

March 13, 2012

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

Dear Phyllis:

Project No: Water Use Licence No.: 1BR-BYR0712 2011 Annual Report
Regarding: PIN-4, Byron Bay DEW Line Site

AECOM Canada Ltd. is providing the attached annual report form as per Section B.1 of the above-noted water use license. The report is being submitted on behalf of Defence Construction Canada and the Department of National Defence.

During the 2011 field season at PIN-4, site activities included construction and closure of the landfarm, partial closure of the Non-Hazardous Waste Landfill and Tier II Disposal Facility, excavation of landfills and contaminated soils, and regrading and reshaping. The following is a detailed summary of the work items completed during the 2011 summer construction season at PIN-4:

- All demolition activities were completed.
- Forty-nine contaminated areas were excavated and backfilled. All contaminated soil excavations are now completed.
- All remaining landfills and buried debris areas requiring excavation and backfilling were completed, including:
 - Northwest Landfill Lobe A; Point Buried Debris Area Lobe A; Sewage Outfall Buried Debris Area; Airstrip Landfill Lobe A; Barrel Storage Buried Debris Area; South Landfill Buried Debris Area Lobe C; South Landfill – Middle Lobe; Landing Debris Area Lobes A, C, D, E.
- All remaining regrade areas were completed, including:
 - Old Construction Camp West Debris Area Lobes A, B, C; Northwest Garage Debris Area; North Landfill Lobes A, B; Point Debris Area Lobe B; Sewage Outfall Debris Area Lobes E, F; West POL Debris Area Lobes A, B; Airstrip Landfill Lobe B.
- The landfarm was closed as the material inside the facility met criteria required for closure. Closure activities included reshaping the access road, perimeter berms and treatment soils. The synthetic liner within the berms was removed and the temporary groundwater monitoring wells were decommissioned as per the specifications.
- The Non-Hazardous Waste Landfill was winterized at the end of the season. Work in 2011 included:

- Placement of two layers of non-hazardous debris and intermediate fill.
 - The final cap of Type 2 granular materials was placed over 80% of the landfill.
 - A layer of Type 6 granular material was placed as winter cover over the remaining 20% of the landfill.
- The work completed at the Tier II Disposal Facility in 2011 includes:
 - Placement of Type 5 granular material was completed on the west portion of the facility.
 - Landfilling of all Tier II contaminated soil was completed.
 - The top geomembrane liner system was installed and covered with a layer of Type 5 granular material, followed by five lifts of Type 2 capping material, which was placed and compacted. A sixth lift was placed and not compacted.
- Baseline monitoring was carried out at the landfills which remain on-site.

Community Consultations: The results of the community meetings held by DCC were submitted with the Project Description. The contractor typically holds a project start up meeting prior to each season; however, a copy of the presentation has not been provided.

Spill Incidences: None.

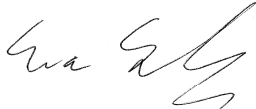
Monitoring Reports: See attached.

The work remaining in 2012 includes:

- Placement of the remaining Type 2 cover material and Type 1 granular fill for erosion protection on the outside slopes of the Non-Hazardous Waste Landfill.
- The placement of an additional four lifts of Type 2 granular fill for the top cover and Type 1 granular fill for erosion protection on the outer slopes of the Tier II facility.
- Reshaping and regrading at the Tier II facility perimeter.
- Reshaping of the area where the construction camp was located.
- Demobilization of the camp, construction equipment and the PCB material currently in temporary storage.

We trust the information provided is sufficient. Please feel free to contact the undersigned if you require any additional information.

Sincerely,
AECOM Canada Ltd.

A handwritten signature in black ink, appearing to read 'Eva Schulz', with a stylized flourish at the end.

Eva Schulz, P.Ag.
Senior Environmental Scientist
Eva.Schulz@aecom.com

EMS.
cc: Tamara Van Dyck, DCC

Encl. Annual Report Form; Updated Site Figures; Monitoring Reports; Selected Site Photos

NWB Annual Report

Year being reported:

2011

License No: 1BR-BYR0712 Issued Date: July 23, 2007
 Expiry Date: December 31, 2012

Project Name: PIN-4, Byron Bay DEW Line Site Clean Up

Licensee: Defence Construction Canada

Mailing Address: Defence Construction Canada
 DGME
 101 Colonel By Drive,
 Ottawa, Ontario, Canada. K1A 0K2

Name of Company filing Annual Report (if different from Name of Licensee please clarify relationship between the two entities, if applicable):

AECOM
 Design Engineering and Regulatory Support

General Background Information on the Project (*optional):

Licence Requirements: the licensee must provide the following information in accordance with

Part B ▼ Item 1 ▼

A summary report of water use and waste disposal activities, including, but not limited to: methods of obtaining water; sewage and greywater management; drill waste management; solid and hazardous waste management.

Water Source(s):	Water Supply Lake (BYR-1)	
Water Quantity:	55 per day	Quantity Allowable Domestic (cu.m)
	17.5 per day/106 days	Actual Quantity Used Domestic (cu.m)
		Quantity Allowable Drilling (cu.m)
		Total Quantity Used Drilling (cu.m)

Waste Management and/or Disposal

- ☒ Solid Waste Disposal
☒ Sewage 1484 cu.m of sewage and greywater discharged to sewage lagoon
☐ Drill Waste
☒ Greywater
☒ Hazardous
☒ Other:

Additional Details:

Details of the waste management were provided in the application supporting documents.

A list of unauthorized discharges and a summary of follow-up actions taken.

