AECOM
2540 Kensington Road NW
Calgary, AB, Canada T2N 3S3
www.aecom.com

403 270 9200 tel
403 270 0399 fax

RECEIVED
By clerk at 9:46 am, Apr 18, 2011

March 23, 2011

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 2010 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.

Summary of Work Completed in 2010

Non-Hazardous Waste Landfill: The Non-Hazardous Waste Landfill was constructed and landfilling of non-hazardous site debris was started. The landfill was capped for the winter.

Tier II Disposal Facility: Construction activities at the Tier II Disposal Facility included construction of the perimeter berms, bottom liner installation, placement of liner bedding material, some placement of Tier II soils, and monitoring instrument installation. The Tier II Disposal Facility was capped for the winter.

Landfarm: The landfarm was constructed and all hydrocarbon impacted soils were excavated and placed in the facility for treatment. Moisture conditioning, tilling and fertilizer application were completed.

Existing Landfill and Buried Debris Area Remediation: The South Landfill, Beach Landfill and Landing Debris Areas, which were scheduled for removal, were excavated and backfilled.

Demolition: Demolition of the module train, radome, POL tanks and associated facilities, communications billboards and communications dishes was completed. Hazardous building materials were removed and packaged for transport off-site.

Contaminated Soil Excavation: On-going. Excavation of three Tier II contaminated soil areas and disposal in the Tier II Soil Disposal Facility were completed.

Surface Debris Removal: On-going.

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.

Spill Incidences: There was one spill incidence in 2010 – see attached spill report.

Remaining work to be completed during the 2011 construction season will include:

- Contaminated soil excavation and disposal.
- Excavation of remaining landfills scheduled for removal.
- Regrading.
- Demolition of the garage and warehouse.
- Final closure and capping of the Non-Hazardous Waste Landfill and Tier II Soil Disposal Facility, and
- Closure of the sewage lagoon.

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

Sincerely,
AECOM Canada Ltd.

Eva Schulz, P.Ag.
Eva.Schulz@aecom.com

EMS.
cc: Tamara Van Dyck, DCC

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

NWB Annual Report **Year being reported:** 2010

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 accodance 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)
18 per day	Actual Quantity Used Domestic (cu.m)
	Quantity Allowable Drilling (cu.m)
	Total Quantity Used Drilling (cu.m)

Waste Management and/or Disposal

- [x] Solid Waste Disposal
- [x] Sewage — 1260 cu.m of sewage and greywater discharged to sewage lagoon
- [ ] Drill Waste
- [x] Greywater
- [x] Hazardous
- [x] 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.: 1 (as reported to the Spill Hot-line)
Date of Spill: June 23, 2010
Date of Notification to an Inspector: June 29, 2010

Additional Details: (impacts to water, mitigation measures, short/long term monitoring, etc)

See attached spill report.

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)

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)

An inspection was completed; however, no report was received.

Any additional comments or information for the Board to consider

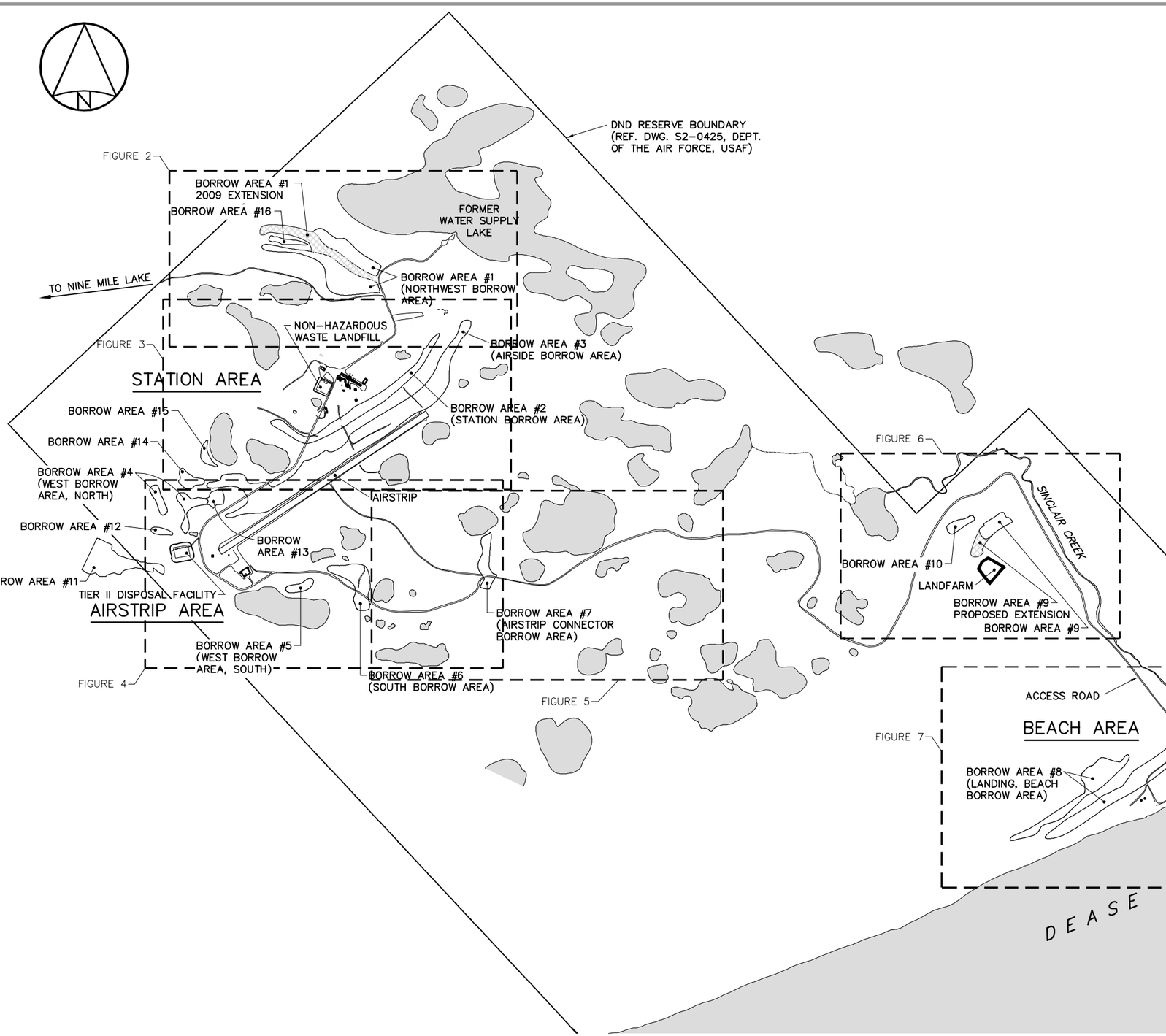
Date Submitted:	March 31, 2011	
Submitted/Prepared by:	Eva Schulz	
Contact Information:	**Tel:**	403-270-9200
	Fax:	403-270-0399
	email:	eva.schulz@aecom.com

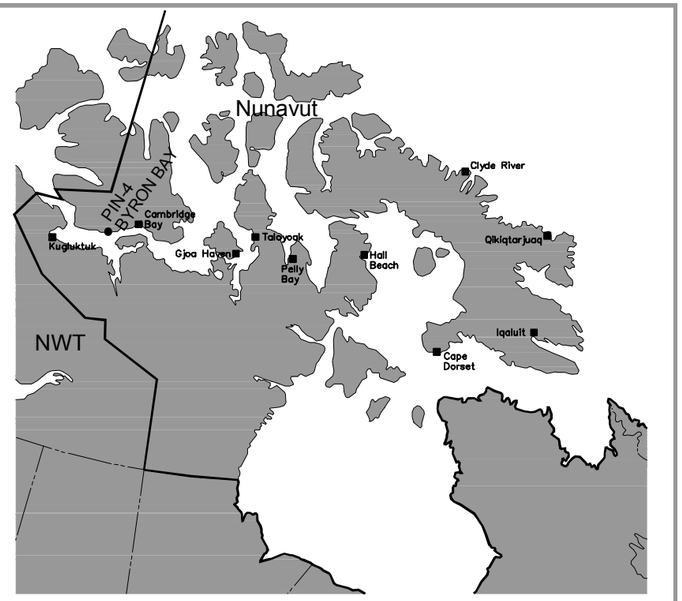
GPS Coordinates for water sources utilized

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	





LOCATION OF BYRON BAY WITHIN NUNAVUT TERRITORY

N.T.S.

