FSC File: 2005-2150

02, March, 2009

Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Attn: Phyllis Beaulieu

Re: Water Licence 1BR-RAN0914 Abandonment and Restoration Plan

Dear Phyllis,

Please find enclosed the Abandonment and Restoration Plan as required under water license 1BR-RAN0914, issued to the Government of Nunavut, Community and Government Services. This Abandonment and Restoration Plan is intended to be a stand-alone document.

If you have any questions regarding this plan please don't hesitate to contact us

Sincerely,

FSC ARCHITECTS & ENGINEERS

Ron Kent, P. Eng

Environmental Engineering

Abandonment and Restoration Plan for Rankin Inlet Landfarm

Version 1.0

Created March 2009

Effective till November 2014

Project # 2005-2150

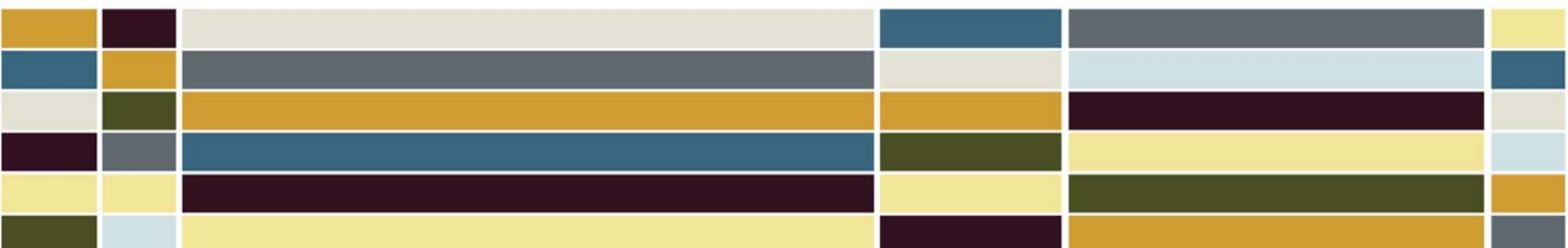
Prepared for:

Wayne Thistle
Government of Nunavut
Community and Government Services,
Box 490, Oomilik Building
Rankin Inlet, NU,
X0C 0G0

Prepared by:

FSC Architects & Engineers
4910 53 Street
Yellowknife, NT
X1A 2P4

LISTEN. DESIGN. MANAGE.



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1 Introduction

The community of Rankin Inlet is located within the Kivalliq Region, Nunavut, on the west coast of Hudson Bay. The community is located in a zone of continuous permafrost, which has an active layer of approximately one metre. The Rankin Inlet Fuel Facility is being upgraded. As part of the upgrade, approximately 5,000 cubic metres of hydrocarbon-contaminated soils must be removed from the site and remediated. Contaminated soils will be remediated in a lined engineered landfarm.

The landfarm will be located adjacent to the new Rankin Inlet Municipal Solid Waste Site. It will be accessed from the same road. The Government of Nunavut in consultation with the Hamlet of Rankin Inlet selected the site.

1.1 DETAILED DESCRIPTION OF FACILITY

The site for the landfarm is located in the area of (Lat/Long) 62º 49' 49.66" N, 92º 10' 28.15" W, (UTM) Easting 542,055.88, Northing 6,966,969.53. (Map sheet number 55K16) near the Hamlet of Rankin Inlet's municipal solid waste site. The landfarm is designed to hold 6450 CU.M. of contaminated soil.

1.2 LANDFARM DECOMMISSIONING

Once the landfarm is determined that it is no longer required we can start the decommissioning process. All the remediated soil within the landfarm must meet the CCME requirements for PHC in commercial use before the soil can be used. Once soil meets CCME requirements it can be removed from the landfarm.

When it is determined that that land farm is to be decommissioned, the following will take place

- The berms and access ramp will be tested on a 10 metre grid for compliance with PHC in commercial soils;
- Any water in the sump will be vacuumed out for disposal in an approved manner;
- The liner will be removed and disposed in the municipal landfill;
- The area under the liner will be tested on a 10 metre grid for compliance with PHC in commercial soils;
- Excess soil will be removed; and
- The area graded to positive drainage that follows the existing ground.