Spill No.: (as reported to the Spill Hot-line)
 Date of Spill:
 Date of Notification to an Inspector:
 Additional Details: (impacts to water, mitigation measures, short/long term monitoring, etc)

Revisions to the Spill Contingency Plan

SCP submitted and approved - no revision required or proposed ▼

Additional Details:

Revisions to the Abandonment and Restoration Plan

N/A - not applicable ▼

Additional Details:

The project is an Abandonment and Restoration project.

Progressive Reclamation Work Undertaken

Additional Details (i.e., work completed and future works proposed)

n/a

Results of the Monitoring Program including:
The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where sources of water are utilized:

Select ▼

Additional Details:

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where wastes associated with the licence are

Details attached ▼

Additional Details:

Results of any additional sampling and/or analysis that was requested by an Inspector

No additional sampling requested by an Inspector or the Board ▼

Additional Details: (date of request, analysis of results, data attached, etc)

Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.

No additional sampling requested by an Inspector or the Board ▼

Additional Details: (Attached or provided below)

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Any responses or follow-up actions on inspection/compliance reports

No inspection and/or compliance report issued by INAC ▼

Additional Details: (Dates of Report, Follow-up by the Licensee)

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Any additional comments or information for the Board to consider

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Date Submitted:

March 13, 2012

Submitted/Prepared by:

Eva Schulz

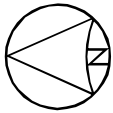
Contact Information:**Tel:** 403-270-9200**Fax:** 403-270-9196**email:** eva.schulz@aecom.com

GPS Coordinates for water sources utilized

Source Description	UTM Zone 12N, NAD83	
	Northing	Easting
water supply lake	7629850	578000

GPS Locations of areas of waste disposal

Location Description (type)	UTM Zone 12N, NAD83	
	Northing	Easting
Landfarm Berm (NO1)	7627922.1	581046.7
Landfarm Berm (NO3)	7627868.7	581139.9
Landfarm Berm (NO4)	7627772.2	581056.9
Landfarm Berm (NO6)	7627857.6	580991.2
Non-Hazardous Waste Landfill (Q01)	7628945.2	577219.4
Non-Hazardous Waste Landfill (Q02)	7628915.3	577282.7
Non-Hazardous Waste Landfill (Q03)	7628856.6	577255
Non-Hazardous Waste Landfill (Q04)	7628886.4	577191.7
Tier II Landfill (R01)	7627978.4	576372.9
Tier II Landfill (R02)	7627993.9	576456.5
Tier II Landfill (R03)	7627934.9	576467.4
Tier II Landfill (R04)	7627919.4	576383.9
Sewage Lagoon	n/a	



DND RESERVE BOUNDARY
(REF. DWG. S2-0425, DEPT.
OF THE AIR FORCE, USAF)

