LAYFIELD

GEOMEMBRANE DESTRUCTIVE TEST REPORT

PROJECT NUMBER: 14C - 091 **PROJECT TITLE:** Baffinland MRP Miln Port Fuel Upgrade
OWNER: Nuna Logistics **CONTRACTOR:** Nuna Logistics
LOCATION: Baffinland NU **SHEET NUMBER:**

DESTRUCTIVE TEST NUMBER*: DT-2 **TEST DATE:** 22-Jul-13
SEAM NUMBER: 15,16-17 **ARCHIVE** ____ **LAYFIELD** ____ **OWNER** ____ **ENGINEER**
SAMPLE LOCATION: 57.3 mts NEOS **3RD PARTY** ____ **YES** ____ **NO** ____ **WHO?**
DATE SEAMED / SAMPLED: 21-Jul-13 - **DATE FORWARDED TO LAB**
TYPE OF SEAM: Fusion **DATE LAB TEST RESULTS REC'D**

FIELD TEST RESULTS (units = lbf. / in. width = ppi)

SHEAR STRENGTH			PEEL ADHESION				
				INSIDE SEAM		OUTSIDE SEAM	
SPECIMEN NUMBER	SEAM STRENGTH	** LOCUS OF BREAK CODE	SPECIMEN NUMBER	ADHESION STRENGTH	LOCUS OF BREAK CODE	ADHESION STRENGTH	** LOCUS OF BREAK CODE
1	123	SE1	2	111	SE1	109	SE1
3	125	SE1	4	115	SE1	117	SE1
5	126	SE1	6	107	SE1	98	SE1
7	119	SE1	8	108	SE1	114	SE1
9	116	SE1	10	109	SE1	100	SE1
11			12				

* DESTRUCTIVE TEST NUMBERS SHOULD BE SEQUENTIAL AND ARE TO BE PREFIXED BY EITHER DT (FUSION), DX (EXTRUSION) OR DS (SOLVENT).

** REFER TO LOCUS OF BREAK CODE DIRECTORIES PROVIDED FOR UNSUPPORTED AND SUPPORTED MATERIALS.

LPL: PASS ____ FAIL ____

3RD PARTY / LAB: PASS ____ FAIL ____

NOTES: ____

CHECKED BY: PH

DATE: 22-Jul-13

LS FORM 8 (OPTIONAL)

LAYFIELD ENVIRONMENTAL SYSTEMS

LAYFIELD

GEOMEMBRANE DESTRUCTIVE TEST REPORT

PROJECT NUMBER: 14C - 091
PROJECT TITLE: Baffinland MRP Miln Port Fuel Upgrade
OWNER: Nuna Logistics
CONTRACTOR: Nuna Logistics
LOCATION: Baffinland NU
SHEET NUMBER:

DESTRUCTIVE TEST NUMBER*: DT-3
TEST DATE: 22-Jul-13
SEAM NUMBER: 25-24
ARCHIVE _____ **LAYFIELD** _____ **OWNER** _____ **ENGINEER**
SAMPLE LOCATION: 10.63 mts WEOS
3RD PARTY _____ **YES** _____ **NO** _____ **WHO?**
DATE SEAMED / SAMPLED: 21-Jul-13 -
DATE FORWARDED TO LAB
TYPE OF SEAM: Fusion
DATE LAB TEST RESULTS REC'D

FIELD TEST RESULTS (units = lbf. / in. width = ppi)

SHEAR STRENGTH			PEEL ADHESION				
				INSIDE SEAM		OUTSIDE SEAM	
SPECIMEN NUMBER	SEAM STRENGTH	** LOCUS OF BREAK CODE	SPECIMEN NUMBER	ADHESION STRENGTH	LOCUS OF BREAK CODE	ADHESION STRENGTH	** LOCUS OF BREAK CODE
1	121	SE1	2	120	SE1	115	SE1
3	122	SE1	4	113	SE1	109	SE1
5	131	SE1	6	114	SE1	117	SE1
7	128	SE1	8	110	SE1	103	SE1
9	130	SE1	10	103	SE1	109	SE1
11			12				

* DESTRUCTIVE TEST NUMBERS SHOULD BE SEQUENTIAL AND ARE TO BE PREFIXED BY EITHER DT (FUSION), DX (EXTRUSION) OR DS (SOLVENT).

** REFER TO LOCUS OF BREAK CODE DIRECTORIES PROVIDED FOR UNSUPPORTED AND SUPPORTED MATERIALS.

LPL: PASS _____ FAIL _____

3RD PARTY / LAB: PASS _____ FAIL _____

NOTES: _____

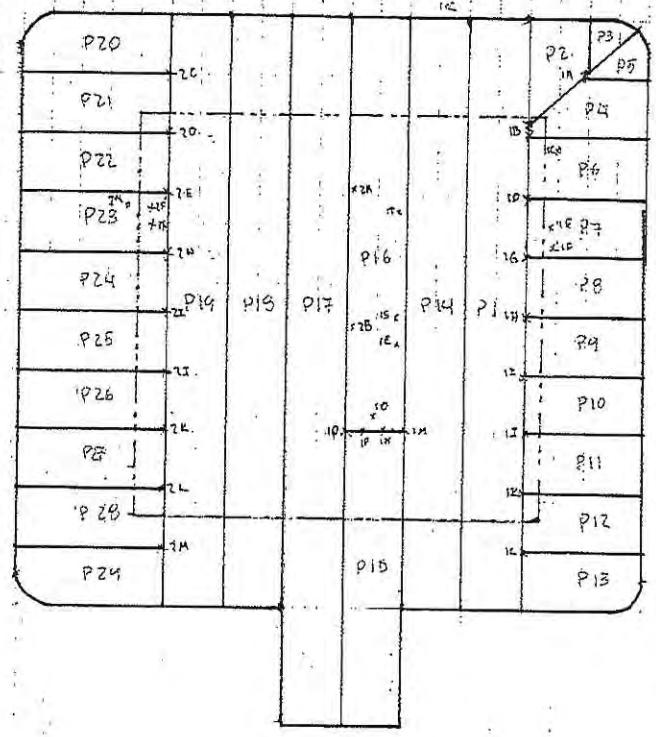
CHECKED BY: PH

DATE: 22-Jul-13

FILE NAME: X:/ENVIROMENTAL SYSTEMS/2006/

LS-04-QF-001

NO.	REVISIONS	DATE (MM/DD/YY)	BY



NOTES
EFFLUENT POND

LAYFIELD
ENVIRONMENTAL SYSTEMS LTD.