1.3 TESTING PLANS

For sampling we will be using the GNWT Commercial Standards for Petroleum Hydrocarbons (PHCs) in Soils (mg/kg soil) that were developed from the National CCME standards

GNWT COMMERCIAL STANDARDS FOR PETROLEUM HYDROCARBONS (PHCs) IN SOILS (mg/kg soil)									
	Particle Size	Benzene	Toluene	Ethyl-benzene	Xylene	F1 (C_6-C_{10})	F2 (C_{10}-C_{16})	F3 (C_{16}-C_{34})	F4 (>C_{34})
Under building <1.5m	Coarse	5.0	20	0.8	17	310	1700	NA	NA
	Fine	5.0	20	0.8	17	4600	25000	NA	NA
Under building >1.5m	Coarse	5.0	20	0.8	17	340	1800	NA	NA
	Fine	5.0	20	0.8	17	4800	26000	NA	NA
Eco-soil <1.5m	Coarse	5.0	20	0.8	17	330	760	1700	3300
	Fine	5.0	20	0.8	17	660	1500	2500	6600
Eco-soil >1.5m	Coarse	5.0	20	0.8	17	700	2000	3500	10000
	Fine	5.0	20	0.8	17	1000	3000	5000	10000

1.3.1 Testing During Initial Soil Remediation

After the contaminated soil from the tankfarm has been deposited in the landfarm it should be tested monthly to monitor progress. The testing should be done in a representative manner and using PetroFlag testing kits. Once the levels of hydrocarbons in the soil have dropped to be within CCME standards final Compliance samples should be taken and sent to accredited laboratory for analysis.

The Piezometer's should also be monitored during the snow free months to ensure the landfarm is containing the contaminates.

1.3.2 Testing For Abandonment

Once the remediated soil has been deemed within the Standards of the CCME the abandonment can begin. While the berm is being removed petroflag samples will be taken to ensure the berm does not contain any contaminates. The Liner should be removed in sections and samples will be taken as the liner comes up. PetroFlag samples will be taken from under the liner to test for contaminates. The liner is to be removed starting on the high side and moving towards the low side, (west to east). This is to ensure containment if any contaminants that remain. Once the liner has been removed compliance samples will be taken and sent accredited laboratory for analysis.

