03
1.1	0.1	0.07
1.15	0.04	0.35
1.2	0.04	0.34
1.25	0.02	0.22
1.3	0.04	0.33
1.35	0.01	0.12
1.4	0.08	0.05
1.45	0.08	0.11
1.5	0.02	0.07
1.55	RWW	RWW
1.475	0.06	0.1
1.425	0.01	0.08
1.375	0.01	0.24
1.325	0.02	0.36
1.275	0.02	0.37
1.225	0.04	0.32
1.175	0.06	0.29
1.125	0.06	0.28
1.075	0.02	0.3
1.025	0.04	0.04

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NOTES:

1. DISCHARGE MEASUREMENT COLLECTED AT 0561872N, 7911921E ON AUGUST 26, 2014 FROM 15:38 TO 15:45.
2. RWW INDICATES RIGHT WETTED WIDTH; LWW INDICATES LEFT WETTED WIDTH.

REV	DATE	DESCRIPTION	PREP'D	REV'D
0	24FEB'15	ISSUED WITH MEMO NB14-00448	EJA	RAC

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TABLE A.7

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

AEMP STREAM DIVERSION BARRIER STUDY - SUMMARY OF 2014 MONITORING
SDLT-12 DISCHARGE MEASUREMENT

Print Feb/24/15 9:59:21

Chainage (m)	Depth (m)	Velocity (m/s)
1	LWW	LWW
1.1	0.12	0.09
1.2	0.1	0.07
1.3	0.1	0.13
1.4	0.1	0.08
1.5	0.1	0.08
1.6	0.1	0.07
1.7	0.08	0.07
1.8	0.06	0.1
1.9	RWW	RWW
1.85	0.06	0.02
1.75	0.1	0.1
1.65	0.1	0.06
1.55	0.1	0.02
1.45	0.09	0.1
1.35	0.1	0.07
1.25	0.1	0.08
1.15	0.12	0.11
1.05	0.12	0.08

I:\1\02\00181\34\A\Correspondence\NB14-00448 - 2014 Stream Diversion Study Summary\FINAL\[NB14-00448 Tables_20141117 RAC Rev.xlsx]Table A.7 SDLT-12 Discharge

NOTES:

1.. DISCHARGE MEASUREMENT COLLECTED AT 0561099N, 7912878E ON AUGUST 26, 2014 FROM 13:50 TO 14:00.

2. RWW INDICATES RIGHT WETTED WIDTH; LWW INDICATES LEFT WETTED WIDTH.

REV	DATE	DESCRIPTION	PREP'D	REV'D
0	24FEB'15	ISSUED WITH MEMO NB14-00448	EJA	RAC

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APPENDIX B

PHOTOS

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APPENDIX B1

CLT-1 Photos

(Pages B1-1 to B1-6)