FILE NAME: P4-Figure-1.DWG CLC - 2010/11/12

National Defence / Défense nationale

DEW LINE CLEAN UP
PIN-4 BYRON BAY

GEOTECHNICAL QA SUMMARY REPORT

Site Plan

Figure 1 of 7

AECOM

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

BORROW AREA #1
2009 EXTENSION

BORROW AREA #16

TP09-33

TP09-35

TP09-30

TP09-34

TP09-36

FORMER
WATER SUPPLY
LAKE

TP09-28

TP09-37

TP09-39

TP09-29

BORROW AREA #1
(NORTHWEST BORROW AREA)

NORTHWEST
LANDFILL (LOBE D)

TP09-38

TP09-27

NORTH LANDFILL
(LOBE K)

NORTH LANDFILL
(LOBE B)

BM-1

NORTH LANDFILL
(LOBE D)

NORTHWEST
LANDFILL (LOBE C)

LOBE H

LOBE F

NORTH LANDFILL
(LOBE A)

LOBE I

LOBE L

NORTHWEST
LANDFILL (LOBE B)

NORTH LANDFILL
(LOBE C)

LOBE A

LOBE J

NW GARAGE AREA

OLD CONSTRUCTION
CAMP - WEST
DEBRIS AREA

BM-2

LOBE B

LOBE C

BORROW AREA #3
(AIRSIDE BORROW AREA)

LEGEND:

TP09-28 — GEOTECHNICAL QA TEST PIT LOCATION (APPROX.)

BM-8 — BENCHMARK LOCATION

REGRADE AREA COMPLETED

REGRADE AREA NOT COMMENCED AS OF 2010

FILE NAME: P4-Figure-2.DWG CLC - 2010/11/12

AECOM

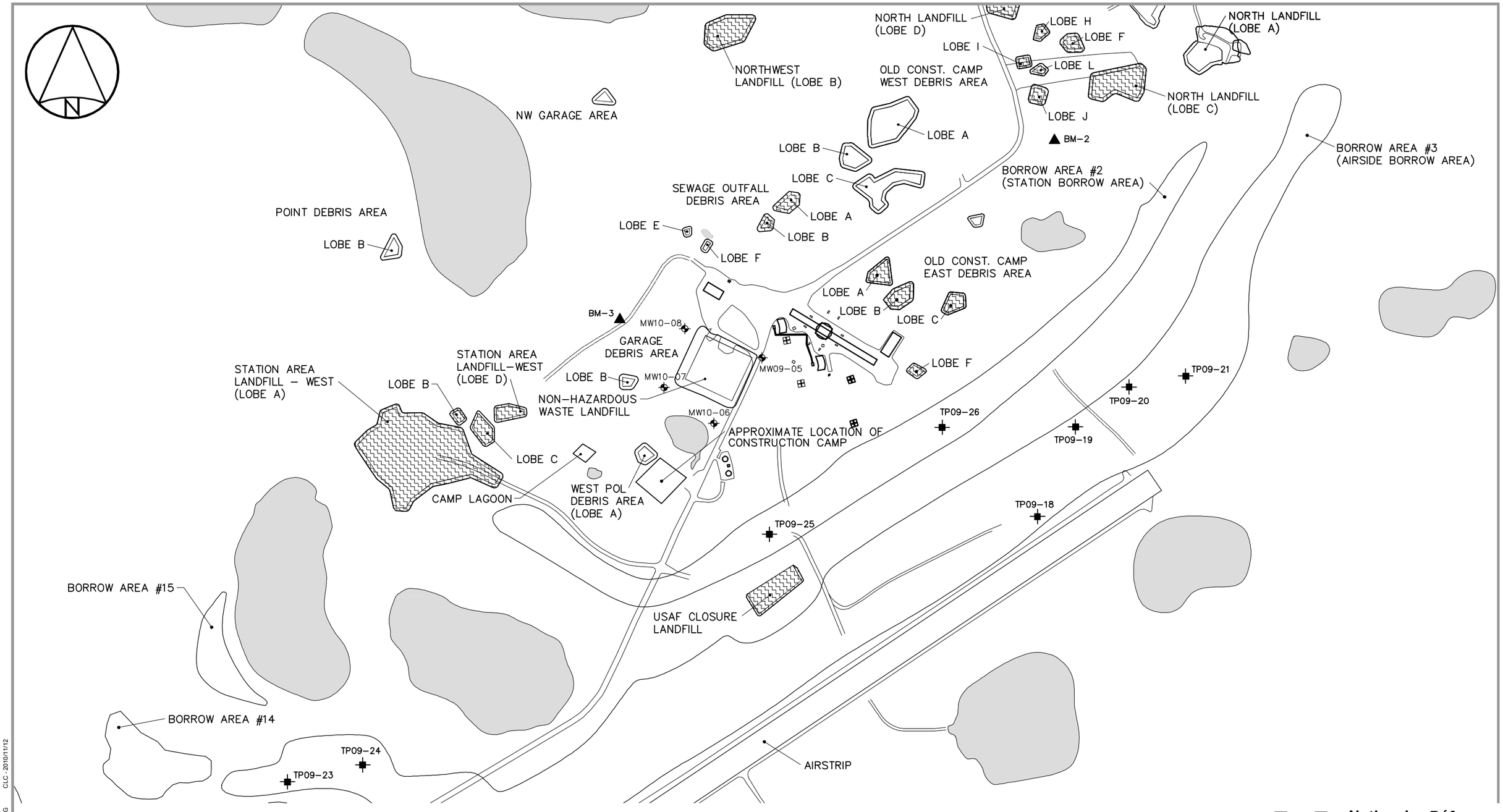
National Defence / Défense nationale

DEW LINE CLEAN UP
PIN-4 BYRON BAY

GEOTECHNICAL QA SUMMARY REPORT

Northwest Borrow Area

Figure 2 of 7



LEGEND:

- TP09-28 — GEOTECHNICAL QA TEST PIT LOCATION (APPROX.)
- MW09-11 — MONITORING WELL LOCATION
- BM-8 — BENCHMARK LOCATION
- REGRADE AREA COMPLETED
- REGRADE AREA NOT COMMENCED AS OF 2010

FILE NAME: P4-Figure-3.DWG CLC - 2010/11/12

AECOM

National Defence / Défense nationale

DEW LINE CLEAN UP
PIN-4 BYRON BAY

GEOTECHNICAL QA SUMMARY REPORT

Station Area
Figure 3 of 7

TP09-23
TP09-24
BORROW AREA #13
TP09-17
TP09-14
TP09-15
TP09-16
BORROW AREA #4 (WEST BORROW AREA, NORTH)
TP09-13
BM-4
TP09-12
AIRSTRIP
BORROW AREA #12
MW10-01B
BM-5
AIRSTRIP LANDFILL (LOBE B)
MW10-04
TIER II DISPOSAL FACILITY
MW10-02
MW10-03
HANGAR
BORROW AREA #11
BORROW AREA #5 (WEST BORROW AREA, SOUTH)
TP09-10
TP09-11
TP09-09
TP09-08
TP09-07
BM-6
BORROW AREA #6 (SOUTH BORROW AREA)
TP09-06
DND RESERVE BOUNDARY (REF. DWG. S2-0425, DEPT. OF THE AIR FORCE, USAF)
TP09-01
TP09-02
BORROW AREA #7 (AIRSTRIP CONNECTOR BORROW AREA)
TP09-03
TP09-04
TP09-05
BM-7
SOUTH LANDFILL (EAST)
SOUTH LANDFILL (WEST)
ACCESS ROAD

LEGEND:

- TP09-28 — GEOTECHNICAL QA TEST PIT LOCATION (APPROX.)
- MW09-11 — MONITORING WELL LOCATION
- BM-8 — BENCHMARK LOCATION
- REGRADE AREA COMPLETED
- REGRADE AREA NOT COMMENCED AS OF 2010