ENVIROLINER
60-60

LEGEND

— — —	EXTENT OF LINER
— · — · —	TOE OF SLOPE
———	LINER FIELD SEAM
xxx	EXTRUSION WELDING
△	PATCH
P2	PANEL NUMBER
1A	REPAIR NUMBER

Code No.	PROJECT No. 14C-091
DWG: OF	SCALE:
DWN: CHD:	APP'D:
DATE:	REVISION:

LAYFIELD

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Baffinland MRP Milne Port Fuel Upgrade Phase 2 "Effluent Pond"
PROJECT NUMBER: 146-091 **DATE:** 21-July 2013
OWNER: Nuna Logistics
LOCATION: Baffinland NU

SCOPE OF INSTALLATION(S): THE WORK
Installation of Geotextile LP 12 under lug and 60-60 EL with all testing and repairs 100% done.

2454 m².

Part 1 – LAYFIELD ENVIRONMENTAL SYSTEMS LTD.

I, Yonatan Espindola, a duly appointed representative of Layfield Environmental Systems Ltd. (LESL), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield Environmental Systems' QC program and the terms and conditions of the contract.

Layfield Environmental Systems Representative:
Name: Yonatan Espindola
Title: Supervisor
Date: 21 July 2013 Signature: [signature]

Part 2 – OWNER (or Representative)

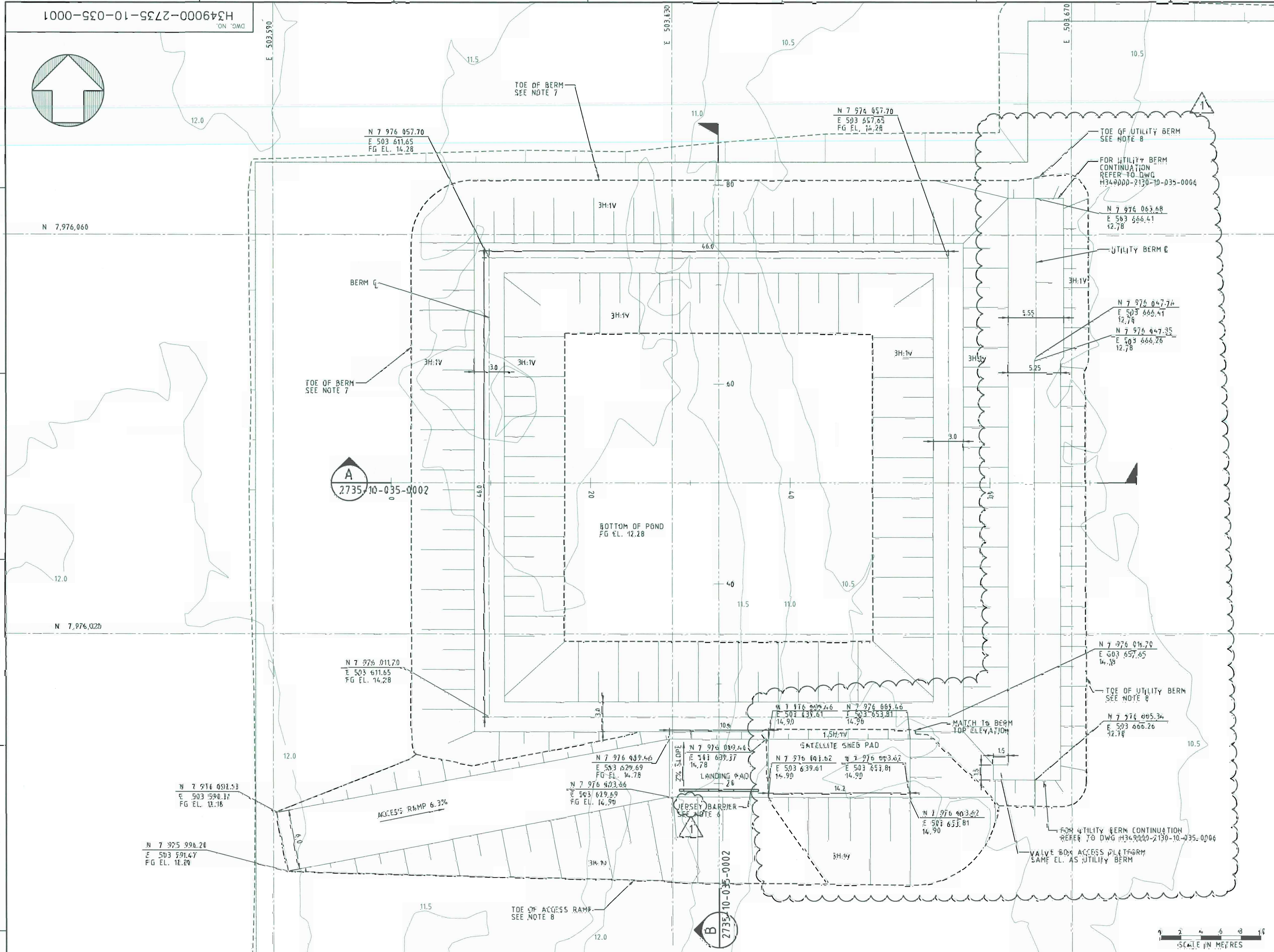
I, Mike Price, a duly appointed representative of Nuna East, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