FORMER
WATER SUPPLY
LAKE

BORROW AREA #16
2009 EXTENSION

TP09-33

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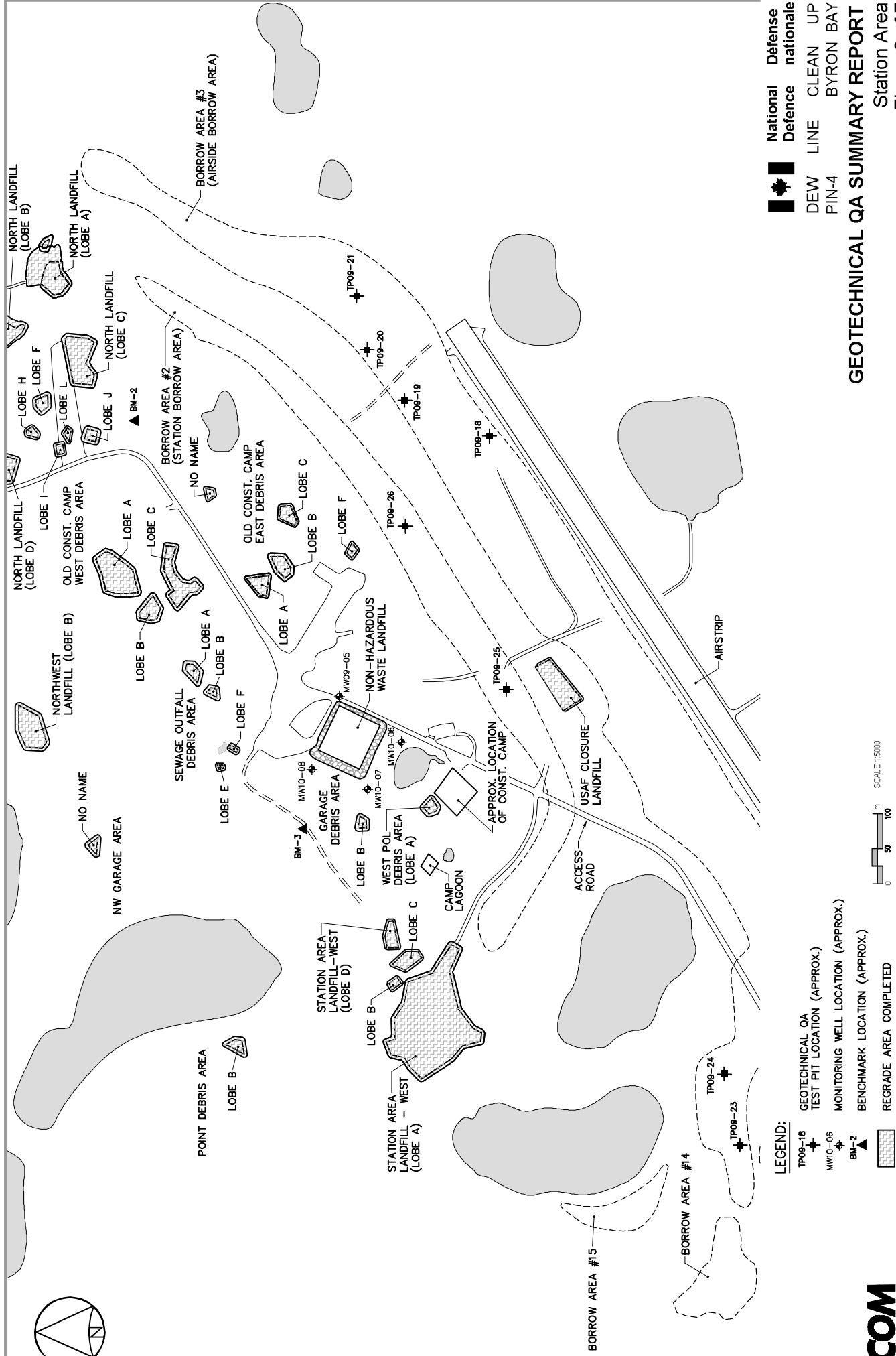
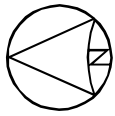