FILE NAME: P4-Figure-4.DWG CLC - 2010/11/12

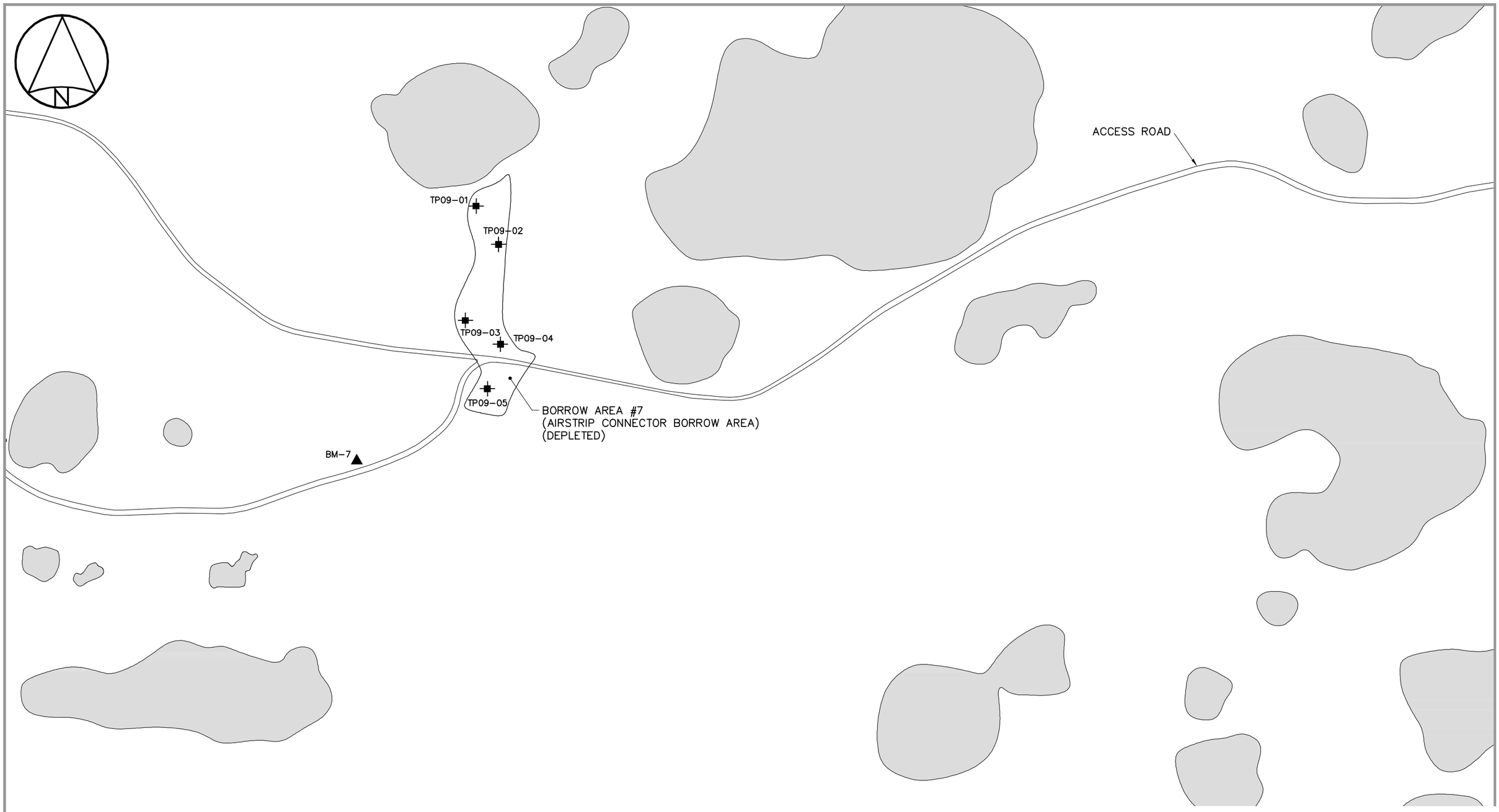
AECOM

National Defence / Défense nationale

DEW LINE CLEAN UP
PIN-4 BYRON BAY

GEOTECHNICAL QA SUMMARY REPORT

Airstrip Area
Figure 4 of 7



LEGEND:

TP09-28 — GEOTECHNICAL QA TEST PIT LOCATION (APPROX.)

BM-8 — BENCHMARK LOCATION

REGRADE AREA COMPLETED

REGRADE AREA NOT COMMENCED AS OF 2010

FILE NAME: P4-Figure-5.DWG CLC - 2010/11/12

AECOM

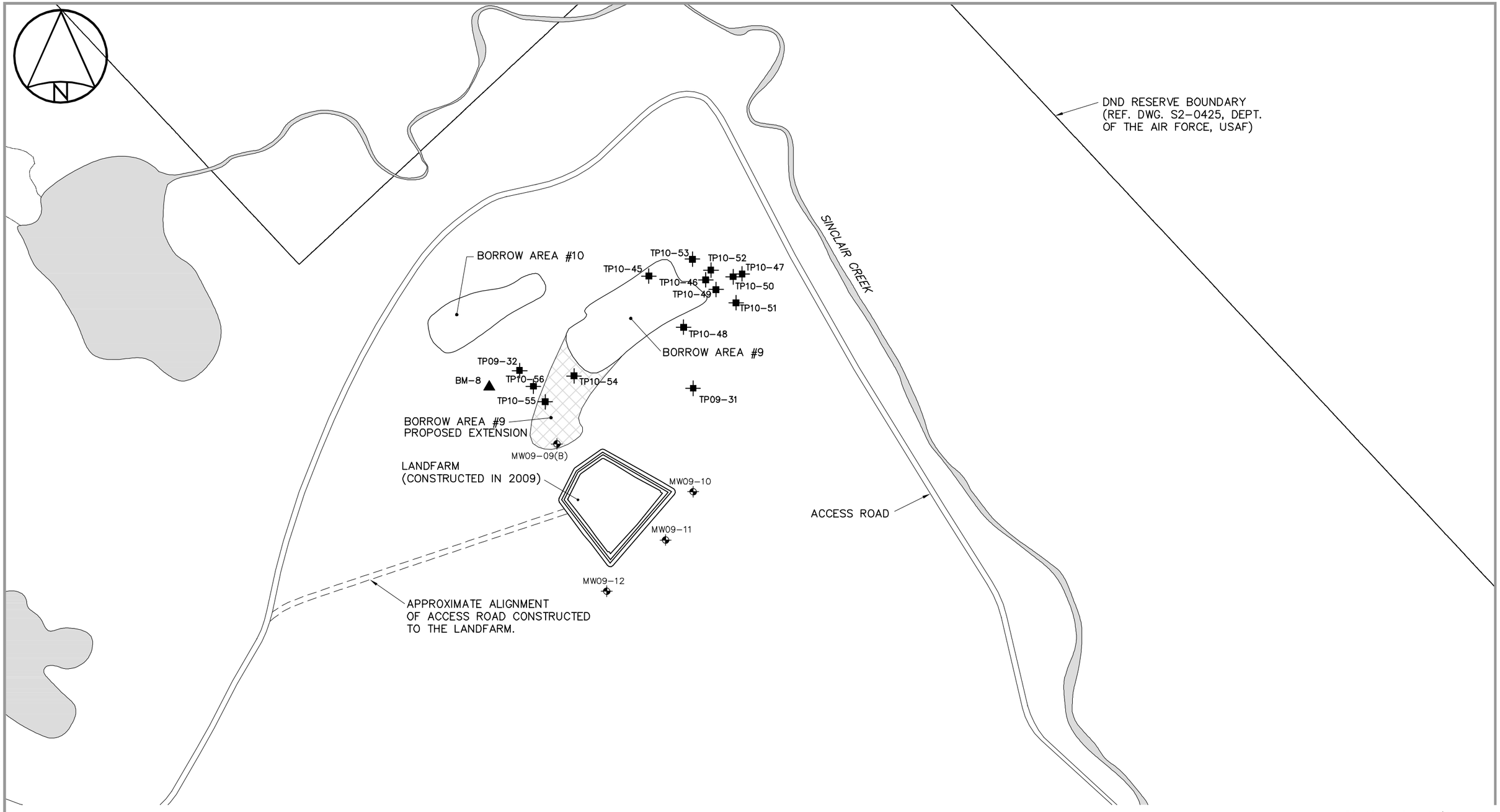
National Defence / Défense nationale

DEW LINE CLEAN UP
PIN-4 BYRON BAY

GEOTECHNICAL QA SUMMARY REPORT

Airstrip Connector Borrow Area

Figure 5 of 7



LEGEND:

- TP09-28 — GEOTECHNICAL QA TEST PIT LOCATION (APPROX.)
- MW09-11 — MONITORING WELL LOCATION
- BM-8 — BENCHMARK LOCATION
- REGRADE AREA COMPLETED
- REGRADE AREA NOT COMMENCED AS OF 2010

