



Indian and Northern
Affairs Canada

Affaires indiennes
et du Nord Canada

RECEIVED

By clerk3 at 11:54 am, Apr 18, 2011

Nunavut Regional Office (NRO)
P.O. Box 2200
Iqaluit, NU, X0A 0H0

March 31, 2011

Mr. Thomas Kabloona
A/Chief Administrative Officer
Nunavut Water Board
P.O. Box 119, Gjoa Haven,
NU X0B 1J0

Dear Mr. Kabloona:

**RE: CAM-D Simpson Lake Remediation Project: 2010 Annual Report
for Water Licence No: 1BR-SIM0813**

Please find attached the 2010 Annual report for the Water licence No: 1BR-SIM0813 issued for the remediation of the CAM-D Simpson Lake site.

If you have any questions or comments, please contact the undersigned or the Project Manager, Dele Morakinyo at dele.morakinyo@inac-ainc.gc.ca, or by telephone at (819) 934-9224

Sincerely,

Natalie Plato, Director,
Contaminated Sites Program (NRO)
Tel: (867) 975-4730;
Fax: (867) 975-4736
Email: natalie.plato@inac-ainc.gc.ca

CC: Nunavut Impact Review Board (NIRB), Cambridge Bay, Nunavut

NWB Annual Report

Year being reported:

2010 ▼

License No: 1BR-SIM0813

Issued Date: November 25, 2008

Expiry Date: November 30, 2013

Project Name: CAM-D Simpson Lake Remediation Project

Licensee: Indian and Northern Affairs Canada Contaminated Sites program

Mailing Address:

PO Box 2200
Iqaluit NU
X0A 0H0

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

General Background Information on the Project (*optional):

CAM-D was constructed as an intermediate DEW Line site in 1957 by the Department of National Defence (DND). The station was taken out of service in 1963, and in 1965 responsibility for the site was assumed by INAC. CAM-D site consisted of a module train, warehouse, garage, Inuit house, POL tanks, Quonset huts, storage pads, a radar tower and a 750 m airstrip.

Prior minimal site assessment and clean up of PCB containing equipment was carried out at the site by the Environment Canada (EC) and Department of National Defence in 1985. Several other contaminants including petroleum hydrocarbon contaminated soils, metals contaminated soils, buried and scattered surface debris, several thousands of buried barrels, remains of demolished buildings were left at the site.

The 2005 site assessment was conducted to evaluate the remaining contaminants at the site and develop strategies for the clean up. Remediation Works commenced at the site in 2010 and it is expected to be completed in 2011 with final demobilization to south in 2012.

Between 1992 and 1995 the Department of National Defence (DND) constructed an unmanned Short Range Radar (SRR) facility approximately 1 km east of the former the CAM-D site. The scope of this work does not cover the DND's SRR boundaries.

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 Quantity:

Unnamed Creek adjacent to the camp. Drinking water brought in.

20/day

2.1/day max

N/A

N/A

Quantity Allowable Domestic (cu.m)

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
- ☐ Drill Waste
- ☒ Greywater
- ☒ Hazardous
- ☐ Other:

Additional Details:

In 2010, field works were carried out at the CAM-D site from June to October. The monthly and annual quantities of freshwater obtained are as follows;

June – 42 m3

July – 62 m3

August – 62 m3

September – 60 m3

October – 18 m3

Annual – 244 m3

The monthly and annual quantities of sewage generated are as follows;

June – 42 m3

July – 62 m3

August – 62 m3

September – 60 m3

October – 18 m3

Annual – 244 m3

All combustible camp waste was incinerated in the on-site incinerator. Non-combustible material, such as aerosol cans and hazardous waste, was collected for backhauling and/or treatment at the conclusion of the project. During the initial stages of construction, two temporary sewage waste lagoons were constructed with a liner. The lagoons were used to temporarily store sewage while the Bionest sewage treatment system was constructed. Once the Bionest system was operational, the lagoon waste was passed through the treatment system and, once confirmatory samples were collected, the treated effluent was discharged to ground at the approved discharge location. More details in the Resident Engineer's letter (Appendix B)

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

Spill No.: none (as reported to the Spill Hot-line)

Date of Spill: none

Date of Notification to an Inspector: N/A

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

There were some minor operational spills which are all below reportable levels. None was close to water body. Adequate actions were taken to clean them up. More details are provided in the Resident Engineer's letter (Appendix B)