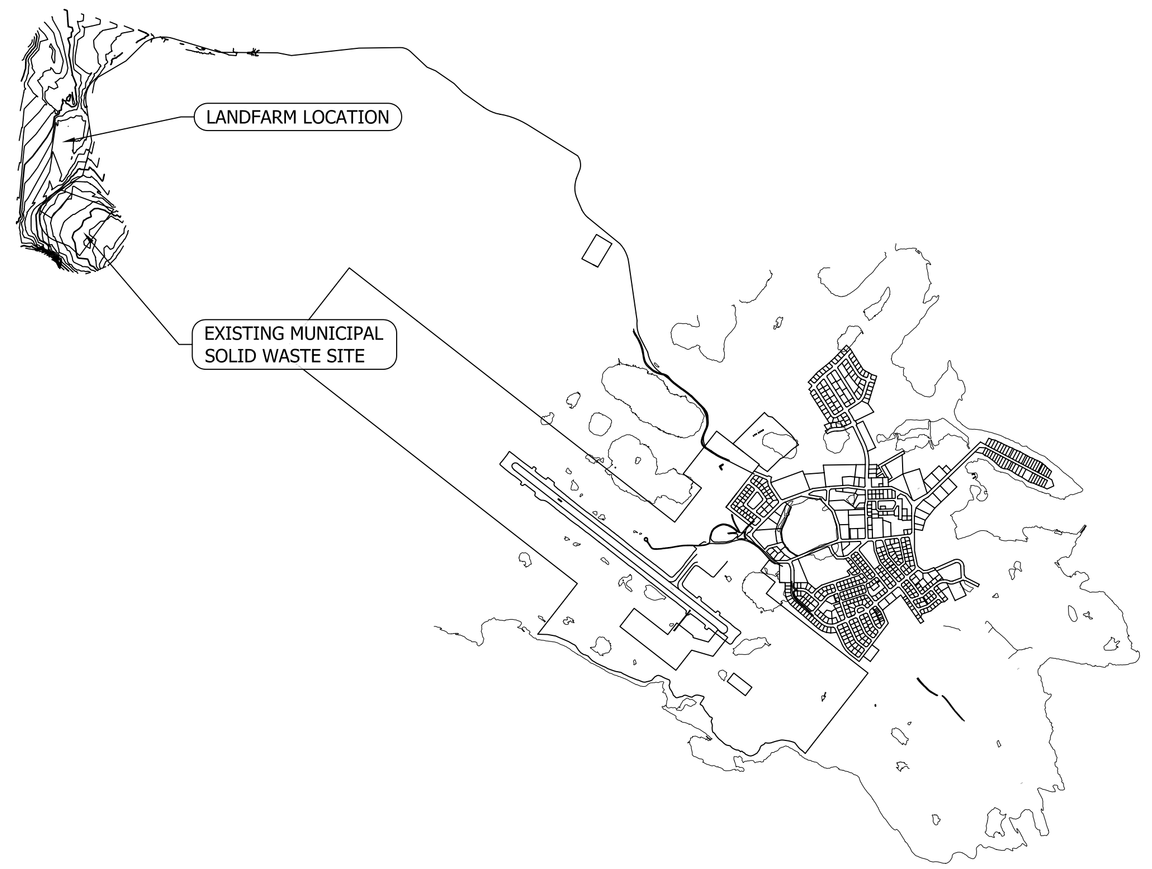
1.4 DISTURBED AREAS

Once all excess material has been removed from the site, the site can be returned to the natural state. The landfarm has an area of 6100 SQ.M. This will be the limit of the excessive disturbed area. Outside the actual site there should be little disturbance consisting of mainly light vehicle tracks. The 6100 SQ.M of the landfarm will be graded back to original ground. All remnants and foreign materials should be removed from the site as part of the Abandonment process. Once the natural grade is reached we will allow the site to revegetate naturally.

1.5 REPORTING ON RECLAMATION

During reclamation FSC Architects and Engineers will provide status reports to the NWB whenever FSC completes a site visit. This status report will include a daily field report with pictures and test results when possible. Daily field reports are the best way to keep all interested parties up to date on happenings. See appendix B for a sample of a Daily Field Report.

Appendix A: Map



1/C1 RANKIN INLET REGION
N.T.S.

2/C1 AIR PHOTO OF RANKIN INLET REGION
N.T.S.

Nunavut

GENERAL NOTES:

1. DO NOT SCALE FROM DRAWINGS.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE BEFORE PROCEEDING WITH THIS WORK.
3. REFER TO RULER IN BINDING MARGIN TO VERIFY IF SHEET HAS BEEN REDUCED OR ENLARGED.
4. ACTUAL DIMENSIONS TO BE ADJUSTED IN FIELD

NO.	REVISION DESCRIPTION	DATE ISSUED
00	ISSUED FOR REVIEW	2008-03-25

PROFESSIONAL SEAL / PERMIT TO PRACTICE

REGISTERED PROFESSIONAL ENGINEER N.W.T. 21 MAR 2008

PERMIT TO PRACTICE
FSC ARCHITECTS AND ENGINEERS
(S10) (NWT LTD.)
Signature
Date 25 MAR 2008
PERMIT NUMBER: P0457
The Association of Professional Engineers, Geologists and Geophysicists of the NWT/NU

FSC ARCHITECTS & ENGINEERS
4910 - 53RD STREET, P.O. BOX 1777,
YELLOWKNIFE, NT, X1A 2P4, CANADA
TEL: (867) 920-2882 FAX: 920-4319