FILE NAME: P4-Figure-6.DWG CLC - 2010/11/12

AECOM

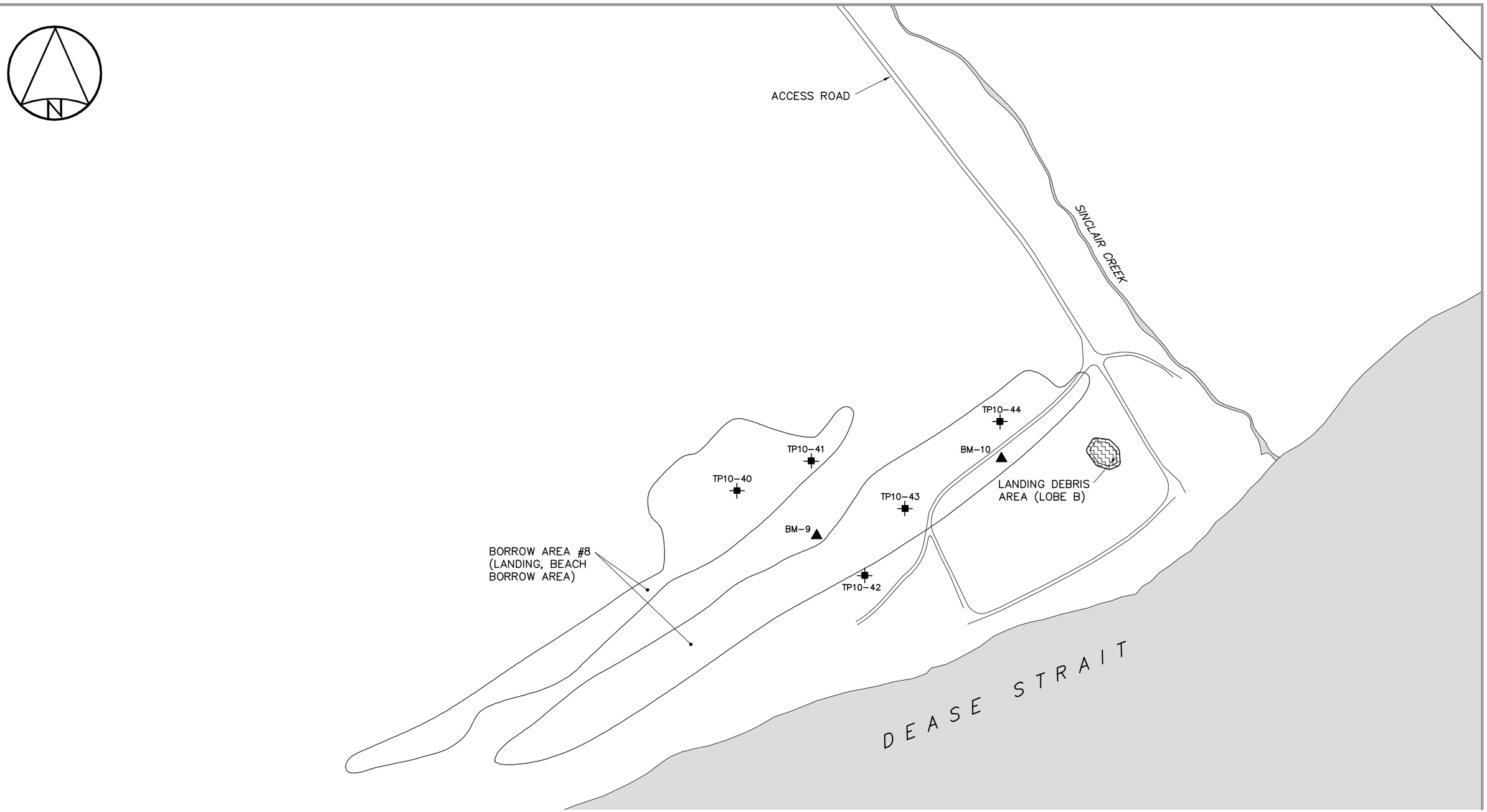
National Defence / Défense nationale

DEW LINE CLEAN UP
PIN-4 BYRON BAY

GEOTECHNICAL QA SUMMARY REPORT

Landfarm Area

Figure 6 of 7



LEGEND:

TP09-28 — GEOTECHNICAL QA TEST PIT LOCATION (APPROX.)

MW09-11 — MONITORING WELL LOCATION

BM-8 — BENCHMARK LOCATION

REGRADE AREA COMPLETED

REGRADE AREA NOT COMMENCED IN AS OF 2010

FILE NAME: P4-Figure-7.DWG CLC - 2010/11/12

AECOM

National Defence / Défense nationale

DEW LINE CLEAN UP
PIN-4 BYRON BAY

GEOTECHNICAL QA SUMMARY REPORT

Beach Area

Figure 7 of 7

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR **06-29-2010**	REPORT TIME **9h00**	[X] ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER ____-_____
B	OCCURRENCE DATE: MONTH – DAY – YEAR **06-23-2010**	OCCURRENCE TIME **noticed 23Jun2010**		

C	LAND USE PERMIT NUMBER (IF APPLICABLE) **N2007X0007**	WATER LICENCE NUMBER (IF APPLICABLE) **1BR-BYR0712**
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION **PIN-4, Byron Bay**	REGION ☐ NWT [X] NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES **68** MINUTES **45** SECONDS	LONGITUDE DEGREES **109** MINUTES **04** SECONDS
F	RESPONSIBLE PARTY OR VESSEL NAME **Defence Construction Canada**	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION **350 Albert, Suite 1720, Ottawa, Ontario, K1A 0K3**
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION

H	PRODUCT SPILLED **contact water; non-haz landfill**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES **700-900 gallons**	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
I	SPILL SOURCE **snow melt**	SPILL CAUSE **snow melt**	AREA OF CONTAMINATION IN SQUARE METRES **To be determined**
J	FACTORS AFFECTING SPILL OR RECOVERY **climate**	DESCRIBE ANY ASSISTANCE REQUIRED **none**	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT **N/A**

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

On June 23rd contractor at site PIN-4 (Byron Bay) Nunavut, pumped water from the west corner of the non-hazardous waste landfill onto the INAC designated area. The contact water from the NHWL was from snowmelt. The approximate volume of contact water discharged is 700-900 gallons. Sample results of contact water will be provided once they are received from the laboratory.

L	REPORTED TO SPILL LINE BY **Robert Bellizzi**	POSITION **DLCU Env. Officer**	EMPLOYER **DCC**	LOCATION CALLING FROM **Ottawa**	TELEPHONE **613-998-7288**
M	ANY ALTERNATE CONTACT **Kerry Mould**	POSITION **Assoc. Proj. Mng**	EMPLOYER **DCC**	ALTERNATE CONTACT LOCATION **Ottawa**	ALTERNATE TELEPHONE **613-990-9641**

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

Candice Casucci
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

March 15, 2011

RE: 2010 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 FOX-2 *(Longstaff Bluff).*

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.

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 2010 field season. The level of liquid in the lagoons remained low, and discharge was not required.

Photo 1 (P9270732): PIN-4 sewage lagoon cell 1 facing northeast. Sept 27th 2010.

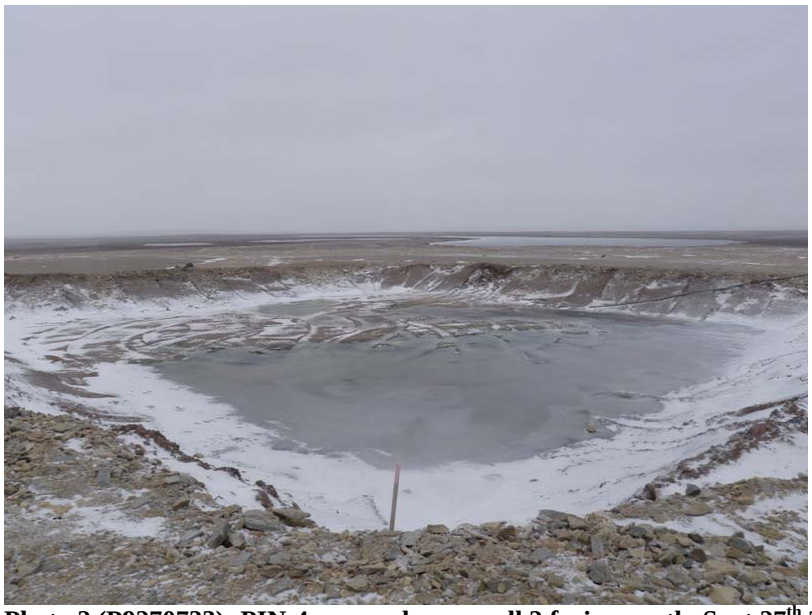


Photo 2 (P9270733): PIN-4 sewage lagoon cell 2 facing north. Sept 27th 2010.

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

Candice Casucci
Environmental Sciences Group

cc: Eva Schulz (UMA)
Daniela Loock, Kat White, Darren White, Cameron King, Ryan Adams (ESG)

Candice Casucci
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, March 18, 2011

RE: Analytical Results for Wastewater Samples Collected at PIN-4 in June 2010

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:

Parameter	Maximum Allowable Concentration	Units
pH	6-9	pH units
Total arsenic (As)	0.100	mg/L
Dissolved cadmium (Cd)	0.010	mg/L
Dissolved 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)	0.0006	mg/L
Dissolved nickel (Ni)	0.200	mg/L
Total zinc (Zn)	0.500	mg/L
Oil & grease	5	mg/L
PCBs	1.0	mg/L
Phenols	0.020	mg/L

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 ESG[1] 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 maximum concentration of phenols in DLCU wastewater to date (2.44 mg/L) is below the

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

LC_{50} for freshwater fish and crustaceans and below the oral and dermal LD_{50}s 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 2010. A summary of the details of these results follows. Laboratory results are provided in Appendix A

LOCATION: WEST CORNER OF NON HAZARDOUS WASTE LANDFILL
GPS COORDINATES: 12W 0577200 7628902
SAMPLE: 10-10925
DATE: June 24, 2010

Parameter	Maximum Allowable Concentration	Units	Sample # 10-10925
pH	6-9	pH units	7.04
Total arsenic (As)	0.100	mg/L	0.004
Dissolved cadmium (Cd)	0.010	mg/L	0.003
Dissolved chromium (Cr)	0.100	mg/L	<0.005
Dissolved cobalt (Co)	0.050	mg/L	<0.003
Dissolved copper (Cu)	0.200	mg/L	0.016
Dissolved lead (Pb)	0.050	mg/L	<0.010
Total mercury (Hg)	0.0006	mg/L	<0.0004
Dissolved nickel (Ni)	0.200	mg/L	<0.005
Total zinc (Zn)	0.500	mg/L	**1.03**
Oil & grease	5	mg/L	<2.0
PCBs	1.0	mg/L	<0.003
Phenols	0.020	mg/L	N/A

Photo 1 (P6240003) Sample 10-10925: Pin-4 Sample collection at West end of Non-Hazardous Waste Landfill

Water was discharged from the facility prior to a sample being collected. Sample 10-10925 was above criteria for Zn and the onsite team collected soil samples from the area where water was discharged to. All results were below criteria.