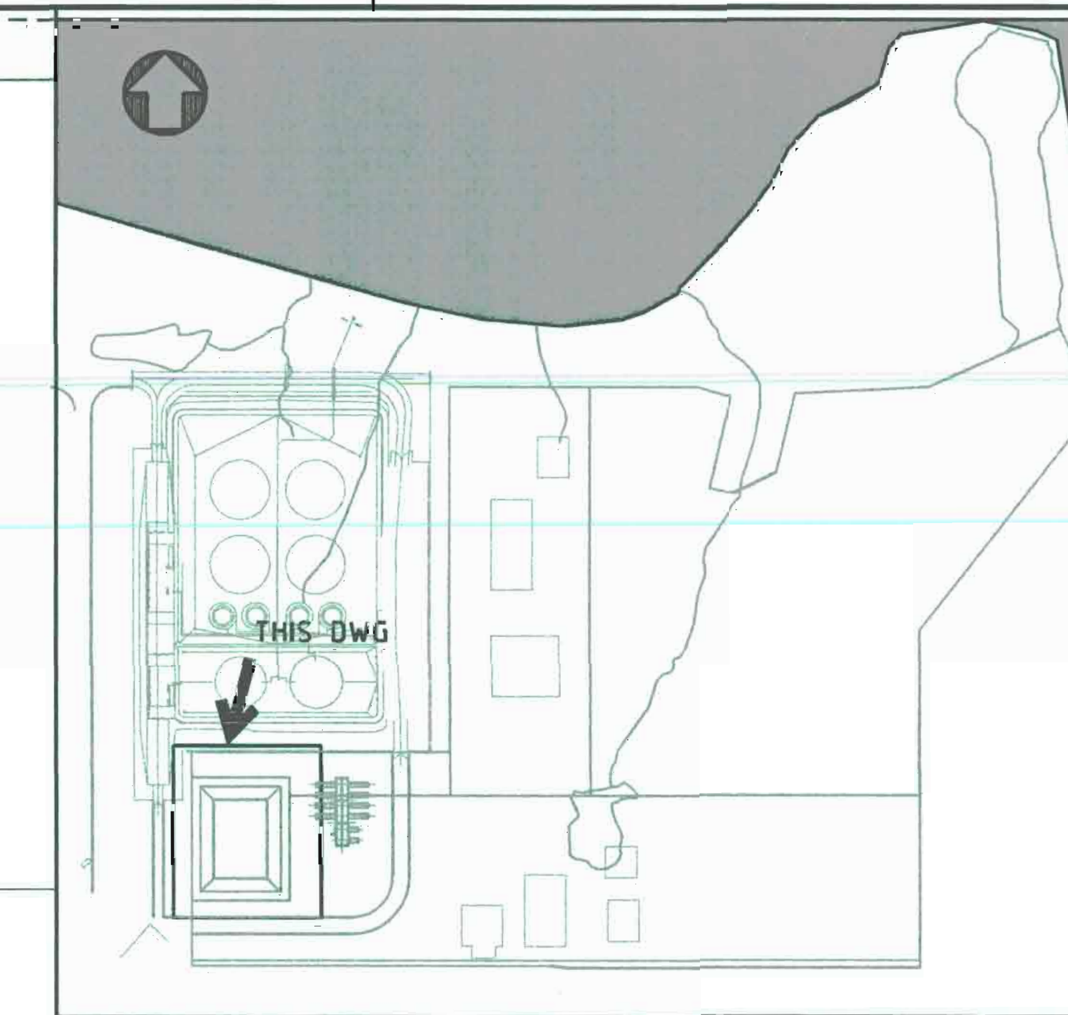
I have evaluated and measured the work together with the Layfield Environmental Systems representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: Mike Price
Title: Project Coordinator
Company: Nuna East
Date: 07/22/2013 Signature: [signature]

Comments:

Appendix B
As Built Drawings





KEY PLAN

LEGEND

FILL SLOPE

EXISTING GROUND CONTOURS

JERSEY BARRIERS

CROSS SECTION DISTANCE

NOTE:

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 0.5 METRES.
4. FOR UTILITY BERM CIVIL WORKS DETAILS, REFER TO DRAWING H349000-1000-10-014-0006.
5. FOR UTILITY BERM MECHANICAL & ELECTRICAL REQUIREMENTS, REFER TO DRAWING H349000-2000-00-014-0005/0006.
6. JERSEY BARRIER: HY-GRADE PRECAST CONCRETE J-J HOOK CONCRETE BARRIER, LENGTH 4.0m X HEIGHT 0.9m, OR EQUIVALENT.
7. TOE OF BERM MATCH TO FINISHED GRADE EL. 12.18. REFER TO DRAWINGS H349000-2130-10-035-0001 AND H349000-2735-10-035-0002
8. TOE OF UTILITY BERM / ACCESS RAMP MATCH TO FINISHED GRADE. REFER TO DRAWINGS H349000-2130-10-035-0001 AND H349000-2735-10-035-0002

AS BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS BUILT BY: Bradford Watkin SIGN: [signature]

DATE: Dec 17,2013 COMPANY: Nuna East Ltd.

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE
H349000-2130-10-035-0001	MILNE PORT–LAYDOWN AREA, CAMP & SERVICES BUILDINGS–EARTHWORKS & DRAINAGE – PLAN
H349000-2735-10-035-0002	MILNE PORT – OFF-SET EFFLUENT POND (RWSP) – SECTIONS & DETAILS

PERMIT TO PRACTICE
HATCH LTD.
Signature [signature]
Date 13 Sep 13
PERMIT NUMBER: P 512
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

THIS DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF BAFFINLAND IRON CORPORATION ("CLIENT") AND IS ISSUED PURSUANT TO THE AGREEMENT BETWEEN CLIENT AND HATCH LTD. ("HATCH"). UNLESS OTHERWISE AGREED IN WRITING WITH CLIENT OR SPECIFIED ON THIS DRAWING, (A) HATCH DOES NOT ACCEPT AND DISCLAIMS ANY AND ALL LIABILITY OR RESPONSIBILITY ARISING FROM ANY USE OF OR RELIANCE ON THIS DRAWING BY ANY THIRD PARTY OR ANY MODIFICATION OR MISUSE OF THIS DRAWING BY CLIENT, AND (B) THIS DRAWING IS CONFIDENTIAL AND ALL INTELLECTUAL PROPERTY RIGHTS EMBODIED OR REFERENCED IN THIS DRAWING REMAIN THE PROPERTY OF HATCH.