PROJECT TITLE

FUEL STORAGE FACILITY UPGRADE AND EXPANSION

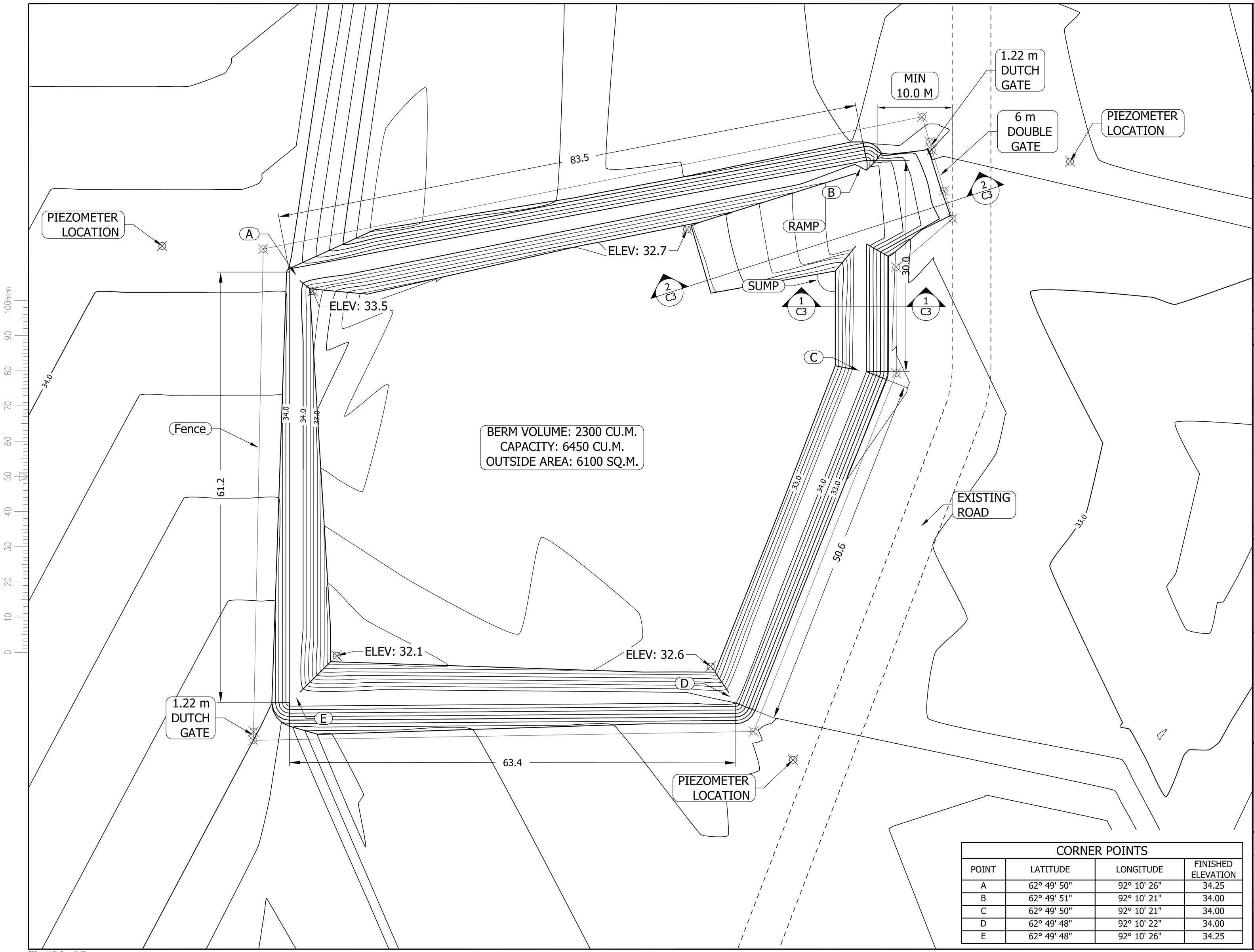
LOCATION
RANKIN INLET, NU

DRAWING TITLE
LAND FARM
EXISTING SITE LAYOUT

DRAWN BY	SCALE
AJ	1: 2500
CHECKED BY	CLIENT PROJECT NO.
RK	-

FSC PROJECT NO.
2005-2150

DRAWING NO.
C8



CORNER POINTS			
POINT	LATITUDE	LONGITUDE	FINISHED ELEVATION
A	62° 49' 50"	92° 10' 26"	34.25
B	62° 49' 51"	92° 10' 21"	34.00
C	62° 49' 50"	92° 10' 21"	34.00
D	62° 49' 48"	92° 10' 22"	34.00
E	62° 49' 48"	92° 10' 26"	34.25

Nunavut

GENERAL NOTES:

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3. REFER TO RULER IN BINDING MARGIN TO VERIFY IF SHEET HAS BEEN REDUCED OR ENLARGED.
4. ACTUAL DIMENSIONS TO BE ADJUSTED IN FIELD