Spill No.: None

Date of Spill: None

Date of Notification to an Inspector: N/A

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

See notes above

Revisions to the Spill Contingency Plan

SCP submitted and approved - no revision required or proposed

Additional Details:

None

Revisions to the Abandonment and Restoration Plan

AR plan submitted and approved - no revision required or proposed ▼

Additional Details:

None

Progressive Reclamation Work Undertaken

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

WORK COMPLETED

- ☐ Mobilization of equipment, supplies and facilities, by sealift, from south to CAM-3 and from CAM-3 to CAM-D;
- ☐ Camp set up
- ☐ Repairs of site roads
- ☐ Quarrying of all required borrow materials from the approved borrow area, hauling to the location of the landfill facility (~5 Km distance) and stockpiling.
- ☐ Barrel crushing and placement in the landfill
- ☐ Restoration of Borrow Area No. 2 and the removal of river crossing.
- ☐ Demolition of existing structures (including the garage, warehouse foundation, POL pumphouse and fallen antenna). Demolition activities involved: removal of PCB amended paint (PAP) and lead based paint and containerization for shipment off-site; asbestos abatement; and the removal of inert debris (i.e. concrete, fibreglass insulation, and scrap metal) and disposal in the NHWL.
- ☐ Excavation of the nine (9) of the twelve (12) contaminated soil locations. Contaminants included petroleum hydrocarbons, heavy metals and PCBs. In total, approximately 1,800 m3 of contaminated soil was excavated, of which 580 m3 was containerized for shipment off-site and 1,220 m3 was placed in the NHWL as intermediate fill.
- ☐ Excavation of buried debris involving unearthing the buried waste, separating the debris into waste streams and sampling of the intermixed soil to determine disposal requirements. Of the four scheduled buried debris excavations, two were completed during 2010. Surficial debris collection from the thirteen previously identified site debris areas commenced in 2010 and will be completed in the year ahead.
- ☐ Barrel processing. In 2010, approximately 1,370 barrels containing residual fluids (water, fuel or otherwise) were processed (i.e. consolidated where practical, sampled, analyzed and disposed of accordingly).
- ☐ Completion of community meetings at Taloyoak, Gjoa Haven and Kugaaruk.

- More details in Appendix A (The executive summary)

FUTURE WORK PROPOSED

- ☐ Completion of the barrel processing,
- ☐ Contaminated soil excavation,
- ☐ Buried debris excavation,
- ☐ Removal of remaining surface debris,
- ☐ Closure of the NHWL, intermediate and
- ☐ Final demobilization from site to CAM-3 and later to south.
- ☐ Long Ter Monitoring (Post-remediation)

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;

Details attached ▼

Additional Details:

See GPS Co-ordinates below

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

Details attached ▼

Additional Details:

See GPS Co-ordinates below

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)

See Appendix B (Table 1 and 2 for Sampling at Raw Water Intake - SIM-1) and Appendix C for final discharge point for sewage disposal facility (SIM-2) as per part K of the Water Licence. There were no SIM-3 and SIM-4 (See Appendix C for explanation).

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)

Any additional comments or information for the Board to consider

None

Date Submitted:

March 31, 2011

Submitted/Prepared by:

Natalie Plato

Contact Information:

Tel: (867) 975-4730

Fax: (867) 975-4736

email: natalie.plato@inac-ainc.gc.ca

GPS Coordinates for water sources utilized

Source Description	Latitude			Longitude		
	° Deg	, Min	Sec	° Deg	, Min	Sec
Raw Water Supply Intake	68	34	11.43	92	2	45.41

GPS Locations of areas of waste disposal

Location Description (type)	Latitude			Longitude		
	° Deg	, Min	Sec	° Deg	, Min	Sec
Non-Hazardous Waste Landfill	68	35	36.26	91	58	49.46
Waste water discharge point	68	34	14.48	92	2	46.04

APPENDIX A

**EXECUTIVE SUMMARY IN ENGLISH,
INUKTUTUIT (INUINAKTUN
TRANSLATORS NOT AVAILABLE AT
THE MOMENT)**

CAM-D, Simpson Lake NWB Licence No. 1BR-SIM0813

Executive Summary of all Plans, Reports, or Studies Conducted under Water Licence No. 1BR-SIM0813