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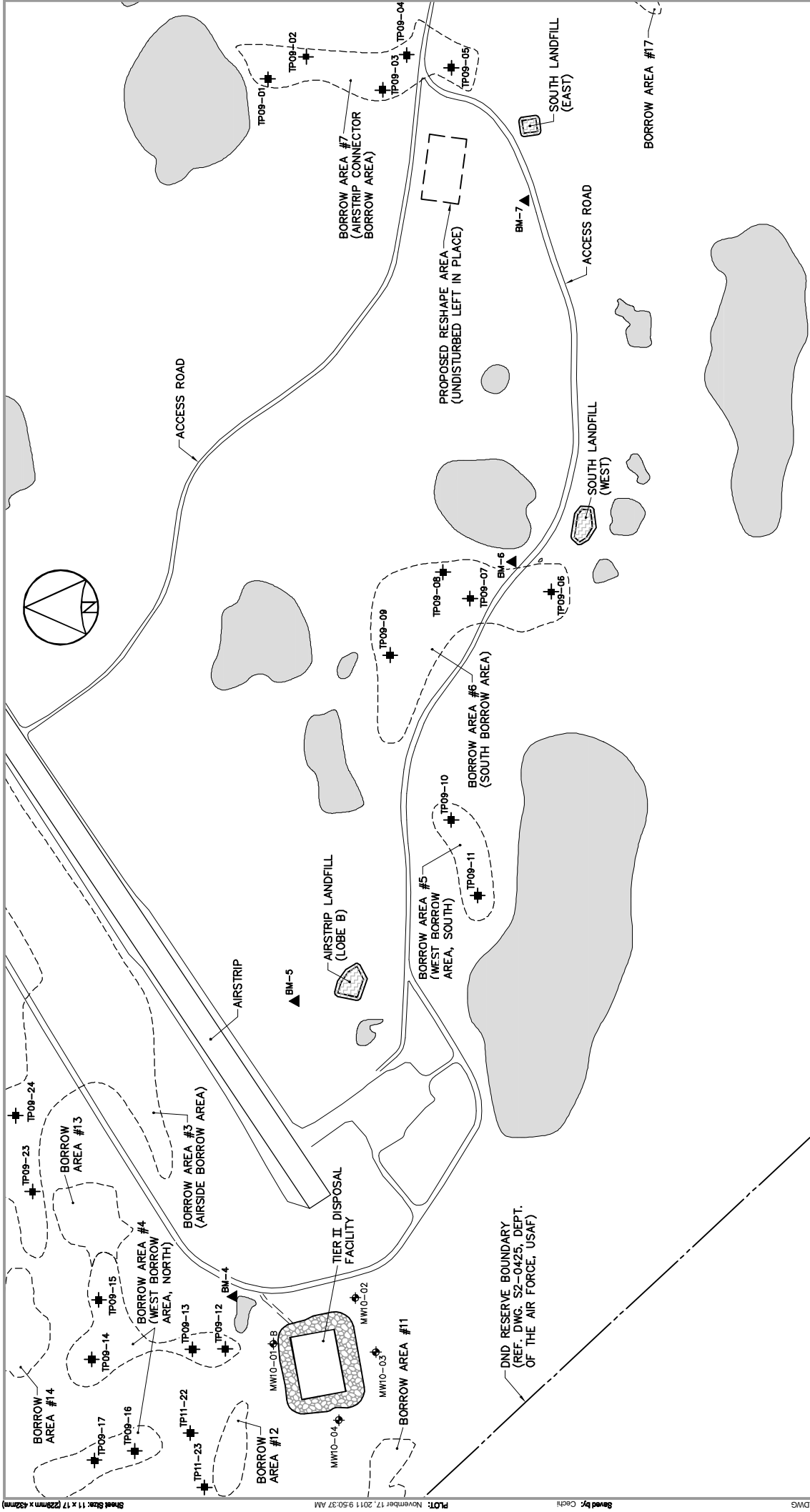
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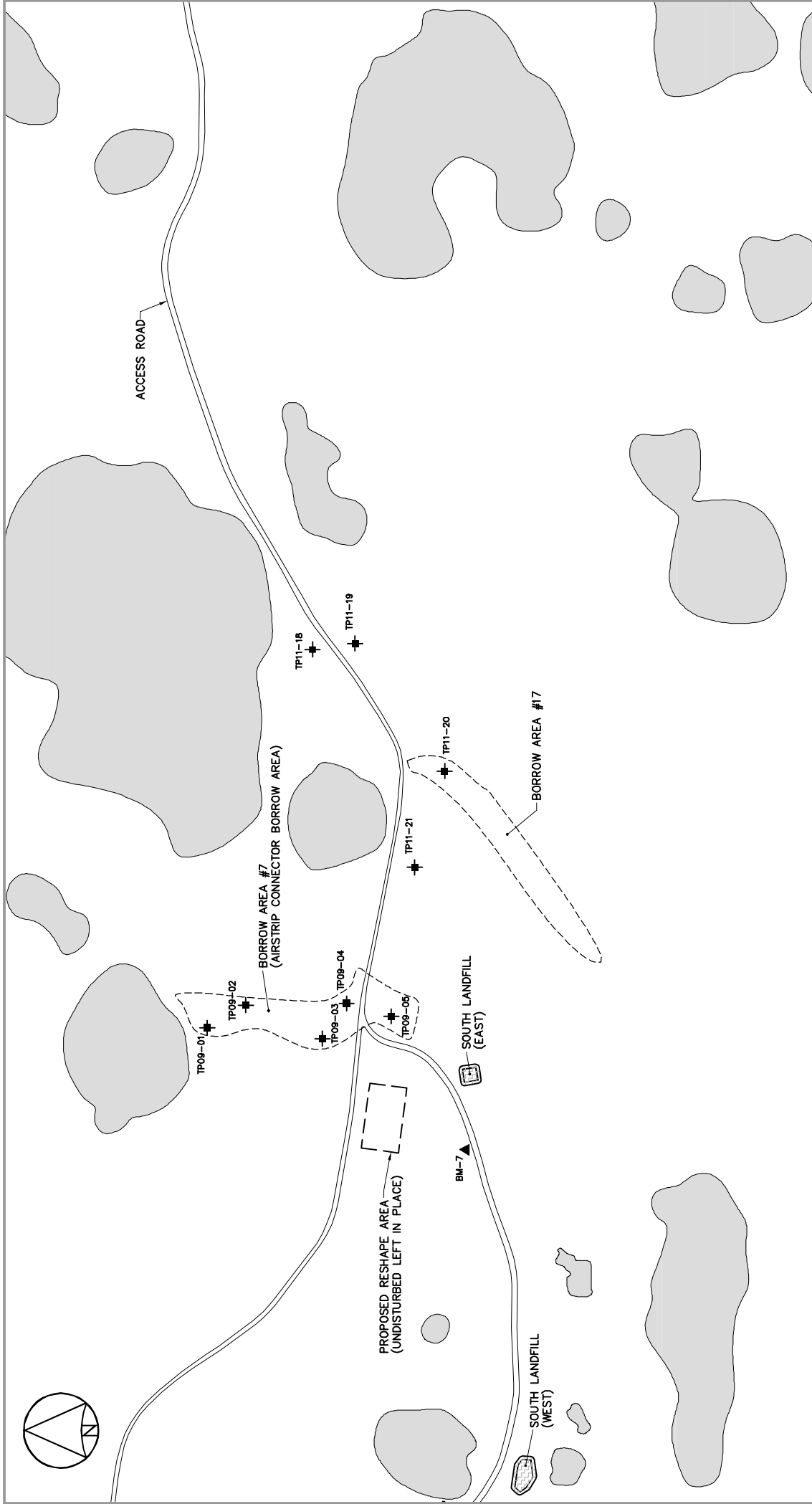