NO.	REVISION DESCRIPTION	DATE ISSUED
00	ISSUED FOR REVIEW	2008-03-25

PROFESSIONAL SEAL / PERMIT TO PRACTICE

REGISTERED PROFESSIONAL ENGINEER NWT

PERMIT TO PRACTICE
FSC ARCHITECTS AND ENGINEERS (51078 NWT LTD)
Signature
Date 27/MAR/08
PERMIT NUMBER: P0457
The Association of Professional Engineers, Geologists and Geophysicists of the NWT/NU

FSC ARCHITECTS & ENGINEERS
4910 - 53RD STREET, P.O. BOX 1777,
YELLOWKNIFE, NT, X1A 2P4, CANADA
TEL: (867) 920-2882 FAX: 920-4319

PROJECT TITLE

FUEL STORAGE FACILITY UPGRADE AND EXPANSION

LOCATION
RANKIN INLET, NU

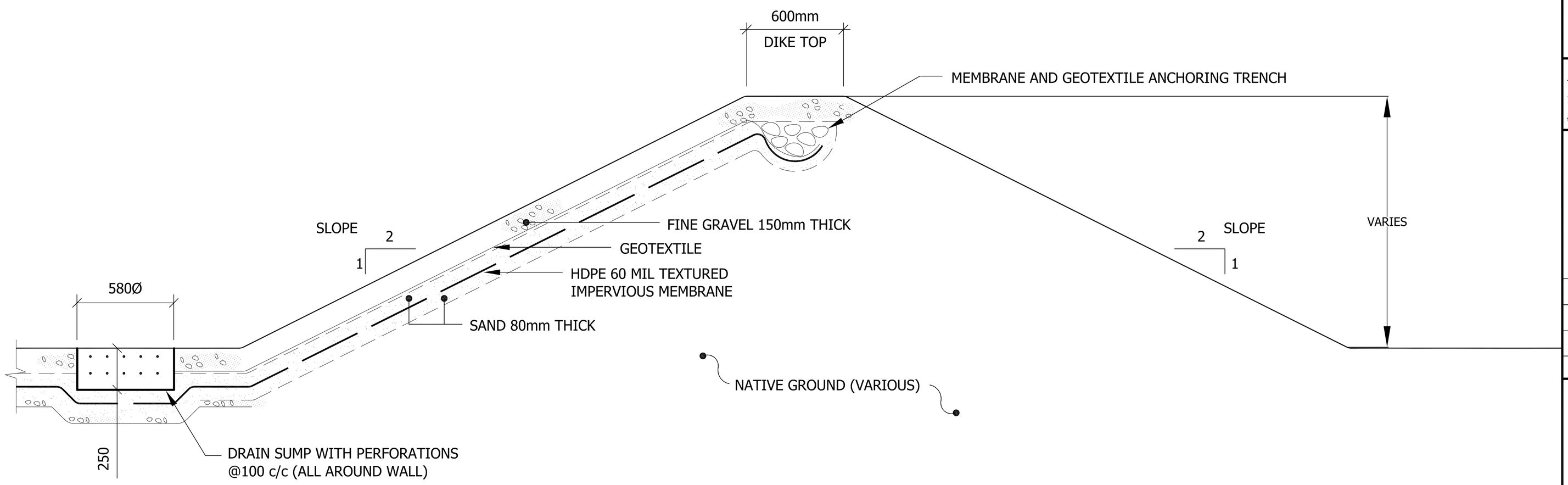
DRAWING TITLE
LAND FARM DESIGN

DRAWN BY	SCALE
AJ/CP	1: 500
CHECKED BY	CLIENT PROJECT NO.
RK	-

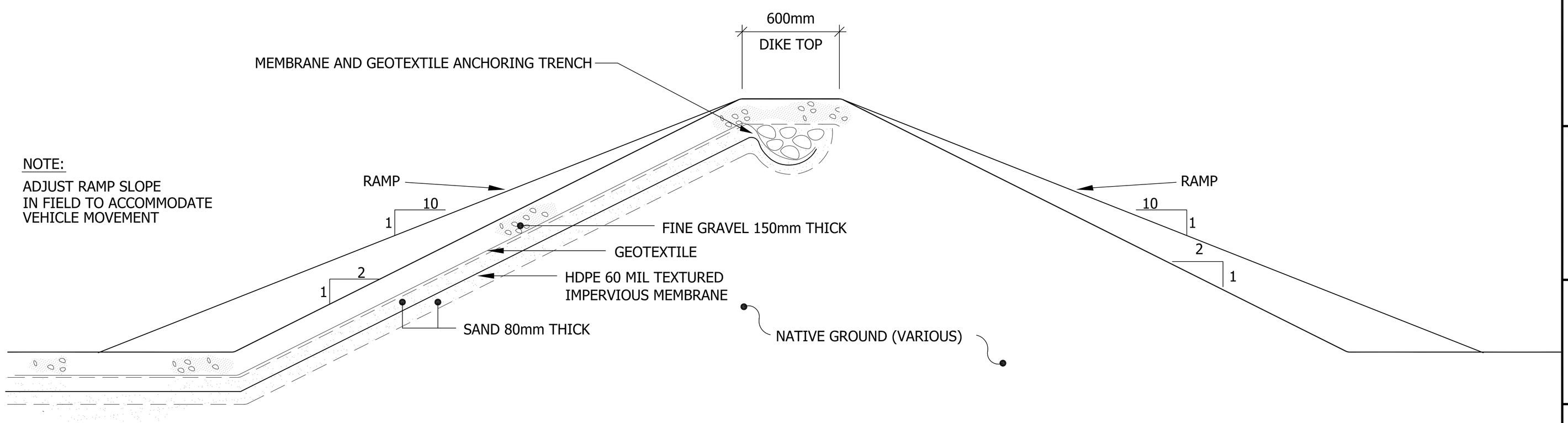
FSC PROJECT NO.
2005-2150

DRAWING NO.
C9

FSC – ANSI-B – 11x17



1 / C3 BERM CROSS SECTION (TYPICAL)
N.T.S.



2 / C3 ENTRANCE RAMP
N.T.S.

GENERAL NOTES:

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4. ACTUAL DIMENSIONS TO BE ADJUSTED IN FIELD

NO.	REVISION DESCRIPTION	DATE ISSUED
00	ISSUED FOR REVIEW	2008-03-25

PROFESSIONAL SEAL / PERMIT TO PRACTICE

PERMIT TO PRACTICE
FSC ARCHITECTS AND ENGINEERS
(5107)NWT LTD
Signature
Date 27/MAR/2008
PERMIT NUMBER: P0457
The Association of Professional Engineers, Geologists and Geophysicists of the NWT/NU

FSC ARCHITECTS & ENGINEERS