REVISIONS

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
1	UTILITY BERM AND SATELLITE SHED PAD ADDED	AV	KF	SH	2013-09-13

REGISTERED PROFESSIONAL ENGINEER
M. M. S. HASSAN
LICENSEE
13 Sep 13
NT/NU

ISSUE AUTHORIZATION

REV.	ISSUE FOR	AUTH.	BY	DATE
1	CONSTRUCTION	SH	AV	2013-09-13
0	CONSTRUCTION	SH	AV	2013-05-22

HATCH

DESIGNED BY A. SAHELI DATE 2013-03-08	DRAWN BY A. VALENCIA DATE 2013-03-08
CHECKED BY K. FALLAHI DATE 2013-05-22	DISCIP. ENGR. S. HASSAN DATE 2013-05-22
PROJ. DES. COORD. T. THERTELL DATE 2013-05-22	PROJ. ENGR. J. CLELAND DATE 2013-05-22
PROJ. MGR. S. PERRY DATE 2013-05-22	

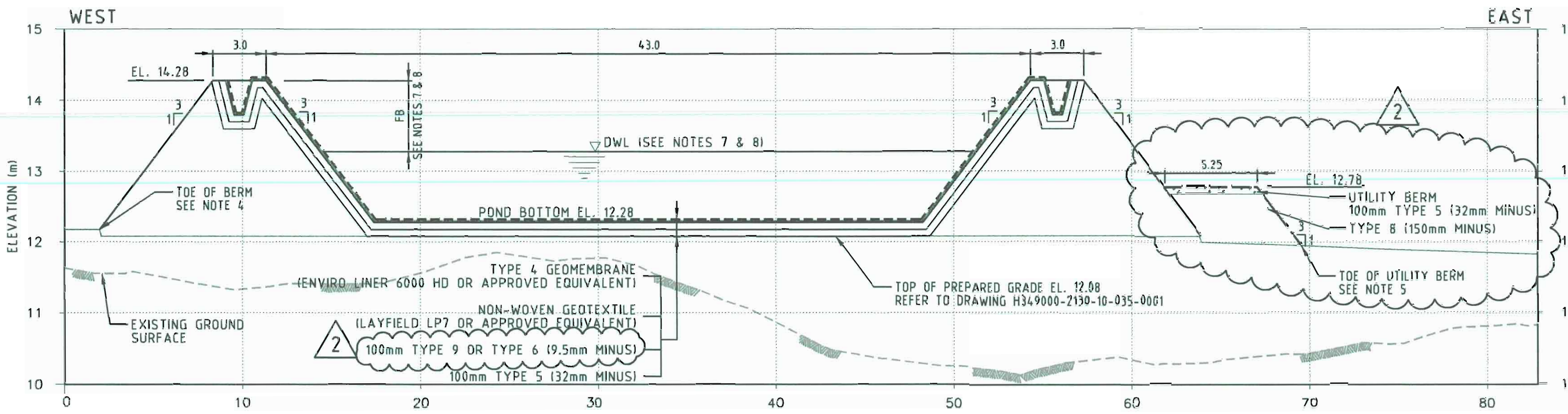
Baffinland

MARY RIVER PROJECT

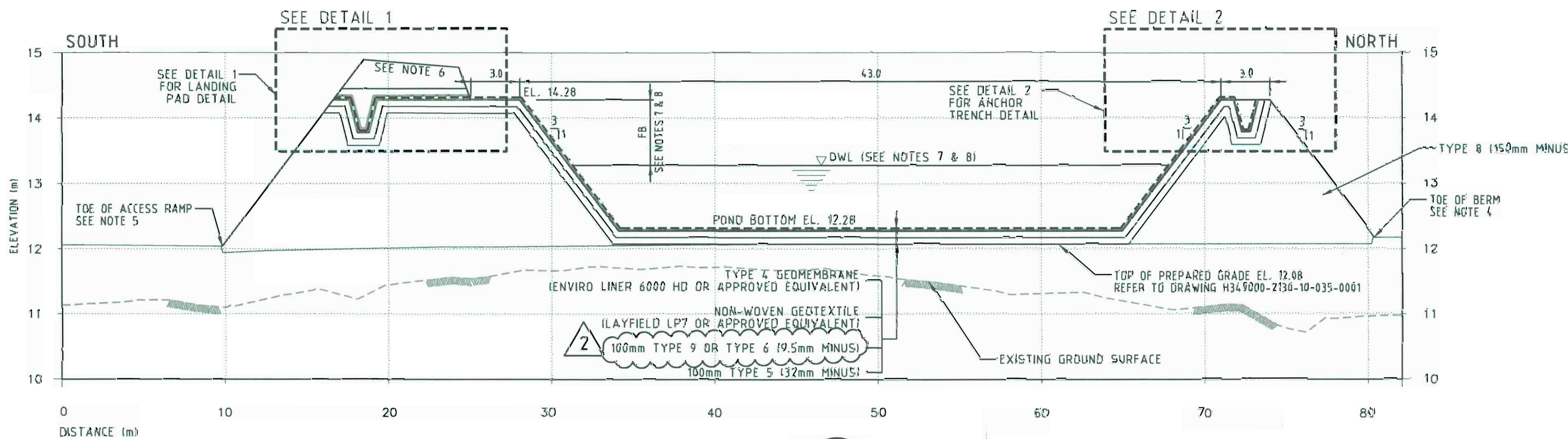
MILNE PORT
OFF-SPEC EFFLUENT POND (PWSP)
PLAN

SCALE	DWG. NO.	REV.
1:200 OR AS NOTED	H349000-2735-10-035-0001	1

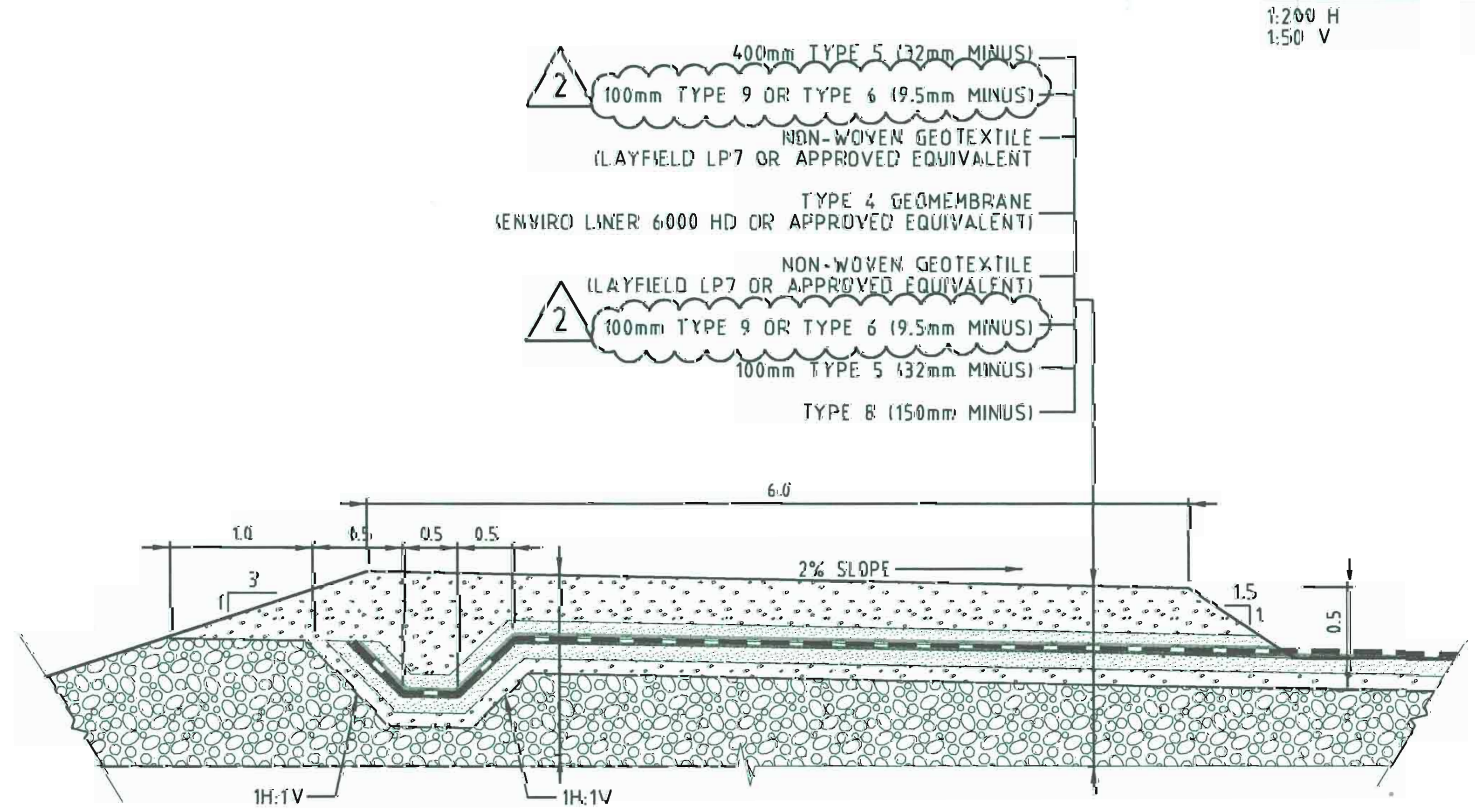
ORIGINAL SHEET SIZE: ISO A1 (841 x 594)