This executive summary document has been prepared to fulfill the requirements of Part B: General Conditions (subsection letter: O) of the NWB Licence No. 1BR-SIM0813. NWB Licence No. 1BR-SIM0813 was issued on November 25, 2008 for the remediation of the abandoned CAM-D DEW Line Site at Simpson Lake, Nunavut. The main activities carried out under this licence during the period April 1, 2010 to March 31, 2011 are summarised as follows:

In May 2010, pre-construction season community consultations (public meetings) were held at the nearest communities (Kugaaruk, Taloyoak and Gjoa Haven) to CAM-D. The meeting was well attended by members of the communities. Members of the communities were introduced to the project and the schedule planned for executing it. Jobs/business opportunities and the hiring methods were also explained to the attendees of these community meetings.

The remediation program at the former CAM-D DEW Line Site at Simpson Lake, Nunavut began on June 10, 2010 with the installation of the camp/camp facilities and the repair of the 4.5 Km road connecting the main site area to the camp. This area was used for the hauling of borrow materials to the non-hazardous landfill area.

Approximately 17,650 m³ of borrow material was quarried from Borrow Area No. 2, of which 14,400 m³ was borrowed and used for access road improvements, on-site non-hazardous waste landfill (NHWL) berm construction and general fill (where required). Restoration of Borrow Area No. 2 was completed and the river crossing has been removed. The remaining volume of borrow material (estimated 4,000 m³ of Type 2 and 1,700 m³ of Type 3) sufficient to meet the requirements of the specifications (final cap on the NHWL and final site regrading) has been hauled and stockpiled at the upper site to facilitate site closure activities in the year ahead.

Demolition of existing structures including the garage, warehouse foundation, POL pumphouse and fallen antenna was completed. Demolition activities involved PCB amended paint (PAP) and lead based paint removal and containerization for shipment off-site, asbestos abatement and the removal and disposal of inert debris (i.e. concrete, fibreglass insulation, and scrap metal) in the NHWL.

During the 2010 Construction Season, nine (9) of the twelve (12) contaminated soil excavations were completed. Contaminants included petroleum hydrocarbons, heavy metals and PCBs. In total, approximately 1,800 m³ of contaminated soil was excavated, of which 580 m³ was containerized for shipment off-site and 1,220 m³ was placed in the NHWL as intermediate fill.

Buried debris excavation involved unearthing the buried waste, separating the debris into waste streams and sampling of the intermixed soil to determine disposal requirements. Of the four scheduled buried debris excavations, two were completed during 2010. Surficial debris

collection from the thirteen previously identified site debris areas commenced in 2010 and will be completed in the year ahead.

In 2010, approximately 1,370 barrels containing residual fluids (water, fuel or otherwise) were processed (i.e. consolidated where practical, sampled, analyzed and disposed of accordingly).

The construction activities continued until October 10, 2010 when the site was closed for the 2010 season. The equipment and other materials were winterized and stored for next year. The packaged hazardous waste materials and polychlorinated biphenyl (PCB) impacted soils were moved by Cat Train in March 2011 from CAM-D to the barge staging area at CAM-3 in readiness for final demobilization to the south in 2012. PCB storage areas at both locations are registered with Environment Canada.

[illegible]

ᐊᐅᓕᑎᓗᓂᓴᐅᓕ ᓇᐃᓐᓴᐅᓕᐅᓕᐅᓕ ᐅᓂᓴᓕ ᑕᓕᐃᓂᓴ ᑕᓴᓇᐅᑎᓂᓴ, ᐅᓂᓴᓴᓕᐊᓂᓴ,
ᓴᐅᓗᓴᓴᓴᐅᓕᐅᓕᐅᓕᐅᓂᓴ ᐊᑕᓴᓕ ᐊᑕᓴᓂᓴᓴᓕ ᐃᓴᓴᓴᐅᓕᐅᓂᓴᓴᓕ ᓕᐃᓴᓴᓴᑎᓴᓴᓕ 1BR-
SIM0813

[illegible][illegible][illegible][illegible]

[illegible][illegible][illegible]

[illegible]

APPENDIX B

ADDITIONAL DETAILS FROM RESIDENT ENGINEER'S LETTER REPORT:

- 1. SPILL DETAILS**
- 2. WATER SAMPLING RESULTS &**
- 3. OTHERS**

March 18, 2011

Dele Morakinyo
Project Manager, Contaminated Sites Program (NRO)
Department of Indian and Northern Affairs
Government of Canada
25 Eddy Street, 10th floor
Gatineau, Quebec K1A 0H4