LOCATION: BEACH POL AREA BP -11299
GPS COORDINATES: 12W 0581920 762507
SAMPLE: 10-10992
DATE: June 28, 2010

Parameter	Maximum Allowable Concentration	Units	Sample # 10-10992
pH	6-9	pH units	7.53
Total arsenic (As)	0.100	mg/L	<0.003
Dissolved cadmium (Cd)	0.010	mg/L	<0.001
Dissolved chromium (Cr)	0.100	mg/L	<0.005
Dissolved cobalt (Co)	0.050	mg/L	<0.003
Dissolved copper (Cu)	0.200	mg/L	0.021
Dissolved lead (Pb)	0.050	mg/L	<0.010
Total mercury (Hg)	0.0006	mg/L	<0.0004
Dissolved nickel (Ni)	0.200	mg/L	<0.005
Total zinc (Zn)	0.500	mg/L	<0.010
Oil & grease	5	mg/L	<2.0
PCBs	1.0	mg/L	<0.003
Phenols	0.020	mg/L	N/A

Photo 2 (P6280009) Sample 10-10992 Pin-4: Water collected within excavation of BP-11299 facing south towards ocean.

Waste water from the Beach POL Area was discharged to the ground on July 20, 2010. The water was discharged to an area greater than 30m from natural drainage courses (581880 7626522).

LOCATION: BEACH POL AREA BP -11421
GPS COORDINATES: 12W 0581951 7626473
SAMPLE: 10-10993
DATE: June 28, 2010

Parameter	Maximum Allowable Concentration	Units	Sample # 10-10993
pH	6-9	pH units	7.62
Total arsenic (As)	0.100	mg/L	0.005
Dissolved cadmium (Cd)	0.010	mg/L	<0.001
Dissolved chromium (Cr)	0.100	mg/L	0.027
Dissolved cobalt (Co)	0.050	mg/L	<0.003
Dissolved copper (Cu)	0.200	mg/L	0.012
Dissolved lead (Pb)	0.050	mg/L	<0.010
Total mercury (Hg)	0.0006	mg/L	<0.0004
Dissolved nickel (Ni)	0.200	mg/L	<0.005
Total zinc (Zn)	0.500	mg/L	0.039
Oil & grease	5	mg/L	(broken bottle)
PCBs	1.0	mg/L	<0.003
Phenols	0.020	mg/L	N/A

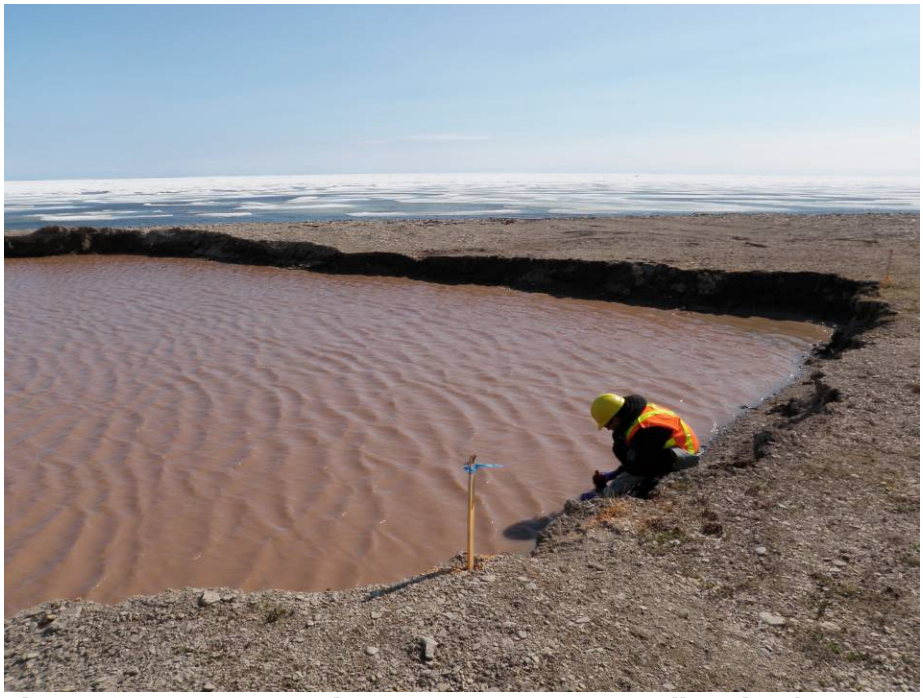


Photo 3 (P6280011) Sample 10-10993 Pin-4: Water collected within excavation of BP-11421 facing south west towards ocean.

Wastewater from the area was retested in July as the analysis for oil and grease could not be completed (broken sample vessel). .

LOCATION: BEACH POL AREA BP - 22286
GPS COORDINATES: 12W 0581984 7626464
SAMPLE: 10-11005
DATE: JUNE 28, 2010

Parameter	Maximum Allowable Concentration	Units	Sample # 10-11005
pH	6-9	pH units	7.74
Total arsenic (As)	0.100	mg/L	<0.003
Dissolved cadmium (Cd)	0.010	mg/L	<0.001
Dissolved chromium (Cr)	0.100	mg/L	<0.005
Dissolved cobalt (Co)	0.050	mg/L	<0.003
Dissolved copper (Cu)	0.200	mg/L	0.011
Dissolved lead (Pb)	0.050	mg/L	<0.010
Total mercury (Hg)	0.0006	mg/L	<0.0004
Dissolved nickel (Ni)	0.200	mg/L	<0.005
Total zinc (Zn)	0.500	mg/L	<0.010
Oil & grease	5	mg/L	2.2
PCBs	1.0	mg/L	<0.003
Phenols	0.020	mg/L	N/A

Photo 4 (P6280005) Sample 10-11005 Pin-4: Water collected within the excavation BP-22286 facing south towards water.

Wastewater collected from the area was below criteria for all parameters. Beach POL Area BP-22286 (10-11005)) was backfilled in late July without discharing any water from the excavation.

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

Sincerely,

Candice Casucci
Environmental Sciences Group

cc: Eva Schulz (UMA)
Daniela Loock, Kat White, Shari Reed, Jennifer Joubert, Andrea Ellis, William Pain (ESG)

APPENDIX A
LABORATORY RESULTS

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20687
Site:	Pin-4
Client No:	10-057
Samples Received:	30-Jun-10
Date of analysis:	1-Jul-10
Method No:	ASG 037
Date Reported:	1-Jul-10
Page:	1 of 1

RESULTS OF pH ANALYSIS

Sample I.D.	pH
10925*	7.04

* Averaged result of duplicates

LABORATORY QA/QC

Sample I.D.	pH
10925* ; Duplicate	7.04 ; 7.04
Control	7.00
Control Target	7.00

ASU #	12831	**Report ID:**	PIN-4 W2	
Client:	ESG	**Date Submitted:**	30-Jun-10	
		Date tested:	2-Jul-10	
Site:	PIN-4	**Date:**	2-Jul-10	
	10-057	**Matrix:**	Water	

Report of Analysis

Total Metals Results in mg/L

SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
10-10925	-	-	-	-	-	1.03	<0.005	0.004
Blank	-	-	-	-	-	<0.010	<0.005	<0.003
Control	-	-	-	-	-	3.30	0.90	0.83
Control Target	-	-	-	-	-	3.00	0.80	0.80

Dissolved Metals Results in mg/L

SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
10-10925	0.016	<0.005	<0.003	0.003	<0.010	-	-	-
Blank	<0.005	<0.005	<0.003	<0.001	<0.010	-	-	-
Control	1.75	1.75	1.75	0.87	8.81	-	-	-
Control Target	1.60	1.60	1.60	0.80	8.00	-	-	-

ASU #	12831		**Report ID:**	PIN-4 W1
Client:	ESG		**Date Submitted:**	30-Jun-10
			Date tested:	30-Jun-10
Site:	PIN-4		**Date:**	30-Jun-10
	10-057		**Matrix:**	water
Report of Analysis				
Sample	Oil & Grease			
	mg/L			
10-10925	<2.0			
Blank	<2.0			
Control	14.0			
Control Target	15.7			

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20687
Site:	Pin-4
Client No:	10-057
Samples Received:	30-Jun-10
Date of analysis:	1-Jul-10
Method No:	ASG 014
Date Reported:	1-Jul-10
Sheet:	1 of 1

RESULTS OF MERCURY ANALYSIS

Sample ID	Mercury^ mg/L
10925*	< 0.0004

*Results of duplicate analysis.
^ Acid digestion performed.
# Reported at 0.0004 mg/L detection limit.

LABORATORY QA/QC

Sample ID	Mercury^ mg/L
Duplicate ; 10925*	< 0.0004 ; < 0.0004
Blank	< 0.0004
Control Target	0.0040
Control Sample	0.0040

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20687
Site:	Pin-4
Client No:	10-057
Samples Received:	30-Jun-10
Date of analysis:	30-Jun-10
Method No:	ASG 015
Date Reported:	1-Jul-10
Sheet No:	1 of 1

RESULTS OF PCB IN WATER ANALYSIS

Sample Type **	Sample I.D.	Unit	Aroclor 1254	Aroclor 1260
W	10925**	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 ; 10925*	mg/L	< 0.003 ; < 0.003	< 0.003 ; < 0.003
	Control Sample	mg/L	< 0.003	0.019
	Control Sample Target	mg/L	< 0.003	0.015

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

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20709
Site:	Pin-4
Client No:	10-073
Samples Received:	5-Jul-10
Date of analysis:	6-Jul-10
Method No:	ASG 021
Date Reported:	6-Jul-10
Sheet:	1 of 1

RESULTS OF MERCURY ANALYSIS

Sample ID	Mercury^ mg/L
10-10992*	< 0.0004
10-10993	< 0.0004
10-11005	< 0.0004

*Results of duplicate analysis.
^ Acid digestion performed.
# Reported at 0.0004 mg/L detection limit.