SECTION A — 1:200 H, 1:50 V — 2735-10-035-0001

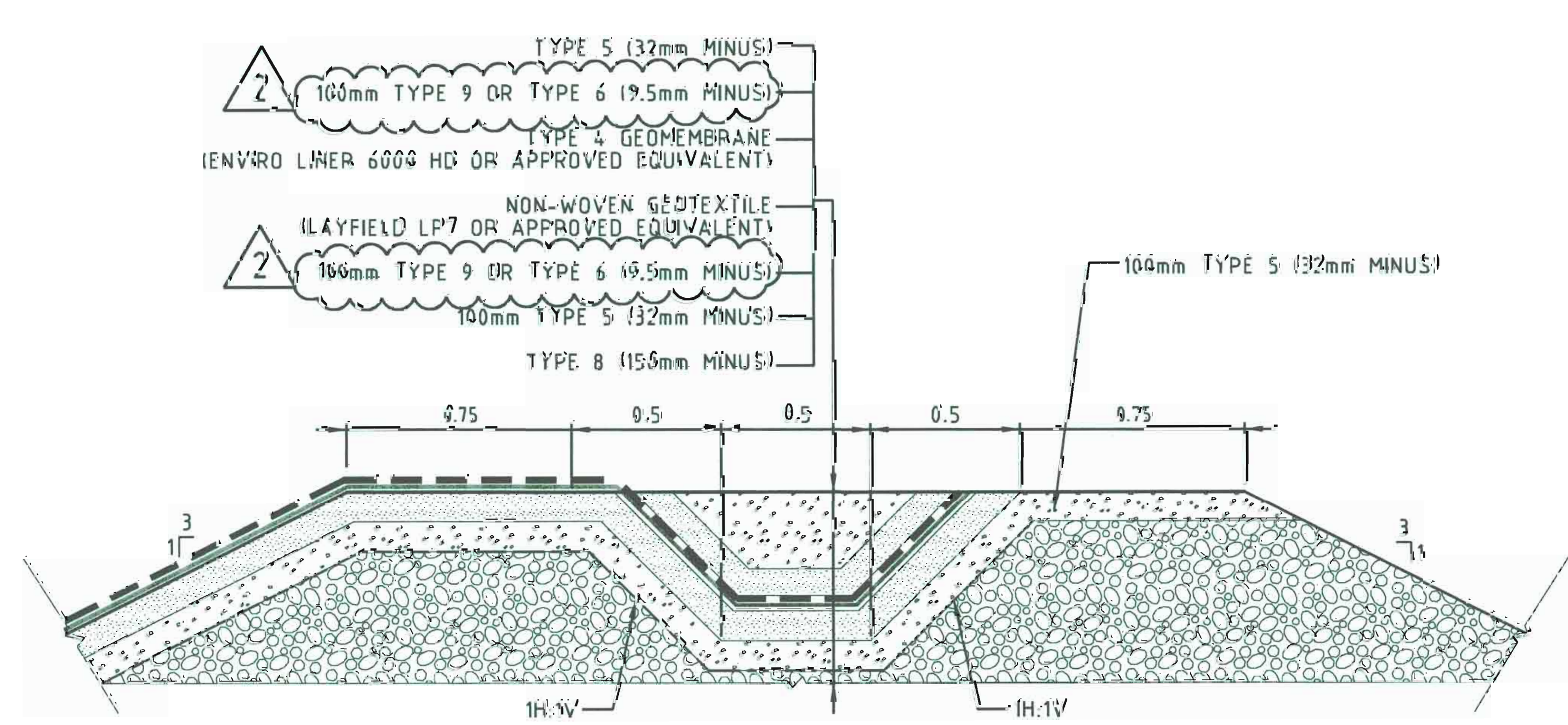


SECTION B — 1:200 H, 1:50 V — 2735-10-035-0001



DETAIL 1 - BERM AT LANDING PAD

N.T.S.



DETAIL 2 - NORMAL BERM

N.T.S.

LEGEND

DWL	DESIGN WATER LEVEL
FB	FREEBOARD

NOTES:

1. TOPOGRAPHY PROVIDED BY TERRAPOINT CANADA INC.
2. ALL DIMENSIONS AND ELEVATIONS SHOWN ARE IN METRES, UNLESS NOTED OTHERWISE.
3. FOR UTILITY BERM MECHANICAL & ELECTRICAL REQUIREMENTS, REFER TO DRAWING H349000-2000-00-914-0005/0006.
4. TOE OF BERM MATCH TO FINISHED GRADE EL. 12.18. REFER TO DRAWING H349000-2130-10-035-0001 AND H349000-2735-10-035-0001.
5. TOE OF UTILITY BERM / ACCESS RAMP MATCH TO FINISHED GRADE. REFER TO DRAWING H349000-2130-10-035-0001 AND H349000-2735-10-035-0001.
6. JERSEY BARRIER: HY-GRADE PRECAST CONCRETE J-J HOOK CONCRETE BARRIER, LENGTH 4.0m X HEIGHT 0.9m, OR EQUIVALENT.
7. POND DESIGN CAPACITY IS 1080M3 WITH 1.0m OF FREEBOARD AND DWL EL. 13.28m.
8. POND MAXIMUM DESIGN CAPACITY (SUMMER USE) IS 2230M3 WITH 0.3m FREEBOARD AND DWL EL. 13.98m.

AS BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS BUILT BY: Bradford Watkin SIGN: [signature]

DATE: Dec 17,2013 COMPANY: Nuna East Ltd.

FOR CONSTRUCTION

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE
H349000-2735-10-035-0001	MILNE PORT-OFF-SPEC EFFLUENT POND (PWSP) -PLAN

PERMIT TO PRACTICE: HATCH LTD. Signature: [signature] Date: 13 Sep. 13. PERMIT NUMBER: P 512. The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REVISIONS

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
2	UTILITY BERM SECTION "A" UPDATED AND LABELS FIXED	AV	KF	SH	2013-09-13
1	NOTES 7 & 8 AND DWL & FB ADDED, WCD DELETED FROM LEGEND	MM	KF	SH	2013-06-18

REGISTERED PROFESSIONAL ENGINEER — M. M. S. HASSAN — LICENSEE — 13 Sep 13 — NT/NU

ISSUE AUTHORIZATION

REV.	ISSUE FOR	AUTH.	BY	DATE
2	CONSTRUCTION	SH	AV	2013-09-13
1	CONSTRUCTION	SH	MM	2013-06-18
0	CONSTRUCTION	SH	MM	2013-05-22

HATCH

DESIGNED BY A. SAHELI DATE 2013-05-07	DRAWN BY M. MCDOUGALD DATE 2013-05-07
CHECKED BY K. FALLAHI DATE 2013-05-22	DISCIP. ENGR. S. HASSAN DATE 2013-05-22
PROJ. DES. COORD. T. THERTELL DATE 2013-05-22	PROJ. ENGR. J. CLELAND DATE 2013-05-22
PROJ. MGR. S. PERRY DATE 2013-05-22	