Dear Mr. Morakinyo:

Project No: 60149115

Regarding: Water Licence Requested Information, CAM-D Simpson Lake

As per your email on March 9, 2011, the following bullets present a summary of the information requested and correspond with the Part B – General Conditions, section 1 of the Water Licence;

- a. The monthly and annual quantities of freshwater obtained are as follows;
 - June – 42 m³
 - July – 62 m³
 - August – 62 m³
 - September – 60 m³
 - October – 18 m³
 - Annual – 244 m³
- b. The monthly and annual quantities of sewage generated are as follows;
 - June – 42 m³
 - July – 62 m³
 - August – 62 m³
 - September – 60 m³
 - October – 18 m³
 - Annual – 244 m³
- c. All combustible camp waste was incinerated in the on-site incinerator. Non-combustible material, such as aerosol cans and hazardous waste, was collected for backhauling and/or treatment at the conclusion of the project.
- d. All hazardous waste and non-combustible waste was segregated during the 2010 season. Waste oil will be incinerated as per Kudlik's work plan. No backhauling will occur until the

completion of the project in 2012.

- e. During the initial stages of construction, two temporary sewage waste lagoons were constructed with a liner. The lagoons were used to temporarily store sewage while the Bionest treatment system was constructed. Once the Bionest system was operational, the lagoon waste was passed through the treatment system and, once confirmatory samples were collected, the treated effluent was discharged to ground at the approved discharge location.

The photo below shows the CAM-D camp area, with the temporary sewage lagoons and the Bionest treatment system located in the northwest (top left of the photo) corner of the camp.



- f. The following Table 1 and Table 2 present a summary of the data collected during the 2010 season.

Table 1. Drinking Water Analysis Results

Parameter	HC Guidelines ¹	Units	Kudlik/ 27-Jun-10	Kudlik/ 27-Jul-10	Kudlik/ 12-Sep-10	AECOM/ 4-Oct-10
Microbiological Parameters						
Escherichia coli	0	UFC/100 mL	0	0	0	<1
Fecal coliforms	-	UFC/100 mL	0	0	0	<1
Total coliforms	0	UFC/100 mL	0	N/A	0	<1
Heterotrophic Plate Count	-	UFC/100 mL	5	-	-	-
Chemical and Physical Parameters						
Arsenic	0.01	mg/L	<0.001	<0.001	<0.001	0.0003
Cadmium	0.005	mg/L	<0.0005	-	-	<5
Calcium	-	mg/L	1.1	-	-	17
Chloride	250 ^{AO}	mg/L	1.4	-	-	58
Chromium	0.05	mg/L	0.001	0.002	0.001	<0.001
Cobalt	-	mg/L	<0.001	-	-	<0.0003
Electrical Conductivity	-	µS/cm	21	-	-	330
Copper	1.0 ^{AO}	mg/L	0.005	-	-	0.0090
Hardness (CaCO ₃)	-	mg/L	6	-	-	82.8
Iron	0.3 ^{AO}	mg/L	0.23	-	-	0.21
Lead	0.01	mg/L	0.001	<0.001	<0.001	0.0006
Magnesium	-	mg/L	0.82	-	-	10
Manganese	0.05 ^{AO}	mg/L	0.015	-	-	0.008
Mercury	0.001	mg/L	<0.001	-	-	-
Nitrate (N)	10	mg/L	<0.02	0.19	<0.02	0.11
Nitrite (N)	3.2	mg/L	<0.01	<0.01	<0.01	<0.003
Nickel	-	mg/L	0.002	-	-	0.0015
pH	6.5-8.5	N/A	6.8	7.6	7.6	7.63
PCBs	-	µg/L	<0.01	-	-	-
Potassium	-	mg/L	1.5	-	-	3.0
Sodium	200 ^{AO}	mg/L	1.1	3.4	10	29
Sulphate (SO ₄)	500 ^{AO}	mg/L	0.6	-	-	32
Zinc	5.0 ^{AO}	mg/L	0.026	-	-	0.044

Notes: ¹ Guidelines for Canadian Drinking Water Quality, Health Canada, December 2010
^{AO} Aesthetic Objective