LABORATORY QA/QC

Sample ID	Mercury^ mg/L
Duplicate ; 10-10992*	< 0.0004 ; < 0.0004
Blank	< 0.0004
Control Target	0.0040
Control Sample	0.0040

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20709
Site:	Pin-4
Client No:	10-073
Samples Received:	5-Jul-10
Date of analysis:	6-Jul-10
Method No:	ASG 037
Date Reported:	6-Jul-10
Page:	1 of 1

RESULTS OF pH ANALYSIS

Sample I.D.	pH
2010-10992	7.53
2010-10993	7.62
2010-11005*	7.74

* Averaged result of duplicates

LABORATORY QA/QC

Sample I.D.	pH
2010-11005* ; Duplicate	7.74 ; 7.74
Control	7.01
Control Target	7.00

ASU #	12849		**Report ID:**	PIN-4 W6
Client:	ESG		**Date Submitted:**	5-Jul-10
			Date tested:	5-Jul-10
Site:	PIN-4		**Date:**	6-Jul-10
	10-073		**Matrix:**	water

Report of Analysis

Sample	Oil & Grease mg/L
10-10992	<2.0
10-10993	broken bottle
10-11005	2.2
Blank	<2.0
Control	14.0
Control Target	15.7

ASU #	12849		**Report ID:**	PIN-4 W7				
Client:	ESG		**Date Submitted:**	5-Jul-10				
			Date tested:	5-Jul-10				
Site:	PIN-4		**Date:**	6-Jul-10				
	10-073		**Matrix:**	Water				
Report of Analysis								
Total Metals	Results in mg/L							
SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
10-10992	-	-	-	-	-	<0.010	<0.005	<0.003
10-10993	-	-	-	-	-	0.039	0.027	0.005
10-11005	-	-	-	-	-	<0.010	<0.005	<0.003
Blank	-	-	-	-	-	<0.010	<0.005	<0.003
Control	-	-	-	-	-	3.16	0.85	0.81
Control Target	-	-	-	-	-	3.00	0.80	0.80
10-11005	-	-	-	-	-	<0.010	<0.005	<0.003
10-11005	-	-	-	-	-	<0.010	<0.005	<0.003
Dissolved Metals	Results in mg/L							
SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
10-10992	0.021	<0.005	<0.003	<0.001	<0.010	-	-	-
10-10993	0.012	<0.005	<0.003	<0.001	<0.010	-	-	-
10-11005	0.011	<0.005	<0.003	<0.001	<0.010	-	-	-
Blank	<0.005	<0.005	<0.003	<0.001	<0.010	-	-	-
Control	1.60	1.64	1.63	0.79	8.10	-	-	-
Control Target	1.60	1.60	1.60	0.80	8.00	-	-	-
10-11005	0.011	<0.005	<0.003	<0.001	<0.010	-	-	-
10-11005	0.011	<0.005	<0.003	<0.001	<0.010	-	-	-

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20709
Site:	Pin-4
Client No:	10-073
Samples Received:	5-Jul-10
Date of analysis:	13-Jul-10
Method No:	ASG 006
Date Reported:	14-Jul-10
Sheet No:	1 of 1

RESULTS OF PCB IN WATER ANALYSIS

Sample Type **	Sample I.D.	Unit	Aroclor 1254	Aroclor 1260
W	10992	mg/L	< 0.003	< 0.003
W	10993	mg/L	< 0.003	< 0.003
W	11005	mg/L	< 0.003	< 0.003

* Average result of duplicate
Report Values in PPM

LABORATORY QA/QC

	Blank	mg/L	< 0.003	< 0.003
	Control Sample	mg/L	< 0.003	0.018
	Control Sample Target	mg/L	< 0.003	0.016

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

Candice Casucci
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, March 18, 2011

RE: Analytical Results for Wastewater Samples Collected at PIN-4 in July 2010

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
Dissolved 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)	0.0006	mg/L
Dissolved nickel (Ni)	0.200	mg/L
Total zinc (Zn)	0.500	mg/L
Oil & grease	5	mg/L
PCBs	1.0	mg/L
Phenols	0.020	mg/L

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 ESG[1] 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 maximum concentration of phenols in DLCU wastewater to date (2.44 mg/L) is below the

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

LC_{50} for freshwater fish and crustaceans and below the oral and dermal LD_{50}s 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

Two wastewater samples were collected at PIN-4 and analyzed in July 2010. A summary of the details of these results follows. Laboratory results are provided in Appendix A.

LOCATION: BEACH POL AREA BP -11421
GPS COORDINATES: 12W 0581951 7626473
SAMPLE: 10-19428
DATE: JULY 6, 2010

Parameter	Maximum Allowable Concentration	Units	Sample # 10-19428
pH	6-9	pH units	N/A
Total arsenic (As)	0.100	mg/L	N/A
Dissolved cadmium (Cd)	0.010	mg/L	N/A
Dissolved chromium (Cr)	0.100	mg/L	N/A
Dissolved cobalt (Co)	0.050	mg/L	N/A
Dissolved copper (Cu)	0.200	mg/L	N/A
Dissolved lead (Pb)	0.050	mg/L	N/A
Total mercury (Hg)	0.0006	mg/L	N/A
Dissolved nickel (Ni)	0.200	mg/L	N/A
Total zinc (Zn)	0.500	mg/L	N/A
Oil & grease	5	mg/L	**39.4**
PCBs	1.0	mg/L	N/A
Phenols	0.020	mg/L	N/A

Photo 1 (P6280011) Sample 10-19428 Pin-4: Water collected within excavation of BP-11421 facing south west towards ocean.

Water from Beach POL Area BP-11421 (10-19428) was above criteria for Oil and Grease and therefore was not discharged to land. The level of water in the excavation decreased throughout the season, and no discharge was required prior to backfill.

LOCATION: LANDING DERIS AREA - LOBE C
GPS COORDINATES: 12W 0582215 7626834
SAMPLE: 10-19887
DATE: JULY 20, 2010

Parameter	Maximum Allowable Concentration	Units	Sample # 10-19887
pH	6-9	pH units	7.92
Total arsenic (As)	0.100	mg/L	<0.003
Dissolved cadmium (Cd)	0.010	mg/L	0.001
Dissolved chromium (Cr)	0.100	mg/L	<0.005
Dissolved cobalt (Co)	0.050	mg/L	<0.003
Dissolved copper (Cu)	0.200	mg/L	0.023
Dissolved lead (Pb)	0.050	mg/L	<0.010
Total mercury (Hg)	0.0006	mg/L	N/A
Dissolved nickel (Ni)	0.200	mg/L	0.007
Total zinc (Zn)	0.500	mg/L	0.014
Oil & grease	5	mg/L	<2.0
PCBs	1.0	mg/L	<0.003
Phenols	0.020	mg/L	N/A

Photo 2 (P7190001) Sample 10-19887 Pin-4: Water collected with excavation of Landing Debris Area - Lobe C.

Water from Landing Debris Area – Lobe C (10-19887) was discharged to land on August 25th. The water was discharged to an INAC approved location (12W 582238 7626806).

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

Sincerely,

Candice Casucci
Environmental Sciences Group

cc: Eva Schulz (UMA)
Daniela Loock, Kat White, Shari Reed, Jennifer Joubert, Andrea Ellis, William Pain (ESG)

APPENDIX A
LABORATORY
RESULTS

ASU #	12885		**Report ID:**	PIN-4 W8
Client:	ESG		**Date Submitted:**	12-Jul-10
			Date tested:	12-Jul-10
Site:	PIN-4		**Date:**	13-Jul-10
	10-099		**Matrix:**	water
Report of Analysis				
Sample	Oil & Grease			
	mg/L			
10-19428	39.4			
Blank	<2.0			
Control	14.0			
Control Target	15.9			

ASU #	12938		**Report ID:**	PIN-4 W10
Client:	ESG		**Date Submitted:**	26-Jul-10
			Date tested:	26-Jul-10
Site:	PIN-4		**Date:**	27-Jul-10
	10-141		**Matrix:**	water
Report of Analysis				
Sample	Oil & Grease			
	mg/L			
10-19887	<2.0			
10-19888	<2.0			
Blank	<2.0			
Control	13.1			
Control Target	15.9			

ASU #	12938		**Report ID:**	PIN-4 W11				
Client:	ESG		**Date Submitted:**	26-Jul-10				
			Date tested:	27-Jul-10				
Site:	PIN-4		**Date:**	27-Jul-10				
	10-141		**Matrix:**	Water				