Baffinland

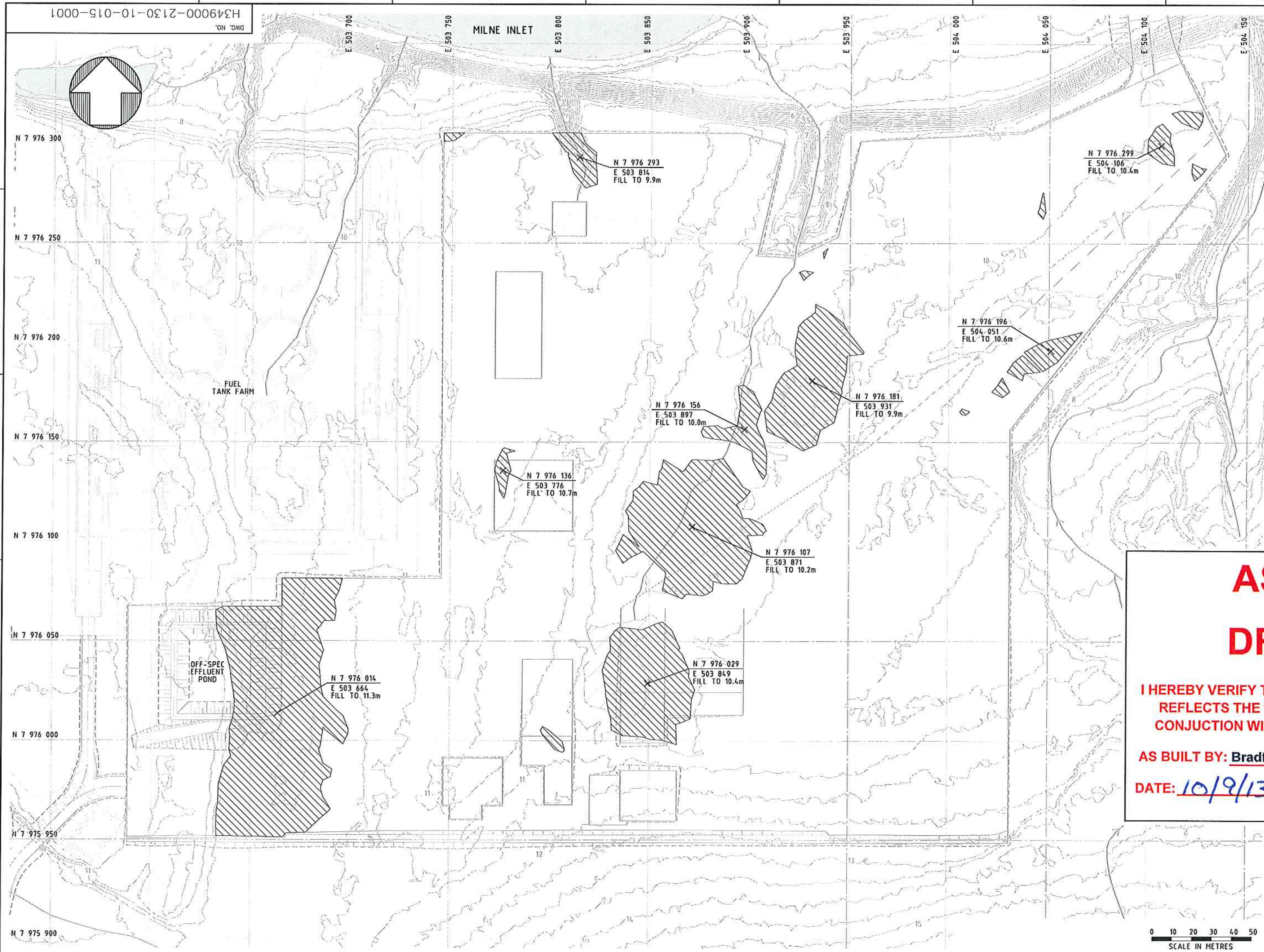
MARY RIVER PROJECT

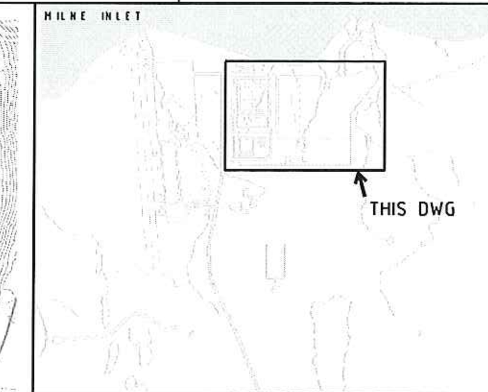
MILNE PORT
OFF-SPEC EFFLUENT POND (PWSP)
SECTIONS & DETAILS

SCALE: 1:200 OR AS NOTED — DWG. NO. H349000-2735-10-035-0002 — REV. 2

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

DWG. NO. H349000-2130-10-015-0001





KEY PLAN

LEGEND:

- EXISTING GROUND CONTOURS
- EXISTING WATERBODY
- EXISTING DEPRESSION TO BE DEWATERED
- EXISTING STREAM
- RUN OF QUARRY FILL AREAS (APPROXIMATE)

AS BUILT DRAWING

I HEREBY VERIFY THAT THIS DRAWING ACCURATELY REFLECTS THE "AS BUILT" FIELD CONDITION IN CONJUCTION WITH THE SURVEY AS-BUILT DATA.

AS BUILT BY: Bradford Watkin SIGN: [signature]

DATE: 10/9/13 COMPANY: Nuna East Ltd.

NOTES:

1. TOPOGRAPHY PROVIDED BY TERRAPOINT CANADA INC.
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 0.5 METRES.

DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS	

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
REVISIONS					

REV.	ISSUE FOR	AUTH. BY	DATE
0	APPROVED FOR USE	SH MM	2013-05-17
ISSUE AUTHORIZATION			

HATCH

DESIGNED BY M. MCDOUGALD DATE 2013-05-16	DRAWN BY M. MCDOUGALD DATE 2013-05-16
CHECKED BY A. VALENCIA DATE 2013-05-17	DISCIP. ENGR. S. HASSAN DATE 2013-05-17
PROJ. DES. COORD. T. THERTELL DATE 2013-05-17	PROJ. ENGR. J. CLELAND DATE 2013-05-17
PROJ. MGR. S. PERRY DATE 2013-05-17	

Baffinland

MARY RIVER PROJECT

MILNE PORT
LAYDOWN AREA, CAMP & SERVICES BUILDINGS
RUN OF QUARRY FILL AREAS

SCALE	DWG. NO.	REV.
1:1000 OR AS NOTED	H349000-2130-10-015-0001	0

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

Appendix C
Field Instruction NE-RFI-008

NUNA
NUNA EAST LTD

REQUEST FOR INFORMATION

RFI NUMBER	NE-RFI-008
ISSUE DATE (YY/MM/DD)	June 2nd, 2013
PRIORITY	H X M L
REQ'D RESPONSE DATE	June 4th, 2013

Baffinland Iron Mines

Subject:	Off-Spec Effluent Pond	Project Zone/Area:	South of Existing Tank Farm
Company:	Nuna East	Station/Location:	Milne
Attention:	James Cleland	Discipline:	Civil - Earthworks