Table 2. Treated Water Analysis Results

Parameter	Effluent Quality Limits	Kudlik/ 7-Jul-10	Kudlik/ 1-Sep-10	Kudlik/ 4-Oct-10	AECOM/ 4-Oct-10
BOD	120 mg/L	40 mg/L	24 mg/L	9 mg/L	14 mg/L
Total Suspended Solids	180 mg/L	19 mg/L	13 mg/L	9 mg/L	19 mg/L
Fecal Coliforms	100,000 CFU/100 mL	66 CFU/100 mL	210 CFU/100 mL	1,900 CFU/100 mL	1,700 CFU/100 mL
pH	6.0 to 9.0	7.7	7.9	7.5	7.67
Oil and Grease	no visible sheen	<1 mg/L	<1 mg/L	<1 mg/L	<2 mg/L

- g. All samples collected met the drinking water guidelines and effluent discharge limits - refer to Table 1 and Table 2.

- h. Five marine containers were filled with hazardous materials (lead and PCB painted items, PCB containing electrical equipment, etc) generated during remediation activities in 2010. In addition to the marine containers, 308 superbags (approx 1 m³ capacity) and 48 wooden seacans (approx 2.4 m³ capacity) were filled with petroleum hydrocarbon contaminated soil and require shipment off-site. A CAT train has been scheduled for March 2011, at which time the marine containers, superbags and seacans will be relocated to the temporary storage area at Shepherd Bay in preparation for final demobilization in 2011 or 2012.
- i. The following paragraphs provide a summary of the remediation operations completed in 2010;

Approximately 17,650 m³ of borrow material was quarried from Borrow Area No. 2, of which 14,400 m³ was borrowed and used for haul road improvements, on-site non-hazardous waste landfill (NHWL) berm construction and general fill (where required). Restoration of Borrow Area No. 2 was completed and the river crossing has been removed. The remaining volume of borrow material (estimated 4,000 m³ of Type 2 and 1,700 m³ of Type 3) sufficient to meet the requirements of the specifications (final cap on the NHWL and final site regrading) has been hauled and stockpiled at the upper site to facilitate site closure activities in 2011.

Demolition of existing structures including the garage, warehouse foundation, POL pumphouse and fallen antenna was completed. Demolition activities involved PCB amended paint (PAP) and lead based paint removal and containerization for shipment off-site; asbestos abatement; and the removal and disposal of inert debris (i.e. concrete, fibreglass insulation, and scrap metal) in the NHWL.

During the 2010 season, nine of the twelve contaminated soil excavations were completed. Contaminants included petroleum hydrocarbons, heavy metals and PCBs. In total, approximately 1,800 m³ of contaminated soil was excavated, of which 580 m³ was containerized for shipment off-site and 1,220 m³ was placed in the NHWL as intermediate fill.

Buried debris excavation involved unearthing the buried waste, separating the debris into waste streams and sampling of the intermixed soil to determine disposal requirements. Of the four scheduled buried debris excavations, two were completed during 2010. Surficial debris collection from the fourteen previously identified site debris areas commenced in 2010 and will be completed in 2011.

In 2010, approximately 1,370 barrels containing residual fluids (water, fuel or otherwise) were processed (i.e. consolidated where practical, sampled, analyzed, treated and disposed of accordingly).

Anticipated work to be completed in 2011 include barrel processing, debris removal, buried debris and excavations and regrading, petroleum hydrocarbon soil excavation and treatment closing the nonhazardous waste landfill as well as removing culverts and a general regrade of the site prior to demobilization.

- j. No studies were requested by the Board that relate to waste disposal, water use or reclamation and no future studies are planned.
- k. The following table presents a summary of all unauthorized discharges and corrective action taken. All quantities were below the reportable limit.