Report of Analysis

Total Metals	Results in mg/L							
SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
10-19887	0.023	0.007	<0.003	0.001	<0.010	0.044	<0.005	<0.003
Blank	<0.005	<0.005	<0.003	<0.001	<0.010	<0.010	<0.005	<0.003
Control	1.54	1.62	1.62	0.80	8.12	2.95	0.82	0.76
Control Target	1.60	1.60	1.60	0.80	8.00	3.00	0.80	0.80

Dissolved Metals	Results in mg/L							
SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
10-19887	0.012	<0.005	<0.003	<0.001	<0.010	0.014	<0.005	<0.003
Blank	<0.005	<0.005	<0.003	<0.001	<0.010	<0.010	<0.005	<0.003
Control	1.54	1.62	1.62	0.80	8.12	2.95	0.82	0.76
Control Target	1.60	1.60	1.60	0.80	8.00	3.00	0.80	0.80

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20811
Site:	Pin-4
Client No:	10-141
Samples Received:	26-Jul-10
Date of analysis:	27-Jul-10
Method No:	ASG 015
Date Reported:	28-Jul-10
Sheet No:	1 of 1

RESULTS OF PCB IN WATER ANALYSIS

Sample Type **	Sample I.D.	Unit	Aroclor 1254	Aroclor 1260
W	19887	mg/L	< 0.003	< 0.003

Report Values in PPM

LABORATORY QA/QC

	Blank	mg/L	< 0.003	< 0.003
	Control Sample	mg/L	< 0.003	0.015
	Control Sample Target	mg/L	< 0.003	0.015

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

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20811
Site:	Pin-4
Client No:	10-141
Samples Received:	26-Jul-10
Date of analysis:	28-Jul-10
Method No:	ASG 037
Date Reported:	28-Jul-10
Page:	1 of 1

RESULTS OF pH ANALYSIS

Sample I.D.	pH
19887*	7.92

* Averaged result of duplicates

LABORATORY QA/QC

Sample I.D.	pH
19887* ; Duplicate	7.92 ; 7.92
Control	7.01
Control Target	7.00

Candice Casucci
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, March 18, 2011

RE: Analytical Results for Wastewater Samples Collected at PIN-4 in August 2010

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
Dissolved 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)	0.0006	mg/L
Dissolved nickel (Ni)	0.200	mg/L
Total zinc (Zn)	0.500	mg/L
Oil & grease	5	mg/L
PCBs	1.0	mg/L
Phenols	0.020	mg/L

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 ESG[1] has determined that a) no federal, territorial or provincial criteria exist for the discharge of wastewater

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

containing phenols to land at a minimum distance of 30-m from natural drainage courses b) the maximum concentration of phenols in DLCU wastewater to date (2.44 mg/L) is below the LC_{50} for freshwater fish and crustaceans and below the oral and dermal LD_{50}s 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

Two wastewater sample was collected at PIN-4 and analyzed in August 2010. A summary of the details of these results follows. Laboratory results are provided in Appendix A.

LOCATION: LANDING DEBRIS AREA – LOBE C
GPS COORDINATES: 12W 0582331 7626689
SAMLE: 10-31709
DATE: AUGUST 23, 2010

Parameter	Maximum Allowable Concentration	Units	Sample # 10-31709
pH	6-9	pH units	8.23
Total arsenic (As)	0.100	mg/L	<0.003
Dissolved cadmium (Cd)	0.010	mg/L	<0.001
Dissolved chromium (Cr)	0.100	mg/L	<0.005
Dissolved cobalt (Co)	0.050	mg/L	<0.003
Dissolved copper (Cu)	0.200	mg/L	0.005
Dissolved lead (Pb)	0.050	mg/L	<0.010
Total mercury (Hg)	0.0006	mg/L	<0.0004
Dissolved nickel (Ni)	0.200	mg/L	<0.005
Total zinc (Zn)	0.500	mg/L	<0.010
Oil & grease	5	mg/L	<2.0
PCBs	1.0	mg/L	<0.003
Phenols	0.020	mg/L	N/A

Photo 1 (P8230468) Sample 10-31709 Pin-4: Collecting a wastewater sample from Landing Debris Area - Lobe E

LOCATION: LANDING DEBRIS AREA – LOBE E
GPS COORDINATES: 12W 0582348 7626701
SAMPLE: 10-31815
DATE: AUGUST 28, 2010

Parameter	Maximum Allowable Concentration	Units	Sample # 10-31815
pH	6-9	pH units	7.92
Total arsenic (As)	0.100	mg/L	<0.003
Dissolved cadmium (Cd)	0.010	mg/L	<0.001
Dissolved chromium (Cr)	0.100	mg/L	<0.005
Dissolved cobalt (Co)	0.050	mg/L	<0.003
Dissolved copper (Cu)	0.200	mg/L	<0.005
Dissolved lead (Pb)	0.050	mg/L	<0.010
Total mercury (Hg)	0.0006	mg/L	<0.0004
Dissolved nickel (Ni)	0.200	mg/L	<0.005
Total zinc (Zn)	0.500	mg/L	<0.010
Oil & grease	5	mg/L	<2.0
PCBs	1.0	mg/L	<0.003
Phenols	0.020	mg/L	N/A

Photo 2 (P280511) Sample 10-31815 Pin-4: Collecting a wastewater sample from Landing Debris Area - Lobe E (b)

Waste water from the Landing Debris Area – Lobe E (10-31709) was below criteria for all parameters. Water was not discharged prior to backfilling the excavation.

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

Sincerely,

Candice Casucci
Environmental Sciences Group

cc: Eva Schulz (UMA)
Daniela Loock, Kat White, Shari Reed, Jennifer Joubert, Andrea Ellis, William Pain (ESG)

APPENDIX A
LABORATORY RESULTS

ASU #	13144		**Report ID:**	PIN-4 W12
Client:	ESG		**Date Submitted:**	30-Aug-10
			Date tested:	31-Aug-10
Site:	PIN-4		**Date:**	31-Aug-10
	10-324		**Matrix:**	water
Report of Analysis				
Sample	Oil & Grease			
	mg/L			
10-31709	<2.0			
Blank	<2.0			
Control	13.3			
Control Target	15.9			

ASU #	13144		**Report ID:**	PIN-4 W13				
Client:	ESG		**Date Submitted:**	30-Aug-10				
			Date tested:	1-Sep-10				
Site:	PIN-4		**Date:**	2-Sep-10				
	10-324		**Matrix:**	Water				
Report of Analysis								
Total Metals	Results in mg/L							
SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
10-31709	-	-	-	-	-	<0.010	<0.005	<0.003
Blank	-	-	-	-	-	<0.010	<0.005	<0.003
Control	-	-	-	-	-	2.91	0.78	0.73
Control Target	-	-	-	-	-	3.00	0.80	0.80
Dissolved Metals	Results in mg/L							
SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
10-31709	0.005	<0.005	<0.003	<0.001	<0.010	-	-	-
Blank	<0.005	<0.005	<0.003	<0.001	<0.010	-	-	-
Control	1.44	1.55	1.54	0.77	7.66	-	-	-
Control Target	1.60	1.60	1.60	0.80	8.00	-	-	-

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20982
Site:	Pin-4
Client No:	10-324
Samples Received:	30-Aug-10
Date of analysis:	1-Sep-10
Method No:	ASG 037
Date Reported:	1-Sep-10
Page:	1 of 1

RESULTS OF pH ANALYSIS

Sample I.D.	pH
31709*	8.23

* Averaged result of duplicates

LABORATORY QA/QC

Sample I.D.	pH
31709* ; Duplicate	8.23 ; 8.23
Control	7.00
Control Target	7.00

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20982
Site:	Pin-4
Client No:	10-324
Samples Received:	30-Aug-10
Date of analysis:	1-Sep-10
Method No:	ASG 021
Date Reported:	2-Sep-10
Sheet:	1 of 1

RESULTS OF MERCURY IN WATER ANALYSIS

Sample ID	Mercury^ mg/L
31709	< 0.0004

^ Acid digestion performed.
# Reported at 0.0004 mg/L detection limit.