LEGEND:

- TP09-06 GEOTECHNICAL QA TEST PIT LOCATION (APPROX.)
- MW10-01 MONITORING WELL LOCATION (APPROX.)
- BM-5 BENCHMARK LOCATION (APPROX.)
- REGRADE AREA COMPLETED

National Défense
Defence nationale
 DEW LINE CLEAN UP
 PIN-4 BYRON BAY

GEOTECHNICAL QA SUMMARY REPORT
 Airstrip Area
 Figure 4 of 7



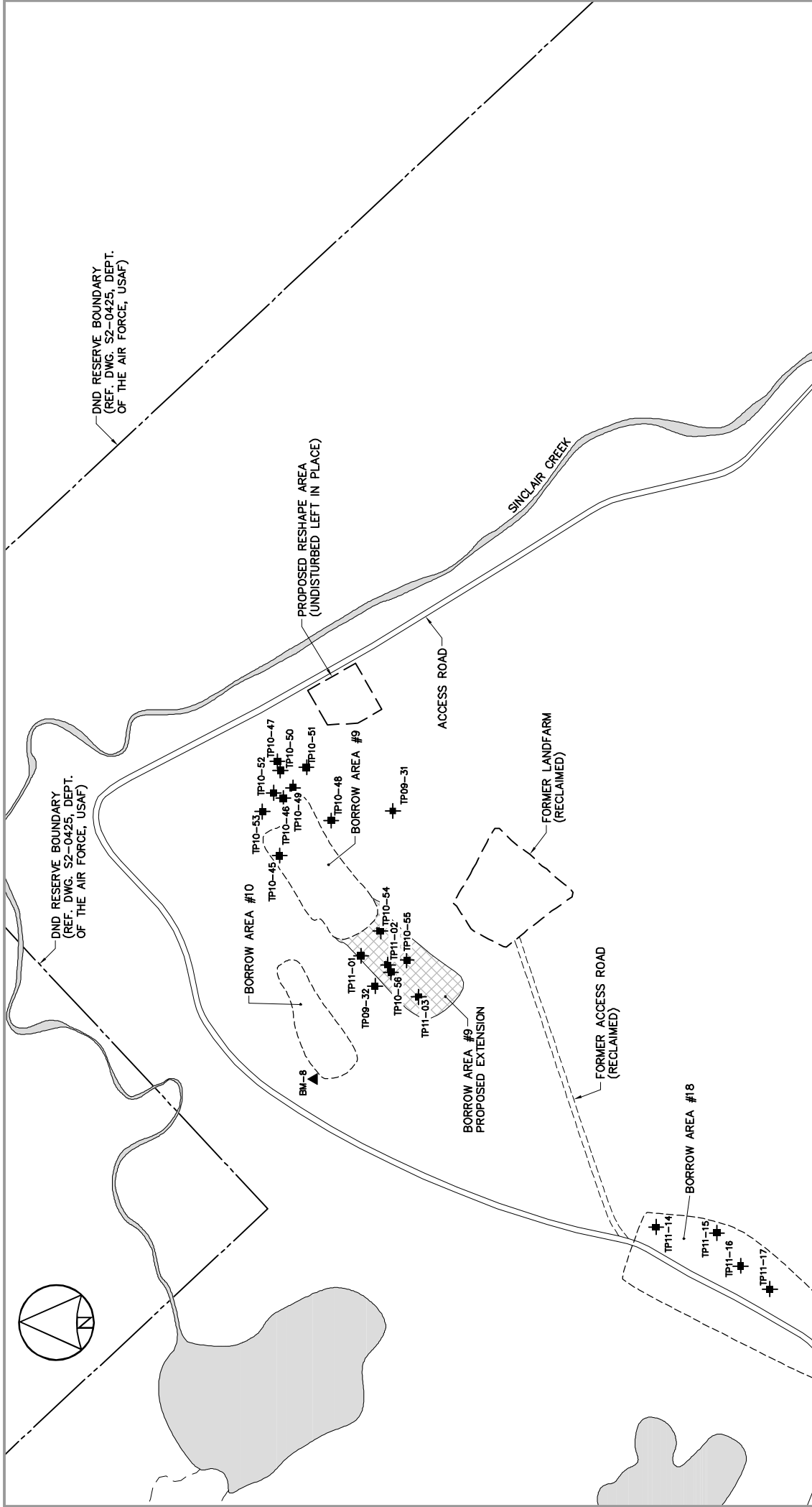
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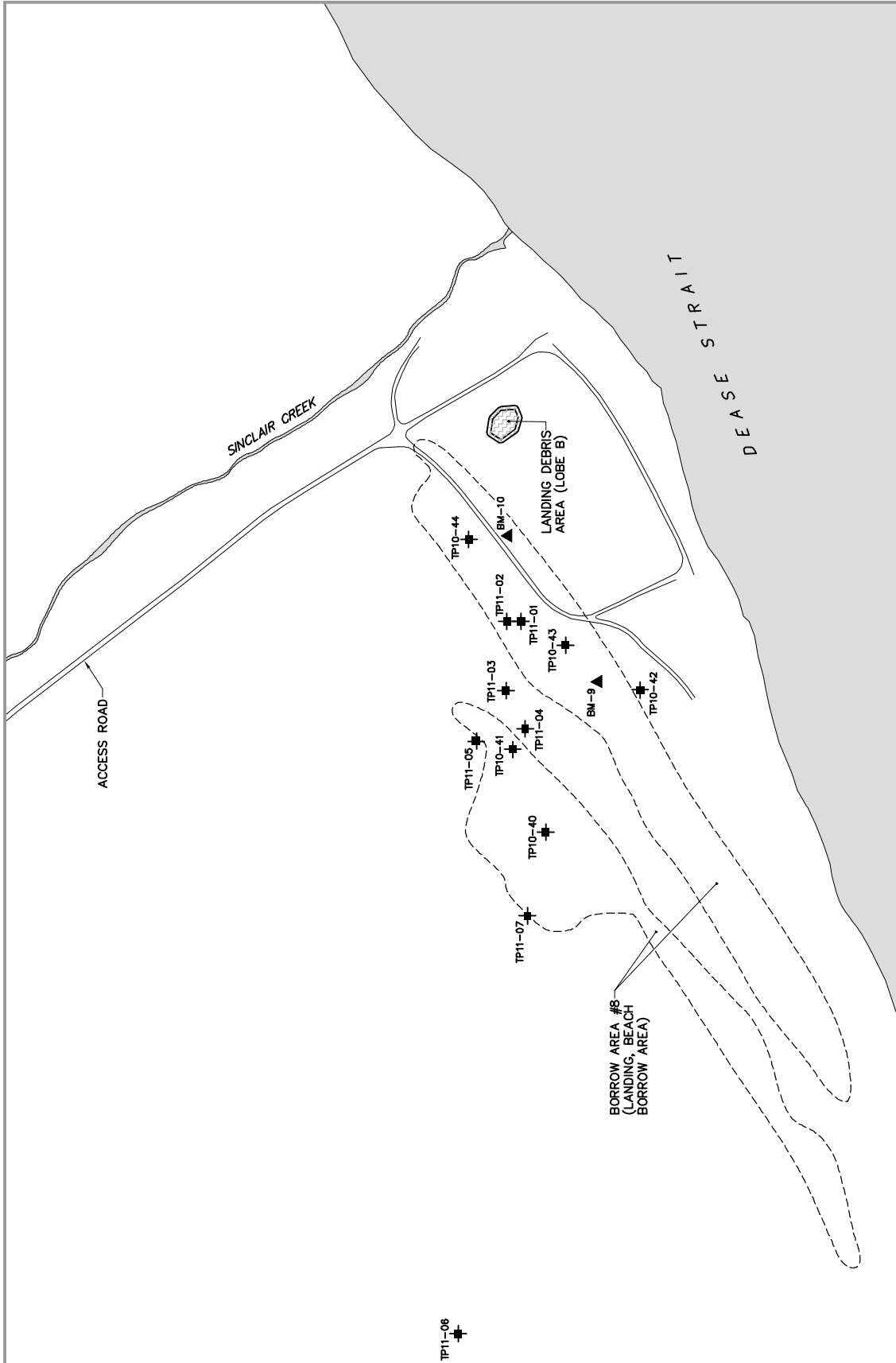
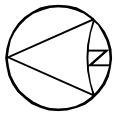
TP09-01 GEOTECHNICAL QA
TEST PIT LOCATION (APPROX.)