Table 3. CAM-D 2010 Spill and Unauthorized Discharge Summary

Date of Occurrence	Description of Spill/Unauthorized Discharge	Related Equipment	Product Spilt	Quantity (L)	Corrective Action Taken
July 26, 2010	Stained soil observed near CAT Challenger 855D in Main Station Temporary Storage Area.	Unknown	Hydraulic Fluid	<1 L	The impacted soil was excavated and placed into a barrel which was disposed of in the NHWL.
July 29, 2010	Hydraulic hose disconnected and sprayed the ground surface in the heavy equipment parking adjacent the garage.	Komatsu WA500 Loader	Hydraulic Fluid	1-2 L	Repaired the hose and cleaned the surface of the machine. The impacted soil was excavated into a pail and placed in the NHWL.
August 2, 2010	Broke radiator half-way on haul road; leaked slowly along road to the garage.	Contractor's Ford F350 Crew Cab Truck	Anti-Freeze (ethylene glycol)	3 L	The remaining fluids in the radiator were drained (~3 L) into a spill pan and the radiator was replaced. The impacted soil was excavated into a pail and disposed of in the NHWL.
August 24, 2010	Lubricant dripped from hinge and emulsified with ponded water at the Airstrip.	Compactor	Lubricant	<1 L	Cleaned the ground surface using absorbent pads and installed a drip collection pan underneath the parked compactor.
September 6, 2010	Stained soil observed adjacent garage at Camp Site.	Unknown	Diesel Fuel	<1 L	Impacted soil was excavated onto a polyethylene membrane. The stockpile was sampled by AECOM and then placed in the NHWL when acceptable results were received.
September 6, 2010	Stained soil observed in Borrow Area No. 2.	Unknown	Hydraulic Fluid	< 1L	Impacted soil was excavated onto a polyethylene membrane. The stockpile was sampled by AECOM and then placed in the NHWL when acceptable results were received.
September 7, 2010	Hydraulic hose was damaged and fluid sprayed on the equipment and the ground surface in Borrow Area No. 2.	Komatsu PC300 Excavator	Hydraulic Fluid	1-2 L	Repaired the hose and cleaned the surface of the machine (and the ground surface) using absorbent pads. No soil excavation was required. The used absorbents were incinerated on-site.
October 1, 2010	New diesel fuel barrel was damaged during transport from barrel cache to the main storage tank at the Camp Site. Barrel fell from the sleigh used for transport and was partially crushed. The partially crushed barrel leaked on the frozen ground. Two other barrels also fell to the ground and were damaged; however, they were not punctured and did not leak.	CAT Challenger 855D and Sleigh	Diesel Fuel	20-30 L	Contents of the damaged barrel were pumped into an empty fuel barrel. The fuel on the frozen ground was completely absorbed with bulk absorbent. The fuel soaked absorbent was placed into an open-top barrel and incinerated on-site. The contents of the other two barrels were pumped into the main storage tank.

- l. For 2011, there are two Impacted soil excavations that remain; the POL Area and the Garage Pad. Because of the increase volume (significantly larger than the RAP/design volume) and suitability for treatment, the soil from the Garage Pad is going to be landfarmed to the 2009 Criteria prior to being used as intermediate fill in the landfill. If there is no need for additional intermediate fill, the treated soil will be left in place. Should the NHWL be at capacity (which AECOM does not foresee occurring since the original design volume from the Garage Pad excavation was specified for disposal in the NHWL) and should there be any material above the 2009 Criteria after landfarming, the contaminated soil should be containerized for offsite disposal.
- m. No revisions were made to the site specific Spill Contingency Plan.
- n. No trenches or sumps were excavated.
- o. Public consultation/participation report to be provided by INAC.
- p. The only deficiency/recommendation identified by the Land Use Inspector was the lack of secondary containment for the fuel storage. Since the fuel was stored in individual 205 L drums (<230 L) they are not regulated and no secondary containment was constructed.
- q. Executive summary to be provided by INAC.
- r. No other details were requested by the Board.

I trust this will meet your reporting requirements. If you have any questions or concerns please contact me by email mike.zimmel@aecom.com or phone at 780-486-7056.

Sincerely,
AECOM Canada Ltd.



Mike Zimmel
Departmental Representative
CAM-D Environmental Site Remediation Project
mike.zimmel@aecom.com

MZ:ph
Encl.
cc: Matthew McElwaine (PWGSC), Greg Wright (AECOM),

APPENDIX C

MONITORING PROGRAM STATIONS (SIM-1, SIM-2, SIM-3 AND SIM-4 AS PER PART K OF THE WATER LICENCE)

SIM-1 (Raw Water Supply Intake) 68°34'11.43"N, 92°02'45.41"W

Analytical results:

Parameter	HC Guidelines ¹	Units	Kudlik/ 27-Jun-10	Kudlik/ 27-Jul-10	Kudlik/ 12-Sep-10	AECOM/ 4-Oct-10
Microbiological Parameters						
Escherichia coli	0	UFC/100 mL	0	0	0	<1
Fecal coliforms	-	UFC/100 mL	0	0	0	<1
Total coliforms	0	UFC/100 mL	0	N/A	0	<1
Heterotrophic Plate Count	-	UFC/100 mL	5	-	-	-
Chemical and Physical Parameters						
Arsenic	0.01	mgL	<0.001	<0.001	<0.001	0.0003
Cadmium	0.005	mgL	<0.0005	-	-	<5
Calcium	-	mgL	1.1	-	-	17
Chloride	250 ^{AO}	mg/L	1.4	-	-	58
Chromium	0.05	mgL	0.001	0.002	0.001	<0.001
Cobalt	-	mgL	<0.001	-	-	<0.0003
Electrical Conductivity	-	mS/cm	21	-	-	330
Copper	1.0 ^{AO}	mgL	0.005	-	-	0.0090
Hardness (CaCO3)	-	mg/L	6	-	-	82.8
Iron	0.3 ^{AO}	mgL	0.23	-	-	0.21
Lead	0.01	mgL	0.001	<0.001	<0.001	0.0006
Magnesium	-	mgL	0.82	-	-	10
Manganese	0.05 ^{AO}	mgL	0.015	-	-	0.008
Mercury	0.001	mgL	<0.001	-	-	-
Nitrate (N)	10	mg/L	<0.02	0.19	<0.02	0.11
Nitrite (N)	3.2	mg/L	<0.01	<0.01	<0.01	<0.003
Nickel	-	mgL	0.002	-	-	0.0015
pH	6.5-8.5	N/A	6.8	7.6	7.6	7.63
PCBs	-	mg/L	<0.01	-	-	-
Potassium	-	mgL	1.5	-	-	3.0
Sodium	200 ^{AO}	mgL	1.1	3.4	10	29
Sulphate (SO4)	500 ^{AO}	mg/L	0.6	-	-	32
Zinc	5.0 ^{AO}	mgL	0.026	-	-	0.044

Notes: ¹ Guidelines for Canadian Drinking Water Quality, Health Canada, December 2010

^{AO} Aesthetic Objective

SIM-2 (Final Discharge Point from Sewage Disposal Facility) 68°34'14.48"N,
92°02'46.04"W

Analytical Results:

Parameter	Effluent Quality Limits	Kudlik/ 7-Jul-10	Kudlik/ 1-Sep-10	Kudlik/ 4-Oct-10	AECOM/ 4-Oct-10
BOD	120 mg/L	40 mg/L	24 mg/L	9 mg/L	14 mg/L
Total Suspended Solids	180 mg/L	19 mg/L	13 mg/L	9 mg/L	19 mg/L
Fecal Coliforms	100,000 CFU/100 mL	66 CFU/100 mL	210 CFU/100 mL	1,900 CFU/100 mL	1,700 CFU/100 mL
pH	6.0 to 9.0	7.7	7.9	7.5	7.67
Oil and Grease	no visible sheen	<1 mg/L	<1 mg/L	<1 mg/L	<2 mg/L

SIM-3 (Discharge Point for the Waste Handling Facility)
No waste handling facility was used on CAM-D

SIM-4 (Discharge Point for the Non-Hazardous Waste Disposal Facility
(68°35'36.26"N, 91°58'49.46"W)

No discharges occurred from the Non-Hazardous Waste Disposal Facility

APPENDIX D

SOME BEFORE AND AFTER REMEDIATION PHOTOS



Photograph 1. Before: View of Plumber's Dump prior to surface debris removal. ↑



Photograph 2. After: View of Plumber's Dump subsequent to surface debris removal. ↑



Photograph 3. Before: View Outfall – Contaminated prior to excavation of contaminated soil. ↑



Photograph 4. After: View of Outfall - Contaminated subsequent to excavation and backfilling activities. ↑

**Photograph 5.**

Before: Borrow Area No. 2 during borrow material development. ↑

**Photograph 6.**

After: Borrow Area No. 2 subsequent to restoration program. ↑



Photograph 7. Before: View of Garage prior to demolition. ↑



Photograph 8. After: View of Garage Pad following the completion of demolition activities. ↑



Photograph 9. Before: View of Pallet Line – Contaminated during excavation of contaminated soil. ↑



Photograph 10. After: Pallet Line – Contaminated during backfilling/reshaping. ↑