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PROJECT TITLE

FUEL STORAGE FACILITY UPGRADE AND EXPANSION

LOCATION
RANKIN INLET, NU

DRAWING TITLE
LAND FARM
TYPICAL CROSS SECTION
DETAILS

DRAWN BY	SCALE
AJ	NTS
CHECKED BY	CLIENT PROJECT NO.
RK	-

FSC PROJECT NO.
2005-2150

DRAWING NO.
C10

FSC – ANSI-B – 11x17

Appendix B: Daily Report Form

FSC
ARCHITECTS & ENGINEERS

Field Review

GENERAL INFORMATION			
Project:	**Project Name**	Report No.:	**FR-XXX**
Date of Visit:	**XX January 200X**	FSC File:	**200X-XXXX - 51**
Date of Issue:	**XX January 200X**	Contractor File:	
Present:		Weather:	**°C**

SITE CONDITIONS	
Items	**Action By**
	Contractor

GENERAL OBSERVATIONS OR INSTRUCTIONS/DIRECTION TO CONTRACTOR	
Items	**Action By**
	Contractor

SAFETY AND SECURITY		
Were there any health or safety incidents reported during the period?	☐ Yes	☒ No
Were there any security issues or breaches reported during the period?	☐ Yes	☒ No
If YES to either, describe:		

CONSTRUCTION OUTLOOK		
Are there any submittals, issues or direction required over the next week, which may affect schedule?	☐ Yes	☒ No
Explain:		

Site Visit Report Prepared By:	
Name:	Date:

DISTRIBUTION		
Name	**Company**	**Via**
Joe Blow	Dynamite Construction	Email & Mail

Issued By:	Person / Title	Signature

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