AFE:		Specification Number:	
Related Drawings:	H349000-2735-10-035-0002	Related Documents:	

Related WBS Code		WBS Code Description:	

Information Request/Description of Issue/Approval Required:
The Effluent Pond calls for the base fill material and berms to be constructed of 150mm minus. The ROQ material that is being produced from the blasting consists of material ranging from 100mm – 300mm.
Proposed Corrective Action:
To allow the berms and base fill to be completed with the ROQ produced. The material would be selected specifically and approved by the client representative before being placed.
Originator: Nuna
Print: Kyle Kuntz *Sign:* *Date: June 2nd, 2013*

Cost Impact:	☒ No ☐ Yes	$		Summary Estimate
Detailed Estimate attached:	☒ No ☐ Yes			
Schedule Impact:	☒ No ☐ Yes	#		Number of Days
Source for Communication:	☐ Owner Change	☒ Clarification/Info		☐ Constructor Change
	☐ Vendor Change	☐ Designer Change		☐ Other

Note: RFI's are not authorized change documents and cannot be used to direct a change in contract requirements. If Hatch response on the RFI has cost and/or schedule effect, it is the contractor's responsibility to immediately advise Hatch Work undertaken without Hatch written authorization is at the contractor's risk and expense

Response

☒ Corrective Action Approved ☐ Correct as Follows:

NUNA
NUNA EAST LTD

REQUEST FOR INFORMATION

RFI NUMBER	NE-RFI-008
ISSUE DATE (YY/MM/DD)	June 2nd, 2013
PRIORITY	H X M L
REQ'D RESPONSE DATE	June 4th, 2013

Baffinland Iron Mines

Responsible Engineer:	J Cleland	4 July 2013
	Print:	*Sign:*	*Date:*

Appendix D
Annual Geotechnical Information

ANNUAL GEOTECHNICAL INSPECTION
Baffinland Iron Mines Corporation
Mary River Project

Prepared for:

Mr. Dave McCann
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, Ontario L6H 0C3

Prepared by:

Mr. Barry H. Martin, P. Eng., MRAIC
Consulting Engineer and Architect
1499 Kraft Creek Road
Timmins, Ontario P4N 7C3

Reference 13-053
August 2013

Barry H. Martin, P. Eng., MRAIC
Consulting Engineer and Architect
1499 Kraft Creek Road
Timmins, Ontario P4N 7C3
705-268-5621 (tel)
705-360-3106 (cell)
barrymartin1499@gmail.com (e-mail)

August 31, 2013

Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, Ontario L6H 0C3

Attention: Dave McCann
david.maccann@baffinland.com

RE: ANNUAL GEOTECHNICAL INSPECTION 2013-08-31
BAFFINLAND IRON MINES CORPORATION
OUR REFERENCE NO. 13-053

1.0 INTRODUCTION

Barry H. Martin Consulting Engineer and Architect completed the 6th annual water licence geotechnical inspection of the on-site containment structures at Baffinland Iron Mines Corporation Mary River Project.

The earthwork structures designed to carry water or waste were inspected in accordance with Dam Safety Guidelines 2007 and the solid waste disposal site, was inspected using similar guidelines set out.

The previous 5 annual water license geotechnical inspections were completed by Mr. Martin working on behalf of B. H. Martin Consultants Ltd and GENIVAR Inc. Mr. Martin was the design Engineer on all original structures.

The containment structures for the operation are located at two main campsites comprising the Mary River project being the Mary River site itself and the Milne Inlet site at the sea coast.

The soil structures reviewed are the following:

Mary River Mine Site

1. Bulk Fuel Storage Facility Containment
2. Generator Fuel Storage Facility Containment
3. Polishing Waste Stabilization Pond No. 1
4. Polishing Waste Stabilization Pond No.2 and No. 3 (Constructed as a 2 cell structure)
5. Helicopter Fuel Cell Containment.
6. Barrel Fuel Containment (Constructed as a 2 cell structure).
7. Stove Oil Storage
8. Enviro-Tank Storage (Constructed contiguous with hazardous waste storage and stove oil storage)
9. Hazardous Waste Storage
10. Jet Fuel Tank and Pump Containment
11. Solid Waste Disposal Site
12. Waste Oil Storage Containment

A site plan for the Mary River site showing most containment structures is attached.

Milne Inlet Site

1. Bulk Fuel Containment Facility
2. Polishing/Waste Stabilization Pond
3. Barrel Fuel Storage (Constructed as a 2 cell structure)
4. Hazardous Waste Storage (Constructed as a 2 cell structure)
5. Oil and Antifreeze Containment
6. Jet "A" Pump Containment
7. 5 M Litre Steel Fuel Storage Tank Containment which has now been expanded to contain 48.25m litres

8. New Effluent Pond to accommodate the new camp

This report presents the findings.

2.0 METHODOLOGY FOR INSPECTION

The geotechnical inspector was Mr. Barry H. Martin, P. Eng., who reviewed the sites on August 29, 30 and 31, 2013. The inspections were focused principally on the following aspects:

1. The structures were inspected for conformance with the design basis as presented in as-constructed and as-built drawings (provided in the first annual report).

2. The structures were specifically inspected for settlement, cracking and seepage through the berms.

3. The areas around the sites were examined for evidence of seepage.

   Construction drawings are attached for new structures.

   Photographs were taken to document observations made during the inspection and are attached.

3.01 MARY RIVER CAMP

3.01 General

There had not been a particularly large amount of rainfall in the month immediately preceding the inspection, although there had been a large amount of precipitation at the end of July.

Hence, it was expected that there would be some water in the containment dykes.

The weather at the time of the inspection was at freezing and minor snow flurries had occurred in the week preceding the inspection as well as during the inspection.

A monitoring surveillance program is in place to test storm water that does accumulate within the dykes. As required, water that does not meet water license effluent requirements is treated on site prior to release.

At the Bulk Fuel Storage Facility Containment , the water that collects within the dyke is treated at the end of the containment structure.

We report on the Waste Oil Storage Containment for the first time.