BM-7 BENCHMARK LOCATION (APPROX.)

REGRADE AREA COMPLETED







- LEGEND:**
- TP10-40
GEOTECHNICAL QA
TEST PIT LOCATION (APPROX.)
 - BM-9
BENCHMARK LOCATION (APPROX.)
 - REGRADE AREA COMPLETED

 National Défense
Defence nationale
DEW LINE CLEAN UP
PIN-4 BYRON BAY

GEOTECHNICAL QA SUMMARY REPORT

Beach Area
Figure 7 of 7



PHOTOGRAPHIC LOG



Site Name:
PIN-4, Byron Bay

Site Location:
Nunavut

Project No.
60212727

Photo No.
1

Date:
1-jul-11

Direction Photo Taken:
Northwest

Description:
Tier II Facility at the start of the construction season



Photo No.
2

Date:
15-sep-11

Direction Photo Taken:
Northwest

Description:
Completed Tier II Disposal Facility



PHOTOGRAPHIC LOG



Site Name:
PIN-4, Byron Bay

Site Location:
Nunavut

Project No.
60212727

Photo No.
3

Date:
11-jul-11

Direction Photo Taken:
Northeast

Description:
Non-Hazardous Waste Landfill at the start of the season.



Photo No.
4

Date:
25-sep-11

Direction Photo Taken:
West

Description:
Non-Hazardous Waste Landfill at the end of the season with intermediate granular material cover.



PHOTOGRAPHIC LOG**Site Name:**
PIN-4, Byron Bay**Site Location:**
Nunavut**Project No.**
60212727**Photo No.**
5**Date:**
1-jul-11**Direction Photo
Taken:**
North**Description:**Landfarm at the start of
the season.**Photo No.**
6**Date:**
26-aug-
11**Direction Photo
Taken:**
South**Description:**Liner removal from the
landfarm berms.

PHOTOGRAPHIC LOG

Site Name:
PIN-4, Byron Bay

Site Location:
Nunavut

Project No.
60212727

Photo No.
7

Date:
29-aug-11

Direction Photo Taken:
South

Description:
Decommissioned landfarm.



Photo No.
8

Date:
25-jul-11

Direction Photo Taken:
West

Description:
Debris from excavation of the South Landfill.



PHOTOGRAPHIC LOG



Site Name: PIN-4, Byron Bay		Site Location: Nunavut	Project No. 60212727
Photo No. 9	Date: 1-jul-11		
Direction Photo Taken: North			
Description: Debris removal from Hangar area.			
Photo No. 10	Date: 1-jul-11		
Direction Photo Taken: North			
Description: Garage demolition.			

**Jennifer Joubert
Environmental Sciences Group
The Royal Military College of Canada
PO Box 17000 Stn. Forces
Kingston, ON K7K 7B4**



**Tamara Van Dyck
Environmental Officer
Defence Construction Canada
DEW Line Cleanup PMO
101 Colonel By Drive
Ottawa ON K1A 0K2**

Friday December 16, 2011

RE: 2011 Report for Water Use License Number: 1BR-BYR0712

The following results of the Monitoring Program (MP) and/or Water Use License are provided by the Environmental Sciences Group to meet the requirements of the above-noted license for PIN-4 (Byron Bay).

1. CAMP SEWAGE LAGOON

A 2 cell sewage lagoon was constructed to service the PIN-4 construction camp in August 2009. The sewage lagoon was constructed a minimum of 100 m from drainage courses and water bodies. Cell 1 was closed on September 19th, 2011 due to the end of the construction project. Cell 2 remains open for the 2012 field season.

2. SEWAGE EFFLUENT SAMPLES

The Water Use License and MP require that samples from treated sewage lagoon effluent at the point of discharge to the receiving water be collected prior to each discharge event.

No sampling was completed at the PIN-4 sewage lagoons during the 2011 field season. The level of liquid in the lagoons remained low, and discharge was not required.



Photo 1 (P7300006): PIN-4 sewage lagoon cell 1 facing northeast. July 30th, 2011.



Photo 2 (P7300007): PIN-4 sewage lagoon cell 2 facing north. July 30th, 2011.



Photo 3 (P8150004): PIN-4 sewage lagoon cell 1 facing southwest towards incinerator. August 15th, 2011.



Photo 4 (P8150005): PIN-4 sewage lagoon cell 2 facing southwest towards incinerator. August 15th, 2011.