LABORATORY QA/QC

Sample ID	Mercury^ mg/L
Blank	< 0.0004
Control Target	0.0040
Control Sample	0.0041

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20982
Site:	Pin-4
Client No:	10-324
Samples Received:	30-Aug-10
Date of analysis:	2-Sep-10
Method No:	ASG 015
Date Reported:	3-Sep-10
Sheet No:	1 of 1

RESULTS OF PCB IN WATER ANALYSIS

Sample Type **	Sample I.D.	Unit	Aroclor 1254	Aroclor 1260
W	31709*	mg/L	< 0.003	< 0.003

Report Values in PPM
* Average Result of Duplicate

LABORATORY QA/QC

	Blank	mg/L	< 0.003	< 0.003
	Duplicate ; 31709*		< 0.003 ; < 0.003	< 0.003 ; < 0.003
	Control Sample	mg/L	< 0.003	0.011
	Control Sample Target	mg/L	< 0.003	0.015

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

ASU #	13161		**Report ID:**	PIN-4 W14				
Client:	ESG		**Date Submitted:**	1-Sep-10				
			Date tested:	3-Sep-10				
Site:	PIN-4		**Date:**	3-Sep-10				
	10-351		**Matrix:**	Water				

Report of Analysis

Total Metals Results in mg/L

SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
10-31815	-	-	-	-	-	<0.010	<0.005	<0.003
Blank	-	-	-	-	-	<0.010	<0.005	<0.003
Control	-	-	-	-	-	3.04	0.83	0.75
Control Target	-	-	-	-	-	3.00	0.80	0.80
10-31815	-	-	-	-	-	<0.010	<0.005	<0.003
10-31815	-	-	-	-	-	<0.010	<0.005	<0.003

Dissolved Metals Results in mg/L

SAMPLE	Cu	Ni	Co	Cd	Pb	Zn	Cr	As
10-31815	<0.005	<0.005	<0.003	<0.001	<0.010	-	-	-
Blank	<0.005	<0.005	<0.003	<0.001	<0.010	-	-	-
Control	1.46	1.61	1.59	0.81	8.00	-	-	-
Control Target	1.60	1.60	1.60	0.80	8.00	-	-	-
10-31815	<0.005	<0.005	<0.003	<0.001	<0.010	-	-	-
10-31815	<0.005	<0.005	<0.003	<0.001	<0.010	-	-	-

Results relate only to the items tested

ASU #	13161		**Report ID:**	PIN-4 W15
Client:	ESG		**Date Submitted:**	1-Sep-10
			Date tested:	1-Sep-10
Site:	PIN-4		**Date:**	1-Sep-10
	10-351		**Matrix:**	water
Report of Analysis				
Sample	Oil & Grease			
	mg/L			
10-31815	<2.0			
Blank	<2.0			
Control	15.0			
Control Target	15.7			

ESG
12 Verite Ave
Dept. of Chem. / Chem. Eng., RMC
P.O. Box 17000, Stn. Forces
Kingston, Ontario K7K 7B4
(613) 541-6000 ext 6567
Fax: (613) 541-6596

ASG Login No:	20994
Site:	Pin-4
Client No:	10-351
Samples Received:	1-Sep-10
Date of analysis:	3-Sep-10
Method No:	ASG 037
Date Reported:	3-Sep-10
Page:	1 of 1

RESULTS OF pH ANALYSIS

Sample I.D.	pH
10-31815*	7.92

* Averaged result of duplicates

LABORATORY QA/QC

Sample I.D.	pH
10-31815* ; Duplicate	7.92 ; 7.92
Control	7.00
Control Target	7.00

ESG						ASG Login No:	20994
12 Verite Ave						Site:	Pin-4
Dept. of Chem. / Chem. Eng., RMC						Client No:	10-351
P.O. Box 17000, Stn. Forces						Samples Received:	1-Sep-10
Kingston, Ontario K7K 7B4						Date of analysis:	3-Sep-10
(613) 541-6000 ext 6567						Method No:	ASG 014
Fax: (613) 541-6596						Date Reported:	3-Sep-10
						Sheet:	1 of 1

RESULTS OF MERCURY IN WATER ANALYSIS

Sample ID	Mercury^ mg/L
31815*	< 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 ; 31815*	0.0004 ; < 0.0004
Blank	< 0.0004
Control Target	0.0040
Control Sample	0.0041

ESG						ASG Login No:	20994
12 Verite Ave						Site:	Pin-4
Dept. of Chem. / Chem. Eng., RMC						Client No:	10-351
P.O. Box 17000, Stn. Forces						Samples Received:	1-Sep-10
Kingston, Ontario K7K 7B4						Date of analysis:	2-Sep-10
(613) 541-6000 ext 6567						Method No:	ASG 015
Fax: (613) 541-6596						Date Reported:	3-Sep-10
						Sheet No:	1 of 1

RESULTS OF PCB IN WATER ANALYSIS

Sample Type **	Sample I.D.	Unit	Aroclor 1254	Aroclor 1260
W	31815	mg/L	< 0.003	< 0.003

Report Values in PPM
* Average Result of Duplicate

LABORATORY QA/QC

	Blank	mg/L	< 0.003	< 0.003
	Control Sample	mg/L	< 0.003	0.011
	Control Sample Target	mg/L	< 0.003	0.015

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

Candice Casucci
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, March 18, 2011

RE: Analytical Results for Wastewater Samples Collected at PIN-4 in September 2010

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
Dissolved 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)	0.0006	mg/L
Dissolved nickel (Ni)	0.200	mg/L
Total zinc (Zn)	0.500	mg/L
Oil & grease	5	mg/L
PCBs	1.0	mg/L
Phenols	0.020	mg/L

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 ESG[1] has determined that a) no federal, territorial or provincial criteria exist for the discharge of wastewater

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

containing phenols to land at a minimum distance of 30-m from natural drainage courses b) the maximum concentration of phenols in DLCU wastewater to date (2.44 mg/L) is below the LC_{50} for freshwater fish and crustaceans and below the oral and dermal LD_{50}s 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

No wastewater sample were collected at PIN-4 in September 2010.

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

Sincerely,

Candice Casucci
Environmental Sciences Group

cc: Eva Schulz (UMA)
Daniela Loock, Kat White, Shari Reed, Jennifer Joubert, Andrea Ellis, William Pain (ESG)

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
PIN-4, Byron Bay	Nunavut	60153669

Photo No.	Date:
1	9-jul-2010

Direction Photo Taken:
Aerial

Description:
Construction camp and sewage lagoon.

Photo No.	Date:
2	9-jul-2010

Direction Photo Taken:
Aerial

Description:
Tier II Disposal Facility being constructed.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
PIN-4, Byron Bay	**Nunavut**	**60153669**

Photo No.	Date:
3	9-jul-2010

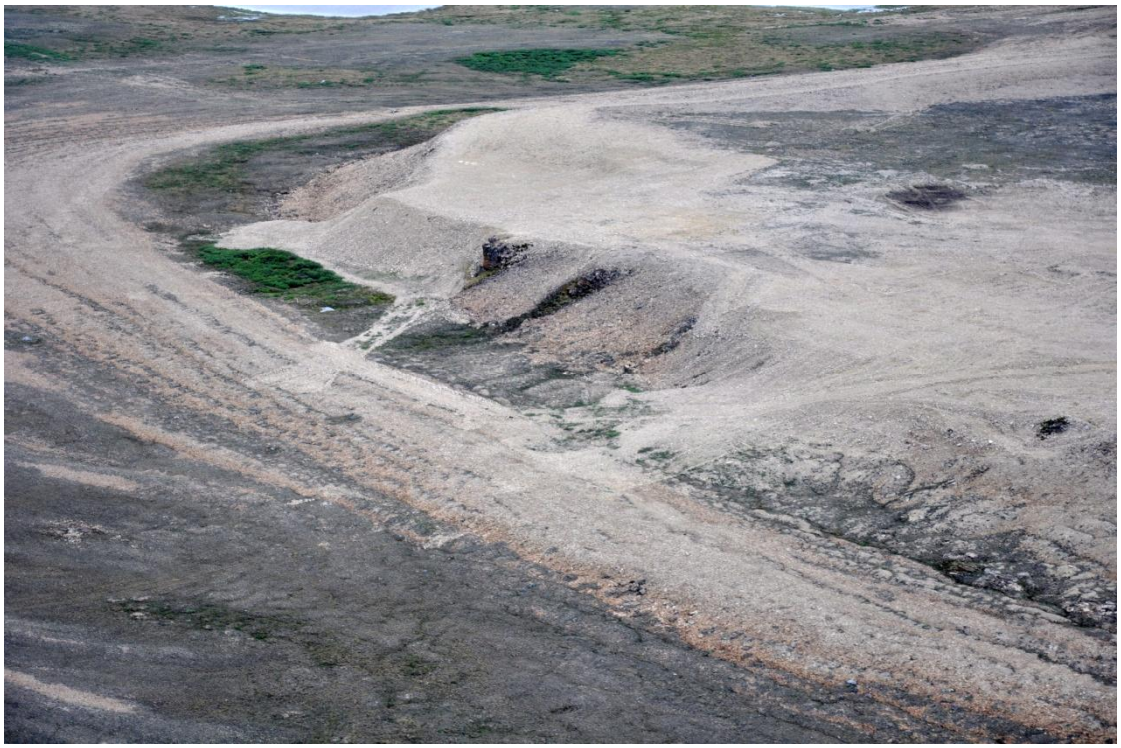
Direction Photo Taken:
Aerial

Description:
Non-Hazardous Waste Facility waste placement.

Photo No.	Date:
4	9-jul-2010

Direction Photo Taken:
Aerial

Description:
North Landfill - Regrade



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
PIN-4, Byron Bay	Nunavut	60153669

Photo No.	Date:
5	9-jul-2010

Direction Photo Taken:
Aerial

Description:
Landfarm

Photo No.	Date:
6	9-jul-2010

Direction Photo Taken:
Aerial

Description:
Beach Area

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
PIN-4, Byron Bay	Nunavut	60153669

Photo No.	Date:
7	9-jul-2010

Direction Photo Taken:
Aerial

Description:
Garage area contaminated soil excavation.

Photo No.	Date:
8	9-jul-2010

Direction Photo Taken:
Aerial

Description:
Module train undergoing hazardous material removal.