Photo 5 (P9150104): PIN-4 sewage lagoon cell 1 facing northeast. September 15th, 2011.



Photo 6 (P9150105): PIN-4 sewage lagoon cell 2 facing northwest. September 15th, 2011.



Photo 7 (110919): PIN-4 sewage lagoon cell 1 closure facing north. September 19th, 2011.

Please contact the undersigned if you have any questions or concerns.

Sincerely,

Jennifer Joubert
Environmental Sciences Group

cc: Eva Schulz (UMA)
Daniela Loock, Darren White, Shari Reed, Jennifer Joubert, Dean Morrow (ESG)

Jennifer Joubert
Environmental Sciences Group
The Royal Military College of Canada
PO Box 17000 Stn. Forces
Kingston, ON K7K 7B4



Tamara VanDyck
Environmental Officer
Defence Construction Canada
DEW Line Cleanup PMO
350 Albert Street, Suite 1720
Ottawa ON K1A 0K3

Wednesday, February 22, 2012

RE: Analytical Results for Wastewater Samples Collected at PIN-4 in 2011

The following report summarizes results of the analysis of wastewater samples as per the PIN-4 (Byron Bay) DEW Line Cleanup Project (DLCU) Specifications.

The PIN-4 specifications require that “wash water, melt water collection, rinse water resulting from the cleaning of fuel tanks and pipelines, and/or any other liquid effluent stream” meet the following guidelines prior to their discharge to land (01560.4.1):

Parameter	Maximum Allowable Concentration	Units
pH	6-9	pH units
Total arsenic (As)	0.100	mg/L
Dissolved cadmium (Cd)	0.010	mg/L
Total chromium (Cr)	0.100	mg/L
Dissolved cobalt (Co)	0.050	mg/L
Dissolved copper (Cu)	0.200	mg/L
Dissolved lead (Pb)	0.050	mg/L
Total mercury (Hg)	0.6	µg/L
Dissolved nickel (Ni)	0.200	mg/L
Total zinc (Zn)	0.5	mg/L
Oil & grease	5 mg/L and None visible	mg/L
PCBs	1.0	mg/L
Phenols	0.020	mg/L

*Discharge to barren land, **Discharge to vegetated land

Phenols

The wastewater samples collected by ESG at PIN-4 are not analyzed for phenols but they are analyzed for oil and grease. Research conducted by ESG¹ has determined that a) no federal, territorial or provincial criteria exist for the discharge of wastewater containing phenols to land at a minimum distance of 30-m from natural drainage courses b) the

¹ Environmental Sciences Group. *DEW Line Clean Up Project – Phenols in Wastewater*. June, 2007.

maximum concentration of phenols in DLCU wastewater to date (2.44 mg/L) is below the LC₅₀ for freshwater fish and crustaceans and below the oral and dermal LD₅₀s for rats and rodents and c) phenols in excess of the maximum allowable concentration (MAC) have historically co-occurred with a visible oil & grease sheen and/or with an exceedance of the MAC for oil & grease. This information, and a subsequent decision to not test for phenols, has been presented to the NWB. To date, verbal agreement from the NWB has been received, but the project is awaiting written confirmation of the decision to suspend testing for phenols.

WASTEWATER SAMPLES

Four wastewater samples were collected at PIN-4 and analyzed in June 2011. A summary of the details of these results follows. Laboratory results are provided in Appendix A.

LOCATION: MIDDLE EAST BERM OF LANDFARM

GPS COORDINATES: 12W 0581084 7627810

SAMPLE: 11-32657

DATE: June 23, 2011

Parameter	Maximum Allowable Concentration	Units	Sample # 11-32657
pH	6-9	pH units	N/A
Total Arsenic	0.100	mg/L	N/A
Dissolved Cadmium	0.010	mg/L	N/A
Total Chromium	0.100	mg/L	N/A
Dissolved Cobalt	0.050	mg/L	N/A
Dissolved Copper	0.200	mg/L	N/A
Dissolved Lead	0.050	mg/L	N/A
Total Mercury	0.6	µg/L	N/A
Dissolved Nickel	0.200	mg/L	N/A
Total Zinc	1.0	mg/L	N/A
Oil & Grease	None Visible and 5 mg/L	mg/L	Non Visible <2.0
PCBs	50* 5**	µg/L	<0.003
Phenols	20	µg/L	N/A

*Discharge to barren land, **Discharge to vegetated land



Photo 1 (P6230751): Sample 11-32657: PIN-4 Sample collection at middle east berm of Landfarm.

Waste water from the Landfarm was discharged to the ground on July 6, 2011. The water was discharged to an area greater than 30m from natural drainage courses (12W 7627847 0581151).



Photo 2 (P7060033): PIN-4 Wastewater discharge from the Landfarm.

LOCATION: SOUTHEAST CORNER OF TIER II DISPOSAL FACILITY

GPS COORDINATES: 12W 0577200 7628902

SAMPLE: 11-32656

DATE: June 23, 2011

Parameter	Maximum Allowable Concentration	Units	Sample # 11-32656
pH	6-9	pH units	8.00
Total Arsenic	0.100	mg/L	<0.003
Dissolved Cadmium	0.010	mg/L	<0.001
Total Chromium	0.100	mg/L	<0.005
Dissolved Cobalt	0.050	mg/L	<0.003
Dissolved Copper	0.200	mg/L	<0.005
Dissolved Lead	0.050	mg/L	<0.010
Total Mercury	0.6	µg/L	<0.0004
Dissolved Nickel	0.200	mg/L	<0.005
Total Zinc	1.0	mg/L	<0.010
Oil & Grease	None Visible and 5 mg/L	mg/L	Non Visible 2.5
PCBs	50* 5**	µg/L	<0.003
Phenols	20	µg/L	N/A

*Discharge to barren land, **Discharge to vegetated land



Photo 3 (P6230748) : Sample 11-32656: PIN-4 Water sample collection from southeast corner of the Tier II Disposal Facility.



Photo 4 (P7070002): PIN-4 Wastewater discharge from Tier II Disposal Facility.

Waste water from the Tier II Disposal Area was discharged to the ground on June 29, 2011. The water was discharged to an area greater than 30m from natural drainage courses (12W 0576406 7627880).

We trust that the information provided meets current requirements. Please contact the undersigned if you have any questions or concerns.

Sincerely,
Jennifer Joubert
Environmental Sciences Group

cc: Eva Schulz (UMA)
Daniela Loock, Darren White, Shari Reed, Jennifer Joubert, Dean Morrow (ESG)

APPENDIX A

LABORATORY RESULTS

ANALYTICAL SCIENCES GROUP AND SLOWPOKE-2 FACILITY AT RMC GROUP DES SCIENCES ANALYTIQUES ET FACILITÉ SLOWPOKE-2 AU CMR

Dept. of Chem. and Chem. Eng. - Dépt. de chimie et de génie chimique
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Client: ESG
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Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No: 21771
Site: PIN-4
Client No: 11-019
Samples Received: 29-Jun-11
Date of analysis: 29-Jun-11
Method No: ASG 037
Date Reported: 29-Jun-11
Page: 1 of 1

RESULTS OF pH ANALYSIS

Sample I.D.	pH
32656	8.00

LABORATORY QA/QC

Sample I.D.	pH
Control	7.01
Control Target	7.00

ASU #	13690		Report ID:	PIN-4 W2				
Client:	ESG		Date Submitted:	29-Jun-11				
			Date tested:	30-Jun-11				
Site:	PIN-4		Date:	30-Jun-11				
	11-019		Matrix:	Water				
Report of Analysis								
Results relate only to the items tested								
Total Metals	Results in mg/L							
SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
11-32656	-	-	-	-	-	<0.010	<0.005	<0.003
Blank	-	-	-	-	-	<0.010	<0.005	<0.003
Control	-	-	-	-	-	3.42	0.90	0.81
Control Target	-	-	-	-	-	3.00	0.80	0.80
11-32656	-	-	-	-	-	<0.010	<0.005	<0.003
11-32656	-	-	-	-	-	<0.010	<0.005	<0.003
Dissolved Metals	Results in mg/L							
SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
11-32656	<0.005	<0.005	<0.003	<0.001	<0.010	-	-	-
Blank	<0.005	<0.005	<0.003	<0.001	<0.010	-	-	-
Control	1.61	1.79	1.77	0.90	9.12	-	-	-
Control Target	1.60	1.60	1.60	0.80	8.00	-	-	-
11-32656	<0.005	<0.005	<0.003	<0.001	<0.010	-	-	-
11-32656	<0.005	<0.005	<0.003	<0.001	<0.010	-	-	-

**ANALYTICAL SCIENCES GROUP AND SLOWPOKE-2 FACILITY AT RMC
GROUP DES SCIENCES ANALYTIQUES ET FACILITÉ SLOWPOKE-2 AU CMR**

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ASG Login No: 21771
Site: PIN-4
Client No: 11-019
Samples Received: 29-Jun-11
Date of analysis: 30-Jun-11
Method No: ASG 021
Date Reported: 30-Jun-11
Sheet: 1 of 1

RESULTS OF MERCURY ANALYSIS

Sample ID	Mercury mg/L
32656*	< 0.0004

*Average result of duplicates.

^ Acid digestion performed.

Reported at 0.0004 mg/L detection limit.

LABORATORY QA/QC

Sample ID	Mercury mg/L
Duplicate ; 32656*	< 0.0004 ; < 0.0004
Blank	< 0.0004
Control Target	0.0040
Control Sample	0.0043

ASU #	13690		Report ID:	PIN-4 W3
Client:	ESG		Date Submitted:	29-Jun-11
			Date tested:	29-Jun-11
Site:	PIN-4		Date:	29-Jun-11
	11-019		Matrix:	water
Report of Analysis				
Sample	Oil & Grease			
	mg/L			
11-32656	2.5			
11-32657	<2.0			
Blank	<2.0			
Control	14.7			
Control Target	15.8			
Results relate only to the items tested				

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ASG Login No: 21771
 Site: Pin-4
 Client No: 11-019
 Samples Received: 29-Jun-11
 Date of analysis: 29-Jun-11
 Method No: ASG 015
 Date Reported: 30-Jun-11
 Sheet No: 1 of 1

RESULTS OF PCB IN WATER ANALYSIS

Sample Type **	Sample I.D.	Unit	Aroclor 1254	Aroclor 1260
W	32656*	mg/L	< 0.003	< 0.003

*Average result of duplicate

Report Values in PPM

LABORATORY QA/QC

	Blank	mg/L	< 0.003	< 0.003
	Duplicate : 32656*	mg/L	< 0.003 ; < 0.003	< 0.003 ; < 0.003
	Control Sample	mg/L	< 0.003	0.016
	Control Sample Target	mg/L	< 0.003	0.015

** S = Soil , C = Concrete , PC = Paint Chip , SW = Swab , P = Plant , W = Water, L = Leachate

All results corrected for the recovery of the surrogate decachlorobiphenyl